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PUC Networks Inc.

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December 13, 2004

Mr. John Zych
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street
Toronto, Ontario
M4P 1E4

Dear Mr. Zych:

Re: Application for Final Order RP-2004-0203 Procedural Order, Conservation & Demand Management Plans

Please find enclosed Oshawa PUC Networks Inc.'s Conservation and Demand Management Plan describing the proposed programs, the total budget and the benefits currently anticipated by the implementation of these programs.

Upon notification from the Ontario Energy Board we will post a Notice of Application and Hearing.

Yours truly,

Jeff Rosenthal
President & CEO
Oshawa PUC Networks Inc.

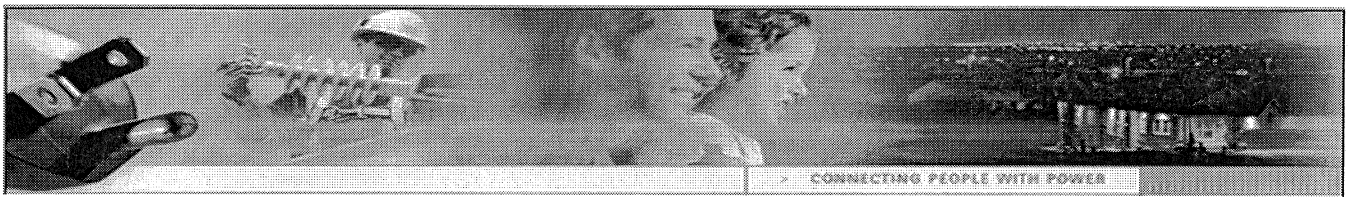
Oshawa PUC Networks Inc.

OSHAWA PUC NETWORKS INC.

CONSERVATION AND DEMAND SIDE MANAGEMENT PLAN

DECEMBER 2004

Ontario Energy Board File No RP-2004-0203



Oshawa PUC Networks Inc.

EXECUTIVE SUMMARY OF OSHAWA PUC NETWORKS INC. CONSERVATION AND DEMAND SIDE MANAGEMENT PLAN

Ontario's Minister of Energy has authorized electricity distributors to apply to the Ontario Energy Board (the 'Board') for 2005 rate implementation of their third installment of market adjusted revenue requirement (MARR), on the condition that an equivalent amount of incremental revenue is invested by those distributors in conservation and demand management activities. In a letter dated May 31, 2004 to electricity distributors, the Minister identified some of the activities that might be included in a distributor's Conservation and Demand Management Plan, including:

- Energy efficiency;
- Behavioral 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 Board issued a procedural order (RP-2004-0203) setting out the process for how distributors may apply for approval of a Conservation and Demand Management 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.

Oshawa PUC Network's Conservation and Demand Management (CDM) Plan has been developed within the context of the Minister of Energy's May 31, 2004 letter and the procedural order issued by the Board.

Oshawa PUC Networks Inc (OPUCN) hereby requests the Board's approval and final order authorizing its CDM plan as being appropriate and effective in discharging its CDM obligation, subject to issuance in due course of an order for distribution rates including the final tranche of the market adjusted revenue requirement (MARR), and the approval of OPUCN's Board of Directors.

PLAN BUDGET AND ASSUMPTIONS

OPUCN's third MARR installment is approximately $1.5 million, exclusive of any payments in lieu of taxes.

Through a letter accompanying its Preliminary Guidelines for Electricity Distributor Conservation and Demand Management Activities, the Board has authorized that distributor conservation and demand management spending may occur until September 30, 2007.

OPUCN's Conservation and Demand Management Plan is therefore based on investing approximately $1.5 million in a combination of capital and operating expenses during the period from January 1, 2005 to September 30, 2007.

The implementation of this plan will require re-deployment of some existing personnel. Costs associated with the use of existing resources to implement this plan have been allocated to the individual programs and are provided for in the annual budget figures.

While the current plan is well balanced, it is recognized that the industry and regulatory framework is dynamic. OPUCN will continue to assess and update its plan as new opportunities are presented. If necessary, OPUCN will re-allocate funds between programs to respond to customer demand levels. However, OPUCN will make best efforts to achieve the target levels of capital and operating expenditures by year.

OSHAWA PUC NETWORKS INC. DSM/DR PROGRAMS

1.0 RESIDENTIAL CUSTOMERS

1.1 ESTABLISH BASELINES AND MEASURING IMPACTS

The establishment of baselines is required to benchmark the measurement and analysis of future accrued results that are to be submitted to the regulators. Baselines may apply to specific customer groups or they may be based on the penetration of identified energy efficient technologies.

Hence the baseline establishment and design for impact measurement are necessary to gauge the success of programs. In order to justify programs to the Ontario Energy Board (OEB), it is necessary to demonstrate:

1. A credible baseline for the target market or technology
2. A methodology to measure the impact of the DSM/DR program for the target market.

The ability to Measure Impacts of programs not only provides a feedback loop regarding the cost effectiveness of programs, but is also an important part of the regulatory process.

Budget:
Operating $25,000
Capital $0

1.2 DSM IDENTIFICATION FOR RESIDENTIAL CUSTOMERS

The objective of this part is to identify residential sector DSM program(s) for OPUCN to leverage and to identify opportunities for outreach.

There are many existing residential energy efficiency programs that are offered by provincial and federal governments as well as by other utilities in BC, Quebec, and US jurisdictions. OPUCN may be able to subscribe to some of these programs to achieve results in a cost effective way. For example, in Ontario, the Ontario Ministry of Energy Programs includes the ENERGY STAR® Appliances & PST Rebate Program.

On the federal level, Natural Resources Canada's Office of Energy Efficiency (OEE) offers a wide range of programs and services including home energy audits. The OEE offer financial incentives and other resources, including workshops, data interpretation and publications, to help Canadians save energy

and reduce greenhouse emissions. BC Hydro, Hydro Quebec, and the USA's Department of Energy (DOE) also offer other relevant programs.

We are proposing two strategies to pursue:

1. Leveraging existing programs – to maximize the value for program spending and to minimize the associated risk.
2. Developing Outreach Programs – these will build on relationships with existing retail and service partners and targeted specifically at OPUCN's customer base.

In order to leverage from existing programs and infrastructure and to identify outreach partners, it is necessary to:

- Scan existing government and utility programs.
- Evaluate track record of effective programs: Successes, elements, and time frame.
- Identify appropriate programs that would be most suitable for application by OPUCN and acceptable to the Ontario Energy Board. and,
- Identify the necessary infrastructure and resources for OPUCN to make the best use of these programs.

1.2.1 LEVERAGE EXISTING PROGRAMS

We propose a scan of residential DSM programs to include but not be limited to the following:

- Household Space Heating and Cooling Equipment Choice Functions
- Domestic Hot Water (electric) Systems
- Lighting Systems
- Standby Power Requirements for Household Appliances
- Appliance Choice Functions
- Home Entertainment and Home Office Related Appliances
- Air-Leakage Control (Caulking, Energy Efficient Windows & Doors)
- Residential Contractor and Retailer Training for Energy Efficiency renovations
- Behavioral Change programs aimed at load shifting to off peak hours

Using aggregated residential customer usage data provided, we will then overlay this data with the best residential program concepts. Through extrapolation, OPUCN will calculate the technical and economic DSM potential for OPUCN's residential customer base.

Techniques and methods to reduce energy consumption of existing residential will be explored and evaluated for the OPUCN service territory. Water heater and air-conditioning loads are two of the most energy consuming equipment.

At a later stage, after OPUCN reviews the results of the studies, decisions will be made by OPUCN to start implementing some of the programs identified. Partners may assist in implementation and evaluation of the outlined programs. OPUCN will provide project management to implement approved programs. Development of evaluation criteria for each program and the evaluation of the effectiveness of program delivery and quantify the demand impact will be done.

1.2.2 OUTREACH DSM OPPORTUNITIES

This outreach component will identify and recommend the best channels for OPUCN to utilize (e.g. Home Improvement Retailers, Contractors, & Manufacturers), but does not address the implementation issues.

Some of the implementation tasks include:

- Screening of existing channels for OPUCN to utilize for outreach purposes
- Promotion and communications messaging,
- Turnkey program development, and
- Dealing with regulators

In summary, the focus will be on developing turnkey outreach programs targeted at OPUCN's Residential customers.

1.2.3 CUSTOMER AWARENESS

Programs to educate the consumer on how and where they consume electricity within their home or business will be developed. These programs will illustrate the principal areas of consumption and demonstrate the savings impact available through changing consumption patterns or conservation. These programs will include but will not be limited to:

- An internet portal where customers can create custom profiles of their home or business and understand where they are consuming electricity
- Self registered programs that allow customers to track their savings through changing behaviour or adopting more energy efficient appliances
- Implementation of tools that illustrate the affect of weather, seasonality, and additional occupants on energy consumption for each individual consumer
- Implementation of campaigns to build both general and targeted awareness and measure the impact of direct marketing on consumption
- General customer education on the impact of demand management to both their cost of electricity and the overall cost of the utility.

1.2.4 EDUCATIONAL

- Printing and distribution of the Ministry of Energy's "Conserve Energy and Save Money" pamphlet
- Branding on the back of the pamphlet to identify each LDC

This utilizes the Ministry of Energy's pamphlet to encourage conservation and ensures that a consistent message is delivered.

Budget (DSM Identification and Education)
Operating: $125,000
Capital: $0

1.3 NON- PROFIT HOUSING PROJECT PILOT

- Working with local Social agencies to retrofit non-profit housing for low income earners
- Identifying funding availability from other sources in support of any capital work done on properties
- Identifying needs of homes to replace electric heating with alternatives
- Necessary to be inclusive of all residents within our service area

It is very important that OPUCN take a lead in working with social agencies to ensure that residents in non-profit housing can participate in conservation.

Budget:
Operating $50,000
Capital: $50,000

1.4 CO-BRANDING WITH OTHER LDC'S AND MARKET PARTICIPANTS

Mass market programming is a multifaceted approach to fostering the conservation culture in Ontario. Through development of a significant cooperative effort with other LDCs to maximize economies of scale, these will include incentives to the consumer such as Christmas lights, school based education and other programs aimed at customers to encourage their reduction of energy usage.

The benefits of this program will include increased awareness, improved product supply, culture shift and reduction of energy usage. It will also educate the customer on valuing the commodity.

Budget:
Operating: $50,000

1.5 PAY-AS-YOU-GO METER PILOT PROGRAM

Pay as you go metering is a proven metering technology that allows customers to purchase power on a card, similar to pre-paid telephone cards, in denominations of their choice. The card is taken home and "swiped" through a customer interface device to upload the purchased power amount in to the meter. The amount of power purchased then winds downs as a declining balance. As the amount of purchased power approaches zero a warning is provided to the customer to purchase more power on their card.

The customer interface device provides information to the customer on a number of electricity usage parameters, including - amount of power currently being consumer and the number of days remaining until card replenishment is require at the current usage level, etc.

- Installation of 100 Pay-as-you-go Meter / Customer Information Units
- Working with distributors on implementation

The following benefits are expected from the Pay-as-you-go Meter Program:

Customer:
1. ability to budget power purchase
2. education on power usage
3. no deposit
4. no disconnect/reconnect charges
5. cost savings through efficient usage of power

Utility:
1. reduce unbilled revenue and exposure
2. reduce operating costs
3. increased cash flow
4. improve image with customer
5. demand side management tool

Budget:
Capital **$125,000 – initial hardware and software**

1.6 SMART METER RESIDENTIAL

A pilot program for residential SMART meters will be deployed to enable the assessment of metering, communications, settlement, load control and other technologies that may be used to accommodate the universal application of SMART meters in the future. Further, sub-metering opportunities for the purposes of customer information in a bulk-metered situation (i.e. condominiums) may be considered.

This initiative will commence upon the release of a formal definition of a SMART meter by the Board.

This program supports the Minister of Energy's commitment to the installation of 800,000 SMART meters across Ontario by 2007. It will provide OPUCN with the experience and knowledge needed to efficiently expand the use of SMART meters over the next several years.

In conjunction with appropriate rate structures, the program will also provide customers participating in the pilot programs with an incentive to conserve or shift energy use.

Budget:
Operating: $50,000
Capital: $125,000

2.0 Commercial and Industrial Customers

2.1 PILOT PROGRAM DESIGN FOR COMMERCIAL & INDUSTRIAL GROUPS

Experience with DR programs has shed light on participating customer and utility preferences including:

- Programs should be simple to comprehend and sign up for,
- Utilities and Customers should be permitted to aggregate small loads,
- DR programs should be publicized well in advance of implementation,
- Programs should leverage public-relations benefits to the customer
- Initial DR programs should be voluntary, without financial penalties for failure to curtail load when called upon to do so,
- DR programs should provide sufficient advance notice of required customer action, using backup communications channels if necessary.
- The financial incentive should match the desired load reductions.

OPUCN will develop a broad-brush assessment of the electrical DR potential in OPUCN's service territory using recent estimates of attainable energy savings for conventional DR programs presently available or actively being developed.

We envisage the following steps for developing and promoting the pilot DR program:

- Survey Demand Response technologies
- Analyze OPUCN's Commercial/Industrial customer base
- Develop an Economic screening tool
- Set the OPUCN baseline
- Prioritize Commercial and Industrial customers for OPUCN to target
- Develop client mailing and information day collateral package
- Follow up jointly or independently with OPUCN's pre-screened customers to participate in the DR pilot
- Refine DR & Interval Metering equipment and component selection to best fit with OPUCN's situation.

Budget:
Operating: $75,000

2.2 INDEPENDENT MARKET OPERATOR DEMAND RESPONSE PILOT PROJECT

Within the service area of Oshawa – aggregated within service area

- Initiated by Oshawa PUC Networks Inc. and launched to customers on October 6, 2004
- Presented with the IMO and OEB to help customers with market knowledge
- Continuing to work with large customers on demand response
- Providing baseline information and market knowledge to customers that sign up

This program supports the IMO's pilot project to monitor the market on a voluntary basis to determine the response to demand reduction based on price. This is a two-year pilot, directed at customers who can reduce demand when notified.

Budget:
Operating: $ 50,000

2.3 SMART METERS FOR COMMERCIAL INDUSTRIAL CUSTOMERS

OPUCN will make an investment to further the use of SMART or interval meters by commercial industrial and institutional customers.

This program will commence upon the release of a formal definition of a SMART meter by the Board.

This program supports the Minister of Energy's commitment to the installation of 800,000 SMART meters across Ontario by 2007. These meters are seen as an important means of establishing a 'conservation culture' in Ontario. In conjunction with appropriate rate structures, they will encourage customers to conserve or shift energy use.

Budget:
Operating: $75,000
Capital: $300,000

3.0 SYSTEM OPTIMIZATION

The objective of this initiative is to identify distribution loss analysis and prioritization of loss reduction opportunities. To do this component correctly, both the macro and micro components need to be evaluated in a two stage analysis, commencing with the macro analysis.

Losses are produced in the inherent resistances of distribution system equipment such as cables, feeder conductors, secondaries, and distribution and station transformers. Figure 1 shows an example of the contributions to system losses at a rural utility. The contribution to losses can vary drastically from utility to utility.

The objective of this portion of OPUCN's plan is to be able to identify the major causes of losses on OPUCN's distribution feeders. This would first involve a high level analysis of losses from distribution lines and transformers, and estimation of the percentage contribution of each to the total system losses. This information would be used to develop a loss reduction strategy. A further objective would be to identify specific opportunities for loss mitigation on the distribution systems. Detailed feeder modeling would be required to assess the financial impact of particular mitigation techniques on individual feeders. This work would establish areas where implementation of loss reduction techniques could be cost justified.

The overall intent of the study would be to illustrate where cost savings would be available and the methodology by which savings could be achieved. The loss reduction techniques that could be applied most easily by the utility to achieve the greatest return with the least investment in time or equipment would be determined.

Table 1: Example Effects of Loss Minimization Techniques Applied to Sample Feeders

Loss Reduction Technique	Reduction of Peak Losses (% Peak Feeder Losses)	Reduction of Loss Costs (% Feeder Loss Costs)	Profitability Index
Re-conductoring	30%	29%	1.4
Capacitor application	3.1%	3.2%	4.2
Phase Balancing	2%	1.6%	5.4
Re-sizing Distribution Transformers	2.3%	4.1%	0.1

More specifically, it is proposed that the loss analysis for OPUCN be conducted in two Phases as indicated below.

3.1 Implementation of Loss Mitigation Strategies

The loss mitigation strategies with the greatest overall system benefit as identified through the analysis stage will be implemented over the next three years and the results will be closely monitored.

Budget:
Operating $75,000
Capital $200,000

4.0 PROGRAM MANAGEMENT

In order to ensure the planning and coordination of the DSM/DR initiatives are implemented and monitored, OPUCN will enlist the assistance of a program coordinator for a three year contract. The coordinator will:

- Continuous updating of plans and timelines for senior management and for review by the OEB and any other governing body.
- Project management of the DSM/DR Plan. This will include the coordination of all of the initiatives.
- Refining of the plan to reflect new information, new technology, or changed circumstances.
- Progress reports as requested by senior management and as set out by regulation will be developed and reviewed by the responsible persons within OPUCN.

Budget
Operating: $50,000 (estimate – annually)

DSM/DR Budget Summary

The following table provides an estimate of the current plans as presented. Some of the programs will require further research before contracting and therefore the funds are estimated. This summary does not include any additional funds that will be provided directly or indirectly by other agencies, such as Natural Resources Canada, and through in-kind contribution of various programs.

This summary does not include any other costs from OPUCN that it may incur for current staff's time and work. It is currently being discussed and the option of adding full time staff for DSM/DR programs is under review. It is also felt that a certain percentage of overhead needs to be allocated to these costs as they are a very real part of implementation.

OPUCN also recognizes that technology can change quickly and it would be prudent of OPUCN to keep up to date on new directions.

OPUCN is also aware that the Ontario Energy Board, the Conservation Secretariat under the Ontario Power Authority and the Ministry of Energy will also be spearheading conservation programs for the Province of Ontario, to be championed by the LDCs. It is important that the OEB will approve of these initiatives under the DSM/DR plans as they arise.

This summary is presented to the OEB for final approval for the rate application process for 2005. OPUCN commits to the OEB that any significant change or direction of the above mentioned plans will be submitted to the OEB as supplementary documentation throughout 2005 – 2007.

OPUCN DSM/DR INITIATIVE SUMMARY

DSM/DR INITIATIVE	OPERATING COSTS	CAPITAL COSTS	EXPECTED BENEFITS
1.0 Residential Customers 1.1 Establish Baseline 1.2 DSM Identification 1.3 Non-profit Housing 1.4 Co-Branding 1.5 Pay as you Go 1.6 Smart Meters	} $125,000 $50,000 $50,000 $50,000	$50,000 $125,000 $125,000	1. Establishing Baseline for measuring effectiveness. 2. Provide a channel to our customers to access energy saving related products and services 3. Working with other utilities to market specific energy saving devices 4. Smart Meter pilots
2.0 Commercial/Industrial Customers 2.1 Establish Baseline 2.2 Pilot Programs 2.3 IMO TDRP 2.4 Smart Meters	} $75.000 $50,000 $75,000	$300,000	1. Establishing Baseline for measuring effectiveness 2. Provide channel for Load Control products and services 3. Participate in IMO pilot program. 4. Smart Meter pilots
3.0 System Optimization 3.1 Loss Analysis 3.2 Prioritization 3.3 Financial Impact 3.4 Solution Modeling 3.5 Implementation	} $75,000	$200,000	1. Identify potential for Loss Factor Reduction 2. Prioritize actions 3. Execute on high return activities
4.0 Program Management	$150,000		Overall program management
TOTAL PROGRAM COSTS (ESTIMATE)	**$700,000**	**$800,000**	

Conclusion

Oshawa PUC Networks Inc. believes that the plan as presented in this document is a prudent and effective approach in helping the Province achieve energy and demand management goals. This plan incorporates many of the potential initiatives outlined in the Minister's communications and represents Oshawa PUC Networks Inc. commitment to the ideology of conservation within the Province.

Oshawa PUC Networks Inc. looks forward to the Board's approval of this plan and the implementation of these initiatives.

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