EB-2004-0520

Festival Hydro INC.
P.O. Box 397, Stratford, Ontario N5A 6T5

187 ERIE STREET, STRATFORD
TELEPHONE: 519-271-4700
TOLL-FREE: 1-866-444-9370
FAX: 519-271-7204
www.festivalhydro.com

November 25th. 2004

Ontario Energy Board
PO Box 2319, Suite 2601
2300 Yonge Street
Toronto ON M4P 1E4

Attention: Mr. John Zych, Board Secretary

Dear Mr. Zych:

Re: Application for Conservation and DSM Program (Final Approval)

Enclosed you will find Festival Hydro Inc's outline of Conservation and Demand Management Activities for 2004 to 2007.

Festival Hydro's third tranche is equal to $661,623.00. The total budget for the three years exceeds the third tranche, however Festival Hydro will monitor each program and some may be scaled back to ensure the spending does not exceed the O.E.B. approved amount.

Festival Hydro has informally consulted with many distributors in our area to exchange ideas and determine if joint ventures are possible. We anticipate the execution of common programs that will benefit from the synergies obtained through joint ventures with other distributors.

We hope that you will consider our application.

Yours very truly,
FESTIVAL HYDRO INC.

Bill Zehr
President

c.c. Honourable Dwight Duncan, Minister of Energy
John Wilkinson, MPP Perth-Middlesex

Festival Hydro INC.

OUTLINE OF CONSERVATION AND DEMAND MANAGEMENT ACTIVITIES

2004 to 2007

prepared November 18, 2004
by
Festival Hydro Inc.
187 Erie Street, PO Box 397
Stratford, ON N5A 6T5

Table of Contents

Foreword

On July 16, 2004 the Ontario Energy Board released a document entitled "Preliminary Guidelines for Electricity Distributor Conservation and Demand Management Activities". On August 30, 2004 the OEB released an Information Bulletin offering additional clarity to the expectations of distributors, and encouraging distributors to apply for deferral accounts to begin planning and executing Conservation and Demand Management projects. On October 5, 2004 the OEB released a Procedural Order outlining details regarding deferral accounts, development expenses, applications for plan approvals, and filing requirements.

Festival Hydro has informally consulted with most of the distributors in the area to exchange ideas and determine if joint ventures are possible. We have decided that each distributor will submit a separate action plan to the OEB, but some LDCs will work co-operatively to execute common programs that will benefit from the synergies obtained through informal and formal alliances.

The primary focus of Festival Hydro's plan is to re-start and further develop the load control system that has been previously successful in reducing demand. While conservation activities will reduce the overall requirement for electricity in the Province of Ontario, the critical need is to reduce demand when the supply is constrained. It is our opinion that the most effective program will be a load control system that operates automatically without the need for intervention by the distributor or the end user. Conservation initiatives will be pursued, but the overall impact of these activities is expected to be much less than the load control system.

This document is intended to be Festival Hydro's application for final approval of our Conservation and Demand Management Plan for the next three years. The plan is separated into two main categories – demand management and conservation.

This document has been prepared by Festival Hydro. Questions or comments should be directed to Jac Vanderbaan, Vice-President of Engineering & Operations (Tel 519-271-4703 ext 241, email jvanderbaan@festivalhydro.com) or Bill Zehr, President (Tel 519-271-4703 ext 243, email bzehr@festivalhydro.com).

Summary

Festival Hydro plans to invest in programs that will reduce the system demand and conserve energy. These investments will take place over the next three years, and will target all customer classes. The total budget for the three years presently exceeds the third installment of Festival Hydro's Market Adjustment Revenue Requirement (MARR) of $661,623. However, Festival Hydro will monitor each program and some may be scaled back to ensure the spending does not exceed the allowed amount.

The table below summarizes the expenditures by year. Each program is explained in greater detail in subsequent sections of this document.

	2005	2006	2007	Total
1. Load Control System	$173,500	$134,000	$146,000	$453,500
2. Voltage Conversions	$ 55,000	$ 55,000	$ 55,000	$165,000
3. Compact Fluorescent Light Bulbs	$ 22,000	$ 22,000	$ 22,000	$ 66,000
4. LED Seasonal Lighting	$ 16,500	$ 16,500	$ -	$ 33,000
5. Energy Awareness (Residential)	$ 18,500	$ 7,500	$ 7,500	$ 33,500
6. Energy Seminars (General Service)	$ 20,000	$ 25,000	$ 15,000	$ 60,000
Total	$305,500	$260,000	$245,500	$811,000

The first four (4) programs will promote demand reduction and energy conservation, with results that are relatively easy to calculate and monitor. The Energy Awareness Program for Residential Customers and the Energy Seminars for General Service Customers will provide educational opportunities for all customers, but the results are difficult to predict and monitor. However, each of these programs will have follow-up to determine their effectiveness.

1.0 DEMAND MANAGEMENT

1.1 Load Control System

Targeted Customer Class – All Customers

Festival Hydro has a load control system that has not been used since 2002 following changes to the Market Rules. There are approximately 1000 water heater load controllers installed in the City of Stratford. When in use, the system would be able to decrease the Stratford monthly peak by 1 to 3 MW, shifting the usage to off-peak periods. Historically, load control was only used to reduce the

monthly peak and would only be needed a few hours every month. It is expected that load control may be called upon daily, and may not always be at peak load. A separate price signal or other notification from a central agency such as the IMO would be used to trigger load control.

Proposed Implementation Steps

The existing system will be tested and brought back into service as soon as the OEB provides approval for this plan. (Tentative target date is March 1, 2005.) Customers with existing controllers will be notified that the system will be brought back into service, and they may opt out of the program if they choose. The local media will be contacted and an official "kick-off" will launch the program and make customers aware of the opportunity to join in this effective load management system.

The hardware and software systems will be upgraded and links to the SCADA system (to provide real time load information) and the IMO (or other agency providing real time price signals) will be established. The new system will be tested and put into use before the summer of 2005. The existing controllers have a second relay that can control central air conditioners in addition to the water heaters. At an appropriate time in the spring, a second promotional campaign will highlight the ability of the load control system to automatically shut off central air systems during system peaks or price spikes.

Existing and future customers who participate in this program will receive a credit of $4 per month for each electric water heater, and an additional $2 per month for a central air conditioner. These incentive amounts will be monitored to determine if they are appropriate based on the savings achieved.

In addition to the financial incentives, all customers will benefit through the reduction in the transmission charges incurred by Festival Hydro. The future rates charged to all customers for the transmission component will be adjusted to reflect the amount saved through this program.

	Capital	Operating
2005 – Upgrade Hardware and Software	$50,000	
2005 – New Interface to SCADA and IMO	$10,000	
2005 – Marketing Plan		$ 1,000
2005 – New Installations (250)	$37,500	
2005 – Software System Maintenance		$10,000
2005 – Operating Costs		$20,000
2005 – Customer Incentives		$45,000
2006 – Marketing Plan		$ 1,000

2006 – New Installations (250)	$37,500	
2006 – Software System Maintenance		$10,000
2006 – Operating Costs		$20,000
2006 – Customer Incentives		$66,000
2007 – Marketing Plan		$ 500
2007 – New Installations (250)	$37,500	
2007 – Software System Maintenance		$10,000
2007 – Operating Costs		$20,000
2007 – Customer Incentives		$78,000
Total Costs	$172,500	$281,000

Anticipated energy savings:

Based on historical information, the load control system should shift between 1 MW and 3 MW from on-peak to off-peak. Using an average of 2 MW and a combined transmission rate of $5.15 per kW, the annual savings from reduced demand will be $123,600. There will be an additional savings from shifting the consumption from on-peak to off-peak times. Typically, the load control period will be for approximately 2 hours per weekday with about 2 MW of load, for an annual total of 1,040,000 kwh shifted from on-peak to off-peak. Assuming price difference of $0.03 per kwh, this represents an annual savings of $31,000. The total annual savings is expected to be $154,800. There is no lost revenue to the distributor with this type of project.

Screening Tests:

Total Resource Cost Test (TRTC) – total cost for three years is $453,500, total benefits is $464,400. PASS

Rate Impact Measure Test (RIMT) – is the same as the TRTC. PASS

2.0 CONSERVATION

2.1 Reduce Distribution Losses

Targeted Customer Class – All Customers

Festival Hydro has been working aggressively over the past decade to reduce system losses by converting 4 kV distribution to higher voltages. These conversions have taken place as the infrastructure approaches 'end-of-life'

status. Converting to the higher voltage reduces the "I^2R" losses by decreasing the amount of current needed to deliver the same amount of energy. The reduced losses will reduce the amount charged on each customer's bill for system losses.

Proposed Implementation Steps

Voltage conversions are planned for 2005, 2006, and 2007. The incremental costs[1] associated with these conversions (taller poles, different insulators and transformers) will be considered conservation assets. The savings in system losses will be calculated based on the amount of load converted to the higher voltage.

	Capital	Operating
2005 – 4 kV Conversions	$55,000	
2006 – 4 kV Conversions	$55,000	
2007 – 4 kV Conversions	$55,000	
Total Cost of Program	$165,000	

Anticipated energy savings:

Each year of the conversion plan, approximately 500 kW of load is converted from 4 kV to 27.6 kV. The line losses are reduced by approximately 70%[2] by converting to the higher voltage. Typical line loss for medium density load at 4 kV is around 3%[3] or about 15 kW for every 500 kW of load. Therefore, the voltage conversion will reduce the line losses to 4.5 kW, which will save 10.5 kW for every 500 kW converted. This represents an annual savings of 91,980 kwh or about $7,500 per year. The assets used in the voltage conversions have an expected useful life of 30 years, so the cumulative savings using a Net Present Value Calculation is equivalent to $252,000 in 2005 dollars.[4] (After 2007, the annual savings will be 3 x $7500 = $22,500.) There is no lost revenue to the distributor with this type of project.

Screening Tests:

Total Resource Cost Test (TRTC) – total cost for three years is $165,000, total benefits is $252,000 (NPV). PASS

---

[1] Based on previous projects, the incremental costs are estimated to be 5% of the total project costs.
[2] Source – Electric Utility Engineering Reference Book: Distribution Systems, Westinghouse Electric Corporation Figure 73.
[3] Source – Electric Utility Engineering Reference Book: Distribution Systems, Westinghouse Electric Corporation Figure 72.
[4] Using a cost of money of 7.25%.

Rate Impact Measure Test (RIMT) – is the same as the TRTC. PASS

This program meets both screening methods.

2.2 Promotion of Compact Fluorescent Lighting

Targeted Customer Class – All Residential

A single compact fluorescent light bulb can save an average of $10 per year, at a cost of only $5. These bulbs will typically last at least five years. All residential customers, including residents of bulk metered apartment buildings, will be offered coupons to cover the cost of two bulbs. We anticipate that one third of our residential customers (approximately 6,000) will take advantage of this program over a three year period.

Proposed Implementation Steps

The logistics of getting the coupons to the customers and encouraging the customers to use them has yet to be determined. However, it is envisioned that Festival Hydro will partner with retailers in each of our service areas, and offer the coupons at or near the point of sale. A marketing campaign will be used to promote the program, and educate the customers on the benefits of using compact fluorescent lights. The customers who take advantage of this promotion will be noted in a database, and the average annual consumption of a random number of customers will be monitored to determine the actual kwh saved. To maximize the number of customers taking advantage of this program, it may be offered each year – 2005, 2006, and 2007 and possibly more than once per year.

Program Budget

	Capital	Operating
2005 - Cost of Lightbulbs		$20,000
2005 - Program Administration[5]		$ 2,000
2006 - Cost of Lightbulbs		$20,000
2006 - Program Administration		$ 2,000
2006 - Cost of Lightbulbs		$20,000
2006 - Program Administration		$ 2,000
Total Cost of Program		$66,000

[5] Program Administration includes marketing costs, compensation to participating retailers for coupon processing, and direct expenses associated with the program.

Anticipated energy savings:

A typical compact fluorescent light bulb uses 14 W, and provides as much light as a standard 60 W bulb. The energy saved for a single bulb is therefore 46 W. Assuming these bulbs are on an average of 8 hours per day, the annual energy savings is 134 kwh (46 W x 8 hours x 365 days). At a cost of $0.08 per kwh the annual cost savings is $10.72 for one bulb. Assuming one sixth or 2000 residential customers take advantage of this program each year for three years, the total cost of the program will be about $66,000. With a total of 12,000 light bulbs each saving 134 kWh per year, the total annual savings will be 1,608,000 kwh. This represents a savings to customers of $128,000 per year. The estimated lost distributor revenue would be about $18,000 per year (1,608,000 kwh x $0.01127).

Screening Tests:

Total Resource Cost Test (TRTC) – total cost for three years is $66,000, total benefits is $128,000 per year for five years = $640,000. PASS

Rate Impact Measure Test (RIMT) – total cost including lost revenue for five years is about $156,000, total benefits is $640,000 for five years. PASS

This program meets both screening methods.

2.3 Promotion of LED Seasonal Lighting

Targeted Customer Class – All Residential

A single string of LED Christmas lights can save an average of $2 per year, at a cost of only $8. These lights will typically last up to ten years, but for the purposes of analysis they are assumed to last only five years. All residential customers, including residents of bulk metered apartment buildings, will be offered coupons worth $5 off the purchase of one string of LED Christmas lights in exchange for dropping off a conventional string of lights. We anticipate that one third of our residential customers (approximately 6,000) will take advantage of this program over a three year period.

Proposed Implementation Steps

The logistics of getting the coupons to the customers and encouraging the customers to use them has yet to be determined. However, it is envisioned that Festival Hydro will partner with retailers in each of our service areas, and offer the coupons at or near the point of sale. A marketing campaign will be used to promote the program, and educate the customers on the benefits of LED Christmas lights. The customers who take advantage of this promotion will be noted in a database, and the average annual consumption of a random number of customers will be monitored to determine the actual kwh saved. To maximize the number of customers taking advantage of this program, it may be offered two years – 2005, and 2006 shortly before the Christmas season.

Program Budget

	Capital	Operating
2005 - Cost of LED Lights		$15,000
2005 - Program Administration[6]		$ 1,500
2006 - Cost of LED Lights		$15,000
2006 - Program Administration		$ 1,500
Total Cost of Program		$33,000

Anticipated energy savings:

A typical string of LED Christmas lights uses 30 W, while a conventional string uses 150 W. The energy saved for a single string is therefore 120 W. Assuming these lights are on an average of 8 hours per day during the Christmas season, the annual energy savings is about 29 kwh (120 W x 8 hours x 30 days). At a cost of $0.08 per kwh the annual cost savings is $2.30 for one string. Assuming 3000 residential customers take advantage of this program each year for two years, the total cost of the program will be about $33,000. With a total of 6,000 LED light strings each saving 29 kWh per year, the total annual savings will be 172,800 kwh. This represents a savings to customers of $41,500 per year. The estimated lost distributor revenue would be about $1,950 per year (172,800 kwh x $0.01127).

[6] Program Administration includes marketing costs, compensation to participating retailers for coupon processing, and direct expenses associated with the program.

Screening Tests:

Total Resource Cost Test (TRTC) – total cost for three years is $33,000, total benefits is $41,500 per year for five years = $207,500. PASS

Rate Impact Measure Test (RIMT) – total cost including lost revenue for five years and the customer investment of $3 per string is about $60,750, total benefits is $207,500 for five years. PASS

This program meets both screening methods.

2.4 Energy Awareness Program

Targeted Customer Class – All Residential

An easy to use worksheet will be made available to all residential customers. Advertised as a "family audit", the worksheet will allow residential customers to take an inventory of every electrical device in their home, and estimate the amount of energy it takes to operate that device every month. The worksheet will also contain a section outlining "what if" scenarios such as "what if we replaced the 15 year old upright freezer with a new, smaller chest freezer?". Simple calculations will help the customer make the right choice when choosing to use or replace electrical devices. Festival Hydro will also obtain a limited number of devices that measure the actual energy used by standard 120 V appliances, and loan these devices to customers who wish to make their audit more accurate. The worksheets will be available in Microsoft Excel format from either the Festival Hydro website or on disk, or in hardcopy format.

In addition to this worksheet, customers will receive information with their bills outlining energy saving ideas. These would be issued four (4) times a year with seasonally appropriate suggestions. At least once a year, Festival Hydro will participate in local workshops, seminars, or trade shows that will provide an opportunity to promote energy awareness to residential customers.

The Festival Hydro website will be updated to include similar information and links to other sites offering conservation and demand management information. Where possible, Festival Hydro will highlight the availability of programs and incentives offered by other organizations such as home energy audits, window replacements, and heating system upgrades.

Proposed Implementation Steps

The worksheets will be developed with the assistance of an energy expert, and a basic marketing plan implemented to promote it. The devices that measure the actual consumption will be field tested prior to loaning to customers. A group of volunteer employees will be asked to conduct the "family audits" at their homes to ensure the worksheets are easy to use and provide useful information, prior to making them available to our customers. Billing inserts will be developed and delivered at appropriate times during the year. Festival Hydro will promote energy awareness by participating in local events such as builders shows, environmental seminars, and energy conservation workshops. The website will be updated with new information and external links.

Program Budget

	Operating
2005 – Cost of Worksheet Development	$ 5,000
2005 – Cost of Measurement Tools (10)	$ 500
2005 – Website Enhancements	$ 5,000
2005 – Billing Inserts (4 per year)	$ 4,000
2005 – Energy Awareness Promotion	$ 3,000
2005 – Program Administration	$ 1,000
2006 – Billing Inserts (4 per year)	$ 4,000
2006 – Energy Awareness Promotion	$ 3,000
2006 – Program Administration	$ 500
2007 – Billing Inserts (4 per year)	$ 4,000
2007 – Program Administration	$ 500
2007 – Energy Awareness Promotion	$ 3,000
Total Cost of Program	$ 33,500

Anticipated energy savings:

Due to the uncertainty regarding the acceptance and implementation of the different energy saving ideas, a specific target for kwh or kw savings cannot be provided.

Screening Tests:

This program does not meet the screening methods. However, it is expected that providing these worksheets will provide customers with the necessary

education to make appropriate decisions regarding the use and replacement of their electrical devices. Festival Hydro's Key Account Executive will follow-up with a select group of participants to obtain feedback regarding the quality of the worksheets, and what steps customers are taking to reduce their energy usage.

2.5 Energy Seminars for General Service Customers

Targeted Customer Class – Small, Medium, and Large Commercial and Institutional Customers

This program will target general service customers, offering energy saving ideas through a series of seminars. Each seminar will target a specific category of customer (small businesses under 50 kW, commercial and institutional customers from 50 kW to 250 kW, and large commercial and industrial customers), and provide information regarding strategies to reduce their energy usage. Experts on topics such as lighting design, variable speed drive motors, programmable thermostats, and building envelope upgrades will make presentations using case studies of similar initiatives carried out with actual customers. Where possible, these seminars will also promote existing programs that may benefit the customers such as *Sustainable Building Canada* (sponsored in part by Natural Resources Canada. Other potential partnerships will be explored during the development of these seminars. These seminars will be offered to our customers free of charge, and our Key Account Executive will follow-up with the attendees to determine if any are taking steps to reduce their energy usage.

In addition to these seminars, Festival Hydro will participate with the City of Stratford in their *Partners for Climate Protection* Program. The *Partners for Climate Protection* Program is a partnership between the Federation of Canadian Municipalities and the International Council for Local Environmental Initiatives that helps municipal governments identify sources of and then reduce greenhouse gas emissions. The City intends to pursue the first three milestones of this program: 1. Take Stock of energy use in buildings, vehicles, streetlights, water/sewer operations, and waste. 2. Set a Reduction Target. 3. Develop and Action Plan. It is expected that many of the changes initiated by this program will result in reduced kw and kwh usage by the City. Therefore, Festival Hydro will commit $12,500 towards this endeavour, and in return, receive information from the City regarding potential and actual savings.

Proposed Implementation Steps

Customers in each of the above categories will receive personal invitations to attend a specific seminar. These seminars will be held in the three locations that

have the most commercial customers (Stratford, St. Marys, and Seaforth). Energy experts on relevant topics will be screened then hired to conduct the seminars with the customers, with Festival Hydro employees facilitating the meeting. The City of Stratford will pursue their *Partners for Climate Protection* Program, and Festival Hydro will provide assistance when required.

Program Budget

	Operating
2005 – Cost of Seminars	$ 10,000
2005 – Partners for Climate Protection	$ 12,500
2006 – Cost of Seminars	$ 10,000
2006 – Develop/Promote Partnerships	$ 10,000
2006 – Program Follow-up (2005)	$ 5,000
2007 – Develop/Promote Partnerships	$ 7,500
2007 – Program Follow-up (2006)	$ 5,000
Total Cost of Program	$ 60,000

Anticipated energy savings:

Due to the uncertainty regarding the acceptance and implementation of the different energy saving ideas, a specific target for kwh or kw savings cannot be provided.

Screening Tests:

This program does not meet the standard screening tests. However, it is expected that providing these seminars that are specifically geared to each customer type will provide them with the necessary education to initiate their own energy reduction plans. The follow-up by the Key Account Executive will provide valuable feedback regarding the quality of the seminars, and ways that they might be improved in the future. Festival Hydro will work closely with the City of Stratford regarding their *Partners for Climate Protection* Program, and offer technical advice regarding changes that affect electrical consumption.

3.0 COMMENTS AND CONCERNS

3.1 Suggestions Excluded from the Plan

The programs outlined in this plan are the ones that Festival Hydro has screened and prioritized as most likely to achieve the desired results. Several suggestions put forth have been excluded because they did not pass the screening tests. One example is a solar water heater system developed by Enerworks in Dorchester, Ontario. Although the energy savings is in the order of 50%, the relatively high capital and maintenance cost result in a relatively long payback period, and there is a significant loss in distributor revenue. This technology and others like it will be included in the promotional literature provided to our customers, but will not be a formal program actively pursued by Festival Hydro.

Improvements to power factor have also been excluded from this plan. The recent orders from the OEB emphasize energy savings (kw or kwh), and the existing billing arrangements with the Transmitter are based on kW peaks, not kVA. Therefore, investments made to improve the system power factor will not have a measurable financial impact, and have been excluded from this plan. The OEB might consider creating an incentive to distributors to improve their power factor as this would reduce system loading.

3.2 Difficult to Reach Customers

During the preparation of this plan, it became apparent that some customers will not be able to substantially participate in energy conservation due to their circumstances. Specifically, customers who rent houses, apartments, or commercial space in buildings with electric heat, poor insulation, or dated heating systems. The owners of these buildings have no incentive to take corrective action as it would be the tenants that benefit. Likewise, the tenants are not in a position to take advantage of programs and rebates offered by utilities (gas and electric) or government agencies for practical items such as window replacements, converting to natural gas, or upgrading insulation. Festival Hydro is concerned that this group of customers may be the ones who could benefit most from energy conservation, but are unable to participate due to the landlord-tenant relationship.