



Electrification

▶ **North American Market Supplement**

# **Battery Manufacturing 2030: Collaborating at Warp Speed**

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## ▶ **Battery Manufacturing 2030: Collaborating at Warp Speed**



## UPDATE ON EXISTING STUDY: KEY INSIGHTS AND NEW MARKET DYNAMICS IN NAR

In early 2024, Porsche Consulting released its comprehensive study **Battery Manufacturing 2030: Collaborating at Warp Speed**. It tackles the question of what it will take for equipment manufacturers to ride the coming wave of breakneck growth and create a viable battery manufacturing cluster that can compete with Asia.

The current mobility and energy transition offers an unprecedented opportunity, as the battery cell market is quickly racing from \$ 22 billion in 2020 to \$ 605 billion in one decade and is expected to reach \$ 743 billion in 2035. By the end of 2035, roughly 230 battery plants are scheduled to be constructed worldwide. Equipment manufacturers stand to benefit enormously from this boom if they can outpace the established competition—there is growth potential of up to 50% CAGR and a total market worth up to \$ 330 billion into 2030.

The crucial question is whether clusters will arise outside Asia, which

currently holds 92% market share in battery manufacturing equipment and defines the industry standard. To grow from 8% to 20% market share, European and North American manufacturers, equipment suppliers, and public entities need to foster increased collaboration. This task is intensified by the sheer scale, speed, cost, and complexity of addressing technological and structural challenges.

As the energy transition unfolds at a fast clip, the market landscape continues to change. Since the study was published, the impact of the Inflation Reduction Act (IRA) has become more apparent, influencing corporate decisions on where to build new gigafactories and forcing many industry players to readjust their plans.

This update considers the effects of the IRA and offers new insights into market size and manufacturing capacity in North America.

# The IRA effect: an update on market size

Throughout 2022 and 2023, the IRA triggered localization of the battery value chain in North America and forced chemical companies, OEMs, and cell manufacturers to rethink their global footprint. Local subsidies such as those offered through the IRA continue to shift cell production capacity away from Europe, which will only in part be counterbalanced by the European Green Deal Industrial Plan and the Net-Zero Industry Act.

The IRA drove an initial spike in investments in U.S. battery cell manufacturing and is now similarly driving investment in battery components such as cathode active material, electrolyte, and pack materials. Between February 2022 and 2023, announced short-term capacity (targeting production by 2025) in the U.S. and Canada jumped by 50%, while projects in Europe were put on hold or rescinded altogether. As of June 2023, battery projects in North America approaching a total capacity of 500 GWh have been announced. By contrast, the IRA has had no palpable effect on projects in Asia.

The IRA's overall impact depends to a large extent not just on provisions written into the law, but also on how the Internal Revenue Service interprets those provisions. The law's tax benefits are significant for all players in the battery value chain, with the biggest impact on manufacturers of battery cells and modules in the form of advanced manufacturing production credits and on vehicle OEMs in the form of EV tax credits.

Timing is crucial since IRA tax credits will phase out starting in 2030, zeroing out in 2033. This timeline is prompting companies to make use of tax credits as soon as possible. The total amount of tax credits for battery cell factories depends on ramp-up time and factory size. Such credits can be either used or sold to the government or third parties, with payments resulting from such trades being excluded from a company's taxable income.

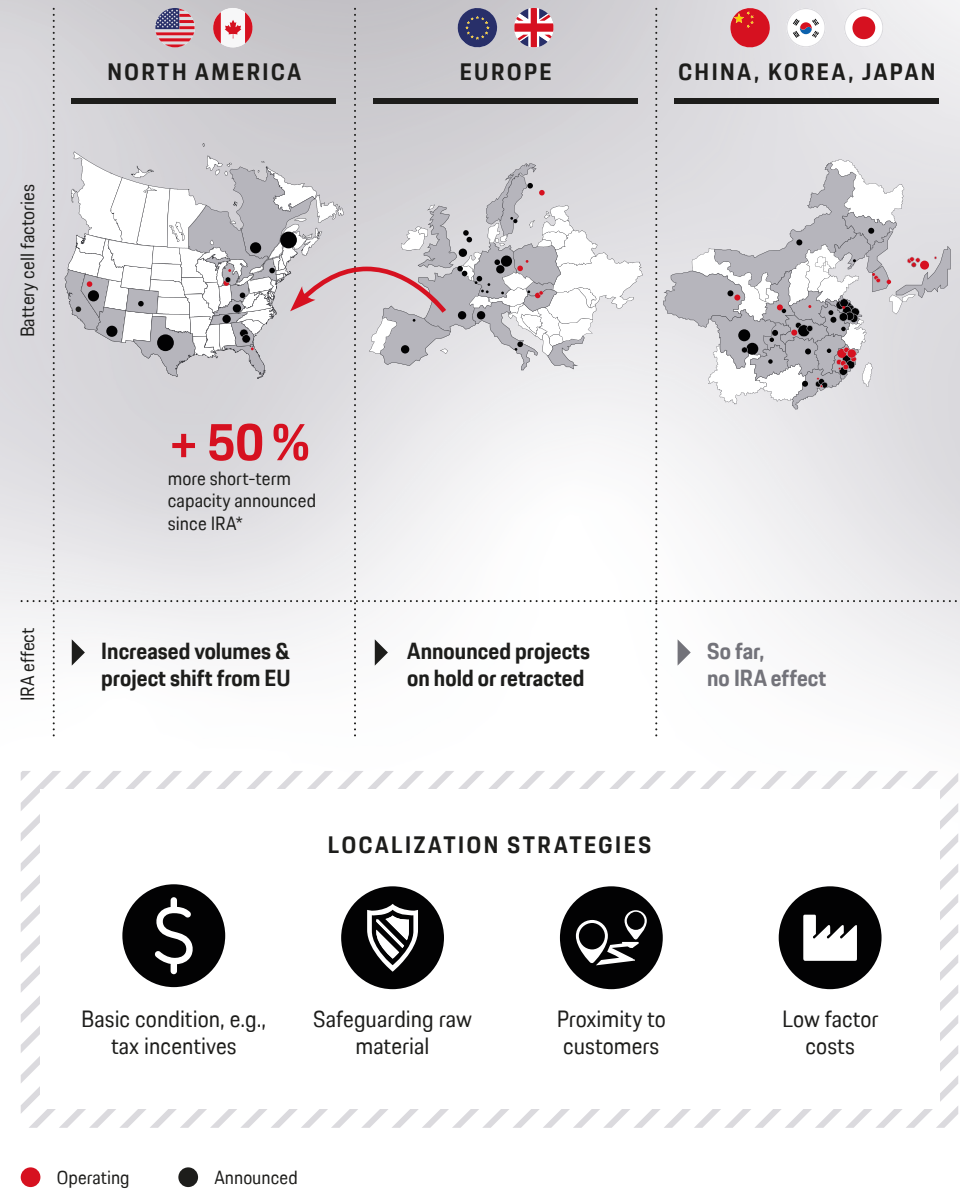


Fig. 1. The IRA shifted cell production capacity towards NAR.

\* Based on comparison of capacity announcements with SOP until 2025 per region  
IRA: Inflation Reduction Act | NAR: North American Region

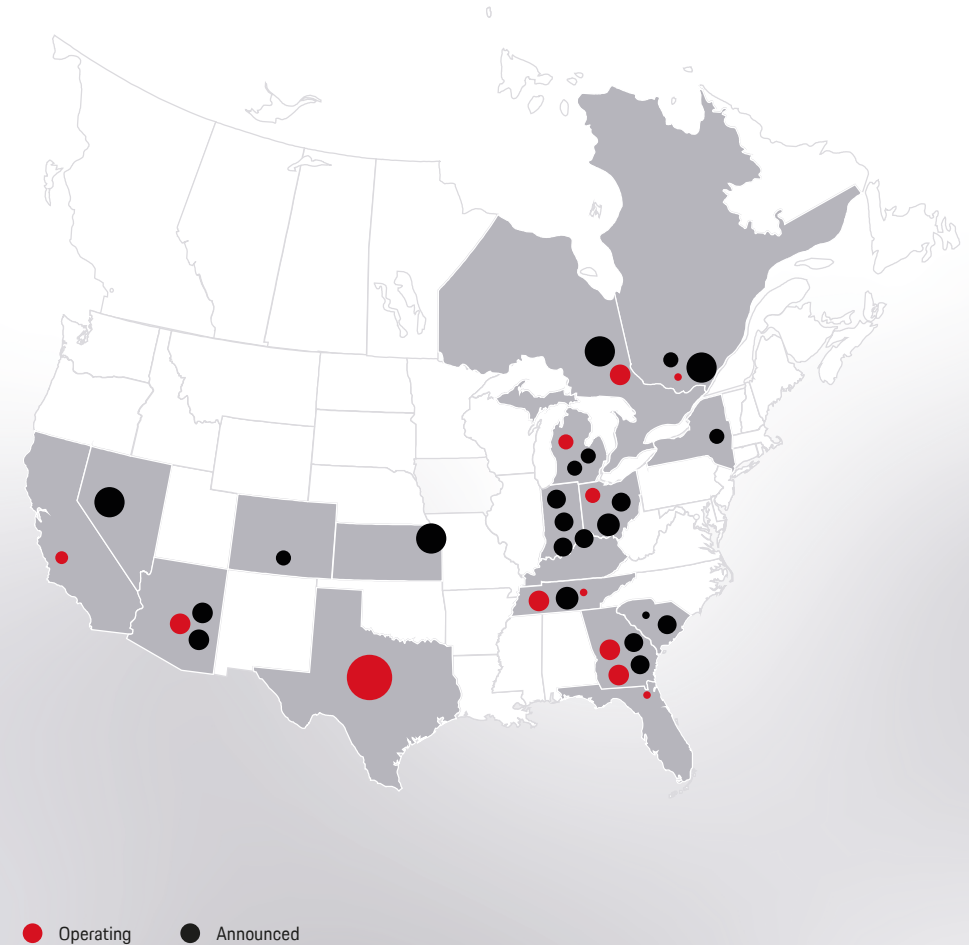
## Update on planned gigafactories and installed capacity:

Most North American battery investment is going to states and provinces in the so-called Battery Belt which stretches from Quebec, Canada, down to Alabama. This region has several key advantages for battery makers, starting with the cost of electricity, which can be as low as \$0.05 per kWh for industrial use in Quebec or North Carolina. Proximity to existing automotive plants translates into shorter logistics distances and availability of a well-trained workforce. Additionally, these states and provinces are willing to provide substantial tax and land incentives. Finally, since IRA regulations force a preference for Canadian raw materials, the Battery Belt benefits by its close proximity to mines in Quebec and Ontario.

In North America, battery cell capacity will grow from currently 207 GWh/a to 465 GWh/a by 2025, then more than triple to 1,589 GWh/a in 2030. Across the Atlantic in Europe, battery cell capacity will more than triple from 59 GWh/a in 2024 to 201 GWh/a in 2025 and then grow sixfold to reach 1,335 GWh/a in 2030. While the European market is expected to top out at 1,797 GWh/a in 2035, the North American market will reach its high mark at 1,719 GWh/a by 2034.



NORTH AMERICA



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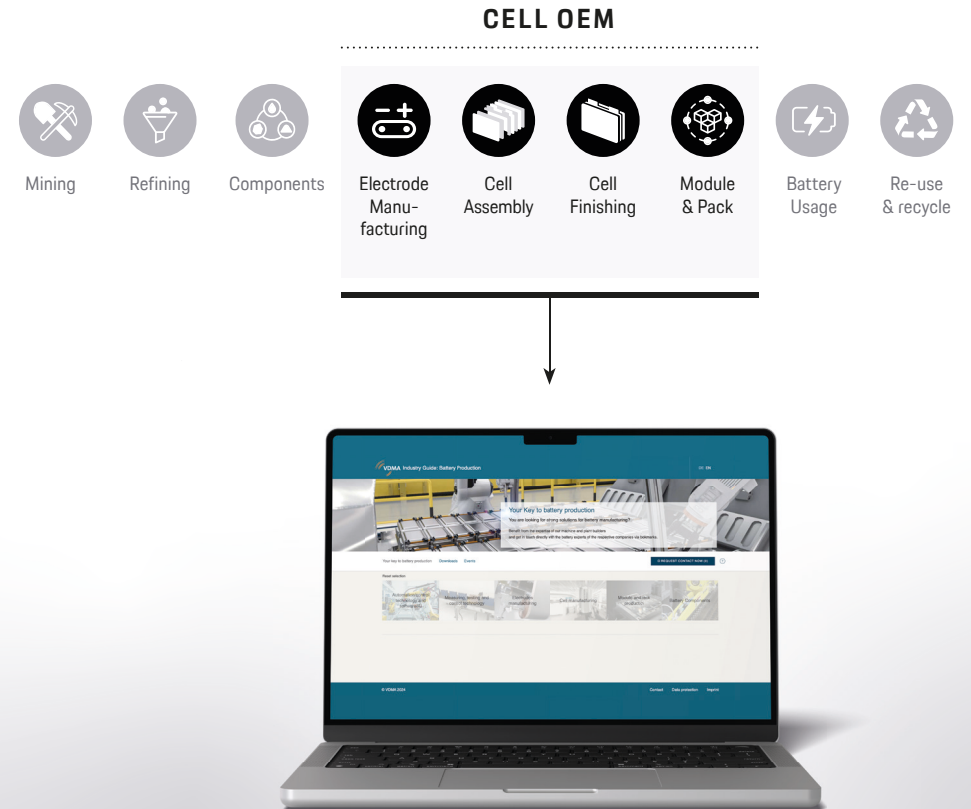
Fig. 2. Operating and announced cell production locations in NAR.

# Battery machinery manufacturers in North America: an overview

Battery machinery manufacturers in North America share a few traits. They are scarce and typically serve a relatively small part of the overall process, such as production automation, coating, slitting, and drying or mixing. Unlike Asian battery equipment manufacturers, which are mostly end-to-end providers, there are no full-scale manufacturers in the market. Homegrown North American providers are even rarer, as some of the above equipment manufacturers are subsidiaries of European companies. Overall, the sector could benefit from development such as capital investments incentivized under Section 48C of the IRA, yet the cost of domestic equipment manufacturing and speed to market must be weighed against a fairly small pool of 48C incentives totaling just \$ 10 billion.

Venture investment into battery-oriented capital equipment manufacturers is sparse at the moment, though there is some funding going to firms that promise to optimize certain process steps like dry coating. The good news is that traditional capital equipment makers can pivot to making battery manufacturing equipment. During the last few years, many manufacturers have leveraged their existing know-how to acquire competencies for the battery sector.


We see a sound business case for North American capital equipment manufacturers to pivot to the battery market—lead time, quality, and serviceability are all important purchasing criteria for cell manufacturers, and domestic producers can hold a substantial advantage on these fronts. If North American manufacturers cooperate with European providers that are ready, chances for success will increase significantly.





**Find relevant companies who provide equipment for Battery Manufacturing:**

**Online Industry Guide**  
<https://vdma-industryguide.com/batteryproduction>



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Fig. 3. Equipment providers for battery cell manufacturing and module & pack assembly.

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