



Michigan Sustainability Conference

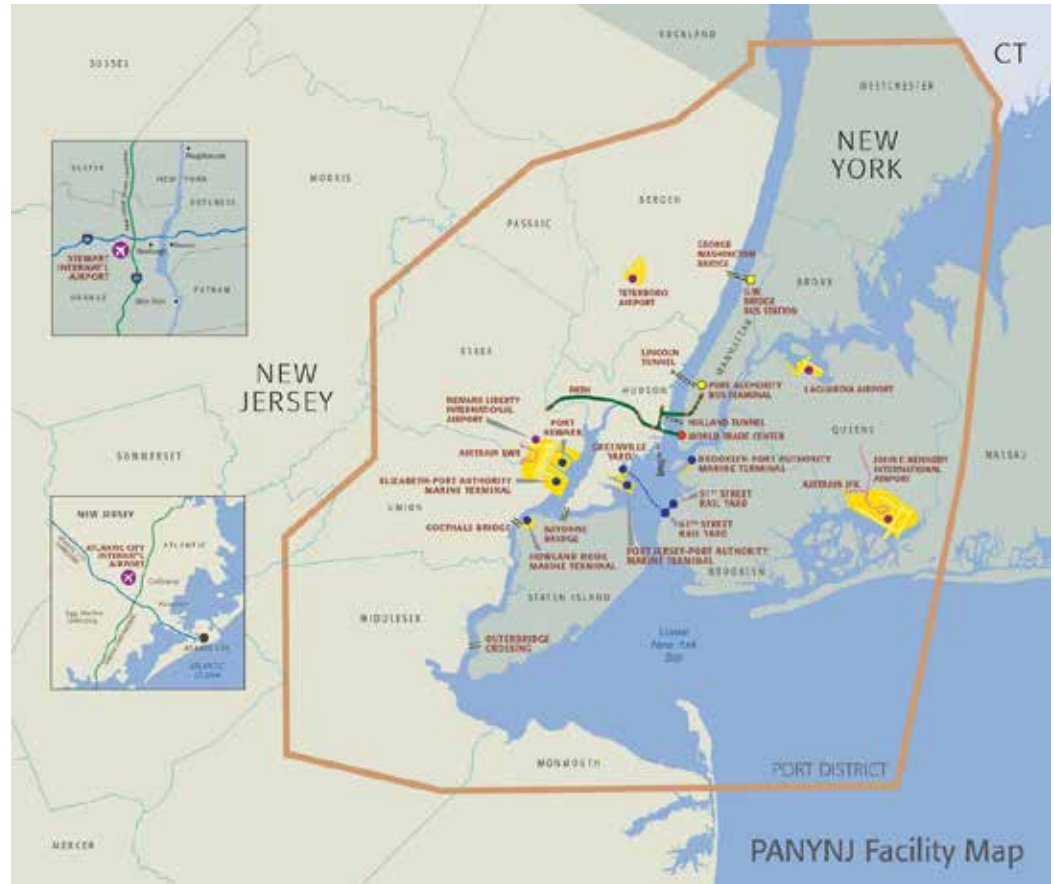
Founded in 1921 by the U.S. Congress as a bi-state authority, The Port Authority of NY & NJ builds, operates, and maintains many of the most important transportation and trade infrastructure assets in the country.

Operates significant multi-modal facilities that connect the region:

- Aviation
- Ports
- Tunnels, Bridges & Terminals
- PATH (rail)
- WTC

Area of jurisdiction call the “Port District,” (a bi-state region of about 1,500 square miles and 19 million residents) centered on the Statue of Liberty

Central Automotive Division (CAD) maintains the 2600+ pieces of equipment that are owned & operated by the agency.





PANYNJ Fleet

- Compressed Natural Gas
- Biodiesel - B20
- Flex Fuel
- Unleaded Gasoline
- Solar
- Propane
- Hybrid / PHEV / BEV
- 12 Onsite Fueling stations
- 144 Level 2 charging ports
- 12 DC fast / level 3
- 2 Renewable level 2 chargers

Items for consideration

Budget

- Funding / Incentives
- Total cost of ownership
- Infrastructure
- R.O.I. on fuel
- Training / Equipment

Environment

- Cost vs Impact
- Anthropogenic vs Biogenic
- Minimize GHG
- Decrease dependence on fossil fuels

Availability

- Regional fuel
- Infrastructure
- Class of vehicle
- Modifications
- Customer outreach

Compressed Natural Gas

What is CNG?

- Compressing natural gas (methane) to less than 1% of its original volume at standard atmospheric pressure
- Availability / Dependability
 - CNG reduces dependence on foreign oil
 - Dedicated / Bi-fuel
 - Cost effective
 - Restriction by vehicle
- Support
 - Infrastructure
 - Vehicle Modifications
- Vehicle Class
 - LD
 - MD
 - HD



Biodiesel B20

What is biodiesel?

- Renewable , biodegradable fuel manufactured from vegetable oils or animal fats
- Availability / Dependability
 - B20 helps reduces dependence on foreign oil
 - Readily available
 - No restriction by vehicle
 - Cold weather concerns
- Support
 - No infrastructure changes
 - Vehicle Modifications not required
- Vehicle Class
 - HD
 - MD
 - LD



Renewable Diesel - R50

What is Renewable Diesel?

- Renewable, biodegradable fuel manufactured from vegetable oils or animal fats that is hydrogenated
- Availability / Dependability
 - Reduces dependence on foreign oil
 - No additional infrastructure required
 - Meets ASTM D975
 - No use restrictions
 - Not readily available
- Support
 - Contractor/Supplier support essential.
- Vehicle Class
 - HD
 - MD



E85

What is E85?

- 85% ethanol (corn-based alcohol)
15% unleaded gasoline
- Availability / Dependability
 - Reduces dependence on foreign oil
 - Cost is comparable per gallon basis -
not per energy unit basis
 - Restriction by vehicle
- Support
 - Infrastructure modifications
 - Revisions for conversions
 - Vehicle Modifications
- Vehicle Class
 - LD



Battery Electric Vehicle

What is BEV?

- Use a battery pack to store the electrical energy that powers the motor
- Availability / Dependability
 - Reduces dependence on foreign oil
 - Reduce maintenance
 - Infrastructure required
 - Mechanic training
 - Readily available
- Support
 - Education / training
 - TCO vs Initial cost
- Vehicle Class
 - LD
 - MD / HD In near future



Plug-in Hybrid Electric Vehicle

What is PHEV?

- Use batteries to power an electric motor and use another fuel, to power an internal combustion engine or other propulsion source
- Availability / Dependability
 - Infrastructure required
 - Mechanic training
 - Readily available
- Support
 - Education / training
- Vehicle Class
 - LD



Education

- Knowledge of equipment
- Research infrastructure
- Purchasing habits
- Training for mechanics
- Emergency personnel
- Educate drivers on operating / fueling
- Asset utilization





Technology Solution:

Telematics Data:

- Mileage and idle time
- Frequency of stops / location
- Asset utilization

Informs:

- Charging level required
- Optimal location of charging infrastructure
- Number of charging stations
- Fleet right-sizing and allocations





Central Automotive Division Testing

Mack – Bio Based Fluids

- Transmission
- Gear oil
- Hydraulic
- Engine oil
- Coolant

Soy Based Supplies

- Degreasers
- Soaps / Lotions
- Lubricants
- Adhesive removers

Product Testing

- Idle management
- Rotors & pads
- Filters
- Biosynthetic Oils
- EV chargers

Tests Completed

- Renewable Diesel
- Hydrogen Fuel Cell Vehicles
- Soy Tires
- Telematics

Outreach Programs



- **Expo's / Conferences**
- **Clean Cities**
- **Local Vocational schools**
- **Job Fairs**
- **Neighboring Agencies**

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