March 24 Clean Freight Movement Workshop

- **Welcome and Meeting Objectives (10:00 am – 10:15 am)**
  - Becky Bradley, Lehigh Valley Planning Commission
  - UPS – Christopher Lutick, Director, Public Affairs, UPS
  - Mack Truck – Catie Kawchak, Federal and State Government Relations Director, Public Affairs, Volvo Group North America

- **Private Sector Perspectives (10:15 am – 10:50 am)**
  - NYC Clean Truck Program – Susan McSherry, New York City Department of Transportation
  - New Jersey Zero Emission Incentive Program (ZIP) – Victoria Carey, New Jersey Economic Development Authority

- **Public Sector Initiatives (10:55 am – 11:30 am)**
  - Mark Nielsen, Naugatuck Valley Council of Governments
  - NYC Clean Truck Program
  - New Jersey Zero Emission Incentive Program (ZIP)

- **Multi-State Regional Planning (11:30 am – 11:55 am)**
  - Leslie Fordjour, New York Metropolitan Transportation Council
  - Clean Freight Corridors Planning Study – Chris Lamm, Cambridge Systematics and Al Beatty, CALSTART

- **Next Meeting and Adjourn (11:55 am – 12:00 pm)**

Please use the Chat box to ask questions during the presentations and if requesting AICP credits, please post your name and email.

Please mute yourself when not speaking.
Welcome to the Clean Freight Movement Workshop

- Gerry Bogacz, New York Metropolitan Transportation Council
- Anne Strauss-Wieder, North Jersey Transportation Planning Authority
The Evolving Supply Chain and Increasing Clean Freight Movement

MAP Forum Clean Freight Movement Workshop
March 2022

Anne Strauss-Wieder, Director, Freight Planning
North Jersey Transportation Planning Authority
Supply Chains Remain in the Headlines

The Next Supply Chain Mess Is Coming for Your Morning Coffee

Sources: The New Yorker, WSJ, Anne Strauss-Wieder, the Today Show, Jack White

JACK WHITE ANNOUNCES THE SUPPLY CHAIN ISSUES TOUR
Recent Federal Initiatives

Executive Order on America’s Supply Chains

Infrastructure Investment and Jobs Act of 2021

The Biden-Harris Administration Trucking Action Plan to Strengthen America’s Trucking Workforce

The Biden-Harris Administration Initiative to Improve Supply Chain Data Flow
Ecommerce Market Share Continues to Grow

Ecommerce sales as a % of total retail* spend, 2012-2021

Source: Digital Commerce 360 analysis of U.S. Department of Commerce data: January 2022

Source: https://www.digitalcommerce360.com/article/us-ecommerce-sales
February 10, 2022
We’ve fundamentally shifted how we purchase groceries

Source: https://www.supermarketnews.com/online-retail/online-channel-builds-share-us-grocery-market-2021
Clean Freight Movement
Private Sector Perspectives

- Becky Bradley, Lehigh Valley Planning Commission
- Christopher Lutick, UPS
- Catie Kawchak, Volvo Group North America
Delivering Environmental Sustainability
Pressure is increasing
Customers are asking for sustainable solutions

Expectations from stakeholders
- To deliver behavioral change
- Strong sustainability governance can correlate to increased financial value

Accuracy and transparency matter
- Standardized reporting – including Scope 3 emissions
- Global requirements increasing – EU-ETS, China commitments, CDP, etc.

Consistent with long-term financial viability
- Creating lasting value for all stakeholders
- Climate risk can raise investment risk
UPS is focused on sustainable innovation
UPS’s efficiencies as competitive advantage

Global smart logistics
One, single network means the ability to maximize efficiency

Technology ORION
The greenest mile is the one never driven

Rolling laboratory
Tests new technologies in real time, driving 1 million miles each day
Using the power of our global smart logistics network to help you achieve your business goals

UPS’s efficient execution

- Network flexibility allows UPS to shift to the most efficient mode of transport, eliminating excess miles and route redundancies
- Multiple modes and service options to fit your time and budget needs
- Built to optimize delivery options
Technology integration
ORION: the greenest mile is the one never driven

ORION: On-Road Integrated Optimization and Navigation
• Analyzes daily stops and identifies optimized route
• Auto re-route to avoid delays
• Predictive package analytics to optimize vehicles and hubs
Rolling laboratory
114 years of engineering innovation, continuing experimentation

30+
Urban logistics projects to improve last-mile deliveries in cities around the world

3 billion+ miles
Driven on alternative fuels since 2008

8,100+
Compressed natural gas (CNG) vehicles expected to be purchased between 2020 and 2022

Up to 10,000
Ordered all-electric custom-built delivery vans by Arrival

125
Pre-ordered Tesla’s new fully-electric semi tractors

2,400+
Propane-powered engines in our fleet as of October 15, 2021
UPS expertise can enhance your business model

We utilize rules, tools and partnerships to create value for our customers

Reduce Risk

• Setting goals with a roadmap to mitigate climate risk
• Supporting public policy advocacy to influence industry regulations

Create Opportunity

• Finding innovative ways to deliver to global communities
• Leveraging our brand relationships to optimize growth opportunities in the new, low carbon economy

Provide Transparency

• Reporting to GRI, SASB and TCFD
• Taking a fiscally-responsible approach based on sound engineering principles
Roadmap

**UPS Environmental Sustainability Goals**

**Achieve carbon neutrality by 2050**

UPS is determined to continue our leadership in decarbonizing the transportation sector.

<table>
<thead>
<tr>
<th>By 2025</th>
<th>By 2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>40% alternative fuel in ground operations</td>
<td>50% reduction in CO(_2) per global small package (2020 baseline)</td>
</tr>
<tr>
<td>25% renewable electricity in facilities</td>
<td>100% renewable electricity in facilities</td>
</tr>
<tr>
<td>30% sustainable aviation fuel</td>
<td></td>
</tr>
</tbody>
</table>

*Company goals are aspirational and not guarantees or promises that all goals will be met, due to dependence on technological innovations and other available resources needed to drive environmental change. Statistics and metrics relating to ESG matters are estimates and may be based on assumptions or evolving standards.*
More ways to reduce emissions by choosing UPS

UPS is innovating, investing and partnering to create sustainable solutions for you

40,000 UPS Access Point® Locations
Provide your customers a centralized location for flexible package pickup and return delivery

UPS My Choice®
Allows your customers to control delivery time and location

UPS Foundation Global Forestry Initiative
50 million trees planted by 2030 (2015 baseline)

Innovative Partnerships
Smart EV charging, sustainable packaging, reverse logistics
**Environmental Sustainability Goals**

**Achieve carbon neutrality by 2050**

UPS is determined to continue our leadership in decarbonizing the transportation sector. Our roadmap includes both existing goals and targets.

<table>
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<tr>
<th><strong>By 2025:</strong></th>
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</tr>
</tbody>
</table>

**Social Sustainability Goals**

**Help improve the well-being of 1 billion lives by 2040**

UPS will deliver social impact through our commitment to diversity, equity and inclusion (DEI), employee engagement through volunteerism, and charitable giving through The UPS Foundation.

- 25% of charitable donations targeted toward underserved women, youth and marginalized communities
- 28% women in full-time management globally by 2022, while maintaining 35% ethnically diverse company management
- 30 million volunteer hours by 2030 (2015 baseline)
- 50 million trees planted by 2030 (2015 baseline)

**Governance**

**Recent achievements**

UPS remains committed to a transparent and inclusive governance structure.

- 31% ethnically diverse members on Board of Directors as of July 1, 2021
- 46% women on Board of Directors as of July 1, 2021
- Published annual EEO-1 report and first Task Force on Climate-related Financial Disclosures (TCFD) report in 2021
- Recently appointed chief DEI officer, a new position on the Executive Leadership Team, and elevated the chief sustainability officer to report directly to the CEO

*Company goals are aspirational and not guarantees or promises that all goals will be met, due to dependence on technological innovations and other available resources needed to drive environmental change. Statistics and metrics relating to ESG matters are estimates and may be based on assumptions or evolving standards.*
Measure

Know your shipping carbon emissions

• Carbon impact analysis uses our Carbon Emissions Calculator to help you understand the climate impact of your UPS shipping

• Full inventory of GHG emissions (Scopes 1, 2, & 3)

• Detailed reports customized to your business category

• Calculate offsets needed to mitigate your emissions

• Methodology receives 3rd-party reviews and validation
Manage
How can we help to manage your climate impact in the supply chain?

Immediate Results
- Utilize UPS’s world-class technology to optimize transportation
  - Intermodal Shifting
  - ORION & Telematics
- Improve CO₂e emissions using UPS’s fleet
- Electronic Billing / UPS Paperless Invoice®
- UPS My Choice®
- UPS Access Point®

Long-term Strategies
Review specific strategies to drive down waste and increase efficiency
- Supply Chain Optimization
- Site Locator Analyses
- Transportation Analyses
- Inventory Planning
- Packaging Design Services
- Eco Responsible Packaging
- Returns Portfolio
Mitigate
Neutralize remaining emissions with certified offsets

1. Sign-Up
   check box / sign agreement

2. Pay
   per package fee

3. Offset
   we purchase offsets from environmental projects around the world

4. Market
   co-branding

- **Wolf Creek Landfill**
  USA
  Captures methane from landfill for electricity
  Annual emissions reductions: >130,000 MT

- **Chol Charoen Biogas Capture**
  Thailand
  Captures GHGs from wastewater for energy
  Annual emissions reductions: 37,292 MT

- **Amazon Rainforest Conservation REDD+**
  Brazil
  Protects 100K hectares of rainforest
  Annual emissions reductions: 540,000 MT

3/22/2022
Market

UPS Carbon Neutral Co-Branding

We proudly ship using UPS carbon neutral

Marketing materials

Sustainability reporting

Website/social media

Shipping labels

Packaging
How do we pick which projects to buy from?

**Criteria**

- **Measurable** – quantifiable reductions
- **Permanence** – long-term reductions
- **Registry** – reputable offset registry
- **Vintage** – minimize time between emissions generated and offsets retired

**Registries:**

- Gold Standard
- Verified Carbon Standard
- Climate Action Reserve
THANK YOU
THE DRIVE TOWARD A SUSTAINABLE FUTURE

Catie Kawchak, Director State and Federal Government Relations

Volvo Group

March 24, 2022
Volvo Group North America

- 30% of Group’s net sales (2019)
- Approx. 17,000 employees (2019)
- Fourteen major manufacturing sites
- Only heavy-duty truck group with 100% U.S. production for the NA market
- Global HQ for Mack Trucks, Volvo Financial Services
What we do

Volvo Group offers trucks, buses, construction equipment, power solutions for marine and industrial applications, financing and services that increase our customers’ uptime and productivity.

We contribute to the development of electrified and autonomous solutions for the benefit of customers, society and for the environment.
VGNA in PA
More VGNA employees live in PA than any other state

• More than 4000 employees

• Key Facilities:
  – Volvo Construction Equipment Headquarters and Manufacturing Plant (Shippensburg),
  – Remanufacturing Plant (Middletown)
  – Mack Lehigh Valley Operations (Macungie)
  – Mack Experience Center (Allentown)

• Major Investments:
  – 2021 announced $4.3 million investment in a technical training facility expansion at the Volvo Construction Equipment campus in Shippensburg
  – 2020 completed Lehigh Valley Operations’ five-year, $84-million Reborn initiative to revitalize and transform the facility into a world-class manufacturing site.
2040
100% Fossil Free

2030
35% Electric Vehicles

Fuel cell vehicles in the second half of the decade
Mack LR Electric
Electromobility and Refuse
GREAT FIT FOR MANY REFUSE APPLICATIONS

Why Refuse?
• Closed loop operation on predetermined routes
• Return home every night
• Start/stop nature of refuse pick-up allows for plenty of regenerative braking opportunities to recapture energy

Why Electric?
• Zero vehicle emissions
• Reduced noise
• Sustainability benefits such as reduced maintenance/consumables (oil, lubricants, brake components)
Product / Commercializing LR Electric

It’s not just about the truck.
It’s the whole ecosystem.
Volvo Trucks mission

To drive purposeful progress and innovation in order to provide efficient, safe and sustainable solutions for customers and the transport industry at large.

Global platform for zero tailpipe emissions Class 8 BEV offering
California LIGHTS Project

- Low Impact Green Heavy Transport Solutions
- Public-Private Partnership totaling $90 M
- California Air Resources Board (CARB) awarded bid $45 M
  - South Coast Air Quality Management District
  - Paid from Cap-and-Trade funds
- Project Objectives: Create end-to-end near zero emission eco system
  - at selected California freight sites
  - Reduce Greenhouse Gas emissions
  - Strengthen the local economy
  - Improve public health and the environment
  - Match our Volvo Group vision of zero emission transport
ZEV opportunities and challenges

- Single largest challenge for the heavy-duty ZEV market is charging infrastructure
- Utilities and local officials must be engaged early in the infrastructure design process
- TCO is currently dependent on public funding for vehicle purchase & infrastructure
- Fleet ownership of property eases facility planning and investments
- Divergent priorities of multiple stakeholders must be managed
- Consider identifying a dedicated point of contact within your organization
THANK YOU

Volvo Trucks

March 24, 2022
Private Sector Perspectives

Questions and Discussion

Please use the Chat box to ask questions.

Please mute yourself.
Please mute yourself.

Please use the Chat box to ask questions during the presentations.

Public Sector Initiatives

- Mark Nielsen, Naugatuck Valley Council of Governments
- Susan McSherry, New York City Department of Transportation
- Victoria Carey, New Jersey Economic Development Authority
NYC Clean Trucks Program

Expanding the Success of NYC DOT Hunts Point Clean Trucks Program
New York City Transportation Overview:

☑️ New York City is committed to meeting clean energy goals to reduce greenhouse gases 40% from 1990 levels by 2030 and 80% by 2050

☑️ The majority of Class 4 to Class 8 trucks in New York City operate on diesel; accounts for 20% of all transportation GHGs

☑️ Diesel emissions include carbon dioxide, particulate matter and nitrogen oxide (NOx)
  - Particulate matter and NOx harm human health
  - Carbon dioxide contributes to climate change; trucking Deploying electric and alternative fuel trucks helps reduce the negative environmental impacts of vehicles that typically operate on diesel
The NYC Clean Trucks Program is being offered by the NYC DOT to promote sustainable transportation and a cleaner environment in NYC, using VW, City and FHWA funding.

The NYC Clean Trucks Program offers rebate incentive funding to reduce diesel exhaust emissions by replacing older, heavy polluting diesel trucks with new battery electric, or EPA emission compliant alternative fuel (compressed natural gas, diesel-electric hybrid, and plug-in hybrid) and diesel trucks.

Secure funding from $12,000 up to $185,000 per truck replacement, depending on fuel type and truck class size.

Contact us at nycctp@tetratech.com. Or call 877-310-2733.
What is the Volkswagen Settlement Funding?

✔ Funded through the New York State Department of Environmental Conservation (NYSDEC) under the Volkswagen Diesel Emission Environmental Mitigation Trust Agreement for State Beneficiaries, Puerto Rico and the District of Columbia (VW Trust)

✔ The Environmental Mitigation Trust’s chief goal is to reduce NOx emissions in the transportation sector

   NYSDEC will direct approximately $9.8 million to the NYC Clean Trucks Program, to fund medium- and heavy-duty replacement trucks.

✔ Emphasis is to fund all-electric, zero emission trucks

   Targets Environmental Justice communities that have historically been subject to a disproportionate amount of diesel exhaust emissions
NYC Clean Trucks Program Evolved from HPCTP

- Funding is now available for fleet applicants in 20 program-approved NYC Industrial Business Zones (IBZs).
- Eligible trucks for replacement must be located in or provide service within 0.5 miles of program-approved IBZs for the previous 24 months.

<table>
<thead>
<tr>
<th>Bronx</th>
<th>Brooklyn</th>
<th>Queens</th>
<th>Staten Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathgate</td>
<td>Brooklyn Navy Yard</td>
<td>Jamaica</td>
<td>North Shore</td>
</tr>
<tr>
<td>Eastchester</td>
<td>East New York</td>
<td>JFK</td>
<td>West Shore</td>
</tr>
<tr>
<td>Hunts Point</td>
<td>Flatlands/Fairfield</td>
<td>Long Island City</td>
<td></td>
</tr>
<tr>
<td>Port Morris</td>
<td>Greenpoint/Williamsburg</td>
<td>Maspeth</td>
<td></td>
</tr>
<tr>
<td>Zerega</td>
<td>North Brooklyn</td>
<td>Ridgewood/SoMA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Southwest Brooklyn</td>
<td>Steinway</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Woodside</td>
<td></td>
</tr>
</tbody>
</table>

Contact us at nycctp@tetratech.com. Or call 877-310-2733
New York City Industrial Business Zones

**The Bronx**
- Zerega
- Port Morris
- Bathgate
- Eastchester
- Hunts Point

**Staten Island**
- West Shore
- North Shore
- Rossville*

**Queens**
- Woodside
- Maspeth
- Long Island City
- Ridgewood
- Steinway
- JFK
- Jamaica
- Richmond Hill*

**Brooklyn**
- Greenpoint/Williamsburg
- Brooklyn Navy Yard
- North Brooklyn
- Southwest Brooklyn
- East New York
- Flatlands/Fairfield

* Do not meet EJ requirements.
# Fleet Eligibility Requirements

- Businesses that move goods, commercial truck owners, and fleets that operate in port drayage

<table>
<thead>
<tr>
<th>Beverage Distributors</th>
<th>Freight Delivery (Heating, Air Conditioning, Home Appliance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete/Cement Haulers</td>
<td>Newspaper/Magazine Deliveries</td>
</tr>
<tr>
<td>Construction/Demolition Equipment Haulers</td>
<td>Office Supplies (Paper &amp; Plastic)</td>
</tr>
<tr>
<td>Food and Produce Distributors</td>
<td>Service Vehicles (Plumbing, Welding)</td>
</tr>
<tr>
<td>Fuel Delivery</td>
<td>Towing Companies</td>
</tr>
<tr>
<td>Goods Delivery (Furniture, Home Improvement Supplies)</td>
<td>Waste/Recycling Haulers</td>
</tr>
</tbody>
</table>
Battery Electric Replacement Truck Incentives

- There is no limit on the number of battery electric replacement trucks a fleet can purchase.

<table>
<thead>
<tr>
<th>Class</th>
<th>Incentive Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 4</td>
<td>$100,000</td>
</tr>
<tr>
<td>Class 5</td>
<td>$110,000</td>
</tr>
<tr>
<td>Class 6</td>
<td>$125,000</td>
</tr>
<tr>
<td>Class 7</td>
<td>$150,000</td>
</tr>
<tr>
<td>Class 8</td>
<td>$185,000</td>
</tr>
</tbody>
</table>

The incentive shall be based on the prevailing DEC approved incentive amounts.
Non-Electric Replacement Truck Incentives

The program also funds the purchase of CNG, diesel-electric hybrid, plug-in hybrid electric, and new diesel meeting specific requirements based on fleet size.

<table>
<thead>
<tr>
<th>CNG Replacement Truck</th>
<th>Diesel Electric Hybrid</th>
<th>Plug-In Hybrid Electric</th>
<th>Diesel Replacement Truck</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 4</td>
<td>$30,000</td>
<td>$25,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>Class 5</td>
<td>$40,000</td>
<td>$35,000</td>
<td>$13,000</td>
</tr>
<tr>
<td>Class 6</td>
<td>$50,000</td>
<td>$45,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Class 7</td>
<td>$55,000</td>
<td>$50,000</td>
<td>$21,000</td>
</tr>
<tr>
<td>Class 8</td>
<td>$60,000</td>
<td>$55,000</td>
<td>$30,000</td>
</tr>
</tbody>
</table>
Trucks Eligible for Replacement Must Meet the Following Requirements:

- Class 4 to Class 7 local goods movement or commercial diesel-fueled truck
- Class 8 port drayage or local freight diesel-fueled truck
- Vehicles must have been operating within New York City for the past 24 months (additional details apply)
- Be a NYS registered vehicle
- Scrapping of the older truck is required, which ensures the removal of older, polluting diesel trucks from New York City
Replacement Trucks Must Meet the Following Requirements:

- Must be a brand-new truck
- Perform the same function as the diesel-powered truck being replaced
- Generally, Class 4 to Class 8 trucks must be replaced with trucks in the same weight class as the old truck.
  (* New: Applicants may increase vehicle class by 2 sizes [max to Class 7] if going BEV. Additional details apply)
- Be operated within 0.5 miles of NYC Clean Trucks Program-approved IBZs twice a week
- AVL is required in order to monitor emissions benefits and program compliance
- Must remain registered in NYS and commit to the program for five (5) years minimum
- *3rd Party Ownership: Applicants can purchase a 3rd party truck to scrap for EVs; must have been in a similar vocation and meet all eligibility requirements
Replacement Truck Mileage

- Must average 5,000 miles per year, or more, for 5 years
- At least 70% of the total vehicle miles traveled (VMT) must be within the Tri-State area of New York, New Jersey and Connecticut
Program Compliance Monitoring

- Automatic Vehicle Locators provide proof of use; quantify mileage within local-regional geofences in order to monitor program compliance
- 2x/week trips to IBZ; 70% of Vehicle Miles Travelled in Tri-State area

Vehicle Miles Traveled results for 2021 for 587 trucks

<table>
<thead>
<tr>
<th>HP VMT</th>
<th>NY (5 Borough) VMT</th>
<th>NY (Other) VMT</th>
<th>NJ VMT</th>
<th>CT VMT</th>
<th>Total VMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>396,517.40</td>
<td>1,653,574.30</td>
<td>1,575,709.40</td>
<td>1,226,708.00</td>
<td>119,475.00</td>
<td>4,971,984.10</td>
</tr>
<tr>
<td>7.98%</td>
<td>33.26%</td>
<td>31.69%</td>
<td>24.67%</td>
<td>2.40%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Emissions Reductions Results to Date - Trucks

The NYC Clean Trucks Program and the HPCTP have reduced significant levels of NO\textsubscript{x}, PM\textsubscript{2.5}, HC, and CO annually when compared to the emissions profile of the older, diesel-fueled vehicles that were replaced.

**Truck Replacements, Retrofits, and Scrappage**

<table>
<thead>
<tr>
<th>Annual Results (short tons)</th>
<th>NO\textsubscript{x}</th>
<th>PM\textsubscript{2.5}</th>
<th>HC</th>
<th>CO</th>
<th>Fuel (Gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount Reduced Per Year</td>
<td>398.04</td>
<td>23.22</td>
<td>28.65</td>
<td>109.25</td>
<td>636,267</td>
</tr>
</tbody>
</table>

As of December 31, 2021, the NYC Clean Trucks Program and HPCTP have achieved the above emission reductions through 627 truck replacements, 6 exhaust retrofits, and the voluntary scrappage of 24 trucks.

Notes:
1) 1 short ton = 2,000 lbs.
2) Emission reductions are calculated using the U.S. EPA's Diesel Emissions Quantifier (DEQ)
Emissions Reductions Results to Date – TRU Replacements

The HPCTP facilitated the replacement of 68 Transportation Refrigeration Units (TRUs). These replacements reduced significant levels of NO\textsubscript{x}, PM\textsubscript{2.5}, HC, and CO annually when compared to the emissions profile of the older, diesel-fueled TRUs.

### TRU Replacements

<table>
<thead>
<tr>
<th>Annual Results (short tons)</th>
<th>NO\textsubscript{x}</th>
<th>PM\textsubscript{2.5}</th>
<th>HC</th>
<th>CO</th>
<th>Fuel (Gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount Reduced Per Year</td>
<td>75.98</td>
<td>63.29</td>
<td>14.67</td>
<td>124.87</td>
<td>301,544</td>
</tr>
</tbody>
</table>

As of December 31, 2021, the HPCTP have achieved the above emission reductions through 40 All-Electric TRUs replacements and 28 Diesel-Electric Hybrid TRU replacements.

Notes:
1) 1 short ton = 2,000 lbs.
2) Emission reductions are calculated using the U.S. EPA’s Diesel Emissions Quantifier (DEQ)
Vision Zero Vehicle Safety Enhancements

- NYC Clean Trucks Program embraces this important initiative
- Vehicle Safety Enhancements must be installed and maintained on each replacement truck
  - Backup alert system (audible alert; visual alert; or radar detection)

- Side Guards
- Split Mirror Design
- Cross-over Mirror
- Passenger Door Down View Mirror
Not an IBZ Eligible Fleet?

- NYS Truck Voucher Incentive Program – applies to Fleets outside of IBZs
  
  https://www.nyserda.ny.gov/All-Programs/Programs/Truck-Voucher-Program

Want to Go Electric?

- Con Ed Infrastructure Supports between 85% - 87% of utility side costs, capped at $1.2 per participant
  
Program Team Overview

☑ Tetra Tech, Inc.; Gladstein, Neandross & Associates (GNA); and Integrated Strategic Resources are contractors working with NYC DOT to administer the program.
Contact Information:

- www.nycctp.com
- Email us at nycctp@tetratech.com
- Or call 877-310-2733
New Jersey Zero-emission Incentive Program: Policy in Practice

March 24, 2022

Victoria Carey – Clean Energy Manager
vcarey@njeda.com
Transitioning New Jersey’s transportation system to zero-emission alternatives is critical to becoming a stronger and fairer state

Transportation accounts for 42% of NJ’s emissions, with a quarter coming from MHDV, which disproportionately impact overburdened communities.

In meeting our zero emission vehicle targets, we can reduce net emissions especially in overburdened communities.

By pursuing the zero-emission transition, we can create jobs and reduce costs, increasing economic opportunity.

A cohesive financial, strategic, and regulatory tool set coordinated across government and industry – and driven by communities’ self-identified needs – is key to meaningfully achieving our goals.
Why is the ZE MHDV transition a difficult problem to solve, and why does it require incentives?

There are many interdependent and deeply established factors that may slow adoption:

- 20- to 30-year **equipment lifespan** creates long lead time to transition
- **High upfront cost** compared to gas/diesel alternatives
- **Lack of sufficient charging infrastructure** for long-haul and high-power applications
- **Unclear residual/resale value and recycling/disposal requirements**
- **Weight restrictions** may limit shipment volumes, impacting the bottom-line
- Greater **vehicle specialization** and variety than light duty passenger vehicles

*Incentives can help break this catch-22 cycle to make real and necessary progress on adoption*
Various tools and incentives are necessary to address the ZE MHDV transition at the intersection of environment, energy, and economy.

Accelerated ZE MHDV adoption, with equitable access and impact
- Tax incentives: credits, sales, & gas
- Grants, vouchers, and rebates
- Financing; second-hand programs
- Non-financial incentives
- Implement regulations and standards

Support for people and businesses in the green economy
- Direct incentives and grants
- Standards development and adoption
- Green Jobs Council work
- Technical assistance
- Expand existing programs
- Foster innovation by supporting research institutions

ZE MHDV-enabling grid modernization
- Infrastructure financing
- Make ready support
- Design of market mechanisms
- Streamlining of processes
- Implement regulations and standards

For example...

NJ ZIP: Zero-emission Incentive Program – At a glance
NJEDA’s RGGI-funded Voucher Pilot for Medium Duty Vehicles

**Funding**
$44.25M in voucher pool (expanded from an initial $15M pool), anticipated to support purchase of approximately 300 vehicles.

**Timing**
First come, first serve with rolling approvals, open until all funds committed. Set asides by location and for small businesses to ensure equitable access.

**Eligibility**
Businesses or institutions operating or registering/domiciling zero-emission medium duty vehicles in Greater Camden, Newark, New Brunswick, and Shore Areas.

### Voucher Amounts

<table>
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<tr>
<th>Vehicle Class</th>
<th>Voucher $</th>
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<tbody>
<tr>
<td>Class 2b</td>
<td>$25,000</td>
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<tr>
<td>Class 3</td>
<td>$55,000</td>
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<tr>
<td>Class 4</td>
<td>$75,000</td>
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<tr>
<td>Class 5</td>
<td>$85,000</td>
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<tr>
<td>Class 6</td>
<td>$100,000</td>
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</tbody>
</table>

### Bonus voucher criteria

- Minority-, women-, or veteran-owned business ($4k)
- Small business (25%)
- Small business scrappage ($2k)
- 25% NJ-manufactured (25%)
- Public access for driver readiness and education ($2k)

### Basic program requirements

- $1000 application fee
- Buy new ZEV & register in NJ
- 3 years operation with 75% in NJ and 50% in EJ
- Vendor provides charging and in-state maintenance plan
- Comply with audit requirements

LEARN MORE AT [www.njeda.com/njzip](http://www.njeda.com/njzip)
What communities are eligible?

**Greater Camden Area**
- Bellmawr, Camden, Cherry Hill, Cinnaminson, Collingswood, Delran, Deptford, Gloucester, Lawnside, Lindenwold, Magnolia, Maple Shade, Merchantville, Mount Ephraim, Mount Laurel, Palmyra, Paulsboro, Pennsauken, Riverside, Somerdale, Stratford, Voorhees, Washington, West Deptford, Westville, Woodbury, Woodlynne

**Greater Newark Area**
- Bayonne, Belleville, Bloomfield, Carlstadt, Carteret, Clark, Clifton, Cranford, East Newark, East Orange, East Rutherford, Elizabeth, Glen Ridge, Guttenberg, Harrison, Hillside, Hoboken, Irvington, Jersey City, Kearney, Kenilworth, Linden, Little Falls, Livingston, Lyndhurst, Maplewood, Millburn, Montclair, Moonachie, Newark, North Arlington, North Bergen, Nutley, Orange, Passaic, Rahway, Roselle, Roselle Park, Rutherford, Secaucus, South Orange, Springfield, Summit, Union City, Union Township, Verona, Wallington, Weehawken, West New York, West Orange, Westfield, Woodridge

**Greater New Brunswick Area**
- Bound Brook, Bridgewater, Clark, Dunellen, East Brunswick, Edison, Franklin, Green Brook, Highland Park, Hillsborough, Jamesburg, Manville, Metuchen, Middlesex, Monroe, Montgomery, New Brunswick, North Brunswick, North Plainfield, Old Bridge, Perth Amboy, Piscataway, Plainfield, Raritan, Sayreville, Scotch Plains, Somerville, South Amboy, South Bound Brook, South Brunswick, South Plainfield, South River, Spotswood, Woodbridge

**Greater Shore Area**
- Greater Shore Area: Absecon, Asbury Park, Atlantic City, BarNEGat Township, Berkeley Township, Bradley Beach Borough, Brick Township, BriGantine, Cape May, Colts Neck Township, Eatontown Borough, Egg Harbor City, Egg Harbor Township, Farmingdale Borough, Gallowsay Township, Highlands Borough, Holmdel Township, Howell Township, Keepsburg Borough, Keypor Township, Lacey Township, Lakewood Township, Little Egg Harbor Township, Long Branch, Lower Township, Manchester Township, Middle Township, Middletown Township, Neptune City Borough, Neptune Township, North Wildwood, Northfield, Ocean City, Ocean Heights Borough, Ocean Township, Pleasantville, Point Pleasant Beach Borough, Red Bank Borough, Seaside Heights Borough, Shrewsbury Township, Somers Point, South Toms River Borough, Stafford Township, Tinton Falls Borough, Toms River Township, Tuckerton Borough, Union Beach Borough, Ventnor City, Wildwood, Woodbine Borough
Example Voucher Calculation

How do you calculate the voucher amount?

You don’t have to! The application auto-calculates. But for example…

You are a small, women- and veteran-owned NJ business. You need to buy (1) Class 3 vehicle to add to your fleet. You find an approved Vendor who sells a zero-emission version, and get a quote of $125,000 (pre-voucher) for the vehicle.

\[
\text{Voucher amount} = ( \text{Base voucher amount} \times \text{Small business bonus} ) + \text{Woman-owned business bonus} + \text{Veteran-owned business bonus}
\]

\[
\text{Voucher amount} = ( \$55,000 \times 1.25 ) + \$4,000 + \$4,000
\]

\[
\text{Voucher amount} = \$76,750
\]

\[
\text{Upfront cost to buyer} = \$125,000 - \$76,750 = \$48,250 \text{ final cost with voucher}
\]

Note: All vouchers are capped at 100% of vehicle cost and a single applicant is capped at $1.5M
NJ ZIP By the Numbers (as of March 2022)

Overall program participation to-date

$44.25M available // $38.6M in submitted voucher applications

*This is representative of more than 190 applications for approximately 400 vehicles!*

33 applications have been approved // $14.46M vouchers reserved

Purchaser demographics

91 applicants are minority-owned businesses

26 applicants are women-owned businesses

2 applicants are veteran-owned businesses

185 applicants are small businesses

Vendors

17 vendors approved
## Illustrative program design process and considerations example

<table>
<thead>
<tr>
<th>Sample of stakeholder-identified issues</th>
<th>NJ ZIP pilot design features</th>
<th>Future research?</th>
</tr>
</thead>
</table>
| **Upfront costs of ZE MHDV are too high** | • Reduce upfront cost with voucher rather than rebate or tax incentive  
 • Provide bonuses for small and minority-, woman-, and veteran-owned businesses | • Financing options  
 • Lease programs  
 • Pre-owned vehicles  
 • Repower/retrofit |
| **Environmental justice communities need immediacy of solutions** | • Focus on medium-duty vehicles  
 • Require registration of ZEV in 6 months  
 • Require >50% operation within pilot overburdened communities, greater Camden and greater Newark areas | • Heavy-duty sector  
 • Expand to more areas  
 • Use-case focused support |
| **There is limited charging infrastructure available** | • Address supply / demand catch 22 by supporting vehicle purchases  
 • Focus pilot on short-haul or depot-based use-cases | • Make ready funding  
 • Charger incentives |
| **ZE MHDV support structures in NJ are limited** | • Require the provision of a standard warranty and in-state servicing | • Education campaigns & certs development  
 • Business incentives |
Where can I find more information about NJ ZIP?

https://www.njeda.com/njzip/
NJ ZIP: Common questions

Where can I find more information about EVs in NJ?

https://www.drivegreen.nj.gov/
Public Sector Initiatives

Questions and Discussion

Please use the Chat box to ask questions.

Please mute yourself.
NYMTC Clean Freight Corridors Planning Study

- Leslie Fordjour, New York Metropolitan Transportation Council
- Chris Lamm, Cambridge Systematics
- Al Beatty, CALSTART

Please use the Chat box to ask questions during the presentations.

Please mute yourself.
Geographic scope of the study
Study Objective

Assess opportunities for the development of **Clean Freight Corridors** in the NYMTC planning area that are integrated within the larger Multi-State Metropolitan Region.

This study has:

- Inventoried existing alternative fuel infrastructure in the region;
- Reviewed current and emerging alternative fuel technologies;
- Identified gaps between existing and future alternative fuel infrastructure capacities;
- Analyzed goods movement trends and forecasts;
- Identified and defined optimal corridors for recommended designations as clean freight corridors and identified needs for the development of additional clean freight infrastructure in each corridor.
Project Team

• NYMTC Project Management – Leslie Fordjour, NYMTC Project Manager

• Consultant Team Leaders:

  - Chris Lamm, Consultant Project Manager
  - Katie Kirk, Deputy Project Manager
  - Benjamin Mandel
    NE Regional Director
  - Al Beatty
    Lead PM, Innovative Mobility
  - Nora Madonick
Key Findings

• Trucks constitute a significant source of greenhouse gas and criteria air pollution with a disproportionate impact on low-income communities

• Freight volumes in the region are projected to grow 37% between 2018 and 2045

• Diesel is projected to fall below 50% of new truck sales between 2029-2034, with battery electric, fuel cell electric, and compressed natural gas constituting the majority of truck sales past 2030

• There is significant policy support for diesel alternatives throughout the study region but additional measures are needed to support alternative fuel fleet turnover
Title VI / Environmental Justice
Title VI / Environmental Justice
Recommendations

• High “readiness” corridor segments have good alternative fueling infrastructure coverage, high truck volume, and proximity to freight-generating facilities

• High “need” corridor segments have high levels of diesel particulate matter pollution and high projected demand for alternative fuel based on vehicle adoption projections

• Implications:
  • High readiness / high need = Designate as Clean Freight Corridors (priority)
  • Low readiness / high need = Prioritize for additional alternative fuel station development
  • High readiness / low need = Longer-term CFC designation
  • Low readiness / low need = No recommendation
## Recommendations

<table>
<thead>
<tr>
<th>Clean Freight Corridor (High Readiness, High Need)</th>
<th>Highway</th>
<th>Segment</th>
<th>High Readiness</th>
<th>High Need</th>
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<tbody>
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<td></td>
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<td>EV</td>
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<td>Queens</td>
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<td>Suffolk</td>
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</tbody>
</table>
Regional Assessment for Clean Freight Corridors
Regional Assessment for Clean Freight Corridors

- Identified existing alternative fuel infrastructure and FHWA corridor designations

- Filtered stations to match medium- and heavy-duty (M/HD) theoretical vehicle compatibility

- Produced maps for each fuel type and identified gaps in infrastructure networks
Assessment and Gaps – CNG
Assessment and Gaps – Propane
Assessment and Gaps – Hydrogen
Assessment and Gaps – Electric
Alternative Fuel Vehicle Technology Scan and Projections
1. Characterize the state of technology for major alternative fuel types and the vehicles that use them

2. Describe the policy and regulatory landscape for AFV technologies in the study area

3. Project AFV adoption patterns among truck fleets through 2050
Policy Outlook

• Significant policy support for diesel alternatives within the study region
• Policy outlook is brightest for zero-emission technologies (BEV and FCEV)
  • Emergence of structures for utility involvement and investment in fleet electrification lays a groundwork to be replicated
• Regulatory hurdles and policy aversion to combustion technology will continue to impede growth in CNG and LPG technology
• Additional regulatory and incentive actions must be taken to achieve policy objectives
Modeling Results: Adoption Rate

- Diesel is projected to drop under 50% of sales between 2029-2034
- BEV ends with the highest sales share in each scenario (38-60%)
  - FCEV ends between 28-33%
  - CNG ends between 4-29%
  - Diesel ends between 0.5-6%
  - LPG ends with negligible sales
- Less aggressive adopter profiles (2B and 2C) result in greater sensitivity to incentives
  - Greater sales share volatility
Online GIS Map

Provides easy viewing access

Allows viewers to toggle any map layers on/off

Continuously updated to include new layers as analysis proceeds

Online map
Freight Demand Trends and Forecasts
Regional Freight Commodity Flows

88% of freight tons in MAP Forum Region move by truck (2018)
Total freight volume (in tons) expected to increase 37% through 2045

<table>
<thead>
<tr>
<th>Domestic Mode</th>
<th>Tons (M)</th>
<th>Units (M)</th>
<th>Value (SB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck</td>
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<td>Air</td>
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<tr>
<td>Other</td>
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<tr>
<td>Grand Total</td>
<td>655.3</td>
<td>51.39</td>
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</table>

Source: IHS Markit Transearch, analysis performed by WSP for NYMTC Plan 2050 (forthcoming).
Corridor-Level Freight Demand Generators

Data/Information Sources:
- Business establishment data (vendor-sourced)
- Census business pattern data
- Recent plans and studies
- Interviews with NYMTC members (summer and fall, 2020)

Analysis approach:
- Businesses within 5 miles of key freight corridors
- Freight-generating industry sectors (NAICS 11-49)
- Location employment 100+
Clean Freight Corridor
Recommendations
“Putting it All Together”

- Gaps, Needs, and Recommendations
  - AFV Projections
  - Existing Corridor Designations
  - Freight Demand and Origin/Destinations
Draft Corridor Designation Method

• Readiness levels by fuel type
  • Weighted composite score based on TAC input
    • Fuel station coverage: 44%
    • Freight Demand Clusters: 29%
    • Existing Truck Volume: 27%
  • High, medium, or low readiness (relative)
  • “High” readiness segments = designated clean corridors

• Need levels by fuel type
  • Projected demand: 50%
  • Air quality: 50%
  • Segments with a low readiness and high need could be designated as priority development corridors
Optimal Mix of New Clean Freight Corridors

• **Recommended Clean Freight Corridors**
  • High **Readiness** for at least three fuel types
    • Fuel station coverage (by fuel type)
    • Proximity to freight demand clusters
    • High existing truck volume

• **Recommended Priority Development Corridors**
  • Low readiness but high **Need** for EV, H2, and CNG
    • Projected demand (by fuel type)
    • High levels of diesel particulate matter
  • **OR** fills a key gap between other designated segments
  • **OR** connects to a designated clean fuel development corridor in a neighboring jurisdiction
<table>
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Implementation Considerations

• Considerations for Corridor Designation
  • Finalize list based on factors outside project scope
    • Further discussion with agencies in adjacent jurisdictions and other stakeholders
    • Further consideration of EJ communities
    • Examine role of different fuel types

• Develop a signage and communication plan

• Considerations for Infrastructure Development
  • Policy considerations
    • Federal (funding, regulatory barriers)
    • State/Regional (Multi-State MOU and Action Plan, leverage existing state incentives)
    • Local (zoning and permitting)
Implementation Considerations

• Considerations for Infrastructure Development (cont.)
  • Role of each fuel type
  • Fuel station siting (spacing, size, redundancy, fuel capacity)
  • Truck-compatible development (turning radii, fuel station dimensions)
  • Engaging local communities
  • Financing (public and private funding sources and mechanisms)

Electric Island Heavy Duty Vehicle Charging Station, Portland, Oregon

Source: Daimler Trucks North America
Thank you!

If you have any questions, comments, or additional feedback, please reach out to Leslie Fordjour, NYMTC Leslie.Fordjour@dot.ny.gov
• Gerry Bogacz, New York Metropolitan Transportation Council
• Anne Strauss-Wieder, North Jersey Transportation Planning Authority