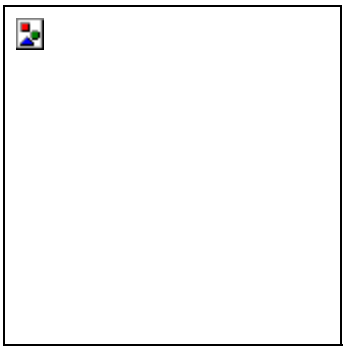

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To: The Ontario Energy Board

Minister's Directive on Demand-Side Management and Demand Response

5 February 2004

This report serves as Manta Test Systems Inc.'s written submission to the OEB consultation process with respect to the Report of the Advisory Group on Demand-Side Management and Demand Response in Ontario. Manta Test Systems is a manufacturer of specialized test equipment focused on protective relaying and metering as used by all electrical utilities, and was founded by an engineer who worked in Ontario Hydro's Protection and Control department for over 20 years.

In this report we offer three specific proposals to aid and develop Demand Side Management, Supply Response and Load Reduction. All these proposals operate within the competitive market mechanism, require little or no investment of funds from government bodies, and in our opinion will substantially advance the pace and development of conservation, efficiency and small generation.

Additionally we comment on several existing practices and issues wherein we believe our suggestions would substantially improve both the delivery of electrical energy and the necessary concomitment of end users to Demand Side Management and efficiency.

1. Proposal #1 Demand Side Management Corporations

1.1 Introduction

The scenarios outlined in the OEB report appear to largely revolve around the question of where to place and divide the responsibility of DSM and DR among the Energy Transport, Generation and Local Utility sectors. There are some comments in the report concerning conflict of interest with the proposed placements. It is our opinion that this conflict of interest is very nearly a fatal flaw that continues to greatly impede DSM. Furthermore, this inherent conflict of interest serves to keep the issue in the political realm because of the irreconcilable conflict between load reduction and Utility Growth. In essence, all the existing proposals place the agency responsible for delivering DSM in the untenable position of competing with themselves to become smaller. This inherent conflict with normal business practices we believe condems all these mechanisms to either failure to deliver substantial DSM or at best tokenistic DSM at great governmental cost.

1.2 Proposal Regarding Demand Side Management Corporations

We suggest the establishment of a regulatory framework enabling the creation of DSM corporations. These corporations would be entities whose charter is essentially to make money by means of selling DSM. Their entire existence and profitability will be dependent on their success at achieving DSM. Thus there would no longer be a corporate conflict of interest, and success at DSM would become a market driven positive feedback mechanism engendering corporate growth.

1.3 Demand Side Management Corporation Example

A corporation is established to supply DSM. The DSM Co. obtains a contract with the IMO to deliver up to X MWH of DSM savings. To accomplish this, DSM Co. in turn contracts with homeowners to install a remotely controlled (Pager Technology?) device between for example their air conditioners and water heaters, and utility power providers. When the price of power from the DSM is favourable, the IMO purchases their avoided power competitively with other producers and DSM's. When the purchase is placed, DSM Co. in turn suggests to the remote devices to turn off the air conditioners. The homeowners in turn have set their control devices such that when the income from it exceeds some given amount, it is financially worthwhile for their controllable loads to be turned off. Other factors many enter into this calculation, such as ambient temperature, need for power etc. DSM Co. is paid for the avoided load at current Market prices. DSM Co. and the homeowners apportion this income according to their contractual agreements. Extension to commercial and industrial electricity consumers' equipment is obvious.

1.4 Advantages

1. The arrangement is entirely market driven.
2. The IMO buys the avoided power on the spot market competitively with other producers and DSM Co.'s.
3. The DSM Co.'s growth and profitability is solely linked with their ability to deliver avoided load.
4. The homeowners' comfort levels versus financial interests are satisfied in a fully competitive environment.
5. Power producers, LDC's and the IMO are no longer in a conflict of interest position *vis à vis* DSM.
6. DMS's compete with each other and producers to deliver power.
7. Price elasticity of DSM ceases to be an unknown entity and becomes a competitive market driven commodity.
8. DSM ceases to be an irreconcilable object of endless debate.

1.5 Potential Disadvantages

1. DSM is removed from the domain of power producers, LDC's or distributors who may have political objections to such a transfer of responsibility.
2. Regulatory changes are required.
3. DSM functions better with real time market data.

2. Proposal #2 Load Reduction Corporations

2.1 Introduction

The OEB report does not directly address overall Load Reduction as a component of Demand Side Management or Demand Response. We feel that overall Load Reduction is an integral part of Demand Side Management, and should be treated on an equal basis with Supply Side Management. Furthermore, we feel that the contradictions inherent in Overall Load Reduction make it ill advised that it be administered or delivered by the present, existing electricity Corporate and Government Structure.

2.2 Proposal regarding Load Reduction Corporations

We suggest the establishment of a regulatory framework enabling the existence of Load Reduction (LR) corporations. These would be corporations whose charter is specifically to make money by means of selling LR. Their entire existence and profitability is dependent on their success at achieving LR. Thus there is no longer a corporate conflict of interest, and success at LR becomes a market driven positive feedback mechanism towards corporate growth.

2.3 Load Reduction Corporate Example

A need is established or determined by some means for additional electrical generation capacity. Because avoided load is at least as cost effective as additional generation capacity, the LR Co. obtains a contract with the IMO or administrative agency to deliver X MWH. of avoided load by a given means to the IMO over some time period. This contract would be essentially similar to the present arrangements between existing electricity suppliers and the IMO. The contract states the amount of avoided load (sic. Generation) capacity of the installation and a time duration. Scheduled completion dates are agreed upon. With contract in hand, the LR Co. proposes to (for example) an industrial customer to replace all their electrical motors with high efficiency brushless DC variable speed motors. In this contractual agreement between the LR Co. and the industrial customer; they agree on a cost per KWH mechanism for this avoided load. The LR Co. then replaces the agreed upon equipment. The customer immediately benefits from the savings of reduced electrical demand. Additionally, when the price of electricity is above this agreed price (their cost + profit), the LR Co. sells this avoided load to the IMO at current market prices, until the contractual amount is purchased at which time the contract ends, and the customer continues to reap the savings of reduced electricity demand.

In effect, the one time purchase cost of equipment necessary for Load Reduction or Avoidance is amortized over the period of the contract between the LR Co. and the IMO, and paid for over time, by the Avoided Load power sold to the IMO during favourable price periods.

2.4 Advantages

1. The arrangement is entirely market driven.
2. Because the arrangement is a contractual agreement between the IMO or other agency and LR Co., cream-skimming proposals can be rejected or adjusted at the contract negotiation stage.
3. The arrangement has a built in sunset.
4. The IMO buys the avoided power on the market competitively with other producers and LR Co.'s.
5. The IMO knows in advance the quantity of Avoided Load that it is purchasing.
6. The LR Co.'s growth and profitability is solely linked with their ability to deliver avoided load.
7. A market based finance mechanism for Load Reduction is established.
8. All stakeholders see advantages.
    a. The IMO gains Avoided Load at market prices.
    b. The customer gains upgraded, modernized, and more efficient equipment along with an agreed share of the Avoided Load profits.

c. The LR Co. makes a profit.
d. The IMO has only to deal with a single entity, the LR Co.

9. The customers' financial interests are satisfied in a fully competitive environment.
10. Power producers, LR Co.'s and the IMO are no longer in a conflict of interest position *vis à vis* Load Reduction.
11. LR Co.'s compete with each other and producers to deliver avoided power.
12. Price elasticity of Avoided Power ceases to be an unknown entity and becomes a competitive market driven commodity.

2.5 Potential Disadvantages

1. LR is removed from the domain of power producers, LDC's or distributors who may have political objections to such a transfer of responsibility.
2. Regulatory changes are required.
3. Functions better and more efficiently with real time market data.

3. Proposal #3 Virtual Supply Aggregation Corporations (VSAC)

3.1 Introduction

Grid interconnection and ongoing control and monitoring of small power producers is relatively expensive. Additionally, because of time, control, and complexity factors, small power producers are more frequently abruptly disconnected from the grid than large producers[1]. The interconnection costs frequently reach $100,000 – $200,000, and they may be dropped 7 –8 times a year. To an industrial co-generator supplier, shutdown of their cogeneration facility may entail loss of process heat and consequent plant shutdown.

3.2 Proposal regarding Virtual Supply Aggregation Corporations

We suggest the establishment of a regulatory framework enabling the existence of VSACs. These would be corporations whose charter is essentially to make money by means of connecting and selling the power obtained from small generation units. The VSAC acts largely as a command and control buffer between the IMO, and small generation suppliers. In return for a percentage of the supplied power price, they would undertake to provide the system interconnection, and the control and monitoring of that interconnection. Their entire existence and profitability is dependent on their success at supplying, managing and controlling power. Thus there is no longer a corporate conflict of interest, and success at VSAC becomes a market driven positive feedback mechanism towards corporate growth.

3.3 Virtual Supply Aggregation Corporate Example

A corporation with several geographically dispersed plants, some with cogeneration facilities contracts with a VSAC. for grid interconnection and control. The VSAC supplies interconnection and control equipment in exchange for a price per controlled and interconnected KWH. The VSAC receives aggregate control instructions from the IMO, and using its own control strategies and equipment satisfies the instructions of the utility and attempts to satisfy the needs of the contracted corporation.

This reduces or eliminates the need of the contracted corporation to interact with the IMO, and reduces the number of small generation facilities the IMO must control. The VSAC through it's monitoring and

[1] Jack Brown personal communication 4 Feb 2004.

control equipment can match or attempt to match the needs of the wires companies and the contracted corporations.

3.4 Advantages

1. Through power wheeling agreements and its monitoring and control equipment, the VSAC can transfer power among geographically dispersed corporate sites, assuming spot market wheeling capacity is available.
2. With it's understanding of grid dynamics and information from it's equipment, the VSAC can schedule cogeneration spin up and spin down for minimal plant disruption, and schedule alternate process heat mechanisms for it's contractee's.
3. The IMO does not have to directly control potentially hundreds if not thousands of small producers.
4. Small producers do not need in-house interconnection and control staff.
5. VS Co. can utilize independent state of the art, cost effective, monitoring and control equipment, while meeting IMO interface and control requirements.
6. Opens the spot market to power wheeling

3.5 Potential Disadvantages

1. Requires spot market power wheeling.
2. Functions better with real time market data.

4. Comments regarding Market and Regulatory Issues

4.1 OEB/ Wires model Inappropriate

All of the above proposals strongly depend on a market driven approach. However, without an overall uniform regulatory framework, we do not see how any of these proposals can be adopted. Since some of the proposals may be geographically dispersed, we feel that devolving DSM to the LDC's with its inherent possibility of non-uniform DSM rules and programs would severely inhibit these proposals. Thus we believe that the OEB/Wires model, wherein LDC's take responsibility for the design, development, and delivery of DSM, would <u>not</u> be an appropriate structure, and would present a severe barrier to the establishment of a Virtual Supply Aggregation Company. Furthermore, a Load Reduction Company may engage similarly in a geographically dispersed program of Load Reduction. In this situation the OEB/Wires model would require multiple contracts/agreements with LDC's. We view this as unnecessary, costly, and ultimately unworkable.

4.2 Central Agency Models

We suggest that some version of the Central Agency Model would be most appropriate for these suggestions. In particular the third model "Central Agency with third party DSM" model. This model provides the necessary centralized contractual agency, with which a DMS, LR or VS company could contract. This model provides a uniform province wide process for contracting, management, oversight, and regulation.

4.3 Self Funding

Our suggested structures, do not require government funding, LDC or Central Agency based per KWH charges or other forms of subsidy. Each proposal is self-funding through power or Load Reduction purchased competitively on the electricity market by the IMO.

4.4 Load Reduction and Generation Equality

It has been shown[2] that the price of Load Reduction power per MWH is normally less than the price of new generation capacity. We believe that market pricing of new Load Reduction should be treated on an equal basis with new generation capacity, and have proposed a market-based mechanism. This mechanism requires the establishment of a uniform province wide regulatory framework, which we suggest would be best served by the Central Agency with third party model. However we do not think the third parties should be limited to DSM. Load Reduction companies would be an excellent fit with this approach, and the model should be extended accordingly to encourage the establishment of competitive Load Reduction Corporations.

4.5 Advanced Metering

All of the proposals herein would function significantly more cost effectively with advanced customer metering and control. Some of these control functions may be over and above the current regulations. As discussed on Page 13 of the report, traditional provision of Real Time Pricing to very small customers may not be cost effective. However the aggregation of these customers by a Virtual Supply Corporation eliminates this problem, and leaves the development of such cost effective equipment and methods up to the private sector within a competitive framework. In this case benefits flow to all parties. The IMO gains additional supply, the VSAC is a profit making enterprise, and small producers gains the benefit of having their power sold through Real Time Pricing. We propose that the development, testing and provision of such advanced capabilities be left to the private sector acting within a Central Agency regulatory framework, with details of these control methods, techniques and regulations left to later negotiations. However the framework for this arrangement is clearly within the scope of the present document.

4.6 IMO Confidentiality and Concealment

Page 11 of the Report discusses various problems and solutions with the present IMO confidentiality. We feel none of the proposed solutions are well suited to our proposals. Consequently, we suggest the regulatory framework of the IMO be changed to correspond more closely with the Alberta model of near if not precisely real time information on generation and outages. We think this information is utterly crucial to the safe and effective operation of our suggested corporate entities. The present confidential arrangement serves only to hinder the development of a fully competitive market, and furthermore gives the IMO a privileged position with respect to understanding the real time flow of power. This privileged position should be established by means of legislation, rather than by the concealment of operational information. Such concealment is fundamentally inimical to the operation of fair and free markets.

4.7 Net Metering

The current Ontario provisions for net metering for very small consumers and producers wherein any net surplus power produced over a billing period, is set to zero, is a clearly unfair competitive practice and a violation of fair market practice. Furthermore this practice violates the principles of the DSM and DR within the report, and actively discourages both efficiency and small generation capacity. Customers are discouraged from establishing generation capability in excess of their own needs to the good of the IMO, and are likewise discouraged from further reducing their own consumption below a periodical net zero. This is essentially an anti-competitive clawback on Demand Side Management. We suspect the primary reasons for such an unfair and anti-competitive practice, assuming they are not a direct discouragement of small generation, are primarily reasons of metering, billing and monitoring. Our suggestion above regarding Advanced Metering should resolve most of these issues. Furthermore coupled with a Virtual Supply Corporation, the billing and administration of such very small producers would become a competitive domain, and the surplus power sold at market value, thus indirectly

[2] Fueling the Future,ed A. Heintzman, E Solomon 2003 p. 181 “In California the hike in energy prices led to major conservation efforts by the public. By June 2001 peak demand had fallen 12 percent from a year earlier, saving the equivalent of 4,800 megawatts…” and following.

extending the benefits of the power market to potentially every household in Ontario. Through Virtual Supply Corporations, they would appear as essentially a small number of easily managed VS entities to the IMO.

4.8 Transmission Capacity and Efficiency Market

As discussed on Page 13, Transmission companies and LDC's have little incentive to upgrade transmission efficiency; while passing through peak loss pricing may be too complex. We suggest that opening a spot Market on Transmission Capacity and Efficiency would resolve this problem, wherein suppliers would bid not only to deliver power, but also to have their power transmitted at the current efficiency. Thus power would become properly geographically priced. As discussed under Virtual Supply Corporations, obtaining safe and efficient power wheeling costing and capacity between sites is necessary for smooth functioning and equitable pricing of power produced by corporations at remote sites. Furthermore, we suggest that by it's very nature, such a market mechanism would move the efficiency, monitoring, safety and control of transmission into the competitive domain. As evidenced by the blackout of 14 July 2003, the ineffective monitoring and control of large-scale power transfers contributes directly to the system failure.

In this report we have offered three specific proposals to aid and develop Demand Side Management, Supply Response and Load Reduction. All these proposals operate within the competitive market mechanism, require little or no investment of funds from government bodies, and in our opinion will substantially advance the pace and development of conservation, efficiency and small generation.

Additionally we have commented on several existing practices and issues wherein we believe our suggestions would substantially improve both the delivery of both electrical energy and the necessary concomitment of end users to Demand Side Management and efficiency. These suggestions too are all within the competitive market driven framework and would require little or no government funding.

All our proposals and suggestion do however require legislative changes that we understand lies within the domain of the Report of the Advisory Group on Demand-Side Management and Demand Response in Ontario

This concludes the submission of Manta Test Systems Inc.

Thank you for the opportunity to comment.

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Terry McMillan, P. Eng. President

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Paul Neelands,