AeroVironment, Inc.
Electric Vehicle Charging Solutions Fact Sheet

AeroVironment's Electric Vehicle History

AeroVironment (AV) has been committed to advancing practical electric transportation technology for more than two decades.

- 1989: AV proposed and co-developed the first modern electric car, the General Motors Impact (prototype for the EV-1), unveiled at the L.A. Auto Show 20 years ago.
- 1987: AV designed and built the breakthrough solar-powered General Motors Sunraycer that won the inaugural 1,950-mile World Solar Challenge road race by a margin of two days. Knowledge acquired from this race led to the development of the EV-1.
- Seven AV innovations are part of the Smithsonian Institution's collection.
- 1990s: AV created one of the first fast-charge systems to support early consumer electric vehicles and municipal transportation.

AeroVironment develops, manufactures, and supports other technologies that are critical for the proliferation and practical adoption of consumer, commercial, public and industrial electric vehicles.

- **Advanced EV Test Systems** – AV has supplied advanced vehicle test systems to the world's leading automotive, battery, and fuel cell companies in support of the development of today's (and tomorrow's) electric vehicles. AV also supplies the test systems to large utilities, universities, defense contractors and government agencies in support of advanced tactical vehicles and stationary power storage and distribution systems.
- **Commercial and Industrial Support Since the 1990s** – Thousands of AV's EV charging systems have been supporting commercial and industrial electric vehicles since the late 1990's by replacing cumbersome, dirty, and inefficient battery rooms with EV fast charge stations. Ford Motor Company replaced battery rooms in all of its North American Vehicle Operations with AV's EV charging systems, and in addition to the automotive industry, AV's fast charge stations support all major US airport hubs and major airlines, food distribution companies, and other manufacturing and distribution markets.

AeroVironment's EV Charging Solutions Overview

AV's "ecosystem" of EV refueling solutions supports the convenient, worry-free and practical driving and recharging of electric cars:

- **Charge-while-you-sleep -–** Drivers will mostly rely on overnight residential charging over four to eight hours for a full recharge. A charging station is placed in the garage, driveway or carport. AV also offers charging stations for apartments, condominiums and other types of multi-family properties. Multi-unit home chargers offer dual and quad configurations with the same user-friendly design as the single-port units and a weather-resistant housing suitable for covered and outdoor parking.

- **In-city and extended driving convenience –** Charging stations designed for installation at public locations within a city and on well-traveled highways can enable fast charging for consumers who have long commutes, forgot to charge the night before, or have an extended trip planned. These fueling stations can be installed at public and private locations such as malls, movie theaters, restaurants, office buildings, federal and municipal buildings, airports, rest stops and many other locations.

- **Fleet charging -–** Buses, delivery vans, and other municipal and private fleet vehicles can make use of AV's convenient filling stations.

- **Roadside assistance (EVBoost™)** – Just as stranded drivers now call roadside assistance for a few gallons of gas to get to the next filling station, EV motorists will be able to get prompt help from tow trucks outfitted with AV's patent-pending EVBoost, which will give a limited charge to get EV motorists with depleted batteries to the nearest charging station.

- **Business Systems Integration –** AV has a customizable "back-office" web-based system that facilitates the purchase and ongoing support of chargers. Both a traditional customer relationship management (CRM) tool and a robust e-Commerce platform, AV's system allows users to buy, schedule installations, manage records, and communicate with the manufacturer and service providers to encourage high levels of customer satisfaction.

- **Networking and Communications** – AV's flexible, UL-listed smart charger (EVSE-RS+) and networked data system are designed to track charge data and provide critical recommendations and usage information such as energy usage, efficiency, and cost optimization, to utilities and other users. The customizable system is also designed to support subscription payment models and charge-time control to minimize impact on the grid, as well as provide real-time charge alerts to drivers.

- **Quality and Compliance –** AV has installed thousands of charging stations for commercial electric vehicles worldwide that continue to support heavy duty operations and has supported major automakers in the development of their next-generation cars and batteries. All of AV's electric vehicle charging solutions are designed and built to meet or exceed the most stringent quality and performance standards anywhere in the world. AV has the first CHAdeMO certified fast charger, EV50, and two UL listed Level 2 models, the EVSE-RS and EVSE-RS+.

Installation Services

To support the installation and servicing of EV charging infrastructure, AV has built and continues to grow a national network of trained, licensed, and certified independent electrical contractors who are prepared to provide turnkey installations. These electrical contractors know local codes and manage all permitting and inspection requirements.

The electrical contractors also use AV's proprietary service and support tool that enables them to troubleshoot EV charging systems with a high degree of accuracy and without dismantling the charging unit.

- **AV's Service Tool–** Patent-pending service technology supporting charging installations with "service-technician-in-a-box" capabilities. The system gives AV's certified installers the ability to troubleshoot EV charging systems with highly accurate simulations and diagnostics on-site at driver's homes or commercial/public locations – all without requiring the use of an actual vehicle, and without dismantling the charging hardware.

Industry-wide Engagement

AV is actively involved in the areas of public policy and standardization in support of viable solutions for everyday drivers

- Founding member of the Battery Electric Vehicle Coalition
- Founding member of the Electrification Coalition
- Promotes federal battery warranty legislation
- Helped secure various federal credits for consumers and business owners
- AV executives participated on the SAE J1772 committee that set L2 standard and currently working with the SAE J1772 committee for Level 3 standard

About AeroVironment, Inc. (AV)

AeroVironment is a technology solutions provider that designs, develops, produces and supports an advanced portfolio of electric transportation solutions and electric-powered Unmanned Aircraft Systems (UAS). AV's comprehensive EV charging solutions include EV home charging, public charging, fast charging, data collection, grid-integrated communications and complete installation, training and support services for consumers, automakers, utilities, government agencies and businesses. AV's industrial fast charging systems support more than 15,000 electric materials handling vehicles in mission-critical supply chains for Fortune 500 enterprises. AV's power cycling and test systems provide EV developers and EV battery manufacturers with market-leading simulation and cycling capabilities. Agencies of the U.S. Department of Defense and allied military services use the company's battery-powered, hand-launched unmanned aircraft systems to provide situational awareness to tactical operating units through real-time, airborne reconnaissance, surveillance and communication. More information is available at www.avinc.com.

Additional AV News: http://www.avinc.com/resources/news
AV Media Gallery: http://www.avinc.com/media_gallery
Follow us: http://www.twitter.com/aerovironment