NGVAmerica Volkswagen Settlement Webinar

July 19, 2018
Welcome from NGVAmerica President, Dan Gage

Update on state activities related to VW Settlement

State VW grant programs and sample project

Argonne National Laboratory’s HDVEC tool and its use for VW projects

Q&A
About NGVAmérica

NGVAmérica is the national organization dedicated to the development of a growing, profitable, and sustainable marketplace for vehicles powered by natural gas and biomethane and for promoting the use of more natural gas in transportation... trucks, trash, transit, and even off-road uses like HHP marine, rail, and construction/mining applications.

200+

NGVAmérica represents 200+ companies, LDCs, fleets, OEMs, environmental and government organizations.
Value for NGVAmerica Members

- Advocacy on policy and regulations that impact NGVs & NG in transport
  - Federal & state – legislation, regulations, various government agencies
- Leadership on key technology & safety issues
  - Modernization of codes & standards, safety/best practices & technical barriers
  - Collaboration with government & industry
  - Incident investigations & cause analysis
  - Ten work groups led by members to address industry priorities
- Voice of a strong industry
  - Communicating the value of NGVs
  - Analysis, credible data & case studies
  - Convening industry leaders
  - One-on-one member support
Join us as a Member!
Visit: www.ngvamerica.org/sign-up/
Status of State VW Plans
✓ Fund alternative fuel vehicle projects that focus on maximizing NOx reduction for the funds spent
✓ Provide larger incentives for engines that deliver greater NOx reductions than currently required
✓ Target funding for technologies that deliver lower in-use emissions
✓ Fund commercially available products that are ready for use
✓ Prioritize funding for clean vehicles rather than fueling infrastructure
✓ Scale funding to incentivize the cleanest engines available
✓ Incentivize adoption by both public and private fleets
✓ Prioritize projects that provide a match
✓ Accelerate the funding to maximize the NOx reduction benefits
✓ Use vehicles emissions measurement tools that reflect current technologies & actual performance – AFLEET and HDVEC tools
State Mitigation Plans

State VW EMT Plan Status
(July 2018)

Draft Plan (18)
RFI and/or Meetings Held
Lead Agency & Website
Final Plan (20)
State VW Plan Trends

✓ Most states have high-level goal of funding the projects that reduce the most NOx for the funds spent

✓ Most states allow all approved alternative fuel vehicles

✓ Many states have not designated the percentages for vehicle funding – will decide based on the project description, match, leveraged aspects, etc.

✓ Several states are prioritizing funding for government vehicles

✓ Most states will at least match their normal DERA funding

✓ Some states are beginning to recognize that they need to use the Argonne Lab Heavy Duty Vehicle Emissions Calculator (HDVEC – based on the revised AFLEET tool) instead of the outdated EPA Diesel Emission Quantifier (DEQ) tool

✓ Most States have opted to fund the 15% EV Light Duty Charging Option
## Sample State Plan Components

<table>
<thead>
<tr>
<th>Project Type</th>
<th>AR</th>
<th>CO</th>
<th>CT</th>
<th>DC</th>
<th>DE</th>
<th>GA</th>
<th>ID</th>
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<th>NV</th>
<th>OH</th>
<th>OR</th>
<th>PA</th>
<th>VT</th>
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<td>On-Road</td>
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<td>52.50%</td>
<td>53%</td>
<td>100% EV/D Transit</td>
<td>35%</td>
<td>25%</td>
<td>35%</td>
<td>45-50%</td>
<td>25% School Bus</td>
<td>20-40%</td>
<td>43%</td>
<td>≤ 45%</td>
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<td></td>
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<td>20%</td>
<td>40%</td>
<td>25-25%</td>
<td>35%</td>
<td>25%</td>
<td>5%</td>
<td>35-55%</td>
<td>31% Includes DER A</td>
<td>15%≤ 5% Equip ≤ 5% RR ≤ 45% Mar</td>
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<td></td>
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<td>DERA</td>
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<td>20%</td>
<td>4%</td>
<td>25%</td>
<td>5%</td>
<td>0-20%</td>
<td>11% (RR / Mar)</td>
<td>≤ 5%</td>
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<td></td>
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<tr>
<td>Flex Funds</td>
<td>17.50%</td>
<td>85%</td>
<td>85%</td>
<td>72% DERA Type</td>
<td>25%</td>
<td>80%</td>
<td>75%</td>
<td>85%</td>
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<td></td>
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<tr>
<td>EV Light Duty Charging</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>14%</td>
<td>10%</td>
<td>15%</td>
<td>20-22% Includes Shore Power</td>
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<td></td>
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<tr>
<td>Administration</td>
<td>7.50%</td>
<td>9%</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
<td>6-8%</td>
<td>15%</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
State VW Settlement Grant Programs

✓ CONNECTICUT (Funding Opportunity Deadline – July 31, 2018)
DEEP Announces $7.5M in VW Environmental Mitigation Funding: Grants to fund the replacement or repower of older, dirtier diesel vehicles and engines as described in the VW Trust. Grants are eligible to both non-government and government entities.

✓ MINNESOTA (Funding Opportunity Deadline – July 19, 2018)
MPCA Funding Announcement $2.1 Million Grant Opportunity: The Minnesota VW Settlement Diesel Replacement Program RFP provides grants of $15,000 or $20,000 to school bus owners or their representatives around the state to replace old diesel school buses with new diesel, natural gas, propane or electric school buses. Grants will be awarded based on selection criteria that include emissions reduction, cost effectiveness, health effects, and environmental justice ramifications.

✓ NEVADA (Funding Opportunity Deadline – July 31, 2018)
Funding Announcement up to $11 Million Grant Opportunity: The DEP has indicated that fleets seeking Volkswagen Environmental Mitigation Trust Fund monies from Nevada will need to complete and submit the application form. Applicable vehicles and engines generally follow the VW Trust designations.
State VW Settlement Grant Programs

✓ **NEW MEXICO** – (Funding Opportunity Deadline – September 14, 2018)

**Funding Opportunity:** The NMED has announced that it is now accepting applications for projects relating to the Volkswagen Settlement Agreement. Qualifying projects must demonstrate a reduction in NOx, and meet the criteria outlined in the Settlement Agreement. The NMED requires that all applicants use the Argonne National Laboratory’s Heavy-Duty Vehicle Emissions Calculator found at: [https://afleet-web.es.anl.gov/hdv-emissions-calculator/](https://afleet-web.es.anl.gov/hdv-emissions-calculator/).

✓ **OHIO** (Funding Opportunity Deadline – August 3, 2018)

**EPA Funding Opportunity - $15M:** Applications are open for funding from the new Diesel Mitigation Trust Fund (DMTF) for replacement or repower of medium and heavy duty on-road and off-road vehicles. The EPA website indicates that owners of eligible medium and heavy diesel fleets in 26 Ohio priority counties are invited to apply for grants to repower or replace diesel vehicles and equipment with new clean diesel or alternative fuel (CNG, LNG, propane, diesel electric hybrid) or all-electric vehicles and equipment. A total of $15 million is available for grant awards between $50,000 and $2 million. All projects require a minimum match of 25 percent, with larger matches required for some project categories.

✓ **PENNSYLVANIA** (Funding Opportunity Deadline – July 19, 2018)

**VW Funding Notice/Oppportunity:** A new initiative undertaken by the state named, *Driving PA Forward*, provides information on the timing of future funding announcements and indicates that the first projects to be awarded funding will be eligible actions under the $8.9 million DERA Program.
Typical Project Application Data

✓ **Recipient Information**
  - Organization
  - Name / Title
  - Address / Email / Phone

✓ **Project Information**
  - Target Fleet / # of Vehicles
  - Location of Vehicles
  - Funding Amount Requested
  - Additional Funding Source/Amount
  - Project Leverage
    - (station availability, etc.)
  - Estimated Emissions Reductions
  - Other Benefits from Project

✓ **Current Vehicle Information**
  - Eligible Mitigation Action
  - Class/Equipment
  - Make, Model Year
  - Fuel Type / MPG
  - Annual Miles/Vehicle
  - Operation Hours/Vehicle

✓ **New Vehicle/Technology Information**
  - Year of Action
  - Class/Equipment Make, MY, Fuel Type
  - Serial or VIN Number
  - Emissions Reductions per Vehicle or Engine
  - Cost per Vehicle or Engine
Dollar-for-Dollar, NGVs Deliver the Largest & Most Cost-Effective NOx Emissions Reductions

Short/Regional Haul Truck Comparison – 100% Funding Scenario

Natural Gas
- Technology Cost: $150,000
- NOx Reduced: 5,582 lbs

Electric
- Technology Cost: $290,000
- NOx Reduced: 5,715 lbs

Diesel
- Technology Cost: $100,000
- NOx Reduced: 1,716 lbs

Data Source: Emission comparisons based on ANL - HDVEC tool with low-NOx engines and higher in-use diesel emissions taken into account. Useful life, cost and mileage vary by applications. Additional details available from NGVA upon request.
**Class 8 Truck Sample Project**

**Target Fleet / # of Vehicles**
Regional goods hauling / 10 trucks

**Vehicle Class, Make, Model Year**
Class 8 / Cummins Westport Inc. / 2018 MY

**Fuel Type / MPG / Annual Miles**
CNG / 6.7 mpg / 80,000 annual miles

**Location of Vehicles**
In the state / non-attainment? disadvantaged? sensitive?

**Funding Amount Requested**
$375,000

**Additional Funding Source/Amount**
Fleet 2018 Budget / $1,125,000

**Project Leverage**
CNG station on route / CNG station to be built
- station will provide fueling for other vehicles?

**Estimated Emissions Reductions**
Reduces: 27.9 tons NOx / 1,804 tons CO2e / 49.4 PM

**Cost per Vehicle**
NG Truck Cost: $150,000

**Other Benefits from Project**
Quieter / American fuel / economic (lower price of fuel) / creates jobs (producing fuel and for the NGV industry / other local benefits
Data Source: Emission comparisons based on ANL - HDVEC tool with low-NOx engines and higher in-use diesel emissions taken into account. Useful life, cost and mileage vary by applications. Additional details available from NGVA upon request.

Refuse Comparison – 100% Funding Scenario

$69 per lb of NOx
Natural Gas
Technology Cost $300,000
NOx Reduced 4,375 lbs

$151 per lb of NOx
Electric
Technology Cost $670,000
NOx Reduced 4,423 lbs

$496 per lb of NOx
Diesel
Technology Cost $270,000
NOx Reduced 544 lbs

Dollar-for-Dollar, NGVs Deliver the Largest & Most Cost-Effective NOx Emissions Reductions
Data Source: Emission comparisons based on ANL - HDVEC tool with low-NOx engines and higher in-use diesel emissions taken into account. Useful life, cost and mileage vary by applications. Additional details available from NGVA upon request.

Transit Comparison – 100% Funding Scenario

Natural Gas
- Technology Cost: $526,500
- NOx Reduced: 4,078 lbs

Electric
- Technology Cost: $836,330
- NOx Reduced: 4,128 lbs

Diesel
- Technology Cost: $477,775
- NOx Reduced: 134 lbs

Dollar-for-Dollar, NGVs Deliver the Largest & Most Cost-Effective NOx Emissions Reductions
Type-C Bus Comparison – 100% Funding Scenario

$90 per lb of NOx
Natural Gas
Technology Cost: $125,000
NOx Reduced: 1,391 lbs

$190 per lb of NOx
Electric
Technology Cost: $300,000
NOx Reduced: 1,583 lbs

$1,764 per lb of NOx
Diesel
Technology Cost: $100,000
NOx Reduced: 57 lbs

Data Source: Emission comparisons based on ANL - HDVEC tool with low-NOx engines and higher in-use diesel emissions taken into account. Useful life, cost and mileage vary by applications. Additional details available from NGVA upon request.

Dollar-for-Dollar, NGVs Deliver the Largest & Most Cost-Effective NOx Emissions Reductions
NGVAmerica VW Trust Action Center
(NGVAmerica.org/vw-trust-action-center)

✓ Consent Decrees
✓ Presentations
✓ Fact Sheets
✓ HDVEC Tool Access
✓ State Details
  – Lead Agency / Actions
  – Plans & Summaries
  – NGVA Submissions
Argonne National Laboratory (ANL)

HDVEC Tool

HEAVY-DUTY VEHICLE EMISSIONS CALCULATOR
Heavy-Duty Vehicle Emissions Calculator

• Simple online tool based on AFLEET to help analyze AFVs for funding opportunities
• Examines medium-duty & heavy-duty vehicle:
  – Vehicle operation NO$_x$ & PM$_{2.5}$
  – WTW GHGs
  – Emission reduction cost effectiveness
• Contains 4 fuel/vehicle technologies:
  – Diesel
  – Electric vehicle
  – Propane
  – Natural Gas
• HDVEC available at:
  afleet-web.es.anl.gov/hdv-emissions-calculator/
HDVEC’s Calculation Methods

- Tool has 3 calculation methods & which to use depends on project type
- Environmental Mitigation w/ Scrappage
  - New AFV vs. new diesel, plus additional benefit from early retirement of scrapped vehicle
- Environmental Mitigation w/ Repower
  - Vehicle after repower vs. diesel vehicle before repower
- Clean Vehicle Replacement
  - New AFV vs. new diesel
HDVEC Tutorial - Demo #1 - Environmental Mitigation w/ Scrappage
The Heavy-Duty Vehicle Emissions Calculator was developed to estimate the vehicle operation nitrogen oxide (NO_x) and particulate matter (PM_{2.5}), as well as the well-to-wheel greenhouse gas emissions (GHGs) of commercially available alternative fuel medium- and heavy-duty vehicles. This tool is ideally suited to aid fleets and decision makers compare vehicle technologies for emission reductions and consider allocation of funding.

The tool can calculate results for 3 project types:

- Environmental Mitigation w/ Scrappage
  - New alternative fuel versus new diesel, plus additional benefit from early retirement of scrapped vehicle.
- Environmental Mitigation w/ Repower
  - Vehicle after repower versus diesel vehicle before repower.
- Clean Vehicle Replacement
  - New alternative fuel versus new diesel.

The first two are specifically for environmental mitigation projects such as those funded under the Clean Diesel Settlement or the Diesel Emission Reduction Program, while the third provides results without the scrappage benefit. The Heavy-Duty Vehicle Emissions Calculator was developed using the AFLEET Tool 2017, available at: https://greet.es.anl.gov/afleet. AFLEET Tool 2017 uses emissions data from both the EPA's MOVES and Argonne's GREET models.
1st step: on “Vehicle Options” enter project type and state

- Project Options
  - Load Previously Saved Project?
  - Save Project?

- Project Type
  - Environmental Mitigation with Scrappage

- State
  - MICHIGAN
HDVEC Tutorial - Environmental Mitigation w/ Scrappage

- 2nd step: enter vehicle type, # of vehicles, MY of scrapped vehicle, years of early retirement, new vehicle lifetime, and VMT
HDVEC Tutorial - Environmental Mitigation w/ Scrappage

- Optional: use diesel in-use multiplier, low NOx engines, custom fuel economy data

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Old Diesel (MPDGE)</th>
<th>New Diesel (MPDGE)</th>
<th>Natural Gas (MPDGE)</th>
<th>Electric (MPDGE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.4</td>
<td>7.4</td>
<td>6.7</td>
<td>18.9</td>
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HDVEC Tutorial - Environmental Mitigation w/ Scrappage

- 4th step: enter funding requested (for cost effectiveness)

<table>
<thead>
<tr>
<th>Funding Options</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Diesel Funding Requested</td>
<td>$100,000</td>
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<tr>
<td>Electric Funding Requested</td>
<td>$290,000</td>
</tr>
<tr>
<td>Natural Gas Funding Requested</td>
<td>$150,000</td>
</tr>
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</table>
• 5th step: enter NG feedstock and EV source (default = state selected) and click “Calculate Results”
HDVEC Tutorial - Environmental Mitigation w/ Scrappage

- Optional: enter custom electricity mix or NG Feedstock Sources
HDVEC Tutorial - Environmental Mitigation w/ Scrappage

- Results: emission benefits (higher value = more reduction)
HDVEC Tutorial - Environmental Mitigation w/ Scrappage

- Results: cost effectiveness (lower value = more cost effective) & Optional: export results to Excel

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Diesel</th>
<th>Electric</th>
<th>Natural Gas</th>
<th>Propane</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO(_x) ($/lb)</td>
<td>$58</td>
<td>$51</td>
<td>$27</td>
<td>N/A</td>
</tr>
<tr>
<td>PM(_{2.5}) ($/lb)</td>
<td>$20,243</td>
<td>$5,408</td>
<td>$30,364</td>
<td>N/A</td>
</tr>
<tr>
<td>GHG ($/ton)</td>
<td>N/A</td>
<td>$571</td>
<td>$788</td>
<td>N/A</td>
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### HDVEC Tutorial - Environmental Mitigation w/ Scrappage

- Optional: export to Excel 3 sheets Results, Inputs, Emissions

### New Vehicle Emission Benefit

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<tr>
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<th>Propane</th>
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</thead>
<tbody>
<tr>
<td>NOx (lb)</td>
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<td>714.86</td>
<td>581.58</td>
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<td>PM2.5 (lb)</td>
<td>4.94</td>
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<td>4.94</td>
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<tr>
<td>GHG (short tons)</td>
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<td>507.71</td>
<td>190.34</td>
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### New Vehicle Cost Effectiveness

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<th>Natural Gas</th>
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</thead>
<tbody>
<tr>
<td>NOx (lb)</td>
<td>558</td>
<td>51</td>
<td>27</td>
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<tr>
<td>PM2.5 (lb)</td>
<td>20,243</td>
<td>5,408</td>
<td>30,364</td>
<td>N/A</td>
</tr>
<tr>
<td>GHG (short tons)</td>
<td>N/A</td>
<td>571</td>
<td>788</td>
<td>N/A</td>
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</tbody>
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### Project Options

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<th>State</th>
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<tr>
<td>Project Type</td>
<td>Environmental Mitigation with Scrappage</td>
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### Vehicle Options

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<thead>
<tr>
<th>Type</th>
<th>Combination Short-Haul Truck</th>
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<tr>
<td>Number of Vehicles</td>
<td>1</td>
</tr>
<tr>
<td>Model Year of Scrapped Vehicle</td>
<td>2007</td>
</tr>
<tr>
<td>Years for Early Retirement of Scrapped Vehicle</td>
<td>2</td>
</tr>
<tr>
<td>Lifetime of New Vehicle (Years) After Scrappage</td>
<td>10</td>
</tr>
<tr>
<td>Annual Miles of Scrapped Vehicle</td>
<td>80000</td>
</tr>
<tr>
<td>Annual Miles of New Vehicle</td>
<td>80000</td>
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<tr>
<td>Use Diesel In-Use Multiplier?</td>
<td>Yes</td>
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<tr>
<td>Use Low NOx Engines?</td>
<td>Yes</td>
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### Funding Options ($)

<table>
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<tr>
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<th>Electric Vehicle Funding</th>
<th>Natural Gas Vehicle Funding</th>
<th>Propane Vehicle Funding</th>
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<tbody>
<tr>
<td>Natural Gas (NG) Feedstock Source</td>
<td>North American NG</td>
<td>RFC</td>
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<table>
<thead>
<tr>
<th>Fuel Options</th>
<th>Diesel Vehicle Funding</th>
<th>Electric Vehicle Funding</th>
<th>Natural Gas Vehicle Funding</th>
<th>Propane Vehicle Funding</th>
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<td>Natural Gas (NG) Feedstock Source</td>
<td>North American NG</td>
<td>RFC</td>
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## HDVEC Tutorial - Environmental Mitigation w/ Scrappage

- Optional: export to Excel 3 sheets Results, Inputs, Emissions

### NOx Emissions

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Year</th>
<th>Remaining Years</th>
<th>Scrappage Years</th>
<th>Emission Rate (g/mi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>2007</td>
<td>N/A</td>
<td>2</td>
<td>6.438</td>
</tr>
<tr>
<td>Diesel</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>1.572</td>
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<tr>
<td>Diesel</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>1.952670588</td>
</tr>
<tr>
<td>Electric</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Electric</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>0.0524</td>
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<tr>
<td>Natural Gas</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>0.06508902</td>
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<tr>
<td>Propane</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>N/A</td>
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<tr>
<td>Propane</td>
<td>2017</td>
<td>10</td>
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### PM2.5 Emissions

<table>
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<th>Scrappage Years</th>
<th>Emission Rate (g/mi)</th>
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</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>2007</td>
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<td>0.033</td>
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<tr>
<td>Diesel</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>0.019</td>
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<td>Diesel</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>0.0238</td>
</tr>
<tr>
<td>Electric</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Electric</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Natural Gas</td>
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<td>N/A</td>
<td>2</td>
<td>0.019</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>0.0238</td>
</tr>
<tr>
<td>Propane</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>Propane</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>N/A</td>
</tr>
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</table>

### GHG Emissions

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Year</th>
<th>Remaining Years</th>
<th>Scrappage Years</th>
<th>Emission Rate (g/mi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>2007</td>
<td>N/A</td>
<td>2</td>
<td>1741.829136</td>
</tr>
<tr>
<td>Diesel</td>
<td>2017</td>
<td>N/A</td>
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<td>1741.829136</td>
</tr>
<tr>
<td>Diesel</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>1741.829136</td>
</tr>
<tr>
<td>Electric</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>1262.052863</td>
</tr>
<tr>
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<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>1262.052863</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>1561.964372</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>1561.964372</td>
</tr>
<tr>
<td>Propane</td>
<td>2017</td>
<td>N/A</td>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>Propane</td>
<td>2017</td>
<td>10</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
HDVEC Tutorial - Environmental Mitigation w/ Scrappage

- Short-Haul Truck: diesel in-use or low-NOx options *not selected*

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Diesel (lb)</th>
<th>Electric (lb)</th>
<th>Natural Gas (lb)</th>
<th>Propane</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>1,901.27</td>
<td>4,566.89</td>
<td>4,167.04</td>
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</tr>
<tr>
<td>NOx ($/lb)</td>
<td>$53</td>
<td>$64</td>
<td>$36</td>
<td>N/A</td>
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</tbody>
</table>

- Short-Haul Truck: diesel in-use or low-NOx options *selected*

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Diesel (lb)</th>
<th>Electric (lb)</th>
<th>Natural Gas (lb)</th>
<th>Propane</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>1,716.43</td>
<td>5,714.86</td>
<td>5,581.58</td>
<td>N/A</td>
</tr>
<tr>
<td>NOx ($/lb)</td>
<td>$58</td>
<td>$51</td>
<td>$27</td>
<td>N/A</td>
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</tbody>
</table>
HDVEC Tutorial - Environmental Mitigation w/ Scrappage

• Transit: diesel in-use or low-NOx options **not selected**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Diesel</th>
<th>Electric</th>
<th>Natural Gas</th>
<th>Propane</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO\textsubscript{x} (lb)</td>
<td>567.60</td>
<td>1,566.06</td>
<td>1,066.83</td>
<td>N/A</td>
</tr>
<tr>
<td>Pollutant</td>
<td>Diesel</td>
<td>Electric</td>
<td>Natural Gas</td>
<td>Propane</td>
</tr>
<tr>
<td>NO\textsubscript{x} ($/lb)</td>
<td>$842</td>
<td>$534</td>
<td>$494</td>
<td>N/A</td>
</tr>
</tbody>
</table>

• Transit: diesel in-use or low-NOx options **selected**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Diesel</th>
<th>Electric</th>
<th>Natural Gas</th>
<th>Propane</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO\textsubscript{x} (lb)</td>
<td>134.26</td>
<td>4,128.09</td>
<td>4,078.17</td>
<td>N/A</td>
</tr>
<tr>
<td>Pollutant</td>
<td>Diesel</td>
<td>Electric</td>
<td>Natural Gas</td>
<td>Propane</td>
</tr>
<tr>
<td>NO\textsubscript{x} ($/lb)</td>
<td>$3,559</td>
<td>$203</td>
<td>$129</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Contact Information

Jeff Clarke – jclarke@ngvamerica.org
Sherrie Merrow – smerrow@ngvamerica.org

https://www.ngvamerica.org/vw-trust-action-center/