



Comments to EPA on the IRA's Transportation Programs

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US Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20004

On behalf of Resources for the Future (RFF), I am pleased to share the accompanying comments to the Environmental Protection Agency on the Request for Information related to the Inflation Reduction Act's Transportation Programs.

RFF is an independent, nonprofit research institution in Washington, DC. Its mission is to improve environmental, energy, and natural resource decisions through impartial economic research and policy engagement. RFF is committed to being the most widely trusted source of research insights and policy solutions leading to a healthy environment and a thriving economy.

While RFF researchers are encouraged to offer their expertise to inform policy decisions, the views expressed here are those of the individual authors and may differ from those of other RFF experts, its officers, or its directors. RFF does not take positions on specific policy proposals.

These comments first address the clean heavy-duty vehicles program and measures that could be beneficial to low-income and disadvantaged communities. They also discuss how grants to reduce air pollution at ports by electrifying port-serving vehicles can create environmental benefits by ensuring a smooth transition with low private and social costs. This would entail subsidizing charging equipment, facilitating the acquisition and subsidization of managed charging software, involving electric utilities as active participants in the process, and encouraging investment in co-located storage and solar alongside trucks and charging stations.

If you have any questions or would like additional information, please contact Beia Spiller, fellow and director of RFF's Transportation Program, at bspiller@rff.org.

Sincerely,

A handwritten signature in black ink, appearing to read "B Spiller", is written over a light gray rectangular background.

Dr. Beia Spiller

Comments to EPA on the IRA's Transportation Programs

Below we include a discussion of both the clean heavy-duty vehicles and the diesel emissions reductions at ports. These discussions focus on how to leverage the programs to ensure more equitable outcomes, reduced emissions in disadvantaged communities, and a smooth and low-cost transition to electric trucks and buses.

1. Comments on Clean Heavy-Duty Vehicles [60101]

1.1. On how to ensure the benefits of the program reach low-income and disadvantaged communities

Electric heavy-duty vehicles have a much higher purchase cost than their diesel counterparts. Though some analyses have found that certain vehicle use cases may provide large enough fueling savings (as electricity is cheaper than diesel) so that the truck owner can recoup the initial investment over the vehicle's lifetime, these findings are highly sensitive to the input assumptions (see, for example, [Ledna et al 2022](#)). Exactly why these vehicles are so much more expensive than their diesel counterparts is still an open question, yet factors such as limited demand, new and changing battery technologies, and limited competition across manufacturers likely contribute to this cost gap. To that end, providing subsidies to the truck purchaser can help spur demand, thereby reducing one of the challenges leading to higher vehicle costs. Exactly why these vehicles are so much more expensive than their diesel counterparts is still an open question, yet factors such as limited demand, new and changing battery technologies, and limited competition across manufacturers likely contribute to this cost gap. To that end, providing subsidies to the truck purchaser can help spur demand, thereby reducing one of the challenges leading to higher vehicle costs.

Furthermore, these diesel vehicles heavily contribute to air pollution and poor air quality, particularly in low- and moderate-income (LMI) and disadvantaged communities (DACs). Increasing the purchases of electric vehicles can therefore help pave the way towards improved air quality in communities that have been most affected by diesel pollution in the past.

Among heavy-duty vehicles, school buses are a very important sector to electrify, as children are particularly exposed to diesel pollution when riding a bus. Similarly, garbage trucks spend significant time idling in front of homes and exposing residents to diesel pollution. Prioritizing vehicles such as these, as well as other city fleets that might spend significant time driving through LMI and DACs, when awarding or prioritizing funding across different applicants could improve the effectiveness of targeted pollution mitigation in these communities.

Leveraging local air quality monitoring and analytical tools to make more granular identifications of LMI and DACs can help the EPA develop more targeted vehicle electrification efforts. Under the current approach, for example, all of New York City is labeled as disadvantaged, though this is clearly not the case in many of the

counties and neighborhoods. To that end, cities themselves can contribute to more specific and accurate identifications of communities that could stand to benefit the most from vehicle electrification.

It's also important to point out that, in addition to environmental benefits from vehicle electrification, ownership of the vehicles is another way in which LMI and DACs can benefit from government programs dedicated to increasing EV adoption. To that end, a meaningful education campaign and targeted outreach by the EPA could promote equity in the grant process by ensuring that small fleets and fleets owned by BIPOC or non-English speaking individuals are not only aware of the grants, but able to navigate the potential bureaucracy around applying for the grants. Community organizations would be a key partner in this effort, as they will be able to identify these fleets and help engage in this type of outreach. They could also contribute to effective program design by identifying additional challenges that these fleets could face in applying and securing the grant money.

1.2. On how to measure success and ensure accountability

Though highly important from an equity perspective, air quality and health improvements should not be the only benefit identified to calculate the impact on LMI and DACs from government investments in clean energy. Indeed, the benefits to these communities can be measured in other ways—for example, the extent to which small fleets and BIPOC-owned fleets are able to take advantage of the grants.

Taking steps to measure how these investments affected pollution at the local level can increase the EPA's accountability. To accurately identify the impact of the program on pollution, air quality measurements should be gathered not just before and after the program in the areas where the vehicles were adopted, but in “control” locations where the grants were not adopted. Measuring pollution changes at the local level would allow the agency to accurately identify the impact of the investments on air pollution outcomes separately from other factors, thereby leading to improved accuracy in success measurement and accountability.

2. Comments on Grants to Reduce Air Pollution at Ports [60102]

2.1. On the importance of electrifying medium- and heavy-duty vehicles at ports

Ports contribute significantly to air pollution in neighboring communities, which tend to have greater concentrations of LMI and DACs. Diesel trucks that serve ports are a particular problem for these neighboring communities, as many of these vehicles do not only stay within the port but travel to and from the port as well, passing through communities and increasing pollution in surrounding areas. Thus, electrifying these vehicles will help the EPA accelerate improvements in health and wellbeing for disadvantaged communities near ports, a key objective of the Justice40 initiative.

2.2. On the importance of subsidizing charging stations

It is important to note that while subsidizing the purchase of the vehicle will provide significant incentives for truck owners to electrify, it is not the only factor that affects these decisions. Specifically, the availability of charging equipment is an essential input to vehicle electrification, yet the costs of these stations can be quite high. Furthermore, there is a “split incentive” here associated with who owns and installs the charging equipment and who would use it. Frequently, trucks that work at the port are not owned by the port authority, who would be the entity in charge of making the charging station investment at the port. Though the port authority could install a charging station and charge the truck owners for electricity, low throughput and high demand charges have the potential to make this investment a costly endeavor with long payback periods (see, for example, [Muratori et al 2019](#)). Furthermore, to be able to host a large number of electric trucks, the authority would have to invest in multiple charging stations, leading to very high fixed upfront costs that may be cost prohibitive given their available funds. And, unless there is enough charging station capacity to allow for the trucks to charge, truck owners will be less willing to give up their diesel vehicle. This means that ports face a simultaneous challenge (a chicken-and-egg problem paired with split incentives) that has the likelihood to result in under-investment in electric trucks relative to the social optimum. By providing subsidies for the port authority to make these investments in charging stations, these two simultaneous problems are minimized and can facilitate the path towards vehicle electrification.

2.3. On how to ensure a smooth transition that reduces social and private costs

Though electrification of medium- and heavy-duty vehicles can have major air quality benefits for surrounding communities, the charging of these vehicles can place significant strain on the local distribution grid, given the massive size of the batteries and the demands they require. This raises several issues that call for a range of policy actions.

The electric distribution grid at the port may not have sufficient capacity to allow for the levels of electricity demand that large trucks could pull from the grid. For example, a [recent National Grid report](#) found that electrifying a truck stop could require up to almost 50MW of power; these demand levels are even greater than a large industrial plant’s demand ([National Grid 2022](#)). In these cases, local capacity upgrades would be required to enable ports to have the capacity to charge these vehicles from the electric grid. Port Authorities can reduce this need by making their own investments in distributed solar and storage, yet even with these investments, local capacity upgrades may be required. Unfortunately, these upgrades can take up to two years to finalize, whereas ordering new EV trucks can be done in the span of a few months. Thus, there is a disconnect in terms of timing between when the port will have sufficient capacity to electrify and the speed at which truck owners want to electrify (or submit a grant to the EPA for funding these vehicles).

Many truck owners and Port Authorities may be unaware of the capacity system upgrades needed to facilitate electrification and could invest in the vehicles prematurely, causing them to have an unutilized asset. Two actions can help address this. First, if the local electric utility is brought into the discussion as early as possible, it can be an active participant in the planning process, helping streamline the interconnection, provide technical assistance, and ensure adequate capacity investments are made. Second, understanding and addressing timing discrepancy when awarding the grants can help align timelines and lead to more efficient investments. Specifically, given the short number of years which the EPA has to award the grants, deadline extensions could prevent those submitting applications for grants near the end of the allowed period

from being forced to purchase EVs that will sit at the port unused until the electric utility has had time to make the upgrades.

Requiring ports who receive funding for charging stations and electric vehicles to also acquire managed charging software can have two important benefits. On the one hand, managed charging results in lower peak demands, which can alleviate the impact that truck/bus charging can have on the electric system. Simultaneously, reducing peak demands can have an important benefit to the charging station owner: given the prevalence of demand charges in local electric utility rates, managing peak demands will help stabilize and reduce electric bills. Without managed charging software, the port manager will be required to take optimizing actions on their own, which can be very complicated and challenging. Furthermore, in the case of a split ownership situation (whereby the truck owner is not the Port Authority), the authority will have very limited control over when the demand occurs; managed charging software can thus help reduce the costs to the charging station owner. Indeed, without the software, the likelihood of high bills will increase, since small mistakes can result in high monthly demand charges.

Many port managers (and particularly, truck owners who own trucks that drive into ports but are not housed at ports) may have little to no experience with complex electricity tariffs that are imposed on high demand users. Without this experience, new EV owners may face unwieldy and unmanageable bills. Thus, if the EPA subsidized the purchase of the software, which can cost thousands of dollars, for independent truck owners who charge at home (and apply for grants to cover home charging stations), this could help make their electric bills more manageable and improve their return on investment. Importantly, without the subsidy, it is very possible that lower-income truck owners will not make the investment, leading to their having higher bills, and higher total cost of ownership. Essentially, by subsidizing the purchase of the software for individual truck owners seeking to charge at home (particularly for those who are lower-income or live in BIPOC neighborhoods), equity outcomes associated with electric truck ownership can be improved.

Finally, policies that promote investment in co-located solar and storage simultaneously with the investment in charging stations can effectively minimize the local and environmental costs associated with the transition to electric trucks. Yet these actions are not always taken, and incomplete information on the charging station owner's side (specifically, lack of information related to the decision to adopt, subsidies and grants available for making the investment, the benefits of adopting, and how to adopt) may be a significant factor in reducing the frequency of adoption. To that end, when ports apply for the grants, the EPA could provide information on the economic and environmental benefits of the investment, as well as financial resources available for making the investment (such as those within the IRA) and facilitate connection with solar suppliers. Such actions increase awareness and thus could increase the likelihood that port managers will pursue such investments. These investments would reduce the port's charging impact on the local distribution grid, as they are able to leverage the battery to keep their peak demands down. These investments can also help keep the capacity expansion costs down by reducing the port's overall reliance upon the grid for energy. The environmental benefits increase even further when these vehicles are charged with electricity from clean solar electricity sources local to the port, rather than relying upon the grid for energy (which, in many locations across the country, is generated by coal and natural gas and therefore reduces the net environmental benefits of electrifying).

3. References

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