



# **Comments to Treasury on the IRA's Clean Vehicle Provisions**

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On behalf of Resources for the Future (RFF), we are pleased to share the accompanying comments to the Treasury on the clean vehicles provisions within the Inflation Reduction Act, in response to Notice 2022-46, and comments on related tax credits for suppliers of critical minerals and electric vehicle batteries in response to Notice 2022-47.

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In the comments below, we first detail why the vehicle tax credit may not entirely benefit the car buyer, as critical mineral suppliers, battery manufacturers, vehicle manufacturers and dealers may be able to capture some, if not all, of the economic incidence of the tax credit. We also discuss how the tax credits for eligible suppliers of batteries and critical minerals going into them may lead mainly to increased profits for those suppliers for an uncertain but potentially significant amount of time. We next describe information that can be gathered by the agencies to allow for ex-post analyses of the tax credits. Analyzing the economic incidence of the tax credits, and the ability for the credits to reduce the differences in electric vehicle ownership across income and race/ethnicity, will be key to ensuring that the Administration's equity goals as defined by the Justice40 Initiative are met. Furthermore, by conducting these analyses, government agencies will be able to achieve key learnings that can help in structuring future rounds of clean vehicle incentives to achieve equitable, efficient, and effective investments.

The comments below were written by two RFF researchers- Dr. Michael Toman (Senior Fellow), and Dr. Beia Spiller (Fellow and Transportation Program Director). Dr. Toman provided the comments on sections 13401 and 13502, while Dr. Spiller provided the comments responding to questions 6(c) and 11(c). Both authors' comments are their own and submitted as independent



authors. Please note that these comments are a revised version of the original set of comments submitted on November 4, 2022 in order to provide hyperlinks that had been inadvertently omitted in the original submission. The comments are otherwise identical.

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# Comments to Treasury on the IRA's Clean Vehicle Provisions

*In the comments below, we detail key information that should be collected by the relevant government agencies in order to allow for appropriate ex-post analysis of the clean vehicle tax credits on outcomes such as battery costs and vehicle prices; impacts of tax credits for critical mineral and battery suppliers; economic incidence of the tax credits; and distributional impacts of the subsidies across income and race/ethnicity.*

## Comments on §13401 and §13502

The economic incidence of the clean vehicle tax credit (that is, who effectively benefits from the tax credit) may differ significantly from the statutory incidence (i.e., the person for whom the tax credit was targeted, which in this case, is the car buyer). The economic incidence of the tax credit depends upon supply and demand conditions along the supply chain, starting with the batteries and critical minerals inputs for their manufacture.

Because eligibility for the vehicle tax credit applies specific sourcing requirements on critical minerals and battery manufacturing, this creates a supply chain issue for two reasons. First, only a small percentage of critical minerals currently available in the world market are sourced from the US or countries with whom the US has free trade agreements (e.g., the US and Canada only refine 3 percent of the global supply of lithium). Second, most battery manufacturing is conducted outside of North America, with China leading the world in cathode, anode and lithium-ion battery production. Due to these supply chain constraints, a (potentially significant) portion of the tax credit's economic incidence will go to critical mineral and battery suppliers who can access the US market, rather than the car buyer. The reason is that as the vehicle tax credit expands demand for new EVs, and thus for the batteries that power them, vehicle manufacturers will bid up the prices of batteries meeting the sourcing requirements, and battery manufacturers in turn will bid up the prices of critical minerals needed to produce the batteries. Because critical mineral sources and battery sources meeting the sourcing requirements can only satisfy a small share of the current market demand and those supplies will take time to expand (especially new production capacities for the minerals that require permitting as well as major capacity investments), most of the value of the vehicle tax credit will be retained by those suppliers.

This value accruing to critical mineral producers and battery manufacturers meeting the sourcing requirements eventually will encourage market entry and help mitigate the shifting of the vehicle tax credits' economic incidence to the battery manufacturers and mineral suppliers who can access the US market. However, it will take some time to expand the production capacities of qualifying battery manufacturers, and likely even more time to expand the production capacities of qualifying mineral suppliers (given, for example, permitting requirements under existing law). Because of those lags and the small share of qualifying sources in the current market, the tax credits for battery and critical mineral producers mostly will increase the profits of those meeting the sourcing



requirements for an uncertain but potentially substantial length of time (especially for the critical mineral inputs), In the meantime, they will do little to affect the economic incidence of the vehicle tax credits.

Over the medium to longer term, battery designs will evolve to require less of the costlier critical minerals, including minerals currently sourced from entities of concern (or sources deemed problematic for other reasons like environmental or human rights abuses). This dynamic in battery design is already occurring. As demand for costlier minerals grows more slowly with adjustments in battery designs, the mineral producer tax credits for those minerals will be increasingly unnecessary.

To be able to retrospectively evaluate the resulting incidence of the tax credits across various market actors (e.g., battery manufacturers, vehicle manufacturers, and car buyers) the IRS should collect information on battery designs, specifically the critical minerals content of batteries sold, from battery suppliers seeking tax credits. The IRS also could obtain average battery sales price information from US battery manufacturers. Properly aggregated and anonymized, that information would show general trends in the cost impacts, and in turn, tax credit incidence, of the mineral and battery source constraints.

It also would be useful for the Treasury Department to gather information (from, for example, the US Geological Survey) on production and reserves of the critical minerals listed in the IRA that are supplied by countries that are not entities of concern, but that are outside current US free-trade agreements (for example, Turkey and Indonesia have large reserves of graphite and nickel respectively). This will provide an estimate of potential additions to critical minerals supplies from expansion of trade agreements, thereby allowing a greater portion of the tax credit's economic incidence to be received by the car buyer.

## Responses to questions:

6(c): What information should be included in the report furnished by the seller of the vehicle to the taxpayer and the Secretary under § 30D(d)(1)(H), including the election to transfer the credit under § 30D(g)?

11(c) If an election to transfer the credit is made by the taxpayer, what issues should be considered regarding the transfer of the § 30D credit?

Below I include a response to these two questions jointly.

EV purchases have in the past been characterized by being largely dominated by wealthier individuals (Muehlegger and Rapson 2018, Linn 2022). This is due to a variety of factors, including budget and credit constraints, limited access to private charging stations, limited tax liabilities with which to claim tax credits, and lack of information, among others. Moreover, EVs are more likely to be purchased by white and Asian American households than Black and Hispanic households; with this outcome likely due to similar reasons (see for example this [2022 survey](#)).

EV subsidies can help reduce these trends by reducing purchase costs. Furthermore, because the new tax credits provided by the IRA have income limits, limits on the vehicle's purchase price, and ability to transfer the tax credit to the dealer, this may help further reduce the unequal distribution



of EV ownership by race/ethnicity and income. Ensuring that disadvantaged households are able to benefit from EV ownership will help reduce some of the inequities associated with existing transportation policies.

However, as described in the previous section, given the critical mineral and battery constraints, it is unclear how much of the tax credit's economic incidence will benefit the car buyer. If the full economic incidence is captured by the critical mineral suppliers and battery manufacturers, this means that the tax credit will not be able to reduce current unequal ownership outcomes, because the resulting vehicle purchase price will not have decreased by \$7,000 as intended by the IRA.

Even if critical mineral suppliers and battery manufacturers do not capture the full economic incidence of the tax credit, there is still the potential for the manufacturers and/or the dealers to capture some of that economic incidence. Importantly, Linn (2022) finds that the economic incidence of vehicle tax credits differs across income levels; given that higher income consumers are less price sensitive (and purchase more expensive vehicles), manufacturers are able to capture a higher amount of the economic incidence of the tax credit for more expensive vehicles.

Given the Administration's Justice40 initiative and equity goals, it will therefore be of utmost importance for the government to track to what extent the tax subsidies are able to reduce these differences in ownership across income and race/ethnicity. This will require the government to estimate the economic incidence of the tax across income and race/ethnicity and track EV purchases by low- and middle-income households, BIPOC households, and all households living in disadvantaged communities.

To be able to conduct these analyses, specific data will need to be collected, including the following information:

- Vehicle VIN
- Purchase price
- MSRP
- Location of customer (could be at zip code level for anonymity purposes)
- Name, Location of dealer
- Demographics of customer (e.g., income, race)
- Battery type and costs (as described in the previous section)

## References

Muehlegger, E., & Rapson, D. (2018). [Understanding the distributional impacts of vehicle policy: who buys new and used alternative vehicles?](https://escholarship.org/uc/item/11111111) (escholarship.org)

Linn, J. (2022). Balancing Equity and Effectiveness for Electric Vehicle Subsidies. Resources for the Future Working Paper, 22-7.

