Making Electric Transportation a Reality

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Plug-In Vehicles Here with More on the Way!

- Mini-E: Trial Launch 2010
- NISSAN: Available in Launch Markets
- Toyota Prius: 2012
- Chevy Volt: Available
- SMART: Available
- Mercedes Benz: 2012
- BMW ActiveE: 2011 in Launch Markets
- North America and Europe Plug-In Vehicle TAM

Major Automakers Are Bringing Out PHEVs And BEVs Starting in Late 2009
A New Set of Challenges…

Where Will People Charge?
- There are only 54 Million private garages in the US for the 247 Million cars we have
- Studies show that 80% of Plug-in owners want to charge more than once a day
- The result is that there are less than 12% of the needed charging points

How Will Recurring Costs, Including the Cost of Electricity, Be Paid?
- Electricity for Plug-in Vehicles needs to be treated as a transportation fuel
- Need to cover cost of electricity and maintenance
- Need to generate revenue
- Need ability to implement taxes

How Will Grid Load Be Managed?
- Need ability to shed grid load during peak hours
- Need ability to manage charge times

There is a Mounting Shortage of Smart/Networked Charging Points
A New Wave of Opportunity

- First wave of vehicles concentrated in metropolitan areas

- Home charging is not enough
  - Many park on street
  - Many park in public garages
  - Limited range of early vehicles

- Opportunity
  - Improve environment
  - Reduce dependence on oil
  - Reduce cost of transportation
  - Happy residents and business owners
Motivations for Individuals

Cities, State and Federal Government are Motivated by Grassroots Demands:
- Developing Environmentally Focused “Green” Programs
- Driving Energy Usage Transformation via Green Energy funds
- National Security concerns – Avoiding Foreign Oil
- Reducing the Cost of Fuel for Citizens
- Ensuring a Viable Replacement for Highway Fuel Taxes

Private Parking, Apartments, Condo, Hotels, Airport Driven By Tenants & Customer Needs and the Underlying Economics:
- Providing a service to tenants / guests
- Reducing the cost of fuel for its residents customers
- Share in revenue – Next Generation Vending Machine

Corporations are motivated by employee interests:
- Developing “green” programs
- National Security concerns – avoiding foreign oil
- Reducing the cost of fuel for its employees

Utilities
- Deliver energy - become the new “gas” station
- Retain full control of grid loads
- Integrate into billing system

The Time is Now to Help America Transform the Transportation Industry!
Why the Need for Professional Charging Stations?

- **Standard 120V Outlets w/GFI Circuitry are NEC 625 compliant but…**
  - There Are Significant Benefits of ChargePoints in Public Spaces:
    - Provides required Hardware **Physical GFI reset** with Remote Reset Capability
    - Eliminates the Issues of “energized” outlets
      - Safety and **Liability Concerns**
      - **Energy Theft.**
    - Controls **Cord-Theft** Issues for EV Owners
    - Ready for New EV Car Connectors - Enables Use of SAE J1772 Connector Access
    - Tested for **Durability** to Ensure Large Number of **Mate/Demate Cycles**:
      - Needs less frequent replacements
      - Provides auto detection capabilities.
    - Utility **Grid Friendly**:
      - Delivers Grid-load management capabilities
      - Circuit load management capabilities
    - Provides “Pay for Use” Vending-Machine Business model
      - **Revenue Generation** is Inherent in the System & Allows For Taxation
      - Provides for Capital Recovery that Creates Attractive Investment

*ChargePoints Reduce Physical Maintenance, Provide Security, Reduce Liabilities, Manage Grid Load, Enable Fleets Management and Provide for a Revenue & Taxation Model*
The ChargePoint Product Family

- CT500
  - Home Charging
- CT1000
  - Level 1 Charging
- CT2000
  - Single Level 2 Charging
- CT2100
  - Level 1 & Level 2 Charging
- DC Fast Charge
  - (available late Q2 2011)
Challenges to Consider…

• How to provide open, impartial charging services to all users?

• How to ensure public safety and limit liability?

• How to get paid for electricity?

• How to ensure quality of service without straining maintenance resources?

• How to ensure Smart Grid compatibility?

• How to accommodate a loss in gas tax revenue?

• How to stay current with new technology?

• How to scale with increased demand?
Ensuring Public Safety

• All products certified to international safety standards

• Charging sessions are only energized when it is safe to do so
  o Authorized access only
  o Automatic GFI detect with retry
  o Automatic cable disconnect detect
  o Locking door for applicable models

• Auto notification
  o Vandalism
  o Wear out
  o Misuse
Integration with Smart Grid Systems

- Leverage future Utility rate incentives
  - Compatible with Utility Smart Grid Automatic Meter Infrastructure (AMI)
  - Enables demand response programs
  - Enables time-of-use pricing incentives
Current Incentives for EV Infrastructure Deployment

• **Federal Alternative Fuel Vehicle Refueling Property Credit**
  – The Energy Policy Act (EP Act) of 2005 (Pub. L. No. 109-58, § 1342) provided an income tax credit equal to 30 percent of the cost of installing new alternative fuel vehicle refueling property at each location by the taxpayer but was limited to a maximum of $30,000 in the case of business property.
  – The American Recovery and Reinvestment Act (H.R. 1) passed on February 10, 2009, increases the credit from 30% (capped at $30,000) to 50% (capped at $50,000) for business property placed in service in 2009 and 2010.
  – Extended through FY 2011 at 30% up to $30,000.
  – If the refueling property is acquired by a tax-exempt organization, governmental unit, or a foreign person or entity, and the use of that property is described in section 50(b)(3) or (4), the company that sold the fueling equipment can claim the tax credit -- but only if they provide the customer with written notification of the credit value.

• **The ChargePoint America Program**
  – $37 million grant from the DOE to deploy 4,800 ChargePoints in 12 cities.
    • Orlando and Tampa Bay are the closest cities participating in the Grant.
      – Orlando will have over 300 station by October 2011
      – Tampa Bay will have over 100 stations by October 2011
Thank You!

[Logo: NovaCHARGE Empowering the Future]
Deployments in San Francisco, San Jose, Cary, Orlando…