periods such as during the night, and become a source of electrical power during high-load periods such as a hot summer’s afternoon. This ability can help substantially with Demand Response which is a key and yet challenging problem for the utilities. This source of energy can also provide buffer power for smoothing out frequency fluctuations resulting from mismatched demand (generation versus consumption) - and therefore could be used for Demand Dispatch by the utilities. All of these needs and capabilities will require the integration of sophisticated technologies including communications, wireless, sense-and-control, Internet, mobile computing, cloud computing, Lithium Ion and other battery technology, superconductors, etc.

This forum will bring together researchers, utilities (distribution and transmission), technology providers, service providers, EV and automotive companies, renewable generation companies, and government together to create Thought Leadership around the field of electric vehicles and their integration into the Smart Grid of the Future.

Current Speakers

Scott Backhaus - Staff Member - Los Alamos National Laboratory
Thomas Basso - Senior Engineer - National Renewable Energy Laboratory
Mike Coop - Founder - heyCoop, LLC
Marcelo Dipecho - Full Engineer - LADWP
Rajit Gadhe - Professor & Director - UCLA - WINMEC & Smart Grid Energy Research Center
Mike Gravely - Manager - Energy Systems Research Office - California Energy Commission
Stanton Hadley - Power and Energy Systems Group - Oak Ridge National Laboratory
Bruce Hamer - Principal Power Engineer - Burbank Water and Power
Andrew Martinez-Fonts - Sr. Product Manager - Silver Spring Networks
Ali Morabbi - Manager, Power System Information Technology - LADWP
Feng Pan - Technical Staff Member - Los Alamos National Laboratory
Jason Rodriguez - CEO and Director of Research - Zytrme Research & Consulting, LLC
Timothy Simon - Commissioner - California Public Utilities Commission
Peter Sutker - Manager, Fleet Services - LADWP

California constitutes a significant automotive market - a place where demanding and energy-conscious consumers come together with creative designers from Hollywood, resulting in an environment rich in ideas on automotive innovation. As a result, California is home to some of the most significant innovations in EVs including Tesla and Fisker. As these innovations come on line their integration into the smart grid of the future becomes the next big challenge. We are developing a scalable and robust architecture utilizing wireless and RF-monitoring and control technologies derived from our REWINS research called WINSmartGrid that allows smart vehicle and energy storage and consumption management for vehicles in home or in the office. As part of the challenging long-term research project, we are developing a series of demonstrations both at home and in the office. The first phase - developing an on-campus demonstration within UCLA - requires conducting research and demonstration on UCLA’s internal electric vehicle (EV) fleet and charging stations at UCLA for its integration with our local utility’s managed grid.

The objective of this project is to reduce energy cost and usage and to increase the stability of local power system by managing the charging operations of the EVs. This will be accomplished using the smart grid wireless system under development at UCLA called WINSmartGrid."
Recent advances in information and communications systems and battery technologies, in combination with substantial importance given by society to reducing greenhouse gas/carbon emissions, have resulted in dramatic thrusts towards accelerated innovations in electric vehicles (EVs) and the smart and renewable energy infrastructure necessary to fuel and support them. Products such as the Nissan Leaf, Chevy Volt, and Ford Focus Electric, are in the process of creating mass markets for electric vehicles in the U.S. The utilities on their part are working towards enhancing their infrastructure through their own investments as well as those from the DOE Stimulus ARRA Grants, and this requires massive changes in their distribution as well as their transmission systems. If 25% of all vehicles were EVs today, the current infrastructure in the U.S. would have a difficult time supporting the charging of these EVs - substantial load curve. Each EV will be equipped with a handheld device to allow the driver to receive instructions or seek advice to better manage his/her EV's battery charging/backfill process.

For example, an alert can be issued to the driver when the battery capacity is below a threshold level. The alert can include a list of near-by charging station's location, distance, current and projected energy cost based on the time of the day and use an intelligent cloud-computing the driver the optimum course of action.

The batteries on the EVs when not in driving status can also be collectively used to serve as the energy storage which can backfill into the local electric grid to prevent power outage during peak demand. In this scenario, an alert is issued to the driver when a predicted instability in the grid is detected. The alert can instruct the driver to bring the vehicle to the appropriate charging station to serve as backfill battery.

Existing EVs and charging stations usage patterns will be studied to determine the appropriate sensors and wireless communication modules to be installed. Communication and alerting systems will be implemented by integrating WINSmantGrid™ with our local utility's Advanced Metering Infrastructure (AMI) and the Demand Respond project.

The demonstration and results of this project will provide vast amounts of data, information and knowledge to allow an effective and large scale roll-out of grid-integrated EVs across the region and in the country.