



MESC

OFFICE OF MANUFACTURING AND ENERGY SUPPLY CHAINS

MESC Overview

Fall 2023



MESC is focused on the “how” of the energy transition



Purpose

To deliver the how of the energy transition quickly, securely, and equitably



Mission

To **strengthen** and **scale** America’s clean energy supply chains



Vision

To eliminate vulnerabilities in US Clean Energy supply chains



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MESC was founded in 2022 to secure and strengthen critical manufacturing and energy supply chains

Nov 2021
Bipartisan
Infrastructure Law

Feb 2022
MESC founded

Aug 2022
Inflation
Reduction Act

Jun 2023
First MESC
groundbreaking

Anovion
Technologies
breaks ground in
Georgia on facility
supported by MESC
investment through
BIL funding

Feb 2021
E.O. 14017

E.O. directing a whole-of-government approach to assessing vulnerabilities in, and strengthening the resilience of, critical supply

Feb 2022
Securing
America's Clean
Energy Supply
Chain Report

Report in response to E.O. 14017 outlining the USG's plan to build a secure energy sector industrial base

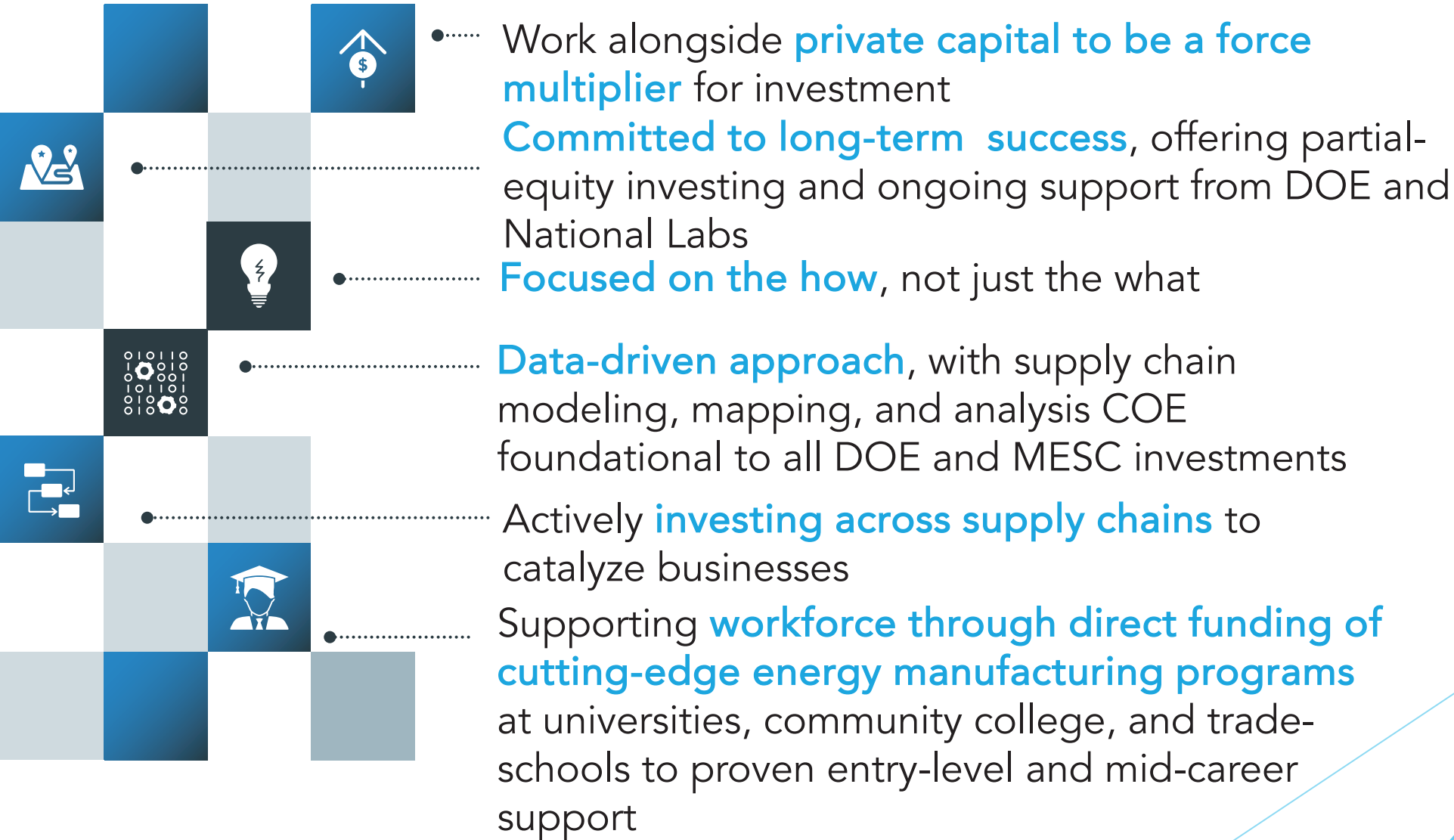
Jun 2022
Biden invokes DPA

Authorizes DOE to utilize the Defense Production Act to accelerate domestic production of key energy technologies

Oct 2022
First investments
announced

MESC selects 20 companies across 12 states, investing \$2.8B into the first round of battery manufacturing

Our investment principles



MESC's investment activities are underpinned by robust analytical modeling

MESC's Core Functions

Manufacturing Investing

Strengthening and securing supply chains needed to modernize the nation's energy infrastructure, while supporting a clean and equitable energy transition

Workforce Investing

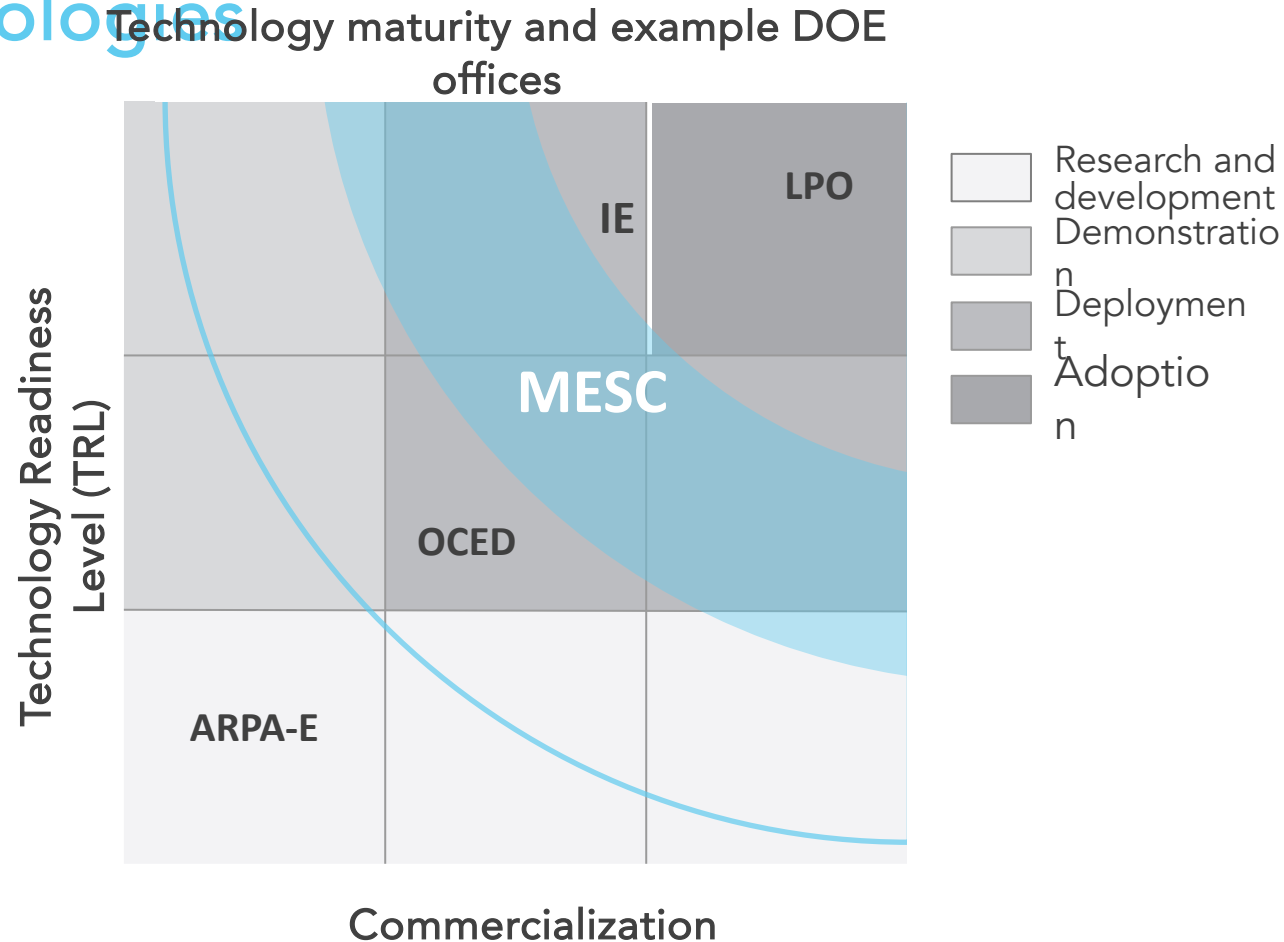
Supporting workforce education and training through the direct funding of cutting-edge energy manufacturing programs

Supply Chain Analytics Backbone

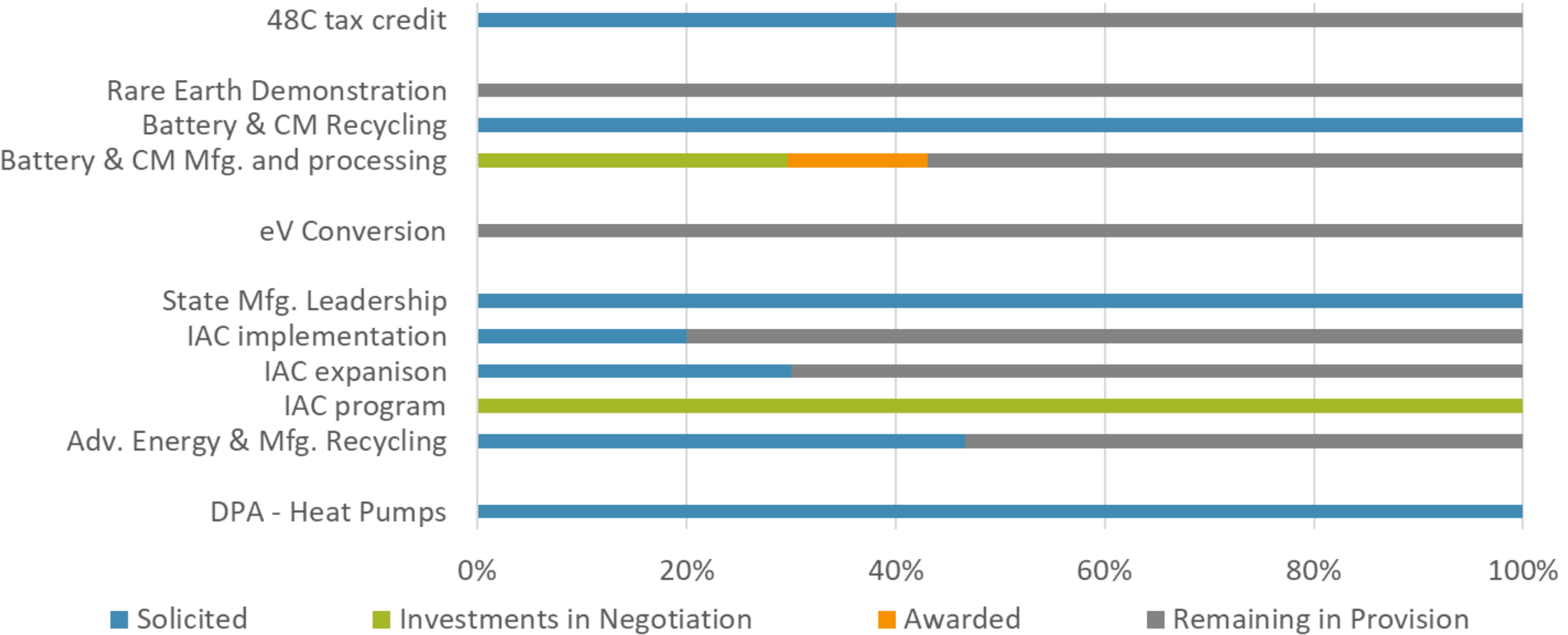
Robust modeling to guide and support DOE strategy and investments, private sector collaborative investments, and policy recommendations to broader USG

Our **strategic investment in critical materials, workforce, and essential manufacturing** enables DOE's other major project offices (OCED, GDO, IE, FECM etc.) by **de-risking the supply chains** for transmission, hydrogen, carbon capture, and other emerging clean technology projects.

MESC operates in late-stage technology development, driving large-scale deployment of new technologies



MESC is making steady progress delivering BIL & IRA programs



Rebates Programs

Energy Efficient Transformers Rebate Program (BIL 40555)

What: Rebate: \$10 million total, no aggregate limit per entity.

When: Rolling applications, final deadline of **December 8, 2023**.

Who: Utilities; manufacturers; state, local and tribal governments; and other commercial entities who replaced an inefficient distribution transformer with an efficient model or who have a valid purchase order for a future replacement.

Why: The transformer rebate program is designed to help defray the cost of increasing grid resiliency and efficiency.

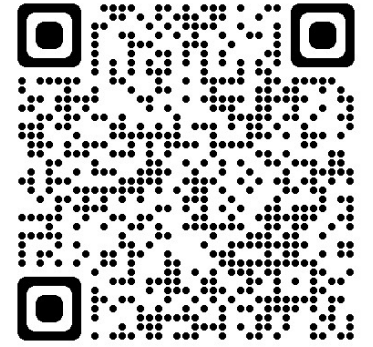
Extended Product System (EPS) Rebate Program (BIL 40555)

What: Rebate: \$10 million total, up to \$25,000 per entity per calendar year.

When: Rolling applications until funds are expended.

Who: Manufacturers and commercial building owners who have purchased and installed variable-speed motor systems like pumps, fans, and air compressors or retrofitted existing equipment to make use of them.

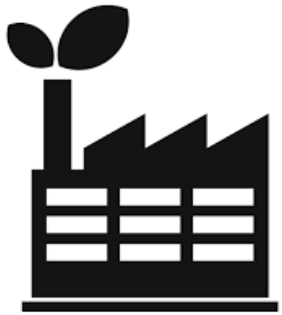
Why: The EPS rebate program aims to defray the cost of installing energy efficient systems that save energy and money compared to non-variable speed equipment.



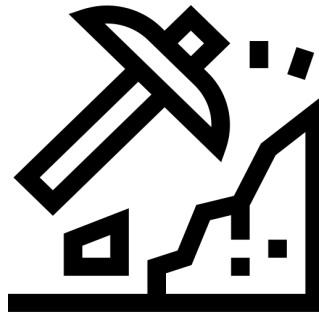
48C Program invests in projects that re-equip, expand, or establish manufacturing facilities

\$10B of Federal tax (credits up to 30%) were administered by the Department of Treasury and Internal Revenue Service, supported by DOE.

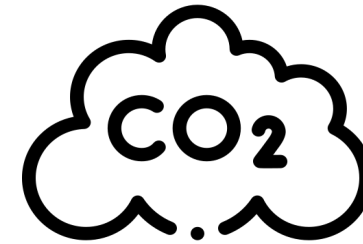
- ▶ Round one of applications has closed, with up to \$4B in funding.
- ▶ A second round of funding is expected in CY24.



For manufacturing or recycling of clean energy and energy efficiency technologies



To process, refine, or recycle critical materials



Re-equips manufacturing facility to reduce GHG emissions by 20%



MESC's Impact To-date

- ▶ \$6B+ private sector investment catalyzed
- ▶ 8,000+ jobs created
- ▶ 34% of investments in energy justice communities
- ▶ 500+ students trained annually
- ▶ 10M+ EVs enabled annually



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MESC: Battery Critical Minerals Processing, Battery Manufacturing, and Recycling

- ▶ Under the BIL Sections 40207(b)(c), MESC has ~\$6B in authority to provide grants for large-scale demonstration and deployment activities of battery materials processing and battery manufacturing and recycling
- ▶ Round one selections of these grants were announced in October of 2022.

[DOE BIL Battery FOA-2678 Selectee Fact Sheets \(energy.gov\)](https://www.energy.gov/foia/DOE-BIL-Battery-FOA-2678-Selectee-Fact-Sheets)



Notice of Intent \$3.5 billion: Battery Critical Minerals Processing, Battery Manufacturing, and Recycling

Topic Areas	Title
1	Commercial-scale Lithium Separation from Domestic Sources
2	Commercial-scale Separation, Processing, and Recovery of Battery Critical Minerals (non-Lithium)
3	Commercial-scale Domestic Processing of Crucial Precursor Materials for Battery Manufacturing
4	Commercial-scale Domestic Production of Battery Cathode/ Anode Materials and Cathode/ Anode Electrodes
5	Commercial-scale Domestic Production of Electrolyte Salts and Electrolyte Solvents
6	Commercial-scale Domestic Production of Cell Manufacturing for Small and Specialized Markets
7	Commercial-scale Domestic Production of Non-Lithium Based Battery Cell and Systems

[Biden Harris Administration Announces \\$15.5 Billion to Support a Strong and Just Transition to Electric Vehicles, Retooling Existing Plants, and Rehiring Existing Workers | Department of Energy](#)



MESC is Investing Across America to Strengthen and Scale Domestic Energy Manufacturing

Project Locations for MESC Selectees and Awardees AUGUST 2023

● MESC Selectee & Awardees: Battery Materials Processing and Battery Manufacturing

6K Inc. – Madison County, TN
 Albemarle U.S. Inc. – Kings Mountain, NC
 American Battery Technology Company – Tonopah, NV
 Anovion LLC – Bainbridge, GA
 Applied Materials Inc. – TBD, TBD
 Ascend Elements – Hopkinsville, KY
 Cirba Solutions – Lancaster, OH
 Membrane Holdings – ENTEK – Limestone County, AL
 Group14 Technologies Inc. – Moses Lake, WA

ICL-IP America Inc. – St. Louis, MO
 Koura (formerly Mexichem Fluor) – St. Gabriel, LA
 Lilac Solutions – Fernley, NV
 Lilac Solutions – Fernley, NV
 Novonix Anode Materials LLC – Chattanooga, TN
 Piedmont Lithium Inc. – McMinn County, TN
 Sila Nanotechnologies – Moses Lake, WA
 Solvay Specialty Polymers USA, LLC – Augusta, GA
 Syrah Technologies LLC – Vidalia, LA
 Talon Nickel (USA) LLC – Mercer County (Beulah), ND

● MESC Selectee & Awardees: Industrial Assessment Centers (IAC)

○ Centers of Excellence

○ Georgia Tech Research Corporation – Atlanta, GA
 Arizona State University – Tempe, AZ
 Colorado School of Mines – Golden, CO
 Georgia Tech – Atlanta, GA
 Indiana University Purdue University – Indianapolis, IN
 Kennesaw State University – Kennesaw, GA
 Lehigh University – Bethlehem, PA
 Louisiana State University (LSU) – Baton Rouge, LA
 Louisiana Tech University – Ruston, LA
 Michigan State University – East Lansing, MI
 Mississippi State University – Starkville, MS
 Oklahoma State University – Stillwater, OK
 Oregon State University – Corvallis, OR
 San Diego State – San Diego, CA
 San Francisco State University – San Francisco, CA
 San Jose State – San Jose, CA
 Syracuse University – Syracuse, NY
 Tennessee Technological University – Cookeville, TN
 Texas A&M University – College Station, TX
 Texas Engineering Experiment Station – College Station, TX

The University of Texas Rio Grande Valley – Edinburg, TX
 University of Alabama – Tuscaloosa, AL
 University of California Irvine – Irvine, CA
 University of Connecticut – Storrs, CT
 University of Dayton – Dayton, OH
 University of Delaware – Newark, DE
 University of Florida – Gainesville, FL
 University of Illinois at Chicago – Chicago, IL
 University of Louisville – Louisville, KY
 University of Massachusetts – Amherst, MA
 University of Miami – Coral Gables, FL
 University of Missouri-Columbia – Columbia, MO
 University of Nebraska-Lincoln – Lincoln, NE
 University of North Carolina at Charlotte – Charlotte, NC
 University of North Texas – Denton, TX
 University of Utah – Salt Lake City, UT
 University of Washington – Seattle, WA
 University of Wisconsin-Milwaukee – Milwaukee, WI
 West Virginia University – Morgantown, WV



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MESC is radiating and coordinating across agencies on energy manufacturing & supply chain priorities

Strategic Analysis Partners

- **National Science Foundation**
 - Technology commercialization and workforce
- **Interior**
 - Critical material permitting and resource evaluation
- **State**
 - International energy supply chain analysis and alignment
- **Department of Transportation**
 - Battery recycling
- **Commerce**
 - NIST – SMM reach and supply chain resilience coordination
 - ITA – trade and industry analysis for robust supply chain mapping
 - Economic Affairs – MOA with EDA strategic investment opportunities
- **Defense**
 - Critical materials and workforce



Deployment Partners

- **Treasury**
 - Technical support and execution for tax credits
- **Whitehouse**
 - NSC, NEC, OMB, and CPO program reach and impact
- **Environmental Protection Agency**
 - Critical mineral transport
 - Commercial battery recycling programs

Public & Private Partnerships

- **Federal Consortium for Advanced Batteries (FCAB)**
 - USG-wide (18 agencies/ 80+ offices) stake future of next generation batteries
- **Li-Bridge Alliance**
 - Private industry-led focus on near term opportunities for battery technology



Stay in touch! Sign up to receive MESC updates.

- ▶ LinkedIn: [Office of Manufacturing and Energy Supply Chains, U.S. Department of Energy: Overview | LinkedIn](#)
- ▶ Website: [Office of Manufacturing and Energy Supply Chains | Department of Energy](#)
- ▶ Email: MESC@hq.doe.gov
- ▶ Phone: (202) 586-5000



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Appendix

Our investment process

Terms to understand

Request for Information (RFI)

Used by MESC to collect general information or feedback

Notice of Intent (NOI)

Indicates upcoming investment round topic and timing

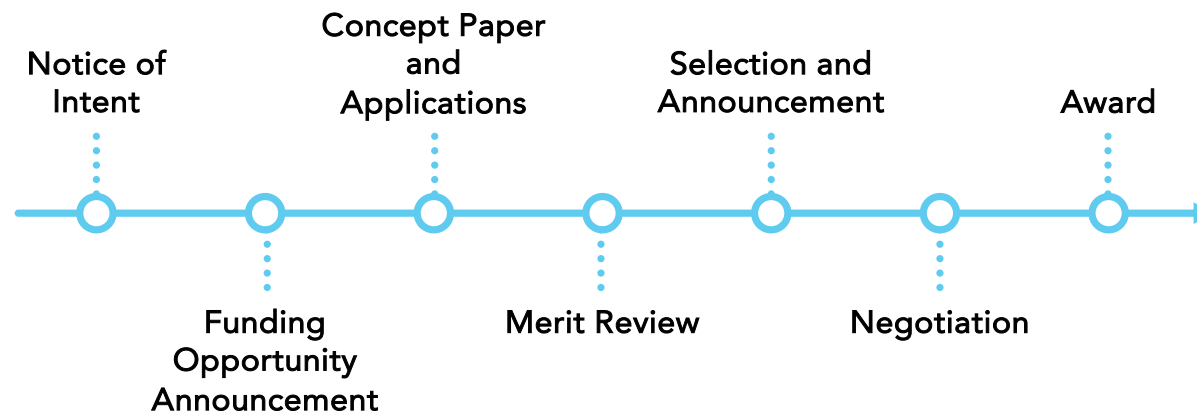
Funding Opportunity Announcement (FOA)

Indicates beginning of application window for investments

Concept Paper (CP)

Pitch deck for application, used for initial review and engagement with MESC

From announcement to award...



...MESC is focused on how investments further four key topics



Supply chain security



Decarbonization



Commercial viability

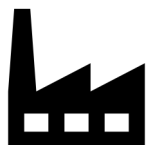


Community benefits and workforce development

U.S. investments in the battery supply chain have grown greatly over the last several years



- ▶ Over \$100B announced



- ▶ Over 200 new or expanded minerals, material processing, and manufacturing facilities



- ▶ Enough to power 10M EVs each year



- ▶ Over 75,000 new jobs



Federal Support for the Domestic Battery Supply Chain

Li-based Battery Supply Chain

Upstream

Mining and Extraction

Raw Materials Production



Midstream

Cathode Powder
Production, Separator
Production, Electrode
and Cell Manufacturing

Materials Processing



Cell Manufacturing



Downstream

Pack Manufacturing, End of
Life Recycling and Reuse

Pack Manufacturing



Electric Vehicles



Stationary Storage



National Defense



Aviation



End of Life Recycling and Reuse



DOE - MESC

Bipartisan
Infrastructure Law

**Battery
Materials
Processing
And
Manufacturing**
Section
40207(b)(c)

\$6 Billion

**Battery
Recycling**
Sections 40207
and 40208

\$335 Million

Inflation
Reduction Act

**Advanced
Manufacturing
Production
Credit**
Sec 13502 (45X)

**Qualified
Advanced
Energy Project
Credit**
Sec 13401 (48C)
\$10 Billion

**Clean Energy
Tax Credit**
30D

**Conversion
Grants**
Sec 50143
\$2 Billion

DOE - LPO

Federal Loans

**Advanced
Vehicle
Technology
Manufacturing
Loans**

**Loan
Guarantees**

Defense

Defense
Production Act

**Critical
Minerals**

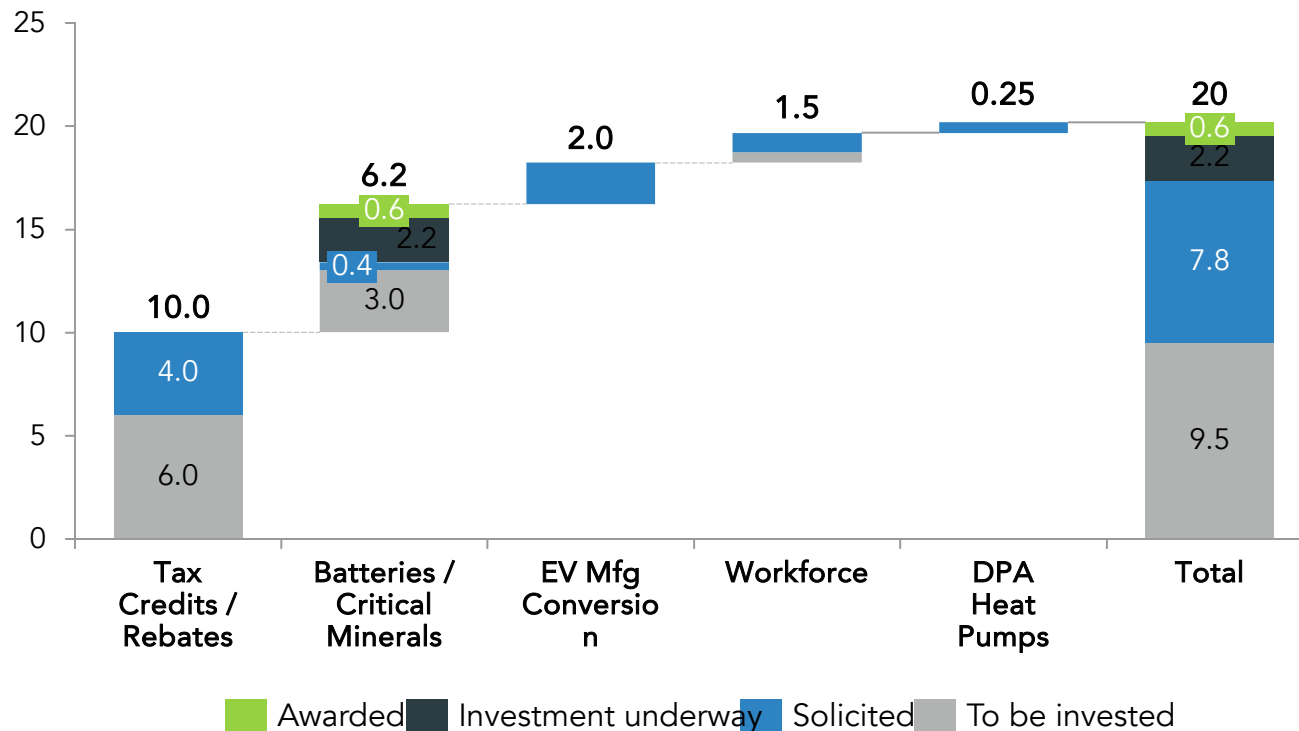
\$500 Million
(Ukraine Stimulus)

\$250 Million
(IRA 30001)

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MESC is working to deploy an additional \$20B+ across workforce, batteries, and ESIB initiatives

MESC investments (\$B)



\$20B

+

Amount outstanding to be invested

\$2.8B

Invested in batteries and critical minerals, to-date

~15%

Funding awarded or with investment underway



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Battery Materials Processing and Battery Manufacturing Grants Round II

(BIL 40207(b&c))

- ▶ Grant: ~\$3.5 billion, **competitive grant** funding for battery materials processing and manufacturing grants

When

- ▶ On or about October 2023. Notice of Intent Released 8/3

Who

- ▶ Battery Materials Processing, Battery Component, Cell Manufacturers, and Recyclers

Why

- ▶ To **strengthen domestic battery supply chain** by supporting the creation of new, retrofitted, and expanded domestic commercial facilities for battery materials, battery



Advanced Manufacturing and Recycling Grants (BIL 40209)

What

- ▶ Grant: \$750 million, **competitive grants** to build new or retrofit existing manufacturing and industrial facilities to produce or recycle advanced energy property.

When

- ▶ Round I - \$350 million opportunity (February 2023), Expected Selections Announcement November 2023
- ▶ Round II - Forthcoming 2024

Who

- ▶ **Small- and medium-sized manufacturers** in communities where coal mines or coal power plants have closed

Why

- ▶ This programs will support the establishment of a secure, resilient domestic energy supply chain and the **revitalization of economies in energy communities**



Qualifying Advanced Energy Project Credit (48C)

What

- Tax Credit: \$10 Billion, **investment tax** credit

When

- At least one additional round of applications will be considered following the completion of the round currently underway.

Who

- Clean energy manufacturers & recyclers; critical materials processors, refiners, & recyclers; industrial facilities planning GHG emissions reduction

Why

- 48C will play a critical role in creating high-quality jobs, reducing industrial emissions, and increasing domestic production of critical clean energy products and materials. 40% of the total \$10B will be allocated to projects in communities with closed coal plants and mines.



Industrial Assessment Center Implementation Grants

What

- ▶ \$400 million total, cap of \$300k per facility

When

- ▶ First round closed, future round coming soon

Who

- ▶ Implementation Grants are for Small and Medium Sized Manufacturers who have completed an energy assessment through the IAC program or other approved 3rd party entities.

Why

- ▶ The IAC Implementation program is designed to help defray the cost of installing energy efficiency and productivity solutions

