Name of the applicant: Ascend Elements, Inc.
Project director: David Steiner, Senior Program Manager, Ascend Elements
Project title: Apex – Integrated Sustainable Battery Precursor Production Plant

Objective: To establish significant production capacity, at an industrial scale, of sustainable low-cost precursor cathode materials in the United States by [redacted] with the production of both [redacted] (b) (4) to support domestic production of [redacted] can then be used in new LiBs for electric vehicles (EV) and energy storage systems (ESS). Using Ascend Elements' proprietary and established Hydro-to-Cathode™ direct precursor synthesis process technology, developed in the US, the new proposed "Apex" facility will be the first domestic, commercial-scale, integrated metal extraction and pCAM facility in the US.

Apex will use black mass as input. Produced at Ascend Elements' Base 1 facility in Covington GA, black mass is recovered from end-of-life LiB's and/or manufacturing scrap. By the end of the project period, Apex will have the capacity to flexibly process [redacted] of recovered black mass [redacted] The Hydro-to-Cathode™ technology is the most economic, effective and environmentally friendly technology for producing [redacted] it keeps all critical materials comingled in the processing, allows for transformation of old battery chemistries into new formulations, and creates less GHG emissions than traditional cathode material manufacturing processes.

(b) (4)

Description of the project: Ascend Elements will plan, design and build Apex 1 on an existing greenfield site in Hopkinsville, a disadvantaged community (DAC) in southwestern Kentucky. This facility consists of multiple manufacturing buildings as well as office space and a warehouse, and support infrastructure such as a rail spur, unloading/loading stations and holding tanks. The construction process will use established and approved processes for building new manufacturing sites. The manufacturing equipment will be based on its operational pilot-scale plant in Westborough, MA. Commercial-scale equipment will be designed, installed and commercial production will begin during the [redacted] project period.

(b) (4)

Potential Impact: Project funding will dramatically accelerate and advance US lithium-ion battery precursor cathode manufacturing by rapidly scaling a unique domestically-developed technology that uses [redacted]. The project will generate [redacted] in total economic impact during its three year construction period and over the first [redacted] of operation. It will enable sourcing of critical battery materials from within the US and reduce the dependence on foreign material suppliers. It will jumpstart the creation of a sustainable, secure LiB economy in the US. It will create high quality, good-paying jobs that offer many benefits such as healthcare and stock options. Ascend Elements also plans to offer community benefits such as workforce training and education, affordable childcare, and affordable transportation initiatives to raise equity levels in the greater Hopkinsville community. Together, this will help revitalize the workforce and the economy of the greater Hopkinsville community for decades to come, while significantly strengthening the US lithium-ion battery industry.

Instructions and Summary

Control Number: 2678-1596
Award Recipient: Ascend Elements, Inc.

Date of Submission: June 30 2022
Form submitted by: Roger Lin
(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, negotia ion, 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 iden ified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. hrough 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 wi h the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit en ities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal enti ies.
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

	Federal	Cost Share			Total Costs	Cost Share %	Proposed Budget Period Dates
Budget Period 1	$84,448,850	$84,448,850			$168,897,700	50.00%	Month 01 to Month 19
Budget Period 2	$79,946,775	$79,946,775			$159,893,550	50.00%	Month 17 to Month 36
Budget Period 3	$0	$0			$0	0 00%	
Budget Period 4	$0	$0			$0	0 00%	
Budget Period 5	$0	$0			$0	0 00%	
Total	$164,395,625	$164,395,625			$328,791,250	50.00%	

Section B - Budget Categories

CATEGORY	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Costs	% of Project	Comments (as needed)
a. Personnel	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
b. Fringe Benefits	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
c. Travel	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
d. Equipment	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	$0.12
e. Supplies	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	$8.22
f. Contractual	[redacted]	[redacted]				[redacted]	[redacted]	
Sub-recipient	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
Vendor	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
FFRDC	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
Total Contract	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
g. Construction	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
h. Other Direct Costs	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
Total Direct Costs	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
i. Indirect Charges	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
Total Co	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	

(b) (4)

Additional Explanation (as needed):

a. 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
2	Technicians (2)	4000	$20.00	$80,000	0	$0.00	$0	0	$0.00	$0	0	$0.00	$0	0	$0.00	$0	4000	$80,000	Actual Salary
All	[redacted]																		
1 3 5 6 7 9 11 12																			
All																			
All																			
1, 2,4,5,7,8,10,11																			
All																			
All																			
All																			
All																			
All																			
All																			
All																			

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.

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
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]			[redacted]			[redacted]			[redacted]	[redacted]
			$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
			$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
			$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
			$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
			$0			$0			$0			$0			$0	$0
			$0			$0			$0			$0			$0	$0
[redacted]	[redacted]		[redacted]	[redacted]		[redacted]	[redacted]		[redacted]	[redacted]		[redacted]	[redacted]		[redacted]	[redacted]

(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.*

X **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.

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 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
	Domestic Travel	Budget Period 1									
1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
										$0	
	International Travel										
										$0	
	[redacted]									[redacted]	
	Domestic Travel	Budget Period 2									
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
										[redacted]0	
	International Travel										
										$0	
	Budget Period 2 Total									[redacted]	
	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									$[redacted]	

Additional Explanation (as needed):

(b) (4)

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						
3,4,5	**EXAMPLE!!!** Thermal shock chamber	2	$70,000	$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
[redacted]						
					Engineering Estimate	Process Equipment
					Engineering Estimate	Process Equipment
					Engineering Estimate	Support infrastructure
				$0		
				$0		
	Budget Period 1 Total			[redacted]		
				Budget Period 2		
[redacted]						
				$0		
				$0		
	Budget Period 2 Total			[redacted]		
				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			[redacted]		

(b) (4)

Additional Explanation (as needed):

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		
	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):

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) $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. 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.

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	$8,000	$4,000	$108,000
								$0
								$0
								$0
								$0
								$0
								$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	$0	$32,900	$86,500	$0	$0	$119,400
[redacted]								
								$0
								$0
								$0
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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
								$0
								$0
		Sub-total	$0	$0	$0	$0	$0	$0

	Total Contractual		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	

Additional Explanation (as needed):

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):

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):

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 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)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		
[redacted]							
OTHER Indirect Rate	0.00%	0 00%	0 00%	0.00%	0.00%		
Indirect Costs (As Applicable):							
Overhead Costs						**$0**	
G&A Costs	[redacted]	[redacted]	[redacted]			[redacted]	
FCCM Costs, if applicable						**$0**	
OTHER Indirect Costs						**$0**	
Total indirect costs requested:	[redacted]	[redacted]	**$**	**$0**	**$0**	[redacted]	

(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.

X 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.

Used historical G&A rate from past DOE projects (performed as Battery Resourcers)

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.

Recipient Provided Cost Share	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
a. Personnel	Ascend Elements	Cash		[redacted]					
b. Fringe	Ascend Elements	Cash							
c. Travel	Ascend Elements	Cash							
d. Equipment	Ascend Elements	Cash							
e. Supplies									
f. Contractual (NOT subrecipient provided)	Ascend Elements	Cash							
g. Construction									
h. Other									
i. Indirect	Ascend Elements	Cash							
Total recipient provided cost share				$84,448,850	$79,946,775	$0	$0	$0	$164,395,625

(b) (4)

f. Subrecipient (3rd Party) Provided Cost Share	Organization/Source	Type (Cash or In Kind)	Cost Share Item For simple cost share contributions from a partner provide the detail below; for complex contributions provide a separate budget justification (if required) or a supplementary detailed explanation	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Total subrecipient provided cost share				$0	$0	$0	$0	$0	$0
Total Contractual Cost Share (Sum of Recipient and Subrecipients)				[redacted]					
Grand Total Cost Share All Sources			Totals	$84,448,850	$79,946,775	$0	$0	$0	$164,395,625
			Cost Share Percentage per Budget Period	24.7%	23.3%	0.0%	0.0%	0.0%	

Total Project Cost: $328,791,250 **Cost Share Percent of Award: 50.0%**

Additional Explanation (as needed):

(b) (4)

(b) (4)

A. Environmental Information Describing the Project and the Project Site

1. Summary

"Project Apex" is Ascend Elements' flagship and largest facility – a commercial-scale lithium-ion battery material production plant consisting of multiple buildings on approximately 65 acres of land, currently greenfield, located in Hopkinsville Kentucky. This facility will use black mass (BM), which is a sustainable extracted feedstock from recycled lithium-ion batteries (LiB), as an input supply source. It will transform the BM into LiB precusor materials such as metal salts (e.g. cobalt sulfate, nickel sulfate, etc) and precursor cathode active materials (pCAM), as well as battery active materials such as cathode active material (CAM), which are then subsequently used by LiB manufacturers to build batteries for various applications including electric vehicles (EV), electricity storage systems (ESS) for the utility grid, or portable electronic devices.

The project will take place over a 36-month period during which the greenfield site will undergo civil works in preparation for building shell construction, equipment will be specified, procured, and installed, and the production lines will be tested and commissioned for commercial operation. The Apex facility will require water, sewer, electricity, and a rail spur to be brought to site. All major civil works and construction is expected to occur in months 4-17 of the project.

Figure 1: Site aerial view. The overall Commerce Park II area in Hopkinsville KY is outlined in yellow. Apex facility will be built in the northwest part of the area shown.

An environmental site assessment has already been prepared as part of the State of Kentucky's efforts

to convert a large swath of existing farmland into an industrial park. This report, conducted by [redacted] (b) (4) [redacted] outlines the details of the land upon which the proposed project seeks to build upon. The report identifies recognized environmental conditions and includes a site reconnaissance as well as research and interviews with representatives of the public, property owners, and regulatory agencies [redacted], available upon request). It should be noted that the proposed project will not occupy the entire industrial park, but a smaller portion in the northwest part of the park.

Impact assessment is still being completed at this preliminary stage of the project.

2. Proposed Project and Its Alternatives

a. Proposed Project

The project will take place over a 36-month period during which the greenfield site will undergo civil works in preparation for building shell construction, equipment will be specified, procured, and installed, and the production lines will be tested and commissioned for commercial operation. The Apex facility will require water, sewer, electricity, and a rail spur to be brought to site. All major civil works and construction is expected to occur in months [redacted] of the project.

(b) (4)

Figure 2: Site building plan (conceptual) bounded by John Rivers Road to the north

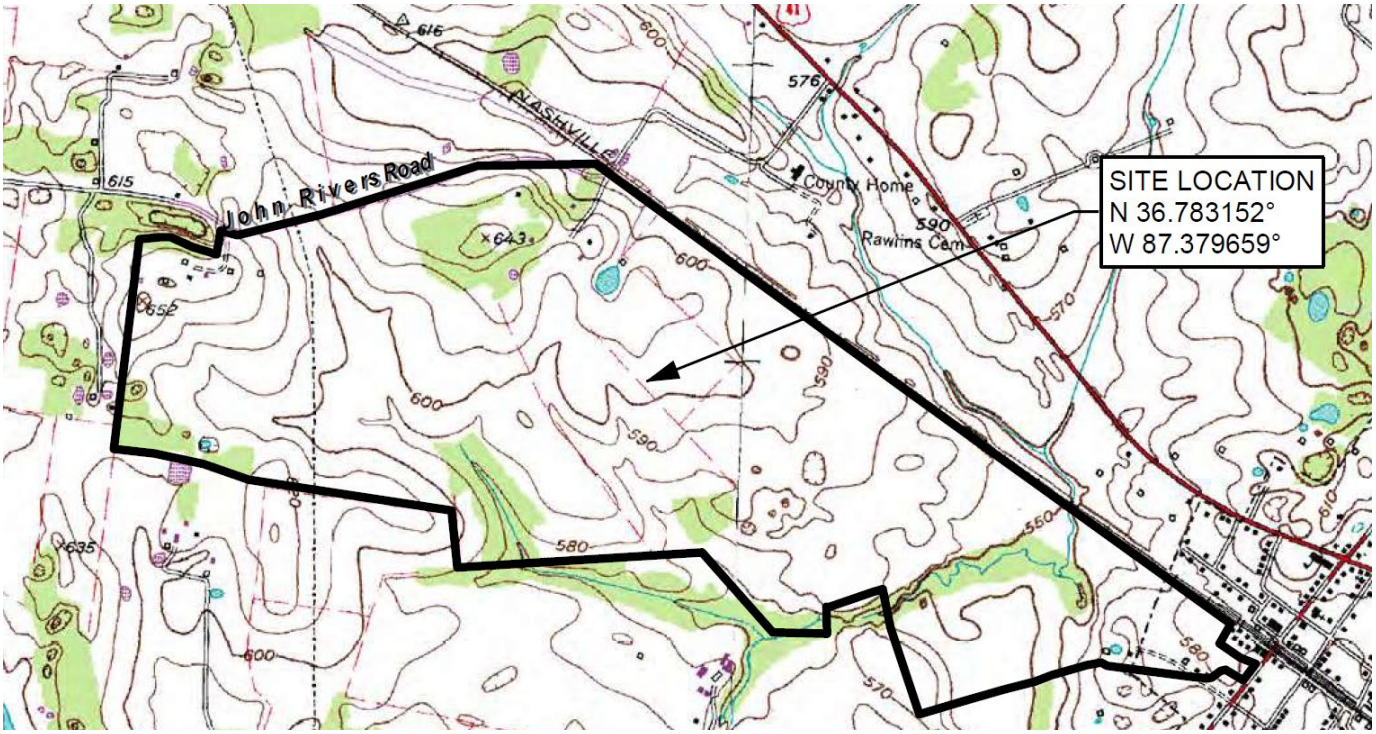


Figure 3: Topographic Map, Commerce Park II overall industrial park area (currently greenfield). Apex project will occupy northwestern corner of the marked plot.

b. Alternatives to Proposed Project Location

(b) (4) Multiple alternative locations (48 in total) were considered for Apex including greenfield and brownfield [redacted] ites in [redacted]. None were able to meet the requirements [redacted] or proximity to existing Ascend Elements facility in Covington Georgia and the larger EV and battery manufacturing industry manufacturing sites in the southeastern USA, overall size/area available, access to power and rail service, building clear height, zoning and permitting, timeline, and cost.

No-Action Alternative

Other than failure to build infrastructure that would significantly strengthen and secure the US capability in lithium-ion material manufacturing, the other main "no-action" alternative would result in failure of the existing initiative by Southwestern Kentucky Economic Development Council (SWK EDC) to transform currently underutilized land in the Hopkinsville area into a new industrial park. SWK EDC has been actively promoting, with support from the broader community, the conversion of existing farmland into "Commerce Park II" to help revitalize the surrounding disadvantaged communities including the city of Hopkinsville itself. Ascend Elements would be the first occupier of this newly planned industrial park.

3. Existing Environment

a. Land Use

Commerce Park II is located immediately south of the CSX Railroad and John Rivers Road where it intersects the Hopkinsville Commerce Industrial Park I, to the southeast of Hopkinsville, Christian County, Kentucky. It is currently used as farmland. There is a TVA (Tennessee Valley Authority) 161 kV

transmission line running through the western side of the property. Within Commerce Park II are [redacted] are located in northwestern Commerce II. The lots may be modified in size to fit the needs of the project.

(b) (4) [redacted]

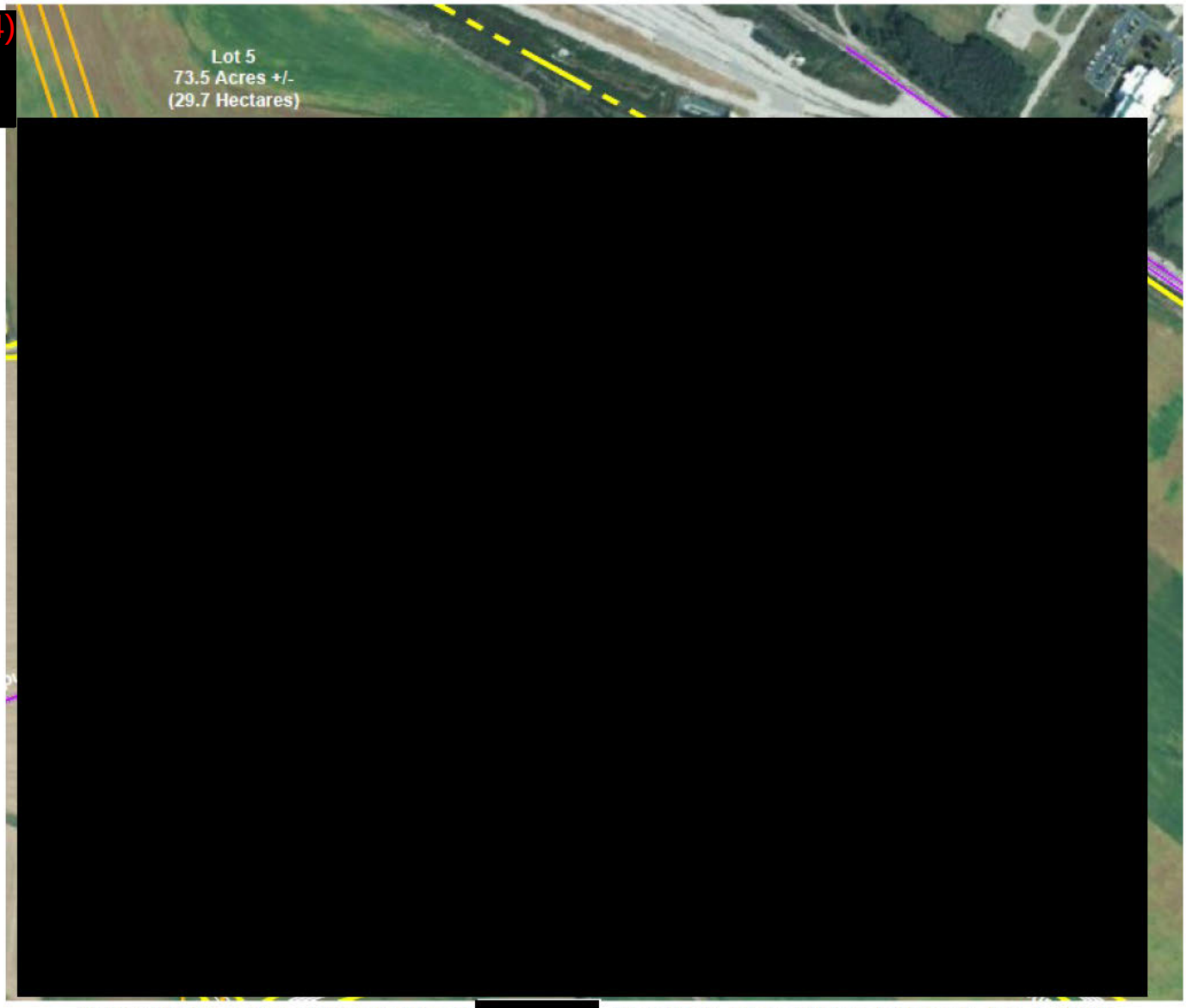


Figure 4: Inset map of Commerce II; [redacted] are where Project Apex is intended to be built

b. Atmospheric Conditions/Air Quality

The facility will be located in Hopkinsville, Christian County, Kentucky and will operate under an air permit issued by the Kentucky Department for Environmental Protection. Christian County is currently designated as an as an area that is in attainment, unclassifiable, or not designated for carbon monoxide (CO), particulate matter less than 10 microns (PM10), PM less than 2.5 microns (PM2.5), nitrogen dioxide (NO2), sulfur dioxide (SO2), and ozone (O3) national ambient air quality standards.

c. Hydrologic Conditions/Water Quality

None known. Site is an existing agriculture field. Based on the general topography of the area the site is expected to drain to the south-east.

d. Geologic /Soil Conditions

Site topography is considered gently rolling with slopes ranging from 2% to about 12% and the soils would not be considered highly erosive. Bedrock is expected to be between 15 and 30 feet below the surface. The area is known for karst geology; however, this site does not appear to have sinkholes or other features that indicate karst conditions.

e. Vegetation and Wildlife Resources

The majority of the Commerce Park II site consists of active agricultural land currently cropped with a combination of corn (Zea mays), wheat (Triticum sp.), and soybeans (Glycine max). The corn fields are located in the western and eastern portion of the site, while the soybean and wheat fields are located in the central portion of the site.

Small areas of forest habitat occupy scattered woodlots, stream corridors and fence lines primarily along the perimeter of the site, as well as in the south-central and eastern portion of the site. Common species within the mixed-aged woods include black walnut (Juglans nigra), silver maple (Acer saccharinum), box elder (Acer negundo), sugar berry (Celtis laevigata), shagbark hickory (Carya ovata), northern red oak (Quercus rubra), American sycamore (Platanus occidentalis), pecan (Carya illinoinensis), persimmon (Diospyros virginiana), and black gum (Nyssa sylvatica).

Regarding threatened or endangered species, there are [redacted] species potentially occurring on, or in the vicinity of, the project site. Species listed on the report, the presence/absence of suitable habitat for these species on the site, and potential effects on each species are summarized in the following table and discussed below.

Table 1: Threatened/Endangered Species Near Proposed Project Site

Scientific Name	Common Name	Federal Status	Habitat Present	Species Impacted
[redacted] (b) (4)				
			No	No
			Summer	Indirect
			Summer	Indirect
			No	No
			No	No
			No	No

E = Federally Endangered; T = Federally Threatened

There are no critical habitats in the project area. No suitable habitat for [redacted] winter [redacted] t for the [redacted] is present on the site. Suitable habitats for these species on the project site is limited to [redacted], which includes the small scattered woodlots,

fencerows and riparian zones.

f. Socioeconomic Conditions

Hopkinsville is the county seat of Christian County, Kentucky. The county has a population of just over 72,300 people and has been losing people over the years (down 2.2 percent since 2010). The economy of Christian County has been much weaker than that of the Commonwealth. Table 2 on the following page shows current data for the County compared to the state[i] [4]. As the data show, Christian County is relatively poor, with a per capita income that is about $8,000 less than state average, and a poverty rate that is over 13 percent higher. This likely reflects the fact that there are very few businesses in the county, just 60 for every 1,000 residents, compared to 74 per 1,000 people in the state. In addition, employment levels have been falling rapidly in Christian County – down by 4.5 percent between 2019 and 2020, while at the same time employment was flat in Kentucky overall.

The major employers in the region around Christian County include: Fort Campbell, the Christian Co. Board of Education, Martinrea (a vehicle parts manufacturer), a Wal-Mart Distribution Center, T.RAD (a vehicle parts manufacturer), the Jennie Stuart Medical Center, the Western State Psychiatric Hospital, Tele Tech's Call Service Center, Grupo Antolin (a vehicle parts manufacturer) and TGASK (another vehicle parts manufacturer)[ii]. This means that the region is highly dependent on the government, and the automobile industry.

Table 2: Christian County Kentucky economic statistics

Comparative Economic Statistics

Indicator	Christian County	Kentucky
Population	72,357	4,509,394
Population Change Since 2010	2.2%	0.4%
Median Home Price	$121,000	$147,100
Percent of Population with College Degree	18.7%	25.0%
Percent of Population in Labor Force	47.1%	59.1%
Per capita income ($ 2020)	$44,279	$52,238
Persons in poverty, percent	16.9%	14.9%
Total employment	24,055	1,666,427
Total annual payroll, ($ 2020)	$951,726,000	$75,359,894,000
Employment Pct. Change (2019-2020)	(1.3)	-
Per Capita Firms (2012)	0.060	0.074

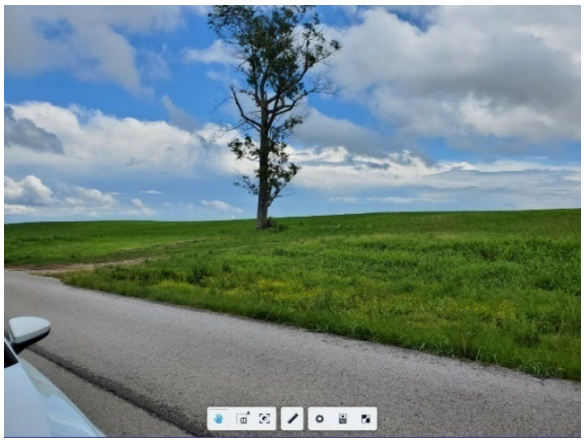
g. Historic/Cultural Resources

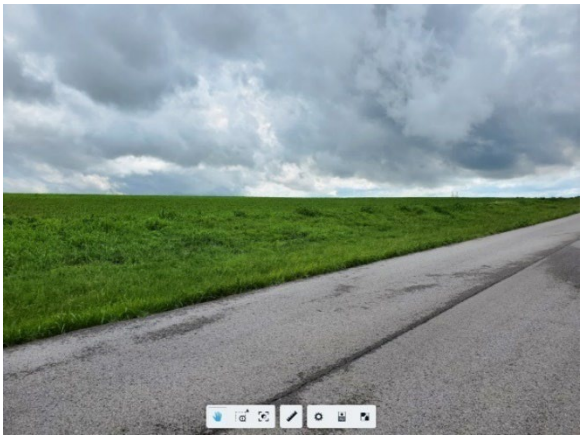
In preliminary assessments, no historic/cultural resources or archeological sites are present.

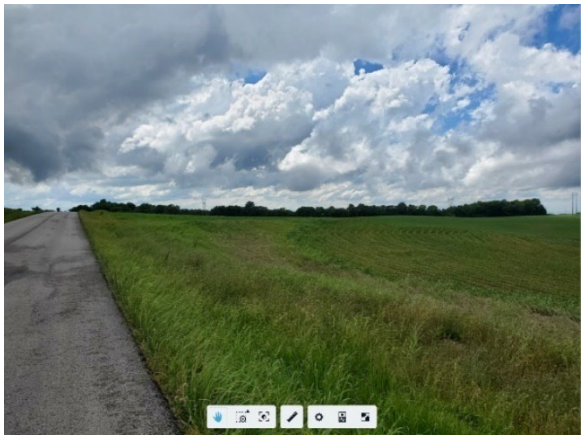
h. Visual Resources

The term "aesthetic and visual resources" (visual resources) refers to the composite of basic terrain, geologic and hydrologic features, vegetative patterns, and human-built features that influence the visual appeal of a landscape. Existing visual resources consist mostly of open agricultural fields with scattered tree lines. The analysis area for visual resources is defined as the area of visibility up to 30 miles from the

Project Area. Current vistas from the project area are shown below:







<u>i. Health and Safety Factors</u>

There are no current emissions or effluents from the proposed project sites as they are existing agricultural fields. Noise levels in the project area are primarily from the existing CSX Casky rail yard located immediately to the north.

B. Environmental Impact of the Work to be Performed

1. Land Use

Land will be cleared, excavated, graded and filled as needed to meet foundation requirements, manage stormwater runoff, allow construction of roadways and parking lots, installation of utility lines including water, sewer, and electric, and building of a rail spur to interconnect to the existing CSX rail line. Additional studies will be completed to determine specific road materials and stormwater retention pond and piping design. Once the project is complete, ongoing action will prevent pollutants from entering the stormwater management system. Raw materials and wastes will be stored inside or under cover with adequate containment. Snow, sand, deicing chemicals, fertilizers, pesticides, and solid waste will be properly managed. An effective street-sweeping program will be implemented. Structural best management practices (BMPs) that can remove the pollutants of concern will be designed, constructed, operated and maintained. Infiltration BMPs, bioretention areas, constructed stormwater wetlands, and filter systems may be effective tools for reducing the concentration of nutrients and bacteria in stormwater discharges

2. Atmospheric Conditions/Air Quality

Air quality changes are expected. Construction equipment, earthmoving, and travel on paved and unpaved roads would emit quantities of criteria pollutants and fugitive dust. These impacts would be temporary, ceasing when construction of the Project is complete.

The current facility is in the design phase***. It is the goal/mission statement of Ascend Elements to have minimal impact on any environmental conditions***. There will be air handling units, air scrubbers and ventilation from drying operations. It is expected an air permit will be required. The air permit would provide enforceable limits and potential air pollution mitigation measures to reduce air emissions impacts from the operation. Further design and modeling is needed to have impacts on external air quality assessed. In addition, preliminary estimated process emissions from the various manufacturing operations are currently being assessed and will be updated when available.

3. Hydrologic Conditions/Water Quality

Project will result in regrading of the land. Stormwater runoff will be managed in accordance with all relevant requirements. No permanent outdoor storage piles are expected at this stage, though temporary storage during construction is expected.

Volume of wastewater is expected to increase due to planned manufacturing facility operations,

(b) (4)

(b) (4)

4. Geologic /Soil Conditions

Soil conditions are not highly erosive. There are no streams, floodplains, or wetlands on the proposed project site. Additional study will be performed to further assess construction impact on soil permeability and filtration, or subsidence given possibility of karst conditions.

5. Vegetation and Wildlife Resources

Limited impact is expected to indigenous flora and fauna. There is no ecologically sensitive terrain at the proposed project site, and no critical habitats exist for threatened or endangered species disclosed in section II.A.3.e above. There are some [redacted] for [redacted] Under the current USFWS 4(d) Rule, incidental take of the northern long-eared bat at this site is not prohibited. If tree clearing is proposed for specific phases of project development, consultation with the USFWS will likely be required and result in a per acre payment to the ICBF for any clearing of suitable bat habitat.

6. Socioeconomic Conditions

Increased employment is expected as a result of this project. Labor requirements and mix are not expected to change drastically as the majority of jobs will be in advanced manufacturing operations, which already exists in this region. There will be additional requirements for certain engineering disciplines that may not already be present.

7. Historic/Cultural Resources

Preliminary assessment suggests no disturbances to historic/cultural resources are expected – no such resources are present in the vicinity.

8. Visual Resources

The term "aesthetic and visual resources" (visual resources) refers to the composite of basic terrain, geologic and hydrologic features, vegetative patterns, and human-built features that influence the visual appeal of a landscape. The analysis area for visual resources is defined as the area of visibility up to 30 miles from the Project Area. To investigate the potential visual impacts of the Project, a viewshed analysis will be conducted to determine the extent to which the Project (buildings and development) would potentially be visible within the 30-mile analysis area.

9. Health and Safety Factors

The proposed project will process [redacted] however, absolute maximum noise levels are not expected to exceed current and existing rail car noise levels at the nearby CSX rail yard.

(b) (4)

Risk mitigation for handling hazardous materials will be conducted via proper operations and maintenance of equipment in compliance with OSHA, environmental regulations, and manufacturer recommendations. [redacted] equipment will be installed for [redacted] farms.

10. Solid and Hazardous Wastes

The mission of Ascend Elements is to be a green company. The main goal of the design of this facility is to self-produce as much material as needed in the process.

As this will be an active facility there will be non-hazardous waste streams such as normal trash. Recycling of as much of material handling material (i.e., pallets) will be implemented. It is expected a formal recycling Plan will be developed on a Corporate level prior to the opening of the Apex 1 facility.

(b) (4)

[redacted] 12 tons per year - this material will be either sold, disposed of, or recovered for energy.

11. Impacts on Regional or Local Plans

Preliminary – full impact assessment not yet complete – but as described in Section 10 the project is committed to reusing / self-consuming all products from process. Apex 1 will require process water. Process water once used will be refined and reused to the extent practicable. [redacted] he proposed project is projected to create 2,860 FTE jobs in Hopkinsville (9,305 jobs statewide) during the construction and development phase of the new facility. Once fully operational, the new APEX facility in Hopkinsville will employ 416 individuals (1,000 FTE jobs statewide).

C. Potential liability to DOE of existing conditions at the site

At this stage, there are no potential conditions on the proposed project site to expose the DOE to previous liability. The site has historically been purely agricultural land.

D. Ability to meet compliance requirements at the site

The facility will be a source of air emissions and thus subject to the Clean Air Act (CAA). The Kentucky Department of Environmental Protection will enforce the permitting requirements of the CAA through its state implementation plan. The facility will apply for a Title V operating permit since it will be subject to a National Emission Standard for Hazardous Air Pollutants (NESHAP) (40 CFR 63 Subpart VVVVVV) which requires a Title V permit if federally enforceable equipment are installed to maintain emissions below major source thresholds. Other air regulations that the facility may be subject to include the New Source Performance Standard (NSPS) for small commercial-institutional steam generators (40 CFR 60 Subpart Dc) and state-only regulations that regulate particulate emissions and opacity from processes.

(b) (4)

Preliminary assessment of the design and size of the parking areas, building and amount of stormwater that would need to be collected and managed, as well as the amount generated from boiler condensate a Stormwater Permit will be required requesting permission to discharge to a surface waterbody. Based on initial analysis, the stormwater from the developed parking areas will need to go through pretreatment to remove total suspended solids to be able to discharge this to the creek on site. A SPDES permit will need to be applied for and would have monitoring requirements and effluent limits. Based on the low volume of boiler blowdown water, at the time of the application.

All existing corporate policies will be followed. anagement and handling procedures as well as all health and safety policies, including all proper training, equipment commissioning, O&M, engineering controls. Site Specific Process Risk Assessments will be completed to identify any type of hazard (i.e., material handling or worker safety program) not present at an existing AE facility. If new hazards are identified additional policies will be implemented to be in compliance with all local, state and federal regulations.

, if the facility status is identified as Large Quantity Generator an Annual Hazardous Waste Report, and Waste Reduction Reports/Plan will be required. All waste handling, waste storage, disposal and tracking will

[redacted]

[redacted] (b) (4) [redacted]

1. All directly related education/experience of key project members in each of the following areas:

   - ☑ Air quality management
   - ☑ Surface water and ground water management
   - ☑ Solid and liquid waste management and disposal practices
   - ☑ Noise, land use, ecological resources, archaeological, cultural, and historical resources management
   - ☑ Environmental permit applications, amendments, and renewals

[redacted]

[redacted]

[redacted]

[redacted] (b) (4) [redacted]

(b) (4)

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

(b) (4)

(b) (4)

References

i [4] Statistics are from US Department of Commerce, Bureau of the Census, *QuickFacts: Christian County, KY*, available on-line at: https://www.census.gov/quickfacts/fact/table/KY,christiancountykentucky/SBO001212#SBO001212

ii *Top Ten Regional Employers*, webpage, South Western Kentucky Economic Development Council, at: https://southwesternky.com/local-business/regional_manufacturers/

DOE F 540
(04-2017)

OMB Number 1910-5175
Exp. 11/30/2020

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

ENVIRONMENTAL QUESTIONNAIRE

SECTION I. PROJECT SUMMARY	
Control Number:	2678-1596
Project Title:	Apex - Integrated Sustainable Battery Active Material Production Plant
Applicant:	Ascend Elements, Inc.
Other Participants (Subrecipients, Contractors, etc.):	
FOA Number:	DE-FOA-0002678
FOA Title: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing .	

SECTION II. BACKGROUND AND INSTRUCTIONS

Pursuant to the U.S. Department of Energy's National Environmental Policy Act (NEPA) implementing regulations (10 C.F.R. Part 1021), the Office of Energy Efficiency and Renewable Energy (EERE) is required to evaluate the potential environmental impact of projects that it is considering for funding. EERE must determine at the earliest possible time whether any proposed project qualifies for a categorical exclusion under 10 C.F.R.§ 1021.410 or will require further environmental review within an environmental assessment or an environmental impact statement.

You are required to answer the questions below for the project as a whole, including all work to be performed by the Recipient, its subrecipients and contractors, including any work outside of the United States. You may not limit your responses to work performed by the Recipient only unless instructed to do so by EERE. In completing this questionnaire, you must provide specific information regarding the nature of your proposed project, including information on its size, operations, and the types and quantities of air emissions, wastewater discharges, solid wastes, land disturbances, etc. You should identify the location(s) of the proposed project and describe the activities that would occur at each location.

The form should be completed and signed by the Principal Investigator for the project or another member of your organization who has sufficient knowledge of the project to answer the questions truthfully and accurately.

Failure to fully and adequately complete this form will delay EERE's environmental review of your proposed project. Please note that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001.

BURDEN DISCLOSURE STATEMENT
Public reporting burden for this collection of information is estimated to average 60 minutes 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 (1910-1800), U.S. Department of Energy, 1000 Independence Avenue S.W., Washington, D.C. 20585; and to the Office of Management and Budget (OMB), Paperwork Reduction Project (1910-1800), Washington, D.C. 20503.

SECTION III. PROJECT EVALUATION

1a. In the box below, please provide a brief summary of the proposed project activities. Describe physical activities, not goals and objectives. Specify if this project is part of a larger project or connected to another project.

Example: The proposed project activities include the design, development, fabrication, and field testing of advanced biomass harvesting equipment. Design, development, and fabrication activities would occur at our research and development facility adjacent to our manufacturing plant in Dearborn, Michigan. Equipment testing would occur in various agricultural fields in the surrounding area over a two-year period.

Explanation:
The proposed project activities include the design, construction, and operation of a manufacturing facility producing lithium-ion battery materials on a roughly 65-acre greenfield site in Hopkinsville, KY currently used as farmland. The facility is currently in planning phase and multiple buildings, parking lots, new roads, new rail spur, utility lines including power, water, and sewer lines are being designed. Buildings comprise warehouse, office, labs, maintenance and utilities space and multiple production buildings. Delivery of materials will be by rail. There will be chemical storage tank 'farm' to hold the various solutions that are required for materials processing. The design and construction is estimated to take three (3) years and the facility is expected to operate for 10+ years.

1b. Is there other Federal government involvement outside of EERE in any aspect of this project (e.g., funding, permitting, technical assistance, project located on Federally administered land)?

Yes ☐ | **No** ■

If you checked "Yes," please list the agency, describe the nature of its involvement, and provide a point of contact at the agency, if known.

Explanation:
Not applicable

1c. Is the proposed project limited exclusively to intellectual, academic, or analytical activities?

Intellectual, academic, and analytical activities include, but are not limited to:

- Literature searches and information gathering
- Data analysis
- Computer modeling
- Analytical reviews
- Conceptual design
- Feasibility studies
- Document preparation
- Data dissemination
- Paper studies

You must answer "No" to this question if the proposed project involves any laboratory research and/or development, physical experiments, pilot-scale projects, demonstration projects, field tests, land-disturbance, construction, or similar activities.

Yes ☐ | **No** ☒

If you checked "Yes," proceed directly to Section IV (Certification) and complete the information and signatures as requested. If you checkned "NO" you must complete the entire questionnaire.

Explanation:
Not applicable

If you checked "Yes," proceed directly to Section IV (Certification) and complete the information and signatures as requested. If you checked "No," you must complete the entire questionnaire.

2a. Is the project fully defined at this point (i.e., all sites and activities are known)?

Yes ☐ | **No** ☒

If you checked "No," please describe those sites and/or activities/tasks that are yet to be defined and complete the remainder of the questionnaire to the best of your knowledge.

Explanation:
The design of the buildings, manufacturing equipment, parking area, roads, utilities, rail spur, stormwater drainage, land excavation, leveling, and grading activity, manufacturing process inputs/outputs are all in preliminary calculation stage and are subject to change.

2b. In the chart below, please describe the following four types of identifying information concerning project activities to be performed:

(1) each location where work would be performed, including address or coordinates, names of facilities, and whether this is a Recipient, Subrecipient, or Contractor location;
(2) the nature of the location (e.g., urban, industrial, suburban, agricultural, university campus, manufacturing facility) and the current condition and/or use of the site;
(3) the types of activities to be conducted at that location;
(4) land administration (e.g., BLM, USFWS, DOD, state, private).

(1) ***List all Locations Where Project Activities Would Occur (Facility Name and Address or Coordinates) and Indicate Recipient, Subrecipient, or Contractor***	*(2)* ***Nature of Location and Current Condition/Use***	*(3)* ***Activities to be Performed at Each Location***	*(4)* ***Land Administration***
Ascend Elements (recipient) TBD John Rivers Rd, Hopkinsville KY	Commerce Park II Lot [redacted] and [redacted] (b) (4) (N 36.783152, W 87.379659)	Design and construction of Apex manufacturing facility. Design, permit analysis and construction.	Private
Example 1: Smith Laboratory (recipient) 1234 College Lane Baltimore, MD XYZ Corporation (subrecipient) 1232 Industrial Drive Golden, CO	Smith Laboratory – Dedicated University Laboratory Facility XYZ Corporation – Manufacturing Facility in Industrial Park	Activities would include design and fabrication of a gallium-nitrate battery at XYZ Corporation's battery manufacturing facility using existing equipment. The battery would then undergo testing including battery charge/discharge cycling at Smith Laboratory. Data analysis would also occur at Smith Laboratory.	Smith Laboratory – State property XYZ Corporation – Private property
Example 2: Capital High School (recipient) 1234 Eagle Lane Golden, CO	High school property in a suburban environment that has been previously disturbed and is owned by the City.	Activities would include the installation of a 50 kW wind turbine adjacent to the football stadium. The final height for the turbine would not exceed 140 feet (hub height) or 170.6 feet (maximum blade height) with a blade radius of 31.5 feet. There is an airport 15 miles away from project site location.	City

2c. In the box below, please identify and describe: (1) any known or potential health and safety hazards to the public or project workers that may result from or are associated with your proposed project; and (2) any efforts that would be taken to mitigate these hazards. <u>Describe individually for each site discussed in Question 2b.</u>

Example (Hazards): The project would involve the use and handling of various hazardous materials, including metals and industrial solvents. All such handling would occur in-lab, and our organization is dedicated to proper hazardous material handling and disposal practices, so the project activities that involve these materials would pose no risk to the public. All hazardous materials would be managed in accordance with Federal, state, and local environmental regulations.

Example (Mitigation): Existing corporate health and safety policies and procedures would be followed, including employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. Additional policies and procedures would be implemented as necessary as new health and safety risks are identified. This would help ensure compliance with applicable health and safety regulations, and minimize health and safety risks to employees and the public.

Explanation:

The project would include new construction of a manufacturing facility, with typical health and safety hazards associated with a construction project. Project will develop and implement Environmental Protection Measures (EPM) to avoid or minimize adverse effects on environmental resources from construction, O&M, and decommissioning. Certain areas would be designated as environmentally sensitive and actions would be taken to avoid or minimize effects on these areas (for example, environmentally sensitive areas include wetlands, certain waterbodies, cultural resources, and wildlife habitat). Project activities described herein would incorporate and be subject to the EPMs and requirements imposed as part of Federal, State, and local permits and authorizations. Project would comply with applicable Federal, State, and local laws, regulations, and ordinances related to environmental protection.

In operation the facility will process significant amounts of powdered chemicals. Hazard mitigation policies will be followed including, but not limited to: bulk powdered material handling procedures, waste management and handling procedures as well as all health and safety policies, including all proper training, equipment commissioning, O&M, engineering controls.

2d. In the box below, please identify and describe any of the following that would be associated with the proposed project. <u>Describe individually for each site discussed in Question 2b.</u>

(1) any physical modification of existing facilities or construction of new facilities (this does NOT include modification to equipment, only facilities);
(2) ground disturbing activities;
(3) any change in the use, mission, or operation of existing facilities;
(4) installation or deployment of equipment outdoors including the area of disturbance, what currently exists at the site, the dimensions of the installation, any associated infrastructure, etc.

Example 1: Physical modification of existing facilities and ground disturbing activities -To accommodate testing facilities necessary for the project, the current testing facility would have to be expanded by approximately 4,500 square feet.

Example 2: Change in use of existing facility - A room within our facility that has served as a dedicated wind tunnel would be modified to serve as an environmental test chamber. This would require the adaptation of the chamber's construction to partition off part of the room and seal it to allow generated environmental fluctuations within.

Example 3: Installation of equipment outdoors and ground disturbing activities - The proposed turbine location is on school property located in a previously disturbed area south of the existing school building and near the high school athletic facilities and fields. East of the school are two golf courses; south and north are single family residential neighborhoods; and to the west are two public park properties. There are wooded areas located on the school property to the south and west. The foundation of the wind turbine would be approximately 25 square feet with an additional 5 square feet of disturbance during construction. The foundation would be approximately 10-15 feet in depth. There would be a minor, temporary land disturbance adjacent to the proposed site for crane work and the tower staging area. Existing roads would be used to access the project location.

Explanation:
The project will be new construction. It will disturb ground including regrading and development of road, rail, power, water, and sewer lines leading to the new buildings to be built, roughly 9 freestanding buildings of varying sizes totaling nearly 500,000 sq ft and up to 60' in height in some areas. The existing land is purely used as farmland. Adjacent sites are also farmland and are intended to be developed into an industrial park. External equipment will be installed onsite including a chemical storage tank 'farm', wastewater treatment equipment, and dust collectors.

Once a project is complete, ongoing action is needed to prevent additional pollutants from entering the stormwater management system. Raw materials and wastes should be stored inside or under cover with adequate containment. Snow, sand, deicing chemicals, fertilizers, pesticides, and solid waste should be properly managed. An effective street-sweeping program should be implemented. Structural BMPs that can remove the pollutants of concern must be designed, constructed, operated and maintained. Infiltration BMPs, bioretention areas, constructed stormwater wetlands, and filter systems may be effective tools for reducing the concentration of nutrients and bacteria in stormwater discharges.

2e. In the box below, please identify and describe any existing, modifications to, or new permits, licenses, or authorizations that would be required to perform project activities (such as environmental permits, operating permits, or drilling permits). <u>Describe individually for each site discussed in Question 2b.</u>

Example 1: The project would generate small amounts of effluent waste which will be discharged into the Potomac River, requiring our organization to secure the requisite discharge permit pursuant to state and Federal regulations.

Example 2: The project activities would be conducted for the next three years. We would be required to replace our current solid waste disposal permit with an updated permit that may alter the nature of what and how we are permitted to dispose of solid waste.

Example 3: The project activities would take place in marine navigable waters and would require permits from the U.S. Coast Guard and the U.S. Army Corps of Engineers.

Explanation:
The project is in the design phase, therefore any licenses or permits would be new, not modifications to existing.

Based on the projected processing and output it is expected the following permits will be required for construction and operations in the next three years:
KPDES Construction SW Permit- for construction activities (expecting to disturb more than 1 acre).
KPDES Operating Permit - for effluent flow of wastewater treatment system to publicly-owned treatment works
Potential discharge of cooling waters to surface water body
Groundwater Protection Plan (SWPP) -
Potentially a Water withdrawal permit - diverting 10K gallons per day
Air Permit (Title V) - Facility equipment dryers and dust collectors

2f. In the box below, please list the estimated quantities of materials to be used (e.g., feedstock, chemicals, water) and produced by the project (e.g., biofuel). <u>Describe individually for each site discussed in Question 2b.</u>

Explanation:

(b) (4)

2g. In the box below, please quantify, to the extent possible, all emissions into the ambient air resulting from project activities. Indicate if the project site is within an attainment or non-attainment area. <u>Describe air emissions individually for each site discussed in Question 2b.</u>

Note: Potential emissions include, but are not limited to, greenhouse gas emissions, particulate matter, and airborne pollutants. Sources of emissions can include stationary sources, such as boilers, process heaters, generators, and/or solvent usage, or mobile sources such as vehicles. It is presumed that every project would result in some emissions being released into the ambient air, so applicants answering "none" must explain why no emissions would be released. Non-attainment areas are designated parts of the country where air pollution levels persistently exceed the national ambient air quality standards. See 42 U.S.C. 7501(2).

(b) (4)

2h. In the box below, please describe: (1) all non-hazardous wastes that would be generated by the proposed project including recycled materials, and (2) the method of their disposal. <u>Describe individually for each site discussed in Question 2b.</u>

Note: It is presumed that every project would generate solid wastes, so applicants answering "none" must explain why no waste would be generated. Non-hazardous waste is any garbage, refuse or trash, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. See 40 C.F.R. § 261.2.

Explanation:
The mission of Ascend Elements is to be a green company an the main goal of the design of this Apex 1 Facility is to self produce as much material as needed in the process.

[redacted] (b) (4) [redacted]

3. Is the proposed project near, or does it involve, any of the following resources? Please indicate below any and all resources that could be affected by any project activities. (See Attachment 1 to the Environmental Questionnaire for resource definitions.)

- ☐ a. Historical, archeological, or cultural resources (includes listed and eligible resources over 50 years old or of cultural significance)
- ☒ b. Threatened or endangered species (whether proposed or listed by state or Federal governments), including their habitat
- ☒ c. Marine mammals or essential fish habitat
- ☒ d. Floodplains or wetlands
- ☐ e. Tribal lands or resources of Tribal interest/sensitivity
- ☐ f. Ocean resources (e.g., coral reefs)
- ☐ g. Land resources (e.g., tundra, rainforests)
- ☐ h. Coastal zones
- ☐ i. Migratory birds, or Golden or Bald Eagles
- ☐ j. Areas having a special designation (e.g., Federal and state designated wilderness areas, national parks, national natural landmarks, wild and scenic rivers, state and Federal wildlife refuges, and marine sanctuaries)
- ☐ k. Prime farmland, unique farmland, or other farmland of statewide or local importance
- ☐ l. Special sources of water (e.g., sole source aquifers)

If you checked any boxes above, provide a detailed description of: (1) the resources that could be affected, and (2) how project activities may affect those resources.

Explanation:

Additional Studies requires. FEMA Flood Insurance Maps indicate the 100-year flood plain on a nearby creek is located in the southeast corner of the subject property.

Three mammal and three mussel species potentially occurring on, or in the vicinity of, the project site.
Species listed on the report, the presence/absence of suitable habitat for these species on the site,
and potential effects on each species are summarized in the following table and discussed below.

Scientific Name	Common Name	Federal Status	Habitat Present	Species Impacted
Mammals				
Myotis grisescens	gray bat	E	No	No
Myotis septentrionalis	northern long-eared bat	T	Summer	Indirect
Myotis sodalis	Indiana bat	E	Summer	Indirect
Mussels				
Obovaria retusa	ring pink	E	No	No
Pleuronaia dolabelloides	slabside pearly mussel	E	No	No
Ptychobranchus subtentum	Fluted kidneyshell	E	No	No

E = Federally Endangered; T = Federally Threatened

The project would include the construction of the facility, for construction activities AE would develop and implement Environmental Protection Measures (EPM) to avoid or minimize adverse effects on environmental resources from construction, O&M, and decommissioning of the Construction Phase of the Project. Certain areas would be designated as environmentally sensitive and actions would be taken to avoid or minimize effects on these areas. For example, environmentally sensitive areas include wetlands, certain waterbodies, cultural resources, and wildlife habitat. Project activities described herein would incorporate and be subject to the EPMs and requirements imposed as part of Federal, State, and local permits and authorizations. AE would comply with applicable Federal, State, and local laws, regulations, and ordinances related to environmental protection

4. Does the proposed project involve any of the following activities or areas of concern? Please indicate below any and all activities or areas of concern that exist in the vicinity of your project, are required for your project, or could affect your project. (See Attachment 1 for definitions of each activity or area of concern.)

- ☒ a. Clearing or excavation
- ☐ b. Dredge and/or fill
- ☐ c. Pre-existing contamination
- ☐ d. Pesticide use
- ☐ e. Asbestos or lead-based paint
- ☐ f. Polychlorinated biphenyls (PCBs)
- ☐ g. Navigable air space
- ☐ h. Underground storage tanks
- ☐ i. Underground extraction/injection
- ☐ j. Use of a non-renewable resource

If you checked any boxes above, provide a detailed description of: (1) each activity or area of concern, and (2) the effects of each activity or area of concern on your project and/or the surrounding area.

Explanation:

Clearing and excavation needed for the construction of the Apex Facility. Additional design and studies needed (minimize disturbance). All Local, State and Federal laws will be followed for permitting and monitoring activities. Environmental Protection Measures (EPM)/ Best Management Practices (BMP) will be used for clearing or excavation activates needed during the Facility Construction.

5. Would the proposed project have the potential to result in impacts to the surrounding community? Please indicate below all areas of concern that exist in the vicinity of your project, are required for your project, or could affect your project.

- [x] a. Visual impacts
- [x] b. Populations of low income or minorities (Environmental Justice)
- [x] c. Changes in local employment
- [x] d. Changes in local traffic patterns or density
- [x] e. New transportation access
- [x] f. New utility lines or right-of-ways
- [ ] g. Other impacts

If you checked any boxes above, please provide a detailed description of: (1) the communities affected, and (2) what effects the project would have.

Explanation:
Improvement in local employment, creating of hundreds of new good-paying clean energy jobs. Improved benefits to low income, minority, and disadvantaged communities with higher income job opportunities, appropriate workforce training programs, affordable childcare and affordable transportation benefits made available to the greater Hopkinsville community. More studies required for visual impacts but generally will change from farmland to industrial park. Increase in local traffic density especially truck traffic. New access roads will be constructed. New rail spur will be constructed. New power, water, and sewer lines will be run to project site.

6. Would the proposed project use, result in, or require the management, storage, transport, or disposal of radioactive, toxic, or hazardous chemicals, waste, or other materials that require special handling?

Note: Hazardous chemicals and materials include those which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may increase the risk of mortality or pose a substantial threat to human health or the environment when improperly stored, transported, disposed of, or otherwise managed.

Yes ☒ | **No** ☐

If you checked "Yes," please provide a detailed description of: (1) the materials; (2) approximate quantity of each; (3) their role in the project; and (4) storage, transport, and disposal procedures for each material.

Explanation:

[redacted] (b) (4) [redacted]

7. Would the proposed project involve the use or development of recombinant DNA or genetically engineered microorganisms, plants, animals, or similar technologies?

Yes ☐ | **No** ☒

If you checked "Yes," please provide a detailed description of: (1) the genetic modifications, (2) the safety procedures in place for their handling and use over the course of the project, and (3) how they would be disposed of at the project's conclusion.

Explanation:
Not applicable

8. Does the project involve the use of any nanoscale materials or nanotechnology?

Note: Nanotechnology is defined as research and technology development at the atomic, molecular, or macromolecular levels using a length scale of approximately one to one hundred nanometers in any dimension; the creation and use of structures, devices and systems that have novel properties and functions because of their small size; or the ability to control or manipulate matter on an atomic scale.

Yes ☐ | **No** ☒

If you checked "Yes," please describe: (1) the nanoscale materials used, (2) potential risks those materials may pose, and (3) how they would be disposed of.

Explanation:
Not applicable

9. Is there any public opposition concerning any of the project activities?

Yes ☐ | **No** ☒

If you checked "Yes," please describe the nature of the opposition and any actions you may have taken or plan to take to address it.

Explanation:
None Known

10. Would the project involve activities or deployments into marine/freshwater aquatic environments?

Yes ☒ | **No** ☐

If you checked "Yes," please provide a detailed description of: (1) the proposed activities or deployment, (2) where and when these activities would occur, and (3) what permit/authorizations have been or would be acquired for this activity.

Explanation:
More investigation/studies required. Aquatic life are in existence to the southern area of the overall Commerce II site. It is not clear if the project in this early design phase would impact the area due to distance but most likely due to stormwater runoff or changes in drainage.

11. Would the proposed project result in a discharge of any type of wastewater, pollutant, or contaminant, including thermal discharges, to a sewer system, stormwater system, soils, retention ponds, or any water resources (e.g., surface water, including lakes, rivers, creeks, and wetlands; and ground water)?

Note: Under Federal law, the term "pollutant" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. See 33 U.S.C. § 1362(6). The term "contaminant" means any physical, chemical, biological, or radiological substance or matter in water. See 42 U.S.C. § 300f(6).

Yes ☒ | **No** ☐

If you checked "Yes", please quantify and characterize the wastewater or pollutants and provide a detailed description of the: (1) wastewater, pollutants, or contaminants to be released; and (2) the water resources that may be affected.

Explanation:
[redacted] (b) (4) [redacted]
material as needed in the process.

Apex 1 will require process water, once the process water is used it will be refined and reused to the extent practicable. The final effluent from the wastewater treatment will be discharged to the POTW approximately 150,000 gpd, with applicable NPDES permit.

12. Would the proposed project have the potential to generate noise impacts to adjacent communities, employees working at the project site, wildlife, and/or sensitive receptors including hospitals, schools, daycare facilities, and elderly housing?

Yes ☒ | **No** ☐

If you checked "Yes", please provide a description of: (1) the receptors that may be impacted and their estimated distance from the project activities, (2) the level of noise generated (in A-weighted decibels (dbA)) to each receptor, and (3) anticipated duration.

Explanation:
There may be noise impact since the land is currently used for crops. There is an existing and active rail line in close proximity to the project. The surrounding community is not expected to be impacted.

13. Please provide a detailed description of how the project would be decommissioned, including the disposition of equipment and materials.

Explanation:	AE does not expect to decommission this Apex Facility within the next decade. If decommissioning was needed, all efforts would be to minimize waste and disturbance.

SECTION IV. CERTIFICATION

I hereby certify that I am authorized to submit, and I do so hereby submit, the information in this questionnaire on behalf of the Recipient named below. I certify that the information provided herein is accurate and complete as of the date shown below. I understand that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001. If I receive any information that would indicate that any of the above-referenced answers are no longer correct or complete, I agree to notify EERE immediately. If it is necessary for EERE to modify the information I provide, EERE will request that I recertify the revised form.

Name	(b) (4) [redacted]
Title	VP Marketing and Governemnt Relations
Applicant	Ascend Elements, Inc.
Signature	
Date	

EERE ENVIRONMENTAL QUESTIONNAIRE
ATTACHMENT 1

Definitions for Question 3 –Resources*

Historical, Archeological, or Cultural Resources. The National Historic Preservation Act; the Historic Sites, Buildings and Antiquities Act; the American Indian Religious Freedom Act; and the Archeological Recovery Act provide for the preservation of sites, buildings, structures, or objects of historic, archeological, or architectural significance designated by Indian, Federal, state, or local governments or listed or eligible for listing on the National Register of Historic Places. The Archeological Resources Protection Act, Antiquities Act, and Native American Graves Protection and Repatriation Act also apply if the proposed project is on Federal and tribal land. This item should be checked "yes" if a proposed project is in an area that meets any of the above, or if an archeological survey has not been performed. Provide documentation of any consultation or State Historic Preservation Officer determination letters if available. If this information is not available or a survey has not been conducted recently, DOE may require such a survey to be conducted prior to any proposed project implementation.

Threatened/Endangered (T/E) Species and/or Critical Habitat. The Endangered Species Act provides for protection of animals, birds, fish, plants, and other living organisms that are in danger of extinction. A list of T/E species is provided in 50 C.F.R. Part 17. Consultations with the U.S. Department of Interior Fish and Wildlife Service (FWS), National Marine Fisheries Services (NMFS), and the corresponding state agency should be documented. This item should be checked "yes" if any state- or Federally-listed or proposed threatened or endangered species or critical habitat is located in the proposed project area, or could be indirectly affected by the proposed project. If the status of T/E species at the proposed project location is unknown, please contact the local or state office of the FWS or NMFS to obtain a listing of potential species and habitats found in the area.

Floodplains. Floodplains are lowlands adjoining inland and coastal waters with a 1 percent or greater chance of inundation in any given year. Indicate "yes" if the proposed project location is in or adjacent to a floodplain area. If documentation is available noting the floodplain boundaries, please provide a copy. Appropriate documentation of the 100 year floodplain [or 500 year floodplain for critical actions**] boundaries include: Flood Insurance Rate Maps or Flood Hazard Boundary Maps prepared by the Federal Emergency Management Agency (FEMA) of the U.S. Department of Homeland Security. Executive Order 11988 Floodplain Management requires Federal agencies to avoid incompatible development in floodplains, and consider the conformance of the proposed project to floodplain standards, potential effects of the proposed projects on floodplains, and potential effects of floodplain modifications on other local properties and improvements.

** Critical actions as defined in the Implementing Guidelines to Executive Order 11988 are activities for which chance of flooding is too great.

Wetlands. Wetlands are areas inundated by surface or groundwater with a frequency sufficient to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction, [10 C.F.R. 1022.4]. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflow, mudflats, and natural ponds. Man-made ponds can qualify as wetlands if invasion of appropriate flora or fauna has occurred. Appropriate documentation of presence or absence of wetlands within the area of project effect includes: FWS National Wetlands Inventory; U.S. Department of Agriculture Soil Conservation Service Local Identification Maps; U.S. Geological Service (USGS) Local Identification Maps; USGS Topographic Maps; state wetland inventories; and regional or local government sponsored wetland and land use inventories. Executive Order 11990 Protection of Wetlands requires Federal agencies to consider the effects of proposed projects on wetlands, and to avoid, to the extent possible, destruction and modification of wetlands. If the status of land in or around the proposed project location is unknown, please contact the state or local U.S. Army Corps of Engineer's office.

Coastal Zones. Coastal zones are the coastal waters and adjacent shore lands of the Great Lakes, and the Atlantic, Pacific, and Arctic Oceans, Gulf of Mexico, and Long Island Sound. The term "coastal state" includes the states bordering on those bodies, plus Puerto Rico, the Virgin Islands, Guam, the Commonwealth of Northern Mariana Islands, and the Trust Territories of the Pacific Islands and American Samoa. Coastal states have authority regarding actions, which directly affect coastal zones, in accordance with the Department of Commerce regulations promulgated under the Coastal Zone Management Act. Federal activities and Federal development projects must be consistent with state coastal zone management (CZM) programs to the maximum extent possible. Federal activities are those performed by or on behalf of a Federal agency in the exercise of its statutory responsibilities. Indicate "yes" if the proposed project is located in a coastal zone State or is in the vicinity of a coastal zone State. If a consistency determination has been obtained, or a written "negative determination" (indicating that a consistency determination is not required) please provide a copy. See 15 C.F.R. 930.

Migratory Birds, Golden or Bald Eagles. Other Federal and state laws that protect wildlife species include the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Examples of protected migratory birds include Canadian geese and great blue herons. This item should be checked "yes" if the proposed project may directly or indirectly impact any of these species or their habitats. If the status of other protected species is unknown in the proposed project location, please contact the local or state office of the FWS to obtain a listing of potential species and habitats found in the area.

Areas Having a Special Designation. Various Federal laws restrict the ability of Federal agencies to aid developments affecting national wilderness areas, national memorial parks, national parks, national monuments, national primitive areas, national preserves, national recreational areas, national wild and scenic rivers, national grasslands, national wildlife refuges, national forests, national lakeshore or seashore, and national trails. Indicate "yes" if any of these areas of special environmental or natural significance is located in close proximity to the proposed project location and describe the specific special designation.

Prime Farmland, Unique Farmland, or Other Farmland of Statewide or Local Importance. The Farmland Protection Policy Act requires Federal agencies to consider ways to lessen the effects of proposed projects that convert or adversely affect prime farmland which is not currently classified or designated for future urban development or water storage. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland also includes land that possesses the above characteristics, but is being used currently to produce livestock and timber. Prime farmland does not include lands designated for future urban development, such as land that has been identified for commercial, industrial, or residential development by zoning code, ordinance, or a comprehensive land use plan [7 U.S.C. 4201(c)(1)]. The U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) field office serving the area can provide assistance in determining whether a proposed location or site meets the definition of prime farmland. Form AD 1006, the Farmland Conversion Impact Rating Form, available at NRCS offices, should be used for this purpose.

Special Sources of Water. Through the Safe Drinking Water Act, EPA and states designate Critical Aquifer Protection Areas and Sole or Principal Source Aquifers, and State-Designated Wellhead Protection Areas in accordance with 42 U.S.C. 300h-6(b), 42 U.S.C. 300h-3(e), and 42 U.S.C. 300h-7(e), respectively. Such areas are accorded special protection to assure the quality and availability of public water supplies. Indicate "yes" if the proposed project is located in an area designated for protection (e.g., is included in an area wide groundwater quality protection plan), or would constitute a potential source of contamination within an existing or expected wellhead protection area serving a public water supply. If aquifer designations are not known for the proposed project area, contact the environmental protection office for the State.

* Definitions and requirements are subject to regulatory changes.

Definitions for Question 4 – Activities or Areas of Concern*

Clearing or Excavation. Clearing or excavation refers to the removal of vegetation, soil, sediments, or disturbance of land surfaces and subsurface including cutting, burning, digging, grading, filling, or blasting. Provide the estimated area to be affected, the quantity of material to be added or removed, and the planned disposition of spoils. Describe the potential for runoff or erosion, any control techniques to be employed, and the distance to nearby surface water bodies, including wetlands.

Dredge and/or Fill. Dredge and/or fill are the excavation of material from waters of the United States. Filling is the discharge of material into waters of the United States to change the bottom elevation. Waters of the United States are all interstate waters, and intrastate lakes, rivers, streams, mudflats, wetlands, sloughs, plays, or natural ponds. These activities include "ocean dumping" as regulated under Sections 102 and 103 of the Clean Water Act, construction of dams, dikes, piers, or others that could alter the course of waters of the United States. Also included is any shore activity with the potential for runoff to waters of the United States. If available, include documentation of appropriate consultation(s), e.g., with the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act or Sections 9 and 10 of the Rivers and Harbors Act; and with EPA [40 C.F.R. Parts 220-233].

Pre-Existing Contamination. Indicate if the proposed project will disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment. Quantify and characterize such pre-existing substances, including whether they are present above background or regulatory levels. Also quantify the volume of contaminated materials (e.g. soil, sediment, groundwater, debris, etc.) which would require transport to a properly permitted treatment, storage, or disposal facility as the result of the proposed project.

Pesticide Use. A pesticide is a substance intended for preventing, destroying, repelling, or mitigating any type of pest including insects, rodent, nematode, fungus, or weed, and any substance intended for use as a plant regulator, defoliant, or desiccant. While the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) imposes no requirements on private applicators, commercial pesticide applicators must be certified by the state or U.S. EPA. Additionally, FIFRA requires that certain pesticides known as “restricted use pesticides” (listed in 40 C.F.R. 152.175) to only be applied by certified applicators. If either commercial or private pesticide application or the utilization of restricted use pesticides is anticipated, indicate "yes". If a private application is anticipated, document measures to be undertaken to assure safe storage, use, and disposal.

Asbestos. If the proposed project includes demolition or renovation of an existing building, you must determine if asbestos is present. Common asbestos-containing building materials may include but are not limited to floor tile, mastics, wall board, joint compound, acoustic ceiling tiles, thermal insulation, spray-on fire proofing, glazing, caulking, roof flashing, and felts. Demolition and renovation activities that may impact asbestos containing building materials are regulated by the U.S. Occupational Health and Safety Administration (OSHA) through the Asbestos in Construction Standard and asbestos air emissions from asbestos abatements are regulated by the EPA as a hazardous air pollutant under the Clean Air Act (CAA). Include a description of measures to be undertaken to comply with asbestos removal requirements of 29 C.F.R. 1926.1100 and 40 C.F.R. 61 (Subpart M).

Polychlorinated Biphenyls (PCBs). PCBs are a family of man-made organic chemicals that were domestically manufactured from 1929 until banned in 1979 due to their toxicity and persistence in the environment. Given their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were largely used as dielectric and coolant fluids in transformers, capacitors, electric motors, etc. Manufacture, processing, transport, use, marking, storage, and disposal of PCBs are regulated by EPA [40 C.F.R. Part 761] in accordance with the Toxic Substances Control Act. Some states also regulate PCBs as hazardous waste. If the proposed project involves replacement or removal of capacitors, transformers, voltage regulators, circuit breakers, switches, cables, electromagnets, or other electrical equipment, presence or absence of PCBs should be ascertained. A "yes" indication

should be supported with information on the anticipated concentration and quantity of PCB oil, and the intended method/location of disposal.

Navigable Air Space. The U.S. Department of Transportation Federal Aviation Administration (FAA) regulates objects which invade navigable air space or otherwise constitute an obstruction to air navigation, and determines whether such activities constitute a navigation hazard. Indicate "yes" if the proposed project involves construction or alteration more than 200 feet above ground level, any construction or alteration in instrument approach areas, and other construction or alteration identified in 14 C.F.R. 77.13. Document notification of the appropriate Manager, Air Traffic Division, of the FAA Regional Office for the area within which the construction or alteration will be located. Copies of FAA Form 7460-1 Notice of Proposed Construction or Alteration may be obtained from the regional FAA office or electronically through FAA's website.

Underground Storage Tanks. Indicate "yes" if 10 percent or more of tank volume (including the volume of underground pipes) will be beneath surface of the ground. Indicate if installation, use, or removal of underground storage tanks is anticipated, and whether tank use is/was for storage/collection of hazardous waste, heating oil, other petroleum or petroleum-based substances, stormwater, or wastewater. Describe any leak detection/monitoring methods to be used for storage of hazardous waste or regulated petroleum products like gasoline or diesel.

Underground Extraction/Injection. Underground extraction/injection is the subsurface emplacement of fluids through a bored, drilled, or driven well, or through a dug well where the depth of the well is greater than the largest surface dimension. If the proposed project involves construction or use of an injection well, indicate "yes," and describe the class of the well as defined in 40 C.F.R. 146.5, the type and quantity of contaminants (e.g., waste disposal, hydrocarbon or mineral extraction) and whether the injection involves an exempt aquifer as defined in 40 C.F.R. 146.4.

Use of a Non-Renewable Resource. Non-renewable resources are naturally occurring substances (e.g., metals, minerals, fossil fuels) that are in limited supply and cannot be replaced or regenerated. The exhaustion or threatened exhaustion of such resources could have significant ramifications. Indicate "yes" if the proposed project would involve a resource that is in limited supply.

* Definitions and requirements are subject to regulatory changes.

(b) (4)

Proposal Review Committee
U.S. Department of Energy

Subject: Letter of Support for Ascend Elements' proposal for its Apex production facility **under DE-FOA - 0002678**

Dear Review Committee Member(s),

I am pleased to write this letter to convey [redacted] strong support for Ascend Elements' proposal for its Apex production facility being submitted under DE-FOA-0002678.

Honda has been operating in the U.S. for more than 60 years and manufacturing vehicles here for 40 years. [redacted]

(b) (4)

.

[redacted]

We are a current customer of Ascend Elements, providing end-of-life EV batteries from [redacted] vehicles for processing at its Covington Georgia "Base 1" facility. In addition, we are currently undergoing a technical and commercial evaluation of Ascend Elements Hydro-to-Cathode™ technology, [redacted] which we understand would be the activity that would be undertaken at the proposed Apex production facility.

[redacted]

We believe this is promising fundamental infrastructure required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States and that it aligns with the federal government's objective to build a robust domestic advanced battery supply chain. It will help keep critical materials in the U.S. supply chain and is an economic and efficient way to recycle and manufacture new cathode active materials.

Thank you for your consideration of our support for Ascend Elements' application. If you have any questions, please do not hesitate to contact me at [redacted]

[redacted]
(b) (4), (b) (6)
[redacted]

(b) (4), (b) (6)

(b) (4), (b) (6)

June 29, 2022

US Department of Energy
Office of Energy Efficiency and Renewable Energy (EERE)
Funding Opportunity Number: DE-FOA-0002678
Applicant Name: Ascend Elements

To Whom it May Concern:

We are writing this letter to express support for the Ascend Elements "Apex" production facility, for which Ascend Elements is currently seeking financial assistance under Department of Energy funding opportunity DE-FOA-0002678. As we strive to regionalize our battery supply chain, we believe there is a strong need for domestic sources of recycled battery materials: battery grade metal sulfates, precursors and cathode materials. The Apex facility is an important addition to the lithium-ion battery manufacturing infrastructure and will be an important enabler in the nation's transition from the internal combustion engine to electrified mobility. While there are plans/announcements for domestic cathode manufacturing facilities, the upstream materials to feed them are absent, creating a barrier to a domestic circular economy.

(b) (4)

To realize these goals, we recognize the need for domestic development and manufacture of advanced battery materials. We support Ascend Elements' goals to localize production of advanced battery materials, These materials are critical to lithium-ion batteries, and therefore important to our electrification strategy.

We have been in discussions with Ascend Elements over the past years on their Hydro-to-Cathode technology e

(b) (4)

[redacted] as it may reduce the environmental impact of battery recycling.

We support the Ascend Elements Apex project as it will add to the fundamental infrastructure, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States.

Sincerely,

[redacted]

(b) (4), (b) (6)

June 20, 2022

Mr. [redacted]
Ascend Elements, Inc.
133 Flanders Road
Westborough, MA 01581

Dear [redacted],

Thank you for your participation in the request for proposal process of [redacted].

(b) (4) [redacted]

[redacted]	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

[redacted]

[redacted] ecosystem and very much appreciate the open, collaborative and strategic discussions with you in the coming weeks.

Thank you again for your participation and interest in our program.

[redacted]
(b) (4), (b) (6) [redacted]

(b) (4), (b) (6) [redacted]

Gotion

6/14/2022

Mike O'Kronley

CEO

Ascend Elements, Inc

133 Flanders Road

Westborough, MA 01581

Dear Mike,

[redacted] intends to purchase cathode precursor materials produced at Ascend Elements future "Apex" production facility, for which Ascend Elements is currently seeking grant funding under DE-FOA-0002678 entitled "Apex - Integrated Sustainable Battery Precursor Production Plant".

(b) (4) [redacted] otion Inc. has been working with Ascend Elements for [redacted] understand its Hydro-to-Cathode [redacted] chnology. We are impressed with the efficiency of the process and its ability to create a highly economic, clean, [redacted] nd circular lithium-ion battery supply chain in the United States. The technology's ability to [redacted] is innovative, unique, and has been [redacted] duced to practice. The team at Ascend Elements is responsive, innovative, and highly capable, and is working on further innovations to improve efficiency and extract other critical materials from recycled batteries.

The Apex facility will produce [redacted] which will be designed to meet our requirements, and following positive product evaluation and validation testing, we intend to enter into a long-term supply agreement for Ascend Elements materials. Although we have no final binding business agreement as of today, we anticipate an annual volume requirement [redacted] to adequately supply our operations. If the Apex facility can take advantage of federal grant funding to increase commercial scale, it will provide greater capacity and economic efficiency than it could without such funding.

We at Gotion Inc. strongly support and recommend funding the Ascend Elements project. We believe this is fundamental infrastructure, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States. It will keep critical materials in the U.S. supply chain because it is the most economic and efficient way to recycle and manufacture new cathode active materials, and help us achieve our goals of electrifying transportation, reducing GHG emissions, and combating climate change.

Sincerely,

[redacted]

(b) (4), (b) (6)

[redacted]

June 20, 2022

Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing
U.S. Department of Energy (DOE)
Office of Manufacturing and Energy Supply Chains (MESC)
Office of Energy Efficiency and Renewable Energy (EERE)

Subject: FBPS/XALT Energy Letter of Commitment for Ascend Elements DOE DE-FOA-0002678 Application to Expand U.S. Recycled Cathode Material Manufacturing

Dear Program Officer,

(b) (4) [redacted] We are impressed with its efficiency and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. We feel the technology's ability [redacted] is innovative, unique, and has been reduced to practice.

Currently the cathode supply chain is subject to severe risks and challenges. Even with aggressive expansion announcements from numerous cathode manufacturers, demand for [redacted] which are in turn supply constrained, highly volatile in price, highly delocalized in processing steps from mine to material, and involve issues of ethical sourcing. It is our understanding that AE wishes to expand its cathode production from recycled feedstock to a new U.S. "Apex" site to create significant commercial-scale **domestic** manufacturing capacity for [redacted] under the Department of Energy's Funding Opportunity Announcement No. DE-FOA-0002678. The recycled feedstock would also originate in the U.S. from AE "Base" sites such as Covington, GA supplied by manufacturing scrap and end-of-life cells, modules, and packs, representing a sustainable, stable, low-risk, domestic source of lithium, cobalt, and nickel.

If AE's [redacted] meets [redacted] requirements, [redacted] will strongly consider sourcing from AE's Apex Site [redacted], cobalt, and nickel-containing cells and electrodes, and approximately 6,000 MT of end-of-life modules by 2030.

[redacted] strongly supports the AE Apex project and believes this is fundamental infrastructure required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States.

(b) (4), (b) (6) [redacted]

[redacted]

(b) (4), (b) (6)

June 10, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Subject: Letter of Interest re: Ascend Elements' cathode active material products and "Apex" facility.

Dear Mr. O'Kronley,

[redacted] wishes to express our interest in adopting Ascend Elements' domestically-produced cathode active materials into our advanced batteries for [redacted] This material will remove considerable risk from our battery raw materials supply chain, which is presently dominated by Asia-Pacific region chemical suppliers. Accordingly, Navitas fully supports Ascend Elements' "Apex" cathode production facility proposal to DOE under funding opportunity DE-FOA-0002678

(b) (4)

[redacted]

[redacted] We are currently evaluating Ascend Elements [redacted] We recognize that Ascend Elements has developed a distinctive and economical process for recycling lithium-ion cathode materials, capable of producing materials that are expected to align well with [redacted] requirements. Adoption of Ascend Elements products will result in significant improvements to U.S. battery supply chain security.

[redacted] anticipates consuming [redacted]. We expect to achieve peak production by 2026. [redacted] looks forward continuing our technical collaborations and strategic partnership discussions.

[redacted]

(b) (4), (b) (6)

[redacted]

(b) (4), (b) (6)

[redacted]

[redacted]s committed to purchase precursor and cathode active material produced at Ascend Elements future "Apex" production facility, for which Ascend Elements is currently seeking grant funding under DE-(b) (4)OA-0002678 entitled "Apex - Integrated Sustainable Battery Precursor Production Plant".

[redacted] We are impressed with the efficiency of the process and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. The technology's ability to convert shredded lithium-ion batteries directly into new precursor and cathode active materials is unique and has been reduced to practice. The team at Ascend Elements is responsive, innovative, and highly capable, and is working on further innovations to improve efficiency and extract other critical materials from recycled batteries.

[redacted]

[redacted]strongly support and recommend funding the Ascend Elements project. We believe this is fundamental infrastructure, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States. It will keep critical materials in the U.S. supply chain because it is the most economic and efficient way to recycle and manufacture new cathode active materials, and help us achieve our goals of electrifying transportation, reducing GHG emissions, and combating climate change.

[redacted]

6208161 / 10.90.210.62 / 2022-06-09 11:53 (UTC+9) / 본 문서는 현대기아자동차의 사내한 등급 이상의 정보자산이므로 무단 전재 및 복제할 수 없으며, 위반 시 당사 사규 및 관련 법규에 의해 제재될 수 있습니다.

(b) (4), (b) (6)

June 28, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

To Whom It May Concern:

(b) (4)

Through this letter, [redacted] expresses strong support for Ascend Elements' plans to develop precursor and cathode active material at the company's future "Apex" production facility, for which Ascend Elements is currently seeking grant funding under DE-FOA-0002678 entitled "Hydro-to-Cathode Production Plant".

[redacted] has been working with Ascend Elements [redacted] to understand its Hydro-to-Cathode technology. We are impressed with the efficiency of the process and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. The technology's ability to convert shredded lithium-ion batteries directly into new precursor and cathode active materials is unique and has been reduced to practice. The team at Ascend Elements is responsive, innovative, and highly capable, and is working on further innovations to improve efficiency and extract other critical materials from recycled batteries.

[redacted]

We at [redacted] strongly support the Ascend Elements project. We believe this is fundamental infrastructure, and will help achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States electrifying transportation, reducing GHG emissions, and combating climate change.

Sincerely,

[redacted]

(b) (4), (b) (6)

June 29, 2022
Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

is exploring its opportunity to test precursor and cathode active material produced at Ascend Elements future "Apex" production facility, for which Ascend Elements is currently seeking grant funding under DE-FOA-0002678 entitled "Apex - Integrated Sustainable Battery Precursor Production Plant".

(b) (4) We are currently undergoing a more thorough technical and commercial evaluation of the cathode precursor materials produced from Ascend Elements' process, including If they meet our production requirements, we can consider Ascend Elements as a possible partner of

We at support and recommend funding the Ascend Elements project. We believe this is fundamental infrastructure, required to achieve a high-class, clean, and secure lithium-ion battery supply chain in the United States. It will keep critical materials in the U.S. supply chain because it can be the most economic and efficient way to recycle and manufacture new cathode active materials, and can help us achieve our goals of electrifying transportation, reducing GHG emissions, and combating climate change.

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

US Department of Energy
Office of Manufacturing and Energy Supply Chains (MESC) and
Office of Energy Efficiency and Renewable Energy (EERE)
Funding Opportunity Number: DE-FOA-0002678
Applicant Name: Ascend Elements, Inc.

07/01/2022

Letter of Support for Ascend Elements, Inc.

To Whom it May Concern,

At [redacted] it is our mission to accelerate the world's transition to sustainable energy. We believe that battery raw material supply chains that are localized, resilient, low carbon, and equitable for American workers are central to the success of our mission.

[redacted] is pleased to provide this letter of support for Ascend Elements, Inc. ("Ascend") in its application to the U.S. Department of Energy's (DOE) funding opportunity with the Office of Energy Efficiency and Renewable Energy. Department of Energy funding for Ascend's Li-ion battery cathode precursor (b) (4) anufacturing scale-up is anticipated to accelerate U.S. based manufacturing of best-in-class cathode recursor materials, 100% of which is sourced from abroad today. Ascend is currently building its "Apex" recursor facility to start production at [redacted] A DOE grant would support Ascend's production scaling accelerating their plans by 12 months.

Tesla and Ascend Elements are currently initiating product development, qualification, and commercial negotiations.

Please treat this letter and [redacted] relationship with Ascend Elements as ***Confidential Business Information***.

We remain available if you have any questions about our support for the proposed project.

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

June 23, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

is committed to supporting Ascend Elements as it creates an equity plan to ensure that the benefits from its future "Apex" production facility flow to the community in the most effective manner possible. We are pleased that Ascend Elements is taking a very proactive approach to ensuring that the community and the people that are most in need of the benefits created by this project will receive them.

(b) (4)

We are excited to welcome Ascend Elements to southwest Kentucky as the site of their future Apex facility. The City of Hopkinsville is a vibrant community that prides itself on a pro-business, pro-growth environment. We welcome you to invest in our community and take full advantage of our robust regional workforce, award winning quality of life, and lower cost of living and doing business.

We believe in your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you on this transformative project which will benefit Ascend Elements and for many years to come.

(b) (4), (b) (6)

(b) (4), (b) (6)

June 22, 2020

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

RE: Community Benefits Agreement (CBA)

Dear Mike:

is committed to developing a to be put in place with Ascend Elements as part of its future "Apex" production facility, for which Ascend Elements is currently seeking financial assistance under DE-FOA-0002678, should Ascend Elements application be selected for award negotiation.

(b) (4) lanned CBA, which will be funded by Project Apex, will contain several major elements:

1.

we are very excited that Ascend Elements has selected our location for the site of their future Apex facility. n addition, we believe in and strongly support your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you to define this

(b) (4), (b) (6)

(b) (4), (b) (6)

June 24, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

[redacted] is committed to helping Ascend Elements create and design an Equity Plan which will lead to a [redacted] as part of its future "Apex" production facility. We are pleased to see that Ascend Elements is already taking a very proactive approach to ensuring that the community and the people that are most in need of the benefits created by this project will receive them. [redacted]

(b) (4)

We are excited to welcome Ascend Elements to [redacted] as the potential site of your future Apex facility. [redacted] is well-connected to the local organizations that can help craft an effective CBA and look forward to supporting your grant and planning process as we facilitate important discussions and partnerships throughout our three-county service area.

We believe in and strongly support your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you to define this transformative project which will benefit Ascend Elements and [redacted] for many years to come.

(b) (4), (b) (6)

(b) (4), (b) (6)

(b) (4)

Wednesday, June 22, 2022

Michael O'Kronley, Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

[redacted] is committed to work with Ascend Elements to understand the needs of your impending "Apex" sustainable battery material manufacturing facility being sited here in Hopkinsville and to lead in ensuring that the minority-owned businesses and disadvantaged business enterprises in the Greater Hopkinsville area are aware of the multiple opportunities to support this groundbreaking and important project.

[redacted] local knowledge, expertise, and proven track record supporting diverse and hardworking enterprises here will provide an array of effective resources that will be well-suited to support the needs of your Apex project. Our clients include businesses in construction, transportation, hospitality, and material manufacturing industries that are ready, willing, and able to assist this Apex project achieve its goals.

[redacted] believes in and strongly supports your mission to build the greater clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical, commitment to diversity and working with diverse partners, and that it is strategic to the competitiveness of the United States in this important industry. We are excited to work with your team on how the local minority businesses in the region can assist in supporting your Apex facility.

Sincerely,

(b) (4), (b) (6)

[redacted]

(b) (4), (b) (6)

June 23, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Michael:

[redacted] is committed to work with Ascend Elements to develop a workforce solution to train potential employees for career opportunities at your future "Apex" production facility which will be built right here in Hopkinsville.

(b) (4)

[redacted] our expanded service area to support the high-quality critical battery material manufacturing jobs that will be created by your Apex facility.

We believe in and strongly support your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you to leverage our resources for workforce development which will benefit your Apex facility as well as [redacted]

Sincerely,

(b) (4), (b) (6)

(b) (4)

(b) (4), (b) (6)

June 16, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mr. O'Kronley:

[redacted] is committed to developing a workforce development program in collaboration with Ascend Elements as part of its future "Apex" production facility. This program will educate, train, and develop new labor resources to ensure a deeper, more skilled workforce in the region to support the multitude of clean energy jobs that will be created by the Apex project. [redacted]

(b) (4)

We believe in and strongly support your mission to build a clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you [redacted]

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

(b) (4), (b) (6)

June 16, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

[redacted] is excited to work with Ascend Elements [redacted]

(b) (4)

We believe in and strongly support your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high-value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We are excited to work with your team [redacted] can benefit your Apex facility and create a steady workforce in [redacted] many years to come.

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

is excited to work with Ascend Elements and is writing this letter to show our commitment to help develop a program to expand access to affordable childcare for the greater We have had preliminary discussions with your team and applaud the future "Apex" production facility that you are planning for the site in Hopkinsville as it will bring high-quality job opportunities for the local community. As you know, a barrier for many in the region to accessing these (b) (4) opportunities and achieving successful long-term employment is affordable childcare.

(b) (4), (b) (6)

(b) (4)

Purchase order

Supplier : BATTERY RESOURCERS
WORCESTER

No.	ItemCode/ItemName	Quantity	UoM	Unit Price	unit of price	Amount	Delivery Date
			Total Amount	**USD**			

Payment Term : ACH CCD NET 60 DAYS

ESMITC-AP@lgensol.com

Statement of Project Objectives
Apex – Integrated Sustainable Battery Active Material Production Plant
Ascend Elements

A. OBJECTIVES

The overall objective of this project is to significantly expand US production capacity for sustainable cathode active materials (CAM) for lithium-ion batteries (LiBs) for EV's and energy storage systems (ESS). The new "Apex" plant in Hopkinsville KY will not only produce CAM at commercial-scale – it will also use recycled batteries as raw material. Based on Ascend Elements' proprietary and established Hydro-to-Cathode™ technology, by the end of the three-year project, the proposed plant will be the first commercial-scale plant in the US producing sustainable CAM.

At the end of the 36-month project period, the CAM plant at Apex will have a CAM manufacturing [redacted]

B. SCOPE OF WORK

(b) (4) [redacted]

The project will be conducted in two budget periods, budget period 1 (BP1) and budget period 2 (BP2). Ascend Elements is scheduled to close on a suitable greenfield site for the manufacturing plant in the USA this summer for its "Apex" facility. In BP1, the cathode active material (CAM) plant at Apex will be constructed, equipped, and put into production. In BP2 the facilities for the expansion CAM plant will be constructed, equipped, and put into production. Ascend Elements will subcontract with [redacted] a world-class architectural and engineering firm headquartered in Toledo OH with whom Ascend has successfully completed its industrial facility in Covington GA, to support engineering, procurement, and construction tasks.

Budget Period 1: CAM plant at Apex: Plan, design, build, equip and start-up production of the Apex CAM plant [redacted]
Budget Period 2: Expansion CAM plant at Apex: Plan, design, build, equip and start-up production of [redacted]

C. TASKS TO BE PERFORMED

The following tasks will be conducted:

All Budget Periods

<u>Overall Project Management and Planning</u>

Ascend will perform project management activities to include project planning and control, subcontractor control, financial management, data management, management of supplies and/or equipment, risk management, and reporting as required to successfully achieve the overall objectives of the project.

Task 0.0 – Project Management and Planning:

Ascend will develop and maintain the Project Management Plan (PMP). The content, organization, and requirements for revision of the PMP are identified in the Federal Assistance

Reporting Checklist and Instructions. The Recipient shall manage and implement the project in accordance with the PMP.

Task 0.1- Kick-Off Meeting:
Ascend will participate in a project kickoff meeting with the DOE within 30 days of project initiation.

Budget Period 1: CAM plant at Apex

Task 1: Site design
Task 1 Summary Description: The site design phase will include front-end loading engineering for building design, definition of utility requirements and basic process information as well as awarding the engineering, procurement, and construction (EPC) contract.

Subtask 1.1: Front-end loading engineering
Subtask 1.1 Summary: The front-end loading engineering, the conceptional engineering phase, includes the determination of the high level (HL) mass balance of the material flows in the plant and the development of a HL manufacturing process description. An estimated equipment list, power demand, manufacturing space allowances and warehouse requirements for this process unit will be established.

Subtask 1.2: Site level civil design
Subtask 1.2 Summary: The civil design of the site provides details on grading, drainage, erosion control, utility layout, and shell design. It will include design of specialty building design with specialty HVAC systems providing dry air and cooling. Civil engineering site designers work with all of the overlapping elements from this site to other parcels.

Subtask 1.3: Engineering, procurement and construction contract award
Subtask 1.3 Summary: Ascend will negotiate the details of the site contract for the construction of Apex. This task will conclude with an award of the site contract.

Milestone 1.1: Site level civil design completed

Task 2: Site preparation
Task 2 Summary Description: Construction phase begins with site preparation. Site preparation entails test drilling, landfill, levelling (cut and remove trees and then clear and grub the site of roots), filling in dirt to level the site, earth-moving, excavating, land drainage and other land preparation to ready the site.

Task 3: Design of process equipment and procurement
Task 3 Summary Description: Based on the process description and mass balance (subtask 1.1) the process flow is defined using process and instrumentation diagrams (P&IDs). Design engineers will create equipment data sheets from the P&IDs. Requests for quotations are prepared from the data sheets and sent to qualified vendors. Successful bidders are selected with

equipment details entered into the 3D model drawings for clash detection. Contracts are negotiated for price, delivery and quality with purchase orders executed. Selected vendors will fabricate the equipment, inspect it and deliver it to the site.

Milestone 1.2: Site preparation completed
Milestone 1.3: Process equipment contracted for fabrication
Smart Milestone BP1.1: All process equipment has been received at the site

Task 4: Obtain critical permits
Task 4 description: The activities in this task focus on modifying/updating critical permits. Permits include the air permit, the building permit and the occupancy permit. Ascend has already had discussions with the cognizant entities in Hopkinsville and Kentucky to plan for the permit approval periods. Modifying the air permit will take approximately 6 month for approval the building permit about three months and the occupancy permit one month.

Subtask 4.1: Apply for and obtain air permit
Subtask 4.1 Summary: [redacted] will apply for the air permit, provide clarifications as needed in order to meet all requirements.

(b) (4) [redacted]

Subtask 4.2: Apply for and obtain the building permit
Subtask 4.3 Summary: [redacted] will apply for the building permit, provide clarifications as needed in order to meet all requirements.

Subtask 4.3: Apply for and obtain the occupancy permi
Subtask 4.3 Summary: [redacted] will apply for the occupancy permit, provide clarifications as needed in order to meet all requirements.

Milestone 1.5: Air permit, building permit and occupancy permit granted

Task 5: Shell construction, detailed building design, mechanical, electrical & plumbing (MEP) build-out
Task 5 Summary: Will begin the construction phase with the shell construction of the building, according to the detailed building design, and the mechanical, electrical and plumbing (MEP) build-out. At its completion the building will be ready for equipment installation.

Subtask 5.1: Shell construction
Subtask 5.1 Summary: The subsurface is leveled with soils that are well-drained and compacted to the correct elevations. Underground utilities such as plumbing drainage and electrical feed conduits are installed. Formwork is built to support the concrete. The steel reinforcement bars are accurately placed and adequately supported inside the forms. A ready-mix concrete batching plant will mix the specified concrete mix which is then poured into the forms. Entrained air is release by vibration and the concrete is then finished and cured. Concrete is poured in layers. This is repeated for foundations, columns, walls, roofs and floors.

Subtask 5.2: Detailed building design
Subtask 5.2 Summary: The building design is governed by the civil loads of the equipment, soil conditions of the geotech work and fire code requirements. Engage an engineering, procurement and construction contractor (EPC) contractor who then can complete detailed design drawings and specifications for bidding project to their sub-contractors. The detailed design completes the building design, rail unloading, utilities design, security, stormwater pretreatment, offices and warehouse requirements.

Subtask 5.3: Mechanical, Electrical and Plumbing Build Out
Subtask 5.3 Summary: Mechanical, electrical, and plumbing (MEP) are the systems inside the building shell. These include mechanical ventilation and heating systems for the building. The electrical build-out of the shell provides lighting, electrical feed to heating systems, furnaces and boilers. The plumbing installation design process involves a layout of piping routes for water booster pumps, hot water systems, fire protection and sanitary plumbing. Effective MEP installations require interaction and collaboration among all design teams.

Milestone 1.6: MEP build-out completed

Task 6: Equipment installation and line commissioning
Task 6 Summary: In Task 7 the process equipment, including electrical, mechanical and material transporting equipment will be installed (such as needed between various processing steps in the factory). Once the equipment is installed the production lines will be commissioned and site acceptance approval will be obtained. At the end of this task the CAM plant will begin start-up of production.

Subtask 6.1: Install the process equipment
Subtask 6.1 Summary: Prior to installation, all supplier documentation will be studied. The electrical supply lines will be brought from the motor control centers and all utilities such as compressed air, vacuum, steam, cooling water and, communication cables will be installed. Any required foundations will be inspected. Anchor bolts will be installed to provide stability of the equipment and will follow manufacturer's instructions. Rigging equipment into place must be planned ensuring any interferences are avoided.

Subtask 6.2: Manufacturing line commissioning and site acceptance approval
Subtask 6.2 Summary: Startup recommendations by the manufacturer will be followed closely. Three phase motors will be check for rotation, any required lubrication will be added, spare parts checked, communications verified for all controls. A site acceptance test (SAT) will document the completion of the equipment commissioning.

Milestone 1.7: Process equipment installed
Milestone 1.8: Facility is chemical ready
Smart Milestone BP1.2: Start-up of production

MILESTONE SUMMARY TABLE Budget Period 1		
Ascend Elements: Apex – Integrated Sustainable Battery Precursor Production Plant		
	Description	**Type and Description**
Budget Period 1		
1.1	Site level civil design completed	Technical; civil design drawings completed
1.2	Site preparation completed	Technical; The greenfield site has been prepared and is ready for construction
	BP1 Go/no go decision point	Go/no go; move from design to implementation
1.3	Process equipment contracted for fabrication	Technical; process equipment has been designed and contracted for fabrication
BP1.1	All process equipment has been received at the site	Technical; all process equipment has been physically accounted for at the site
1.5	Air permit, building permit and occupancy permit granted	Approval; air, building and occupancy permits have been approved by the authorities
1.6	MEP build-out completed	Technical; all MEP installation have been completed and tested
1.7	Process equipment installed	Technical; all process equipment has been installed and tested for proper operation
1.8	Facility is chemical ready	Technical; all tests related to chemical safety have been successfully concluded
BP1.2	Start-up of CAM production	Technical; Apex will start CAM production
Note that BP 1.1 and 1.2 are SMART Milestones in Budget Period 1		

Continuation: *The recipient is* ***NOT*** *authorized to initiate any scope in the next budget period without the DOE Contracting Officer's prior written approval in accordance with the award terms and conditions.*

BUDGET PERIOD 2: Expansion CAM Plant at Apex

Task 7: CAM expansion site design
Task 7 Summary Description: This site design phase will include front-end loading engineering, the detailed engineering design and the site level civil design.

Subtask 7.1: Front-end loading engineering
Subtask 7.1 Summary: The front-end loading engineering, the conceptional engineering phase, includes the determination of the high level (HL) mass balance of the material flows in the plant and the development of a HL manufacturing process description. An estimated equipment list, power demand, manufacturing space allowances and warehouse requirements for each process unit will be established.

Subtask 7.2: Detailed engineering design
Subtask 7.2 Summary: The detailed design completes the building design, utilities design, offices and warehouse requirements.

Subtask 7.3: Site level civil design

Subtask 7.3 Summary: The civil design of the site provides details on grading, drainage, erosion control, utility layout, stormwater management and shell design. Initial surveying and geotechnical core samples allow designs to proceed for foundation concepts and building layouts. It will include items such as an environmental impact of the project, permitting, subsurface characteristics, wetlands delineation, and zoning. Civil engineering site designers work with all of the overlapping elements from this site to other parcels.

Milestone 2.1: Site level civil design completed

Task 8: Site preparation, shell(s) design and expansion building shell construction
Task 8 Summary Description: Construction will begin with site preparation, design and construction of the building shell, and the mechanical, electrical, and plumbing (MEP) build-out.

Subtask 8.1: Site preparation
Subtask 8.1 Summary: Site preparation entails test drilling, landfill, levelling (cut and remove trees and then clear and grub the site of roots), filling in dirt to level the site, earth-moving, excavating, land drainage and other land preparation to ready the site.

Subtask 8.2: Building shell design
Subtask 8.2 Summary: Design the building shell in accordance with all building codes for chemical manufacturing sites, ground composition and site regulations within Christian County in Kentucky.

Subtask 8.3: Building shell construction
Subtask 8.3 Summary: The subsurface is leveled with soils that are well-drained and compacted to the correct elevations. Underground utilities such as plumbing drainage and electrical feed conduits are installed. Formwork is built to support the concrete. The steel reinforcement bars are accurately placed and adequately supported inside the forms. A ready-mix concrete batching plant will mix the specified concrete mix which is then poured into the forms. Entrained air is release by vibration and the concrete is then finished and cured. Concrete is poured in layers. This is repeated for foundations, columns, walls, roofs and floors.

Subtask 8.4: MEP build-out
Subtask 2.4 Summary: Mechanical, electrical, and plumbing (MEP) are the systems inside the building shell. These include mechanical ventilation and heating systems for the building. The electrical build-out of the shell provides lighting, electrical feed to heating systems, furnaces and boilers. The plumbing installation design process involves a layout of piping routes for water booster pumps, hot water systems, fire protection and sanitary plumbing. Effective MEP installations require interaction and collaboration among all design teams.

Milestone 2.2: Site preparation and building shell design completed
Milestone 2.3: Building shell construction completed

Smart Milestone BP2.1: Building ready for the processing equipment

Task 9: Design of process equipment and procurement
Task 9 Summary Description: Based on the process description and mass balance (subtask 1.1) the process flow is defined using process and instrumentation diagrams (P&IDs). Design engineers create equipment data sheets from the P&IDs. Requests for quotations are prepared from the data sheets and sent to qualified vendors. Successful bidders are selected with equipment details entered into the 3D model drawings for clash detection. Contracts are negotiated for price, delivery and quality with purchase orders executed. Selected vendors will fabricate the equipment, inspect it and deliver it to the site.

Milestone 2.4: Equipment data sheets completed
Milestone 2.5: Contracts with vendors executed for fabrication of the process equipment
Milestone 2.6: Process equipment arrived at the Apex site

Task 10: Obtain critical permits
Task 5 description: The activities in this task focus on obtaining critical permits to operate Apex. Permits include the air permit, the building permit and the occupancy permit. Based on its experience in Budget period 1, this permitting task will last six months.

Smart Milestone BP2.2: Air permit, building and occupancy permits granted

Task 11: Process equipment installation
Task 5 Summary: Prior to installation, all supplier documentation will be studied. The electrical supply lines will be brought from the motor control centers and all utilities such as compressed air, vacuum, steam, cooling water, and communication cables will be installed. Any required foundations will be inspected. Anchor bolts will be installed to provide stability of the equipment and will follow manufacturer's instructions. Rigging equipment into place must be planned ensuring any interferences are avoided.

Milestone 2.7: The facility is chemical ready

Task 12: Expansion line commissioning and production start-up
Task 6 Summary: Startup recommendations by the manufacturer will be followed closely. Three phase motors will be check for rotation, any required lubrication will be added, spare parts checked, communications verified for all controls. A site acceptance test (SAT) will document the completion of the equipment commissioning.

Smart Milestone BP2.3: Start-up of production at CAM plant expansion

MILESTONE SUMMARY TABLE		
Ascend Elements: Apex – Integrated Sustainable Battery Precursor Production Plant		
	Description	Type and Description
Budget Period 2		
2.1	Site level civil design completed	Technical; civil design drawings completed
2.2	Site preparation and building shell design completed	Technical; The site preparation and the building shell design are complete, drawings are available
	BP2 Go/no go decision point	Move from design to implementation
2.3	Building shell construction completed	Technical; The building shell has been constructed
BP2.1	Building ready for the processing equipment	Technical; all building systems are installed ready for the equipment install
2.4	Equipment data sheets completed	Technical; equipment specification data sheets are complete
2.5	Contracts with vendors executed for fabrication of the process equipment	Business; contracts signed with selected equipment fabricators
2.6	Process equipment arrived at the Apex site	Shipment; all process equipment has arrived at the Apex site
BP2.2	Air, building and occupancy permits granted	Necessary permits granted by the authorities
2.7	The facility is chemical ready	Technical; all test related to chemical safety have been successfully concluded
BP2.3	Start-up of production at Apex for the additional 10,000 tpy pCAM production	Technical; Production of the expansion CAM plant has started.
Note that BP 2.1, 2.2 and 2.3 are SMART Milestones in budget period 2		

D. DELIVERABLES

In addition to the reports specified in the "Federal Assistance Reporting Checklist", Ascend Elements will provide the following to the DOE Project Officer (identified in Block 15 of the Assistance Agreement as the Program Manager):

- A summary of accomplishments and project work report will be prepared for inclusion in the Office of Manufacturing and Energy Supply Chains (MESC) and Office of Energy Efficiency and Renewable Energy (EERE) annual programmatic progress report. The report will be due by October 31 of each year.

E. BRIEFINGS AND TECHNICAL PRESENTATIONS

Ascend Elements will prepare detailed briefings will for presentation to the DoE Project Manager at the Project Manager's facility or other location specified by the DOE Project Manager approximately on an annual basis. Briefings will be given to explain the plans, progress, and results of the technical effort. Additional briefings and/or presentations will be prepared as required and upon the request of MESC/EERE.

Name of the applicant: Ascend Elements, Inc.
Project director: [redacted] Senior Program Manager, Ascend Elements
Project title: Apex – Integrated Sustainable Battery Active Material Production Plant

(b) (4) [redacted]

Objective: Significantly expand US production capacity for sustainable cathode active materials (CAM) for lithium-ion batteries (LiBs) for EV's and energy storage systems (ESS). The new "Apex" plant in Hopkinsville KY will not only produce [redacted] at commercial-scale – it will also use recycled batteries as raw material. Based on Ascend Elements' proprietary and established Hydro-to-Cathode™ technology, by the end of the [redacted] project period, the proposed plant will be the first to produce [redacted] at commercial-scale predominately from [redacted]

The plant will use as input precursor cathode materials produced at another plant within the Apex facility. These [redacted] are derived from [redacted] – [redacted] – which is [redacted] from end-of-life LiB's and/or manufacturing scrap. The CAM plant at Apex will be sited in Hopkinsville Kentucky, a disadvantaged community (DAC). The Hydro-to-Cathode™ technology is the most economic, efficient, and environmentally-friendly technology for producing CAM since it produces it from recycled LiB's, allows for transformation of old battery chemistries into [redacted], and creates less GHG emissions than traditional [redacted] processes.

Description of the project: Ascend Elements will plan, design and construct a CAM plant at a greenfield site in Hopkinsville Kentucky and install all manufacturing equipment. The CAM plant will consist of a manufacturing building and the processing equipment necessary to [redacted] into [redacted] the highest value component in a lithium-ion battery. Using established and approved processes for building new manufacturing plants, Ascend Elements will design and procure the manufacturing equipment needed based on its operational manufacturing pilot plant in Novi, MI, install the equipment, and bring the CAM plant to full production by the end of the [redacted] project period.

Potential Impact: Project funding will significantly accelerate and advance US CAM manufacturing from recycled LiB's by rapidly scaling unique domestically developed technology. The CAM project will create [redacted] in economic impact during construction and [redacted] per year in ongoing activity. It will enable sourcing of critical battery materials from within the US and reduce the dependence on foreign materials and foreign [redacted] suppliers. It will jumpstart the creation of a sustainable, secure LiB economy in the US. The CAM plant at Apex will also create high quality, good-paying jobs and offer many benefits such as healthcare and stock options. Ascend Elements also plans to offer community benefits such as workforce training and education, affordable childcare, and affordable transportation initiatives to raise equity levels in the greater Hopkinsville community. Together, this will help revitalize the workforce and the economy of the greater Hopkinsville community for decades to come, while significantly strengthening the US lithium-ion battery industry.

Instructions and Summary

Control Number: 2678-1595
Award Recipient: Ascend Elements, Inc.

Date of Submission: 6/30/2022
Form submitted by: Ascend Elements, 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 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. If using this form for invoice submission, fill out tabs a. through j. wi h 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 he 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 he Instructions and Summary tab. If your project contains more than five budget periods, consult your EERE contact before adding addi ional 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

	Federal	Cost Share			Total Costs	Cost Share %	Proposed Budget Period Dates
Budget Period 1	$233,119,325	$233,119,325			$466,238,650	50.00%	Month 01 to Month 19
Budget Period 2	$83,067,250	$83,067,250			$166,134,500	50.00%	Month 17 to Month 36
Budget Period 3	$0	$0			$0	0.00%	
Budget Period 4	$0	$0			$0	0.00%	
Budget Period 5	$0	$0			$0	0.00%	
Total	$316,186,575	$316,186,575			$632,373,150	50.00%	

Section B - Budget Categories

CATEGORY	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Costs	% of Project	Comments (as needed)
a. Personnel	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
b. Fringe Benefits	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
c. Travel	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
d. Equipment	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
e. Supplies	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
f. Contractual	[redacted]	[redacted]				[redacted]	[redacted]	
Sub-recipient	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
Vendor	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
FFRDC	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
Total Contract	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
g. Construction	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
h. Other Direct Costs	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
Total Direct Costs	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
i. Indirect Charges	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	
Total Cos	[redacted]	[redacted]	$0	$0	$0	[redacted]	[redacted]	

(b) (4)

(b) (4)

Additional Explana ion (as needed):

a. 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
2	Technicians (2)	4000	$20 00	$80,000	0	$0 00	$0	0	$0.00	$0	0	$0.00	$0	0	$0.00	$0	4000	$80,000	Actual Salary
All	[redacted]																		
3,7,10,13																			
All																			
All																			
1, 2,4,5,6,8,9																			
All																			
All																			
All																			
All																			
All																			
All																			
All																			

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.

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
[redacted]																
			$0			$0			$0			$0			$0	$0

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 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
	Domestic Travel	**Budget Period 1**									
1	EXAMPLE Visit to PV manufacturer			2	2	$250	$500	$100	$160	$2,020	Current GSA rates
[redacted]											
	International Travel										
										$0	
	Budget Period 1 Total									[redacted]	
	Domestic Travel	**Budget Period 2**									
[redacted]											
	International Travel										
										$0	
	Budget Period 2 Total									[redacted]	
	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									[redacted]	

(b) (4)

Additional Explanation (as needed):

Detailed Budget Justificat on

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 t 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 add tional 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
[redacted]					See Expansion Detail to right	See Expansion Detail to right
					See Expansion Detail to right	See Expansion Detail to right
	Budget Period 2					
[redacted]						
	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			[redacted]		

Insufficient rows to provide detail, added Expansion Detail in table to right of main input table.

Equipment Item	Qty	Unit Cost	SOPO Task #	Basis of Cost	Justification of need
Budget Period 1 Expansion Detail					
[redacted]					

(b) (4)

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 heir 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 he organiza ion. 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 he 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	$8,000	$4,000	**$108,000**
								$0
								$0
								$0
								$0
								$0
								$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

(b) (4)

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
								$0
								$0
		Sub-total	$0	$0	$0	$0	$0	$0

Additional Explanation (as needed):

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 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)

	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)	[redacted]	[redacted]	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%		
[redacted]direct Costs (As Applicable):							
Overhead Costs						$0	
G&A Costs	[redacted]	[redacted]				[redacted]	
FCCM Costs, if applicable						$0	
OTHER Indirect Costs						$0	
Total indirect costs requested:	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	

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.

X 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.

Used historical G&A rate from past DOE projects (performed as Battery Resourcers)

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.

Recipient Provided Cost Share	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
a. Personnel	Ascend Elements	Cash		[redacted]					
b. Fringe	Ascend Elements	Cash							
c. Travel	Ascend Elements	Cash							
d. Equipment	Ascend Elements	Cash							
e. Supplies									
f. Contractual (NOT subrecipient provided)	Ascend Elements	Cash							
g. Construction									
h. Other									
i. Indirect	Ascend Elements	Cash							
Total recipient provided cost share				$233,119,325	$83,067,250	$0	$0	$0	$316,186,575

(b) (4)

f. Subrecipient (3rd Party) Provided Cost Share	Organization/Source	Type (Cash or In Kind)	Cost Share Item For simple cost share contributions from a partner provide the detail below; for complex contributions provide a separate budget justification (if required) or a supplementary detailed explanation	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Sub-Recipient cost share									$0
Total subrecipient provided cost share				$0	$0	$0	$0	$0	$0
Total Contractual Cost Share (Sum of Recipient and Subrecipients)				[redacted]					
Grand Total Cost Share All Sources			Totals	$233,119,325	$83,067,250	$0	$0	$0	$316,186,575
			Cost Share Percentage per Budget Period	20.3%	22.3%	0.0%	0.0%	0.0%	

Total Project Cost: $632,373,150 **Cost Share Percent of Award: 50.0%**

Additional Explanation (as needed):

A. Environmental Information Describing the Project and the Project Site

1. Summary

"Project Apex" is Ascend Elements' flagship and largest facility – a commercial-scale lithium-ion battery material production plant consisting of multiple buildings on approximately 65 acres of land, currently greenfield, located in Hopkinsville Kentucky. This facility will use black mass (BM), which is a sustainable extracted feedstock from recycled lithium-ion batteries (LiB), as an input supply source. It will transform the BM into LiB precusor materials such as metal salts (e.g. cobalt sulfate, nickel sulfate, etc) and precursor cathode active materials (pCAM), as well as battery active materials such as cathode active material (CAM), which are then subsequently used by LiB manufacturers to build batteries for various applications including electric vehicles (EV), electricity storage systems (ESS) for the utility grid, or portable electronic devices.

The project will take place over a 36-month period during which the greenfield site will undergo civil works in preparation for building shell construction, equipment will be specified, procured, and installed, and the production lines will be tested and commissioned for commercial operation. The Apex facility will require water, sewer, electricity, and a rail spur to be brought to site. All major civil works and construction is expected to occur in months [redacted] of the project. (b) (4)

Figure 1: Site aerial view. The overall Commerce Park II area in Hopkinsville KY is outlined in yellow. Apex facility will be built in the northwest part of the area shown.

An environmental site assessment has already been prepared as part of the State of Kentucky's efforts

to convert a large swath of existing farmland into an industrial park. This report, conducted by [redacted] outlines the details of the land upon which the proposed project seeks to build upon. The report identifies recognized environmental conditions and includes a site reconnaissance as well as research and interviews with representatives of the public, property owners, and regulatory agencies [redacted] available upon request). It should be noted that the proposed project will not occupy the entire industrial park, but a smaller portion in the northwest part of the park.

(b) (4)

Impact assessment is still being completed at this preliminary stage of the project.

2. Proposed Project and Its Alternatives

a. Proposed Project

The project will take place over a 36-month period during which the greenfield site will undergo civil works in preparation for building shell construction, equipment will be specified, procured, and installed, and the production lines will be tested and commissioned for commercial operation. The Apex facility will require water, sewer, electricity, and a rail spur to be brought to site. All major civil works and construction is expected to occur in months [redacted] of the project.

Figure 2: Site building plan (conceptual) bounded by John Rivers Road to the north

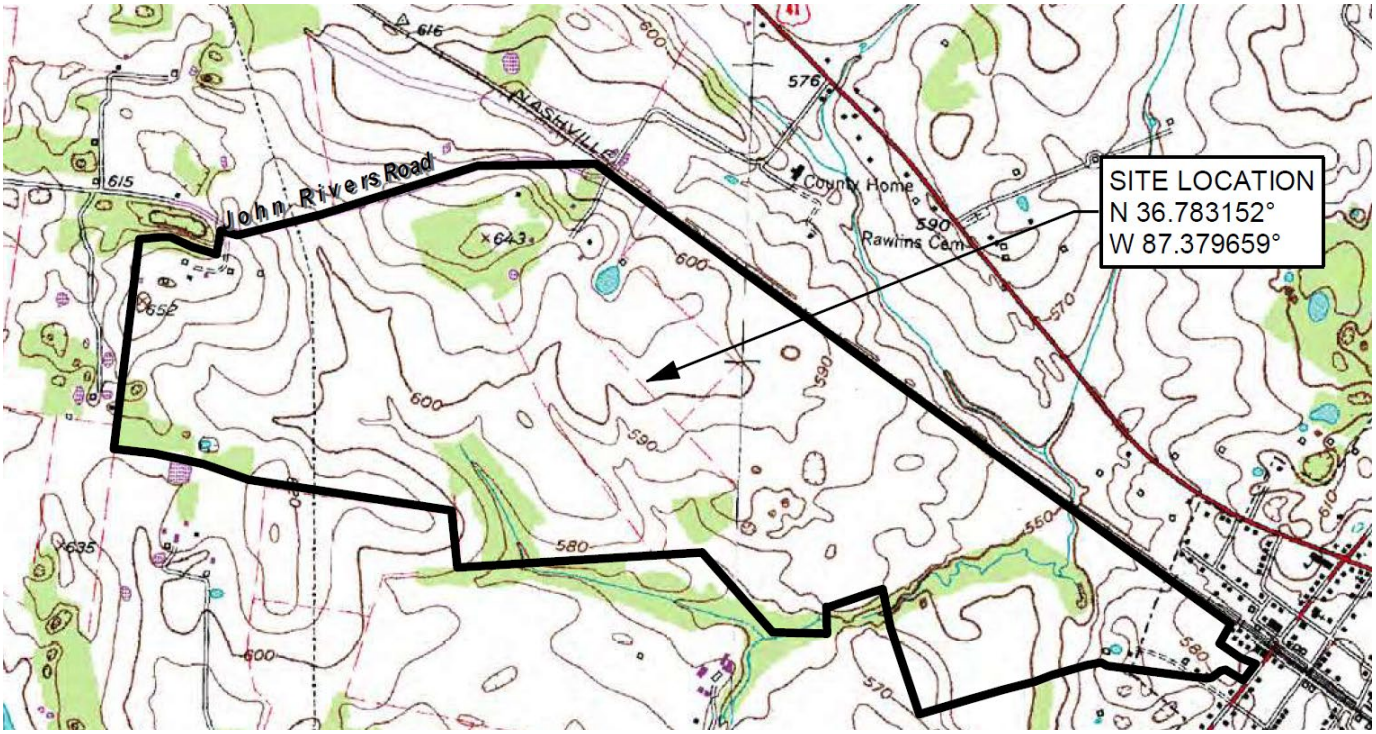


Figure 3: Topographic Map, Commerce Park II overall industrial park area (currently greenfield). Apex project will occupy northwestern corner of the marked plot.

b. Alternatives to Proposed Project Location

(b) (4) Multiple alternative locations [redacted] in total) were considered for Apex including greenfield and brownfield sites in [redacted]. None were able to meet the requirements for proximity to existing Ascend Elements facility in Covington Georgia and the larger EV and battery manufacturing industry manufacturing sites in the southeastern USA, overall size/area available, access to power and rail service, building clear height, zoning and permitting, timeline, and cost.

No-Action Alternative

Other than failure to build infrastructure that would significantly strengthen and secure the US capability in lithium-ion material manufacturing, the other main "no-action" alternative would result in failure of the existing initiative by Southwestern Kentucky Economic Development Council (SWK EDC) to transform currently underutilized land in the Hopkinsville area into a new industrial park. SWK EDC has been actively promoting, with support from the broader community, the conversion of existing farmland into "Commerce Park II" to help revitalize the surrounding disadvantaged communities including the city of Hopkinsville itself. Ascend Elements would be the first occupier of this newly planned industrial park.

3. Existing Environment

a. Land Use

Commerce Park II is located immediately south of the CSX Railroad and John Rivers Road where it intersects the Hopkinsville Commerce Industrial Park I, to the southeast of Hopkinsville, Christian County, Kentucky. It is currently used as farmland. There is a TVA (Tennessee Valley Authority) 161 kV

transmission line running through the western side of the property. Within Commerce Park II are [redacted] are located in northwestern Commerce II. The lots may be modified in size to fit the needs of the project.

(b) (4) [redacted]

Figure 4: Inset map of Commerce II; [redacted] where Project Apex is intended to be built

b. Atmospheric Conditions/Air Quality

The facility will be located in Hopkinsville, Christian County, Kentucky and will operate under an air permit issued by the Kentucky Department for Environmental Protection. Christian County is currently designated as an as an area that is in attainment, unclassifiable, or not designated for carbon monoxide (CO), particulate matter less than 10 microns (PM10), PM less than 2.5 microns (PM2.5), nitrogen dioxide (NO2), sulfur dioxide (SO2), and ozone (O3) national ambient air quality standards.

c. Hydrologic Conditions/Water Quality

None known. Site is an existing agriculture field. Based on the general topography of the area the site is expected to drain to the south-east.

d. Geologic /Soil Conditions

Site topography is considered gently rolling with slopes ranging from 2% to about 12% and the soils would not be considered highly erosive. Bedrock is expected to be between 15 and 30 feet below the surface. The area is known for karst geology; however, this site does not appear to have sinkholes or other features that indicate karst conditions.

e. Vegetation and Wildlife Resources

The majority of the Commerce Park II site consists of active agricultural land currently cropped with a combination of corn (Zea mays), wheat (Triticum sp.), and soybeans (Glycine max). The corn fields are located in the western and eastern portion of the site, while the soybean and wheat fields are located in the central portion of the site.

Small areas of forest habitat occupy scattered woodlots, stream corridors and fence lines primarily along the perimeter of the site, as well as in the south-central and eastern portion of the site. Common species within the mixed-aged woods include black walnut (Juglans nigra), silver maple (Acer saccharinum), box elder (Acer negundo), sugar berry (Celtis laevigata), shagbark hickory (Carya ovata), northern red oak (Quercus rubra), American sycamore (Platanus occidentalis), pecan (Carya illinoinensis), persimmon (Diospyros virginiana), and black gum (Nyssa sylvatica).

Regarding threatened or endangered species, there are [redacted] species potentially occurring on, or in the vicinity of, the project site. Species listed on the report, the presence/absence of suitable habitat for these species on the site, and potential effects on each species are summarized in the following table and discussed below.

(b) (4)

Table 1: Threatened/Endangered Species Near Proposed Project Site

Scientific Name	Common Name	Federal Status	Habitat Present	Species Impacted
[redacted]				
		E	No	No
		T	Summer	Indirect
		E	Summer	Indirect
		E	No	No
		E	No	No
		E	No	No

E = Federally Endangered; T = Federally Threatened

There are no critical habitats in the project area. No suitable habitat for [redacted] summer/winter [redacted] winter [redacted] for the [redacted] is present on the site. Suitable habitats for these species on the project site is limited to [redacted] which includes the small scattered woodlots,

fencerows and riparian zones.

f. Socioeconomic Conditions

Hopkinsville is the county seat of Christian County, Kentucky. The county has a population of just over 72,300 people and has been losing people over the years (down 2.2 percent since 2010). The economy of Christian County has been much weaker than that of the Commonwealth. Table 2 on the following page shows current data for the County compared to the state[i] [4]. As the data show, Christian County is relatively poor, with a per capita income that is about $8,000 less than state average, and a poverty rate that is over 13 percent higher. This likely reflects the fact that there are very few businesses in the county, just 60 for every 1,000 residents, compared to 74 per 1,000 people in the state. In addition, employment levels have been falling rapidly in Christian County – down by 4.5 percent between 2019 and 2020, while at the same time employment was flat in Kentucky overall.

The major employers in the region around Christian County include: Fort Campbell, the Christian Co. Board of Education, Martinrea (a vehicle parts manufacturer), a Wal-Mart Distribution Center, T.RAD (a vehicle parts manufacturer), the Jennie Stuart Medical Center, the Western State Psychiatric Hospital, Tele Tech's Call Service Center, Grupo Antolin (a vehicle parts manufacturer) and TGASK (another vehicle parts manufacturer)[ii]. This means that the region is highly dependent on the government, and the automobile industry.

Table 2: Christian County Kentucky economic statistics

Comparative Economic Statistics

Indicator	Christian County	Kentucky
Population	72,357	4,509,394
Population Change Since 2010	2.2%	0.4%
Median Home Price	$121,000	$147,100
Percent of Population with College Degree	18.7%	25.0%
Percent of Population in Labor Force	47.1%	59.1%
Per capita income ($ 2020)	$44,279	$52,238
Persons in poverty, percent	16.9%	14.9%
Total employment	24,055	1,666,427
Total annual payroll, ($ 2020)	$951,726,000	$75,359,894,000
Employment Pct. Change (2019-2020)	(1.3)	-
Per Capita Firms (2012)	0.060	0.074

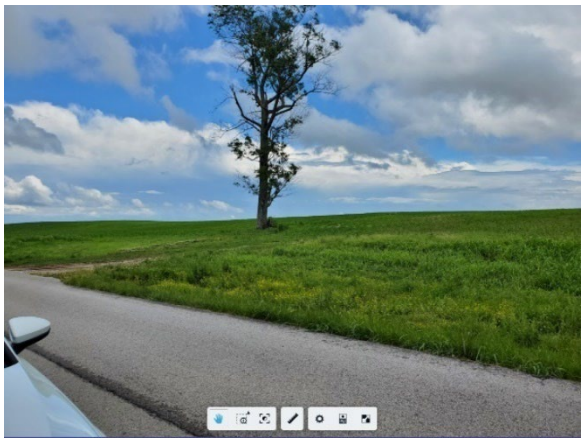
g. Historic/Cultural Resources

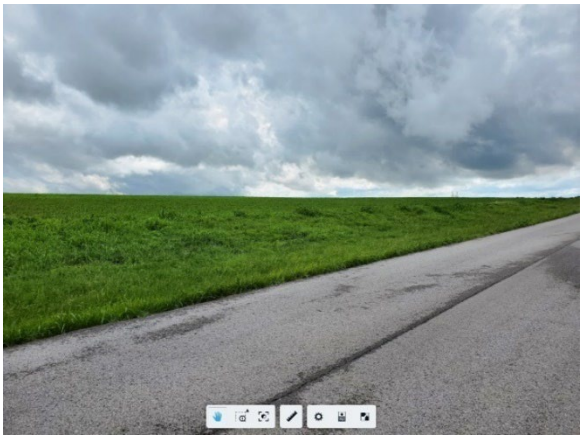
In preliminary assessments, no historic/cultural resources or archeological sites are present.

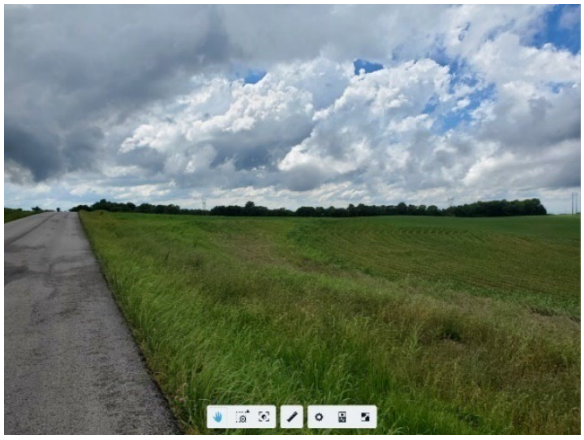
h. Visual Resources

The term "aesthetic and visual resources" (visual resources) refers to the composite of basic terrain, geologic and hydrologic features, vegetative patterns, and human-built features that influence the visual appeal of a landscape. Existing visual resources consist mostly of open agricultural fields with scattered tree lines. The analysis area for visual resources is defined as the area of visibility up to 30 miles from the

Project Area. Current vistas from the project area are shown below:







<u>i. Health and Safety Factors</u>

There are no current emissions or effluents from the proposed project sites as they are existing agricultural fields. Noise levels in the project area are primarily from the existing CSX Casky rail yard located immediately to the north.

B. Environmental Impact of the Work to be Performed

1. Land Use

Land will be cleared, excavated, graded and filled as needed to meet foundation requirements, manage stormwater runoff, allow construction of roadways and parking lots, installation of utility lines including water, sewer, and electric, and building of a rail spur to interconnect to the existing CSX rail line. Additional studies will be completed to determine specific road materials and stormwater retention pond and piping design. Once the project is complete, ongoing action will prevent pollutants from entering the stormwater management system. Raw materials and wastes will be stored inside or under cover with adequate containment. Snow, sand, deicing chemicals, fertilizers, pesticides, and solid waste will be properly managed. An effective street-sweeping program will be implemented. Structural best management practices (BMPs) that can remove the pollutants of concern will be designed, constructed, operated and maintained. Infiltration BMPs, bioretention areas, constructed stormwater wetlands, and filter systems may be effective tools for reducing the concentration of nutrients and bacteria in stormwater discharges

2. Atmospheric Conditions/Air Quality

Air quality changes are expected. Construction equipment, earthmoving, and travel on paved and unpaved roads would emit quantities of criteria pollutants and fugitive dust. These impacts would be temporary, ceasing when construction of the Project is complete.

The current facility is in the design phase***. It is the goal/mission statement of Ascend Elements to have minimal impact on any environmental conditions***. There will be air handling units, air scrubbers and ventilation from drying operations. It is expected an air permit will be required. The air permit would provide enforceable limits and potential air pollution mitigation measures to reduce air emissions impacts from the operation. Further design and modeling is needed to have impacts on external air quality assessed. In addition, preliminary estimated process emissions from the various manufacturing operations are currently being assessed and will be updated when available.

3. Hydrologic Conditions/Water Quality

Project will result in regrading of the land. Stormwater runoff will be managed in accordance with all relevant requirements. No permanent outdoor storage piles are expected at this stage, though temporary storage during construction is expected.

[redacted]

- [redacted]

4. Geologic /Soil Conditions

(b) (4) [redacted]

Soil conditions are not highly erosive. There are no streams, floodplains, or wetlands on the proposed roject site. Additional study will be performed to further assess construction impact on soil ermeability and filtration, or subsidence given possibility of karst conditions.

5. Vegetation and Wildlife Resources

Limited impact is expected to indigenous flora and fauna. There is no ecologically sensitive terrain at the proposed project site, and no critical habitats exist for threatened or endangered species disclosed in section II.A.3.e above. There are some [redacted] for [redacted] Under the current USFWS 4(d) Rule, incidental take of the [redacted] this site is not prohibited. If tree clearing is proposed for specific phases of project development, consultation with the USFWS will likely be required and result in a per acre payment to the ICBF for any clearing of suitable [redacted]

6. Socioeconomic Conditions

Increased employment is expected as a result of this project. Labor requirements and mix are not expected to change drastically as the majority of jobs will be in advanced manufacturing operations, which already exists in this region. There will be additional requirements for certain engineering disciplines that may not already be present.

7. Historic/Cultural Resources

Preliminary assessment suggests no disturbances to historic/cultural resources are expected – no such resources are present in the vicinity.

8. Visual Resources

The term "aesthetic and visual resources" (visual resources) refers to the composite of basic terrain, geologic and hydrologic features, vegetative patterns, and human-built features that influence the visual appeal of a landscape. The analysis area for visual resources is defined as the area of visibility up to 30 miles from the Project Area. To investigate the potential visual impacts of the Project, a viewshed analysis will be conducted to determine the extent to which the Project (buildings and development) would potentially be visible within the 30-mile analysis area.

9. Health and Safety Factors

The proposed project will process [redacted] (b) (4) [redacted]

There may be average increases ambient noise due to additional rail car activity in the vicinity, however, absolute maximum noise levels are not expected to exceed current and existing rail car noise levels at the nearby CSX rail yard.

(b) (4) Risk mitigation for handling hazardous materials will be conducted via proper operations and maintenance of equipment in compliance with OSHA, environmental regulations, and manufacturer recommendations. [redacted] equipment will be installed for [redacted] farms.

10. Solid and Hazardous Wastes

The mission of Ascend Elements is to be a green company. The main goal of the design of this facility is to self-produce as much material as needed in the process.

As this will be an active facility there will be non-hazardous waste streams such as normal trash. Recycling of as much of material handling material (i.e., pallets) will be implemented. It is expected a formal recycling Plan will be developed on a Corporate level prior to the opening of the Apex 1 facility.

(b) (4) [redacted]

11. Impacts on Regional or Local Plans

Preliminary – full impact assessment not yet complete – but as described in Section 10 the project is committed to reusing / self-consuming all products from process. Apex 1 will require process water. Process water once used will be refined and reused to the extent practicable. [redacted] The proposed project is projected to create 2,860 FTE jobs in Hopkinsville (9,305 jobs statewide) during the construction and development phase of the new facility. Once fully operational, the new APEX facility in Hopkinsville will employ 416 individuals (1,000 FTE jobs statewide).

C. Potential liability to DOE of existing conditions at the site

At this stage, there are no potential conditions on the proposed project site to expose the DOE to previous liability. The site has historically been purely agricultural land.

D. Ability to meet compliance requirements at the site

The facility will be a source of air emissions and thus subject to the Clean Air Act (CAA). The Kentucky Department of Environmental Protection will enforce the permitting requirements of the CAA through its state implementation plan. The facility will apply for a Title V operating permit since it will be subject to a National Emission Standard for Hazardous Air Pollutants (NESHAP) (40 CFR 63 Subpart VVVVVV) which requires a Title V permit if federally enforceable equipment are installed to maintain emissions below major source thresholds. Other air regulations that the facility may be subject to include the New Source Performance Standard (NSPS) for small commercial-institutional steam generators (40 CFR 60 Subpart Dc) and state-only regulations that regulate particulate emissions and opacity from processes.

(b) (4) [redacted] Preliminary assessment of the design and size of the parking areas, building and amount of stormwater that would need to be collected and managed, as well as the amount generated from boiler condensate a Stormwater Permit will be required requesting permission to discharge to a surface waterbody. Based on initial analysis, the stormwater from the developed parking areas will need to go through pretreatment to remove total suspended solids to be able to discharge this to the creek on site. A SPDES permit will need to be applied for and would have monitoring requirements and effluent limits. Based on the low volume of boiler blowdown water, at the time of the application.

All existing corporate policies will be followed. [redacted] management and handling procedures as well as all health and safety policies, including all proper training, equipment commissioning, O&M, engineering controls. Site Specific Process Risk Assessments will be completed to identify any type of hazard (i.e., material handling or worker safety program) not present at an existing AE facility. If new hazards are identified additional policies will be implemented to be in compliance with all local, state and federal regulations.

[redacted] if the facility status is identified as Large Quantity Generator an Annual Hazardous Waste Report, and Waste Reduction Reports/Plan will be required. All waste handling, waste storage, disposal and tracking will

(b) (4)

1. All directly related education/experience of key project members in each of the following areas:

- ☑ Air quality management
- ☑ Surface water and ground water management
- ☑ Solid and liquid waste management and disposal practices
- ☑ Noise, land use, ecological resources, archaeological, cultural, and historical resources management
- ☑ Environmental permit applications, amendments, and renewals

(b) (4)

(b) (4) [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

(b) (4)

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

(b) (4)

[redacted]

References

i [4] Statistics are from US Department of Commerce, Bureau of the Census, *QuickFacts: Christian County, KY*, available on-line at: https://www.census.gov/quickfacts/fact/table/KY,christiancountykentucky/SBO001212#SBO001212

ii *Top Ten Regional Employers*, webpage, South Western Kentucky Economic Development Council, at: https://southwesternky.com/local-business/regional_manufacturers/

DOE F 540
(04-2017)

OMB Number 1910-5175
Exp. 11/30/2020

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

ENVIRONMENTAL QUESTIONNAIRE

SECTION I. PROJECT SUMMARY	
Control Number:	2678-1595
Project Title:	Apex - Integrated Sustainable Battery Precursor Production Plant
Applicant:	Ascend Elements, Inc.
Other Participants (Subrecipients, Contractors, etc.):	
FOA Number:	DE-FOA-0002678
FOA Title: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing	

SECTION II. BACKGROUND AND INSTRUCTIONS

Pursuant to the U.S. Department of Energy's National Environmental Policy Act (NEPA) implementing regulations (10 C.F.R. Part 1021), the Office of Energy Efficiency and Renewable Energy (EERE) is required to evaluate the potential environmental impact of projects that it is considering for funding. EERE must determine at the earliest possible time whether any proposed project qualifies for a categorical exclusion under 10 C.F.R.§ 1021.410 or will require further environmental review within an environmental assessment or an environmental impact statement.

You are required to answer the questions below for the project as a whole, including all work to be performed by the Recipient, its subrecipients and contractors, including any work outside of the United States. You may not limit your responses to work performed by the Recipient only unless instructed to do so by EERE. In completing this questionnaire, you must provide specific information regarding the nature of your proposed project, including information on its size, operations, and the types and quantities of air emissions, wastewater discharges, solid wastes, land disturbances, etc. You should identify the location(s) of the proposed project and describe the activities that would occur at each location.

The form should be completed and signed by the Principal Investigator for the project or another member of your organization who has sufficient knowledge of the project to answer the questions truthfully and accurately.

Failure to fully and adequately complete this form will delay EERE's environmental review of your proposed project. Please note that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001.

BURDEN DISCLOSURE STATEMENT
Public reporting burden for this collection of information is estimated to average 60 minutes 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 (1910-1800), U.S. Department of Energy, 1000 Independence Avenue S.W., Washington, D.C. 20585; and to the Office of Management and Budget (OMB), Paperwork Reduction Project (1910-1800), Washington, D.C. 20503.

SECTION III. PROJECT EVALUATION

1a. In the box below, please provide a brief summary of the proposed project activities. Describe physical activities, not goals and objectives. Specify if this project is part of a larger project or connected to another project.

Example: The proposed project activities include the design, development, fabrication, and field testing of advanced biomass harvesting equipment. Design, development, and fabrication activities would occur at our research and development facility adjacent to our manufacturing plant in Dearborn, Michigan. Equipment testing would occur in various agricultural fields in the surrounding area over a two-year period.

Explanation:
The proposed project activities include the design, construction, and operation of a manufacturing facility producing lithium-ion battery materials on a roughly 65-acre greenfield site in Hopkinsville, KY currently used as farmland. The facility is currently in planning phase and multiple buildings, parking lots, new roads, new rail spur, utility lines including power, water, and sewer lines are being designed. Buildings comprise warehouse, office, labs, maintenance and utilities space and multiple production buildings. Delivery of materials will be by rail. There will be chemical storage tank 'farm' to hold the various solutions that are required for materials processing. The design and construction is estimated to take three (3) years and the facility is expected to operate for 10+ years.

1b. Is there other Federal government involvement outside of EERE in any aspect of this project (e.g., funding, permitting, technical assistance, project located on Federally administered land)?

Yes ☐ | **No** ■

If you checked "Yes," please list the agency, describe the nature of its involvement, and provide a point of contact at the agency, if known.

Explanation:
Not applicable

1c. Is the proposed project limited exclusively to intellectual, academic, or analytical activities?

Intellectual, academic, and analytical activities include, but are not limited to:

- Literature searches and information gathering
- Data analysis
- Computer modeling
- Analytical reviews
- Conceptual design
- Feasibility studies
- Document preparation
- Data dissemination
- Paper studies

You must answer "No" to this question if the proposed project involves any laboratory research and/or development, physical experiments, pilot-scale projects, demonstration projects, field tests, land-disturbance, construction, or similar activities.

Yes ☐ | **No** ■

If you checked "Yes," proceed directly to Section IV (Certification) and complete the information and signatures as requested. If you checkned "NO" you must complete the entire questionnaire.

Explanation:
Not applicable

If you checked "Yes," proceed directly to Section IV (Certification) and complete the information and signatures as requested. If you checked "No," you must complete the entire questionnaire.

2a. Is the project fully defined at this point (i.e., all sites and activities are known)?

Yes ☐ | **No** ■

If you checked "No," please describe those sites and/or activities/tasks that are yet to be defined and complete the remainder of the questionnaire to the best of your knowledge.

Explanation:
The design of the buildings, manufacturing equipment, parking area, roads, utilities, rail spur, stormwater drainage, land excavation, leveling, and grading activity, manufacturing process inputs/outputs are all in preliminary calculation stage and are subject to change.

2b. In the chart below, please describe the following four types of identifying information concerning project activities to be performed:

(1) each location where work would be performed, including address or coordinates, names of facilities, and whether this is a Recipient, Subrecipient, or Contractor location;
(2) the nature of the location (e.g., urban, industrial, suburban, agricultural, university campus, manufacturing facility) and the current condition and/or use of the site;
(3) the types of activities to be conducted at that location;
(4) land administration (e.g., BLM, USFWS, DOD, state, private).

(1) *List all Locations Where Project Activities Would Occur (Facility Name and Address or Coordinates) and Indicate Recipient, Subrecipient, or Contractor*	*(2)* *Nature of Location and Current Condition/Use*	*(3)* *Activities to be Performed at Each Location*	*(4)* *Land Administration*
Ascend Elements (recipient) TBD John Rivers Rd, Hopkinsville KY	Commerce Park II Lot [redacted] and Lot [redacted] (b) (4) (N 36.783152, W 87.379659)	Design and construction of Apex manufacturing facility. Design, permit analysis and construction.	Private
Example 1: Smith Laboratory (recipient) 1234 College Lane Baltimore, MD XYZ Corporation (subrecipient) 1232 Industrial Drive Golden, CO	Smith Laboratory – Dedicated University Laboratory Facility XYZ Corporation – Manufacturing Facility in Industrial Park	Activities would include design and fabrication of a gallium-nitrate battery at XYZ Corporation's battery manufacturing facility using existing equipment. The battery would then undergo testing including battery charge/discharge cycling at Smith Laboratory. Data analysis would also occur at Smith Laboratory.	Smith Laboratory – State property XYZ Corporation – Private property
Example 2: Capital High School (recipient) 1234 Eagle Lane Golden, CO	High school property in a suburban environment that has been previously disturbed and is owned by the City.	Activities would include the installation of a 50 kW wind turbine adjacent to the football stadium. The final height for the turbine would not exceed 140 feet (hub height) or 170.6 feet (maximum blade height) with a blade radius of 31.5 feet. There is an airport 15 miles away from project site location.	City

2c. In the box below, please identify and describe: (1) any known or potential health and safety hazards to the public or project workers that may result from or are associated with your proposed project; and (2) any efforts that would be taken to mitigate these hazards. <u>Describe individually for each site discussed in Question 2b.</u>

Example (Hazards): The project would involve the use and handling of various hazardous materials, including metals and industrial solvents. All such handling would occur in-lab, and our organization is dedicated to proper hazardous material handling and disposal practices, so the project activities that involve these materials would pose no risk to the public. All hazardous materials would be managed in accordance with Federal, state, and local environmental regulations.

Example (Mitigation): Existing corporate health and safety policies and procedures would be followed, including employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. Additional policies and procedures would be implemented as necessary as new health and safety risks are identified. This would help ensure compliance with applicable health and safety regulations, and minimize health and safety risks to employees and the public.

Explanation:
The project would include new construction of a manufacturing facility, with typical health and safety hazards associated with a construction project. Project will develop and implement Environmental Protection Measures (EPM) to avoid or minimize adverse effects on environmental resources from construction, O&M, and decommissioning. Certain areas would be designated as environmentally sensitive and actions would be taken to avoid or minimize effects on these areas (for example, environmentally sensitive areas include wetlands, certain waterbodies, cultural resources, and wildlife habitat). Project activities described herein would incorporate and be subject to the EPMs and requirements imposed as part of Federal, State, and local permits and authorizations. Project would comply with applicable Federal, State, and local laws, regulations, and ordinances related to environmental protection.

In operation the facility will process significant amounts of acids and other chemicals. Hazard mitigation policies will be followed including, but not limited to: chemical handling procedures [redacted] waste management and handling procedures as well as all health and safety policies, including all proper training, equipment commissioning, O&M, engineering controls.

(b) (4)

2d. In the box below, please identify and describe any of the following that would be associated with the proposed project. <u>Describe individually for each site discussed in Question 2b.</u>

(1) any physical modification of existing facilities or construction of new facilities (this does NOT include modification to equipment, only facilities);
(2) ground disturbing activities;
(3) any change in the use, mission, or operation of existing facilities;
(4) installation or deployment of equipment outdoors including the area of disturbance, what currently exists at the site, the dimensions of the installation, any associated infrastructure, etc.

Example 1: Physical modification of existing facilities and ground disturbing activities -To accommodate testing facilities necessary for the project, the current testing facility would have to be expanded by approximately 4,500 square feet.

Example 2: Change in use of existing facility - A room within our facility that has served as a dedicated wind tunnel would be modified to serve as an environmental test chamber. This would require the adaptation of the chamber's construction to partition off part of the room and seal it to allow generated environmental fluctuations within.

Example 3: Installation of equipment outdoors and ground disturbing activities - The proposed turbine location is on school property located in a previously disturbed area south of the existing school building and near the high school athletic facilities and fields. East of the school are two golf courses; south and north are single family residential neighborhoods; and to the west are two public park properties. There are wooded areas located on the school property to the south and west. The foundation of the wind turbine would be approximately 25 square feet with an additional 5 square feet of disturbance during construction. The foundation would be approximately 10-15 feet in depth. There would be a minor, temporary land disturbance adjacent to the proposed site for crane work and the tower staging area. Existing roads would be used to access the project location.

Explanation:
The project will be new construction. It will disturb ground including regrading and development of road, rail, power, water, and sewer lines leading to the new buildings to be built, roughly 9 freestanding buildings of varying sizes totaling nearly 500,000 sq ft and up to 60' in height in some areas. The existing land is purely used as farmland. Adjacent sites are also farmland and are intended to be developed into an industrial park. External equipment will be installed onsite including a chemical storage tank 'farm', wastewater treatment equipment, and dust collectors.

Once a project is complete, ongoing action is needed to prevent additional pollutants from entering the stormwater management system. Raw materials and wastes should be stored inside or under cover with adequate containment. Snow, sand, deicing chemicals, fertilizers, pesticides, and solid waste should be properly managed. An effective street-sweeping program should be implemented. Structural BMPs that can remove the pollutants of concern must be designed, constructed, operated and maintained. Infiltration BMPs, bioretention areas, constructed stormwater wetlands, and filter systems may be effective tools for reducing the concentration of nutrients and bacteria in stormwater discharges.

2e. In the box below, please identify and describe any existing, modifications to, or new permits, licenses, or authorizations that would be required to perform project activities (such as environmental permits, operating permits, or drilling permits). <u>Describe individually for each site discussed in Question 2b.</u>

Example 1: The project would generate small amounts of effluent waste which will be discharged into the Potomac River, requiring our organization to secure the requisite discharge permit pursuant to state and Federal regulations.

Example 2: The project activities would be conducted for the next three years. We would be required to replace our current solid waste disposal permit with an updated permit that may alter the nature of what and how we are permitted to dispose of solid waste.

Example 3: The project activities would take place in marine navigable waters and would require permits from the U.S. Coast Guard and the U.S. Army Corps of Engineers.

Explanation:
The project is in the design phase, therefore any licenses or permits would be new, not modifications to existing.

Based on the projected processing and output it is expected the following permits will be required for construction and operations in the next three years:
KPDES Construction SW Permit- for construction activities (expecting to disturb more than 1 acre).
KPDES Operating Permit - for effluent flow of wastewater treatment system to publicly-owned treatment works
Potential discharge of cooling waters to surface water body
Groundwater Protection Plan (SWPP) -
Potentially a Water withdrawal permit - diverting 10K gallons per day
Air Permit (Title V) - Facility equipment dryers and dust collectors

2f. In the box below, please list the estimated quantities of materials to be used (e.g., feedstock, chemicals, water) and produced by the project (e.g., biofuel). Describe individually for each site discussed in Question 2b.

Explanation:

[redacted]

(b) (4)

2g. In the box below, please quantify, to the extent possible, all emissions into the ambient air resulting from project activities. Indicate if the project site is within an attainment or non-attainment area. Describe air emissions individually for each site discussed in Question 2b.

Note: Potential emissions include, but are not limited to, greenhouse gas emissions, particulate matter, and airborne pollutants. Sources of emissions can include stationary sources, such as boilers, process heaters, generators, and/or solvent usage, or mobile sources such as vehicles. It is presumed that every project would result in some emissions being released into the ambient air, so applicants answering "none" must explain why no emissions would be released. Non-attainment areas are designated parts of the country where air pollution levels persistently exceed the national ambient air quality standards. See 42 U.S.C. 7501(2).

[redacted]

(b) (4)

2h. In the box below, please describe: (1) all non-hazardous wastes that would be generated by the proposed project including recycled materials, and (2) the method of their disposal. <u>Describe individually for each site discussed in Question 2b.</u>

Note: It is presumed that every project would generate solid wastes, so applicants answering "none" must explain why no waste would be generated. Non-hazardous waste is any garbage, refuse or trash, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. See 40 C.F.R. § 261.2.

Explanation:
The mission of Ascend Elements is to be a green company an the main goal of the design of this Apex 1 Facility is to self produce as much material as needed in the process.

[redacted]

(b) (4)

3. Is the proposed project near, or does it involve, any of the following resources? Please indicate below any and all resources that could be affected by any project activities. (See Attachment 1 to the Environmental Questionnaire for resource definitions.)

- ☐ a. Historical, archeological, or cultural resources (includes listed and eligible resources over 50 years old or of cultural significance)
- ☒ b. Threatened or endangered species (whether proposed or listed by state or Federal governments), including their habitat
- ☒ c. Marine mammals or essential fish habitat
- ☒ d. Floodplains or wetlands
- ☐ e. Tribal lands or resources of Tribal interest/sensitivity
- ☐ f. Ocean resources (e.g., coral reefs)
- ☐ g. Land resources (e.g., tundra, rainforests)
- ☐ h. Coastal zones
- ☐ i. Migratory birds, or Golden or Bald Eagles
- ☐ j. Areas having a special designation (e.g., Federal and state designated wilderness areas, national parks, national natural landmarks, wild and scenic rivers, state and Federal wildlife refuges, and marine sanctuaries)
- ☐ k. Prime farmland, unique farmland, or other farmland of statewide or local importance
- ☐ l. Special sources of water (e.g., sole source aquifers)

If you checked any boxes above, provide a detailed description of: (1) the resources that could be affected, and (2) how project activities may affect those resources.

Explanation:

Additional Studies requires. FEMA Flood Insurance Maps indicate the 100-year flood plain on a nearby creek is located in the southeast corner of the subject property.

Three mammal and three mussel species potentially occurring on, or in the vicinity of, the project site.
Species listed on the report, the presence/absence of suitable habitat for these species on the site,
and potential effects on each species are summarized in the following table and discussed below.

Scientific Name	Common Name	Federal Status	Habitat Present	Species Impacted
Mammals				
Myotis grisescens	gray bat	E	No	No
Myotis septentrionalis	northern long-eared bat	T	Summer	Indirect
Myotis sodalis	Indiana bat	E	Summer	Indirect
Mussels				
Obovaria retusa	ring pink	E	No	No
Pleuronaia dolabelloides	slabside pearly mussel	E	No	No
Ptychobranchus subtentum	Fluted kidneyshell	E	No	No

E = Federally Endangered; T = Federally Threatened

The project would include the construction of the facility, for construction activities AE would develop and implement Environmental Protection Measures (EPM) to avoid or minimize adverse effects on environmental resources from construction, O&M, and decommissioning of the Construction Phase of the Project. Certain areas would be designated as environmentally sensitive and actions would be taken to avoid or minimize effects on these areas. For example, environmentally sensitive areas include wetlands, certain waterbodies, cultural resources, and wildlife habitat. Project activities described herein would incorporate and be subject to the EPMs and requirements imposed as part of Federal, State, and local permits and authorizations. AE would comply with applicable Federal, State, and local laws, regulations, and ordinances related to environmental protection

4. **Does the proposed project involve any of the following activities or areas of concern? Please indicate below any and all activities or areas of concern that exist in the vicinity of your project, are required for your project, or could affect your project.** (See Attachment 1 for definitions of each activity or area of concern.)

- ☒ a. Clearing or excavation
- ☐ b. Dredge and/or fill
- ☐ c. Pre-existing contamination
- ☐ d. Pesticide use
- ☐ e. Asbestos or lead-based paint
- ☐ f. Polychlorinated biphenyls (PCBs)
- ☐ g. Navigable air space
- ☐ h. Underground storage tanks
- ☐ i. Underground extraction/injection
- ☐ j. Use of a non-renewable resource

If you checked any boxes above, provide a detailed description of: (1) each activity or area of concern, and (2) the effects of each activity or area of concern on your project and/or the surrounding area.

Explanation:

Clearing and excavation needed for the construction of the Apex Facility. Additional design and studies needed (minimize disturbance). All Local, State and Federal laws will be followed for permitting and monitoring activities. Environmental Protection Measures (EPM)/ Best Management Practices (BMP) will be used for clearing or excavation activates needed during the Facility Construction.

5. Would the proposed project have the potential to result in impacts to the surrounding community? Please indicate below all areas of concern that exist in the vicinity of your project, are required for your project, or could affect your project.

- [x] a. Visual impacts
- [x] b. Populations of low income or minorities (Environmental Justice)
- [x] c. Changes in local employment
- [x] d. Changes in local traffic patterns or density
- [x] e. New transportation access
- [x] f. New utility lines or right-of-ways
- [ ] g. Other impacts

If you checked any boxes above, please provide a detailed description of: (1) the communities affected, and (2) what effects the project would have.

Explanation:
Improvement in local employment, creating of hundreds of new good-paying clean energy jobs. Improved benefits to low income, minority, and disadvantaged communities with higher income job opportunities, appropriate workforce training programs, affordable childcare and affordable transportation benefits made available to the greater Hopkinsville community. More studies required for visual impacts but generally will change from farmland to industrial park. Increase in local traffic density especially truck traffic. New access roads will be constructed. New rail spur will be constructed. New power, water, and sewer lines will be run to project site.

6. Would the proposed project use, result in, or require the management, storage, transport, or disposal of radioactive, toxic, or hazardous chemicals, waste, or other materials that require special handling?

Note: Hazardous chemicals and materials include those which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may increase the risk of mortality or pose a substantial threat to human health or the environment when improperly stored, transported, disposed of, or otherwise managed.

Yes ☒ | **No** ☐

If you checked "Yes," please provide a detailed description of: (1) the materials; (2) approximate quantity of each; (3) their role in the project; and (4) storage, transport, and disposal procedures for each material.

Explanation:

[redacted]

(b) (4)

7. **Would the proposed project involve the use or development of recombinant DNA or genetically engineered microorganisms, plants, animals, or similar technologies?**

Yes ☐ | **No** ■

If you checked "Yes," please provide a detailed description of: (1) the genetic modifications, (2) the safety procedures in place for their handling and use over the course of the project, and (3) how they would be disposed of at the project's conclusion.

Explanation:
Not applicable

8. Does the project involve the use of any nanoscale materials or nanotechnology?

Note: Nanotechnology is defined as research and technology development at the atomic, molecular, or macromolecular levels using a length scale of approximately one to one hundred nanometers in any dimension; the creation and use of structures, devices and systems that have novel properties and functions because of their small size; or the ability to control or manipulate matter on an atomic scale.

Yes ☐ | **No** ■

If you checked "Yes," please describe: (1) the nanoscale materials used, (2) potential risks those materials may pose, and (3) how they would be disposed of.

Explanation:
Not applicable

9. Is there any public opposition concerning any of the project activities?

Yes ☐ | **No** ■

If you checked "Yes," please describe the nature of the opposition and any actions you may have taken or plan to take to address it.

Explanation:
None Known

10. Would the project involve activities or deployments into marine/freshwater aquatic environments?

Yes ■ | **No** ☐

If you checked "Yes," please provide a detailed description of: (1) the proposed activities or deployment, (2) where and when these activities would occur, and (3) what permit/authorizations have been or would be acquired for this activity.

Explanation:
More investigation/studies required. Aquatic life are in existence to the southern area of the overall Commerce II site. It is not clear if the project in this early design phase would impact the area due to distance but most likely due to stormwater runoff or changes in drainage.

11. Would the proposed project result in a discharge of any type of wastewater, pollutant, or contaminant, including thermal discharges, to a sewer system, stormwater system, soils, retention ponds, or any water resources (e.g., surface water, including lakes, rivers, creeks, and wetlands; and ground water)?

Note: Under Federal law, the term "pollutant" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. See 33 U.S.C. § 1362(6). The term "contaminant" means any physical, chemical, biological, or radiological substance or matter in water. See 42 U.S.C. § 300f(6).

Yes ■ | **No** ☐

If you checked "Yes", please quantify and characterize the wastewater or pollutants and provide a detailed description of the: (1) wastewater, pollutants, or contaminants to be released; and (2) the water resources that may be affected.

Explanation:
[redacted]
(b) (4)
The mission of Ascend Elements is to be a green company an the main goal of the design of this Apex 11 facility is to self produce as much material as needed in the process.
[redacted]

12. Would the proposed project have the potential to generate noise impacts to adjacent communities, employees working at the project site, wildlife, and/or sensitive receptors including hospitals, schools, daycare facilities, and elderly housing?

Yes ■ | **No** ☐

If you checked "Yes", please provide a description of: (1) the receptors that may be impacted and their estimated distance from the project activities, (2) the level of noise generated (in A-weighted decibels (dbA)) to each receptor, and (3) anticipated duration.

Explanation:
There may be noise impact since the land is currently used for crops. There is an existing and active rail line in close proximity to the project. The surrounding community is not expected to be impacted.

13. Please provide a detailed description of how the project would be decommissioned, including the disposition of equipment and materials.

Explanation:	AE does not expect to decommission this Apex Facility within the next decade. If decommissioning was needed, all efforts would be to minimize waste and disturbance.

SECTION IV. CERTIFICATION

I hereby certify that I am authorized to submit, and I do so hereby submit, the information in this questionnaire on behalf of the Recipient named below. I certify that the information provided herein is accurate and complete as of the date shown below. I understand that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001. If I receive any information that would indicate that any of the above-referenced answers are no longer correct or complete, I agree to notify EERE immediately. If it is necessary for EERE to modify the information I provide, EERE will request that I recertify the revised form.

Name	(b) (4) [redacted]
Title	VP Marketing and Governemnt Relations
Applicant	Ascend Elements, Inc.
Signature	
Date	

EERE ENVIRONMENTAL QUESTIONNAIRE
ATTACHMENT 1

Definitions for Question 3 –Resources*

Historical, Archeological, or Cultural Resources. The National Historic Preservation Act; the Historic Sites, Buildings and Antiquities Act; the American Indian Religious Freedom Act; and the Archeological Recovery Act provide for the preservation of sites, buildings, structures, or objects of historic, archeological, or architectural significance designated by Indian, Federal, state, or local governments or listed or eligible for listing on the National Register of Historic Places. The Archeological Resources Protection Act, Antiquities Act, and Native American Graves Protection and Repatriation Act also apply if the proposed project is on Federal and tribal land. This item should be checked "yes" if a proposed project is in an area that meets any of the above, or if an archeological survey has not been performed. Provide documentation of any consultation or State Historic Preservation Officer determination letters if available. If this information is not available or a survey has not been conducted recently, DOE may require such a survey to be conducted prior to any proposed project implementation.

Threatened/Endangered (T/E) Species and/or Critical Habitat. The Endangered Species Act provides for protection of animals, birds, fish, plants, and other living organisms that are in danger of extinction. A list of T/E species is provided in 50 C.F.R. Part 17. Consultations with the U.S. Department of Interior Fish and Wildlife Service (FWS), National Marine Fisheries Services (NMFS), and the corresponding state agency should be documented. This item should be checked "yes" if any state- or Federally-listed or proposed threatened or endangered species or critical habitat is located in the proposed project area, or could be indirectly affected by the proposed project. If the status of T/E species at the proposed project location is unknown, please contact the local or state office of the FWS or NMFS to obtain a listing of potential species and habitats found in the area.

Floodplains. Floodplains are lowlands adjoining inland and coastal waters with a 1 percent or greater chance of inundation in any given year. Indicate "yes" if the proposed project location is in or adjacent to a floodplain area. If documentation is available noting the floodplain boundaries, please provide a copy. Appropriate documentation of the 100 year floodplain [or 500 year floodplain for critical actions**] boundaries include: Flood Insurance Rate Maps or Flood Hazard Boundary Maps prepared by the Federal Emergency Management Agency (FEMA) of the U.S. Department of Homeland Security. Executive Order 11988 Floodplain Management requires Federal agencies to avoid incompatible development in floodplains, and consider the conformance of the proposed project to floodplain standards, potential effects of the proposed projects on floodplains, and potential effects of floodplain modifications on other local properties and improvements.

** Critical actions as defined in the Implementing Guidelines to Executive Order 11988 are activities for which chance of flooding is too great.

Wetlands. Wetlands are areas inundated by surface or groundwater with a frequency sufficient to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction, [10 C.F.R. 1022.4]. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflow, mudflats, and natural ponds. Man-made ponds can qualify as wetlands if invasion of appropriate flora or fauna has occurred. Appropriate documentation of presence or absence of wetlands within the area of project effect includes: FWS National Wetlands Inventory; U.S. Department of Agriculture Soil Conservation Service Local Identification Maps; U.S. Geological Service (USGS) Local Identification Maps; USGS Topographic Maps; state wetland inventories; and regional or local government sponsored wetland and land use inventories. Executive Order 11990 Protection of Wetlands requires Federal agencies to consider the effects of proposed projects on wetlands, and to avoid, to the extent possible, destruction and modification of wetlands. If the status of land in or around the proposed project location is unknown, please contact the state or local U.S. Army Corps of Engineer's office.

Coastal Zones. Coastal zones are the coastal waters and adjacent shore lands of the Great Lakes, and the Atlantic, Pacific, and Arctic Oceans, Gulf of Mexico, and Long Island Sound. The term "coastal state" includes the states bordering on those bodies, plus Puerto Rico, the Virgin Islands, Guam, the Commonwealth of Northern Mariana Islands, and the Trust Territories of the Pacific Islands and American Samoa. Coastal states have authority regarding actions, which directly affect coastal zones, in accordance with the Department of Commerce regulations promulgated under the Coastal Zone Management Act. Federal activities and Federal development projects must be consistent with state coastal zone management (CZM) programs to the maximum extent possible. Federal activities are those performed by or on behalf of a Federal agency in the exercise of its statutory responsibilities. Indicate "yes" if the proposed project is located in a coastal zone State or is in the vicinity of a coastal zone State. If a consistency determination has been obtained, or a written "negative determination" (indicating that a consistency determination is not required) please provide a copy. See 15 C.F.R. 930.

Migratory Birds, Golden or Bald Eagles. Other Federal and state laws that protect wildlife species include the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Examples of protected migratory birds include Canadian geese and great blue herons. This item should be checked "yes" if the proposed project may directly or indirectly impact any of these species or their habitats. If the status of other protected species is unknown in the proposed project location, please contact the local or state office of the FWS to obtain a listing of potential species and habitats found in the area.

Areas Having a Special Designation. Various Federal laws restrict the ability of Federal agencies to aid developments affecting national wilderness areas, national memorial parks, national parks, national monuments, national primitive areas, national preserves, national recreational areas, national wild and scenic rivers, national grasslands, national wildlife refuges, national forests, national lakeshore or seashore, and national trails. Indicate "yes" if any of these areas of special environmental or natural significance is located in close proximity to the proposed project location and describe the specific special designation.

Prime Farmland, Unique Farmland, or Other Farmland of Statewide or Local Importance. The Farmland Protection Policy Act requires Federal agencies to consider ways to lessen the effects of proposed projects that convert or adversely affect prime farmland which is not currently classified or designated for future urban development or water storage. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland also includes land that possesses the above characteristics, but is being used currently to produce livestock and timber. Prime farmland does not include lands designated for future urban development, such as land that has been identified for commercial, industrial, or residential development by zoning code, ordinance, or a comprehensive land use plan [7 U.S.C. 4201(c)(1)]. The U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) field office serving the area can provide assistance in determining whether a proposed location or site meets the definition of prime farmland. Form AD 1006, the Farmland Conversion Impact Rating Form, available at NRCS offices, should be used for this purpose.

Special Sources of Water. Through the Safe Drinking Water Act, EPA and states designate Critical Aquifer Protection Areas and Sole or Principal Source Aquifers, and State-Designated Wellhead Protection Areas in accordance with 42 U.S.C. 300h-6(b), 42 U.S.C. 300h-3(e), and 42 U.S.C. 300h-7(e), respectively. Such areas are accorded special protection to assure the quality and availability of public water supplies. Indicate "yes" if the proposed project is located in an area designated for protection (e.g., is included in an area wide groundwater quality protection plan), or would constitute a potential source of contamination within an existing or expected wellhead protection area serving a public water supply. If aquifer designations are not known for the proposed project area, contact the environmental protection office for the State.

* Definitions and requirements are subject to regulatory changes.

Definitions for Question 4 – Activities or Areas of Concern*

Clearing or Excavation. Clearing or excavation refers to the removal of vegetation, soil, sediments, or disturbance of land surfaces and subsurface including cutting, burning, digging, grading, filling, or blasting. Provide the estimated area to be affected, the quantity of material to be added or removed, and the planned disposition of spoils. Describe the potential for runoff or erosion, any control techniques to be employed, and the distance to nearby surface water bodies, including wetlands.

Dredge and/or Fill. Dredge and/or fill are the excavation of material from waters of the United States. Filling is the discharge of material into waters of the United States to change the bottom elevation. Waters of the United States are all interstate waters, and intrastate lakes, rivers, streams, mudflats, wetlands, sloughs, plays, or natural ponds. These activities include "ocean dumping" as regulated under Sections 102 and 103 of the Clean Water Act, construction of dams, dikes, piers, or others that could alter the course of waters of the United States. Also included is any shore activity with the potential for runoff to waters of the United States. If available, include documentation of appropriate consultation(s), e.g., with the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act or Sections 9 and 10 of the Rivers and Harbors Act; and with EPA [40 C.F.R. Parts 220-233].

Pre-Existing Contamination. Indicate if the proposed project will disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment. Quantify and characterize such pre-existing substances, including whether they are present above background or regulatory levels. Also quantify the volume of contaminated materials (e.g. soil, sediment, groundwater, debris, etc.) which would require transport to a properly permitted treatment, storage, or disposal facility as the result of the proposed project.

Pesticide Use. A pesticide is a substance intended for preventing, destroying, repelling, or mitigating any type of pest including insects, rodent, nematode, fungus, or weed, and any substance intended for use as a plant regulator, defoliant, or desiccant. While the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) imposes no requirements on private applicators, commercial pesticide applicators must be certified by the state or U.S. EPA. Additionally, FIFRA requires that certain pesticides known as “restricted use pesticides” (listed in 40 C.F.R. 152.175) to only be applied by certified applicators. If either commercial or private pesticide application or the utilization of restricted use pesticides is anticipated, indicate "yes". If a private application is anticipated, document measures to be undertaken to assure safe storage, use, and disposal.

Asbestos. If the proposed project includes demolition or renovation of an existing building, you must determine if asbestos is present. Common asbestos-containing building materials may include but are not limited to floor tile, mastics, wall board, joint compound, acoustic ceiling tiles, thermal insulation, spray-on fire proofing, glazing, caulking, roof flashing, and felts. Demolition and renovation activities that may impact asbestos containing building materials are regulated by the U.S. Occupational Health and Safety Administration (OSHA) through the Asbestos in Construction Standard and asbestos air emissions from asbestos abatements are regulated by the EPA as a hazardous air pollutant under the Clean Air Act (CAA). Include a description of measures to be undertaken to comply with asbestos removal requirements of 29 C.F.R. 1926.1100 and 40 C.F.R. 61 (Subpart M).

Polychlorinated Biphenyls (PCBs). PCBs are a family of man-made organic chemicals that were domestically manufactured from 1929 until banned in 1979 due to their toxicity and persistence in the environment. Given their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were largely used as dielectric and coolant fluids in transformers, capacitors, electric motors, etc. Manufacture, processing, transport, use, marking, storage, and disposal of PCBs are regulated by EPA [40 C.F.R. Part 761] in accordance with the Toxic Substances Control Act. Some states also regulate PCBs as hazardous waste. If the proposed project involves replacement or removal of capacitors, transformers, voltage regulators, circuit breakers, switches, cables, electromagnets, or other electrical equipment, presence or absence of PCBs should be ascertained. A "yes" indication

should be supported with information on the anticipated concentration and quantity of PCB oil, and the intended method/location of disposal.

Navigable Air Space. The U.S. Department of Transportation Federal Aviation Administration (FAA) regulates objects which invade navigable air space or otherwise constitute an obstruction to air navigation, and determines whether such activities constitute a navigation hazard. Indicate "yes" if the proposed project involves construction or alteration more than 200 feet above ground level, any construction or alteration in instrument approach areas, and other construction or alteration identified in 14 C.F.R. 77.13. Document notification of the appropriate Manager, Air Traffic Division, of the FAA Regional Office for the area within which the construction or alteration will be located. Copies of FAA Form 7460-1 Notice of Proposed Construction or Alteration may be obtained from the regional FAA office or electronically through FAA's website.

Underground Storage Tanks. Indicate "yes" if 10 percent or more of tank volume (including the volume of underground pipes) will be beneath surface of the ground. Indicate if installation, use, or removal of underground storage tanks is anticipated, and whether tank use is/was for storage/collection of hazardous waste, heating oil, other petroleum or petroleum-based substances, stormwater, or wastewater. Describe any leak detection/monitoring methods to be used for storage of hazardous waste or regulated petroleum products like gasoline or diesel.

Underground Extraction/Injection. Underground extraction/injection is the subsurface emplacement of fluids through a bored, drilled, or driven well, or through a dug well where the depth of the well is greater than the largest surface dimension. If the proposed project involves construction or use of an injection well, indicate "yes," and describe the class of the well as defined in 40 C.F.R. 146.5, the type and quantity of contaminants (e.g., waste disposal, hydrocarbon or mineral extraction) and whether the injection involves an exempt aquifer as defined in 40 C.F.R. 146.4.

Use of a Non-Renewable Resource. Non-renewable resources are naturally occurring substances (e.g., metals, minerals, fossil fuels) that are in limited supply and cannot be replaced or regenerated. The exhaustion or threatened exhaustion of such resources could have significant ramifications. Indicate "yes" if the proposed project would involve a resource that is in limited supply.

* Definitions and requirements are subject to regulatory changes.

(b) (4), (b) (6)

US Department of Energy
Office of Manufacturing and Energy Supply Chains (MESC) and
Office of Energy Efficiency and Renewable Energy (EERE)
Funding Opportunity Number: DE-FOA-0002678
Applicant Name: Ascend Elements, Inc.

07/01/2022

Letter of Support for Ascend Elements, Inc.

To Whom it May Concern,

At [redacted] it is our mission to accelerate the world's transition to sustainable energy. We believe that battery raw material supply chains that are localized, resilient, low carbon, and equitable for American workers are central to the success of our mission.

(b) (4) [redacted] is pleased to provide this letter of support for Ascend Elements, Inc. ("Ascend") in its application to the U.S. Department of Energy's (DOE) funding opportunity with the Office of Energy Efficiency and Renewable Energy. Department of Energy funding for Ascend's Li-ion battery cathode precursor manufacturing scale-up is anticipated to accelerate U.S. based manufacturing of best-in-class cathode precursor materials, 100% of which is sourced from abroad today. Ascend is currently building its "Apex" precursor facility to start production [redacted] Ascend elements innovative cathode precursor process is anticipated to eliminate wastewater by regenerating key reagents in a closed loop. If successful Ascend's cathode precursor production process will enable low environmental footprint cathode precursor production and unlock scale not only for U.S. cathode precursor production but also end of life Li-ion battery recycling. A DOE grant would support Ascend's production scaling accelerating their plans by 12 months.

[redacted] and Ascend Elements are currently initiating product development, qualification, and commercial negotiations.

Please treat this letter and [redacted] relationship with Ascend Elements as ***Confidential Business Information***.

We remain available if you have any questions about our support for the proposed project.

Sincerely,

[redacted]

(b) (4), (b) (6)

Confidential Business Information

(b) (4), (b) (6)

David Howell
Acting Director and Principal Deputy Director
Office of Manufacturing and Energy Supply Chains
U.S. Department of Energy
1000 Independence Ave., S.W.
Washington, DC 20585

Dear David:

(b) (4)

is committed to purchase material produced at Ascend Elements future "Apex" production facility, for which Ascend Elements is currently seeking grant funding under DE-FOA-0002678 entitled "Apex - Integrated Sustainable Battery Precursor Production Plant".

has been working with Ascend Elements to its Hydro-to-Cathode technology. We are impressed with the efficiency of the process and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. The technology's ability to convert shredded lithium-ion batteries directly into new precursor and cathode active materials is unique and has been reduced to practice. The team at Ascend Elements is responsive, innovative, and highly capable, and is working on further innovations to improve efficiency and extract other critical materials from recycled batteries.

We are currently undergoing a evaluation of the cathode precursor materials produced from Ascend Elements' process, including and precursor cathode active materials (pCAM), which If Ascend Elements and its products satisfy our requirements sufficiently, we will recommend Ascend Elements to our purchasing department so that they could become our partner. One of the challenges we are addressing is the by the Ascend Elements Apex production plant. meaningful supply for our operations. If the Apex facility can take advantage of federal grant funding to it will provide than it could without such funding.

We strongly support and recommend funding the Ascend Elements project. We believe this is fundamental infrastructure, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States. It will keep critical materials in the U.S. supply chain because it is the most economic and efficient way to recycle and manufacture new cathode active materials, and help us achieve our goals of electrifying transportation, reducing GHG emissions, and combating climate change.

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

June 28, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

To Whom It May Concern:

(b) (4)

Through this letter, [redacted] expresses strong support for Ascend Elements' plans to develop precursor and cathode active material at the company's future "Apex" production facility, for which Ascend Elements is currently seeking grant funding under DE-FOA-0002678 entitled "Hydro-to-Cathode Production Plant".

[redacted] has been working with Ascend Elements for the past nine months to understand its Hydro-to-Cathode technology. We are impressed with the efficiency of the process and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United State[redacted] he technology's ability to convert shredded lithium-ion batteries directly into new precurs[redacted] nd cathode active materials is unique and has been reduced to practice. The team at Ascend Elements is responsive, innovative, and highly capable, and is working on further innovations to improve efficiency and extract other critical materials from recycled batteries.

We are currently undergoing a [redacted] evaluation of the cathode precursor materials produced from Ascend Elements' process, including [redacted] and [redacted] precursor cathode active materials (pCAM). If Ascend Elements and its products meet our production requirements, [redacted] collaborate together and explore potential purchase agreements. One of the challenges we are addressing [redacted] by the Ascend Elements Apex production plant. A [redacted] If the Apex facility can take advantage of federal grant funding to increase commercial scale, it will provide greater capacity and economic efficiency than it could without such funding.

We [redacted] strongly support the Ascend Elements project. We believe this is fundamental infrastructure, and will help achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States electrifying transportation, reducing GHG emissions, and combating climate change.

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

Proposal Review Committee
U.S. Department of Energy

Subject: Letter of Support for Ascend Elements' proposal for its Apex production facility **under DE-FOA - 0002678**

Dear Review Committee Member(s),

I am pleased to write this letter to convey [redacted] strong support for Ascend Elements' proposal for its Apex production facility being submitted under DE-FOA-0002678.

(b) (4)

[redacted] In addition, we are currently undergoing a technical and commercial evaluation of Ascend Elements Hydro-to-Cathode™ technology, including precursor cathode materials and full cathode active materials, which we understand would be the activity that would be undertaken at the proposed Apex production facility.

Our evaluation [redacted] indicates that the process is highly efficient and could create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. The technology's ability to convert shredded lithium-ion batteries directly into new precursor and cathode active materials is innovative, unique, and has been reduced to practice. Assuming qualification and validation of these processes and the resulting materials, this technology could provide valuable materials needed to support lithium-ion batteries and [redacted] domestic electric vehicle supply chain.

We believe this is promising fundamental infrastructure required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States and that it aligns with the federal government's objective to build a robust domestic advanced battery supply chain. It will help keep critical materials in the U.S. supply chain and is an economic and efficient way to recycle and manufacture new cathode active materials.

Thank you for your consideration of our support for Ascend Elements' application. If you have any questions, please do not hesitate to contact me [redacted]

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

June 29, 2022

US Department of Energy
Office of Energy Efficiency and Renewable Energy (EERE)
Funding Opportunity Number: DE-FOA-0002678
Applicant Name: Ascend Elements

To Whom it May Concern:

We are writing this letter to express support for the Ascend Elements "Apex" production facility, for which Ascend Elements is currently seeking financial assistance under Department of Energy funding opportunity DE-FOA-0002678. As we strive to regionalize our battery supply chain, we believe there is a strong need for domestic sources of recycled battery materials: battery grade precursors and cathode materials. The Apex facility is an important addition to the lithium-ion battery manufacturing infrastructure and will be an important enabler in the nation's transition from the internal combustion engine to electrified mobility. While there are plans/announcements for domestic cathode manufacturing facilities, the upstream materials to feed them are absent, creating a barrier to a domestic circular economy.

(b) (4)

We share President Biden's vision to achieve sales of 40-50% of annual U.S. volumes of electric vehicles (battery electric, fuel cell and plug-in hybrid vehicles) by 2030 to move the nation closer to a zero-emissions future consistent with Paris climate goals[2].

To realize these goals, we recognize the need for domestic development and manufacture of advanced battery materials. We support Ascend Elements' goals to localize production of advanced battery materials, specifically battery grade metal sulfates and more value-added materials. These materials are critical to lithium-ion batteries, and therefore important to our electrification strategy.

We have been in discussions with Ascend Elements over on their Hydro-to-Cathode technology which converts shredded lithium-ion batteries directly into new precursor and cathode

[2] https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/05/statements-on-the-biden-administrations-steps-to-strengthen-american-leadership-on-clean-cars-and-trucks/

active materials without needing to manufacture intermediate products as it may reduce the environmental impact of battery recycling.

We support the Ascend Elements Apex project as it will add to the fundamental infrastructure, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States.

Sincerely,

[redacted]

(b) (4), (b) (6)

(b) (4), (b) (6)

June 20, 2022

Mr. Ian Braime
Ascend Elements, Inc.
133 Flanders Road
Westborough, MA 01581

Dear Mr. Braime,

Thank you for your participation in the request for proposal process

(b) (4)

ecosystem and very much appreciate the open, collaborative and strategic discussions with you in the coming weeks.

Thank you again for your participation and interest in our program.

(b) (4), (b) (6)

(b) (4), (b) (6)

June 29, 2022
Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

[redacted] exploring its opportunity to test precursor and cathode active material produced at Ascend Elements future "Apex" production facility, for which Ascend Elements is currently seeking grant funding under DE-FOA-0002678 entitled "Apex - Integrated Sustainable Battery Precursor Production Plant".

We are currently undergoing [redacted] of the cathode precursor materials produced from Ascend Elements' process, including [redacted] and [redacted] precursor cathode active materials (pCAM). If they meet our production requirements, we can consider Ascend Elements as a possible partner [redacted]

(b) (4) [redacted]

We [redacted] support and recommend funding the Ascend Elements project. We believe this is fundamental infrastructure, required to achieve a high-class, clean, and secure lithium-ion battery supply chain in the United States. It will keep critical materials in the U.S. supply chain because it can be the most economic and efficient way to recycle and manufacture new cathode active materials, and can help us achieve our goals of electrifying transportation, reducing GHG emissions, and combating climate change.

[redacted]

Sincerely,

(b) (4), (b) (6)

[redacted]

(b) (4), (b) (6)

6/14/2022

Mike O'Kronley

CEO

Ascend Elements, Inc

133 Flanders Road

Westborough, MA 01581

Dear Mike,

[redacted] intends to purchase cathode precursor materials produced at Ascend Elements future "Apex" production facility, for which Ascend Elements is currently seeking grant funding under DE-FOA-0002678 entitled "Apex - Integrated Sustainable Battery Precursor Production Plant".

[redacted] has been working with Ascend Elements [redacted] to understand its Hydro-to-Cathode technology. We are impressed with the efficiency of the process and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. The technology's ability to convert shredded lithium-ion batteries directly into new precursor and cathode active materials is innovative, unique, and has been reduced to practice. The team at Ascend Elements is responsive, innovative, and highly capable, and is working on further innovations to improve efficiency and extract other critical materials from recycled batteries.

(b) (4) The Apex facility will produce cathode, precursor, and metal salt products which will be designed to meet our requirements, and following positive product evaluation and validation testing, we intend to enter into a long-term supply agreement for Ascend Elements materials. [redacted] If the Apex facility can take advantage of federal grant funding to increase commercial scale, it will provide greater capacity and economic efficiency than it could without such funding.

We [redacted] strongly support and recommend funding the Ascend Elements project. We believe this is fundamental infrastructure, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States. It will keep critical materials in the U.S. supply chain because it is the most economic and efficient way to recycle and manufacture new cathode active materials, and help us achieve our goals of electrifying transportation, reducing GHG emissions, and combating climate change.

Sincerely,

(b) (4), (b) (6)

[redacted]

(b) (4), (b) (6)

Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing
U.S. Department of Energy (DOE)
Office of Manufacturing and Energy Supply Chains (MESC)
Office of Energy Efficiency and Renewable Energy (EERE)

Subject: Letter of Commitment for Ascend Elements DOE DE-FOA-0002678 Application to Expand U.S. Recycled Cathode Material Manufacturing

Dear Program Officer,

and Ascend Elements (AE) are currently working together o evaluate AE's Hydro-to-Cathode technology and its cathode products for our next generation Li-Ion battery cells. We are impressed with its efficiency and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. We feel the technology's ability to convert shredded lithium-ion batteries directly into new precursor and cathode active materials **without needing to manufacture intermediate products** is innovative, unique, and has been reduced to practice.

(b) (4)

Currently the cathode supply chain is subject to severe risks and challenges. Even with aggressive expansion announcements from numerous cathode manufacturers, demand for cathode materials like is expected to outpace supply, and the majority of manufacturing capacity is expected to remain in China. Moreover, s composed of which are in turn supply constrained, highly volatile in price, highly delocalized in processing steps from mine to material, and involve issues of It is our understanding that AE wishes to expand its cathode production from recycled feedstock to a new U.S. "Apex" site to create significant commercial-scale **domestic** manufacturing capacity for cathode under the Department of Energy's Funding Opportunity Announcement No. DE-FOA-0002678. The recycled feedstock would also originate in the U.S. from AE "Base" sites such as Covington, GA supplied by manufacturing scrap and end-of-life cells, modules, and packs, representing a sustainable, stable, low-risk, domestic source of

If AE's cathode material meets technical and commercial requirements, will strongly consider sourcing from AE's Apex Site a portion volume requirements are expected to increase In addition to cathode supply consideration, which could be returned to in the form of recycled material for a **closed loop of**

strongly supports the AE Apex project and believes this is fundamental infrastructure required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States.

(b) (4), (b) (6)

(b) (4), (b) (6)

June 10, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Subject: Letter of Interest re: Ascend Elements' cathode active material products and "Apex" facility.

Dear Mr. O'Kronley,

[redacted] to express our interest in adopting Ascend Elements' domestically-produced cathode active materials into our advanced batteries for [redacted] This material will remove considerable risk from our battery raw materials supply chain, which is presently dominated by [redacted]chemical suppliers. [redacted] fully supports Ascend Elements' "Apex" cathode production facility proposal to DOE under funding opportunity DE-FOA-0002678

(b) (4)

[redacted]

[redacted]. Adoption of Ascend Elements products will result in significant improvements to U.S. battery supply chain security.

[redacted]

(b) (4), (b) (6)

[redacted]

(b) (4), (b) (6)

June 27, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

I am writing this letter to confirm that [redacted] is committed to purchase cathode precursor materials produced at Ascend Elements future "Apex" production facility, for which Ascend Elements is currently seeking grant funding under DE-FOA-0002678.

[redacted] has been evaluating the company's Hydro-to-Cathode technology and its products. We are impressed with its efficiency and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. We feel the technology's ability to convert shredded lithium-ion batteries directly into new precursor and cathode active materials is innovative, unique, and has been reduced to practice.

(b) (4)

The Apex facility will produce cathode precursor [redacted] which meet our requirements. We are moving to put a long-term offtake agreement in place which we intend to begin [redacted]

[redacted] strongly support the Ascend Elements Apex project. We believe this is fundamental infrastructure, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States.

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

June 22, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

I am writing this letter to confirm that [redacted] is a potential customer of Ascend Elements future "Apex" production facility for which Ascend Elements is currently seeking financial assistance under Department of Energy funding opportunity DE-FOA-0002678. Specifically, we are interested in [redacted] moving ahead with [redacted] offtake agreement beginning as soon as product is available. Should [redacted] determine that such a relationship is appropriate and beneficial, we would consider executing an agreement extending, [redacted]

(b) (4)

We have been evaluating your company and its products and are impressed with your efficiency and ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. As [redacted] we believe that every ton of lithium [redacted] must eventually be recycled and remain in circulation in the battery supply chain. We strongly support the Ascend Elements Apex project. We believe this is a fundamental infrastructure need, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States. Together, [redacted] and Ascend Elements are committed to help realizing this vision.

If we may be of further assistance to you as you consider your funding options, please contact us.

(b) (4), (b) (6)

(b) (4), (b) (6)

June 27, 2022
Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

Subject to a mutually acceptable supply agreement being negotiated and [redacted] intends to purchase [redacted] produced at Ascend Elements' future "Apex" production facility. [redacted] has been working with Ascend Elements for the [redacted] to understand its Hydro-to-Cathode technology. Based on the information we have been provided to date, we are impressed with the efficiency of the process and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States.

We are currently undergoing [redacted] commercial evaluation of the [redacted], [redacted] If the [redacted] meets our production requirements, we intend to discuss entering a supply agreement with Ascend Elements. One of the challenges we are addressing is the [redacted] If the Apex facility can take advantage of federal grant funding to increase commercial scale, it will provide greater capacity and economic efficiency than it could without such funding.

(b) (4)

We [redacted] strongly support and recommend funding the Ascend Elements project. We believe this is fundamental infrastructure, and will help achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States. This project will keep critical materials in the U.S. supply chain because it is an economic and efficient way to recycle and manufacture new cathode active materials and will help us achieve our goals of electrifying transportation, reducing GHG emissions, and combating climate change.

(b) (4), (b) (6)

(b) (4), (b) (6)

June 16, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

[redacted] is committed to purchase [redacted] produced at Ascend Elements future "Apex" production facility, for which Ascend Elements is currently seeking financial assistance under Department of Energy funding opportunity DE-FOA-0002678, should it meet our requirements and if beneficial to both parties. Should this be the case, we are prepared to move ahead with a long-term offtake agreement beginning as soon as product is available and extending [redacted] from recycled lithium-ion battery "black mass".

We have been evaluating your company and its products and are impressed with your efficiency and ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. As [redacted] believe that every ton of [redacted] [redacted] eventually be recycled and remain in circulation in the battery supply chain. We support the Ascend Elements Apex project and believe this is fundamental infrastructure, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States. Together, we are committed to realizing this vision.

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

June 10, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Michael:

On behalf [redacted] I am pleased to provide you with this commitment letter in support of Ascend Elements' proposal to the DOE to seek grant funding under DE-FOA-0002678 for your "Apex" production facility.

[redacted] is interested in localizing supply chains for Li-ion battery materials in the US. Today, [redacted]

(b) (4)

In keeping with our mission of enabling sustainable businesses, [redacted] is interested in procuring [redacted] from recycled Li-ion batteries produced by Ascend Elements. Specifically, we are committing to purchasing [redacted]

We have been working with Ascend Elements to evaluate its products and technology. We are impressed with the efficiency of the recycling process employed by Ascend Elements and its ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. The technology's ability to convert shredded lithium-ion batteries directly into new precursor and cathode active materials is innovative, unique, and has been reduced to practice. The team at Ascend Elements is responsive, innovative, and highly capable, and is working on further innovations to improve efficiency [redacted] from recycled batteries. Their planned Apex facility will be able to produce the quality products our operations need to supply the US lithium-ion battery industry with critical materials. If the Apex facility can take advantage of federal grant funding to increase commercial scale, it will provide greater capacity and economic efficiency than it could without such funding.

We [redacted] strongly support and recommend funding the Ascend Elements project. We believe this is fundamental infrastructure, required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States. It will keep critical materials in the U.S. supply chain because it is the most economic and efficient way to recycle and manufacture new cathode active materials, and help us achieve our goals of electrifying transportation, reducing GHG emissions, and combating climate change.

(b) (4), (b) (6)

(b) (4), (b) (6)

June 27, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

I am writing this letter to confirm is willing to purchase produced at Ascend Elements, Inc.'s future production facilities, for which Ascend Elements, Inc. is currently seeking financial assistance under Department of Energy funding opportunity DE-FOA-0002678. Specifically, we are interested in fora long-term offtake reement to begin as soon as product is available. Any agreement would be subject to utually agreeable terms, including price, quantity and quality specifications, and relate to e purchase from recycled lithium-n battery "black mass" to be used in

(b) (4)

e have been evaluating your company and its products and are impressed with your efficiency and ability to create a highly economic, clean, and circular lithium-ion battery supply chain in the United States. As a sustainable extraction company, we believe that every ton of Lithium we extract must eventually be recycled and remain in circulation in the battery supply chain. We support the Ascend Elements Apex project. We believe this is fundamental infrastructure and required to achieve a world-class, clean, and secure lithium-ion battery supply chain in the United States.

Sincerely,

(b) (4), (b) (6)

[redacted]

(b) (4), (b) (6)

June 23, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

The City of Hopkinsville is committed to supporting Ascend Elements as it creates an equity plan to ensure that the benefits from its future "Apex" production facility flow to the community in the most effective manner possible. We are pleased that Ascend Elements is taking a very proactive approach to ensuring that the community and the people that are most in need of the benefits created by this project will receive them. As your vision for the Hopkinsville project crystalizes, the city looks forward to structuring an aggressive incentive package and becoming a full partner in this very important new venture.

We are excited to welcome Ascend Elements to southwest Kentucky as the site of their future Apex facility. The City of Hopkinsville is a vibrant community that prides itself on a pro-business, pro-growth environment. We welcome you to invest in our community and take full advantage of our robust regional workforce, award winning quality of life, and lower cost of living and doing business.

We believe in your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you on this transformative project which will benefit Ascend Elements and Hopkinsville for many years to come.

[redacted]

(b) (4), (b) (6)

(b) (4), (b) (6)

June 22, 2020

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

RE: Community Benefits Agreement (CBA)

Dear Mike:

The Greater Hopkinsville [redacted]s committed to developing a Community Benefits Agreement (CBA) to be put in place with Ascend Elements as part of its future "Apex" production facility, for which Ascend Elements is currently seeking financial assistance under DE-FOA-0002678, should Ascend Elements application be selected for award negotiation.

The planned CBA, which will be funded by Project Apex, will contain several major elements:

1. Creation of high-quality clean energy jobs with a strong benefits package that will uplift the communities in the Greater Hopkinsville areas
2. A workforce development program to educate, train, and development of new labor resources to ensure a deeper, more skilled workforce in the region
3. An initiative to improve access to affordable childcare in the community to reduce the burden for workers and the broader community
4. An initiative to improve access to affordable transportation in the community to reduce burden for workers and the broader community

As a 501(c)(3) nonprofit organization representing the Greater Hopkinsville and Christian County community, we are very excited that Ascend Elements has selected our location for the site of their future Apex facility. The benefits described in the Equity Plan of your financial assistance application align well with Christian County's Vision 2030 plan which was formed with extensive community stakeholder input and has been an ongoing initiative for nearly 20 years. In addition, we believe in and strongly support your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you to define this transformative CBA which will benefit your Apex facility as well as Christian County for many years to come.

Sincerely,

(b) (4), (b) (6)

[redacted]

(b) (4), (b) (6)

June 24, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

Th[redacted] committed to helping Ascend Elements create and design an Equity Plan which will lead to a Community Benefits Agreement (CBA) as part of its future "Apex" production facility. We are pleased to see that Ascend Elements is already taking a very proactive approach to ensuring that the community and the people that are most in need of the benefits created by this project will receive them. We were happy to host your team's visit to Hopkinsville on [redacted] to discuss elements of this plan.

(b) (4)

We are excited to welcome Ascend Elements to Southwest Kentucky as the potential site of your future Apex facility. The [redacted] is well-connected to the local organizations that can help craft an effective CBA and look forward to supporting your grant and planning process as we facilitate important discussions and partnerships throughout our three-county service area.

We believe in and strongly support your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you to define this transformative project which will benefit Ascend Elements and South Western Kentucky for many years to come.

(b) (4), (b) (6)

[redacted]

(b) (4), (b) (6)

[redacted]

CORPORATE ALLIANCE PARTNERS

Wednesday, June 22, 2022

Michael O'Kronley, Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

[redacted] is committed to work with Ascend Elements to understand the needs of your impending "Apex" sustainable battery material manufacturing facility being sited here in Hopkinsville and to lead in ensuring that the minority-owned businesses and disadvantaged business enterprises in the Greater Hopkinsville area are aware of the multiple opportunities to support this groundbreaking and important project.

[redacted] local knowledge, expertise, and proven track record supporting diverse and hardworking enterprises here will provide an array of effective resources that will be well-suited to support the needs of your Apex project. Our clients include businesses in construction, transportation, hospitality, and material manufacturing industries that are ready, willing, and able to assist this Apex project achieve its goals.

[redacted] believes in and strongly supports your mission to build the greater clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical, commitment to diversity and working with diverse partners, and that it is strategic to the competitiveness of the United States in this important industry. We are excited to work with your team on how the local minority businesses in the region can assist in supporting your Apex facility.

Sincerely,

[redacted]

[redacted]

(b) (4), (b) (6)

June 23, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Michael:

is committed to work with Ascend Elements to develop a workforce solution to train potential employees for career opportunities at your future "Apex" production facility which will be built right here in Hopkinsville.

(b) (4)

one of 16 in the Kentucky Founded in and accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC), maintains a primary campus in Hopkinsville and an off-site campus on the Our goal is to prepare students for successful transfer to four-year colleges or for immediate entrance into fulfilling careers. With an average fall enrollment of about 2,000 students, awards associate degrees, diplomas, and certificates in more than 20 areas of study.

Our existing programs and services, including customized training, continuing education offerings, and our advanced manufacturing program can help develop the labor pool in Christian County and our expanded service area to support the high-quality critical battery material manufacturing jobs that will be created by your Apex facility.

We believe in and strongly support your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you to leverage our resources for workforce development which will benefit your Apex facility as well as Christian County for many years to come.

Sincerely,

(b) (4), (b) (6)

(b) (4), (b) (6)

June 16, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mr. O'Kronley:

The [redacted]s committed to developing a workforce development program in collaboration with Ascend Elements as part of its future "Apex" production facility. This program will educate, train, and develop new labor resources to ensure a deeper, more skilled workforce in the region to support the multitude of clean energy jobs that will be created by the Apex project. The [redacted]provides policy development and coordination for workforce development in support of economic development for the region, serving the seventeen counties of the Pennyrile/Purchase area, including Christian County, where your Apex project will be located.

We believe in and strongly support your mission to build a clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We look forward to engaging with you to develop a workforce development program which will benefit your Apex facility as well as Christian County for many years to come.

Sincerely,

[redacted]

[redacted]

(b) (4), (b) (6)

[redacted]

June 16, 2022

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

[redacted] excited to work with Ascend Elements to develop a program to begin introducing and preparing [redacted] tudents for career possibilities at your future "Apex" production facility. In conjunction with our existing programs, including work-based learning programs lik[redacted] will educate and develop local labor resources that will be well-suited to support the type of jobs that will be created by the Apex project.

We believe in and strongly support your mission to build the clean energy ecosystem, especially in the recycling of lithium-ion batteries into brand new, high-value battery materials which are critical and strategic to the competitiveness of the United States in this important industry. We are excited to work with your team on how our school systems and our extensive array of education and training programs can benefit your Apex facility and create a steady workforce in Christian County for many years to come.

Sincerely,

[redacted]

(b) (4), (b) (6)

Michael O'Kronley
Chief Executive Officer
Ascend Elements, Inc.
133 Flanders Rd
Westborough, MA 01581

Dear Mike:

is excited to work with Ascend Elements and is writing this letter to show our commitment to help develop a program to expand access to affordable childcare for the greater Hopkinsville area and Christian County. We have had preliminary discussions with your team and applaud the future "Apex" production facility that you are planning for the site in Hopkinsville as it will bring high-quality job opportunities for the local community. As you know, a barrier for many in the region to accessing these opportunities and achieving successful long-term employment is affordable childcare.

is a 501(c)(3) non-profit providing a wide array of benefits to 16 counties in the southwest Kentucky area. Among other services, it has been operating the local chapter of the US which provides childcare services to low income and disadvantaged families. Serving over 2,500 children in the region, our Head Start program is one of only twenty-five programs in the nation to have achieved recognition as a national Program of Excellence by the National Head Start Association. The program has maintained this distinction since 2000. Our local facility in Hopkinsville, the Christian County Head Start Center, currently has over 300 children enrolled. We are well-positioned with the local experience, network, and knowledge to help your company create an effective childcare initiative for future Apex employees as well as the broader community.

Your company's consideration of the wholistic situation to bring not only greater employment opportunity, but also the support network that workers will need to succeed on those opportunities, will undoubtedly result in great success for Apex facility and the local area. Christian County has a lower per capita income and higher poverty rate than surrounding counties which makes the Apex project so much more impactful to these communities. We are excited to work with your team on this affordable childcare initiative in tandem with your Apex facility project to help transform the community.

Sincerely

Statement of Project Objectives
Apex – Integrated Sustainable Battery Precursor Production Plant
Ascend Elements

A. OBJECTIVES

To establish significant production capacity, at an industrial scale, of sustainable low-cost cathode active materials in the United States by integrating the separation of critical cathode materials from spent LiBs with the production of precursor active materials for new LiBs using Ascend Elements' proprietary and established Hydro-to-Cathode™ technology. The new proposed "Apex" facility will be the first domestic metal extraction and pCAM facility operating at an industrial scale.

(b) (4) Apex will be successfully completed at the end of the proposed project period, will start-up production and have a capacity to process [redacted] black mass into [redacted] such as [redacted] as well as more advanced precursor cathode active materials (pCAM) such as [redacted] which are highly engineered, high value materials.

B. SCOPE OF WORK

The project will be conducted in two budget periods, budget period 1 (BP1) and budget period 2 (BP2). Ascend is scheduled to close on a suitable greenfield site for the manufacturing plant in the USA this summer. In BP1, the Apex facilities for the [redacted] line and the first [redacted] line will be constructed and equipped and, production start-up will complete this budget period. In BP2 the facilities for the second pCAM line will be constructed and equipped, and start-up of production will complete this budget period. During budget period 2 it is the goal to reach full capacity for the [redacted] line and the first [redacted] line completed in budget period 1 to full capacity as soon as possible.

Budget Period 1: Apex metal salt extraction line and pCAM lines: In budget period 1 we will plan, design, build**,** equip and start-up production of the Apex metal extraction line for [redacted].

Budget Period 2: Apex expansion [redacted] lines: In budget period 2 we will plan, design, build**,** equip and start-up production of additional Apex [redacted] lines.

C. TASKS TO BE PERFORMED

The following tasks will be conducted:

All Budget Periods

Overall Project Management and Planning

Ascend will perform project management activities to include project planning and control, subcontractor control, financial management, data management, management of supplies and/or equipment, risk management, and reporting as required to successfully achieve the overall objectives of the project.

Task 0.0 – Project Management and Planning:

Ascend will develop and maintain the Project Management Plan (PMP). The content, organization, and requirements for revision of the PMP are identified in the Federal Assistance Reporting Checklist and Instructions. The Recipient shall manage and implement the project in accordance with the PMP.

Task 0.1- Kick-Off Meeting:

Ascend will participate in a project kickoff meeting with the DOE within 30 days of project initiation.

Budget Period 1: Apex metal salt extraction line and first pCAM line

Task 1: Apex site design

Task 1 Summary Description: The Apex site design phase will include front-end loading engineering, the site level civil design, the rail spur design and rail spur approvals as well as Ascend awarding the engineering, procurement and construction (EPC) contract for Apex.

Subtask 1.1: Front-end loading engineering

Subtask 1.1 Summary: The front-end loading engineering, the conceptional engineering phase, includes the determination of the high level (HL) mass balance of the material flows in the plant and the development of a HL manufacturing process description. An estimated equipment list, power demand, manufacturing space allowances and warehouse requirements for each process unit will be established.

Subtask 1.2: Site level civil design

Subtask 1.2 Summary: The civil design of the site provides details on grading, drainage, erosion control, utility layout, stormwater management and shell design. Initial surveying and geotechnical core samples allow designs to proceed for foundation concepts and building layouts. It will include items such as an environmental impact of the project, permitting, subsurface characteristics, wetlands delineation, and zoning. Civil engineering site designers work with all of the overlapping elements from this site to other parcels.

Subtask 1.3: Rail spur design and approvals
Subtask 1.3 Summary: The preliminary alignment of the railroad spurs' geometry will be approved by the local rail carrier. The design of the roadbed, drainage ditches, ballast specifications and turnout radiuses will follow the standard specifications for the design and construction of private sidetracks. The construction management company will closely work with CSK on this subtask.

Subtask 1.4: Engineering, procurement and construction contract award
Subtask 1.4 Summary: Ascend will negotiate the details of the site contract for the construction of Apex as well as the rail spur construction. This task will conclude with an award of the site contract.

Milestone 1.1: Site level civil design completed
Milestone 1.2: Rail spur design completed
Milestone 1.3: Rail spur design approved for rail spur construction

Task 2: Site preparation and rail spur construction
Task 2 Summary Description: The construction management company will begin the construction phase with the site preparation and rail spur construction.

Subtask 2.1: Site preparation
Subtask 2.1 Summary: Site preparation entails test drilling, landfill, levelling (cut and remove trees and then clear and grub the site of roots), filling in dirt to level the site, earth-moving, excavating, land drainage and other land preparation to ready the site.

Subtask 2.2: Rail spur construction
Subtask 2.2 Summary: Rail spur construction will commence once the rail spur permit has been approved. The rail spur construction process includes a preparation to provide proper grade with good compaction and subgrade drainage. The next steps include leveling the rock ballast bed for the foundations of the rail track. The ties are then set based on the rail track centerline keeping the rail in alignment. The steel rails are then placed onto the ties and secured. The top ballast is added on top of the rail and then the track is lifted, vibrated and tamped to the correct elevation. Rail anchors and braces are then used preventing the rail track from crawling.

Task 3: Design of process equipment and, procurement
Task 3 Summary Description: Based on the process description and mass balance (subtask 1.1) the process flow is defined using process and instrumentation diagrams (P&IDs). Ascend design engineers create equipment data sheets from the P&IDs. Requests for quotations are prepared from the data sheets and sent to qualified vendors. Successful bidders are selected with equipment details entered into the 3D model drawings for clash detection. Contracts are negotiated for price, delivery and quality with purchase orders executed. Selected vendors will fabricate the equipment, inspect it and deliver it to the Apex site.

Milestone 1.4: Site preparation completed
Milestone 1.5: Process equipment contracted for fabrication
Smart Milestone BP1.1: All process equipment has been received at the Apex site

Task 4: Upgrade of the utility power transmission
Task 4 Summary Description: For the operation of Apex at full capacity (including product lines such as CAM and graphite that are not included in this project) an increase in utility power is required. For this purpose, TVA has to bring in new power lines to the site. [redacted] This task will start at the project kick off, Task 0.

(b) (4)

Task 5: Obtain critical permits
Task 5 description: The activities in this task focus on obtaining critical permits to operate Apex. Permits include the air permit, the Kentucky Pollutant Discharge Elimination System (KPDES) water permit, the building permit and the occupancy permit. Ascend has already had discussions with the cognizant entities in Hopkinsville and Kentucky to plan for the permit approval periods. Based on these discussions, the air permit will take approximately one year for approval, the KPDES about six months, the building permit about three months and the occupancy permit one month.

Subtask 5.1: Apply for and obtain air permit
Subtask 5.1 Summary: The construction management company will apply for the air permit, provide clarifications as needed in order to meet all requirements.

Subtask 5.2: Apply for and obtain the KPDES permit
Subtask 5.2 Summary: The construction management company apply for the KPDES water permit, provide clarifications as needed in order to meet all requirements.

Subtask 5.3: Apply for and obtain the building permit
Subtask 5.3 Summary: The construction management company will apply for the building permit, provide clarifications as needed in order to meet all requirements.

Subtask 5.4: Apply for and obtain the occupancy permit
Subtask 5.4 Summary: The construction management company will apply for the occupancy permit, provide clarifications as needed in order to meet all requirements.

Milestone 1.6: Air permit, KPDES permit, building permit and occupancy permit granted

Task 6: Shell construction, detailed building design, mechanical, electrical & plumbing (MEP) build-out
Task 6 Summary: A contracted construction management company will begin the construction phase with the shell construction of the buildings, the detailed building design, and the mechanical, electrical and plumbing (MEP) build-out. At its completion the Apex buildings will be ready for equipment installation.

Subtask 6.1: Shell construction
Subtask 6.2 Summary: The subsurface is leveled with soils that are well-drained and compacted to the correct elevations. Underground utilities such as plumbing drainage and electrical feed conduits are installed. Formwork is built to support the concrete. The steel reinforcement bars are accurately placed and adequately supported inside the forms. A ready-mix concrete batching plant will mix the specified concrete mix which is then poured into the forms. Entrained air is release by vibration and the concrete is then finished and cured. Concrete is poured in layers. This is repeated for foundations, columns, walls, roofs and floors.

Subtask 6.2: Detailed building design
Subtask 6.2 Summary: The building design is governed by the civil loads of the equipment, soil conditions of the geotech work and fire code requirements. The construction management company will engage an engineering, procurement and construction contractor (EPC) contractor who then can complete detailed design drawings and specifications for bidding project to their sub-contractors. The detailed design completes the building design, rail spur, the tank farm, rail unloading, utilities (electrical, natural gas, water, sewer, compressed air, boiler and reverse osmosis treatment) design, security, stormwater pretreatment, offices and warehouse requirements.

Subtask 6.3: Mechanical, Electrical and Plumbing Build Out
Subtask 6.3 Summary: Mechanical, electrical, and plumbing (MEP) are the systems inside the building shell. These include mechanical ventilation and heating systems for the building. The electrical build-out of the shell provides lighting, electrical feed to heating systems, furnaces and boilers. The plumbing installation design process involves a layout of piping routes for water booster pumps, hot water systems, fire protection and sanitary plumbing. Effective MEP installations require interaction and collaboration among all design teams.

Milestone 1.7: MEP build-out completed

Task 7: Equipment installation and line commissioning
Task 7 Summary: In Task 7 construction management company will install the process equipment, including electrical, mechanical and material transporting equipment (such as needed to connect to the tank farm, warehouse, or between various processing steps in the factory). Once the equipment is installed the production lines will be commissioned and site acceptance approval will be obtained. At the end of this task the Apex will begin start-up of production.

Subtask 7.1: Install the process equipment
Subtask 7.1 Summary: Prior to installation, all supplier documentation will be studied. The electrical supply lines will be brought from the motor control centers and all utilities such as compressed air, vacuum, steam, cooling water and communication cables will be installed.

Any required foundations will be inspected. Anchor bolts will be installed to provide stability of the equipment and will follow manufacturer's instructions. Rigging equipment into place must be planned ensuring any interferences are avoided.

Subtask 7.2: Manufacturing line commissioning and site acceptance approval
Subtask 7.2 Summary: Startup recommendations by the manufacturer will be followed closely. Three phase motors will be check for rotation, any required lubrication will be added, spare parts checked, communications verified for all controls. A site acceptance test (SAT) will document the completion of the equipment commissioning.

Milestone 1.8: Process equipment installed
Milestone 1.9: Facility is chemical ready
Smart Milestone BP1.2: Start-up of production at Apex

MILESTONE SUMMARY TABLE Budget Period 1		
Ascend Elements: Apex – Integrated Sustainable Battery Precursor Production Plant		
	Description	**Type and Description**
Budget Period 1		
1.1	Site level civil design completed	Technical; civil design drawings completed
1.2	Rail spur design completed	Technical; rails spur drawings completed
1.3	Rail spur design approved for rail spur construction	Approval; permit for rail spur construction obtained.
1.4	Site preparation completed	Technical; The greenfield site has been prepared and is ready for the construction
	BP1 Go/no go decision point	Go/no go; move from design to implementation
1.5	Process equipment contracted for fabrication	Technical; process equipment has been designed and contracted for fabrication
BP1.1	All process equipment has been received at the Apex site	Technical; all process equipment has been accounted for at the Apex site
1.6	Air permit, KPDES permit, building permit and occupancy permit granted	Approval; air, KPDES, building and occupancy permits have been approved by the authorities
1.7	MEP build-out completed	Technical; all MEP installation have been completed and tested
1.8	Process equipment installed	Technical; all process equipment has been installed and tested for proper operation
1.9	Facility is chemical ready	Technical; all test related to chemical safety have been successfully concluded
BP1.2	Start-up of production at Apex	Technical; Apex will start with production of metal salts and pCAM
Note that BP 1.1 and 1.2 are SMART Milestones in budget period 1		

Continuation: *The recipient is* ***NOT*** *authorized to initiate any scope in the next budget period without the DOE Contracting Officer's prior written approval in accordance with the award terms and conditions.*

Budget Period 2: Apex expansion pCAM lines

Task 8: Apex site design
Task 1 Summary Description: This Apex site design phase will include front-end loading engineering, the detailed engineering design and the site level civil design.

Subtask 8.1: Front-end loading engineering
Subtask 8.1 Summary: The front-end loading engineering, the conceptional engineering phase, includes the determination of the high level (HL) mass balance of the material flows in the plant and the development of a HL manufacturing process description. An estimated equipment list, power demand, manufacturing space allowances and warehouse requirements for each process unit will be established.

Subtask 8.2: Detailed engineering design
Subtask 8.2 Summary: The detailed design completes the building design, utilities (electrical, natural gas, water, sewer, compressed air, boiler and reverse osmosis treatment) design, security, stormwater pretreatment, offices and warehouse requirements.

Subtask 8.3: Site level civil design
Subtask 8.3 Summary: The civil design of the site provides details on grading, drainage, erosion control, utility layout, stormwater management and shell design. Initial surveying and geotechnical core samples allow designs to proceed for foundation concepts and building layouts. It will include items such as an environmental impact of the project, permitting, subsurface characteristics, wetlands delineation, and zoning. Civil engineering site designers work with all of the overlapping elements from this site to other parcels.

Milestone 2.1: Site level civil design completed

Task 9: Site preparation, shell(s) design and building shell construction
Task 9 Summary Description: construction management company Group will begin the construction phase with the site preparation, design the building shells, construct the building shells and will complete the MEP build-out.

Subtask 9.1: Site preparation
Subtask 9.1 Summary: Site preparation entails test drilling, landfill, levelling (cut and remove trees and then clear and grub the site of roots), filling in dirt to level the site, earth-moving, excavating, land drainage and other land preparation to ready the site.

Subtask 9.2: Building shell design
Subtask 9.2 Summary: construction management company Group will design the building shells in accordance with all building codes for chemical manufacturing sites, ground composition and site regulations within Christian County in Kentucky.

Subtask 9.3: Building shell construction
Subtask 9.3 Summary: The subsurface is leveled with soils that are well-drained and compacted to the correct elevations. Underground utilities such as plumbing drainage and electrical feed conduits are installed. Formwork is built to support the concrete. The steel reinforcement bars are accurately placed and adequately supported inside the forms. A ready-mix concrete batching plant will mix the specified concrete mix which is then poured into the forms. Entrained air is release by vibration and the concrete is then finished and cured. Concrete is poured in layers. This is repeated for foundations, columns, walls, roofs and floors.

Subtask 9.4: MEP build-out
Subtask 9.4 Summary: Mechanical, electrical, and plumbing (MEP) are the systems inside the building shell. These include mechanical ventilation and heating systems for the building. The electrical build-out of the shell provides lighting, electrical feed to heating systems, furnaces and boilers. The plumbing installation design process involves a layout of piping routes for water booster pumps, hot water systems, fire protection and sanitary plumbing. Effective MEP installations require interaction and collaboration among all design teams.

Milestone 2.2: Site preparation and building shell design completed
Milestone 2.3: Building shell construction completed
Smart Milestone BP2.1: Building ready for the processing equipment

Task 10: Design of process equipment and, procurement
Task 10: Summary Description: Based on the process description and mass balance (subtask 1.1) the process flow is defined using process and instrumentation diagrams (P&IDs). Ascend design engineers create equipment data sheets from the P&IDs. Requests for quotations are prepared from the data sheets and sent to qualified vendors. Successful bidders are selected with equipment details entered into the 3D model drawings for clash detection. Contracts are negotiated for price, delivery and quality with purchase orders executed. Selected vendors will fabricate the equipment, inspect it and deliver it to the Apex site.

Milestone 2.4: Equipment data sheets completed
Milestone 2.5: Contracts with vendors executed for fabrication of the process equipment
Milestone 2.6: Process equipment arrived at the Apex site

Task 11: Obtain critical permits
Task 11 description: The activities in this task focus on obtaining critical permits to operate Apex. Permits include the air permit, the Kentucky Pollutant Discharge Elimination System (KPDES) permit, the building permit and the occupancy permit. Based on its experience in Budget period 1, this permitting task will last six months.

Smart Milestone BP2.2: Air permit, KPDES permit, building and occupancy permits granted (M22)

Task 12: Process equipment installation
Task 12 Summary: Prior to installation, all supplier documentation will be studied. The electrical supply lines will be brought from the motor control centers and all utilities such as compressed air, vacuum, steam, cooling water and communication cables will be installed. Any required foundations will be inspected. Anchor bolts will be installed to provide stability of the equipment and will follow manufacturer's instructions. Rigging equipment into place must be planned ensuring any interferences are avoided.

Milestone 2.7: The facility is chemical ready

Task 13: Line commissioning and production start-up
Task 13 Summary: Startup recommendations by the manufacturer will be followed closely. Three phase motors will be check for rotation, any required lubrication will be added, spare parts checked, communications verified for all controls. A site acceptance test (SAT) will document the completion of the equipment commissioning.

Smart Milestone BP2.3: Production start of expansion pCAM lines at Apex

MILESTONE SUMMARY TABLE		
Ascend Elements: Apex – Integrated Sustainable Battery Precursor Production Plant		
	Description	**Type and Description**
Budget Period 2		
2.1	Site level civil design completed	Technical; civil design drawings completed
2.2	Site preparation and building shell design completed	Technical; The site preparation and the building shell design are complete, drawings are available
	BP2 Go/no go decision point	Move from design to implementation
2.3	Building shell construction completed	Technical; The building shell has been constructed
BP2.1	Building ready for the processing equipment	Technical; all building systems are installed ready for the equipment install
2.4	Equipment data sheets completed	Technical; equipment specification data sheets are complete
2.5	Contracts with vendors executed for fabrication of the process equipment	Business; contracts signed with selected equipment fabricators
2.6	Process equipment arrived at the Apex site	Shipment; all process equipment has arrived at the Apex site
BP2.2	Air permit, KPDES permit, building and occupancy permits granted	Permits granted; the four critical permits have been granted by the authorities
2.7	The facility is chemical ready	Technical; all test related to chemical safety have been successfully concluded
BP2.3	Start-up of production at Apex for the additional pCAM lines	Technical; Apex will start with production of the additional pCAM lines
Note that BP 2.1, 2.2 and 2.3 are SMART Milestones in budget period 2		

D. DELIVERABLES

In addition to the reports specified in the "Federal Assistance Reporting Checklist", Ascend Elements will provide the following to the DOE Project Officer (identified in Block 15 of the Assistance Agreement as the Program Manager):

- A summary of accomplishments and project work report will be prepared for inclusion in the Office of Manufacturing and Energy Supply Chains (MESC) and Office of Energy Efficiency and Renewable Energy (EERE) annual programmatic progress report. The report will be due by October 31 of each year.

E. BRIEFINGS AND TECHNICAL PRESENTATIONS

Ascend Elements will prepare detailed briefings will for presentation to the DoE Project Manager at the Project Manager's facility or other location specified by the DOE Project Manager approximately on an annual basis. Briefings will be given to explain the plans, progress, and results of the technical effort. Additional briefings and/or presentations will be prepared as required and upon the request of MESC/EERE.