

MASSEVIP Fleets

A grant program for plug-in vehicles and electric charging stations

By Evan Melillo

Background

- MASSEVIP Fleets is a grant program administered by the Department of Environmental Protection and it provides grants for:
 - Battery electric vehicles (BEVs)
 - Plug-in hybrid electric vehicles (PHEVs)
 - Electric charging stations.
- I have experience administering this grant for the Town of Dartmouth, the Town of Marion, the Town of Middleborough, the Town of Norton, and the Town of Weymouth.

Plug-In Hybrid Electric Vehicle (PHEV)



- \$3,000 is available for leasing a plug-in hybrid.
- The Chevy Volt (above) has 53 miles of electric range with a gasoline engine backup that gets 42 mpg.
- The Volt costs around \$3,000 to lease after grant funding.

Battery Electric Vehicle (BEV)

Nissan Leaf



-Available Since: 2010
 -Range: 107 miles EPA
 -Max. Cargo: 30.0 cu.ft.
 -Passenger Vol: 92.4cu.ft.
 -Fuel for 10,000 mi: \$388
 -Lease Price: \$12,924

BMW i3



-Available Since: 2014
 -Range: 124 miles EPA
 -Max. Cargo: 36.9 cu.ft.
 -Passenger Vol: 91.5 cu.ft.
 -Fuel for 10,000 mi: \$352
 -Lease Price: Unknown

Chevy Bolt



★ Available since: 2017
 ★ Range: 238 miles EPA
 ★ Max. Cargo: 56.6 cu.ft.
 -Passenger Vol: 94.4cu.ft.
 -Fuel for 10,000 mi: \$368
 ★ -Lease Price: \$12,750

Hyundai Ioniq



-Available Since: Not Yet
 -Range: 124 miles EPA
 -Max. Cargo: 23.8 cu.ft.
 ★ Passenger Vol: 96.2cu.ft.
 ★ Fuel for 10,000 mi: \$324
 -Lease Price: Unknown

*Lease pricing based on February quotes, pricing changes monthly

**For reference, a 2011 Crown Victoria costs \$1,226 for 10,000 miles

Electric Charging Station



- Procuring a BEV receives an additional \$5,000 to purchase and install a Level 2 (240 Volt) dual charger stations.

Reasons to Lease

- Each vehicle would be leased for 36 months.
- A 3 year lease receives funding from MASSEVIP Fleets while not locking the Town into a life-time purchase commitment.
- In addition, a lease also provides a \$7,500 electric vehicle *Federal* tax credit to the leasing agency, which is put directly into the lease.
- **Leasing two plug-in vehicles for \$9,000 provides the Town with \$28,000 in State and Federal funding.**

Replacing With Plug-ins

- To replace two department vehicles in a more traditional way would mean an investment by the Town of \$50,000 to \$70,000 depending on the vehicle.
- In contrast, the Town will spend \$9,000 for two plug-in vehicles with the option to either purchase or simply return the vehicles.

Fuel Savings

- A 2017 Chevy Volt gets the equivalent of 106 mpg on electricity and 42 mpg on gasoline.
- A 2017 Chevy Bolt gets the equivalent of 119 mpg.
- Over a 30,000 mile lease that's \$1,134 for the Bolt at 15¢ per kw.
- A brand new 2011 Crown Victoria got 19 mpg combined.
- Over 30,000 miles a Crown Victoria uses \$3,679 in fuel at \$2.33 per gallon.
- **Operating the Bolt over of a cruiser is estimated to save the Town \$2,545 over 3 years in fuel alone.**

Total Savings

- The Town will look to recoup cost of leasing plug-in vehicles in the following 3 ways:
 1. Sell each Police cruiser for a conservative \$1,000.
 2. Maintenance savings of \$3,000 over 3 years.
 3. Fuel savings of more than \$2,500 over 3 years.
- That's a very conservative Total **savings of over \$6,500** per vehicle over 3 years.

Charging Station Funding

- Unfortunately, PHEVs do not come with funding for a charging station .
- Only battery electric vehicles receives funds to purchase and install charging stations.
- This means that the Town should procure at least 1 all-electric vehicles in order to qualify for charging station funding.

Other Electric Vehicle Uses

- Plug-in vehicles cost so little to lease that they can be used to fill a shortage of vehicles which can result in employees being reimbursed for personal vehicle use.
- Personal vehicle reimbursement rate is 54¢/mile.
- Plug-in vehicles can be leased, fueled, and insured for around half the reimbursement rate.

Cost Per Mile

- The price per mile of a plug-in vehicle can also be adjusted to include all fees the Town will have to pay in order to operate the new vehicle.
- Two plugins cost \$9,000 or an average of 15¢/mile over a 30,000 mile lease.
- Fuel (electricity) adds less than 4¢/mile.
- Insuring costs \$700/year, adding another 7¢/mile.
- This adds up to just 26¢/mile, while employees are being reimbursed at 54¢/mile.
- Even with just 7,500 miles driven per year, the cost only rises to 29¢/mile.

Public Charging Station

- MASSEVIP Fleets requires at least one station be built accessible to the public with each award. After 3 years, it can be restricted for Town use only.
- The public station needs be a Level 2 charger(240 Volts) and to have at least two charging nozzles.
- Any funding leftover from the public station can go towards restricted stations.

First Grant Application

- Applying for 1 all-electric vehicle and one plug-in hybrid would be a good start for the Town.
- It would also provide enough money to build a public station at the Town Hall to charge both vehicles.
- Any leftover funding could go towards addition public or restricted charging stations.

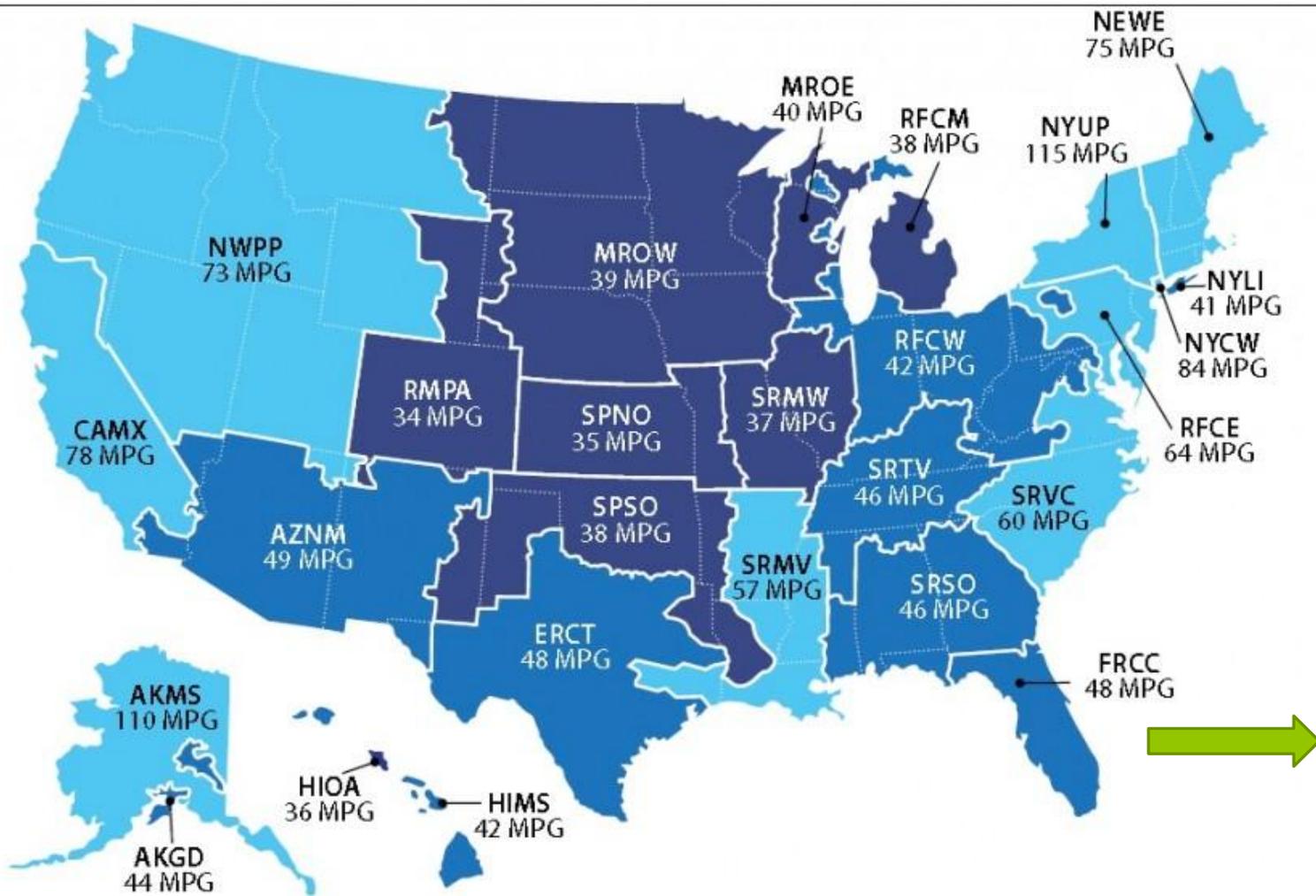
Future Grant Applications

- Once comfortable with the vehicles, additional applications can be submitted for further replacements and to mitigate reimbursement expenses.
- Exciting new vehicles coming later in 2017:
 - More plug-in passenger vehicles
 - Plug-in Minivan
 - Plug-in 4WD SUVs
 - Plug-in full size truck

Environmental Information

- Electric vehicles are certainly green in the sense that they make economic sense right now with all of the State and Federal incentives.
- There is always a lingering question as to how environmentally green they are because they are plugging into a grid after all.
- Fortunately, there have been studies taking into account regional electricity production, losses from distance, and conversion.

Table 1.4. ELECTRIC VEHICLE GLOBAL WARMING POLLUTION RATINGS AND GASOLINE VEHICLE EMISSIONS EQUIVALENTS BY ELECTRICITY GRID REGION. (The mpg value listed for each region is the combined city/highway fuel economy rating of a gasoline vehicle that would have global warming emissions equivalent to an EV.)



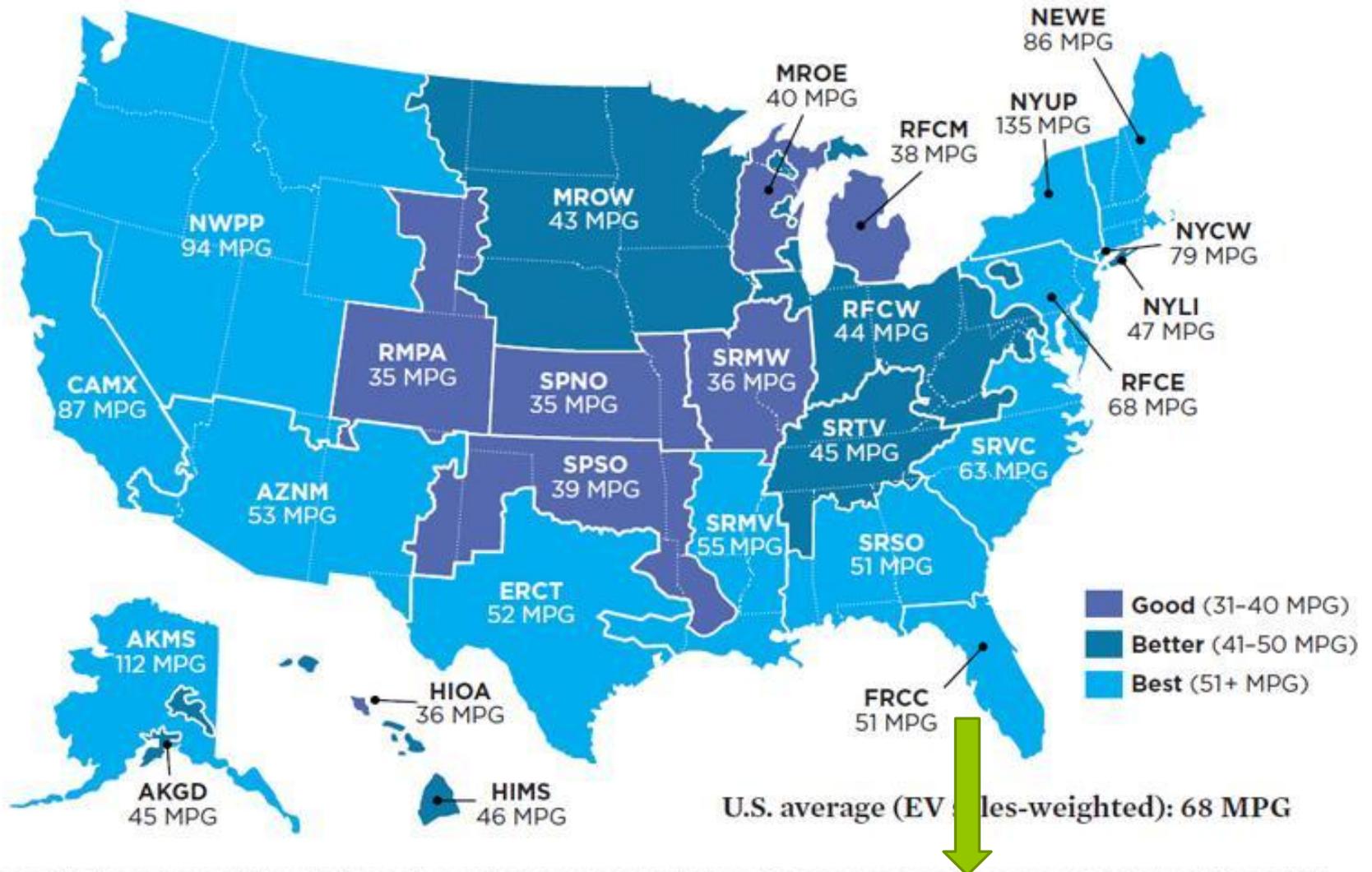
Notes: Cities were assigned to grid regions based on which utilities serve the most customers there, as identified by the EPA's Power Profiler tool. Cities marked with an asterisk (*) are served by multiple utilities, some of which are in different grid regions. This tool, available at www.epa.gov/cleanenergy/energy-and-you/how-clean.html, provides a zip code look-up to determine the primary utility and grid region. Regional global warming emissions ratings are based on 2009 power plant data in the EPA's eGRID 2012 database (the most recent available version).

Good

Better

Best

Electric Vehicle Global Warming Pollution Ratings and Gasoline Vehicle Emissions Equivalents by Region



Note: The MPG (miles per gallon) value listed for each region is the combined city/highway fuel economy rating of a gasoline vehicle that would have global warming emissions equivalent to driving an EV. Regional global warming emissions ratings are based on 2012 power plant data in the EPA's eGRID 2015 database (the most recent version). Comparisons include gasoline and electricity fuel production emissions. The 68 MPG U.S. average is a sales-weighted average based on where EVs were sold in 2014.

Questions?