Circulor

US Inflation Reduction Act

Building transparent EV supply chains

US Inflation Reduction Act

How it impacts the EV and Battery Industries

The Key Points

On Tuesday, August 16, 2022, President Joe Biden signed the Inflation Reduction Act, America's most historic legislative effort in clean energy and climate.

The bill invests more than $360 billion in clean energy and climate provisions over the next decade. These provisions include tax breaks to accelerate the nation's transition to renewable energy and cash incentives for the purchase of electric vehicles (EVs). With the enactment of the Inflation Reduction Act, the U.S. is now on a path to reduce its emissions by approximately 40% from 2005 levels by 2030.

The inclusion—and now passage—of these clean energy incentives has positively surprised most people in the renewable, electric vehicle, and battery industries. Less than a month ago, they seemed dead in the water as Senator Joe Manchin, a key swing vote in the Senate, said he would only back a much narrower spending bill that included prescription drugs and health care.

Senator Manchin came back to the table willing to include clean energy provisions, even the $7,500 federal tax credit for purchasing an electric vehicle. However, this go-around, the credit comes with very important stipulations that automakers must meet in sourcing and producing their EV batteries in order to pass that $7,500 in federal tax credit savings on to their customers.

Manchin has repeated for months that he would not extend the electric vehicle tax credit as it has been and—as he has put it—"continue incentivizing battery production abroad." Committed to this premise, Senator Manchin and the Senate Democrats included new requirements for proving the provenance and production of electric vehicle batteries and their materials in the U.S. and nations that have a free trade agreement with the U.S.

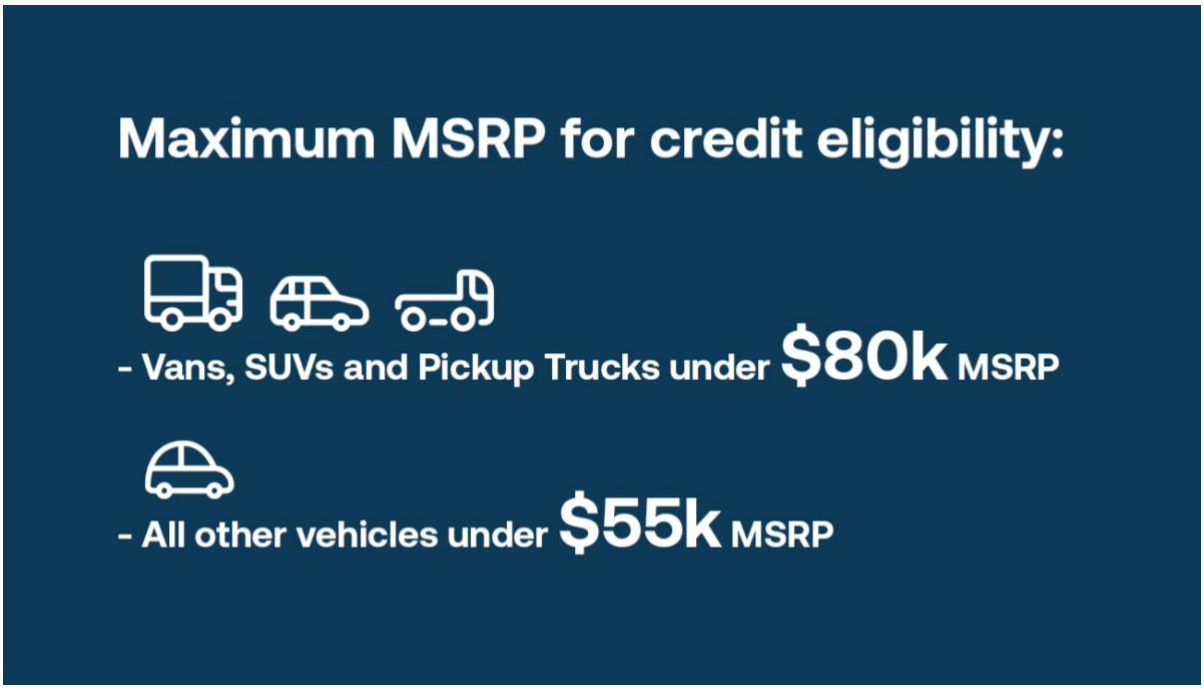
The requirements include the following details. In essence, and in similarity with the European Battery Regulation, it makes the automaker responsible for the entire value chain of its batteries. It also creates an opportunity in which the details of the sourcing and production of an electric vehicle battery will now be communicated to the buyer and the end customer, giving the customer and automaker a financial incentive to purchase clean vehicles that are increasingly sourced from allied countries and produced in North America.

Key take homes from the Inflation Reduction Act

Given the requirements of the new EV tax credit, automakers will now be required to show proof of the provenance and production journey of the materials in their EV battery to qualify a vehicle with the federal government for a clean vehicle tax credit. Circulor's technology can be helpful to the industry in this transition. Circulor's solution tracks the physical material from mine, through to production, to a customer's vehicle and can equip original equipment manufacturers (OEMs) with the information they need to demonstrate fulfillment of the EV tax credit requirements.

Below are the specifics of the electric vehicle (EV) tax credit that are included in the Inflation Reduction Act, as well as additional details on the other key provisions driving the US clean energy transition forward.

Vehicles and EV buyers that qualify



- Excludes any vehicle after 2024 with critical minerals that were extracted, processed, or recycled in a "foreign entity of concern," per IIJA definition.
- Excludes vehicles after 2023 if any components in the battery were manufactured or assembled by a "foreign entity of concern," per IIJA definition.

Battery mineral and component requirements

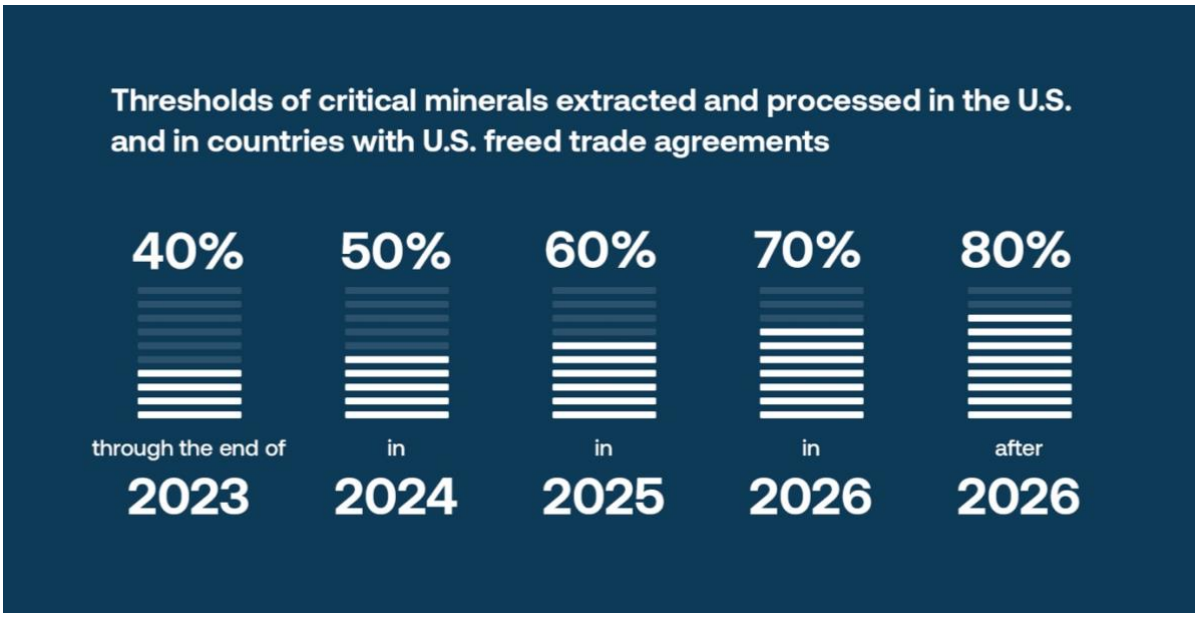
Starting in 2024, clean vehicles will be required over the following years to increase the percentage of minerals in their batteries that are extracted and processed in the U.S., in a country the U.S. has a free trade agreement with, or recycled in North America.

By 2026, 80% of battery materials must meet these content requirements. A similar content requirement scale-up applies to battery components, of which 100% of battery components must be manufactured and assembled in North America by 2028 for a vehicle to be eligible for the clean vehicle tax credit.

How automakers and customers fulfil the requirements of the $7,500 tax credit

Part 1

$3,750 of the $7,500 tax credit is achieved by meeting a requirement that a certain threshold of critical minerals in the EV battery be extracted or processed in the U.S., countries with which the U.S. has a free trade agreement, or have been recycled in North America. The battery minerals also must meet certain purity requirements to qualify.

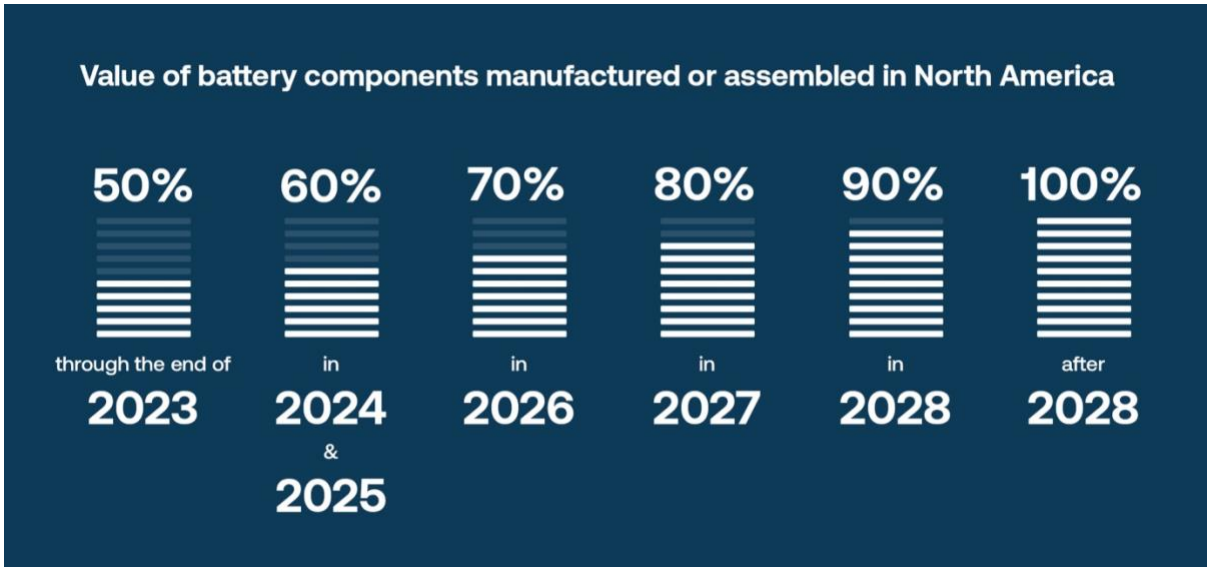


Qualifying countries:

Australia
Bahrain
Canada
Chile
Colombia
Costa Rica
Dominican Republic
El Salvador
Guatemala
Honduras
Israel
Jordan
Korea
Mexico
Morocco
Nicaragua
Oman
Panama
Peru
Singapore

Part 2

The remaining $3,750 of the $7,500 is achieved if the percentage of the value of the battery's components that were manufactured or assembled in North America exceeds thresholds of:



For Commercial Electric Vehicles

The Inflation Reduction Act enables businesses to receive tax credits for commercial EVs. The value of the credit is equal to the lesser 30% or the incremental cost with a comparable internal combustion engine vehicle. There is a cap of $7,500 for vehicles lighter than 14,000 pounds (Class 1-3) and a cap of $40,000 for vehicles heavier than 14,000 pounds.

Electric Vehicle Manufacturing

The package also includes $2 billion in grants for converting auto manufacturing facilities to EV manufacturing and $20 billion in loans for clean vehicle manufacturing capabilities.

Extension of the Advanced Energy Project Credit

In this bill, the existing 48C tax credit for advanced energy projects in the tax code was expanded and amended to include new technologies and types of facilities. The 48C tax credit is a 30% investment tax credit intended to help stand up clean energy facilities in the US. Not only was the credit eligibility expanded, as detailed below, but the funding cap was also raised dramatically from $2.3 billion in total awards to $10 billion.

Eligible projects for the credit are expanded in the legislation from “manufacturing facilities for production” to “industrial or manufacturing facilities for production or recycling.” The language also expands the definition of eligible facilities from “an energy storage system for use with electric or hybrid electric motor vehicles” to include “energy storage systems and components.” These changes ensure that component manufacturing and recycling facilities are now eligible under the 48C tax credit.

Advanced Manufacturing Production Credit

The Advanced Manufacturing Production Tax Credit, designated as 45X, applies to the following: solar energy components, wind energy components, inverters, battery components, and critical minerals.

According to the bill, a qualifying battery component includes electrode active materials, battery cells, and battery modules. “Electrode active material” means cathode materials, anode materials, anode foils, and electrochemically active materials, including solvents, additives, and electrolyte salts. “Battery cell” means an electrochemical cell comprised of at least 1 positive and 1 negative electrode that has an energy density of at least 100 watt-hours per liter, and can store at least 20 watt-hours of energy. A “battery module” means a module with 2 or more battery cells or with an aggregate capacity of at least 7 kilowatt-hours (1 kilowatt-hour for modules for hydrogen fuel cell vehicles) if comprised of no battery cells. Finally, applicable critical minerals include all minerals on the USGS critical minerals list, each with minimum purity requirements. The applicable battery minerals are:

Cobalt which is 1) converted to cobalt sulphate, or 2) purified to a minimum purity of 99.6% cobalt by mass

Graphite which is purified to a minimum purity of 99.9% graphitic carbon by mass
Lithium which is 1) converted to lithium carbonate or lithium hydroxide or 2) purified to a minimum purity of 99.9% lithium by mass

Manganese which is 1) converted to manganese sulphate, or 2) purified to a minimum purity of 99.7% manganese by mass

Nickel which is 1) converted to nickel sulphate, or 2) purified to a minimum purity of 99% nickel by mass

Other provisions driving the U.S. clean energy economy through the Inflation Reduction Act

Renewable Energy Tax Credits

The bill includes 10-year extensions of existing credits for wind and solar, as well as standalone energy storage, rooftop solar, and heat pumps. It also includes renewable energy tax incentives for next-generation technologies such as clean hydrogen and advanced nuclear.

Production Tax Credit

The package also includes a $60 billion, 5-year production tax credit for companies in clean energy manufacturing, including solar panels, wind turbines, batteries, and critical minerals processing.

Defense Production Act

The package provides $500 million for DPA, nearly doubling the amount of money the program has received this year following the Ukraine Supplemental's allocation of $600 million to the Title III program. This funding is expected to target heat pump and critical mineral production, among other initiatives.

Loan Program

The Department of Energy's Loan Program Office is authorized to spend up to $250 billion by September 2026, creating a massive opportunity for clean energy project loans in the next four years.

Environmental Justice

The package would invest $60 billion in projects dubbed environmental justice initiatives, including $3 billion in grants for environmental health initiatives, $3 billion for improved access to clean transportation, and $3 billion for improved air quality near ports.

Green Bank

The legislative agreement also includes a program resembling a national green bank, a topic that has been discussed by environmental advocates for years. The $27 billion clean energy technology accelerator program would support deployment of emission-reduction technologies, primarily in disadvantaged communities.

Emission Reductions

The bill includes fines for excessive methane pollution, with fines beginning in 2025 and being ramped up over following years. To help companies reduce methane emissions, the package also includes $1.5 billion for EPA to provide technical assistance on greenhouse gas reporting and deploying methane-reduction equipment.