DEMAND SIDE MANAGEMENT
AND
LOCAL DISTRIBUTION COMPANIES

AN ASSESSMENT OF ENVIRONMENT, NEEDS AND OPTIONS

PREPARED BY
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1. Executive Summary

On January 14, 2004, Ontario Energy Minister Dwight Duncan released the report of the Electricity Conservation and Supply Task Force (ECSTF), which stated:

"Ontario faces a looming electricity supply shortfall as coal-fired generation is taken out of service and existing nuclear plants approach the end of their planned operating lives…The Task Force calls for the creation of a "conservation culture" in Ontario… education and improved co-ordination among providers will be critical. Specific recommendations include the adoption of new market rules that promote demand-side bidding by large volume customers, the removal of rules that financially penalize local distribution companies when they engage in conservation efforts, the promotion of technologies and rate offerings that facilitate time of use shifting, and the creation of a "conservation champion" to monitor and co-ordinate conservation efforts across the province. The Task Force believes that growth in peak demand can be reduced from 1.7 per cent per year (the average over the past ten years) to 0.5 per cent per year, which is in line with recently announced Government targets. A key concept, going forward, is that demand reduction should be given the opportunity to compete with supply side alternatives, and be evaluated on a level playing field."

The Task Force Report set the course for major changes in the electricity sector, primarily through new legislation, which among other elements created a Conservation Bureau to implement demand management, demand reduction and a conservation culture. As stated by Premier McGuinty,

"Our government's goal is ambitious -- to reduce electricity use by 5 percent across the province by 2007. Our government is taking bold action to help make Ontario a North American leader in conservation. I am talking about nothing less than creating a profound shift in the culture of this province, about moving from a culture of waste to a culture of conservation."

The Government of Ontario with its agents, the Ministry of Energy and the Ontario Energy Board, has taken concrete steps in the past year to make its conservation vision a reality.

The provincial government has established a Conservation Action Team of Parliamentary Assistants to ensure support and coordination across its

ministries; developed an "Ontario Conserves" web site providing tips to help conserve and a conservation guide in twelve languages and scripts; launched an in-house conservation program; and most significantly, passed new legislation to provide a framework for integrated supply/ demand planning and implementation.

In response to the government's clear commitment to conservation, the Ontario Energy Board encouraged the electricity distribution companies (LDCs) in the province to implement demand side management (DSM) programs immediately. Although voluntary, these programs are the only expenditures permitted for the previously (2002) approved third tranche of rate increase, scheduled for implementation in 2005. The LDCs responded to this OEB directive by submitting Conservation and Demand Management (CDM) Plans in December 2004 and January 2005, for approval and immediate implementation. To support conservation over the longer term, the OEB also created a task force and issued recommendations on the implementation of new metering technology ("Smart Meters") to provide consumers with the information they need to manage their consumption. Finally and perhaps most significantly, the OEB initiated the development of a new scheme of electricity rates that reflect and reward conservation.

Gas experience in Ontario since 1993 has illustrated that with government support, demand side management can become part of the core business of a distribution utility. The OEB has indicated that it will be building on the gas experience in Ontario with respect to DSM in that it will permit LDCs' costs associated with DSM to be collected in a variance or deferral account, that can then be entered into the next rate case. It will also permit those LDCs that lose projected revenue because of successful conservation efforts, to recover this revenue through a Lost Revenue Adjustment Mechanism (LRAM). Finally the OEB will encourage LDCs and their shareholders to support DSM by incenting them through a Shared Savings Mechanism (SSM). To kick start DSM, the OEB agreed to a SSM for 2005 for consumer-based initiatives. For the longer term, the OEB intends to use the 2006 Electricity Distributors Rate (EDR) Process to establish a more permanent approach to variance accounts, LRAM and SSM for CDM programs.

The local electricity distribution companies (LDCs) have moved into DSM rapidly by developing CDM plans, including programs, timetables and costs for the period 2005-2007; forming a number of coalitions among themselves to design and implement programs; working with other industry participants, such as, consultants, equipment vendors, gas utilities, local community organizations, not-for-profit organizations, municipal and federal government; initiating programs for consumer awareness (e.g. websites and bill stuffers), and running pilot programs (e.g. smart metering).

Although they have taken up the challenge, there appear to be a number of issues for many LDCs in their effective implementation of CDM plans. Firstly, other than for a few LDCs, there is little coordination with respect to marketing and branding of conservation messages. While some LDCs have formed alliances and are joint branding, others are not accessing the province-wide value of such promotion. At the consumer level, many LDCs have proposed programs such as incentives for Compact Fluorescent Lights (CFL) or refrigerator buy-backs, but there is not yet coordination and consistency in pricing and rebates at the retail level. As well there are a number of technology and consumer pilots proposed but no clear mechanisms or guidelines for sharing results. Province-wide, there are multi-site customers (e.g. Loblaws), multi-site distributors (e.g. Home Depot) and potential for alliances with partners such as Enbridge or the Clean Air Foundation. In addition there are many national, provincial and local organizations looking to work with LDCs on DSM. There are many programs, many potential consultants, vendors, and contractors. Currently LDCs have few staff dedicated to DSM and little to no experience in DSM.

For successful implementation of CDM over the longer term, there needs to be coordination of efforts to eliminate unnecessary duplication of effort in program design, testing and evaluation. Similarly, coordinated program delivery among LDCs could achieve economies of scale in customer awareness campaigns, communication materials and incentive programs. Exchange of information could enable the development of a balanced set of programs for customers of different classes and could facilitate the coordination of LDC activities with provincial and national organizations and key provincial customer accounts.

Some LDCs are looking to the Conservation Bureau as a panacea to the market confusion. While the Conservation Bureau has not been established at the time of the writing of this report, many industry participants believe it will be focused on larger issues and have neither the resources nor the inclination to provide the kind of direct involvement that some LDCs may require. Services that the Conservation Bureau are likely to provide include estimates of potential savings from demand management, based on system avoided costs; tools for cost-benefit analyses; support for province-wide programs or pilots (e.g. Social Housing Corporation); tracking of results across the province and annual reporting to the Minister of Energy.

While the LDCs' immediate challenge is to spend the initial $185 million earmarked for CDM programs wisely and effectively, the longer-term challenge will be how to incorporate DSM as a core service delivered to customers. Because of the time frames associated with the 2005 rate increase, most LDCs have not yet increased their staff to develop or implement their CDM programs. Over the long term however, there will be a need for additional resources- internal, external, or though affiliation, and staff training in the delivery of DSM programs to their customers.

It appears that LDCs are still waiting for clear rules and guidelines from the Ontario Energy Board and evidence of long-term government commitment to CDM before they make longer-term decisions and commitments themselves. The extent to which DSM will actually become an integral part of LDC programming is highly dependent on the OEB's regulatory approach and government direction through legislation or regulation.

Looking forward past 2005/2006, there are signals that DSM will become an integral element of energy policy. New market rules for bidding demand reduction as well as supply into the marketplace are under consideration. The OEB has provided an advisory report to the government with guidelines for the implementation of smart meters and the government has established targets for the installation of 800,000 smart electricity meters by December 31, 2007 and installation of smart meters for all Ontario customers by December 31, 2010. These smart meters will provide timely energy usage information to consumers.

Their value will be enhanced by the new rate structures, including time of use rates, currently under development.

It appears likely at this time that LDCs will be faced with the long-term challenge of delivering energy management as well as distribution services. While there will be a great deal of learning in LDCs during their spending of third tranche money, the longer term will require a deeper and more sustainable approach.

The options for LDCs over the longer time include ignoring DSM unless otherwise mandated; building DSM capability in-house; purchasing services as required from a variety of consultants and contractors; or a DSM Office, dedicated to providing LDCs with the tools and expertise they need to deliver DSM programs.

A DSM Office could offer the full gamut of services from information on best practices, programs, experiences of others, to co-ordination of consulting services and/or technology solutions for LDCs, to advisory services with respect to design and implementation of CDM, to the actual implementation and project management of CDM, including screening, designing, testing, monitoring, evaluating. A DSM Office could meet some or all of the LDCs needs in DSM either through its own efforts or as a facilitator and coordinator of industry support.

The benefits of a DSM Office would be that it would be focused on LDCs; it could provide a vehicle for integrating responses (such as templates for OEB reporting); it could coordinate the more effective delivery of programs.

The risks associated with establishing a DSM Office at this time are:

- Timing – the LDC s are focused on near-term implementation of DSM programs funded by third tranche monies and are not ready to envision longer term needs;
- Market acceptance – LDCs may not endorse another central entity and may not wish to fund it;

- Mandate confusion – the Conservation Bureau is not yet operational and may provide the support required by the LDCs; an additional central office, though focused on LDCs might add to confusion;
- Financial – costs for resources may be significant;
- Political – if near-term conservation targets are not met, the government might introduce a different approach to DSM. In addition, there are the risks associated with a change in government

There is also uncertainty with respect to the structure of the distribution sector- will there be more amalgamations and rationalization- and how will this impact DSM? Finally, there is the ultimate risk that if voluntary LDC-driven DSM programs are not successful, the government may take either a non-voluntary centralized approach or may back away from DSM.

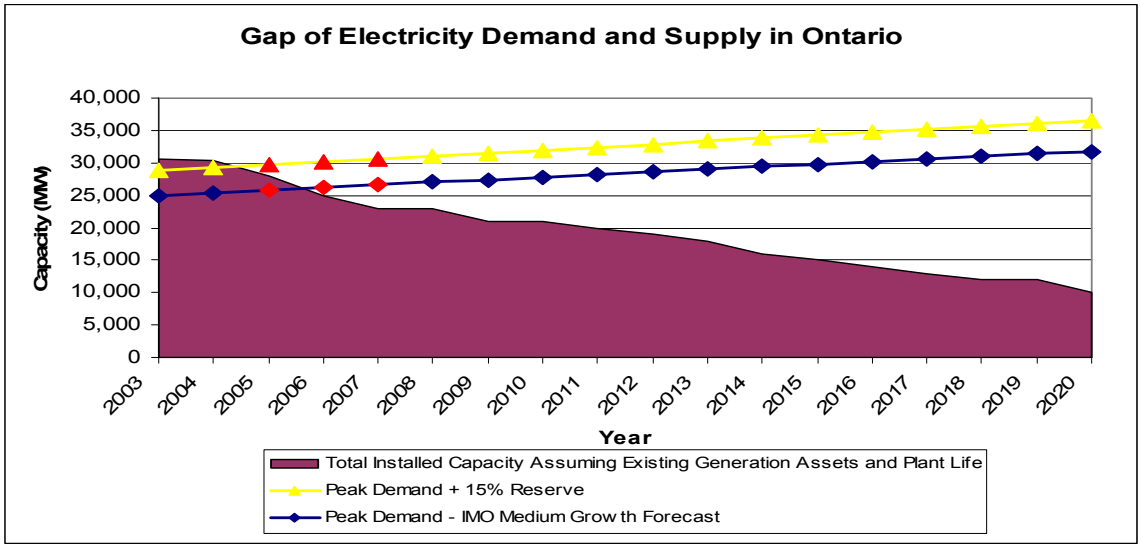
As the DSM environment develops and matures it is advisable for all industry participants to keep a watching file on government direction and regulations that support the integration of DSM into core LDC business; provide near-term services to LDCs as they require them; and support the development of a DSM industry in Ontario. While a central DSM Office may not be timely today, it may be required as DSM becomes a more permanent part of the energy landscape.

2. Background: Regulatory and Legislative Environment

On January 14, 2004, Ontario Energy Minister Dwight Duncan released the report of the Electricity Conservation and Supply Task Force (ECSTF), which stated:

"Ontario faces a looming electricity supply shortfall as coal-fired generation is taken out of service and existing nuclear plants approach the end of their planned operating lives…The Task Force calls for the creation of a "conservation culture" in Ontario… education and improved co-ordination among providers will be critical. Specific recommendations include the adoption of new market rules that promote demand-side bidding by large volume customers, the removal of rules that financially penalize local distribution companies when they engage in conservation efforts, the promotion of technologies and rate offerings that facilitate time of use shifting, and the creation of a "conservation champion" to monitor and co-ordinate conservation efforts across the province. The Task Force believes that growth in peak demand can be reduced from 1.7 per cent per year (the average over the past ten years) to 0.5 per cent per year, which is in line with recently announced Government targets. A key concept, going forward, is that demand reduction should be given the opportunity to compete with supply side alternatives, and be evaluated on a level playing field."

The following graph, shown in the ECSTF Report illustrates these concerns,



The Electricity Supply Task Force Report set the course for major changes in the electricity sector, primarily through new legislation, which among other elements has created a Conservation Bureau to implement demand management, demand reduction and a conservation culture. As stated by Premier McGuinty,

"Our government's goal is ambitious -- to reduce electricity use by 5 percent across the province by 2007. Our government is taking bold action to help make Ontario a North American leader in conservation. I am talking about nothing less than creating a profound shift in the culture of this province, about moving from a culture of waste to a culture of conservation."

The Ontario Government has stated publicly on numerous occasions that it is committed to building a culture of conservation; its goal is for Ontario to become a North American leader in conservation. To accomplish this goal, the government has set an ambitious target of reducing province-wide electricity demand by five percent by 2007.

On June 18, 2003, the Minister of Energy directed the Ontario Energy Board to consult with stakeholders to identify and review options for the delivery of demand-side management and demand response activities within the electricity sector. After extensive consultation, the Board released its report and recommendations on March 1, 2004. In its report, *"Demand Side Management and Demand Response in the Electricity Sector in Ontario"*, the OEB stated:

"Conservation measures are essential in Ontario…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. …New supply and investment in transmission are part of the solution, but cannot be built fast enough to meet our needs."

The Electricity Conservation and Supply Task Force had earlier addressed the role that LDCs could play in implementing conservation and the barriers to this role:

"In the current market, Ontario's local distribution companies have little incentive to promote conservation and face financial barriers to doing so. LDCs face the risk of delivering conservation programs and losing revenue because of lower volume

throughput. In the natural gas industry, where conservation is delivered by Ontario's gas distributors, financial incentives (for example, funding to deliver programs, compensation for lost volume revenues, variance accounts to manage under- or over-spending, and sharing in the cost saving) are provided and recovered through rates. Similar mechanisms are used to encourage conservation by electric utilities in the United States. The current regulatory structure which requires that LDCs and transmitters act as wires companies whose core business is to distribute electricity, earning revenues on the amount of electricity flowing through their system, does not allow for the provision of conservation programs. This is instead included with retailing electricity affiliate companies or the private sector. The Task Force believes that action should be taken to help LDCs overcome these barriers. Local distribution companies are favourably positioned to provide conservation programs. They are close to their customers, understand their local market conditions and may be able to better target certain programs. Goodwill exists and utilities are generally considered to enjoy strong customer trust, loyalty and brand recognition. LDCs have existing marketing relationships with delivery partners, for example, with builders or HVAC (heating, ventilation and air conditioning) contractors. In the case of some of the larger commercial and industrial customers, LDCs may provide important technical expertise."

Recognizing the pivotal role that electricity distributors (LDCs) need to play in changing consumption behaviour in the province, the OEB recommended that distributors be eligible to develop and deliver demand-side management and demand response activities.

On May 31, 2004, the Minister wrote to electricity distributors pursuant to section 79.6 of the Ontario Energy Board Act, 1998 to allow them to ***"proceed to the Ontario Energy Board (the Board) with applications to establish deferral accounts within which to track expenditures on conservation and demand management initiatives in advance of the distributors' ability to recover the costs through the next installment of the allowable return on equity in March, 2005".***

The Minister also stated that he expected the framework that was being established to: ***"remove barriers to demand-side management, provide incentives to manage distribution systems more efficiently and ensure consumers benefit from reduced energy use".***

LDCs could apply to the Ontario Energy Board (Board) for rate implementation of their third installment of market adjusted revenue requirement (MARR), in

2005, on the condition that an equivalent amount of incremental revenue would be invested by those distributors in conservation and demand management activities.

As described in Appendix 1: **Ontario Energy Board FAQ's**

"Prior to the opening of Ontario's electricity market to competition, LDCs were required to undertake a number of changes. One of the changes required that LDCs become business corporations, and as such, they were entitled to earn a selected market-based rate of return (MBRR) between 0 and 9.88%. A calculation was performed to determine the incremental revenue required by the LDC to generate its MBRR. This incremental revenue requirement is called the market adjusted revenue requirement (MARR). The incremental MARR was to be recovered by LDC through rate increases in three installments called "tranches". The first tranche and second tranche were recovered in 2001 and 2002 rates, respectively. In 2002 a rate freeze was put in place by the government and the third installment of incremental MARR was not recovered in 2003 as planned. Currently, the Minister is allowing LDCs to recover the third installment of the incremental market adjusted revenue requirement (the 3rd tranche) conditional on a commitment to reinvest an equivalent amount in CDM initiatives."

The Minister's letter indicated that he was looking for a broad range of programs, programs that would reduce the customer demand and/or energy consumption, and that priority should be given to programs which would leverage existing programs, for example, Natural Resources Canada and the Federation of Canadian Municipalities. The Minister identified some of the activities that might be included in a distributor's Conservation and Demand Management Plan, including:

- Energy efficiency;
- Behavioural and operational changes, including the application of benchmarking or "SMART" control systems;
- Load management measures which facilitate interruptible and dispatchable loads, dual fuel applications, thermal storage, and demand response;
- Measures to encourage fuel switching which reduces the total system energy for a given end-use;
- Programs and initiatives targeted to low income and other hard to reach consumers; and

- Distributed energy options behind a customer's meter such as tri-generation, co-generation, ground source heat pumps, solar, wind, and biomass systems.

On October 5, 2004 the Ontario Energy Board issued a procedural order (RP-2004-0203) setting out the process for how distributors might apply for approval of a Conservation and Demand Management (CDM) Plan. It also set out the filing requirements for a distributor's plan. Distributors were given the option of applying for interim or final approval of their plan. The following requirements were identified:

- ***"A description of the proposed programs identifying the affected customer classes and the specific details of each program;***
- ***Total program budget including the total amount and schedule of the annual expenses for the 2004-2007 time period; and***
- ***Anticipated program benefits, including quantifiable benefits where these can be identified (i.e. energy savings (kW or kWh)). Where the program has anticipated qualitative benefits (such as enabling technologies or customer education), these expected qualitative benefits must be described"***

The challenge faced by the LDCs was that, although their CDM programs could be funded by the revenue adjustment in 2005, there was no mechanism in place to compensate LDCs for the lost revenue they would suffer if their demand management programs were successful, and no mechanism to incent the LDCs to encourage savings by their customers.

On December 6, 2004, the Ontario Energy Board heard a motion brought by Pollution Probe. This motion requested that the Board establish a lost revenue adjustment mechanism (LRAM) and incentive mechanism or shared savings mechanism (SSM) with respect to expenditures on conservation and demand management by local electricity distribution companies in 2005. The motion was supported by: various LDCs, the Coalition of Large Distributors (CLD), and the Electricity Distributors Association (EDA), as well as various other parties, including the Green Energy Coalition and the Canadian Energy Efficiency Alliance.

LRAM is a form of revenue protection for LDCs, recognizing that once rates are set for any given period, successful conservation measures would reduce LDC revenue. A Lost Revenue Adjustment Mechanism should hold utilities harmless from LDC-driven impacts. LRAM requires that LDCs track revenue variance due to conservation as compared to the revenue (without DSM) assumed in setting rates.

The decision of the Board was to adopt a voluntary LRAM for lost revenues incurred by LDCs as a result of CDM initiatives in 2005. Going forward, a formula for LRAM will be determined by the 2006 Electricity Distribution Rate Panel (RP-2004-0188).

Incenting LDCs takes more than compensation for lost revenue. Of considerable value in other jurisdictions is the Shared Savings Mechanism (SSM). This mechanism rewards an LDC and its shareholders by returning some portion of the benefits of DSM to them, for example by giving the LDC 5% of Total Resource Cost (TRC) benefits created. TRC is a net benefit test that counts all financial costs and benefits over the life of the measure, whether felt by the customer, distributor or system.

The Board adopted an incentive mechanism or SSM for the LDC for 2005. The application of a SSM will only apply to funds spent on customer-based initiatives. Board staff prepared the "Draft Guidelines for Electricity Distributors Wishing to Apply for SSM Incentive for 2005 Implementation of CDM Plans". These guidelines are included in Appendix 2.

Having set the wheels in motion for early uptake of DSM in 2005, the government then established the framework for a more permanent inclusion of DSM in energy planning. On December 9, 2004, the Government of Ontario passed the *Electricity Restructuring Act, 2004*, ("the Act") which reorganized the province's electricity sector. The new legislation amended the *Ontario Energy Board Act, 1998*, and the *Electricity Act, 1998*.

The legislation's objectives were to reorganize the institutional structure to ensure efficient and effective management of the electricity sector over the long-term; ensure sufficient electricity supply; encourage electricity conservation and

renewable energy; facilitate electricity demand management; regulate prices in parts of the electricity sector and ensure competitive prices for Ontario's electricity consumers. The Act confirmed that the Ministry of Energy will set targets for conservation, renewable energy, and the overall supply mix of supply sources in the electricity sector

A key element of the Act is the creation of a new Ontario Power Authority. The Ontario Power Authority is expected to assess adequacy and reliability of electricity resources; forecast future demand and the potential for conservation and renewable energy; prepare an integrated system plan for generation, transmission and conservation; procure new supply, transmission and demand management either by competition or by contract, when necessary; assist the government in achieving its goals for alternative and renewable energy; be self-financing, with fees approved by the Ontario Energy Board.

In addition a Conservation Bureau, headed by a Chief Energy Conservation Officer, will be established to provide leadership in planning and coordination of electricity conservation and demand management. As stated by Jan Carr, CEO of the Ontario Power Authority on January 26, 2005,

"The Conservation bureau has responsibility for the development and delivery of conservation and demand –side management programs. It is anticipated that its major role will be in the development and coordination of programs, and that their delivery will be handled largely by the local distribution companies. However it's important to recognize that the OPA does have the authority to deliver conservation and demand-side management programs directly, where that makes sense."

The Conservation Bureau is expected to provide:

- Estimates of potential savings from demand management & demand response (based on system avoided cost)
- Tools for Cost Benefit analyses - measure by measure
- Support for Province wide programs (e.g. recycling, demolition of old refrigerators)
- Targeted outreach (e.g. Social Housing Corporation)
- Pilots
- Tracking of results across the province

- Annual Report to the Minister
- Interface with Conservation Action Team, and other government ministries and agencies.

In addition to the legislative changes that it has approved, the Government of Ontario has taken a number of other significant steps in the past year to act on its commitment to change Ontario into a culture of conservation.
Specific government actions include:

- A Conservation Action Team of Parliamentary Assistants to ensure support and coordination across its ministries;
- An "Ontario Conserves" web site providing tips to help conserve and a conservation guide in 12 languages and script;
- An in-house conservation program;

The Minister of Energy has established a Conservation Action Team that is comprised of Parliamentary Assistants from nine Ontario government ministries responsible for a broad range of policy and program areas. The Action Team is looking at a number of options associated with conservation and demand-side management initiatives, and developing an action plan to help the government meet its conservation target of five per cent by 2007. The Action Team is also working to identify and remove barriers to conservation in existing government policies and programs, and will explore ways for new government policies and programs to incorporate conservation principles. Donna Cansfield, MPP Etobicoke Centre and Parliamentary Assistant to the Minister of Energy is the Team Leader. Appendix 3 contains the names and positions of the Conservation Action Team.

The provincial government has also initiated its own in-house energy efficiency program that includes:

- ***"Engaging Ontario's 62,000 civil servants in a government-wide conservation effort. The government will be working with public servants to reduce electricity consumption and build a conservation culture in the Ontario Public Service (OPS). The government has already received over 500 energy-related ideas from employees during the OPS Ideas Campaign in 2004.***

- ***Aggressively conserving energy in its own buildings through retrofits, upgrades and new building standards. Some projects the government will be undertaking in the coming year include:***

	Approximate cost	*Approximate annual savings*	
24 lighting retrofit projects	*$2.8 million*	*9.6m kWh*	*$690,000*
19 building automation projects	*$2.6 million*	*6.0m kWh*	*$430,000*
12 chiller replacement projects	*$9.3 million*	*4.3m kWh*	*$310,000*
18 heating, ventilation and air conditioning projects	*$2.7 million*	*4.0m kWh*	*$290,000*

- ***Working with government landlords to cut back on energy waste in space the government leases. The government has about 800 private-sector landlords. The Ontario Realty Corporation will be working with the government's landlords to improve energy efficiency and conservation in facilities the government leases."***

(source: Ministry of Energy backgrounder)

As evidence of its longer-term commitment to DSM are the OEB's initiatives in Smart Metering and Regulated Price Plan. The Government of Ontario has established targets for the installation of 800,000 smart electricity meters by December 31, 2007 and installation of smart meters for all Ontario customers by December 31, 2010. In response to this directive, The Ontario Energy Board held industry wide consultations and on January 26, 2005, submitted its implementation plan on smart meters to the Minister of Energy. As stated in the press release and backgrounder,

"Highlights of the proposed plan include:
- ***Smart meters that are capable of recording hourly data for every customer;***
- ***A two-way communication system that transfers data to and from the meter by the distributor, including reading from remote locations, which is not possible with existing meters;***
- ***Consumers' access to consumption data by telephone or Internet the following day.***

Initial installation will focus on large consumers and residential and commercial consumers in large urban areas. To meet the target of 800,000 customers by 2007, consumers with peak demand over 200kW [will] get interval meters and residential and small commercial consumers [will] get smart meters. Large urban distributors,

representing over 1.5 million consumers (provincial total of about 4.3 million), are to install the initial 800,000-meter deployment for small commercial and residential customers by the end of 2007. The results of this process [will] allow the Board to provide guidance to smaller distributors in the second phase of the project (2008 start) and will eliminate the need for all distributors to form buying groups immediately.

Distributors [will] continue to be responsible for the maintenance and installation of smart meter systems…consumers may be able to choose enhanced services, such as remotely controlled energy consumption or in-home customer display, from a distributor or retailer for an additional charge."

On February 10, 2005 the Ontario Energy Board issued its draft Regulated Price Plan (RPP) Manual for comment. For consumers with smart meters, the draft Manual proposes specific hours for time-of-use pricing periods. Distributors with consumers who have smart meters installed, or who are currently conducting Smart Meter pilot projects, will not be obligated to provide time-of-use pricing to those consumers until April 1, 2006, but may introduce it sooner if they choose.

In summary, the provincial government has through its actions signaled to the electricity industry and its consumers that it is serious about achieving a "conservation culture" and that it will commit resources to achieve this end.

The LDCs are seen as the optimum channels for implementing demand side management programs. Because the local distribution companies are closest to their customers, because they have customer relationships, and because they are trusted by their customers, they are seen as being a necessary element in the execution of the conservation strategy. However, given the political realities over the past four years, LDCs remain somewhat guarded in their acceptance of these policy statements and initiatives as firm long- term direction, and will be proceeding cautiously. The degree to which the LDCs will actively and effectively implement CDM plans and programs is a function of the legislative and regulatory environment put in place. In addition, political priorities could change either with this government or through the election of a different governing party.

The New Democrats have indicated that they are in favour of a more autonomous, centralized conservation agency that would have the authority to mandate programs such as retrofits for low-income housing. They also favour reforming the Ontario Building Code to re-introduce energy efficient standards, introducing a C2000 office for building efficiency and providing consumer rebates for energy efficient appliances. LDCs under such program would likely be responsible only for delivery rather than development and delivery of CDM.

The Conservatives too have declared a commitment to demand side management as a critical part of their energy platform. In their policy paper of June 2002, "Alternative Fuels Report", The Conservatives stated that,

"Development of alternative energy sources and the promotion of energy conservation and efficiency present the province with significant economic growth opportunities and benefits"

Recommendations in this Report included,
" The formulation of an Ontario alternative fuel and energy strategy; the establishment of an Ontario Energy Research Institute; specific funding and comprehensive tax provisions to assist alternative fuels/energy; establishment of an aggressive renewable portfolio standard for the supply of new renewable power sources across Ontario; the establishment of a systems benefits charge to fund renewable energy programs; provisions to require net metering; the long-term elimination of traditional carbon-based generation by 2015 with a recommendation to close the Atikokan and Thunder Bay coal-fired stations in northwestern Ontario by 2005; new aggressive energy conservation and efficiency standards, aggressive government and municipal procurement incentives and targets to utilize alternative fuels and energy; and consumer awareness and education programs to promote alternative fuels/energy."

John O'Toole, the current Conservative Energy Critic, has stated that the party continues to support the wise use of resources. While he would like to see appropriate price signals and an incentive based system for encouraging consumers to conserve, he does agree that LDCs are the correct interface with customers by virtue of their existing relationships. Given the current electricity situation, O'Toole believes that the need for demand side management will not go away, regardless of who is in power.

Consistent with this point of view, it is important to note that although governments have changed, DSM has become entrenched in the gas industry over the past decade. The next section looks at the history of DSM and gas.

3. Gas Experience

LDCs have been closely observing the experience of the gas industry with demand side management over the past decade. Although there are significant structural differences between the sectors (such as 2 large gas utilities versus 92 electric utilities; and the fact that gas can be stored while electricity cannot), it can be expected that there will be some commonalities going forward by virtue of having the same regulator.

In its April 9,1990 Union Gas Decision (EBRO 462) the OEB decided to call a generic hearing into Least Cost Planning. The Board stated that it was interested in managing demand in the context of utility expansion in Ontario. Board staff prepared a draft issues list, in consultation with the natural gas utilities, and a broad range of interested parties. A draft report was then circulated for comment.

In September 1990, a report was issued by the Board entitled, "Report on Integrated Resource Planning". Integrated Resource Planning (IRP), sometimes referred to as Least Cost Planning, was defined as "a planning method for use by natural gas and electric utilities whereby expected demand side for energy is met by the least costly mix of demand–side and supply- side programs and strategies".

After reviewing responses to the Board's report, the Board announced that it would use a building block approach, starting with an investigation of DSM issues, before considering supply side issues and the integration of IRP. The Board then held a settlement conference and hearing on the demand side aspects. The Board in its report issued in July 1993 found the following:

- Long term avoided supply-side costs (including avoided upstream costs) should be used in the costing methodology
- An iterative process should be used when developing DSM portfolios. Programs which passed the Societal Cost test (SCT) but failed the Rate

Impact Measure (RIM) had to pass a third test to ensure that any related rate impacts would not be excessive and the indirect costs would not exceed the net benefits of a program. Programs, which failed the third test, were to be evaluated once more before being discarded or deferred. All programs were to be assessed quantitatively and qualitatively to determine the best candidate for a utility's DSM portfolio.

The Societal Cost Test was defined as an evaluation of the costs and benefits accruing to society as a whole due to an activity. The Rate Impact Test was defined as a screening test, which measures the impact of a DSM program on the customer's unit cost of energy.

The Board decided that those program externalities, which involve significant environmental and social costs, and benefits should be included in the cost analysis of DSM programs, and endorsed a collaborative group to assess methodologies and processes. However the Board never formally reviewed the report of this group.

After further review, the Board decided that:

- Long-term DSM investments should be treated consistently with prudent supply side investments. Long-term DSM investments should be included in rate base and short-term expenditures expensed as part of the utility's cost of service. Any variance between the forecast and actual costs or benefits of a DSM program would be recorded in a deferral account for future disposition.

- The beneficiaries of a program should pay for it. Some level of cross subsidization and rate impact might be acceptable to the Board but the utilities should work toward self sustaining programs. DSM efforts should be included as part of utility operations and not spun off as a non-regulated business.

If incentives were necessary the Board preferred the approach of shared savings. Shared saving was defined as "regulatory incentive to the utility's shareholder whereby they are allowed to retain a portion of the net dollar benefit from a DSM

program." A utility could propose a revenue adjustment initiative if it felt there were impacts on risk and earnings.

The Board cited a need for effective monitoring and evaluation. The utilities needed to provide a base case forecast of demand prior to DSM programs. Forecasts were also to be provided for each DSM program and overall portfolio showing the pessimistic, optimistic and most likely impacts relative to the base case. Impacts attributable to energy efficiency were to be considered in any future rate design.

The Board asked the utilities to present their DSM plans no later than fiscal 1995 rate cases. The utilities were encouraged to consult with interested parties and to use delivery channels such as energy service companies. Once sufficient experience was gained in DSM the Board expected to proceed with a supply side review and then integration of demand with supply in an integrated resource plan.

The Board recommended that the government consider:

- Regulation to establish carbon dioxide emission targets;
- Further development of standards and fiscal measures to improve energy efficiency;
- Establishment of a regulatory mandate for IRP; and
- Clarification of government agencies to effectively coordinate IRP in all of the energy sector's roles.

In 1996, when the Board considered natural gas system expansion guidelines (EBO 188), it did consider the issues of cost tests and inclusion of externalities in economic feasibility tests.

In subsequent decisions, the Board authorized the use of shared savings (SSM) and lost revenue adjustment mechanisms (LRAM), at certain times and not at others. For example, in Union Gas decision EBRO 493/494 in 1997 the Board did not see the need for an LRAM or SSM. In the same year however the Board did approve an LRAM for Consumers Gas. In 1998,EBRO 497-01 a settlement agreement was reached between parties and Union Gas on an SSM that the

Board accepted subject to periodic updates. The Board did accept a settlement agreement in Union Gas case 499 in 1998 that allowed for LRAM. In that case, Union agreed to develop a PBR mechanism for DSM and file it as part of its next application to the Board.

The Board did not accept Union's proposed DSM plans in the next case and noted several general concerns about DSM in general. It noted that Union Gas should address a number of policy issues within the context of Ontario's evolving energy market before approving a DSM framework such as that proposed.

The Board believed that the roles of all parties (including the Board and government) including a review of where the responsibility for the promotion and pursuit of DSM should lie, required further examination. The role of DSM within the context of a PBR plan, as well as its proper role with respect to the newly unbundled services of the utility was also raised. There was a need for further evidence that DSM measures and incentives could be properly balanced against the appropriate incentives for the utility under a PBR plan.

As well, the Board wanted to evaluate whether a distributor, charged with the responsibility for providing non-discriminatory access to services for a competitive gas market, should at the same time engage in managing gas demand other than for reasonable efficiencies in the operation of the distribution system. The demand for and delivery of utility-sponsored programs related to energy efficiency in evolving energy markets required better understanding.

As a result of these concerns the Board did not accept Union's proposed DSM program. The company was allowed to continue its existing DSM programs and to only offer new programs if they could be established cost effectively under its price cap plan.

In 2002, during its RP-2002-0133 proceeding for Enbridge Gas Distribution, the Board continued to consider policy issues, among them the DSM consultative and audit processes and the need for a general review of DSM programs for natural gas utilities.

The Board noted that the consultative and audit processes to review Enbridge's DSM results did not operate in a way that was efficient and effective and probably resulted in larger than necessary cost awards. Expressing the view that the consultative process was advisory in nature, the Board stated that Enbridge still held the responsibility for the acceptability and effectiveness of its programs. The Board also expressed concern with the slow delivery of monitoring and evaluation reports by Enbridge.

Enbridge's programs had been in place since 1995, and although the objectives and principles had evolved somewhat, they had remained essentially unchanged. Given the changes in the market and industry and concerns raised regarding the level of rewards generated by incentive mechanisms, the Board was of the view that it was time to review and update the DSM framework. The evidence in that hearing led the Board to conclude that the DSM framework for all entities within its jurisdiction needed to be reviewed. Among the issues that needed to be addressed were:

- Determination of who should be providing DSM activities;
- Identification of the relative role of the utilities, energy service providers and others;
- Establishment of common DSM principles across the energy sectors;
- Evaluation of the need and level of incentives required to support DSM objectives; the treatment of DSM within a PBR framework; and
- Improved understandability, transparency and administrative ease.

On June 18th 2003, the Government directed the Board to consult with stakeholders on options for delivery of demand side management and demand response in the electricity sector, including the role of local distribution utilities in such activities. The directive also referred to the potential role for load aggregators in the markets administered by the IMO. The directive asked the Board to balance implementation costs with the benefits to both consumers and the entire system. The Board announced its plan for carrying out the directive and invited stakeholders to participate in its consultation process. It also expanded the scope of review to consider inclusion of natural gas distribution companies in this DSM review

In its subsequent report to the Minister, the Board recommended that a central agency oversee DSM in gas and electricity. The report suggested that a central agency would facilitate a focused effort on market transformation, and provide unbiased decision-making on fuel switching and potential load growth issues. Further it could provide comprehensive programs that would address all energy sources available to the consumer whether at one or many locations across the province. However, the Board recognized that putting a DSM framework for electricity in place would take time and it would not be advisable to combine electricity and natural gas immediately. While DSM in electricity was maturing, the natural gas distributors could provide gas savings and prepare for the new framework without undue disruption to their business and marketing strategies. The Board recommended that the suggested framework replace the current gas framework within three years.

What can be learned from the natural gas experience?

Firstly, a clear regulatory framework and guidelines are necessary.

EBO 169-III laid out a clear framework and guidelines for implementing DSM into the natural gas utility operations. Both gas utilities have employed the guidelines laid out in planning, designing, costing, monitoring, reporting and auditing their DSM programs. In 2001 the DSM portfolios of the two major gas utilities generated net annual gas savings of approximately 133 million cubic meters. The direct costs for achieving these savings were approximately thirteen million dollars. Although some critics say that all the low hanging fruit has been picked and further significant natural gas DSM is unlikely, the natural gas utilities are still offering a full range of programs.

The Board has given the gas utilities lost revenue protection, variance accounts to track differences from budget in DSM spending and an ability to increase returns through shared savings mechanisms. There are those stakeholders who question whether the returns are too high.

Secondly, periodic review of rules governing the playing field is necessary. EBO 169 was the only generic proceeding to set DSM guidelines for the gas industry. Since that proceeding, decisions have been made on a case-by-case basis and

utility-by-utility basis. This has resulted in uneven application of SSM, LRAM and variance accounts. Although this may be appropriate in some cases, a generic review would help to clarify the ground rules and assist the utilities in their planning and implementation. The Board has stated an intention to have such a generic review for the natural gas utilities but none has come about as yet. As mentioned earlier, the Board has cited several concerns, some of them fundamental to the delivery of natural gas DSM in the province.

However it seems unlikely in the current environment, where conservation and demand management are clear public policy goals, and natural gas DSM principles have been adopted by the Board for electricity utility DSM, that the Board will dramatically change the framework for natural gas in the near future.

As the relative roles and responsibilities of the Conservation Bureau and the Board become clearer on electricity sector DSM implementation, it may become apparent whether the natural gas utilities will continue as they do now or have some accountability to or direction from the Conservation Bureau. The regulator, be it the government or the Board, may be concerned about creating a level playing field to address concerns about fuel switching and load growth issues.

Finally, the process issues must be managed. Over the years, issues have arisen around the consultative and reporting processes. The stakeholders have argued that the utilities have not been responsive to the stakeholders' concerns on DSM issues. The utilities contended that some of the positions have been unreasonable. The Board has stated that the utilities are responsible for making the application and defending it before the Board.

The stakeholders have in some cases been concerned that monitoring and audit reports have been unduly delayed and have made it more difficult to participate in DSM consultations and hearings. The Board has indicated that the utilities must be timely in submitting these reports. In its recent business plan the Board indicated its intention to develop its audit and compliance function to increase public confidence in accountability measures.

It is important that the process issues be managed such that there be clear protocols so that expectations can be managed. The natural gas experience has

shown that consultations and proceedings have been lengthened and the cost increased when this has not been the case.

LDCs can also learn from specific experiences of Enbridge and Union. Jim Schultz, President of Enbridge Gas Distribution recently stated in the April 2004 issue of ***"the distributor"***,
"Factors that contributed to Enbridge's success in natural gas DSM programs may also be applicable to the industry in setting up electric DSM programs, including:

- ***Engage stakeholders, business partners and other distributors early…***
- ***Ensure financial instruments are put in place so that distributors are kept whole…***
- ***Dedicate resources…***
- ***Leverage industry and customer relationships."***

The next section looks at the responses of the LDCs to the DSM challenge.

4. Local Distribution Companies- Responses and Requirements

4.1 CDM Plans

In response to: the Minister of Energy's letter of May 31, 2004; the condition that third tranche monies could be spent only on CDM; and the fact that plans could be submitted to the OEB in advance of the next rate hearing for pre-approval, the majority of electricity distribution companies developed and submitted plans for conservation and demand management for the period 2005-2007, in December 2004.
In brief, approximately 80 LDCs submitted CDM plans to the OEB; plans included programs, costs, and timelines, and a number of Coalitions of LDCs were formed, including: the Coalition of Large Distributors (CLD); Cornerstone (CHEC) and NEPPA. Typical LDC programs included:

- Consumer education: Conservation website; Consumer awareness
- Energy audits
- Lighting: LED retrofits; CFL replacements
- Distribution line loss reduction
- Water Heater load control
- Power Factor Correction

- Metering: Interval meters; Smart meters

The six largest electricity distribution utilities (Toronto Hydro Electric System Limited, Hydro Ottawa Limited, PowerStream Inc., Enersource Hydro Mississauga, Hamilton Hydro, and Veridian) established a "Coalition of Large Distributors" (CLD) to jointly prepare Conservation and Demand Management (CDM) applications to the Ontario Energy Board. Collectively, the CLD utilities provide service to over 1.5 million customers or 40 percent of the Ontario total. Their CDM plans totaled over $70 million. Each of the CLD utilities presented its individual application, under a covering letter and template jointly developed by them all.
In general their programs consist of: residential and small commercial programs; commercial, industrial and institutional programs; distribution loss reduction programs; distributed energy programs; and overall program support.

In the development process, CLD prepared a menu of CDM programs from which each utility could choose, such as,

- LED traffic replacement
- Distribution loss reduction including, voltage conversion activities and voltage profile management
- Social housing energy efficiency, in collaboration with the provincial government, gas utilities and others
- Customer education
- Smart meters
- Load control
- Load shifting

In developing their plans, the following criteria were used to guide the selection of component programs:

- Allocation of Benefits – "The overall plan should distribute benefits broadly to the LDCs' customers".
- Certainty of Achieving Targeted Benefits – "Preference was given to investments that offered more predictable results".

- Leveraging Partnerships – "Partnerships would be sought to deliver 'behind the meter' programs that could benefit from greater scale for cost-effective implementation."

The CLD flagship is the co-branded mass-market program (PowerWISE ™). It is intended to promote the growth of the conservation culture in Ontario. CLD has indicated that "***the six utilities will cooperate in specific initiatives such as Compact Fluorescent Lighting (CFL) change out programs, LED Christmas Lights, Energy Star, Multi-Choice, energy audits, water heater blanket wraps, school based education and a host of other programs aimed at providing customers with the tools and education needed to reduce their energy usage. Access to online services such as energy consumption calculators, an energy expert, and personalized energy audit services are contemplated as components of this program***."

Cornerstone Hydro Electric Concepts (CHEC) is another association of LDCs: Centre Wellington Hydro, COLLUS Power, Grand Valley Energy, Orillia Power, Lakeland Power, Woodstock Hydro, St. Thomas Energy, Orangeville Hydro, Innisfil Hydro, Lakefront Utilities, West Coast Huron Energy, Gravenhurst Hydro, Rideau St. Lawrence, Wellington North Power, Westario Power, Wasdaga Distribution, Parry Sound Power and Midland Power Utility.

CHEC represents 18 LDCs and approximately 160,000 customers, 87% of which are residential. Funding or third tranche for the CHEC group, totals approximately $3.5 million As a response to concerns about: ***"efficacy of measures, consistency of conservation message, communication, value for investment and economies of scale"***, the CHEC group members decided to pool their resources, both for development and execution of the programs.

The CHEC Group has divided its initiatives in its CDM plan into Tier One and Tier Two measures, to recognize mutual and individual interests. Tier One initiatives are common to all participants and are designed to maximize economies of scale. Tier One measures include:

- Customer surveys
- Education initiatives e.g. billing stuffers, energy efficiency seminars, school conservation programs
- Common web page development

- Exploration of joint water and electricity conservation programs.

Tier Two measures recognize local differences and have a higher level of customization. Tier Two measures include:

- System Optimization
- Energy Audits
- Power Factor Audits
- Demand Response Programs
- Wind Power Studies
- Signal and Street light efficiency, e.g. LED lighting
- Metering

CHEC stated in its plan that:
"The diversity of measures covered by both tiers permits flexibility for each LDC to maximize C&DM results while simultaneously minimizing costs and risk of program inadequacy. Communal reporting and information distribution of both successes and failures is critical to the mandate of the CHEC Group".

The Niagara Erie Public Power Alliance (NEPPA) is a cooperative arrangement of eleven Local Distribution Companies, including Grimsby Power, Haldimand County Hydro, Niagara Falls Hydro, Niagara-on-the-Lake Hydro, Norfolk Power, Peninsula West Power and Welland Hydro, that, like CHEC, have joined together to achieve efficiency from shared resources and to maximize their dollar effectiveness.

Hydro One Networks and Hydro One Brampton also filed their application jointly. Hydro One proposed to spend its MARR increase initially on establishing a knowledge base of research and expertise, consumer education and awareness, and a series of pilot projects. As stated in their public notice to customers:

"The elements of Networks' CDM Plan for residential customers are smart metering, residential load control, real-time energy use monitoring, efficient lighting and audits and a low income program. The elements of Networks' CDM plan for business, institutional and farm customers are smart metering, time of use rates, commercial and industrial load control, energy efficiency audits and lighting. The elements of Brampton's plan for residential customers are compact fluorescent lights, LED holiday

light exchange, residential load control, real-time energy use monitoring, and smart metering. The elements of Brampton's CDM plan for business and institutional customers are power factor correction, commercial and industrial load control, technology demonstration and smart metering. In addition, Brampton proposes an initiative focused on improving the internal efficiency of its office facilities. Both Networks and Brampton also propose communications and education initiatives and a distribution loss energy reduction program. The total budget for Networks' plan is approximately $39.5 million. The total budget for Brampton's plan is $3.2 million."

4.2 CDM Plan Review

On December 7, 2004 the Board began its open hearing into the CDM applications of Coalition of Large Distributors (CLD): (Toronto Hydro Electric System Limited, Hydro Ottawa Limited, PowerStream Inc., Enersource Hydro Mississauga, Hamilton Hydro, and Veridian). Over several days, the Board reviewed issues raised by interveners which included cost/benefit analysis, LDCs' rate base, MARR, incremental expenses, operating vs. capital expenses, program modifications, smart meters, program balance, low-income consumers and LED traffic lights.

On December 10, 2004, the Board approved the CLD applications totaling more than $70 million: $8.2 million for Enersource, $5.2 million for Hamilton, $9.3 million for Hydro Ottawa, $6.4 million for PowerStream, $39.8 million for Toronto Hydro and $3.5 million for Veridian.

In addition, the OEB approved applications from Milton Hydro and Brantford Power for their third tranche of incremental MARR related to CDM initiatives. The budget for these initiatives totaled more than $760,000 for Milton and $1.3 million for Brantford.

During the CLD hearing, the OEB heard a number of interveners express concerns about the programs proposed. The issues raised by interveners included:

- No quantification of benefits; no cost/benefit projections. The interveners, for the most part, thought a cost-benefit analysis should be done at this stage. There were no quantifiable benefits in these applications, and the

applicants stated that they didn't have sufficient data to do so. The Board accepted the proposition there was an understandable inability, at this point, to provide the Board with a cost-benefit analysis that would be meaningful.

- No targets, and monitoring and reporting against the programs. The Board declared that it supported the principle of monitoring and reporting and its approval or order in this matter was:

"Conditional upon the utilities filing quarterly reports….. The terms will, at a minimum, require an evaluation of each of the programs that the utility is undertaking, and the progress with respect to that program… the amount of money spent as opposed to budget amounts to date…. No hearing or public review is contemplated with respect to the quarterly reports. [An] annual report should be done on a calendar year and should be filed with the Board no later than March 31st of the following year… The Board will hold a hearing with respect to the annual report. It will provide the Board with an opportunity in a public forum to question the applicants with respect to their first years of experience with respect to these programs"

In addition, interveners were concerned about the lack of customer or stakeholder involvement in developing programs; excessive emphasis on capital; too much spending on utility side of meter than on customer side and the potential for significant waste. The Board however recognized that the plans were still in a formative stage and indicated that: "***without coming back to the Board, CLD was entitled to move resources between programs, to discontinue some programs, add other programs, increase the resources in some programs, and decrease it in others. And, provided that an LDC does not move more than 20 percent of the total allocated budget it should be able to have that flexibility without Board intervention.***"

Many of the other LDC submissions also did not reference program monitoring and evaluation, or specifics of implementation, such as whether the programs would be designed in- house or contracted out, and by whom. Although costs are shown per program, only general benefits were stated, rather than any quantified targets. Given the shortness of time allowed to prepare the submissions, many of the submissions were at a high level, with specificity to follow approvals.

In making its Decisions, the Board recommended that all the above utilities voluntarily investigate possible initiatives to assist low-income consumers. The Board Decisions also required the applicants to implement reporting and monitoring mechanisms.

During the Hydro One Hearings of February 17 and February 18, the issues of cost benefit analysis, smart meters and pilot programs were also raised. Hydro One defended its expenditures on Smart Meter pilot projects by stating that:

"The pilot will be substantial for Hydro One, … to find, and confirm, a telecommunication technology that works in rural and remote areas, but it, also, has to prove back-office systems, AMR data-warehousing… capable of supporting large volumes of data, and in a timely manner, to meet customer next-day communication requirements. …Hydro One will look to leverage the smart-meter platform for technologies that support load control and in-home display.

The Board's decision however was as follows:

"The first of the main issues is smart meters… Networks is proposing to spend some $14.9 million on smart meters. $7.8 million of that is in 2005, and $7.1 in 2006. As a percentage of the total amount, it is almost 39 percent. It's worth noting, in addition that this is also larger than any other utility has spent on smart meters, as a percent of total MARR. But the $14.9 million, referred to a moment ago, is, in fact, larger than the $12 million, which was the total amount invested on smart meters by the entire group of six…. It is the Board's view that $7.1million - that is to say, the 2006 amount - should be reallocated. It is a condition of this order that the utility, Hydro One, re-file, by June 30th, an application for alternative projects, with respect to that $7.1 million. We believe this is in accordance with the Board's earlier decision, and we believe it's in accordance with the Government's intention.

...The Board has [recommended] that the program should commence, first, with the big urban utilities… [to] provide a more focused manner to evaluate the technology in the first instance…under that [recommendation] there wouldn't be any roll out of smart meters by Hydro One in '06 in any event, because those are essentially rural areas.

[With respect to cost /benefit analyses], one of the conditions that [the Board] imposed on utilities with respect to these CDM plans, …is quarterly and annual reports… the annual reports requires a cost/benefit analysis and provides that there will, in fact, be public review of that annual report. …We have imposed that reporting requirement in

order to ensure that there is some oversight of what are significant expenditures…. The annual report… should be done on a calendar year. It should be filed with the Board no later than March 31st of the following year. So the first one would be for the year 2005."

The significance of this Board decision is that the Board reaffirmed its determination to have substantive cost-benefit analyses done and reported in the CDM Annual Reports of all the LDCs, that the Board anticipates community discussions on the values to be used, and finally that the Board has the authority and will exercise it to redirect proposed spending if the Board does not believe it is in the best interests of customers and government policies.

The majority of LDCs have submitted their CDM plans for approval. It is expected that no others will require hearings, but each plan will be reviewed prior to approval being granted. The LDCs are currently awaiting such review and approval before proceeding with any CDM spending.

4.3 LDC Concerns

In November/December 2004, a survey was conducted by The MEARIE Group of LDC requirements with respect to CDM. Twenty- five LDCs responded to the survey, representing the full gamut of small, medium and large utilities. All respondents had submitted CDM plans. There was great variance in their responses, with some LDCs indicating a desire for assistance in communication, design, monitoring, reporting, and training of staff. Other LDCs were confident that they could manage with existing resources or with those additional resources currently contracted for DSM. The Survey was followed with a number of in-depth discussions with LDCs. These discussions raised the following concerns and issues:

- **Many similar "pilots"**

Many of the LDCs have dedicated funds to "pilots", whether these are for load management in commercial operations or small-scale distributed generation (expanded use of standby generators on buildings) or metering. There is not yet a central registry of pilot programs or a mechanism for sharing program criteria and results. There may be duplication of pilots, which in itself may be useful for analysis of conditions required for success, but which necessitates even more, dialogue and exchange of information.

- **Many "branding" exercises**

In order to reach consumers, LDCs are looking to "brand" their messages and their consumer awareness programs. The CLD's "PowerWise" program is an illustration of the branding chosen by the top six utilities in the province. However, there have not yet been discussions across the province (although there is apparently a communications initiative at the provincial government level) of the benefits of cross branding or the mechanisms for doing so. Consistent messages, especially when there are two national newspapers with large provincial distribution and common TV and radio channels, can increase awareness in the marketplace. A variety of different branding exercises may confuse consumers and weaken the effectiveness of the messages. Branding exercises will be among the first to be implemented with easy access to Internet, web pages and local distribution channels. If there is to be any consistency, it must be timely.

- **Lack of coordination regarding partners (e.g. Enbridge)**

A number of LDCs have been approaching the same companies for partnering in the marketplace. An illustration of this is Enbridge. Enbridge shares customers with 34 LDCs in the province. Enbridge's stable of programs (over 36) as well as its experience in measuring and reporting results for the OEB are perceived as valuable to the LDCs. Enbridge has indicated its willingness to offer access to its "basket" of known programs under formal agreements with the LDCs. Many of the existing programs are applicable to LDCs such as commercial and industrial audits. In addition Enbridge has developed automated spreadsheets, useful for calculating costs, benefits, LRAM and SSM, and has known top-quality contractors and distribution channels. Although Enbridge has established a department dedicated to working with LDCs, it would be both efficient and economic for LDCs to work with Enbridge in groupings, rather each LDC on its own.

- **How to deal with provincial wide customers (e.g. Loblaws)**

As LDCs begin to roll out their demand management programs to large customers in their jurisdictions, they will be faced with companies such as Loblaws that have multi-sites, crossing LDC lines. In some cases, demand management decisions will be made by a head office located in one LDC. In other cases, local facilities or franchises will have the authority to make some

energy decisions. Both situations present problems. In the first situation, can an LDC claim savings it had no input to, if for example Head Office Loblaws decides to replace all its lighting across Ontario? In the second instance, how can both the LDC and the commercial customer gain benefits from the economies of scale that could occur through joint programming? In both these illustrations, as well as in many others, guidelines and/or some coordinated approach to province wide organizations will be necessary.

- **How to provide consistent pricing and rebates (CFLs, refrigerator buy back)**

At the retail level, there is great opportunity for coordination and equal opportunity for confusion. The majority of LDCs have planned a form of lighting replacement. In most of these cases, incentives such as rebates will be provided. There are a number of players in the lighting replacement chain, including manufacturers, retail distributors, marketers, LDCs, and customers. Working on its own, a small to medium sized LDC will have difficulty establishing the necessary infrastructure to provide the lighting replacement or retrofit. In addition, customers may react negatively to provincial variations in rebate or terms associated with each of the products. Working together there will be economies of scale all along the supply chain, including the cross province advertising by such outlets as Home Depot.

- **Confusing marketplace- many suppliers/many LDCs**

There are both many suppliers and many customers (LDCs) for their products and services. While this may make for a competitive marketplace, it is cumbersome and time consuming for both parties to engage in the challenging marketing and negotiation required to enter into cooperative relationships. In addition, some suppliers while having an excellent product (such as a high-density electricity monitoring and control tool for businesses) cannot customize it economically for 92 different LDCs. It is evident that most LDCs will be outsourcing some to all of their CDM programs. It would be a great service to them to identify all potential suppliers of products and services and where possible establish buying groups for increased effectiveness and economies.

- **Implementation**

Some LDCs recognized that implementation had to be carried out with future reporting in mind, and as such were concerned about:

- **Establishing a baseline against which to measure;**
- **Tools for monitoring effectiveness of initiative;**
- **Tools for evaluating success of programs; and**
- **Processes for collecting, recording, analyzing and reporting information to the regulator;**
- **Cultural change internally.**

In this new regulatory environment, the LDCs will be subject to a level of scrutiny and accountability not experienced in DSM previously. In addition to all of the above, some LDCs recognized that the relationship with the OEB requires the capability to defend their case, and evidence of vision, leadership and commitment to DSM.

4.4 Services Needed by the LDCs

As evidenced by both the Survey and the interviews, depending on their size and on the programs they are initiating, many LDCs indicated that they will require some form of external services both in executing their programs in the near term and in developing a DSM competency in their core business over the long term.

Not all LDCs will be looking for all services. After approval of their CDM plans, some LDCs may begin designing and implementing immediately; some may see DSM as an opportunity to build relations with their customers. Others will be looking for a third party to whom they may transfer accountability. In other words, some LDCs will be happy to transfer their CDM budget to a contractor willing to take on the whole program, including the full justification of expenditures and evaluation of results. These LDCs will likely be unprepared for a future of DSM as part of their core business.

In order to prepare for the future, LDCs will likely need support in:

- Program implementation including:
  - Program assessment and selection,
  - Program design
  - Load forecasting; load research;
  - Market research;
  - Technology assessment;

    - Program testing, pilot management
    - Tracking and monitoring
- Regulatory submissions and representation
- SMART Meters- program design and implementation
- System development for audits, billing, customer information
- Customer Communication
- Staff training

The decision as to what degree of support or outsourcing to be sought will depend on a number of factors, including internal resources, in-house expertise, management commitment to DSM, to name a few. Suppliers will need to demonstrate cost-effectiveness, trustworthiness, existing relationship, expertise, accommodation of local needs, local control, and customer service, to secure contracts with LDCs. The next section reviews in greater detail the current state of this DSM industry.

5. The DSM Industry

The DSM Industry in Ontario has been focused primarily on gas for the past decade while there has been little activity or interest in the electricity sector. A number of entities have specific expertise and experience in conservation and demand management and the number and scope will undoubtedly continue to grow, as DSM becomes more entrenched in the electricity sector. There are potentially significant sources of support, assistance or alliance for LDCs as they deepen their involvement in DSM, including:

- Government- provincial, federal, local
- Consultants
- Other LDCs
- Not-for-profits
- Gas utilities
- Technology/Equipment Suppliers
- Home builders; developers; contractors;
- Voluntary/community sector
- Associations

5.1 Government

Government to date has provided the legislative framework and direction for DSM in Ontario. It is clear that LDCs are seen as the vehicle for implementing DSM broadly across the province through local channels and initiatives. Many LDCs are looking to the Conservation Bureau to provide leadership, support and coordination to accomplish this task. The Conservation Bureau has not been established at the time of the writing of this report. Current thinking however is that it will not provide the level of direct involvement that some LDCs are seeking. At this time, it appears that the Conservation Bureau will provide:

- Estimates of potential savings from demand management, based on system avoided costs;
- Tools for cost-benefit analyses;
- Support for province-wide programs or pilots (e.g. Social Housing Corporation);

- Tracking of results across the province;
- Annual reporting to the Minister of Energy.

The provincial government, including the Conservation Bureau will be focused on culture shift and major initiatives. With limited resources (the Conservation Bureau is anticipated to have approximately 12 staff), the Conservation Bureau may set expectations for delivery but will likely not be able to design "market-ready" programs for each LDC. LDCs will however benefit greatly from the broader roles of the Conservation Bureau, for example, in eliminating barriers to effective programming, such as the disposal of old refrigerators or old light bulbs.

The Federal Government is also a source of support to the LDCs. Coordinated through Natural Resources Canada (NRCan), the Office of Energy Efficiency (OEE) can offer business in the LDC territory: Programs, Rebates, Publications, Statistics and Analysis, Grants. The OEE manages seven energy efficiency and alternative fuels programs aimed at the residential, commercial, industrial and transportation sectors. The consolidation of these programs under a single organization enables the OEE to be more proactive in promoting energy efficiency and more comprehensive in meeting the information needs of clients, who range from individual consumers to school boards, hospitals and large corporations. For example, OEE offers the following incentives:

- The Energy Innovators Initiative through advice, funding and training, helps commercial businesses and public institutions improve the energy efficiency of existing buildings. Eligible members can apply for funding of up to $250,000 for planning and implementing building retrofits.
- The Commercial Building Incentive Program provides financial incentives to building owners who incorporate energy efficiency features in the design of new commercial or institutional buildings. The applicant can receive up to $60,000 if his building design meets the program's requirements.
- The Industrial Building Incentive Program provides incentives to building owners who combine energy-efficient features and processes into the design of new industrial buildings. The applicant can receive up to

$80,000 if his building or process design meets the program's requirements.

Although these programs and others like them do not provide the funding to the LDC directly, the incentives, in partnership with LDC programs can be an additional motivator for commercial and industrial customers. They are useful in leveraging the dollars committed to these customer classes.

Locally, there are also a number of initiatives that can work with LDCs to promote DSM in their communities. For example, in Toronto, an Energy Efficiency Office (EEO) was established in 1990 by the former Toronto Council, with a mandate to develop a comprehensive energy efficiency and conservation strategy for the City. This action was related to Toronto's official commitment to reduce its carbon dioxide emissions by 20 percent, relative to 1988 levels, by the year 2005. The EEO is now also expected to co-ordinate the City of Toronto's energy efficiency efforts. Today, the EEO manages the successful Better Buildings Partnership (BBP) and has helped retrofit City buildings and facilities resulting in an overall energy consumption reduction of 10 percent as of 1998.

While governments can be partners in the LDCs' CDM efforts, they cannot provide the resources or dedicated support that some LDCs require. Accessing government programs also takes time and experience. LDCs will need to commit resources to effectively utilize the many government vehicles available to them.

5.2 Consultants

There are a number of DSM consultants, such as IndEco, The BESTCo, Navigant, Summerhill Group, Kinectrics, to name a few, in the Ontario marketplace providing a broad range of expertise and experience.

These firms can offer LDCs assistance in the full life cycle of DSM planning and execution, including: strategy, planning, program design, program implementation, monitoring and evaluation. Some firms have expert knowledge in regulatory and policy matters while others have specific technology based expertise, such as evaluation of distribution loss programs.

While the companies identified (and those similar to them) have substantial expertise, it must be noted that DSM has not been active (other than in select projects) in the electricity sector for more than a decade. In addition there are gaps in the services available, such as load research, monitoring and evaluation, to name a few. Consultants as well as LDCs will have to prepare for the situation that DSM may be here to stay. There will undoubtedly be growth in the number of consultants offering services in this area. The challenges for LDCs will be in choosing their service providers wisely and in accessing this expertise economically and effectively. Great potential exists for groups of LDCs to achieve economies of scale through the specification and procurement of the expert advice available.

5.3 Other LDCs

Some LDCs and their affiliates, such as Toronto Hydro Energy Services Inc. (THESI) are developing the capability to offer services to other LDCs. THESI has developed a range of programs including energy audit and analysis and energy management tools for its own business customers that it could offer to other LDCs. THESI has also been working with LDCs to assist them in developing their own CDM plans. Several of these LDCs may also look to THESI for assistance in implementation.

The challenge for THESI and other affiliates is their capacity to work with a number of clients at once, while continuing to deliver their existing programs. They may add additional resources to do so or may work in partnership with consultants or not-for profit organizations, or may chose to work only on projects of a certain size.

5.4 Not-For-Profit Organizations

There are a number of not-for-profit organizations in Ontario that are focused on the energy sector and several on energy efficiency. The Clean Air Foundation, managed by the Summerhill Group, offers DSM retail programs that should be of interest to LDCs. These are: *Keep Cool*: a room air conditioner exchange program; *Energy Smarts*, which provides customers with discounts and valuable information on Energy Star and other efficient products; *Cool Shops* which target street facing retailers in Ontario, with whom it identifies and helps implement

energy management practices; *Chill Out*, a refrigerator exchange and recovery program. In addition Clean Air Foundation is developing a *CFL Campaign*, modeled after successful campaigns in BC and Quebec to drive demand for energy efficient lighting and an *LED retail exchange* campaign to retire old incandescent Christmas lights and replace them with LED strings. Clean Air Foundation offers LDCs a complete campaign including program design, program monitoring and evaluation, relations with manufacturers and retail distributors and marketing materials. For greatest cross province effectiveness these programs will benefit from joint efforts and participation among LDCs.

Different from Clean Air Foundation is EnerConnect. Building on its historical relationship with LDCs, EnerConnect is now also offering "emetering" for its members' commercial and industrial customers, and a Retailer-Leveraged CDM Program. Other offerings are also being considered. EnerConnect's model would likely be one that provides services to both end use customers and LDCs through its network of relationships with LDCs.

5.5 Gas Utilities

The gas utilities, Enbridge and Union, have had experience with DSM in a regulated environment for more than 10 years. This experience can be useful to the LDCs. Enbridge has in its organization, 30 centralized marketing staff, with approximately 50% of their time being dedicated to DSM. The marketing staff are supported by 6 regional offices for local assistance. Enbridge has 36 DSM programs that it offers its customers, some of which, like energy audits may be useful to LDCs. Enbridge uses contractors and consultants for implementation. As described earlier, Enbridge recently established a dedicated department to provide services to LDCs. Some LDCs identified in their plans the intent to partner with Enbridge, where appropriate. Enbridge is interested in working only with the 34 LDCs with whom it shares customers. Like the other deliverers of services, the key issues will be ones of capacity and priority setting for Enbridge. Not all LDCs will be able to benefit from this experience. As well, some LDCs may not be comfortable working closely with the gas utilities that traditionally were viewed as competitors. Fuel switching programs however, will require them to move beyond this history.

5.6 Technology/Equipment Suppliers

There are numerous designers and suppliers of new technology to the LDCs. Two such firms currently speaking with a number of LDCs are Triacta and Canadian Niagara Energy (CNE). Both these firms supply power measurement technology. Regardless of the attractiveness of the technologies offered, there are challenges in promoting these with LDCs. First from the supplier's point of view, it is time consuming to market to each of the 90+ LDCs in the province and even more costly to customize the product for each customer. From the LDC's perspective, there are many technologies available and comparative assessment among them is difficult. For both customer and supplier, an evaluative and integrating mechanism would be helpful.

5.7 Contractors /Developers/Home Builders

Contractors, developers and home-builders are the delivery agents for many of the DSM programs. Programs involving HVAC or lighting retrofits, new design codes, higher efficiency construction all require the participation of this sector. These companies and their associations (e.g.BOMA) can support LDC objectives by identifying options for greatest impact and incentives required by all parties for implementation. The challenge will be to find sufficient return for them in DSM. It will also be challenging to coordinate the joint efforts of large developers or associations and multiple LDCs.

5.8 Retailers for marketing and distribution

Consumer based programs, such as rebates for energy efficient appliances or promotions for Compact fluorescent lights (CFLs) are primarily delivered through the channels of retail distribution. Outlets such as Home Depot or Canadian Tire are typically interested in supporting these programs, to draw additional shopping traffic into their stores. These stores can also provide the necessary print promotion in their flyers and newspaper ads to support the communication of the programs. Even Ontario is a small market for some retailers, let alone a single community. Again LDCs need to cultivate these relationships for broad dispersion of the programs.

5.9 Voluntary/Community Sector

The voluntary/community sector consists of local and provincial organizations whose mandate it is to promote energy efficiency and environmental responsibility. These organizations can be excellent partners in the community for advocacy, education and communication. LDCs need to foster their relationships with these voluntary organizations to gain broader based support in their communities. This sector includes participants such as: Conservation Ontario; Conservation Council of Ontario; Evergreen; Green Communities of Ontario; Social Housing Services Corporation. In addition, some provincial pilot programs are being implemented through these organizations such as HomeWorks, a major program of energy retrofits and ECOschools, a benchmarking program for efficiency in schools. LDCs may find themselves drawn in many directions by the particular agendas of the local or voluntary groups and will have to determine a strategy on whom to work with and to what extent.

5.10 Associations and Other Organizations

There are a number of associations that are in a position to promote and support the DSM activities of LDCs, including EDA (advocacy), Canadian Energy Efficiency Alliance, The MEARIE Group, Ontario Energy Network. These associations offer LDCs the opportunity to network, share ideas, exchange experiences and learn from experts at conferences and meetings. These are valuable sources of information for LDCs and should increase their capacity to have the information sources that LDCs require, such as best practices, electronic newsletters and exposure to other jurisdictions. In addition, AMPCO, the Association of Major Power Consumers in Ontario is also supporting DSM to increase the competitiveness of its members. In a recent address to LDCs, Mary-Ellen Richardson, AMPCO's CEO stated that,

"AMPCO is a strong supporter of DSM/DR initiatives. It makes good economic sense for our members and the province as a whole.... There is a considerable knowledge transfer that could benefit all parties. Put simply, I think that we can learn from each other. Specifically, I believe that the experience of some industrial companies, who have been at this energy management 'game' for many years, can be treated as a microcosm of what might be encountered in any social ecosystem... AMPCO is currently working with Hydro One to survey members of AMPCO to uncover the programs of greatest

interest to them, what has worked well in other jurisdictions, where the biggest area of improvement might be and what the barriers are to moving forward."

Summary

As illustrated above, the energy management landscape is wide-ranging, diverse, and multifaceted. Each of these players can assist the LDCs in being successful in DSM. But the LDCs need to be able to effectively access and manage all the services and alliances available to them. A potential solution to this challenge is the creation of a DSM Office dedicated to LDCs. This option is discussed more fully in the following pages.

6. Long Term DSM Options for LDCs

LDCs responded quickly to the call for CDM programs to be approved in 2005 and implemented from 2005 to September 2007. As described earlier, the first commitment of $185 million will be spent on programs such as line loss reduction, building retrofits, Smart Meters, and consumer awareness. As well, a number of pilots have been launched. But, what about DSM after this first foray? The options for LDCs over the longer time include: ignoring DSM unless otherwise mandated; building DSM capability in-house; purchasing services as required from a variety of consultants and contractors; supporting the launch of a DSM Office, dedicated to providing LDCs with the tools and expertise they need to deliver DSM programs.

6.1 Do Nothing

The "Do Nothing" alternative may seem impossible, but it is likely that under the "voluntary" environment for DSM that currently exists, some LDCs will choose to not participate. This choice will be a function of how difficult it appears to them (from both a programming and regulatory perspective) weighed against the potential benefits. Some LDCs may be free riders, in that they will hope to have their customers participate in any province wide programs that either the Conservation Bureau or other entities launch. The degree to which "Do Nothing" is sustainable depends on government policy. Government may make DSM non-voluntary or may structure the delivery of DSM differently. While the "Do Nothing" alternative has some risk in that the LDCs may experience some censure for non-participation, it will likely be taken up by a few LDCs.

6.2 Build DSM In-House Capability

On the other extreme, some LDCs will be looking to build substantial in-house capability in DSM. Some will do so in the near term and it should be expected that many more will do so as DSM becomes entrenched as part of their core businesses. Looking at the experience of the gas utilities is useful here, as they elected to run their programs with a combination of in-house and external resources. Initially, their program design and development were supported by international consultants (e.g. California), experienced in DSM in their own jurisdictions. These programs are now established. LDCs too, will likely build on

the experience of others in designing programs and will not necessarily require a great deal of in-house development capability, other than in the modification of programs to local conditions. It is in the implementation that in-house LDC capabilities will be stretched. Enbridge has marketing staff that promote programs and regional staff that deliver them with the support of local contractors. It will take time and financial resources to acquire or develop in-house DSM program management capability in the LDCs. Some of this will happen during the spending of the third tranche monies and for others, it will never occur and these LDCs will purchase all services they require from the marketplace.

6.3 Purchase services

As described earlier, there are a number of sources of expertise that can support LDCs over the long term in DSM. These include consultants, contractors and manufacturers. Some LDCs may outsource their entire DSM program, including regulatory reporting, but the majority of LDCs will likely be managing a number of external suppliers in conjunction with in-house efforts. The growth and maturity of the DSM industry in Ontario will provide LDCs with options in both programming and partnerships. LDCs will need to be able to justify the costs associated with these purchases to the OEB in their regular reporting.

6.4 DSM Office

Given the complex marketplace for energy management products and services and the high level of expectation placed on the LDCs, an opportunity for a centralized DSM Office for LDCs has appeal. The focus of a DSM Office would be on ensuring that the needs of the LDCs are met with respect to conservation and demand management, in an economic way.

6.4.1 Scope

A DSM Office could offer the full gamut of services from information on best practices, programs, experiences of others, to co-ordination of consulting services and/or technology solutions for LDCs, to advisory services with respect to design and implementation of CDM, to the actual implementation and project management of CDM, including screening, designing, testing, monitoring,

evaluating. The following list of potential services provides a brief description and discussion of each.

a. Co-ordination of consulting services and/or technology solutions

Description: A DSM Office could provide a kind of "brokering" service for LDCs, where it would coordinate the purchase of consulting services or technologies, and could facilitate LDC partnerships with entities like Enbridge; NRCan; distributors (such as Home Depot); and associations (such as BOMA).

Discussion: There are many suppliers in the market and LDCs need ways to access the best arrangements. The DSM Office could assess, with LDCs, their primary design and advisory services requirements and source these with multiple parties participating, thereby achieving benefits of scale in both cost and results. Most suppliers would prefer to deal with a buying group rather than 90 individual customers. Economies of scale would be achieved as well as coordination of broader based promotions.

b. Advisory/Consulting Services

Description: A DSM Office could itself provide advice or consulting services on:

- Regulatory submissions and representation
- Program selection, design, execution, tracking, monitoring
- Load forecasting; load research; metering
- Market research;
- Technology assessment
- Program testing, pilot management

Discussion: While these are the services that could be available through energy management consultants, there may be gaps or capacity issues that a DSM Office could address, particularly while the DSM industry matures. Investment in putting in place Information Technology systems and acquiring expertise are required to build the capability across the industry.

c. Program Services

Description: A DSM Office could support the implementation and project management of CDM by providing program delivery services. These could include:

- Program assessment and screening,
- Program design
- Program testing and monitoring,
- Creation of templates/software for OEB submissions
- Quarterly/annual report productions
- DSM Communication materials, such as Web site content development and management, and written materials e.g. bill stuffers
- Marketing & Promotion programs
- Energy management for business/commercial (load profiling, energy monitoring and reporting

Discussion: The creation of an Office with the capability to provide all these services would take a great deal of time and financial commitment. It is more likely that the DSM Office would identify those areas where there is greatest need and develop the resources to fulfill those needs for the greatest number of LDCs possible.

d. Information Services

Description: The DSM Office would provide information services to LDCs including a central database of DSM programs, cost-benefit analyses, pilot program results, best practices, benchmarking, e-letters.

Discussion: LDCs need ongoing current information and would undoubtedly welcome the efforts. While information will be provided by the Conservation Bureau, a dedicated office could collect the most relevant information for LDCs and make it available to its members.

e. Conferences and workshops

Description: The DSM Office could provide a range of conferences from the more multi-faceted, informational (such as Enercom), to ones focused on a single topic

(such as load research), to hands-on workshops (such as developing an Annual CDM Report).

Discussion: Like information services, these types of networking and educational forums would likely be welcomed by LDCs to assist them in their development of DSM capability and in meeting their obligations to the OEB.

f. Training

Description: As DSM becomes integrated into the core business of LDCs, LDC staff will require training to both bring about a culture shift from a 'supply' mentality and to prepare staff to support these programs in the field. In addition, there is an interest in developing an accreditation program for DSM practitioners.

Discussion: Some training will likely be required by most LDCs. A DSM Office would be a logical centre for the development and delivery of such training, as well as certification of a DSM professional.

g. Research and Development

Description: A DSM Office could also be the vehicle for the investigation and development of new technologies for demand management.

Discussion: Like the DEED program of the APPA, (Appendix 4), the DSM Office could be_funded by the LDCs with applications from LDCs for specific technology research. The R&D needs, however, may be met through the new Centre of Excellence for Energy, to be launched in the near future.

6.4.2 Resources Required

A DSM Office, depending on the choices it makes about scope, would require competencies and resources. It would need adequate staffing to assess the government requirements and the local LDC needs. It would require DSM technical expertise to assess the external programs and services offered to LDCs, appreciate and distinguish among offerings and to design where no market offering was apparent. It would require marketing expertise to work with large intra-provincial companies. It would require regulatory expertise to support the regulatory requirements of the LDCs. It would require competency in

coordination and project management. The DSM Office would also require computer systems and expertise if it were to engage in specific DSM activities, such as conducting load research, coordinating market research, or tracking data of provincial-wide residential audits, if such existed.

There are a number of ways through which DSM competency could be accessed. The DSM Office could source these skills by hiring individuals, permanent or on contract, to provide the expertise. This would involve the building of an organization and the financing of this venture.

6.4.3 Business Model

There are several ways in which a DSM Office could be structured, including;

- Membership owned
- Investor owned
- Joint Venture/Partnership/Alliance
- Licensee
- Fee for Service

- *Membership Owned*

This structure would entail having all or the majority of LDCs fund a venture, comparable to DEED (Appendix 4), where LDCs would be both contributing members (through a fee) and recipients of services (through an application)

- *Investor Owned*

An investor owned company would entail attracting private investment funding. The DSM Office would be run as a "for profit" organization. A strong business case supported by firm commitments would likely be required to attract private financing.

- *Joint Venture/Alliance*

Another option to self-financing would be to enter into a joint venture or an alliance with a single company. The challenge here would be to find such a company. As illustrated previously, there does not appear to be a single supplier of all LDC needs in the marketplace. Choosing one or even two partners would mean limiting the range of services offered.

- *Licensee*

There are entities in the country such as PowerSmart that might be interested in entering into a licensing arrangement with a DSM Office. Although a number of market participants could themselves be licensees of PowerSmart, an integrated DSM Office would be a more effective province wide licensee.

- *Fee for Service*

The DSM Office could be financed on a fee for service basis, where the individual contracts entered into would cover the costs of operation. Start up costs would need to be financed through one of the structures above, but once operational, the business should be self-financing. Operationally a fee for service business could require extensive staffing or could operate through a series of contracts with others in the marketplace. It would however hold the possibility of least risk in that a service would be designed or developed only if sufficient interest were shown.

6.4.4 Risks

While a full service DSM Office would be highly focused on the needs of the LDCs and would have the substance and credibility to negotiate on behalf of LDCs, there are a number of risks associated with establishing a DSM Office at this time including;

- Timing – the LDC s are focused on near-term implementation of DSM programs funded by third tranche monies and are not ready to envision longer term needs;
- Market acceptance – LDCs may not endorse another central entity and may not wish to fund it;
- Mandate confusion – the Conservation Bureau is not yet operational and may provide the support required by the LDCs; an additional central office, though focused on LDCs might add to confusion;
- Financial – costs for resources may be significant; investment will need to pre-date returns

In addition to the above, there are the political risks, including a change in priorities or a change in government.

There is also the risk associated with uncertainty with respect to the structure of the distribution sector- will there be more amalgamations and rationalization- and how would this impact DSM and a DSM Office for LDCs?

Finally, there is the risk that if voluntary LDC-driven DSM programs are not successful, the government may take a non-voluntary centralized approach with LDCs, may use other channels for its programs or may back away from DSM.

7. Conclusions

There is an opportunity in the near term for LDCs to make a difference in conservation and demand management, with a minimum of $185 million being spent by them in Ontario between now and September 2007. Past this initial thrust of programs, the ongoing involvement of LDCs in DSM is highly dependent on the legislative and regulatory environment that will be created. For DSM to flourish, LDCs need to be kept whole, need incentives to promote conservation and need clarity with respect to the expectations of them by the OEB. While there are temporary measures in place to support implementation in the near-term, there are a number of areas of uncertainty going forward.
Outstanding regulatory issues include:

- What models for LRAM and SSM will be used going forward?
- What level of incentive will be used (5% or less)?
- What kind of analysis and reporting will be required?
- Will there be interim approvals of estimates with subsequent true up?
- What types of conservation measures will be included/excluded?
- Will there be pre-approval of values as the basis for LRAM and SSM?
- Will subsequent revisions due to audit or experience be applied to future approvals or will there be retroactivity?

A number of market participants have recommended that the OEB and stakeholders develop a separate C&DM Handbook that would include:

- Program and portfolio guidelines
- Program examples
- Screening templates
- Common input assumptions (avoided generation and transmission costs)
- Energy and peak impact statistics
- Spending guidelines
- Audit protocols
- Filing deadlines
- Annual reporting requirements

To date, there has been no clear statement as to how 2006 EDR will handle CDM. As a result there is little preparation for making CDM a permanent part of LDCs' businesses. Many LDCS are planning and executing their 2005 CDM Plans and adopting a "wait and see" attitude before committing further to CDM. Given the supply-demand gap described earlier and the government's clear desire to see results, it is unlikely that this temporary response will be permitted to continue for very long. Either LDCs will deliver the conservation results needed or the government will need to find another method of creating a conservation culture in Ontario.

The risks of failure to achieve the desired demand reduction and the conservation culture are financial, political and societal. On the financial front, a waste of $185 million would be unconscionable. There is a moral obligation on all participants in these programs to make their expenditures effective. On the political front, failure will likely result in more significant levels of government involvement in all aspects of the energy sector. The government has given LDCs the opportunity to prove they can deliver DSM programs with adequate financing and little oversight. Failure to prove the government right can only result in less autonomy for the LDCs. Finally, failure will have societal consequences. The push for conservation and demand management is real. It must be demonstrated to provide a legitimate alternative to new supply or as a province we will be faced with mounting bills and pressures for even more construction of generation.

That the LDCs have a pivotal role in delivering on the commitment is evident. While a centralized DSM Office might be able to assist LDCs in their tasks, there are currently a significant number of market participants in Ontario, in the government, private, not-for-profit, and voluntary sectors to provide support. However, because demand for DSM expertise in the electricity sector was low for the past ten years, many service providers are responding to the immediate needs with limited resources and expertise. There will need to be confidence in clear, long-term, political, legislative and regulatory frameworks before investments will made to develop the DSM industry to maturity.

As the DSM environment develops and matures, it is necessary for all industry participants to keep a watching file on government direction and regulations that

support the integration of DSM into core LDC business. As with gas, DSM needs to be sustained regardless of a change in government. While a central DSM Office may not be timely today, it may be required as DSM becomes a more permanent part of the energy landscape.

Appendices

Appendix 1- Ontario Energy Board FAQs

Conservation and Demand Management Frequently Asked Questions

1. What does Conservation and Demand Management (CDM) mean?
Conservation in the context of this proceeding includes initiatives undertaken by local distribution companies (LDCs) to reduce electricity system waste and usage. Demand Management in this context includes initiatives designed to limit peak system loading by shifting load timing.

2. What is the goal of the CDM initiative?
The Ontario Government is committed to building a culture of conservation with the goal for Ontario to become a North American leader in conservation. The government has set a target of reducing province-wide electricity demand by five percent by 2007. LDCs are well positioned to influence the outcome of this initiative and as such, the Minister of Energy has asked LDCs to invest in CDM programs.

3. What is the commitment of the LDC?
As indicated in the Minister of Energy's letter to all distributions companies dated May 31, 2004, LDCs can make application to the Ontario Energy Board ("the Board") for third installment of their incremental market adjusted revenue requirement. Approval of the third installment is conditional on LDCs reinvesting the equivalent of one year's incremental returns in CDM.

4. What is the third installment of the incremental market adjusted revenue requirement?
Prior to the opening of Ontario's electricity market to competition, LDCs were required to undertake a number of changes. One of the changes required that

LDCs become business corporations, and as such, they were entitled to earn a selected market-based rate of return (MBRR) between 0 and 9.88%. A calculation was performed to determine the incremental revenue required by the LDC to generate its MBRR. This incremental revenue requirement is called the market adjusted revenue requirement (MARR). The incremental MARR was to be recovered by LDC through rate increases in three installments called "tranches".

The first tranche and second tranche were recovered in 2001 and 2002 rates, respectively. In 2002 a rate freeze was put in place by the government and the third installment of incremental MARR was not recovered in 2003 as planned. Currently, the Minister is allowing LDCs to recover the third installment of the incremental market adjusted revenue requirement (the 3rd tranche) conditional on a commitment to reinvest an equivalent amount in CDM initiatives.

5. What is the process for opening a deferral account?

As indicated in the Procedural Order issued by the Board on October 5, 2004, all LDCs have the authority to automatically establish a deferral account without seeking approval of the Board to be used in tracking expenditure related to CDM. The Board has amended the Accounting Procedures Handbook and the Uniform System of Accounts to allow for the automatic approval of the deferral account. The Board's letter of October 29, 2004 details the accounting treatment of the deferral account.

6. How is the $25,000 development expense to be used?

Further to the Procedural Order of October 5, 2004, the Board indicated that it was prepared to allow development expenses up to $25,000 as part of the 3rd tranche for research of technologies or programs that could be employed for CDM. The Board also indicated that the funds would be counted against the 3rd tranche irrespective of whether any programs were undertaken. The intent of pre-approval of the development expense is to initiate CDM Plan development without the risk of not recovering the allocated resources.

7. Is the development expense the upper limit to spending on research of technologies and programs for CDM?
No, the development expense relates to the costs associated with development of a CDM Plan and does not restrict initiatives within the plan.

8. What is the evidence the applicant must submit for approval of the CDM Plan?
As indicated in the Procedural Order of October 5, 2004, the criteria for approval of a CDM Plan are:

1. A description of the proposed programs identifying the affected customer classes and the specific details of each program;
2. The total program budget including the total amount and schedule of the annual expenses for the 2004-2007 time period; and
3. The anticipated program benefits, including quantifiable benefits where these can be identified (i.e.: energy savings (kW or kWh)). Where the program has anticipated qualitative benefits (such as enabling technologies or customer education), these expected qualitative benefits must be described.

9. What types of programs are eligible for CDM Plan approval by the OEB?
Further to the Minister of Energy's letter to LDCs on May 31, 2004 initiatives which fall endure the following categories are eligible:

- Energy efficiency;
- Behavioural and operational changes, including application of benchmarking or "smart" control systems;
- Load management measures which facilitate interruptible and dispatchable loads, dual fuel applications, thermal storage, and demand response;
- Measures to encourage fuel switching which reduces the total system energy for a given end-use;
- Programs and initiatives targeted to low income and other hard to reach consumers; and

- Distributed energy options behind a customer's meter such as tri-generation,
- Co-generation, ground source heat pumps, solar wind, and biomass systems.

10. If a utility elected an ROE less than 9.88%, but would like approval of program funding in excess of their 3rd tranche, what other approvals are needed?

An LDC that desires a CDM Plan budget that is in excess of the previously determined 3rd tranche must file an application to the Board for approval of a CDM. The application to the Board must include authorization of the Minister for approval of spending equivalent to the 3rd tranche at the full 9.88% ROE. The application must also include an explanation of the calculated amount of the 3rd tranche had the LDC elected the maximum allowable ROE (9.88%). To determine the calculated amount of the 3rd tranche, the LDCs should consult the procedure set out in Sheet 7 of the Rate Unbundling Design (RUD) Model in 2001, which defines the concept of incremental MARR. The maximum CDM budget would be:

CDM Budget = 1/3 x (MARR),where:

- MARR = RATE BASE x [(CER x ROE)] + [(1-CER) x DEBT RATE)],
- Rate Base is fully explained on Pages 3-5 to 3-8 of the Rate Handbook
- CER is the Common Equity Ratio (inputted decimal places),
- ROE is the Return on Equity (usually 9.88% and inputted as 0.0988), and,
- Debt Rate is the debt/equity split. For utilities with rate bases less than $100
- Million the debt equity split was deemed to be 50/50 (inputted as 0.5).

11. Does the OEB support LDCs making group applications for approval of the CDM Plan?

Yes, it is clear that a group application can eliminate much of the duplication and effort in CDM Plan development and research. A group application must clearly indicate the programs, budgets and spending schedules by individual LDC as an appendix.

12. Does a Distributor have to conduct a total resource cost (TRC) test to submit a CDM initiative to the OEB, for the purposes of the 3rd tranche?

No. The Procedural Order of October 5, 2004 contains the complete instructions for obtaining prior approval of the CDM Plan. A TRC test may assist utilities in developing cost effective programs. The TRC test is useful where all of the costs and energy savings impacts are available.

13. What is the schedule for investment and cost recovery associated with CDM?

LDCs can seek to recover costs associated with CDM investments dating back to July 1, 2004. Investments in CDM under this program are expected to be completed by September 30, 2007. LDCs that have or expect to incur costs associated with CDM initiatives outside of this schedule are invited to make applications to the Board for approval on a case-by-case basis.

14. Will investments made in distribution assets be included in calculating rate base in future years?

Yes, distribution assets acquired under the CDM program may form part of the rate base calculation in future years. The first opportunity LDCs will have to apply these assets to rate base will be for the purposes of setting of 2006 rates.

15. How will LDCs determine resource savings?

As per the Procedural Order of October 5, 2004, a calculation of benefits should be accurate to the extent possible, whether qualitative or quantitative in nature.

16. What happens after the CDM Funds are exhausted?

Once the equivalent of the 3rd tranche is fully invested in CDM initiatives the LDC would no longer have the ability to make further investments under this program. As a completely separate process, the 2006 Electricity Distribution Rate Process is establishing a long-term approach to CDM programs.

17. Must the LDC continue to make investments in CDM beyond 2005 to keep the 3rd tranche in rates?

No, in order for the LDC to get the 3rd tranche in rates, the LDC must make a commitment to invest an amount equivalent to one year's incremental revenue in CDM initiatives over a three-year period until Sep 2007. The current Board review relates to the CDM plans required to fulfill the commitment related to the 3rd tranche, however it is expected that utilities will be further developing their CDM activities and that the rate treatment of these activities will be considered in future rates applications.

18. Are smart meters eligible?

Smart meters and the associated information systems are technologies that enable conservation and demand management. A component of a LDCs CDM plan may include smart meters. LDCs should take note of the Smart Meter Initiative (RP-2004- 0196). More information on the Smart Meter Initiative can be found at
http://www.oeb.gov.on.ca/html/en/industryrelations/ongoingprojects_smartmeters.htm

19. Can a distributor hire staff with funds made available through the CDM Plan to administer CDM initiatives?

Yes, LDCs can use these funds to cover overhead costs associated with developing and implementing CDM initiatives.

20. Who authorizes CDM Plans and spending?

The OEB reviews CDM Plans and the associated budgets. The LDC will be responsible to ensure that spending is done in accordance with the plan.

21. What spreadsheets and input data will be provided by the Board to enable LDC's to supply the Board with the information they require.

The Board will not be providing spreadsheets or input data in support of CDM applications.

22. Will the Board provide a standard template document for CDM plan submissions?
The Board will not provide a standard template for CDM plan submissions, as a template would likely constrain potential plans. Many LDCs are discussing innovative approaches to group submissions.

23. What happens if the actual program benefits of the 3rd tranche initiatives are less than what was originally projected? Will some portion of the program costs be disallowed on this basis?
Given the pilot nature of initiatives begun with 3rd tranche funding, the Board recognizes that specific targets may not be met.

24. To what extent can the CDM funds be applied to distribution system enhancements?
Distribution system enhancements are among a variety of initiatives that can be looked at to achieve conservation benefits. LDCs are encouraged to strike a balance between customer and utility focused CDM initiatives.

25. Given that LDCs will generate increased revenue associated with the 3rd tranche, how will the increase in PILs be dealt with?
The rate increase for 2005 will include a PILs provision.

26. Is the 3rd tranche encumbered or is the LDC making a commitment to spend an amount equivalent to the 3rd tranche?
Under this program, in order for the LDC to receive the 3rd tranche in rates, the LDC must commit to spend an equivalent amount on CDM initiatives over a 3-year period ending on September 30, 2007. Therefore the 3rd tranche is not encumbered and can be recognized as income, when received. Accounting under GAAP is different than the reporting and record keeping requirements (RRR) filings requested by the Board.

27. How would a utility budget for operating/maintenance and administration costs associated with CDM?

In designing the CDM budget, costs allocated to the CDM Plan must be identified as being incremental to the existing OM&A budget.

28. From a reporting perspective, how would the utility track OM&A costs associated with CDM?

For RRR purposes, a utility should track costs in a manner similar to the recording of regulatory assets. Account 1565 has been established for this purpose and instructions on how to used this account are covered in the Board's letter to all LDCs on October 29, 2004.

29. Can the LDC use CDM funds to provide low or zero interest loans to third parties wishing to undertake CDM initiatives?

It is up to the LDC to decide how to use CDM funds for CDM initiatives. If the LDC provides a loan to a third party, the amount of the loan would not be considered part of CDM spending as the funds would be repaid to the LDC at a later date. An LDC might want to consider other options including paying the interest on behalf of a third party.

12.1.2004

Appendix 2- Guidelines for SSM

RP-2004-0203
DRAFT GUIDELINES FOR ELECTRICITY DISTRIBUTORS WISHING TO APPLY FOR SSM INCENTIVE FOR 2005 IMPLEMENTATION OF CDM PLANS
Prepared by Board Staff
December 17, 2004

PURPOSE OF THE DRAFT GUIDELINES

On December 7, 2004, in its decision on the Motion by Pollution Probe, the Board gave the opportunity to electricity distributors to voluntarily apply for revenue protection or lost revenue adjustment mechanism (LRAM) and for an incentive mechanism or shared savings mechanism (SSM) to facilitate more effective implementation of the conservation and demand management (CDM) plans. The Board ruled that both LRAM and SSM will be available for expenditures for the 2005 rate year which begins April 1, 2005 and ends March 31, 2006 to be recovered by distributors.

Upon the Board's direction Board staff drafted the "Draft Guidelines for Electric Distributors Wishing to Apply for SSM Incentive for 2005 Implementation of CDM Plans" (Draft Guidelines). The purpose of the Draft Guidelines is to assist prospective applicants in preparing the applications for SSM approval. The Draft Guidelines provide only a general framework and should be used in conjunction with directions of the 2006 EDR proceeding (RP-2004-0188) and/or any other applicable directive or rules issued by the Board or other agencies. The Draft Guidelines do not address the LRAM applications as these will be guided by the rules to be established in the 2006 EDR proceeding.

GENERAL FILING REQUIREMENTS

- These Draft Guidelines set general filing requirements for the SSM applications by distributors wishing to obtain incentives for CDM activities during the 2005 rate year.
- An application for a SSM is voluntary.
- A distributor wishing to apply for a SSM shall file an application at the time of filing its 2007 rate application in the summer of 2006.

• This SSM applies only to the customers' side of the meter programs which either reduce the demand for electricity (kW) and/or reduce the amount of energy used (kWh).
• The SSM applies only to expenditures on customer based programs which cannot be included in rate base.
• A distributor may recover 5% of the net incremental benefits created by the approved CDM program or portfolio implemented during the period.
• The applicant shall use the Total Resource Cost (TRC) Test to determine the net incremental benefits.
• The TRC Test calculates the economic benefits of a CDM program or portfolio of programs. The TRC method requires the quantification of costs and benefits of a CDM program or portfolio.
• Benefits of a CDM program or portfolio, in the TRC Test, include the avoided costs of electricity (i.e. electricity generation, transmission, distribution cost) and other fuels.
• Costs of a CDM program or portfolio, in the TRC Test, include distributor cost to administer the program, participants' costs and other delivery or implementation. Therefore, the costs must account for all CDM program implementation costs regardless of who pays.
• The benefits calculation is net of "free riders" which are defined as customers that would have adopted a particular CDM program measure regardless of the CDM Plan implementation.
• In the TRC test, incentives and taxes are considered as transfers between the customer and other agencies. As such, they are both a cost and a benefit and should net out of the calculation.
• The result of the TRC Test should be expressed as a Net Present Value (NPV) defined as a discounted value of net benefits over the period.
• Inputs and assumptions of the TRC Test have to be clearly stated in the pre-filed evidence.

Appendix 3- Conservation Action Team

The Conservation Action Team is comprised of Parliamentary Assistants from nine Ontario government ministries responsible for a broad range of policy and program areas. The action team will look at a number of options associated with conservation and demand-side management initiatives, and develop an action plan to help the government meet its conservation target of five per cent by 2007. The action team will also work to identify and remove barriers to conservation in existing government policies and programs, and will explore ways for new government policies and programs to incorporate conservation principles.

Action Team Members

- **Donna Cansfield, Team Leader** MPP Etobicoke Centre Parliamentary Assistant to the Minister of Energy
- **Carol Mitchell,** MPP Huron-Bruce, Parliamentary Assistant to the Minister of Agriculture and Food
- **Richard Patten,** MPP Ottawa Centre, Parliamentary Assistant to the Minister of Education
- **Wayne Arthurs,** MPP Pickering-Ajax-Uxbridge, Parliamentary Assistant to the Chair of Management Board
- **Brad Duguid,** MPP Scarborough Centre, Parliamentary Assistant to the Minister of Municipal Affairs (Urban)
- **Bill Mauro,** MPP Thunder Bay-Atikokan, Parliamentary Assistant to the Minister of Northern Development and Mines
- **Lou Rinaldi,** MPP Northumberland, Parliamentary Assistant to the Minister of Public Infrastructure Renewal
- **Kathleen Wynne,** MPP Don Valley West, Parliamentary Assistant to the Minister of Training, Colleges and Universities
- **John Wilkinson,** MPP Perth-Middlesex, Parliamentary Assistant to the Minister of the Environment

Appendix 4- Experience in the USA: APPA

APPA is the service organization for the USA's more than 2,000 not-for-profit electric utilities that are locally owned and operated by the people they serve.

APPA provides DSM assistance to its members through 2 vital programs; one is DEED and the other is the development of communication materials for consumers,

DEED is the only research and development program funded by and for public power utilities. Because the long-term strength of public power demands a firm commitment to research, development and demonstration, APPA's DEED program fills a vital niche for public power.

Membership in DEED is an investment in the future technologies and best practices of public power utilities. Over 600 APPA members are currently members of DEED and nearly $6 million in funding has been committed to research projects since the program's inception 24 years ago. The DEED program is premised on the belief that public power systems can most effectively conduct these activities by working with one another, rather than separately.

As a complementary program to the Electric Power Research Institute and other research organizations, the DEED program investigates technologies through its grants and scholarships that will provide direct and tangible benefits to publicly owned electric utilities.

DEED is governed by a 12 member Board of Directors that meets biannually.

A DEED member may:

- Apply for project funding twice a year through grants and internships
- Receive complimentary and at cost products addressing important issues facing today's utilities such as reliability, safety, security, efficiency, etc.
- Stay abreast of R&D issues through DEED's quarterly newsletter, monthly e-mail discussion group, and DEED's online project database

Current List of Grant Projects (DEED)

Distributed Generation: Technology and Trends Relevant to Utilities

Salt River Project, AZ

This project will provide a comprehensive report on the status of distributed generation in the U.S.

Air Conditioner Service Light Project

Sacramento Municipal Utility District, CA

This project will develop and test a prototype of an air conditioning service light that can be used to detect when the air conditioning system requires a service call to restore operation to manufacturer's intended energy efficiency level. This new component could be added to a utility's toolbox of programs to reduce energy consumption and peak power demand.

Application of a Small-Scale Thermal Energy Storage System

City of Anaheim, CA

This project will demonstrate a small-scale Thermal Energy Storage system and evaluate ease of installation, technical performance, maintenance and reliability. How this technology assists with load shaping for peak demand attributed to air conditioning load will also be evaluated, as well as determining applicability towards time-of-use rate design for small to mid-sized customers.

Enterprise Voltage Regulation Project

Sacramento Municipal Utility District, CA

This project will demonstrate the energy and cost savings potential of a new active voltage regulation device at small commercial customers. The technology actively responds to changes in feeder voltage levels and dynamically boosts or bucks input line voltages to a set voltage.

Power Quality Pilot Program

Anaheim Public Utilities, CA

This year long pilot program is testing a power quality technology, SoftSwitching Technologies I-Sense Monitors, at 30 sites.

TigerWoods Learning Center

City of Anaheim Public Utilities Department, CA

This project will educate the public on the benefits of energy efficiency and renewable energy in a new building to be constructed called the Tiger Woods Learning Center. Energy-efficient

technologies, renewable projects and a demonstration of three variations of solar energy technologies (Solar Glass System, Solar Wall System, and Solar Roof System) will be showcased at The Center.

Purification of Power Plant Liquid Diesel Fuel by Electronic Filtering, Phase III

Connecticut Municipal Electrical Energy Cooperative, CT

This is a continuation of a DEED-funded project of a new Electro-Technology being widely field tested and deployed for use in cleaning and improving the quality of lubricating oil.

Demonstrating the Economic Effectiveness of Microturbine CHP Systems in Cooling Applications for Sales of Thermal Energy by Municipal Utilities

Florida Municipal Electric Association, FL

This project will demonstrate the effectiveness of microturbine combined heat and power (CHP) systems in cooling applications and provide guidelines for integrating microturbine CHP systems with absorption cooling systems.

Electric Utility Safety Video Production

Peru Utilities, IN

This project will produce safety-training videos that will reinforce the APPA Safety Manual and OSHA standards. The goal is to improve the quality of training available to public power utilities and increase training efficiency.

Characterizing the Impacts of Distributed Wind Generation on Distribution Systems

Waverly Light and Power, IA

This project is intended to develop a set of tools to aid distribution and planning engineers in their assessment and application of wind generation at the distribution system level.

SCADA for Street Lighting Demonstration

Glasgow Electric Plant Board, KY

With this project, Glasgow hopes to reduce the overall lighting maintenance costs with technology that modifies the normal photocell arrangement.

Wholesale Power Markets in New England: A Primer for Public Power Officials

Northeast Public Power Association, MA

This project will improve power supply planning and purchasing in regions with active wholesale markets by developing an instructional videotape to be used as a training tool for policymakers in energy policy. The video will focus on the New England wholesale power

market and include other regions in the discussion. It will include descriptions of how public power utilities interact with day-ahead and real-time markets, as well as more traditional bilateral markets, to plan and secure power supply requirements.

Hybrid Energy System Study (HESS) Phase II

Rochester Public Utilities, MN

This project will develop and demonstrate a residential, hybrid fuel cell - geothermal heating system in order to capture the heat lost during the fuel cell's operation and in doing so almost double the efficiency of the system. The increase in efficiency of the heat pump and the impact on other processes such as water heating will be evaluated.

MMUA Renewable Energy Training Center

Minnesota Municipal Utilities Association, MN

A hands-on renewable energy-training center is the desired result from this project.

Corporate Environmental Management System Program

Nebraska Public Power District, NE

This project includes the development of a user-friendly tool kit for the development of an environmental management system.

Internet Enabled AMR/LM Technology Assessment

Wadsworth Electric & Communications Department, OH

This project will demonstrate AMR/LM feasibility over HFX networks as compared to other existing and proven technologies.

Peak Power

City of Westerville Electric Division, OH

This project will look at the commercial viability of a cost-efficient microprocessor-based system that enables the remote monitoring, controlling and metering of standby generator sets (gensets) in a multi-site network.

Energy Savings Accomplished through Design, Equipment and Control of New Public Works Facility

Edmond Electric, OK

This project will demonstrate, verify and maximize the energy savings from ground source heat pump HVAC and lighting systems by using sophisticated control and monitoring equipment at a building in a new public service facility.

Biodiesel Demonstration with SCONOx Nox Removal

McMinnville Electric System, TN

This project will demonstrate the use of a renewable (BioDiesel) fuel diesel generator, equipped with state-of-the-art emissions control, in a grid-connected service.

Integrating Storm water Management with Ecological Services Enhancement

Tennessee Valley Authority, TN

This project will research the development of an integrated technology to passively, efficiently and cost effectively treat storm water discharges from transmission and delivery facilities.

Integrating Storm water Management with Ecological Services Enhancement II

Tennessee Valley Authority, TN

This project will build upon the results of a previously funded DEED project that investigated passive storm water treatment technologies and ecological services and developed a concept design integrating the above into a storm water retention system. This project will develop a partnership with a local distributor to build a concept system.

Managing Emergencies: Best Practices Initiative

Memphis Light, Gas and Water, TN

This project will study best emergency management and response procedures at leading companies and develop a comprehensive checklist and specific procedures all utilities can use to develop and/or strengthen their own emergency response plans.

Small Wind Demonstration and Outreach

Tennessee Valley Authority, TN

Small wind turbines will be demonstrated at three southeastern sites and community outreach on small wind turbines will be provided.

Farm Methane: Installation, Implementation and Monitoring

Vermont Public Power Supply Authority, VT

Vermont is investigating the possibility of installing distributed generators to convert farm methane gas to electricity through a pilot project at a farm in Vermont.

Policymakers Guide to Distribution System Performance Evaluation

Seattle City Light, WA

This project will update APPA's publication *Making the Most of Your Distribution System: a Policymakers Guide for Small Public Power Systems*. The publication will provide a policy level perspective on distribution system evaluation to help city managers and governing boards understand the importance of monitoring and, where possible improving distribution system performance.

APPA Marketing Programs and Bill Stuffers

Michael, the Energy Mastermind

Description:
This user-friendly software program is ideally suited for energy fairs and other customer relations' activities. Consumers answer a series of questions about their energy usage and receive suggestions on how to improve their energy-efficiency. The program includes an energy quiz, worksheets on heating, cooling, and water heating, as well as information on heat pumps and graphs of individual energy usage. This program was prepared by the Municipal Energy Association of Nebraska under a grant from the DEED program. Michael The Energy Mastermind comes on a 3.5" disk.
Price: APPA member : $25.00 ; DEED Member $0.00

Light Your Way to Savings - Folder

Description:
This four-paneled folder describes the benefits your customers can expect by switching from incandescent bulbs to compact florescent ones and encourages consumers to wisely select bulbs by reading package information on output, energy use, and bulb life.
Price: $0.08 to $.11 per folder, depending on quantity ordered.