**Purchase Alternative Fuel Vehicles**

5 Points  | 10 Points  | 15 Points
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Updated January 2020

Municipalities can now earn 5, 10, or 15 points for this action. The specific types of vehicles that can earn points under this action has been clarified and the Fleet Inventory Action prerequisite for the 5 and 10 point level of the action has been lifted. In addition the Resources section of the action was updated to include the Sustainable Jersey Alternative Fuel Vehicle Procurement Guide.

Procuring more fuel-efficient and low impact vehicles (cars, buses, and service vehicles) is a primary component of greening a local fleet. These vehicles produce fewer emissions and therefore improve air and water quality in addition to public health.

This action covers procurement options for the following types of alternative fuel vehicles:

- **Plug-In Electric**
- **Plug-in Hybrids (Hybrids are eligible for pursuit class law enforcement and specialized emergency response vehicles ONLY)**
- **Compressed Natural Gas (CNG)**
- **Vehicle Conversion to CNG or electric powertrain**

**IMPORTANT NOTE:** For the 2020 certification cycle hybrid vehicles and biodiesel and Ethanol (E85) vehicles are eligible for 10 points IF the municipality is approved for the Fleet Inventory action.

A municipality may earn points at three different tiers. To receive points for this action, a municipality must do **ONE** of the following:

5 points: Acquire one plug-in hybrid passenger class vehicle

10 points: Acquire one of the following:
- one plug-in fully electric vehicle (any vehicle class); golf carts are not eligible
- one compressed natural gas (CNG) heavy duty vehicle
- a service contract that specifies hauling services be provided via alternative fuel vehicles
- gasoline hybrid vehicle (for pursuit class law enforcement and specialized emergency response vehicles only)

15 Points: Convert 5% of total fleet to plug-in electric vehicles (or CNG for heavy duty classes, or hybrid vehicles for law enforcement and specialized emergency response vehicles).

The 15 point level of this action requires completion of the **Fleet Inventory action**. The fleet inventory should document that at least 5% of the vehicles owned by the municipality are alternative fuel vehicles that are eligible for points under this action.

- Additional points for AFV service contracts (for refuse collection, etc.) can be obtained with the **Meet Target for Green Fleets** action.

For any point level, the vehicle acquisition/conversion may have been made in any year as long as the vehicle is still in use.

**Why is it Important?**

Greenhouse gas emissions and pollution from vehicles negatively impact the environment and public health, and inefficiencies in the municipal fleet translate into unnecessary expenses associated with higher energy bills. Improving a fleet's fuel efficiency and reducing overall emissions will result in long-term energy and cost savings, healthier air, and lower greenhouse gas (GHG) emissions.

Relative to other sectors of the economy, motor vehicles account for a particularly large share — 20 to 40 percent — of total anthropogenic GHG emissions in the Northeastern United States. Because total vehicle miles traveled are predicted to rise steadily in coming decades, motor vehicles also represent the fastest growing portion of the region's overall GHG inventory. Transportation has surpassed even industrial activity in the amount of carbon emissions that it generates.

NJDEP reported that 42 percent of New Jersey’s total greenhouse gas emissions in 2018 came from the transportation sector. The environmental impact of fleet vehicles is greater than this percentage may suggest, because they are driven more than personal vehicles. For example, the average car was driven 12,000 miles in 2000, while survey data suggests that the average business fleet car was driven close to 23,000 miles. A reasonable estimate is that fleets are responsible for about 10% of passenger vehicle miles driven. Since fleet vehicles account for such a substantial portion of the total vehicle miles driven, it is important to address the efficiency and environmental impact of existing fleets.

**Who should lead and be involved with this action?**

Implementing a Green Fleet initiative would typically include representatives from the following municipal departments:

- Staff responsible for municipal and/or departmental vehicle maintenance
- Transportation Department
- Public Works Department
- Purchasing Department or Officer
- Finance Department
- Police Department
Fire Department

Timeframe

The timeframe for implementation will vary depending on: a municipality’s current level of organization; age of vehicles in the existing fleet; complexity of the goals set; and budgetary constraints.

Project Costs and Resource Needs

AFV Vehicle Options

For each of the vehicle types listed below, total emissions and cost comparisons to conventional counterparts are included. Total emissions data, which includes both greenhouse gas emissions and smog creating pollutants, is provided in one of two formats:

- **Well to Wheel** data, which includes all emissions generated from the point of production of the fuel to emissions when the fuel use used by the vehicle.
- **Tailpipe Emissions** data, which includes only emissions created while the vehicle operates.

Unless emissions data is specified as tailpipe emissions, all emissions data given below is well to wheel data.

Total Emissions, for the purposes of this action, are defined as greenhouse gas emissions (carbon dioxide, methane, nitrous oxide, fluorinated gases) and smog causing emissions (nitrogen oxide, non-methane organic gases, carbon monoxide, particulate matter, and formaldehyde).

A. Plug-In Electric Vehicles

Vehicle emission comparisons

In New Jersey, electric vehicles average 22-33% of total greenhouse gas emissions relative to comparable gasoline vehicles. This includes the total emissions created during the creation of the electricity used to charge the vehicle. This estimate is based on data calculated using the current New Jersey electricity supply. These numbers may vary depending on source of fuel used to generate electric power in the area where the vehicle is charged. Click here for full details of emissions comparisons as reported by the US Department of Energy’s Alternative Fuel Data Center (AFDC).

Cost Comparisons

- **Initial Purchase**: Passenger class plug-in electric vehicles move closer to price parity with comparable gas powered cars each year. Projections suggest that price parity for initial purchase price will be realized in 2025. However, because of the reduced fueling and maintenance costs of today’s electric vehicles, purchase cost comparisons can be misleading because savings on O&M may offset these price differences. Options to reduce the cost of procuring electric vehicles are covered in the SJ Alternative Fuel Vehicle Procurement Guide.
- **Fueling**: According to a 2018 study from the University of Michigan the average annual fueling cost for electric lightweight vehicles in New Jersey is 48.6% of the comparative cost from fueling a gasoline vehicle. Click here to view the University of Michigan Relative Costs of Driving Electric and Gasoline Vehicles in the Individual U.S. States.
- **Battery Life**: A 2014 study from the US Department of Energy’s National Renewable Energy Laboratory (NREL) estimates a 12 to 15 year battery lifespan in moderate climates. Most EVs now come with an 8 year/100,000 mile battery warranty. To view the report by the NREL called Predictive Models of Li-ion Battery Lifetime click here.
- **Maintenance**: Maintenance costs for EVs compared to gasoline vehicles vary depending on where the vehicle is serviced and the specific vehicle model. A 2019 report from New York City showed that their electric fleet vehicles had on average between 20 – 25% less maintenance costs of gasoline powered fleet vehicles. To view the full report called NYC Reducing Maintenance Costs With Electric Vehicles, click here.

Note: A valuable resource for vehicle selection is the Atlas Fleet Vehicle Procurement Tool.

The types of Electric Vehicles commonly used in municipal fleets

- **Plug-in Electric (PEV) Passenger Vehicles**: Passenger class electric vehicles move closer to price parity with comparable gas powered cars each year. This fact, coupled with the significantly lower maintenance and fueling costs of electric cars, make PEVs great additions for municipal fleets.
- **Passenger Transport**: Electric passenger transport vehicles are becoming a mainstream technology. Passenger transport vehicles (buses, jitneys, etc.) generally cost significantly more than diesel counterparts, but there are several funding sources available to facilitate electric bus adoption. Check the funding section of this document for funding options related to passenger transportation. The benefits of adopting alternative fuel vehicles for these vehicle classes include the O&M savings as above, and cleaner air, particularly in dense urban settings.

B. Plug-In Hybrid Vehicles

While plug-in electric vehicles are becoming increasingly popular as fleet vehicles, if the current duty cycle of fleet vehicle routinely exceeds 100 miles a day in a plug-in hybrid may be a better fit as an AFV replacement.

Vehicle emission comparisons: Total emissions for plug-in hybrids depend on fueling behavior and battery size. The New Jersey average total emissions for plug-in hybrids are 43% of emissions compared to similar gasoline vehicles, according to the U.S. Department of Energy’s Alternative Fuel Data Center.

Click here to view the Alternative Fuels and Advanced Vehicles Data Center for more details on plug-in hybrid electric vehicle (PHEVs) availability.

Cost Comparisons for Hybrids: Cost comparisons for plug-in hybrid vehicles vary by model, click here to view the Department of Energy’s Hybrid Cost Calculator for comparisons of commonly available plug-in hybrids to their conventional corollaries.

C. Hybrid Pursuit Class Law Enforcement and Specialized Emergency Response Vehicles

Pursuit Class Law Enforcement Vehicles: Three major manufacturers now make hybrid vehicles specifically designed as pursuit class law enforcement vehicles. These vehicles come with idle reduction technology built in and save thousands per year in reduced fuel costs and reduce total emission from the long idle times typical for police vehicles.

Idle reduction technology installed in pursuit class hybrids allows the cabin temperature and communications devices to be utilized without the engine running. See the Spotlight section for a case study about hybrid police cruiser saving 40% on fuel costs.

Specialized Emergency Response Vehicles: For the purposes of this action, specialized emergency response vehicles are defined as vehicles that are specifically designed for a particular emergency service, like ambulances and fire engines. Municipalities with hybrid specialized emergency response vehicles are eligible for points. Non-specialized vehicles used by first responders, such as a sedan driven by fire personnel, must meet the certification standard set for other fleet cars in this action in order to be eligible for points.

To receive points for a law enforcement or specialized emergency response vehicle in this action, a municipality must purchase a hybrid vehicle. However, aftermarket idle reduction technology is a viable option for vehicles that are already owned by the municipality and have more than three years left in their projected lifespan. See the Meet Target for Green Fleet action for additional information on how to earn points for adoption of aftermarket idle reduction technologies.
D. Compressed Natural Gas (CNG) Vehicles

CNG Vehicles create approximately 10% less greenhouse gas emissions and about half as much particulate emissions than older diesel vehicles. Using CNG vehicles reduces smog emissions in residential neighborhoods for applications like refuse collection. Click here to view the NJDEP 2018 Vehicular Emission Comparison for CNG emission comparison to new diesel vehicles.

- **Initial Purchase:** A new natural gas vehicle costs roughly $4000-$8000 more than a conventional model.
- **Fueling:** The fueling price for CNG is relatively stable and generally lower than diesel and gasoline, which tend to fluctuate. The most current pricing comparisons can be found on the Department of Energy CNG Fuel Economy page located here.

A municipality must have access to a facility where the CNG vehicles can refuel. Click here to see CNG locations list.

Alternatively, the municipality could install its own refueling system. The average cost for municipal CNG dispensary is $10,000, plus installation. Details about CNG fueling can be found on the Department of Energy Alternative Fuels Data Center Natural Gas Fueling Infrastructure Development page located here.

E. Emerging Technologies

Fuel cell electric vehicles (FCEVs) feature an electric drive fueled by hydrogen. FCEVs are not currently available in New Jersey, but may be a technology to keep an eye on. Click here to read about the FCEV adoption in California.

**Renewable Diesel** is another promising new technology not currently available widely in New Jersey. The NREL Renewable Diesel Report explains the basics of Renewable Diesel. Click here to view the report.

If your town acquires a vehicle that uses an emerging technology, your vehicle can be evaluated for points on a case by case basis.

**Alternative Fuel Vehicle Conversion Options**

As an alternative to purchasing an Alternative Fuel Vehicle, some fleet managers may opt to convert a vehicle to operate on an Alternative Fuel.

Professional services will likely be required for these conversions.

A. **Natural Gas:** Conversion to compressed natural gas (CNG) can range from about $10,000 to $22,500 depending on the age of the vehicle, engine, size of CNG tanks needed, and who performs the conversion. Click here to visit the Alternative Fuel Data Center Natural Gas Vehicle Conversion page for more details.

B. **Electric:** Converting to electric vehicles can cost between $10,000 and $20,000 depending on the cost of labor and the complexity of the power system. While some of these options may seem expensive, municipalities can justify the conversion cost for newer vehicles with the resulting fuel savings over the life of the vehicle.

**What to do, and how to do it (“How to”**

We have provided recommendations for implementing this action. This guidance does not need to be followed exactly as long as the final product meets the requirements for the desired points level.

**Guidance for Procurement and Tax Incentives**

Minimizing procurement logistics and saving money when acquiring alternative fuel vehicles help make the goal of a sustainable fleet attainable. Tax incentives for electric vehicle and other alternative fuel vehicles that are available to individual purchasers for plug-in vehicles are generally not available for local government purchasing.

To simplify the procurement process while attaining the best price for vehicles, four methods can be used, separately or together:

- Crafting a Request for Proposal (RFP) for Direct Purchase
- Fleet Leasing
- Purchasing Cooperatives/Government Contracts
- Service Contracting with Alternative Fuel Vehicles

**Sustainable Jersey’s Alternative Fuel Vehicle Procurement Guide** has resources for each of the procurement strategies listed above.

**Funding and Incentives**

**New Jersey Board of Public Utilities Clean Fleet Electric Vehicle Incentive Program**

The New Jersey Board of Public Utilities (NJBPU) offers grant funding to support the purchase of up to two (2) eligible electric vehicles (EVs) and one (1) dual-port Level 2 electric vehicle charging station for local government authorities in New Jersey. Local governments can apply for:

- a $4,000 grant toward the purchase of a battery electric vehicle;
- $1,500 toward the purchase of a dual-port Level 2 charging station

The application deadline for the program is April 15, 2020, or until all of the funding is awarded. To learn more, click here.

**New Jersey Department of Environmental Protection It Pay$ to Plug-in Program**

The NJ Department of Environmental Protection offers grants for electric vehicle charging stations (EV supply equipment or EVSE) installed in public, workplace, or multi-unit residential locations. The program currently offers funding for Level 1 and Level 2 charging stations, with up to $6,000 per dual-port Level 2 charging station. For further information and to apply, click here.

**EPA Diesel Emissions Reduction Act (DERA) Funding for Electric School Buses**

DERA School Bus Rebates will offer over $10 million to public and private fleet owners for the replacement of old diesel school buses with new buses certified to EPA’s cleanest emission standards. EPA will award selected applicants $15,000-20,000 per bus for scrapping and replacing old buses. Click here to learn more about the EPA DERA program.

**VW Settlement Applications for medium and heavy duty sustainable fleet and infrastructure**

The NJDEP is accepting applications for sustainable transportation and infrastructure projects for the $72.2 million VW Settlement. Of the total funding, up to $15 million is earmarked for EV charging and hydrogen fueling, with the other 85% for other project categories.

Eligible project equipment under the VW Settlement:

1. Replacement vehicles for Class 4-8 School, Shuttle & Transit Bus model year 2009 and older
2. Replacement vehicles for Class 4-7 Local Freight Trucks model year 2009 and older
3. EV charging and hydrogen fueling

Alternatively, the municipality could install its own refueling system. The average cost for municipal CNG dispensary is $10,000, plus installation. Details about CNG fueling can be found on the Department of Energy Alternative Fuels Data Center Natural Gas Fueling Infrastructure Development page located here.
What to submit to earn points for this action

In order to earn points for this action, the following documentation must be submitted as part of the online certification application in order to verify that the action requirements have been met.

Description of Implementation – In the text box provided on the submission page for this action provide a short narrative (300 words or less) of what has been accomplished and the impact it has or will have on the community. Discuss in your narrative how the vehicle is being used and what options are available for charging the vehicle.

For 5 points or 10 points

Upload a copy of the current vehicle registration:

- 5 points for a plug-in hybrid vehicle any class.
- 10 points for one of the following:
  - one plug-in fully electric vehicle (any vehicle class); golf carts are not eligible
  - one compressed natural gas (CNG) heavy duty vehicle
  - a service contract that specifies passenger transportation services (bussing) or hauling services, such as trash collection, be provided via alternative fuel vehicles
  - gasoline hybrid vehicle (for pursuit class law enforcement and specialized emergency response vehicles only)

If you are submitting for points based on a service contract for hauling services, please upload a contract valid within the 2.5 year expiration period for the action.

IMPORTANT NOTE: For the 2020 certification cycle hybrid vehicles and biodiesel and Ethanol (E85) vehicles are eligible for 10 points IF the municipality is approved for the Fleet Inventory action.

For 15 points

- Pre-requisite: Sustainable Jersey Fleet Inventory Action.
  Submit a fleet inventory from the Fleet Inventory action showing that 5% or more of the municipal fleet comprises vehicles that are eligible for points under this action (plug-in electric vehicles; CNG for heavy duty classes; hybrid vehicles for law enforcement and specialized emergency response vehicles).

Resubmission Requirements

To resubmit for the 5 or 10 point level of this action, please provide a copy of the current vehicle registrations and a signed statement by an authorized municipal official documenting that the vehicles are operating as part of the municipal fleet. For contract vehicles, submit documentation of a current contract for hauling services specifying that alternative fuel vehicles are in use.

To resubmit for the 15 point level of this action, the Fleet Inventory action must be currently approved or expired in the current or previous calendar year. The fleet inventory should demonstrate that 5% of the current municipal fleet comprises vehicles that are eligible for points under this action.

Approved Action Expiration Date

Approved actions will be set to expire after two full calendar years. For example, an action approved in 2020 will be set to expire December 31, 2022.

IMPORTANT NOTES

You can upload up to six separate documents for each action. Please excerpt relevant information from large documents. Please remember that your submissions will be viewable by the public as part of your certified report.

Spotlight

Ford Responder Hybrid Police Vehicle in Maplewood, NJ

In 2018 the Maplewood Police Department acquired a hybrid Ford Responder pursuit class patrol vehicle. The vehicle was purchased through the Educational Services Commission of New Jersey purchasing cooperative.

Maplewood Police Chief, Jimmy DeVaul, reported that the new patrol vehicle has been well received by his officers. The pros of the car, according to Chief DeVaul, are the savings in gasoline, the ability to use temperature controls and communications devices without idling, and a safety feature that allows officers to exit the vehicle without putting the car in park during emergency situations. Chief DeVaul estimates a 60% reduction in gasoline usage when compared to similar non-hybrid patrol cars.

When asked about any downsides of the vehicle, Chief DeVaul reported that the reduced size of the back seat does not allow for detainees to be transported in this vehicle. Also, Chief DeVaul said that the Responder Maplewood purchased has slightly less acceleration than the fleet’s other patrol vehicles, but pointed out the vehicle is available in different engine sizes.

Considering all factors, the Maplewood Police Department feels the pros far outweigh the cons and plans to purchase more of these vehicles. According to the manufacturer, when compared to a non-hybrid pursuit class vehicle, the average carbon emission reduction for this vehicle is 27K lbs of CO2 per year.

Click here to view Maplewood’s purchase order for the Ford Responder Hybrid and authorizing resolution.

Franklin Township (Somerset)

As shown, Council approved the purchase of five Chevrolet Bolt electric vehicles for building inspectors on August 14, 2018. The vehicles have been purchased and were placed in service Feb. 11, 2019 - somewhat delayed because the area around the charging stations was not repaved before winter. They have been charged at the Public Works garage, where a sixth charging station was installed.

- Purchase Alternative Fuel Vehicles Council Resolution
- Purchase Alternative Fuel Vehicles - purchase order
- Purchase Alternative Fuel Vehicles - Bolt Quote

Resources

Funding Resources

The U.S. Department of Energy Alternative Fuel Data Center (AFDC) has a complete database of state and federal incentives and laws related to alternative fuels and vehicles, air quality, fuel efficiency, and other transportation related topics.

Page 4 of 5 - 11 Mar 2020