2014 Annual Summary: New York State Electric Vehicle (EV) Charging Station Deployment Program

Summary Report

New York State Energy Research and Development Authority

October 2015
NYSERDA’s Promise to New Yorkers:
NYSERDA provides resources, expertise, and objective information so New Yorkers can make confident, informed energy decisions.

Mission Statement:
Advance innovative energy solutions in ways that improve New York’s economy and environment.

Vision Statement:
Serve as a catalyst – advancing energy innovation, technology, and investment; transforming New York’s economy; and empowering people to choose clean and efficient energy as part of their everyday lives.
2014 Annual Summary:  
New York State Electric Vehicle (EV)  
Charging Station Deployment Program  

Summary Report  

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Program Manager  

Prepared by:  
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973 Total Public EV Charging Outlets in New York State (NYS)

- 176 New EV charging outlets added in 2014 through NYSERDA’s Deployment Program
- 431 Total EV charging outlets installed through NYSERDA’s Deployment Program
- 56 New EV charging outlets added in 2014 by other entities

136 Total Private EV Charging Outlets in NYS

- 5 New EV charging outlets added in 2014 through NYSERDA’s Deployment Program
- 30 Total EV charging outlets installed through NYSERDA’s Deployment Program
- 5 New EV charging outlets added in 2014 by other entities
NYSERDA Deployment Program 2014 installations include:

Municipal Facilities (35 new EV outlets)
- Cortlandt (2)
- Rochester (24)
- Southold (6)
- Skaneateles (3)

Parking Garages (22 new EV outlets)
- Central Parking-NYC (6)
- GMC Parking-NYC (6)
- White Plains (10)

Workplaces (26 new EV outlets)
- Eldor (4)
- JATC IBEW Locations (16)
- Monolith Solar (2)
- Time Warner Cable (2)
- Schluter (2)

Business Offices (14 new EV outlets)
- Pitcairn Properties (2)
- Rosenblum, Albany (2)
- RXR Realty, Long Island (8)
- Vanderbilt Financial Group (2)

Universities/Colleges (20 new EV outlets)
- Adelphi University (4)
- Hobart and William Smith (2)
- Jefferson Community College (2)
- Morrisville State College (2)

- SUNY Canton (2)
- SUNY New Paltz (6)
- SUNY Plattsburgh (2)

Transportation Hubs (19 new EV outlets)
- Albany Airport (6)
- Buffalo Airport (3)
- Chappaqua Metro North (3)
- Hicksville Long Island Railroad (3)
- Niagara Falls Airport (2)
- Tarrytown Metro North (3)

Retail (10 new EV outlets)
- Key Foods (2)
- Price Chopper Supermarkets (8)

Medical Institutions (4 new EV outlets)
- Mercy Medical (2)
- Nathan Littauer Hospital (2)
Tri-City JATC
428 Old Niskayuna Road, Latham

JATC / IBEW LU25
270 Motor Parkway, Hauppauge

JATC / IBEW LU910
25001 Water Street, Watertown
NYS Plug-in Electric Vehicle Ownership

Current BEVs
- Tesla Model S
- Nissan Leaf
- Smart ForTwo Electric
- Honda Fit EV
- Ford Focus EV
- Other

Current PHEVs
- Toyota Prius Plug-in Hybrid
- Chevrolet Volt
- Ford Fusion Energi
- Ford C-Max Energi
- Honda Accord PHEV
- Other

BEVs and PHEVs by County
(NYS Department of Motor Vehicle data as of 1/1/2015)
EV Charging Station Utilization

The 462 EV charging station outlet installations in the NYSERDA Deployment Program resulted in the following based on the EV charging they facilitated in 2014;

<table>
<thead>
<tr>
<th>Consumption of</th>
<th>Displacement of</th>
<th>Savings of</th>
</tr>
</thead>
<tbody>
<tr>
<td>376 MWh</td>
<td>50,000 gallons</td>
<td>672,000 lbs.</td>
</tr>
<tr>
<td>of energy</td>
<td>of petroleum</td>
<td>of CO₂ emissions</td>
</tr>
</tbody>
</table>

Public EV Stations Statistics

21,926 Charge Events totaling 163 MWH
5% of the time an EV outlet was occupied
48% of the occupied time was spent charging
0.3 charge events per day per EV outlet
4.1 plug-in hours and 7.4 kWh per charge event

Private EV Station Statistics

8,437 Charge Events totaling 209 MWH
39% of the time an EV outlet was occupied
26% of the occupied time was spent charging
0.8 charge events per day per EV outlet
11 plug-in hours and 25 kWh per charge event
Vanderbilt Financial Group
125 Froehlich Farm Blvd, Woodbury
Of the public EV charging station installations in the NYSERDA Deployment Program:

EV charging stations in New York City (NYC) dispensed approximately 3 times more energy per charge event than EV charging stations in most other parts of the State.

EV charging stations in Western NY and Rochester/Finger Lakes areas were occupied more (a vehicle was plugged into a port an average of 11.2% and 9.9% of the time respectively) than EV charging stations in other parts of the State.

EV charging stations that charged a fee for use (most of which were in NYC) had fewer charge events per day (0.08 verses 0.36 charge events per day at free stations), but dispensed more energy per charge event (21.7 kWh verses 6.5 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 (1.4 hours) and Transit Stations (1.5 hours), followed by Leisure Destinations (3.1 hours), non-NYC Parking Lot/Garage (4.0 hours), and University or Medical Centers (4.0 hours). NYC Parking Garages and Workplaces showed the longest plug-in times per charge event, with an average of 9.3 and 8.3 hours respectively.

Comparison of Public NYS EV Charging Station Usage — by Application

Profile curves represent the connection utilization percentage for each EV outlet.
Lyons Place Garage
4 Lyons Place, White Plains
Comparison of Public NYS EV Charging Station Usage – by Region

Profile curves represent the connection utilization percentage for each EV outlet.

2014 EV Charging Station Usage Trends
Monolith Solar
432 Washington Street, Rensselaer

Time Warner Cable
1021 Highbridge Road, Schenectady
Key Observations to Date

EV charging station installation costs greatly varied; ranging from $777 to $32,400 per EV outlet with an average of $4,362. 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 be constructed
5) Location within the State (i.e. labor rates and permit fees)
6) Experience of the installer (impacts the number of installation hours)

There was very little consistency in the signage and pavement markings used at EV charging station locations for different installers. As shown in the figure, over half did have signs at the station itself, but a large portion of the remaining stations had no signs. While many EV drivers use onboard navigation or phone apps, better signage would likely help EV drivers locate the station at the site and may lead to more use. The variation in signage can also lead to driver confusion.

Keeping parking spaces in front of the EV charging station available for drivers to charge EVs was a challenge at some locations. Signage stating that only EVs can park at a charging station or even more specifically that the EV must be charging when parked there could help. Even if the signage is clear, it must be enforced to be effective. Many non-EVs were seen parked in these spaces, although most were visited soon after being commissioned. It is important for site owners to consider how the parking lot is used year round before the EV charging station is installed. At some locations, equipment or storage trailers ended up being parked in the spaces and in winter, snow piled up in some spaces due to the plowing routine.

The EV charging stations that are experiencing the most use are those installed at a location with known EV drivers. These include most of the private stations, along with some of the universities, parking garages, medical campuses, workplaces, and apartment complexes. This trend will likely continue until EVs are more common. The top performing stations are found throughout multiple regions in the State, including Western New York, Rochester, New York City, and the Capital District. EV charging stations in an urban or suburban environment are typically used more, however, rural destinations likely play a key role in facilitating the expanded use of EVs throughout the State.
Press Coverage


10. EV Connect Secures $1.5 Million Contract for Charge NY. EV Connect, June 4, 2014.


Detailed EV Charging Station Usage Statistics

RXR Business Park
68 South Service Road, Melville
# Detailed EV Charging Station Usage Statistics*

<table>
<thead>
<tr>
<th>Access</th>
<th>Ports</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>
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<td>%</td>
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<tr>
<td>Public &amp; Limited</td>
<td>388</td>
<td>21,926</td>
<td>0.30</td>
<td>90,799</td>
<td>4.1</td>
<td>5.1%</td>
<td>43,418</td>
<td>2.0</td>
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<tr>
<td>Private</td>
<td>30</td>
<td>8,437</td>
<td>0.83</td>
<td>95,754</td>
<td>11.3</td>
<td>39.4%</td>
<td>24,535</td>
<td>2.9</td>
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<table>
<thead>
<tr>
<th>Region</th>
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<th>Charge Events per day</th>
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<td>%</td>
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<tr>
<td>Capital District</td>
<td>97</td>
<td>8,368</td>
<td>0.42</td>
<td>26,424</td>
<td>3.2</td>
<td>5.5%</td>
<td>13,908</td>
<td>1.7</td>
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<td>New York City</td>
<td>87</td>
<td>2,568</td>
<td>0.12</td>
<td>18,314</td>
<td>7.1</td>
<td>3.6%</td>
<td>8,864</td>
<td>3.5</td>
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<tr>
<td>Western NY</td>
<td>53</td>
<td>4,788</td>
<td>0.54</td>
<td>23,793</td>
<td>5.0</td>
<td>11.2%</td>
<td>10,127</td>
<td>2.1</td>
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<tr>
<td>Hudson Valley</td>
<td>38</td>
<td>612</td>
<td>0.10</td>
<td>1,703</td>
<td>2.8</td>
<td>1.2%</td>
<td>1,000</td>
<td>1.6</td>
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<tr>
<td>Rochester/Finger Lakes</td>
<td>32</td>
<td>2,675</td>
<td>0.59</td>
<td>10,778</td>
<td>4.0</td>
<td>9.9%</td>
<td>4,447</td>
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<td>Long Island</td>
<td>28</td>
<td>1,291</td>
<td>0.37</td>
<td>4,519</td>
<td>3.5</td>
<td>5.4%</td>
<td>2,256</td>
<td>1.7</td>
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<tr>
<td>North Country</td>
<td>20</td>
<td>504</td>
<td>0.16</td>
<td>1,634</td>
<td>3.2</td>
<td>2.2%</td>
<td>853</td>
<td>1.7</td>
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<tr>
<td>Syracuse/Central NY</td>
<td>19</td>
<td>528</td>
<td>0.16</td>
<td>1,492</td>
<td>2.8</td>
<td>1.9%</td>
<td>933</td>
<td>1.8</td>
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<tr>
<td>Other</td>
<td>14</td>
<td>2,915</td>
<td>0.23</td>
<td>9,786</td>
<td>3.4</td>
<td>3.3%</td>
<td>5,071</td>
<td>1.7</td>
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<table>
<thead>
<tr>
<th>Land Use Type</th>
<th>Ports</th>
<th>Charge Events (CE)</th>
<th>Charge Events per day</th>
<th>Plug-in Time</th>
<th>Charging Time</th>
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<td></td>
<td>%</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suburban</td>
<td>191</td>
<td>11,250</td>
<td>0.34</td>
<td>29,033</td>
<td>2.6</td>
<td>3.7%</td>
<td>16,968</td>
<td>1.5</td>
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<tr>
<td>Urban</td>
<td>157</td>
<td>9,669</td>
<td>0.28</td>
<td>58,042</td>
<td>6.0</td>
<td>7.1%</td>
<td>24,515</td>
<td>2.5</td>
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<tr>
<td>Rural</td>
<td>40</td>
<td>1,007</td>
<td>0.15</td>
<td>3,723</td>
<td>3.7</td>
<td>2.3%</td>
<td>1,935</td>
<td>1.9</td>
</tr>
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</table>
Detailed EV Charging Station Usage Statistics

19

Albany International Airport
737 Albany Shaker Road, Albany
### Detailed EV Charging Station Usage Statistics*

<table>
<thead>
<tr>
<th>Location Type/Venue</th>
<th>Ports</th>
<th>Charge Events (CE)</th>
<th>Charge Events per day</th>
<th>Plug-in Time</th>
<th>Charging Time</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Hours CE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parking Lot/Garage (NYC)</td>
<td>77</td>
<td>1,649</td>
<td>0.08</td>
<td>15,332</td>
<td>9.3</td>
<td>3.3%</td>
<td>47%</td>
<td>41,105</td>
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<tr>
<td>University or Medical Campus</td>
<td>64</td>
<td>6,640</td>
<td>0.66</td>
<td>26,539</td>
<td>4.0</td>
<td>11.0%</td>
<td>50%</td>
<td>46,654</td>
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<td>Workplace</td>
<td>63</td>
<td>2,363</td>
<td>0.30</td>
<td>19,553</td>
<td>8.3</td>
<td>10.4%</td>
<td>34%</td>
<td>17,565</td>
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<td>Retail Location</td>
<td>59</td>
<td>5,874</td>
<td>0.50</td>
<td>7,952</td>
<td>1.4</td>
<td>2.8%</td>
<td>80%</td>
<td>22,649</td>
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<tr>
<td>Parking Lot/Garage (non-NYC)</td>
<td>49</td>
<td>2,998</td>
<td>0.39</td>
<td>12,047</td>
<td>4.0</td>
<td>6.5%</td>
<td>42%</td>
<td>16,865</td>
</tr>
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<td>Hotel</td>
<td>34</td>
<td>954</td>
<td>0.10</td>
<td>4,547</td>
<td>4.8</td>
<td>2.1%</td>
<td>50%</td>
<td>9,876</td>
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<tr>
<td>Leisure Destination</td>
<td>19</td>
<td>1,160</td>
<td>0.36</td>
<td>3,603</td>
<td>3.1</td>
<td>4.7%</td>
<td>54%</td>
<td>6,558</td>
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<tr>
<td>Transit Station</td>
<td>17</td>
<td>119</td>
<td>0.04</td>
<td>177</td>
<td>1.5</td>
<td>0.2%</td>
<td>67%</td>
<td>518</td>
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<tr>
<th>Payment Required</th>
<th>Ports</th>
<th>Charge Events (CE)</th>
<th>Charge Events per day</th>
<th>Plug-in Time</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hours</td>
<td>Hours CE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>309</td>
<td>20,596</td>
<td>0.36</td>
<td>80,128</td>
<td>3.9</td>
<td>5.9%</td>
<td>48%</td>
<td>134,336</td>
</tr>
<tr>
<td>Yes</td>
<td>79</td>
<td>1,330</td>
<td>0.08</td>
<td>10,670</td>
<td>8.0</td>
<td>2.6%</td>
<td>50%</td>
<td>28,852</td>
</tr>
</tbody>
</table>

*Includes data from all stations reporting usage, which may be less than all stations installed by the end of 2014.
NYSERDA, a public benefit corporation, offers objective information and analysis, innovative programs, technical expertise, and support to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce reliance on fossil fuels. NYSERDA professionals work to protect the environment and create clean-energy jobs. NYSERDA has been developing partnerships to advance innovative energy solutions in New York State since 1975.

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