Notice of Intent No. DE-FOA-0003119

Notice of Intent to Issue
Funding Opportunity Announcement No. DE-FOA-0003120

DISCLAIMER: The "Notice of Intent to Issue" is for informational purposes only; the Department of Energy is not seeking comments on the information in this notice and applications are not being accepted at this time. Any information contained in this notice is subject to change.

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Vehicle Technologies Office, a Funding Opportunity Announcement (FOA) entitled "Bipartisan Infrastructure Law (BIL) Electric Drive Vehicle Battery Recycling, Transport, and Design."

The Biden Administration has laid out a bold agenda to address the climate crisis and build a clean and equitable energy economy that achieves carbon pollution free electricity by 2035, and puts the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050[1] to the benefit of all Americans.

Batteries are a critical element to decarbonizing our economy and national competitiveness–for grid storage, for the resilience of homes and businesses, and for electrification of the transportation sector. President Biden's Executive Order on America's Supply Chains directed Department of Energy (DOE) to produce a report identifying the risks in the current and forecasted battery supply chain landscape and policy recommendations to address them. The Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth 100-Day Reviews under Executive Order 14017 report assesses vulnerabilities and opportunities across four key products including high-capacity batteries. The *National Blueprint for Lithium Batteries*, a report developed by the Federal Consortium for Advanced Batteries[2], lays out five critical goals and key actions to guide federal agency collaboration to secure the nation's long-term economic competitiveness and create good-paying jobs for American workers, while supporting the Biden Administration's decarbonization goals.

The Infrastructure Investment and Jobs Act (Public Law 117-58), also known as the Bipartisan Infrastructure Law (BIL), is a once-in-a-generation investment in infrastructure, which will grow a more sustainable, resilient, and equitable economy through enhancing U.S. competitiveness

[1] Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad," January 27, 2021.
[2] The Federal Consortium for Advanced Batteries (FCAB) provides a framework for cooperation and coordination among federal agencies having a stake in developing advanced battery technology and establishing a domestic supply of lithium batteries. The FCAB is led by the Departments of Energy, Defense, Commerce, and State and includes many organizations across the government.

in the world, creating good jobs, ensuring stronger access to these economic and other benefits for underserved communities. The BIL appropriates more than $62 billion to DOE[3] to deliver a more equitable clean energy future for the American people by

- Investing in American manufacturing and workers.
- Expanding access to energy efficiency and clean energy for families, communities, and businesses.
- Delivering reliable, clean, and affordable power to more Americans.
- Building the technologies of tomorrow through clean energy demonstrations.

The BIL will **invest more than $7 billion in the batteries supply chain over the next five years.** This includes sustainable sourcing and processing of the critical minerals used in battery production without new extraction or mining all the way through end-of-life battery collection and recycling.

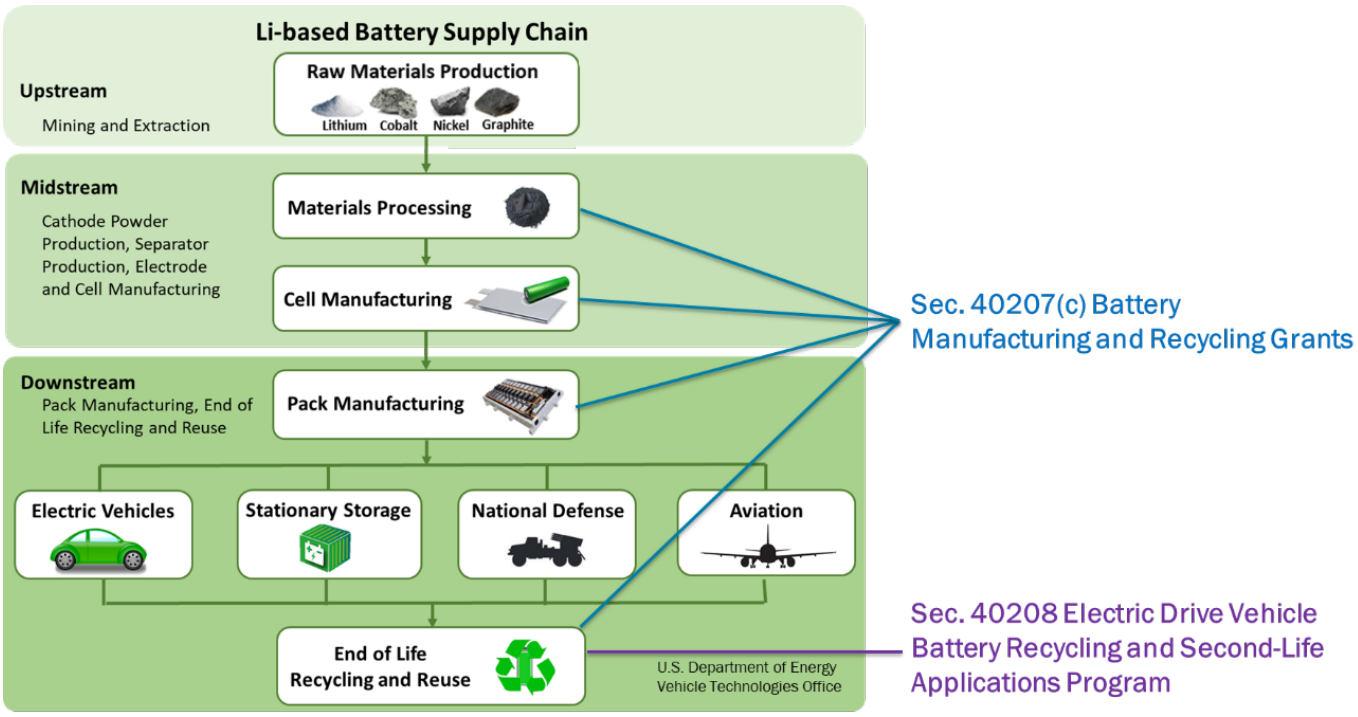
The anticipated FOA and any related activities support BIL section 40208, Electric Drive Vehicle Battery Recycling and Second-Life Applications Program aimed at "research, development, and demonstration of

- **second-life applications** for electric drive vehicle batteries that have been used to power electric drive vehicles; and
- **technologies and processes** for final recycling and disposal of the [electric drive vehicle batteries]."

As part of this whole-of-government approach, this FOA seeks to encourage meaningful engagement with and participation of all stakeholders, including labor unions, underserved communities, and underrepresented groups, including Tribes. Consistent with Executive Order 14008, the FOA will be designed to support the goal that 40% of the overall benefits of certain federal investments flow to underserved and overburdened communities in accordance with the Justice40 Initiative. In addition, this FOA is designed to ensure that priority is given to projects that support the development or demonstration of projects in economically distressed areas, including communities facing loss of economic activity and jobs due to the clean energy transition, and provide the greatest potential to reduce costs for consumers and promote accessibility and community implementation of demonstrated technologies.

The high-capacity battery supply chain consists of five main steps: 1) raw material production, 2) materials processing, 3) battery material manufacturing and cell fabrication, 4) battery pack and end use product manufacturing, and 5) battery end-of-life and recycling. The graphic below shows how these five steps relate to the BIL investments in the battery supply chain.

[3] U.S. Department of Energy. November 2021. "DOE Fact Sheet: The Bipartisan Infrastructure Deal Will Deliver For American Workers, Families and Usher in the Clean Energy Future." https://www.energy.gov/articles/doe-fact-sheet-bipartisan-infrastructure-deal-will-deliver-american-workers-families-and-0



BIL section 40208 provides $200 million for the electric drive vehicle battery recycling and second life applications program over five years. The first FOA, released in FY22, awarded nearly $74 million to 1) advance the development of recycling processes and the requalification of resultant recycled material into the battery supply chain and 2) establish demonstration projects to understand and validate real-world performance and potential for deploying spent electric drive vehicle batteries for second-life applications outside of the automotive industry. Through the selected projects, the FY22 FOA aimed to ensure that highly efficient battery recycling processes and second life applications are in place to scale up and support the domestic battery supply chain.

However, large-scale adoption of battery recycling by industry requires a more economically appealing model than is generally achieved through current battery recycling practices. Battery recyclers incur significant costs associated with transporting and disassembling end-of-life lithium ion (Li-ion) batteries before the batteries can be processed. Due to potential fire hazards, end-of-life Li-ion batteries are considered Class 9 Hazardous Materials and need to be handled, labeled, packaged, and shipped according to Department of Transportation safety regulations.[4] These procedures can cost hundreds to thousands of dollars per shipment, and, as a result, transportation makes up an estimated 40%-60% of overall recycling costs[5]. Another

[4] U.S. Department of Transportation. September 2021. "Lithium Battery Guide for Shippers: A Compliance Tool for All Modes of Transportation." https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2021-09/Lithium-Battery-Guide.pdf

[5] California Environmental Protection Agency. March 2022. "Lithium-ion Car Battery Recycling Advisory Group Final Report." https://calepa.ca.gov/lithium-ion-car-battery-recycling-advisory-group/

large cost driver is disassembly, which is difficult for many batteries in production today. For battery recycling to be financially viable, the costs of these operations prior to actual material processing must be reduced.

The anticipated FOA will focus on solutions that reduce the costs associated with battery recycling through technologies, processes, and product designs that facilitate the transport, disassembly, and preprocessing of end-of-life electric drive vehicle batteries. Because the cost of transportation increases with distance traveled, technologies and processes that can interface at the point of collection, such as those performed at or with auto recyclers, dealerships, or automobile mechanic shops, are especially appealing. Also of interest are technologies or product designs that lower the costs and improve safety associated with the transport and disassembly of electric drive vehicle batteries including but not limited to:

- technologies and processes, that improve the safety of end-of-life electric drive vehicle battery transportation by de-energizing, neutralizing, safely shredding, or otherwise deactivating the battery;
- product designs that decrease the cost and improve the safety of end-of-life electric drive vehicle battery packaging; and
- product designs that facilitate the dismantling and separation of end-of-life electric drive vehicle batteries and battery material.

The anticipated FOA will also address recycling of the electric drive vehicle battery accessory components. In pursuit of demonstrating the recycling of all battery components, the anticipated FOA will support technologies and processes for final recycling and disposal of battery accessory components, including casings and enclosures made from plastics and polymer composites.

It is anticipated that the FOA would provide approximately $35 million to fund research, development, and demonstration of transportation, dismantling, and preprocessing of end-of-life electric drive vehicle batteries for recycling at reduced cost, as well as $2 million for recycling of plastic and polymer electric drive vehicle battery accessory components. This Notice of Intent supports battery recycling by aiming to reduce the associated costs and improve safety of transport, dismantling, and recycling to achieve scale-up and profitability.

EERE envisions awarding multiple financial assistance awards in the form of grants. The estimated period of performance for each award will be approximately 3-4 years.

All prime recipients receiving funding under this anticipated FOA must be incorporated (or otherwise formed) under the laws of a state or territory of the United States and have a physical location for business operations in the United States. If a foreign entity applies for funding as a prime recipient, it must designate in the Full Application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a state or territory of the United States to be the prime recipient. The Full Application must state the nature of the corporate

relationship between the foreign entity and domestic subsidiary or affiliate. Waivers to these requirements will not be accepted.

This Notice is issued so that interested parties are aware of the EERE's intention to issue this FOA in the near term. All of the information contained in this Notice is subject to change.

EERE plans to issue the FOA on or about November 2023 via the EERE Exchange website https://eere-exchange.energy.gov/. If Applicants wish to receive official notifications and information from EERE regarding this FOA, they should register in EERE Exchange. When the FOA is released, applications will be accepted only through EERE Exchange.

In anticipation of the FOA being released, Applicants are advised to complete the following steps, which are **required** for application submission:

- Register and create an account in EERE Exchange at https://eere-exchange.energy.gov/. This account will allow the user to register for any open EERE FOAs that are currently in EERE Exchange. It is recommended that each organization or business unit, whether acting as a team or a single entity, use only one account as the contact point for each submission.

  Questions related to the registration process and use of the EERE Exchange website should be submitted to: EERE-ExchangeSupport@hq.doe.gov
- Obtain a Unique Entity identification (UEI) number at www.sam.gov
- Register with the System for Award Management (SAM) at https://www.sam.gov. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Please update your SAM registration annually.
- Register in FedConnect at https://www.fedconnect.net/. To create an organization account, your organization's SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf
- Register in Grants.gov to receive automatic updates when Amendments to a FOA are posted. However, please note that applications will not be accepted through Grants.gov. http://www.grants.gov/. All applications must be submitted through EERE Exchange.