Vermont Energy Investment Corporation

- Nonprofit with 25 years experience reducing economic, environmental costs of energy
- Comprehensive focus and results
  - Energy efficiency – Renewable energy – Transportation
- National & international consulting & implementation
  - Program design, planning, & evaluation – policy & advocacy – research
- Clients are government agencies, regulators, utilities, foundations, advocates
- Operate 3 Energy Efficiency Utilities
Forecasting Demand of Public Electric Vehicle Charging Infrastructure
National EV Registrations

200,000+ EVs registered
8,354+ charging stations
20,285+ outlets

# EVs on the road

Cumulative EV Sales

2011 2012 2013 2014
How much demand will there be for public charging?

Where should charging stations be located?

*Optimizing EVSE deployment*
Charging Equipment

- **Level 1 charging**
  - 120V

- **Level 2 charging**
  - 208/240V

- **DC fast charging**
  - 480V
Methodology to predict demand for public EVSE

Vermont case study

- Projected EV sales
- Travel patterns
- Spatial data of non-residential locations
EIA Projected EV Registrations

Projected EV ownership (Total # EVs on the road)

Projected = 281
Actual = 600+


5,649
Daily Travel Demand

- EV drivers go ~ 25 miles between charges
- Vermonters drive 33 miles / day
- Vermonters need an extra 8 miles / day

With a Level 2 charger:
- ≈ 1.5 hours of charging per vehicle
- Between 8 AM and 5 PM, each EVSE can serve 5.8 vehicles
Estimating Demand

Demand for public EVSE is a function of:

1. EV range and efficiency (70-80 miles)
2. Distance EV drivers are comfortable driving between charges (25 mi)
3. Local travel patterns (33 mi driving per day in Vermont)

Vermonters will need 0.04 public charging stations per EV
Priority non-residential locations

Long dwell times

n = 40

High density of employment
How many public EVSE will Vermont need?

...... and how much will it cost?
<table>
<thead>
<tr>
<th>Year</th>
<th>Projected # EVs</th>
<th>Cumulative # EVSE needed</th>
<th>Incremental cost estimate (midrange)</th>
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<td>50</td>
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<td>226</td>
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Adequate public EVSE at present but not full geographic coverage
EVSE Siting Considerations

• Availability of power
• Parking capacity
• Proximity to high traffic corridor, destinations
• Link with other modes (transit, Park and Rides)
• Filling gaps in EVSE spatial coverage
Funding Public EVSE

Annual funds needed will be substantial ($32,000 to $3 million+)

1. Fee for use
2. Advertising revenue generation
3. Pairing EVSE with solar photovoltaic
4. Sale of renewable fuel credits (RINs)
Thank You

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