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Submission Docket 08-DR-01

To: California Energy Commission: Dockets Office, MS-4, 1516 9th Street, Sacramento, Ca
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Subject: Comments to Docket No 08-DR-01 Load Management Standards

DOCKET	
08-DR-1	
DATE	MAR 11 2008
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1. Introduction

1.1. Workshop of Efficiency Committee Workshop

In the matter of 2008 Rulemaking on Load Management Standards; an Efficiency Committee Workshop held on March 3, 2008, by the California Energy Commission under the leadership of Chairman Pfannenstiel and Commissioner Rosenfeld. The purpose of this meeting was to receive input from interested parties regarding how to develop and implement load management standards.

1.2. Emacx Systems, Inc.

Emacx Systems, Inc. (www.emacx.com) is an Energy Management and Information Systems Solutions provider. We implement automated demand response and load management systems to commercial and industrial customers. Our systems are based on state-of-the art technology and have an established track record in many different parts of the world. We work very closely with some of the leading providers of this enabling technology in Europe, where demand response and load management have been more prevalent in the past due to the high cost of electric energy and RTP (Real Time Pricing) programs already in place. Since 2004 Emacx Systems, Inc. has completed numerous installations to national and local accounts in New Jersey, New York, Connecticut, Massachusetts and Texas. We just recently opened an additional office on the west coast in Irvine, California to meet growing demands.



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1.3. The Need for Demand Management

The discussions and presentations of the meeting held Monday, March 3, 2008, make obvious the need to implement a demand and load management framework. Emacx Systems, Inc. started its US operation in the aftermath of the California energy crisis in 2001. The shockwave created by this energy crisis was felt across the country and around the world. It left many energy experts questioning why and how such huge demand fluctuations could happen in a civilized world. While not everyone is familiar with the particular challenges the Southern California climate combined with the high population density may pose to a highly advanced industrial civilization, we owe it to our fellow citizens to ensure such outages never happen again. Addressing the situation by educating the consumer about the challenges of demand management and offering the right incentives to those customers willing to participate in the solution remains the primary responsibility of the CEC.

2. Availability and Implementation of Enabling Technologies

2.1. Automated Demand Control Technologies are Available

There is a great deal of automated demand control technology available on the market today. Emacx is constantly utilizing the newest technologies to improve its products. It is important for the CEC to know that we can start right now, today, implementing the technology for Automated DR which is readily available.

In many European countries like Germany, Austria and Switzerland, the market is reaching saturation to find new industrial or commercial clients with sufficient curtailment potential, who have not yet implemented a demand management solution. The situation is completely different in the United States. Many of our U.S. customers have a hard time understanding their electric bill, not to mention understanding what savings an automated demand control unit might offer.

Most of the technology Emacx Systems, Inc. employs today results from the research and development made over decades by European companies to offset demand charges in the higher-priced overseas electric market. However, the same algorithms, processes and solutions can be applied in the US market. Emacx Systems, Inc. has successfully implemented its Automated Control Systems for numerous US clients across the country. Whether our IPLC (Intelligent Peak Load Control) manages wattage in 120V, 240V or 480V, 50Hz or 60Hz, is completely irrelevant. The technology that controls the loads remains the same almost anywhere in the world. This allows Emacx Systems, Inc. to leverage the demand control technologies developed elsewhere to the needs of our US clients.

For decades we have gained the knowledge and expertise to use Automated DR systems around the world. Implementing these solutions which are readily available in California, will depend solely on the ability of the regulators and utilities to provide sufficient incentives to California consumers to jump on the bandwagon and embrace the technology, thus saving money and improving the environment.

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2.2. Here's How it Works (A Case Study)

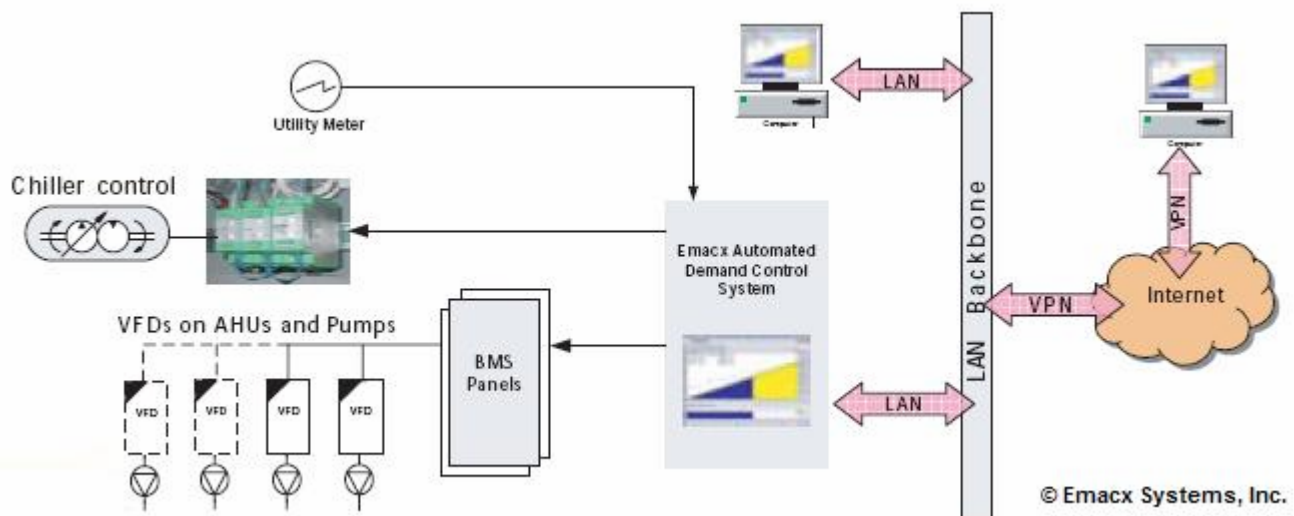
One of Emacx's enhanced Energy Management System Project for demand control involved expanding the capabilities of an existing Building Management System (BMS) at a major department store chain with demand management capabilities. The modifications included software programming of the BMS, along with some new hardware and wiring. The result is a powerful combination of an automated demand control system and a building management system that can maintain demand set points without disrupting shoppers' comfort, nor jeopardizing operations.

To monitor the real-time effects of load-shedding strategies on overall demand, Emacx' System is linked directly to the electric utility meter. The system collects and archives 15-minute interval data. This linkage allows facility operators not only to see the immediate effects of load-shedding strategies, but also to program the automated demand control system to reduce storewide demand to a specified kW amount. The system will now shed loads in a predetermined sequence until demand reaches the set point.

The main effort was to reduce the facility demand (kW) by maximizing control of the entire HVAC System. Equipment such as AHUs, Pumps and Chillers were integrated in the Emacx Load Controller and the BMS by using existing and new variable speed drives. Supply and Return Fans are all programmed in a Master Slave mode to avoid in-balances. The combination of variable speed drives and the automated demand control system makes a substantial contribution towards energy savings.

AHU-VFDs are reduced by maximum 15Hz increments, yielding over 30% in kWh and kW savings. Electric chillers were outfitted by the manufacturer with a board allowing for external current limiting. The Emacx Frequency Analog Module for chiller control accepts a frequency input and outputs an analog voltage or current in proportion to the input frequency with 0.1% accuracy. The maximum reduction is 10% of the chiller's output cooling capacity.

The Automated Demand Control System allows it now to program a not-to exceed set-point for electrical demand and instruct the system to initiate pre-programmed load shedding strategies when that set-point is approached. Dynamic calculations with specially developed algorithms allow for a non-





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jeopardizing operation at all times. The algorithm takes into consideration many different parameters and makes intelligent real time decisions determining whether the load needs to be curtailed or not. The electrical power used is transmitted synchronously to a utility measurement device (in most cases, the utility supplies measurements via power impulses). The transmitted actual power is monitored by a microprocessor, controlled and continuously compared with target values.

As a result, the client is now able to shed from 60kW to 575 kW depending on the peak load of the store, without disrupting shoppers' comfort or store productivity. Under their new load-shedding strategies, we even discovered that the client could actually benefit from using the system on a day-to-day basis and not only for the mandatory demand responses under the enrolled program. Due to their conservation efforts over the past year, the client is currently saving substantial costs annually due to demand reduction and are curtailing a load of over 1.5 Mega Watt, a substantial contribution to unload the grid during critical energy shortages.

2.3. This is Happening Right Here in the United States

The case as described above did not happen in a far away country, but right here in the United States, at Macy's Department Stores in New York and Connecticut during 2006/2007. Emacx Systems, Inc. secured and administered the NYSERDA, LIPA and CL&P grant funds and played a key role in shaping and implementing the project together with the BMS provider.

Funding from utilities such as CL&P, LIPA and NY State energy authorities like NYSERDA, for the installation of enhanced automated demand control technologies served as a catalyst for Macy's to move forward with plans to implement these systems in several key stores. Macy's traditionally uses a Building Management System (BMS) for monitoring temperatures, humidity and for operating air-handlers and other mechanical HVAC equipment. However, automated demand control by trending the kW usage within the imposed utility interval to initiate intelligent curtailment was not possible without the use of an intelligent and automated demand management system, which was provided by Emacx Systems, Inc.

We are convinced that there are thousands of commercial and industrial customers in the State of California for whom the installation of our Intelligent Peak Load Control System, in combination with other elements of our automated demand management solutions, would yield similar benefits. We propose to take the successful solutions that have been implemented by our customers in Connecticut, New Jersey, New York and Texas and bring them to the businesses of California.



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3. Conclusion and Recommendation

3.1. Bring Together the 4 Key Areas and 4 Key Stakeholders

In our opinion, the Efficiency Committee of the CEC needs to address four specific areas in close cooperation with four different groups of stakeholders:

- 1.) Provide an environment persuasive for the **public utilities to implement the AMI** as quickly as possible;
- 2.) Work in conjunction with the **PUC to provide a framework for simple but effective rate structures** including demand incentives and RTP (Real Time Pricing);
- 3.) Encourage **technology providers to improve and deploy enabling technologies** allowing the integration of the AMI with demand control devices using modern information management systems;
- 4.) Assist in **educating the consumer** (commercial, industrial and residential) to understand the importance of load management and the opportunities for their economic and ecological benefit.

The challenge for the CEC will be to move rulemaking on load management and demand response ahead in an expedited manner, at the same time achieving the objectives in all four above areas.

3.2. Choose the Soil with the Best Potential for Growth

While the private households may offer the largest potential for demand savings in the long run, we concur with the opinions expressed by others that the commercial and industrial customers will be much more inclined to respond to demand incentive programs offered by the utilities. Therefore, we recommend focusing the first programs, studies and pilot projects on this customer segment.

3.3. Leverage Existing Knowledge, Technologies and Experiences

We believe that the wheel has already been invented and is readily available, although it may need to be reshaped or remounted. Leadership by the CEC is required in shaping the framework for Load Management Standards. However, most technological elements are available to provide solid solutions for the market. Missing is the integration of the available technology with the knowledge to leverage its potential in the California market.

We sincerely appreciate the opportunity to submit our comments for your consideration. For further comments or questions, please contact:

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