

# Preventing Blackouts - Increasing Profitability

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By Theo Breitenstein\*

## August 14 - A Powerless Day

There has been a rising concern for years that looser regulations tempted utilities to direct more cash to the bottom line to maximize profit and inflate stock prizes to keep investors happy vs. grid improvements. Cutbacks and delays on capital expenditures to improve and maintain the interconnected utility grid are believed to be what led to August 14, one of the worst power outages in American history, leaving millions without electricity for days.

It can be argued that the blackout of August 14, 2003 is a utility problem since it was caused primarily by a bad grid and poor grid management rather than excess demand, though demand did play a part. Electric power reliability problems and shortages due to high demand have led to more blackouts in recent years than historically experienced in North America. Customers in 14 western states underwent scattered outages twice in the summer of 1996. Major outages occurred during the summer of 1999 in different regions of North America, including Chicago and New York. More recently, California experienced rotating blackouts, price spikes and near-bankruptcy of several utilities beginning in 2000 and continuing into 2001.

## Increasing Productivity by Energy Preservation

European and Asian companies have become major players in today's global market. They are much more sensitive to energy preservation as one of the means of being competitive vs. looking at reorganizing, re-engineering or downsizing to increase productivity. Alternative productivity improvements within American companies are essential for survival. A way of enhancing profits and competitiveness is to be more focused on Demand Side Management (DMS). If more businesses and industries were engaged in active Demand Side Management, vulnerability to power reliability problems would occur less. To many American companies energy is still a minor factor in their overall cost of operation. Load audits that were conducted for several hotels in New York City showed that peak demand reduction, as one measure of DMS is very effective and a major contribution to lower operational costs, and therefore, increase in profitability. In addition, the New York State Energy Research and Development Authority (NYSERDA\*\*) sponsored miscellaneous Peak-Load Reduction Programs, contributing significant funds towards installing Automated Demand Control Systems.

DMS refers to actions taken on the customer's side of the meter to change the amount or timing of energy consumption. Such technologies are:

### Load Reduction

These energy conservation technologies are implemented to reduce total energy use. Specific technologies include energy-efficient lighting, appliances, and building equipment.

### Load Leveling

These technologies are used to smooth out the peaks and dips in energy demand by reducing consumption at peak times ("peak shaving") and increasing it during off-peak times ("valley filling").

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## Demand / Load Control

Automated Demand / Load Control Systems can be used to switch electrical equipment on or off for load leveling purposes with features for direct off-site control of user equipment. This technique can be applied to: water heaters, ice makers, electric motors, non-critical process equipment, HVAC systems, walk-in coolers, convection ovens, air handlers, chillers, washers and dryers, compressors, battery chargers, electrical industrial equipment and more.

Such Automated Demand Control Systems can also be used to invoke on-site generators, thereby reducing peak demand for grid electricity.

## Actual Savings with Automated Demand Control Systems

There are a number of expert firms that specialize in helping small and medium size businesses to exploit their potential for demand savings. **In today's competitive market place there is no reason not to engage in effective energy / demand savings measures by taking advantage of highly attractive incentive programs offered by utilities and government institutions before they expire, or are cancelled.** Emacx Systems, Inc. offers a fast knowledge in effective demand reduction strategies and implementation. In the New York Metropolitan area, for example, annual cost savings due to implemented Demand Control Systems from Emacx amounted to savings of up to 10% and provided a return of investment between 1 and 2 ½ years. Demand savings with Emacx's Automated Demand Control System for different industries are shown below:

Industry	Total Annual Electrical Energy Expenditure	Annual Demand Expenditure	Annual Demand Savings
Hotel	\$ 938,954	\$ 349,154	\$ 21,192 ( 6.0%) ROI: 1.5 Years**
Hospital	\$ 2,313,543	\$ 845,354	\$ 76,707 ( 9.1%) ROI: 1.06 Years
Industrial	\$ 968,362	\$ 303,927	\$ 26,625 ( 8.7%) ROI: 2.6 Years
Grocery Industry	\$ 459,397	\$ 183,759	\$ 15,252 ( 8.3%) ROI: 2.5 Years
Warehousing	\$ 697,547	\$ 141,528	\$ 20,249 ( 14.3%) ROI: 2.6 Years

An Automated Demand Control System combined with the appropriate demand control strategy will bring the expected results. Not only will it add to your bottom line, but also to reducing utility grid overload.

\*\* Based on a NYSERDA sponsored installation.

NYSERDA applications are accepted only through October 31, 2003, 3:00 PM EST