Years After Purchase

<table>
<thead>
<tr>
<th>Years After Purchase</th>
<th>Cumulative Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$20,000</td>
</tr>
<tr>
<td>5</td>
<td>$30,000</td>
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<tr>
<td>10</td>
<td>$40,000</td>
</tr>
<tr>
<td>15</td>
<td>$50,000</td>
</tr>
</tbody>
</table>

LI-ION BATTERIES

- Leaf
- Volt
- Prius
- Gasoline Auto

Payment to owners of cashback vehicles average $2,400 annually

Regulation Services and the Cashback Car

Maintenance costs and rebate not applied

$4.00/gal.
$0.09¢/kWh (2009 avg)
Grid Benefits of Demand Response

- PJM Study: a 3% reduction in demand of Top 20 5hr Blocks in 5 Mid-Atlantic States could save $280 million annually.
- Brattle Group: a 5% reduction in grid peak load (757 GW) can result in $3 billion savings annually, for PV over 20 yrs of $31 billion.
Dominion MicroGrid Vision

Regional Transmission Operator (RTO)

- Microgrid
  - Distributed Load Control
  - Distributed Voltage Control
  - Direct Voltage Control

- Dominion Substation E-Grid Database
- Electrical GIS Based Control

- System & Regional Operations Center

- Billing Back Office Customer Bills

- AMI

- Utility Defined Microgrid

- Home Microgrid

- Military, Commercial, Industrial Microgrid

- Dist Storage
The Hunt for Transmission and Distribution Losses

2010 Electric System Loss < 10.3%  Includes Transmission, Distribution and “Behind the Meter”

Transmission Loss ~1.5%
Transmission to Distribution Loss ~0.9%
High & Low Voltage Distribution Loss ~0.5%
Distribution to Secondary Loss ~0.8%
Secondary Loss ~1.6%
Behind the Meter ~5%
Google Electric Future

US Electricity Generation Scenario

- SAVINGS from efficiency
- Biomass/other (23 GW)
- Geothermal (80 GW)
- Solar (250 GW)
- Wind (380 GW)
- Natural Gas (290 GW)
- Oil (0 GW)
- Coal (0 GW)
- Hydro (78 GW)
- Nuclear (115 GW)

Terawatt-hours per year (TWh/yr)


Actual demand, Baseline demand, Baseline plus plug-in demand