Electric Vehicles Fact Sheet

Alexander Croft | Prof. Nicodemus | Lafayette College Mechanical Engineering Department

Electric Vehicles (EV) at a glance

Electric Vehicles operate on solely one or more electric motors powered by rechargeable battery packs. EV vehicles produce no tailpipe emissions and is completely independent of all other fuel sources.

Pro/Con list

Pros
- Energy efficient
- Environmentally friendly
- Performance benefits
- Reduction on foreign energy dependence
- Reduced noise pollution

Cons
- Driving range
- Battery charge time
- Battery cost
- Battery size and weight
- Limited existing infrastructure

Battery and Infrastructure

Battery
Large drawbacks associated with EV vehicles are due to certain constraints on the battery. Current lithium-ion powered batteries make them costly and heavy, increasing the capital cost and consumer inconvenience. Technology today is not capable of producing a battery that is cheap, light, and capable (in terms of range) enough to make it worth the switch to some consumers.

Infrastructure
The limited existing infrastructure for charging needs to become more widespread in order for electric vehicles to gain nationwide acceptance. While the existing infrastructure still has a way to go in terms of becoming a non-issue, it is clear that is one of the more robust alternative fuel networks in the nation.

Although EV vehicles produce no carbon dioxide tailpipe emissions, one must take into account the possible emissions produced by the production of the electricity used. A ‘well to wheels’ (WTW) efficiency is a way of numerically quantifying how effectively the energy is getting from the source to your vehicle. As such, it is considered a complete energy vs emissions comparison.

EV Vehicles – How Environmentally Friendly are They?

<table>
<thead>
<tr>
<th>Example Car</th>
<th>Technology</th>
<th>Fuel Source</th>
<th>CO₂ content (g/MJ)</th>
<th>Well-to Wheel Efficiency (km/MJ)</th>
<th>Emissions (g/km CO₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honda CNG</td>
<td>Natural Gas Engine</td>
<td>Natural Gas</td>
<td>52.8</td>
<td>0.37</td>
<td>166.0</td>
</tr>
<tr>
<td>Honda Civic VX</td>
<td>Gasoline Engine</td>
<td>Crude Oil</td>
<td>73.0</td>
<td>0.52</td>
<td>141.7</td>
</tr>
<tr>
<td>Toyota Prius</td>
<td>Hybrid (Gas/Electric)</td>
<td>Crude Oil</td>
<td>73.0</td>
<td>0.56</td>
<td>130.4</td>
</tr>
<tr>
<td>Tesla Roadster</td>
<td>Electric</td>
<td>Natural Gas</td>
<td>52.8</td>
<td>1.15</td>
<td>46.1</td>
</tr>
</tbody>
</table>

EV car sales by model for 2014

- Nissan LEAF
- Chevrolet Volt
- Tesla Model S
- Toyota Prius
- Ford Fusion Energi
- Ford C-Max Energi

Existing Electric Charging Locations by State

- Existing Alternative Fuel Stations in the U.S.

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EV Vehicles With Components Labeled
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U.S. Department of Energy
For more information visit: https://www.fueleconomy.gov/feg/evtech.shtml

Pro/Con list

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http://www.afdc.energy.gov/fuels/electricity_infrastructure.html

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Existing Alternative Fuel Stations in the U.S.

Chart developed using data from:
Note: CNG is compressed natural gas, E85 is a type of gasoline –ethanol blend

Existing Electric Charging Locations by State


EV Vehicles – How Environmentally Friendly are They?


For more information visit: http://en.wikipedia.org/wiki/Life-cycle_assessment#Well-to-wheel


EV Vehicle With Components Labeled

Internal Diagram of Electric Car (of AMP Saturn Sky) taken from: http://www.prweb.com/releases/2008/05/prweb968944.htm

EV car sales by model for 2014

Data acquired from insideevs.com.
For more information visit: http://insideevs.com/monthly-plug-in-sales-scorecard/