Pathways to Rapid Reductions in Virginia's Transportation Emissions: Clean Car Standards

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Overview

- Virginia Context
 - Motor Vehicles
 - Vehicle Pollution
- Impacts of Adopting Clean Car Standard:
 - Pollution, Health, and Mortality
 - Economic Benefits and Costs

Background: On-Road Vehicles in Virginia

| | Electric Vehicles (EVs) | Light-Duty Vehicles (LDVs) | Medium- & Heavy- Duty Vehicles (MDHDs) |
|---|-------------------------------|----------------------------------|--|
| 2018 Total Vehicle Fleet (Baseline Estimate) | 6,375 | 7.5 Million | 177,000 |
| 2020-2040 Cumulative New Purchases (Business As Usual) | 1.3 Million | 6.4 Million | 200,000 |



Projected Business as Usual Carbon Pollution from Cars & Trucks in VA



Projected Business as Usual PM2.5 Pollution from Cars & Trucks in VA



Scenarios Evaluated

| Scenario | Scenario Name | Description |
|------------------------------|------------------|--|
| Business As Usual (BAU) | BAU | Using the Virginia EV forecast adopted from Transportation Funding Sustainability report. New light-duty vehicle (LDV) fuel efficiency reflects the 2018 SAFE rule. |
| LEV & ZEV standard - 2025 | ZEV 2025 | Introduces both Zero Emissions Vehicle (ZEV) standard and Low Emissions Vehicle (LEV) standards for new LDVs through 2025, with no additional improvements thereafter. |
| LEV standard - 2040 | LEV 2040 | Extends the LEV III standards to reduce new LDV emissions per mile by 38% from 2021 levels in 2030, with continued improvements through 2040. |
| LEV & ZEV standard - 2040 | ZEV 2040 | LEV 2040 is included. In addition, adds a 100% ZEV standard for LDVs beginning in 2035. |



Impact of Clean Car Standards



Net Carbon Pollution Declines:

(Power sector & tailpipe emissions, relative to BAU, cumulative through 2040)



Net PM2.5 Pollution Declines:

(Power sector & tailpipe emissions, relative to BAU, cumulative through 2040)



Clean Car Standards Projected to Drive Light-duty EV Deployment 2-3x Greater Than BAU



Carbon Pollution Reduction Larger with More Protective Clean Car Standards



Clean Car Standards Save Lives Statewide and Nationally (High and Low estimates, cumulative 20 years)





Net VA Jobs Growth Projected from Clean Car Standards (cumulative)



Clean Car Standards Produce Net Benefits

| Scenario | Total Benefits (\$B) | Total Costs (\$B) | Net Benefits (\$B) | Benefit Cost Ratio |
|----------|----------------------------|----------------------|-----------------------|-----------------------|
| ZEV 2025 | 2.6 | 0.34 | 2.2 | <u>7.5</u> |
| LEV 2040 | 14 | 3.9 | 10 | 3.6 |
| ZEV 2040 | <u>30</u> | <u>8.9</u> | <u>21</u> | 3.4 |

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Conclusions

- Clean car standards that accelerate more EVs result in greater net benefits
 - · Lower emissions
 - More jobs
 - Better health outcomes
- Slow fleet turnover rates mean that immediate policy actions are needed to achieve long-term goals.
- Combination of transportation policies will be needed to achieve deeper reductions and to maximize co-benefits.
- Power sector pollution from greater adoption of EVs increases a little, though much less than the pollution reduction from driving fewer fossil-fuel vehicles.



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Authors: Matt Cox, PhD Etan Gumerman Jean-Ann James, PhD Samantha McDonald

Thank you to the gracious funders and reviewers of this research. Any errors are the fault of the authors. For additional details, please reach out to Matt Cox: mcox@greenlinkanalytics.org

If you have questions for the Georgetown Climate Center, please contact James Bradbury: james.bradbury@Georgetown.edu

