New York State
Electric Vehicle
Supply Equipment
(EVSE) Deployment Program;
*a Charge NY Initiative*

2013 Summary
Haverstraw Village Court – Municipal Parking Lot
40 New Main Street; Haverstraw
NYS EVSE as of December 31, 2013

743 Total Public Electric Vehicle Charging Ports
- 259 New ports added in 2013 through NYSERDA’s EVSE Deployment Program
- 75 New ports added in 2013 by other entities

126 Total Private Electric Vehicle Charging Ports
- 25 New ports added in 2013 through NYSERDA’s EVSE Deployment Program
- 3 New ports added in 2013 by other entities
New York City and Long Island EVSE

NYSERDA EVSE Deployment Program 2013 installations include:

NYC Parking Garages (70 ports)  Frito-Lay Distribution Facilities (20)
Kohl’s Retail Stores (16)          Universities and Colleges (22)
Hilton Hotels (12)                • Bard College
Chili’s Restaurants (14)          • Buffalo State
Marriot Hotels (10)               • Clarkson University
New York State Attractions (14)   • Columbia University
• Bronx Zoo                       • Empire State College
• Buffalo Zoo                     • Rensselaer Polytechnic Institute
• Niagara Falls                    • Schenectady Community College
• Onondaga Lake                    • Skidmore College
• Windham Mountain                • St. Lawrence University
Medical Facilities (6)            • SUNY Albany
• Cayuga Medical Center           • SUNY Buffalo
• Glens Falls Hospital            • SUNY Cobleskill
• SUNY IT
• Queens College
• Union College
Frito-Lay Jim Rich Service Center
70 Ridgeland Road; Rochester

SUNY College of Nanoscale Science and Engineering
257 Fuller Road; Albany

Vanderbilt Financial
125 Froehlich Farm Boulevard; Woodbury

SUNY Albany
1400 Washington Avenue; Albany
NYS Plug-in Electric Vehicle Ownership

Number of Full Size EVs in NYS

All NYS Electric Plug-in Vehicles

EVs by County as of 1/2/2014
(Created by NYPA using DMV data)

Plug-in Hybrid Electric Vehicles (PHEVs)
- Toyota Prius (55%)
- Chevy Volt (32%)
- Ford Cmax (8%)
- Ford Fusion (3%)
- Honda Accord (2%)

Battery Electric Vehicles (BEVs)
- Tesla (41%)
- Nissan Leaf (29%)
- Ford Focus EV (5%)
- Smart ForTwo EV (4%)
- Honda Fit EV (4%)
- Mitsubishi i-Miev (4%)
- Toyota Rav4 (3%)
- BMW Active E (2%)
- Other (8%)
EVSE Utilization

While most of the new 141 EVSE installations in the NYSERDA EVSE Deployment Program were only operational near the end of the year, for 2013 use from all stations resulted in;

| Consumption of 74 MWh of energy | Displacement of 10,000 gallons of petroleum | Savings of 131,000 lbs of CO₂ emissions |

Public EVSE Stations Statistics

3,907 Charge Events totaling 39 MWh

3% of the time an EVSE port was occupied

63% of the occupied time was spent charging

0.1 charge events per day per port

5 plug-in hours and 10 kWh per charge event

Private EVSE Station Statistics

1,468 Charge Events totaling 35 MWh

27% of the time an EVSE port was occupied

26% of the occupied time was spent charging

0.6 charge events per day per port

11 plug-in hours and 24 kWh per charge event
Of the public EVSE installations in the NYSERDA EVSE Deployment Program;

EVSE in New York City parking garages dispensed 3 to 4 times more energy per charge event than EVSE in other parts of the State.

EVSE in the Capital District and Western NY were occupied more (a vehicle was plugged into a port an average of 3.8% and 3.1% of the time respectively) than EVSE in other parts of the State.

EVSE that charged a fee for use (most of which were in NYC) had fewer charge events per day (0.05 verses 0.16 charge events per day at free stations), but dispensed more energy per charge event (23.2 kWh verses 8.6 kWh per charge event at free stations).

The average plug-in time per charge event differed for various location types. Shortest was the Retail locations (1.6 hours), followed by Hotels (4.3 hours), Leisure Destinations (4.5 hours), University or Medical Centers (5.6 hours), and NYC Parking Lot/Garage (6.5 hours). Workplaces and Multi-family Housing showed even longer plug-in times per charge event, but have few installations to date.

Comparison of public NYS EVSE usage to public EV Project Blink EVSE usage

Key Observations

EVSE installation costs greatly varied; ranging from $1,567 to $25,785 with an average of $7,305. Key factors that influence the installation costs are;

1) Length of run from the electrical panel to the station
2) Whether a new electrical service panel must be added
3) Ground surface that must be excavated and repaired for the underground conduit
4) Whether a new concrete base must to constructed
5) Location within the State (i.e. labor rates and permit fees)
6) Experience of the installer (impacts the number of hours to install the EVSE)

There was very little consistency in the signage and pavement markings used at EVSE locations for different installers if any was used at all. As shown in the figure, many had no signs at all and more than half only had signs on the station itself which does not help EV drivers in locating the station. The variation in signage (see preceding page) can lead to driver confusion.

Keeping parking spaces in front of the EVSE available for drivers to charge EVs was a challenge at some locations. Signage can influence this as some do not state that only EVs can park there and less specifically state that the EV must be charging when parked there. Even if the signage is clear, it must be enforced to be effective. It was not uncommon to see non-EVs parked in these spaces. At some locations, equipment or storage trailers were parked in one of the spaces and in winter, some spaces were occupied by a snow pile. These locations clearly did not consider how the parking lot is used all year round before the EVSE was installed.

The stations that are experiencing the most use are those installed at a location with known EV drivers. These include some parking garages in New York City, apartment complexes, and universities. A few retail locations make that list as well, but that might be from an employee rather than customers. This trend will likely continue until EVs are more common. However, the most important stations may be the more remote destinations. While these are less used, when they are used it is likely by an EV driver in need of a charge and these stations also likely facilitate the expanded use of EVs throughout the State.
Press Coverage


2. $1M NYSERDA Grant Sparks EV Charging Stations in New York City. CleanTechIQ. March 12, 2013.


10. Governor Cuomo Launches $19 Million Truck Voucher Incentive Program to Promote Electric Vehicles. NYSERDA. August 9, 2013.


### Detailed EVSE Usage Statistics*

<table>
<thead>
<tr>
<th>Region</th>
<th>Ports</th>
<th>Total Days of Port Availability</th>
<th>Charge Events (CE)</th>
<th>Charge Events per day</th>
<th>Plug-in Time</th>
<th>Charging Time</th>
<th>% of Plug-in time charging</th>
<th>Total Energy (kWh)</th>
<th>Energy per CE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital District</td>
<td>71</td>
<td>10,539</td>
<td>2,112</td>
<td>0.20</td>
<td>9,641 4.6 3.8%</td>
<td>6,506 3.1 2.6%</td>
<td>67%</td>
<td>14,793</td>
<td>7.0</td>
</tr>
<tr>
<td>New York City</td>
<td>56</td>
<td>11,302</td>
<td>776</td>
<td>0.07</td>
<td>5,012 6.5 1.8%</td>
<td>3,109 4.0 1.1%</td>
<td>62%</td>
<td>18,369</td>
<td>23.7</td>
</tr>
<tr>
<td>Syracuse/Central NY</td>
<td>14</td>
<td>2,364</td>
<td>182</td>
<td>0.08</td>
<td>299 1.6 0.5%</td>
<td>255 1.4 0.4%</td>
<td>85%</td>
<td>1,069</td>
<td>5.9</td>
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<tr>
<td>Western NY</td>
<td>32</td>
<td>3,782</td>
<td>753</td>
<td>0.20</td>
<td>2,851 3.8 3.1%</td>
<td>1,342 1.8 1.5%</td>
<td>47%</td>
<td>3,998</td>
<td>5.3</td>
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<tr>
<td>Other</td>
<td>10</td>
<td>1,450</td>
<td>84</td>
<td>0.06</td>
<td>215 3 0.6%</td>
<td>162 2 0.5%</td>
<td>75%</td>
<td>657</td>
<td>7.8</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Location Type/Venue</th>
<th>Ports</th>
<th>Total Days of Port Availability</th>
<th>Charge Events (CE)</th>
<th>Charge Events per day</th>
<th>Plug-in Time</th>
<th>Charging Time</th>
<th>% of Plug-in time charging</th>
<th>Total Energy (kWh)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hotel</td>
<td>20</td>
<td>2,494</td>
<td>270</td>
<td>0.11</td>
<td>1,165 4.3 1.9%</td>
<td>696 2.6 1.2%</td>
<td>60%</td>
<td>3,041</td>
<td>11.3</td>
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<tr>
<td>Leisure Destination</td>
<td>12</td>
<td>1,374</td>
<td>60</td>
<td>0.04</td>
<td>270 4.5 0.8%</td>
<td>166 2.8 0.5%</td>
<td>61%</td>
<td>567</td>
<td>9.4</td>
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<tr>
<td>Parking Lot/Garage (NYC)</td>
<td>54</td>
<td>10,812</td>
<td>774</td>
<td>0.07</td>
<td>5,009 6.5 1.9%</td>
<td>3,106 4.0 1.2%</td>
<td>62%</td>
<td>18,359</td>
<td>23.7</td>
</tr>
<tr>
<td>Retail Location</td>
<td>49</td>
<td>7,413</td>
<td>1,334</td>
<td>0.18</td>
<td>2,105 1.6 1.2%</td>
<td>1,661 1.2 0.9%</td>
<td>79%</td>
<td>6,210</td>
<td>4.7</td>
</tr>
<tr>
<td>University or Medical Campus</td>
<td>34</td>
<td>4,788</td>
<td>982</td>
<td>0.21</td>
<td>5,466 5.6 4.8%</td>
<td>2,883 2.9 2.5%</td>
<td>53%</td>
<td>6,292</td>
<td>6.4</td>
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<tr>
<td>Other</td>
<td>14</td>
<td>2,556</td>
<td>487</td>
<td>0.19</td>
<td>4,004 8.2 6.5%</td>
<td>2,862 5.9 4.7%</td>
<td>71%</td>
<td>4417</td>
<td>9.1</td>
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<table>
<thead>
<tr>
<th>Land Use Type</th>
<th>Ports</th>
<th>Total Days of Port Availability</th>
<th>Charge Events (CE)</th>
<th>Charge Events per day</th>
<th>Plug-in Time</th>
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<th>% of Plug-in time charging</th>
<th>Total Energy (kWh)</th>
<th>Energy per CE</th>
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<tr>
<td>Rural</td>
<td>22</td>
<td>2,926</td>
<td>325</td>
<td>0.11</td>
<td>1,533 4.7 2.2%</td>
<td>572 1.8 0.8%</td>
<td>37%</td>
<td>2,026</td>
<td>6.2</td>
</tr>
<tr>
<td>Suburban</td>
<td>71</td>
<td>11,281</td>
<td>2,073</td>
<td>0.18</td>
<td>7,151 3.4 2.6%</td>
<td>4,977 2.4 1.8%</td>
<td>70%</td>
<td>12,818</td>
<td>6.2</td>
</tr>
<tr>
<td>Urban</td>
<td>90</td>
<td>15,230</td>
<td>1,509</td>
<td>0.10</td>
<td>9,335 6.2 2.6%</td>
<td>5,825 3.9 1.6%</td>
<td>62%</td>
<td>24,042</td>
<td>15.9</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Payment Required</th>
<th>Ports</th>
<th>Total Days of Port Availability</th>
<th>Charge Events (CE)</th>
<th>Charge Events per day</th>
<th>Plug-in Time</th>
<th>Charging Time</th>
<th>% of Plug-in time charging</th>
<th>Total Energy (kWh)</th>
<th>Energy per CE</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>141</td>
<td>22,001</td>
<td>3,543</td>
<td>0.16</td>
<td>15,899 4.5 3.0%</td>
<td>9,950 2.8 1.9%</td>
<td>63%</td>
<td>30,440</td>
<td>8.6</td>
</tr>
<tr>
<td>Yes</td>
<td>42</td>
<td>7,436</td>
<td>364</td>
<td>0.05</td>
<td>2,119 5.8 1.2%</td>
<td>1,424 3.9 0.8%</td>
<td>67%</td>
<td>8,446</td>
<td>23.2</td>
</tr>
</tbody>
</table>

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*Includes data from all stations reporting usage, which may be less than all stations installed by the end of 2013.