


The DOE Webinar will begin shortly . . .

- **Why is there no sound?**
 - Once you logged into the webinar, you were provided two options to listen to this broadcast. The first option is through your computer speakers, the second option is via dialing the phone number provided to you upon login to the webinar. If you chose to listen through your computer speakers, you may need to turn your speaker volume on or up.
- **Will DOE provide access to the recorded webinar after the meeting?**
 - Yes, all those who registered will receive a link to the slides and to the recorded webinar soon after the meeting. It will also be available on the DOE SBIR/STTR web site.
- **Where can I find the Topics being discussed today?**
 - This link will take you to the Funding Opportunity Announcement (FOA) page that lists the FY 2025 Phase I Release 2 Topics: <https://science.osti.gov/sbir/Funding-Opportunities>
- **What if my question was not answered at today's webinar?**
 - Please contact the point of contact that follows each subtopic in the document listed above for further clarification.
 - If you have a question about the grant application process, please send us an email at: sbir-sttr@science.doe.gov.



**DOE SBIR/STTR
Phase I Release 2 Topics Webinar**

**Topics associated with the
FY 2025 Phase I Release 2
Notice of Funding Opportunity**

Topics 11-16

DOE SBIR/STTR Programs Office

November 21, 2024

TODAY'S AGENDA

Topics Introduction	DOE SBIR/STTR Programs Office
Topic 11-16	Office of Energy Efficiency and Renewable Energy

FY 2025 Phase I Schedule

	Release 1	Release 2
Topics Issued	Monday, July 8, 2024	Tuesday, November 12, 2024
Webinar(s)	Week of July 22, 2024	Week of November 18, 2024
NOFO Issued	Monday, August 5, 2024	Monday, December 16, 2024
NOFO Webinars	Thursday, August 8, 2024 (Webinar) Friday, August 9, 2024 (Q&A)	Thursday, December 19, 2024 (Webinar) Friday, December 20, 2024 (Q&A)
Letters of Intent (LOI) Due	Tuesday, August 27, 2024	Tuesday, January 7, 2025
Non-responsive LOI Feedback Provided	Monday, September 16, 2024	Monday, January 27, 2025
Applications Due	Tuesday, October 8, 2024	Wednesday, February 26, 2025
Award Notification	Monday, January 6, 2025	Tuesday, May 27, 2025

Phase I Funding Opportunity Announcements Participating DOE Programs (FY 2025)

Phase I Release 1

- Office of Advanced Scientific Computing Research
- Office of Basic Energy Sciences
- Office of Biological and Environmental Research
- Office of Fusion Energy Sciences
- Office of High Energy Physics
- Office of Nuclear Physics

Phase I Release 2

- Office of Cyber Security, Energy Security, and Emergency Response
- Office Of Defense Nuclear Nonproliferation Research And Development
- Office of Electricity
- Office of Energy Efficiency and Renewable Energy
- Office of Environmental Management
- Office of Fossil Energy and Carbon Management
- Office of Nuclear Energy

Notice of Funding Opportunity (NOFO) Webinar

- FY25 Phase I Release 2 NOFO will be issued on **December 16th**
- Join our Mailing List – this field is on every DOE SBIR/STTR web page
 - Following the issuance of the NOFO, look for an email with a link to the NOFO
- Webinar on **December 19th** and Q&A Webinar for this **December 20th**
 - Overview of the FY 2025 DOE SBIR/STTR Programs
 - Following the issuance of the NOFO, look for an email announcing this webinar

Contact the DOE SBIR/STTR Programs Office

Address U.S. Department of Energy SC-29/Germantown Building 1000 Independence Ave., SW Washington, DC 20585	Phone Tel(301) 903-5707 Fax(301) 903-5488	Email Send us a message sbir-sttr@science.doe.gov	Join Mailing List Subscribe to email updates from the SBIR & STTR Programs Subscribe
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Provide Feedback
Submit suggestions for improving the SBIR & STTR Programs [here](#)

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Reminder - Phase 0 Application Assistance Program



- Phase 0 application assistance program is available for first-time DOE SBIR/STTR applicants
- Participants receive an individual coach who is an expert in our application process.
- Registration is open now and onboarding is in process!
- Services are expected to begin in December
- Visit <http://www.dawnbreaker.com/doephase0/> to determine your eligibility and apply to Phase 0

Topic Basics

- Topics are created by DOE program managers and define important technology breakthroughs needed in R&D areas that support the DOE mission
- Topics are organized by DOE Program Office, e.g., EERE, FECM, etc.
- DOE program managers are listed with each subtopic
 - Questions to DOE program managers are limited to clarification of the topic and subtopic (including references)
 - Clarification is provided to help **you** determine whether your technology fits within the topic and subtopic
 - You may communicate with these topic managers from the release of topics until the grant application due date
 - The decision to apply is **yours**

Example Topic

- Topic & Subtopic
 - You must specify the same topic and subtopic in your Letter of Intent and grant application
- Topic Header
 - Lists the maximum award amounts for Phase I & Phase II and the types of application accepted (SBIR and/or STTR)
- Program Manager
 - Each subtopic lists the responsible DOE program manager
- “Other” Subtopic
- References

12. INSTRUMENTATION FOR ADVANCED CHEMICAL IMAGING

Maximum Phase I Award Amount: \$150,000	Maximum Phase II Award Amount: \$1,000,000
Accepting SBIR Applications: YES	Accepting STTR Applications: YES

The Department of Energy seeks to advance chemical imaging technologies that facilitate fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels. The Department is particularly interested in forefront advances in imaging techniques that combine molecular-scale spatial resolution and ultrafast temporal resolution to explore energy flow, molecular dynamics, breakage, or formation of chemical bonds, or conformational changes in nanoscale systems.

Grant applications are sought in the following subtopics:

- a. **High Spatial Resolution Ultrafast Spectroscopy**
Chemical information associated with molecular-scale processes is often available from optical spectroscopies involving interactions with electromagnetic radiation ranging from the infrared spectrum to x-rays. Ultrafast laser technologies can provide temporally resolved chemical information via optical spectroscopy or laser-assisted mass sampling techniques. These approaches provide time resolution ranging from the breakage or formation of chemical bonds to conformational changes in nanoscale systems but generally lack the simultaneous spatial resolution required to analyze individual molecules. Grant applications are sought that make significant advancements in spatial resolution towards the molecular scale for ultrafast spectroscopic imaging instrumentation available to the research scientist. The nature of the advancement may span a range of approaches including sub-diffraction limit illumination or detection, selective sampling, and coherent or holographic signal analysis.

Questions – Contact: James Rustad, James.Rustad@Science.doe.gov

- b. **Time-Resolved Chemical Information from Hybrid Probe Microscopies**
Probe microscopy instruments (including AFM and STM) have been developed that offer spatial resolution of molecules and even chemical bonds. While probe-based measurements alone do not typically offer the desired chemical information on molecular timescales, methods that take advantage of electromagnetic interactions or sampling with probe tips have been demonstrated. Grant applications are sought that would make available to scientists new hybrid probe instrumentation with significant advancements in chemical and temporal resolution towards that required for molecular scale chemical interactions. The nature of the advancement may span a range of approaches and probe techniques, from tip-enhanced or plasmonic enhancement of electromagnetic spectroscopies to probe-induced sample interactions that localize spectroscopic methods to the molecular scale.

Questions – Contact: James Rustad, James.Rustad@Science.doe.gov

- c. **Other**
In addition to the specific subtopics listed above, the Department invites grant applications in other areas that fall within the scope of the topic description above.

Questions – Contact: James Rustad, James.Rustad@Science.doe.gov

References:

1. U.S. Department of Energy, 2006, Office of Science Notice DE-FG01-05ER05-30, Basic Research for Chemical Imaging, BES Chemical Imaging Research Solicitation. (<http://science.energy.gov/~media/grants/pdf/foas/2005/DE-FG01-05ER05-30.pdf>).
2. National Research Council, 2006, Visualizing Chemistry, The Progress and Promise of Advanced Chemical Imaging, National Academies Press. (http://www.nap.edu/catalog.php?record_id=11663).

Topic C60-11: SOLAR ENERGY TECHNOLOGIES

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES
Accepting SBIR Fast-Track Applications: NO	Accepting STTR Fast-Track Applications: NO

- a. Innovative Power Electronic Technologies for Solar Systems
- b. Dual-Use Photovoltaic Technologies
- c. Technologies Enabling Solar-Powered DC Microgrids
- d. Cybersecurity of Solar Energy Systems (DOE Crosscuts: Grid Modernization, Energy Sector Cybersecurity)
- e. Distribution Reliability Visibility (DOE Crosscuts: Grid Modernization)
- f. Concentrating Solar-Thermal Power Technologies for Gen3 CSP, Commercial CSP (Gen2 CSP), or Concentrated Solar Industrial Process Heat (SIPH) (ESS: Industrial Heat Shot)
- g. Affordability, Reliability, Performance, and Manufacturing of Solar Systems

Questions: solar.sbir@ee.doe.gov

Topic C60-12: SOLAR ENERGY TECHNOLOGIES (STTR ONLY)

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: NO	Accepting STTR Phase I Applications: YES
Accepting SBIR Fast-Track Applications: NO	Accepting STTR Fast-Track Applications: NO

- a. Innovative Software Technologies and Products for Solar Energy Systems

Questions: solar.sbir@ee.doe.gov

Topic C60-13: VEHICLE TECHNOLOGIES OFFICE

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES
Accepting SBIR Fast-Track Applications: NO	Accepting STTR Fast-Track Applications: NO

- a. Innovative Electric Vehicle Battery Cells and Components
- b. Improving EV Battery Recycling Efficiency (BIL-Funded)
- c. Improving Consumer Electronic Battery Recycling Efficiency (BIL-Funded)
- d. Modular Heavy-Duty Vehicle Batteries

Questions: Subtopic a – Nico Eidson, Nicolas.Eidson@ee.doe.gov and Stephanie Spence, Stephanie.Spence@ee.doe.gov
Subtopic b & c – Stephanie Spence, Stephanie.Spence@ee.doe.gov, Jake Herb, Jake.Herb@ee.doe.gov, and Tina Chen, Tina.Chen@ee.doe.gov
Subtopic d – Simon Thompson, Simon.Thompson@ee.doe.gov

Topic C60-13: VEHICLE TECHNOLOGIES OFFICE (Continued)

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES
Accepting SBIR Fast-Track Applications: NO	Accepting STTR Fast-Track Applications: NO

- e. Material Innovations for Thermal Runaway Mitigation in High-Energy Battery Enclosures
- f. EV Battery Firefighting Technologies
- g. Electrified Hydraulic Components for Off-road Equipment
- h. Energy Efficient Mobility Systems (EEMS): Increasing Efficiency Through Systemwide Innovation

Questions: Subtopic e – Felix Wu, felix.wu@ee.doe.gov

Subtopic f – Haiyan Croft, Haiyan.croft@ee.doe.gov

Subtopic g – Nick Hansford, nicholas.hansford@ee.doe.gov

Subtopic h – Avi Mersky, Avi.Mersky@ee.doe.gov (cc eems@ee.doe.gov)



C60-13a. VEHICLE TECHNOLOGIES OFFICE

Innovative Electric Vehicle Battery Cells and Components

- Metrics are for end of a potential Phase II
 - Preliminary data and phase I do not need to demonstrate them but should show pathway to achieve metrics
 - Metrics are to an extent suggestions, but are based on what is believed to be needed to achieve industry adoption of new technology in EVs
- EV relevant cell level performance (USABC)
 - Advanced/beyond Li-ion (Lithium metal anode, Sulfur cathode, Silicon anode) to >300-350 Wh/kg
 - Low-cost alternatives (Na-ion and Ni/Co free cathodes) to >200 Wh/kg
- Full Cell Demonstration
 - Phase I: >200 mAh single layer pouch cell (cylindrical and prismatic acceptable)
 - Phase II: >1 Ah multi-layer pouch cell (cylindrical and prismatic acceptable)
- Timeline: Final Full Cell Demonstration on test by April

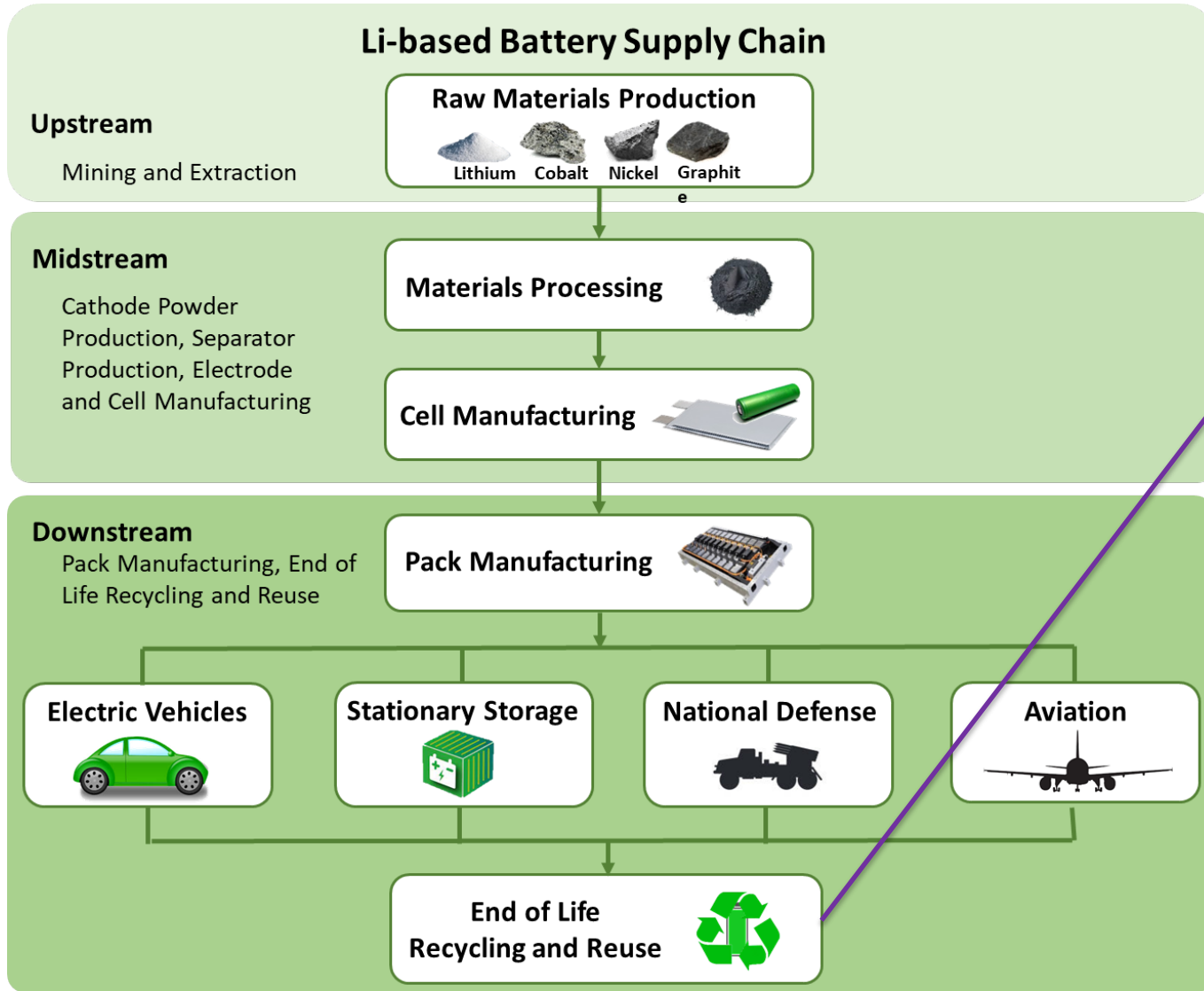


C60-13a. VEHICLE TECHNOLOGIES OFFICE

Innovative Electric Vehicle Battery Cells and Components

Areas of Development	Topics of Interest and Performance Metrics	Not of Interest
Cathode (Li-ion)	<ul style="list-style-type: none"> High energy density (Co free) or Low cost (Ni/Co free) 	<ul style="list-style-type: none"> LFP NMC, NCA, or similar
Sodium-Ion	<ul style="list-style-type: none"> Cathode and/or Anode and/or Electrolyte development Low cost and Li/Co-free 	<ul style="list-style-type: none"> Na metal anode, SSE, or Prussian blue analog electrodes Low energy density (<160 Wh/kg)* High Ni content (>30%)
Sulfur Cathode	<ul style="list-style-type: none"> High sulfur content (>60% total electrode mass) High cell energy density (>300 Wh/kg)* 	
Li Metal	<ul style="list-style-type: none"> Match or beat performance metrics demonstrated by the Battery 500 Consortium 	
Si anode	<ul style="list-style-type: none"> 100% Si, SiO_x, SiC containing active material Long calendar life (>10 years) 	<ul style="list-style-type: none"> Graphite blend EC containing electrolytes
Manufacturing/Inactive Components	<ul style="list-style-type: none"> Binder or Separator (PFAS-free) Foil/cell components (lowered cost and increased energy density by at least 15% for commercial technology) Dry electrode processing Roll-to-roll capable 	
Safety and Diagnostics	<ul style="list-style-type: none"> Low-cost thermal runaway mitigation/prevention (15% cost savings with no impact on performance) High-speed diagnostic hardware for manufacturing 	<ul style="list-style-type: none"> Pack, module, or BMS level solutions Software only solutions

VTO Batteries Bipartisan Infrastructure Law (BIL) Efforts



Sec. 40207(e) Lithium-Ion Battery Recycling Prize Competition (\$10 Million total)

Sec. 40207(f) Battery and Critical Mineral Recycling: Battery Recycling Research, Development, and Demonstration Grants (\$125 Million total)

Sec. 40208 Electric Drive Vehicle Battery Recycling and Second-Life Applications Program (\$200 Million Total over 5 years)

*Prior 40208 processing work awarded in 2022 (FOA 2680)

*Notice of Intent to Issue Funding Opportunity Announcement DE-FOA-3434: Bipartisan Infrastructure Law (BIL) Electric Drive Vehicle Battery Improving Economics, Recovery and Reuse, and State of Health Issued 9/13/24.

Topics on:

- LFP recycling
- Electrolyte component recycling
- Upcycling of low-value material
- SOH determination for second-use



Topic C60-13b: Improving EV Battery Recycling Efficiency (BIL Sec. 40208)

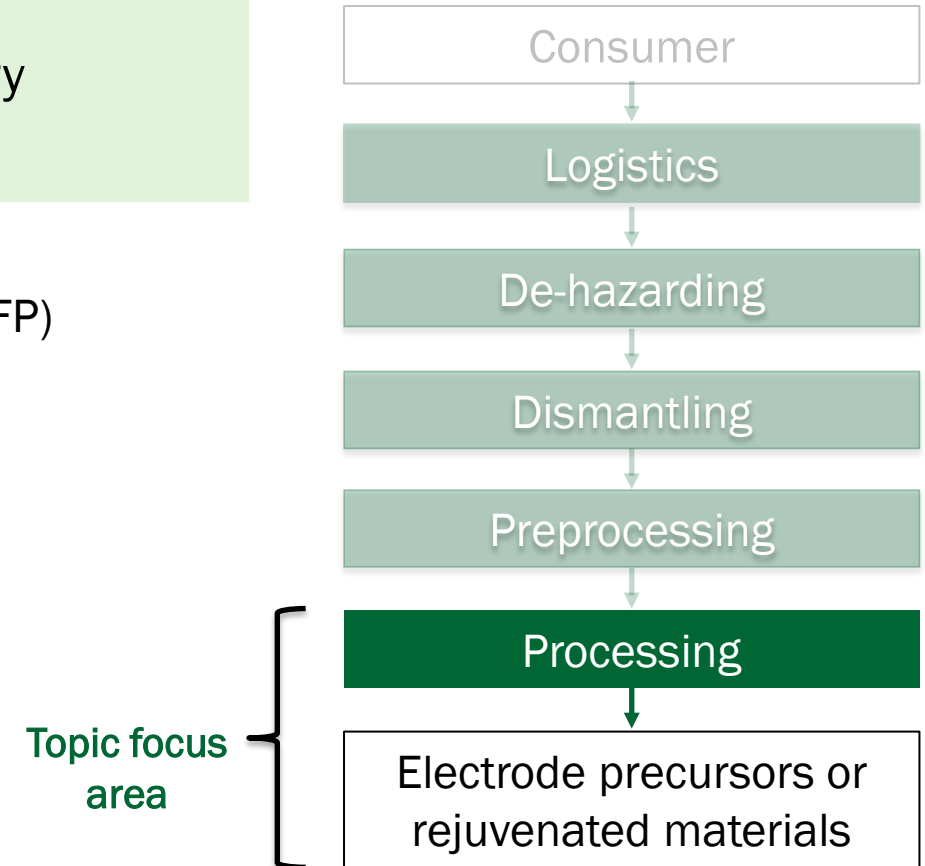
Objectives:

1. Reduce the cost of recycling EV batteries
2. Develop, validate and demonstrate technologies for EV battery recycling for integration into the battery recycling ecosystem

Looking for:

- Feedstocks from end-of-life lithium-ion EV batteries (NMC, NCA, LFP)
- Direct recycling and upcycling approaches
- Hydrometallurgical approaches
- **Critical Metrics:** Material recovery >90%; decreased water, reagent, waste, GHG emissions, cost
- **Suggested Partners:** Battery manufacturers, pre-processors for feedstocks (upstream); materials/cell producers, potential recycled material customers (downstream)
- **Phase 1 Expectation:** Process validation, preliminary LCA/TEA, plan to achieve 100 tons/year processing
- **Phase 2 Expectation:** demonstration of commercial potential; scale-up

Battery Recycling Chain:



Topic C60-13c: Improving Consumer Electronic Battery Recycling Efficiency (BIL Sec. 40207(f))

Objectives:

1. Reduce the cost of recycling consumer electronics batteries
2. Develop, validate and demonstrate technologies for consumer electronic battery recycling for integration into the battery recycling ecosystem

– Looking for:

- Feedstocks from end-of-life consumer electronics (LCO and LFP)
- Hydrometallurgical approaches
- Direct recycling and upcycling approaches (e.g. LCO -> NMC)

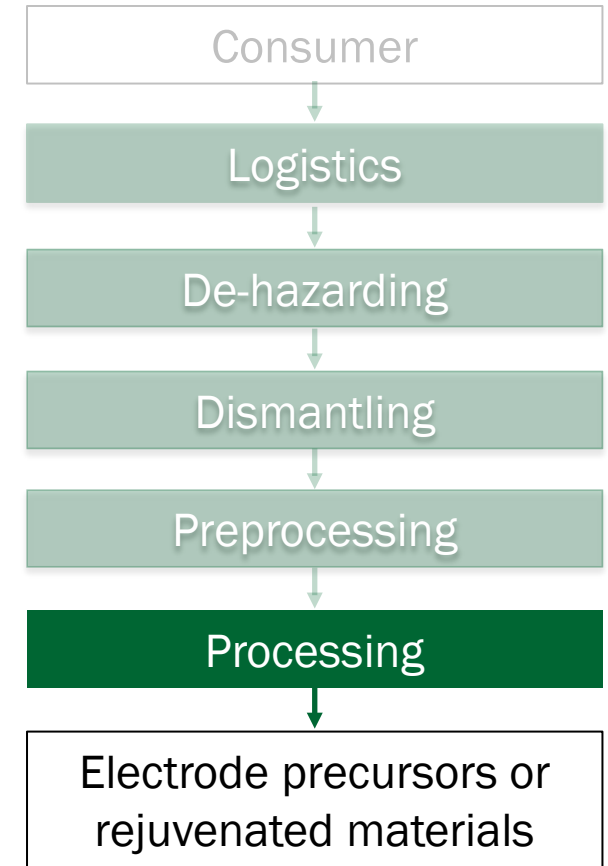
- **Critical Metrics:** Material recovery >90%; decreased water, reagent, waste, GHG emissions, cost

- **Suggested Partners:** Battery/device manufacturers, pre-processors for feedstocks (upstream); materials/cell producers, potential recycled material customers (downstream)

- **Phase 1 Expectation:** Process validation, preliminary LCA/TEA, plan to achieve 100 tons/year processing

- **Phase 2 Expectation:** demonstration of commercial potential; scale-up

Battery Recycling Chain:



Topic C60-14: MAINTENANCE FOR NEXT GENERATION WIND PLANTS

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES
Accepting SBIR Fast-Track Applications: NO	Accepting STTR Fast-Track Applications: NO

- a. Cranes and alternative technologies for major component exchange
- b. Autonomous maintenance and decision support

Questions: wind.sbir@ee.doe.gov

Topic C60-15: WATER POWER TECHNOLOGIES: BASE APPROPRIATIONS TOPICS

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES
Accepting SBIR Fast-Track Applications: NO	Accepting STTR Fast-Track Applications: NO

- a. Municipal and Industrial Conduit Hydropower
- b. Innovations in Data Collection, Analytics, Models and Tools (Energy-Water Nexus Crosscut)
- c. Pumped Storage Hydropower Innovative Concepts
- d. Co-Development of Marine Energy Technologies
- e. Development of Standardized Modular Power Electronics for Grid-Compatible Marine Energy Systems
- f. Advances in Overtopping Wave Energy Converters for Coastal Structures.
- g. Next-Generation Tidal and River Current Energy Technologies for Arctic/Alaskan Communities
- h. Feasibility of Co-locating Wave Energy and Offshore Wind

Questions: water.sbir@ee.doe.gov



Office of Energy Efficiency
& Renewable Energy

Wind Energy Technologies Office

Topic C60-14: Maintenance for Next Generation Wind Plants



SUBTOPIC A: CRANES AND ALTERNATIVE TECHNOLOGIES FOR MAJOR COMPONENT EXCHANGE

As turbines grow taller, heavier, and more remote, maintaining them becomes more challenging.

Technologies under this topic should focus on:

- Designing advanced cranes or strategies for heavier, higher lifts
- Developing alternatives for craneless installation and maintenance
- Improving safety during maintenance, especially at height or offshore
- Reducing costs and increasing efficiency for mobilization and deployment
- Supporting cost-effective maintenance for floating offshore wind systems.

SUBTOPIC B: AUTONOMOUS MAINTENANCE AND DECISION SUPPORT

This topic focuses on advanced technologies to improve system health and reduce labor demands, particularly in challenging environments.

Proposed technologies should aim to:

- Develop sensors that collect and transmit critical data from hard-to-reach or costly areas
- Enhance sensor durability and performance for use throughout a turbine's lifespan
- Use data fusion to predict failures, inform maintenance strategies, and recommend actions
- Apply digital tools to optimize maintenance, create new value streams, or improve coordination
- Advance robotics or automation for inspections and maintenance, from technician support to full autonomy.

Topic C60-16: WATER POWER TECHNOLOGIES: BIPARTISAN INFRASTRUCTURE LAW TOPIC (STTR ONLY)

Maximum Phase I Award Amount: \$200,000	Maximum Phase II Award Amount: \$1,100,000
Accepting SBIR Phase I Applications: NO	Accepting STTR Phase I Applications: YES
Accepting SBIR Fast-Track Applications: NO	Accepting STTR Fast-Track Applications: NO

- a. Marine Energy Technologies
- b. Hydropower Technologies

Questions: water.sbir@ee.doe.gov

DOE SBIR/STTR Programs Office Contact Information

- SBIR/STTR Web: <https://science.osti.gov/sbir>
- Email: sbir-sttr@science.doe.gov
- Phone Assistance Hotline: 301-903-5707
- DOE Phase 0 Assistance Program: <https://doephase0.dawnbreaker.com/>
- DOE Application Assistance: <https://science.osti.gov/SBIRLearning>