

Appendix-Assumptions for Calculations in Project Get Ready Menu

The following assumptions were made for in order to perform the calculations listed above:

Number of vehicles in hypothetical city

In a plug-in ready city, 2% of total registered vehicles will be electrified vehicles by December, 2014. For the purposes of the calculations in this document, 2% means 10,000 plug in cars after 5 years.

We arrived at 10,000 plug in cars being approximately 2% of total registered vehicles by using the City of Denver, Colorado as an example city.

For all calculations

- Gas is \$2.50 per gallon.
- Each vehicle travels 12,000 miles/year.
- The average vehicle lifetime is 16 years.
- Home level two charge stations cost \$750 each¹.
- Work level two charge stations cost \$3,000 with two ports. This number includes installation labor and cost of hardware. Costs can range widely depending on the installation challenges (e.g. tearing up the walls of a parking deck can add thousands).
- Public level two charge stations cost \$7,000 each. This number includes installation labor and cost of hardware. Costs can range widely depending on installation challenges (e.g. tearing up sidewalk, walls to lay wire).

For 30 fleet vehicles

- Each 30 vehicle fleet consists of 15 retrofits and 15 new vehicles (factory model cars).
- Five retrofits are adopted in the first year (2009), 10 in the second year (2010).
- Five factory model cars are adopted in the third year (2011), 10 in the fourth year (2012).
- The cost of a retrofit is \$7,000 assuming that a \$3,000 subsidy is in place.
- The cost of a factory model vehicle assumes that a \$5,000 subsidy is in place.
- Retrofits are converted, pre-owned hybrids. The incremental cost of a retrofit is included in the calculations above, not the cost of the vehicle that gets retrofitted.
- The cost of a factory model car is incremental above a \$30,000 vehicle baseline.
- The cost of electricity per kWh of is \$0.05 off peak, \$0.27 on peak.

Free parking spot

- In order to provide one free parking spot, a city forfeits revenues of \$1.75 per hour, 10 hours per day, five days a week, for five years. One free spot therefore costs \$22,750.

¹ The cost of charging stations vary greatly depending on where they are installed. Numbers shown here are based on industry interviews, and represent estimates for an average, existing building. Some public charge stations can cost half as much, or three times as much. Installing charge spots in new construction costs a small fraction of the price of installing in an existing building. We assume the public and work station will provide five years of free electricity.

Assign a project leader:

- The project leader earns \$80,000 per year and spends half of her/his time on Project Get Ready initiatives. Therefore, the assigned project leader costs \$40,000.

\$3,000 vehicle subsidy

- A \$3,000 vehicle subsidy is awarded to 10,000 vehicle owners (10,000 vehicles is the 'hypothetical city' five year total vehicle benchmark).

Public Level 2 charging spots

- Public chargers have two visits per day and provide a six kWh charge each visit. One charge is off peak (\$0.05 per kWh) and the other is on peak (\$0.27 per kWh).
- Hardware costs \$3,500.
- Labor to install charger costs \$1,500.
- Charger maintenance costs \$500.
- Electricity per year costs \$300.
- Total cost of public charger is \$7,000.

Utility Actions

- Does not include benefits associated with potential ancillary services, distributed generation or meeting air quality/RPS targets.

Total hypothetical city vehicle adoption

- 1,000 retrofits are adopted each year for five years.
- 1,000 factory model cars are adopted in year three and 2000 factory model cars adopted in both year four and five.

Provide up to \$3,000 for home chargers

- The average cost of a home charger installation is \$1,000. 60% of people have home charging capability and therefore the total cost of installing home chargers in our hypothetical city is \$6,000,000.

Education program

- An education program will cost at least \$100,000.

Jobs created by “must have” actions

- Based on Bureau of Labor Statistics Domestic Employment Requirement Coefficients.
- Non-retrofit auto-manufacturing sector cash flows have not been included in this calculation.
- Number of Jobs= cash flow over five years* BLS Multiplier/1 million/5 years
- Assumed retrofitting would best fit into Motor Vehicle Body and Trailer Manufacturing sector (BLS multiplier of 12.02).
- Assumed electricity payments would best fit into Electric Power Generation, Transmission and Distribution sector (BLS multiplier of 5.20).

- Assumed charging infrastructure would best fit into Electrical Equipment Manufacturing sector (BLS multiplier of 9.07).

Emissions

- Each kWh of electricity used for the vehicles is assumed to emit 684 grams of CO₂-equivalent (combines CO₂ and all other greenhouse gases into one metric). The greenhouse gas intensity is assumed to remain constant over time.
- Each gallon of gasoline burned in the vehicle is assumed to emit 11,500 grams of CO₂-equivalent. This includes the emissions caused by extraction and refining as well as combustion.
- To calculate the oil saved we compare the gasoline usage of our fleet of vehicles to the gasoline a fleet of vehicles that match the Energy Information Administration's projections for new car fuel efficiency for the next five years.
- There are 46.4 gallons of gasoline per barrel of oil (btu equivalency basis).