



EV Charging Infrastructure Innovation at Work

AeroVironment

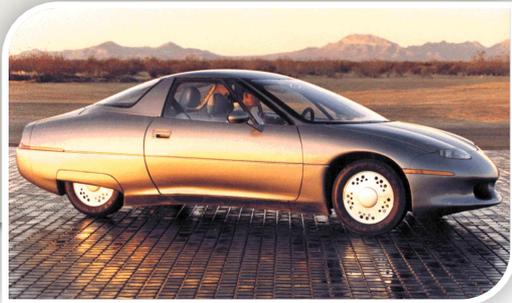
Suresh Jayanthi

August 2012

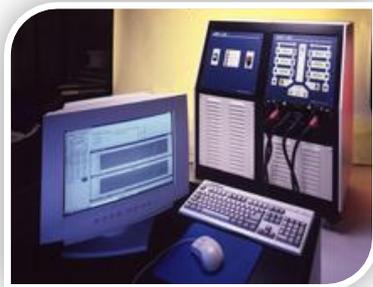


Driving Technology Innovations in Clean Transportation

1989



The car that started it all
GM Impact, our concept that inspired a revolution



The system of champions
The brains behind some of the most lauded hybrid, PHEV, and EV models



Industrial revolution
The #1 line of industrial fast chargers supporting the Fortune/Global 500



First generation charging
Solutions for EVs in the 90s



POWER UP
Solutions for the next generation of EVs



Going commercial
Public fast chargers for cities, retailers, utilities – making EVs more practical than ever

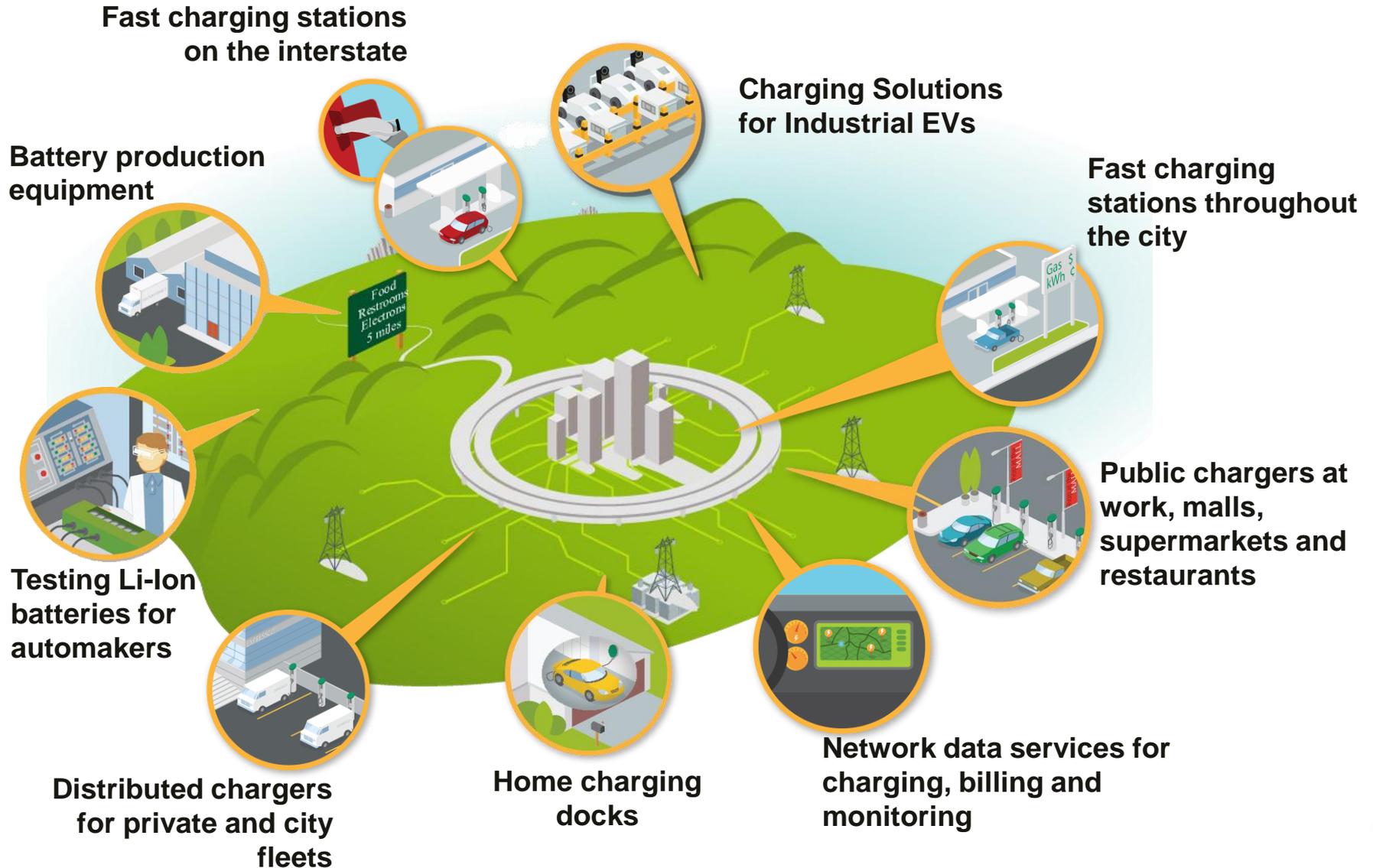


Expert on-site service
First-to-market nationwide network of licensed and certified EV charge system installers



2012
and beyond

Reinforcing Core Competencies Throughout the EV Ecosystem – Market Innovations



Practical Solutions Based on Application Need

Systems for Home, Highway, In-City, and EV Support



RESIDENTIAL EVSE



SINGLE PORT PEDESTAL EVSE



DUAL PORT EVSE



QUAD PORT EVSE



LEVEL 1 - CORDSET



FAST CHARGERS



PATENT PENDING

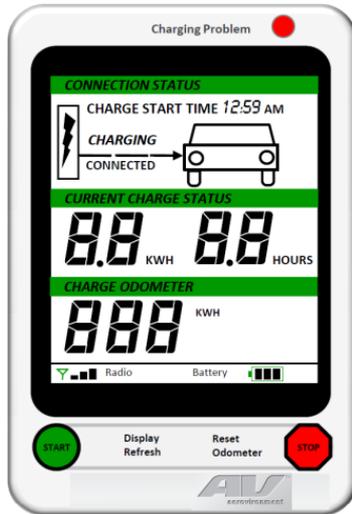
EVSE DIAGNOSTIC KIT



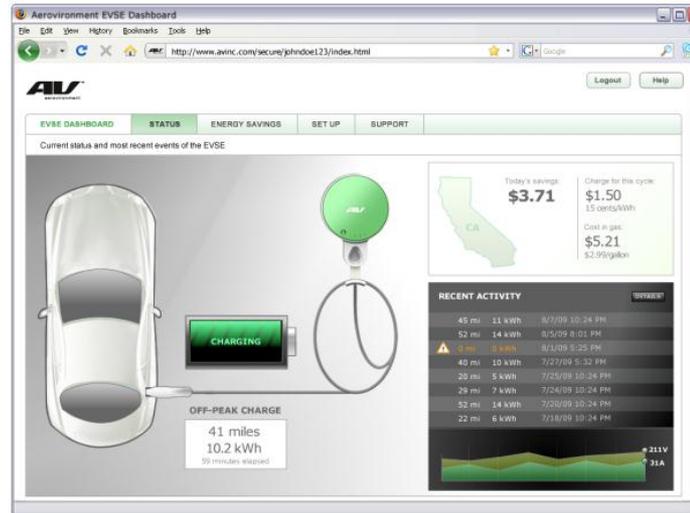
SMART CHARGING EV DATA

Smart Grid Solution - Integrating EV Charging Infrastructure with Utilities

Charger Display



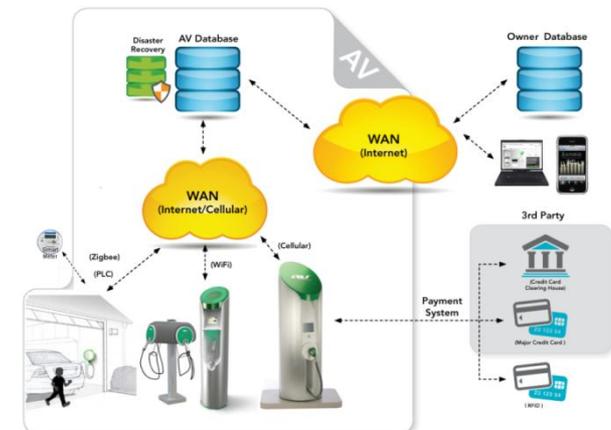
Computer Web Portal



Smart Phone App



CRM Back Office



Enabling Practical EV Adoption



Fast Charging Solutions



Mobile Charging Solutions



Commercial Model
 Iconic, Public, CHAdeMO Standard, Fast Chargers. With RFID, HMI and POS
 Broad range of power levels

Fleet Model
 Fleet, Private, CHAdeMO Standard, Fast Chargers. With RFID and POS
 Broad range of power levels

EVBoost
 Ruggedized kits to provide a limited amount of charge to EVs with depleted batteries. Also supports EV transportation.

Cordsets
 Cordsets that support SAE Level 1 and Level 2 needs in US and Asia, and IEC62196 (J17772, Mennekes, and SCAME) needs in Europe.



Partnering To Support EV Adoption

■ OEM Partnerships

- Nissan North America
- Nissan Canada
- BMW
- Mitsubishi

■ Public Private Partnerships

- Oregon Dept. of Transportation & Washington Dept. of Transportation – Building out West Coast Green Highway in Oregon and Washington
- Massachusetts DOER – EVSE Grant Program
- Hawaii DBEBT – Multi-island program for EV infrastructure
- NRG Energy – Privately funded residential and public EV infrastructure program
- Hydro Quebec – Public EV infrastructure program “*Le Circuit électrique*”



Public-Private Partnership

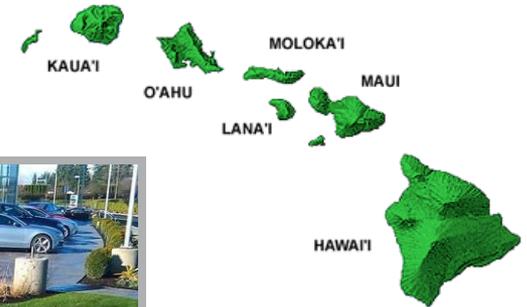
Winning Formula for Accelerated EV Adoption

- AV partnered with local transportation authorities to build out the West Coast Green Highway
 - 10 fast charger locations along I-5 corridor in southern Oregon
 - 9 fast charger locations along I-5 and US-2
 - 22 fast charging stations in NW Oregon



Hawaii is Leading by Example

- AV has established largest installed base of residential EVSE stations across Hawaii
 - Around 300 residential units installed across Oahu & Maui with a growing pipeline of installations currently scheduled
- Under 100 public EVSE stations
- A diverse group of stakeholders are collaborating to enable this adoption
- Six DC Fast Charger Stations
 - Oahu
 - Maui
 - Kauai



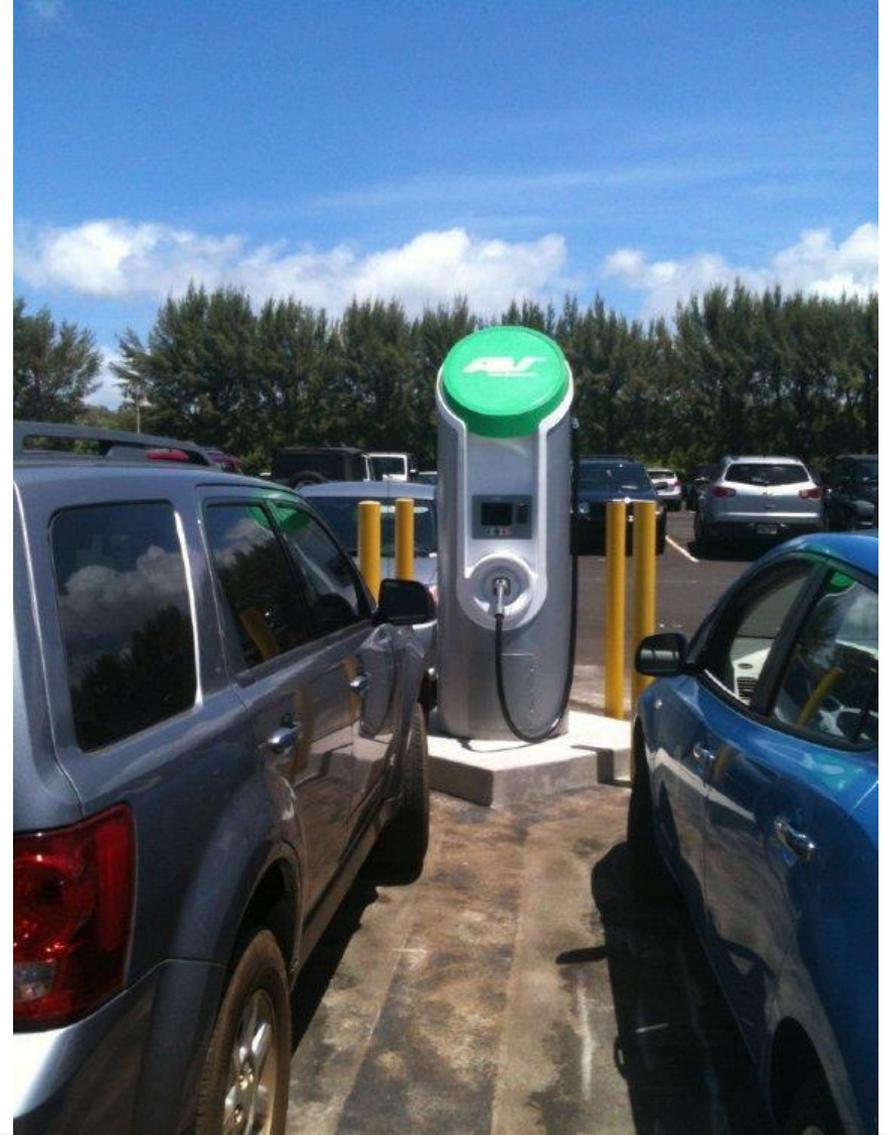
Multifaceted Partnerships to Reinforce Market Innovations in Hawaii



<p>AeroVironment</p> 	<p>Nissan</p> 	 <p>County of Maui</p>	<p>Hawaii Auto Dealer Assoc</p>  <p>H A D A www.HawaiiAutoDealer.com</p>
<p>HECO</p>  <p>Hawaiian Electric Company</p>	<p>MECO</p>  <p>Maui Electric Company, Ltd.</p>	<p>HELCO</p>  <p>Hawaii Electric Light Company</p>	<p>CBRE CB RICHARD ELLIS</p>
 <p>County of Kauai</p>	<p>Aloha Petroleum</p> 	<p>Clean Cities Honolulu</p> 	 <p>Mitsubishi</p>

Adoption of Public EV Charging Infrastructure

Innovation at Work



Innovative Technology Solutions for Practical Adoption

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