

California Energy Commission awards Bosch-led team \$2.8 million to demonstrate highly efficient, commercial-scale energy grid

Funds will assist technology demonstration and deployment

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- ▶ Bosch's Direct-Current Building-Scale Microgrid Platform will provide a more reliable and resilient power supply to critical loads
- ▶ Bosch DC microgrid enables a simpler way to achieve zero-net-energy requirements in commercial buildings
- ▶ Bosch and its partners will provide \$1.8 million in in-kind and matching funds for the project

FARMINGTON HILLS, Mich. – The California Energy Commission has announced a proposed award to Robert Bosch LLC for \$2,817,566 to demonstrate a high-penetration, renewable-based microgrid. With this award, Bosch will demonstrate the effectiveness of its Direct-Current Building-Scale Microgrid Platform (Bosch DC microgrid) in an American Honda Motor Co., Inc., parts distribution center. The project is designed to illustrate the viability and benefits of a commercial-scale DC building grid compared with conventional AC-based grid connected solar photovoltaic (PV) systems or microgrids.

The Bosch DC microgrid project will provide a low-cost, highly energy-efficient solution in which the DC microgrid connects rooftop solar PV arrays to energy-efficient DC lighting, DC ventilation and DC energy storage systems on a 380-volt DC bus to form a DC building grid. The approach allows commercial buildings to become zero-net-energy users in a cost-effective manner.

“We are confident the Bosch DC microgrid system will contribute to California’s carbon reduction and energy efficiency goals by increasing the reliability and utilization of distributed renewable energy and improving the energy efficiency of state-of-the-art technologies – such as LED lighting paired with advanced lighting controls, motors with variable frequency drives and energy storage systems – by operating them on DC power,” said Oliver Steinig, vice president of business development for Robert Bosch LLC. “This will reduce installation costs and lower operating costs, while increasing reliability and quality of the power provided to building loads.”

Bosch will use this project to demonstrate the feasibility and benefits of a commercial-scale DC building grid that integrates multiple advanced technologies to provide reliable power to the loads on the DC grid, resilience during grid outages, increased energy efficiencies and renewable energy utilization. Once the project is installed and commissioned, performance data will be collected to validate the cost savings, energy efficiency gains and the capabilities of the advanced microgrid energy management system.

The project will directly enhance the technical understanding of how to integrate and optimize distributed renewable energy generation into the California distribution infrastructure, pave the way for introduction and large-scale adoption of cost-effective and energy-efficient DC power distribution architectures, and establish a complete supply chain for system integration through various partnerships.

Partnerships

To provide the best design, engineering and performance validation expertise for the Bosch DC microgrid, Bosch has partnered with Navigant Consulting and the California Lighting Technology Center (CLTC), UC Davis. Additionally, Bosch will partner with a number of California-based companies, including Maxwell Technologies and Imergy Power Systems, for the complete technology supply chain.

Through these partnerships, technical experts with a long track record of success in piloting and delivering technologies that can be incorporated into advanced microgrids will participate in the project. Together, Bosch and its partners provided \$1,790,095 in in-kind and matching funds to assist in the development, planning and execution of the project.

Bosch plans to begin the project once the contract with the California Energy Commission is signed and conclude the project by February 2018.

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About Bosch:

Having established a regional presence in 1906 in North America, the Bosch Group employs some 25,000 associates in more than 100 locations. In 2014, Bosch generated consolidated sales of \$11.3 billion in the U.S., Canada, and Mexico according to preliminary figures. For more information, visit www.boschusa.com, www.bosch.com.mx and www.bosch.ca.

The Bosch Group is a leading global supplier of technology and services. According to preliminary figures, its roughly 290,000 associates generated sales of 48.9 billion euros (\$65 billion) in 2014. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. The Bosch Group comprises Robert Bosch GmbH and its more than 360 subsidiaries and regional companies in some 50 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth. In 2014, Bosch applied for some 4,600 patents worldwide. The Bosch Group's strategic goal is to deliver innovations for connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life."

Exchange rate: 1 EUR = \$1.32850

About Navigant:

Navigant (NYSE: NCI) is a specialized, global professional services firm dedicated to assisting clients in creating and protecting value in the face of critical business risks and opportunities. For more information, please visit www.navigant.com.

California Lighting Technology Center (CLTC), UC Davis:

Part of the University of California, Davis, the California Lighting Technology Center (CLTC) is a not-for-profit research, development and demonstration facility dedicated to accelerating the development and commercialization of next-generation, energy-efficient lighting and daylighting technologies. For more information, please visit cltc.ucdavis.edu.

About Honda:

Honda has been producing automobiles in America for more than 30 years and currently operates 16 major manufacturing facilities in North America. In 2014, 98 percent of all Honda brand vehicles sold in U.S. were made in North America, using domestic and globally sourced parts. For more information, please visit www.honda.com.

About Imergy Power Systems:

Imergy Power Systems is a leader in stationary energy storage solutions using innovative flow battery technology. Its proven Energy Storage Platform (ESP) provides a total solution to reduce energy cost and optimize renewable power generation while improving overall power reliability. Imergy Power Systems is headquartered in Fremont, California, USA, with additional operations in Europe, Asia, and the Americas. The Company's investors include venture capital firms NEA, Technology Partners, and Blue Run. For more information about the company, please visit www.imergy.com or follow the company on [Twitter](https://twitter.com/imergy).

About Maxwell:

Maxwell is a global leader in the development and manufacture of innovative, cost-effective energy storage and power delivery solutions. Maxwell's ultracapacitor products provide safe and reliable power solutions for applications in consumer and industrial electronics, transportation and telecommunications. For more information, please visit www.maxwell.com.

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