



The Inflation Reduction Act Explained Part 1: What it means for electric vehicles (EVs) and battery materials

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What it means for electric vehicles (EVs) and battery materials

On Tuesday 16 August U.S. President Biden signed the Inflation Reduction Act (“IRA”). The IRA paves the way for a broad stimulus package centered around three subjects: (i) the stimulation of clean energy initiatives that secure America’s energy supply, (ii) increasing the affordability of certain prescription drugs by allowing the Department of Health to negotiate the prices of these drugs directly with drug manufacturers; and (iii) paying for the first two subjects by introducing significant changes to the tax code which – according to government estimates – should enable the U.S. government to reduce the deficit on the U.S. current account over time.

The bulk of the funding authorized by the IRA is earmarked to encourage American leadership in clean energy tech, energy efficiency and energy independence. Almost US\$369 billion out of the US\$ 437 billion of total investments proposed is related to energy and climate change, as can be seen from Table 1 below. Two articles will therefore specifically focus on the possible impact of the proposed policy changes on the global energy landscape. This first article will share observations on the impact that the IRA can have on an American EV and battery materials supply chain. A second article will look into the impact of the IRA on other clean energy technology solutions.

TOTAL REVENUE RAISED	\$737 billion
<i>15% Corporate Minimum Tax</i>	<i>222 billion*</i>
<i>Prescription Drug Pricing Reform</i>	<i>265 billion***</i>
<i>IRS Tax Enforcement</i>	<i>124 billion**</i>
<i>1% Stock Buybacks Fee</i>	<i>74 billion*</i>
<i>Loss Limitation extension</i>	<i>52 billion*</i>
TOTAL INVESTMENTS	\$437 billion
<i>Energy Security and Climate Change</i>	<i>369 billion*</i>
<i>Affordable Care Act Extension</i>	<i>64 billion**</i>
<i>Western Drought Resiliency</i>	<i>4 billion***</i>
TOTAL DEFICIT REDUCTION	\$300+ billion

* = Joint Committee on Taxation estimate

** = Congressional Budget Office estimate

*** = Senate estimate, awaiting final CBO score

Table 1 Topline estimates of investments made and revenues raised under the IRA. Source: Summary of the Inflation Reduction Act of 2022, www.democrats.senate.gov

The IRA: tax law made sexy

Who ever said that tax law is boring? The IRA relies heavily on changes to the U.S. tax code to advance the deployment of clean energy technologies. The new law will restore, modify and expand several tax credits and other incentives, while also creating new credits such as tax credits that incentivize more domestic content in the production of clean energy facilities over time. If a taxpayer certifies that it uses steel, iron or *manufactured products*

from the United States in the construction of an eligible (clean energy) facility, the taxpayer can apply for a so-called *Domestic Content Bonus*. A product may be considered 'manufactured in the U.S.' if at least a certain percentage of total project costs are attributable to products or components that are mined, produced or manufactured in the United States. The IRA sets clear guidelines on these percentages, also referred to as *Adjusted Percentages*. In general, the Adjusted Percentages will increase over time, encouraging project owners to buy more locally produced material and components. For example, for offshore wind facilities the IRA sets the adjusted percentage at 20% for projects that begin construction before 2025. This means that at least 20% of a wind farm's cost needs to be attributable to products or components that are mined, produced or manufactured in the U.S. The adjusted percentage increases over time to reach 55% for projects that commence construction in 2027.

Another unique feature of the IRA is that it permits taxpayers, in particular situations, to elect a direct pay option in lieu of a tax credit, or the option to monetize the credits by transferring them to another tax paying entity. For example, it is possible for people buying an EV that is eligible for tax credits, to transfer the actual tax credit to the EV automaker selling the EV. The EV automaker will then take care of all the (tax) paper work after closing the sale whilst allowing the consumer to already benefit, upfront, from a discounted sales price.

So, what does the IRA state specifically on EVs and battery materials?

The IRA aims to spur the development of an American EV and battery materials supply chain in five ways.

1: Amendments to the tax credits for alternative refueling property

The IRA will extend and modify the tax credit available for alternative refueling property such as electric vehicle charging. The big deviation from current regulation and tax credits is that the IRA offers a tax credit of up to 30% of the capital expenditures related to placement of a single unit rather than the entire property. The credit cannot however exceed US\$100,000 per single refueling property. The IRA allows for the tax credit to be transferrable amongst taxpayers.

2: Amendments to the tax credits for the purchase of Clean Vehicles

The IRA will extend and modify the existing credit with a *Clean Vehicle Credit*, which will be worth up to US\$7,500.¹The US\$7,500 is an existing tax credit but has been prolonged, renamed and reshaped under the IRA. The credit is a capped total amount, is split in two parts and will be subject to a couple of conditions:

- a) First of all, EVs that exceed certain price caps will not be eligible for Clean Vehicle Credits. These price caps depend on the class type of the vehicle:

¹ *Clean Vehicles* are not only battery EVs. Fuel cell powered EVs are also eligible for tax credits provided they fulfill the same conditions.

Type of qualified EV	Cap
Van	US\$80,000
Sport Utility Vehicle	US\$80,000
Pickup Truck	US\$80,000
Other Vehicles	\$55,000

b) Secondly, in order to be qualified as *Clean Vehicles*, EVs need to meet the *Domestic Content* requirements under the IRA, meaning that

- A specified portion of the materials contained in the battery must be extracted, processed or recycled in the United States or a country which the United States has a free trade agreement with.² This requirement starts at 40% and increases to 80% after 2026. Meeting this requirement makes a taxpayer eligible for a US\$3,750 tax credit (i.e., half of the total amount of US\$7,500 available per EV);

and

- A specified portion of the components must be manufactured or assembled in North America. This requirement starts at 50% and increases to 100% after 2028. Fulfilling this requirement makes the taxpayer eligible for another US\$3,750 tax credit (i.e., the other half of the total amount of US\$7,500 tax credit available for taxpayers).

Very important in this regard is the IRA provision that as of 31 December 2024, EVs containing critical materials or battery components that are sourced from a “*foreign entity of concern*” will not be eligible for the Clean Vehicle Credit.³

c) Finally, the credit is only available for taxpayers with a gross income of up to US\$300,000 if married, US\$225,000 for heads of household and US\$150,000 in case of single taxpayers. The high limits illustrate that the Biden Administration prefers to include as much taxpayers as possible to encourage local production of EVs.

The credit will apply to vehicles placed in service as of 1 January 2023 and runs through 2032.

3: New tax credits for used Clean Vehicles and Clean Commercial Vehicles

The IRA has also created two entirely new tax credits.

a) A tax credit for qualified commercial clean vehicles such as buses and trucks. The credit will be equal to 15% of its purchase price. The maximum credit will be US\$7,500 for vehicles with a gross weight rating of 14,000 pounds and US\$40,000 for all others.

The credit will apply to any vehicles placed in service as of 1 January 2023, through 2032.

b) A tax credit for previously owned clean vehicles that are at least two (2) years old and are purchased before 31 December 2032. The tax credit will be equal to the lesser of US\$4,000 or 30% of the sale price. The tax credit for previously owned clean vehicles will also be subject to certain conditions, i.e.

- The credit will be limited to taxpayers earning less than US\$150,000 for those married filing jointly, US\$112,500 for heads of household and US\$75,000 for a single taxpayer.
- The sale price cannot exceed US\$25,000.

² The U.S. has bilateral free trade agreements with 20 countries. For the complete list, please follow the link: <https://ustr.gov/trade-agreements/free-trade-agreements>

³ For example, an entity owned or controlled by the government of China or Russia. For a complete definition of ‘country of concern’ please see: *Section 40207(a)(5) of the Infrastructure Investment and Jobs Act (42 U.S.C. 18741(a)(5))*.

4: The Advanced Energy Production Credit

The IRA will create a new production tax credit through 2032 for the production of components related to clean energy such as solar photovoltaic (PV) cells, wind energy components and battery cells. The components relevant to the lithium-ion battery supply chain have been highlighted below:

Component	Credit (in US\$)
Thin Film PV cell	\$0.04/watt
Crystalline PV cell	\$0.04/watt
PV wafer	\$12/sqm
Solar grade polysilicon	\$3/kg
Polymeric backsheet	\$0.4/sqm
Solar module	\$0.07/watt
Wind energy component	<ul style="list-style-type: none"> ○ Offshore wind vessel – 10% of vessel sales price ○ All others (eg. blades) - \$0.02/watt
Torque tube	\$0.87/kg
Structural fastener	\$2.28/kg
Inverter	Applicable amount (eg. \$0.25 for central inverter / watt)
Electrode active material	10% of production cost
Battery cell	\$35/kWh
Battery module	\$10 (\$45 for cell to pack) / kWh
Applicable critical mineral	10% cost of production

These credits are transferable amongs tax payers. The credits will generally be subject to phase out beginning in 2029.

5: Direct investments in programs managed by government agencies

In addition to tax incentives, the IRA will make direct investments in programs across government agencies government agencies such as the U.S. Department of Energy (“DoE”), the EPA, the U.S. Department of Interior (“DoI”) to accelerate the development of technology in clean energy technology and infrastructure. These direct investments come in addition to existing government funding, providing more resources to these government agencies. Specifically for battery materials direct investments include measure like:

- Providing US\$1 billion in funding to replace heavy-duty vehicles with zero-emission vehicles. This includes replacing heavy-duty vehicles for school transportation. The funds will be dispersed to state and other local governments. The funds may also be used to purchase, install, operate and maintain the infrastructure needed to charge, fuel or maintain zero-emission vehicles or to train the workforce needed for maintenance.
- Providing US\$23.5 million in funding to the United States Geological Survey (“USGS”) to accelerate to collect, disseminate and use 3D elevation data to more effectively map America’s mineral resources.

Some initial observations (conclusion of Part 1)

The IRA aims to create a solid and sustainable supply chain for EV manufacturing and battery materials for the U.S.. The Biden Administration seems to have opted for a more pragmatic approach than its European counterpart(s) by acknowledging that the U.S. cannot have an entire supply chain for battery materials and EV (components) on its own soil. Rather, it has paved the way to use its partnership with likeminded nations to secure a steady stream of materials needed to accelerate the energy transition in the U.S.. Providing U.S. tax payers tax credits to buy EVs assembled in *North America* (as opposed to manufactured only in the U.S.) is an example of how the Biden Administration leaves the door open to optimally use the free trade agreements it has with its neighbors Canada and Mexico. And it applies the same approach to the sourcing of raw materials and battery components. The IRA paves the way for a true mass adaption of EVs by providing tax credits to EVs that are affordable to the lower and middle class. The tax credit on used EVs is a good example of this. Especially noteworthy is the credit for commercial vehicles (i.e. commercial trucks). At a maximum of US\$40,000 (for vehicles weighing 14,000 pounds or more), this tax credit could potentially be a more impactful contribution to battling climate change than the tax credit for other clean vehicles, which is limited to US\$7,500. The transportation sector is one of the biggest emitters of greenhouse gases (“GHGs”). The appetite of commercial transportation companies to replace their conventional, internal combustion engine, trucks with clean trucks such as the Tesla Semi depends on three things: (i) the range of the vehicles in their fleet (i.e., a short range means drivers lose time because they need to charge too often), (ii) battery safety and reliability and (iii) the total cost of ownership. Assuming that U.S. EV producers succeed in improving the range and safety of their vehicles, the tax credit of up to US\$40,000 can make a difference in total cost of ownership for commercial fleet owners. Let’s use the Tesla Semi as an example. Since this vehicle weighs around 18,000 pounds it could be eligible for the maximum amount of tax credit if essential material and component are indeed sourced from the U.S., effectively lowering the purchase price of a Tesla Semi from US\$150,000 to US\$110,000. A change to electric and hydrogen fueled vehicles could have a significant impact on the Administration’s decarbonization goals for 2030 as medium and heavy-duty vehicles produce about 23% of all U.S. transportation sector emissions.

Is the IRA then the perfect tool to help the U.S. become the leader in clean energy tech?

That remains to be seen. First, it is disappointing to see how little funding the IRA has earmarked to support the USGS to collect 3D elevation data. Mapping America’s mineral resources is essential to understanding what the U.S. is able to produce itself in the long term. It is true that the IRA leaves room to secure material, including raw materials for batteries, from foreign partners in the short to mid term but that still leaves the U.S. exposed to development and production success abroad. Secondly, there is a real chance that the very strict conditions on domestic content and sourcing of materials from friendly jurisdictions has a contrary effect on EV sales. At least in the short term. The requirement to decrease material input from *countries of concern* is strategically smart but will put American EV producers in a tough spot if they wish to benefit from the IRA’s tax credits by 2024, given their exposure to Chinese battery manufacturers and Russian class 1 nickel.⁴ The big quest for these producers will be to shift their supply chain away from China, as much as they can, by 2024. If American EV producers fail to do this quickly, their EVs will not be eligible for the EV sales tax credits which in turn may detrimentally impact the demand for EVs in the U.S.. Whilst China and Russia have been identified as countries of concern, the IRA fails to offer American EV automakers viable alternatives to source materials from in the short term. Indonesia, a major nickel producer, is for instance not on the list of eligible suppliers. Neither is Argentina, a major lithium producer. It is not yet clear as to why the Biden Administration did not include Indonesia and Argentina as an eligible supplier given the relatively good relationship these countries. Finally, regulating a shift away from a low-cost producer like China under the banner of an Inflation Reduction Act is misleading as, at least in the short-to-midterm, prices for EV batteries and their components will most likely increase given the higher cost of production in the U.S. and other western jurisdictions.

⁴ Class 1 nickel is essential for the production of lithium ion batteries using nickel based chemistries. Russia produces around 13% of the world’s class 1 nickel.

The Biden Administration seems to take a *catch all* approach in which it tries to regain American leadership in the fight against climate change by setting a target to reduce GHGs with 40% by 2030 whilst ensuring the creation of new jobs through investments in clean energy (tech) projects and onshoring domestic manufacturing. But the U.S. is still a hostile environment for launching new legislation to combat climate change. All Republican senators voted against the IRA and there is a big chance that the Republicans will regain majority control in Congress after the mid-term elections in November this year. In addition, the U.S. Supreme Court is becoming increasingly more comfortable in taking politically motivated decisions which earlier this year culminated in a very narrow interpretation of the tasks and responsibilities of government agencies such as the Environmental Protection Agency (“EPA”). And with a former Republican President keen to run for President again in 2024, time will tell whether the IRA is here to stay and will have a chance to become historic. For now, let’s praise the fact that the U.S. is willing to re-take leadership in clean energy technology and the fight against climate change.

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