NATIONAL ENERGY TECHNOLOGY LABORATORY

SUMMARY OF BATTERY WORKFORCE INITIATIVE INDUSTRY ROUNDTABLE (DECEMBER 2022)

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Disclaimer

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LIST OF EXHIBITS

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PURPOSE OF THE BATTERY WORKFORCE INITIATIVE INDUSTRY ROUNDTABLES

The U.S. Department of Energy (DOE) hosted a virtual event on Friday, December 16, 2022, to bring together battery industry employers to (1) identify priority workforce skills needed to support the rapid growth of this industry and (2) understand current training development and planning underway in the industry. The goal of the roundtable meeting was to continue to catalogue common needs and concerns regarding workforce skills and availability across the industry to inform a collaborative approach to workforce development.

The virtual roundtable provided a special opportunity for companies to share valuable insight and industry knowledge to help establish standardized, sector-based workforce solutions that will result in an influx of qualified workers to support the rapid expansion and long-term success of the domestic battery industry.

The meeting agenda was as follows:

- Welcome/Opening Remarks
- Vision for the Battery Workforce Initiative[1]
- Industry Participant Self-Introductions
- Discussion on Current Status and Industry Views on Training
- Closing Remarks

During the discussion on current status and industry views on training, industry participants were presented with the following questions for consideration, but were welcome to discuss other topics.

Questions for Industry Participants
Where do you expect to recruit workers and what is your plan for retention?
Describe the top production and highly skilled occupations your company expects to hire.
How can an industry-guided skills project help your company meet its factory-level workforce development and training goals?
What type of job training partnerships has your company been involved in or is considering?

This report offers a summary of key findings and observations derived from discussion during the roundtable.

[1] Battery Workforce Initiative webpage (NETL website).

Battery Workforce Initiative Background

The United States is seeing enormous growth in the advanced battery industry. Collectively, industry has invested approximately $100 billion toward electrification, with approximately $40 billion of that for advanced batteries. Innovative technology for electric batteries is rapidly increasing, and the number of domestic battery manufacturing plants is increasing as well. DOE heard from industry that a systematic effort was needed to develop a capable workforce for this emerging economic sector. After consultation with business and labor, it was clear that the challenge to build a highly skilled clean energy workforce was larger than any one enterprise or organization. Government could play a role by mobilizing its resources to identify training needs that are common across multiple employers and communicate occupational skill requirements throughout the nation's workforce ecosystem.

While specific training will always be the responsibility of individual employers, there is an opportunity for strategic collaboration to benefit the entire industry. To identify skill requirements for key occupations, the Battery Workforce Initiative brings together advanced battery manufacturers, companies introducing new battery technology, the advocates of work-based learning and quality apprenticeship, and community-based organizations and unions trusted by thousands of workers interested in high-skill, quality jobs. It also draws upon the resources and expertise of DOE and the U.S. Department of Labor (DOL).

DOE is establishing a team of experts and stakeholders from the advanced battery industry to rapidly develop training and materials for key occupations (as defined by industry) in a manner that complements ongoing workforce development efforts. DOE is coordinating this initiative with DOL, American Federation of Labor and Congress of Industrial Organization's Working for America Institute (WAI), Li-Bridge alliance members, and other organizations. DOE is using its National Energy Technology Laboratory (NETL) to implement the initiative.

The purpose of this industry-driven, government-facilitated initiative is to speed up the development of high-quality training, starting with existing examples to develop consensus on core training needs, and then develop training for use by companies and local training providers.

The initiative will:

- Convene battery industry organizations to cooperate in the development of training by sharing non-proprietary requirements for high-demand occupations.
- Engage training experts from manufacturers, labor, education, government, and other organizations to participate in facilitated workshops that quickly distill common skills and abilities needed in each industry segment and accelerate decision making.
- Translate those needs into educational and on-the-job training requirements, forming the basis for training materials and guides.

1 KEY FINDINGS AND OBSERVATIONS

Following two initial virtual roundtable meetings in October 2022[2] for advanced battery industry leaders to share their knowledge, insights, and experience, the Battery Workforce Initiative sponsored an additional virtual roundtable on December 16, 2022, to continue discussion with industry stakeholders. This session was held in conjunction with the Battery Materials and Technology Coalition (BMTC).

While the Battery Workforce Initiative will engage other stakeholders, this effort was focused only on employers to determine the level of interest in engagement. This section of the report identifies and discusses notable themes from this session. Questions were answered by participants, which prompted more questions and robust discussions. Driven by the needs of industry, the initiative continues to collect and process information.

Exhibit 1-1. Battery Materials and Technology Coalition members and production activities

Company/Organization	Production Activities
Anovion Battery Materials	Synthetic graphite manufacturing.
Cirba Solutions	Collecting, sorting, and processing batteries.
EnerSys	Stored energy systems and technology provider for industrial applications.
Forge Nano	Surface engineering and precision nanocoating technology.
Hemlock Semiconductor	Provider of high-purity polysilicon products for the electronic and solar power industries.
Li-Cycle	Producer of black mass, which will be converted into battery-grade materials.
Nouveau Monde Graphite	Developer of a fully integrated source of carbon-neutral battery anode material.
NOVONIX	Producer of graphite anode material for lithium-ion batteries.
Piedmont Lithium	Developer of a spodumene ore deposit in the Carolina Tin Spodumene belt.
REC Silicon	Producer of advanced silicon materials, supplying high-purity polysilicon and silicon gases to the solar and electronics industries.
Sila Nanotechnologies	Next-generation battery materials company supplying anodes.
South32	Producer of commodities including bauxite, alumina, aluminum, copper, silver, lead, zinc, nickel, metallurgical coal, and manganese.
Standard Lithium	Developer of its south Arkansas lithium brine project.
Talon Metals	Explorer and developer of the Tamarack nickel-copper-platinum group elements project.
Westwater Resources	Explorer and developer of U.S.-based mineral resources focused on developing a source of high-purity battery graphite in Alabama.
Venn Strategies	Government affairs and public affairs firm.

[2] Summary of Battery Workforce Initiative Industry Roundtables (October 2022).

Battery Materials and Technology Coalition

BMTC "unites the battery materials industry behind a shared goal to scale a North American battery supply chain…BMTC members are committed to ensuring that governments and private industry across North America seize the opportunity to secure the supply chains that electrify our economy and power our way of life." Launched in 2020, BMTC is comprised of 15 member companies that "mine, extract, process, manufacture, and recycle battery materials, as well as develop cathode, anode, cell, pack, and battery technologies." BMTC is involved in conversations and initiatives with the U.S. Departments of Commerce, the State Department, and the Office of the U.S. Trade Representative (USTR) to build coordinated battery supply chains.[3]

Discussion on Current Status and Industry Views on Training

The value of partnerships with community colleges and the reliance on local community resources emerged as themes of the third industry roundtable sponsored by the Battery Workforce Initiative. BMTC representatives agreed to meet to discuss their priority needs and issues, which included:

- Strategies to recruit and retain qualified employees.
- Assisting workers in transition from the fossil fuel industry.
- Importance of safety measures within training.

Recruiting by BMTC companies focuses on a range of occupations, from machine maintenance to engineers to skilled trade workers. Companies endorsed the idea of government action to create regional networks to promote training for highly skilled jobs, which include warehouse operators, manufacturing technicians, and welders. They are aware of manufacturing facilities that are now closed (or may soon shut down) and wish to contribute to helping workers transition to new, meaningful jobs with a sense of purpose, which is critical to retaining workers. Providing benefits like stock options or giving employees equity in the company may help to motivate displaced workers to move into a new industry. It is important to rely upon the resources already available in local communities to the extent possible.

Machine operators and production technicians are critical occupational areas (in fact, half of their hiring needs are for machine operators, company representatives asserted). Company representatives expressed a preference for finding individuals with a basic knowledge and providing approximately one month of online training and orientation before starting on-the-job training on the first day. Continued on-the-job training then focuses on equipping new hires to operate the unique machinery and follow the highly automated production processes that characterize individual companies. Typically, companies provide training on multiple functions and varied equipment and technologies.

[3] https://batterymaterials.org/about/.

It is essential that workers obtain the required training to succeed in an environment with health and safety challenges, the representatives emphasized. Working in a battery material facility means dealing with advanced nanotechnologies. Workers need to be aware of the hazards of mining and processing extremely small particles of matter. It is important that personnel are properly trained in the use of chemicals, how to walk around them, and how to safely handle them. At least one company sponsors a "battery boot camp," which is a six-week training program for new employees conducted in cooperation with a local community college.

The local community orientation of BMTC companies was evident in their discussion of the importance of working with various levels of local school systems, technical schools, and post-secondary educational institutions. Companies are partnering with community colleges, building upon existing courses that shape career pathways for workers and providing the colleges with job descriptions. Representatives said it is necessary to start reaching students early in the school system to build awareness of job opportunities available in the clean energy sector. The fossil fuel industry has well-resourced programs and defined career pathways, while the career pathways in the advanced battery supply chain are unfamiliar. The industry must show that the battery supply chain is a viable career path.

It remains a challenge to fill the need for a greater number of engineers.[4] The companies conduct outreach to universities and colleges to offer students studying engineering the opportunity to obtain real-life training in new technologies related to manufacturing and material processing.

Closing Remarks

Government officials, subject matter experts, and initiative administrators expressed their appreciation to the industry representatives for their participation in the roundtables. Their openness to describing their advanced battery production experience, and their willingness to share their knowledge and resources, was a tangible expression of the strategic collaboration that the initiative seeks to inspire among varied manufacturers and supply chain organizations.

[4] U.S. House of Representatives. Electric Vehicle Battery Materials Production and Recycling: The Emerging Circular Economy, November 9, 2021. Available online at: https://housemanufacturingcaucus-reed.house.gov/events/117th-congress-eventsbriefings.

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