Ontario Energy Board

Commission de l'Énergie de l'Ontario

DEMAND-SIDE MANAGEMENT AND DEMAND RESPONSE IN THE ONTARIO ELECTRICITY SECTOR

REPORT OF THE BOARD TO THE MINISTER OF ENERGY

March 1, 2004

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EXECUTIVE SUMMARY

This report outlines several steps that can move Ontario closer to a culture of conservation. It presents the Board's recommendations for the delivery of demand-side management and demand response activities within the electricity sector including the role of local distribution companies and the potential role for load aggregators in the IMO-administered markets.

Ontario's Minister of Energy, the Honourable Dwight Duncan, noted recently that this province's challenge in the next few years is to "redesign our energy sector to reliably and affordably deliver the power that Ontario's homes and businesses require, and to do so in a way that does not threaten our environment." One of the best ways to do this, he noted, is through effective conservation measures.

Conservation measures are essential in Ontario. Problems with existing nuclear plants, transmission system constraints, and lack of investment in new generating plants contribute to tight supply conditions. If Ontario's coal-fired plants are phased out for environmental reasons by 2007, as government policy direction indicates, supply will get even tighter.

Meanwhile, demand continues to grow. In August 2002, the province hit a new one-day summer peak of 25,414 megawatts and on January 16 of this year, a new winter high of 24,982 megawatts.

The Ontario Energy Board began a series of consultations last fall with stakeholders in the energy sector as to what were the best means available to create a culture of conservation in Ontario. With the help of a 31-member advisory group, the Board undertook an extensive study of the options available, including how best to coordinate efforts across the province. The Board's recommendations are based on the varied views heard, analysis, debate and review.

Creating Lasting Change

Everyone in Ontario can play an important role in conservation. Deciding to turn out lights and turn down air conditioners, investing in more energy-efficient equipment, reducing electricity lost in delivery, and setting province-wide standards that promote conservation: these are all parts of the solution.

That is why the Board, in this report, makes recommendations on matters that range from the structure of the electricity market and the complexities of how power is delivered, through to better educating consumers.

Although the subject is at times highly technical, there are some basic principles that help to clarify how conservation can work (additional terms are defined in Section 1.2 of the report):

- Individuals and organizations can use more energy-efficient products and appliances and take other steps to reduce their electricity use on a regular basis. This reduces demand across the board, and is called demand-side management (or DSM).

- They can also be encouraged to reduce their use at "peak" times. This is called demand response (or DR). It can be achieved by reducing demand altogether at those times, or by shifting the energy use to a lower-demand time.

The recommendations in this report aim to promote both demand-side management and demand response. To achieve this, the ability of individuals and organizations to lower or shift their use of energy must improve.

Conservation Agency

The Ontario Energy Board recommends that a conservation agency oversee demand-side management and demand response activities in Ontario's electricity sector. The conservation agency would be responsible for:

- developing the province-wide demand-side management and demand response plan (including conservation fund administration, market plans, budget allocations, and market transformation initiatives);
- identifying broad areas of opportunity in demand-side management and demand response;
- setting rules for selecting and prioritizing demand-side management and demand response activities;
- ensuring a comprehensive portfolio of programs, including hard-to-reach sectors;
- contracting with, and funding market players and distributors for the design and delivery of programs;
- setting monitoring and evaluation protocols;
- contracting for an independent audit of results; and
- providing an annual report to the Minister.

Conservation efforts and programs would be funded by a charge on electricity consumption, in line with the approach that those who use the most electricity should contribute the most towards conserving it, and will also have the greatest opportunity to save from investment in conservation. This charge would be levied on all consumers, but would not apply to self-generated electricity.

The conservation agency would draw on the strengths of a range of players and open the door to a wide range of new ideas and approaches. The conservation agency would be accountable in order to provide a way of checking the approach against public policy aims. A central coordinating agency would ensure

consistency and universal access to programs, eliminate conflicting business goals, and provide the best fit with public policy aims.

The Ontario Energy Board would license the conservation agency, and be responsible for:

- oversight of the province-wide demand-side management and demand response plan;
- approving the consumption charge; and
- approving the conservation agency's budget.

The Board believes it should play an important role in overseeing the conservation agency to ensure accountability and the effective use of the conservation fund. This provides adequate oversight with the lightest possible administrative burden, so that conservation funds are used most effectively.

As the conservation culture develops and market signals become clearer, a competitive energy services market will drive conservation without additional funding from ratepayers.

The Role of the Distributor

The Board believes that a blended approach best meets Ontario's needs.

The conservation agency will oversee DSM/DR activities funded out of the conservation fund.

The Ontario Energy Board recommends that distributors be eligible to develop and deliver demand-side management and demand response activities for the conservation agency beyond least-cost planning and/or distribution system optimization. Distributors and market players would contract with and be funded by the conservation agency on equal terms.

The Board will regulate distributor activities funded out of distribution revenue.

The Board will examine regulatory mechanisms to protect distributors against distribution system load reductions associated with conservation.

The Ontario Energy Board will oversee distributor demand-side management and demand response activities for least-cost planning and/or distribution system optimization. This might include investing in meters, controllers, communications, and/or gateway services.

The Ontario Energy Board will develop principles and guidelines on the regulatory treatment of these activities for rate-making purposes. Further, the Ontario Energy Board will review the regulatory treatment of distribution system losses (as an incentive for making the distribution system more efficient).

Distributors understand their local market conditions and benefit from long-term customer relationships that have created a high level of trust. A blended approach would give them the option to work with the conservation agency.

The Minister has advised the Board that the government intends to permit distributors to apply to the Board for the next installment of their allowable return on equity beginning March 1, 2005. The Ontario Energy Board will develop guidelines for the review and approval of investments in conservation and demand management.

Enhancing Demand Response in the Wholesale and Retail Markets

The Ontario Energy Board recommends that the Independent Electricity Market Operator, in consultation with stakeholders, design and develop economic demand response to be put in place as a transitional measure.

When the deciding factor to curtail load is price then there is a true level of DR in the market. The IMO and the Board, as part of their market surveillance responsibilities, would review market conditions to determine when economic DR could be discontinued.

To enhance demand response in the retail market, the Ontario Energy Board will:

- develop interim and long-term Standard Supply Service (SSS) pricing strategies that include peak and off-peak time-differentiated SSS prices altered seasonally.
- issue a proposal to amend the Distribution System Code for notice and comment as soon as possible. The proposed amendment would require installation of advanced metering technologies on any new installation that is forecast by the distributor to have a monthly average peak demand during a calendar year of over 200 kW.
- begin a review soon of the use of metering technologies by low-volume consumers. Following this review, the Ontario Energy Board will implement its findings through guidelines and amendments to codes.

The Ontario Energy Board recommends that on an on-going basis, the conservation agency consider pilots and demonstration projects for emerging and innovative technologies that enable retail load management.

To bring retail demand response to the IMO-administered markets, the Ontario Energy Board recommends that no one player be mandated to play the role of load aggregator. Further, the Independent Electricity Market Operator should revise the Market Rules to facilitate load aggregation including statistical measurement, metering, and settlement requirements.

Consumer Education

The Ontario Energy Board recommends that the conservation agency be a conservation champion in Ontario for educating consumers. The conservation agency should coordinate efforts with the Ministry of Energy, the Independent Electricity Market Operator and the Ontario Energy Board.

Finally, in line with an expanded role in consumer education, the Ontario Energy Board will provide more information about energy conservation, energy efficiency, load management and cleaner sources of energy, and will explain to consumers the impacts of their energy choices.

1 INTRODUCTION

Conservation is a clean and affordable way of helping to bridge a growing gap between electricity demand and supply in Ontario.

The province faces growing demand. With hot weather in recent years, and the use of more air-conditioning, Ontario has set a series of new records for summer electricity use. The coldest days also bring new levels of demand — by January 16 of this year, the previous year's record for winter demand had already been broken.

Supply is falling behind demand. Ontario is facing tight supply conditions that are expected to continue past 2007. Problems with existing nuclear plants, transmission system constraints, and lack of investment in new generating plants contribute to these conditions. Coal power that releases harmful emissions now accounts for about one-quarter of our electrical generation, and government policy direction would end this by 2007. New supply and investment in transmission are part of the solution, but cannot be built fast enough to meet our needs.

Ontario's Minister of Energy, the Honourable Dwight Duncan, noted recently that this province's challenge in the next few years is to "redesign our energy sector to reliably and affordably deliver the power that Ontario's homes and businesses require, and to do so in a way that does not threaten our environment." One of the best ways to do this, he noted, is through effective conservation measures.

Conservation is an important and achievable goal. By reducing consumption and using electricity more efficiently, the province can reduce the rate at which demand is growing.

This will require changes in how the electricity market works and in individual behaviour, but the benefits are clear. Consumers will have an affordable and reliable supply of electricity. Higher energy productivity will also make Ontario more competitive.

This report sets out ways in which Ontario can start to create a "culture of conservation" that the Minister of Energy has discussed to help ensure a reliable and affordable electricity supply.

1.1 Background

The Ontario Energy Board received a directive from the former Minister of Energy under Section 27.1 of the *Ontario Energy Board Act, 1998* on June 18, 2003. In it, the Minister directed the Board to consult with stakeholders on options for the delivery of demand-side management (DSM) and demand response (DR) activities within the electricity sector, including the role of local

distribution companies in such activities. The directive also referred to the potential role for load aggregators within the markets administered by the Independent Electricity Market Operator (IMO). The directive asked the Board to balance implementation costs with the benefits to both consumers and the entire system. The Board was to report back to the Minister of Energy by March 1, 2004 with its analysis and recommendations for both the short and long term.

The former Government also appointed a task force, the Electricity Conservation and Supply Task Force, to provide an action plan outlining ways to attract new generation and identifying mechanisms for DSM. On January 14, 2004 the Minister of Energy released the report of the Task Force. In its recommendations, the Task Force endorsed the Board's process.

The Minister announced the formation of a Conservation Action Team to promote the government's conservation initiatives.

1.2 Definitions

Such commonly used terms as "energy conservation," "energy efficiency" and "load management" may mean different things to different people. Such terms are central to the Board's response to the directive. This section explains, therefore, what is meant by various terms as they are used in this report[1].

Energy Conservation means any action that results in less energy being used than would otherwise be the case. These actions may involve improved efficiency, reduced waste or lower consumption, and may be implemented through new or modified equipment or behaviour changes.

Energy Efficiency means using less energy to perform the same function. This may be achieved by substituting higher-efficiency products, services, and/or practices. Examples include high-efficiency appliances, efficient lighting programs, high-efficiency heating, ventilating and air conditioning systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems. Energy efficiency can be distinguished from demand-side management in that it is a broad term that is not limited to a particular sponsor such as a utility, a retailer, or an energy services company.

Load Management means activities or equipment to induce consumers to use energy at different times of day or to interrupt energy use for certain equipment

[1] Two supporting definitions are worth noting here as they are conceptually referred to in a number of the working definitions. According to *The Power Reference* by Ontario Power Generation, "Demand" means the rate at which electricity or natural gas is delivered to or by a system in a given instant, or averaged over a designated period, usually expressed in m^3/hr (natural gas) or kW (electricity); and "Energy consumption" means the quantity of energy used, typically expressed as m^3 (natural gas) or kWh (electricity).

temporarily in order to meet the objectives of reducing demand at peak times and/or load shifting from peak to off-peak. Examples include interruptible rates, time-of-use rates, load control devices, and air conditioner cycling programs.

Demand-side management[2] (DSM) means actions which result in sustained reductions in energy use for a given energy service, thereby reducing long-term energy and/or capacity needs.

Demand response (DR) means actions that result in short-term reductions in peak energy demand.

It is important to note that these terms are not mutually exclusive. For example, energy conservation includes energy efficiency; and energy conservation or energy efficiency may be achieved through load management measures. Similarly, demand-side management involves all three concepts – energy conservation, efficiency and load management. In general, energy conservation is the broadest term; energy efficiency has a strong technology focus; and load management may or may not result in the use of less energy, but at a minimum it shifts the timing.

1.3 Consultation with Stakeholders

The Board announced its plan for carrying out the directive and invited stakeholders to participate in a consultation process. It also expanded the scope of review to include the role of gas distribution companies in DSM.

The Board received 139 responses from both sectors as well as other stakeholders. These respondents formed the group of Listed Stakeholders.

A staff discussion paper presented results of preliminary research on DSM and DR to Listed Stakeholders.

An Advisory Group of 31 stakeholders was selected from the Listed Stakeholders to represent identifiable constituencies, including consumers, special interest groups, trade associations, generators, transmitters, electricity and gas distributors, wholesalers, retailers, and technology and energy service providers.

Starting on October 22, 2003, the Advisory Group held 14 days of meetings over an eight-week period. It heard 14 stakeholder oral presentations, on October 29 and 30. With Board staff and the assistance of a facilitator, the group analyzed and evaluated options; prepared action plans for overcoming identified barriers, issues and stakeholder concerns; and prepared a report.

[2] These working definitions for DSM and DR were developed by the Advisory Group.

The Advisory Group discussed changes in the market that it felt would lead to greater efficiency. As outlined in the "Market Issues" section of their report, market changes are needed to address:

- unequal treatment of demand-side and supply-side resources;
- artificial/inefficient pricing (and lack of transparency);
- Ontario Power Generation market power;
- forward price uncertainty;
- transmission rate structure; and
- separate capital and operating budget practices in government-funded buildings.

(The report contains the complete list of market issues raised by the Advisory Group.)

DSM and "economic DR" (usually understood to mean payments for curtailment) would target remaining barriers to efficiency. However, it should be noted that many Advisory Group members objected to the implication that curtailment payments are always economic or that DR without such payments is not economic.

The "Report of the Advisory Group on Demand-Side Management and Demand Response in Ontario in Response to the Minister's Directive to the Ontario Energy Board" brings together the group's working documents and represents its deliberations. It does not set out a consensus position. Instead it details several options. The report contains:

- a discussion of market issues, as noted above;
- an outline of options for delivering DSM and DR in Ontario, including two different approaches to a DSM/DR framework, as discussed further on page 9; and
- a discussion of general issues.

By November 19, the Board had received 28 stakeholder written representations.

The report of the Advisory Group and Stakeholder submissions presented reasoned and varied points of view.

On January 23, 2004, staff issued its Report to the Board containing its recommendations for the delivery of DSM and DR activities in Ontario's energy sectors. Stakeholders were invited to comment and 53 responded.

This report contains the Board's recommendations to the Minister. It discusses some of the positions taken by stakeholders who participated in the Advisory Group, provided representations or oral presentations and/or commented on the Board staff Report to the Board. For the sake of brevity, not all stakeholder comments could be reflected in this report. However, the Board has reviewed

and carefully considered all of the comments provided by stakeholders in preparing this report.

The Board thanks those who took part in the Board's consultation for their hard work and thoughtful representations. A summary of stakeholder comments on the staff report is attached as Appendix A to this report. Complete text of all submissions related to this consultation has been provided to the Minister. It is also available with all of the other materials related to this consultation for public review at the Board's office and on the Board's web site.

1.4 Report Overview

The purpose of this report is to respond to the Minister's directive. It presents the Board's recommendations for the delivery of demand-side management and demand response activities within the electricity sector including the role of local distribution companies and the potential role for load aggregators in the IMO-administered markets.

Chapter 2 presents the Board's recommended policy framework. It discusses the role of the distributor and recommends how activities should be funded. Further, the chapter recommends how to incorporate demand response into the IMO-administered markets.

Chapter 3 discusses demand response in Ontario's retail markets and recommends how to increase the role of load aggregators in the IMO-administered markets. The Board identifies many areas where it will take action.

Chapter 4 highlights the importance of consumer education.

Chapter 5 discusses the regulation of demand-side management activities by gas distributors.

The Appendices include the Board staff's January 23, 2004 Report to the Board and a summary of the stakeholders' comments on that report.

2 RECOMMENDATIONS FOR DELIVERY OF DEMAND-SIDE MANAGEMENT AND DEMAND RESPONSE ACTIVITIES IN THE ELECTRICITY SECTOR

Using market forces may be the best means to optimize the system to ease short-term capacity constraints. Making long-term, sustainable changes in the market, on the other hand, may best be achieved through public policy.

In Ontario's electricity sector, a key policy driver in the short term is system optimization[3] through DR to:

- meet Ontario's electricity needs;
- promote load management (system benefits);
- promote wider consumer participation in the electricity markets than is currently afforded by the real-time energy market;
- reduce overall electricity prices to consumers;
- reduce electricity price volatility; and
- avoid uneconomic investments in generation, transmission or distribution.

In Ontario's gas and electricity sectors, the longer-term policy objective should be market transformation[4] through DSM to:

- induce lasting structural and behavioral changes in Ontario to create a conservation culture;
- increase Ontario's competitiveness through increased energy productivity; and
- provide universality - i.e., allow as many consumers as possible the opportunity to participate and share in the benefits of demand-management activities (public benefits).

Ontario will need both DSM and DR to meet its objectives and resource goals.

[3] Maximizing use of the existing infrastructure through balancing investment in new generation, transmission and/or distribution upgrades, and DSM and DR activities. For a discussion of system reliability as a function of the relationship among generation, wires, and load, see: Richard Cowart, "Efficient Reliability: The Critical Role of Demand-side Resources In Power Systems and Markets", Prepared for The National Association of Regulatory Utility Commissioners, June, 2001.

[4] The American Council for an Energy-Efficient Economy (ACEEE) defines market transformation as: "Reducing market barriers to the adoption of cost-effective energy efficiency products and services in a sustained manner." An example would be when an energy-efficient option becomes the norm through an increase in minimum standards. A recent example of this in Ontario is gas water heaters.

2.1 Policy Framework

The Ontario Energy Board recommends that:

A conservation agency oversee demand-side management and demand response activities in Ontario's electricity sector. The conservation agency will be responsible for:

- developing the province-wide demand-side management and demand response plan (including conservation fund administration, market plans, budget allocations, and market transformation initiatives);
- identifying broad areas of opportunity in demand-side management and demand response;
- setting rules for selecting and prioritizing demand-side management and demand response activities;
- ensuring a comprehensive portfolio of programs, including hard-to-reach sectors;
- contracting with, and funding market players and distributors for the design and delivery of programs;
- setting monitoring and evaluation protocols;
- contracting for an independent audit of results; and
- providing an annual report to the Minister.

The Ontario Energy Board license the conservation agency, and be responsible for

- oversight of the province-wide demand-side management and demand response plan;
- approving the consumption charge; and
- approving the conservation agency's budget.

Background

The Board reviewed a jurisdictional survey carried out by the Regulatory Assistance Project [5]. In 48 per cent of the cases administration of conservation programs is centrally coordinated, subdivided into 21 per cent central agency and 27 per cent government or regulator. In the remaining 52 per cent, DSM is utility-led, half by distributors and half by vertically-integrated utilities. In many jurisdictions, a blend of players is used to implement DSM activities, including private and public sector utilities.

In all jurisdictions the program administrator is overseen by a review authority. In 58 per cent of the jurisdictions surveyed, the regulator is the review authority.

[5] Harrington, Cheryl and Catherine Murray, The Regulatory Assistance Project. "Who Should Deliver Ratepayer Funded Energy Efficiency?" A Survey and Discussion Paper. May 2003.

The same study suggests that the strengths of central coordination include:
- a focused mission;
- elimination of conflicting business objectives; and
- a high degree of compatibility with broader public policy goals.[6]

The independent system operator does not take a lead role in DSM in other jurisdictions. It is often seen as a conflict with its role as impartial manager of the market system.

In some jurisdictions the state acts as a central DSM agency. The Advisory Group objected to the government taking an active role in implementation, although it did recommend that the Ministry set overarching objectives for DSM and DR (such as peak demand and consumption reduction targets). Also, the group recommended that the government continue to improve the efficiency of buildings and products through building codes and product standards.

The Report of the Advisory Group discussed two possible frameworks, one where a central agency takes the lead for DSM/DR activities, and one where distributors are primarily responsible.

Observations

The Board believes that a conservation agency, with its variety of delivery channels, would effectively meet Ontario's conservation goals. It would provide greater universality and develop the competitive sector, by:

- being a single point of contact for all players;

- allowing economies of scale through consistent, province-wide policies that would lower energy service product prices and transaction costs since delivery agents could develop marketing programs for the entire province using their existing delivery channels;

- attracting more private sector participants through these scale economies;

- reflecting regional needs through consultation with local stakeholders;

- allowing consumers with multiple locations around the province (such as chain accounts and property management firms) to benefit from more consistent program rules; and

[6] Ibid.

- screening, tracking and evaluating activities with a single set of protocols, allowing for consistent comparison of results regardless of the delivery agent.

Oversight of the Conservation Agency

The Board notes the importance of adequate oversight with the lightest possible administrative burden so that conservation funds are used most effectively. The Board believes that it should play an important role in overseeing the conservation agency to ensure accountability and the effective use of the conservation fund collected from ratepayers. To achieve these goals, the Board should license the conservation agency. The Board should oversee the province-wide DSM/DR plan and approve the consumption charge and the conservation agency's budget.

In reviewing the DSM/DR plan, one of the Board's considerations would be consistency with government policy, supply and transmission plans and the general regulatory framework for Ontario's electricity system. The Board would not approve specific DSM/DR activities, but would have authority, in response to complaint or on its own motion, to review the portfolio of activities for adherence to the province-wide DSM/DR plan.

Conservation Agency Activities

The conservation agency would lead and promote conservation efforts by bringing together ideas, plans, and best practices from its own research and a range of market participants. No one player would have a primary role in all stages of the DSM/DR implementation process.

There is a broad range of activities that might be integrated into the province-wide DSM/DR plan, including:

- research and development:
  - market related (e.g., feasibility studies, market penetration rates studies, development of end-use market information repository);
  - DSM related (e.g., study on elements of avoided costs); and
  - technology related (e.g., contributions to research bodies aimed at product development);
- enabling infrastructure:
  - dynamic pricing;
  - specific technologies that enable other initiatives (e.g., metering, communications, etc); and
- design, development and delivery of DSM and/or DR activities such as:
  - provision of information (e.g., energy audits, fact sheets);
  - replacement of equipment (e.g. insulation, windows, appliances and equipment, lighting, heating and air conditioning, water heating);

- building design (e.g., including energy efficient equipment and building standards, and small-scale generation including solar heating and cooling, photovoltaics, passive solar design, and/or day lighting); and
- load control (e.g., appliance timers and controllers).

The conservation agency would contract for specific core DSM/DR activities (e.g., research, province-wide initiatives, market transformation, and initiatives for hard-to-reach sectors). For example, the Board is concerned that low- and fixed-income consumers may be unable to participate in DSM/DR activities. These consumers have a significant opportunity for savings because they represent 11.7 per cent of Ontario residents; they have limited access to capital; and they pay a disproportionate amount of income on water, fuel and electricity. Therefore, they could be a focus for specific government policy.

Also, in order to encourage innovation and diversify the portfolio of activities, the conservation agency would invite DSM/DR proposals from any person or organization, including distributors, energy service companies, retailers and wholesalers, and individual consumers (market players). The proposals would be subject to common screening and selection criteria. A common way of selecting and prioritizing DSM activities is the total resource cost test. The total resource cost test is an evaluation of the costs and/or benefits accruing to society as a whole, due to an activity, excluding externalities.

The Board recognizes the importance of up-front rule-making and stakeholder input to initial development. In particular, the Board suggests that the conservation agency set, with stakeholder input:

- screening criteria;
- monitoring and evaluation protocols; and
- principles for audits.

Board staff would participate in these consultations to help the overall process.

As identified by the Advisory Group, avoided costs for generation, transmission, distribution and losses need to be determined and should be updated periodically. These costs would be used in all program screening, prioritization, evaluations and audits. Further, the principles and the terms of reference for the audit of DSM/DR activity results should be established and standardized to the greatest extent possible at the beginning of the process (i.e. before delivery begins) to avoid after-the-fact dispute over the auditor's role and findings, and to ensure a timely and streamlined audit process.

2.1.1 Implementation

Legislative change will be required in order to give a new or an existing agency the powers and duties of the conservation agency.

The *Ontario Energy Board Act, 1998* will have to be changed to give the Board licensing power over the conservation agency.

2.2 The Role of the Distributor

The Board believes the province needs a central coordinator, particularly for market transformation, program consistency, and serving hard-to-reach market segments. Distributors do have an important role in DSM and DR. In forming its recommendation, the Board considered the extent to which distributors should plan, design, develop and contract for DSM/DR activities.

Distributors understand their local market conditions and their customers, and this would allow distributors to design effective programs for their customers. Further, distributors' long-term relationships with customers have established a high level of trust.

The Board notes that small distributors may not have the experience or resources to implement DSM/DR activities. In looking at the distributor's role, the Board considered that small distributors might be required to outsource, participate voluntarily, or be exempted from any obligation.

The Board recognizes that distributors are key to:
- the efficient delivery of electricity;
- the facilitation of market-driven, customer-oriented DSM/DR activities; and
- optionally, the pursuit of broader DSM/DR objectives.

2.2.1 Distribution System Efficiency

The Ontario Energy Board will oversee distributor demand-side management and demand response activities for least-cost planning and/or distribution system optimization. This might include investing in meters, controllers, communications, and/or gateway services.

The Ontario Energy Board will develop principles and guidelines on the regulatory treatment of these activities for rate-making purposes. Further, the Ontario Energy Board will review the regulatory treatment of distribution system losses (as an incentive for making the distribution system more efficient).

Least-Cost Planning

Distributors' involvement in some DSM/DR activities will enable them to balance infrastructure upgrades with load management options for least-cost planning. Least-cost planning is used to ensure economically efficient growth of the distribution system. A common test for such activities is the utility cost test. The utility cost test is an evaluation of the impact of a DSM activity on a distributor's revenue requirement as a result of a change in distribution costs, and excludes any lost revenues due to the activity.

The Board understands that distributor least-cost planning would require a sufficiently long horizon, for example at least 10 years, to allow DSM/DR to be a viable alternative when considering investments.

A common least-cost planning activity by distributors is load management. Load management reduces the peak demand on the distribution system thereby deferring or avoiding the need to expand or reinforce the distribution system. For example, it might be useful to reactivate some existing water-heater load control programs if they pass the utility cost test. The Board notes that revenue erosion, lack of demand charges, and unbundling of commodity from delivery charges are reasons that distributor load management programs have been discontinued. Some of these programs provided reductions of 5 to 20 per cent in distribution system peak.

Reducing Distribution System Losses

On an ongoing basis, distributors should be encouraged to optimize the operation of their distribution systems, including reducing losses. Distribution system losses are highest during peak demand periods. Currently, electricity distributors are indifferent to losses because they are treated as a passthrough to ratepayers. This could lead to distributors making decisions based solely on the initial capital cost rather than the life cycle cost since losses are passed on to the ratepayer.

Distribution system driven DSM/DR activities focus on solving system capacity constraints and reduce the cost of distribution services. There are many ways to mitigate system losses, including load shifting and system reconfiguration.

To encourage distribution system efficiency, the Board will review the regulatory treatment of distribution system losses.

2.2.2 Distributors and the Conservation Agency

The Ontario Energy Board recommends that:

Distributors be eligible to develop and deliver demand-side management and demand response activities for the conservation agency beyond least-cost planning and/or distribution system optimization. Distributors and market players would contract with and be funded by the conservation agency on equal terms.

The Board encourages all distributors to pursue DSM and DR where they contribute to distribution system efficiency. In addition, the Board recognizes that there are some distribution companies eager to offer other DSM/DR activities to their customers. These distributors have identified specific market opportunities, have the resources and have shareholder support.

Distributors will be able, voluntarily, to approach the conservation agency for additional or full funding of activities or bid on projects identified by the conservation agency. Activities funded by the conservation agency would be outside the distributor's regulated rate of return. In contracting with the conservation agency, the distributor would, like any other business, be entitled to build in room for profit. Distributors can participate and compete with other organizations (e.g., private sector and non-government organizations), but would not receive preferential treatment from the conservation agency.

The Board is sensitive to the concern that distributors engaging in competitive activities could result in cross-subsidization. This would impose costs on ratepayers and give distributors an unfair competitive advantage in bidding for funding from the conservation agency. This will be of particular concern when distribution charges and the conservation fund are both funding an activity. The Board will closely monitor distributors' activities in DSM/DR to ensure that cross-subsidization does not occur.

2.2.3 The Need for Revenue Protection

The Ontario Energy Board will examine regulatory mechanisms to protect distributors against distribution system load reductions associated with conservation.

The Board is aware that DSM/DR activities sponsored by the conservation agency might erode distribution system throughput.

There are various methods of dealing with revenue erosion:

- annual update to volumetric forecasts to adjust rates to recover approved revenue requirements;

- modification to distribution rate structure (more fixed, less variable);
- modification of type of PBR framework (revenue cap rather than price cap); and
- variance accounting (i.e., LRAM).

The Board is of the view that distributors need protection from revenue erosion due to conservation activities. The Board will determine an appropriate method for revenue protection as part of its review of electricity distribution PBR.

2.2.4 Implementation

The Board's ability to amend distribution rate orders to enable DSM/DR activity is currently constrained by legislation. The Government would have to change legislation or the Minister would have to give the Board specific direction on amending distribution rate orders.

2.3 Conservation Funding

2.3.1 Electricity Distributors' Next Installment of their Allowable Return on Equity

> The Ontario Energy Board will develop guidelines for the review and approval of the investments in conservation and demand management from the next installment of the allowable return on equity.

The Minister has advised the Board that the government intends to permit distributors to apply to the Board for the next installment of their allowable return on equity beginning March 1, 2005. The Board's approval will be conditional on a financial commitment to reinvest one year's incremental returns in conservation and demand management initiatives. The Board has been instructed to use its discretion regarding the nature of these initiatives and related timing and recovery issues.

The Board expects investment to focus on activities that promise immediate conservation benefits, including equipment, business practices and information systems that will enable DSM/DR activities and on DSM research. The Board will seek advice from the conservation agency, if possible, on how this money should be invested. It is not clear whether distributors would be required to actually plan and deliver all activities.

It is not certain that all distributors will apply for the maximum allowable adjustment; however, estimates put the upper boundary at $225 million on consumption of 150 to 155 terawatt hours[7]. This represents an average charge

[7] Estimate of 12 month Ontario demand based on historical figures from the IMO website.

of about 0.15¢ per kWh. The Board expects distributor applications in the fall of 2004, and funds to begin to be collected on March 1, 2005.

The Board encourages distributors to provide an enabling role to conservation and demand management. Equipment to enable DSM/DR activities might include metering technologies, controllers, communications, and/or gateway services. Further, some electricity distributors provide historical consumption data on customer bills, and a few already allow customers to access their account information over the internet.

In exercising its discretion regarding the nature of these initiatives, the Board will develop guidelines for the review and approval of investments.

2.3.2 Ongoing Conservation Funding

The Ontario Energy Board recommends that:

On an ongoing basis, electricity demand-side management and some retail demand response initiatives be funded by all electricity consumers through a transparent consumption charge (¢/kWh).

- This charge would be levied on all consumers, but would not apply to self-generated electricity.
- The conservation agency would be responsible for setting the rate applied to electricity consumption annually, subject to review by the Ontario Energy Board.

All DSM and DR funding comes ultimately from the consumer regardless of the method of collection (i.e., tax, distribution rate, or uplift charge). Therefore, a consumption charge is appropriate. Knowing that a charge on use is being collected urges consumers to conserve. It clearly shows the government's commitment to conservation. Therefore, the charge should be transparent.

A rate based on consumption is most sensible because the more electricity a consumer uses, the more they should contribute to conservation and the greater their scope for conservation. However, the Board notes that the consumption charge should not apply to self-generated electricity. The Board does not want to recommend any impediment to innovative supply solutions in the market.

The consumption charges paid by consumers would flow to the conservation agency to administer as a conservation fund.

The level of funding, the universality of the funding, and the allocation of the funds to DSM/DR activities are important issues that the conservation agency will have to address. For example:

- Should the conservation fund be allocated to the customer classes from which it is collected? In many jurisdictions, funding is dedicated to areas where the market does not serve (i.e., low and fixed-income, residential markets, and new technologies/standards). The Board notes that in the United States, programs for low-income consumers are frequently administered either directly by the State or by a newly created entity with public oversight.[8]

  There are three generally accepted principles to DSM/DR funding: equal collection across all customer classes; budget allocation proportional to collection; and maximizing total resource cost test benefits. Concern was raised in the Advisory Group that it is not possible to satisfy all three at the same time — trade-offs will be necessary. For example, residential programs typically have high program costs relative to the savings generated, while industrial programs have low program costs relative to the savings generated. Therefore, selecting programs based solely on maximum total resource cost test benefits will result in lost opportunities in the residential sector. On the other hand, allocating funds strictly to customer class may leave some industrial or commercial projects unfunded resulting in lost opportunities in those sectors and lower overall total resource cost test benefits for a given level of DSM/DR spending.

- How much of the conservation fund should be spent to enable increased DR at peak periods (i.e., through investment in enabling technologies such as meters, controllers, communications, and/or gateway services)?

The Board expects that as the conservation culture develops and market signals become clearer, a competitive energy services market will drive conservation without additional funding from ratepayers.

2.3.3 Implementation

Legislation will be needed to implement the electricity consumption charge.

This charge could be collected in a similar manner to the debt retirement charge.

[8] See also the written representations of the Vulnerable Energy Consumers Coalition and the Canadian Environmental Law Association. November 10, 2003.

2.4 Demand Response in the IMO-Administered Markets

The Ontario Energy Board recommends that:

The Independent Electricity Market Operator, in consultation with stakeholders, design and develop economic demand response to be put in place as a transitional measure.

DR is a natural element of a functioning market. It is an economic decision to forego production, take equipment out of service (for example, air conditioning or escalators), or switch to an alternative fuel based on price.

In the current, real-time energy market in Ontario, all buyers pay the price set by the last unit of electricity accepted, which is called the "market-clearing price." (This is particularly critical during peak demand periods, when prices typically increase very quickly.)

The current market allows buyers to announce their willingness to curtail their usage above a certain price (demand bid).

A buyer whose demand bid is accepted benefits by consuming less and, to the extent that this lowers the market-clearing price, that buyer and all others benefit by paying less for electricity that is consumed.

When buyers bid demand into the market, there is less difference between the forecasted (pre-dispatch) and actual market-clearing prices. This makes prices more transparent and less volatile.

Unfortunately, DR in Ontario is limited. This aspect of the Ontario market was not emphasized in market design. Ontario Hydro, the vertically integrated utility, charged "interruptible" rates. The industrial and large commercial entities on these lower rates rarely had their supply curtailed. In addition, some distributors had programs with a flat fee payment to get internal system benefits from reducing demand at peak times. When the market opened, however, these rates and programs ended.

The current Ontario demand curve does not reflect true DR. The report of the Advisory Group[9] discusses this in more detail. This distortion is exacerbating price transparency problems that are evident in the difference between the pre-dispatch price and the market-clearing price.

[9] See also the written representation to the Board of the Association of Major Power Consumers in Ontario. November 18, 2003.

Economic DR, which pays buyers to curtail, is justified as a transitional tool. It would create a more realistic demand curve until the market is mature. The objective would be to let consumers participate in the wholesale market.

The Board acknowledges that economic DR creates a wider range within which it makes economic sense to forego production and, by extension, the associated benefits to society, such as jobs. Regardless, the payments to a few consumers to curtail at peak periods are dwarfed by the savings to all consumers. These savings are due to lower cost supply being able to meet all demand.

Studies have indicated that when supply is scarce relative to expected demand, a reduction in demand of 2 to 5 per cent could reduce prices by half or more.[10] This suggests that the market could save between $24.50 and $9.50 for every $1 of economic DR payment. It is important to remember that, because of the infrequency and short duration of the events, customers' total electricity bill savings may be less than 2 per cent. However, the system benefits of reduced demand near system capacity limits are large.

It is in the high-price section of the supply curve that the most dramatic price changes could result from small demand changes. Therefore economic DR should be active only in periods when the price is above a threshold. For example, in Ontario between May 1, 2002 and October 31, 2003 the three-hour ahead price was above $180 for a total of 406 hours[11] out of 13,152 hours (approximately 3 per cent of the time).

It is possible that once economic DR payments ended, demand bidding would move to the operating reserve market in search of a payment stream. This would suppress operating reserve prices and generation would likely be pushed into the wholesale market. Consequently, more generation capacity would be available for supply instead of reserve.

The Board acknowledges concern that economic DR could discourage investment in new supply. However, it is the Board's view that it would only discourage *uneconomic* supply.

Economic DR: An Example

Under current rules, an example of how economic DR might work is as follows. A wholesale economic DR participant, or load aggregator, would offer to curtail

[10] Rosenzweig, Michael, et al. "Market Power and Demand Responsiveness: Letting Customers Protect Themselves". The Electricity Journal. May 2003.

[11] Independent Electricity Market Operator. Presentation at Economic Demand Response Pilot Workshop. November 20, 2003. (http://www.theimo.com/imoweb/consult/\imoweb\pubs\consult\DmdResp\dr_EcoDRPfinal.pdf)

use of 2 MW if the three-hour pre-dispatch price were to exceed $180/MW (the participant's economic threshold price). The IMO would call for the curtailment when the pre-dispatch price exceeds the threshold price. Regardless of the eventual market-clearing price, the participant would receive a payment of: ($180/MW) x (the actual measured load curtailment) x (the required number of hours for curtailment).

All IMO-administered market participants would fund the economic DR payments through the uplift charge. Not all wholesale consumers would take part in economic DR programs. Economic DR participants might include wholesale consumers and load aggregators serving retail consumers.

IMO Transitional Demand Response Program

The IMO is currently developing its Transitional Demand Response Program, formerly its Economic Demand Response Pilot Program. The objective of the program is to build on the Ontario market's DR capability infrastructure. The rules are not final. The IMO has proposed the life of the program be two to three years. Further, one of the proposed eligibility criteria is that a verifiable barrier to DR participation exist.

The Board is concerned some consumers would be excluded from the IMO's proposed program. These consumers, primarily large industrial consumers, are participating in the market and have technologies needed to respond to price signals. However, they are not active in the market because they lack experience in responding without a payment stream, they have fixed price contracts, or prices are simply too low to make it economic for them. These consumers are a large opportunity for immediate DR[12] resources and have expressed interest to the IMO. However, they would be excluded because they do not have an eligible barrier.

The Board believes that large industrial consumers should not be excluded. The intent of economic DR is to give payments that will allow participants such as these to gain experience and build the infrastructure to continue demand participation once the payments end.

End of Transition Period

Economic DR is unnecessary in markets where virtually all load is participating in the market in one form or another. In Ontario, this is not the case at present. When Ontario's consumers are able to refuse high-priced electricity, they will do so and the economic value of electricity will be clear. That is, when the deciding

[12] The Association of Major Power Consumers of Ontario estimates in its written representation that the potential DR is 1500 MW to 2000 MW.

factor to curtail load is price then there is a true level of DR in the market. The IMO and the Board, as part of their market surveillance responsibilities, should review market conditions to determine when economic DR could be discontinued. The Board anticipates that this might be in three to five years.

2.4.1 Implementation

The IMO should establish the objectives for economic DR in terms of the length of the program and the threshold price at which it would begin to call on economic DR offers.

The IMO should implement economic DR through Market Rule changes and pay for it through the uplift charge since all consumers benefit from the reduction in prices in proportion to their consumption.

3 DEMAND RESPONSE IN RETAIL MARKETS AND THE ROLE OF LOAD AGGREGATORS IN THE IMO-ADMINISTERED MARKETS

3.1 Demand Response in Retail Markets

The Board is of the view that three conditions are needed to make consumers change the amount or timing of their consumption:

- a price that changes over time in response to demand and supply forces;
- the ability of consumers to see and respond to a price signal; and
- measurement of the response so that consumers get credit for their action.

A Price That Changes over Time

The Ontario Energy Board will develop interim and long-term Standard Supply Service (SSS) pricing strategies that include peak and off-peak time-differentiated SSS prices altered seasonally.

Pricing to consumers has an impact on a DSM/DR framework. In a fully-functioning competitive market, market-based pricing tends to lead to efficient levels of demand. Consumers change the amount or timing of their electricity consumption, or contract to hedge against price volatility.

Before market opening, small Ontario consumers were used to a flat price for electricity use. With market opening, the majority of small consumers then began to be billed based on an unpredictable and volatile spot price pass-through applied to their consumption based on a net system load shape (often two months worth of consumption).

Ontario currently uses two forms of pricing for electricity - market-based pricing and regulated pricing. Wholesale market participants and non-designated consumers pay the Hourly Ontario Energy Price unless they contract for a fixed price, while designated consumers[13] pay a fixed price.

In summary, commodity pricing in Ontario differs depending on consumer size (annual demand and/or consumption), market participation (wholesale or retail), and choice (default supply or competitive supply).

Introducing a peak and off-peak, time-differentiated price begins an education process for consumers that electrons have different values at different times. This serves as an economic proxy for a market-based price signal.

[13] Defined in section 56 of the *Ontario Energy Board Act, 1998* Act and associated regulations.

The Board is of the view that SSS pricing should reflect market pricing. In the summer and winter, the difference between peak and off-peak prices should be large enough to cause shifting in consumption. This is when it is most needed from a system point of view. Pilot programs in Wisconsin have used price differences of 12:1[14].

Ability to See and Respond to Price

Consumers should understand the basics of the electricity market, including the real level of prices and how they can control their bills. Large commercial and industrial consumers are in need of information as much as residential consumers.

Demand-management services could be competitively offered to consumers by energy services companies or packaged with generation and financial services by retailers and power marketers. These services are available in the market for commercial and small industrial consumers. In addition, economic DR will create a revenue stream and encourage activity.

Residential consumers are unlikely to be aggregated into the IMO-administered markets in the short term because of high transaction costs and uncertain response.

Timers and smart controllers on appliances will give residential consumers the ability to change the amount or timing of their electricity consumption. Smart controllers would build infrastructure for future aggregation because they can be programmed to respond to a signal. Timers could give quick inexpensive results. However, they are pre-programmed rather than responsive to a remote signal.

New and innovative customer solutions, such as sophisticated gateway systems, allow consumers to see in real-time what they are consuming at what price. These could be the subject of pilot programs.

Measurement of Response

The Ontario Energy Board will issue a proposal to amend the Distribution System Code for notice and comment as soon as possible. The proposed amendment would require installation of advanced metering technologies on any new installation that is forecast by the distributor to have a monthly average peak demand during a calendar year of over 200 kW.

[14] See materials of oral presentation to the Advisory Group by Schlumberger Electricity, Inc. October 30, 2003.

Accurate and timely measurement is important to ensure that a consumer gets credit for changing the amount or timing of his/her electricity consumption. Otherwise, as with the original spot market pass-through based on net system load shape, some consumers will be under rewarded for their activities and some consumers will see undue benefit.

Advanced metering technology is important to enable demand response in the retail market. However, debate exists on what meters are appropriate for various consumer groups and when/how they should be deployed. The Board notes that meters are a tool, and without pricing changes and the ability to respond, meters alone are not sufficient to help consumers change their behavior or control their electricity bills.

Many large consumers (more than 250,000 kWh per year) may not be aware of DR benefits and may not have the tools to act on price signals. There is an opportunity for more consumers to use advanced metering technology at lower demand thresholds than are currently required.

The Board supports advancing the use of metering technologies by consumers. A number of studies have suggested that the threshold for "measurement inside settlement time" (MIST) meter installation on new customers in the Distribution System Code should be lower. At a 200 kW peak demand level, it would include small manufacturers, schools and grocery stores. This would enable more consumers embedded behind a wholesale meter to be rewarded for changing the amount or timing of their consumption.

The Board also expects that distributors will find additional benefits from advanced meters, such as account automation and theft detection.

The Board notes that many distributors have already adopted lower thresholds for MIST meters in their conditions of service.

Therefore, the Board is of the view that it is time to lower this metering standard in the Distribution System Code.

The Board has not seen a demonstrated economic justification for mass-deployment of interval meters among existing residential customers based on load shifting. It is not clear that the incremental capital and operating costs of replacing an existing standard meter with an interval meter is less than the demand and consumption savings to the market or to the consumer. Voluntary and mandatory pilot programs have shown that few consumers have sufficient ability to respond to make it worth while. Lack of flexibility in usage is a greater barrier than lack of technology. The Board is of the view that a clear, predictable price signal is more important to changing those consumers' behavior than metering technology.

The Ontario Energy Board will soon commence a review of the use of metering technologies by low-volume consumers. Following this review, the Ontario Energy Board will implement its findings through guidelines and amendments to codes.

3.1.1 The Role of the Conservation Agency to Increase Retail Load Management

The Ontario Energy Board recommends that:

On an ongoing basis, the conservation agency consider pilots and demonstration projects for emerging and innovative technologies that enable retail load management.

The conservation agency should be involved in province-wide DR activities, particularly in the retail market. However, the IMO should oversee DR in the markets it administers. Early coordination with the IMO would help to leverage or expand upon the services that the IMO provides to support province-wide demand-side strategies and objectives. For example, the conservation agency could coordinate activities that advance participation in the IMO administered markets (i.e., technologies needed to qualify as a market participant).

As new technology is developed the conservation agency can help to investigate the benefits and commercialize the technology; e.g., use of metering technologies, controllers, communications, and/or gateway services.

3.2 Aggregation of Retail Load

The Ontario Energy Board recommends that:

No one player be mandated to play the role of load aggregator.

The Independent Electricity Market Operator revise the Market Rules to facilitate load aggregation including statistical measurement, metering, and settlement requirements.

The role of load aggregators is to gather retail load to participate in the wholesale market. The IMO has indicated that only 17 per cent of Ontario electricity is consumed by wholesale market participants themselves; the remaining 83 per cent is purchased through distributors. The largest short-term potential is the small industrial and large commercial sectors. Many of these entities already have interval meters and pay the Hourly Ontario Energy Price. Likely, many of these would be aggregated across distributor boundaries.

The Board is of the view that relaxed Market Rules would allow load aggregation to develop naturally. Some consumers might aggregate their own load to their own benefit. Retailers might aggregate load to manage their commodity risk. Other energy services companies might offer load aggregation as a standalone service in the market. Therefore, it is not necessary to mandate the role of load aggregator in the market.

3.2.1 Implementation

The government has the authority to address elements of SSS pricing by way of regulation.

The Board's ability to accept applications for distribution rate changes associated with advanced metering is currently constrained by legislation.

4 THE IMPORTANCE OF CONSUMER EDUCATION

4.1 Coordinating Communication

The Ontario Energy Board recommends that:

The conservation agency be a conservation champion in Ontario for educating consumers.

The conservation agency coordinate efforts with the Ministry of Energy, the Independent Electricity Market Operator and the Ontario Energy Board.

The goal of consumer education is to help create a conservation culture.

The government communicates general energy matters and policy direction to consumers. The Board's expanded mandate requires it to communicate to electricity and gas consumers on how the energy markets work and consumer choice in those markets. The IMO communicates with market participants on market function. The conservation agency would communicate DSM/DR program-related information and general conservation information to consumers. Together, these entities will provide all the information needed for a conservation culture.

The conservation agency should look at the activities of market players and distributors already providing consumer-education tools to the public. These include the two major gas distributors, as well as some electricity distributors and energy service providers.

The Board is of the view that educated consumers will be able to make better choices about how, when and whether they use electricity or gas. They are likely to be more aware of the benefits of shifting or reducing their usage or using other sources. Their feedback, in turn, could help the agencies involved in conservation and the energy sector as a whole to identify other ways of reducing or better managing demand. This would include helping the conservation agency identify opportunities for DSM/DR activities.

The Ontario Energy Board will design, develop and/or deliver information to consumers related to energy conservation, energy efficiency, load management and cleaner sources of energy to help consumers understand their energy choices and the consequences of those choices in the Ontario market.

The Board already has a role as an objective leader in protecting energy consumers' interests. Its expanded mandate makes that role clearer. The Board will need to coordinate with other parties. There will be opportunities, for

example, to leverage what has been learned from the earlier efforts of government and others.

To avoid the risk that the Board's role or the purpose of its communication might be misunderstood, educational materials must be carefully drafted. For example, the Board should not be seen as promoting a particular activity or technology. This advocacy role should belong to the conservation agency.

The Board will also need to consider the best ways of getting information out to consumers (and back from them). It currently uses such channels as letters, Board Orders, stakeholder presentations, a call centre and its web site. It may want to add new channels - for example, current rules allow the Board to send information out in energy bills. Examples of ways to communicate valuable information to consumers include presenting historical consumption data on residential bills, and/or using the internet to inform consumers about their consumption and savings possibilities.

The focus of Board communications should be on explaining the market and ensuring that consumers are fully informed of the impact of their decisions. The conservation agency would focus on explaining to consumers the potential bill savings (and environmental benefits) of certain energy efficiency improvements.

5 OTHER MATTERS

5.1 Demand-Side Management in Ontario's Gas Sector

The Board believes that the DSM framework in gas could be improved. In Enbridge's RP-2002-0133 Partial Decision with Reasons, the Board expressed its concern about the existing framework in gas and approved the company's proposal to study improvements to the framework. The studies include looking at how to improve the incentive mechanism and the consultation and audit processes.

The Board has a long history of regulating the activities of gas distributors in DSM. The Board believed that it was time for it to further examine DSM in the gas industry. In addition, the Board anticipated that experience of DSM in natural gas would provide important lessons in consultation with stakeholders of DSM in electricity. Further, given that there are many common issues, the Board believed that it was appropriate to combine the review of the role of the distributor in DSM in natural gas with the process for responding to the Directive in electricity.

The Board is now convinced that symmetry between the gas and electricity sectors may not be appropriate in DSM matters for a number of reasons:

- there are structural differences — the gas sector is less fragmented ;
- load management in gas focuses on seasonal variations in demand rather than daily variations; and
- the distributors have been actively involved in DSM for a number of years, and existing programs should not be absorbed in a central agency.

Therefore, the policy frameworks need not be the same at this time. However, the Board considers that consistency and clarity are important, and notes that the two gas companies have different frameworks.

The Board is of the view that improved regulation of DSM activities is necessary to better manage the regulatory process. Specific areas for improvement would include:

- regulatory instruments (including revenue protection and incentives);
- verification (monitoring and evaluation, compliance, and audit); and
- commonality (consistency of framework between distributors).

The Board intends to review the regulation of DSM activities by gas distributors. In the meantime, the Board will continue to oversee gas DSM in individual rate cases.

5.2 Distributed Generation as a Demand Resource

Debate on distributed generation as a demand resource is on-going. While distributed generation reduces system losses and displaces system supply, it is in effect a source of supply. Distributed generation can function as a demand response resource in emergency situations or high price periods. In both cases, it may not always be environmentally beneficial because of the fuel used to generate the electricity. The Board will deal with these and other matters separately.

APPENDICES

Appendix A - January 23, 2004 Staff Report to the Board.

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Ontario

Staff Report to the Board

Demand-Side Management and Demand Response in the Ontario Energy Sectors

January 23, 2004

TABLE OF CONTENTS

SUMMARY OF RECOMMENDATIONS

- A hybrid framework using both market-based and public-policy approaches should deliver demand-side management (DSM) and demand response (DR) activities in Ontario's energy markets.

- A Central Agency should be responsible for delivery of DSM and DR activities in Ontario's energy sectors.

- The Ministry of Energy, the Independent Electricity Market Operator (IMO) and the Ontario Energy Board should work together to coordinate DSM and DR activities.
  - The Ministry would be responsible for setting over-arching objectives for DSM and DR.
  - Where necessary, the IMO would make changes in the Market Rules to implement DR, and the Board would change regulatory instruments to facilitate DSM and DR activity. Both organizations would continue to carry out their legislated objectives.

- Transmitters and distributors should be allowed to act as delivery agents of DSM/DR activities for least-cost planning and/or optimizing their distribution systems. This might include investing in DSM/DR-enabling technologies such as meters, controllers, communications, and/or gateway services. In doing so, distributors should comply with Central Agency protocols and compete equally with private sector players, without provision for DSM variance account, lost revenue adjustment mechanism, or shared savings mechanism.

- The Board should put in place regulatory mechanisms to induce gas distributors, electricity transmitters and electricity distributors to reduce distribution system losses.

- The recommended framework should replace the current gas framework within three years.

- Electricity DSM and some retail DR initiatives should be funded by all electricity consumers through a transparent, non-bypassable consumption charge (kWh). Gas DSM initiatives should also be funded by a transparent consumption charge (m^3).
  - This charge would be levied on all consumers, including self-generation in electricity.
  - The Central Agency should be responsible for setting the rate applied to electricity and gas consumption annually, subject to review by a regulatory body.

- In consultation with stakeholders, the IMO should design and develop economic DR to be put in place for 3-5 years as a transitional measure.

- Further, the IMO should revise the Market Rules to facilitate load aggregation (e.g., statistical measurement, metering, and settlement requirements).

- No one player should be mandated to play the role of load aggregator.

- The Board is currently working on interim and long-term Standard Supply Service (SSS) pricing strategies. These could include peak and off-peak time-differentiated SSS prices altered seasonally.

- Until May 1, 2006, time-differentiated and seasonally adjusted commodity prices could apply to designated consumers.

- The agencies involved in conservation in Ontario (the government, the Central Agency, the IMO, and the Board), should coordinate consumer education plans to ensure consistent messages and avoid duplication.

- To help consumers understand their energy choices and the consequences of those choices in the Ontario market, the Board should design, develop and/or deliver information to consumers related to energy conservation, energy efficiency, load management and cleaner sources of energy.

1 INTRODUCTION

1.1 Background

The Ontario Energy Board received a directive from the former Minister of Energy under Section 27.1 of the *Ontario Energy Board Act, 1998* (OEB Act) on June 18, 2003. In it, the Minister directed the Board to consult with stakeholders on options for the delivery of demand-side management (DSM) and demand response (DR) activities within the electricity sector, including the role of local distribution companies in such activities. The directive also referred to the potential role for load aggregators within the markets administered by the Independent Electricity Market Operator (IMO). The directive asked the Board to balance implementation costs with the benefits to both consumers and the entire system. The Board is to report back to the Minister of Energy by March 1, 2004 with its analysis and recommendations for both the short and long term.

Record electricity demand since market opening in Ontario underscores the need for conservation. In August, 2002, the province set a new summer peak of 25,414 MW and in January, 2003, a new winter peak of 24,158 MW. August, 2003 would likely have seen a new summer peak if not for the blackout and Ontario consumers' response to the subsequent call for restraint. Demand in June had already reached 24,753 MW (just 661 MW short of the 2002 record). Already this year, on January 16, consumers set a new winter peak record of 24,982 MW.

The former Government also appointed a task force, the Electricity Conservation and Supply Task Force, to provide an action plan outlining ways to attract new generation and identifying mechanisms for DSM. On January 14, 2004 the Minister of Energy released the report of the Task Force. In his news release, the Minister confirmed the Government's commitment of "setting a new direction and developing a responsible and sustainable policy for Ontario's electricity

sector", including creating a conservation culture in Ontario. The conservation culture means "making conservation, demand management and demand response strategies a cornerstone of Ontario's long-term energy future."[1]

The Minister has announced the formation of a conservation action team to promote the government's conservation initiatives[2], and that he will seek a technical advisor to oversee a competitive contracting process to enhance Ontario's supply of renewable energy[3].

In its recommendations, the "Task Force endorses the process currently under way at the Ontario Energy Board which is expected to provide more detailed advice to the Government in the spring of 2004 on the appropriate organization and funding of conservation in Ontario."[4]

1.2 Definitions

Such commonly used terms as "energy conservation", "energy efficiency" and "load management" may mean different things to different people. Such terms are central to the Board's response to the directive, but are not defined in the current legislation. This section explains, therefore, what is meant by various terms as they are used in this paper[5].

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[1]Ontario Ministry of Energy News Release. "Electricity Conservation And Supply Task Force Report Confirms Need For New Direction In Ontario's Electricity Sector". January 14, 2004.

[2]Ontario Ministry of Energy News Release. "McGuinty Government Takes Action On Conservation". January 16, 2004.

[3]Ontario Ministry of Energy News Release. "Energy Minister Announces Plan to Address First Third of Coal Commitment". January 20, 2004.

[4]Electricity Conservation and Supply Task Force. "Tough Choices: Addressing Ontario's Power Needs" Final Report to the Minister. January 2004.

[5]Two supporting definitions are worth noting here as they are conceptually referred to in a number of the working definitions. According to *The Power Reference* by Ontario Power Generation, "Demand" means the rate at which electricity or natural gas is delivered to or by a system in a given instant, or averaged over a designated period, usually expressed in m^3/hr

Energy Conservation means any action that results in less energy being used than would otherwise be the case. These actions may involve improved efficiency, reduced waste or lower consumption, and may be implemented through new or modified equipment or behaviour changes.

Energy Efficiency means using less energy to perform the same function. This may be achieved by substituting higher-efficiency products, services, and/or practices. Examples include high-efficiency appliances, efficient lighting programs, high-efficiency heating, ventilating and air conditioning systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems. Energy efficiency can be distinguished from demand-side management in that it is a broad term that is not limited to any particular sponsor (e.g., a utility, a retailer, an energy services company).

Load Management means activities or equipment to induce consumers to use energy at different times of day or to interrupt energy use for certain equipment temporarily in order to meet the objectives of peak shaving and/or load shifting from peak to off-peak. Examples include interruptible rates, time-of-use rates, load control devices, and air conditioner cycling programs.

Demand-side management[6] (DSM) means actions which result in sustained reductions in energy use (KWh, m^3) for a given energy service, thereby reducing long-term energy and/or capacity needs.

Demand response (DR) means actions that result in short-term reductions in peak energy demand (MW, m^3/hr).

(natural gas) or kW (electricity); and "Energy consumption" means the quantity of energy used, typically expressed as m^3 (natural gas) or kWh (electricity).

[6]These working definitions for DSM and DR were developed by the Advisory Group.

It is important to note that these terms are not mutually exclusive. For example, energy conservation includes energy efficiency; and energy conservation or energy efficiency may be achieved through load management measures. Similarly, demand-side management involves all three concepts – energy conservation, efficiency and load management. In general, energy conservation is the broadest term; energy efficiency has a strong technology focus; and load management may or may not result in the use of less energy, but at a minimum it shifts the timing.

1.3 Board Approach to Developing Recommendations

The Board announced its plan for carrying out the directive and expanded the scope of review to include the role of gas distribution companies in DSM. The Board invited stakeholders to participate in a consultation process. The Board received 139 responses. These respondents formed the group of Listed Stakeholders.

A staff discussion paper presented results of preliminary research on DSM and DR to Listed Stakeholders.

An Advisory Group of 31 stakeholders was selected from the Listed Stakeholders to represent identifiable constituencies, including consumers, special interest groups, trade associations, generators, transmitters, electricity and gas distributors, wholesalers, retailers, and technology and energy service providers.

Starting on October 22, 2003, the Advisory Group held 14 days of meetings over an eight-week period. It heard fourteen stakeholder oral presentations on October 29 and 30. With Board staff and the assistance of a facilitator, the group analyzed and evaluated options; prepared action plans for overcoming identified barriers, issues and stakeholder concerns; and prepared a report.

The "Report of the Advisory Group on Demand-Side Management and Demand Response in Ontario in Response to the Minister's Directive to the Ontario Energy Board" brings together the group's working documents and represents its deliberations. It does not set out a consensus position. Instead it details several alternatives. The report contains:

- a discussion of market issues;
- an outline of options for delivering DSM and DR in Ontario:
  - a DR framework;
  - options for a Central Agency framework; and
  - an option for an "Ontario Energy Board/wires company" framework; and
- a discussion of general issues.

By November 19, the Board received 28 stakeholder written representations. A list of stakeholder oral presentations and written representations is included in Appendix A.

The report of the Advisory Group and Stakeholder submissions presented reasoned and varied points of view. Subsequently, the Board asked staff to prepare this Report to the Board. In doing so staff have drawn on the stakeholder oral presentations, written representations, the report of the Advisory Group and staff's original Discussion Paper. Staff note that the report of the Advisory Group will continue to be useful as a framework is put in place.

The Board wishes to receive stakeholder comments on staff's Report to the Board before deciding on its recommendations to the Minister.

1.4 Energy Market Issues

The Advisory Group discussed market changes that would lead to greater efficiency. As outlined in the "Market Issues" section of the report of the Advisory Group, these would address issues including:

- unequal treatment of demand-side and supply-side resources;
- artificial/inefficient pricing (and lack of transparency);
- Ontario Power Generation market power;
- forward price uncertainty;
- transmission rate structure; and
- "use it or lose it" budget practices in government-funded buildings.

DSM and "economic DR" (usually understood to mean payments for curtailment) would target remaining barriers to efficiency. However, it should be noted that many Advisory Group members objected to the implication that curtailment payments are always economic or that DR without such payments is not economic.

2 RECOMMENDED POLICY DIRECTION

Recommendation:

A hybrid framework using both market-based and public-policy approaches should deliver DSM and DR activities in Ontario's energy markets.

A hybrid framework achieves DSM and DR goals in a variety of ways. Using market forces may be the best means to optimize the system to ease short-term capacity constraints. Making long term, sustainable changes in the market, on the other hand, may best be achieved through public policy.

In Ontario's electricity sector, a key policy driver in the short term is system optimization[7] through DR to:

- meet Ontario's energy needs;
- promote load management (system benefits);
- promote wider-based consumer participation in the electricity markets than is currently afforded by the real-time energy market (e.g., in the case of DR to bridge between wholesale and retail markets; load aggregation);
- reduce overall electricity prices to consumers;
- reduce electricity price volatility; and
- avoid uneconomic investments in generation, transmission or distribution.

[7] Maximizing use of the existing infrastructure through balancing investment in new generation, transmission and/or distribution upgrades, and DSM and DR activities. For a discussion of system reliability as a function of the relationship among generation, wires, and load, see: Richard Cowart, "Efficient Reliability: The Critical Role of Demand-side Resources In Power Systems and Markets", Prepared for The National Association of Regulatory Utility Commissioners, June, 2001.

In Ontario's gas and electricity sectors, the longer-term policy objective should be market transformation[8] through DSM to:

- induce lasting structural and behavioral changes in the market place to create a conservation culture;
- increase Ontario's competitiveness through increased energy productivity; and
- provide universality - i.e., allow as many consumers as possible the opportunity to participate and share in the benefits of demand-management activities (public benefits).

Ontario will need both DSM and DR to meet its objectives and resource goals.

Pricing to consumers also has an impact on a DSM/DR framework. In a fully-functioning competitive market, market-based pricing tends to lead to efficient levels of demand. Consumers change the amount or timing of their energy consumption, or contract to hedge against price volatility. demand-management services could be competitively offered to consumers by energy services companies or packaged with generation and financial services by retailers and power marketers. Under regulated pricing, however, moving to efficient levels of demand depends on public policy and regulatory oversight.

Ontario currently uses both forms of pricing for electricity. Designated consumers[9] pay a fixed price, while wholesale market participants and non-designated consumers pay the hourly Ontario energy price, unless they contract for a fixed price. In summary, commodity pricing in Ontario differs depending on

[8]The American Council for an Energy-Efficient Economy (ACEEE) defines market transformation as: "Reducing market barriers to the adoption of cost-effective energy efficiency products and services in a sustained manner." For example, when an energy efficient option becomes the norm through an increase in minimum standards. A recent example of this in Ontario is gas water heaters.

[9]Defined in section 56 of the OEB Act and associated regulations.

consumer size (annual demand and/or consumption), market participation (wholesale or retail), and choice (default supply or competitive supply).

Since system optimization and market transformation are not mutually exclusive, and commodity pricing is both market-based and regulated, a hybrid approach using both market-based and public-policy based approaches is recommended for Ontario.

3 RECOMMENDATIONS FOR IMPLEMENTING DEMAND-SIDE MANAGEMENT ACTIVITIES

3.1 Policy Framework

Recommendations:

A Central Agency should be responsible for the design and delivery of DSM and DR activities in Ontario's energy sectors.

The Ministry, the IMO, the Board and the Central Agency should work together to coordinate DSM and DR activities.

- The Ministry would be responsible for setting over-arching objectives for DSM and DR.
- Where necessary, the IMO would make changes in the Market Rules to implement DR, and the Board would change regulatory instruments to facilitate DSM and DR activity. Both organizations would continue to carry out their legislated objectives.

No one player has a primary role in all stages of the DSM/DR implementation process.

The Central Agency would be responsible for:

- developing the province-wide DSM/DR plan (including conservation fund administration, target market plans, budget allocations, and market transformation initiatives);
- setting rules for screening opportunities and monitoring and evaluation protocols;
- identifying broad areas of opportunity in DSM and DR;
- contracting for and coordinating design and delivery of programs;
- contracting for an independent audit of results; and

- providing an annual report to the Minister.

The Central Agency should also be involved in province-wide DR activities, particularly in the retail market. However, the IMO should oversee DR in the markets it administers. Early coordination with the IMO would help to leverage or expand upon the services that the IMO provides to support province-wide demand-side strategies and objectives. This is discussed further in chapter 4 of this report and in the IMO's written representation.

To encourage the development of a competitive energy services sector, private sector delivery agents should be used as much as possible. A thriving energy services sector will offer cost effective solutions to consumers. As the conservation culture develops, a competitive energy services market would eventually drive conservation without additional funding from ratepayers.

The Ministry could create a new entity to be the Central Agency, or could designate the role to an existing agency.

In some jurisdictions the state acts as a Central Agency. The Advisory Group objected to the government taking an active role in implementation although it did recommend that the ministry set overarching objectives for DSM and DR (such as peak demand and consumption reduction targets). Also, the group recommended that the government continue to improve the efficiency of buildings and products through building codes and product standards.

Independent system operators do not take a lead role in DSM in other jurisdictions. It is often seen as a conflict with their role as impartial manager of the market system.

Figure 1 presents the results of a jurisdictional survey undertaken by the Regulatory Assistance Project [10]. Program administration (the role of the Central Agency) is not dominated by any single model. Program administration models include: Central Agency (21%); the government or regulator (27%); distributors (26%); and vertically integrated utilities (26%). In many jurisdictions, a blend of players is used to implement DSM activities, including private and public sector utilities.

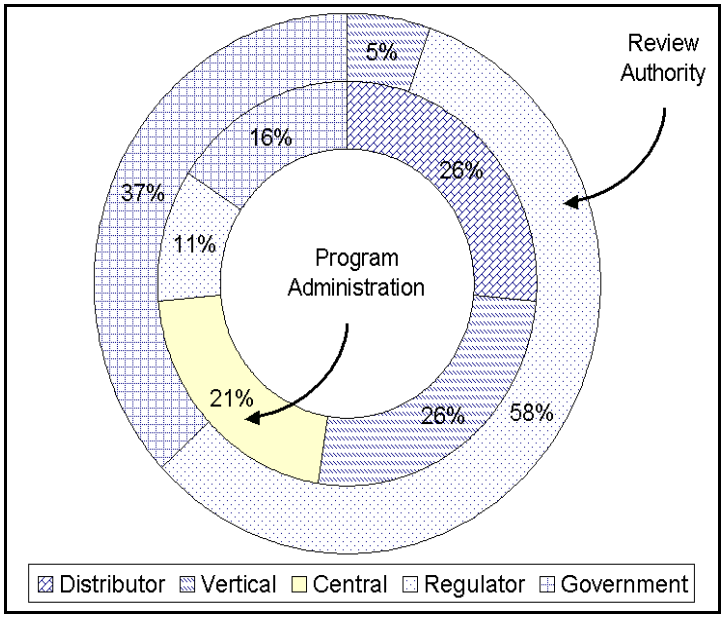

Figure 1: Administrative Structures (adapted from "Who Should Deliver Ratepayer Funded Energy Efficiency?")

In all jurisdictions the Program Administrator is overseen by a Review Authority. In 58% of the jurisdictions surveyed, the regulator is the review authority.

3.1.1 Rationale

The Central Agency Model

A coordinated approach to DSM is necessary in Ontario to prioritize and implement public policy goals. A Central Agency is also effective at addressing market transformation issues, setting appropriate targets, ensuring universal access, maximizing consistency and reducing administrative burden.

[10] Harrington, Cheryl and Catherine Murray, The Regulatory Assistance Project. "Who Should Deliver Ratepayer Funded Energy Efficiency?" A Survey and Discussion Paper. May 2003.

The report of the Advisory Group discussed the central agency model without making a definite recommendation. It noted that the central model can be more effective, provide greater universality, and develop the competitive sector, because:

- It provides a single point of contact for all players.

- It allows economies of scale through consistent, province-wide policies. Energy service product prices and transaction costs should therefore be lower because delivery agents can develop marketing programs for the entire province using their existing delivery channels. These scale economies are also likely to attract more private sector participants.

- It can reflect regional needs through consultation with local stakeholders.

- Consumers with multiple locations around the province (such as chain accounts and property management firms) also benefit from more consistent program rules.

- All activities can be screened, tracked, and evaluated with a single set of protocols, allowing for consistent comparison of results regardless of the delivery agent.

An alternative to the Central Agency model is the use of utilities to deliver DSM and DR activities. Research suggests that the strengths of the Central Agency model over the utility model include the ability to:

- focus its mission;
- eliminate conflicting business objectives; and

- achieve a high degree of compatibility with broader public policy goals.[11]

The OEB – Utility Model

In addition to the Central Agency model, the Advisory Group described a utility model where the Board oversees activities undertaken by utilities.

There is support among stakeholders for a primary role in DSM and DR for distributors. Distributors understand their local market conditions and their customers, and proponents maintain that this would allow distributors to design highly effective programs for their customers. Further, distributors' long-term relationships with consumers establish a high level of trust.

The report of the Advisory Group notes that the utility model may not adequately address central issues such as standards and market transformation initiatives. However, it may be appropriate for system optimization purposes. See section 3.2 in this report.

Concerns about the utility model include:

- Energy efficiency programs should be province-wide for consistent coverage. The patchwork coverage through utilities tends to result in a confusing variety of programs for consumers.

- Utilities often integrate their DSM/DR programs into marketing strategies for building load and retaining customers. These competing goals subordinate the goal of conservation.

[11] Harrington, Cheryl and Catherine Murray, The Regulatory Assistance Project. "Who Should Deliver Ratepayer Funded Energy Efficiency?" A Survey and Discussion Paper. May 2003.

- If a utility is to pursue energy efficiency for social benefits, then the utility may need to get large incentive payments and revenue protection to overcome business conflicts. This compensation comes directly from consumers.

  In Ontario's gas sector, there are three regulatory mechanisms: a DSM variance account (DSMVA), the lost revenue adjustment mechanism (LRAM), and the shared savings mechanism (SSM). The DSMVA allows the distributor to recover overspending of the DSM budget if the additional savings warrant it. As defined in the July 23, 1993, E.B.O. 169-III Report of the Board, a "lost revenue adjustment mechanism" is a technique which allows the utility to recover, in its rates, the revenue loss associated with a specific DSM program or set of programs; and a "shared savings mechanism" is a regulatory incentive to the utility's shareholders whereby they are allowed to retain a portion of the net dollar benefit from a DSM program or set of programs.

- A study of U.S. jurisdictions found that utility-led and Central Agency-led models have similar administration costs. In addition, utility incentives can be as much again as those administration costs[12]. In Ontario's gas sector, regulatory oversight of these payments has proven to be complex and controversial. This regulatory complexity may be compounded by the number and variety of electricity distributors.

[12]Guinn, C. "Briefing Report: Status of Public Benefit Programs". Prepared for the National Association of State Energy Officials. *Undated*.

Figure 2[13] shows that the incentive payment to Enbridge Gas Distribution, Inc. shareholders in 2001 was 28% of all DSM spending. Union Gas Limited does not have a shareholder incentive mechanism; however, revenue protection for Union in 2001 was 42% of total DSM spending.

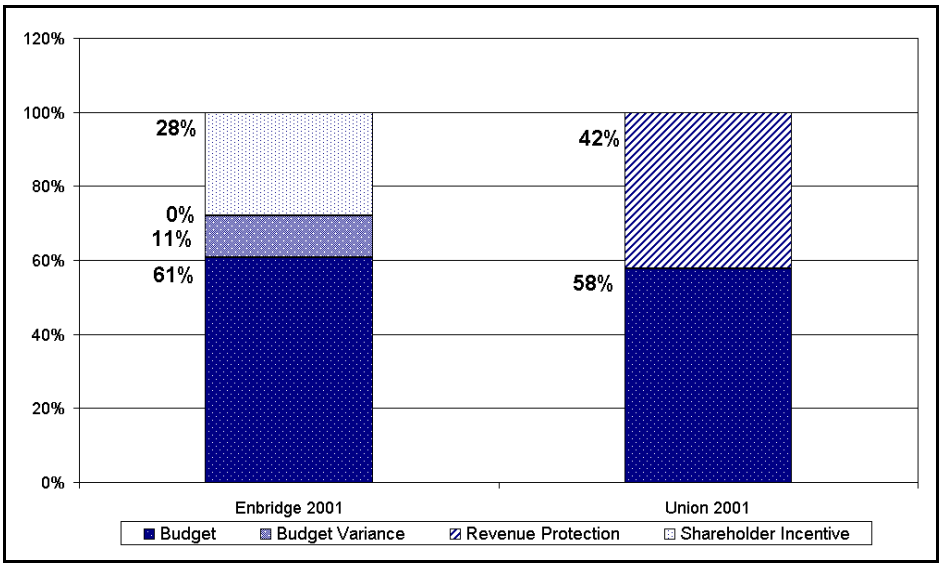

Figure 2: DSM Spending in Gas in Ontario

- The utility model is inconsistent with the restriction on business activities that attempts to make distributors neutral to market forces. Other market players believe that utility-based administration is a conflict of interest for the utility that gives it an unfair advantage in the energy services market. There is relatively little experience in DSM with the electricity distributors. That inexperience and the resources required would likely lead those distributors to outsource to a larger third party.

[13]Source data for this graph is the Enbridge Distribution Inc. RP-2002-0133 Partial Decision with Reasons, and the Union Gas Limited DSM 2001 Evaluation Report and evidence filed in the Union Gas Limited RP-2001-0029 rate case.

3.1.2 Potential Concerns

Stakeholders were concerned about bureaucracy and the risk of a Central Agency becoming self-perpetuating. The Central Agency must achieve adequate oversight with the lightest possible administrative burden so that conservation funds are used most effectively. Up-front rule-making so that the operating environment is clear would reduce these concerns. Transparent reporting of results and periodic review of effectiveness would ensure that the agency was accountable and did not outlive its usefulness.

Some members of the Advisory Group considered that mandating a market regulator to act as the Central Agency would conflict with the regulator's role. There is concern that by actively designing, implementing, and funding DSM/DR activities, a regulator would intervene in the market it is meant to oversee.

3.1.3 Implementation

The Ministry may have to implement legislation to create a new entity to be the Central Agency, or to designate the role to an existing agency.

3.2 The Role of The Transmitter And Distributor

Recommendations:

Transmitters and distributors should be allowed to act as delivery agents of DSM/DR activities for least-cost planning and/or optimizing their distribution systems. This might include investing in DSM/DR-enabling technologies such as meters, controllers, communications, and/or gateway services. In doing so, distributors should comply with Central Agency protocols and compete equally with private sector players, without provision for DSM variance account, lost revenue adjustment mechanism, or shared savings mechanism.

The Board should put in place regulatory mechanisms to induce gas distributors, electricity transmitters and electricity distributors to reduce distribution system losses.

3.2.1 Rationale

Least-Cost Planning

Letting transmitters and distributors act as delivery agents will enable them to balance infrastructure upgrades with load management options for least-cost planning. An option might include aggregating local distribution system load. Otherwise ratepayers are paying for uneconomic investments that could have been avoided.

As discussed in section 3.1, the Central Agency would use private sector delivery agents as much as possible. This would give the transmitters and distributors the option of entering into performance contracts with delivery agents for DSM/DR resources. Performance contracts would allow them to mitigate risk. In

fulfilling the contract, the delivery agent may offer activities supported by the conservation fund.

Reducing Distribution System Losses

Currently, electricity distributors are indifferent to losses because they are treated as a passthrough to consumers. This could lead to distributors making decisions based solely on the initial capital cost rather than the life cycle cost since losses are passed on to the consumer.

Peak conditions are critical to the electricity system as a whole and distributors in particular. "Meeting system needs at peak require allowances in system design and operations for a typically less than optimal load factor. Optimal asset utilization or, alternatively, component loading often suffer as a consequence. It is at these times when the system also experiences the greatest losses."[14] DSM and DR can mitigate system losses and distributors should be encouraged to pursue these activities at optimal times when those activities most benefit them. "Invariably, those times correspond to peak demand periods. Losses are much higher during peak demand periods because they vary as the square of the current, or system load."[15]

3.2.2 Potential Concerns

Least-cost planning calls for a sufficiently long horizon, for example at least 10 years, to allow DSM/DR to be a viable alternative when considering investments.

[14] EnerSpectrum. Ontario Energy Board Stakeholder Consultations - RP-2003-0144 Minister's directive on DSM and DR October 2003. November 10, 2003.

[15] Ibid.

However, distributors should be made aware that the utility cost test[16] should be used so that ratepayers do not subsidize societal benefits.

One concern for distributors is that DSM/DR activities sponsored by the Central Agency might be so successful that throughput is significantly eroded during a multi-year performance-based regulatory (PBR) term. The Board may need to consider rate relief in such cases. This does not mean LRAM or SSM, but an adjustment to forecasted throughput for recovery of revenue requirement.

3.2.3 Implementation

The Board is currently planning for the second generation of electricity distribution PBR. In that work the Board should review the regulatory treatment of distribution system losses (as a potential incentive for making the distribution system more efficient). It should also consider the need for mid-term adjustments to load forecasting to take into account the impact of conservation initiatives.

3.3 Symmetry Between Electricity and Gas

Recommendation:

The recommended framework should replace the current gas framework within three years.

3.3.1 Rationale

A Central Agency could oversee DSM in gas as well as electricity. It would allow a focused effort on market transformation and provide unbiased decision-making

[16] An evaluation of the impact of a DSM program on a utility's revenue requirement as a result of a change in costs. Excludes any lost revenues due to the DSM program. E.B.O. 169-III Report of the Board, July 23, 1993

on fuel switching and potential load growth issues. Further, it could provide comprehensive programs that address all energy sources available to the consumer whether at one location or many locations across the province.

Implementation of DSM should be the same in gas as in electricity. Otherwise, gas distributors could structure programs to their competitive advantage.

However, putting a DSM framework in place for electricity - establishing the policy foundation and operating norms - will take time. It is not advisable to add natural gas immediately. While DSM in electricity is maturing, the natural gas distributors will provide gas savings and prepare for the new framework without undue disruption to their business and marketing strategies.

3.3.2 Potential Concerns

The gas distributors have built considerable experience in DSM program development and administration. Successful programs could be transferred to the Central Agency (using the same delivery partners) where they would be subject to the same monitoring and evaluation criteria as electricity programs. In the meantime, gas distributors might focus on superficial projects to maximize incentive payments.

3.3.3 Implementation

The Board would continue to oversee gas cases on an individual basis with the goal of transferring responsibility to the Central Agency.

3.4 Conservation Funding

Recommendations:

Electricity DSM and some retail DR initiatives should be funded by all electricity consumers through a transparent, non-bypassable consumption charge (kWh). Gas DSM initiatives should also be funded by a transparent consumption charge (m^3).

- This charge would be levied on all consumers, including self-generators in electricity.
- The Central Agency should be responsible for setting the rate applied to electricity and gas consumption annually, subject to review by a regulatory body.

DSM funding should cover DSM/DR program administration and consumer incentives. It would not include funding for lost revenue adjustment (LRAM), variance accounts (DSMVA) or shared savings mechanisms (SSM).

The consumption charges paid by consumers would flow to the Central Agency to administer as a conservation fund.

The government has proposed that the funds from one year of the third phase of electricity distribution market-based rate of return (MBRR) be used to fund conservation and demand management. For these funds to be available, distributors would have to apply for, and receive the Board's approval for these increases. It is not certain that all distributors will apply for the maximum allowable. However, estimates put the upper boundary at $240 million[17] on consumption of 150 to 155 terawatt hours[18]. This represents an average charge of about 0.16¢ per kWh. Staff estimate that in 2001, the average charge per m^3

[17] Value of 3rd tranche of MBRR from Rates spreadsheet (January 18, 2003).

[18] Estimate of 12 month Ontario demand based on historical figures from the IMO website.

of gas for Enbridge was 0.15¢, and for Union 0.05¢. This level of funding may suggest that 0.15¢ per unit could serve as a baseline for the consumption charge in future years to be set by the Central Agency.

3.4.1 Rationale

All DSM and DR funding comes ultimately from the consumer regardless of the method of collection (i.e., tax, distribution rate, or uplift charge). Therefore, a non-bypassable commodity charge is appropriate. Knowing that a charge on use is being collected spurs consumers to conserve. It shows clearly that the government sees the societal importance of conservation. Conversely, consumers would resent an increase in distribution rates without a demonstrable benefit.

A mil rate based on consumption makes sense because the more energy a consumer uses the more he or she should be able to conserve.

3.4.2 Potential Concerns

A Central Agency can help to resolve questions of funding:

- Should funds collected from the two energy sectors be allocated within those energy sectors? To ensure that DSM activities may be available to both electricity and gas consumers, gas funding may need to be allocated to programs in gas. Avoided cost[19] calculations in electricity are often high because of avoided capital generation costs. As well, benefits to electricity consumers usually include higher bill savings. Therefore, total

[19] The total supply-side costs that are not incurred, or deferred into the future, as a result of the implementation of a DSM program. Avoided costs are usually taken to be the full marginal or incremental costs of supply that will be avoided. E.B.O. 169-III Report of the Board, July 23, 1993.

resource cost[20] (TRC) test results in electricity are often higher than in gas. This does not necessarily mean that the program costs will be higher. Therefore, if gas and electricity activities are screened together, it would result in few if any gas opportunities being targeted.

- Should the conservation fund be allocated to the customer classes from which it is collected? In many jurisdictions, funding is dedicated to areas where the market will not serve (i.e., low and fixed-income, residential markets, and new technologies/standards). Staff note that in the United States, low-income programs are frequently administered either directly by the State or a newly created entity with public oversight.[21]

  There are three generally accepted principles to DSM funding: equal mil rate collection across all customer classes; budget allocation proportional to collection; and maximizing TRC benefits. Concern was raised in the Advisory Group that it is not possible to satisfy all three at the same time - trade-offs will be necessary. For example, residential programs typically have high program costs relative to the savings generated, while industrial programs have low program costs relative to the savings generated. Therefore, selecting programs based solely on maximum TRC benefits will result in lost opportunities in the residential sector. On the other hand, allocating funds strictly to customer class may leave some industrial or commercial projects unfunded resulting in lost opportunities in those sectors and lower overall TRC benefits.

- How much of the conservation fund should be spent to enable increased DR at peak periods (i.e., through investment in enabling technologies such as meters, controllers, communications, and/or gateway services)?

[20] An evaluation of the costs and/or benefits accruing to society as a whole, due to an activity, with the exception of externalities. E.B.O. 169-III Report of the Board, July 23, 1993.

[21] See also the written representations of the Vulnerable Energy Consumers Coalition and the Canadian Environmental Law Association. November 10, 2003.

- Should the gas consumption charge be levied on gas-fired generators, regardless of size or use? Since the electricity charge would be levied on all electricity consumed, this could be considered double taxation.

3.4.3 Implementation

The government should legislate the basis for the electricity and gas consumption charges.

The charges might be collected in a way similar to the debt-retirement charge in the electricity sector and remitted to the Central Agency.

3.5 Summary

In summary, Figure 3 depicts the recommended framework showing the flow of funds, and the relationships between the major players.

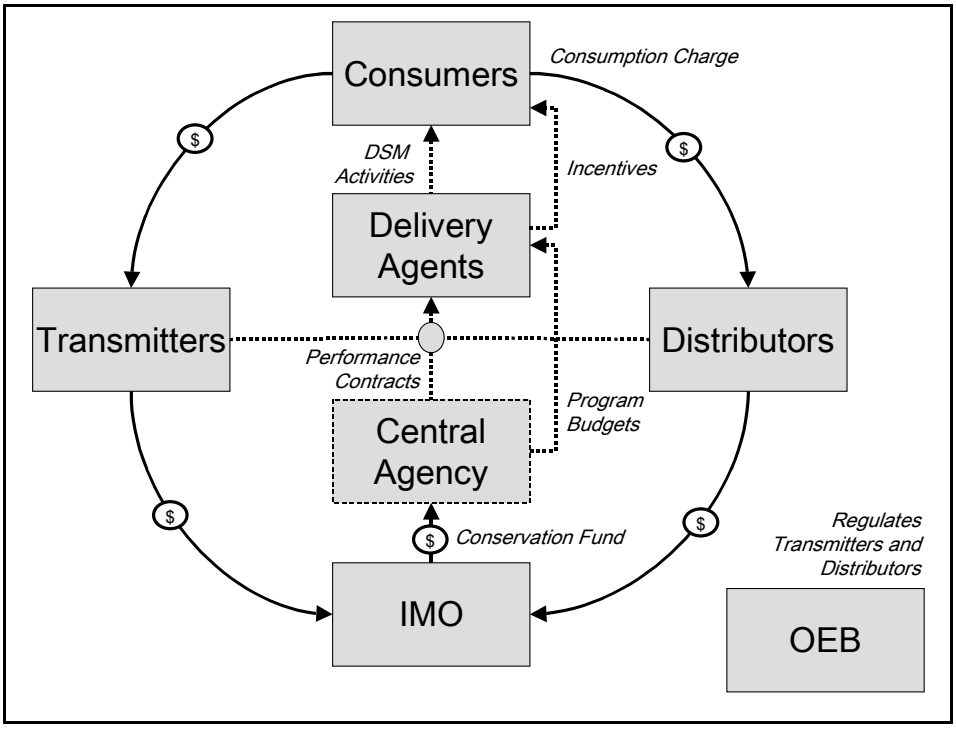

Figure 3: Recommended Framework

4 RECOMMENDATIONS FOR DEMAND RESPONSE

4.1 Demand Response in the IMO-Administered Markets and Load Aggregation

Recommendations:

In consultation with stakeholders, the IMO should design and develop economic DR to be put in place for 3-5 years as a transitional measure.

Further, the IMO should revise the Market Rules to facilitate load aggregation (e.g., statistical measurement, metering, and settlement requirements).

No one player should be mandated to play the role of load aggregator.

4.1.1 Rationale

DR is a necessary part of a functioning market. It is an economic decision to forgo production or a service (air conditioning, escalators, etc) or to switch to an alternative fuel based on the price of the commodity.

Natural DR in the wholesale energy market gives two benefits to the bidder: consumption is foregone at the higher price; and the bid contributes to a lower market-clearing price for what is consumed. The market also benefits: the bid is seen in the market; and there is less difference between the pre-dispatch price and the market-clearing price. The rest of the market participants benefit too: their consumption is priced at the lower market-clearing price.

Economic DR achieves all of these benefits. However by adding a payment into market settlement, it distorts the market. It creates a wider range within which it makes economic sense to forego production and, by extension, the associated

benefits to society, such as jobs. On the other hand, the payments to a few consumers to curtail at peak periods are dwarfed by the savings to all consumers in terms of lower market-clearing prices. "The few examples that have been observed indicate that when supply is scarce relative to expected demand a reduction in demand of 2-5 percent could reduce prices by half or more."[22] This suggests that the market saves $9.50 for every $1 of incentive payment to responding load.

The demand response side of the Ontario market was not emphasized in market design. Ontario Hydro, the vertically integrated utility, charged interruptible rates largely to industrial and large commercial entities with dual fuel capability that were rarely curtailed. This was a set payment for an unlikely event. Some distributors had programs with a flat fee payment to get internal system benefits from peak shaving. The programs used set timers or ripple control.

The current Ontario demand curve does not reflect true DR. The report of the Advisory Group[23] discusses this in more detail. This distortion is exacerbating price transparency problems that are evident in the difference between the pre-dispatch price and the market-clearing price. Economic DR is justified as a transitional tool. It would create a more realistic demand curve until the market is mature. The objective would be to let consumers participate in the wholesale market. The IMO and the Board, as part of their market surveillance responsibilities, would review market conditions to determine when economic DR could be discontinued.

It is in the high-price section of the supply curve that the most dramatic price changes could result from small demand changes. Therefore economic DR

[22]Rosenzweig, Michael, et al. "Market Power and Demand Responsiveness: Letting Customers Protect Themselves". The Electricity Journal. May 2003.

[23]See also the written representation to the Board of the Association of Major Power Consumers in Ontario. November 18, 2003.

should be active only in periods when the price is above a threshold. For example, in Ontario between May 1, 2002 and October 31, 2003 the three-hour ahead price was above $180 for a total of 406 hours[24] out of 13,152 hours (approximately 3% of the time).

The IMO is currently developing a short-term economic DR program for use where a verifiable barrier exists. The rules are not final, but the program as proposed by the IMO could work as follows:

> A wholesale economic DR participant, or load aggregator, offers to curtail use of 2 MW if the three-hour pre-dispatch price exceeds $180/MW (the threshold price). The IMO would call for the curtailment when the pre-dispatch price exceeds the threshold price. Regardless of the eventual market-clearing price, the participant would receive a payment of: ($180/MW) x (the actual measured load curtailment) x (the required number of hours for curtailment).

[24] Independent Electricity Market Operator. Presentation at Economic Demand Response Pilot Workshop. November 20, 2003. (http://www.theimo.com/imoweb/consult/\imoweb\pubs\consult\DmdResp\dr_EcoDRPfinal.pdf)

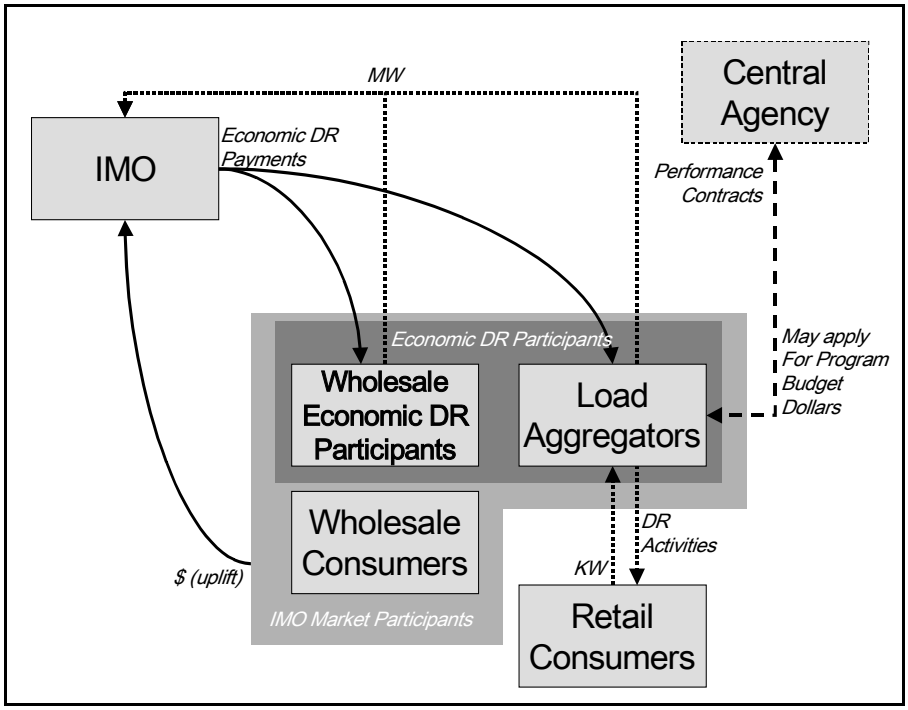

Figure 4: Economic Demand Response

As shown in Figure 4, all IMO-administered market participants will fund the economic DR payments through the uplift charge. Not all wholesale consumers will take part in economic DR programs. Economic DR participants might include wholesale consumers and load aggregators serving retail consumers.

Large industrial consumers have technologies needed to take part in economic DR and many are already market participants. They may participate directly and have already expressed interest to the IMO[25]; however, they would be excluded under the IMO's proposed program.

The role of load aggregation is to gather retail load to participate in the wholesale market. The largest short-term potential is the small industrial and large commercial sectors. i.e. entities that already have interval meters and pay the

[25]The Association of Major Power Consumers of Ontario estimates in its written representation that the potential DR is 1500 MW to 2000 MW.

hourly Ontario energy price. Likely, many of these would be aggregated across distributor boundaries.

No one player should be mandated to play the role of load aggregator. Some consumers might aggregate their own load to their own benefit. Retailers might aggregate load to manage their commodity risk. Other energy services companies might offer load aggregation as a standalone service in the market.

4.1.2 Potential Concerns

The intent of economic DR is to give payments that will allow participants to build the infrastructure and gain experience to continue demand participation once the payments end. When the deciding factor to curtail load is price then there is a true level of DR in the market. If DR evaporates at the end of an economic DR program then the program has failed.

However, it is also possible that once DR payments end, demand bidding will move to the operating reserve market in search of a payment stream. This would suppress operating reserve prices and generation would likely be pushed into the wholesale market. Consequently, more generation capacity would be available for supply instead of reserve.

The residential sector is unlikely to be addressed by economic DR in the short term because of high transaction costs and uncertain response. Only the ripple control water heater controllers might be useful to reactivate. Other residential initiatives may give better short-term results:

- Time-differentiated commodity prices will cause load shifting. Timers would allow immediate shifting but are not tied to a dynamic price.

- Controllable appliances (either smart controllers or timers) will allow greater consumer flexibility. Smart controllers would build infrastructure for future aggregation.

4.1.3 Implementation

The IMO should establish the objectives for economic DR in terms of the length of the program and the threshold price when it begins to call on economic DR offers.

The IMO should implement economic DR through Market Rule changes and pay for it through the uplift charge since all consumers of the market benefit from the reduction in prices in proportion to their consumption.

4.2 Demand Response in the Retail Market

Recommendation:

The Board is currently working on interim and long-term Standard Supply Service (SSS) pricing strategies. These could include peak and off-peak time-differentiated SSS prices altered seasonally.

Until May 1, 2006, time-differentiated and seasonally adjusted commodity prices could apply to designated consumers.

The Central Agency should consider pilots and demonstration projects for emerging and innovative technologies that enable retail load management; e.g., use of metering technologies, controllers, communications, and/or gateway services.

4.2.1 Rationale

Before market opening, small Ontario consumers were used to a flat price for electricity use. The majority of small consumers then began to be billed based on an unpredictable and volatile spot pass-through applied to their consumption based on a net system load shape (often two months worth of consumption). Introducing a peak and off-peak, time-differentiated price begins an education process for consumers that electrons have different values at different times. This serves as an economic proxy for a market-based price signal.

There is no demonstrated economic justification for mass-deployment of interval meters among existing residential customers based on load shifting. It is not clear that the incremental capital and operating costs of replacing an existing standard meter with an interval meter is less than the demand and consumption savings to the market or to the consumer. Voluntary and mandatory pilot programs have shown that not all consumers have a favorable load shape or have the ability to adjust their usage. However, there is evidence that consumers who are conservation or cost conscious will make behavioral changes based on the clear, predictable signal sent by price levels.

There may be additional benefits to distributors from interval meters, such as account automation and theft detection, that have not been studied locally.

As the policy direction for the Ontario electricity market becomes more certain, it will be possible to determine where smart metering technologies are economically feasible. Costs and benefits will also be easier to calculate.

4.2.2 Potential Concerns

The price differential will have to be great enough to spur shifting in consumption. Pilot programs in Wisconsin have used differences up to 12 to 1[26]. Large price variations may only reflect the commodity price during seasonal peaks where shifting is most desirable.

Any strategy that differs from market-based pricing will create winners and losers. As with the original spot market pass through based on net system load shape, some consumers will be under rewarded for their activities and some consumers will see undue benefit.

4.2.3 Implementation

No legislative change is required. The government has the authority to address elements of SSS pricing by way of regulation.

[26] See materials of oral presentation to the Advisory Group by Schlumberger Electricity, Inc. October 30, 2003.

5 THE IMPORTANCE OF CONSUMER EDUCATION

5.1 Coordinating Communication

Recommendation:

The agencies involved in conservation in Ontario (the government, the Central Agency, the IMO, and the Board), should coordinate consumer education plans to ensure consistent messages and avoid duplication.

To help consumers understand their energy choices and the consequences of those choices in the Ontario market, the Board should design, develop and/or deliver information to consumers related to energy conservation, energy efficiency, load management and cleaner sources of energy.

The government communicates general energy matters and policy direction to consumers. The Board's expanded mandate requires it to communicate to electricity and gas consumers on how the energy markets work and consumer choice in those markets. The IMO communicates with market participants on market function. The Central Agency would communicate DSM/DR program-related information and general conservation information to consumers. Together, they will bring about a conservation culture.

The Board already has a role as an objective leader in protecting energy consumers' interests. Its expanded mandate makes that role clearer. The Board will need to coordinate with other parties. There will be opportunities, for example, to leverage what has been learned from the earlier efforts of government and others.

The Board will also need to consider the best ways of getting information out to consumers (and back from them). It currently uses such channels as letters,

Board Orders, stakeholder presentations and its web site. It may want to add new channels - for example, current rules allow the Board to send information out in energy bills. Examples of ways to communicate valuable information to consumers include presenting historical consumption data on residential bills, and/or using the internet to inform consumers about their consumption and savings possibilities.

The focus of Board communications should be on ensuring that consumers are fully informed of the impact of their decisions. For example, in cooperation with the Central Agency, the message could focus on explaining the potential bill savings (and environmental benefits) of certain energy efficiency improvements.

The Central Agency should look at the activities of market participants already providing consumer-education tools to the public. These include the two major gas distributors, as well as some electricity distributors and energy service providers.

5.1.1 Rationale

Educated consumers will be able to make better choices about how, when and whether they use electricity or gas. They are likely to be more aware of the benefits of shifting or reducing their usage or using other sources. Their feedback, in turn, could help the agencies involved in conservation and the energy sector as a whole to identify other ways of reducing or better managing demand. This would include helping the Central Agency identify opportunities for DSM/DR activities.

5.1.2 Potential Concerns

The goal of consumer education is to create a conservation culture. This will take time. Outcomes may not be immediately tangible. Also, it may be hard to tell how effective the communications efforts are and to judge the benefits.

To avoid the risk that the Board's role or the purpose of its communication might be misunderstood, educational materials must be carefully drafted. For example, the Board should not be seen as promoting a particular activity or technology. This advocacy role should belong to the Central Agency.

Some electricity distributors provide historical consumption data on consumer bills. A few allow consumers to access their account information over the internet. Distributors who invest in technologies and systems that allow this might ask for Ministerial approval of related cost recovery.

5.1.3 Implementation

The Board is already working on its expanded consumer education mandate.

APPENDICES

Appendix A - List of Reports and Stakeholder Oral Presentations and Written Representations.

Adams, Tom. Energy Probe Research Foundation. Notes for Presentation of Energy Probe's Initial Views: OEB Generic DSM/DR Review RP-2003-0144. October 29, 2003

Advisory Group. Report of the Advisory Group. December 12, 2003.

Association of Major Power Consumers in Ontario. Minister's directive on DSM/DR - AMPCO submission to the OEB. November 18, 2003

Buckler, Chris. Enersource Corporation. Seven Steps For An Energy Efficient Ontario. November 10, 2003

Buckler, Chris. Key DSM Strategies and a framework for transition (Presentation).

Burman, Bart. EnerSpectrum. Oral Presentation.

Burman, Bart. EnerSpectrum. Ontario Energy Board Stakeholder Consultations - RP-2003-0144 Minister's directive on DSM and DR October 2003. November 10, 2003

DeRose, Vincent. Industrial Gas Users Association. Written Submission of the Industrial Gas Users Association ("IGUA") on Demand Side Management ("DSM") to the Advisory Committee.

Elenchus Research Associates. Power Workers' Union. Minister's directive on Demand-Side Management and Demand Response - Representation by the Power Workers' Union. November 10, 2003

Farmer, Chuck. Union Gas Limited. Energy Efficiency and Load Management for Ontario's Electricity Market. November 17, 2003

Farmer, Chuck. Demand Side Management 1997 - 2004 (Presentation).

Forsyth, John. Olameter Inc OEB DSM Presentation. October 30, 2003

Fraser, Marion. Canadian Energy Efficience Alliance. Options for Demand Side Management and Demand Response in Ontario.

Gibbons, Jack. Pollution Probe Foundation. An Energy Efficiency Framework for Ontario's Electric Utilities (Presentation). October 20, 2003

Gibbons, Jack. A Framework for Energy Conservation, Energy Efficiency and Load Management (Presentation). October 28, 2003

Grod, Paul M. Rodan Meter services Inc Recommendations for a Demand Side Management and Demand Response Framework in Ontario (File Number RP-2003-0144). November 10, 2003

Hydro One Networks Inc. Electricity Demand in Ontario: Submitted to the Ontario Energy Board regarding RP-2003-0144, November, 2003.

Independent Electricity Market Operator. Submissions of the Independent Electricity Market Operator. November 19, 2003

Johnson Controls L.P. Position Paper on Energy Market Development to Foster Improved and Effective Implementation of DSM and DR. November 17, 2003

Kee, Sheila & Scott Owen. Schlumberger Electricity Metering. DSM and Metering (Presentation). October 30, 2003

Kushler, Martin, Ph.D. Energy Efficiency Principles and Conclusions Derived from U.S. Experience (Presentation). October 29, 2003

Kushler, Martin, Ph.D. Written Comments to the Ontario Energy Board Re: Demand Side Management and Demand Response in the Ontario Energy Sectors. October 29, 2003

Lenarduzzi, Frank. Terra Power Systems Inc. Open Letter to the Advisory Group on Demand Side Management & Demand Response (DSM & DR). November 10, 2003

Lenarduzzi, Frank. Strategic Review of Demand-Side Management and Demand Response (Presentation).

MacDonald, Alex. Virtual Power Plant.

McClenaghan, Theresa. Canadian Environmental Law Association. DSM for low-income consumers in Ontario. November 10, 2003

Morris, Richard. Better Buildings Partnership. RP-2003-0144 – Participation from Listed Stakeholders. November 10, 2003

Mountain, Dean. McMaster Institute for Energy Studies. RP-2003-0144.

Nolan, Dennis. Hydro Vaughan Distribution Inc. RP-2003-0144 Participation from Listed Stakeholders Consultation on DSM and DR. November 10, 2003

Ontario Energy Board Staff. Demand-Side Management and Demand Response in the Ontario Energy Sectors. October 6, 2003.

Posh, David. Green Energy Coalition (GEC). Demand-Side Management and Demand Response in the Ontario Energy Sectors - GEC's Initial Views on the OEB Discussion Paper Issues.

Ronchka, Richard. Measurement Issues Associated with DSM (Presentation).

Ronchka, Richard. OZZ Corporation. Written Submission ro RP-2003-1044. November 04, 2003

Singleton, Mike. Sustainable Buildings Canada. A Submission by Sustainable Buildings Canada November, 2003.

Squires, Pat. Enbridge Gas Distribution Inc. Principles and Frameworks for DSM in Ontario A Policy Paper by Enbridge Gas Distribution. November 17, 2003

Squires, Pat. Demand-Side Management at Enbridge - Lessons Learned (Presentation). October 29, 2003

Struthers, Dale. BOMA Toronto. Presentation to OEB DSM/DR Advisory Group.

Thorne, Don, Brian Denney, Ian Jarvis. Milton Hydro Distribution Inc RP-2003-0144 Demand-Side Management and Demand Response in the Ontario Energy Sectors. November 03, 2003

Torrie, Ralph. Electricity Productivity, "DSM" and Sustainable Futures for Ontario (Presentation).

VECC Comments of Board Staff Discussion Paper. November 10, 2003

Weber, Brian (Grimsby Power). Grimsby Power Incorporated. RP-2003-0144. October 17, 2003

Wong, Angela. Ontario Power Generation Inc. Written Submission of Ontario Power Generation Inc. to the Consultation on Demand Side Management (DSM) and Demand Response (DR). November 17, 2003

Zebrowski, Richard. Presentation by Toronto Hydro.

Zebrowski, Richard. Toronto Hydro Corporation. Key Points of Toronto Hydro Position. November 17, 2003

Appendix B - Summary of Stakeholder Comments on Staff's Report to the Board.

Ontario Energy Board

Commission de l'Energie de l'Ontario

RP-2003-0144

SUMMARY OF STAKEHOLDER COMMENTS ON STAFF'S REPORT TO THE BOARD

February 6, 2004

TABLE OF CONTENTS

ISSUES RAISED BY STAKEHOLDERS

1 Energy Markets

Ontario Federation of Agriculture made a number of recommendations for market issues:

- Generators should be paid as bid.
- Each generating station should be bid separately.
- Prices should be adjusted monthly with three tiers of pricing and a social base rate for the first 750 kwh.
- The market should have a default account funded by a levy of sales. Part of the fund could be lent to new generators.
- Customer driven board should oversee utilities.

NRGen emphasized the role of an open transparent market with freely fluctuating wholesale prices, suggesting that this encourages not just demand response in the near term but also conservation. "Price volatility is in effect a motivator towards conservation. NRGen recommended no public intervention in the daily functioning of the market, but rather a role of independent oversight through an appointed regulator.

2 Policy Direction

The staff Report to the Board recommended a hybrid framework using both market-based and public-policy approaches should deliver DSM and DR activities in Ontario's energy markets.

2.1 Stakeholders' Comments

Energy@Work submitted that to help set industry standards on the principles of sustained change, it is necessary to improve transmission and distribution infrastructure through "supply-side" efficiency (e.g., in-house energy efficiency programs implemented by Ontario Hydro to reduce line losses and increase energy efficiency). Energy@Work included its submission a copy of the October, 2002 Ontario Hydro report entitled "1994-2001 Energy Efficiency Project Results Summary."

BOMA Toronto ("BOMA") submitted that it supports the proposed policy direction and recommendations as representing a thoughtful assessment of competing options and differing approaches to the delivery of DSM and DR.

EPCOR Merchant and Capital Inc. ("EMC") submitted that it agrees with the proposed policy direction and stated that while public policy is required to establish a framework, EMC preferred an emphasis on a market-based competitive model.

The Canadian Environmental Law Association (CELA) suggested that the general objective of market transformation should be augmented with specific objectives for energy savings by specific customer groups. CELA recommended that the OEB should recommend to the Minister of Energy that energy savings programs targeted to low income groups should be a mandatory requirement.

Pollution Probe submitted that "making conservation in the self-interest of Ontario's electric utilities is a prerequisite for the creation of a conservation culture in Ontario". However, under OEB's regulatory rules Pollution Probe felt that Hydro One and the LDCs will be financially penalized for promoting energy conservation and efficiency, and as a result, this is inconsistent and contrary to the government's interest and policy direction. Also, Pollution Probe suggested that the OEB adopt its Advisory Group's Ontario Energy Board/Wires Companies DSM Framework as the framework to regulate DSM/DR programs.

Energy Probe stated that the report failed to "explicitly endorse user pay for electricity". Energy Probe felt that user pay for electricity is the "most irreducible necessity for market efficiency to develop". Also, Energy Probe was concerned that the report did not answer the questions - what works and what doesn't work in DSM/DR programs - and did not address the issue of verifying DSM programs cost effectiveness.

Canadian Manufacturers and Exports ("CME") was concerned that there was no analytical basis for a hybrid framework and that the report did not outline when the market-based vs the public policy approach should be used.

Direct Energy stated that the government should set public policy with respect to conservation, however, all design and delivery of DSM/DR programs should be left to competitive commercial entities.

Consumers Association of Canada and the Consumers Council of Canada (CAC/CCC) commented that residential consumers stand to benefit from cost-effective DSM and DR in both natural gas and electricity. CAC has long supported development of DSM in natural gas and now strongly support development of DSM in electricity sector. Conservation must become a priority for all of Ontario's residential energy consumers. A centrally mandated framework and approach through a central agency is the surest way to ensure that the benefits to Ontario consumers are maximized.

CAC submitted that it does not accept that the natural gas model is at all appropriate for the electricity sector and urges Board to reject this approach.

Enbridge asserted that natural gas DSM has been a success, resulting in substantial net dollar savings for Ontario gas customers while realizing public benefits. Enbridge submitted that it rejects the concept that its DSM programs should be dismantled with responsibility assigned elsewhere and that its framework should be preserved. A major change in direction of the gas utilities' DSM mandate requires more comprehensive analysis and testing of the evidence in a formal Board proceeding.

Ontario Power Generation (“OPG”) supported the recommended hybrid framework as a necessity in the short term, but suggested that there needs to be greater emphasis on proper price signals without price caps as the long run goal.

OPG noted the absence of consideration of distributed generation from the hybrid approach. It suggested that baseload (i.e. co-generation) and peaking distributed generation such as back-up generators could make cost-effective contributions to DSM/DR as long as emissions issues are properly addressed.

A joint submission by Northland Power, Toromont Energy Ltd., TransAlta Energy Corporation, and Yousef Energy Services also criticized the report for neglecting consideration of distributed generation.

Triacta Power Technologies did not support a hybrid framework in principle, and submited that short-term incentives over, for example, two years would helpful but in the longer term the OEB's role should be as a catalyst for competitive rules that result in consumers bearing the true cost of electricity.

The Power Workers Union submitted that some assumptions are required to understand the implications of the recommended policy direction. It supported a policy approach that would result with a price for Standard Supply Service that reflects the actual cost of electricity and would result in conservation and efficient energy usage. It recommended that the Board make a clear statement of certain principles in its recommendations to the Minister, in particular that the costs recovered from distribution ratepayers should not exceed the benefits to the distribution system.

3 Demand Response in the IMO-Administered Markets and Load Aggregation

The staff Report to the Board recommended that the IMO design and develop economic DR to be put in place for 3-5 years as a transitional measure. Further, IMO Market Rules should facilitate load aggregation (e.g., statistical measurement, metering, and settlement requirements), and no one player should be mandated to play the role of load aggregator. With regard to retail DR, staff recommended that Standard Supply Service (SSS) pricing strategies could include peak and off-peak time-differentiated SSS prices altered seasonally, and time-differentiated and seasonally adjusted commodity prices could apply to designated consumers until May 1, 2006. Further, the Central Agency should consider pilots and demonstration projects for emerging and innovative technologies that enable retail load management; e.g., use of metering technologies, controllers, communications, and/or gateway services.

3.1 Stakeholders' Comments

Christensen Associates, Inc. ("Christensen") noted that DR lowers prices since lower cost resources are sufficient to meet the reduced demand - this is shown by the reduced market prices. Christensen submitted that it is not correct to say that reduced demand lowers market prices. "In previous research we have estimated the magnitude of potential cost savings from various types of dynamic retail pricing to lie in the range of 0.5 to 2% of consumers' total energy bill."

Christensen also noted that when demand is represented by energy providers (e.g. load serving entities) or contracts for differences, DR is self-financing and no further payments are necessary - an entity who avoids paying the higher prices can pay the entity that reduced load.

Christensen suggested that DR only discourages the building of *uneconomic* generation since DR shows the true value that consumers put on the commodity.

Christensen submitted that economic payments for DR are not necessary as DR would be better implemented through inventive retail pricing schemes that provide exposure to dynamic pricing. They conceded that a day-ahead wholesale market is probably necessary.

BOMA submitted that it strongly supported the demand response recommendations; and noted that demand response should not be confined to the less than 100 wholesale consumers in Ontario's electricity market - aggregation of retail loads should be encouraged. BOMA commented that more innovation and options for the smaller retail market would be possible by not limiting the role of aggregator.

EMC suggested that in addition to the IMO, the Central Agency would have a key role in encouraging DR initiatives - helping to overcome the first cost retrofits and defining economic benefits and appropriate market price signals.

Johnson Controls supported the role of the IMO as recommended.

NRGen suggested that the wholesale market should be augmented with day-ahead pricing together with an opportunity for consumers to communicate what their response will be. Aggregators of loads should be able to use a communication channel to the market to bid their demand response to day-ahead prices, along with larger individual market participants on the demand side. NRGen also suggested that self-generation must be seen as an important component of the demand response.

Ontario Federation of Agriculture suggested that the central agency also have responsibility for education and enabling technology for DR.

The IMO reiterated that the purpose of the IMO program of transitional EDR is to develop infrastructure for natural demand response. Intervention could discourage new generation.

The IMO supported aggregation of retail load. It suggested that codes and licences for aggregators will have to deal with the treatment of multiple aggregators operating in the same service area, data sharing and code of conduct.

The IMO noted that only 17 per cent of Ontario load are wholesale market participants but 40 per cent of the load consumer more than 250,000 kWh of electricity per year. Many of the later do not have the tools (i.e. interval meters) or knowledge to provide demand response.

The IMO noted that 83 per cent of Ontario load purchase their energy through local distribution companies and is an untapped potential to manage demand. The new pricing regime should help reduce overall consumption levels, by raising rates for consumption over 750 kWh per month.

EnerSpectrum supported economic DR and suggested that the costs of the program would dictate threshold levels and obsolescence.

OZZ suggested that customer response at system peak is important for utility loss reduction and provincial conservation.

OZZ suggested that EDR should not have a timed sunset but be based on economic sense.

OZZ proposed that all new residential and small commercial buildings be mandated to install interval meters, and further that when existing properties are sold or meters exchanged that an interval meter should be mandated.

OZZ stated that changing to TOU meters is not defensible given the small price difference between TOU meters and interval meters. OZZ stated that TOU technology is already obsolete.

AMPCO stated that the real issues are identifying the manner in which the greatest "response" can be achieved at the minimum cost, and ensuring an appropriate matching of costs and benefits.

HONi recommended that rather than mandate the duration of economic DR up-front that the IMO review the level, structure and effectiveness of the program it develops on a regular basis, to determine an appropriate exit plan.

HONi stated that residential customers typically do not have sufficient flexibility in the timing of their electricity use to justify the additional cost of an interval or time of use meter.

The OEA suggested that an economic DR program creates a conflict at the IMO with its responsibility for impartial administration of the electricity market. Increased uplift charges will increase the amount of the bill that cannot be hedged and therefore will increase bill volatility and risk for all consumers. In any case, intervention in the market to invent a demand curve where one doesn't exist of to manipulate the supply curve to produce lower price reduces the benefits of competition and compromises the value of investments in Ontario's energy sector.

The OEA advised that its Technology Joint Sector Committee is developing recommendations for effective implementation of smart metering technology in Ontario.

EDA noted that economic DR may be needed for more than 5 year, as it may take longer for customers to overcome the barriers they face in responding to price signals.

Energy Probe stated that "international experience suggested that programs designed to dampen out price volatility may be barriers to investment in peaking capacity and customer investment in demand control". As a result, Energy Probe suggested that the OEB conduct research to determine whether the IMO's DR program is impeding investment in peaking plants and/or demand controls.

CME agreed with these recommendations.

Collus stated that the "IMO structure of payments for DR is far from a sufficient incentive for re-activating or establishing new systems".

H-Ottawa stated that distributors require "significant lead time if any further rate structure changes are contemplated and the cost of any changes should be recoverable".

Direct Energy agreed with continued IMO development of its economic DR program and the central agency enabling retail load management.

Ontario Power Generation supported the concept of enabling aggregators to represent small consumers who are otherwise not exposed to market prices. It recommended that monitoring and compliance mechanisms be put in place to minimize gaming by aggregators. It recommended against demand-side bidding of load reduction, suggesting that this is an artificial subsidy that is unnecessary if there are proper market price signals.

Manta Test Systems supported an increased role for aggregators, and made a detailed submission on how such entities might contract with the IMO to achieve

DR. Manta also endorsed an expanded role for advanced customer metering and controls.

4 Demand Response in the Retail Market

London Hydro submitted that local distributors should derive Standard Service Supply prices with OEB approval - the OEB would also approve rate recovery of variances. London Hydro also stated that distributors should act as load serving entities, entering into contracts for supply. London Hydro submitted that time of use rates should be available for time of use meters, and that interval and time of use meters will be a crucial component. London Hydro suggested that the "third tranche" spending should be targeted at meter installations and that if this does not pay for all of them, the OEB should establish a multi-year mechanism to pay for it.

London Hydro noted that if distributors are not load serving entities then, "Competitive retail market participants are better able to package energy efficient products with power procurement price contracts than the distributors." Conversely, London Hydro stated, if distributors do become load serving entities, then DSM costs could be built into the commodity price.

BOMA commented that fixed low prices for low volume and designated consumers are a disincentive to conserve energy or shift demand - making 50% of total Ontario load unresponsive to price. BOMA noted that mass deployment of interval meters may be an unnecessary and costly venture; however, suggested that a steady migration towards interval meters in increasingly smaller consumer classes may be appropriate - to provide all consumers choice of preferred pricing and contract options.

Brantford commented that it strongly supports staff comment regarding mass deployment of interval metering, and suggests simpler and cheaper time-of-use as a more appropriate technology for the residential market.

Ontario Federation of Agriculture suggested that SSS pricing should also have different prices for different customer classes, and a summer premium over a threshold usage. "...OFA believes that interval meters should only be required of large market participants who are able to fully integrate their risk management and commodity management activities in ways that are positive for the economy and the environment."

Energy Probe was concerned that the administered prices for SSS meant that the OEB would be interfering with market forces and the prices would not be market-based.

CME also was concerned about the administered prices. CME supported market-based prices, not regulated electricity prices.

Direct Energy submitted that "retail pricing is key to conservation and SSS pricing should include time-differentiated and seasonal rates".

The Power Workers Union recommended that time-of-use rates should be made available as an option to designated customers who are willing to pay the incremental metering cost.

5 Policy Framework for Demand-Side Management and Demand Response

The Staff Report to the Board recommended a model which requires that a central agency be created to design and implement DSM/DR programs in Ontario for both electricity and natural gas. The Ministry, the IMO, the Board and the Central Agency would work together to coordinate DSM and DR activities. DSM and some electricity retail DR activities would be funded by consumers through a transparent consumption charge. Distributors would be eligible to act as delivery agents of activities for least-cost planning and/or system optimization purposes. The Board should put in place regulatory mechanisms to induce gas distributors, electricity transmitters and electricity distributors to reduce distribution system losses. The Agency would begin by providing DSM/DR initiatives to the electricity sector but would, after a three year period, take on the responsibility for DSM/DR initiatives in the natural gas sector.

5.1 Stakeholders' Comments

The Central Agency

Energy@Work called for a coordinated approach due to the number of electricity distributors, the existing stakeholders, and finite funding. Energy@Work proposed the formation of an independent "energy efficiency cluster" to identify best practices, draw on experience, contacts and knowledge, build a resource library, provide a forum for discussion and debate, and facilitate new partnerships (e.g., linking industry, NGOs, universities and government to perform research, audits and other energy efficiency applications). A "virtual centre of excellence" approach, this would allow interested stakeholder and interest groups to tap into resources and innovative processes.

Union Gas Limited ("Union") submitted that the natural gas industry is sufficiently different from the electricity industry that the management of DSM programs

need not be the same for both sectors. First, Union noted that the gas industry is less fragmented than the electricity industry - that the supply and demand of energy meets at the gas utility. This allows for coordinated and effective DSM programs that are balanced with supply and infrastructure management. Second, Union noted that the gas utilities have been successfully delivering DSM for a number of years - that the programs are now fully integrated into the utilities, staff are well trained and knowledgeable, and DSM funds are leveraged with other activities. Third, Union submitted that the gas utility is the best design and delivery option for DSM due to its marketing experience and knowledge of its customers - a trusted source of energy information that is not transferable to others. Finally, Union commented that gas utilities do not face the same kinds of infrastructure constrains that electricity distributors do. DSM goals in gas focus on seasonal reductions and changes in demand, while in electricity focus daily peaks are of greater concern. Therefore, Union concluded, under a Central Agency model and with no compelling infrastructure motivation to undertake DSM, it is unlikely that a gas utility would initiate any DSM activity without at least compensation for lost revenues. Also, in response to staff's recommendation that distributors could bid competitively for delivery of Central Agency DSM activities, Union submitted that it is unlikely for distributors to do so with no upside beyond the distributor's allowed rate of return.

Union also stated that transferring responsibility for DSM from the gas distributors to a Central Agency would cause inefficiencies and reduced market success. Union submitted that its success to date is based on the strength of its customer relationships, its ability to influence delivery partners, and its deep knowledge of its customers - assets which take several years to develop. Further, Union commented that the gas utilities business relationships with delivery partners are only partially focused on DSM, and many of the gas utility's current partners may not want to partner with anyone based solely on DSM. Union submitted that the connection between conservation decisions and other energy services decisions made by consumers should not be cut because

consumers seldom separate the different elements of their purchase decision (economy, features, efficiency, etc) - consumers rely on the advice of their energy providers (i.e., gas utilities) to help them make wise energy choices. Union summarized that transferring DSM to a Central Agency would create inefficiencies that would increase delivery costs, including:

- duplication of infrastructure (e.g., customer information systems);
- loss of gas utility staff knowledge in program design and delivery; and
- loss of ability to leverage funding with other marketing initiatives.

The Green Energy Coalition ("GEC") expressed disappointment with staff's recommendations stating that it has played a lead role in the Board's processes concerning gas DSM and submitted that the gas model has been highly successful at saving customers approximately $1 billion (net present value). GEC advocated for a similar, albeit streamlined approach to DSM for electricity as exists in gas today. GEC urged the Board to consider a hybrid approach, which captures the strengths of central coordination and harnesses utility delivery. A hybrid model, which incents distributors (i.e., disincentives removed and a simplified incentive applied) and utilizes a central "conservation champion" to ensure coordination and encourage compatible government action would address any shortcoming of the utility model. GEC suggested that the "conservation champion" would coordinate market transformation efforts and help to ensure that a full range of public resources are harnessed (i.e., Ministry, IMO, and other ministries such as Education, Housing and Government Services). Further, economies of scope, such as utilizing existing mailing, billing and customer call centre capability in distribution companies would make marketing of many DSM programs less expensive. GEC submitted that no matter what model is pursued, transparency and accountability are critical for success and that the Board should not be shy in asserting the need to regulate DSM.

BOMA submitted that a Central Agency approach is needed to provide consistent programs across the province - especially for large commercial consumers

whose portfolios of properties typically span the province. However, BOMA suggested that a sunset clause and performance measures for the Central Agency should be set to ensure that the agency does not become "an unwieldy and expensive perpetual bureaucracy." BOMA stated that the utility model is problematic because distributors are already burdened with considerable regulatory, financial and structural challenges and that imposing additional business obligations on them would not be practical.

London Hydro Inc. ("London Hydro") submitted that it supports a Central Agency for DSM.

EMC submitted that it agreed that a separate Central Agency is needed. EMC stated preference for a highly competitive Central Agency model that would rely on competitive forces to develop creative customer-oriented DSM solutions. EMC expressed strong opposition to a utility model that would have DSM/DR activities designed, developed and delivered through 93 separate distributors - this would create market confusion due to inconsistencies between distributor programs - as is currently experienced between Ontario's gas utility franchises.

The Electricity Distributors Association ("EDA") Task Force on Demand-side Management developed an alternative model although the larger membership has not been consulted.

The EDA suggested an LDC/LDC model where a central agency established by the LDCs undertakes policy development including tax lobbying; market transformation initiatives including product development, building code development and market rule changes; design, delivery and implementation of programs; budget administration; revenue protection and incentive allocation; analysis of results for private sector delivery agents to ensure maximum attribution of savings; and work with gas companies to coordinate programs.

Local LDCs would have the option of delivering or contracting for delivering programs; developing locally targeted programs; administering incentives to delivery agents; setting innovative rates to encourage DSM/DR; providing meter technologies; and investing in distributed generation.

Brantford Power ("Brantford") submitted that it supports the EDA's recommendations - distributors are well positioned to provide conservation programs due to consumer trust in the distribution company and a routine communications channel to consumers (i.e., billing). Brantford stated that it has an existing load management system (controllable load is approximately 5% of peak demand) but that it is not operating because it erodes their distribution revenues. Brantford noted that "set timer" and "ripple control" systems are not representative of recent load management technologies and that their own system, well integrated with their customer information system, can be flexibly operated by a Customer Service Representative sitting at a computer in the distributor's offices. Brantford submitted that least-cost planning and/or distribution system optimization are not sufficient reasons to continue operating the system and that their business driver for load management is lower costs to their customers.

YES Inc. stated that DSM should be an expanded mandate of the MOE, the OEB, the IMO or the OEFC. Creating another agency is "unnecessary bureaucracy". YES Inc. further stated that "The OEB/Utility model (or a similar model using existing agencies) is more suitable approach to managing DSM and Electricity Conservation initiatives in Ontario."

YES Inc. stated that electricity and natural gas are sufficiently different that "DSM and Conservation initiatives in the Electricity sector should be dealt with separately from Gas DSM initiatives but with a close eye on the experience in the Gas sector."

Ontario Federation of Agriculture called for a central agency to deliver DSM. "OFA believes LDC's could manage DSM, but that they would be unlikely to do it as well, as consistently or at as low a cost as a well run central agency." Ontario Federation of Agriculture would like to see the central agency structured like research granting agency with voluntary panels to address specific areas.

Ontario Federation of Agriculture argued against mandating the natural gas companies to give up their current DSM responsibilities. It should be voluntary.

EnerSpectrum called for a central agency to ensuring province wide consistency of DSM/DR programs but suggested that it should be excluded from development, design or implementation of programs because of 3 risks:

- To reflect regional needs the central agency must be large.
- If private contractors are used, funds will be allocated unevenly across regions.
- Generic, province-wide programs may not allow LDCs to employ DSM/DR optimally.

EnerSpectrum suggested that design and implementation should be left to the marketplace. EnerSpectrum suggested that the OEB ensure consistency in LDC delivery. It did not specify how. EnerSpectrum suggested that the SSM is equivalent to profit for a competitive company.

Guelph Hydro Electric Systems Ltd. suggested a Central Agency component to manage province-wide programs in a cohesive manner, together with a degree of autonomy for local implementation of area-specific programs by local delivery channels, would incorporate the benefits of both basic approaches, while limiting the shortcomings inherent in both. GHES suggested that LDCs should deliver targeted local programs where appropriate. GHES requested DSMVA, LRAM and SSM. GHES suggested that SSM is equivalent to the profit of a competitive

entity. GHES stated that DSM is interventionist and therefore is an allowed activity for regulated utilities. GHES suggested a review of the regulatory process to reduce the number and complexity of hearing to assist the OEB in reducing its burden while enabling the province to benefit from the involvement of LDCs in DSM and conservation activities. GHES suggested that to achieve early, cost-effective results, DSM should be targeted to the 20 largest LDCs that deliver to over 80% of end-users.

OZZ Corporation suggested that a Central Agency should develop objectives, monitor outcomes and success-based funding. OZZ strongly supported transmitters and distributors acting as delivery agents for system optimization. It did not suggest who should deliver broader-based programs.

CEEA suggested common components for DSM governance to address market barriers:

- Energy prices reflect true costs.
- There is no under burden place on disadvantaged groups as a result of energy prices.
- Energy efficiency standards continue to improve over time.
- Incentives are available to encourage the development and introduction of new, more efficient technologies.
- There are training or other programs to ensure energy professionals and trades people are skilled at using the latest technologies and techniques.
- There are coordinated and consistent public education programs on energy conservation and energy efficiency across Ontario.
- Natural gas and electric utilities and provincial ministries/agencies are required to implement cost-effective energy efficiency and energy conservation programs in their own operation and report on their progress.

In particular, CEEA noted that low income consumer represent 11.7% of Ontario residents. They have limited access to capital, pay a disproportionate amount of income on water, fuel and electricity, and may be using more energy per household. CEEA concludes that low income households are a significant opportunity.

CEEA suggested common components for DSM governance for efficient and effective delivery of DSM programs.

- There is a reliable, long term source of funding for aggressive DSM.
- There are DSM programs that target each of the market segments.
- There is emphasis on local delivery of DSM programs.
- There are incentives for delivery agents to carry out successful, aggressive DSM programs.
- There are clear rules for DSM.
- There is independent, third party verification of DSM energy savings.

CEEA favoured the OEB/Utility model of governance.

CEEA suggested that the government develop clear rules to expedite and simplify DSM oversight. It recommended that each utility (92 LDCs plus Hydro One) have the option to go to the OEB to request their own unique design for LRAM, DSMVA and SSM. CEEA recommended that DSM start in the largest utilities and that smaller utilities be mandated as lessons are learned.

The OEB would not approve program selection or development but would oversee implementation of the incentive mechanisms and verification of program savings. The OEB would also establish avoided cost.

CEEA recommended that a central agency (the Ministry) take on system planning for full IRP and that a central agency develop portfolios of programs for LCDs to adopt. The CEEA also suggested that the province develop and

endorse programs with an identifiable brand to help market the programs and to achieve a comfort level with potential program participants. CEEA also suggested that, in some cases, the coordination of programs [delivery] be aggregated over large areas because of the number and dispersion of potential participants or because of economies of scale. It suggested that LCDs would contract for local delivery and should receive incentives for performance.

CEEA stated that the OEB/Utility model has worked very well in gas and suggested that the OEB embark on a three year period to make improvement before holding a hearing to consider continuing or phasing it out. CEEA does not feel that symmetry between the governance of DSM in electricity and natural gas is necessary.

Corporate Knights Inc. seemed to favour the OEB/Utility model on the premise that most government led voluntary energy conservation efforts have failed. Corporate Knights Inc. feels that private energy providers have more levers for getting consumers to use less energy.

The Canadian Environmental Law Association (CELA) suggested that the drafting of the staff report is slanted toward the Central Agency, by identifying potential concerns with the OEB-Utility model clearly and without mitigation while identifying the potential concerns with the Central Agency model less clearly and with mitigation. CELA recommended rejecting the Central Agency model. CELA recommended that the natural gas utilities retain their role in DSM, with efforts to made by the OEB, the utilities, and stakeholders to refine the OEB-Utility model over time. It further recommended that the OEB should recommend a 3 year pilot program by the 10 largest electric utilities similar to the model now in place for the natural gas utilities.

Satish Saini made no direct comments on the report. However, he stated: “Government agencies can make various policies and regulations, provide

incentive, subsidies and technical support for these programs and Utilities can implement these more effectively through different cost-effective and customized programs in coordination with the end-users i.e. the consumers."

The IMO stated: "The Electricity Conservation and Supply Task Force highlighted the need for a 'Conservation Champion' that would foster the development of a conservation culture throughout the province. This position was supported in the Board Staff report calling for a Central Agency that would be responsible for the design and delivery of DSM and DR initiatives." Further the IMO stated: "...the Conservation Champion must have the resources to conduct far-reaching education campaigns, but also develop or foster the development of a focused energy efficiency program that can generate measurable and sustainable results."

Ottawa River Power Corporation focused on retail DR. It suggested that programs must be administered by the LDC. It stated that the Central Agency would overlook the customer and is primarily to generate business opportunities for people. Further, a central agency is a costly level of bureaucracy in getting the product to customers. It stated that a central agency will eliminate competition but LDCs will solicit Ontario companies for products to serve their customers. Futher, it submitted that it had a water heater control program before market opening that reduced system peak by 15 to 20%. When the distributor stopped paying demand charges, the system was abandoned. It did not specify the type of equipment previously used but noted that controlling load for price instead of just for identified peak times would be a new level of complexity.

Ottawa River Power Corporation suggested penalties for commercial entities that do not respond to emergency situations.

The Association of Major Power Consumers in Ontario ("AMPCO") was particularly concerned that funding should be allocated to customer segments in

proportion to that sector's funding relative to total funding; and customers who can demonstrate that they could design and deliver self-directed programs can apply for levy exemption. AMPCO requested rigorous measures that will ensure that all programs have benefits that are greater than cost. AMPCO also suggested that funding be contingent on audited results.

AMPCO made no explicit comment on the model except to say that the oversight body should have processes and controls to structure program development funding so as to allocate the costs of programs to the beneficiaries. AMPCO also suggested that, in order to minimize costs, the DSM function be combined with other functions assigned to existing bodies or new agencies established to conduct supply related activities.

Hydro One Networks Inc. (“HONi”) suggested that the Ministry of Energy and the Energy Conservation and Supply Task force had recommended a utility model.

HONi recommended an OEB/Utility model to address regional variation, but that smaller utilities could contract with other parties and that larger utilities are already meeting to discuss cooperation to maximize benefits and minimize costs.

HONi suggested that establishing a central agency would take too much time and that the OEB/Utility model should be retained in the gas sector.

The OEA suggested that the DSM/DR policy framework should include clear roles and accountabilities:

- Government leadership in setting the DSM/DR policy framework and objective.
- Government leading by example by setting conservation standards in its own facilities and operations.
- DSM/DR delivered through market based and commercially driven initiatives, with regulatory oversight only where warranted.

The OEA recommended that the Government take a more direct role. Some OEa members felt strongly that a central agency should be created, others felt that the IMO and the OEB should coordinate implementation by engaging consumers and the energy industry.

The OEA cautioned that the boundary between regulated and competitive activities must be explicit. LDCs, energy savings companies, competitive retailers and other companies should have a level playing field.

At the same time, LDC should have revenue protection and cost recovery to implement demand-reducing conservation measures.

The OEA recommends retaining the current gas framework and states that symmetry should proceed natural as warranted by the evolution of the industry and the market and in consultation with stakeholders.

The OEA membership had differing views as to the need for a levy and the appropriate level at which such a charge might be set. The OEA suggested that the need for a levey and the appropriate level of such a charge warrants further study. However the OEA recommended that a levy should not apply to self-generation.

Pollution Probe stated that the new government agency would be inconsistent with government policy and the public interest. Pollution Probe felt that the government wants the LDCs to perform this task.

Energy Probe submitted that “given the sweeping scope of DSM activities proposed in the report”, the recommended framework would leave DSM program development and delivery fundamentally unaccountable. However, Energy Probe stated that given a choice between “aggressive conservation subsidies” by

a central agency or 93 electric LDCs, it would choose a central agency. Energy Probe recommended a "more thoughtful and measured and market-based approach".

CME felt that the report needed to state the pros and cons of a central agency vs a utility model. CME was "indifferent to either a central agency or utility model, provided that : 1) there is no LRAM, 2) if a DSMVA is in place with an incentive mechanism, then the volumetric target is adjusted proportionate to the additional DSMVA budget used, 3) if an incentive mechanism is in place, then the incentive is not based on a TRC calculation, and 4) no dedicated charge or tax on electricity or natural gas consumers". Also, CME wanted to know if the IMO, the Ministry, and the OEB would also be assigned the responsibility and accountability for program design and delivery.

Chatham-Kent Hydro Inc. ("C-K Hydro") understood the need for a central agency to design, coordinate and measure DSM/DR programs but was concerned with the limited role of the electric LDCs in delivering DSM programs to consumers. C-K Hydro believed that the electric LDCs are best positioned (and where customer trust already exists) to deliver programs.

COLLUS Power Corp. ("Collus") also understood the need for a central agency to design, coordinate and measure DSM/DR programs but felt that the report overlooked the ability of the electric LDCs in delivering DSM/DR programs to consumers. Collus was concerned that the distributor would be involved in the delivery these activities as part of a least-cost planning or system optimization approach only. Collus believed that the electric LDCs are essential in meeting the targets required to reduce the supply/demand imbalance.

Enersource Corporation ("Enersource") stated that the report "places too much emphasis on this new agency providing direct delivery of conservation programs, ignoring the central role the LDCs or LSEs should play". Enersouce believed the

central agency was essential in providing policy directives, goals, objectives and coordination but the LDCs or LSEs would be essential for delivering DSM/DR programs. Enersource could not "endorse the diminished role proposed for Ontario's LDCs" since this would be a "significant impediment in achieving the required conservation objectives".

Energyshop.com ("Energyshop") agreed with the central agency approach. Also, Energyshop proposed a consortium called the Energy Conservation Consortium of Ontario to be the central agency and outlined the operating principles, and roles and responsibilities of this agency.

Hydro Ottawa Limited ("H-Ottawa") agreed with the central agency approach and stated that the central agency function could be performed by the OEB or a Distributor's Agency (as proposed by the EDA).

Toronto Hydro agreed with the central agency approach but was concerned that this agency would "take considerable amount of time, money and human resources to construct". Toronto Hydro proposed that this central agency be "evaluated after 3 years and at regular intervals" to determine effectiveness. Also, Toronto Hydro felt that the "primary responsibility for program delivery should rest with utilities" and the central agency's role should be limited to planning and design functions.

Direct Energy agreed that a central agency has a role to play in providing guidelines, program measurement, auditing and monitoring, and as a repository of the conservation fund but competitive energy service providers should design and deliver conservation programs. Direct Energy believed that competitive energy services providers "would be hesitant to engage in delivery of outsourced conservation programs" because it would "preclude the development of direct and continuing customer relationships (a primary commercial incentive)".

Wholesale Gas Service Purchasers Group ("Gas Group") supported the central agency approach and opposed the OEB-Utility model. The Gas Group did not support the OEB taking on the role of the central agency due to a potential conflict of interest and the increased time at OEB proceedings.

Hydro Vaughan Distribution Inc. ("H-Vaughan") stated that the central agency has merit if it "clearly defines the role that the LDCs are expected to play and recognizes the considerable differences amongst LDCs with respect to size and customer mix". Also, H-Vaughan submitted that the central agency should address program funding and costs to participating LDCs. Also, H-Vaughan felt that to "encourage participation by LDCs in DSM/DR initiatives, financial incentives should be offered for achieving base targets, based on customer diversity".

CAC advocated a centralized approach for developing and delivering DSM and DR. The primary reasons for supporting a centralized approach include:

- ensuring initiatives are cost-effective
- the Government, through a central agency, has a responsibility to Ontario consumers to assess trade-offs of DSM vs. generation and transmission alternatives to achieve lowest societal cost
- allow for development of market-based DSM and DR initiatives

Without central coordination:

- virtual certainty duplication of effort
- co-ordination will stifled and resources not allocated to maximize
- auditing of effort and effectiveness will be unworkable

CAC advocated a new agency as most effective way to facilitate DSM and DR with a level of independence from the Ministry of Energy but subject to some level of OEB oversight similar to IMO (eg, annual budget reviews and

performance measures to ensure accountability). If cost an issue, CAC submitted that it would support a separate department within OEB.

Enbridge stated that its framework can serve as a foundation for an effective framework for electricity DSM and that the success of the utility model is proven but that it is early days for the central agency model. Enbridge noted that many jurisdictions have different DSM frameworks for their gas and electric utilities. Enbridge quoted two US studies on the most appropriate governance model for the electricity sector that have concluded that there is no one single model for energy efficiency programs that has yet to emerge as superior to the alternatives.

Enbridge stated that while participating LDCs in a utility-driven model should be free to develop unique programs in response to local market conditions, the OEB and the Ministry should engage LDCs, the EDA and other stakeholders to identify a set of core, uniform programs for OEB approval. This would foster coordination among LDCs, help achieve economies of scale in design and delivery, expedite the achievement of results and enhance development of the energy services market. To ensure complete market coverage, the Board and the Ministry should also engage LDCs and the EDA to develop a plan for smaller LDCs who choose not to opt in.

Enbridge recommended that the government and the OEB facilitate this by:

- developing the appropriate financial instruments
- determining the appropriate screening measure (e.g, TRC)
- developing audit and evaluation protocols
- setting complementary efficiency standards
- undertaking provincial branding and awareness building
- coordinating with federal conservation initiatives.

Enbridge also recommended that a “Uniform Program Design” Steering Committee comprised of LDCs, stakeholders, Ministry and OEB staff be established and have responsibility for:

- identifying the most promising candidate programs based on a review of electric DSM programs in other jurisdictions
- conducting research to determine application of these programs to Ontario
- identifying other new program concepts and develop them
- choosing the most suitable programs and finalizing design

Enbridge stated it expects that this committee would work aggressively over a six month period.

Enbridge also recommended that the OEB and the Ministry facilitate market transformation efforts but that a new agency is not needed for this role.

CAC supported the IMO initiatives in DR and sees the IMO working closely with the central agency. The central agency should mandate DR activities as high priority and focus on initial development.

The School Energy Coalition supported the recommendation of a Central Agency. It made detailed suggestions for the agency as a separate Crown Corporation which effectively would be charging a rate to energy users. The Central Agency should be regulated by the Ontario Energy Board in a manner fully analogous to the regulation of plans, targets, effectiveness, cost allocation, as well as the design of the consumption charge. The School Energy Coalition did not reject all aspects of the OEB-Utility model, however, inasmuch as it saw the Agency as leveraging its resources through utilities and the private sector, to the point of relying on individual utilities to initiate and refine DSM delivery in a framework analogous to a franchise operation in the private sector.

Ontario Power Generation did not take a position on a new Central Agency. It recommended a number of measures to be put in place if such an agency were to be created. It also suggested reasons why little responsibility should be given to distributors, at least with the current structure, but suggested that the advantage of the Central Agency concept over the OEB-Utility model would be less important if there were only a small number of Load Serving Entities.

Manta Test Systems supported the concept of a Central Agency, but the support was limited to the version that emphasizes third-party DSM. The major initiatives would be self-funding. The non-uniformity inherent in the OEB-Utility model is considered to be a server barrier to DSM.

Triacta Power Technologies recommended that the LDCs and local suppliers should provide DSM/DR solutions, and submited that a Central Agency would be less effective in stimulating innovative solutions while adding a layer of bureaucracy, delay, and cost.

The Power Workers Union endorsed the concept of a Central Agency for certain roles such as market transformation initiatives, setting standards and province-wide targets for DSM/DR, and overseeing consumer education activities. However, on the whole it recommended a significant role for the electricity distributors.

The Vulnerable Energy Consumers Coalition (VECC) endorsed the recommendation of an independent agency. VECC submitted that ten years of experience with DSM in the natural gas sector has demonstrated that there is a conflict between the corporate need to maintain distribution revenues and the ability of low income and vulnerable customers to participate in DSM programs. VECC noted that the majority of jurisdictions in the U.S. have DSM funding policies that allocate funds to the low-income segment for DSM, and recommended that the same approach be adopted in Ontario.

Veridian Connections recommended that the staff recommendation of a Central Agency be rejected. It submited that Ontario Hydro's province-wide program in the early 1990's was on the same model, and proved costly and only marginally effective. It submitted that the OEB - Utility approach, while inevitably less uniform, would foster comparison of programs and innovations and would be more effective. It submitted that the concerns expressed about the OEB - Utility model are related to the current fragmented structure of the distribution sector, and that DSM should be addressed in an integrated fashion along with consolidation of electricity distributors.

6 The Role of the Distributor

GEC criticized the use of the Utility Cost Test as a screen for distributor investment in efficiency because it does not include consideration of customer and societal benefits.

BOMA suggested that distributors be obligated to provide an enabling role in the delivery of DSM activities (i.e., provision of meter and billing data in readily accessible formats). In addition, BOMA submitted that any disincentive inherent to the current regulatory framework for distributors to improve the electrical efficiency of their operations should be addressed. BOMA commented that distributors generally lack the relevant capabilities and resources to fulfil broader DSM obligations; however, retail affiliates could and should be encouraged to do so. EMC also submitted that distributors have little or no expertise - those that do have it concentrated in their retail affiliates. Those affiliates should be encouraged to participate in competition with other private sector providers.

London Hydro commented that transmitter and distributor activities should be limited to investments in enabling technologies - the distributor will have a role as default meter service provider, data collectors and billing agents. London Hydro also submitted that it supports a process that provides incentives to utilities to reduce system losses.

NRGen recommended that “incumbent entities”, including distributors, should not have preferential access to funds or clients.

Johnson Controls recommended that distributors should not be involved in delivery of either DSM or DR except to the extent that their actions would have a direct impact on lowering distribution costs.

HONi stated that DR enabling technologies and internal loss reduction should compete with other opportunities for DSM funding.

Pollution Probe criticized the use of the Utility Cost Test as a screen for distributor investment in efficiency because it is too restrictive. Also, Pollution Probe called for the establishment of a DSM variance account, lost revenue adjustment mechanism, and a shared savings mechanism.

Energy Probe suggested that DSM monies collected by the electric LDCs should be spent on upgrading meters for their large customers combined with a commitment to introduce real-time prices. Also, Energy Probe supported incentive mechanisms to encourage distributors and transmitters to manage and reduce technical and non-technical losses.

CME stated that the report provided "no guidance or understanding of the relationship of the central agency to the delivery agents, channel partners, and gas users". CME agreed with the recommendations that distributors compete equally with private sector players, and distributors and transmitters reduce system losses.

H-Ottawa was concerned with the statement that distributors would have to compete equally with private sector players. H-Ottawa felt that because electric LDCs are regulated companies, they have "certain constraints and limitations that affect ability to operate on a level playing field with non-regulated companies". Also, H-Ottawa recommended that LDCs get rewarded (instead of penalized) for improving distribution loss factors.

Direct Energy stated that the operation of a competitive business within regulated LDC could: 1) increase shareholder risk, 2) cross-subsidization of unregulated business with monopoly services, and 3) shift resources from LDCs' core

business. Therefore, Direct Energy recommended that an independent affiliate of the regulated LDC should compete in the delivery of conservation programs.

Wholesale Gas Service Purchasers Group ("Gas Group") was concerned with the statement in the report - there is general support among stakeholders for a primary role in DSM/DR programs for distributors. The Gas Group noted that this is not necessarily true for small distributors because of the high costs. Also, the Gas Group supported the "recommendations that transmitters and distributors should be allowed to act as delivery agents of DSM/DR activities, if they so choose" but only if these activities are classified as non-utility activities.

CAC stated that having each LDC in Ontario pursuing its own initiatives would not be a responsible approach. The disadvantages of the LDC model include:

- patchwork of competing and inconsistent approaches will not facilitate cost-effective results
- regulatory structure would be complex and costly
- difficult/impossible for coordination with federal government
- potential to lose benefits of scale and scope, R&D, knowledge-base
- lack of universal access to programs across province
- LDCs are not currently staffed or structured to design or deliver DSM/DR. Costly infrastructure for each LDC to set up. Ontario consumers should not foot the bill for LDCs to explore new ways to pursue DSM/DR in their franchise areas.

CAC supported staff recommendation that LDC act as delivery agents for least-cost planning and system optimization of their systems. CAC encouraged regulatory mechanisms to reduce overall system losses.

Enbridge stated that utility-driven electricity DSM is best for Ontario. Enbridge proposed that during an initial transition period the twenty largest LDCs accounting for approximately 80% of Ontario's customers should be responsible

for DSM. Smaller LDCs with a keen interest could also participate. LDCs would likely outsource significant elements of DSM design and delivery.

Grimsby Power commented that many LDCs have inherited systems losses which can adversely affect the existing losses and limit LDCs ability to effectively reduce the losses without incurring major expenses.

The School Energy Coalition supported the Central Agency approach as a necessary means of avoiding electricity and gas distributors working at cross purposes with their respective DSM and fuel-switching initiatives. It recommended that distributors have a role in delivering DSM programs under the supervision of the Central Agency, perhaps in competition with private sector players. It also suggested that it is premature to make a recommendation to changeover to the Central Agency from the existing gas distributor programs at a specified time, but rather the Central Agency should be given the mandate to determine the changeover in such a way as to avoid having these programs languish in the meantime.

Ontario Power Generation submitted that utility-sponsored DSM/DR activities have not necessarily yielded the expected results and economic benefits. OPG noted that in the existing structure of Ontario distribution utilities, not all of them have the expertise or any interest in delivering DSM programs.

The Power Workers Union (PWU)recommended a leading role for electricity distributors in setting realistic local DSM targets and delivering DSM programs. It submitted that the distributors cover all areas of the province, are not unfamiliar with DSM programs having participated in Ontario Hydro-led programs to the mid-1990's, and are in the best position to work with the Electrical Safety Authority to ensure that DSM equipment installations are consistent with public safety. The Power Workers Union submited that the staff’s expressed concern that DSM will be subordinated to load growth and customer retention is

unfounded (in the context that an LRAM mechanism is established by the OEB or the Central Agency).

The PWU endorsed an incentive to reduce distribution system losses, such as allowing a share of the financial savings that result from achieving a reduction.

Veridian Connections recommended that electricity distributors should be assigned a function as Load Serving Entities (LSE), with the obligation to secure supply for all default customers. As an LSE, the distributor might be mandated or incented to include DSM, DR, and new distributed generation resources. Veridian submitted that the local distributor is uniquely positioned to deliver programs in this way.

7 Symmetry Between Electricity and Gas

7.1 Stakeholder Comments

Energy Probe stated that natural gas distributors have well established DSM programs in the marketplace and as a result, should not be absorbed in the central agency framework. Energy Probe felt that the "advantages of continuity and tracking outweigh any potential economies of scale to be gained by wiping out DSM programs and absorbing them" in a central agency.

Direct Energy agreed with harmonizing gas and electricity conservation activities.

CAC stated that it believes that problems have consistently plagued the regulatory framework for natural gas and need to be addressed as soon as possible by the Board.

8 Conservation Funding

TransCanada Energy Ltd. ("TransCanada") noted that the "Electricity Conservation and Supply Task Force Report" acknowledged the importance of attracting investment in new sources of electrical generation in Ontario, including distributed generation. That report supported distributed generation projects because of the benefits associated with locating supply close to load, including, the avoidance of transmission and distribution investment, reduced line losses, and enhanced system reliability. TransCanada expressed concern that the proposed consumption charge contradicts the task force recommendation that investment in distributed generation should be encouraged in Ontario as it would erect a barrier to these investments, especially gas-fired projects. No further details were provided.

BOMA submitted that it supported a transparent consumption charge for funding DSM/DR activities as a clear signal of commitment to consumers. BOMA commented that funds should generally allocated to the consumer classes from which they are collected, but exceptions may be needed for generic market initiatives. Further, BOMA suggested that it may be appropriate to impose some absolute limit on total funding available to any one consumer.

For funding, CEEA suggested several alternatives, many relying on government allocation for at least 5 years. It recommended a consumption charge incorporated in utility revenue requirements.

Ontario Federation of Agriculture felt that the consumption charge should be above a threshold level such as 750 kwh.

EnerSpectrum recommended that funds collected from the two energy sectors should be kept separate, that funding should be based on cost/benefit alone

without regard to customer class and that the charge should apply to gas consumed to generate electricity.

OZZ suggested that self-generators should be excluded from a consumption charge or it would be double taxing.

NRGen supported the recommendation of a consumption charge, but only to the extent of paying for limited program administration.

Coral Energy supported the consumption charge in general, but suggests that it could have the unintended effect of discouraging consumers from supplying some or all of their own requirements. Coral Energy recommended the consumption charge should not be levied on natural gas used for electricity generation. It recommended that the Board reject the staff recommendation to levy the consumption charge on self-generation.

The IMO noted that collecting the consumption charge from self-generators could prove a deterrent and difficult to ascertain.

Energy Probe submitted that a transparent consumption charge does not take into account cost-effectiveness justification and the report provided no evidence to support that this charge will spur consumers to conserve. Also, Energy Probe recommended that before a charge is levied on consumers, the net benefits of the first quarter of a billion dollars should be determined.

CME opposed a dedicated charge and believed that DSM/DR costs should be paid from the Consolidated Revenue Fund.

Enersource agreed with the report's recommendations that a Systems Benefit Charge be established and administered by a central agency. Also, Enersource

believed that this charge should apply equally to all consumers and be a component of the existing Uplift Charge.

H-Ottawa recommended that the charge be a component of the existing Wholesale Market Service Charge. Also, H-Ottawa suggested that LDCs have access "to the DSM capital provided that the payback of any proposed programs exceed a set threshold".

Industrial Gas Users Association ("IGUA") recommended that a detailed assessment of the appropriateness of the consumption charge is performed before the charge is set. Also, IGUA stated that it is not "appropriate for the consumption charge to be based on the highest estimate from 2001" (i.e., 0.15 cents per unit) and that if the charge is applied equally across all customer classes regardless of the DSM budget allocation or benefits per rate class, it would lead to cross-subsidization between rate classes.

Toronto Hydro recommended that "strong safeguards and cost-effectiveness tests would be needed indefinitely to ensure that the system benefit charge did not become a liberal source of funding for undisciplined expenditures". Also, Toronto Hydro suggested to "devote 2005 MBRR funds to the agency".

Direct Energy agreed with a centralized funding mechanism.

Wholesale Gas Service Purchasers Group ("Gas Group") raised the issue of double taxation. The Gas Group members are natural gas distributors that receive service from Union Gas under rates M9, M10 and are eligible to receive service under rates T3 and T9. If Union were to collect the consumption charges, the members would be charged twice. Therefore, the Gas Group recommended that Union's rate classes M9, M10, T3 and U9 should be exempt from the consumption charge. The Gas Group also raised the issue of the consumption charge levied on natural gas used by the distributors for their own

consumption. The Gas Group submitted that the charge would increase the cost of service and therefore, increase the distributor's revenue requirement resulting in a double taxation to distributor ratepayers. The Gas Group was concerned with the costs of implementing the consumption charge (i.e., the costs of programming ,etc. that is required to put the charge as a line item on the customer's bill) and recommended that these costs be recovered through the consumption charge. Also, the Gas Group felt that it was not appropriate to collect GST on this consumption charge. Furthermore, the Gas Group felt that other types of fuels such as home heating oil, heavy oil and propane, diesel fuel, and gasoline should be included in the consumption charge because without these inclusions, the charge would lead to an uneven playing field.

CAC advocated transparency and stakeholder input on the use of these funds. Consumers should see the charge and know where the funds will be directed. CAC questioned the charge also be levied on self-generators. With respect to the Government's announcement on LDC funding from the 3rd tranche of MBRR, CAC commented that it wants to ensure that these funds are used in the most cost-effective way. CAC advocated pooling these funds with allocation by the central agency for prioritization and best results.

Enbridge supported the recommendation in the Board Staff report that the electric DSM budget should be based on and funded through a uniform fixed consumption charge. This approach would save considerable time and effort by the utilities, stakeholders and the OEB. This charge would be separate from and incremental to distribution rates. LDCs should be able to recover the costs of developing their DSM plans and infrastructure with their increase in rates to the full MBRR in 2005. The OEB could establish eligibility criteria and limits.

The School Energy Coalition supported the consumption charge, subject to regulation by the OEB. It suggested, however, that the staff proposal for a consumption charge across the board might not be appropriate as it would apply

to self-generation. It suggested that the Central Agency should be asked to bring forward an analysis and proposal for an appropriate levy and conditions in this area as a first priority.

A submission made on behalf of Northland Power, Toromont Energy Ltd., TransAlta Energy Corporation, and Yousef Energy Services (the "Generators") concerned distributed generation. "Distributed generation" was not addressed in the reports of the Advisory Group of the staff. In the submission, the Generators suggested that distributed generation should be regarded as an important component of DSM and DR, for reasons such as reduced network requirements, lower line losses, and quicker project lead times. The Generators suggested that the staff proposal on conservation funding would discourage distributed generation, and to this extent would be counterproductive to the DSM/DR objective.

The Power Workers Union submited that the budget for DSM should depend on what is required to meet a defined goal, and that the proposal to base it on the third tranche of the market-based rate of return is not equitable and not symmetric with the natural gas industry. A review of the conservation charge by the OEB would be appropriate means of establishing the charge, along with the distribution revenue requirement and the LRAM adjustment.

Distributor Lost Revenue

In addition, GEC submitted that utilities lose revenue whenever any customer conserves, whether due to independent customer investment in efficiency, or due to government programs or utility encouragement - rates need to be adjusted to keep utilities whole in any model.

London Hydro suggested distribution rates that have more fixed components and fewer volumetric variable components would be affected less by DSM.

Brantford expressed its view that DSM and DR are vitally important and that distributor involvement is essential. However, Brantford submitted that for distributors to participate, something needs to be in place to ensure that distribution revenue is not eroded.

Ontario Federation of Agriculture strongly opposed LRAM and SSM. "It is inappropriate and unneeded."

HONi stated that LRAM was necessary to protect the viability of distributors regardless of the overall approach but that redesign of the electricity rate structure to better reflect the primarily fixed nature of delivery costs was also possible. It also stated that SSM was necessary to ensure that utilities looked for greatest benefits at the cheapest cost.

Ottawa River Power Corporation stated that savings should be shared between the LDC and the participating customer.

C-K Hydro stated that electric LDCs should be held financially harmless from DSM programs and was concerned that electric LDCs would not be entitled to LRAM or SSM.

Collus was concerned that there would be no cost recovery or revenue adjustment to "compensate the LDC's in response to reduced revenues from the uptake of DSM across the province".

Enersource stated that a "mechanism that provides LDCs with the ability to be compensated for lost revenue is essential". Enersource submitted that the report neglected the "financial realities faced by LDCs as a consequence of reduced electricity consumption based on current rate structure and design".

EnWin Powerlines Ltd. ("EnWin") needed "assurance that the LDC will be kept whole (i.e., recover the cost of implementing the DSM program and a means to recover any loss of revenue requirements resulting from decreased consumption relating to successful DSM programs)".

Toronto Hydro stated that DSM-related revenue erosion could be dealt with by using: 1) an annual update of volumetric forecasts, which would be used to reset rates to recover the existing approved revenue requirements or 2) a revenue cap per customer form of PBR.

The Gas Group agreed that the variance accounts should be discontinued because the delivery agents of DSM/DR programs should be a non-utility activity.

H-Vaughan submitted that "if the rate application process and DSM initiatives are carefully coordinated to ensure affordability, financial prudence and rate base recovery of qualified investments", delivering DSM/DR activities through LDCs can be realized.

CAC stated that it believes OEB will need to consider developing practical mechanisms that ensure LDCs are not penalized but these should be more transparent and less complicated than lost revenue from DSM for each LDC.

Grimsby Power commented that DSM variance accounts do not provide cash flow to satisfy lenders, rather rates need to be increased first to offset the reduced revenues due to DSM.

The School Energy Coalition supported an LRAM mechanism as an essential component of the model, as a means of removing any conflict between utility and Central Agency goals. The LRAM approach was even more important, in its opinion, in the longer term if a PBR system is to be implemented. The School

Energy Coalition agreed with the staff recommendation against a DSMVA or SSM approach.

Ontario Power Generation agreed that a lost revenue adjustment is necessary for distributors and also transmitters. It did not make a recommendation between LRAM and SSM.

The Power Workers Union recommended a LRAM mechanism be implemented to cover shortfalls in the distributors' revenue requirement. It submitted that an LRAM approach is better than a rate relief approach responding to a financial crisis that might result from a significant revenue erosion. It recommended that the issue of distributor financial impact be clarified.

9 The Importance of Consumer Education

The staff Report to the Board recommended that the agencies involved in conservation in Ontario (the government, the Central Agency, the IMO, and the Board), should coordinate consumer education plans to ensure consistent messages and avoid duplication. Further, to help consumers understand their energy choices and the consequences of those choices in the Ontario market, the Board should design, develop and/or deliver information to consumers related to energy conservation, energy efficiency, load management and cleaner sources of energy.

9.1 Stakeholders' Comments

London Hydro stated that the Central Agency should be primarily responsible for communication with consumers and that the OEB should monitor for effectiveness.

BOMA submitted that consumers should not be shielded from the realities of the electrical supply system. "Consumers should understand the basics of the system, including the role of imports, the real level of prices, etc." so that critical decisions affecting the future of our market can be made without confusing consumers.

Johnson Controls supported a Board role in consumer education concerning choices and consequences, in coordination with other agencies, but not necessarily the specific role recommended concerning design and development of information.

NRGen supported a public role in education as recommended in the staff report, and added that large commercial and industrial consumers are in need of information as much as residential consumers.

Ontario Federation of Agriculture felt that the central agency should have primary responsibility for conservation education.

The IMO recommended a co-ordinated communications effort. The Board and LDCs should primarily address low-volume customers and the IMO should address customers who are subject to a market price. Effort could be coordinated through a central agency with clear accountabilities. A next step is needed to translate this understanding into conservation measure that deliver direct benefits to both the consumer and the market as a whole.

HONi recommended that the Government, the IMO, the Board and the utilities coordinate consumer education plans.

Energy Probe suggested that coordination between all levels of government and leveraging past experiences might not get the desired results.

H-Ottawa recommended that DSM and DR communication should not be the role of the regulator.

Direct Energy supported coordinated consumer education efforts.

CAC submitted that consumers will stand to benefit by increased education. Information programs can be a key element of DSM. Strong support for a central agency charged with overall coordination, development and oversight of consumer education. Until that agency is set-up, one body should be delegated responsibility and that should be the OEB.

The School Energy Coalition supported coordinated consumer information and communication. Concerning the OEB role, however, it did not endorse the staff recommendation, and suggested that the Central Agency should have the lead role in coordinating consumer education.

Ontario Power Generation supported coordinated consumer education, and noted that there are Federal initiatives that might be leveraged along with the Provincial ones identified in the report.

Triacta Power Technologies supported consumer education concerning the true costs of electricity, but would rely ultimately on consumers adapting to market forces and generally higher prices to achieve DSM/DR objectives.

The Power Workers Union recommended a significant involvement by the distributors in consumer education.

10 Other

10.1 Stakeholders' Comments

YES Inc. suggested that the definition of DSM should expressly include addressing infrastructure congestion and distributed generation. These are very important.

Collus recommended that Distributed Generation projects should have been included when reviewing DSM activities.

Pollution Probe stated that the "Board should accept the Advisory Group's recommendation on evaluation and auditing of the utilities' energy conservation programs".