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KINGSTON ELECTRICITY DISTRIBUTION LIMITED

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ONTARIO ENERGY BOARD

December 8, 2004

Mr. John Zych, Board Secretary
Ontario Energy Board
PO Box 2319
2300 Yonge Street, 26th Floor
Toronto, Ontario
M4P 1E4

Dear Mr. Zych:

RE: CONSERVATION AND DEMAND MANAGEMENT PLAN
Application for a final order of the Board (subject only to the ultimate review
of the actual expenditures)

Kingston Electricity Distribution Limited (KEDL) is pleased to submit our Conservation and Demand Management Plan.

Kingston Electricity Distribution Limited, by way of this plan is committing an amount equal to one year's incremental return of the third installment of market adjusted revenue requirements, which is an amount of \$175,000, to conservation and demand management activities. Through the development stages of our programs specified budget allocations may be altered to achieve optimum value for the program.

It is understood that the Board has granted us the authority to establish a deferral account by amending the Accounting Procedures Handbook and the Uniform System of Accounts which will enable us to monitor and record DSM expenditures

Kingston Electricity Distribution Limited is making this submission to request a final order of the Board (subject only to the ultimate review of actual expenditures) in authorizing this plan as being appropriate and effective in discharging Kingston Electricity Distribution Limited's Conservation and Demand Management investment obligation.

If you require any additional information or clarification, please do not hesitate to contact Mr. J. Keech, President and C.E.O. at 613-546-1181, Extension 2226, or Mr. M. Campbell, Electric and Communications Manager, at 613-546-1181, Extension 2207.

Sincerely,



N. Taylor
Corporate Secretary

KINGSTON ELECTRICITY DISTRIBUTION LIMITED

Conservation and Demand Management Plan

2004

Prepared by Utilities Kingston for
Kingston Electricity Distribution Limited

CONTACTS

J. Keech, President and C.E.O.

M. Campbell, Electric and Communications Manager

December 2004

INTRODUCTION

Electricity distributors within the Province of Ontario have been authorized by Ontario's Minister of Energy to apply to the Ontario Energy Board (OEB) for the 2005 rate implementation of their third installment of market adjusted revenue requirement (MARR). This application can be submitted on the condition that an equivalent amount of incremental revenue is invested by the distributor on 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 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.

The OEB issued a procedural order (RP-2004-0203) on October 5, 2004 setting out the process for how distributors may apply for approval of a Conservation and Demand Management Plan, and the filing requirements. This order was subsequently amended on October 28, 2004.

As a consequence of utilizing the above noted letter from the Minister, and procedural order, Kingston Electricity Distribution Limited hereby submits its Conservation and Demand Management (CDM) Plan to the Ontario Energy Board. As outlined in the procedural order, we are requesting the final order of the Board (subject only to the ultimate review of the actual expenditures) in authorizing this plan as being appropriate and effective in discharging Kingston Electricity Distribution Limited's (KEDL) Conservation and Demand Management investment obligation, subject to issuance in due course of an order for distribution rates including the final tranche of the market adjusted revenue requirement (MARR).

PLAN BUDGET AND ASSUMPTIONS

It is estimated that the total value of the third instalment of the MARR to Kingston Electricity Distribution Limited (KEDL) is \$175,000.

This amount appears to be substantially less than that of many local distribution companies of similar size. To achieve maximum impact, it will be necessary to focus our efforts over the applicable period through to September 30, 2007. Therefore, we are proposing expenditures in relatively few areas compared to many Local Distribution Companies with whom we have consulted. While this plan puts forth our best effort at estimates for expenditures and timing in our areas of focus, it must be noted that both may vary as we gain experience in these ventures.

The Provincial Government and The Minister of Energy has sent a clear message to Local Distribution Companies that it intends to grow a culture of conservation within the province of Ontario, and is looking for the Local Distribution Companies (LDC's) to play a lead role. It is Kingston Electricity Distribution Limited's goal to assist the Ministry and the Province in achieving its targeted reduction of 5% to the Province's demand by 2007 by working with organizations within our community who have long expressed similar desires relating to energy conservation and alternative energy sources.

A KINGSTON FLAVOUR

Although the impetus for this report and submission to the Ontario Energy Board has been driven by the Provincial Government, and in particular the Minister of Energy, there has for some time been a keen local interest for the community owned Local Distribution Company to pursue these activities.

At the December 2003 meeting of the Shareholder of Kingston Electricity Distribution Limited, clear direction was provided by the shareholder for their distribution company to investigate possibilities for a unique "Made in Kingston" plan to promote energy conservation initiatives. This was reiterated at the following meeting held in the second quarter of 2004.

At the December meeting it was noted to the Shareholder that the then current regulatory requirements made participation in these programs difficult for the LDC. New legislation since that time including Bill 4 and Bill 100, and subsequently this initiative have removed these barriers and provided an opportunity for Kingston Electricity Distribution Limited to proceed with our shareholder's desires.

Kingston, as a community has over the past several years grown a keen interest in not only energy conservation initiatives, but also in developing alternate energy solutions. This has been supported by Kingston City Council and several other

community organizations including Kingston Economic Development Corporation (KEDCO), SWITCH and Kingston Environmental Advisory Forum (KEAF).

Kingston Economic Development Corporation (KEDCO)

In KEDCO's 2005 business plan, it has identified six business clusters that it has organized around. One of these is alternate energy. The excerpt from KEDCO's plan is included below:

"In the last four years, Kingston has propelled itself into a position to become a national, if not global leader in Alternative Energy. This sector, specifically the fuel cell industry, represents an industry in which Kingston has a very compelling competitive advantage. Alternative energy presents tremendous economic opportunities for our community.

After considerable community consultation with SWITCH, a membership-based cluster development group comprised of industry, research, entrepreneurs and investors, a comprehensive marketing and awareness-building program has been articulated. The objective of this program is to promote the Kingston cluster within the broader North American industry but also to identify business and research organizations that are currently isolated and should be located here in Kingston.

The marketing program is targeted at key industry influencers including analysts, media, consultants, investors, professional service providers, government and industry executives as a means of broadening awareness, creating partnerships with local research and business and identifying targets for relocation.

Significant efforts and resources will be dedicated to building and maintaining these key relationships from which opportunities will follow. Companies and influencers on our target list will be engaged in a variety of fashions including email, networking events, conferences, industry financing events and targeted advertising and promotion.

Recognizing the importance of innovation and entrepreneurship in this industry, KEDCO, in partnership with SWITCH and Queen's University will take a proactive approach to increasing the rate and likelihood of the commercialization of alternative energy research in Kingston. Growing from our existing base of research an innovation is our greatest opportunity and the key component to any technology cluster development strategy."¹

¹ Kingston Economic Development Corporation, 2005 Business Plan

SWITCH, Kingston's Alternative Energy Cluster

Initiated and supported by the Kingston Economic Development Corporation (KEDCO), SWITCH is a recognized, organized and active cluster of alternative and renewable energy businesses, research institutions, community minded volunteers and public sector participants working together with a mission to position Kingston as a leading centre for alternative energy.

SWITCH is working toward creating new alternative energy businesses, building expertise and promoting the adoption of new Ontario-made alternative energy technologies. SWITCH is building on the leading position it already holds by virtue of its existing commercial enterprises, research institutions, local Department of National Defence (DND) involvement and the creation of a new centre of excellence in Applied Research in Fuel Cell Technologies.

Our mission is to position Kingston as a leading centre for alternative energy in Canada. Our vision is to build on Kingston's powerful knowledge and commercial base, so we have many companies competing in the global alternative energy product and service markets.

The central objective of SWITCH is to create and/or attract three new businesses in Kingston with 50 employees each within three years.

Kingston Environmental Advisory Forum (KEAF)

KEAF was created by City Council in January 2000 with a mandate to "identify environmental issues and priorities in Kingston and to assist the City in the preparation of an environmental strategy."

Senior Staff report to KEAF regularly in regards to industry changes and subsequent impacts on conservation measures and the environment.

Kingston City Council

In addition to supporting KEDL in conservation measures as its shareholder, City Council has been proactive in supporting alternative energy projects, including a possible wind energy project on City owned parkland, in conjunction with a private developer.

PARTNERING/MARKETING/EDUCATION

As previously noted in the introductory sections of this report, there are numerous groups within the City of Kingston already involved in the promotion of energy conservation, and alternate energy solutions. It is our intention to look to partner/co-brand with some of the groups noted, and also investigate the

possibility of partnering with other local groups such as the Chamber of Commerce and Social Housing groups.

Building on their experience we will investigate programmes to educate our citizens and create a conservation culture. This may also include a wide variety of initiatives from promoting compact fluorescent light replacements, to partnering with local alternate energy providers such as Fuel Cell Technology Ltd. to promote a local distributed generation pilot.

Emphasis will be on media campaigns, seminars, and trade shows with our partners.

The estimated expenditure in this area is \$20,000.00 over the three years, and will impact all customer classes.

INITIATIVES

Electric Hot Water Tank Efficiencies/Change-outs

There are a large number of social housing units that are publicly owned within the City of Kingston. A majority of these have old inefficient electric hot water tanks and electric heating. We will partner with the housing providers, including the City of Kingston to install gas hot water tanks. Our contribution will be towards the cost of the gas service and appliance installation, and in some cases subsidized rental rates until September 2007. Following the installation of this equipment it is anticipated that conversion of the heating systems at a later date will become affordable, as well as consideration on hot water tanks.

The estimated expenditure is \$40,000.00 over the three years with an initial estimate of 40 change-outs. This initiative will impact residential customers.

SMART Meter Pilot Program

To enable Kingston Electricity Distribution Limited in supporting the Minister of Energy's commitment to the installation of SMART meters, a pilot program for residential SMART meters will be deployed. It will provide Kingston Electricity Distribution Limited with the experience and knowledge needed to efficiently expand the use of SMART meters over the next several years. The program will also provide customers participating in the pilot programs with an incentive to conserve or shift energy use. One of the key elements of the programme will be in the assessment of communication technologies. Sub-metering opportunities for the purposes of customer information in bulk-metered situations (i.e. condominiums) may also be considered.

Kingston Electricity Distribution Limited will look to make an investment to further the use of SMART or interval meters by commercial, industrial and institutional customers. This initiative will target Commercial, Industrial and Institutional customers with demand greater than 50kW who currently do not have interval meters. In conjunction with appropriate rate structures, they will encourage customers to conserve or shift energy use.

The estimated expenditure across all customer classes is \$50,000.00 over the three years.

Light Emitting Diodes (LED) Retrofits

LED is a highly reliable lighting technology that is becoming increasingly popular for various lighting applications. LEDs offer many benefits relative to traditional lighting including significant energy savings.

This program will examine the opportunities to reduce energy use by identifying applications and encouraging replacement by education and financial incentives.

It is anticipated that the following solutions will deliver benefits, however, other solutions may become apparent during analysis and would be included under this program:

- Traffic Signal / Lights: Working with the Municipality to determine intersections where replacement of lights is practical and cost effective.
- Street Lights: Research to determine if replacement of street lights with LEDs (or other energy efficient options) is technically feasible and cost effective. Implementation will depend on feasibility.
- Signage: Review sign lighting applications to determine where replacement with LEDs is feasible and cost effective. Possible applications include arenas and recreational facilities, retail premises, hotels and motels, etc.

Significant energy savings will be realized as the LED technology utilizes approximately 80% less electricity. LEDs offer the following benefits relative to traditional lighting; significant energy savings, longer life and improved reliability.

The estimated expenditure is \$20,000.00 over the three years.

System Optimization / Reduction of Distribution Losses

This program will examine the overall distribution system and identify various methods to minimize system losses while providing a better product for our customers.

An engineering study will be completed by modeling the distribution system enabling a systematic analysis of the losses. This study, along with a cost/benefit analysis, will identify and prioritize the solutions to be implemented.

It is anticipated that the following solutions will deliver benefits, however, other solutions may become apparent during the engineering study/analysis and would be included under this broad program. Prioritizing the solutions to implement will be conducted after an analysis and cost benefit review has been completed.

- ▶ **Power Factor Correction:** The engineering analysis will identify opportunities to correct power factor. This will include a review of billing all customers over 50kVA by kVA only. There may be a component of this program to educate and implement customer solutions.
- ▶ **Phase Balancing:** An assessment will be conducted which will determine where loads on the 44kV and 5kV system are not balanced properly.
- ▶ **Optimization:** An engineering analysis will identify optimum switching arrangements to ensure every load is supplied from its most efficient point thereby reducing power loss and voltage drop.
- ▶ **Transformer and Equipment Standards:** A review of specifications for new equipment will be conducted to determine if efficiencies can be realized and/or losses reduced.

All Kingston Electricity Distribution Limited customers will benefit from this program. Reducing system losses frees up system capacity at the distribution, transmission and generation levels. Currently end use customers are paying for these losses and any reduction will result in lowering customer costs.

The estimated expenditure is \$50,000.00 over the three years.

CONCLUSION

Kingston Electricity Distribution Limited is confident that this balanced approach supports the more efficient use of electricity in Ontario and will enable the Ontario Energy Board to approve a Final Order (subject only to the ultimate review of the actual expenditures).

In drafting this Plan, Kingston Electricity Distribution Limited has strived to meet the Minister's direction which is consistent with the direction of our Shareholder and a number of community partners. Working with our Shareholder and community partners will result in leveraging results for energy efficiency.

As mentioned in the introduction, Kingston, as a community has over the past several years grown a keen interest in not only energy conservation initiatives, but also in developing alternate energy solutions. This has been supported by Kingston City Council and several other community organizations including Kingston Economic Development Corporation (KEDCO), SWITCH and Kingston Environmental Advisory Forum (KEAF).

Kingston Electricity Distribution Limited requests the Board approve this plan which will permit us to begin to implement the programs and assist in meeting the overall objective laid out by the Minister.

SUMMARY PROGRAMS, BUDGET AND IMPLEMENTATION SCHEDULES

The table below summarizes the budget and proposed schedule for Kingston Electricity Distribution Limited Programs.

Program	2005	2006	2007	Total
Partnership/Marketing/Education	5,000	10,000	5,000	20,000
Smart Metering Pilot/Program	10,000	30,000	10,000	50,000
Electric Hot Water Efficiencies Change-outs	10,000	25,000	5,000	40,000
LED Retrofits	10,000	10,000		20,000
System Optimization / Reduction of Distribution Losses	15,000	15,000	15,000	45,000
Total	50,000	90,000	35,000	\$175,000