CENTER FOR CLIMATE AND ENERGY SOLUTIONS

REGIONAL ECONOMIC DEVELOPMENT

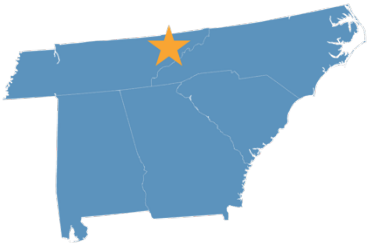
Securing the Supply Chain for Batteries and Critical Materials in the Southeast

Roundtable Summary and Takeaways

May 15, 2025

Note: This discussion summary represents statements made in the roundtable discussion and does not necessarily reflect C2ES positions or opinions, nor does it represent consensus among participants in the event.

Location:



Knoxville, TN

FRAMING THE DISCUSSION

The critical minerals and materials sector represents a strategically important industry with implications for American energy and defense technologies. This conversation aimed to highlight the opportunities and challenges of supporting this industry domestically in the context of a globally competitive market.

On May 15th 2025, C2ES hosted a roundtable event to kick off a regional effort to develop a roadmap to support the growth of the battery and critical material industry in the Southeast United States. Participants included representatives from companies across the value chain, academic institutions, community groups, and others. The day was designed to capture participants' priorities for their work related to the industry, level-set foundational facts and the state of play, and develop big ideas that will strengthen the region's competitive position in the battery and critical materials space. The following takeaways highlight the outcomes from this set of conversations.

OTHER RESOURCES

LINK FACT SHEET: BATTERY SUPPLY CHAIN 101

LINK FACT SHEET: GAPS IN THE SOUTHEAST U.S. BATTERY SUPPLY CHAIN

LINK FACT SHEET: ECONOMIC CLUSTERING 101

Introductory Discussions and Visioning Exercise

At the beginning of the day, participants were placed into groups to discuss their main interest in the topic of the battery and critical material supply chain and to envision what success in the domestic critical materials industry would look like in ten years. They were asked to develop newspaper-style headlines to indicate that efforts begun today were successful.

Headlines

- Southeast battery buckle outpaces the nation: a story of sustainability driven by investment, workforce, and collaboration.
- Against all odds: the Southeast battery belt buckle benefits from leading global circular economy.
- Southeast battery dominance brings down cost of resilient grid and transportation.
- From mines to mobility: Southeast secures America's battery independence.
- U.S. finally gets it right: More energy generated through clean sources than fossil fuels.
- White House announces energy storage foundries to support critical power needs across the Southeast.

Themes in Morning Breakouts

- Promoting energy security and grid resilience through the development and deployment of large-format batteries
- Shoring up domestic supply chains
- Enabling U.S. dominance in the global manufacturing sector
- Positioning the Southeast United States as a global leader in the battery space
- Facilitating interregional collaboration
- Promoting innovation to bring new technologies to the United States
- Creating a circular economy

Questions to Be Explored

Participants shared questions throughout the day; the following remain to be explored through upcoming convenings hosted by C2ES in the region:

- Will existing battery technologies be sufficient for the energy demand growth the region is experiencing? What energy storage technologies are needed beyond the dominant lithium chemistry?
- What does the upstream and midstream landscape look like in the region, and what challenges exist in connecting each of the component parts of the supply chain?
- Are there currently enough incentives to support battery recycling to help meet domestic mineral demand? What, if any, are the current technological barriers in this area?
- What can small- and medium-sized companies in the midstream value chain do to survive political uncertainty?

- Are there opportunities to co-locate critical material and battery component facilities with other complementary industry facilities to improve economic viability?
- What is the balance of training needs for new jobs in the battery space? How many of the new jobs will require unique skills, and how many require transferable skills from other industries?
- What incentives and policy support are local and state governments providing for the battery industry?
- How do mid-stream and downstream [producers] balance sourcing cheaper foreign materials with higher-priced but secure domestic supply?
- Is there a way to codify plans in permitting, or other strategies, to support meaningful community engagement and benefits for those hosting projects?
- Amid policy and market uncertainty, how can companies and policymakers prime the region to remain competitive over the next 4 years?
- How can American companies leverage government funding through the Department of Defense and Department of Energy to help commercialize technologies for specific and strategically critical end uses?

Full Group Presentations and Conversations

Through two full group sessions featuring presentations and discussion, key themes emerged surrounding the state of the industry in the Southeast and the United States; supply chain risks and challenges to scale; the necessity of policy to support the industry through its early phases; how to promote workforce and community development; and how to align the priorities of the organizations working across the region.

State of the Industry in the Southeast and United States

- Although the Southeast is late to join the battery space compared to other regions globally, there is a lot of regional traction for the industry. However, uncertainty remains for many companies, especially smaller businesses and startups.
- Many innovative companies and technologies are founded and developed in the United States, but often, the technology gets shipped to and licensed in other countries as part of the global technology transfer.
- Startups just getting off the ground in the Southeast need dedicated financing mechanisms. As government funding to support early technology development runs out or is rescinded, there needs to be new mechanisms to support American companies in the battery space as they scale to gain global market competitiveness.
- In the United States as a whole, downstream manufacturing has been a success – the growth of final assembly in batteries for stationary storage and electric vehicles is evident across the Southeast. The United States has the capacity to meet 75 percent of the domestic demand for batteries, but it produces virtually none of the necessary upstream components (cathode materials, precursors, and critical minerals).
- The United States also has minimal domestic mining to meet resource demand. Some resources do exist in the United States and can be extracted more safely and environmentally soundly than in other parts of the world. However, the U.S. market faces uncertainty about the scale and scope of domestic geological data, due in large part to a lack of funding for mineral exploration.

- Furthermore, the United States is nearly fully reliant on foreign refining capacity for critical materials (e.g., lithium and graphite), as an overwhelming majority of refining is happening in China. To compete globally, the United States needs to grow its refining capacity across the battery and critical material supply chain.
- It is much more challenging for the United States to compete globally on economic terms in the upstream and midstream segments of the battery supply chain. Economics are the hardest part of standing up the midstream battery facilities in the United States, where costs are significantly higher to construct factories, source equipment, produce materials, and pay talent to run production lines.
- In particular, the first American facilities to produce materials and components are more expensive than subsequent facilities because they must be purpose-built. At present, it costs three times more to build a cathode facility in the United States than to build one in Korea and five times more than to build one in China.

Supply Chain Risks and Challenges to Scale

- The COVID pandemic and the ensuing supply chain disruptions demonstrated that the "just-in-time" model of supply chains creates risks for the battery industry, which can only be profitable if its factories have high uptime. For instance, each minute an auto manufacturing plant sits idle, the company loses millions of dollars.
- The interconnected nature of supply chains means that any removal of downstream financial support will affect businesses all the way upstream, potentially causing them to lose their downstream customers and cease operations.
- The physical infrastructure in the Southeast is important to the success of the industry in the region – access to ports, rail, and highways is necessary to connect materials manufacturers to battery and automotive manufacturers.
- Utilities need more regulatory clarity to act faster to meet the anticipated electricity load growth and to implement ancillary resources for maximum grid flexibility. Energy generation is an area of focus for many, but transmission infrastructure also needs to be expanded, and utilities must make grid improvements to promote resiliency and modernize the electricity system.
- For new technologies in the battery and materials space, the most challenging stage of development is not creating a prototype, but ramping a technology to reach commercial scale due to the financial and technological barriers to mass producing advanced technologies.
- New battery companies in the United States face challenges in selling their products to automakers, who have strict product requirements. In other countries, companies could find potential offtake customers in adjacent industries with more niche markets like small-scale energy storage and defense applications to help them reach scale. But in the United States, the diversity and size of potential offtakers are insufficient for battery innovators to sell their product and raise revenue. These missing rungs of the ladder to commercialization mean that companies have to jump from pre-commercialization to large-scale manufacturing with little support in between.

The first-of-a-kind American facilities to produce battery materials and components are more expensive to construct than subsequent facilities since they must be purpose-built. At present, it costs three times more to build a cathode facility in the United States than to build one in Korea and five times more than to build one in China.

FACT SHEET: ACHIEVING ECONOMIES OF SCALE FOR NEW BATTERY SUPPLY CHAIN MANUFACTURING FACILITIES LINK

Policy is Necessary to Support the Industry Through Its Early Phases

- Federal and state policies have an important role to play in reducing the price differential that will exist between the production of materials in the United States and overseas.
- Federal policy support for the industry is a sign of how strategically important the industry is to American energy security.
- The industry needs a combination of supply- and demand-side policy support. Every transaction is both a sale and a purchase, and policy needs to reflect this. There will be a price differential in the cost of U.S. outputs, so policy will play an important role in ensuring American-made products can compete in the global market.
- Currently, the 45X tax credit supports building new manufacturing capacity in the United States, while the 30D tax credit requires companies to source materials from the United States for their products to be eligible to claim the credit. The industry needs both incentives in tandem. Without both, the United States will not be able to produce or sell batteries at a cost-competitive level to other producing countries.
- With the sourcing restrictions of the 30D tax credit, the $7,500 it offers is crucial to ameliorate the cost differences of materials that are currently only available at scale from China. Without this credit, auto manufacturers will lose money on producing electric vehicles and may pivot back to older combustion technology, which will keep the U.S. behind in the global advanced technology market.
- Without government incentives like the 45X and 30D tax credits to support investments in the United States, the country will lag behind global competitors. Customers are already asking producers to renegotiate the terms of their agreements because they sense that the market will shift away from U.S. investments without these incentives in place.
- Project developers and advocates must ensure that the people who will be impacted if projects are canceled know how the current political situation could impact these projects. They must be aware of what is at stake so that advocates can elevate their voices as part of effective messaging strategies to protect the projects.
- Project developers and advocates can educate communities and local policymakers about the importance of incentivizing the critical materials and battery industries, as well as the broader opportunities and risks these industries bring. This messaging is most helpful when it is tailored directly to local communities and done in cooperation with city and local government.

- Stakeholders and policymakers must appreciate the existing uses and future potential breadth of applications for batteries beyond electric vehicles. Promoting the widely varying use cases of batteries is important to increasing support for this industry.

The interconnected nature of battery supply chains means that shocks to downstream consumer businesses will affect businesses all the way from midstream manufacturing through upstream mining and refining. In particular, ending demand support mechanisms can lead to businesses throughout the supply chain losing their downstream customers and potentially cause them to cease operations or move abroad.

FACT SHEET: THE INTERCONNECTED ELECTRIC VEHICLE AND BATTERY SUPPLY CHAINS IN THE SOUTHEAST UNITED STATES LINK

Promoting Workforce and Community Development

- More universities and academic institutions need to establish training programs in their engineering departments to support every aspect of the coming battery and advanced mobility supply chain. Areas of workforce development for the industry include research and development, advanced manufacturing, electric vehicle engineers, and maintenance technicians.
- Given the projected growth of the battery industry in the Southeast region, gaps in available training and educational curriculum to serve the industry begin as early as K-12.
- States can invest in social infrastructure and wraparound services, such as childcare and housing, to ensure that the economic development is fully realized after large projects are secured.

Priorities of Organizations Operating Across the Southeast

Stakeholders in the discussion identified key focus areas and the goals of the many state and local governments, economic development organizations, companies, academic institutions, nonprofits, labor groups, and other organizations working in the Southeast battery industry ecosystem:

SITE DEVELOPMENT: Develop market-ready industrial sites to attract new facilities to the region and get companies running sooner.

WORKFORCE DEVELOPMENT: Proactively develop programs in collaboration with local communities to support the industry, while working with specialist organizations and other groups implementing workforce development and training programs and the community infrastructure necessary to attract and retain talent.

TECHNOLOGY DEVELOPMENT: Get new technologies to market faster. Support startups through venture funds and incubator programs, while building an ecosystem that will enable energy companies to develop, test, and deploy new grid-integrated technologies faster. For example, to support technology adoption and readiness, states like South Carolina are developing catalytic funding resources for testbeds to develop and integrate new technology, in addition to $15 million for R&D for entrepreneurs and startups to make sure they can reach the scale necessary to test their technology.

To foster cross-state collaboration, independent organizations outside of the fold of politics and government must lead in creating positive benefits that go beyond the boundaries of individual states and metropolitan areas.

Breakout Workshops

Following a full day of presentations and full group discussions, participants self-selected topical areas to engage in blue-sky thinking to develop big ideas in support of the battery and critical materials industry. These topics were designed to represent the crucial support systems to ensure a conducive social and economic environment in the Southeast for technology to develop, businesses to locate and grow, and communities to benefit from the battery industry. The topic areas and big ideas the groups developed were as follows:

Facility Construction

Big Idea: *A shared framework for community engagement tailored to the battery supply chain with protections for consumer utility rates.*

In the lead-up to this big idea, the group identified key principles that must be part of any policy or program to improve the facility construction process:

- Prioritize public health and minimize environmental impacts
- Balance the needs of the community with the needs of the project
- Solutions must be economically feasible
- There must be transparency among all parties
- Solutions must be integrated into the community infrastructure
- Provide an appropriate amount of time to engage the community authentically

Research and Development

Big Idea: *Create a battery materials research and development consortium that also includes circularity, industry, and goes across the value chain.*

In the lead-up to this big idea, the group identified key principles that must be part of any policy or program to facilitate research and development of new technologies in the region:

- There must be sustained funding for next-generation R&D to enhance the regional competitive advantage
- Public-private partnerships, as well as industrial and commercial collaboration, are essential
- Create cost efficiency in battery technology to increase global competitiveness
- Integrate circularity principles into the development of new technology

Workforce Development and Education

Big Idea: *Create a collaborative model where state and companies work together to create workforce conditions that are healthy and sustainable (and retain workers), meeting healthcare, childcare, housing, transportation needs that benefit real, local workers.*

In the lead-up to this big idea, the group identified key principles that must be part of any policy or program to develop the workforce for the battery industry in the region:

- Jobs in this industry need to provide family-sustaining wages and benefits
- Recognize and address historic and ongoing disparities across racial groups
- Address affordability caused in large part by the crisis of housing cost and availability
- Prioritize local hiring to ensure benefits accrue in the communities hosting projects
- When promoting workforce development initiatives, create and communicate a clear plan and hold companies and leaders accountable to ensure follow-through

Financing for New Industries and Facilities

Big Idea: *Create a regional innovation engine/ecosystem united in vision/voice that is industry-driven, government-backed, and collaboratively led. Build the program on a segmented innovation fund and shared foundry to commercialize technology.*

In the lead-up to this big idea, the group identified key principles that must be part of any policy or program to attract finance for new companies and facilities in the region:

- Ensure that companies receiving funding have the necessary support system to succeed
- Provide access to a workforce that has the knowledge to successfully run facilities at scale
- Develop shared infrastructure to allow scaled production of batteries with lower capital costs
- Have buy-in from the government to provide long-term stable policy support and catalytic capital for new technologies and projects
- Provide attractive shovel-ready industrial sites to attract new capital investments to locate in the region

Messaging and Awareness for the Battery Industry

Big Idea: *Create an educational campaign focused on myths and misconceptions of the battery /critical mineral industry, focused on state and federal policymakers.*

In the lead-up to this big idea, the group identified key principles that must be part of any program to develop messaging and awareness around the battery industry:

- Prioritize impactful outcomes, such as workforce development and economic growth
- Ensure any messaging helps to secure investments for the region
- Depoliticize the battery industry and technology using neutral messaging
- Lean into how batteries can increase energy security and American manufacturing
- Integrate long-term thinking and planning, and link data, especially across industries
- Build awareness around the non-energy benefits and security across different geographical areas