

Project/Performance Site Location(s)

Project/Performance Site Primary Location I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name:

UEI:

* Street1:

Street2:

* City: County:

* State:

Province:

* Country:

* ZIP / Postal Code: * Project/ Performance Site Congressional District:

Project/Performance Site Location 1 I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name:

UEI:

* Street1:

Street2:

* City: County:

* State:

Province:

* Country:

* ZIP / Postal Code: * Project/ Performance Site Congressional District:

Additional Location(s)

Application for Federal Assistance SF-424

* 1. Type of Submission: <input type="checkbox"/> Preapplication <input checked="" type="checkbox"/> Application <input type="checkbox"/> Changed/Corrected Application	* 2. Type of Application: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision	* If Revision, select appropriate letter(s): <input type="text"/> * Other (Specify): <input type="text"/>
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* 3. Date Received: <input type="text" value="03/17/2023"/>	4. Applicant Identifier: <input type="text"/>
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5a. Federal Entity Identifier: <input type="text"/>	5b. Federal Award Identifier: <input type="text"/>
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State Use Only:

6. Date Received by State: <input type="text"/>	7. State Application Identifier: <input type="text"/>
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8. APPLICANT INFORMATION:

* a. Legal Name:

* b. Employer/Taxpayer Identification Number (EIN/TIN): <input type="text" value="36-0938600"/>	* c. UEI: <input type="text" value="MJEXZQW6PD76"/>
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d. Address:

* Street1:
Street2:
* City:
County/Parish:
* State:
Province:
* Country:
* Zip / Postal Code:

e. Organizational Unit:

Department Name: <input type="text"/>	Division Name: <input type="text"/>
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f. Name and contact information of person to be contacted on matters involving this application:

Prefix: * First Name:
Middle Name:
* Last Name:
Suffix:

Title:

Organizational Affiliation:

* Telephone Number: Fax Number:

* Email:

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

Q: For-Profit Organization (Other than Small Business)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

National Energy Technology Laboratory

11. Catalog of Federal Domestic Assistance Number:

81.254

CFDA Title:

Grid Infrastructure Deployment and Resilience

*** 12. Funding Opportunity Number:**

DE-FOA-0002740

* Title:

BIL Grid Resilience and Innovation Partnerships (GRIP)

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment

Delete Attachment

View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices (ICF)

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant

* b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

17. Proposed Project:

* a. Start Date:

* b. End Date:

18. Estimated Funding (\$):

* a. Federal
* b. Applicant
* c. State
* d. Local
* e. Other
* f. Program Income
* g. TOTAL

(b) (4)

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

a. This application was made available to the State under the Executive Order 12372 Process for review on

b. Program is subject to E.O. 12372 but has not been selected by the State for review.

c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

Yes No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)**

** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name:

Middle Name:

* Last Name:

Suffix:

* Title:

* Telephone Number: Fax Number:

* Email:

* Signature of Authorized Representative: * Date Signed:

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2025

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. GRIP 2740 TA2 ComEd Lead Proposal (CP290) Interoperable Control Framework		\$ []	\$ []	\$ (b) (4)	\$ []	\$ []
2.		[]	[]	[]	[]	[]
3.		[]	[]	[]	[]	[]
4.		[]	[]	[]	[]	[]
5. Totals		\$ []	\$ []	\$ (b) (4)	\$ []	\$ []

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	GRIP 2740 TA2 ComEd Lead Proposal (CP290) Interoperable Control Framework				
a. Personnel	(b) (4)				
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-					
j. Indirect Charges					
k. TOTALS (sum of 6i and 6j)					
7. Program Income					

SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program		(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	GRIP 2740 TA2 ComEd Lead Proposal (CP290) Interoperable Control Framework	(b) (4)			
9.					
10.					
11.					
12. TOTAL (sum of lines 8-11)					

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	(b) (4)				
14. Non-Federal					
15. TOTAL (sum of lines 13 and 14)					

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program		FUTURE FUNDING PERIODS (YEARS)			
		(b) First	(c) Second	(d) Third	(e) Fourth
16.	GRIP 2740 TA2 ComEd Lead Proposal (CP290) Interoperable Control Framework	\$ (b) (4)			
17.					
18.					
19.		(b) (4)			
20. TOTAL (sum of lines 16 - 19)					

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:	<input type="text"/>	22. Indirect Charges:	<input type="text"/>
23. Remarks:	The complete 5-year budget is uploaded separately (in excel sheet).		

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2025

1. * Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input checked="" type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
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4. Name and Address of Reporting Entity:

Prime SubAwardee

* Name: Commonwealth Edison Company (ComEd)

* Street 1: 10 S. Dearborn Street Street 2: 51st Floor

* City: Chicago State: IL: Illinois Zip: 60603

Congressional District, if known: IL-007

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency: National Energy Technology Lab	7. * Federal Program Name/Description: Grid Infrastructure Deployment and Resilience
	CFDA Number, if applicable: 81.254

8. Federal Action Number, if known:	9. Award Amount, if known: \$
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10. a. Name and Address of Lobbying Registrant:

Prefix: Mr. * First Name: (b) (4) Middle Name:

* Last Name: (b) (4) Suffix:

* Street 1: 10 S. Dearborn Street Street 2:

* City: Chicago State: IL: Illinois Zip: 60603

b. Individual Performing Services (including address if different from No. 10a)

Prefix: * First Name: N/A Middle Name:

* Last Name: N/A Suffix:

* Street 1: N/A Street 2:

* City: N/A State: Zip:

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

* Signature: (b) (4)

* Name: Prefix: (b) (4) * First Name: (b) (4) Middle Name:

* Last Name: (b) (4) Suffix:

Title: (b) (4) telephone No.: (b) (4) Date: 03/17/2023

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Project Overview

- Title: Deployment of a Community-Oriented Interoperable Control Framework

(b) (4)

- Enhance interoperability and leverage grid-edge technologies to provide grid benefits for both utility and customers.
- Foster the aggregation and integration of variable renewable energy resources, electric vehicles, smart buildings, and other electrified loads
- Provide equitable access to clean energy and technology integration and maximize benefits across disadvantaged communities.

Key Idea / Takeaway

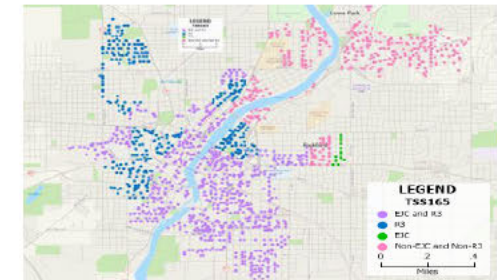
- Integration of innovative technologies need to be standardized for modern grid. This project will develop standard integration principles and protocols to address the interoperability, and to share the knowledge with the industry.
- This project deploys grid-edge technologies that can significantly improve grid visibility and operational flexibility, and can also be easily duplicated elsewhere.
- Community partners can get easier, quicker, and cheaper access to clean energy through the technologies developed in this project.

Project Location: Rockford, IL

- 84,000 ComEd customers
- Total load demand: 410 MW
- Total DER connected: ~200MW (>500 customer DER interconnecting in City of Rockford)
- 40% Minority Population
- Median household income: \$36,600
- 71% ~ 90% national level of low-income,
- 13.5% unemployment rate, compared to 4.8% IL
- 47.45% of households without Internet access in some zip codes



DOE Disadvantaged Communities (DACs)



Environmental Justice and R3 (Restore, Reinvent, Renew) Communities

Technology Impact

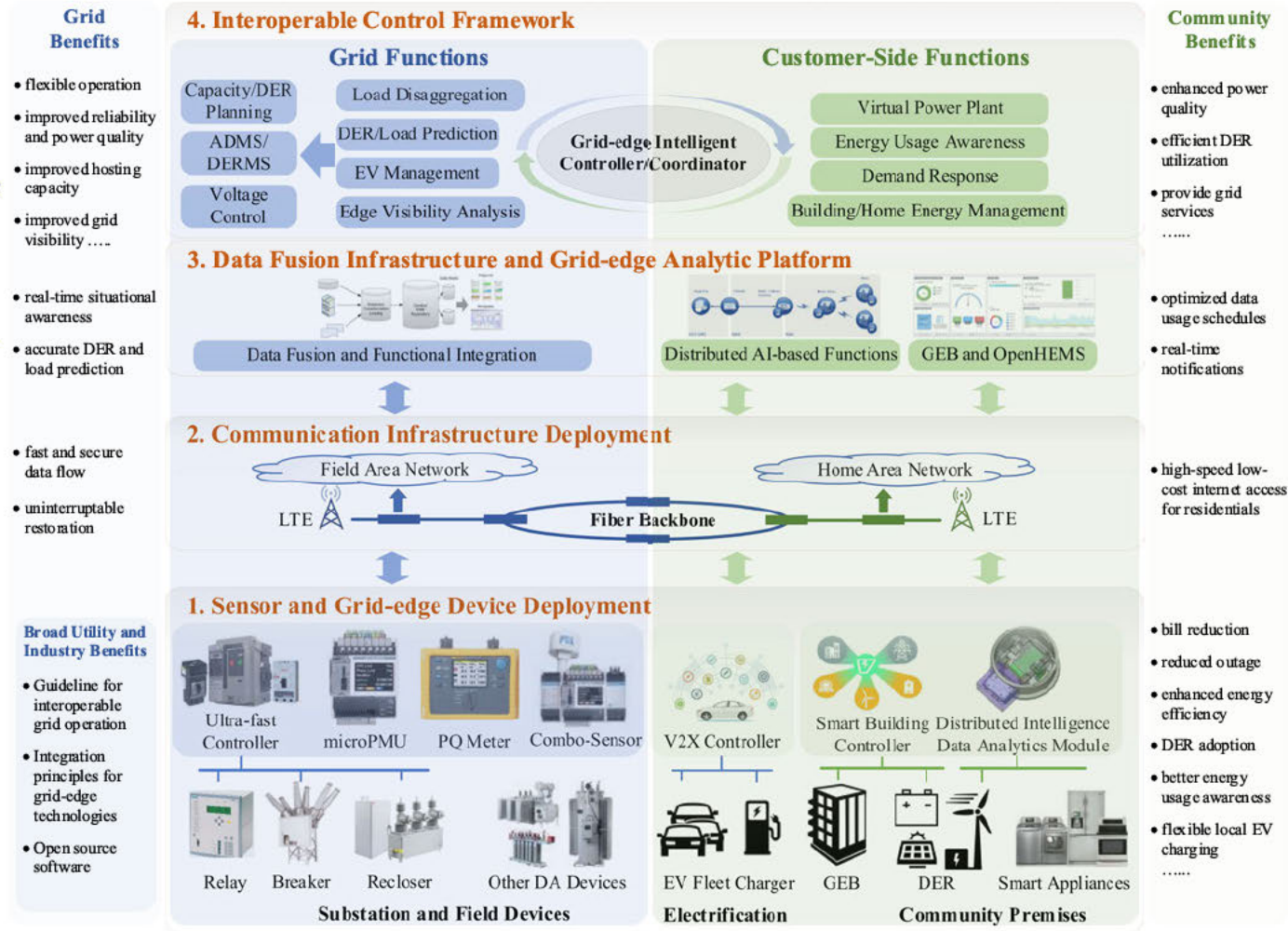
- Utility will have more grid and customer visibility and flexibility to improve smart grid functions.
- Customer will have greater awareness and control over their energy usage.
- Industry will gain templates for integration, source code, lessons learned, better harmonization between equipment and software, and better integration rules.

Technology Summary

- **Objective:** Develop and demonstrate a data fusion empowered interoperable framework. The technical solution architecture has four pillars:
- **Pillar 1:** Deploy **physical** sensors and grid-edge devices to improve grid visibility and flexibility.
 - *Micro-PMU, Power Quality meters, combo-sensors*
 - *Smart building controller (GEB), distributed intelligence module, electric vehicle charger and vehicle-to-everything (V2X) controller*
- **Pillar 2:** Deploy **communication** architecture to support data flow among equipment and applications.
- **Pillar 3:** Develop and deploy **data** fusion infrastructure and analytic platform.
 - *Data fusion functions to integrated data sources from sensors and other modules*
 - *Data-based grid functions for real-time analysis and control*
 - *GEB and AI-based analytic modules*
- **Pillar 4:** Develop interoperable **control** framework
 - *Grid-edge intelligent controller to support interoperable functions*
 - *Both grid and customer-side functions will be developed to support smart grid functions*

Technology Feasibility

- ComEd has a long-term collaboration with Rockford DAC community partners
- ComEd has piloted most of the proposed new technologies in controlled field environment
- Policy support from the State of Illinois (CEJA)
- ComEd and most partners have sufficient experience of working on DOE projects



Partner Information

Innovation Partners:

- Utilidata/NVIDIA
- Ace IoT
- Open Energy Solutions
- V&R
- PingThings
- Slipstream
- PLUG
- Electric Power Engineers

Vendors:

- General Motor
- General Electric
- Eaton
- G&W
- S&C
- Hitachi America

Community Organizations:

- Region 1 Planning Council
- Rockford Work Force Development Council
- Rockford Chamber of Commerce
- Rockford Area Economic Development Council
- The Luther Center
- YWCA Northwestern Illinois

Subject Matter Experts:

(b) (4)

- University of Illinois - Chicago
- University of California - Riverside

(b) (4)

- Iowa State University
- West Virginia University
- Purdue University

(b) (4)

1 (M1-M12)	Deployment Planning, Solution Acquisition, and Customer Recruitment	Community engagement, customer recruitment and testing including utility and partner systems. Procurement of materials and deployment site analysis. Planning and initiation of communication network deployments.
2, 3 (M13-M24) (M25-M36)	Technology Field Deployment and Functionality Testing	Community survey, field deployment of gateways, intelligent sensors, controllers, and communication networks; initial functionality test of grid support functions.
4 (M37-M48)	Scalability and System Performance Testing	STEM community engagement, scalability and system performance testing/improvements; operational testing, measurement and data collection.
5 (M49-M60)	Operational Performance Testing, Analysis, Transition, and Reporting	Community engagement report, continued operational performance, data collection, data processing, knowledge and technology transfer, and reporting.

STATEMENT OF PROJECT OBJECTIVES (SOPO)

Community Oriented Interoperable Control Framework for Aggregating and Integrating DERs and other Grid-Edge Devices (ICF)

A. OBJECTIVES

This project will implement a data fusion empowered interoperable control framework to pave the way for next-generation power grid planning and operation, while maximizing benefits across disadvantaged communities. The project will deploy a selection of grid-edge technologies for field demonstration and develop an interoperable data fusion architecture and grid-edge analytic platform to address the interoperability among innovative technologies. This architecture will provide both centralized and decentralized intelligence, allowing for the optimization and automation of various grid edge resources, including distributed energy resources (DERs), electric vehicles (EVs), grid-interactive efficient buildings (GEBs), and intelligent sensors. This project will develop standard integration principles and protocols to address the interoperability, and to share the knowledge with the industry.

B. SCOPE OF WORK

The team will deploy a selection of grid-edge technologies and supporting communication and data infrastructure to facilitate both utility-side and customer-side functions. As shown in the figure below, the technical solution architecture comprises four fundamental pillars, which cover the deployment of 1) hardware sensors and grid-edge controllers; 2) communication architecture; 3) data fusion infrastructure and analytic platform; and 4) software solutions for grid and customer function integration and coordination. The proposed deployment will be conducted in the City of Rockford, IL, which is a disadvantaged community that has weathered a hollowing-out of its industrial roots over the last 60 years.

C. TASKS TO BE PERFORMED

Task 1: Project Management and Planning (M1-M60).

Subtask 1.1: Project Management Plan (PMP): Submit a Project Management Plan (PMP) within 30 days of award, and revise and resubmit the PMP as often as necessary.

Subtask 1.2: Identify planning advisory group for technical support

Subtask 1.3: National Environmental Policy Act (NEPA) Compliance

Subtask 1.4: Cybersecurity Plan: Develop and submit a cybersecurity plan (CSP) within 30 days of award, and revise and resubmit the CSP as often as necessary

Subtask 1.5: Kick-off briefing and pre-continuation briefings: Project kickoff meeting with the DOE to provide summary briefing within 30 days of submission of the PMP. Not less than 90 days prior to the planned start of a budget period, the team will brief the DOE on the results to date, and their plans for the subsequent periods of work for DOE to authorize continuing the project.

Subtask 1.6: Continuation Briefings: The team will brief DOE on roughly an annual basis to explain the plans, progress and results of the technical effort. The briefing shall also describe performance relative to project success criteria, milestones, and the Go/No-Go Decision point that are documented in the Project Management Plan (PMP).

Deliverable: PMP, CSP, and quarterly review reports, continuation reports.

Task 2: Community Engagement (M1-M12).

Subtask 2.1: Conduct demographic and social assessment: Compile existing documents and conduct the demographic and social assessment on population, building stock, and construction activity to prioritize outreach activities.

Subtask 2.2: Community communication needs assessment: Hold educational and demonstration events on DER technologies and benefits in collaboration with Rockford CBOs. Implement a two-part approach to conducting a community needs survey.

Subtask 2.3: Determine community need on Reliability, Resiliency, Flexibility, Security: Convene stakeholders and expert focus group to define and rank priorities and metrics. Results from Task 2.2 will inform the level of community need, which will be brought to the Community Advisory Forum members, neighborhood organizations, and other meeting spaces to receive any feedback.

Subtask 2.4: Job and training to community: Recruit and train local residents as “Energy Ambassadors” to perform outreach and education to prospective DER sites. R1 and ComEd will collaborate with community partners including Workforce Connections (local workforce board), labor unions (such as International Brotherhood of Electrical Workers), and educational institutions including Rockford Public School #205 (RPS 205) high schools, Rock Valley College, and other technical programs. A training/mentoring program will be designed to fit the needs of the community and launched to support the program.

Subtask 2.5: Create community engagement and communication plan: Develop targets, tactics, and multi-lingual materials for public-facing outreach. Collaborate in producing an in-depth plan for conducting community engagement including goals and objectives, targeted communities, methods employed, expected outcomes, and barriers. Submit final community engagement plan.

Subtask 2.6: Conduct public meetings and community engagement workshops: Leverage community partnerships to present on DER technologies and benefits to targeted audiences. Attend public meetings within the community to present the project and available findings. Based on the community needs assessment, the project team may also choose to host educational community workshops that provide 1:1 support for understanding the project and smart grids.

Subtask 2.7: Recruit community buildings and residential participants to participate in the project: Work with the Rockford community stakeholders including Region 1 Planning Council and ComEd in identifying and recruiting (b) (4) commercial buildings for GEB demonstration and (b) (4) residential homes for Open Home Energy Management System (Open HEMS) demonstration.

Deliverable: Reports for demographic and social assessment, final engagement plan.

Task 3: Benefits Assessment (M1-M12). This task will perform the benefits assessment of deployed technologies for both grid and community. This task will be conducted during the course of project to capture the benefits introduced by technology deployment.

Subtask 3.1: Data collection and analysis of impacts. Collect community information and conduct survey to collect review recommendations and feedback.

Subtask 3.2: Determine metrics for benefit assessment. Develop assessment metrics for both grid (e.g., reliability, flexibility, safety, security, resiliency, scalability) and community (e.g., jobs and economic opportunities). Review the metrics with the community stakeholders.

Subtask 3.3: Calculate enhancement in defined assessment metrics. Perform benefits assessment using the metrics and submit reports for stakeholders for deployed technologies.

Deliverable: benefits assessment reports for deployed technologies and grid functions.

Task 4: Advanced Communication Deployment (M13-M24): This task will include design and deployment of the communication architecture. ComEd has existing fiber deployment program – the Renewable Energy, Advanced Control and Telemetry Systems (REACTS) – to design and build an advanced communication network using optical fiber, private LTE, and other technologies.

Deliverable: The deployment and commissioning report for communication network

Task 5: Advanced Sensors Deployment (M25-M36): This task includes the design, deployment, and commissioning of advanced sensors by leveraging ComEd previous deployment experience.

Subtask 5.1: Engineering design and location assessment for sensor deployment: This subtask includes location assessment in City of Rockford and engineering design for sensor deployment,

Subtask 5.2: Advanced sensor deployment and commissioning: Install and calibrate (b) (4) micro-PMUs, (b) (4) PQ meters, and combo-sensors and validate the network connection. Conduct testing and commissioning to ensure that it meets performance requirements and is safe for operation.

Deliverable: The deployment and commissioning report for advanced sensors.

Task 6: Grid-edge Device Deployment (M1-M36): Work with leading industry partners to deploy a selection of grid-edge devices to facilitate renewable integration, electrification, and customer engagement through smart building and distributed AI technologies.

Subtask 6.1: Design, deployment and commissioning of grid-interactive efficient building (GEB) controllers: Deploy VOLTTRON-based GEB control platform for (b) (4) commercial buildings and the Open HEMS for (b) (4) residential homes.

Subtask 6.2: Design, deployment and commissioning of smart grid chips (SGCs): Install around (b) (4) SGCs within the Rockford demonstration site.

Subtask 6.3: Design, deployment and commissioning of electric vehicle (EV) fleet, EV charger, and vehicle-to-everything (V2X) controllers: Setup EV management system and enable V1G service for

(b) (4)

vehicle-to-grid (V2G) capabilities for up to (b) (4) vehicles.

Subtask 6.4: Deployment and commissioning of ultra-fast controllers for distribution automation (DA) devices: Design and deploy ultra-fast actuator, electro-mechanical drive system, and communication and automation system. Perform lab testing and field testing.

Deliverable: The deployment and commissioning report for GEB controllers, SGC, EV, EV charger, V2X controllers, and ultra-fast controllers.

Task 7: Data Fusion and Grid-edge Analytic Platform Deployment (M37-M48): This task will include deployment of the data fusion and grid-edge analytical platform with function modules.

Subtask 7.1: Design and assessment of platform deployment for field sensor data, meter data, and GEB data: Perform design and assessment by characterizing data streams.

Subtask 7.2: Deployment and commissioning of data fusion platform: Evaluate mainstream solutions (compatibility, interoperability, data processing and storage capability, etc.) to determine and deploy the most appropriate data fusion infrastructure.

Subtask 7.3: Integration of GEB and OpenHEMS function module: Integration and testing of GEB and OpenHEMS functions with the data fusion platform.

Subtask 7.4: Integration of distributed Artificial Intelligence (AI)-based functions: The team will integrate the distributed AI-based functions with the data fusion platform

Subtask 7.5: Automation of planning tools for DER integration. Collaborate with the team to enhance the DER integration planning tools.

Subtask 7.6: Development and deployment of distributed grid-edge algorithms: Develop and deploy grid-edge functions and use cases on the data fusion and analytic platform.

Deliverable: Reports on integration, function design, use cases, results, and source code

Task 8: Interoperable Control Framework Deployment (M49-M60): This task will include the plan, design, development, and deployment of interoperable controllers and framework.

Subtask 8.1: Design and assessment of functional interdependencies and data requirements for interoperable functions: The team will evaluate the data requirement and functional interdependencies of the controllers and platforms to determine the interoperability solution.

Subtask 8.2: Development and deployment of grid-edge intelligent controller functions: The team will develop innovative functions of grid-edge intelligent controller and test them in a lab testing environment. The functions will be deployed in the field to assess its capabilities.

Subtask 8.3: Implementation of coordinated control for grid-side functions: The team will improve the existing grid functions (e.g., capacity and DER planning, ADMS and DERMS, voltage optimization) or develop new grid functions (e.g., load disaggregation, DER and load prediction, EV management, edge visibility analysis) by leveraging the data and analytic functions.

Subtask 8.4: Implementation of coordinated control for customer-side functions: The team will develop customer-side functions, including virtual power plant (VPP), energy usage awareness, customer-side demand response, and building and home energy management.

Subtask 8.5: Grid resilience modeling, simulation, and assessment platform. A lab testing platform will be developed to streamline the workflow and support the implementation of abovementioned functions.

Deliverable: Reports on framework design, use cases, results, and source code

Task 9: Cybersecurity (M1-M60).

Subtask 9.1: Separating devices and services that have different security requirements into different zones. This subtask ensures network segmentation, and the critical infrastructure devices should be in a separate zone from customer-facing devices such as smart meters, etc.

Subtask 9.2: Implement a strong access control policy for critical systems and data. Deploy access control with multi-factor authentication, role-based access control and least privilege access.

Subtask 9.3: Deployment of threat detection including intrusion detection systems, firewalls, and incident response plans. Deploy the threat detection per the results of security assessment.

Subtask 9.4: Deployment of firmware management strategy. Monitor and verify the firmware updates before installation.

Subtask 9.5: Training of the staff who have access to the coordinated control system. Host staff training on password management, email security, supply chain/ransomware attack awareness.

Deliverable: Reports on cybersecurity practices

D. Milestone

Please refer to Table 1. Milestone is formatted as BP Number + Task Number + Milestone Number.

E. End of Project Goal

By end of the project, the team will accomplish the following project goals: 1) check that all the standards are met; 2) communication infrastructure is set up; 3) successful implementation of data fusion platform; 4) arrive at feasible interoperable control framework; 5) Reporting out the support of ComEd's CEJA performance metrics evaluation results: a) overall reliability based on SAIDI; b) DAC communities reliability and resiliency based on SAIDI, SAIFI, CEMI4 and CELID; c) peak load reduction; d) supplier diversity; e) interconnection timeliness

Table 1. Milestone and Go/No-Go Decision Points

Subtask	Milestone	Description	Due
1.1	BP1.1.1	Project Management Plan (PMP) is submitted	M3
1.4	BP1.1.2	Cybersecurity plan (CPS) is submitted	M6
2.1-2.3	BP1.2.1*	The community assessment report is drafted.	M9
2.4-2.5	BP1.2.2*	The community engagement and communication plan is drafted.	M12
3.1-3.2	BP1.3.1	Assessment metrics are developed and reviewed by advisory board	M9
Go/No-Go Decision #1: All milestones for Tasks 1,2, and 3 are achieved			M12
4	BP2.4.1	Communication infrastructure is successfully commissioned.	M24
2, 3	BP2.2.1*	Community survey on broadband access completed. Benefits assessed. Assessment and deployment reports drafted.	M24
Go/No-Go Decision #2: All milestones for Task 4 are achieved			M24
5.1	BP3.5.1	Advanced sensors are procured, installed, configured, and integrated. Proof-of-concept tests are performed.	M33
5.2	BP3.5.2	Functions and intended use cases of advanced sensors are tested and validated. All advanced sensors are commissioned.	M36
2.7	BP3.2.1	Recruitment for GEBs and DER project sites are completed. The deployment plans for grid-edge are finalized and approved.	M27
6.1	BP3.6.1	Grid-interactive efficient building (GEB) controllers are successfully deployed and commissioned at the selected locations.	M27
6.2	BP3.6.2	Smart grid chips (SGCs) are successfully deployed and commissioned at the selected customer meters.	M30
6.3	BP3.6.3	Deployment and commissioning of EV, EV charger, and vehicle-to-everything (V2X) controllers are completed.	M30
6.4	BP3.6.4	Deployment and commissioning of ultra-fast controllers are completed.	M36
2,3	BP3.2.2*	Community survey on grid-edge technologies completed. Benefits assessed. Assessment and deployment reports drafted.	M36
Go/No-Go Decision #3: All milestones for Tasks 5 and 6 are achieved			M36
7.1	BP4.7.1	Deployment plan for data fusion platform is finalized and approved. Cybersecurity plan is developed and approved.	M39
7.2	BP4.7.2	The data infrastructure is deployed and the software for data fusion platform is installed and configured.	M39
7.3	BP4.7.3	The GEB and OpenHEMS functions are integrated. The data flows and functions are validated.	M42
7.4	BP4.7.4	The next-generation AMI functions are integrated with data fusion platform. The data flows and functions are validated.	M42
7.5	BP4.7.5	Automation of planning tools for DER Integration is completed and the use cases are performed.	M45
7.6	BP4.7.6	Advanced algorithms are developed and integrated into the data fusion platform, and the use cases are demonstrated.	M48
2,3	BP4.2.1*	Community survey on GEB and SGC functions completed. Benefits assessed. Assessment and deployment reports drafted.	M48
Go/No-Go Decision #4: All milestones for Task 7 are achieved			
8.2	BP5.8.1	The software and hardware are configured for hosting grid-edge intelligent controller and coordination framework functions	M54
8.3	BP5.8.2	Coordinated control for grid-side functions are deployed and tested in use cases	M54
8.4	BP5.8.3	Coordinated control for customer-side functions are deployed and tested in use cases	M57
8.5	BP5.8.4	The simulation and assessment platform is developed. The functions are validated using proof-of-concept use cases.	M60
2,3	BP5.2.1*	Community survey on grid functions completed. Benefits assessed. Assessment and deployment reports drafted.	M48
9	BP5.9.1	Report on cybersecurity practices during the course of project is submitted.	M60

*: Community related milestones

**Deployment of a Community-Oriented Interoperable Control Framework for
Aggregating and Integrating DERs and Other Grid-Edge Devices (ICF)**

Technical Volume

Submitted to the DOE in response to DE-FOA-0002740
BIL – Grid Resilience and Innovation Partnerships (GRIP)

Topic Area 2: Smart Grid Grants (40107)

Project Lead / Entity Type:

Commonwealth Edison Company / Electric Grid Operator and For-Profit Entity

Technical Point of Contact:

(b) (4)

Business Point of Contact:

(b) (4)

Team Members:

Community Engagement Lead	Region 1 Planning Council
Innovation Partners	Utilidata/NVIDIA, Ace IoT, Open Energy Solutions, V&R, PingThings
Vendors	Eaton, G&W, S&C, Hitachi America General Motors, General Electric
Subject Matter Experts (SMEs)	Slipstream, PLUG, Electric Power Engineers (b) (4) (b) (4) University of California – River (b) (4) (b) (4) Iowa State University, West Virginia University, University of Illinois – Chicago, Purdue University
Community Partners	Rockford Work Force Connection Rockford Area Economic Development Council Rockford Chamber of Commerce Rockford Boys and Girls Club Jeremiah Development The Luther Center YWCA Northwestern Illinois

Project Locations:

City of Rockford, Illinois

Confidentiality Statement:

No sections or data included in this document are confidential.

1. Project Overview

1.1. Project Background and Goals

The Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices, (“Interoperable Control Framework” or “ICF”) is a major initiative in Rockford, Illinois, where significant community needs are matched by a rising pace of distributed energy resource (DER) adoption. ICF addresses both community and grid needs through a joint initiative of workforce and grid development.

As a public utility that provides electric delivery service to more than 4 million metered customers representing over 9 million residents in Northern Illinois, Commonwealth Edison (ComEd) recognizes the value of standardizing processes to achieve excellence. ComEd seeks GRIP support to develop an Interoperable Control Framework as the next standard of excellence in grid visibility and coordination. The ICF proposal builds directly upon the ComEd-led Department of Energy (DOE) funded SIMPLE project¹. ICF moves one step further to address the challenge and opportunity of diverse grid-edge technologies, sensors, and control systems. To do so, the ICF accelerates existing utility initiatives in advanced metering infrastructure (AMI), advanced communications deployment, phasor measurement units (PMUs), power quality (PQ) and advanced grid-edge control systems. These grid resources will pave the way for a future of ubiquitous DER and electrification where grid and community resources work in concert.

As much as 80% of the spend for this project will directly benefit Rockford’s disadvantaged communities (DACs), providing job training, new employment opportunities, and grid assets that can support faster restorations, DER readiness, and a whole new platform for customer-grid interaction. Rockford is one of two DACs that ComEd has designated as a “community of the future” (CoF)², where an advisory council is regularly convened to guide collaborative innovation toward impact. These relationships are guiding the ICF proposal as well and will continue to inform the initiative to ensure its benefit for Rockford’s diverse communities.

ComEd is an established leader in smart grid deployment and grid modernization. With support from forward-thinking legislation in the state of Illinois, including The Energy Infrastructure Modernization Act (EIMA, 2011) and the Future Energy Jobs Act (FEJA, 2016), and with experience as prime applicant in multiple DOE projects, including MMC (DE-OE0000724), MISST (DE-EE0007166), and SIMPLE (DE-OE0000874), ComEd has established a proven track record of innovation to address compelling grid challenges.

One of the central challenges that utilities face today concerns the coordination of an increasingly complex and diverse power system. The increasing number of assets that are close to customers can greatly improve power services, enhance resilience, and eventually facilitate a pathway to decarbonization and electrification to all communities, as long as utility operations can execute a dramatic shift from a process-centric to a data-centric paradigm. Certain levels of automation need to be integrated into the entire power management scheme. The question that utilities face is how to manage this complexity in a way that is robust, secure, efficient, resilient, and cost-effective. The proliferation of new technologies is a double-edged sword: technologies promise to provide useful grid services, but the integration challenge of achieving these services cuts against their value. For examples, vendors’ proprietary data formats and protocols

¹ DE-OE0000874, Sensors with Intelligent Measurement Platform and Low-cost Equipment (SIMPLE) for Monitoring and Control of Medium Voltage Distribution Systems with High Penetration of Intermittent Distributed Energy

² Community of the Future – Rockford, <https://www.comed.com/News/Pages/NewsReleases/2022-04-11.aspx>

complicate the system integration process, delaying the interoperability upon which renewable interconnection timelines depend. Cloud hosted technologies are advanced designs but also major hurdles for utility IT cyber-security architecture, while non-connected equipment promises security at the expense of sophistication and data access. We propose an interoperable control framework to overcome these hurdles to integrate and analyze data, a critical achievement for utilities to improve in planning, system visualization, and the service of diverse customer needs.

In this project, ComEd proposes to bring the advanced technology deployment to the City of Rockford's Justice40 neighborhoods to (1) foster cost-effective integration of variable renewable energy resources at the distribution level; (2) facilitate the aggregation and integration (edge-computing) of electric vehicles and other grid-edge devices or electrified loads; (3) prevent and recover from faults that may lead to system disturbances; and ultimately (4) sustain economic development in under-resourced communities. The team is building on well-established community partnerships³ that champion a clean energy future and that draw upon the incredible talent available in these areas. Further support for the initiative and the approach comes from the latest Illinois Energy law, the Climate and Equitable Jobs Act (CEJA, 2021), which promotes an equitable and publicly beneficial energy transition.

1.2. DOE Impact

The proposed deployment requires broad industry collaboration. Funding from the Department of Energy (DOE) will enable the creation of a blueprint for replication by others and ensure that cost-effective collaboration is possible. Federal financial support will also accelerate the timeline of the proposed system upgrades, enabling the implementation of new technologies that would otherwise be waiting in the stack of competing priorities, with potential benefits for 10+ million people in IL. By setting a new standard and practice for leveraging grid-edge resources to provide grid and customer benefits, ComEd and other utilities across the States can work together to update and maintain this interoperable control framework for the next 20 years to come.

1.3. Community Benefits Plan

The community-supporting benefits of the project include fostering job growth and economic opportunities, affordability, clean energy adoption, equity, beneficial electrification and resultant air quality benefits, and accessibility within Rockford's diverse communities. These direct benefits enhance the payoff of a robust energy system, and to ensure this outcome, the team will be working directly with Rockford communities to identify needs and to address them with thoughtful and inclusive strategies. Reviewers may refer to detailed community benefits plan, which is included as part of ComEd submission package.

1.4. Maximizing Benefits Across Disadvantaged Communities

The location of the City of Rockford was specifically selected to ensure that the Interoperable Control Framework will directly benefit disadvantaged communities and their residents. Rockford is a community that has weathered a hollowing-out of its industrial roots over the last 60 years. Manufacturing plant closings have been exacerbated by COVID-19, with a net loss of nearly 6,000 manufacturing jobs in the metropolitan area from 2019 through 2021, according to the Census Bureau. Approximately 20% of Rockford's population is at or below the poverty rate. Rockford's five opportunity zones have a poverty rate of nearly 50% with poverty disproportionately impacting Rockford's communities of color. Recent legislative initiatives,

³ https://www.comed.com/SiteCollectionDocuments/AboutUs/ComEd_2021DEIAnnualReport.pdf

favorable energy prices, and the price dynamics of solar have driven the rate of residential, commercial, and community solar interconnection requests to grow exponentially (see Figure 1).

1.5. Climate Resilience

In addition to efforts to mitigate climate risk, communities and utilities must also work to adapt to the climate change that is already anticipated for the region. The continental climate of Illinois

includes extreme weather events in both summer and winter, including thunderstorms, derechos, and tornadoes; seasonal flooding risk; polar vortex-driven extreme cold snaps; and icing that can cause very difficult system restorations. ComEd partnered with Argonne to commission its first climate adaptation report in late 2022, and the results of that ongoing collaboration will be one of the inputs to the community consultation wherein needs are assessed and prioritized. With additional system visibility and with decentralized control schemes that are robust to communications outages, the Interoperable Control Framework promises significant advancement to address the climate emergency with effective solutions.

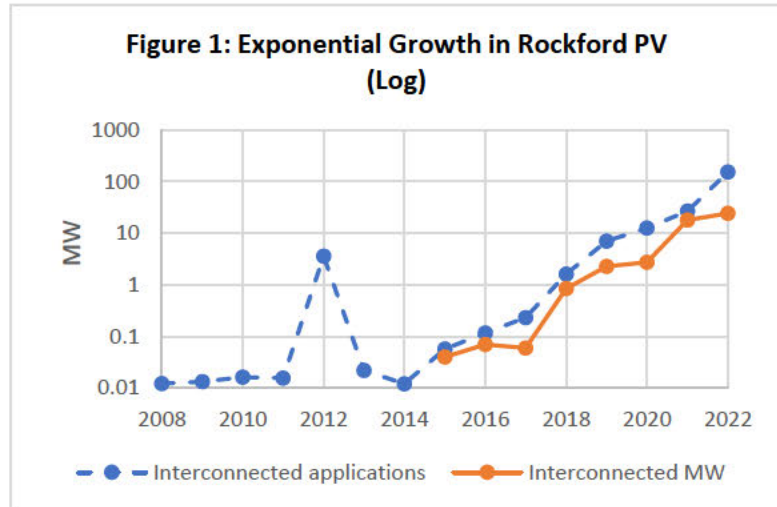
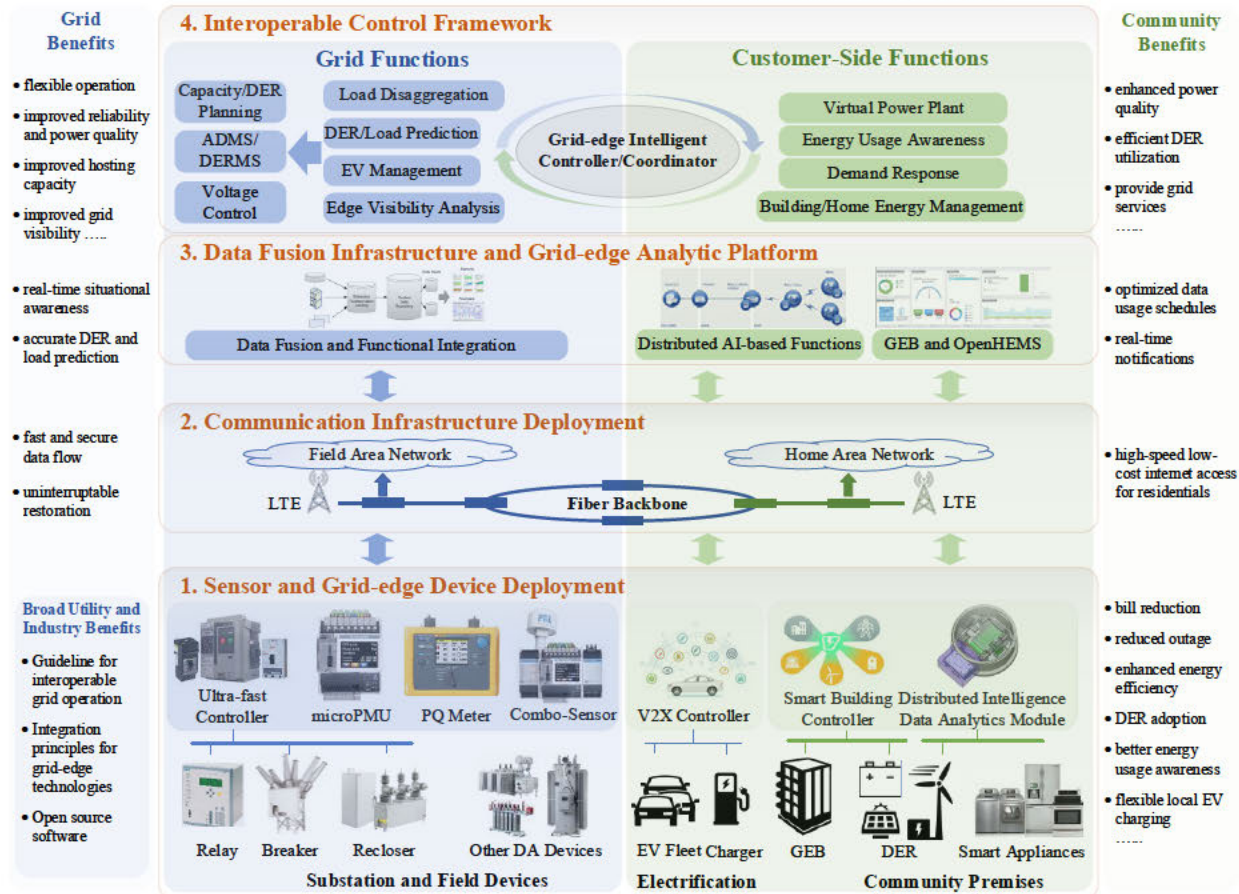


Figure 2. Project Solution Diagram and Expected Benefits



2. Technical Description, Innovation, and Impact

2.1. Technical Description

This project will implement a data fusion empowered interoperable framework to pave the way for next-generation power grid planning and operation, while maximizing benefits across disadvantaged communities. The team will deploy a selection of grid-edge technologies and supporting communication and data infrastructure to facilitate both utility-side and customer-side functions that enhance system flexibility, efficiency, resiliency, and reliability.

As shown in Figure 2, the technical solution architecture is comprised of four fundamental pillars, which cover the deployment of 1) hardware sensors and grid-edge controllers; 2) communication architecture; 3) data fusion infrastructure and analytic platform; and 4) software solutions for grid and customer function integration and coordination.

Pillar 1: Advanced Sensor and Grid-edge Device Deployment. Grid visibility and flexibility are essential for grid operators to respond quickly and effectively when facing of abnormal conditions, and these capabilities are particularly important in DACs. Unfortunately, disadvantaged communities are more adversely impacted during power outages because individuals and households have less access to personal resiliency resources. Savings, personal transportation, and access to a social support structure outside the impacted area can be vital resources in an emergency. Without these resources, adverse circumstances are even more serious. Greater system observability with advanced sensors brings added value in these contexts. In Pillar 1, the team will deploy advanced grid sensors and grid-edge devices to provide both improved grid visibility and flexible operational solutions.

Table 1. Deployment of Advanced Sensors and Grid-edge Devices in Pillar 1

Advanced Sensors	Grid-edge Devices
<p>Power Quality (PQ) meters. PQ meters accurately monitoring system harmonics, voltage flickers, voltage sags and swells. Most renewable generators and EVs use power electronic devices for grid connection, which can be a cause of, and sensitive to, poor power quality. ComEd will (b) (4) PQ meters across Rockford for DER and EV charging awareness.</p>	<p>Electric vehicle charging management and vehicle-to-everything (V2X) controller. ComEd will (b) (4) bi- <div style="background-color: black; height: 1em; width: 100%;"></div> <div style="background-color: black; height: 1em; width: 100%;"></div> The deployment will enable flexible EV charging management to support both grid and customer functions.</p>
<p>Micro-Phasor Measurement Unit (micro-PMU). ComEd will deploy (b) (4) micro-PMUs and (b) (4) distribution PMUs across (b) (4) substations in Rockford. Micro-PMUs can measure multiple electrical signals (voltage, current, frequency).</p>	<p>Smart Grid Chips (SGCs). ComEd will install (b) (4) intelligent devices with Distributed Intelligence. These devices have native distributed AI, a critical edge computing tool to manage the exponential increase in operational complexity driven by DERs.</p>
<p>Combo-sensor. Combo-sensor integrate multiple sensing technologies into a single device. They will be installed at strategic locations to provide comprehensive data streams.</p>	<p>Ultra-fast controller. ComEd will deploy ultra-fast controllers on breakers and reclosers to support uninterrupted power restoration for systems that have two or more power sources.</p>
	<p>Grid-interactive Efficient Building (GEB) controller and Open Home Energy Management System (OpenHEMS). ComEd will deploy GEB controllers for (b) (4) commercial buildings and OpenHEMS for (b) (4) residential homes in the city of Rockford.</p>

Pillar 2: Communication Infrastructure Deployment. ComEd will deploy a secure and fast communication network (e.g., optical fiber, private LTE, and Wi-Fi), leveraging the company’s existing REACTS program, to support data collection and control needs. Fiber built for this project

will also include a dark fiber deployment to provide additional broadband access opportunities for Internet Service Providers (ISPs) that deploy in Rockford, where opportunities for broadband internet access are limited in some areas.⁴

Pillar 3: Data Fusion Infrastructure and Grid-edge Analytic Platform. Data fusion, or integration of multiple data sources, allows for an opportunity to leverage the voluminous or “big data” generated by field sensors, inverter-based DERs, and customer-side devices (AMI and GEB). Existing data fusion technologies require customized software. Without careful design and deployment, it is difficult to integrate different vendors and vintages of equipment. This project accelerates the data fusion strategy within ComEd to systematically align the software solutions for data storage, edge computing, and local analytics, while enhancing the system flexibility with DER and EV penetration. The idea will enhance interoperability and data architecture of systems that support the two-way flow of both electric power and localized analytics to provide information between electricity system operations and consumers. In Pillar 3, ComEd will deploy a unified data fusion architecture and grid-edge analytic platform, with analytic function modules Data fusion architecture and analytic platform. ComEd will collaborate with mainstream vendor solutions (e.g., PingThings, V&R, Microsoft, AWS, all having Master Service Agreements with ComEd) to determine the most appropriate data fusion architecture. The analytic platform will provide industry-leading functions, such as distribution linear and hybrid state estimator (DLSE and DHSE), inter-temporal data integration, asset health assessment, and enhanced data visualization. This platform will also include the data quality assurance tools/package for data treatment and interface with ComEd’s existing ADMS/DERMS. GEB and OpenHEMS analytic function module. The function module can collect historical load and behind-the-meter DER information of the buildings and provide data analytics such as load disaggregation, load and behind-the-meter DER predictions, HVAC fault detection and diagnostics, as well as support optimal control of participating HVAC and behind-the-meter DERs for grid services. ComEd will deploy the open-source platform based on Eclipse VOLTTRON, which is now administered as an open-source project by the Eclipse Foundation. ComEd, ACE IoT and Slipstream will collaborate with City of Rockford community organizations to identify eligible commercial buildings and residential homes within Rockford’s DAC for deployment. Distributed Artificial Intelligence (AI)-based function module. ComEd will deploy distributed AI-based functions to leverage the capability of smart grid chips introduced in Pillar 1. Over time, the platform will enable AI models to be trained with granular edge data, which can precisely predict demand, detect anomalies, and issue complex optimization instructions. Updates for applications and the platform will be issued over the air.

Pillar 4: Interoperable Control Framework. The interoperable control framework is the basis of both grid and customer functions to provide the expected outcomes. Integration is the most critical task before utilities can commission a solution that contains multiple innovative technologies. In Pillar 4, the team will deploy the interoperable coordination framework and the grid-edge intelligent controller to achieve the interoperability between grid-side and customer-side applications while maximizing the benefits for both communities and utilities. Grid-edge Intelligent Controller. Grid-edge intelligent controllers enable a comprehensive integration strategy for integrating grid-edge devices and DERs into a centralized distribution

⁴ NTIA Indicators of Broadband Need Map. In Rockford, IL, median download speeds are 78.29 Mbps and upload speeds are 11.48 Mbps across the entire area. Several zip codes experience speeds as low as 12-20 Mbps download and 3-7 Mbps upload, with up to 35.5% of households without Internet access.

control/communication network. This type of controller can support a wide range of communication protocols (e.g., IEC 61850, OpenFMB, Modbus, and DNP3) and can work with a variety of grid-edge devices. The grid-edge intelligent controller interfaces with the GEB controller and distributed AI-based function module on the customer side, local cap banks/DER/EV charging on the grid side, and DERMS/ADMS on the upper level of control hierarchy and data management.

ComEd will collaborate with vendors and subject matter experts (SMEs) to deploy applicable grid-edge intelligent controllers at several critical feeder locations. The use cases to be developed on the grid-edge intelligent controllers are summarized in Table 2. In addition, a set of supporting functions will be developed to facilitate these use cases, including: 1) load disaggregation and prediction; 2) DERMS and ADMS operation integration; 3) real-time network and load modeling; 4) fast cloud-edge communication; and 5) autonomous orchestration at the grid edge to provide zonal forecasting, federated model validation and calibration, and situational awareness.

Interoperable Control Framework. The framework will be developed, deployed, and evaluated. All things considered, the ideal control framework must be affordable, portable, and reliable. Its structure can be dynamic (e.g., cloud-hosting if approved by cyber security officers), to stimulate the grid transformation while also maintaining grid reliability and equitable service. At the same time, this framework will be flexible enough to reap the maximum grid benefits from grid-edge DERs, such as grid-forming, demand response, and V2G, via grid-edge control architectures. The crowning achievement of an advanced control framework would be a balance of centralized and decentralized control that is both responsive to changing conditions optimizing across the broader system available resources and yet dependable, responsive, flexible, and secure in the face of system disruption including central system failures or communication disruptions.

ComEd will collaborate with team partners, along with industry advisors and standard technical teams, to identify the use cases moving forward. These use cases are summarized in Table 2.

Grid Resilience Modeling, Simulation, and Assessment Platform will be developed to streamline the workflow and support the implementation of abovementioned functions in a lab testing environment. This platform will support development of resilience metrics, CYME Resilience (CYME RES) engine, and interoperability testing.

Finally, the white papers regarding the technologies developed and tested in this project, lessons learned, and testing and demonstration results will be disseminated publicly to facilitate industry and utility companies on further development and broad adoption of smart grid and grid-edge technologies.

2.2. Relevance and Outcomes

As the City of Rockford is seeing a dramatic increase in DER adoption (Figure 1), it is increasingly necessary for ComEd to evaluate the optimal solutions to not only allow for this continued growth but to concurrently enable grid modernization benefits. The proposed deployments will enable automatic or minimal interaction, monitoring, and control of the grid and grid-edge devices, which will improve the reliability, safety, security, flexibility, and resiliency of the grid and unlock additional DER growth potential.

Table 2. Use Cases to be Developed in Interoperable Control Framework in Pillar 3 & Pillar 4

Use Cases	Description
Flexibility	
Virtual power plants (VPPs)	Coordinate and control of aggregated DERs and other grid-edge devices in response to grid conditions
Voltage optimization with coordination across DER, GEB, and V2X technologies	Enable higher level of conservation voltage reduction and voltage optimization, reducing system losses and increasing savings for customers.
Optimal control of DERs	Optimal coordination and control of DERs to facilitate flexible grid operation.
EV charging management	Allow smart EV charging, supporting off-peak charging and accounting for grid condition to avoid overloading and high losses
Efficiency	
Automation of planning tools for DER integration	Streamline the planning tools for integration of DERs and enabling greater proliferation of energy storage and renewable energy resources.
Distributed voltage regulation	Complement the voltage optimization program using distributed DERs and other grid-edge devices.
Energy optimization during normal operation	Promote EMS to optimize energy consumption, reduce energy costs, and improve grid efficiency
Electricity theft detection	Detect electricity theft or malfunctioning edge sensors
Reliability	
Asset health assessment	Data-driven asset health assessment using multiple data sources
Automated high-impedance fault detection	Develop methods for detection, location, and isolation of events time minimizing arcing faults and hazards
Distributed behind-the-meter (BTM) DER discovery	Provide accurate technical parameter estimation for customer's solar PV system. Improve electric load and solar PV generation forecast.
Outage boundary detection	Identify outage boundary using data from sensors and smart meters
Linear and hybrid state estimator (DLSE and DHSE)	Provide real-time situational awareness for system operators to make accurate and timely decisions.
Service transformer load analysis	Analyze service transformer loading and phase-mapping using AMI data, and identify overloaded service transformers for asset management
Hosting capacity analysis for both DER and electric loads	Improve the hosting capacity analysis by providing accurate DER and load predictions.
Mitigate impacts of DERs on protection systems	Analyze the impact of DERs on protective relays and develop mitigation measures.
Power quality monitoring and management	Provide real-time monitoring capability to identify power quality issues and suggest potential causes and solutions.
Resilience	
Equity-cognizant resilience Planning	A well-thought-out resilience planning approach based on equity-cognizant performance-based metrics and community-focused metrics.
Renewable enabled local system restoration	Provide backup power supply for customers using local DERs with grid-forming capabilities during outages
Data-driven anomaly detection and classification	Context-aware online anomaly detection algorithms using micro-PMU and SCADA data and data-driven approaches
Restoration paths identification	Provide optimal energization paths during restoration process.
Edge visibility analysis	Aggregate the grid-edge controller information and facilitate grid functions

2.3. Feasibility

As mentioned in Section 1.1, ComEd has demonstrated a variety of emerging technologies across its service territory that are relevant to, or components of, this project. ComEd has also established sustained business relations (e.g., master service agreement, mutual party Non-Disclosure agreement, etc.) with 85% vendors & innovation partners listed in this proposal, which will help support the execution of this proposal. We emphasize that ComEd has field piloted most

of the constitutive elements (separately, not at scale or interoperable, which is exactly the focus of this project). While additional devices will be deployed in this project, the proposal’s shovel readiness is established by the project portfolio that we can leverage.

Table 3. Technology Feasibility

Technology	Feasibility (All Technologies here should have TRL >= 6)
Fiber	ComEd started 15 years fiber deployment program (REACTS) in 2019
Substation PMU or Micro PMU	PMU program started in ComEd decade ago, first in transmission then expanded to distribution in 2018
PQ Meter	ComEd started to expand its PQ program in 2022
Managed EV Charging	The pilot will be completed in Q3 2023
Grid Edge Intelligence/Grid-edge Intelligent Controller	DOE SIMPLE Project mentioned in Section 1.1
Home Management System	Lab deployed BEM Control system (building management system) as part of DOE Blockchain project, completed in 2022
Ultra-fast Changeover	ComEd will test the technology in controlled field environment first before full field deployment; ComEd has existing processes for this kind of tech
Automation of Planning Tools for DER Integration	ComEd is exploring possibility of upgrading existing CYME and GIS solutions
Data Fusion for Real-time Data Analytics and Control	ComEd already selected the vendor via competitive bids process for PMU analytics platform. This data fusion will be one giant step moving forward.
Interoperable Control Framework	ComEd deployed DERMS and MGMS on different scenarios; the utility acknowledges the emerging tech of distributed intelligence and is exploring collaboration opportunities with SMEs and vendors to come up with a proper interoperable control framework for better accessibility of customers.

2.4. Innovation and Impacts

ComEd will leverage commercially available hardware, software solutions, and grid-edge technologies to the City of Rockford’s grid, in Illinois, to accomplish grant goals. Such advanced grid-edge technologies allow real-time communication between suppliers and consumers and allow distribution network control to manage demand, protect the distribution network, save energy, and reduce costs. More specifically:

- ComEd will deploy a fast and secure communication infrastructure (fiber/private LTE/5G) to provide a reliable connectivity between the installed assets in the grid including loads, DER, EV charging stations, meters and the control centers. Additionally, various stakeholders in the grid can get connected to each other.
- The communication infrastructure built for this project will include a dark fiber buildout, which will have a broad impact on communities that face broadband accessibility issues. By building in reserve fiber when the fiber to support the distribution system is deployed, and in partnership with local internet service providers, ComEd will improve digital equity by bringing quality service to unserved and underserved areas.
- ComEd will deploy distribution line sensors and ultra-fast changeover solutions that will enable granular and real-time visibility into the operation of the City of Rockford’s grid and improve reliability and resiliency of the grid.
- ComEd will use grid interactive building control platform to control building loads including HVAC, lighting, EV charging, and behind-the-meter DERs in response to utility automated demand response signals to provide ancillary services to the grid when required. The flexibility on the demand side will create a valuable tool for the City of Rockford grid operator to support the overall performance of the grid paving the road for

more EV adoption without the need for significantly upgrading the existing grid infrastructure.

- Considering the rise in virtual power plants and DER aggregation, ComEd will deploy dynamic interoperable DER management system architectures that will allow groups of DERs to function in a predictable manner.
- The integration and inclusion of client-side GEB control and Open HEMS into the utility distribution planning and control system and interoperable framework will maximize the mutual benefits of both the utility and the customer, making it a long-term viable technological solution as well as a sustainable business model.
- The deployment of advanced grid-edge technologies will allow real-time monitoring and control of power flow and find out events affecting system efficiency to increase efficiency and minimize the operational costs. The current standard technology for grid edge computing is deployed via high-end smart meters, or AMI. However, even high-end smart meters have far too little data capture and computation necessary to handle basic real-time grid operations, let alone complex use cases like DER integration that are quickly emerging.
- The City of Rockford grid will benefit from such grid-edge technology deployment, including improved security, reduced peak loads, increased integration of renewables, and lower operational costs.

The proposed technology deployment requires broad industry collaboration including local community partners, innovation partners, vendors, consulting firms, and universities. The City of Rockford grid will move to the next level of intelligence by deploying, validating, and evaluating advancements in sensing and communication, grid-edge coordination, and hierarchical integration of data and management systems.

2.5. Alignment with Energy Action Plans Goals, Strategies and Plans

This project receives strong support from City of Rockford on multiple fronts, including the Region 1 Planning Council (R1), Rockford Chamber of Commerce, Rockford Regional Hispanic Chamber of Commerce, Jeremiah Development, and the Luther Center. R1 is a key protagonist in the regional resiliency planning effort that has partnered with ComEd to investigate resiliency in the region. In November of 2021, R1 adopted a resolution to form a Resilience Center and has begun the creation of a regional Climate Action Plan. This project supports regional energy goals and strategies outlined in the Comprehensive Economic Development Strategy and the EV Readiness Plan. This center and the regional leadership are well positioned to guide the proposed ComEd-led initiative to ensure that the local impact is fully realized and to align the grid initiative with wider regional resiliency goals.

2.6. Risk Reduction, Deployment at-Scale, and Private Sector Investments

Implementation of these advanced technologies, communication platform, and data intelligence will enable the City of Rockford to continue to adopt increased levels of DERs including distributed generation, energy storage, and electrified loads for the building and transportation sectors. The top two deployment risks and their mitigation strategy are included below:

- 1) **Risk A: Technology integration and vendor compatibility.** While the technology solutions and partners were selected based on the current state of technology maturity and commercialization status, there is a risk with regards to the technology integration between all these devices. ComEd has had tremendous experience in technology integration as demonstrated in several past DOE grants (e.g., MMC, MISST and SIMPLE).

ComEd's mitigation strategy includes leveraging that experience, making contingency plans when certain technologies have integration barriers to working with each other, and selecting groupings of the technology solutions that already have experience integrating together. While the project bridges the traditional utility distribution system analytics and advanced intelligence with customers sited technologies, ComEd is confident that the solution architecture available contingency solutions will result in success.

2) Risk B: Disruptive Supply Chain. Mitigation Strategy: ComEd works continuously with the Exelon sourcing team to aggressively and proactively secure critical stocking from vendors, ensuring sufficient equipment supply for project execution. The project team will evaluate up-front device needs and accelerate orders immediately as they finalize.

In addition, this project will also leverage ComEd's Risk 2.0 Methodology, which captures not just the risk prior to executing the project (pre-work), but also the risk after the project was completed (post-work) to provide a more holistic view of the risk mitigation value of the project.

The successful implementation of this project will pave a clear pathway for grid-edge technology integration, provide a set of demonstrated use cases, and foster standard making. This effort will push out the long-clouded discussion on grid-edge technology integration, create a model for other utilities to duplicate, and encourage vendors to further invest in all these technologies.

2.7. Smart Grid Functions and Flexibility Improvement

The deployments of advanced grid-edge technologies will enable the power system to maintain balance between generation and load during uncertainty, resulting in increased grid efficiency, resiliency and the integration of variable renewables into the grid. More to the point, the deployments of advanced grid-edge technologies will enable the following functions and improve the grid flexibility accordingly:

2.7.1. Interoperability

Interoperability defines the open architecture of technologies and their software systems to allow their interaction with other systems and technologies. To realize the capabilities of smart grid, technology deployments will connect large numbers of smart devices and systems involving software and hardware. Advanced metering strategies, distributed generation, DERs, and EVs are essential parts of a smart grid and their interoperability is a requirement. Improved cyber security and interoperability standards, protocols, tools, and techniques will enable safe, rapid, and cost-effective distribution automation implementation.

2.7.2. Fast Two-Way Communication Network

Another critical element of a smart grid is the communication backbone to enable low latency data for advanced analytics functions. The Smart grids' two-way communication network, enabled through the deployment of advanced and secured communication infrastructure, allows the secure interaction of various stakeholders in the grid. The smart grid domains and sub-domains will use a variety of private and public communication networks, both wireless and wired. This variety of networking environments is foundational to identifying performance metrics, maintaining appropriate security and access controls, and validating core operational requirements of various applications, users, and domains.

The two-way communication network of the smart grid put the end-users back at the heart of energy decision-making and manage the technical structure of the grid in the most effective way. This creates the condition for connecting new users, while maintaining the stability

and continuity of supplies. The bidirectional communication capabilities will give ComEd the ability to provide interval data and real-time pricing information to their customers and enable advanced demand response programs and strategies which characterize basic smart grid objectives for utilities, industrial, business, and residential customers. Furthermore, demand response promotes the responsiveness and interaction of customers and may offer a broad range of potential benefits for system expansion and operation. The benefits include customer bills savings, reliability, improved customer choice, market performance, and system security.

2.7.3. Enhanced Visibility Advanced Control Methods

ComEd will deploy high-resolution sensors to report real-time conditions along feeders and monitor essential components that enable rapid diagnostics and precise solutions appropriate for any event. This will enhance the smart grid visibility beyond the substation assets and improve the features such as resisting cyberattack, self-healing, and provide higher quality power that will save money lost on outages, motivate consumers to actively participate in grid operations, and accommodate all generation and energy storage options.

3. Workplan

3.1. Project Objectives

This project will implement a data fusion empowered interoperable control framework to pave the way for next-generation power grid planning and operation, while maximizing benefits across disadvantaged communities. The proposed technology deployment and demonstration will start

(b) (4)

area. As part of a community effort, ComEd, Slipstream and Region 1 Planning Council (R1) will conduct demographic and social research (with support from Hitachi UX Design lab) to better understand community needs and to target community benefits of smart grid technologies.

3.2. Technical Scope Summary

The team will deploy a selection of grid-edge technologies and supporting communication and data infrastructure to facilitate both utility-side and customer-side functions that improve renewable integration, electrification, and customer engagement. The technical solution includes hardware sensors and grid-edge controllers, communication architecture, data fusion infrastructure and analytic platform, and software solutions for grid and customer coordination.

3.3. WBS and Task Description Summary

Table 4 describes the five budget periods (BPs). The proposed work is structured with nine tasks as introduced below. Milestones and Go/No-Go decision points are defined in Table 5.

Table 4. Budget Period Definition, Work Scope, and Deliverables

Budget Period	Key Task	Deliverables
BP1(M1-M12)	Deployment Planning, Solution Acquisition, and Customer Recruitment	Community engagement, customer recruitment and testing including utility and partner systems. Procurement of materials and deployment site analysis. Planning and initiation of communication network deployments.
BP2(M13-M24)	Technology Field Deployment	Field deployment of gateways, intelligent sensors, controllers, and communication networks; initial functionality test of grid support functions.
BP3(M25-M36)	Functionality Testing	

BP4(M37-M48)	Scalability and System Performance Testing	Scalability and system performance testing/improvements; operational testing, measurement, and data collection.
BP5(M49-M60)	Operational Performance Testing, Analysis, Transition, and Reporting	Continued operational performance, data collection, data processing, knowledge and technology transfer, and reporting.

Task 1: Project Management and Planning.

Subtask 1.1: Project Management Plan (PMP): The team will submit a Project Management Plan (PMP) within 30 days of award, and revise and resubmit the PMP as often as necessary to capture major/significant changes to the planned approach, budget, key personnel, major resources, etc.

Subtask 1.2: Identify planning advisory group: The team will develop a planning advisory group to provide technical support during the project.

Subtask 1.3: National Environmental Policy Act (NEPA) Compliance: Submit NEPA documentation.

Subtask 1.4: Cybersecurity Plan: Submit a cybersecurity plan (CSP) within 30 days of award, revising and resubmitting as necessary, to capture any significant changes.

Subtask 1.5: Pre-continuation briefings: Project kickoff meeting with the DOE to provide summary briefing within 30 days of submission of the PMP. Not less than 90 days prior to the planned start of a budget period, the team will brief the DOE on the results to date, and their plans for the subsequent periods of work. The DOE will consider the information from this briefing and the deliverables submitted to date, prior to authorizing continuing the project.

Subtask 1.6: Continuation Briefings: The team will brief DOE on roughly an annual basis to explain the plans, progress and results of the technical effort. The briefing shall also describe performance relative to project success criteria, milestones, and the Go/No-Go Decision point that are documented in the Project Management Plan (PMP).

Task 2: Community Engagement.

Subtask 2.1: Conduct demographic and social assessment: Compile existing documents on population, building stock, and construction activity to prioritize outreach activities. Working with ComEd and project partners, will conduct the demographic and social assessment using census data, county/city data, and GIS data. A short report on the identified community will be completed.

Subtask 2.2: Community communication needs assessment: Hold educational and demonstration events on DER technologies and benefits in collaboration with Rockford CBOs. R1 will implement a two-part approach to conducting a community needs survey. The first part will be a survey, distributed to residents and the organizations/businesses that serve the targeted community. The second part will be follow-up conversations with the respondents to clarify and confirm survey results. The survey will be available online, at local community events, and be distributed individually by the community engagement coordinator through the R1 Community Advisory Forum, ComEd Community Advisory Council, and other avenues. A final report will be provided to DOE and the project team.

Subtask 2.3: Determine community need on Reliability, Resiliency, Flexibility, Security: Convene stakeholders and expert focus group to define and rank priorities and metrics. Results from Task 2.2 will inform the level of community need. The identified need will be brought to the Community Advisory Forum members, neighborhood organizations, and other meeting spaces to receive any feedback.

Subtask 2.4: DER demonstration recruitment and training: Recruit and train three local residents as “Energy Ambassadors” to perform outreach and education to prospective DER sites. R1 and ComEd will collaborate with community partners including Workforce Connections (local workforce board), labor unions (such as International Brotherhood of Electrical Workers), and educational institutions including Rockford Public School #205 (RPS 205) high schools, Rock Valley College, and other technical programs. Based on the community needs assessment report, a training/mentoring program will be designed to fit the needs of the community and launched to support the program.

Subtask 2.5: Create community engagement and communication plan: Work with other team members to develop targets, tactics, and multi-lingual materials for public-facing outreach. Led by the R1 Community Engagement Specialist, the project team will collaborate in producing an in-depth plan for conducting community engagement including goals and objectives, targeted communities, methods employed, expected outcomes, and barriers. The final community engagement plan will be submitted to DOE.

Subtask 2.6: Conduct public meetings and community engagement workshops: Work with other team members in leveraging community partnerships to present on DER technologies and benefits to targeted audiences. Led by R1, the project team will attend public meetings within the community to present the project and available findings. Based on the community needs assessment, the project team may also choose to host educational community workshops that provide 1:1 support for understanding the project and smart grids.

Subtask 2.7: Recruit community buildings and residential participants to participate in the project: Work with the Rockford community stakeholders including Region 1 Planning Council and ComEd in identifying and recruiting (b) (4) commercial buildings for GEB demonstration and (b) (4) residential homes for Open Home Energy Management System (Open HEMS) demonstration.

Task 3: Benefits Assessment. This task will perform the benefits assessment of deployed technologies for both grid and community. This task will be ongoing during the project.

Subtask 3.1: Data collection and analysis of impacts. Collect community information and conduct survey to collect review recommendations and feedback including a wider deployment.

Subtask 3.2: Determine metrics for benefit assessment. Develop assessment metrics for both grid (e.g., reliability, flexibility, safety, security, resiliency, scalability) and community (e.g., jobs and economic opportunities). Review the metrics with the community stakeholders.

Subtask 3.3: Calculate enhancement in defined assessment metrics. Perform benefits assessment using the metrics and submit reports for stakeholders for deployed technologies.

Task 4: Advanced Communication Deployment: This task will include design and deployment of the communication architecture required to support data architecture of grid-edge technologies and interoperable control functions. ComEd will accelerate its existing advanced communications deployment program – the Renewable Energy, Advanced Control and Telemetry Systems (REACTS) – for the City of Rockford to design and build an advanced communication network using optical fiber, private LTE, and other technologies (as the original plan for Rockford won’t take place till 2027-2028). This program officially started in 2020.

Task 5: Advanced Sensors Deployment: This task will include the design, deployment, and commissioning of advanced sensors by leveraging ComEd previous deployment experience.

Subtask 5.1: Engineering design and location assessment for sensor deployment: In this subtask, the team will conduct a location assessment of the feeder network in City of Rockford and

identify candidate locations for sensor deployment. Then, the detailed design including schematics and construction document will be developed.

Subtask 5.2: Advanced sensor deployment: The team will install micro-PMU, PQ meters, and other sensors in accordance to the design and specifications. This subtask will configure and validate the network connection of the deployed sensors and ensure stable data flow between the sensors and grid-edge platforms. The deployment will involve a list of development and testing procedures, such as: 1) ensure compatibility with IEC 61859-6, IEEE C57.13.5, and IEC 61850; 2) Development of high-accuracy and high-durability voltage sensors; 3) Development of weather resistant and robust enclosure; 4) high-Frequency harmonics sensibility analysis and calibration.

Task 6: Grid-edge Device Deployment: ComEd will work with its partners to deploy smart building and AMI grid-edge devices that perform DER and electrification integration.

Subtask 6.1: Design, deployment and commissioning of grid-interactive efficient building (GEB) controllers: Using ACE IoT Solution's VOLTTRON-based open GEB control platform for commercial buildings and the Open Home Energy Management System (Open HEMS) for residential homes to integrate and manage multiple building loads during times of grid stress. ACE IoT and Slipstream will install GEB and Open HEMS controllers and ACE IoT gateways.

(b) (4)

Subtask 6.2: Design, deployment and commissioning of smart grid chips (SGCs): The team will install around (b) (4) SGCs, via a meter adapter. 1) ComEd will work with Utilidata to review use case setup, including site location, data needs, and core applications; 2) On-site assessment and process flow diagram design; 3) network and product setup, communication lab test and cellular configuration, hardware configuration, and security configuration; 4) SGC deployment and over-the-air software update. Cybersecurity assessment will be performed every year.

Subtask 6.3: Design, deployment and commissioning of electric vehicle (EV) fleet, EV chargers, and vehicle-to-everything (V2X) controllers: In two phases: **Phase 1:** ComEd will work with GM to support setup, data and systems integration and cloud licensing for V1G services (managed

(b) (4)

(DA) devices: this subtask involves a series of steps: 1) Development of power electronics for ultra-fast actuator operation; 2) Development of electro-mechanical drive system; 3) Development of ultra-fast response communication and automation; 4) Integration of components into interrupter body; 5) Manufacture of lab test unit 6) Lab testing of in-service conditions; 7) Gather test results, analyze and re-design for increased reliability and endurance to climate; 8) Manufacture of on-site test; 9) Deployment of units on-site; 10) Data analysis and report results.

Task 7: Data Fusion and Grid-edge Analytical Platform Deployment: This task will include the plan, design and deployment of the Data fusion and analytical platform.

Subtask 7.1: Design and assessment of platform deployment for field sensor data, meter data, and GEB data: the team will design the platform which has the capability to host field sensor data, meter data and GEB data. Next the platform will be deployed and commissioned to

determine its performance. The platform design will evaluate the new requirements of the power grid caused by grid-edge devices and expand existing software capabilities if needed.

The team will characterize the data streams in terms of data format, protocols, data quality, data compatibility, computational requirement, and privacy and security. A data infrastructure will be designed to satisfy the requirement for data storage, processing, analysis and sharing requirements.

Subtask 7.2: Deployment and commissioning of data fusion platform: ComEd will evaluate mainstream vendor solutions (e.g., PingThings, Microsoft, etc.) to determine the most appropriate data fusion infrastructure in terms of compatibility, interoperability, data processing, etc. Data quality assurance tools will be developed for data pre-processing, pre-mining, and data fusion to enhance the raw data quality by appropriate cleaning and treatment and then aggregate those cleaned data and store them in single database for future queries. ComEd will also include the integration of open-source platform to facilitate grid edge devices and distributed intelligence applications enabled by OpenFMB.

Subtask 7.3: Integration of GEB and OpenHEMS function module: This subtask includes the deployment of GEB and OpenHEMS platforms and integration with building automation system (BAS). ACE IoT will work with Slipstream and the selected commercial and residential building owners/facility managers on the integration of GEB controller with existing commercial building BAS to establish required data flows for GEB and Open HEMS control. This process will also include GEB cybersecurity reviews. Then Slipstream will review existing BAS control sequences, available DER resources, and design supervisory controls of building DERs for automated demand response. ACE IoT will implement the control sequences on the GEB control platform and the OpenHEMS.

Subtask 7.4: Integration of distributed Artificial Intelligence (AI)-based functions: The team will deploy and commission the next-generation AMI platform to ensure all the AMI data are stored at one location which will be required for advanced applications.

Subtask 7.5: Automation of planning tools for DER integration. In this subtask, ComEd will collaborate with Eaton and Hitachi America to enhance the DER integration planning tools. This effort will expand the existing capability of CYME and allow data transfer between CYME and GLOW. Eaton will extend CYME IEC 61970/61968 Common Information Model (CIM) interface to incorporate various types of individual and aggregated DER assets and seamlessly interconnect CYME with other planning and operational tools (e.g., SCADA and OMS) to improve modeling accuracy and automate planning processes. Eaton will implement an interface to enable real-time power systems status monitoring and reporting, including automated event management that in conjunction with CYME planning capabilities can be used to further analyze and improve the power systems performance. Eaton will quantify the performance of this capability using the abovementioned resilience metric and comparing it against a standardized base case. Test cases of resilience assessment will be modelled, developed and simulated. For example, natural disaster and severe event modeling, simulation, and forecasting, with pre-event, real-time event, and fast post-event remedial actions will be conducted and evaluated. Hitachi will expand current open-source simulation platform, i.e. GLOW, to enable high performance computing and AI-and-physics based analytical environment for large scale DER integration analysis. New development will be open-source and accessible by public users.

Subtask 7.6: Development and deployment of distributed grid-edge algorithms: In this subtask, the team will conduct testing and evaluation of all the deployed platforms and ensure proper

executions of all the desired functionality. This subtask includes deployment of DHSE (Distribution Hybrid State Estimator), which is a data fusion application that combines PMU and SCADA data for three-phase distribution state estimation. DHSE can serve as an effective transitional solution to DLSE until more PMUs become available in the distribution grid, and enables real-time situational awareness, analysis, and control of the distribution system while distribution PMU network is being built out.

Task 8: Interoperable Control Framework Deployment: This task will include the plan, design, development, and deployment of interoperable controller framework and use cases.

Subtask 8.1: Design and assessment of functional interdependencies and data requirements for interoperable functions: In this subtask, the team will design and evaluate the data requirement from each of the controllers and platforms to determine the optimal operation of interoperability among different application functions. Comprehensive coordination design of all the controllers will be designed and validated based on the needs of enhanced system services, e.g., frequency and voltage control, black start, and restoration.

Subtask 8.2: Development and deployment of grid-edge intelligent controller and coordination framework: In this subtask, we will work on the development of grid-edge based intelligent controller and the advanced functions. The developed control functions will be deployed in the field to assess its capabilities.

Subtask 8.3: Implementation of coordinated control for grid-side functions: In this subtask, coordinated control functions will be implemented to evaluate its effectiveness for all the grid-side functions.

Subtask 8.4: Implementation of coordinated control for customer-side functions: In this subtask, coordinated control functions will be implemented to determine its effectiveness for all the customers-side functions.

Subtask 8.5: Grid resilience modeling, simulation, and assessment platform. The platform will be developed to streamline the workflow and support the implementation of abovementioned functions in a lab testing environment. A set of critical functions will be developed, including resilience metrics definition, CYME Resilience (CYME RES) engine, automated CYME-RTDS model conversion tool, and interoperability testing using Controller Hardware-In-The-Loop (HIL) simulation. The interoperability testing includes 1) Develop OpenFMB interoperability profiles for multi-vendor Volt-var control, and FLISR functions; 2) Controller HIL integration and validation of the proposed architecture on a subset of ComEd system; and 3) Extend the OpenFMB models and HIL validate use cases with integrating EVs and BTM assets.

Task 9: Cybersecurity.

Subtask 9.1: Separating devices and services that have different security requirements into different zones. This subtask ensures network segmentation, and the critical infrastructure devices should be in a separate zone from customer-facing devices such as smart meters, etc.

Subtask 9.2: Implement a strong access control policy for critical systems and data. Deploy access control with multi-factor authentication, role-based access control and least privilege access.

Subtask 9.3: Deployment of threat detection including intrusion detection systems, firewalls, and incident response plans. Deploy the threat detection per the results of security assessment.

Subtask 9.4: Deployment of firmware management strategy. Monitor and verify the firmware updates before installation.

Subtask 9.5: Training of the staff who have access to the coordinated control system. Host staff training on password management, email security, supply chain/ransomware attack awareness.

3.4. Milestone and Go/No-Go

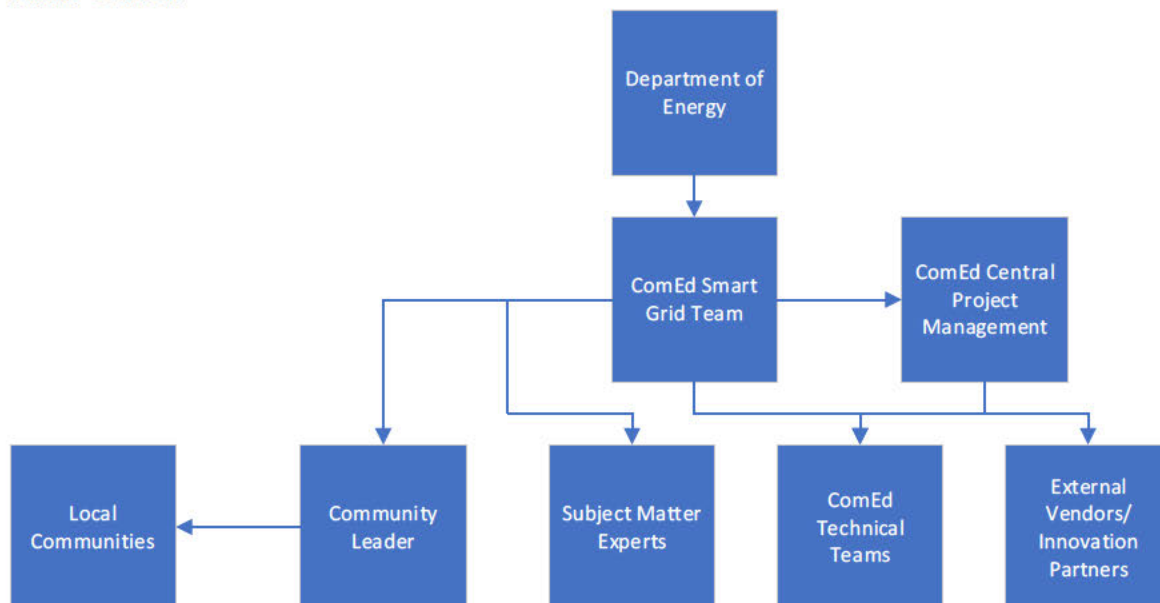
Please refer to Table 5. Milestone is formatted as BP Number + Task Number + Milestone Number.

3.5. End of Project Goal (SMART)

By end of the project, the team will accomplish the following project goals: 1) check that all the standards are met; 2) communication infrastructure is set up; 3) successful implementation of data fusion platform; 4) arrive at feasible interoperable control framework; 5) Reporting out the support of ComEd's CEJA performance metrics evaluation results: a) overall reliability based on SAIDI; b) DAC communities reliability and resiliency based on SAIDI, SAIFI, CEMI4 and CELID; c) peak load reduction; d) supplier diversity; e) interconnection timeliness.

3.6. Project Management

ComEd has an experienced project & control management (P&CM) team that executes large projects that worth billions each year. Throughout the past decade, ComEd has established an DOE project execution mechanism between Smart Grid and P&CM teams, especially after the successful completion of 3 grants that ComEd led as prime – MMC, MISST and SIMPLE. While both MMC and SIMPLE was awarded by Office of Electricity (OE) and MISST was awarded by Energy Efficiency and Renewable Energy (EERE). ComEd Smart Grid team has people with federal grant knowledge that were looped in specifically for DOE proposals and project execution. The grant execution process has been established within ComEd, covering (not limited to) budget reporting, financial alignment, technical analysis and quarterly DOE reporting, etc.. Below is a simple diagram to describe DOE project execution process within ComEd:



PMP best practices will be utilized to support project management, including project risk management, change management, quality management and communications management. Go/No-Go decision points will be used to ensure that technical success is achieved and potential for success is evaluated. ComEd will support and uphold all required financial practices and audit standards. There are three main areas of focus for the project:

- Project Design, Operation, and Systems Integration
- Technology Installation, Commissioning, Operation, Verification, and Training
- Measurement and Verification, and Technology Transfer Plan execution

3.7. Project Schedule

Please refer to Table 6. Shaded color means planning while solid color means actual execution.

Table 5. Milestone and Go/No-Go Decision Points

Subtask	Milestone	Description	Due
1.1	BP1.1.1	Project Management Plan (PMP) is submitted	M3
1.4	BP1.1.2	Cybersecurity plan (CPS) is submitted	M6
2.1-2.3	BP1.2.1*	The community assessment report is drafted.	M9
2.4-2.5	BP1.2.2*	The community engagement and communication plan is drafted.	M12
3.1-3.2	BP1.3.1	Assessment metrics are developed and reviewed by advisory board	M9
Go/No-Go Decision #1: All milestones for Tasks 1,2, and 3 are achieved			M12
4	BP2.4.1	Communication infrastructure is successfully commissioned.	M24
2, 3	BP2.2.1*	Community survey on broadband access completed. Benefits assessed. Assessment and deployment reports drafted.	M24
Go/No-Go Decision #2: All milestones for Task 4 are achieved			M24
5.1	BP3.5.1	Advanced sensors are procured, installed, configured, and integrated. Proof-of-concept tests are performed.	M33
5.2	BP3.5.2	Functions and intended use cases of advanced sensors are tested and validated. All advanced sensors are commissioned.	M36
2.7	BP3.2.1	Recruitment for GEBs and DER project sites are completed. The deployment plans for grid-edge are finalized and approved.	M27
6.1	BP3.6.1	Grid-interactive efficient building (GEB) controllers are successfully deployed and commissioned at the selected locations.	M27
6.2	BP3.6.2	Smart grid chips (SGCs) are successfully deployed and commissioned at the selected customer meters.	M30
6.3	BP3.6.3	Deployment and commissioning of EV, EV charger, and vehicle-to-everything (V2X) controllers are completed.	M30
6.4	BP3.6.4	Deployment and commissioning of ultra-fast controllers are completed.	M36
2,3	BP3.2.2*	Community survey on grid-edge technologies completed. Benefits assessed. Assessment and deployment reports drafted.	M36
Go/No-Go Decision #3: All milestones for Tasks 5 and 6 are achieved			M36
7.1	BP4.7.1	Deployment plan for data fusion platform is finalized and approved. Cybersecurity plan is developed and approved.	M39
7.2	BP4.7.2	The data infrastructure is deployed and the software for data fusion platform is installed and configured.	M39
7.3	BP4.7.3	The GEB and OpenHEMS functions are integrated. The data flows and functions are validated.	M42
7.4	BP4.7.4	The next-generation AMI functions are integrated with data fusion platform. The data flows and functions are validated.	M42
7.5	BP4.7.5	Automation of planning tools for DER Integration is completed and the use cases are performed.	M45
7.6	BP4.7.6	Advanced algorithms are developed and integrated into the data fusion platform, and the use cases are demonstrated.	M48
2,3	BP4.2.1*	Community survey on GEB and SGC functions completed. Benefits assessed. Assessment and deployment reports drafted.	M48
Go/No-Go Decision #4: All milestones for Task 7 are achieved			
8.2	BP5.8.1	The software and hardware are configured for hosting grid-edge intelligent controller and coordination framework functions	M54
8.4	BP5.8.2	Grid-edge intelligent controller functions are developed and deployed. The functions are tested in use cases.	M54
8.5	BP5.8.3	Coordinated control for grid-side functions are deployed and tested in use cases	M57
8.6	BP5.8.4	Coordinated control for customer-side functions are deployed and tested in use cases	M60
8.7	BP5.8.5	The simulation and assessment platform is developed. The functions are validated using proof-of-concept use cases.	M60
2,3	BP5.2.1*	Community survey on grid functions completed. Benefits assessed. Assessment and deployment reports drafted.	M48
9	BP5.9.1	Report on cybersecurity practices during the course of project is submitted.	M60

*: Community related milestones

Table 6. Project Schedule

Budget period/Year	BP1				BP2				BP3				BP4				BP5			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Task 1: Project Management and Planning																				
Milestone BP1.1.1: Project Management Plan (PMP) is submitted (M3)																				
Milestone BP1.1.2: Cybersecurity plan (CPS) is submitted (M6)																				
Subtask 1.1: Project Management Plan (PMP)																				
Subtask 1.2: Identify planning advisory group																				
Subtask 1.3: National Environmental Policy Act (NEPA) Compliance																				
Subtask 1.4: Cybersecurity plan																				
Subtask 1.5: Kick-off meeting and pre-continuation briefings																				
Subtask 1.6: Continuation briefings																				
Task 2: Community Engagement																				
Milestone BP1.2.1: The community assessment report is drafted (M9)																				
Milestone BP1.2.1: The community engagement and communication plan is drafted (M12)																				
Subtask 2.1: Conduct demographic and social assessment																				
Subtask 2.2: Community communication needs assessment																				
Subtask 2.3: Determine community needs																				
Subtask 2.4: Job and training to community																				
Subtask 2.5: Create community engagement and communication plan																				
Subtask 2.6: Conduct public meetings and community workshops																				
Subtask 2.7: Recruit community buildings and residential participants																				
Task 3: Benefits Assessment																				
Milestone BP1.3.1: Assessment metrics are developed and reviewed by advisory board (M9)																				
Subtask 3.1: Data collection and analysis of impacts																				
Subtask 3.2: Determine metrics for benefit assessment																				
Subtask 3.3: Calculate enhancement in defined assessment metrics																				
Go/No-Go Decision #1: All milestones for Tasks 1,2, and 3 are achieved																				
Task 4: Advanced Communication Deployment																				
Milestone BP2.4.1: Communication infrastructure is successfully commissioned (M24)																				
Milestone BP2.2.1: Community survey on broadband access completed. Benefits assessed. Assessment and deployment reports drafted (M24)																				
Go/No-Go Decision #2: All milestones for Task 4 are achieved																				
Task 5: Advanced Sensors Deployment																				
Milestone BP3.5.1: Advanced sensors are procured, installed, configured, and integrated. Proof-of-concept tests are performed (M33)																				
Milestone BP3.5.2: Functions and intended use cases of advanced sensors are tested and validated. All advanced sensors are commissioned (M36)																				
Subtask 5.1: Engineering design and location assessment for sensors																				
Subtask 5.2: Advanced sensor deployment, commissioning, and testing																				
Task 6: Grid-edge Device Deployment																				
Milestone BP3.2.1: Recruitment for GEBs and DER project sites are completed. The deployment plans for grid-edge are finalized and approved (M27)																				
Milestone BP3.6.1: Grid-interactive efficient building (GEB) controllers are successfully deployed and commissioned at the selected locations (M27)																				
Milestone BP3.6.2: Smart grid chips (SGCs) are successfully deployed and commissioned at the selected customer meters (M30)																				

Milestone BP3.6.3: Deployment and commissioning of EV, EV charger, and vehicle-to-everything (V2X) controllers are completed (M30)																											
Milestone BP3.6.4: Deployment and commissioning of ultra-fast controllers are completed (M36)																											
Milestone BP3.2.2: Community survey on grid-edge technologies completed. Benefits assessed. Assessment and deployment reports drafted. (M36)																											
Subtask 6.1: Deployment and commissioning of GEB controllers																											
Subtask 6.2: Deployment and commissioning of smart grid chips (SGCs)																											
Subtask 6.3: Deployment and commissioning of EV fleet, charger, V2X																											
Subtask 6.4: Deployment and commissioning of ultra-fast DA controllers																											
Go/No-Go Decision #3: All milestones for Tasks 5 and 6 are achieved																											
Task 7: Data Fusion and Grid-edge Analytical Platform Deployment																											
Milestone BP4.7.1: Deployment plan for data fusion platform is finalized and approved. Cybersecurity plan is developed and approved (M39)																											
Milestone BP4.7.2: The data infrastructure is deployed and the software for data fusion platform is installed and configured (M39)																											
Milestone BP4.7.3: The GEB and OpenHEMS functions are integrated. The data flows and functions are validated (M42)																											
Milestone BP4.7.4: The next-generation AMI functions are integrated with data fusion platform. The data flows and functions are validated. (M42)																											
Milestone BP4.7.5: Automation of planning tools for DER Integration is completed and the use cases are performed (M45)																											
Milestone BP4.7.6: Advanced algorithms are developed and integrated into the data fusion platform, and the use cases are demonstrated (M48)																											
Milestone BP4.2.1: Community survey on GEB and SGC functions completed. Benefits assessed. Assessment and deployment reports drafted. (M48)																											
Subtask 7.1: Design and assessment of platform deployment																											
Subtask 7.2: Deployment and commissioning of data fusion platform																											
Subtask 7.3: Integration of GEB and OpenHEMS function module																											
Subtask 7.4: Integration of distributed AI-based functions																											
Subtask 7.5: Automation of planning tools for DER integration																											
Subtask 7.6: Deployment of distributed grid-edge algorithms																											
Go/No-Go Decision #4: All milestones for Task 7 are achieved																											
Task 8: Interoperable Control Framework Deployment																											
Milestone BP5.8.1: The software and hardware are configured for hosting grid-edge intelligent controller and coordination framework functions (M54)																											
Milestone BP5.8.2: Coordinated control for grid-side functions are deployed and tested in use cases (M54)																											
Milestone BP5.8.3: Coordinated control for customer-side functions are deployed and tested in use cases (M57)																											
Milestone BP5.8.4: The simulation and assessment platform is developed. The functions are validated using proof-of-concept use cases (M60)																											
Milestone BP5.2.1: Community survey on grid functions completed. Benefits assessed. Assessment and deployment reports drafted (M60)																											
Subtask 8.1: Design and assessment of interoperable functions																											
Subtask 8.2: Deployment of grid-edge intelligent controller																											
Subtask 8.3: Implementation of coordinated control for grid-side																											
Subtask 8.4: Implementation of coordinated control for customer-side																											
Subtask 8.5: Grid resilience modeling, simulation, and assessment																											
Task 9: Cybersecurity																											
Milestone BP5.9.1: Report on cybersecurity practices during the course of project is submitted. (M60)																											
Subtask 9.1: Separating devices and services per security requirements																											
Subtask 9.2: Implementation of access control policy for critical systems																											
Subtask 9.3: Deployment of threat detection																											
Subtask 9.4: Deployment of firmware management strategy																											
Subtask 9.5: Training of the staff with access to the control system																											

4. Technical Qualifications and Resources

4.1. Team's Expertise and Prior Experience

4.1.1 Project lead

ComEd will serve as the prime recipient of this award and will be responsible for Project Management activities and official communications with DOE. ComEd will also participate in technical activities and will be responsible for all deployment and system communities in the City of Rockford, Illinois (b) (4)

4.1.2 Community Partners

Region 1 Planning Council (R1) is a regional government agency providing cross-jurisdictional, collaborative planning across Northern Illinois. R1 will play key community leadership role in this project and assist ComEd to convey all community related strategies. R1 brings planning knowledge, extensive community connections, and experience engaging with and gathering feedback from local stakeholders. R1 is a federally designated Economic Development District (EDD), Metropolitan Planning Organization

(b) (4)

Rockford Work Force Connection provides a fully integrated and accessible workforce development system that balances the needs of individuals and businesses to ensure our region has a skilled workforce to effectively compete in the global economy. (b) (4) will lead the efforts in this project. Rockford Area Economic Development Council (RAEDC) collaborates with regional stakeholders to cultivate opportunities for primary job growth that increase the economic well-being of Rockford. Rockford Chamber of Commerce (RCC) is a private, nonprofit, membership-supported organization. By consolidating resources from several hundred businesses and organizations, large and small, RCC becomes an efficient and cost-effective resource to bring many different programs to Rockford businesses and the community. (b) (4) provides opportunities to build relationships within the Coronado Haskell Neighborhood and the greater Rockford area. They collaborate with residents and the broader community on meaningful events that improve the neighborhood's health, wellness, and happiness, further facilitating access to services and programs for its residents. The Luther Center is a senior property with residents ages 62+. It provides a rental assistance program designed to meet the needs of people with various income levels. YWCA Northwestern Illinois was founded in Rockford in 1891, providing progressive services to women and families in Rockford, and the Illinois counties of Boone, Jo Daviess, McHenry, Ogle, Stephenson, and Winnebago. YWCA has been on the frontline, from women's empowerment and civil rights to affordable housing and pay equity, to violence prevention and health care.

4.1.3 Innovation Partners

Utilidata is digitizing the grid edge in support of clean energy. The company's grid edge software and real-time grid operations, powered by an NVIDIA processor, is the industry's first distributed AI solution. (b) (4)

(b) (4) will oversee technology development and implementation. NVIDIA has unprecedented experience developing AI-powered chips and bringing this technology to scale in new markets, such as gaming, autonomous driving, health care, and robotics. Utilidata's SGC, powered by NVIDIA, is designed to provide easy access to data for third-parties and will support innovation ecosystems.

ACE IoT Solutions (“ACE IoT”) is a software company leveraging open-source technologies, including the Eclipse VOLTRON™ platform, to provide customers with low-cost approaches to acquire, access, and manage data from distributed control systems and sensors. The products include the ACE IoT Cloud, ACE IoT Edge Nodes, and

(b) (4)

Open Energy Solutions (OES) formed in December 2016; its primary focus is to facilitate advanced technology transfer and purpose-built operational technology software for regulated and unregulated energy suppliers and to their customers. OES leverages its collective expertise and experience to make significant changes in the utility industry that will improve the quality of life through the wiser use of energy. Through its efforts implementing the Open Field Message Bus (OpenFMB) and the development of the Open Distributed Systems Operations, which is OpenFMB managed services deployment, OES seeks to transform the way electricity is generated, delivered, and utilized.

V&R Energy (V&R) will contribute to implementing real-time data analytics and control. (b) (4)

worked with power utility companies, US DOE, and research organizations, including NSF, EPRI, NYSERDA, and CEATI.

PingThings is a world leader in integrating, storing, processing, building applications with, and applying machine learning to time series data from sensors at both scale and velocity. The company offers the PredictiveGrid™, a time series application platform for utilities and other energy transition participants to rapidly deploy or develop use cases, new and old, driven by data from virtually any sensor that captures time-stamped measurements regardless of the number of sensors or their sample rates. The PredictiveGrid is cloud-based. Compute and storage can be scaled independently to support not only arbitrarily large sensor fleets but also all of the critical applications derived from this data. The platform is fast, processing tens of millions of measurements per second per node both in real-time and offline. The PredictiveGrid is sensor agnostic with temporal resolution as fine as a nanosecond. Utilities can ingest, analyze, and build with data from synchrophasors (T&D), multi-resolution sensors, continuous waveform (up to 1GHz), COMTRADE event files, DFRs, SCADA, power quality, smart meter, AMI 2.0 and many more. PingThings started the first utility scale deployment in 2019 and have been ingesting nearly 2 million measurements per second every second of every day since platform deployment.

4.1.4 Vendors

General Electric (GE) has a strong representation in the key disciplines relevant to this proposal, such as control design and developments for renewable energy, data analytics, optimization tools for situational awareness,

(b) (4)

Eaton: Eaton Research Lab, along with Eaton’s distribution automation and control business, has extensive expertise and experience in grid edge intelligence, control, automated planning, and operation, and microgrid.

(b) (4)

G&W American manufacturer with 100-year legacy in innovative grid solutions, including the latest load and fault interrupting switches, reclosers, protection equipment and power sensing. By investing heavily in research and development, G&W contributes to creating products for tomorrow’s smart grid making the best-in-class power grid automation solutions. Positioned as a full-system integrator (vendor agnostic), devices are designed

(b) (4)

(b) (4)

Hitachi (Hitachi America LTD and Hitachi Energy) will contribute to IoT building management, grid controller, resource planning platform and advanced analytics (b) (4)

General Motors (GM) is committed to an all-electric future that is inclusive and accessible to all. At the heart of this strategy is the Ultium battery platform, powering everything from mass-market to high-performance vehicles and GM's EV ecosystem supporting various V2X solutions. This ecosystem makes GM well-suited to pioneer this V2X endeavor that will pave the way for EVs for all.

S&C specializes in switching, protection, and control. With a dedicated focus on reliability and resilience, S&C's power switching, protection, and control solutions each year help utilities worldwide to avoid more than 2.7 billion customer-outage minutes and save customers more than 13 million power interruptions.

4.1.5 Subject Matter Experts

PLUG is a Colorado-based R&D firm dedicated to supporting electric utilities in their journey to build the grid of the future. PLUG provides research and development services and designs and develops software platforms to address some of the most pressing issues electric utilities face. PLUG has been collaborating closely with ComEd on multiple time-sensitive nationally recognized grid modernization efforts since 2017.

Slipstream Group, Inc. ("Slipstream") is a mission-driven nonprofit focusing on developing and implementing climate solutions and promoting energy equity. The research and innovation team specializes in engineering,

(b) (4)

Electric Power Engineers (EPE) will support strategy, technology assessment, program implementation, and technical expertise in distribution planning, distribution design, DERs and integration, including (b) (4)

Iowa State University with expertise in data integration from DERs into utility information systems, will contribute to data fusion for real-time data analytics and control. (b) (4)

Purdue University will contribute to grid-edge control of inverter-based resources and demand response. Dr.

(b) (4)

4.1.6 Engineering Societies

The team will closely collaborate with engineering societies such as ASME and IEEE to recruit interns to participate in this project, nurturing the next-generation STEM employees. Detailed information can be seen in the community benefits plan, which contains the STEM development for local communities.

4.2. Prior Partnerships

ComEd has collaborated with all team partners for decades on a variety of projects. G&W and S&C were both involved in the recloser deployment with ComEd, and their products have been operating successfully for more than a decade. (b) (4)

Eaton and GE are also essential product providers for ComEd. ComEd has also collaborated with GE and Eaton on several DOE grants, such as behind-the-meter advanced metering infrastructure (AMI) integration for microgrids and extra fast chargers (b) (4) of the University of California, Riverside (UCR) collaborated with ComEd on two projects that developed and demonstrated data-driven state estimation and topology identification technologies with ComEd. ComEd is collaborating with V&R on deployment of Linear State Estimator (LSE) at Bronzeville Community Microgrid.

4.3. Facilities and Equipment

ComEd has heavily invested in establishing four laboratories for testing, validating, refining, and demonstrating new technologies to modernize the grid to benefit ComEd’s customers:

The "Grid of the Future" Lab. The lab is located in the neighboring suburb of Maywood, Illinois. The lab is used to develop and demonstrate emerging technologies, support standards development and compliance, and train a workforce that is prepared to operate the advanced grid equipment. This lab is used to fulfill the commitment to the US DOE for the design and development of cutting-edge technologies such as microgrid master controllers, and microgrid-integrated solar storage technology (MISST). Additionally, the lab is working on developing new algorithms and controllers which are validated using a real-time digital simulator (RTDS). The RTDS is used for several power-hardware-in-loop (PHIL) controllers to ensure technology alignment with industry standards.
Forensics Lab. ComEd established a Forensics lab in Maywood to review new and retired equipment and materials. This facility includes lab space for ComEd personnel to perform equipment testing and failure analysis and build mock-ups to simulate field concerns.
Smart Grid, Smart City. The lab is located in Maywood to test the interoperability of a variety of devices interconnected to ComEd AMI, including smart meters, smart streetlights, smart water meters as well as grid-edge and behind-the-meter devices. This lab is used to develop and demonstrate technologies that can enable the utility to function as a platform.
Chicago Training Center. CTC is a LEED Gold-certified building and is the second training center ComEd has built in its 130-year history. It provides a place for the company's employees to learn how to manage modern electricity delivery systems, with 50,000 square feet of classroom and indoor training space

4.4. Time Commitment (ComEd Only)

Position Title	FTE	Position Title	FTE
Associate Engineer	0.5	Manager, Project Execution	8.5
Engineer	2.5	Principal Quantitative Engineer	2
Business Analyst	1	Principal Business Analyst	1
General Engineer	5	Manager, Grid Strategy & Analytics	2.5
Senior Business Program Manager	1.25	Senior Manager	1
Senior Financial Manager	0.25	Field Engineer	28

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Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <u>B</u> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application <u>A</u> b. initial award c. post-award	3. Report Type: a. initial filing <u>A</u> b. material change
4. Name and Address of Reporting Entity: ___ Prime ___ X Subawardee Tier ____, if known: Eaton Research Labs, Eaton Corporation W126N7250 Flint Drive Menomonee Falls, WI 53051-4404 Congressional District, if known: Wisconsin 5th		5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 440 S. La Salle Street Chicago, Illinois 60605 Congressional District, if known:
6. Federal Department/Agency: Dept. of Energy, Grid Deployment Office, Office of Clean Energy Demonstrations	7. Federal Program Name/Description: Bipartisan Infrastructure Law (BIL) Grid Resilience and Innovation Partnerships (GRIP) FOA Number: DE-FOA-0002740 CFDA Number, if applicable: <u>81.254</u>	
7. Federal Action Number, if known:	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> None	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> None	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: (b) (4) Print Name: (b) (4) Title: (b) (4) Telephone No.: (b) (4) Date: <u>3/6/2023</u>	
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Disclosure of Lobbying ActivitiesComplete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application <input checked="" type="checkbox"/> b. initial award c. post-award	3. Report Type: a. initial filing <input type="checkbox"/> a. <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: Electric Power Engineers, LLC 13001 W Highway 71 Suite G100, Austin, TX 78737 Mobile: 512-771-0297 Congressional District, if known:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007	
6. Federal Department/Agency: National Energy Technology Laboratory	7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, <i>if applicable</i> : 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: \$ UNKNOWN	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> NONE	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> N/A	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: (b) (4) Print Name: (b) (4) Title: Executive (b) (4) Telephone No.: (b) (4) Date: 3/13/2023	
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Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

<p>1. Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance</p>	<p>2. Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input checked="" type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award</p>	<p>3. Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change</p>
<p>4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> SubAwardee Tier _____, if Known: G&W Electric Co. 305 W Crossroads Pkwy Bolingbrook, IL, 60440 Congressional District, if known: IL-011</p>	<p>5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007</p>	
<p>6. Federal Department/Agency: National Energy Technology Laboratory</p>	<p>7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, if applicable: 81.254</p>	
<p>8. Federal Action Number, if known: DE-FOA-0002740</p>	<p>9. Award Amount, if known: (b) (4)</p>	
<p>10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i></p>	<p>b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> (b) (4)</p>	
<p>11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.</p>	<p>Signature: _____ Print Name: _____ Title: (b) (4) Telephone No.: (b) (4) Date: March 13th, 2023</p>	
<p>Federal Use Only</p>	<p>Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)</p>	

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2025

1. * Type of Federal Action: <input checked="" type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
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4. Name and Address of Reporting Entity:

Prime SubAwardee Tier if known:

* Name: Commonwealth Edison Company (ComEd)

* Street 1: 2 Lincoln Center Street 2: _____

* City: Oak Brook Terrace State: IL: Illinois Zip: 60181

Congressional District, if known: _____

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

* Name: GE Research

* Street 1: One Research Circle Street 2: _____

* City: Niskayuna State: NY: New York Zip: 12309-1027

Congressional District, if known: NY-020

6. * Federal Department/Agency: Department of Energy GDO OCED	7. * Federal Program Name/Description: BILL - Grid Resilience and Innovation Partnerships (GRIP) CFDA Number, if applicable: 81.254
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8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: \$ 0.00
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10. a. Name and Address of Lobbying Registrant:

Prefix _____ * First Name: NO LOBBYING ACTIVITIES Middle Name: _____

* Last Name: NO LOBBYING ACTIVITIES Suffix: _____

* Street 1: _____ Street 2: _____

* City: _____ State: _____ Zip: _____

b. Individual Performing Services (including address if different from No. 10a)

Prefix _____ * First Name: NO LOBBYING ACTIVITIES Middle Name: _____

* Last Name: NO LOBBYING ACTIVITIES Suffix: _____

* Street 1: _____ Street 2: _____

* City: _____ State: _____ Zip: _____

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

* Signature: _____ (b) (4)

* Name: Prefix (b) (4) * First Name (b) (4) Middle Name _____

* Last Name (b) (4) Suffix _____

Title: (b) (4) Telephone No. (b) (4) Date: 03/01/2023

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application <input checked="" type="checkbox"/> b. initial award c. post-award	3. Report Type: a. initial filing <input checked="" type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: Congressional District, if known:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007	
6. Federal Department/Agency: National Energy Technology Laboratory	7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, <i>if applicable</i> : 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: (b) (4)	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> n/a	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> n/a	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: (b) (4) Print Name: (b) (4) Title: (b) (4) Telephone No.: _____ Date: 3/7/2023	
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(b) (4)

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2025

1. * Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input checked="" type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
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4. Name and Address of Reporting Entity:
 Prime SubAwardee Tier if known:

* Name: Iowa State University of Science and Technology
* Street 1: 1138 Pearson Hall, 505 Morrill Rd Street 2: _____
* City: Ames State: IA: Iowa Zip: 50011-2103
Congressional District, if known: IA-004

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

* Name: Commonwealth Edison Co
* Street 1: 440 S LaSalle Street Street 2: Suite 3300
* City: Chicago State: IL: Illinois Zip: 60605
Congressional District, if known: _____

6. * Federal Department/Agency: Department of Energy	7. * Federal Program Name/Description: BIL - Grid Resilience and Innovation Partnerships (GRIP) CFDA Number, if applicable: 81.254
--	---

8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: \$ _____
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10. a. Name and Address of Lobbying Registrant:

Prefix _____ * First Name N/A Middle Name _____
* Last Name ISU does not lobby Suffix _____
* Street 1 _____ Street 2 _____
* City _____ State _____ Zip _____

b. Individual Performing Services (including address if different from No. 10a)

Prefix _____ * First Name N/A Middle Name _____
* Last Name ISU does not lobby Suffix _____
* Street 1 _____ Street 2 _____
* City _____ State _____ Zip _____

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

* Signature: (b) (4)
* Name: _____ * First Name (b) (4) Middle Name _____
* Last Name (b) (4) Suffix _____
Title: _____ Telephone No. (b) (4) Date: 03/03/2023

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2022

1. * Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> SubAwardee Tier if known: <input type="checkbox"/> * Name: Open Energy Solutions, Inc. * Street 1: 5201 Great America Parkway, Suite 320 Street 2: * City: Santa Clara State: CA: California Zip: 95054 Congressional District, if known: CA-17		
5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime: * Name: Commonwealth Edison Company * Street 1: 10 S. Dearborn Street, 51st Floor Street 2: * City: Chicago State: IL: Illinois Zip: 60603 Congressional District, if known: IL-007		
6. * Federal Department/Agency: U.S. Department of Energy	7. * Federal Program Name/Description: BIL- Grid Resilience and Innovation Partnerships (GRIP) Funding Opportunity Announcement DE-FOA-0002740 CFDA Number, if applicable: 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: \$ (b) (4)	
10. a. Name and Address of Lobbying Registrant: Prefix: * First Name: N/A Middle Name: * Last Name: Suffix: * Street 1: Street 2: * City: State: Zip:		
b. Individual Performing Services (including address if different from No. 10a) Prefix: * First Name: N/A Middle Name: * Last Name: Suffix: * Street 1: Street 2: * City: State: Zip:		
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure. * Signature: (b) (4) * Name: (b) (4) Title: (b) (4) Telephone No.: (b) (4) Date: 03/09/2023		
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Disclosure of Lobbying Activities

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(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application <input checked="" type="checkbox"/> b. initial award c. post-award	3. Report Type: a. initial filing <input checked="" type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: Congressional District, if known:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007	
6. Federal Department/Agency: National Energy Technology Laboratory	7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, if applicable: 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> NOT APPLICABLE – No lobbying activities.	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> NOT APPLICABLE – No lobbying activities. (b) (4)	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: (b) (4) Date: March 1	
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Disclosure of Lobbying Activities

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(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application <input checked="" type="checkbox"/> b. initial award c. post-award	3. Report Type: a. initial filing <input checked="" type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: PLUG LLC. 434 University Blvd, Denver, CO 80206 Congressional District, if known: CO-001	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007	
6. Federal Department/Agency: National Energy Technology Laboratory	7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, <i>if applicable</i> : 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i>	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i>	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: (b) (4) Print: (b) (4) Title: (b) (4) Telephone: (b) (4) Date: 3/10/2023	
Federal Use Only	Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)	

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application <input checked="" type="checkbox"/> b. initial award c. post-award	3. Report Type: a. initial filing <input type="checkbox"/> a. <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: Region 1 Planning Council 127 N Wyman St. Suite 100 Rockford, IL 61101 <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: Congressional District, if known: 17		5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007
6. Federal Department/Agency: National Energy Technology Laboratory	7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, <i>if applicable</i> : 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> N/A	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> <div style="background-color: black; color: red; text-align: center; padding: 5px;">(b) (4)</div>	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: 3/7/2023	
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Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application <input checked="" type="checkbox"/> b. initial award c. post-award	3. Report Type: a. initial filing <input checked="" type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: S&C Electric Company 6601 N. Ridge Blvd. Chicago, IL 60626 Congressional District, if known: IL-009	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007	
6. Federal Department/Agency: National Energy Technology Laboratory	7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, <i>if applicable</i> : 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> none	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i>	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____	
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(b) (4)

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2022

1. * Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input checked="" type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
--	--	--

4. Name and Address of Reporting Entity:
 Prime SubAwardee Tier if known:

* Name: The Regents of the University of California, Riverside
* Street 1: 900 University Avenue Street 2: _____
* City: Riverside State: CA: California Zip: 92521
Congressional District, if known: CA-041

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

* Name: Commonwealth Edison Company
* Street 1: 10 S. Dearborn Street, 51st Floor Street 2: _____
* City: Chicago State: IL: Illinois Zip: 60603
Congressional District, if known: CA-041

6. * Federal Department/Agency: U.S. Department of Energy	7. * Federal Program Name/Description: BIL - Grid Resilience and Innovation Partnerships (GRIP) CFDA Number, if applicable: 81.254
---	---

8. Federal Action Number, if known: Funding Opportunity Announcement (FOA) Number: DE-FOA-0002740	9. Award Amount: \$ (b) (4)
---	---------------------------------------

10. a. Name and Address of Lobbying Registrant:

Prefix: _____ * First Name: NOT APPLICABLE Middle Name: _____
* Last Name: NOT APPLICABLE Suffix: _____
* Street 1: NOT APPLICABLE Street 2: _____
* City: NOT APPLICABLE State: _____ Zip: _____

b. Individual Performing Services (including address if different from No. 10a)

Prefix: _____ * First Name: NOT APPLICABLE Middle Name: _____
* Last Name: NOT APPLICABLE Suffix: _____
* Street 1: NOT APPLICABLE Street 2: _____
* City: NOT APPLICABLE State: _____ Zip: _____

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

* Signature: (b) (4)
* Name: Prefix: _____ * First Name: _____ Middle Name: _____
* Last Name: (b) (4) Suffix: _____
Title: _____ Telephone No: (b) (4) Date: 03/08/2023

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application <input checked="" type="checkbox"/> b. initial award c. post-award	3. Report Type: <input checked="" type="checkbox"/> a. initial filing b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: V&R Energy Systems Research, Inc. 11824 Darlington Avenue, Suite 101 Los Angeles, CA 90049 Congressional District, if known: CA-032		5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007
6. Federal Department/Agency: National Energy Technology Laboratory	7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, <i>if applicable</i> : 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> N/A	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> N/A	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: (b) (4) Title: (b) (4) Telephone No (b) (4) Date: March 12, 2023	
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Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. Report Type: <input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: Congressional District, if known:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007	
6. Federal Department/Agency: National Energy Technology Laboratory	7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, <i>if applicable</i> : 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: (b) (4)	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> N/A	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i>	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Sign (b) (4) Print Title Telephone No _____ Date: 3/14/23 _____	
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Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. Report Type: <input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: West Virginia University Research Corporation 886 Chestnut Ridge Road P.O. Box 6845 Morgantown, WV 26506-6845 Congressional District, if known: WV-002		5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Commonwealth Edison Company 10 S. Dearborn Street, 51st Floor Chicago, IL 60603 Congressional District, if known: IL-007
6. Federal Department/Agency: National Energy Technology Laboratory	7. Federal Program Name/Description: Grid Infrastructure Deployment and Resilience CFDA Number, <i>if applicable</i> : 81.254	
8. Federal Action Number, if known: DE-FOA-0002740	9. Award Amount, if known: (b) (4)	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> Not applicable	b. Name and Address of Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> Not applicable	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: (b) (4) Print Name: _____ Title: _____ Telephone: _____ Date: 03/09/2023	
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Instructions and Summary

Award Number: _____
 Award Recipient: _____

Date of Submission: 1-Mar-23
 Form submitted by: ACE IoT Solutions
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
Do not modify this template or any cells for formulas!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

a. Personnel

b. Fringe Benefits

c. Travel

d. Equipment

e. Supplies

f. Contractual

Sub-recipient

Contractor

FFRDC

Total Contractual

g. Construction

h. Other Direct Costs

Total Direct Costs

i. Indirect Charges

Total Costs

Additional Explanation (as

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a. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO		Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project	Project	

(b) (4)

ENTIRE DOCUMENT by Fringe Benefits CONFIDENTIAL

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170 000	20%	\$34 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$38 000
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
Total	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

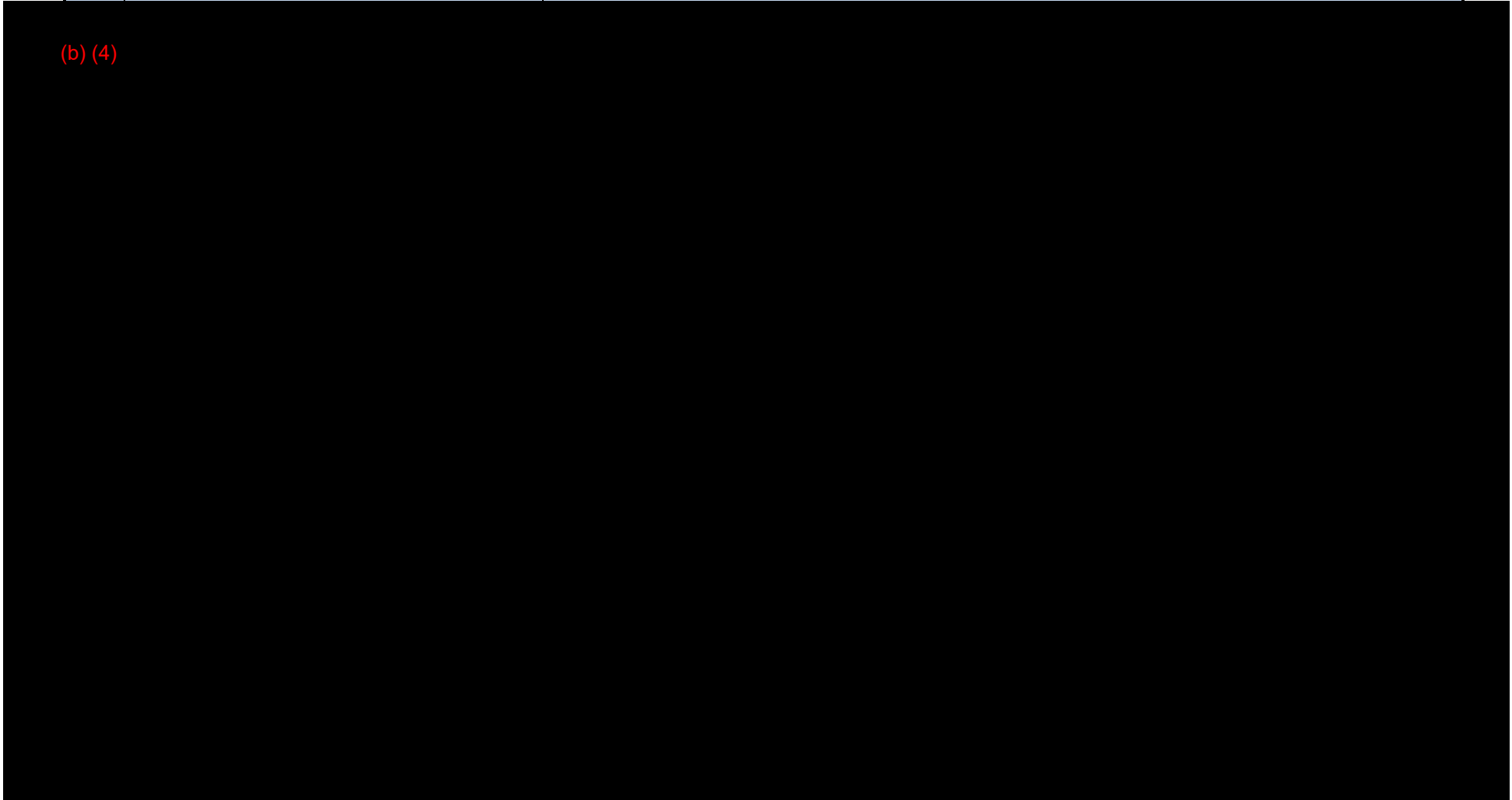
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C. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. mee ings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regula ions are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
-------------	-------------------	-------------	-------------	-------------	------------------	----------------------	---------------------	----------------------	-----------------------	---------------	----------------------------



(b) (4)

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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$0		
	TOTAL EQUIPMENT			\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
------	------------------------------	-----	-----------	------------	---------------	-----------------------

(b) (4)

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I. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2.4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
			Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project

(b) (4)

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
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(b) (4)

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

Organization/Source	Type (Cash or	Cost Share Item	Budget	Budget	Budget	Budget	Budget	Total Project
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(b) (4)

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Applicant Name: 0 Award Number: 0

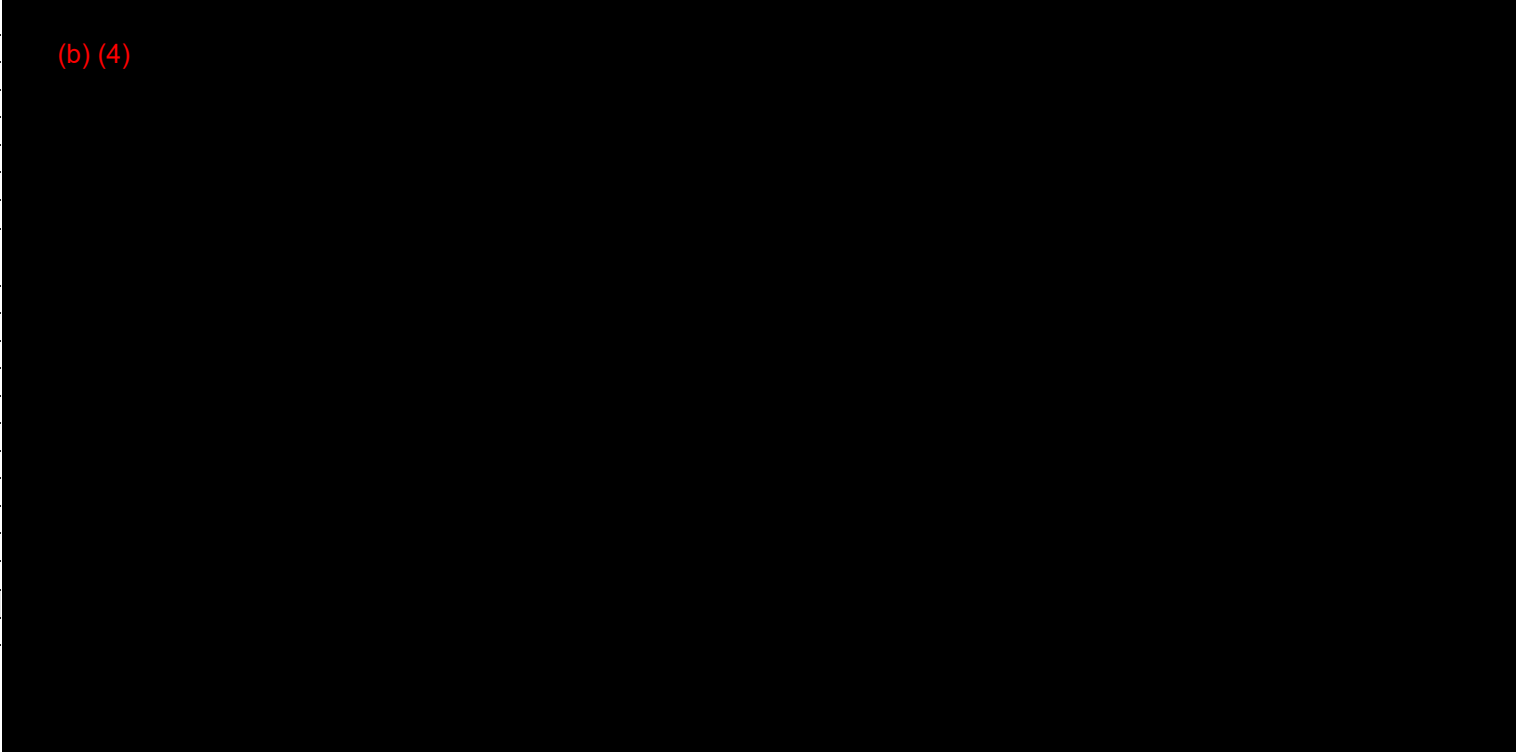
Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds		New or Revised Budget			
		Federal	Non-Federal	Federal	Non-Federal		Total

- (a)
1. Budget Period 1
 2. Budget Period 2
 3. Budget Period 3
 4. Budget Period 4
 5. Budget Period 5
 6. Totals



Section B - Budget Categories

6. Object Class Categories
 - a. Personnel
 - b. Fringe Benefits
 - c. Travel
 - d. Equipment
 - e. Supplies
 - f. Contractual
 - g. Construction
 - h. Other
 - i. Total Direct Charges (sum of 6a-6h)
 - j. Indirect Charges
 - k. **Totals** (sum of 6i-6j)
7. Program Income

Previous Edition Usable

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Instructions and Summary

Award Number: DE-FOA-0002740
 Award Recipient: ComEd

Date of Submission: 3/13/2023
 Form submitted by: Eaton Corporation
(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
 Do not modify this template or any cells for formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

- a. Personnel
- b. Fringe Benefits
- c. Travel
- d. Equipment
- e. Supplies
- f. Contractual
 - Sub-recipient
 - Contractor
 - FFRDC
 - Total Contractual
- g. Construction
- h. Other Direct Costs
- Total Direct Costs
- i. Indirect Charges
- Total C

Additional Explanation (a)

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INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total	Project Total	Rate Basis
		Time	Hourly Rate	Total Budget	Time	Hourly Rate	Total Budget	Time	Hourly Rate	Total Budget	Time	Hourly Rate	Total Budget	Time	Hourly Rate	Total Budget			

(b) (4)

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Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170 000	20%	\$34 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$38 000
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
Total	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

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C. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organization's written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.

(b) (4)

Additional Explanation (as needed):

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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO					
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(b) (4)

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360 00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL SUPPLIES				\$0		

Additional Explanation (as needed):

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f. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
			Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL
h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
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(b) (4)



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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
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(b) (4)

The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs. This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
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(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

Applicant Name: ComEd Award Number: DE-FOA-0002740

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

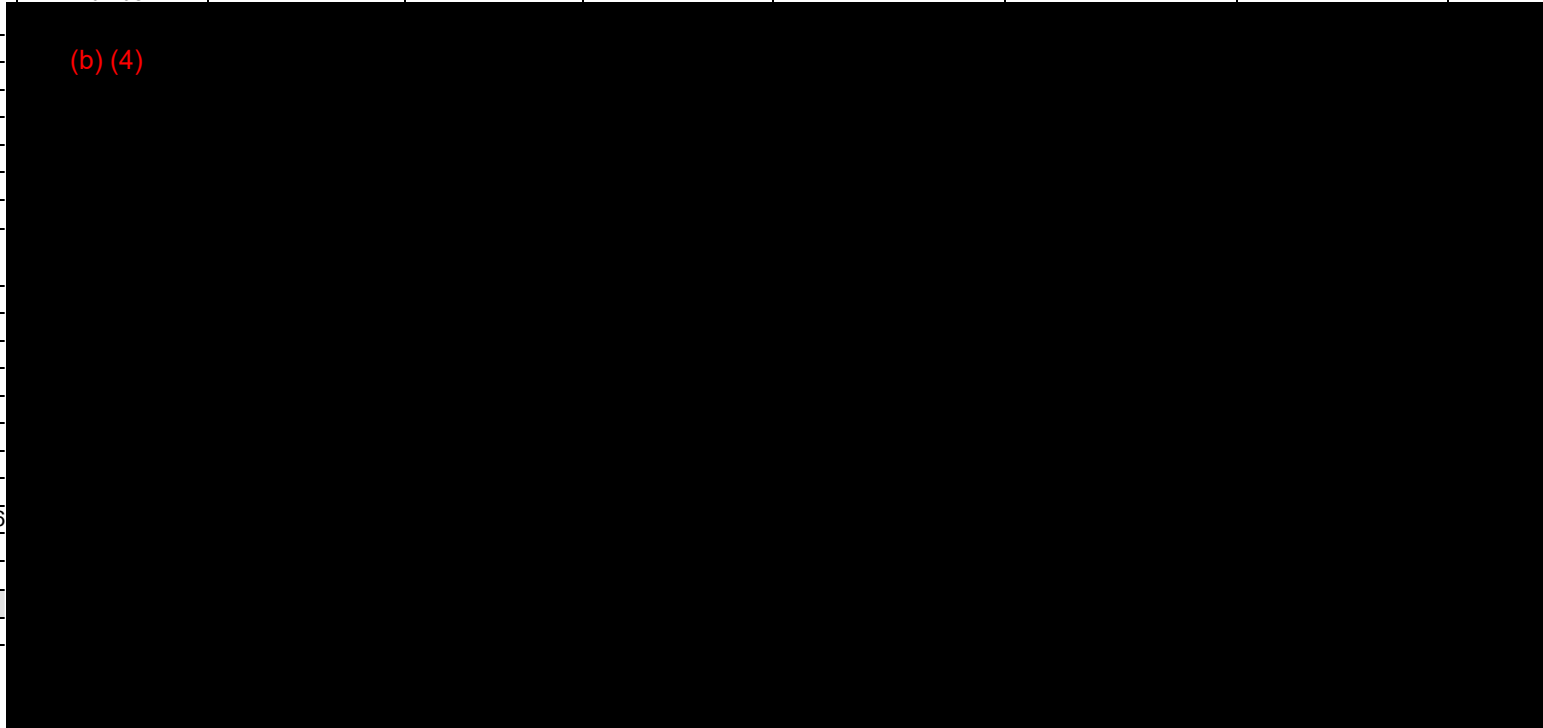
Section A - Budget Summary

Grant Program Function or Activity	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds		New or Revised Budget			
		Federal	Non-Federal	Federal	Non-Federal		Total

- (a)
1. Budget Period 1
 2. Budget Period 2
 3. Budget Period 3
 4. Budget Period 4
 5. Budget Period 5
 6. Totals

Section B - Budget Categories

6. Object Class Categories
 - a. Personnel
 - b. Fringe Benefits
 - c. Travel
 - d. Equipment
 - e. Supplies
 - f. Contractual
 - g. Construction
 - h. Other
 - i. Total Direct Charges (sum of 6a-6h)
 - j. Indirect Charges
 - k. **Totals** (sum of 6i-6j)
7. Program Income



Previous Edition Usable

ENTIRE DOCUMENT CONFIDENTIAL

Instructions and Summary

Award Number: DE-FOA-0002740

Date of Submission: 3/17/2023

Award Recipient: Electric Power Engineers

Form submitted by: Electric Power Engineers

(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
Do not modify this template or any cells for formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

a. Personnel

b. Fringe Benefits

c. Travel

d. Equipment

e. Supplies

f. Contractual

Sub-recipient

Contractor

FFRDC

Total Contractual

g. Construction

h. Other Direct Costs

Total Direct Costs

i. Indirect Charges

Total Costs

Additional Explanation (as required)

ENTIRE DOCUMENT CONFIDENTIAL

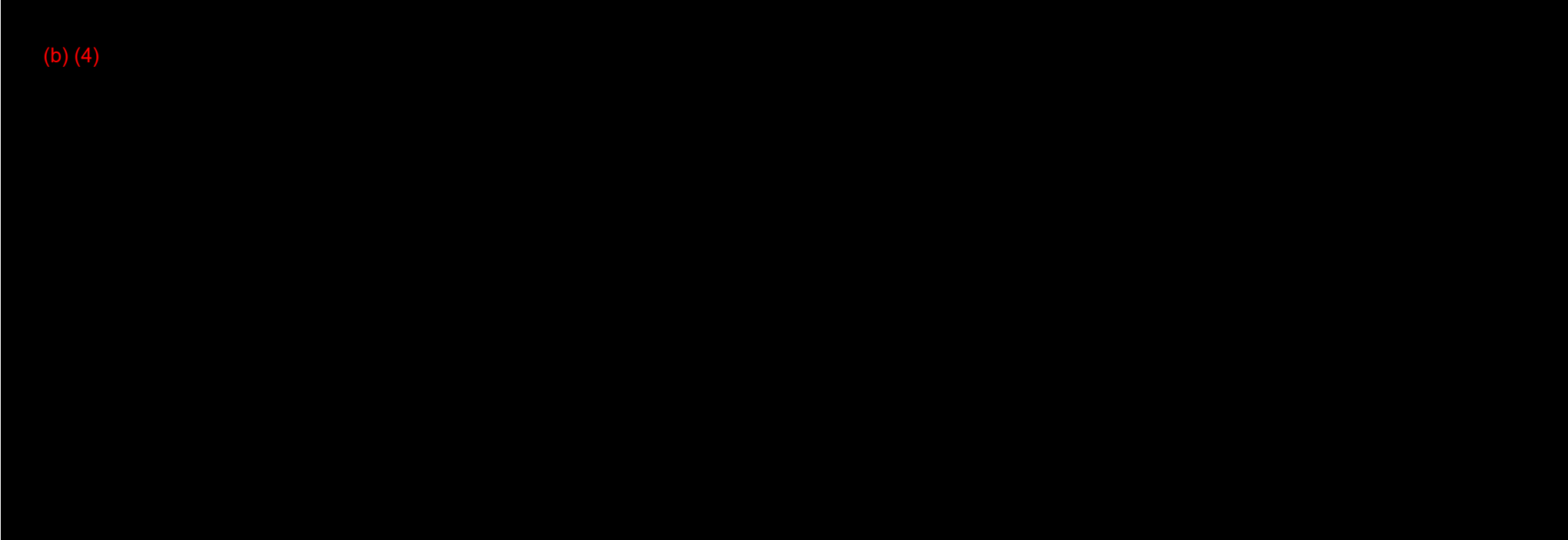
a. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total	Project Total	Rate Basis
		Time	Hourly	Total	Time	Hourly	Total	Time	Hourly	Total	Time	Hourly	Total	Time	Hourly	Total			

(b) (4)



ENTIRE DOCUMENT by Fringe Benefits CONFIDENTIAL

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170 000	20%	\$34 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$38 000
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
Total	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

ENTIRE DOCUMENT CONFIDENTIAL

C. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. mee ings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regula ions are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
Domestic Travel		Budget Period 1									
1	EXAMPLE!!! Visit to PV manufacturer			2	2	\$250	\$500	\$100	\$160	\$2,020	Current GSA rates
										\$0	
										\$0	
										\$0	
										\$0	
International Travel		Budget Period 1 Total									
										\$0	
Domestic Travel		Budget Period 2									
										\$0	
										\$0	
										\$0	
										\$0	
International Travel		Budget Period 2 Total									
										\$0	
Domestic Travel		Budget Period 3									
										\$0	
										\$0	
										\$0	
										\$0	
International Travel		Budget Period 3 Total									
										\$0	
Domestic Travel		Budget Period 4									
										\$0	
										\$0	
										\$0	
										\$0	
International Travel		Budget Period 4 Total									
										\$0	
Domestic Travel		Budget Period 5									
										\$0	
										\$0	
										\$0	
										\$0	
International Travel		Budget Period 5 Total									
										\$0	
PROJECT TOTAL		\$0									

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL EQUIPMENT				\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360 00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL SUPPLIES				\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT I. Contractual CONFIDENTIAL

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$250,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
Sub-total				\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
								\$0
Sub-total			\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
Sub-total			\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual			\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
TOTAL OTHER DIRECT COSTS		\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
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(b) (4)

A federally approved indirect rate agreement, or rate proposed (supported and agreed upon by DOE for estimating purposes) is required if reimbursement of indirect costs is requested. Please check (X) one of the options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project. The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs. This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

ENTIRE DOCUMENT Cost Share CONFIDENTIAL

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.** 7.
- NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
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(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

Applicant Name: Electric Power Engineers Award Number: DE-FOA-0002740

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary					
Grant Program Function or Activity	Catalog of Federal Domestic	Estimated Unobligated Funds		New or Revised Budget	
(a)	(b) (4)				
1. Budget Period 1					
2. Budget Period 2					
3. Budget Period 3					
4. Budget Period 4					
5. Budget Period 5					
6. Totals					
Section B - Budget Categories					
6. Object Class Categories					
a. Personnel					
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges					
k. Totals (sum of 6i-6j)					
7. Program Income					

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Instructions and Summary

Award Number: 2740
Award Recipient: G&W Electric
UEI: RNNZSCLBWT27

Date of Submission: _____
Form submitted by: _____

(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
Do not modify this template or any cells for formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paper Project Management, Washington, DC 20503.

(b) (4)

Section A - Budget Summary

Section B - Budget Categories

CATEGORY

a. Personnel

b. Fringe Benefits

c. Travel

d. Equipment

e. Supplies

f. Contractual

Sub-recipient

Contractor

FFRDC

Total Contractual

g. Construction

h. Other Direct Costs

Total Direct Costs

i. Indirect Charges

Total Costs

Additional Explanation (as

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a. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

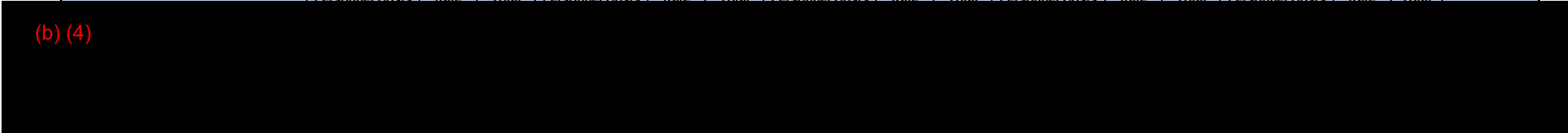
(b) (4)

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INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	



(b) (4)

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Benefit percentage applied to base wage rates include, employer payroll taxes, employer health insurance expense (self-insured), bonus expense, and workers comp insurance

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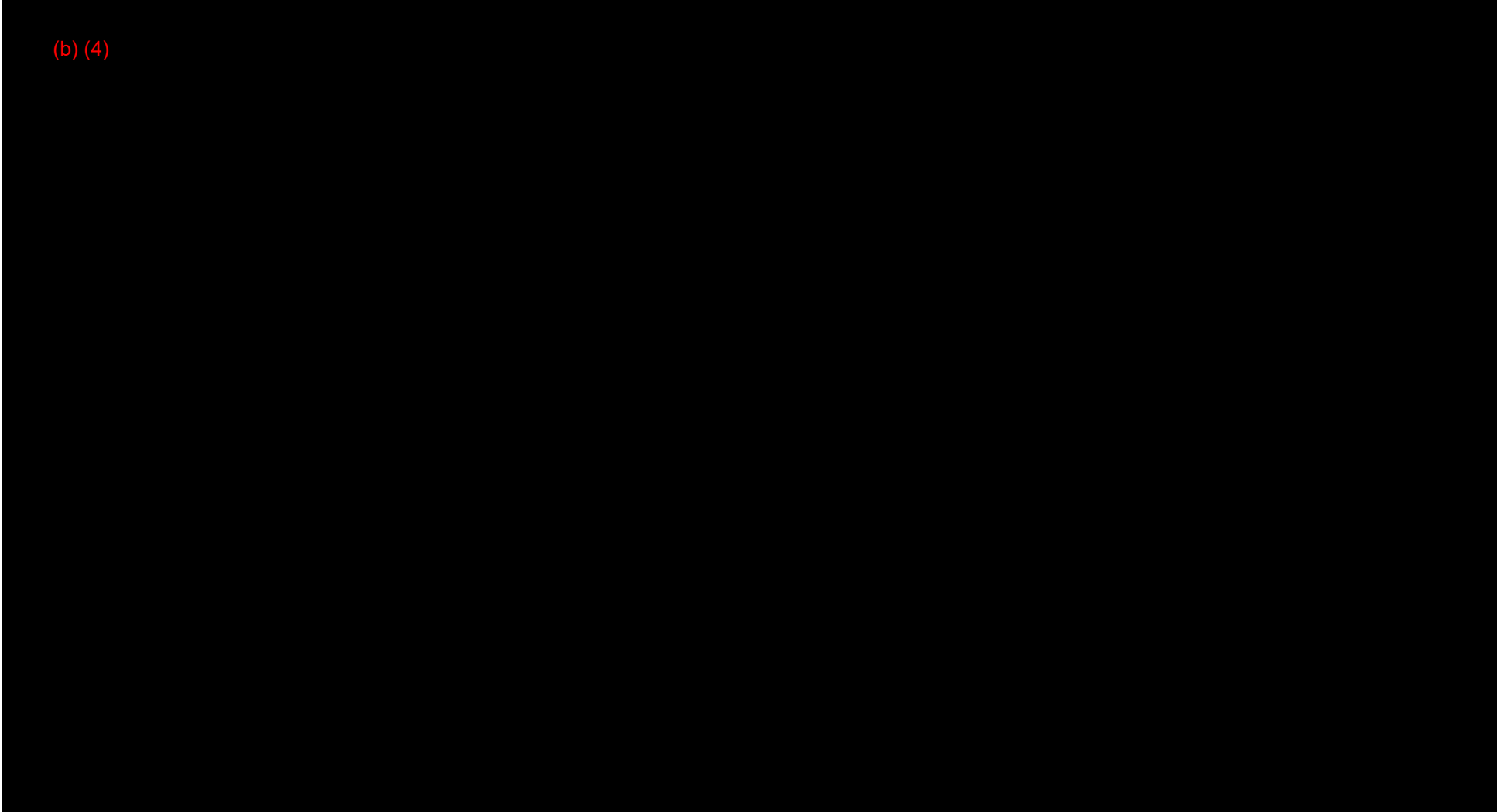
Travel

INSTRUCTIONS - PLEASE READ

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per	Flight per	Vehicle per	Per Diem Per	Cost per Trip	Basis for Estimating Costs
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(b) (4)



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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
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(b) (4)

	Budget Period 3 Total			\$75,000		
					Budget Period 4	
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$0		
					Budget Period 5	
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$0		
	TOTAL EQUIPMENT			\$650,000		

Additional Explanation (as needed):

NO. 415C, AS ISSUED BY THE DOE. **Supplies**

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supply definitions and treatment.

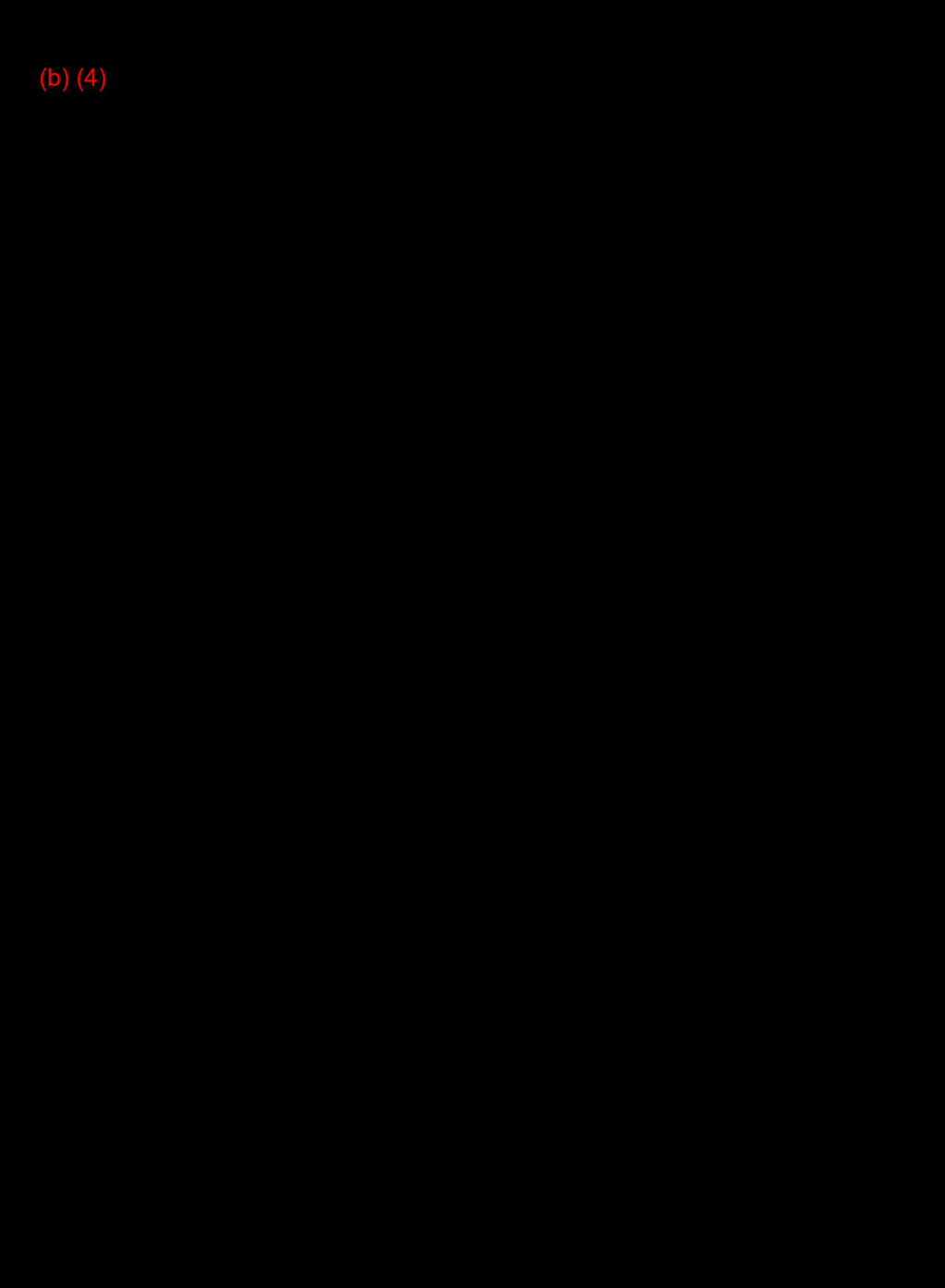
2. List all proposed supplies below, providing a basis of costs (e.g., contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the supplies as they apply to the Statement of Project Objectives. Note that Supplies must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.

3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab.

4. Supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.

5. Each budget period is rounded to the nearest dollar.

SOPO



(b) (4)

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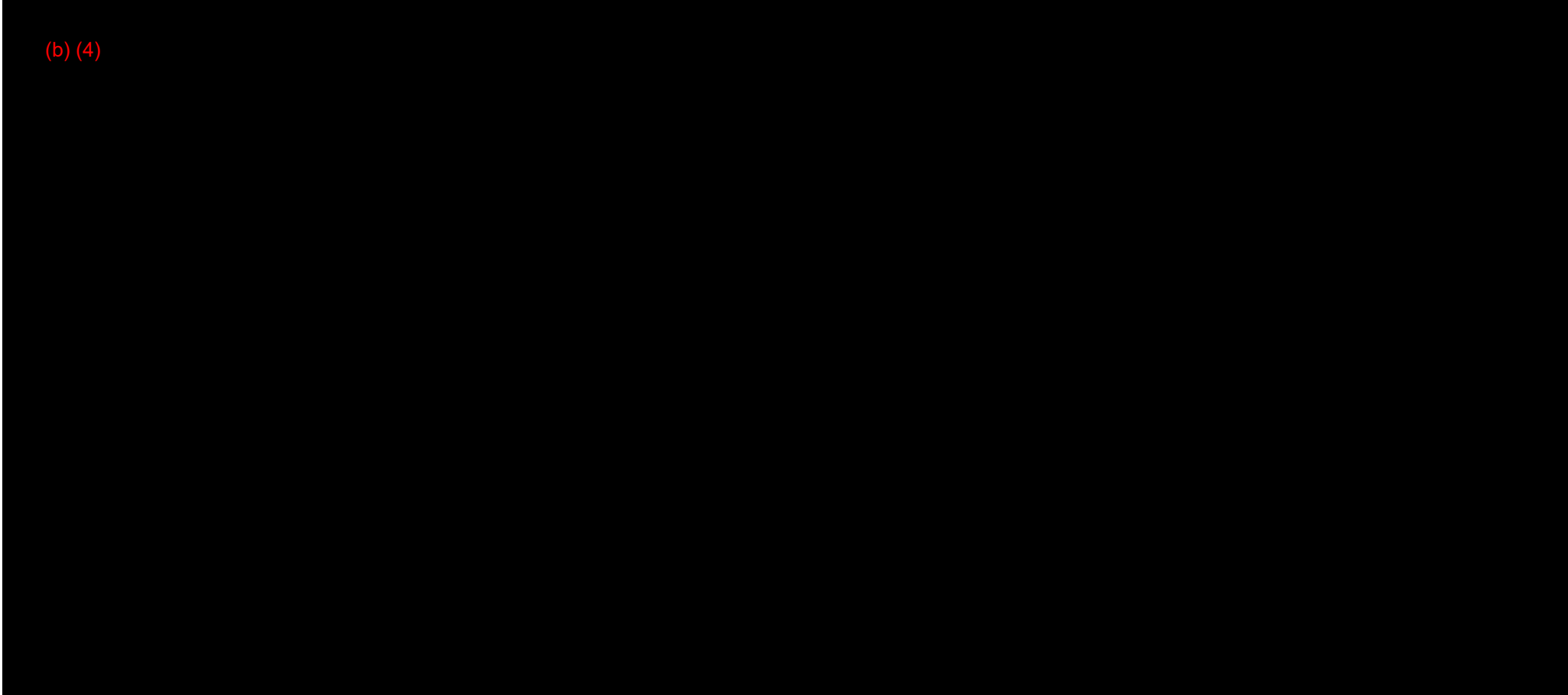
4. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
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(b) (4)



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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: None

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
TOTAL CONSTRUCTION		\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).

2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.

3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
TOTAL OTHER DIRECT COSTS		\$0		

Additional Explanation (as needed):

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
--	-----------------	-----------------	-----------------	-----------------	-----------------	-------	---------------------

(b) (4)

options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project.
 The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs.

X This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

(b) (4)

PLEASE READ

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

(b) (4)

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Applicant Name: G&W Electric Award Number: 2740

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Ac

(b) (4)

(a)

1. Budget Period 1
2. Budget Period 2
3. Budget Period 3
4. Budget Period 4
5. Budget Period 5
6. Totals

Section B - Budget Categories

6. Object Class Categories
 - a. Personnel
 - b. Fringe Benefits
 - c. Travel
 - d. Equipment
 - e. Supplies
 - f. Contractual
 - g. Construction
 - h. Other
 - i. Total Direct Charges (sum of
 - j. Indirect Charges
 - k. **Totals** (sum of 6i-6j)
7. Program Income

Previous Edition Usable

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Instructions and Summary

Award Number: DE-FOA-0002740

Date of Submission: 3/13/2023

Award Recipient: ComEd

Form submitted by: GE Research

(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
Do not modify this template or any cells for formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY
a. Personnel
b. Fringe Benefits
c. Travel
d. Equipment
e. Supplies
f. Contractual
Sub-recipient
Contractor
FFRDC
Total Contractual
g. Construction
h. Other Direct Costs
Total Direct Costs
i. Indirect Charges
Total Costs

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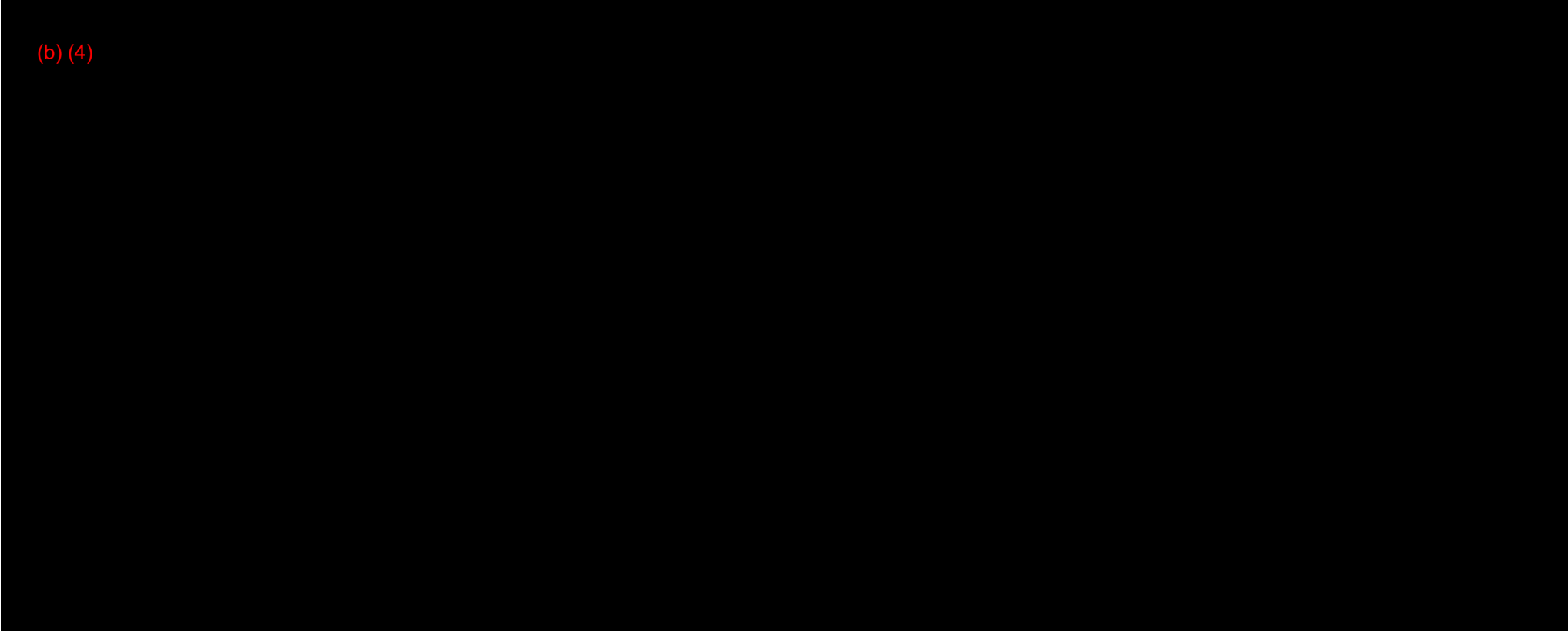
a. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget			

(b) (4)



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b Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

(b) (4)

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

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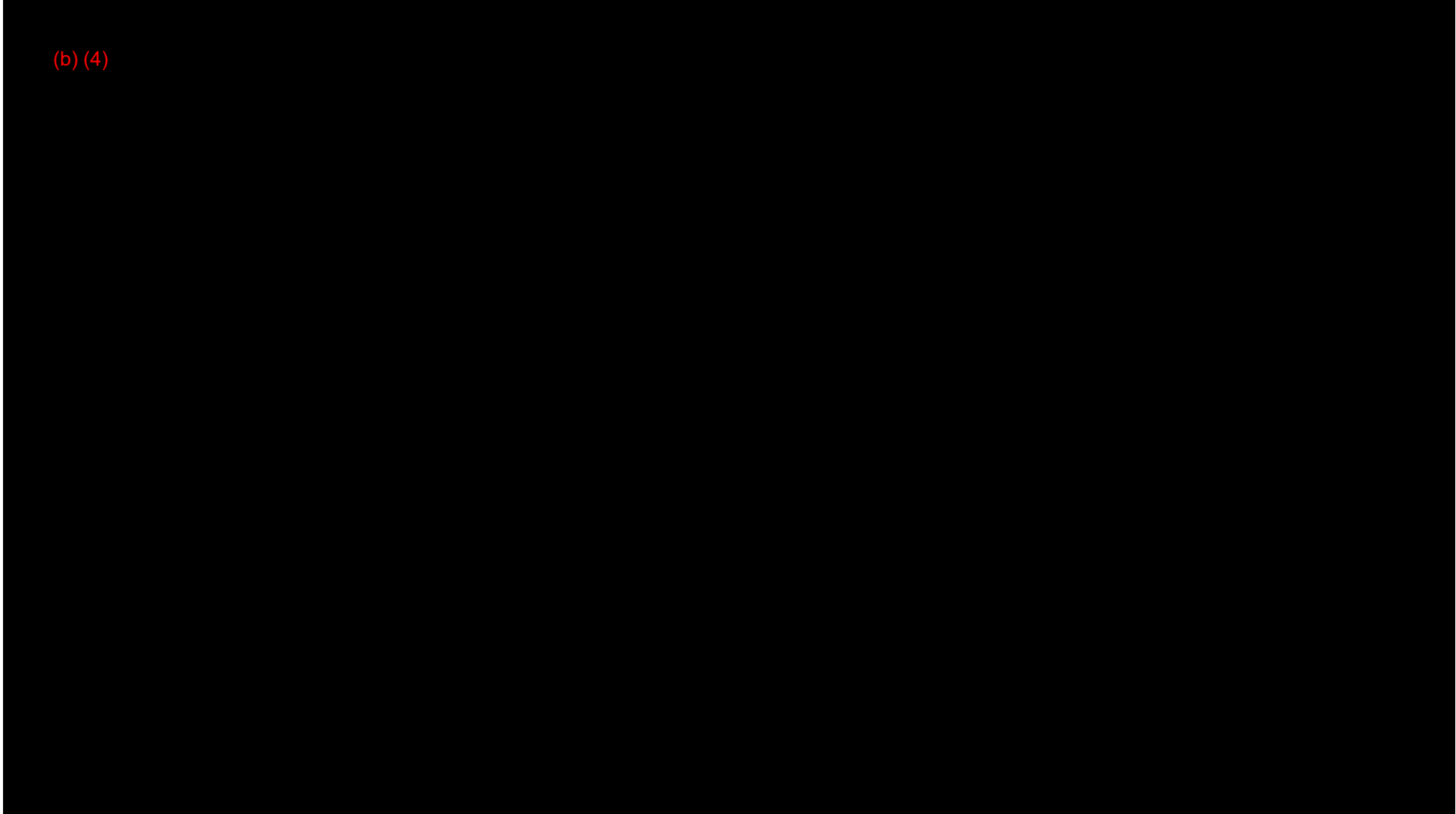
C. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. mee ings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regula ions are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
-------------	-------------------	-------------	-------------	-------------	------------------	----------------------	---------------------	----------------------	-----------------------	---------------	----------------------------

(b) (4)



ENTIRE DOCUMENT CONFIDENTIAL

d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$0		
	TOTAL EQUIPMENT			\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL SUPPLIES				\$0		

Additional Explanation (as needed):

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f. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
			Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
1	GE Grid Solutions	Basis of Cost-Vendor Quote	\$313,735	\$313,735	\$313,735	\$313,735	\$313,735	\$1,568,675
								\$0
								\$0
								\$0
		Sub-total	\$313,735	\$313,735	\$313,735	\$313,735	\$313,735	\$1,568,675

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual \$313,735 \$313,735 \$313,735 \$313,735 \$313,735 \$1,568,675

Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
TOTAL OTHER DIRECT COSTS		\$0		

Additional Explanation (as needed):

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

(b) (4)

options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project. The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs. This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
---------------------	------------------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	--------------------------

(b) (4)

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Applicant Name: ComEd Award Number: DE-FOA-0002740

Budget Information - Non Construction Programs

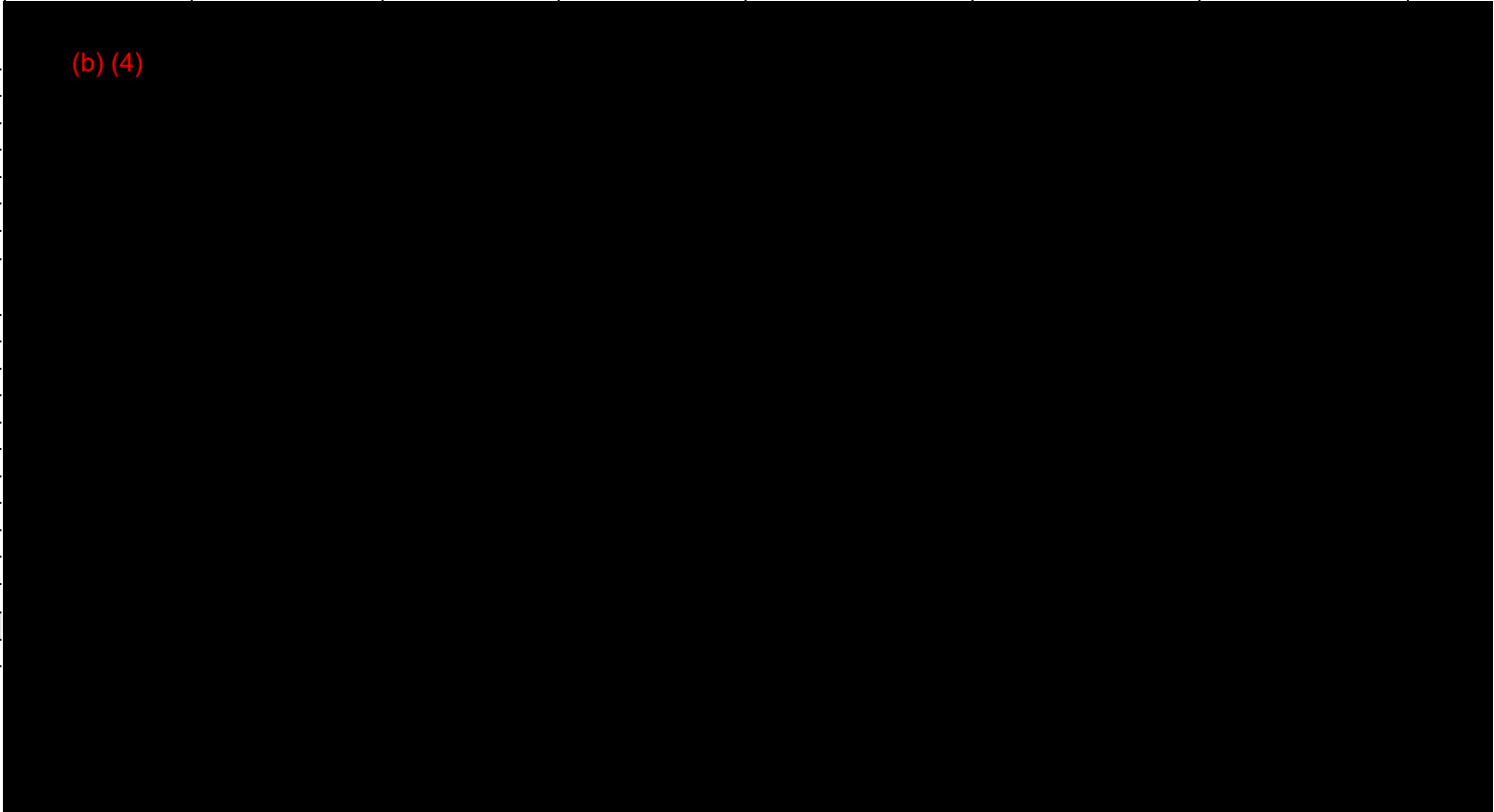
OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity	Catalog of Federal Domestic	Estimated Unobligated Funds		New or Revised Budget			

- (a)
1. Budget Period 1
 2. Budget Period 2
 3. Budget Period 3
 4. Budget Period 4
 5. Budget Period 5
 6. Totals

(b) (4)



Section B - Budget Categories

6. Object Class Categories
 - a. Personnel
 - b. Fringe Benefits
 - c. Travel
 - d. Equipment
 - e. Supplies
 - f. Contractual
 - g. Construction
 - h. Other
 - i. Total Direct Charges (sum of 6a-6h)
 - j. Indirect Charges
 - k. **Totals** (sum of 6i-6j)
7. Program Income

Previous Edition Usable

ENTIRE DOCUMENT Instructions and Summary CONFIDENTIAL

Award Number: 2740
 Award Recipient: ComEd

Date of Submission: 3/17/2023
 Form submitted by: Hitachi America LTD
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

- a. Personnel
- b. Fringe Benefits
- c. Travel
- d. Equipment
- e. Supplies
- f. Contractual
 - Sub-recipient
 - Vendor
 - FFRDC
 - Total Contractual
- g. Construction
- h. Other Direct Costs
- Total Direct Costs
- i. Indirect Charges
- Total Cost

Additional Explanation (as n

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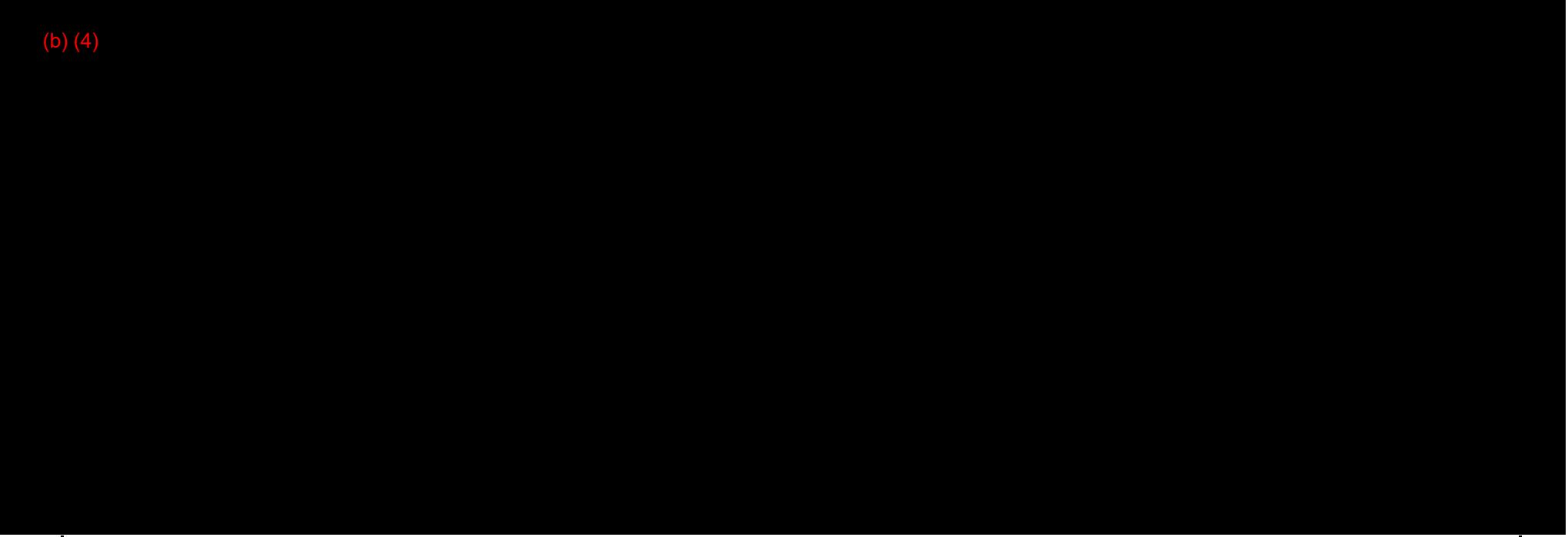
d. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and vendors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base pay rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., actual salary, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 5			
1	Sr. Engineer (EXAMPLE)	2000	\$85.00	\$170,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	2400	\$190,000	Actual Salary

(b) (4)



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INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project
------------	-----------------	-----------------	-----------------	-----------------	-----------------	---------------

(b) (4)

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.
The calculation of fringe benefit includes employee benefits and bonus

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c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Federal travel regulations are contained within the applicable cost principles for all entity types. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									

(b) (4)

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d. Equipment

- INSTRUCTIONS - PLEASE READ!!!**
1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
 2. List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
 3. During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
 4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$0		
	PROJECT TOTAL			\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						

(b) (4)

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f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to sub-recipients, vendors, and FFRDC partners in the applicable boxes below.

2. **Sub-recipients (partners, sub-awardees):** Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

3. **Vendors (including contractors):** List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$100,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

4. **Federal Funded Research and Development Centers (FFRDCs):** FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.

5. Each budget period is rounded to the nearest dollar

SOPO Task #	Sub-Recipient Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
								\$0
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate provided by vendor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

	Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
--	--------------------------	-----	-----	-----	-----	-----	-----

Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	PROJECT TOTAL	\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
PROJECT TOTAL		\$0		

Additional Explanation (as needed):

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

(b) (4)

options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.

There is not a current, federally approved rate agreement negotiated and available*.

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company <i>EXAMPLE!!!</i>	Cash	Project partner ABC Company will provide 20 PV modules for product development at the price of \$680 per module.	\$13,600					\$13,600

(b) (4)

Additional Explanation (as needed):

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Applicant Name: ComEd Award Number: 2740

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds		New or Revised Budget			
		Federal	Non-Federal	Federal	Non-Federal		Total
(a)							
1. Budget Period 1							
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6a-6h)							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							

(b) (4)

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Instructions and Summary

Award Number: _____
 Award Recipient: Commonwealth Edison Company

Date of Submission: _____
 Form submitted by: Illinois Institute of Technology
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY
a. Personnel
b. Fringe Benefits
c. Travel
d. Equipment
e. Supplies
f. Contractual
Sub-recipient
Vendor
FFRDC
Total Contract
g. Construction
h. Other Direct Costs
Total Direct Costs
i. Indirect Charges
Total Co

Additional Explanation (as

ENTIRE DOCUMENT a. Personnel CONFIDENTIAL

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and vendors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base pay rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., actual salary, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 5			
1	Sr. Engineer (EXAMPLE)	2000	\$85.00	\$170,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	2400	\$190,000	Actual Salary

(b) (4)

Additional Explanation (as needed):

In accordance with 2 CFR 200.430, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, Illinois Institute of Technology tracks and reports its professional personnel on a percent of effort and not on an hourly rate basis. IIT's

ENTIRE DOCUMENT by Fringe Benefits CONFIDENTIAL

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project
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(b) (4)

Requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate. IIT's federally negotiated fringe benefit rates are: faculty academic salary, 20.9%; faculty summer salary, 8.5%; staff salary, 24.9%; and student stipends, 0.0%.

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C. Travel

INSTRUCTIONS - PLEASE READ!!!

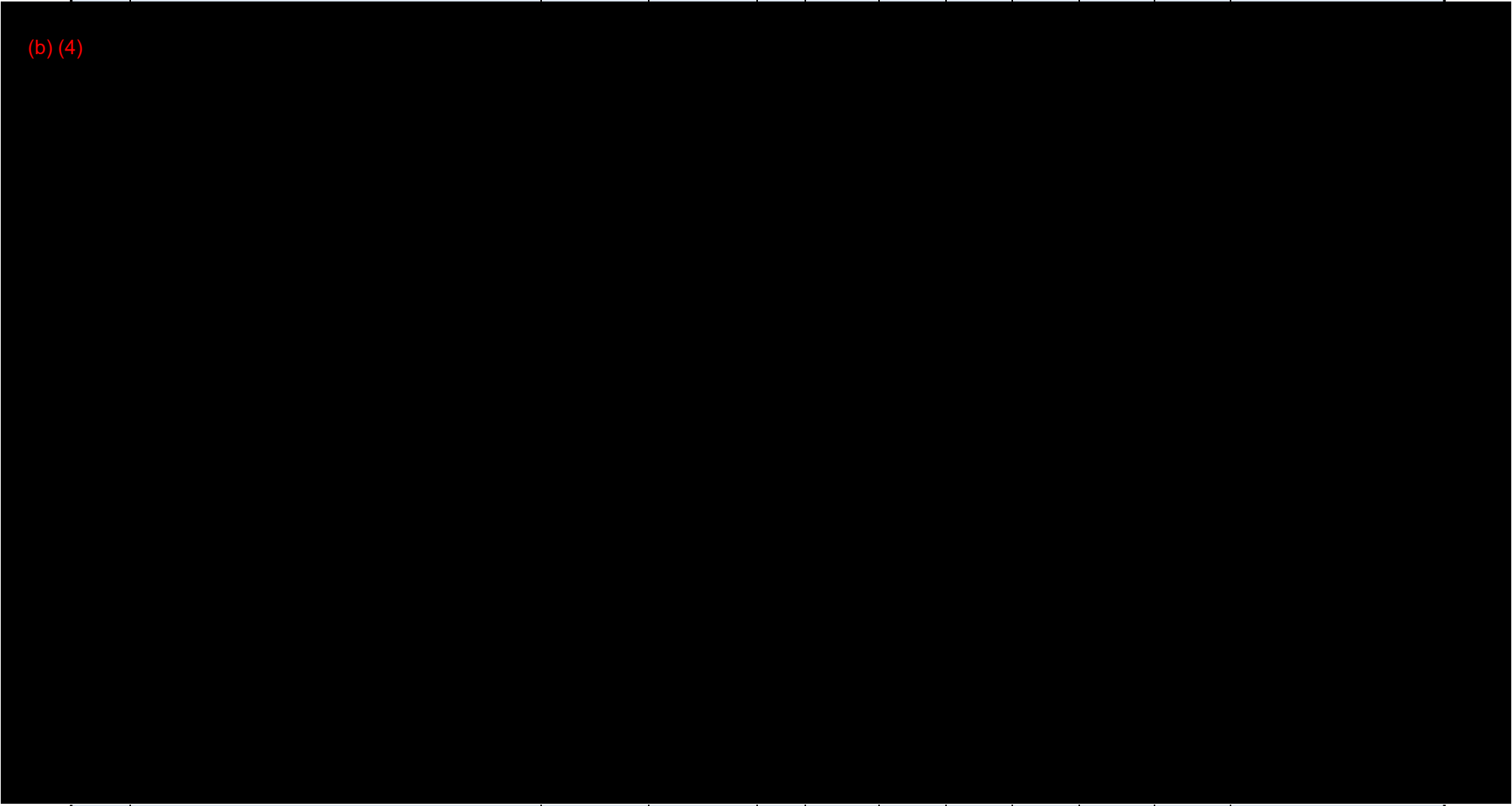
1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.

2. All listed travel must be necessary for performance of the Statement of Project Objectives.

3. Federal travel regulations are contained within the applicable cost principles for all entity types. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.

4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									



(b) (4)

Additional Explanation (as needed):

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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

- Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
- List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
- During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
- Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
PROJECT TOTAL				\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360 00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
PROJECT TOTAL				\$0		

Additional Explanation (as needed):

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f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to sub-recipients, vendors, and FFRDC partners in the applicable boxes below.

2. Sub-recipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

3. Vendors (including contractors): List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$100,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.

5. Each budget period is rounded to the nearest dollar

SOPO Task #	Sub-Recipient Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate provided by vendor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

	Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	PROJECT TOTAL	\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				

(b) (4)

Additional Explanation (as needed):

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
--	-----------------	-----------------	-----------------	-----------------	-----------------	-------	---------------------

(b) (4)

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.

There is not a current, federally approved rate agreement negotiated and available*.

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the

(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company EXAMPLE!!!	Cash	Project partner ABC Company will provide 20 PV modules for product development at the price of \$680 per module	\$13,600					\$13,600

(b) (4)

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Applicant Name: Commonwealth Edison Company Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget			
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)		Total (g)
1. Budget Period 1	(b) (4)						
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6a-6h)							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							

Award Number: _____
Award Recipient: _____

Date of Submission: _____
Form submitted by: _____

(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your EERE contact!
Do not modify this template or any cells or formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your EERE contact before adding additional budget period rows or columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

- a. Personnel
- b. Fringe Benefits
- c. Travel
- d. Equipment
- e. Supplies
- f. Contractual
 - Sub-recipient
 - Contractor
 - FFRDC
 - Total Contractual
- g. Construction
- h. Other Direct Costs
- Total Direct Costs
- i. Indirect Charges
- Total Cost

Additional Explanation (as n

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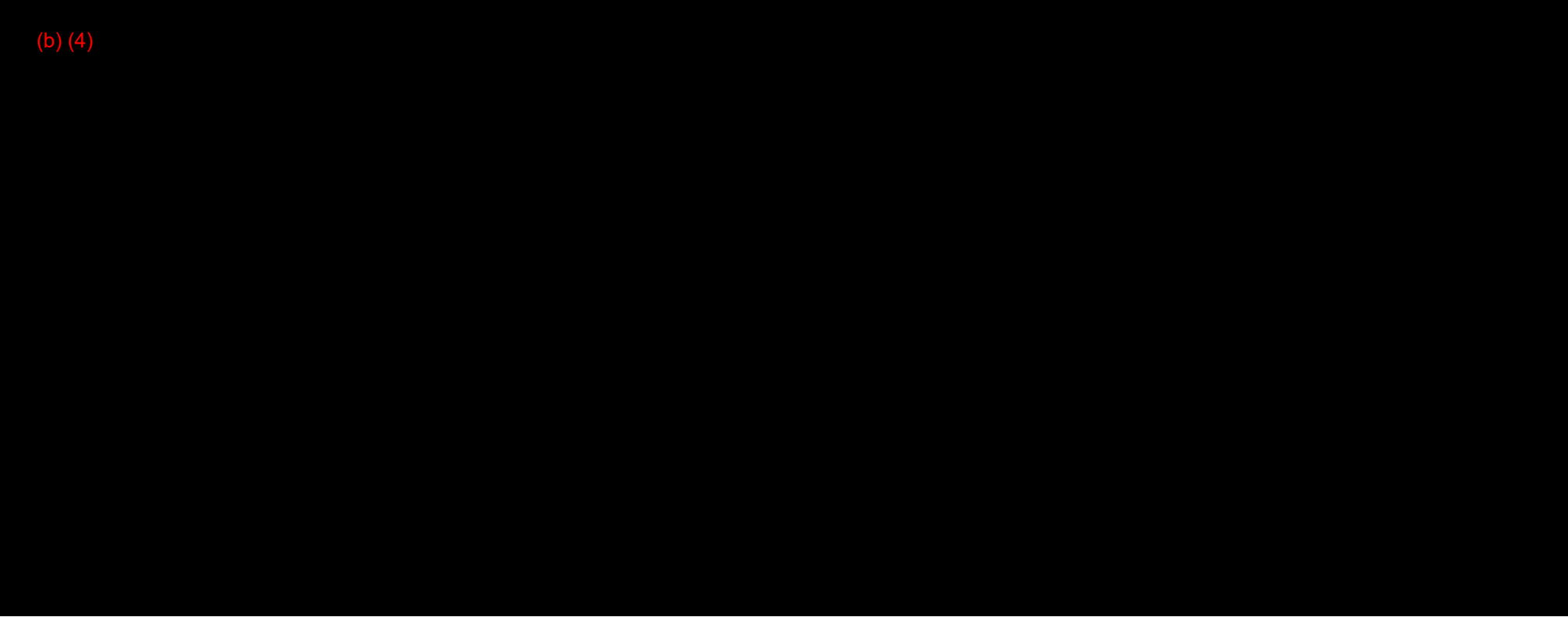
a. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget			

(b) (4)

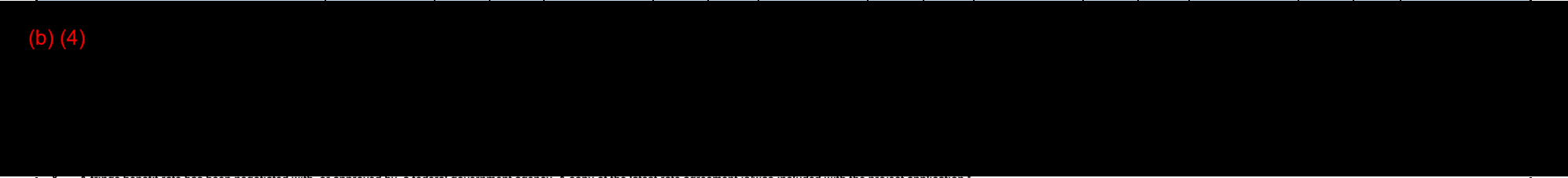


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INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project
------------	-----------------	-----------------	-----------------	-----------------	-----------------	---------------



(b) (4)

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification.

***When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate. <https://www.ospa.iastate.edu/sites/default/files/imported/proposal/preparation/docs/Colleges%20and%20Universities%20Rate%20Agreement.pdf>

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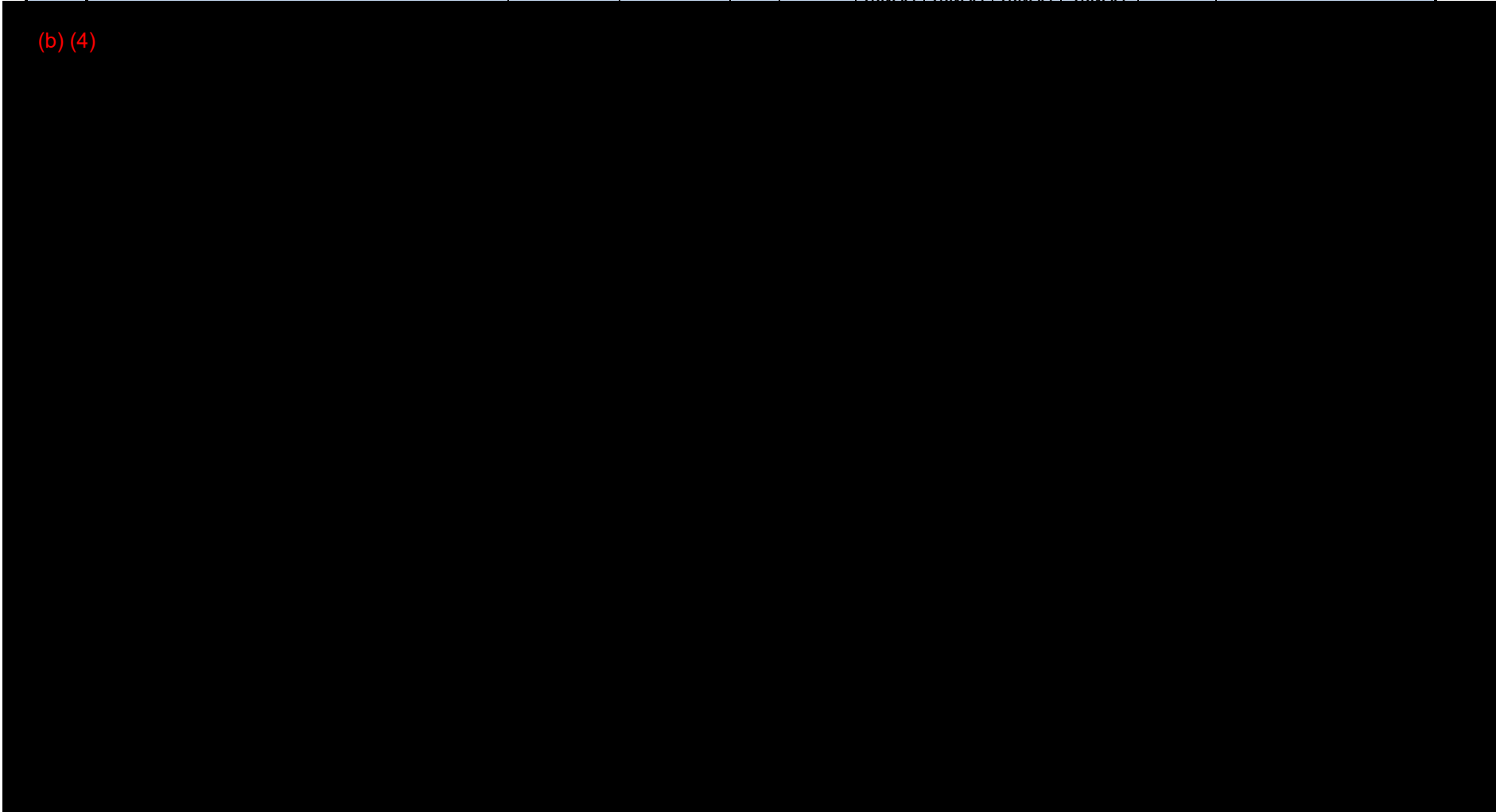
c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. **Columns G, H, I, J, and K are total per trip for each traveler.**
7. The number of days is inclusive of day of departure and day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
-------------	-------------------	-------------	-------------	-------------	------------------	----------------------	---------------------	----------------------	-----------------------	---------------	----------------------------

(b) (4)



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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Contractor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL EQUIPMENT				\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360 00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL SUPPLIES				\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

f. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$250,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
3. Contractors (including contractors): List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$250,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
			Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

TOTAL CONTRACTUAL	\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.

2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.

3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
TOTAL CONSTRUCTION		\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				

(b) (4)

Additional Explanation (as needed):

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting costs as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (§200.306(b)(1)).
5. **Each budget period is rounded to the nearest dollar.**

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
--	-----------------	-----------------	-----------------	-----------------	-----------------	-------	---------------------

(b) (4)

options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project. The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs. This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

Provide an explanation of how your indirect cost rate was applied.

*Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).*

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. Contractors may not provide cost share. Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company EXAMPLE!!!	Cash	Project partner ABC Company will provide 20 PV modules for product development at the price of \$680 per module	\$13,600					\$13,600

(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

Applicant Name: 0 Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds		New or Revised Budget			
		Federal	Non-Federal	Federal	Non-Federal		Total
(a)							
1. Budget Period 1	(b) (4)						
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6a-							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							

ENTIRE DOCUMENT CONFIDENTIAL

Applicant Name: 0 Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Catalog of Federal	Estimated Unobligated Funds	New or Revised Budget
--------------------	-----------------------------	-----------------------

Grant Program Function or Ac

(b) (4)

(a)

1. Budget Period 1
2. Budget Period 2
3. Budget Period 3
4. Budget Period 4
5. Budget Period 5
6. Totals

Section B - Budget Categori

6. Object Class Categories
 - a. Personnel
 - b. Fringe Benefits
 - c. Travel
 - d. Equipment
 - e. Supplies
 - f. Contractual
 - g. Construction
 - h. Other
 - i. Total Direct Charges (sum of
 - j. Indirect Charges
 - k. **Totals** (sum of 6i-6j)

7. Program Income

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Instructions and Summary

Award Number: _____
 Award Recipient: Commonwealth Edison

Date of Submission: 17-Mar-23
 Form submitted by: Open Energy Solutions
(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
 Do not modify this template or any cells for formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

a. Personnel

b. Fringe Benefits

c. Travel

d. Equipment

e. Supplies

f. Contractual

Sub-recipient

Contractor

FFRDC

Total Contractual

g. Construction

h. Other Direct Costs

Total Direct Costs

i. Indirect Charges

Total Costs

Additional Explanation (as ne

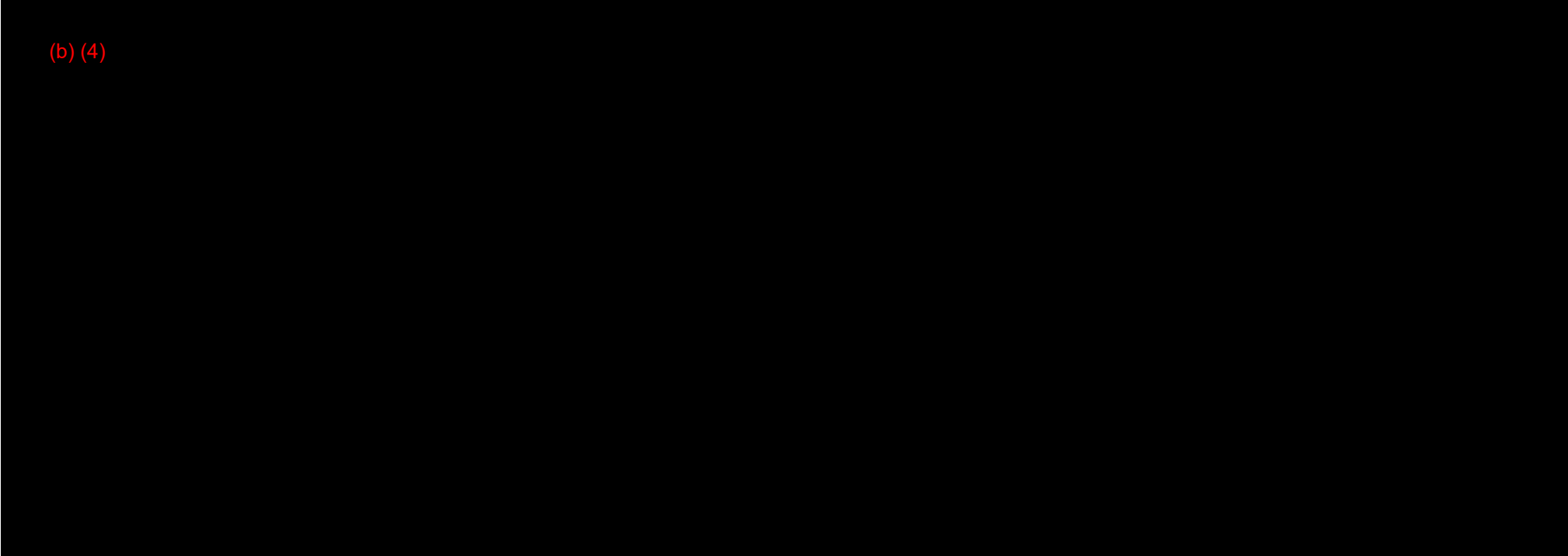
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a. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 5			



(b) (4)

Additional Explanation (as needed):

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Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170 000	20%	\$34 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$38 000
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
Total	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

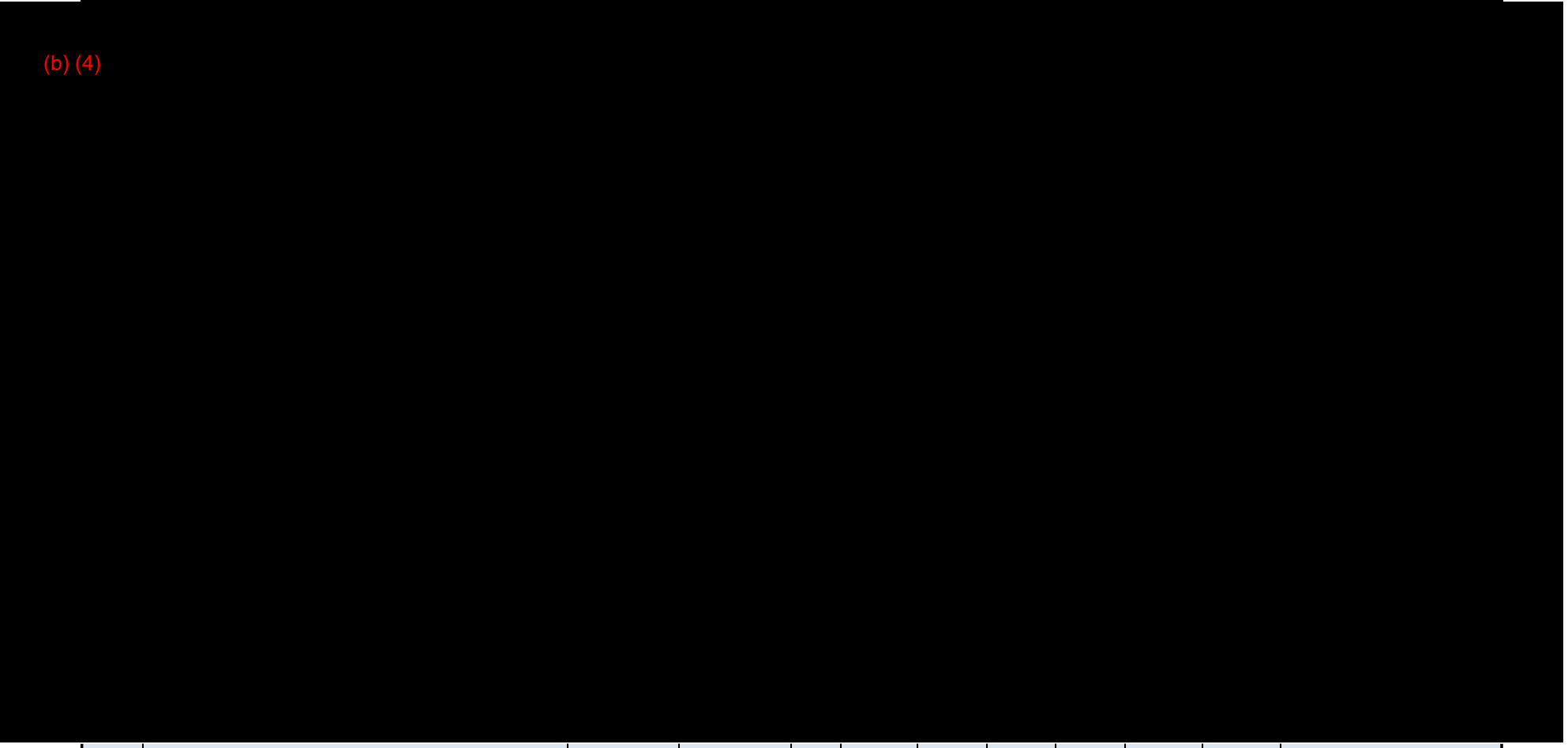
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C. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. mee ings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regula ions are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									



(b) (4)

Additional Explanation (as needed):

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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL EQUIPMENT				\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360 00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL SUPPLIES				\$0		

Additional Explanation (as needed):

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f. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
			Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).

2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.

3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project

(b) (4)

Additional Explanation (as needed):

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
Provide ONLY Applicable Rates:							
Overhead Rate	0.00%	0.00%	0.00%	0.00%	0.00%		<i>Example: Labor + Fringe</i>
General & Administrative (G&A)	0.00%	0.00%	0.00%	0.00%	0.00%		
FCCM Rate, if applicable	0.00%	0.00%	0.00%	0.00%	0.00%		
OTHER Indirect Rate	0.00%	0.00%	0.00%	0.00%	0.00%		
Indirect Costs (As Applicable):							
Overhead Costs						\$0	
G&A Costs						\$0	
FCCM Costs, if applicable						\$0	
OTHER Indirect Costs						\$0	
Total indirect costs requested:	\$0	\$0	\$0	\$0	\$0	\$0	

A federally approved indirect rate agreement, or rate proposed (supported and agreed upon by DOE for estimating purposes) is required if reimbursement of indirect costs is requested. Please check (X) one of the options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project. The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs. This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
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(b) (4)

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Applicant Name: Commonwealth Edison Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget			
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)		Total (g)
1. Budget Period 1	(b) (4)						
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6a-6h)							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							

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Instructions and Summary

Award Number: _____

Date of Submission: _____

Award Recipient: _____

Form submitted by: _____

(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
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SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

a. Personnel

b. Fringe Benefits

c. Travel

d. Equipment

e. Supplies

f. Contractual

Sub-recipient

Contractor

FFRDC

Total Contractual

g. Construction

h. Other Direct Costs

Total Direct Costs

i. Indirect Charges

Total Cost

Additional Explanation (as needed)

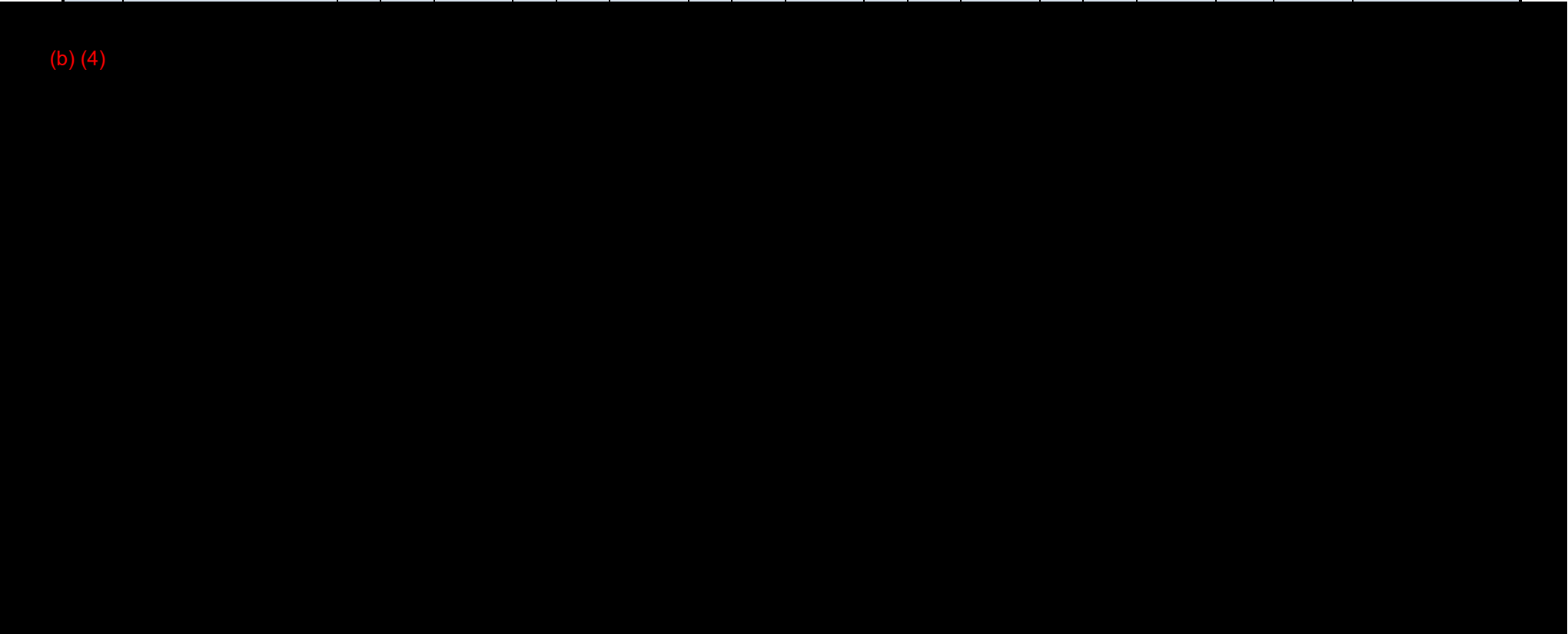
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INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 5			

(b) (4)

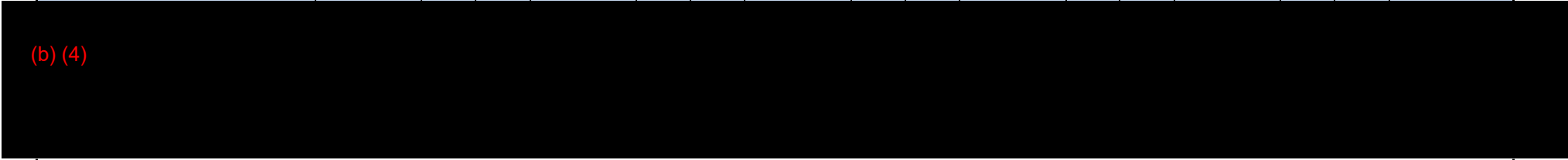


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INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project
------------	-----------------	-----------------	-----------------	-----------------	-----------------	---------------



(b) (4)

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

***When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

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C. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									
1	EXAMPLE!!! Visit to PV manufacturer			2	2	\$250	\$500	\$100	\$160	\$2,020	Current GSA rates
										\$0	
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 1 Total									\$0	
	Domestic Travel	Budget Period 2									
										\$0	
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 2 Total									\$0	
	Domestic Travel	Budget Period 3									
										\$0	
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 3 Total									\$0	
	Domestic Travel	Budget Period 4									
										\$0	
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 4 Total									\$0	
	Domestic Travel	Budget Period 5									
										\$0	
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 5 Total									\$0	
	PROJECT TOTAL									\$0	

Additional Explanation (as needed):

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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL EQUIPMENT				\$0		

Additional Explanation (as needed):

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Supplies

INSTRUCTIONS - PLEASE READ!!!

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE!!! Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL SUPPLIES				\$0		

Addi onal Explanation (as needed):

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Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO	Sub-Recipient	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget	Budget	Budget	Budget	Budget	Project
2 4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
			Sub-total	\$0	\$0	\$0			\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO	FFRDC	Purpose and Basis of Cost	Budget	Budget	Budget	Budget	Budget	Project
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

	Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
--	--------------------------	------------	------------	------------	------------	------------	------------

Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
TOTAL CONSTRUCTION		\$0		

Additional Explanation (as needed):

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n. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project

(b) (4)

Additional Explanation (as needed):

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Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
--	-----------------	-----------------	-----------------	-----------------	-----------------	-------	---------------------

(b) (4)

options below and provide the requested information if it has not already been provided as requested, or has changed.

- An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project. The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs.
- This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or	Cost Share Item	Budaet	Budaet	Budaet	Budaet	Budaet	Total Project
---------------------	---------------	-----------------	--------	--------	--------	--------	--------	---------------

(b) (4)

Additional Explanation (as needed):

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Applicant Name: 0 Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds		New or Revised Budget			
		Federal	Non-Federal	Federal	Non-Federal		Total
1. Budget Period 1	(b) (4)						
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							

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Instructions and Summary

Award Number: _____
 Award Recipient: PLUG LLC

Date of Submission: _____
 Form submitted by: _____

(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows or columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

a. Personnel

b. Fringe Benefits

c. Travel

d. Equipment

e. Supplies

f. Contractual

Sub-recipient

Vendor

FFRDC

Total Contractual

g. Construction

h. Other Direct Costs

Total Direct Costs

i. Indirect Charges

Total Costs

Additional Explanation (as ne

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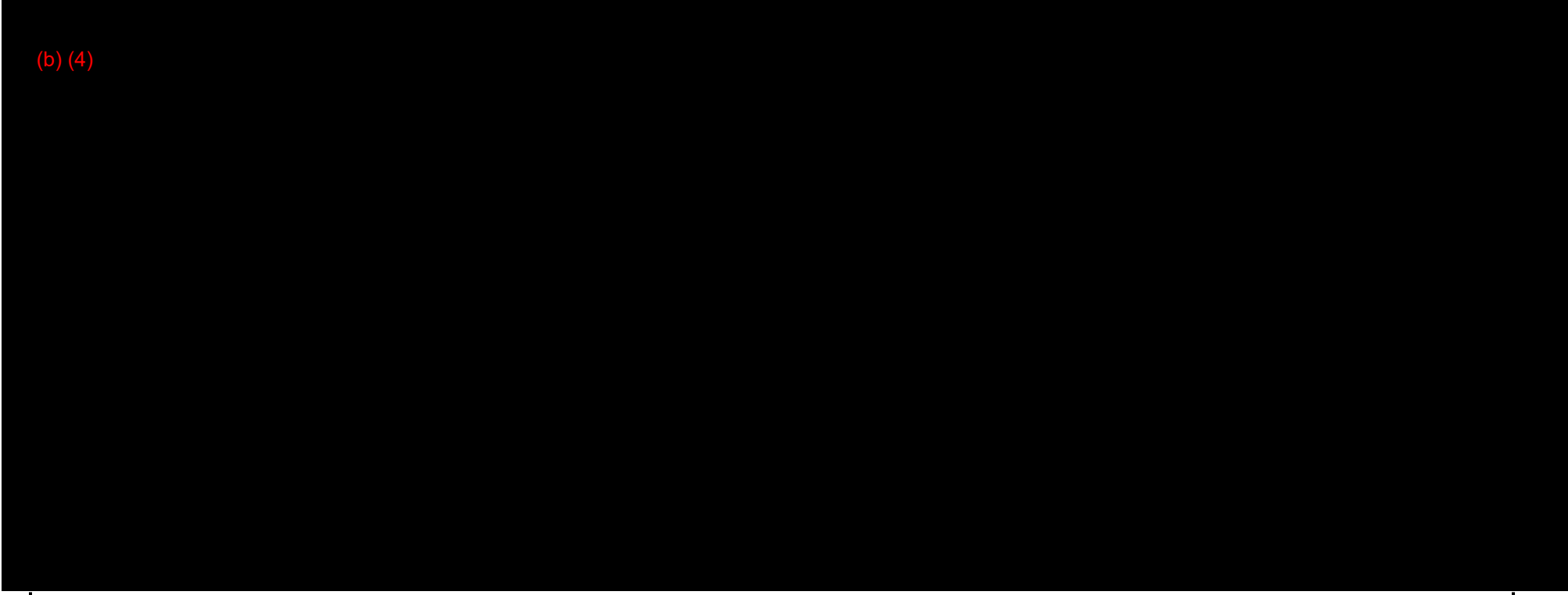
d. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and vendors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base pay rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., actual salary, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Pay Rate	Total Budget	Time (Hrs)	Pay Rate	Total Budget	Time (Hrs)	Pay Rate	Total Budget	Time (Hrs)	Pay Rate	Total Budget	Time (Hrs)	Pay Rate	Total Budget			

(b) (4)



ENTIRE DOCUMENT by Fringe Benefits CONFIDENTIAL

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170,000	20%	\$34,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$38,000
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
Total	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

A single rate method is used, based on de minimis rate of 10% of modified total direct costs (MTDC).

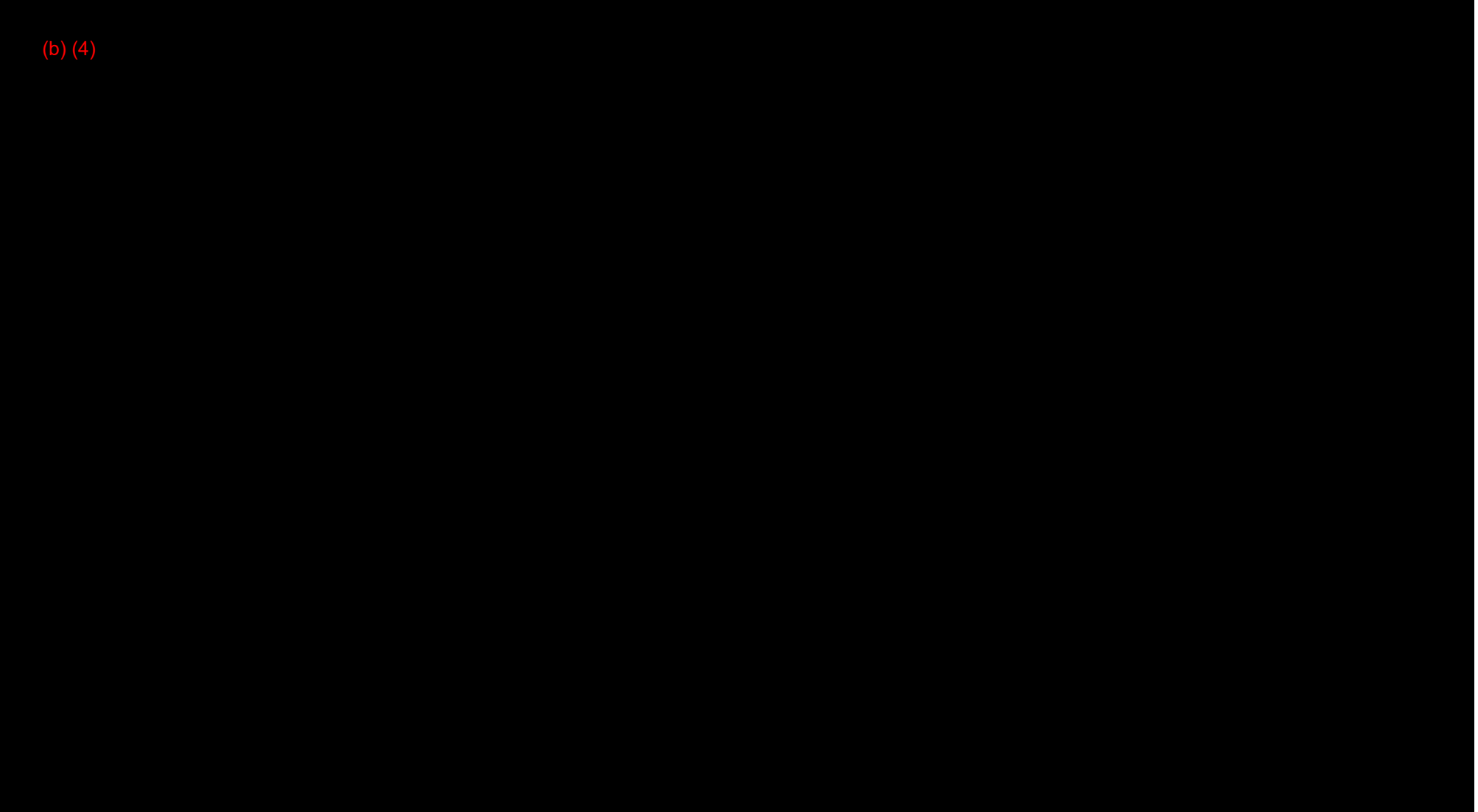
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c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Federal travel regulations are contained within the applicable cost principles for all entity types. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									



(b) (4)

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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						

(b) (4)

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
PROJECT TOTAL				\$0		

Additional Explanation (as needed):

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f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to subrecipients, vendors, and FFRDC partners in the applicable boxes below.
2. Subrecipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 50% of total award costs. These subrecipient forms may be completed by either the subrecipients themselves or by the preparer of this form. The budget totals on the subrecipient's forms must match the subrecipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
3. Vendors (including contractors): List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$250,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
								\$0
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate provided by vendor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

	Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
--	--------------------------	-----	-----	-----	-----	-----	-----

Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
PROJECT TOTAL		\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
PROJECT TOTAL		\$0		

Additional Explanation (as needed):

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

(b) (4)

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.

There is not a current, federally approved rate agreement negotiated and available*.

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

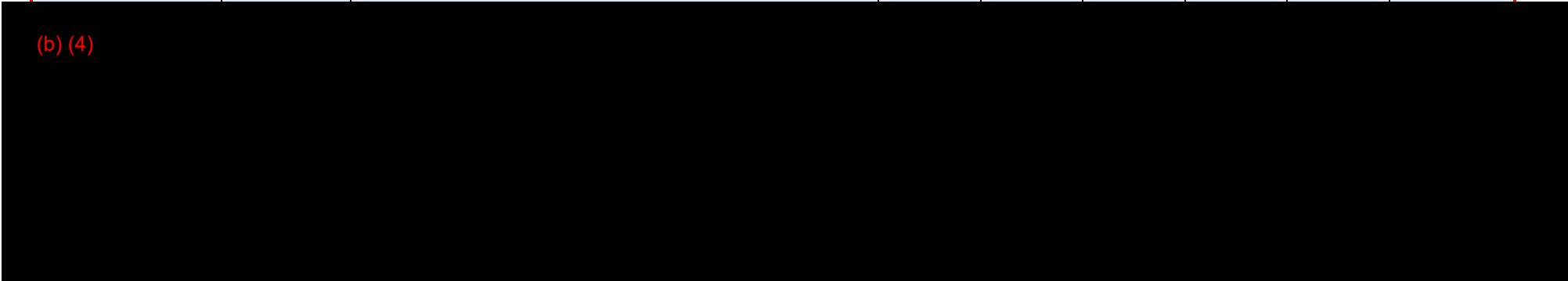
A single rate method is used, based on de minimis rate of 10% of modified total direct costs (MTDC).

ENTIRE DOCUMENT **COST SHARE** CONFIDENTIAL

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. Vendors may not provide cost share. Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company	Cash	Project partner ABC Company will provide 20 PV modules for product	\$13,600					\$13,600



(b) (4)

Additional Explanation (as needed):

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Applicant Name: PLUG LLC Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget			
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)		Total (g)
1. Budget Period 1	(b) (4)						
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6a-6h)							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							

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Instructions and Summary

Award Number: _____
 Award Recipient: _____

Date of Submission: _____
 Form submitted by: _____

(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
 Do not modify this template or any cells for formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

a. Personnel

b. Fringe Benefits

c. Travel

d. Equipment

e. Supplies

f. Contractual

Sub-recipient

Contractor

FFRDC

Total Contractual

g. Construction

h. Other Direct Costs

Total Direct Costs

i. Indirect Charges

Total Costs

Additional Explanation (as ne

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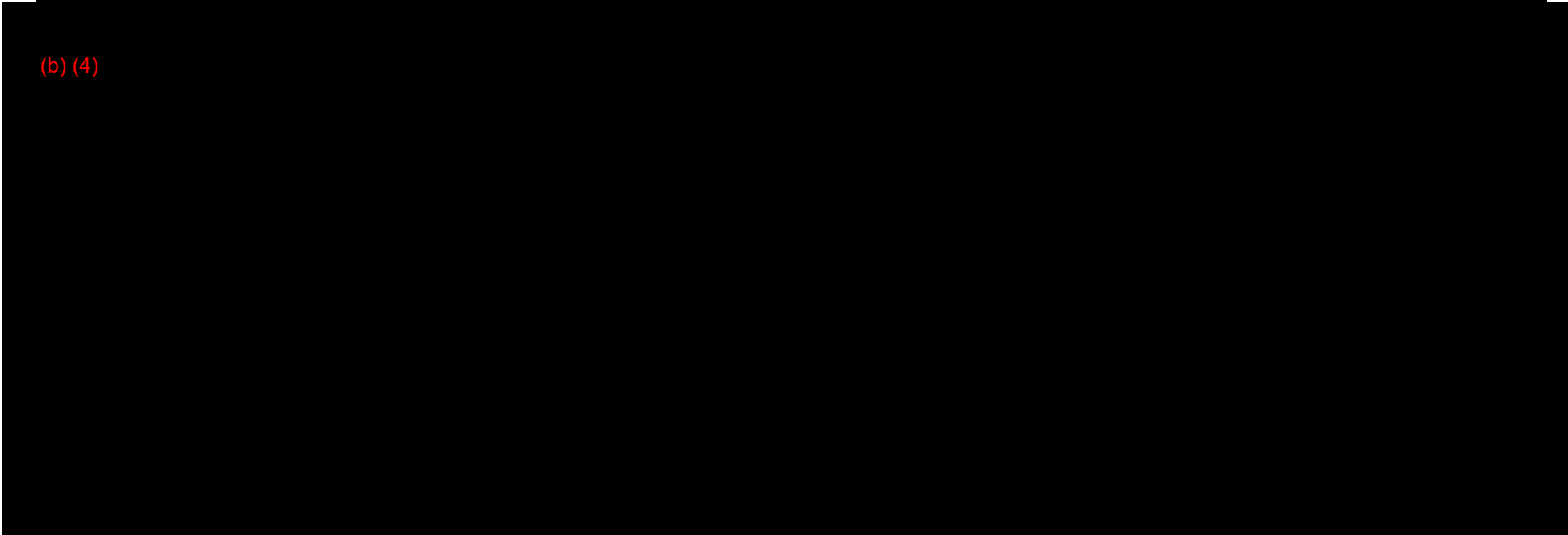
a. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 5			

(b) (4)

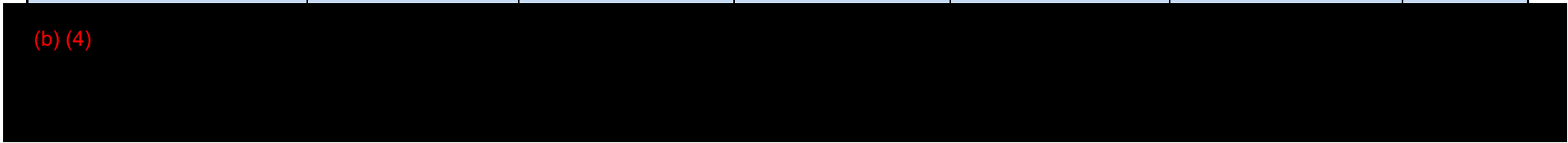


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b Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.



(b) (4)

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

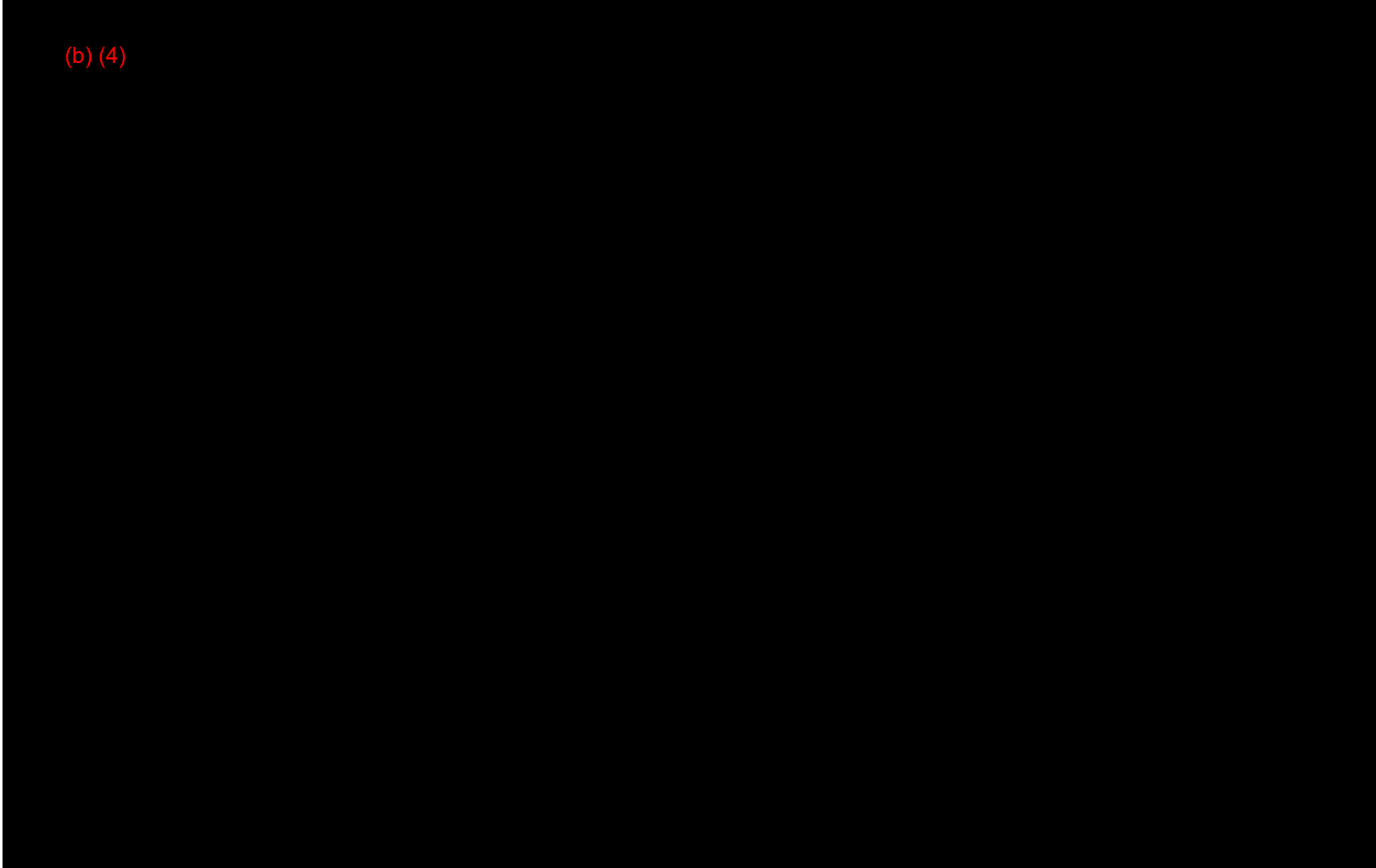
Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate. See rate memo at the following website: <https://www.purdue.edu/business/sps/pdf/FringeBenefits.pdf>

ENTIRE DOCUMENT C. Travel CONFIDENTIAL

INSTRUCTIONS - PLEASE READ

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel										Budget Period 1
1	EXAMPLE: Visit to PV manufacturer			2	2	\$250	\$500	\$100	\$160	\$2,020	Current GSA rates



(b) (4)

Additional Explanation (as needed):

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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL EQUIPMENT				\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360 00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL SUPPLIES				\$0		

Additional Explanation (as needed):

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f. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
			Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
--------------------------	-----	-----	-----	-----	-----	-----

Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				

(b) (4)

Additional Explanation (as needed): rates used as per University memo dated 02/28/2022

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

(b) (4)

options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project. The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs. This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company EXAMPLE!!!	Cash	Project partner ABC Company will provide 20 PV modules for product development at the price of \$680 per module	\$13,600					\$13,600

(b) (4)

Additional Explanation (as needed):

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Applicant Name: 0 Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds		New or Revised Budget			
		Federal	Non-Federal	Federal	Non-Federal		Total
(a)							
1. Budget Period 1	(b) (4)						
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6a-6h)							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							

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Instructions and Summary

Award Number: _____
 Award Recipient: ComEd

Date of Submission: _____
 Form submitted by: Region 1 Planning Council
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
Do not modify this template or any cells for formulas!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

	Federal	Cost Share			Total Costs	Cost Share %	Proposed Budget Period Dates
--	---------	------------	--	--	-------------	--------------	------------------------------

(b) (4)

Section B - Budget Categories

CATEGORY
a. Personnel
b. Fringe Benefits
c. Travel
d. Equipment
e. Supplies
f. Contractual
Sub-recipient
Contractor
FFRDC
Total Contract
g. Construction
h. Other Direct Costs
Total Direct Costs
i. Indirect Charges
Total Co

Additional Explanation (as

ENTIRE DOCUMENT CONFIDENTIAL

a. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget	Time (Hrs)	Hourly Rate	Total Budget			

(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170 000	20%	\$34 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$10 000	20%	\$2 000	\$38 000
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
Total	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate. The federally approved fringe rate is 40.2% and is included in the personnel costs through calculating the loaded wage of each individual position. Medical, dental, FICA taxes, IMRF, PTO, and workers compensation.

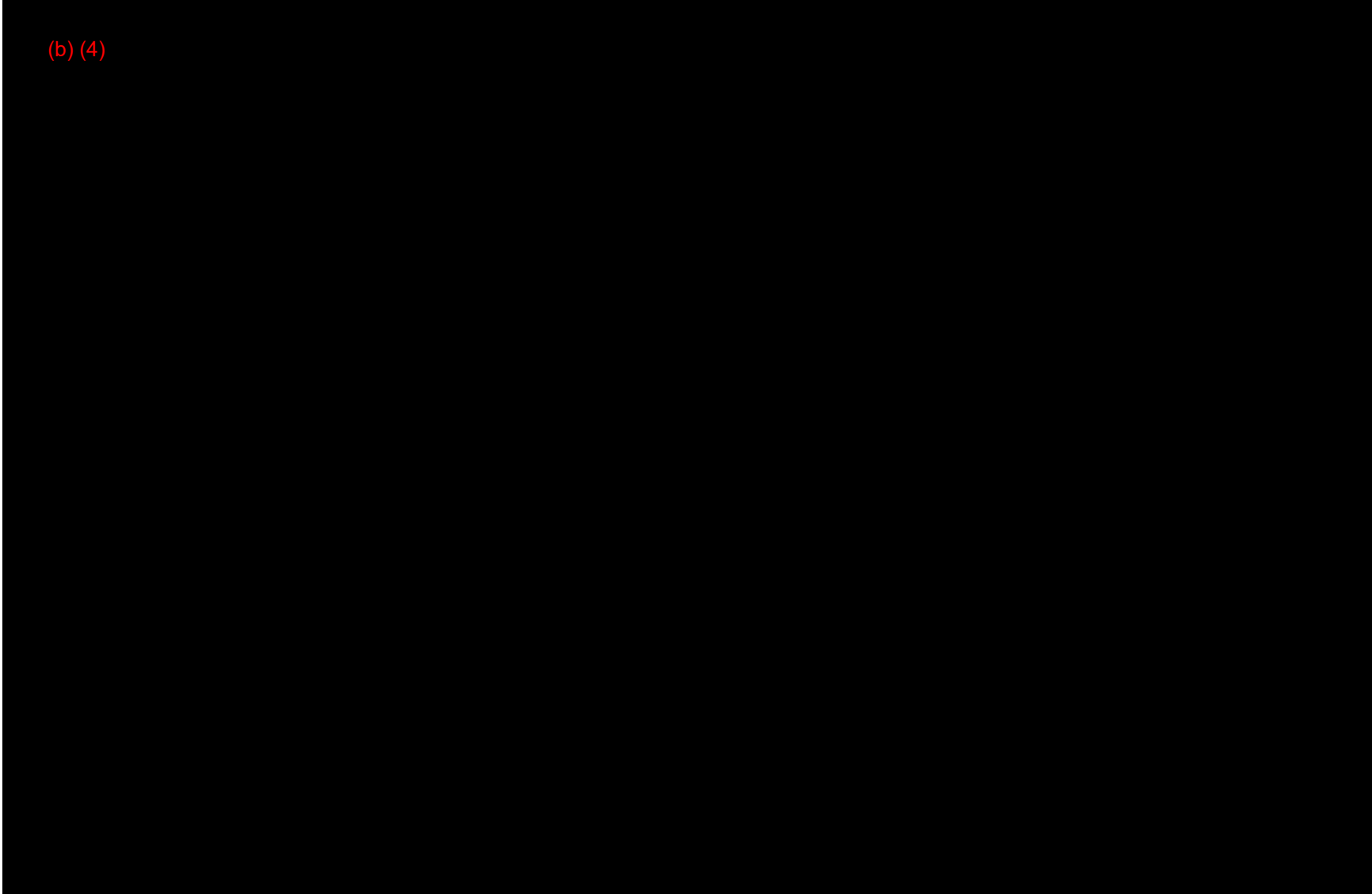
ENTIRE DOCUMENT C. Travel CONFIDENTIAL

INSTRUCTIONS - PLEASE READ

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									

(b) (4)



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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$0		
	TOTAL EQUIPMENT			\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
------	------------------------------	-----	-----------	------------	---------------	-----------------------

(b) (4)

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f. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
			Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
--------------------------	-----	-----	-----	-----	-----	-----

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
TOTAL OTHER DIRECT COSTS		\$0		

Additional Explanation (as needed):

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

(b) (4)

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company EXAMPLE!!!	Cash	Project partner ABC Company will provide 20 PV modules for product development at the price of \$680 per module	\$13,600					\$13,600
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
TOTAL COST SHARE			\$0	\$0	\$0	\$0	\$0	\$0

Total Project Cost: \$423,343

Cost Share Percent of Award:

0.0%

Additional Explanation (as needed):

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Applicant Name: ComEd Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity	Catalog of Federal Domestic	Estimated Unobligated Funds		New or Revised Budget			
(a)	(b) (4)						
1. Budget Period 1							
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6a-							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							

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Instructions and Summary

Award Number: _____
 Award Recipient: _____

Date of Submission: 17-Mar-23
 Form submitted by: Slipstream Group, Inc.
(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
 Do not modify this template or any cells for formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY
a. Personnel
b. Fringe Benefits
c. Travel
d. Equipment
e. Supplies
f. Contractual
Sub-recipient
Contractor
FFRDC
Total Contractual
g. Construction
h. Other Direct Costs
Total Direct Costs
i. Indirect Charges
Total Cost

Additional Explanation (as required)

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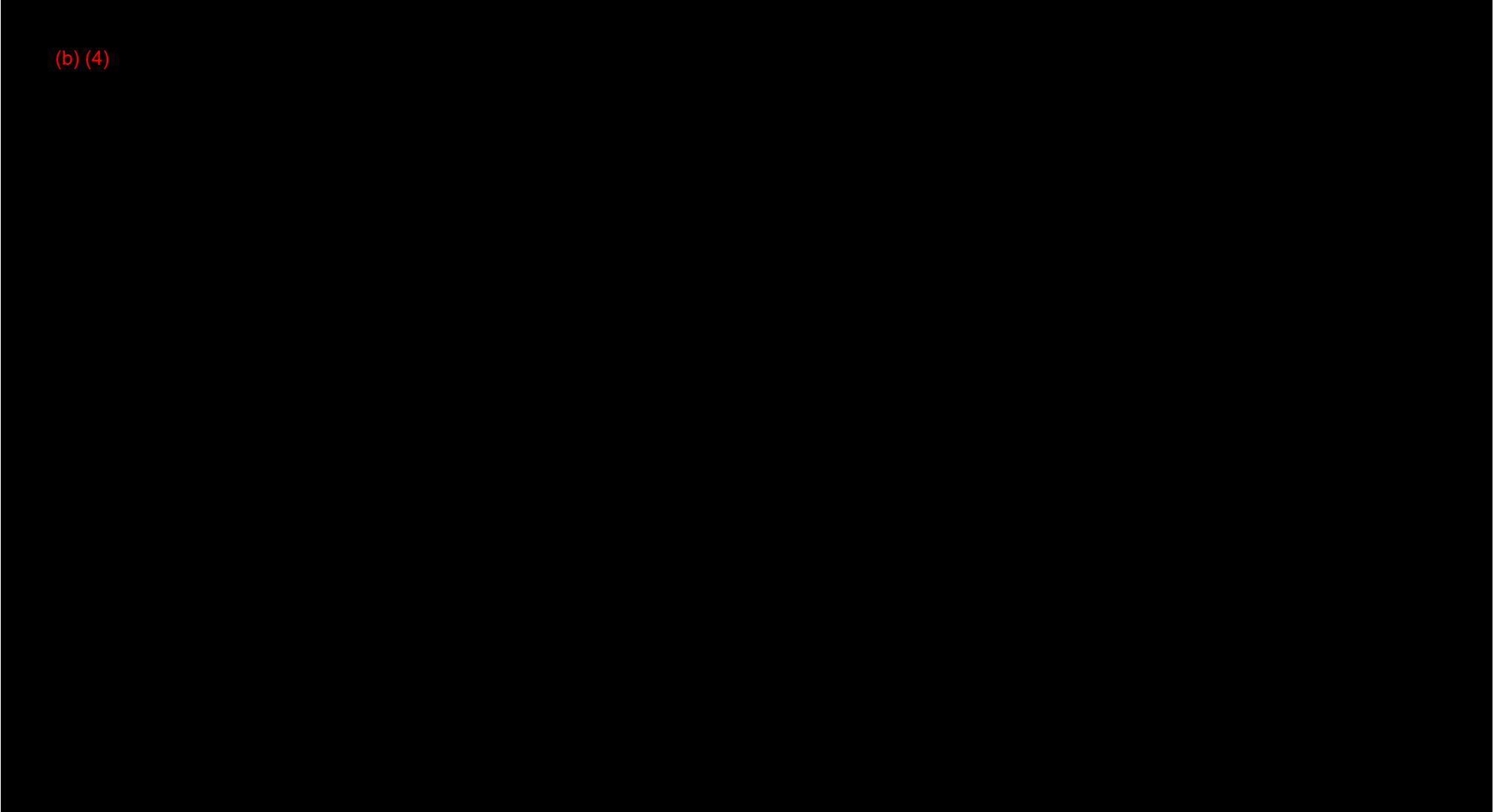
2. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 5			

(b) (4)



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Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project
------------	-----------------	-----------------	-----------------	-----------------	-----------------	---------------

(b) (4)

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

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6. Travel

INSTRUCTIONS - PLEASE READ

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
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(b) (4)

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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$0		
	TOTAL EQUIPMENT			\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
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Budget Period 1

(b) (4)

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f. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
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(b) (4)

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL
h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				

(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

i. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
--	-----------------	-----------------	-----------------	-----------------	-----------------	-------	---------------------

(b) (4)

Additional Explanation (as needed): **IMPORTANT:** Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

ENTIRE DOCUMENT CONFIDENTIAL
Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

Organization/Source	Type (Cash or	Cost Share Item	Budget	Budget	Budget	Budget	Budget	Total Project
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(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

Applicant Name: 0 Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity	Catalog of Federal Domestic Assistance	Estimated Unobligated Funds		New or Revised Budget		
		Federal	Non-Federal	Federal	Non-Federal	Total
(a)						
1. Budget Period 1	(b) (4)					
2. Budget Period 2						
3. Budget Period 3						
4. Budget Period 4						
5. Budget Period 5						
6. Totals						
Section B - Budget Categories						
6. Object Class Categories						
a. Personnel						
b. Fringe Benefits						
c. Travel						
d. Equipment						
e. Supplies						
f. Contractual						
g. Construction						
h. Other						
i. Total Direct Charges (sum of 6a-						
j. Indirect Charges						
k. Totals (sum of 6i-6j)						
7. Program Income						

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Instructions and Summary

Award Number: _____
 Award Recipient: _____

Date of Submission: 3/14/2023
 Form submitted by: Southern Methodist University
(May be award recipient or sub-recipient)

**Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
 Do not modify this template or any cells for formulas!**

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Category

CATEGORY

- a. Personnel
- b. Fringe Benefits
- c. Travel
- d. Equipment
- e. Supplies
- f. Contractual
- Sub-recipient
- Contractor
- FFRDC
- Total Contr
- g. Construction
- h. Other Direct Costs
- Total Direct Costs**
- i. Indirect Charges
- Total**

Additional Explanation

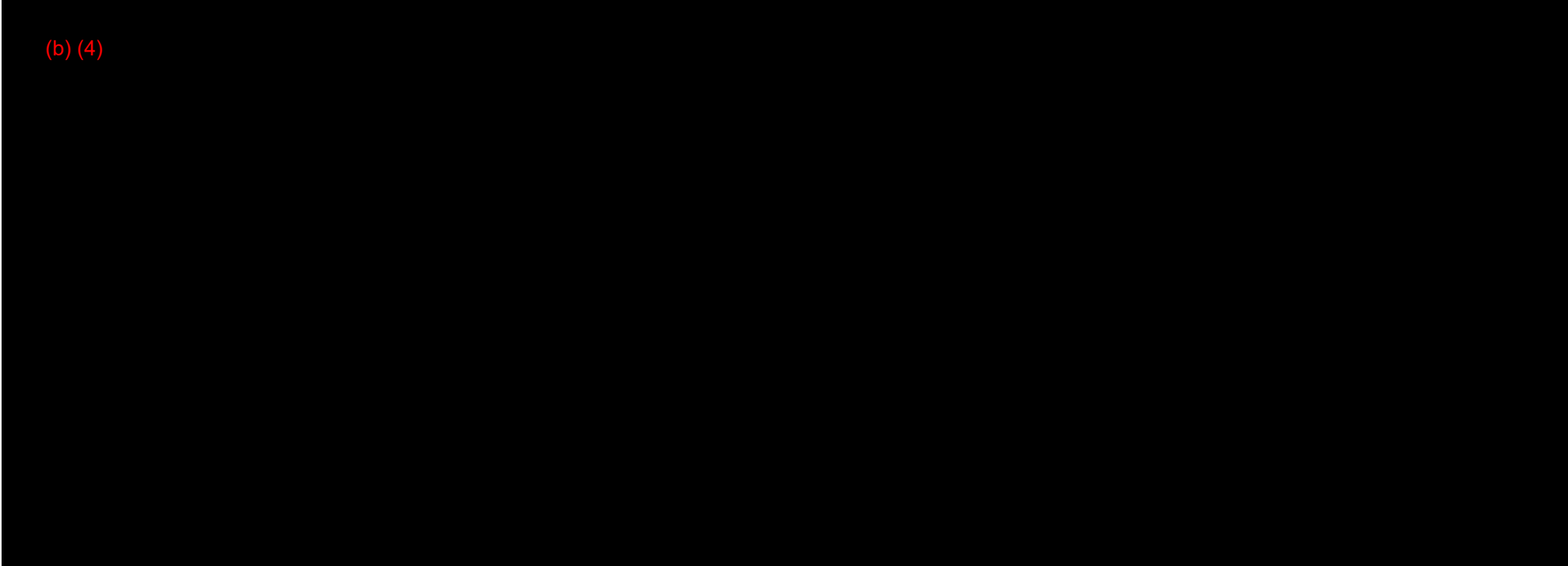
ENTIRE DOCUMENT a. Personnel CONFIDENTIAL

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 5			

(b) (4)



ENTIRE DOCUMENT CONFIDENTIAL

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Position Title	Labor Type	Fringe Benefits	Rate	Cost Share
(b) (4)				

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

***When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

ENTIRE DOCUMENT CONFIDENTIAL

c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with his award should be included as a direct travel cost to he award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
-------------	-------------------	-------------	-------------	-------------	------------------	----------------------	---------------------	----------------------	-----------------------	---------------	----------------------------

(b) (4)

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL EQUIPMENT				\$0		

Additional Explanation (as needed):

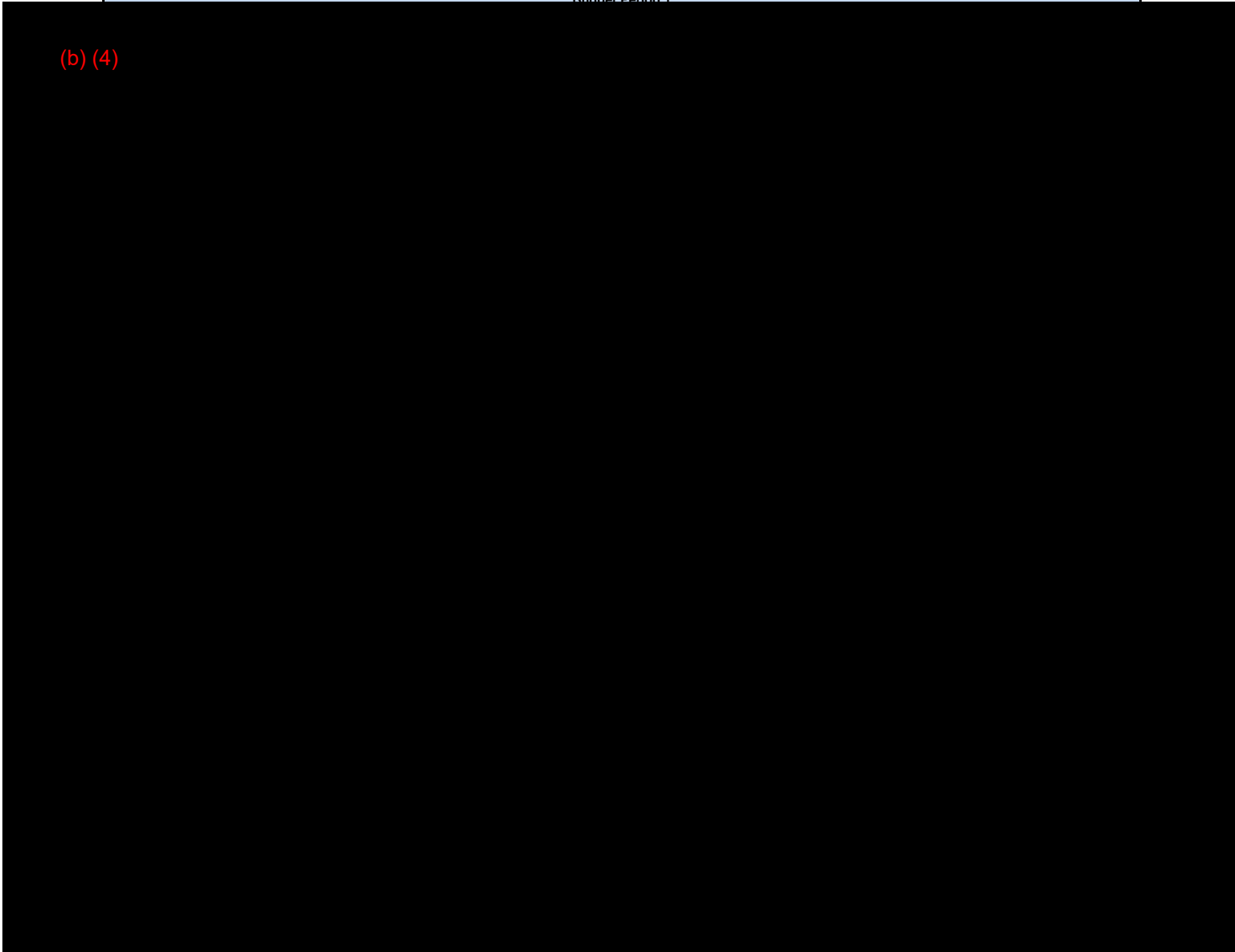
ENTIRE DOCUMENT ^{Supplies} CONFIDENTIAL

INSTRUCTIONS - PLEASE READ!!!

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
-------------	------------------------------	-----	-----------	------------	---------------	-----------------------

Budget Period 1



(b) (4)

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

I. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
									\$0
Sub-total				\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
Sub-total			\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
Sub-total			\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).

2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.

3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
TOTAL OTHER DIRECT COSTS		\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

i. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution**. Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
5. Each budget period is rounded to the nearest dollar.

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
--	-----------------	-----------------	-----------------	-----------------	-----------------	-------	---------------------

(b) (4)

options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project. The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs. This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

ENTIRE DOCUMENT **COST SHARE** CONFIDENTIAL

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
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(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

Applicant Name: 0 Award Number: 0

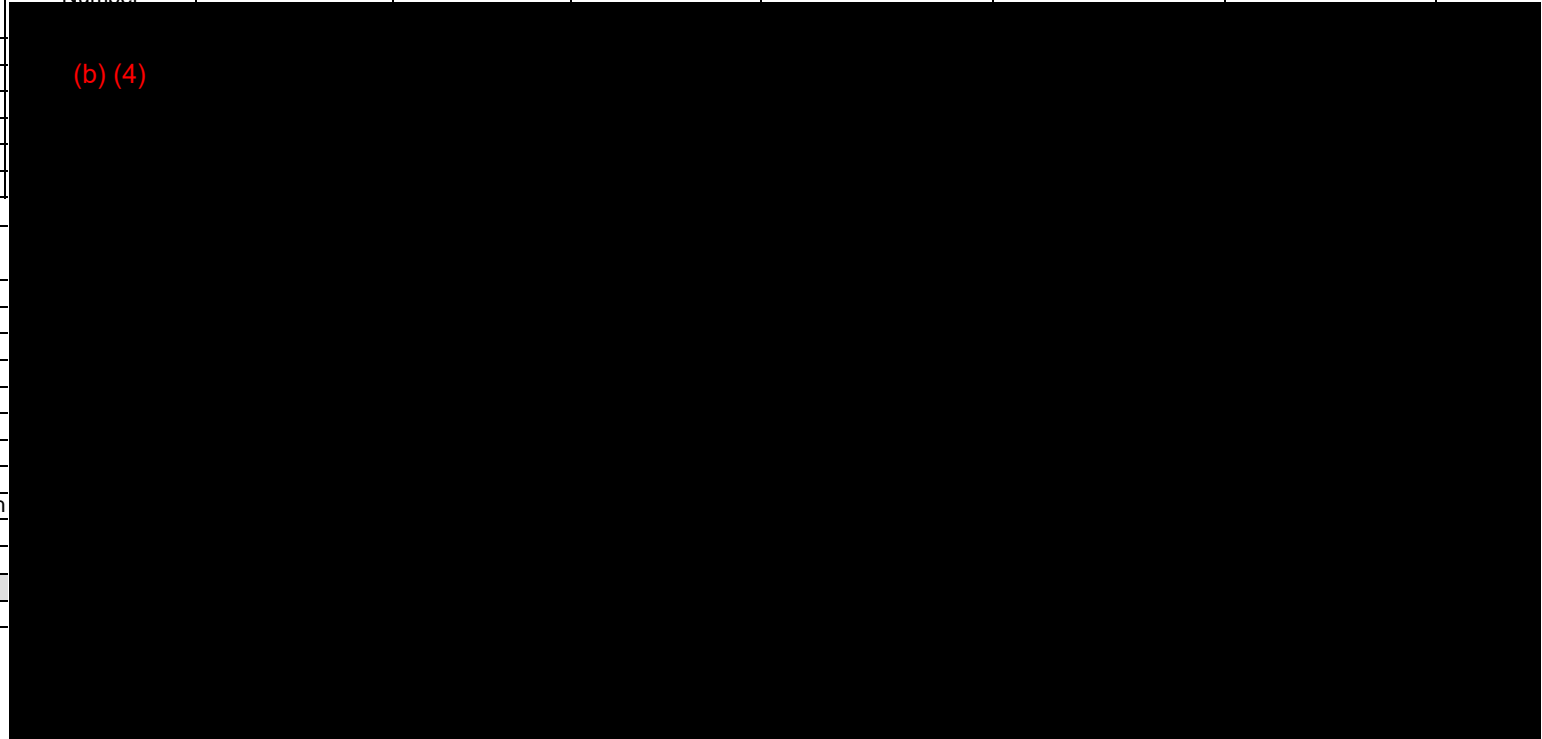
Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds		New or Revised Budget			
		Federal	Non-Federal	Federal	Non-Federal		Total

- (a)
1. Budget Period 1
 2. Budget Period 2
 3. Budget Period 3
 4. Budget Period 4
 5. Budget Period 5
 6. Totals



(b) (4)

Section B - Budget Categories

6. Object Class Categories
 - a. Personnel
 - b. Fringe Benefits
 - c. Travel
 - d. Equipment
 - e. Supplies
 - f. Contractual
 - g. Construction
 - h. Other
 - i. Total Direct Charges (sum of 6a-6h)
 - j. Indirect Charges
 - k. **Totals** (sum of 6i-6j)
7. Program Income

Previous Edition Usable

ENTIRE DOCUMENT CONFIDENTIAL

Instructions and Summary

Award Number: _____
Award Recipient: _____

Date of Submission: _____
Form submitted by: UC Riverside _____

(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

a. Personnel

b. Fringe Benefits

c. Travel

d. Equipment

e. Supplies

f. Contractual

Sub-recipient

Vendor

FFRDC

Total Contractu

g. Construction

h. Other Direct Costs

Total Direct Costs

i. Indirect Charges

Total Cost

Additional Explanation (as n

ENTIRE DOCUMENT CONFIDENTIAL

d. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and vendors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base pay rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., actual salary, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 5			
1	Sr. Engineer (EXAMPLE)	2000	\$85.00	\$170,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	2400	\$190,000	Actual Salary

(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

(b) (4)

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

ENTIRE DOCUMENT CONFIDENTIAL

c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Federal travel regulations are contained within the applicable cost principles for all entity types. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									
1	EXAMPLE!!! Visit to PV manufacturer			2	2	\$250	\$500	\$100	\$160	\$2,020	Current GSA rates
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 1 Total									\$0	
	Domestic Travel	Budget Period 2									
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 2 Total									\$0	
	Domestic Travel	Budget Period 3									
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 3 Total									\$0	
	Domestic Travel	Budget Period 4									
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 4 Total									\$0	
	Domestic Travel	Budget Period 5									
										\$0	
										\$0	
										\$0	
	International Travel									\$0	
	Budget Period 5 Total									\$0	
	PROJECT TOTAL									\$0	

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$0		
	PROJECT TOTAL			\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360 00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
PROJECT TOTAL				\$0		

Additional Explanation (as needed):

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f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to sub-recipients, vendors, and FFRDC partners in the applicable boxes below.

2. Sub-recipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

3. Vendors (including contractors): List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$100,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.

5. Each budget period is rounded to the nearest dollar

SOPO Task #	Sub-Recipient Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate provided by vendor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

	Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	PROJECT TOTAL	\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				

(b) (4)



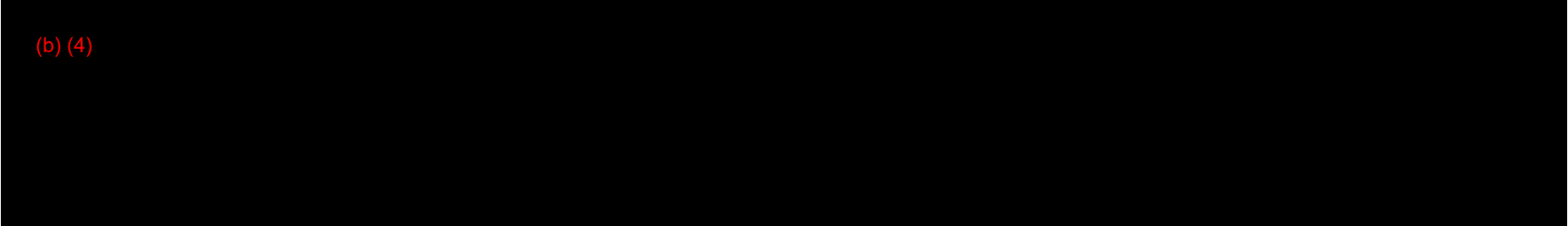
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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
Provide ONLY Applicable Rates:							



(b) (4)

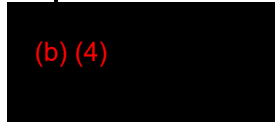
options below and provide the requested information if it has not already been provided as requested, or has changed.

- An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.
There is not a current, federally approved rate agreement negotiated and available*.

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Indirect Costs (a.k.a. Facilities and Administrative costs) were estimated in accordance with UC Riverside's approved indirect cost rate agreement with DHHS, dated March 14, 2018, the Federal Cognizant Agency for UC Riverside. Indirect costs are approved with a Modified Total Direct Costs (MTDC) base. The costs of any proposed equipment, capital expenditures, graduate fees and tuition, rental costs of off-site facilities, scholarships, fellowships, participant support costs, and the portion of each subaward in excess of \$25,000 are excluded from the MTDC base. The applicable predetermined indirect cost rates and corresponding coverage periods for the proposed on-campus research activities are as follows:



(b) (4)

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company EXAMPL E!!!	Cash	Project partner ABC Company will provide 20 PV modules for product development at the price of \$680 per module	\$13,600					\$13,600

(b) (4)

Additional Explanation (as needed):

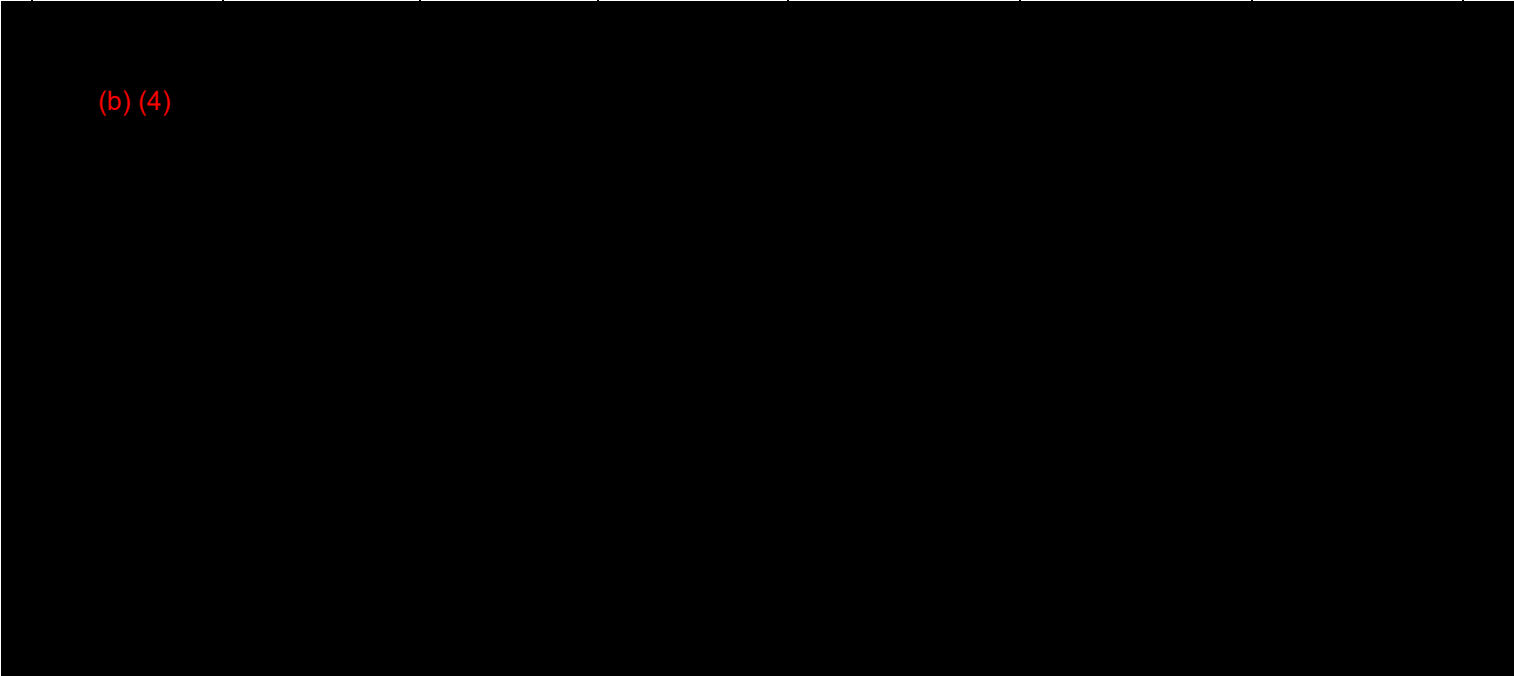
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Applicant Name: 0 Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds		New or Revised Budget			
		Federal	Non-Federal	Federal	Non-Federal		Total
(a)							
1. Budget Period 1							
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6a-6h)							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							



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Instructions and Summary

Award Number: DE-FOA-0002740-TA2-290-E
Award Recipient: Commonwealth Edison Company

Date of Submission: 17-Mar-23
Form submitted by: Univeristy of Illinois Chicago - Lina He
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. **must include both Federal (DOE) and Non-Federal (cost share) portions.**
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary		Federal	Cost Share		Total Costs	Cost Share %	Proposed Budget Period Dates
	(b) (4)						
Section B - Budget Categories							
CATEGORY							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
Sub-recipient							
Vendor							
FFRDC							
Total Contract							
g. Construction							
h. Other Direct Costs							
Total Direct Costs							
i. Indirect Charges							
Total Co							
Additional Explanation (as							

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d. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and vendors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base pay rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., actual salary, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 5			
1	Sr. Engineer (EXAMPLE)	2000	\$85.00	\$170,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	2400	\$190,000	Actual Salary

(b) (4)

Additional Explanation: UIC, faculty and GRAs are on "academic year appointments". These consist of two semesters for a total of nine months with service required for the period August 16 through May 15 (with no allowable vacation). They are paid over a twelve-month period, with some specific exceptions. On this appointment, faculty and GRAs may receive additional summer appointments during the period from May 16 through August 15. Salaries in subsequent years are adjusted by 3-4% for inflation.

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INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project
------------	-----------------	-----------------	-----------------	-----------------	-----------------	---------------

(b) (4)

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

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c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE mee ings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Federal travel regulations are contained within the applicable cost principles for all entity types. Travel costs should remain consistent with travel costs incurred by an organiza ion during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									

(b) (4)

Additional Explanation (as needed): Current travel rates are based on the Illinois Higher Education Travel Control Board: <https://www.stateuniv.state.il.us/travel/allowances/>

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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$0		
	PROJECT TOTAL			\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOP Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
---------------	------------------------------	-----	-----------	------------	---------------	-----------------------

Budget Period 1

(b) (4)

Additional Explanation (as needed):

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f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to sub-recipients, vendors, and FFRDC partners in the applicable boxes below.

2. Sub-recipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

3. Vendors (including contractors): List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$100,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.

5. Each budget period is rounded to the nearest dollar

SOPO Task #	Sub-Recipient Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate provided by vendor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

	Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	PROJECT TOTAL	\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				

(b) (4)



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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

(b) (4)

There is not a current, federally approved rate agreement negotiated and available*.

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): University of Illinois Chicago Facilities & Administrative Rate Agreement is 59.90% of MTDC throughout the life of the project. Standard Institutional Information: Negotiated rate agreement with the Office of Naval Research: <https://www.obfs.uillinois.edu/common/pages/DisplayFile.aspx?itemId=1693852>
The indirect cost is charged according to the following formula Modified Total Direct Cost (MTDC) X Indirect Cost (DC) Rate whereas the MTDC = TDC–Tuition Remission

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Vendors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company	Cash	Project partner ABC Company will provide 20 PV modules for product	\$13,600					\$13,600

(b) (4)

Additional Explanation (as needed):

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Applicant Name: Commonwealth Edison Company Award Number: DE-FOA-0002740-TA2-290-E

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds		New or Revised Budget			
		Federal	Non-Federal	Federal	Non-Federal		Total
1. Budget Period 1	(b) (4)						
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							
Section B - Budget Categories							
6. Object Class Categories							
a. Personnel							
b. Fringe Benefits							
c. Travel							
d. Equipment							
e. Supplies							
f. Contractual							
g. Construction							
h. Other							
i. Total Direct Charges (sum of 6a-6h)							
j. Indirect Charges							
k. Totals (sum of 6i-6j)							
7. Program Income							

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Instructions and Summary

Award Number: _____
 Award Recipient: Commonwealth Edison Company

Date of Submission: 13-Mar-23
 Form submitted by: V&R Energy Systems Research, Inc.
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
Do not modify this template or any cells for formulas!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

	Federal	Cost Share			Total Costs	Cost Share %	Proposed Budget Period Dates
--	---------	------------	--	--	-------------	--------------	------------------------------

(b) (4)

Section B - Budget Categories

CATEGORY
a. Personnel
b. Fringe Benefits
c. Travel
d. Equipment
e. Supplies
f. Contractual
Sub-recipient
Contractor
FFRDC
Total Contractual
g. Construction
h. Other Direct Costs
Total Direct Costs
i. Indirect Charges
Total Costs

Additional Explanation (as

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d. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Hourly Rate (\$/Hr)	Total Budget Period 5			
1	Sr. Engineer (EXAMPLE)	2000	\$85.00	\$170,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	2400	\$190,000	

(b) (4)

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INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

(b) (4)

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

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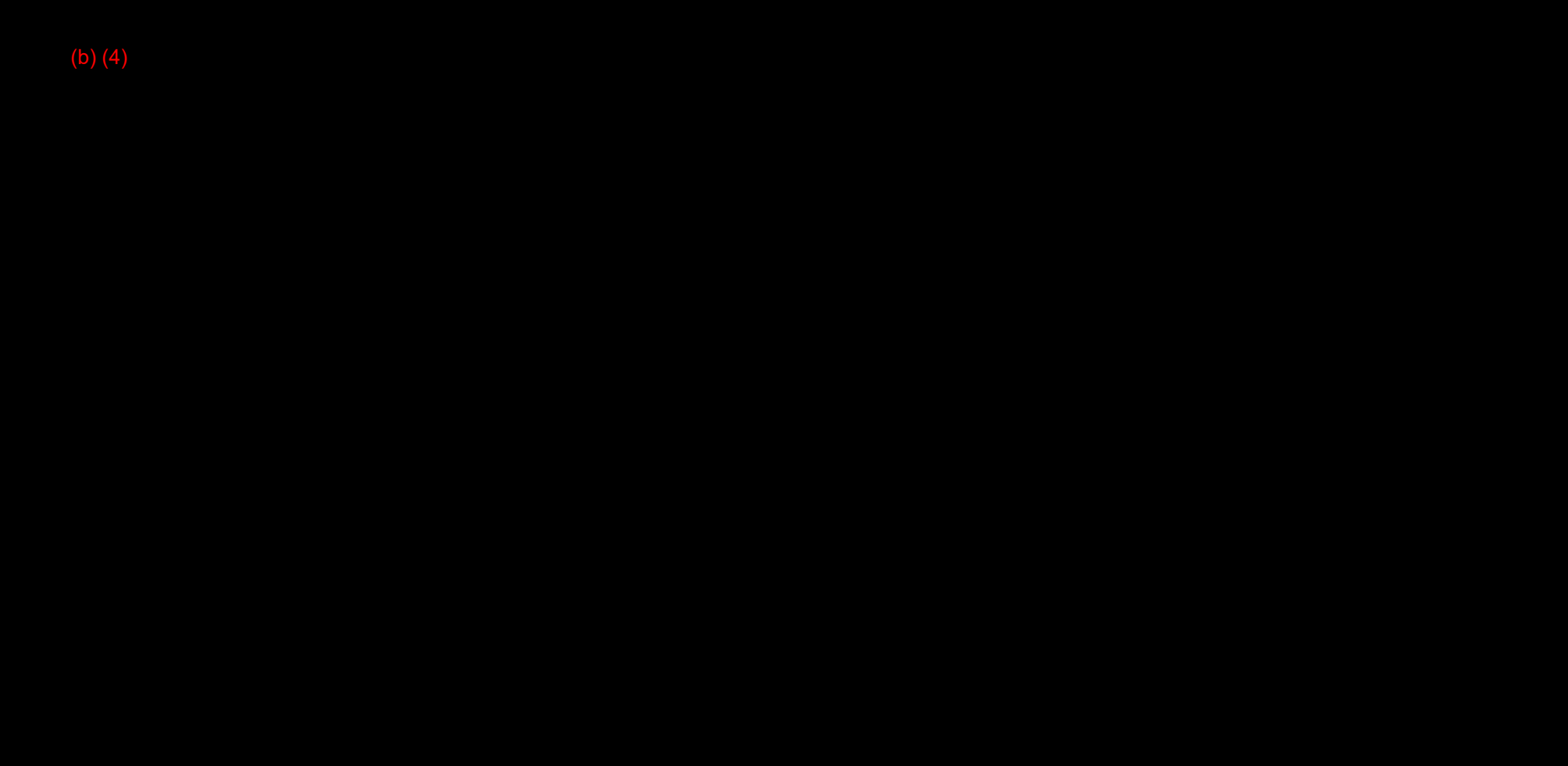
c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. mee ings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regula ions are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel	Budget Period 1									

(b) (4)



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d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a contractor quote for all equipment items over \$50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL EQUIPMENT				\$0		

Additional Explanation (as needed):

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e. Supplies

INSTRUCTIONS - PLEASE READ

- Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
- List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
- Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
- Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
- Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360 00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
TOTAL SUPPLIES				\$0		

Additional Explanation (as needed):

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f. Contractual

INSTRUCTIONS - PLEASE READ

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.
2. Sub-recipients (partners sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.
3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of \$100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs contractor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
									\$0
									\$0
									\$0
									\$0
			Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual	\$0	\$0	\$0	\$0	\$0	\$0
--------------------------	-----	-----	-----	-----	-----	-----

Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	TOTAL CONSTRUCTION	\$0		

Additional Explanation (as needed):

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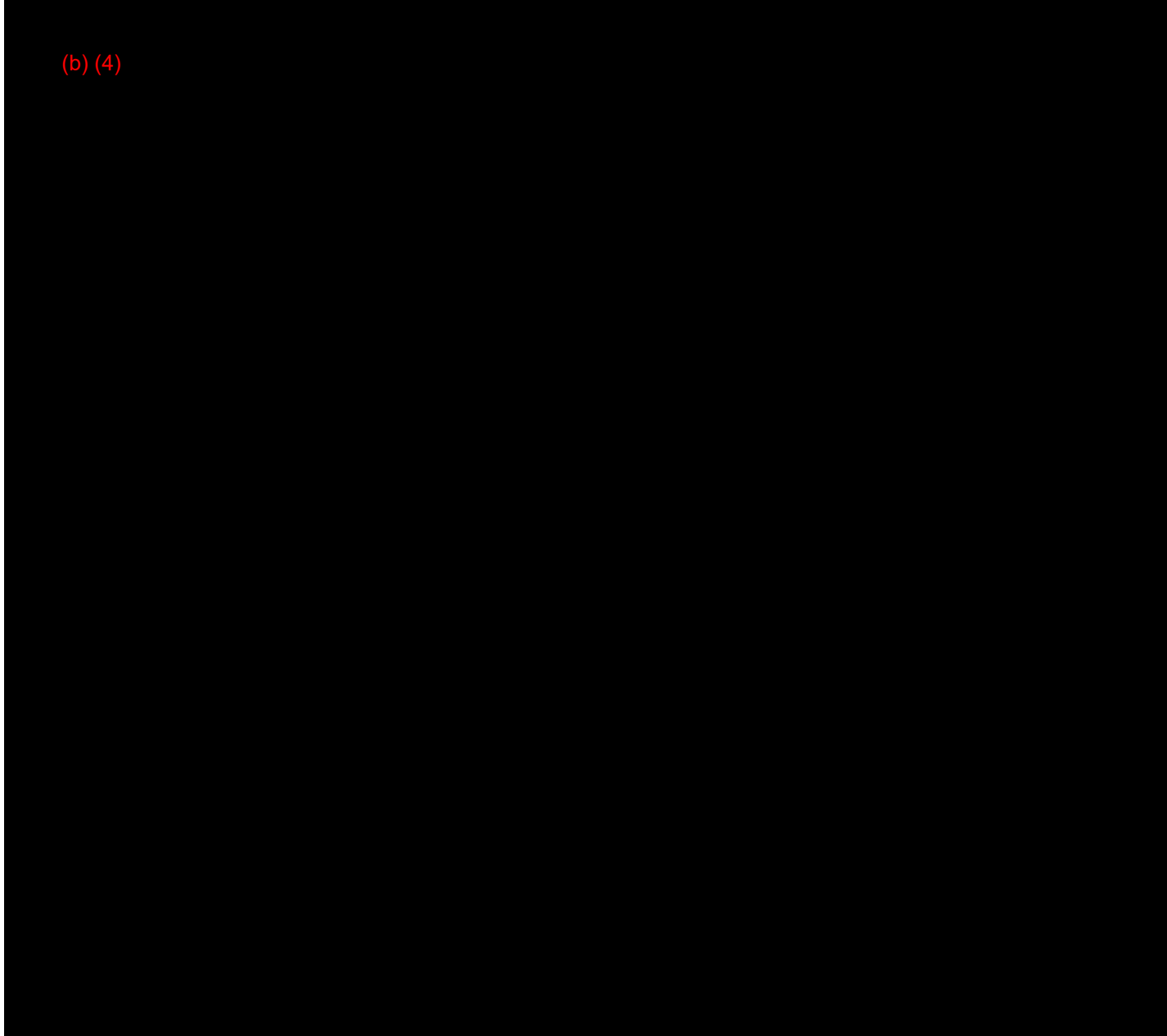
ii. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
-------------	-------------------------------------	------	---------------	-----------------------

Budget Period 1



(b) (4)

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. **NOTE** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution.** Neither of these costs can be reflected as actual indirect cost rates realized by the organization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
- 5.. **Each budget period is rounded to the nearest dollar.**

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
--	-----------------	-----------------	-----------------	-----------------	-----------------	-------	---------------------

(b) (4)

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project. The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs. This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company	Cash	Project partner ABC Company will provide 20 PV modules for product	\$13,600					\$13,600

(b) (4)

Additional Explanation (as needed):

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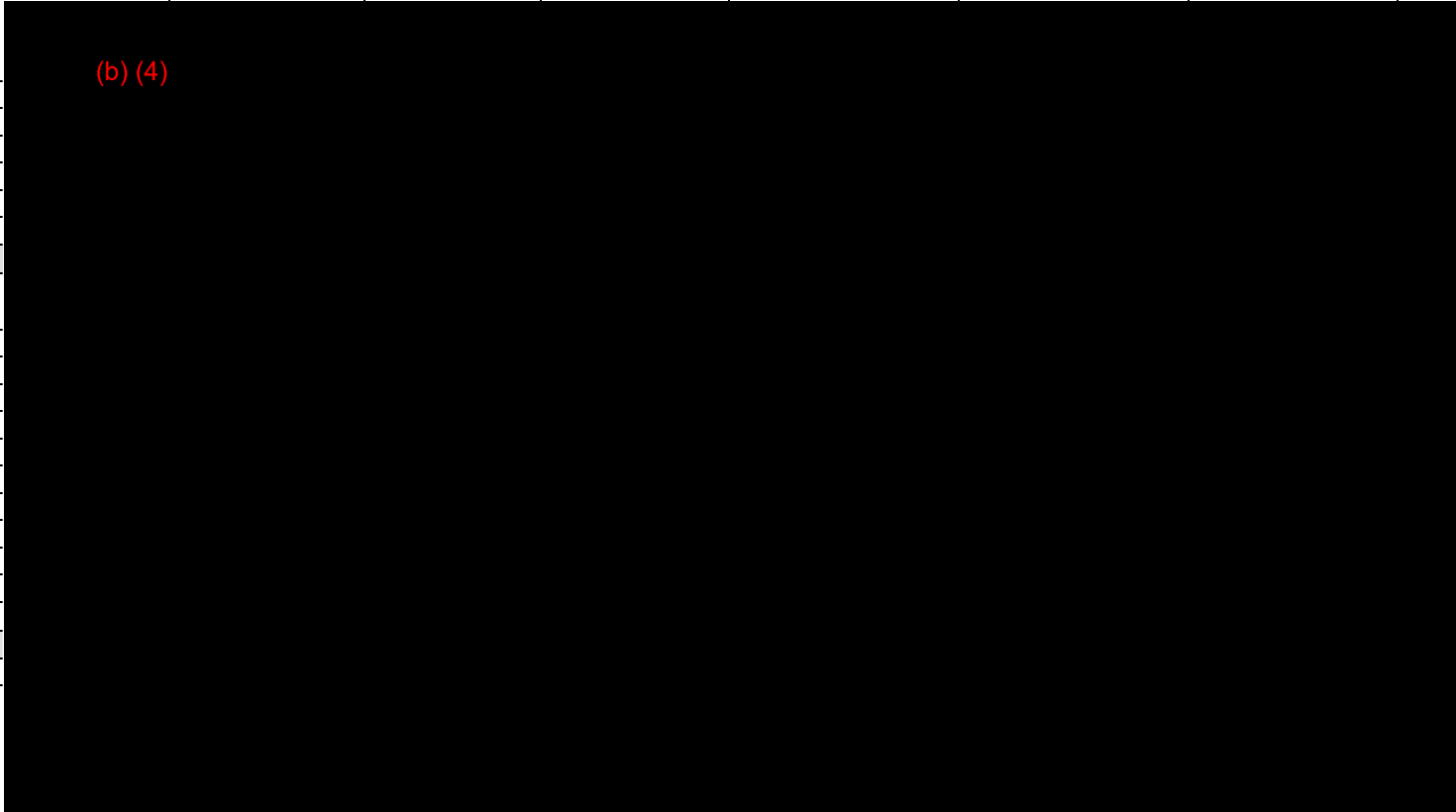
Applicant Name: Commonwealth Edison Company Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity	Catalog of Federal Domestic	Estimated Unobligated Funds		New or Revised Budget			
(a)							
1. Budget Period 1							
2. Budget Period 2							
3. Budget Period 3							
4. Budget Period 4							
5. Budget Period 5							
6. Totals							



(b) (4)

Section B - Budget Categories

6. Object Class Categories
a. Personnel
b. Fringe Benefits
c. Travel
d. Equipment
e. Supplies
f. Contractual
g. Construction
h. Other
i. Total Direct Charges (sum of 6a-6h)
j. Indirect Charges
k. Totals (sum of 6i-6j)
7. Program Income

Previous Edition Usable

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Instructions and Summary

Award Number: _____
 Award Recipient: _____

Date of Submission: _____
 Form submitted by: _____

(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows or columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

(b) (4)

Section B - Budget Categories

CATEGORY

a. Personnel

b. Fringe Benefits

c. Travel

d. Equipment

e. Supplies

f. Contractual

Sub-recipient

Vendor

FFRDC

Total Contractual

g. Construction

h. Other Direct Costs

Total Direct Costs

i. Indirect Charges

Total Costs

Additional Explanation (as

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d. Personnel

INSTRUCTIONS - PLEASE READ

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and vendors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base pay rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., actual salary, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

(b) (4)



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b. Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

(b) (4)

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

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C. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Federal travel regulations are contained within the applicable cost principles for all entity types. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
-------------	-------------------	-------------	-------------	-------------	------------------	----------------------	---------------------	----------------------	-----------------------	---------------	----------------------------

(b) (4)

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d. Equipment

- INSTRUCTIONS - PLEASE READ!!!**
1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
 2. List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
 3. During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
 4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$0		
	PROJECT TOTAL			\$0		

Additional Explanation (as needed):

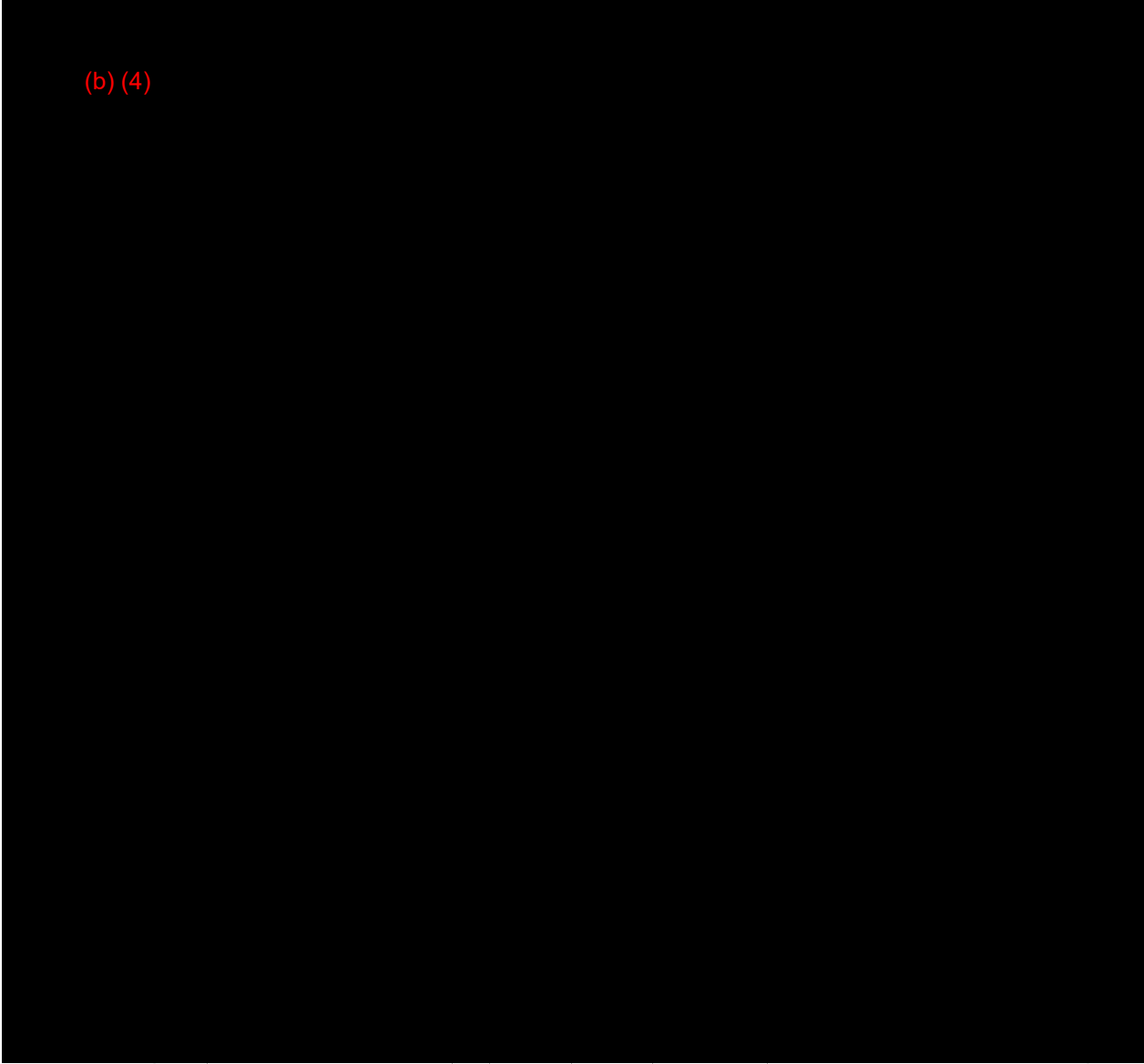
ENTIRE DOCUMENT CONFIDENTIAL

e, Supplies

INSTRUCTIONS PLEASE READ!!!

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						



(b) (4)

Budget Period 5 Total				\$3,938		
PROJECT TOTAL				\$19,690		

Additional Explanation (as needed)

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f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to subrecipients, vendors, and FFRDC partners in the applicable boxes below.

2. **Subrecipients (partners, sub-awardees):** Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 50% of total award costs. These subrecipient forms may be completed by either the subrecipients themselves or by the preparer of this form. The budget totals on the subrecipient's forms must match the subrecipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

3. **Vendors (including contractors):** List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$250,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.

4. **Federal Funded Research and Development Centers (FFRDCs):** FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.

5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
								\$0
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate provided by vendor.	\$32,900	\$86,500				\$119,400
								\$0
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

Total Contractual			\$0	\$0	\$0	\$0	\$0	\$0
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Additional Explanation (as needed):

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g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
PROJECT TOTAL		\$0		

Additional Explanation (as needed):

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h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project

(b) (4)

Additional Explanation (as needed):

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I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

(b) (4)

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

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Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. Vendors may not provide cost share. Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
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8. Each budget period is rounded to the nearest dollar.

(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

Applicant Name: 0 Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

(b) (4)



ENTIRE DOCUMENT CONFIDENTIAL

Instructions and Summary

Award Number: _____
 Award Recipient: _____

Date of Submission: _____
 Form submitted by: _____

(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
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3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
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SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

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(b) (4)

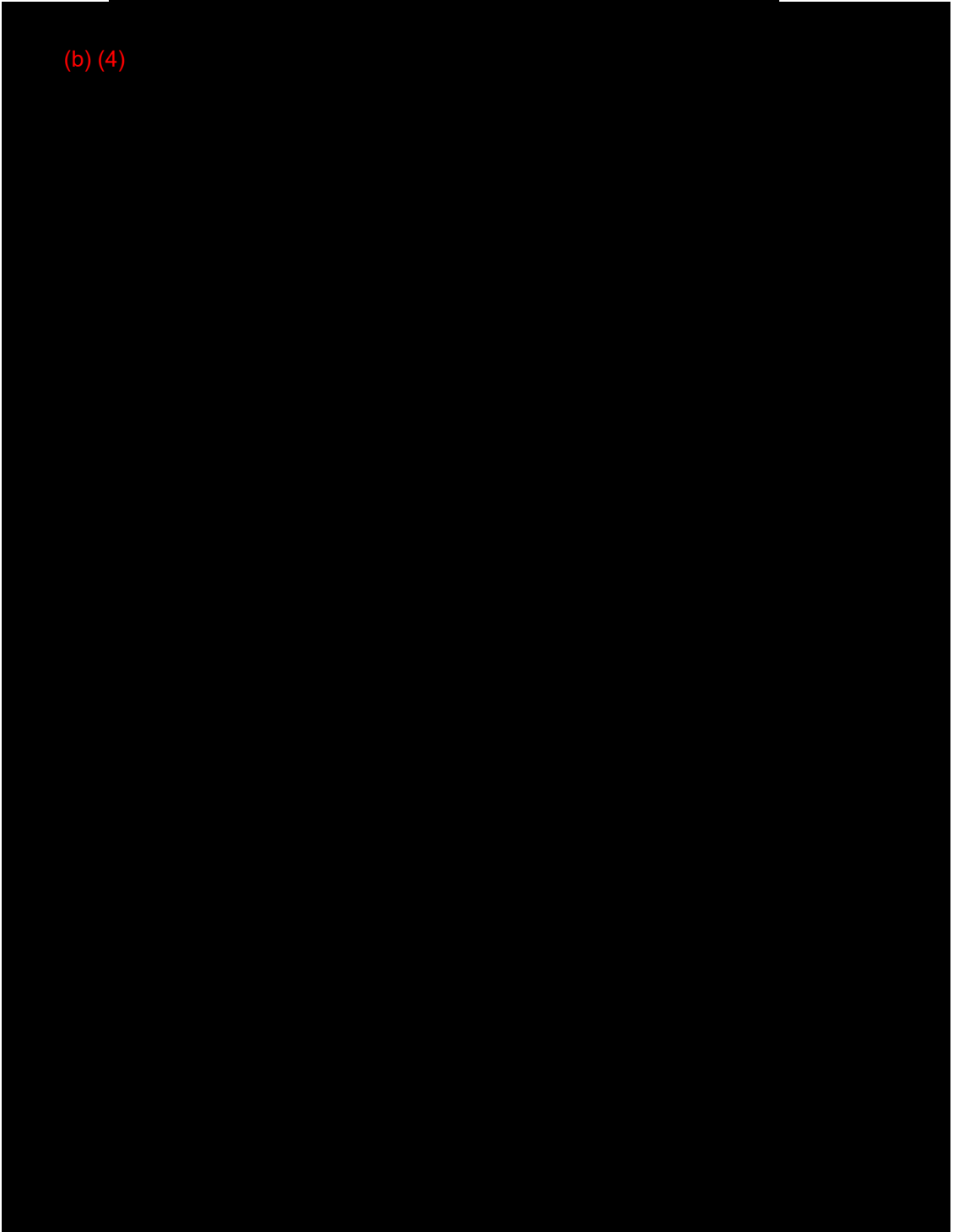
Section B - Budget Categories

CATEGORY
a. Personnel
b. Fringe Benefits
c. Travel
d. Equipment
e. Supplies
f. Contractual
Sub-recipient
Vendor
FFRDC
Total Contractual
g. Construction
h. Other Direct Costs
Total Direct Costs
i. Indirect Charges
Total Costs

Additional Explanation (as

1. Job title and position description
2. Job location
3. Reporting relationship
4. Job classification
5. Job duties and responsibilities
6. Job requirements
7. Job conditions
8. Job hazards
9. Job benefits
10. Job compensation
11. Job history
12. Job performance
13. Job evaluation
14. Job analysis
15. Job design
16. Job description
17. Job specification
18. Job advertisement
19. Job offer
20. Job acceptance
21. Job start date
22. Job termination
23. Job resignation
24. Job dismissal
25. Job reinstatement
26. Job promotion
27. Job demotion
28. Job transfer
29. Job rotation
30. Job assignment
31. Job delegation
32. Job authorization
33. Job delegation
34. Job assignment
35. Job delegation
36. Job assignment
37. Job delegation
38. Job assignment
39. Job delegation
40. Job assignment

(b) (4)



ENTIRE DOCUMENT by Fringe Benefits CONFIDENTIAL

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170,000	20%	\$34,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$38,000
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
			\$0			\$0			\$0			\$0			\$0	\$0
Total	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0		\$0	\$0

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

ENTIRE DOCUMENT CONFIDENTIAL

c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Federal travel regulations are contained within the applicable cost principles for all entity types. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
Domestic Travel		Budget Period 1									
1	EXAMPLE!!! Visit to PV manufacturer			2	2	\$250	\$500	\$100	\$160	\$2,020	Current GSA rates
										\$0	
										\$0	
										\$0	
										\$0	
International Travel											
										\$0	
Budget Period 1 Total										\$0	
Domestic Travel		Budget Period 2									
										\$0	
										\$0	
										\$0	
										\$0	
International Travel											
										\$0	
Budget Period 2 Total										\$0	
Domestic Travel		Budget Period 3									
										\$0	
										\$0	
										\$0	
										\$0	
International Travel											
										\$0	
Budget Period 3 Total										\$0	
Domestic Travel		Budget Period 4									
										\$0	
										\$0	
										\$0	
										\$0	
International Travel											
										\$0	
Budget Period 4 Total										\$0	
Domestic Travel		Budget Period 5									
										\$0	
										\$0	
										\$0	
										\$0	
International Travel											
										\$0	
Budget Period 5 Total										\$0	
PROJECT TOTAL										\$0	

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

Request equipment for the use of the following:

1. All equipment for use in the field (e.g., vehicles, computers, radios, etc.) shall be listed in the following table. The table shall include the following information: (a) the name of the equipment; (b) the quantity; (c) the unit cost; (d) the total cost; (e) the justification for the equipment; and (f) the estimated useful life of the equipment.

2. The justification for the equipment shall be provided in the following table. The table shall include the following information: (a) the name of the equipment; (b) the quantity; (c) the unit cost; (d) the total cost; (e) the justification for the equipment; and (f) the estimated useful life of the equipment.

Equipment Item	Qty	Unit Cost	Total Cost	Justification	Estimated Useful Life
Budget Period 1					

(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

e. Supplies

INSTRUCTIONS - PLEASE READ

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.

2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.

3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.

4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.

5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
PROJECT TOTAL				\$0		

Additional Explanation (as needed):

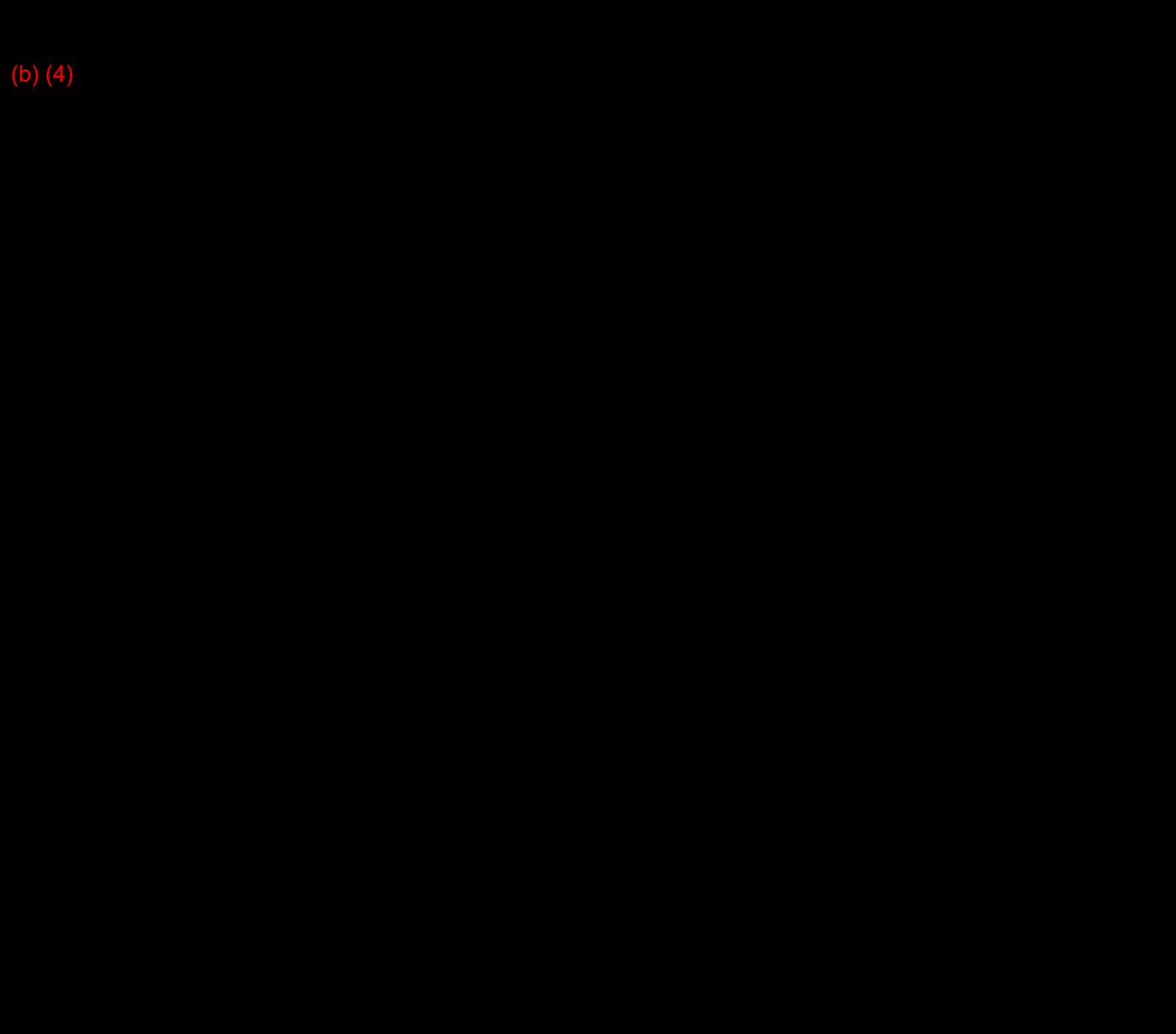
ENTIRE DOCUMENT CONFIDENTIAL

f Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to subrecipients, vendors, and FFRDC partners in the applicable boxes below.
2. Subrecipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 50% of total award costs. These subrecipient forms may be completed by either the subrecipients themselves or by the preparer of this form. The budget totals on the subrecipient's forms must match the subrecipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
3. Vendors (including contractors): List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$250,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO	Sub-Recipient	Purpose and Basis of Cost	Budget	Budget	Budget	Budget	Budget	Project
------	---------------	---------------------------	--------	--------	--------	--------	--------	---------



(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	PROJECT TOTAL	\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
PROJECT TOTAL		\$0		

Additional Explanation (as needed):

ENTIRE DOCUMENT CONFIDENTIAL

I. Indirect Costs

INSTRUCTIONS - PLEASE READ

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
Provide ONLY Applicable Rates:							
Overhead Rate	0.00%	0.00%	0.00%	0.00%	0.00%		
General & Administrative (G&A)	0.00%	0.00%	0.00%	0.00%	0.00%		
FCCM Rate, if applicable	0.00%	0.00%	0.00%	0.00%	0.00%		
OTHER Indirect Rate	0.00%	0.00%	0.00%	0.00%	0.00%		
Indirect Costs (As Applicable):							
Overhead Costs						\$0	
G&A Costs						\$0	
FCCM Costs, if applicable						\$0	
OTHER Indirect Costs						\$0	
Total indirect costs requested:	\$0	\$0	\$0	\$0	\$0	\$0	

A federally approved indirect rate agreement, or rate proposed (supported and agreed upon by DOE for estimating purposes) is required if reimbursement of indirect costs is requested. Please check (X) one of the options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.

There is not a current, federally approved rate agreement negotiated and available*.

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): ***IMPORTANT:** Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

ENTIRE DOCUMENT CONFIDENTIAL

Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of a I cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. A I cost share items must be necessary to the performance of the project. Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. Vendors may not provide cost share. Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, are not allowable as project costs (including cost share) under any resulting award. The project may only incur those costs that are a allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate cannot claim the resulting indirect costs as a Cost Share contribution.
7. **NOTE:** A Recipient cannot claim "unrecovered indirect costs" as a Cost Share contribution, without prior approval.
8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget	Budget	Budget	Budget	Budget	Budget	Total Project
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(b) (4)

ENTIRE DOCUMENT CONFIDENTIAL

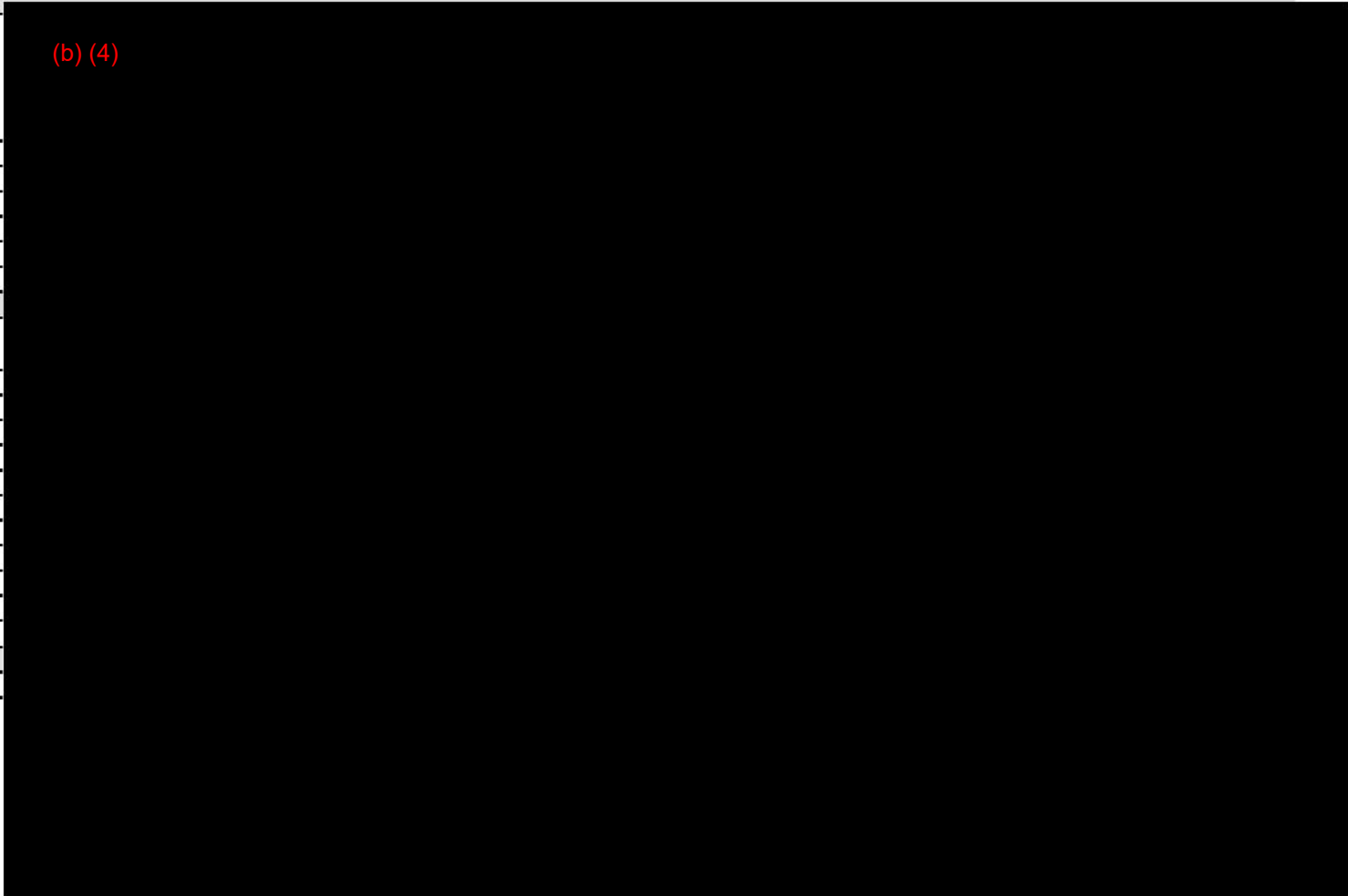
Applicant Name: 0 Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity
(a)
1. Budget Period 1
2. Budget Period 2
3. Budget Period 3
4. Budget Period 4
5. Budget Period 5
6. Totals
Section B - Budget Categories
6. Object Class Categories
a. Personnel
b. Fringe Benefits
c. Travel
d. Equipment
e. Supplies
f. Contractual
g. Construction
h. Other
i. Total Direct Charges (sum of 6a-6h)
j. Indirect Charges
k. Totals (sum of 6i-6j)
7. Program Income



Previous Edition Usable



Bringing Heart to the Heart of the City

February 21, 2023

(b) (4)

Commonwealth Edison Company (ComEd)
2 Lincoln Center
Oakbrook Terrace, IL 60181

(b) (4)

Jeremiah Development, NFP is pleased to offer this letter of support for the proposal led by Commonwealth Edison Company (ComEd) under DOE Funding Opportunity Announcement (FOA) FOA 0002740 BIL – Grid Resilience and Innovation Partnerships (GRIP) “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices”.

Jeremiah Development is a 501(c)3 organization committed to working with those in need in and underserved area of Rockford, IL. We have a pilfering garden open to all that provides fresh produce in a food desert, a small engine repair class that offers students 14-18 an opportunity to get some hands on experience and certification, a community computer center, a take-a-book-and-don't-bring-it-back library to promote literacy, a tri-annual resource fair, and many community building events for the neighborhood residents. All our programs were born out of needs presented to us by those we serve.

We have been engaged with ComEd during the application process and are excited about this proposal. The groups led by ComEd were beneficial to our agency as we were able to learn more about the struggles the residents face with energy dependability. These were not questions we would have thought to ask.

Jeremiah Development, NFP is committed to collaborating with ComEd on STEM education, workforce development programs, community education, etc. and participating in the creation of a formal Community Benefits Agreement, or similar agreement, with ComEd, if funding is awarded.

We look forward to collaborating with ComEd and other team partners on this significant project.

(b) (4)

32 N Church St., Rockford, Illinois 61101

Phone (815) 627-0001

www.JeremiahDevelopment.org

admin@jeremiahdevelopment.org

March 20, 2023

(b) (4)

2 Lincoln Center
Oakbrook Terrace, IL 60181

(b) (4)

The LIUNA Chicago Laborers' District Council is pleased to offer this letter of support for the proposal led by Commonwealth Edison Company (ComEd) under DOE Funding Opportunity Announcement (FOA) FOA 0002740 BIL – Grid Resilience and Innovation Partnerships (GRIP) “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices”.

ComEd’s proposed project would benefit families and businesses, especially in the community of Rockford Illinois that has been historically disadvantaged due to both economic and environmental factors. It also helps to accelerate Illinois’ ambitious goal of driving equitable access to clean energy, as outlined in Illinois’ recent Clean Energy Jobs Act. We believe that the requested funds from the DOE will serve a vital role in enabling this initiative to move forward and in accelerating the project benefits highlighted in detail below.

ComEd’s proposed project aims to bring technology partners and communities together, and develop and construct a flexible and field-ready layer of intelligence in the smart grid that can be replicated across the industry. The benefits of the direct and indirect investments in Rockford and beyond will be increased community resilience, an increase in high-quality job creation through job training, and ultimately a decrease in environmental exposure burdens as these infrastructure upgrades support beneficial electrification.

LIUNA Chicago Laborers’ District Council represents a diverse group of over 20,000 men and women in the construction, municipal, and industrial sectors. United through collective bargaining agreements that ensure family-supporting pay, good benefits, safety on the job, and the opportunity for advancement, we build and maintain our country’s infrastructure, keep our communities clean and safe, and our government operating efficiently.

We are committed to participating in the creation of a formal Community Benefits Agreement, or similar agreement, with ComEd, if funding is awarded. We look forward to collaborating with ComEd and other team partners on this significant project.

Sincerely,

(b) (4)

Affiliated with Laborers’ International Union of North America Locals #:
1 2 4 5 6 68 75 76 152 225 582 681 1001 1035 1092

Boone Cook DuPage Grundy Kane Kendall Lake McHenry Will

James P. Connolly
Business Manager

Joseph V. Healy
Secretary-Treasurer

Rich Kuczowski
President



111 W STATE STREET
ROCKFORD, IL 61101

PHONE 815.965.0055
FAX 815.965.0065

THECAPITALREALTY.COM

February 17,2023

LUTHER CENTER
APARTMENTS

(b) (4)

Commonwealth Edison Company (ComEd)
2 Lincoln Center
Oakbrook Terrace, IL 60181

(b) (4)

The Luther Center Senior Apartments is pleased to offer this letter of support for the proposal led by Commonwealth Edison Company (ComEd) under DOE Funding Opportunity Announcement (FOA) FOA 0002740 BIL – Grid Resilience and Innovation Partnerships (GRIP) “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices”.

The Luther Center houses roughly 205 senior and disabled residents. We are a HUD building so all residents are on a fixed income. The Give a Ray program has been a huge benefit to our residents. George Gaulrapp and his team have been accommodating and excellent to work with.

We have been engaged with ComEd during the application process and are excited about the proposed. I believe that the proposal would benefit so many more in the community, like it is helping our residents with energy relief.

Luther Center Apartments is committed to collaborating with ComEd on STEM education, community education and participating in the creation of a formal Community Benefits Agreement, or similar agreement, with ComEd, if funding is awarded.

We look forward to collaborating with ComEd and other team partners on this significant project.

Sincerely,

(b) (4)

Luther Center Apartments



BOYS & GIRLS CLUB
OF ROCKFORD

February 20, 2023

(b) (4)

Commonwealth Edison Company (ComEd)
2 Lincoln Center
Oakbrook Terrace, IL 60181

(b) (4)

The Boys & Girls Club of Rockford is pleased to offer this letter of support for the proposal led by Commonwealth Edison Company (ComEd) under DOE Funding Opportunity Announcement (FOA) FOA 0002740 BIL – Grid Resilience and Innovation Partnerships (GRIP) “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices”.

Founded in 1908, the mission of the Boys & Girls Club of Rockford is to improve the quality of life for youth in our community, regardless of sex, race or economic background. Club members participate in programming geared toward academic success, healthy lifestyles and development of character and leadership skills.

We have been engaged with ComEd during the application process and are excited about the proposed grid upgrades and increased capacity to serve Rockford through STEM education, community education, and workforce development programming.

The Boys & Girls Club of Rockford is committed to collaborating with ComEd on STEM education and workforce development programs for our club youth and participating in the creation of a formal Community Benefits Agreement, or similar agreement, with ComEd, if funding is awarded.

We look forward to collaborating with ComEd and other team partners on this significant project.

(b) (4)

Boys & Girls Club of Rockford

GREAT FUTURES START HERE.

1040 North Second Street • PO Box 1716 • Rockford, IL 61110
815-972-5973 • www.rockfordboysandgirlsclub.org
President / CEO Clifford J. Stoner



February 26, 2023



(b) (4)

Commonwealth Edison Company (ComEd)
2 Lincoln Center
Oakbrook Terrace, IL 60181

(b) (4)

The Rockford Chamber of Commerce is pleased to offer this letter of support for the proposal led by Commonwealth Edison Company (ComEd) under DOE Funding Opportunity Announcement (FOA) FOA 0002740 BIL – Grid Resilience and Innovation Partnerships (GRIP) “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices”.

With 1,000 members representing 60,000+ employees across five states, the Rockford Chamber of Commerce is *the* voice of business for the Rockford region. Our mission is to Lead Business Growth and is realized through advocacy efforts, leadership and professional development, and community engagement and development.

We have been engaged with ComEd during the application process and are excited about the opportunity they are engaged in. Infrastructure is extremely important to community stabilization and development. The combination of infrastructure improvements and new technology allows communities to serve not only today’s workforce and residents, but prepare for tomorrow’s.

The Rockford Chamber of Commerce is highly interested in collaborating with ComEd on workforce development and community education programs to help enhance the understanding of the rich assets of our community. We are also interested in participating in the creation of a formal Community Benefits Agreement, or similar agreement, with ComEd, if funding is awarded. ComEd has served as a wonderful partner to our community. As a trusted entity, they are well positioned to assist in moving our community forward.

We look forward to collaborating with ComEd and other team partners on this significant project.

Sincerely,

(b) (4)



February 17, 2023

(b) (4)

Commonwealth Edison Company (ComEd)
2 Lincoln Center
Oakbrook Terrace, IL 60181

(b) (4)

The Workforce Connection is pleased to offer this letter of support for the proposal led by Commonwealth Edison Company (ComEd) under DOE Funding Opportunity Announcement (FOA) FOA 0002740 BIL – Grid Resilience and Innovation Partnerships (GRIP) “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices”.

The Workforce Connection (TWC) system is the regional workforce system serving Boone, Stephenson, and Winnebago counties. The TWC Board is one of 22 local workforce boards established by the Governor of the State of Illinois pursuant to the federal Workforce Innovation and Opportunity Act (WIOA). TWC’s Board of Directors and Chief Elected Officials is made up of regional employers, educational institutions, economic development, public partners, and publicly elected officials.. Utilizing Federal, State, and donated funds, TWC provides a system for individuals to get employed and also works with employers to find skilled workers and access other services, including education and training for their current workforce in Boone, Stephenson, and Winnebago Counties.

TWC has been engaged with ComEd during the application process, ComEd also has a seat on our Board. TWC is committed to providing a workforce that meets the needs of the business community now and in the future. Our organization strives to provide a fully integrated and accessible workforce development system that balances the needs of individuals and businesses to ensure our region has a skilled workforce to effectively compete in the global economy. ComEd is actively involved in many endeavors that support our mission and vision and we believe this grant will enable them to further the already strong commitment they have to our community.

TWC is committed to participating in the creation of a formal Community Benefits Agreement, or similar agreement, with ComEd, if funding is awarded.

We look forward to collaborating with ComEd and other team partners on this significant project.

Sincerely,

(b) (4)



comedSM

AN EXELON COMPANY

March 17, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear Program Officer:

Commonwealth Edison Company (ComEd) is pleased to submit the proposal titled “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices” in response to DE-FOA-0002740 – GRIP Topic Area 2.

As one of the largest electric utility companies in the nation, ComEd is responsible for delivering safe and reliable power to more than 4 million customers across northern Illinois. To better serve local communities, ComEd recently released its “ComEd 2030” vision describing how the company’s investments in its infrastructure and customer programs can advance critical policy goals, including the goals of the landmark Illinois Climate and Equitable Jobs Act (CEJA). The goals of IJJA GRIP align closely with the ComEd 2030 vision, and the company wishes to leverage this great opportunity to resolve several imminent challenges for grid operation and disadvantaged communities (DACs).

Through this project we will partner with a diverse array of entities including higher education institutions, innovative technology developers, vendors and suppliers, and community leaders. As a result, ComEd proposes a comprehensive technology deployment in the City of Rockford Justice40 neighborhoods, achieving transformation to support decarbonization, electrification, and DER adoption. This will be done by a field demonstration of an interoperable grid-edge management architecture that fosters: (1) integration of distributed generation at the distribution level; and (2) facilitation of the aggregation and integration (edge-computing) of electric vehicles (EVs), electrified loads, and other grid-edge devices.

ComEd will lead this effort. Together with teaming partners, ComEd wishes to request a \$50 million grant and contribute \$66 million as cost-share. We look forward to collaborating with local communities, academic and other partners to pursue this exciting opportunity.

(b) (4)





ACE IoT SOLUTIONS

March 9, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Ave SW
Washington DC 20585

Dear Program Officer,

ACE IoT Solutions LLC ("ACE IoT") are pleased to partner with ComED and other leading organizations on the proposal entitled "**Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices**" in response to DE-FOA-0002740 GRIP [Topic Area 2].

ACE IoT is a software company based in Chattanooga, TN. ACE IoT helps organizations deploy and support Eclipse VOLTTRON, an open-source data platform developed with the support of the U.S Department of Energy. Customers including Penn State University, the City of Washington DC and EPRI/Oak Ridge National Laboratory have deployed VOLTTRON to acquire, ingest and maintain data from IoT networks and legacy equipment.

In the proposed project, ACE IoT will work with ComEd and other project team members to demonstrate the value of open-source platforms to control commercial and residential buildings for flexible loads. ACE IoT will draw on our expertise to integrate the open-source platforms into ComEd's community-oriented interoperable control framework.

(b) (4)



Eaton Corporation
Eaton Research Laboratory
W126N7250 Flint Drive
Menomonee Falls, WI 53051-4404

March 9, 2023

Commonwealth Edison
440 S. La Salle Street
Chicago, Illinois 60605

Subject: Eaton Commitment Letter in Support of Commonwealth Edison's Proposal

Reference: DOE-FOA-0002740 Grid Resilience and Innovation Partnership (GRIP)

Dear Sir or Madam:

This letter serves to establish Eaton Corporation's commitment in support of Commonwealth Edison's proposal for the Department of Energy's Bipartisan Infrastructure Law GRIP program in response to the Funding Opportunity Announcement # DE-FOA-0002740.

Eaton will provide its full support to Commonwealth Edison with respect to the development of a Grid Resilience modeling, simulation and assessment platform leveraging Eaton's CYME simulation tools; the development of Interoperable OpenFMB Controls; and the development of automated even monitoring and control function for fault detection, location, and isolation.

(b) (4)

ensure compliance and successful completion of the work which is contingent upon execution of an agreement with mutually agreed upon terms between Eaton and Commonwealth Edison.

Regards,

(b) (4)



U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

March 13, 2023

Reference: DE-FOA-0002740 Letter of Commitment

Dear Program Officer:

Electric Power Engineers, LLC (EPE) is pleased to offer this letter of commitment to partner with ComEd and other partners on the proposal titled "Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices" in response to DE-FOA-0002740 – GRIP [Topic Area 2].

EPE has a long history of providing quality consulting services to utilities, cities, project developers, power generators, Independent System Operators, regulators, and financial institutions. EPE is positioned as a utility domain expert and has deep experience in the rapidly expanding field of transportation electrification, clean energy technologies, distribution planning and grid modernization. EPE's role in this project is to provide our expertise with engineering, technology, integration, and implementation as a subject matter expert for the project related to utility grid modernization, distribution engineering, distributed energy resources, demand response, and electrification.

(b) (4)



Engineered to order. Built to last.

March 7th, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear Program Officer:

G&W Electric Co. is pleased to partner with ComEd and other partners on the proposal titled “Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices” in response to DE-FOA-0002740 – GRIP [Topic Area 2].

G&W Electric is an American manufacturer with 100-year legacy of innovative grid solutions, including the latest load and fault interrupting switches, reclosers, protection equipment and power sensing.

G&W’s role in this project is to develop and implement an ultra-fast transfer switch to minimize the impact of power faults on end users, ensuring uninterrupted power supply for common applications. Similarly, G&W commits to design, develop, and deploy high accuracy voltage sensors and combo sensors, providing a reliable sensing solution to DER’s monitoring

(b) (4)

We look forward to collaborating with ComEd and other partners on this exciting opportunity.

Sincerely,

(b) (4)



(b) (4)

Community-Oriented Interoperable Control Framework for
Aggregating and Integrating DERs and Other Grid-Edge Devices”

GE Research Center (GRC) is pleased to offer this proposal in response to your Request for Proposal to carry out a program on “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices” on a fixed fee basis in accordance with

(b) (4)

This estimate is based on the assumption that the work can be completed

GRC’s overhead, bid and proposal and external administrative cost rates are approved by the DCMA-Hartford Administrative Contracting Officer. Details of direct costs are available from the DCAA Supervisory Auditor,

(b) (4)

financial information included in this proposal is considered GE proprietary information and will not be shared to any persons unaffiliated with your Institution or the applicable government agency.

In 2008, the U.S. Federal Government passed the Pension Protection Act. This requires all government contractors to meet pension funding requirements per the federal standards. As a result, GRC’s proposal reflects the additional funding requirements for CYs 2019 through 2023. The labor factors for 2019 through 2023 have been approved by GRC’s Contracting Officer.

As has been discussed with our DCMA ACO, on November 9, 2021, GE announced its plan to form three industry-leading, global public companies focused on the growth sectors of aviation, healthcare, and energy. General Electric Company intends to execute the spin-offs of Healthcare in early 2023 and of the Renewable Energy and Power business in early 2024. The respective capital structures, brands, and leadership teams for each independent company will be determined and announced later. It is unknown how GE Research’s future realignment will affect contract cost.

This proposal is based on the understanding that the resultant contract will contain mutually acceptable terms and conditions, including appropriate disposition of Patent Rights and distribution of risk and liabilities, in accordance with applicable Government Regulations. All work under the final negotiated SOW will be performed using reasonable efforts to achieve the objective of the contract.

GRC has in effect a current, written, and enforced conflict of interest policy (GE’s COI Policy) and administrative process to identify and manage conflict of interests or financial conflict of interests as per the DOE Interim Conflict of Interest Policy. GE’s COI Policy complies with the provisions of 2 CFR 200.112 and 200.318. Copies of GE’s COI Policy can be provided upon request for verification of GRC’s compliance.

(b) (4)



300 Renaissance Center
Detroit, MI 48265-3000

March 15, 2023

Commonwealth Edison Company
10 S. Dearborn Street, 51st Floor, Chicago, IL 60603

RE: Letter of Support for the Department of Energy Grid Resilience and Innovation Partnerships Funding Opportunity
Announcement (DOE GRIP FOA) DE-FOA-0002740

(b) (4)

GM Proprietary Data - This document contains information proprietary to General Motors LLC, is submitted in Confidence, and is privileged and exempt from disclosure by the U.S. Government under paragraph (b) of the Freedom of Information Act (5 USC 522) and is subject to 18 USC 1905.

March 9, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear Program Officer:

Hitachi America, LTD (HAL) is pleased to partner with ComEd and other partners on the proposal titled “Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices” in response to DE-FOA-0002740 – GRIP (Topic Area 2).

Upon award of the project to ComEd, as a subrecipient, HAL intends to contribute to the project to support the Community Demonstration and Data Fusion related tasks, including 1) High performance cloud computing with open-source simulation platform, 2) Data fusion for data analytics and control, and 3) Human centered user analysis via design methods.

(b) (4)

HAL’s primary technical contact for this project will be

(b) (4)

We are eager to work with the project team in the hope to support
on and decarbonization objectives through this proposed project.

Sincerely,

(b) (4)



(b) (4)

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Office of Sponsored
Programs Administration
1138 Pearson Hall
505 Morrill Road
Ames, Iowa 50011-2103
Phone: 515 294-5225
Fax: 515 294-8000

March 3, 2023

Commonwealth Edison Co
440 South LaSalle Street Suite 3300
Chicago, IL 60605

Proposal Title: Demonstrate a Community-Ori

(b) (4)

I am pleased to endorse the enclosed proposal by the appropriate programmatic and administrative personnel at Iowa State University. If the proposal is selected for funding, Iowa State University is committed to fulfilling all commitments made in the grant application.

Iowa State University is a participant in the Federal Demonstration Partnership (FDP) Expanded Clearinghouse, which is an effort by the FDP to reduce administrative burden associated with verifying standard information required for subrecipient issuance and monitoring. Iowa State University's Entity Profile can be found in the Expanded Clearinghouse at the following link: <https://fdpclearinghouse.org/organizations/121>.

Iowa State University certifies it is in compliance with 42 CFR Part 50 SubPart F. Iowa State University will comply with its policy relating to the disclosure of Significant Financial Interests and will report all identified Financial Conflicts of Interest to the awarding entity.

Sincerely,

(b) (4)



March 9, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear BIL-GRIP Program Officer:

Open Energy Solutions Inc. (OES) is pleased to partner with ComEd and its other partners on the proposal titled “Deployment of a Community-oriented Interoperable Control Framework for Aggregating & Integrating DERs and Other Grid-Edge Devices” in response to DE-FOA-0002740 – GRIP [Topic Area 2].

OES is a software and advanced technology transfer services company serving the regulated and unregulated utility industry. It leverages its collective expertise and technology to make significant positive changes in the utility industry by enabling the integration of distributed energy resources (DERs) at scale and improving the quality of life through the wiser use of energy. Through its efforts developing and implementing the Open Field Message Bus (OpenFMB) and the development of the management services that comprise the OpenDSO™ grid-edge energy operating system, OES seeks to transform the way energy is generated, delivered and utilized. To that end, OES has considerable experience and expertise associated with (1) grid edge interoperability as well as (2) the planning/architecting and full development lifecycle for distributed intelligence within the context of distribution grid management.

As part of its role in this project, OES will provide general support in the following areas:

- Reference Grid Edge Controller (i.e., development, demonstration, and documentation)
- OpenFMB Integration (i.e., design, deployment, and enhancements for devices & systems)
- OpenFMB Management Services Deployment (i.e., installation, configuration, and testing)
- Distributed Application Development (i.e., integration, multi-layered architected, etc.)

(b) (4)

We look forward to collaborating with ComEd and other partners on this exciting opportunity.

Sincerely,

(b) (4)

March 14, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear Program Officer:

PingThings is pleased to partner with ComEd and other partners on the proposal titled “Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices” in response to DE-FOA-0002740 – GRIP [Topic Area 2].

PingThings’ team is a world leader in integrating, storing, processing, building applications with, and applying machine learning to time series data from sensors at both scale and velocity. We offer the PredictiveGrid™, a time series application platform for utilities and other energy transition participants to rapidly deploy or develop use cases, new and old, driven by data from virtually any sensor that captures time-stamped measurements regardless of the number of sensors or their sample rates. The PredictiveGrid is cloud-based. Compute and storage can be scaled independently to support not only arbitrarily large sensor fleets but also all the critical applications derived from this data. The platform processes tens of millions of measurements per second per node both in real-time and offline. It employs state-of-the-art compression so that data can be retained long-term to train machine learning and AI-based use cases.

We are very excited to collaborate with ComEd and other partners on this exciting opportunity, where we can support all data-related tasking and will provide the PredictiveGrid platform to serve as a core time series storage, access, analytic, intelligence, and application platform for the effort

(b) (4)

Sincerely,

(b) (4)

March 13, 2023

(b) (4)

Purdue University is pleased to partner with ComEd and other partners on the proposal titled “Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices” in response to DE-FOA-0002740 – GRIP [Topic Area 2].

Purdue University is a public land-grant research university in West Lafayette, Indiana, and the flagship campus of the Purdue University system. The university is world-renowned for its discoveries in science, technology, engineering, and math, as well as the strong and tremendous efforts in workforce development in the relevant areas.

Purdue University’s role in this project is to comprehensively study the requirements of information flow and conduct the feasibility analysis for deploying smart grid technologies at the test sites. Meanwhile, Purdue University will also join the workforce development efforts targeting different audience groups, ranging from undergraduate and graduate students to industry professionals.

(b) (4)



March 9, 2023
U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear Program Officer:

Region 1 Planning Council (R1) is pleased to partner with ComEd and other partners on the proposal titled "Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices" in response to DE-FOA-0002740 – GRIP [Topic Area 2].

R1 is a special-purpose, regional government agency designated to coordinate intergovernmental collaboration in Northern Illinois. R1 is a designated Metropolitan Planning Organization (MPO), Economic Development District (EDD), geographic information system (GIS), a regional land bank, and houses the Winnebago County Mental Health Board.

R1's role in this project is to facilitate community engagement with and on behalf of DOE and project partners. Utilizing R1's Climate Resiliency Forum, Community Advisory Forum, and Energy Working Group, R1 will also engage elected leaders and local stakeholders to inform the development of this technology. Further, R1 will employ a clean energy navigator to assist with multi-organizational partnerships to recruit pilot customers for the proposed technology.

As a participant in this project, Region 1 Planning Council would like (b) (4) federal funds.

We look forward to collaborating with ComEd and other partners on this exciting opportunity.

(b) (4)

(b) (4)

2 Lincoln Center
Oakbrook Terrace, IL 60181

(b) (4)

The Rockford Area Economic Development Council is pleased to offer this letter of support for the proposal led by Commonwealth Edison Company (ComEd) under DOE Funding Opportunity Announcement (FOA) FOA 0002740 BIL – Grid Resilience and Innovation Partnerships (GRIP) “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices”.

As the lead economic development agency in the Rockford area, RAEDC’s mission is to cultivate opportunities for primary job growth that increase the economic well-being of our region. The RAEDC markets the region to attract new capital investment, while assisting existing businesses with resources for sustainable growth. RAEDC works closely with many partners to improve the competitiveness of the region by taking what it learns from the region’s employers and engaging the community in the daily work of economic development.

We have been engaged with ComEd during the application process because infrastructure improvement, specifically electrical reliability is critical to job retention and attracting new industry. RAEDC has partnered with ComEd to identify sites and buildings in the Rockford area best situated for future growth.

The Rockford Area Economic Development Council is interested in participating in the creation of a formal Community Benefits Agreement, or similar agreement, with ComEd, if funding is awarded.

We look forward to collaborating with ComEd and other team partners on this significant project.

Sincerely,

(b) (4)





COMMITTEE ON
WAYS AND MEANS

JOINT ECONOMIC COMMITTEE

Congress of the United States

House of Representatives

March 14, 2023

(b) (4)

Grid Deployment Office
U.S. Department of Energy
1000 Independence Ave SW
Washington DC 20585-0002

Dear (b) (4)

I write in support of Commonwealth Edison's (ComEd's) proposed Smart Grid application for matching through Department of Energy (DOE). ComEd serves many of my constituents, and this project represents an opportunity to improve grid flexibility, lower energy costs, increase energy reliability, support disadvantaged communities, create new jobs, and support robust energy sources.

ComEd's Data Fusion Empowered Digital Intelligence project ("Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices") would benefit families and businesses, especially in the community of Rockford, IL, that have been historically disadvantaged due to both economic and environmental factors. We believe that the requested funds from the DOE will help in accelerating the project benefits highlighted below.

ComEd's proposed project aims to bring technology partners and communities together and develop and construct a flexible and field-ready layer of intelligence in the smart grid that can be replicated across the industry. The benefits of the direct and indirect investments in Rockford and beyond will include increased community resilience, high-quality job creation through job training, and a reduction in environmental exposure burdens as these infrastructure upgrades support beneficial electrification.

I appreciate your full and fair consideration and within all relevant rules and regulations, I urge support for ComEd's Smart Grid grant application. (b) (4)
to contact me or my District Director (b) (4)

Congress of the United States
House of Representatives
Washington, DC 20515-1317

March 6, 2023

(b) (4)

U.S. Department of Energy, Grid Deployment Office
1000 Independence Ave. SW
Washington DC 20585-0002

Dear (b) (4)

I am writing to urge consideration for Commonwealth Edison's (ComEd's) proposed Smart Grid application for matching funding under the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law (BIL) through Department of Energy (DOE). ComEd serves many of my constituents, and this project represents an outstanding opportunity to improve grid flexibility, lower energy costs, increase energy reliability, support disadvantaged communities, create green jobs, and support clean energy sources.

ComEd's Data Fusion Empowered Digital Intelligence project ("Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices") would benefit families and businesses, especially in the community of Rockford, Illinois, which have been historically disadvantaged due to both economic and environmental factors. It also helps to accelerate Illinois' ambitious goal of driving equitable access to clean energy, as outlined in Illinois' recent Clean Energy Jobs Act. We believe that the requested funds from the DOE will serve a vital role in enabling this initiative to move forward and in accelerating the project benefits highlighted in detail below.

ComEd's proposed project aims to bring technology partners and communities together and develop and construct a flexible and field-ready layer of intelligence in the smart grid that can be replicated across the industry. The benefits of the direct and indirect investments in Rockford and beyond will be increased community resilience, an increase in high-quality job creation through job training, and ultimately a decrease in environmental exposure burdens as these infrastructure upgrades support beneficial electrification.

Again, I would like to urge full and fair consideration for ComEd to receive matched funding under the IIJA. Thank you, and I look forward to your favorable review.

Sincerely,

(b) (4)



S&C ELECTRIC COMPANY
Excellence Through Innovation

6601 North Ridge Boulevard
Chicago, Illinois 60626-3997
Telephone (773) 338-1000
Fax (773) 338-3657

12th March, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear Program Officer:

S&C Electric Company is pleased to support ComEd on the proposal titled “Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices” in response to DE-FOA-0002740 – GRIP [Topic Area 2].

S&C Electric Company has been an innovative leader in switching, protection, and control systems for the electric power industry since 1911. S&C has maintained a steadfast commitment to the electric power industry while pioneering innovative products and services that lead to step changes in power system performance. With a dedicated focus on reliability and resilience, we help reduce the duration of power outages from hours to seconds – or to no outage at all. Our 3,000-plus team members, more than 2,500 of whom are based in the US, are committed to reducing the environmental impact of our products and business activities, enhancing the utilization of renewable energy sources and maintaining strong and supportive relationships with the communities in which we work.

As you can see from their proposal, the objectives of ComEd’s Community-oriented Interoperable Control Framework are highly aligned with S&C’s own operating culture, and we are pleased to be a part of it.

S&C’s role in this project is to develop technology that will significantly advance ComEd’s understanding of the real time fitness of its distribution infrastructure, so that it can maximize the contribution of DERs at all times. As a participant in this project, S&C Electric’s equipment costs will be borne by ComEd and are accounted for in their application. Development of the specific software necessary to enable the functionality we describe will be borne by S&C.

We look forward to collaborating with ComEd and other partners on this exciting opportunity.

(b) (4)

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United States Senate
WASHINGTON, DC 20510-1304

March 13, 2023

(b) (4)

U.S. Department of Energy, Grid Development Office
1000 Independence Ave, SW
Washington, D.C. 20585-0002

Dear (b) (4) :

I am writing regarding Commonwealth Edison’s (ComEd) proposed Smart Grid grant under the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law (BIL) through the Department of Energy (DOE). This funding will improve grid flexibility, lower energy costs, increase reliability, support disadvantaged communities, create green jobs, and support clean energy sources.

ComEd’s Data Fusion Empowered Digital Intelligence project would benefit families and businesses in the community of Rockford, Illinois, who have been historically disadvantaged due to economic and environmental factors. This project will also accelerate Illinois’s ambitious goal of providing equitable access to clean energy, as outlined in Illinois’s recent Clean Energy Jobs Act.

This grant will bring technology partners together to develop and construct a flexible-ready layer of intelligence in the smart grid that will benefit Rockford and can be replicated across the industry. The benefits of this direct and indirect investment in Rockford and surrounding communities will increase community resilience, facilitate high quality job creation through job training, and decrease environmental exposure burdens as these infrastructure upgrades support beneficial electrification.

Please give full and fair consideration to ComEd’s application. Thank you for your attention to this matter, and if you have any questions or concerns, please do not hesitate to contact (b) (4)

Sincerely

(b) (4)

March 7, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear Program Officer:

Slipstream is pleased to partner with ComEd and other partners on the proposal titled “Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices” in response to DE-FOA-0002740 – GRIP [Topic Area 2].

Slipstream is a mission-driven nonprofit that specializes in engineering, implementation, and analysis of high-performing buildings, emerging technologies, and grid-interactive efficient buildings. They regularly partner with the DOE, DoD, national labs, and utilities to field test and demonstrate emerging technologies, conduct energy planning, and provide stakeholder education. Slipstream has experience with grid-interactive building demonstrations, energy planning and engagement with communities, and microgrid planning.

Slipstream’s role in this project is to engage with the City of Rockford community creating community engagement and communication plans, conducting demographic, social, and need assessments, and recruiting and training residents as “Energy Ambassadors” to perform outreach and education to prospective demonstration sites. Slipstream will also work with ComEd and other team members in demonstrating using open-source platforms to control commercial and residential buildings for flexible loads, and integrate these platforms into ComEd’s community-oriented interoperable control framework. We will also help with the analysis of benefits for coordinated control.

(b) (4)

Sincerely,

(b) (4)

(b) (4)



Research & Economic Development
Sponsored Programs Administration
900 University Avenue
245 University Office Building
Riverside, CA 92521

March 8, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear Program Officer:

In response to DE-FOA-0002740 – GRIP Topic Area 2, The Regents of the University of California, on behalf of its Riverside campus (“UCR”) is pleased to partner with ComEd and other partners on the proposal titled “Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices.”

UCR’s role in this project is to develop grid edge applications including net-load forecasting, state estimation, electricity theft detection, electric vehicle charging management, and network topology

(b) (4)

If the proposal is selected for funding, UCR anticipates entering into a cost-reimbursable subcontract agreement with ComED to perform fundamental research.

Sincerely,

(b) (4)



UNIVERSITY OF
ILLINOIS CHICAGO

OFFICE OF SPONSORED PROGRAMS

(b) (4)

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V&R Energy Systems Research, Inc.
11824 Darlington Avenue, Suite 101
Los Angeles, CA 90049 USA

March 13, 2023

U.S. Department of Energy
Grid Deployment Office
1000 Independence Avenue SW
Washington, DC 20585

Dear Program Officer:

V&R Energy Systems Research, Inc. (V&R Energy) is pleased to partner with ComEd and other partners on the proposal titled "Deployment of a Community-oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices" in response to DE-FOA-0002740 – GRIP [Topic Area 2].

V&R Energy is a software solution provider and industry leader in real-time data analytics and control. The company has extensive experience and expertise in deploying synchrophasor-based applications for situational awareness, monitoring and control of distribution and transmission grids.

V&R Energy's role in this project is to contribute to implementing real-time data analytics and control, in particular data fusion applications for advanced real-time grid monitoring, analysis, and control.

(b) (4)

opportunity.

(b) (4)

March 9, 2023

(b) (4)

REF: *“Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices”*

(b) (4)

mended for your consideration is the subaward proposal for the referenced project, as prepared by Dr. Anurag Srivastava, Professor of the West Virginia University Computer Science and Electrical Engineering.

As an authorized representative for West Virginia University Research Corporation, I have reviewed and hereby endorse our participation in the referenced proposal.

(b) (4)

WVURC DUNS: 191510239
WVURC EIN: 550665758
WVURC UEI: M7PNRH24BBM8

(b) (4)

February 20, 2023

(b) (4)



2 Lincoln Center
Oakbrook Terrace, IL 60181

YWCA Northwestern Illinois

4990 E. State St.
Rockford, IL 61108
P 815.968.9681
F 815.968.9858
ywcanwil.org

(b) (4)

YWCA Northwestern Illinois is pleased to offer this letter of support for the proposal led by Commonwealth Edison Company (ComEd) under DOE Funding Opportunity Announcement (FOA) FOA 0002740 BIL – Grid Resilience and Innovation Partnerships (GRIP) “Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices”.

YWCA Northwestern Illinois has provided women’s empowerment programming and advocacies since 1891. The organization now serves more than 13,500 women, children, and families each month, through child care subsidy, quality child care access and improvement resources, YWCA La Voz Latina’s Hispanic and Latino community support and resources, the YWCA Literacy Council literacy instruction and programming for families, and community racial justice work that promotes a clear commitment to equality. YWCA Northwestern Illinois delivers its mission, “eliminating racism, empowering women, and promoting peace, justice, freedom and dignity for all,” to women and families in the six-county area of Boone, Jo Daviess, McHenry, Ogle, Stephenson, and Winnebago, Illinois.

YWCA Northwestern Illinois is interested in collaborating with ComEd on STEM education, workforce development programs, community education and participating in the creation of a formal Community Benefits Agreement, or similar agreement, with ComEd, if funding is awarded.

We look forward to collaborating with ComEd and other team partners on this significant project.

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PROJECT DESCRIPTION AND ASSURANCES DOCUMENT

Project title: Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices (ICF)

Applicant Name: Commonwealth Edison

Applicant Address: 2 Lincoln Center, Oak Brook Terrace, IL, 60181

Names of all team member organizations (if applicable):

Community Engagement Lead	Region 1 Planning Council
Innovation Partners	Utilidata/NVIDIA, Ace IoT, Open Energy Solutions, V&R, PingThings
Vendors	General Motors, General Electric, Eaton, G&W, S&C, Hitachi America
Subject Matter Experts (SMEs)	Slipstream, PLUG, Electric Power Engineers, (b) (4), (b) (4), University of California – Riverside, (b) (4), (b) (4) Iowa State University, West Virginia University, University of Illinois – Chicago, Purdue University
Community Partners	Rockford Work Force Connection Rockford Area Economic Development Council Rockford Chamber of Commerce Rockford Boys and Girls Club Jeremiah Development The Luther Center YWCA Northwestern Illinois

Principal Investigator (Name, Address if different than Applicant's, Phone Number, E-mail):

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mail):

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Federal Share: \$50 Million

Cost Share: \$66 Million

Total Estimated Project Cost: \$116 Million

Item 1: Specify (mark with "X") the FOA Topic Area and as applicable the Area of Interest (AOI):

_____ Topic Area 1: Grid Resilience Grants (BIL section 40101(c))

 X Topic Area 2: Smart Grid Grants (BIL section 40107)

_____ Topic Area 3: Grid Innovation Program (BIL section 40103(b)) – Area of Interest 1

(Transmission System Applications)

_____ Topic Area 3: **Grid Innovation Program** (BIL section 40103(b)) – Area of Interest 2

(Distribution System Applications)

_____ Topic Area 3: **Grid Innovation Program** (BIL section 40103(b)) – Area of Interest 3

(Combination System Applications)

TOPIC AREA 1 Specific Items:

Item 2: Specify (mark with “X”) the entity type of the applicant organization:

_____ electric grid operator

_____ electricity storage operator

_____ electricity generator

_____ transmission owner or operator

_____ distribution provider

_____ fuel supplier

If further description is needed for the specified entity type, please provide below:

Item 3: Please provide the total amount (USD) of qualifying resilience investments (as outlined in DE-FOA-00002740) that has been spent for the previous 3 years. Please also provide the time period utilized for calculation of this amount.

Total Amount:

Time Period for Resilience Investments:

Note: Topic Area 1 applicants must submit as part of their application, a report detailing past, current, and future efforts by the eligible entity to reduce the likelihood and consequences of disruptive events. This report should include efforts over at least the previous 3 years and at least the next 3 years and any broader resilience strategy used by the applicant.

Item 4: Is the eligible entity a Small Utility as defined in DE-FOA-0002740 (sells no more than 4,000,000 MWh of electricity per year)? If NO is selected, skip to Item 7.

_____ Yes

_____ No

Note: If YES, applicant must provide their Form 861 for the last reporting year submitted to the Energy Information Administration (EIA).

Item 5: Per BIL section 40101(e)(2) (C) APPLICATION LIMITATIONS.—An eligible entity may not submit an application for a grant provided by the Secretary under subsection (c) and a grant provided by a State or Indian Tribe pursuant to subsection (d) during the same application cycle.

Therefore, is the eligible entity a Subaward/Subcontract recipient for an application submitted under IJJA Section 40101(d), ALRD 2736? If "YES", please describe the differences between the GRIP FOA 2740 application [40101(c)] and the ALRD 2736 [40101(d)] applications in the box below:

_____ Yes

_____ No

TOPIC AREA 2 Specific

No items

TOPIC AREA 3 Specific

Item 6: Specify (mark with "X") the entity type of the applicant organization:

_____ a State

_____ a combination of 2 or more States

_____ an Indian Tribe

_____ a unit of local government

_____ a public utility commission

If further description is needed for the specified entity type, please provide below:

Item 7:

Authorized Organizational Representative (AOR): please provide name, address, phone number and email

address for the authorized agent to bind the entity

Authorized Organizational Representative (AOR):

Name:

Address:

Phone:

E-mail:

Item 8: Signature of Authorized Organizational Representative (AOR)

_____ -

Applicant:

Commonwealth Edison Company (ComEd)

(b) (4)

Project title:

Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices

Project objective:

This project will implement a data fusion empowered interoperable control framework to pave the way for next-generation power grid planning and operation, while maximizing benefits across disadvantaged communities. The project will deploy a selection of grid-edge technologies for field demonstration and develop an interoperable data fusion architecture and grid-edge analytic platform to address the interoperability among innovative technologies. This architecture will provide both centralized and decentralized intelligence, allowing for the optimization and automation of various grid edge resources, including distributed energy resources (DERs), electric vehicles (EVs), grid-interactive efficient buildings (GEBs), and intelligent sensors. This project will develop standard integration principles and protocols to address the interoperability, and to share the knowledge with the industry.

Project description:

The technical solution architecture comprises four fundamental pillars, which cover the deployment of 1) hardware sensors and grid-edge devices; 2) communication architecture; 3) data fusion infrastructure and grid-edge analytic platform; and 4) software solutions for grid and customer function integration and coordination. The proposed deployment will be conducted in the City of Rockford, IL; a disadvantaged community that has weathered a hollowing-out of its industrial roots over the last 60 years. Approximately 20% of Rockford's population is at or below the poverty rate, with five designated opportunity zones representing 10% of the total city population.

The grid improvements proposed in this project will provide significant customer benefits and achieve the core grid functions of reliability, safety, and accessibility while improving the grid's security, flexibility, and resiliency and unlocking additional DER growth potential. The community-supporting benefits of the project include fostering job growth and economic opportunities, affordability, clean energy adoption, equity, beneficial electrification, and accessibility within the Rockford communities.

The major participants of this collaborative project include local communities, innovation partners, leading industry vendors, and multiple subject matter experts from the academia and industry.

Deployment of a Community-Oriented Interoperable Control Framework for Aggregating and Integrating DERs and Other Grid-Edge Devices (ICF)

Community Benefits Plan

Submitted to the DOE in response to DE-FOA-0002740
BIL – Grid Resilience and Innovation Partnerships (GRIP)

Topic Area 2: Smart Grid Grants (40107)

The benefits that ComEd and partners seek to provide through the proposed interoperable control framework (ICF) will serve the Rockford, Illinois community directly by opening new possibilities in grid participation. The electrical grid is the backbone of a decarbonized economy. As communities reduce fossil fuel use, grid energy will serve an even wider array of transit, building, and industrial needs. To do so, the grid is becoming a collaborative platform through which interconnection customers bring clean generation resources and proactive customers adapt to the availability of clean energy to minimize greenhouse gas (GHG) emissions and to efficiently utilize grid assets. To ensure that this platform is open, secure, interactive, efficient, and resilient, the control systems will need to be decentralized toward the grid edge. We will track benefits

The realization of this vision of a clean and collaborative grid depends upon several technological interdependencies that currently only exists in piecemeal form. The interoperability of these technologies will help to maximize the combined grid benefits in security, resiliency, efficiency, and environmental stewardship. But the grid equipment cannot stand alone; sociotechnical change depends upon enthusiastic adoption and active innovation that is only possible where technical teams engage deeply with communities to achieve an equitable energy transition.

Building on community partnerships. To leverage and multiply the long-term value of grid infrastructure, ComEd, Slipstream, Region 1 Planning Council and supportive community partners will rely upon effective communications and public engagement, strong workforce partnerships, and an extension of the established capabilities of community organizations. The proposed project has committed partnership from Rockford Work Force Connection, Rockford Area Economic Development Council, Rockford Chamber of Commerce, Rockford Boys and Girls Club, Jeremiah Development, The Luther Center, YWCA Northwestern Illinois. These organizations will participate in the formal community benefits agreement process and collaborate with the project team on new STEM and workforce development programs related to the proposed technologies.

This benefits plan outlines a community-centric and collaborative approach that will guide the project across its lifecycle. It is our express intention that a community benefits agreement be created, refined, and eventually affirmed by community members, organizations, and leaders to ensure the project's value to Rockford residents and businesses. As such, this benefits plan

proposal is best understood as a procedural synopsis of entities, strategies, roles, and metrics, that can be drawn upon as we work towards an agreement, rather than as a definitive statement of the needs that the community expresses and the benefits that the community seeks. Establishing and operating under a community benefits agreement is one of the key strategies that the team intends to use to ensure that the work addresses community concerns and delivers meaningful benefits.

ComEd has already established a collaborative platform for energy innovation in Rockford. In early 2022, ComEd introduced Rockford as the second site for its Community of the Future (CoF) program, with the first site established in 2016 in the Bronzeville neighborhood of Chicago. Rockford has weathered a hollowing-out of its industrial core over the last 60 years. Manufacturing plant closings have been exacerbated by COVID-19, with a net loss of nearly 6,000 manufacturing jobs in the metropolitan area from 2019 through 2021, according to the Census Bureau. Approximately 20% of Rockford's population is at or below the poverty line.¹ And five designated opportunity zones have a poverty rate of nearly 50%. Poverty disproportionately impacts Rockford's communities of color.

To overcome these challenges, Rockford's community organizations, public leaders, and planners are working with ComEd to enhance the region's competitiveness and to develop a regional advantage in the green economy. The proposed Rockford deployment of an interoperable control framework (ICF) will take a nation-leading step toward these goals by streamlining the integration of distributed clean energy. In this way, the project will help to achieve decarbonization and enhance the distribution system's ability to support increased electrification and adoption of distributed energy resources (DER), hardening against new physical and cyber security threats, and overall adaptability to new technologies.

An Emphasis on Equity. ComEd values the established partnerships and the collaborations to achieve ambitious net-zero objectives. The team also values the opportunity to engage in a conversation on energy futures within a community where too many customers struggle with the affordability of the resources that they require to meet their basic needs, including energy. Equity is a major priority for the State of Illinois, the City of Rockford, and ComEd. Illinois' signature energy law, the Climate and Equitable Jobs Act (CEJA), was enacted in September 2021. The law seeks to ensure that the clean energy transition benefits all Illinois communities, including the most vulnerable. Illinois has actively sought to bring the benefits of clean energy to diverse communities in a sequence of energy policy updates including the Energy Infrastructure Modernization Act (2011), the Future Energy Jobs Act (2016), and CEJA.

¹ Bureau, U. S. C. (2021). *Poverty, All People in Rockford Township, Winnebago County, Illinois*. United States Census Bureau. Retrieved September 21, 2022, from <https://data.census.gov/cedsci/all?q=Poverty&g=0600000US1720165013>

The benefits of these legislative initiatives are visible in Rockford, where an ongoing campaign of community solar adoption is bringing the cost savings of clean energy to more and more customers. Community solar programs aggregate customers' solar program participation through cost-effective, utility scale solar developments. In Rockford and the surrounding region, affordable land prices and local energy demand help to establish economic and grid conditions that are favorable for DER adoption, and a new set of distributed generation incentives are anticipated to further stimulate clean generation development.

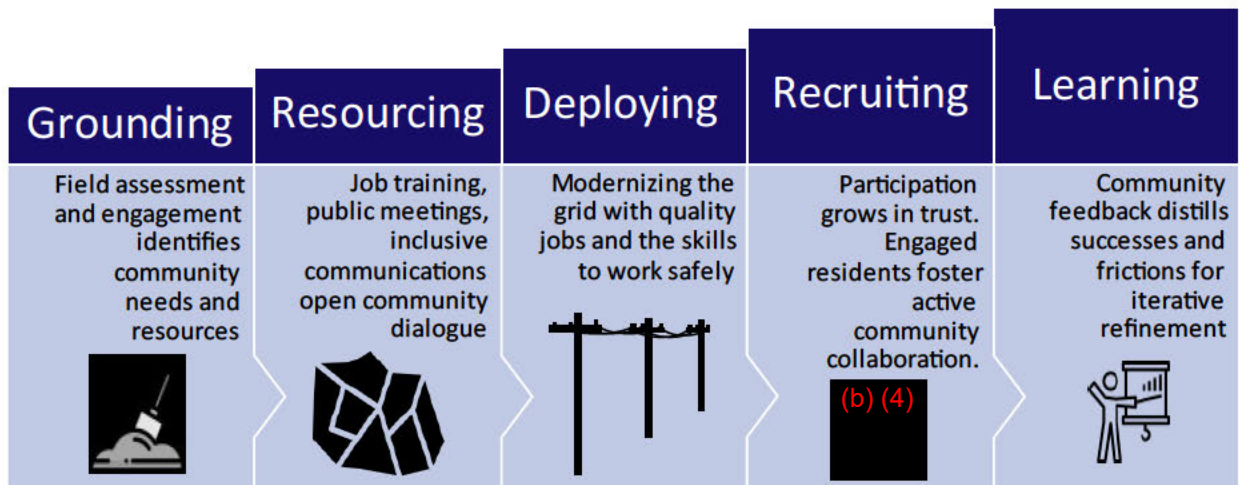
ComEd aims to leverage the GRIP opportunity to establish a new standard of intelligent and adaptive grid services, developing methodologies that can proliferate across the territory and industry. As an extension of this work, ComEd and partners will leverage ComEd's Rockford facilities and partners' extensive capabilities to deliver a key message: the green economy is hiring, and now is the time to develop the skills that it will depend upon.

By showcasing visible investments in the community and the Rockford grid, and by reinforcing the use cases of these investments, we believe that we can sustain an active and successful campaign of economic opportunity in the region. These benefits will diffuse beyond Rockford, and the infrastructure installed will remain in place, serving Rockford customers with a new demonstration of industry best practices for grid services and optimizing the benefits of distributed generation and ubiquitous smart loads, such as electric vehicles.

Planning a collaborative community process to achieve community benefits

The work of ensuring benefits to diverse Rockford neighborhoods will be undertaken across five overlapping phases, as illustrated in Figure 1. The Grounding and Resourcing phases will be focused in the first three budget periods (BPs), whereas the Deploying phase will occur in BP 2, 3 and 4, the Recruiting phase will occur in BP 3 and 4, and Learning in BP 4 and 5.

Figure 1: Five Phases of Community Benefits



The **grounding** phase includes initiatives to understand community needs by embedding the work into existing community structures and by establishing reliable communications and listening channels. As that phase continues, the team will also begin **resourcing** by bringing specific initiatives that have known benefits. Using job training and public outreach as an early-phase initiative that begins even as the fuller community benefits plan is still being developed, allows the project to be more inclusive in later phases. Ongoing community dialogue throughout these phases will help the team to discover yet-unrecognized needs and technology use cases to engage in the overall system planning. The **deploying** phase draws upon the resources established for workforce development and community jobs impacts, ensuring that the work facilitates mentorship and growth for a new cohort of energy employees. As the system work moves into full swing, the team will begin **recruiting** participants onto the project. The benefits to residential and business customers depend on an inclusive and well targeted recruitment campaign built on established trust with community leaders, organizations and individual customers. This community aspect of the work continues with some of the same community recruitment resources being called upon to manage any issues reported with program participation. As the work and validation comes to a conclusion, the final aspect of the benefits occurs through the **learning** that the team will do, taking community feedback and identifying best practices for future projects. This phase includes reporting out of results at conferences and within publications. In the remainder of this plan, we document elements of community benefits initiatives and the team’s experience with these programs.

Multiplying the value of grid investments at a human scale

We have emphasized that the benefits of grid investments have direct meaning and value to the system customers served by the circuits where these investments are made. Additional benefits accrue if the work is well designed to provide quality jobs, workforce development opportunities, affordability benefits, and equitable access to energy infrastructure. We summarize these issues in Table 1 and then detail in the section below.

Table 1: Phases of Community Benefits Collaboration

Grounding	Resourcing	Deploying	Recruiting	Learning	
▪	▪		▪	▪	Community and Labor Engagement. A collaborative project strategy implements agreements that set terms of mutual benefit.
	▪	▪		▪	Quality Jobs: Investing in the American Workforce. Advancing the interests of the green economy’s growing workforce requires jobs that are safe, stable, fairly remunerated, and meaningful. This team will be engaging with multiple partners to consider any the barriers and opportunities to the advancement of job quality in the relevant work processes. Existing labor agreements lay the foundation for job quality, and resolution processes can be drawn upon for further enhancements.

▪	▪	▪	▪	▪	Diversity, Equity, Inclusion, and Accessibility. Building on DEI-targeted supplier strategies, ComEd and Partners will also localize the DEIA strategy within Rockford, seeking diverse participation in community dialogue, workforce opportunity, and the core project team.
▪	▪			▪	Justice40 and equitable outcomes. The equity strategy began with deployment focus on Rockford. More than half of Rockford, particularly the Western and Southern quadrants, are mapped as disadvantaged communities within the Energy Justice Dashboard. The strategy will gain additional definition through the community benefits agreement.

1. Community and Labor Engagement

While collaboration will occur throughout the project, key process steps occur in the initial phases of the project as community engagement plans are developed, and new community leads are engaged, and a formal community benefits plan is negotiated. Another high-collaboration point will occur when customers are recruited into participation in the project.

Community and Labor Engagement						(b) (4)
Duration:	BP1	BP2	BP3	BP4	BP5	Staffing: From .5-3 FTE across project duration
Key organizations: Slipstream, ComEd			R1 Planning,		Metrics: unique community contacts to assess needs and gather ideas, Signed Community Benefits Agreement, public meetings	

Collaboration. ComEd subject matter experts in Governmental, Regulatory, and External Affairs serve as strategic partners to diverse community stakeholders, including local, regional, and state government; social service providers; faith-based organizations; non-profits; and other community-based organizations. The diverse organizations already engaged in this proposal are an indication of the sincere desire to establish a consultative and collaborative dialogue. This project will develop a formal community workforce and benefits agreement in collaboration with these stakeholders and community partners to implement a broad portfolio of initiatives.

ComEd and ComEd communities have developed considerable expertise in collaboration through initiatives like Community of the Future (CoF). CoF began in the Bronzeville neighborhood of Chicago in 2016 with a convening of stakeholders around the installation of the Bronzeville Community Microgrid — the first utility-operated microgrid cluster. Those efforts grew into an initiative in which ComEd partners with local communities to leverage smart grid and other technologies and related services to enhance the everyday lives of residents.

The CoF approach relies upon collaboration with a standing community advisory council that meets quarterly to convene representatives from civic and governmental organizations who work with ComEd staff to co-create demonstration projects that can lead the energy transformation. A notable strength in the project team is R1’s deep experience in community engagement and expertise in research. R1 Planning Council also has the Community Advisory Forum (CAF) that was established to diversify and increase meaningful input in the planning process.

In the grounding phase of the project, the team will draw upon existing and new community and organized labor relationships to plan and execute a beneficial project. The R1 Community Advisory Forum and CoF Community Advisory Council will provide the initial guidance to the project team for this ICF project. Members of the Rockford CoF advisory council, including project team member Region 1 Planning Council, Rockford Workforce Connection, Rockford Chamber of Commerce, and the Boys and Girls Club of Rockford, are already engaged in this work, and will play a key role in its success. The involvement of the advisory council member organizations — as well as other Rockford region workforce development, labor, human services, educational, and civic organizations engaged with ComEd, Slipstream, and Region 1 Planning Council — provides the extensive community network to ensure engagement with diverse stakeholders and to strengthen the value of a formal community benefits agreement.

Accountability. Within the collaboration, three accountability mechanisms are available:

- Not less than three times per year, open community forums will be held in a town hall format where participants can provide feedback on project initiatives and actions.
- 300 unique contacts
- In the spirit of the community benefits agreement, evaluations of performance will be sustained within the DOE reporting process to maintain the community trust placed in the project team.
- Contractual relationships between funded partners and the prime and with employees will provide a last line of defense against non-performance.

Special concern will be given to community engagement and workforce opportunities for disadvantaged communities where barriers to effective communication and trust add additional weight to the importance of effective and consistent project implementation. It should be noted that ComEd has a strong record of partnership with stakeholders on customers' behalf. For example, as a part of our multi-year grid planning efforts, ComEd participated in several stakeholder workshops convened by the Illinois Commerce Commission (ICC). The grid plan stakeholder workshops provided a forum for a wide variety of individuals and organizations to effectively provide feedback and input, making the development of the plan more inclusive of our diverse stakeholder needs. Equity and affordability were major themes.

2. Job Quality and Workforce Continuity (Investing in the American Workforce)

ComEd has demonstrated an ongoing commitment to both job quality and workforce development, with strong union representation in our workforce. ComEd does not have any labor or wage violations and maintains a good relationship with Local 15, the International Brotherhood of Electrical Workers (IBEW) local utility union in northern Illinois. In October 2021 ComEd and Local 15 came to an agreement to develop the skills and competencies of union-represented employees in performing Overhead Fiber Optic work that previously was performed by contractors. Now much of this work is also performed by both ComEd Overhead employees and contractors, with the number of ComEd employees performing the fiber optic work

increasing as more employees are trained. Local 15 played a key role in clean energy legislation, and we continue to work together to manage the labor impacts of the clean energy transition.

Job Quality and Workforce Continuity					Budg	(b) (4)
Duration:	BP1			BP5	Staffing: 1 FTE for projec	
Key organizations: ComEd, Local 15, and R1 Planning, City of Rockford, Rockford Labor Trades Council, Rockford Chamber of Commerce, Rockford Workforce Connection, The Rockford Area Economic Development Council					Metrics: Percent of jobs with high growth potential, New FTE jobs created, Job training participants from EIEC census tracts, Job training participant-hours, STEM education participant-hours	

In 2018, ComEd created two new entry-level union jobs with the title of Construction Worker and Overhead Helper; both positions act as the feeder pools for our construction departments. To date, over 600 employees have been hired for these positions, with another 400 expected in the next 3 years. Applicants hired as entry-level employees are promoted into apprenticeship programs upon qualification and application. The promotional progressions are negotiated with Local 15 and are part of the Collective Bargaining Agreement (CBA). The LIUNA Chicago Laborers’ District Council has provided a letter of support for this proposal, highlighting the “...benefits of the direct and indirect investments in Rockford, increased community resilience, an increase in high-quality job creation through job training, and ultimately a decrease in environmental exposure burdens...”.

One of the goals of this project is to highlight, through the energy sector effort in Rockford, the depth and breadth of opportunities in the green economy, and to help Rockford organizations to better support career transitions for individuals displaced from manufacturing jobs to entire into the green energy workforce. As identified in the project work plan ComEd, Slipstream, R1 Planning and our local workforce development partners will collaboratively quantify the increase in jobs and economic development. The project team will submit these findings to DOE and publish them in R1’s Comprehensive Economic Development Strategy. This plan will build on recent work that ComEd has commissioned to identify the workforce impacts of the clean energy transition in the coming decades.

While specific programs for this initiative will require more collaborative development from partners to determine the appropriate form and the target audience, we highlight the following initiatives that are existing programs being operated by ComEd. These programs demonstrate the depth of experience that the project team brings to workforce development and highlights the range of options available as a starting point for the conversation with community partners in defining workforce development timelines and commitments.

- CONSTRUCT Infrastructure Academy is an 11-week training program sponsored by ComEd in conjunction with a coalition of more than 40 construction and related industry companies that are committed to providing equal employment opportunities and increasing the pool of qualified minority candidates for construction- and industry-related project management and customer service jobs in Illinois. The program includes an

introduction to all the unions the program supports through hiring. CONSTRUCT Business Operations Academy is a 6-week training program that prepares job seekers for entry-level administrative roles in the utility, construction, and related sectors. The Craft Academy Program is a 3-week program that focuses on entry-level craft positions, such as Construction Worker and Overhead Helper.

- Workforce Development Clinics are geared to increase community member success in accessing gainful employment. The three clinics address the hiring process at ComEd: STAR Interview Clinics address the Exelon behavioral interview format; Climb Clinics provide exposure to the craft positions that require physical assessments knowledge and skills; and Math Clinics prepare participants for the CAST exam needed for craft positions at ComEd.
- The Tools of the Trade program, in partnership with the Rockford Boys and Girls Club as well as UCAN Chicago, is a 12-week paid workforce readiness program for 17- to 19-year-old students that focuses on providing hands-on experiences to educate students on careers and skills required within the utility industry. The main goal of this program is to remove barriers to application surrounding union jobs including but not limited to our internal IBEW Local 15 positions. Since its inception in 2016, 108 students have graduated the program.
- The Powering Our Futures skilled trades and STEM training program began at four Chicago high schools in the fall of 2022. Delivered in partnership with local education and philanthropic organizations, the program offers students the opportunity to participate in immersive programming that combines STEM academics in the classroom, with real-world experiences, training, and mentoring provided by ComEd experts in the field.

In implementing the proposed project, ComEd and partners would build on existing relationships with the partners listed above, as well as additional businesses, adult workforce programs, and nonprofit organizations. We would actively recruit Rockford residents for project-associated jobs, with specific focus on the targeted project geography to encourage a representative workforce. ComEd also plans to use contractors and sub-contractors to perform some of the work and has certified, pre-approved engineering and construction contractors with credentials that meet federal and local standards.

Securing Diverse STEM talent. The proposed ICF project represents an immense opportunity to expose students in living in the project focus area, and the greater Rockford region. ComEd is a leader in this area, having established an extensive, company-wide initiative to promote mentorship in STEM education with the explicit aim of increasing energy workforce diversity by increasing diversity of higher education programs. ComEd's Create a Spark program, for example, engages ComEd engineers and other technical staff to mentor high school student participants.

ComEd's existing community partnerships deliver education opportunities to underrepresented groups in STEM fields. ComEd, in collaboration with the American Society of Mechanical Engineers, is currently running a sequence of "DropMeIn!" programs that invite engineers and other STEM professionals into elementary and middle school classrooms. Committed project

partner, Boys and Girls Club of Rockford has been an active STEM education partner, having participated in many ComEd STEM events in recent years, including a current program called Energizing Student Potential, which helps educators bring energy topics into the school and to provide all the tools and resources necessary for students and educators to learn together, explore energy together, and teach their local communities about energy.

In addition to ComEd’s STEM program offerings, Rockford is also home to one of two interactive education centers, called Smart Energy Hubs, located at ComEd training centers. These centers feature content adaptable to preschool through adult learning populations. These facilities will give context to the grid investments that are established with GRIP funding, providing a clear signal to the Rockford community that the time for the green economy is now.

With these facilities and programs available, ComEd and partners will be that much more ready to fully utilize the benefits that spillover from the proposed grid investments and to fully realize the inclusive potential of a public investment campaign in key decarbonization infrastructure. In all years of the project, ComEd will collaborate with our committed community partners and expand our existing STEM programs to include curricula and programming around the advanced communication and grid-edge technologies.

3. Diversity, Equity, Inclusion, and Accessibility

DEIA goals are sustained throughout the project because a commitment to diversity a part of everything that we do. One of the ICF project team’s commitments is that a least 50% of project team will be from groups underrepresented in STEM

Diversity, Equity, Inclusion, and Accessibility						Budget	(b) (4)
Duration:	BP1	BP2	BP3	BP4	BP5	Staffing: From .5 to 1 FTE across project duration	
Key organizations: ComEd, R1 Planning, Slipstream						Metrics: Demographic representativeness of demographic participants compared to project focus area demographics, Percent of project contract value to diversity-certified enterprises, Percent of public meetings in accessible locations, Percent public meetings with Spanish and ASL interpretation	

Inclusive and Intentional Engagement. As described in the project workplan, ComEd, Slipstream, and Region 1 Planning Council will develop a community engagement plan, negotiate a community benefits agreement with committed partners and others, recruit residents to participate in demonstration projects, assess project benefits, and keep the public informed about the project and its results. This high level of community engagement throughout the project demands an intentional approach to ensure quality outcomes. The project team’s commitments are as follows:

- All engagement activities will include residents who are demographically representative of the community areas that compose the project geography.
- All public project meetings will take place in an ADA compliant facility and have a defined agenda that includes opportunities for attendees to provide input on project decisions.
- The team will disseminate educational materials on smart grid technologies, benefits, and costs to members of community. All recruitment and educational documents (digital and print) will be ADA compliant and published in both Spanish and English. All community engagement meetings will have Spanish-language and American Sign Language interpretation.
- STEM education initiatives developed in collaboration with project partners will introduce students from the project focus areas, and other students in historically disinvested communities, to grid resilience technologies with grade-appropriate curriculum (classes, lab tours, etc.)

Inclusive and Representative Recruitment. The Resourcing, Deploying, and Recruiting phases of the project involve recruitment of Rockford residents and business owners, creating an important opportunity to prioritize inclusion in project implementation. ComEd, Slipstream, and R1 Planning are committed to developing systematic recruitment processes for project hiring that prioritizes opportunity for disadvantaged communities. Similarly, the process for recruitment of customers for grid-interactive efficient buildings (GEBs), DER project sites, and EV charger demonstrations, will prioritize disadvantaged communities.

Sourcing Diverse Suppliers. In 2022, 43% of the company's total supply chain spend was with diversity-certified suppliers, a total of \$963 million, and the goal for 2023 is to maintain or improve on 42% of total supply chain spend. ComEd is a founding member of the Illinois Utilities Business Diversity Council, an organization that has been working to advance the cause of supplier diversity since 2015. ComEd also participates in numerous initiatives like Five Forward, which enlists Chicago-area CEOs of midsized to large corporations to commit to establishing or expanding business relationships with five local minority firms. We have a variety of policies and programs specifically designed to meet and exceed our supplier diversity and DEI targets, including the apprenticeship programs mentioned in the section above. We will advance DEI priorities by adhering to the following goals throughout project activities and including updates on these goals in progress reports with DOE.

4. Justice40 Initiative

The location of this proposed project was specifically selected to maximize benefits to disadvantaged communities. The targeted geography is primarily composed of census tracts that are designated as Equity-Investment Eligible Communities, an Illinois-specific criterion that includes environmental justice communities, and Restore, Reinvest, Renew (R3) program communities. The environmental justice designation is determined by the Illinois Solar for All

program criteria, which are based on the Environmental Protection Agency’s (EPA) EJScreen tool. R3 communities are designated as eligible for grant funding, in part, by their rates of gun injuries, child poverty, unemployment, and incarceration. There is significant overlap between these state of Illinois designations and the federal disadvantaged communities criteria.

The proposed project will reflect each Justice40 priority, with a heavy emphasis on energy resiliency and job creation. The benefits of the direct and indirect investments will be increased energy resilience, an increase in high-quality job creation through job training, and a new platform for the development of expertise in grid integrated technologies.

Justice40 Initiative						(b) (4)	
Duration:	BP1	BP2	BP3	BP4	BP5	Staffing: From 1 FTE across project duration	
Key organizations: ComEd, Slipstream, R1 Planning						Metrics: SAIDI, SAIFI, CELID, reduction in costs to public agencies for outage response, DER customers, number of value streams that DER customers can participate in	

Decreasing Energy Burden: The formula to reduce energy burden has two key components. Efficiency improvements can reduce the total or peak energy demand from burdened households, and innovations in the grid that reduce grid costs can yield the same result. This program aims to achieve both of these results. First, by coordinating DER and responsive loads, the utility can help these customers to manage their own operations and the burden of those operations for the grid, exerting downward pressure on overall grid cost. And second, where grid edge control systems enable additional market participation opportunities, for example, in DER, they can support customer initiatives that increase the efficiency or utilize behind the meter resources to manage bill impacts.

Increased Parity in Clean Energy Technology Access: One of the largest barriers to an equitable transition to clean energy is the currently high cost of building electrification. The ICF is designed to open up pathways to DER adoption that can reduce interconnection costs, which have the potential to be a barrier to DER adoption. Likewise, with additional effort on public communications on the energy system, some customers who do not currently understand the benefits that they would derive from innovations may become more interested. Rockford is 90 miles from Chicago, and travel between Rockford and Chicago is an important feature of the transportation landscape in Northern Illinois. Rockford residents who routinely commute to Chicago would be prime candidates for EV adoption, but information about these opportunities needs to reach them.

An Increase in Energy Resilience: ComEd has demonstrated that our reliability performance is equitable across our diverse communities, but we also know that resiliency has a special value to

transit dependent customers and customers who lack the personal financial resources to autonomously recover from a significant power disruption. Our work in the Interoperable Control Framework in Rockford will establish systems that can bring added levels of resiliency to disadvantaged communities. With additional system visibility, measurement of power quality, optimized outage response, improved safety, and higher levels of security, these communities will have a new layer of robustness supporting their grid systems. As real-time data progresses to AI models, we will further improve reliability and resiliency in communities via trained predictions to spot pre-outage conditions or pending equipment failure. The ICF team will track energy resilience through outage counts, standard utility resilience metrics, with specific focus on the impacts in EIEC census tracts.

An increase in high-quality job creation, the clean energy job pipeline, and job training for individuals: ComEd plans to leverage its existing suite of workforce development programs in support of this project, as well as develop new workforce models aimed at creating high-quality jobs. The project team will track the delivery of these benefits through ComEd's workforce development program metrics, and each project partner's program evaluation processes.

Environmental Risk Mitigation

While no specific environmental risks associated with the project have been identified in Rockford, existing policies are in place to minimize environmental exposures and spills in the handling of transformers and other grid equipment.

Exelon's Environmental Policy² commits ComEd to the following:

"Promote a corporate culture in which we are accountable to our communities and the environment and in which full compliance with environmental laws and regulations is the minimum level of acceptable performance; balance meeting future energy needs and contributing to economic growth with delivering sustainable solutions that are clean, affordable, reliable and provide customers the choices they expect; and engage our stakeholders and our employees to preserve, restore and enhance habitats and biodiversity."

The environmental team at ComEd will be engaged in the review of all new grid equipment, and installation to ensure that environmental risks are mitigated. As part of our community benefits agreement negotiation, ComEd, Slipstream, and R1 will gain greater understanding of any environmental concerns within the project area, and any preferred mitigation strategies.

² <https://www.comed.com/SiteCollectionDocuments/SafetyCommunity/corporate-environmental-policy.pdf>