

Bring the Smart Grid Within the Four Walls of Your Operation

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Executive summary

The electric grid, as we know it, can't keep up. It's increasingly unreliable, costly to maintain and deliver electricity, vulnerable to attack, and environmentally unsound. The solution is the Smart Grid. The Smart Grid is an automated, distributed energy delivery network that features a two-way flow of electricity and information. The goal is to perfectly pair electric generation and consumption.

Infor™ believes that in order to make the Smart Grid successful, you need Smart Loads and some way to manage them. Infor EAM Asset Sustainability Edition provides just those capabilities. It provides the energy intelligence for connected assets, systems, structures, and components; it acts as an energy conservation, control, and demand environment tool.

What is the Smart Grid?

Today's energy grid is more than 100 years old. It consists of more than 9,200 electric generating units with more than 1,000,000 megawatts of generating capacity connected to more than 300,000 miles of transmission lines.¹ It's so large and so complex that it's been described as a mechanical ecosystem. All told, it's worked remarkably well--so far. Today's electricity system is 99.97 percent reliable, yet still allows for power outages and interruptions that cost Americans at least \$150 billion each year—about \$500 for every man, woman and child.²

Over this time, businesses have just assumed that when they connected and turned on an asset, power would flow. If they needed more electricity, the utility companies just made it. But how much longer can that continue? The current grid is overburdened, failing at a more rapid rate than ever before, and dangerously at risk.

Our current grid faces a myriad of problems, including:

- Aging infrastructure and workforce
- Escalating world energy consumption
- Growing focus on climate change and desire for environmentally responsible “green” energy
- Lack of consumer choice and control
- Rising cost of outages

Demand has skyrocketed and there's been little investment in new transmission and distribution capabilities to help the grid keep pace. In the US, demand for electricity is expected to grow 30% by 2030. Electricity prices are forecast to increase 50% over the next 7 years.³ Outages and power quality issues are estimated to cost American business more than \$100 billion on average each year.⁴ In fact, the Department of Energy states that a one hour power interruptions costs a semiconductor manufacturer \$2 million.⁵

It's safe to say that the grid, as we know it, can't keep up. It's increasingly unreliable, costly to maintain and deliver electricity, vulnerable to attack, and environmentally unsound.

Energy stake-holders recognize that we need new, clean, economical electric generation capabilities. They also realize that the cleanest and cheapest form of generation comes from the form of electricity that is not used or wasted, conservation, and demand reduction growth. This represents a substantial departure from the current model between the consumer and Utility. As the electric grid evolves by adding clean distributed generation and intelligent loads the ability to balance loads and availability is critical to grid stability. Therefore loads must be optimized and predictable.

1 U.S. Department of Energy, The Smart Grid: An Introduction; 2008; www.smartgrid.gov; p.9.

2 U.S. Department of Energy, The Smart Grid: An Introduction; www.smartgrid.gov; p. 9.

3 U.S. Department of Energy, What the Smart Grid Means to America's Future; www.smartgrid.gov; p. 4.

4 U.S. Department of Energy, The Smart Grid: An Introduction; www.smartgrid.gov; p.10.

5 U.S. Department of Energy, The Smart Grid: An Introduction; www.smartgrid.gov; p.15

Enter the Smart Grid. The Smart Grid is an automated, distributed energy delivery network that features a two-way flow of electricity and information. The goal is to perfectly pair electric generation and consumption. With two-way communication, you gain the ability to monitor everything on the grid--from power plants to individual manufacturing plants, all the way to individual appliances.

Where today's grid lacks awareness for user preference for price and time of use, operational demand performance, and reliability to sensitivity to greenhouse gas emissions, the Smart Grid takes all that into account. The Smart Grid's communications capabilities should allow it to deliver real-time information and near instantaneous balance of supply and demand at the device level. This will make the grid more efficient, more economical, and more green,

Infor believes that the available Smart Grid software solutions alongside infrastructure improvements critical to delivering the promise of the next generation Smart Grid should begin transforming today's grid to realize possible benefits now, ensure societal benefits for our economy, environment, and energy security, and focus on a holistic solution from generation to end-use. We simply do not have the luxury of waiting.

Smart load on the Smart Grid

Ultimately, the next generation of the grid will be intelligent and interconnected with redundant supply; but for this to occur, it assumes the development of “smart loads.” Grid control systems must be able to communicate with these predictable smart loads.

The Smart Grid makes it possible for manufacturers to shed load, time slot electric consuming processes, mitigate energy waste, and take advantage of cleaner and more reliable energy at lower prices. For this to work, systems on both side of your meter must be in sync. Infor EAM Asset Sustainability Edition is an essential part of ensuring the smart load on the Smart Grid meets your financial, operational, and environmental goals. It can enable energy conservation policies and electricity demand management to tens or thousands of your interconnected assets that lack intelligence today.

Infor EAM Asset Sustainability Edition provides the energy intelligence for connected assets, systems, structures, and components; it acts as an energy conservation, control, and demand environment tool.



How manufacturers benefit

There's some debate about how deeply the Smart Grid will reach into buildings. Will it actually reach all the way to the consumer product level—allowing a smart appliance to communicate directly with the grid? It's too soon to answer that question, but there's no denying that the Smart Grid will deliver significant benefits for manufacturers and facilities operators in terms of energy usage, distributed generation, and load balancing.

Manufacturing operations typically use the most energy during standard business hours, 8:00 AM to 5:00 PM. Outside of those hours, demand drops sharply. If you know when your load is heaviest, and can manage it and distribute it throughout the day, you stand a better chance of cutting your energy costs.

Infor EAM Asset Sustainability Edition helps you extend the Smart Grid into your facility or manufacturing plant. It allows operations, engineering, maintenance, procurement, energy management, and environmental health and safety personnel to operate and maintain operational assets at optimum performance and the lowest energy cost. By allowing businesses to monitor, control, maintain, and replace equipment while optimizing the energy efficiency of their HVAC, motors, fans, and compressors, Infor EAM Asset Sustainability Edition supports energy conservation and energy demand management. It simplifies the integration of energy demand measurement and control into existing asset and environmental management business practices to proactively support the maintenance, process control, and design change management processes of an asset.

Infor EAM Asset Sustainability Edition provides an open framework to allow any metering, building automation system, PLC, or SCADA system to communicate with the software to support energy conservation and demand management.

Infor EAM Asset Sustainability Edition helps companies realize significant savings by:

- Granting operations and maintenance personnel visibility into energy consumption at the asset level
- Driving organizational and operational energy conservation and demand reduction decisions

This is where Infor EAM Asset Sustainability Edition connects to the Smart Grid.

Conclusion

The Smart Grid promises to deliver significant benefits for manufacturers and facilities operators in terms of energy usage, distributed generation, and load balancing. But there's no telling how far off the true Smart Grid may be. At Infor, we believe that software solutions working in tandem with infrastructure improvements can begin transforming today's grid to realize possible benefits now, ensure societal benefits for our economy, environment, and energy security.

With Infor EAM Asset Sustainability Edition, you get the tools to realize significant savings and connect up to the Smart Grid today.

About Infor

Infor acquires and develops functionally rich software backed by thousands of domain experts and then makes it better through continuous innovation, faster implementation options, global enablement, and flexible buying options. In a few short years, Infor has become one of the largest providers of business software in the world. For additional information, visit www.infor.com.

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