

Energy Efficiency and Economic Development



Build Smart: Energy Efficiency And Economic Development



Microgrid and Energy Storage Solutions for Rural and Remote Areas

A microgrid is a localized grouping of electricity generation, energy storage, and electrical loads.

Microgrid generation resources can include natural gas, wind, rooftop solar panels, diesel, or other energy sources. A microgrid's multiple generation sources ensure highly reliable electric power.

The effectiveness of microgrids is further enhanced through energy storage. Storage systems provide backup power while the microgrid's generation sources are coming online, and can also be used to regulate the quality of power and protect sensitive systems, such as hospital equipment, that may be vulnerable to power surges.

Microgrids offer additional advantages. Byproduct heat from generation sources, such as microturbines, can be used for space heating and water heating, and surplus power from microgrids can be sold to a central or regional grid or stored for later use. Microgrids also reduce dependence on long distance transmission lines, which reduces transmission energy losses and infrastructure costs.

Also of increasing importance, microgrids can mitigate the effects of cyberattacks by segmenting the grid around the critical elements of a national infrastructure.



As developing nations build their electrical generating capacity, using energy efficient technologies will stretch development resources and boost productivity.



Industrial Energy Efficiency and Intelligent Transportation Lead to Higher Productivity

Through the use of advanced technologies, modern industrial facilities are more sustainable than ever before.

Whether in a wastewater treatment facility, mining operation, or agricultural processing center, the use of NEMA Premium® high-efficiency electric motors, motor controls, intelligent process controls, and monitoring systems can dramatically reduce energy use.

Intelligent transportation systems (ITS), both wired and wireless, are used to manage surface transportation. ITS improves transportation safety and mobility, and enhances productivity through the integration of roadside traffic management devices, message signs, and roadside monitoring cameras. In addition, using ITS to manage highway congestion can reduce the amount of fuel used to transport people and goods.



Energy Efficient Homes and Buildings

Buildings account for 32% of the world's

energy consumption, and developing nations are constructing new homes and buildings at a rapid pace. Recent advances in building technologies—light-emitting diodes (LEDs), sensors, controls, and energy management systems—make it possible to achieve a significant reduction in a building's energy use, which can make new homes and buildings more energy efficient and reduce energy waste in existing structures.

In addition, buildings can support the electric grid through Smart Grid technologies. These technologies can manage peak demand, helping to increase access to reliable electricity through regional power grids.

Energy-efficient technologies not only help reduce energy waste, but they can bring light and other energy services to communities that previously lacked them, allowing children to read at night, businesses to stay open after dark, and hospitals to operate without interruption.



Building an Efficient and Resilient Smart Grid

Just as new information

technologies are reshaping how we work, learn, and communicate, these same technologies are being applied to the electric grid, giving power authorities new ways to manage and maintain the flow of power.

Using smart grid technologies, electrical power suppliers can maximize the amount of power that is delivered to the end-user, minimize the number of power disruptions, more quickly restore power in the event of outages, and improve public safety.

More efficient equipment reduces energy loss in the delivery system. Real-time data gives operators dramatically improved control, allowing them to optimize the system.

For example, when disturbances are detected in the power flow, modern circuit breakers can automatically open or close to help isolate a fault. Much like a motorist using his GPS to find an alternate route around an accident, this equipment can automatically re-route power around a problem area so that electricity continues to flow to other customers and vital operations.





The 400-plus member companies of the National Electrical Manufacturers Association (NEMA) and its staff of experienced engineers and electroindustry experts, spanning 50-plus industry sectors, stand ready to assist industry and government officials in developing nations, as well as U.S. foreign aid officials looking for cost-effective solutions to stretch development resources and promote productivity.

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About NEMA

The National Electrical Manufacturers Association (NEMA) is the international leader in the development and promotion of technologies, standards, and solutions that drive innovation, efficiency, and safety throughout the electrical industry and the energy economy.

NEMA's member manufacturers cover 50-plus industry sectors and make electrical products that lead to more intelligent energy use and less waste, including a smarter electric grid, high performance buildings in the commercial sector, smart homes in the residential sector, factory automation and control in the industrial sector, and intelligent transportation systems. NEMA manufacturers support more than one million jobs and operate more than 7,300 facilities across the United States. Domestic production exceeds \$100 billion and exports surpass \$30 billion.

For more than 80 years, NEMA has been the preeminent source of expertise of how electrical products can reduce energy use and costs, promote economic growth, provide consumer comfort, and contribute to our nation's energy security.

From power plant to plug, NEMA member companies have been at the center of a rapidly changing electrical industry that has transformed our lives in little over a century. They continue forward with a commitment to provide people and businesses around the world with new ways to save energy, ensure safety, and improve quality of life.

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