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# Next-Generation Battery Manufacturing Hub

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## Market Demand and Conditions

Global projections estimate that market demand for energy storage (transportation and stationary storage) is expected to grow by about 33% annually to reach 4,700 gigawatt hours (GWh) by 2030. This growth across the supply chain is estimated to be worth \$400 billion (industry revenue), creating enormous opportunities for workers, American technology providers, manufacturers up and down the supply chain, and the broader U.S. economy.<sup>1</sup> This is a rare instance where technology development and manufacturing are intimately intertwined with national and global policy needs, and it presents an important opportunity to catalyze a domestic supply chain with alignment among government agencies, academia, and industry.

## Federal Context

Decarbonization of the economy hinges on widespread deployment of advanced energy storage technologies. Through the Inflation Reduction Act (IRA) and the Bipartisan Infrastructure Law (BIL), the U.S. federal government is making once-in-a-generation investments aimed at advancing and developing next generation, domestically sourced, battery energy storage technologies at commercial scale. Cultivating domestic supply chains and reshoring battery manufacturing will empower industry to meet what's anticipated to be unprecedented demand for battery-based storage over the coming decade. Achieving these goals will support domestic workers, businesses, and the wider U.S. economy, while reducing reliance on international supply chains.

## California Context

The state of California — a global leader in decarbonization and clean energy — has an opportunity to leverage federal resources and invest in next generation storage technologies that support the state's policy goals. These goals include reaching a zero-carbon economy and operating on 100% renewable energy by 2045 and transitioning the medium- and heavy-duty transportation fleet market to zero emissions by 2040. With a whole-economy effort, California and its local jurisdictional partners are uniquely positioned to engage with utilities, the private sector, and academic research institutions to capture the benefits of reducing emissions while securing greater global market share for California-sourced materials and California-based companies.

<sup>1</sup> McKinsey & Company



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## KEY ASSETS

- ✓ Raw materials that can be extracted with minimal impact on the environment
- ✓ Academic and research facilities that are global leaders in technology innovation
- ✓ Dynamic private sector supported by venture capital and a startup culture
- ✓ Skilled workers in related industries who have transferrable skills
- ✓ Workforce training providers who know how to collaborate with industry
- ✓ One of the biggest markets for next-generation batteries
- ✓ Key institutions that already provide global leadership in clean energy transition

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## THE POTENTIAL

- ✓ California is the fifth largest economy on the planet, yet it is also true that there are many disadvantaged communities that have been under invested in.
- ✓ We need to continue to invest in high-road, blue collar, middle-income jobs that will support families and also generate revenue for local jurisdictions.
- ✓ There is a perception that California can't be competitive in the advanced manufacturing sector, but it has all the inputs for a next-generation manufacturing supply chain, copious amounts of critical mineral reserves, and has the right mix of labor assets to drive the next gen battery manufacturing economy.
- ✓ There is a perception that California's regions can manage projects on their own, but the state would benefit from state-wide coordination to deliver large, complex economic development projects that have market making and market moving potential.

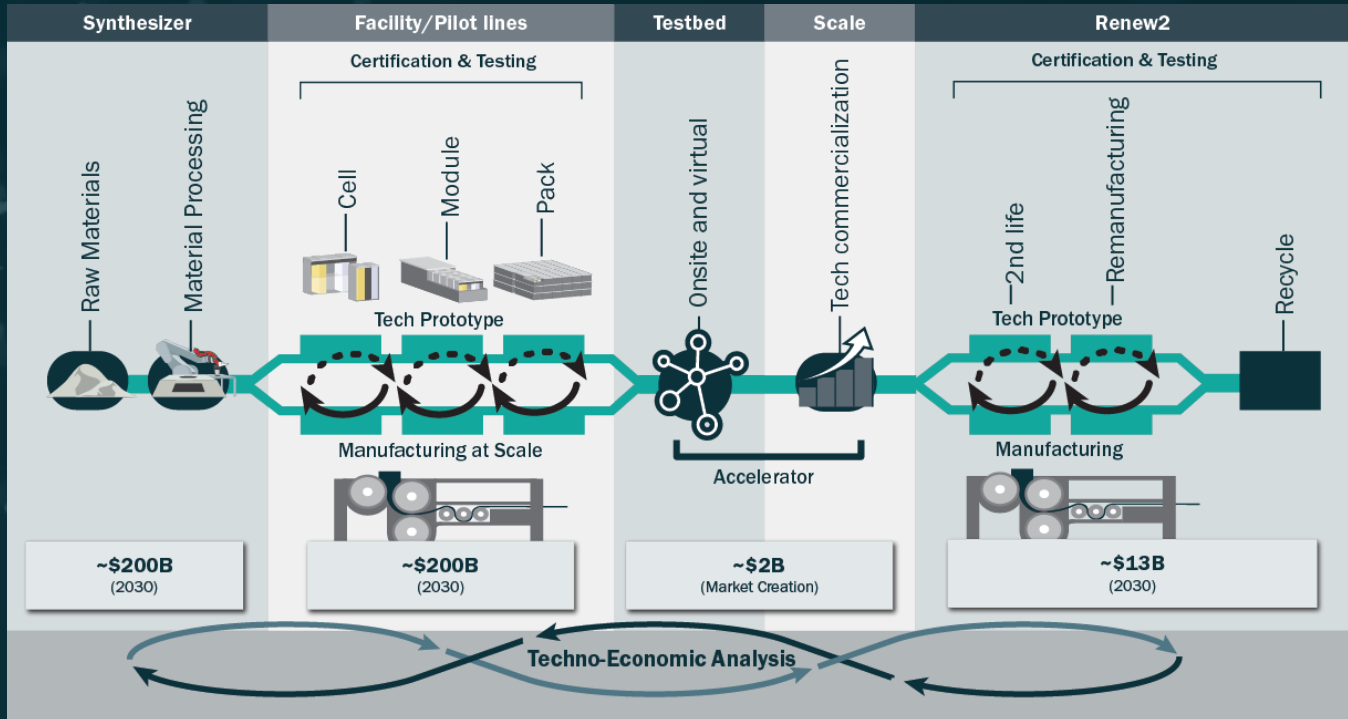


## Local Community Context

For decades, California communities that once thrived as manufacturing hubs have experienced disinvestment and decline. As production moved overseas, family-sustaining jobs for workers without a college degree, a stable tax base for local governments, private sector investment, and technical proficiency followed.

If harnessed effectively, the IRA and IJA has the potential to reverse these trends. Many communities, such as the Northern Waterfront in Contra Costa County, Sacramento County, the San Joaquin Valley, and the Inland Empire are committed to revitalizing their industrial assets into job centers and economic engines that accelerate the clean energy transition. They are also committed to investing in human capital and collaborating regionally to increase their chances of securing federal and state funding. These communities should be central to realizing federal and state goals for a climate-neutral future, energy independence, and national security and deserve a voice in defining how the energy transition will be implemented in their own neighborhood. Seeking feedback from community stakeholders is essential, and that is why more than 109 local jurisdictions have joined this effort.

# NEXT-GENERATION BATTERY MANUFACTURING HUB



## The Technology and Manufacturing Gap

Despite anticipated strong future market demand and increasing availability of government funding, initial industry outreach indicates that battery technology developers — particularly those developing advanced, next generation systems — are struggling through key mid- to late-stages of the development/commercialization process. These struggles come at a critical time, as foreign competitors are also in the process of investing aggressively in advanced battery technologies. This need occurs across the battery manufacturing value chain and is particularly pronounced in the processing and commercial development of existing and next-gen materials used in battery components (cathodes, anodes, electrolytes); fabrication and assembly of batteries (cells, modules, packs); and reuse and recycling of battery materials.

## The Nexus Between Research and Jobs

Co-location of research and manufacturing is especially important for batteries. Advances have centered around material processing, novel chemistries, and optimized battery composition. All of these activities rely on being able to iterate quickly.

Manufacturing along the battery value chain — material synthesis and fabrication of cells, packs, and modules — moved abroad due to lower costs of production. Once production moved, the associated R&D followed.

In the next generation of battery technologies, there is an existential need to catalyze the entire U.S. supply chain to ensure its resilience. Doing so can anchor a virtuous cycle domestically. Co-located research and industrial activity mutually reinforce each other to generate self-perpetuating economic growth.

## Shovel-Ready Solutions

The solution is a network of connected facilities from pilot-scale material synthesis and battery fabrication and to commercial-scale manufacturing of end-use batteries. Developing processes to extract and synthesize materials, as well as fabricate battery components at commercial scale, is essential to boost America's and California's global economic leadership. So is rapid testing and validation of materials and batteries. All of this development is strategically co-located with relevant R&D in order to take advantage of rapid iteration, which is needed to accelerate novel technologies to full-scale deployment that can meet market needs.

California has shovel-ready projects spread throughout the state that are ready to meet industry needs. The University of California, Riverside has been designated a "Tech Hub" by the federal government to research lithium-ion technology for next-generation electric vehicle batteries. The California Mobility Center in Sacramento has received CEQA approval to construct a 25-acre clean energy, power, and zero-emission innovation collaborative campus to study and test next-generation battery and vehicle technology. Contra Costa has a designated Green Empowerment Zone spanning the entire Northern Waterfront designed to transition their community away from oil and gas. These projects can connect in the San Joaquin Valley to provide high-road, large-scale manufacturing opportunities.

## The Coalition

More than 200 coalition partners from California and across the country have joined together — from government, local communities, higher education, nonprofits, the private sector, labor and the trades, academia, and regulatory agencies — to create a Next Generation Battery Technology Manufacturing Ecosystem. The coalition is committed to conceiving and achieving this development in ways that amplify the voices of diverse community leaders and ensure that equity and environmental justice are integral to the economic development and strong job outcomes envisioned.

## Join us and help empower the next generation of advanced battery technologies.

- ✓ Help us design a multiyear, multidecade cycle of equitable workforce development that meaningfully reinforces and strengthens our economy.
- ✓ Help us revitalize industrial brownfield sites and put them in service in ways that make sense not just for our economy, but also for our communities.
- ✓ Help us stabilize an aging grid while simultaneously electrifying nearly every facet of our economy.
- ✓ Help us unlock the full promise of clean, renewable energy to power not just our homes, our businesses, and our factories, but also our transportation.

## Contact Us today

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