

Written Testimony of  
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On behalf of the  
National Electric Manufacturers Association

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Committee on Science and Technology,  
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“Effectively Transforming our Electric Delivery System to a Smart Grid”

WRITTEN STATEMENT OF MR. MICHAEL STOESSL  
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BEFORE THE U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON SCIENCE  
AND TECHNOLOGY, SUBCOMMITTEE ON ENERGY AND ENVIRONMENT

Good morning, Mr. Chairman and members of the committee,

On behalf of the National Electrical Manufacturers Association (NEMA), I am Michael Stoessl, Group President of Cooper Power Systems. Cooper is represented on the NEMA Board of Governors and on its Smart Grid Advisory Panel. NEMA is the leading trade association in the U.S. advancing the interests of 430 electrical manufacturers of a wide array of electrical industry products used in utility, industrial, commercial, institutional, medical imaging, and residential applications.

NEMA companies are actively engaged in the research, development, manufacturing and promotion of a wide range of smart grid technologies and products, including advanced transmission devices, end user controls, and utility distribution equipment. NEMA is an ANSI-accredited standards development organization and publishes several hundred standards, including dozens used today in electrical grid equipment. In the 2007 Energy Independence and Security Act, Congress directed NEMA to advise the National Institute of Standards and Technology on a smart grid interoperability framework. NEMA along with its member companies are actively supporting NIST in identifying standards and protocols that will accelerate deployment of smart grid technologies, including the one(s) in my presentation today.

Cooper Power Systems has been providing equipment and solutions to the electric utility industry since the days of Thomas Edison. Our product range covers the transformers and components needed to connect and restore power, the switchgear and automation technology needed to make the electric grid reliable and efficient, as well as AMI and Demand Response capabilities that help manage the grid's overall load. Our solutions cover the range of "Smart Grid" intelligence. Our "Smart" offerings include Smart Metering (AMI/AMR), Demand Response, VAR Management, Voltage Regulation, Over-current Protection, Outage Detection and Substation Automation. These solutions are known as "Smart" because they are communications equipped and provide decision support both locally on the grid and in back office software solutions. What they all have in common is the ability to sense activity on the grid, communicate that information back to a decision support application, send a decision back to the grid, and then make an actual change to the grid itself. As an example, consider that electricity flow can become inefficient as central air conditioning load increases on a hot day. "VAR" sensors on the grid [picture] can detect this inefficiency, alert decision support software, which can use two-way communication to turn on capacitor bank and improve the load flow efficiency. Cooper has been developing and providing these types of solutions to the industry since the late 1980's.

One of the big challenges we face with building out the smart grid is the integration of legacy equipment in operation on our grid. Many pieces of apparatus installed on the grid do not provide or support any external interfaces, or use custom communication

protocols. For example, these reclosers [picture displayed] provide over-current protection to overhead lines on the distribution grid. In the event of a fault (say a tree branch momentarily short circuits a line) it will open the circuit to try to isolate the problem. Many of these devices do not support two-way communications, so while they are effective as an isolated solution, they can not be part of a truly “Smart” grid without being replaced, or being retrofitted to integrate with the grid. The key to these upgrades will be an economic cost benefit to the utility through operational savings, a variety of government incentive programs, or a combination of both. With more than 500,000 of these types of devices in service today, this is an important undertaking.

Another challenge we face in building out the smart grid is the range of communication options available. In the past three years we have seen an increased availability of cost effective two-way communications technology. Cellular, Wi-Fi, WiMAX, Mesh RF, and Line of sight RF are a few of those technologies. These cost effective two-way communications have become an enabler of adding intelligence to the grid but also present a host of challenges. As an example, Cooper’s Faulted Circuit Indicator (FCI) [see photo] has been one of the successful products making the transition from “dumb” to “smart.” Our legacy FCI has no communications capabilities. It simply displays a local visual indication that a fault has occurred; it is visible to utility line crews from the ground. When a power outage is reported, utility line crews drive along the overhead distribution grid beginning at the substation looking for an FCI indicating a fault. We have transformed this product using today’s low cost communications into a communicating FCI. These devices report the outage event to the utility control center

allowing them to dispatch the crew directly to the correct FCI location. This can translate into less miles traveled thus saving fuel and reducing CO2 emissions. It also can potentially reduce outage time from hours to minutes. One of our challenges with this technology is that we must support a host of communication technologies within this device. Each communication technology must be integrated into our package, validated with a variety of standards, often certified by the communications provider, and interfaced into utility backend IT infrastructure. This adds to the amount of time it takes to bring each communication technology to the market and the amount of research and development investment made by companies like ours.

Cooper Power Systems believes Congress, NIST, and the DOE should continue to drive smart grid standards, as they have begun to do. These industry standards should be directed through standards organizations like NEMA, they should be based on existing or de facto standards, and they should be able to evolve with the emerging smart grid technology. We commend the DOE in their preparation for evaluating FOA grant applications for the \$4.5 billion stimulus for smart-grid investments. We believe the swift and judicious release of these funds will help stimulate the economy and support the process of converting the legacy grid into a smart grid. We would also encourage Congress to consider favorable incentives to utilities and vendors for smart grid replacement or upgrades to existing “dumb” equipment, and for US based research and development investments in smart grid technology.

Thank you very much for the opportunity to testify.

Michael Stoessl