Electric Vehicles are Here!  
What this Means for Vermont

Renewable Energy Vermont | October 2, 2012

Karen Glitman/ VEIC
VEIC

Dedicated to reducing the:
  • economic
  • environmental costs

of energy consumption through cost-effective energy efficiency and renewable technologies.
Vermont Comprehensive Energy Plan

“If we are to achieve our goals, we must create transportation systems and support communities that allow Vermonters to embrace other means of transportation—rideshare, transit, walking, biking—while creating an infrastructure and public policies that support alternative fuels and emerging, more efficient, and renewably fueled vehicle technologies such as hybrid and electric-powered options.” (December 2011)
Vehicle Efficiency

Internal Combustion Vehicle Efficiency

Gasoline → Gas Tank → Combustion Engine → Forward Motion

>65% Energy Loss

Electric Vehicle Efficiency

Electricity from Grid → Battery → Electric Motor → Forward Motion

~12% Energy Loss
Petroleum expenditures and projected energy costs of electrified fleet 2010 $/kWh (December)

- **Taxable Gas and Diesel Sales**: $1.1 Billion
- **Projected Fuel Costs of Electrified Fleet**: $274 Million
Electric Vehicles Registered in Vermont
As of July 17, 2012

Legend
Number of Passenger Car Plug-in EVs in Zipcode
1
2
3
4
5 - 8

Make & Model
Passenger Cars
Chevrolet Volt
Toyota Prius Plug-in
Tesla Roadster
Nissan Leaf
Mitsubishi i-MiEV
Ford Focus Electric
Other (e.g., after market conversion)
Total Passenger Cars
Neighborhood Electric Vehicles (max speed 25 mph – not shown on map)
GEM
Total Plug-in Vehicles

Number Registered Statewide
33
18
7
5
1
1
23
88
63
151

Data Source:
Vermont Department of Motor Vehicles vehicle registration database as of 7/17/2012. EVs distinguished by fuel type, model and/or VIN.
Total: 15 Locations as of Sept 15

Vermont EVSE Inventory

VT Employee Access to Public Charging

Legend
- EVSE Location
- Within 10 Miles
- 10-20 Miles
- 20-40 Miles
- > 40 Miles

- Within 10 Miles
  - 145,188
  - 50%
- 10-20 Miles
  - 31,232
  - 11%
- 20-40 Miles
  - 76,814
  - 27%
- > 40 Miles
  - 34,688
  - 12%
Vermont’s Comprehensive Energy Plan

Linear Growth of EVs to 2030 and 2050 CEP Targets

- CEP Target: 90% renewables
  - 514,710 EVs

- CEP Target: 25% renewables
  - 142,975 EVs
Number of electric vehicles needed to meet CEP goals under linear growth scenario

<table>
<thead>
<tr>
<th>Year</th>
<th># Electric Vehicles needed to meet CEP goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>90</td>
</tr>
<tr>
<td>2020</td>
<td>63,290</td>
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<tr>
<td>2030</td>
<td>142,975</td>
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<tr>
<td>2040</td>
<td>327,975</td>
</tr>
<tr>
<td>2050</td>
<td>514,710</td>
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Vermont’s Comprehensive Energy Plan

Exponential Growth of EVs to 2030 and 2050 CEP Targets

- CEP Target: 25% renewables
  - 142,975 EVs

- CEP Target: 90% renewables
  - 514,710 EVs
Number of electric vehicles needed at 10 year increments for Scenario 2

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<td>2012</td>
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Charging levels

Level 1 Charging

Level 2 charging

Inductive charging

DC Fast Charging

More than 1.5 million charge stations by 2017
—Pike Research

Blink DC Fast Charge Station photo by ECOtality
By 2020, an Advanced Electric Vehicle fleet of 50,000 in Vermont could represent a power resource of 300 MW, with the ability to store 1,000 MWh of energy.
My Nissan LEAF*
The Details

- Live in Jericho – work in Burlington, 34 mile roundtrip commute
- Using a Level 1 charger (dedicated, GFI plug, outside)
- 2012 Nissan LEAF SV (lower trip model – no back-up camera, solar panel, level 3 charge port or fog lights)
- $1,000 down
- 39 month lease
- $294/month
- Waiting for Rate 17 – Time of Use
- Solar panels on roof – net metered.
Car Wings statistics

- Distance Traveled: 1,114.8 miles
- Average Energy Economy: 4.1 miles/kWh
- Electricity Consumption: 274.0 kWh
- Travel Time: 32.7 hrs
- CO2 Tailpipe Emission Reduction: 721 lbs

96.6 Miles!
4.2 Miles per kWh
How can you support more EVs

• Join the Drive Electric Vermont stakeholder group
• Conduct outreach to municipalities/energy committees about the work Drive Electric is doing
• Encourage workplace charging for employees
• Support sustainability benefits to assist employee purchases,
• Sponsoring or attending EV demo days,
• Including EVs in future planning for facilities and operations.
• Take the Pledge: “My Next Car Will Be Electric”
Drive Electric Vermont

www.DriveElectricVT.com

Interested in electric vehicles? So are we. Learn more at one or all of the events we are participating in this fall:

Vermont Plug In Weekend
EV dealerships welcome you to their showrooms
When: September 22-23, 2012
Where: Dealerships around the state
What: To celebrate National Plug In Day, we are partnering with electric vehicle dealerships around the state to host events at their showrooms. Stop by your local participating EV dealer during their open hours on the weekend of September 22-23 to learn more and take a test drive!

Vermont Renewable Energy Conference
Visit the public EV exhibition or sign up to attend the DEV-sponsored workshop
When: October 1-2, 2012
Where: Sheraton Conference Center, Burlington, VT
What: Renewable Energy Vermont is hosting an Electric Vehicle Demonstration & Exhibit Hall (open to the public; $20 fee) on October 1 from 2-6pm. The conference will include a session on renewable energy for transportation, including an update on Drive Electric Vermont, for registered attendees on October 2 from 3-4:15pm. View the schedule here.

Alternative Fuel Vehicle Odyssey Day
Stop by the DEV booth on Church Street
When: October 18, 2012
Where: Church Street Marketplace, Burlington, VT
What: Vermont Clean Cities Coalition is hosting the state’s National Alternative Fuel Vehicle Day event. Stop by our booth!

VECAN Annual Conference
Check back soon for more information
When: December 1, 2012
What: Vermont Energy & Climate Action Network Annual Conference
Questions? Contact Drive Electric Vermont at info@driveelectricvt.com