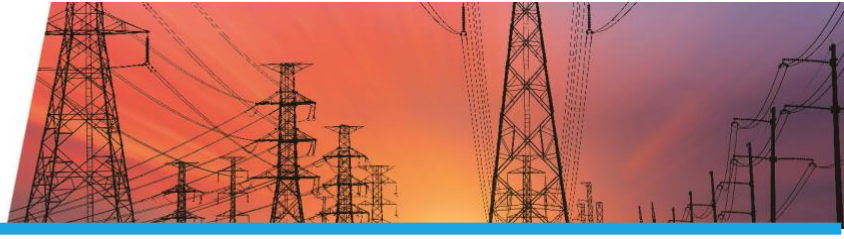

Guidance for Bipartisan Infrastructure Law Grid Resilience Formula Grant Metrics

U.S. Department of Energy

Grid Deployment Office

AUGUST 2023

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Motivation for Tracking Investments

The Bipartisan Infrastructure Law (BIL) includes investments in infrastructure that will create a more sustainable, resilient, and equitable economy by enhancing U.S. competitiveness, driving the creation of well-paying union jobs, and ensuring stronger access to economic and environmental benefits for disadvantaged communities. BIL appropriates more than $62 billion to the U.S. Department of Energy (DOE)[1]—including funding for 60 new programs and 12 existing programs—to invest in American manufacturing and workers; expand access to energy efficiency; deliver reliable, clean, and affordable power to more Americans; and deploy the technologies of tomorrow through clean energy demonstrations.

Funded through BIL and administered through the Building a Better Grid Initiative, the Grid Resilience Formula Grants program is designed to strengthen and modernize America's power grid against wildfires, extreme weather, and other natural disasters that are exacerbated by the climate crisis. The program will distribute up to $2.3 billion over five years and will provide grants to states, U.S. Territories, and Indian tribes based on a formula that includes population size, land area, probability and severity of disruptive events, and a locality's historical expenditures on mitigation efforts. Grant recipients (states, U.S. territories, Indian tribes, and Alaska Native corporations) shall give priority to projects that generate the greatest community benefit by providing clean, affordable, and reliable energy to everyone, everywhere, anytime.

Given the historic level of investment represented by BIL programs, it is incumbent on the Grid Deployment Office (GDO) to transparently track, report, and communicate the outcomes of these programs. The executive order related to BIL directs agencies to prioritize "investing public dollars efficiently and equitably, working to avoid waste, and focusing on measurable outcomes for the American people."[2]

As a steward of this opportunity, it is DOE's responsibility to ensure that funding awarded to recipients maximizes public benefit in both the near and long term. GDO will collect information from award recipients and analyze the data to measure the progress of grid resilience implementation and resulting impacts. GDO expects that award recipients, in turn, will collect information from the eligible entities to which they will subaward program funds.

To enable DOE's oversight of program spending, a standard set of metrics is necessary. This document specifically provides guidance to states, Indian tribes, and U.S. territories on developing uniform collection, measurement, and reporting methodologies that GDO can use to communicate the outcomes and impacts of BIL investments, particularly those of the Grid Resilience Formula Grants program (Sec 40101(d)), while ensuring consistency, transparency, and accountability to support Administration and program objectives.

[1] U.S. Department of Energy, November 2021, DOE Fact Sheet: The Bipartisan Infrastructure Deal Will Deliver for American Workers, Families and Usher in the Clean Energy Future

[2] The White House, Executive Order 14052, November 15, 2021, Executive Order on Implementation of the Infrastructure Investment and Jobs Act

Metrics Framework

GDO is particularly interested in collecting the following types of metrics:

- Grid resilience build metrics
- Grid resilience impact metrics
- Energy equity and community benefit metrics

Build metrics track what grant recipients spend program funds on, which may include hardware, software, additional equipment, and organizational changes. For example, if a sub-granted project is hardening a substation, build metrics will track the number and type of hardware changes being made to the substation. If a project is installing a new software system, build metrics will track migration to the new system as well as its new capabilities.

Impact metrics measure the extent to which grant-funded projects have improved grid resilience and reduced the likelihood and consequences of disruptive events. As projects become operational, impacts should be measurable over time. For example, a project that includes distribution automation may see a significant reduction in customer outage minutes. Another project may see a reduction in the number of outages caused by high-wind events through undergrounding or increased vegetation management.

Energy equity metrics will identify the impact these resilience projects have on disadvantaged communities (DACs), as defined by the DOE Justice40 program.[3] This includes not only improved resilience, but also job creation, investments in businesses located in DACs, investments in job quality and job training, and reduction of the energy burden in these communities**. Community benefit metrics** encompass many of these equity metrics but also consider the quality of engagement. To measure community benefits, DOE is adopting a Spectrum of Community Engagement to Ownership[4] that is more expansive than previous practices and shifts toward involving, collaborating with, and deferring to the community. This approach encourages project teams to build trust, ongoing relationships, and partnerships with impacted communities, whose input will then be considered in key project decisions such as siting, design, implementation, and continuous improvement.

GDO recognizes that the impacts of grid resilience projects should inherently lead to community benefits and that these metrics are intertwined with energy equity. GDO's goal is for the developed metrics to comprehensively consider and inform a deeper understanding of energy equity. To that end, data from the above categories of metrics will be explicitly requested in quarterly and annual reporting templates, as described in further detail in the Documentation section.

[3] The Justice40 initiative, created by Executive Order 14008, establishes a goal that 40% of the overall benefits of certain federal investments flow to disadvantaged communities. See: Executive Office of the President, Memorandum for the Heads of Departments and Agencies, July 20, 2021.

[4] The Spectrum of Community Engagement to Ownership, developed by Facilitating Power in partnership with Movement Strategy Center, can be a resource for project teams. The spectrum envisions five developmental stages: inform, consult, involve, collaborate, defer to. See: Movement Strategy Center, The Spectrum of Community Engagement to Ownership - Movement Strategy Center, 2019.

Approach

GDO's approach involves three basic steps: gather information from grant recipients, analyze the information, and communicate the results to the public. Results will present aggregated data from projects. Identifiable information from individual projects will not be disclosed without permission from the grant recipient.

GDO seeks to work with grant recipients to arrive at a set of metrics for each project that communicates the use of funding and the benefits of funded projects without creating undue burden. To achieve this, grant recipients will work through their DOE Federal Project Officer to select metrics that are most applicable to their proposed projects. Working closely with subrecipients, recipients are advised to choose metrics using the following process:

- What infrastructure, equipment, and devices were deployed?
- What functionality or capability was targeted?
- What benefits were derived from the projects?

Identify resilience objectives. To better determine what metrics to track, recipients should first consider the objective of the project. Most resilience investments will have at least one of the following two goals: prevent outages from occurring or reduce the time it takes to restore power when outages do occur.

Select investments that meet those objectives. Identifying which resilience objectives are most important will inherently determine which types of resilience strategies to invest in. Physical system upgrades such as reconductoring, moving power lines underground, or increasing vegetation management are typically activities done to prevent outages from occurring in the first place. Advanced system monitoring and control technologies, as well as increased system redundancy, can reduce the time it takes to restore power and reduce the number of customers that experience an interruption. Finally, increased numbers and staging of spare parts as well as improvements in inventory management can reduce the time it takes to restore power, especially after an extreme weather event.

Consider the scope of the project. Next, recipients should consider which part of the system they plan to target and why. Projects that target specific communities or sections of a system should collect corresponding impact metrics specific to the project area as much as possible, since gathering data on systemwide performance may not allow recipients to see an impact. For example, when possible, recipients should collect customer interruption data on those directly impacted by the resilience investment. This could mean collecting feeder-specific data if a project is focused on only a few select feeders.

Determine who benefits from the project. Grant recipients are responsible for prioritizing investments and may need to weigh multiple factors when considering different resilience projects proposed by potential subgrantees. These project selection criteria will inform the metrics tracked for each project. In addition to assessing whether a proposed project would be located in a high-risk area, grant recipients may also consider socioeconomic, criticality of load, geographic, or climate factors when deciding resilience projects. If investments are used to ensure equitable access to grid resilience, recipients could consider comparing outage data of the targeted community to other communities within the same service territory. Alternatively, if projects are designed to improve the performance of critical

services during extreme weather events, comparing critical service availability to an average or a baseline would help determine if the project provided the desired benefit.

Establish a baseline. Finally, to capture the extent to which an investment fulfilled its resilience objective, grant recipients need to set a baseline. GDO recommends that recipients—working closely with subrecipients—establish a five-year baseline prior to the project's start date. The impact metrics will then remain consistent throughout the duration of the project.

Table 1 summarizes this approach and identifies some commonly used metrics and how they align with particular resilience objectives. Definitions for the metrics listed in Table 1 as well as other metrics to consider are available in Appendix A.

Table 1. Illustration of how resilience objectives match resilience metrics.

	Resilience objective	
	Prevent outages from occurring	**Reduce time to restore power**
How?	• Component hardening • Undergrounding power lines • Relocating, replacing, or reconductoring power lines • Increasing operation and maintenance activities (vegetation management, pole inspection and replacement, etc.) • System monitoring (health sensors, power quality monitors, etc.)	• Inventory management • Improving ability to access electrical components for repairs • Adding redundancy to allow for load transfer (looped circuits, feeder switching, etc.) • Increasing system visibility to show where outages occur
Where?	• Multiple locations throughout a system • Targeted section(s) of power lines • Targeted feeder • Specific substation • Specific clusters of customers • Disadvantaged communities, as defined by the DOE Justice40 programs[5]	

[5] The Climate & Economic Justice Screening Tool can be used to identify disadvantaged communities.

Why?	• Improve average overall performance • Improve average performance against specific outage threat (e.g., wildfire, hurricane, ice storm) • Increase critical infrastructure resilience • Improve performance of historically underperforming sections of the grid • Improve resilience of historically underserved communities or communities of interest (defined in Appendix B)	
What to measure?		
Build metrics	• Miles of transmission and distribution lines impacted by project • Number of transmission and distribution poles impacted by project • Number and type of substation hardening projects • Megawatts of generating units weatherized • Energy and power rating of batteries installed[6]	
Equity and community benefit metrics	• Number and demographics of employees working on the project • Number of individuals receiving training as part of the project • Proportion of individuals hired or trained from disadvantaged communities • Number of meetings or outreach activities held with community members (specifically those from communities of interest) about project • Grant funding dollars that went to projects benefiting disadvantaged communities	
Impact metrics before and after implementation in targeted location for targeted reason using:	• Number of outages • Number and type of needed repairs • Number of customer interruptions • Number of customers experiencing multiple interruptions • System Average Interruption Frequency Index (SAIFI) • Number and type of customers benefiting from project • Outage recovery costs	• Hours to repair or replace equipment • System Average Interruption Duration Index (SAIDI) • Customer Average Interruption Duration Index (CAIDI) • Hours to restore 50%/90%/100% of customers post outage event • Number and type of customers benefiting from project • Outage recovery costs

[6] For batteries, the power rating (measured in kilowatts) indicates how much power can flow into or out of the battery in any given instant. The energy rating (measured in kilowatt-hours) is the measure of how much electricity the system can deliver or absorb over the course of an hour. See: National Renewable Energy Laboratory, Batteries 101 Series: How to Talk About Batteries and Power-To-Energy Ratios, April 13, 2016.

Examples

Using Table 1, we present three example projects and discuss how a recipient could develop metrics that are appropriate for each project. Please note that the metrics recommended here are not exhaustive and individual projects—even those using similar resilience strategies—could take a different approach to metrics depending on desired outcomes.

SUBSTATION HARDENING

A state along the Gulf Coast partners with a utility that experienced extensive flooding of one of their substations last year during a large tropical storm. The customers served by this substation have no other source of power, so if the substation fails, all customers downstream lose power. The utility has proposed to move the substation to higher ground, add flood monitors, and install submersible equipment. The substation has experienced few other outage events, but the most recent flooding was devastating to its customers.

The recipient should consider collecting the following metrics:

- Build
  - Estimated lifetime of new equipment
  - Increase in elevation of substation
  - Number and type of flood monitors
  - Number and type of new equipment installed

- Equity and community benefit
  - Number and demographics of employees assigned to project
  - Number and demographics of employees trained for project
  - Number and type of customers served by substation, specifically considering disadvantaged, tribal, fossil energy, and rural communities served (definitions provided in Appendix B)
  - Number and type of critical infrastructure served by substation (e.g., resilience hubs, community centers, transportation, fuel supply, food and water services)
  - Number and type of meetings or outreach activities held with community members about project
  - Number and type of community groups or other organizations engaged with through outreach activities, specifically considering disadvantaged, tribal, fossil energy, and rural communities engaged

- Impact (tracked five years prior to project implementation to establish a baseline, as well as during the project performance period)
  - Hours to restore power to 100% of customers downstream from the substation during flooding events
  - Cost to repair substation after a flooding event
  - Number of individual customer outages that extend beyond 24 hours during a flooding event
  - Number of critical services with outages that extend beyond 24 hours during a flooding event

- Number of substation components replaced because of equipment damage or failure, especially considering flood damage

DISTRIBUTION AUTOMATION

Fault location, isolation, and service restoration (FLISR) devices help utilities determine where a fault on the line occurs and then isolate it so it impacts a smaller number of customers. This allows some of the customers who originally lost power to receive power through an alternate connection (tie lines to an adjacent feeder). On top of the monitors and sectionalizing switches, the equipment to automate the process requires a robust communication network and system operations software. Installing such devices cannot prevent outages from occurring in the first place but can reduce the total number of customers who lose power and notify the utility more accurately where the fault occurred so it can be repaired more quickly. Let's consider a grant recipient selecting a utility to install FLISR devices on a single feeder. Because these technologies can be beneficial in all outage cases, improvements could be seen by comparing reliability data of the feeder to the service territory as a whole, in addition to before and after project implementation.

The recipient should consider collecting the following metrics:

- Build
  - Estimated lifetime of new devices
  - Number and type of devices installed
  - Type and capability of additional software systems installed

- Equity and community benefit
  - Number and demographics of employees assigned to project
  - Number and demographics of employees trained for project
  - Average number of hours of training per individual
  - Type of training provided
  - Number and type of customers served by substation, specifically considering disadvantaged, tribal, fossil energy, and rural communities served (definitions provided in Appendix B)
  - Number and type of critical infrastructure served by feeder (e.g., resilience hubs, community centers, transportation, fuel supply, food and water services)
  - Number and type of meetings or outreach activities held with community members about project
  - Number and type of community groups or other organizations engaged with through outreach activities, specifically considering disadvantaged, tribal, fossil energy, and rural communities engaged

- Impact (tracked five years prior to project implementation to establish a baseline, as well as during the project performance period)
  - SAIDI/SAIFI/CAIDI values for all outage types (including major event days) *for the automated feeder*
  - SAIDI/SAIFI/CAIDI values for all outage types (including major event days) *for the entire service territory*
  - Average annual outage recovery cost for the automated feeder

- Number of devices replaced because of equipment damage or failure, including cause of damage

VEGETATION MANAGEMENT

A tribe in the southwestern part of the United States is seeing increases in vegetation-caused outages on the long stretches of power lines that run through highly vegetated areas. Vegetation outages occur even during average storms, but a wildfire could be extremely devasting and cause the tribal community to lose power for extended periods of time while poles and lines are replaced. The tribe has partnered with its utility to train and hire members from the tribal community to trim vegetation that impacts power lines located on or near tribal lands. This project will aim to increase the vegetation clearing area around these power lines, which will require more frequent attention.

The recipient should consider collecting the following metrics:

- Build
  - Number of distribution miles trimmed
  - Number of transmission miles trimmed
  - Increase in clearing diameter around poles (e.g., 5 feet to 10 feet)

- Equity and community benefit
  - Number of employees needed for project
  - Average number of hours of training per individual
  - Type of training provided
  - Number of customers served in tribal community
  - Number and type of critical infrastructure affected by project (e.g., resilience hubs, community centers, transportation, fuel supply, food and water services)
  - Number and type of meetings or outreach activities held with community members about project

- Impact (tracked five years prior to project implementation to establish a baseline, as well as during the project performance period)
  - Number of outages caused by wildfires in areas designated for vegetation management
  - Number of outages caused by vegetation in areas designated for vegetation management
  - Number of poles replaced because of vegetation-caused outages in project area
  - Length (in feet) of conductor replaced because of vegetation-caused outages in project area
  - Number of other electrical components replaced because of vegetation-caused outages in project area
  - Number of events where the entire tribal community lost power and the cause of those outage events
  - SAIDI/SAIFI/CAIDI values for the tribal community, considering total values, wildfires specific values, and vegetation-specific values

Documentation

Metrics reporting will be split into two reporting templates: the Quarterly Progress Report and the Annual Program Metrics and Impact Report. The Quarterly Progress Report will capture data on project attributes, which includes data on the type of project, the expected benefits, the customers impacted, project location, subaward entity, cost, project milestones, and build metrics. The Quarterly Progress Report will be requested at the end of each quarter.

The Annual Program Metrics and Impact Report will further capture benefits that communities realize through the program. Data requests include tracking avoided outages, avoided costs, and reduced restoration time, as well as further information on community and labor engagement; workforce and community agreements; investments in job quality and job training; diversity, equity, inclusion, and accessibility; and Justice40 benefits. The Annual Program Metrics and Impact Report will be requested at the end of each federal fiscal year.

The reporting templates will provide a list of metrics to choose from to help recipients consider the possible metrics to report. However, recipients can use any additional metrics they deem appropriate for the projects funded by the Grid Resilience Formula Grants program. Appendix A provides a list of metrics for all three metric categories.

Metrics reporting templates will be provided by the National Energy Technology Laboratory, which is helping to administer the Grid Resilience Formula Grants program.

As outlined in the Administrative and Legal Requirements Document, reporting requirements are identified on the Federal Assistance Reporting Checklist and Instructions, DOE F 4600.2, attached to the award agreement.

Metrics tracking guidance for all projects funded by BIL is under development by DOE's Office of Policy, which may identify additional reporting requirements. These additional reporting requirements will be added as needed to the Annual Program Metrics and Impact Report. Recipients should maintain sufficient records on their projects.

Appendix A: Metrics to Consider

Table A1. Build metrics and remarks

Metric	Remarks
Miles of new distribution lines	
Miles of distribution lines undergrounded	
Miles of distribution lines of vegetation clearing	
Miles of distribution lines reconductored	
Miles of distribution lines with other upgrades	For example, using a Spacer Cable System, or adding quick-disconnect wires
Number of distribution poles inspected	
Number of distribution poles replaced	For example, replaced with higher load-bearing capable or non-wood poles
Number of distribution poles with other upgrades	For example, adding guy wires or reducing pole attachments
Miles of new transmission lines	
Miles of transmission lines undergrounded	
Miles of transmission lines of vegetation clearing	
Miles of transmission lines reconductored	
Miles of transmission lines with other upgrades	
Number of transmission structures inspected	
Number of transmission structures replaced	For example, replaced with higher load-bearing capable poles/towers or non-wood poles/towers
Number of transmission structures with other upgrades	For example, station transformers or post-insulator upgrades
Number of substations relocated	
Number of substations with added physical protection	For example, flood walls, protective berms, enclosing substation indoors

Number of substations with added sensors/monitors	
Number of substations with elevated equipment	
Number of substations with upgraded equipment	
Number of substations with redundant equipment	
Number of fault location, isolation, and service restoration (FLISR) devices installed	For example, advanced interruption switches, remote fault indicators, and smart relays
Number of other monitoring/metering devices installed	For example, feeder monitors and transformer monitors
Number of other protection or control devices installed	For example, automated capacitors, automated regulators, phasor measurement units (transmission)
Power rating (MW) and energy (MWh) rating of battery system installed	This could be a permanent or temporary installation
Voltage rating of mobile substation (kV)	
Voltage rating of mobile transformers (kV)	
Capacity rating of hardened generation (MW)	Specify generation type: photovoltaic (PV), wind, diesel, natural gas, coal, etc.
Average annual energy provided by hardened generation (MWh)	Specify generation type: PV, wind, diesel, natural gas, coal, etc.
Percentage increase in energy storage capacity in reserve fuel	Specify fuel source: diesel, propane, gasoline, etc.
Number of assets purchased to assist with power restoration	For example, transportation equipment (all-terrain vehicles) and communication equipment (radios)
Type and capability of new software system(s)	For example, outage management systems, supervisory control and data acquisition (SCADA), asset management, workforce management, or advanced distribution management systems (consider what other systems they are integrated with)

Percentage increase in inventory by equipment type	For example, replacement poles, circuit breakers, switches, transformers

Table A.2 Impact metrics and remarks

Metric	Remarks
Number and duration of outages by specific category	Utilities use cause categories for outages to categorize and target issues on their system. Common cause categories include vegetation-related outages, animal-related outages, lighting-caused outages, equipment failure, and weather-related outages.
Number and type of equipment failures	Which pieces of equipment are damaged and what caused it? (In particular, consider weather-related damage.)
Outages exceeding a threshold	Consider defining a threshold tolerance for outage duration
System Average Interruption Duration Index (SAIDI)	The average duration in minutes a customer is interrupted considering the full system during a reporting period (the average includes all customers; those who lost power and those who did not) SAIDI = Customer Minute Interruptions/Total Customers
Customer Average Interruption Duration Index (CAIDI)	The average duration in minutes a customer is interrupted considering only the customers who lost power during a reporting period CAIDI = Customer Minute Interruptions/Customer Interruptions
System Average Interruption Frequency Index (SAIFI)	The average number of customers who lost power during a reporting period SAIFI = Customer Interruptions/Total Customers
Reliability metrics of Major Event Days (MED)	An MED is a statistical measure defined by IEEE 1366-2001, 2.5 Beta Methodology (see IEEE's Measuring Performance of Electric Power Distributions Systems)

	However, not every utility or Public Utility Commission uses this definition for reporting. Track and report if a different definition is used by subaward entities. Separate reporting for MEDs allows for better visibility into the impacts of extreme outage events.
Number of individual customers with more than five interruptions in one year	Noteworthy if the multiple interruptions are coming from the same outage cause
Number of individual customer outages that extend beyond 24 hours	After an outage triggering event, possibly a Major Event Day
Number of critical services with outages that extend beyond 24 hours	After an outage triggering event, possibly a Major Event Day
Hours of unmet load	This would likely be specific to a set of customers installing a battery or hardening a generation asset
Outage recovery cost ($)	Total cost for restoration of project area before and after implementation
Expected changes in annualized costs	Some resilience initiatives, while expensive initially, can save a lot of money in annual operations and maintenance costs, such as avoiding vegetation trimming by undergrounding power lines. Conversely, smaller capital investments may have to be replaced more often (e.g., smart meters), increasing annualized costs.
Hours line loading exceeded normal rating	Transmission and/or distribution lines
Average hours to restore 50%/90%/100% of customers	After an extreme outage event, restoring power to customers often follows an asymptotic curve where the last 5% to 10% of customers take weeks to months to restore power because homes are destroyed. Because of this, the values to restore 50%, 90%, and 100% of customers interrupted are not necessarily correlated. Considering all aspects of the restoration curve are important to grid resilience.

Number of power quality incidents	Power quality incidents are often precursors to outages. Tracking incidents that power quality exceeded set tolerances (e.g., voltage surges, sags, voltage impulses, or harmonic distortion) can inform regulators about the stability of the system.
Total transmission congestion during the reporting period (MW)	
Total transmission congestion cost during the reporting period	
Real (MW) and reactive power (MVar) readings for those feeders involved in the project	Information should be based on hourly loads
Number of crews/line workers deployed to repairs	
Number of truck rolls avoided	Estimate of the number of times a crew would have been dispatched to perform a distribution operations or maintenance function
Total mileage of distribution operations vehicles during reporting period	Could indicate cost savings and environmental impacts

Table A.3 Equity and community benefits metrics

Workforce investment	
Metric	**Remarks**
Number of employees involved in project (total and by demographic)	DOE is specifically interested in the following demographics: • Gender: Male, female, non-binary, other • Race: American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, Asian, Black or African American, White, Other • Ethnicity: Hispanic or Latino, not Hispanic or Latino • Veteran status: Veteran, not veteran, other protected veterans • Disability status: Has disability, does not have disability, disability status unknown

	• From a Justice40 Disadvantaged Community
Is there a project labor agreement (PLA) for the construction project?	Y/N
Is there a collective bargaining agreement (CBA) for the project's non-construction work?	Y/N
Does the project have a formal anti-discrimination or anti-harassment program or plan?	If Y, what is in the plan or program?
Does the recipient have a formal diversity, equity, access, and inclusion (DEIA) plan?	If Y, what is in the plan or program?
Type of training provided	Readiness (e.g., pre-apprenticeship, work readiness) Registered apprenticeship Other earn-as-you-learn on-the-job training Upskilling for employed individuals Experiential training as part of a degree program
Does your program target underserved or underrepresented populations for training?	If Y, which of the following groups: • Women • Returning citizens (formerly incarcerated/justice system-involved) • Veterans • Residents of disadvantaged communities • Transitional youth (18- to 24-year-olds) • Displaced or at-risk energy (coal, oil, gas, or automotive) workers
Number of individuals receiving training as part of the project (total and by demographic)	See demographics for number of employees
Average number of hours of training per individual (including on-the-job training/work performed by registered apprentices)	
Number of individuals receiving raise, promotion, or placed in a new paid position as a result of training	

Community benefit	
Number of meetings or outreach activities held with community members about project	
Type of engagement: Consent-based siting, research and design, reporting, project decision making, community input	See Appendix B for definitions
Degree of engagement: Inform, consult, involve, collaborate, defer to	See Appendix B for definitions
Number of community groups or other organizations engaged with through outreach activities	Considering especially communities of interest: disadvantaged, rural, fossil energy, or tribal communities
Number of community groups or other organizations engaged with that are from disadvantaged communities (DACs).	DACs as identified in the Justice40 Program
Number and cost of projects benefiting communities of interest (i.e., disadvantaged, rural, fossil energy, or tribal communities)	
Number and type of customers benefited by project	Residential or commercial vs. industrial
Number of customers that provide critical services benefited by project	For example, community services/emergency centers, communication service, energy supply services, transportation services, water services, food services
Number and dollar amount of subaward funding going toward minority institutions	HBCU: Historically black college or university TCU: Tribal college or university IHE: Institution of higher education MSI: Minority-serving institution HSI: Hispanic-serving institution
Number and dollar amount of subaward funding going toward small and small disadvantaged businesses	Woman, minority, veteran, disabled veteran, and/or LGBTQ+ person-owned business

Appendix B: Definitions

Table B.1 Community definitions

Disadvantaged community	For the purposes of this guidance, "disadvantaged communities" are defined at the census tract level. DOE recognizes disadvantaged communities as defined and identified by the White House Council on Environmental Quality's Climate and Economic Justice Screening Tool.
Fossil energy community	For the purposes of this guidance, "fossil energy communities" are cities, towns, and regions that have significant economic ties to fossil energy production through the extraction, processing, transport, or storage of coal, oil, and/or gas, or power generation from these fuels, specifically those included in 1) the "Covered Census Tract" definition in Section 40209 of H.R. 3684, which is based on census tracts that have had coal mines that have closed or coal-fired power plants that have retired after a certain date; and 2) the Bureau of Labor Statistics Areas listed by the Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization. This definition should be updated to reflect any new definition established by the Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization.
Rural community	Federal agencies do not have a standard definition for rural; therefore, for the purposes of this guidance, a "rural community" will be defined according to the definition of "rural and remote areas" in BIL Sec. 40103—"a city, town, or unincorporated area that has a population of not more than 10,000 inhabitants."
Tribal community	For the purposes of this guidance, "tribal communities" should be inclusive of organizations that identify as an Indian/Native American Tribal Designated Organization, including Tribal Colleges and Universities and Indian Nations and American Indian and Alaska Native Tribal Governments as defined by DOE Order 144.1:* "Indian Nation. Any American Indian or Alaska Native Tribe, Band, Nation, Pueblo or other organized group or community, including any Alaska Native village [as defined or established pursuant to the Alaska Native Claims Settlement act (43 U.S.C. 1601 et seq.)], which is acknowledged by the Federal government to constitute a tribe with a government-to-government relationship with the United States and eligible for

	the programs, services, and other relationships established by the United States for indigenous peoples because of their status as American Indian and Alaska Native tribes, Bands, Nations, Pueblos or communities." "American Indian and Alaska Native Tribal Government. The recognized government of an Indian nation and any affiliated or component band government of such nation that has been determined eligible for specific services by Congress or officially recognized pursuant to 25 CFR Part 83, in the most recent Bureau of Indian Affairs Federal Register Notice, "Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs." Those who self-identify as American Indian or Alaskan Native, but are nontribal residents, should still be considered part of their self-identified community.

*Source: U.S. Department of Energy, January 2009, DOE Order 144.1.

Table B.2 Type of engagement

Community input	The event gathered input from the community participants.
Consent-based siting	The event sought or worked toward community-consented siting of project.
Project decision making	The event involved shared decision making on the project.
Reporting	The event shared back data or progress with the community.
Research and design	The event engaged in co-design with the community on the project or related research.

Table B.3 Degree of engagement

Consult	Gather input from the community.
Collaborate	Ensure community capacity to play a leadership role in implementation of decisions.
Defer to	Foster democratic participation and equity through community-driven decision making. Bridge divide between community and governance.
Inform	Provide the community with relevant information.
Involve	Ensure community needs and assets are integrated into process and inform planning.