Essex Power Lines Corporation | RP-2004-0203
EB# 2004-0499

Expanding the Culture of Conservation Mandate

Conservation and Demand Annual Report

Lawrence Musyj
CDM Coordinator
Essex Power Lines Corporation
519-776-8900 X475

ESSEX POWER LINES CORPORATION

Table of Contents

Introduction

We are proud of Conservation Demand Management Program and our accomplishments to date. At Essex Power we have the following slogans "***Your Power, our Priority***", and "***Doing the Right Thing, Leading by Example***". We are thriving to be a leader of energy conservation in Essex County.

Understanding energy use is the crucial first step in an effective energy conservation and demand management program.

Essex Power Lines Corporation Conservation and Demand Management (CDM) program is expanding the reach and accessibility of the culture of conservation through a group of innovative and resourceful programs that put the drive to learn and power to conserve in the hands of the energy consumers.

These CDM programs are available to residents, companies and the municipalities within Essex Power service territory. We've removed the challenge of determining what the first step should be by providing entire programs and learning modules.

By partnering with industry-specific service partners, Essex Power is providing best-in-class energy conservation and education solutions.

Essex Power Lines has become a leader in energy conservation and demand side management. We are proud of our results and look forward to working with our customers to lead the way in changing to a culture of conservation.

Essex Power Lines CDM Plan consists of 6 catagories:

1. Energy Awareness
2. Residential Conservation < 50 kW
3. General Service Conservation > 50 kW
4. Municipal Green Project
5. 4 kV Conservation

We have had success in all catagories of our program, excellent customer feedback and continue to expand as we go forward.

Lawrence Musyj
CDM Coordinator
Essex Power Lines Corporation

Appendix A - Evaluation of the CDM Plan

	Total	Residential	Institutional	Industrial	LDC System	Energy Awareness	Municipal
Net TRC value ($):	*$2,469,100*	$19,900	$124,500	$2,271,600	$34,800	$0	$18,300
Benefit to cost ratio:	*$4.83*	$8	$9	$35	$1	$0	$2
Number of participants or units delivered:	*$4,552*	$300	$246	$1	$1	$4,000	$4
Total KWh to be saved over the lifecycle of the plan (kWh):	*$39,787,505*	$246,375	$1,443,210	$36,704,400	$996,720	$0	$406,800
Total in year kWh saved (kWh):	*$3,074,595*	$49,275	$288,642	$2,671,800	$24,198	$0	$40,680
Total peak demand saved (kW):	*$591*	$23	$132	$305	$5	$0	$126
Total kWh saved as a percentage of total kWh delivered (%):	*$0.51*	$0	$0	$0	$0	$0	$0
Peak kW saved as a percentage of LDC peak kW load (%):	*$0.6*	$0	$0	$0	$0	$0	$0
Gross in year C&DM expenditures ($):	*$308,462*	$66,347	$29,182	$12,480	$128,448	$46,757	$25,248
Expenditures per KWh saved ($/kWh):*	*$0.1*	$1	$0	$0	$5	$0	$1
*Expenditures per KW saved ($/kW)**:*	*$522*	$2,885	$221	$41	$25,690	$46,757	$200

Utility discount rate (%):	$7.73

*Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.
**Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.

Public Awareness and Trade Show Representation

Increasing public awareness and educating our customers has been a focus for Essex Power. We have developed promotional and educational materials, as well created interactive and static displays to help deliver the message of demand management. We have participated in home shows, industry specific tradeshows and displayed materials at each municipal office within our service territory.

Featured Event and Results
Essex Power participated in the 2005 Windsor Home Show, promoting the Home energy audit program and providing 140 CFL's to Essex Power customers. The demand reduction for this event was ***13,797 kWh/yr***.

Home Audits

Teaming up with a reputable and professional home inspection service has enabled Essex Power to promote the federal **EnerGuide for Houses Grants for Homeowners** program. By offering our customers $375 off the price of a professional home energy audit along with three compact fluorescent lights as an add incentive, we are able to assist homeowners in identifying areas for improvement and increased energy efficiency. The overall effect is educating the customers, lowering their bills, and lowering peak demand on the entire power system.

The Home energy program has been promoted through the Essex Power website, bill inserts, magazine ads and local newspaper articles.

Since the programs inception in early 2005 fifty two homes within the Essex Power service territory have taken advantage of the Home Energy audit program resulting in an estimated 7,800 kWh/yr reduction.

Seminars for Commercial and Industrial User

Organizations are realizing the importance of managing energy costs. But in order to manage these costs organizations need to understand their facility's energy consumption patterns, the pricing structure in their particular electricity marketplace and how this information can be used to improve their bottom line.

Essex Power has developed seminars for large commercial and industrial users, focusing on the competitive value of **metering, monitoring and management**. Participants learn about market conditions in Ontario and how to develop an electricity monitoring and management program that will provide results-oriented insight into the benefits and cost savings that come with energy conservation—simple, industry-savvy steps that will give large users a competitive advantage.

Offering efficiency seminars to large users has been great way for Essex Power to increase visibility in the communities we serve and promote conservation in business operations.

Results
• Essex power participated in the Ministry of Economic Development and Trade forum to provide Local manufacturing and Industrial customers with energy saving opportunities. • Essex Power sponsored an Energy Savings Seminar for commercial and industrial customers. • Sponsored and presented at an Ontario Greenhouse Growers seminar.

Industrial and Commercial Audits and Load Reduction Incentives

Helping our largest energy users better manage their energy consumption means understanding their needs as large users, and what is required of our programs, so we can recommend a specific and effective course of action when it comes to auditing their business operations.

Essex Power has worked in cooperation with service providers in specific energy industry sectors to provide an audit and 'best business case' energy efficiency solution. Together, we establish a utility baseline, identify energy saving opportunities, and determine the best means to move forward.

Essex Power has established a load reduction Incentive program providing funding to assist companies in Load Reduction projects discovered during the audit process.

Results
Family Traditions Foods in Tecumseh is the first recipient of two programs resulting in ***2,671,351 kWh/yr savings***.

Christmas Light Exchange Program and Energy Innovators Program

Essex Power sponsored a Christmas light exchange program for each municipality. The replacement LED lights consume on average 90% less energy than standard 5W Christmas bulbs.

Essex Power is helping Industry and Municipalities cut costs and become leaders in corporate citizenry. Essex Power has local companies and each Municipality registered as Industrial Energy Innovators. In becoming an Innovator the financial bottom line will benefit as well as helping to reduce greenhouse gas emissions and help create a healthier environment. The Innovator program is part of the Canadian Industry Program for Energy Conservation (CIPEC), a joint industry-government program sponsored by Natural Resources Canada's Office of Energy Efficiency.

Results
Each municipality was provided 55 - 100 bulb strings resulting in a potential savings of ***$700.00 per municipality*** and ***9,900 kWh/yr***.

Energy Innovators may be eligible for an incentive to audit their facilities, customized on-site workshops, access to NR Canada industry officers for R and D support, incentive program info, and technical guide books and case studies.

Compact Fluorescent Light (CFL) retrofit program for public housing

Essex Power has teamed up with Windsor-Essex County Housing Corporation (WECHC) to promote energy awareness and conservation to reduce actual power consumption within their service communities by more than 288,000 kWh per year. The reduction will save $25,000 a year.

The program will replace standard incandescent light bulbs (average 80w) in 246 apartments (10 different buildings) located within the municipalities of Amherstburg (3), LaSalle (1), Leamington (5) and Tecumseh (1). In total over 2,000 bulbs will be converted to Compact Fluorescent light bulbs (CFLs - average 17.5w) donated by Essex Power.

Converting to CFLs is part of the CDM program's effort to meet the terms of the Ontario government's mandate to conserve energy. The benefits breakdown as follows:

- An average per bulb reduction of 62.5W
- 62.5 W x 2,109 bulbs = 131, 812.5 w total reduction
- 131,812.5 W total reduction = 131.8 kW
- 131.8 kW x 6 hours avg. operation/day x 365 days = 288,642 kWh reduced/year
- 288,642 kW/year = $25,000 in savings/year
- Cost of CFLs: $5 x 2,109 bulbs = $10,545
- CFL bulbs are designed to operate 10,000 hours (4.5 years at 6 hours/day usage)

Results
Reduced actual power consumption by more than ***288,000 kWh per year***. The reduction will save ***$25,000 a year***.

Employee Energy Savings Pilot Project

In order to test market an energy savings project that potentially can be conducted within an entire municipality, Essex Power employees will embark upon an energy savings pilot project in their own homes. Armed with energy savings kits provided by Essex Power each employee will be challenged to reduce energy consumption in their own homes.

Each employee will be required to complete a home energy audit as well make low or no cost home energy saving improvements. The pilot project will be tracked, evaluated and improved and Essex Power will determine if the project is viable for a larger size group or even an entire municipality.

Energy Conservation and Kid's Energy Conservation Portal

Energy Conservation

Essex Power knows that it doesn't take a lot of energy to conserve energy and strives to provide our customers with simple and affordable power saving solutions through the Energy Conservation Web portal.

Through Web sites and interactive media, Essex Power is helping to create the culture of conservation at home and in businesses by offering home efficiency and renovation tips, and hands on solutions to improve profits and productivity, including our utilismart software, which can help you master the energy market from your desktop.

Kids Energy

Essex Power knows that getting the next generation of power consumers thinking about energy conservation today is a major step towards solving future power crises.

The Kids Energy Web portal puts this knowledge into action! Young minds absorb information like powerful batteries storing energy. Kids Energy uses games, experiments and a Home Energy Audit project to provide a playful, interactive learning environment where young minds are exposed to energy, its uses, and how it's distributed.

A culture of conservation and demand management must include and embrace the up-coming generations, the people who will be making the energy decisions of the future. Essex Power is already there, guiding them towards energy savings and greater efficiency.

Essex Power Lines Corporation has recently made Utilismart available to all interval meter customers.

Utilismart currently provides a wide range of services to Local Utilities, Industrial and Large Use consumers in the Ontario Electricity Marketplace. Utilismart Corporation operates a web-based service that provides customers with the information needed to make informed business decisions about electricity usage.

Utilismart enables a company to **visualize** how it uses power. Organizations could be operating under the impression that their business is a paragon of efficiency; meanwhile, they have been **squandering and mismanaging** their energy concerns for years.

The Utilismart software monitors efficiency by identifying and avoiding the **high peak demand charges** that appear on monthly utility bills due to out-of-control energy use. The lower the peak demands, the more a company can reduce the energy bill.

Utilismart also offers a **Cost Prediction** model for the Ontario Market. To assist end users of electricity in reducing their consumption and demand, utilismart now has the capability of predicting what your electricity will cost tomorrow! Now a company will have the information to make decisions on whether or not to shift or reduce the load.

Good information is the key to making good decisions and Essex Power has always been at the forefront of providing customers with the information needed to make these decisions.

Wholesale Embedded Generation Power Pool (Tri-Gen and Cogen Standby Power)

Demand Response
12,132 kWh

The Distributed Generation project is the first of its kind in the province. The concept emanated from the August 14, 2003 black out. Immediately following the blackout a Province wide request was made to customers to reduce power by 25%. Our area was able to achieve 30 to 40% load reduction due to the availability of distributed standby power created by emergency generators. The business model is to Aggregate the standby generation assets in our area and bid, dispatch and control the total capacity as a single market participant into the wholesale electricity market and provide demand response to constrained transmission and distribution infrastructure.

The existing Generators are in Hydro One territory and not part of our CDM Results, but as we go forward we will be including Essex Power Customers. This is included to explain how the program works and we will continue to expand into Essex Power Territory.

Project Details and Results

- Testing on the system with the IESO took place Dec 12 – 21, 2005.
- Entered Market December 22, 2005
- Starting hours in Market 6am – 11pm – Dec 22- Jan18, 2006
- Essex Power Rep has to be on call at all times while in the Market
- Changed Hours as Market Participant as of midnight Jan 18, 2006
- Now 24 hrs/day
- Called on for Energy +/- 18 times
- Total Generation for Dec/05 = 12,132 kWh

Discussion of Programs

Appendix B

1- Energy Awareness - Light Bulb Giveaway

2- General Service > 50 kW

3- Municipal Green Program

4- 4 kV conversion

5- General Service Greater 50kW

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** Energy Awareness - Light Bulb Giveaway

Description of the program (including intent, design, delivery, partnerships and evaluation):

Intent was 2 fold. To educate the public and energy conservation. Distributed through homeshows, raffles, employee participation and home audit program. Additionally we built a light bulb display equipped with a Watt meter to demonstrate the energy savings from CFL's.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	30 kW	65700 kWh	
Efficient technology:	7.5 kW	16425	
Number of participants or units delive	300		
Measure life (years):	5		

B. **TRC Results:**

TRC Benefits ($):	*$*	*17,774.25*
TRC Costs ($):		
Utility program cost (less incentives):	$	2,121.75
Participant cost:	$	-
Total TRC costs:	$	2,121.75
Net TRC (in year CDN $):	$	19,900.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$	8.38

C. **Results:** (one or more category may apply)

Conservation Programs:

Demand savings (kW):	*Summer*	23	
	Winter	23	
	lifecycle	*in year*	
Energy saved (kWh):	*246,375*	49,275	
Other resources saved :			
Natural Gas (m3):			
Other (specify):			

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at begining of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		
	lifecycle	*in year*
Energy savngs (kWh):		

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	$	-
	Incremental O&M:	$	2,121.75
	Incentive:	$	-
	Total:	$	2,121.75
Utility indirect costs ($):	*Incremental capital:*		0
	Incremental O&M:		0
	Total:		0
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		0

E. Comments:

Before most participants received a bult they used our light bulb display to visually see the difference between bulbs. Great energy awareness.

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Net Present Value$_{TRC}$

Utility

Name of Utility:	Essex Powerlines Corp.
Number of years in study:	5

Project Description

Name of Project:	
Description:	light bulb Give away

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

- ◉ k$
- ○ $

User Inputs

Discount rate	7.73%	
Unit Annual Energy Savings	23	kW/unit
Number of Units Delivered	1	
Free Ridership Rate		

Output

NPV ($k)	19.9

$k LDC Avoided Costs		Present	2006	2007	2008	2009	2010
Avoided Energy			5	5	5	5	5
Avoided Generation Capacity			-	-	1	2	1
Avoided Transmission Capacity			-	-	0	0	0
Avoided Distribution Capacity			-	-	-	0	0
Avoided Distribution Losses			-	-	-	-	-
Other Avoided Costs							
Other Benefits							
Total (undiscounted) Avoided Costs		-	5	5	6	6	6
$k LDC Program Costs							
LDC OM&A Costs			(2)				
LDC Capital Costs							
Incremental Equipment Costs	2,121.8		(2)				
Participant Costs							
Total Program Costs		-	(4)	-	-	-	-
Total Avoided Costs less Program Costs		-	1	5	6	6	6

			2006	2007	2008	2009	2010
Present value factor	7.7%	1.000	0.963	0.894	0.830	0.771	0.715
Present value of cash flows		-	1.1	4.2	5.2	4.9	4.4
Accumulated present value of cash flows		-	1.1	5.4	10.6	15.5	19.9

$k NPV TRC	19.9

	Winter (December - March)								
	On Peak 7 - 11 am, 5 - 8 pm			Mid-Peak 11 am - 5 pm, 8 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	602			688			1,614		
2006	438	23	9,855	438	23	9,855	-	23	-
2007	438	23	9,855	438	23	9,855	-	23	-
2008	438	23	9,855	438	23	9,855	-	23	-
2009	438	23	9,855	438	23	9,855	-	23	-
2010	438	23	9,855	438	23	9,855	-	23	-

	Summer (June - September)								
	On Peak 11 am - 5 pm			Mid-Peak 7 - 11 am, 5 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	522			783			1,623		
2006	438	23	9,855	438	23	9,855	-	23	-
2007	438	23	9,855	438	23	9,855	-	23	-
2008	438	23	9,855	438	23	9,855	-	23	-
2009	438	23	9,855	438	23	9,855	-	23	-
2010	438	23	9,855	438	23	9,855	-	23	-

	Shoulder (April May October November)					
	Mid-Peak 7 am - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	1,305			1,623		
2006	438	23	9,855	-	23	-
2007	438	23	9,855	-	23	-
2008	438	23	9,855	-	23	-
2009	438	23	9,855	-	23	-
2010	438	23	9,855	-	23	-

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** General Service < 50 kw

Description of the program (including intent, design, delivery, partnerships and evaluation):

Social housing light bulb exchange. The intent is to educate the public and assist the Windsor-Essex County Housing Corporation in reducing energy costs. Replaced 2109 bulbs avg. ~62.5W reduction in bulbs. Essex Power purchased and contracted the installation to the W.E.C.H.C. Excellent feedback from residents.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	168.72 kW	369497 kWh/yr	
Efficient technology:	36.91 kW	80830 kWh/yr	
Number of participants or units delive	246	246	
Measure life (years):	5	5	

B. **TRC Results:**

TRC Benefits ($):	*$*	*111,531.00*
TRC Costs ($):		
Utility program cost (less incentives):	$	10,969.00
Participant cost:	$	2,000.00
Total TRC costs:	$	12,969.00
Net TRC (in year CDN $):	$	124,500.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$	8.60

C. **Results:** (one or more category may apply)

Conservation Programs:

Demand savings (kW):	*Summer*	131.8 kW	
	Winter	131.8 kW	
	lifecycle	*in year*	
Energy saved (kWh):	*1,443,210*	288,642	
Other resources saved :			
Natural Gas (m3):			
Other (specify):			

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at begining of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

	lifecycle	in year
Peak load savings (kW):		
Energy savngs (kWh):		

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	$	-
	Incremental O&M:	$	10,969.00
	Incentive:	$	-
	Total:	$	10,969.00
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		0
	Incremental O&M:		*2000*
	Total:		2000

E. Comments:

Excellent program and partnership. Looking to continue in 2006.

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Net Present Value$_{TRC}$

Utility

Name of Utility:	Essex Powerlines Corp.
Number of years in study:	5

Project Description

Name of Project:	
Description:	Social Housing light bulb exchange

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

- ◉ k$
- ○ $

User Inputs

Discount rate	7.73%	
Unit Annual Energy Savings	132	kW/unit
Number of Units Delivered	1	
Free Ridership Rate		

Output

NPV ($k)	124.5

$k LDC Avoided Costs	Present	2006	2007	2008	2009	2010
Avoided Energy		28	28	28	27	27
Avoided Generation Capacity		-	-	8	9	8
Avoided Transmission Capacity		-	-	1	1	1
Avoided Distribution Capacity		-	-	-	1	1
Avoided Distribution Losses		-	-	-	-	-
Other Avoided Costs						
Other Benefits						
Total (undiscounted) Avoided Costs	-	28	28	37	37	36
$k LDC Program Costs						
LDC OM&A Costs		(2)				
LDC Capital Costs						
Incremental Equipment Costs		(11)				
Participant Costs						
Total Program Costs	-	(13)	-	-	-	-
Total Avoided Costs less Program Costs	-	15	28	37	37	36

			2006	2007	2008	2009	2010
Present value factor	7.7%	1.000	0.963	0.894	0.830	0.771	0.715
Present value of cash flows		-	14.4	24.9	30.7	28.7	25.8
Accumulated present value of cash flows		-	14.4	39.3	70.0	98.7	124.5

$k NPV TRC	**124.5**

	Winter (December - March)								
	On Peak 7 - 11 am, 5 - 8 pm			Mid-Peak 11 am - 5 pm, 8 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	602			688			1,614		
2006	438	132	57,816	438	132	57,816	-	132	-
2007	438	132	57,816	438	132	57,816	-	132	-
2008	438	132	57,816	438	132	57,816	-	132	-
2009	438	132	57,816	438	132	57,816	-	132	-
2010	438	132	57,816	438	132	57,816	-	132	-

	Summer (June - September)								
	On Peak 11 am - 5 pm			Mid-Peak 7 - 11 am, 5 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	522			783			1,623		
2006	438	132	57,816	438	132	57,816	-	132	-
2007	438	132	57,816	438	132	57,816	-	132	-
2008	438	132	57,816	438	132	57,816	-	132	-
2009	438	132	57,816	438	132	57,816	-	132	-
2010	438	132	57,816	438	132	57,816	-	132	-

	Shoulder (April May October November)					
	Mid-Peak 7 am - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	1,305			1,623		
2006	438	132	57,816	-	132	-
2007	438	132	57,816	-	132	-
2008	438	132	57,816	-	132	-
2009	438	132	57,816	-	132	-
2010	438	132	57,816	-	132	-

FOR IMMEDIATE RELEASE

ESSEX POWER REPLACING BULBS IN SOCIAL HOUSING SAVES $25,000 A YEAR

Essex Power Corporation's Conservation and Demand Side Management (CDM) program has teamed up with Windsor-Essex County Housing Corporation (WECHC) to promote energy awareness and conservation and to reduce actual power consumption within their service communities by more than 288,000 kw per year. The reduction will save $25,000 a year.

Starting in September of this year, the partnership began replacing standard incandescent light bulbs (average 80w) in 246 apartments (10 different buildings) located within the municipalities of Amherstburg (3), LaSalle (1), Leamington (5) and Tecumseh (1). In total, over 2,100 bulbs will be converted to Compact Fluorescent light bulbs (CFLs - average 17.5w) donated by Essex Power.

Converting to CFLs is part of the CDM program's effort to meet the terms of the Ontario government's energy conservation mandate. The benefits breakdown as follows:

- An average per bulb reduction of 62.5w
- 62.5 w x 2,109 bulbs = 131, 812.5 w total reduction
- 131,812.5 w total reduction = 131.8 kw
- 131.8 kw x 6 hours avg. operation/day x 365 days = 288,642 kw reduced/year
- 288,642 kw/year = $25,000 in savings/year
- Cost of CFLs: $5 x 2,109 bulbs = $10,545
- CFL bulbs are designed to operate 10,000 hours (4.5 years at 6 hours/day usage)

Essex Power CDM coordinator, Lawrence Musyj, is overseeing the retrofit along with WECHC's Business Officer and Energy Project Manager, Janice Campbell and Field Coordinator, Mauro Gatto.

"As part of our CDM program, we want to reduce the energy used in Ontario," says Musyj. "Part of our mandate was to assist social housing with energy efficiency upgrades. It's more about the energy conserved than the money saved. Essex Power works with municipalities to help them reduce and conserve energy, pool services, become Energy Innovators, and become more cost-effective."

Campbell says WECHC joined Natural Resources Canada's (NRCan) Energy Innovators Initiative back in 2004. "In property management, light bulb retrofits are a great place to start," she says. "They deliver immediate results—as soon as you make the change, you're assured the energy reduction."

The bulb replacement retrofit is expected to be completed by the end of September 2005.

For more information, please contact WECHC Energy Project Manager Janice Campbell at 254-1681 ext. 231, or Essex Power Corporation CDM coordinator Lawrence Musyj at 776-8900 ext. 475.

- ### -

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** Municipal Green Program

Description of the program (including intent, design, delivery, partnerships and evaluation):

Essex Power exchanged 55-100 bulb/string LED X-Mas lights in exchange for the equal amount of old 5-7 Watt bulbs, for all 4 municipal shareholders. The lights were displayed with a sign out front promoting the LED lights. Many great comments from the community and a partnership between Essex Power, municipalities, Canadian Tire.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	126 kW	45360	
Efficient technology:	13	4680	
Number of participants or units delive	252	252	
Measure life (years):	10	10	

B. **TRC Results:**

TRC Benefits ($):	*$*	*11,300.00*
TRC Costs ($):		
Utility program cost (less incentives):	$	7,000.00
Participant cost:	$	-
Total TRC costs:	$	7,000.00
Net TRC (in year CDN $):	$	18,300.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$	1.61

C. **Results:** (one or more category may apply)

Conservation Programs:

Demand savings (kW):	*Summer*	0	
	Winter	126	
	lifecycle	*in year*	
Energy saved (kWh):	*406,800*	40,680	
Other resources saved :			
Natural Gas (m3):			
Other (specify):			

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at begining of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		
	lifecycle	*in year*
Energy savngs (kWh):		

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	$	-
	Incremental O&M:	$	7,000.00
	Incentive:	$	-
	Total:	$	7,000.00
Utility indirect costs ($):	*Incremental capital:*		0
	Incremental O&M:		0
	Total:		0
Participant costs ($):	*Incremental equipment:*		
	Incremental O&M:		
	Total:		0

E. Comments:

Excellent program and partnership. Looking to continue in 2006.

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Net Present Value$_{TRC}$

Utility

Name of Utility:	Essex Powerlines Corp.
Number of years in study:	10

Project Description

Name of Project:	
Description:	Municipal Xmas Light exchange program

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

- ◉ k$
- ○ $

User Inputs

Discount rate	7.73%	
Unit Annual Energy Savings	32	kW/unit
Number of Units Delivered	4	
Free Ridership Rate		

Output

NPV ($k)	18.3

$k LDC Avoided Costs		Present	2006	2007	2008	2009	2010	2011	2012
Avoided Energy			4	4	4	3	3	3	3
Avoided Generation Capacity			-	-	-	-	-	-	-
Avoided Transmission Capacity			-	-	-	-	-	-	-
Avoided Distribution Capacity			-	-	-	-	-	-	-
Avoided Distribution Losses			-	-	-	-	-	-	-
Other Avoided Costs									
Other Benefits									
Total (undiscounted) Avoided Costs		-	4	4	4	3	3	3	3
$k LDC Program Costs									
LDC OM&A Costs			(2)						
LDC Capital Costs									
Incremental Equipment Costs	5,000.0		(5)						
Participant Costs									
Total Program Costs		-	(7)	-	-	-	-	-	-
Total Avoided Costs less Program Costs		-	(3)	4	4	3	3	3	3

			2006	2007	2008	2009	2010	2011	2012
Present value factor	7.7%	1.000	0.963	0.894	0.830	0.771	0.715	0.664	0.616
Present value of cash flows		-	(3.4)	3.2	3.0	2.5	2.4	2.2	2.1
Accumulated present value of cash flows		-	(3.4)	(0.2)	2.8	5.4	7.7	9.9	12.0

$k NPV TRC	18.3

Net Present Value$_{TRC}$

Utility

Name of Utility:	
Number of years in study:	

Project Description

Name of Project:	
Description:	

- ○ **OEB Residential Table**
- ○ **OEB Commercial Table**
- ○ **OEB Industrial Table**
- ◉ **Direct Input**

User Inputs

Discount rate	
Unit Annual Energy Savings	
Number of Units Delivered	
Free Ridership Rate	

$k LDC Avoided Costs	**2013**	**2014**	**2015**
Avoided Energy	4	4	4
Avoided Generation Capacity	-	-	-
Avoided Transmission Capacity	-	-	-
Avoided Distribution Capacity	-	-	-
Avoided Distribution Losses	-	-	-
Other Avoided Costs			
Other Benefits			
Total (undiscounted) Avoided Costs	4	4	4
$k LDC Program Costs			
LDC OM&A Costs			
LDC Capital Costs			
Incremental Equipment Costs			
Participant Costs			
Total Program Costs	-	-	-
Total Avoided Costs less Program Costs	4	4	4

	2013	**2014**	**2015**
Present value factor	0.572	0.531	0.493
Present value of cash flows	2.1	2.1	2.0
Accumulated present value of cash flows	14.2	16.3	18.3
$k NPV TRC			

	Winter (December - March)								
	On Peak 7 - 11 am, 5 - 8 pm			Mid-Peak 11 am - 5 pm, 8 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	602			688			1,614		
2006	-	128	-	300	126	37,800	60	126	7,560
2007	-	128	-	300	126	37,800	60	126	7,560
2008	-	128	-	300	126	37,800	60	126	7,560
2009	-	128	-	300	126	37,800	60	126	7,560
2010	-	128	-	300	126	37,800	60	126	7,560
2011	-	128	-	300	126	37,800	60	126	7,560
2012	-	128	-	300	126	37,800	60	126	7,560
2013	-	128	-	300	126	37,800	60	126	7,560
2014	-	128	-	300	126	37,800	60	126	7,560
2015	-	128	-	300	126	37,800	60	126	7,560

	Summer (June - September)								
	On Peak 11 am - 5 pm			Mid-Peak 7 - 11 am, 5 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	522			783			1,623		
2006	-	126	-	-	126	-	-	126	-
2007	-	126	-	-	126	-	-	126	-
2008	-	126	-	-	126	-	-	126	-
2009	-	126	-	-	126	-	-	126	-
2010	-	126	-	-	126	-	-	126	-
2011	-	126	-	-	126	-	-	126	-
2012	-	126	-	-	126	-	-	126	-
2013	-	126	-	-	126	-	-	126	-
2014	-	126	-	-	126	-	-	126	-
2015	-	126	-	-	126	-	-	126	-

	Shoulder (April May October November)					
	Mid-Peak 7 am - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	1,305			1,623		
2006	-	126	-	-	126	-
2007	-	126	-	-	126	-
2008	-	126	-	-	126	-
2009	-	126	-	-	126	-
2010	-	126	-	-	126	-
2011	-	126	-	-	126	-
2012	-	126	-	-	126	-
2013	-	126	-	-	126	-
2014	-	126	-	-	126	-
2015	-	126	-	-	126	-


ESSEX
POWER
LINES
CORPORATION
CANADIAN
TIRE
Energy Efficient LED Lights
Sponsored By
Essex Power Lines Corporation
Along With
Your Local Canadian Tire Store

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** 4 kv Conversion

Description of the program (including intent, design, delivery, partnerships and evaluation):

Essex Power has a 10 year 4 kv - 27.6 kV conversion Program. With the help of CDM dollars we are able to complete portions ahead of schedule. This involves supplying customers directly from the 27.6 kV system and eventually elimintating the 4 kV distribution stations.

Measure(s):

	Measure 1	Measure 2 (if applicable)
Base case technology:	2419939 kWh	
Efficient technology:	2444138 kWh	
Number of participants or units delive	1	
Measure life (years):	40	

B. **TRC Results:**

TRC Benefits ($):	*$*	*93,200.00*
TRC Costs ($):		
Utility program cost (less incentives):	$	-
Participant cost:	$	128,000.00
Total TRC costs:	$	128,000.00
Net TRC (in year CDN $):	-$	34,800.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$	0.73

C. **Results:** (one or more category may apply)

Conservation Programs:

Demand savings (kW):	*Summer*	5	
	Winter	5	
	lifecycle		*in year*
Energy saved (kWh):	*996,720*	24,198	
Other resources saved :			
Natural Gas (m3):			
Other (specify):			

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at begining of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

	lifecycle	in year
Peak load savings (kW):		
Energy savngs (kWh):		

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	$	114,000.00
	Incremental O&M:	$	14,000.00
	Incentive:	$	-
	Total:	$	128,000.00
Utility indirect costs ($):	*Incremental capital:*		
	Incremental O&M:		
	Total:		
Participant costs ($):	*Incremental equipment:*		0
	Incremental O&M:		
	Total:		0

E. Comments:

This portion of 4 kV conversion were in 4 different areas of our service territory. As we continue to convert, the Distribution Stations will be removed. The benefits will increase significantly eliminating maintenance of the stations, all line losses, transformer, and conductor losses.

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Net Present Value$_{TRC}$

Utility

Name of Utility:	Essex Powerlines Corp.
Number of years in study:	40

Project Description

Name of Project:	
Description:	4 KV Conversion

- (○) OEB Residential Table
- (○) OEB Commercial Table
- (○) OEB Industrial Table
- (●) Direct Input

- (●) k$
- (○) $

User Inputs

Discount rate	7.73%	
Unit Annual Energy Savings	6	kW/unit
Number of Units Delivered	1	
Free Ridership Rate		

Output

NPV ($k)	(34.8)

$k LDC Avoided Costs	Present	2006	2007	2008	2009	2010	2011	2012
Avoided Energy		3	3	4	3	3	3	4
Avoided Generation Capacity		-	-	0	1	0	1	0
Avoided Transmission Capacity		-	-	0	0	0	0	0
Avoided Distribution Capacity		-	-	-	0	0	0	0
Avoided Distribution Losses		-	-	-	-	-	-	-
Other Avoided Costs		30						
Other Benefits								
Total (undiscounted) Avoided Costs	-	33	3	4	4	4	4	4
$k LDC Program Costs								
LDC OM&A Costs		(14)						
LDC Capital Costs		(114)						
Incremental Equipment Costs								
Participant Costs								
Total Program Costs	-	(128)	-	-	-	-	-	-
Total Avoided Costs less Program Costs	-	(95)	3	4	4	4	4	4

			2006	2007	2008	2009	2010	2011	2012
Present value factor	7.7%	1.000	0.963	0.894	0.830	0.771	0.715	0.664	0.616
Present value of cash flows		-	(91.4)	3.1	3.4	3.1	2.9	2.7	2.6
Accumulated present value of cash flows		-	(91.4)	(88.3)	(84.9)	(81.8)	(78.9)	(76.2)	(73.6)

$k NPV TRC	(34.8)

Net Present Value$_{TRC}$

Utility

Name of Utility:	
Number of years in study:	

Project Description

Name of Project:	
Description:	

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

User Inputs

Discount rate	
Unit Annual Energy Savings	
Number of Units Delivered	
Free Ridership Rate	

$k LDC Avoided Costs	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Avoided Energy	4	4	4	5	5	5	5	5	5	5
Avoided Generation Capacity	0	0	0	0	0	0	0	0	0	0
Avoided Transmission Capacity	0	0	0	0	0	0	0	0	0	0
Avoided Distribution Capacity	0	0	0	0	0	0	0	0	0	0
Avoided Distribution Losses	-	-	-	-	-	-	-	-	-	-
Other Avoided Costs										
Other Benefits										
Total (undiscounted) Avoided Costs	4	5	5	5	5	5	5	5	5	6
$k LDC Program Costs										
LDC OM&A Costs										
LDC Capital Costs										
Incremental Equipment Costs										
Participant Costs										
Total Program Costs	-	-	-	-	-	-	-	-	-	-
Total Avoided Costs less Program Costs	4	5	5	5	5	5	5	5	5	6

	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Present value factor	0.572	0.531	0.493	0.458	0.425	0.394	0.366	0.340	0.315	0.293
Present value of cash flows	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6
Accumulated present value of cash flows	(71.1)	(68.7)	(66.4)	(64.2)	(62.1)	(60.1)	(58.2)	(56.4)	(54.7)	(53.1)

$k NPV TRC	

Net Present Value$_{TRC}$

Utility

Name of Utility:	
Number of years in study:	

Project Description

Name of Project:	
Description:	

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

User Inputs

Discount rate	
Unit Annual Energy Savings	
Number of Units Delivered	
Free Ridership Rate	

$k LDC Avoided Costs	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**
Avoided Energy	5	5	6	6	6	6	6	6	6	6
Avoided Generation Capacity	0	0	0	0	0	0	0	0	0	0
Avoided Transmission Capacity	0	0	0	0	0	0	0	0	0	0
Avoided Distribution Capacity	0	0	0	0	0	0	0	0	0	0
Avoided Distribution Losses	-	-	-	-	-	-	-	-	-	-
Other Avoided Costs										
Other Benefits										
Total (undiscounted) Avoided Costs	6	6	6	6	6	6	6	6	6	6
$k LDC Program Costs										
LDC OM&A Costs										
LDC Capital Costs										
Incremental Equipment Costs										
Participant Costs										
Total Program Costs	-	-	-	-	-	-	-	-	-	-
Total Avoided Costs less Program Costs	6	6	6	6	6	6	6	6	6	6

	2023	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**
Present value factor	0.272	0.252	0.234	0.217	0.202	0.187	0.174	0.161	0.150	0.139
Present value of cash flows	1.5	1.5	1.4	1.3	1.2	1.1	1.0	1.0	0.9	0.8
Accumulated present value of cash flows	(51.5)	(50.1)	(48.7)	(47.4)	(46.2)	(45.1)	(44.1)	(43.1)	(42.2)	(41.4)

$k NPV TRC

Net Present Value$_{TRC}$

Utility

Name of Utility:	
Number of years in study:	

Project Description

Name of Project:	
Description:	

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

User Inputs

Discount rate	
Unit Annual Energy Savings	
Number of Units Delivered	
Free Ridership Rate	

$k LDC Avoided Costs	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**
Avoided Energy	6	6	6	6	6	6	6	6	6	6
Avoided Generation Capacity	0	0	0	0	0	0	0	0	0	0
Avoided Transmission Capacity	0	0	0	0	0	0	0	0	0	0
Avoided Distribution Capacity	0	0	0	0	0	0	0	0	0	0
Avoided Distribution Losses	-	-	-	-	-	-	-	-	-	-
Other Avoided Costs										
Other Benefits										
Total (undiscounted) Avoided Costs	6	6	6	6	6	6	6	6	6	6
$k LDC Program Costs										
LDC OM&A Costs										
LDC Capital Costs										
Incremental Equipment Costs										
Participant Costs										
Total Program Costs	-	-	-	-	-	-	-	-	-	-
Total Avoided Costs less Program Costs	6	6	6	6	6	6	6	6	6	6

	2033	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**
Present value factor	0.129	0.120	0.111	0.103	0.096	0.089	0.083	0.077	0.071	0.066
Present value of cash flows	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4
Accumulated present value of cash flows	(40.6)	(39.9)	(39.3)	(38.7)	(38.1)	(37.6)	(37.1)	(36.6)	(36.2)	(35.8)

$k NPV TRC

	Winter (December - March)								
	On Peak 7 - 11 am, 5 - 8 pm			Mid-Peak 11 am - 5 pm, 8 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	602			688			1,614		
2006	602	6	3,612	688	6	-	1,614	6	9,684
2007	602	6	3,612	688	6	4,128	1,614	6	9,684
2008	602	6	3,612	688	6	4,128	1,614	6	9,684
2009	602	6	3,612	688	6	4,128	1,614	6	9,684
2010	602	6	3,612	688	6	4,128	1,614	6	9,684
2011	602	6	3,612	688	6	4,128	1,614	6	9,684
2012	602	6	3,612	688	6	4,128	1,614	6	9,684
2013	602	6	3,612	688	6	4,128	1,614	6	9,684
2014	602	6	3,612	688	6	4,128	1,614	6	9,684
2015	602	6	3,612	688	6	4,128	1,614	6	9,684
2016	602	6	3,612	688	6	4,128	1,614	6	9,684
2017	602	6	3,612	688	6	4,128	1,614	6	9,684
2018	602	6	3,612	688	6	4,128	1,614	6	9,684
2019	602	6	3,612	688	6	4,128	1,614	6	9,684
2020	602	6	3,612	688	6	4,128	1,614	6	9,684
2021	602	6	3,612	688	6	4,128	1,614	6	9,684
2022	602	6	3,612	688	6	4,128	1,614	6	9,684
2023	602	6	3,612	688	6	4,128	1,614	6	9,684
2024	602	6	3,612	688	6	4,128	1,614	6	9,684
2025	602	6	3,612	688	6	4,128	1,614	6	9,684
2026	602	6	3,612	688	6	4,128	1,614	6	9,684
2027	602	6	3,612	688	6	4,128	1,614	6	9,684
2028	602	6	3,612	688	6	4,128	1,614	6	9,684
2029	602	6	3,612	688	6	4,128	1,614	6	9,684
2030	602	6	3,612	688	6	4,128	1,614	6	9,684
2031	602	6	3,612	688	6	4,128	1,614	6	9,684
2032	602	6	3,612	688	6	4,128	1,614	6	9,684
2033	602	6	3,612	688	6	4,128	1,614	6	9,684
2034	602	6	3,612	688	6	4,128	1,614	6	9,684
2035	602	6	3,612	688	6	4,128	1,614	6	9,684
2036	602	6	3,612	688	6	4,128	1,614	6	9,684
2037	602	6	3,612	688	6	4,128	1,614	6	9,684
2038	602	6	3,612	688	6	4,128	1,614	6	9,684
2039	602	6	3,612	688	6	4,128	1,614	6	9,684
2040	602	6	3,612	688	6	4,128	1,614	6	9,684
2041	602	6	3,612	688	6	4,128	1,614	6	9,684
2042	602	6	3,612	688	6	4,128	1,614	6	9,684
2043	602	6	3,612	688	6	4,128	1,614	6	9,684
2044	602	6	3,612	688	6	4,128	1,614	6	9,684
2045	602	6	3,612	688	6	4,128	1,614	6	9,684

	Summer (June - September)								
	On Peak 11 am - 5 pm			Mid-Peak 7 - 11 am, 5 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	522			783			1,623		
2006	522	6	3,132	783	6	4,698	1,623	6	9,738
2007	522	6	3,132	783	6	4,698	1,623	6	9,738
2008	522	6	3,132	783	6	4,698	1,623	6	9,738
2009	522	6	3,132	783	6	4,698	1,623	6	9,738
2010	522	6	3,132	783	6	4,698	1,623	6	9,738
2011	522	6	3,132	783	6	4,698	1,623	6	9,738
2012	522	6	3,132	783	6	4,698	1,623	6	9,738
2013	522	6	3,132	783	6	4,698	1,623	6	9,738
2014	522	6	3,132	783	6	4,698	1,623	6	9,738
2015	522	6	3,132	783	6	4,698	1,623	6	9,738
2016	522	6	3,132	783	6	4,698	1,623	6	9,738
2017	522	6	3,132	783	6	4,698	1,623	6	9,738
2018	522	6	3,132	783	6	4,698	1,623	6	9,738
2019	522	6	3,132	783	6	4,698	1,623	6	9,738
2020	522	6	3,132	783	6	4,698	1,623	6	9,738
2021	522	6	3,132	783	6	4,698	1,623	6	9,738
2022	522	6	3,132	783	6	4,698	1,623	6	9,738
2023	522	6	3,132	783	6	4,698	1,623	6	9,738
2024	522	6	3,132	783	6	4,698	1,623	6	9,738
2025	522	6	3,132	783	6	4,698	1,623	6	9,738
2026	522	6	3,132	783	6	4,698	1,623	6	9,738
2027	522	6	3,132	783	6	4,698	1,623	6	9,738
2028	522	6	3,132	783	6	4,698	1,623	6	9,738
2029	522	6	3,132	783	6	4,698	1,623	6	9,738
2030	522	6	3,132	783	6	4,698	1,623	6	9,738
2031	522	6	3,132	783	6	4,698	1,623	6	9,738
2032	522	6	3,132	783	6	4,698	1,623	6	9,738
2033	522	6	3,132	783	6	4,698	1,623	6	9,738
2034	522	6	3,132	783	6	4,698	1,623	6	9,738
2035	522	6	3,132	783	6	4,698	1,623	6	9,738
2036	522	6	3,132	783	6	4,698	1,623	6	9,738
2037	522	6	3,132	783	6	4,698	1,623	6	9,738
2038	522	6	3,132	783	6	4,698	1,623	6	9,738
2039	522	6	3,132	783	6	4,698	1,623	6	9,738
2040	522	6	3,132	783	6	4,698	1,623	6	9,738
2041	522	6	3,132	783	6	4,698	1,623	6	9,738
2042	522	6	3,132	783	6	4,698	1,623	6	9,738
2043	522	6	3,132	783	6	4,698	1,623	6	9,738
2044	522	6	3,132	783	6	4,698	1,623	6	9,738
2045	522	6	3,132	783	6	4,698	1,623	6	9,738

	Shoulder (April May October November)					
	Mid-Peak 7 am - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	1,305			1,623		
2006	1,305	6	7,830	1,623	6	9,738
2007	1,305	6	7,830	1,623	6	9,738
2008	1,305	6	7,830	1,623	6	9,738
2009	1,305	6	7,830	1,623	6	9,738
2010	1,305	6	7,830	1,623	6	9,738
2011	1,305	6	7,830	1,623	6	9,738
2012	1,305	6	7,830	1,623	6	9,738
2013	1,305	6	7,830	1,623	6	9,738
2014	1,305	6	7,830	1,623	6	9,738
2015	1,305	6	7,830	1,623	6	9,738
2016	1,305	6	7,830	1,623	6	9,738
2017	1,305	6	7,830	1,623	6	9,738
2018	1,305	6	7,830	1,623	6	9,738
2019	1,305	6	7,830	1,623	6	9,738
2020	1,305	6	7,830	1,623	6	9,738
2021	1,305	6	7,830	1,623	6	9,738
2022	1,305	6	7,830	1,623	6	9,738
2023	1,305	6	7,830	1,623	6	9,738
2024	1,305	6	7,830	1,623	6	9,738
2025	1,305	6	7,830	1,623	6	9,738
2026	1,305	6	7,830	1,623	6	9,738
2027	1,305	6	7,830	1,623	6	9,738
2028	1,305	6	7,830	1,623	6	9,738
2029	1,305	6	7,830	1,623	6	9,738
2030	1,305	6	7,830	1,623	6	9,738
2031	1,305	6	7,830	1,623	6	9,738
2032	1,305	6	7,830	1,623	6	9,738
2033	1,305	6	7,830	1,623	6	9,738
2034	1,305	6	7,830	1,623	6	9,738
2035	1,305	6	7,830	1,623	6	9,738
2036	1,305	6	7,830	1,623	6	9,738
2037	1,305	6	7,830	1,623	6	9,738
2038	1,305	6	7,830	1,623	6	9,738
2039	1,305	6	7,830	1,623	6	9,738
2040	1,305	6	7,830	1,623	6	9,738
2041	1,305	6	7,830	1,623	6	9,738
2042	1,305	6	7,830	1,623	6	9,738
2043	1,305	6	7,830	1,623	6	9,738
2044	1,305	6	7,830	1,623	6	9,738
2045	1,305	6	7,830	1,623	6	9,738

Essex Powerlines Corporation
Year 2005
4.16 kV to 27.6 kV Voltage Conversion
KWH Savings

1.0 Introduction

During the year 2005, Essex Powerlines Corporation (EPLC) completed 4.16 kV to 27.6 kV voltage conversion projects in the Municipalities of Leamington, Tecumseh and LaSalle. Appendix # 1 of this report identifies the specific and total 4.16 kV load that was converted, in KWH's, and was obtained from the customers billing meters.

The conversion was completed by replacing the utilization transformers rated at primary 4.16 kV to transformers rated at 27.6 kV and re-connecting the designated conversion customers to the 27.6 kV supply feeder. This conversion now removed the converted customer load from the EPLC 4.16 kV supply substation transformers in LaSalle and Leamington and by the removal of Rabbit (step down) Transformers in Tecumseh. For these conversion projects, the feeder line conductors were not changed.

2.0 Methodology

EPLC will see KWH savings in losses in the substation transformers as the load through these transformers has been reduced and by the removal of the Rabbit Transformers thus eliminating these transformer losses. The existing line conductors are now being operated at a higher voltage; however, it will be assumed that the savings in losses in the line conductors will be minimal, as the line conductors were not changed.

Recognized industry standards for losses in a distribution transformer is a nominal value of 1 % and has been applied by Ontario Hydro and its successor companies to the wholesale metering quantities charged to a Distributor for countless number of years. Also Essex Power in its submission for loss factors to the OEB recognizes the 1 % loss factor as EPLC submitted a Distribution Loss Factor (DLF) for primary metering of 1.0224 and a DLF of 1.0327 for secondary metering. See Figure # 1 for an example of this loss factor application.

Because of this established recognition of 1 % loss in distribution transformers, and in order to keep the KWH savings calculation simple but realistic, 1 % loss in transformers will be used in the calculations.

3.0 Transformer Efficiency

The efficiency of distribution transformers is consistent no matter what the current through the transformer. The following explains this statement.

The efficiency of a transformer, expressed in per unit, is the ratio of real power output to power input; $\text{Efficiency} = \frac{\text{Output}}{\text{Input}} = 1 - \frac{\text{Losses}}{\text{Input}}$

Total losses are the sum of no-load losses and load losses. No-load losses are measured at rated frequency and rated secondary voltage, and can be considered as independent load. Load losses are measured at rated frequency and rated secondary current, but with the secondary short-circuited and with reduced voltage applied to the primary. Load losses can be assumed to vary as the square of the load current.

***** Typical distribution transformers have a nominal value of 0.50 percent no-load loss and 1.0 percent load loss at full load. The method illustrated below is for such a transformer. Percent no-load loss is determined by dividing the no-load loss in watts by 10 times the kva rating of the transformer, and the percent load loss (total minus no-load) is determined by dividing the load in watts by 10 times the kva rating of the transformer. Note that the no-load loss remains constant regardless of the load whereas the load loss varies directly as the square of the load.

1	Percent Load	100.0	75.0	50.0	25.0
2	Percent No-Load Loss	.50	.50	.50	.50
3	Percent Load Loss	1.0	.562	.25	.062
4	Sum of No-Load Loss & Load Loss	1.5	1.062	.75	.562
5	Sum of Percent Load & Sum of total in Row 3	101.50	76.062	50.75	25.562
6	Dividing 100 times Row 4 by Row 5	1.48	1.40	1.48	2.20
7	Efficiency of Transformer (Subtract row 6 from 100)	98.52	98.6	98.52	97.8

***** Some Approximate values of Efficiency for 60 cycle two-winding, three phase power transformers at unity power factor are as follows:

KVA Rating	Voltage Class	Efficiency Rating
2000	34.5 kV	98.89
10000	34.5 kV	99.22

** Westinghouse – Electrical Transmission and Distribution Reference Book.*

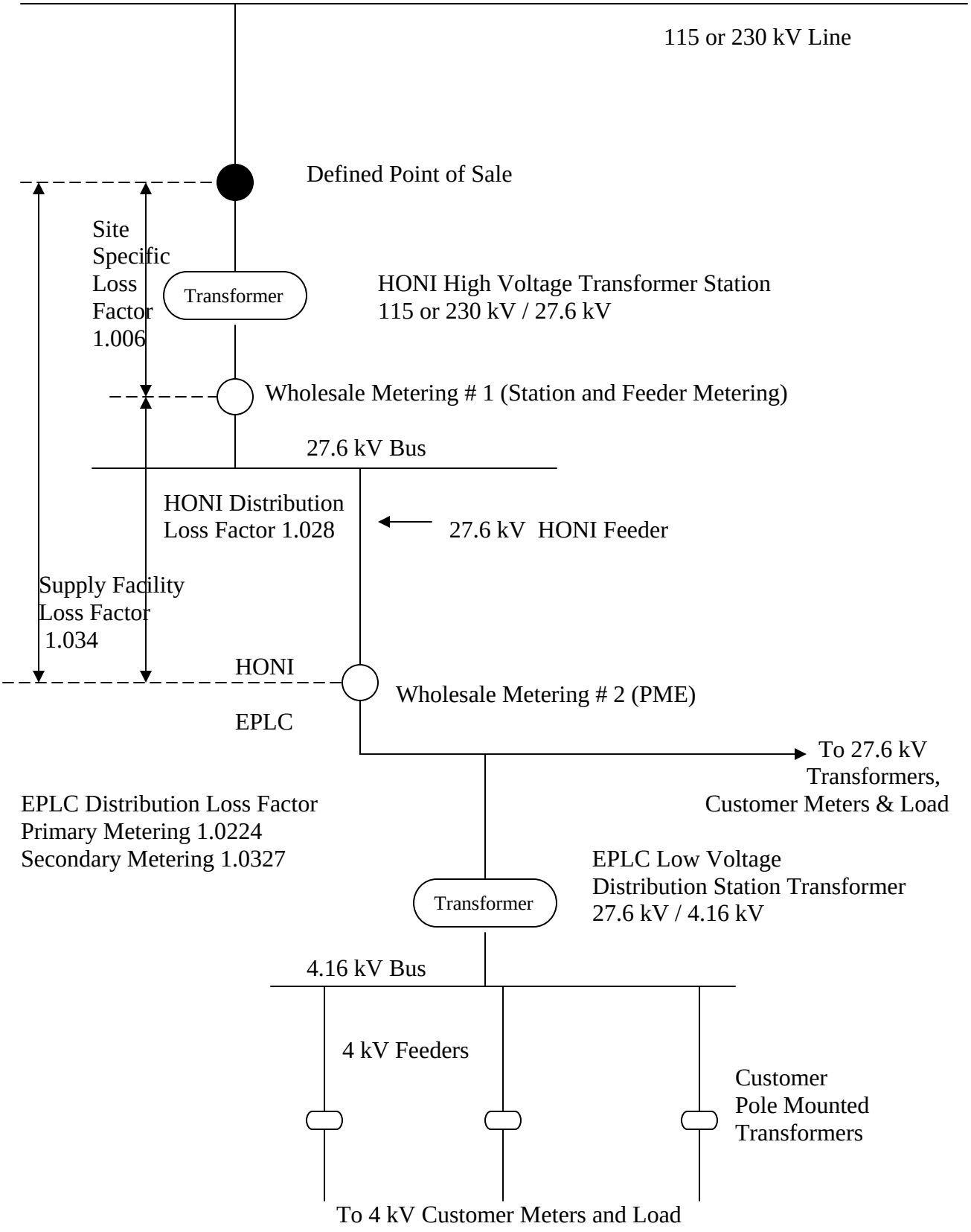
4.0 4.16 kV to 27.6 kV Voltage Conversion KWH Savings

Appendix # 2 details the KWH savings calculations, however, the total KWH savings as a result of the 2005 voltage conversion projects is as follows:

Total Winter KWH savings = 11426.48 KWH's which consists of 6284.57 KWH On-Peak Winter Savings and 5141.92 KWH Off-Peak Winter Savings.

Total Summer KWH savings = 12772.91 KWH's which consists of 7025.10 KWH On-Peak Summer Savings and 5747.81 KWH Off-Peak Summer Savings.

Figure # 1 – Typical EPLC Distribution System Configuration With Low Voltage Substations



Appendix # 1

W/O #	1491/2180	1491/2180	1491/2180	1491/2180	1491/2180		Hazel LAS
Sub	Step Down	Step Down	Step Down	Step Down	Step Down		Sunnyside
	5th Block	Into 1st Block	Last 1st	2nd Block	3+4th Block	Step Down	TX7D649
Month	Total KWH	Total KWH	Total KWH	Total KWH	Total KWH	Totals	Total KWH
September	17,507	17,417	23,048	11,748	15,537	85,257	15,220
August	29,724	29,086	36,856	23,824	27,983	147,473	14,581
July	22,242	20,896	21,780	15,240	20,130	100,288	17,461
June	20,695	22,351	23,067	16,830	21,609	104,552	15,008
May	14,892	14,511	15,960	13,454	14,319	73,136	9,706
April	13,860	12,776	13,368	11,341	11,872	63,217	11,321
March	16,134	13,642	13,430	13,856	14,465	71,527	13,006
February	16,865	14,566	14,094	14,132	14,844	74,501	13,943
January	22,897	18,030	17,573	17,868	18,606	94,974	16,660
December	20,996	18,332	17,933	15,917	17,905	91,083	12,487
November	18,094	16,780	17,866	16,320	16,499	85,559	12,100
October	15,420	15,625	14,373	12,196	13,183	70,797	12,325
Total	229,326	214,012	229,348	182,726	206,952	1,062,364	163,818
Average	19,111	18,019	19,112	15,227	17,246	17,743	13,652

Rabbit Transformer Converted kWh		
Total	On Peak	Off Peak
Winter	Winter	Winter
488,441.0	268,643	219,798
Total	On Peak	Off Peak
Summer	Summer	Summer
573,923	315658	258265

Appendix # 1

Hazel LAS Sunnyside	Hazel LAS Sunnyside	2160 Sunnyside	2181 Georgia	2181 Georgia	2285 Victoria	2285 Victoria	2285 Victoria	
TX7D711	TX70D13	TX70D76	TX31147	TX31387	TX31397	TX31192	TX31072	Substation
Total KWH	Total KWH	Total KWH	Total KWH	Total KWH	Total KWH	Total KWH	Total KWH	Total
3,452	11,904	10,125	13,649	2,040	11,825	47,440	4,199	119,854
5,415	12,785	8,365	8,855	1,680	10,637	51,479	3,430	117,227
5,803	10,499	10,537	11,689	2,120	14,015	51,581	3,671	127,376
3,497	11,492	10,457	12,073	1,800	12,315	50,799	4,111	121,552
2,929	7,243	5,136	7,349	1,000	10,691	52,189	3,864	100,107
2,124	8,159	5,071	7,762	1,440	8,540	57,176	3,013	104,606
3,180	9,475	6,253	9,459	1,760	9,160	57,240	3,971	113,504
2,974	11,097	7,037	12,094	1,440	10,769	55,080	4,564	118,998
4,457	11,243	8,038	13,340	1,640	11,151	52,200	5,151	123,880
4,290	9,087	6,367	12,581	2,160	10,995	25,916	5,530	89,413
2,314	7,983	6,783	13,570	1,480	9,913	31,996	4,669	90,808
2,920	9,124	7,419	11,185	1,160	9,308	48,719	4,131	106,291
43,355	120,091	91,588	133,606	19,720	129,319	581,815	50,304	1,333,616
3,613	10,008	7,632	11,134	1,643	10,777	48,485	4,192	12,348

Total Substation Converted kWh		
Total	On Peak	Off Peak
Winter	Winter	Winter
642,894	353,592	289,302
Total	On Peak	Off Peak
Summer	Summer	Summer
690,722	379,897	310,825

Total Converted kWh		
Total	On Peak	Off Peak
Winter	Winter	Winter
1,131,335	622,234	509,101
Total	On Peak	Off Peak
Summer	Summer	Summer
1,264,645	695,555	569,090

Appendix # 2

Essex Powerlines 4.16 kV Conversion for Year 2005

Summer Peak - April thru September Winter Peak - October thru March

4 kV customer **SUBSTATION** and **RABBIT** transformer load, prior to conversion, metered on the secondary of the Utilization Transformers from Customer Billing Meters

Total Winter kWh =	1131335.0
On Peak Winter =	622234.3
Off Peak Winter =	509100.8
Total Summer kWh =	1264645.0
On Peak Winter =	695554.8
Off Peak Winter =	569090.3

Assume a nominal transformer load loss of 1% which is recognized standard for distribution transformers

To reflect the load on the primary of the utilization transformers, the above values will need to be up-lifted by 1%. Therefore, the load on the primary side is as follows:

Total Winter kWh =	1142648.4
On Peak Winter =	628456.6
Off Peak Winter =	514191.8
Total Summer kWh =	1277291.5
On Peak Winter =	702510.3
Off Peak Winter =	574781.2

Since the line conductors were not changed, we will assume that there is no KWH savings in line losses and therefore, we can assume that the above values reflect the load on the secondary of the substation and rabbit transformers.

The load on the primary side of the substation and rabbit transformer can now be determined by up-liffting the above values by 1 %. Therefore, the load on the primary side is as follows:

Total Winter kWh =	1154074.8
On Peak Winter =	634741.2
Off Peak Winter =	519333.7
Total Summer kWh =	1290064.4
On Peak Winter =	709535.4
Off Peak Winter =	580529.0

Therefore, losses thru the Substation and Rabbit Transformer, for the converted load, can be determined by subtracting the secondary KWH values from the primary KWH values and the difference is the losses/savings.

Total Winter kWh Losses =	11426.48
On Peak Winter Losses =	6284.57
Off Peak Winter Losses =	5141.92
Total Summer kWh Losses =	12772.91
On Peak Summer Losses =	7025.10
Off Peak Summer Losses =	5747.81

Since the above load has been converted to 27.6 kV, the values shown now reflect the KWH savings.

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** General Service > 50 kW

Description of the program (including intent, design, delivery, partnerships and evaluation):

Large user. We influenced this project and helped push forward. Lagoon Hydro Effeciency Project. Circuit masters were installed on Lagoon meters reducing the load by 114 kW demand.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	514 kW		
Efficient technology:	400 kW		
Number of participants or units delive	10		
Measure life (years):	20		

B. **TRC Results:**

TRC Benefits ($):	*$*	*799,000.00*
TRC Costs ($):		
Utility program cost (less incentives):	$	2,000.00
Participant cost:	$	37,000.00
Total TRC costs:	$	39,000.00
Net TRC (in year CDN $):	$	838,000.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$	20.49

C. **Results:** (one or more category may apply)

Conservation Programs:

Demand savings (kW):	*Summer*	114	
	Winter	114	
	lifecycle	*in year*	
Energy saved (kWh):	*19,972,800*	998,640	
Other resources saved :			
Natural Gas (m3):			
Other (specify):			

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at begining of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		
	lifecycle	*in year*
Energy savngs (kWh):		

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	
	Incremental O&M:	$ 2,000.00
	Incentive:	$ 2,028.00
	Total:	$ 4,028.00
Utility indirect costs ($):	*Incremental capital:*	
	Incremental O&M:	
	Total:	
Participant costs ($):	*Incremental equipment:*	37000
	Incremental O&M:	
	Total:	37000

E. Comments:

Excellent pay back. Customer very satisfied with results and analysis we provided. Customer field tested equipment to ensure results before installation.

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Net Present Value$_{TRC}$

Utility

Name of Utility:	Essex Powerlines Corp.
Number of years in study:	15

Project Description

Name of Project:	Lagoon Hydro Efficiency Project
Description:	Circuit Master Installation

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

- ◉ k$
- ○ $

User Inputs

Discount rate	7.73%	
Unit Annual Energy Savings	114	kW/unit
Number of Units Delivered	1	
Free Ridership Rate		

Output

NPV ($k)	693.5

$k LDC Avoided Costs	Present	2006	2007	2008	2009	2010	2011	2012
Avoided Energy		66	65	69	66	66	66	69
Avoided Generation Capacity		-	-	9	10	8	10	9
Avoided Transmission Capacity		-	-	1	1	1	1	1
Avoided Distribution Capacity		-	-	-	1	1	1	1
Avoided Distribution Losses		-	-	-	-	-	-	-
Other Avoided Costs								
Other Benefits								
Total (undiscounted) Avoided Costs	-	66	65	78	77	76	77	80
$k LDC Program Costs								
LDC OM&A Costs								
LDC Capital Costs								
Incremental Equipment Costs		(37)						
Participant Costs								
Total Program Costs	-	(37)	-	-	-	-	-	-
Total Avoided Costs less Program Costs	-	30	65	78	77	76	77	80

			2006	2007	2008	2009	2010	2011	2012
Present value factor	7.7%	1.000	0.963	0.894	0.830	0.771	0.715	0.664	0.616
Present value of cash flows		-	28.8	58.5	64.7	59.1	54.4	51.4	49.5
Accumulated present value of cash flows		-	28.8	87.2	151.9	211.0	265.4	316.8	366.3

$k NPV TRC	693.5

Net Present Value$_{TRC}$

Utility

Name of Utility:	
Number of years in study:	

Project Description

Name of Project:	
Description:	

- ○ **OEB Residential Table**
- ○ **OEB Commercial Table**
- ○ **OEB Industrial Table**
- ◉ **Direct Input**

User Inputs

Discount rate	
Unit Annual Energy Savings	
Number of Units Delivered	
Free Ridership Rate	

$k LDC Avoided Costs	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Avoided Energy	75	79	85	87	89	91	92	94
Avoided Generation Capacity	7	5	3	3	3	4	4	4
Avoided Transmission Capacity	1	1	1	1	1	1	1	1
Avoided Distribution Capacity	1	1	1	1	1	1	1	1
Avoided Distribution Losses	-	-	-	-	-	-	-	-
Other Avoided Costs								
Other Benefits								
Total (undiscounted) Avoided Costs	84	86	90	92	94	96	98	100
$k LDC Program Costs								
LDC OM&A Costs								
LDC Capital Costs								
Incremental Equipment Costs								
Participant Costs								
Total Program Costs	-	-	-	-	-	-	-	-
Total Avoided Costs less Program Costs	84	86	90	92	94	96	98	100

	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Present value factor	0.572	0.531	0.493	0.458	0.425	0.394	0.366	0.340
Present value of cash flows	47.8	45.6	44.3	42.1	40.0	37.9	35.8	33.8
Accumulated present value of cash flows	414.1	459.7	504.0	546.1	586.0	623.9	659.7	693.5

$k NPV TRC

	Winter (December - March)								
	On Peak 7 - 11 am, 5 - 8 pm			Mid-Peak 11 am - 5 pm, 8 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	602			688			1,614		
2006	602	114	68,628	688	114	78,432	1,614	114	183,996
2007	602	114	68,628	688	114	78,432	1,614	114	183,996
2008	602	114	68,628	688	114	78,432	1,614	114	183,996
2009	602	114	68,628	688	114	78,432	1,614	114	183,996
2010	602	114	68,628	688	114	78,432	1,614	114	183,996
2011	602	114	68,628	688	114	78,432	1,614	114	183,996
2012	602	114	68,628	688	114	78,432	1,614	114	183,996
2013	602	114	68,628	688	114	78,432	1,614	114	183,996
2014	602	114	68,628	688	114	78,432	1,614	114	183,996
2015	602	114	68,628	688	114	78,432	1,614	114	183,996
2016	602	114	68,628	688	114	78,432	1,614	114	183,996
2017	602	114	68,628	688	114	78,432	1,614	114	183,996
2018	602	114	68,628	688	114	78,432	1,614	114	183,996
2019	602	114	68,628	688	114	78,432	1,614	114	183,996
2020	602	114	68,628	688	114	78,432	1,614	114	183,996

	Summer (June - September)								
	On Peak 11 am - 5 pm			Mid-Peak 7 - 11 am, 5 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	522			783			1,623		
2006	522	114	59,508	783	114	89,262	1,623	114	185,022
2007	522	114	59,508	783	114	89,262	1,623	114	185,022
2008	522	114	59,508	783	114	89,262	1,623	114	185,022
2009	522	114	59,508	783	114	89,262	1,623	114	185,022
2010	522	114	59,508	783	114	89,262	1,623	114	185,022
2011	522	114	59,508	783	114	89,262	1,623	114	185,022
2012	522	114	59,508	783	114	89,262	1,623	114	185,022
2013	522	114	59,508	783	114	89,262	1,623	114	185,022
2014	522	114	59,508	783	114	89,262	1,623	114	185,022
2015	522	114	59,508	783	114	89,262	1,623	114	185,022
2016	522	114	59,508	783	114	89,262	1,623	114	185,022
2017	522	114	59,508	783	114	89,262	1,623	114	185,022
2018	522	114	59,508	783	114	89,262	1,623	114	185,022
2019	522	114	59,508	783	114	89,262	1,623	114	185,022
2020	522	114	59,508	783	114	89,262	1,623	114	185,022

	Shoulder (April May October November)					
	Mid-Peak 7 am - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	1,305			1,623		
2006	1,305	114	148,770	1,623	114	185,022
2007	1,305	114	148,770	1,623	114	185,022
2008	1,305	114	148,770	1,623	114	185,022
2009	1,305	114	148,770	1,623	114	185,022
2010	1,305	114	148,770	1,623	114	185,022
2011	1,305	114	148,770	1,623	114	185,022
2012	1,305	114	148,770	1,623	114	185,022
2013	1,305	114	148,770	1,623	114	185,022
2014	1,305	114	148,770	1,623	114	185,022
2015	1,305	114	148,770	1,623	114	185,022
2016	1,305	114	148,770	1,623	114	185,022
2017	1,305	114	148,770	1,623	114	185,022
2018	1,305	114	148,770	1,623	114	185,022
2019	1,305	114	148,770	1,623	114	185,022
2020	1,305	114	148,770	1,623	114	185,022

FAMILY TRADITION FOODS (TECUMSEH) INC.
"The Best Vegetable-based Food Company"

Lagoon Hydro Efficiency Project FY-06

CAPITAL PROPOSAL

This project proposal is to cover the cost of labor and materials to install ten power correcting devices at each of the stationary and air pump aerators to lower the amp draw on each unit as well as reduce KVARS and increase power factor. This will increase the overall efficiency of each unit as well as lower the cost to operate the aerators.

Project Purpose

This project has two items that it will address.

Part 1) The lagoon power supply is limited to run only eight aerators at one time due to the KW draw of the eight motors. This has limited the ability to supply the required amounts of oxygen to the lagoon to let it function properly and effectively during the seasonal pack period. With the installation of the ten circuit master devices at each location the total load per unit will be reduced by 15% therefore decreasing the required power to operate it. This will effectively free up approximately 130amps of power to be used to operate the remaining two aerators. This test was performed on one unit with good success.

Part 2) The Circuit Master also corrects power factor and harmonics in a motor. The power factor at the lagoon has traditionally been low when operating at full load, approx. 78%. The utility penalizes locations that have a power factor of less than 90%. The test unit showed that the power factor increased to 95% for a 75hp motor. The other item KVARS are basically resistance factors inherent in operations. This causes heat in motors and shortens their operating life as well as using more power to operate it. The Circuit Master has proven to significantly reduce the unwanted KVARS in the system by fine tuning the incoming hydro. Overall it will lower heat buildup synchronize power and extend motor life.

Project Scope

1- Perform an analysis of each aerator to conclude proper sizing to maximize effectiveness
2 – Measure the initial power usage of each unit as a start point.
3- Mount each unit at the location prescribed by the manufacturer.
4- Electrical connections are made at the load side of the starters.
5- Power is then measured to show the reductions attainable.
6- The remaining two aerators can be wired and run.
7- Monitor the power usage to ensure loads are within line.
8- Inspection of the installation by the electrical authority.

Project Savings

The savings for this project is based on the lowering of the KW draw at the lagoon in order that two extra aerators can be run for the same hydro cost.

Project Cost

Total cost of this upgrade including material and installation is $40,000 Cdn.

Category …….. Profit Sustaining

Project Co-ordinator. Gil Beleutz ……Chief Engineer

This project is planned for in the fiscal year 2006.

Signing Authorities for this Project

Gil Beleutz _____
Chief Engineer

John Landschoot _____
Operations Manager

Steve Tultz _____
Support Service Manager/Sales

Rick Randall _____
Quality Assurance Manager

Bill Folliott _____
Financial Controller

John Omstead _____
President and CEO

Appendix B - Discussion of the Program

(complete this section for each program)

A. **Name of the Program:** General Service > 50 kw

Description of the program (including intent, design, delivery, partnerships and evaluation):

Large customer that we helped evaluate and push forward a project. Family Tradition Foods saved 191 kw demand from this cold storage Energy Efficiency Project, reducing the amount of Energy required for cooling the tunnels, and cold storage area. A partnership was developed between Family Tradition foods, Energy@Work, and Essex Power. Future projects are being explored.

Measure(s):

	Measure 1	Measure 2 (if applicable)	Measure 3 (if applicable)
Base case technology:	11,188,130 kwh		
Efficient technology:	9,5149,970 kwh		
Number of participants or units delive	1		
Measure life (years):	20		

B. **TRC Results:**

TRC Benefits ($):	*$*	*1,409,600.00*
TRC Costs ($):		
Utility program cost (less incentives):	$	2,000.00
Participant cost:	$	22,000.00
Total TRC costs:	$	24,000.00
Net TRC (in year CDN $):	$	1,433,600.00
Benefit to Cost Ratio (TRC Benefits/TRC Costs):	$	58.73

C. **Results:** (one or more category may apply)

Conservation Programs:

Demand savings (kW):	*Summer*	191	
	Winter	191	
	lifecycle	*in year*	
Energy saved (kWh):	*16,731,600*	1,673,160	
Other resources saved :			
Natural Gas (m3):			
Other (specify):			

Demand Management Programs:

Controlled load (kW)	
Energy shifted On-peak to Mid-peak (kWh):	
Energy shifted On-peak to Off-peak (kWh):	
Energy shifted Mid-peak to Off-peak (kWh):	

Demand Response Programs:

Dispatchable load (kW):	
Peak hours dispatched in year (hours):	

Power Factor Correction Programs:

Amount of KVar installed (KVar):	
Distribution system power factor at begining of year (%):	
Distribution system power factor at end of year (%):	

Line Loss Reduction Programs:

Peak load savings (kW):		
	lifecycle	*in year*
Energy savngs (kWh):		

Distributed Generation and Load Displacement Programs:

Amount of DG installed (kW):	
Energy generated (kWh):	
Peak energy generated (kWh):	
Fuel type:	

Other Programs (specify):

Metric (specify):	

D. **Program Costs*:**

Utility direct costs ($):	*Incremental capital:*	
	Incremental O&M:	$ 2,000.00
	Incentive:	$ 3,344.00
	Total:	$ 5,344.00
Utility indirect costs ($):	*Incremental capital:*	
	Incremental O&M:	
	Total:	
Participant costs ($):	*Incremental equipment:*	22000
	Incremental O&M:	
	Total:	22000

E. Comments:

0

*Please refer to the TRC Guide for the treatment of equipment cost in the TRC Test.

Net Present Value$_{TRC}$

Utility

Name of Utility:	Essex Powerlines Corp.
Number of years in study:	20

Project Description

Name of Project:	
Description:	Cold Storage Efficiency Project

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

- ◉ k$
- ○ $

User Inputs

Discount rate	7.73%	
Unit Annual Energy Savings	191	kW/unit
Number of Units Delivered	1	
Free Ridership Rate		

Output

NPV ($k)	1,443.6

$k LDC Avoided Costs		Present	2006	2007	2008	2009	2010	2011	2012
Avoided Energy			111	110	115	110	111	111	116
Avoided Generation Capacity			-	-	14	16	14	16	16
Avoided Transmission Capacity			-	-	1	1	1	1	1
Avoided Distribution Capacity			-	-	-	1	1	1	1
Avoided Distribution Losses			-	-	-	-	-	-	-
Other Avoided Costs									
Other Benefits									
Total (undiscounted) Avoided Costs		-	111	110	131	128	127	130	135
$k LDC Program Costs									
LDC OM&A Costs			(2)						
LDC Capital Costs									
Incremental Equipment Costs	21,761.6		(22)						
Participant Costs									
Total Program Costs		-	(24)	-	-	-	-	-	-
Total Avoided Costs less Program Costs		-	87	110	131	128	127	130	135

			2006	2007	2008	2009	2010	2011	2012
Present value factor	7.7%	1.000	0.963	0.894	0.830	0.771	0.715	0.664	0.616
Present value of cash flows		-	84.0	98.0	108.4	99.0	91.1	86.2	82.9
Accumulated present value of cash flows		-	84.0	181.9	290.3	389.3	480.4	566.6	649.5

$k NPV TRC	1,443.6

Net Present Value$_{TRC}$

Utility

Name of Utility:	
Number of years in study:	

Project Description

Name of Project:	
Description:	

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

User Inputs

Discount rate	
Unit Annual Energy Savings	
Number of Units Delivered	
Free Ridership Rate	

$k LDC Avoided Costs	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Avoided Energy	125	132	143	146	149	152	155	157	161	165
Avoided Generation Capacity	12	9	4	5	6	6	6	6	7	8
Avoided Transmission Capacity	1	1	1	1	1	1	1	1	1	2
Avoided Distribution Capacity	2	2	2	2	2	2	2	2	2	2
Avoided Distribution Losses	-	-	-	-	-	-	-	-	-	-
Other Avoided Costs										
Other Benefits										
Total (undiscounted) Avoided Costs	140	144	150	154	158	161	164	167	172	177
$k LDC Program Costs										
LDC OM&A Costs										
LDC Capital Costs										
Incremental Equipment Costs										
Participant Costs										
Total Program Costs	-	-	-	-	-	-	-	-	-	-
Total Avoided Costs less Program Costs	140	144	150	154	158	161	164	167	172	177

	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Present value factor	0.572	0.531	0.493	0.458	0.425	0.394	0.366	0.340	0.315	0.293
Present value of cash flows	80.0	76.5	74.2	70.5	66.9	63.4	60.0	56.7	54.2	51.7
Accumulated present value of cash flows	729.6	806.0	880.2	950.7	1,017.7	1,081.1	1,141.1	1,197.8	1,252.0	1,303.7

$k NPV TRC

	Winter (December - March)								
	On Peak 7 - 11 am, 5 - 8 pm			Mid-Peak 11 am - 5 pm, 8 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	602			688			1,614		
2006	602	191	114,982	688	191	131,408	1,614	191	308,274
2007	602	191	114,982	688	191	131,408	1,614	191	308,274
2008	602	191	114,982	688	191	131,408	1,614	191	308,274
2009	602	191	114,982	688	191	131,408	1,614	191	308,274
2010	602	191	114,982	688	191	131,408	1,614	191	308,274
2011	602	191	114,982	688	191	131,408	1,614	191	308,274
2012	602	191	114,982	688	191	131,408	1,614	191	308,274
2013	602	191	114,982	688	191	131,408	1,614	191	308,274
2014	602	191	114,982	688	191	131,408	1,614	191	308,274
2015	602	191	114,982	688	191	131,408	1,614	191	308,274
2016	602	191	114,982	688	191	131,408	1,614	191	308,274
2017	602	191	114,982	688	191	131,408	1,614	191	308,274
2018	602	191	114,982	688	191	131,408	1,614	191	308,274
2019	602	191	114,982	688	191	131,408	1,614	191	308,274
2020	602	191	114,982	688	191	131,408	1,614	191	308,274
2021	602	191	114,982	688	191	131,408	1,614	191	308,274
2022	602	191	114,982	688	191	131,408	1,614	191	308,274
2023	602	191	114,982	688	191	131,408	1,614	191	308,274
2024	602	191	114,982	688	191	131,408	1,614	191	308,274
2025	602	191	114,982	688	191	131,408	1,614	191	308,274

	Summer (June - September)								
	On Peak 11 am - 5 pm			Mid-Peak 7 - 11 am, 5 - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	522			783			1,623		
2006	522	191	99,702	783	191	149,553	1,623	191	309,993
2007	522	191	99,702	783	191	149,553	1,623	191	309,993
2008	522	191	99,702	783	191	149,553	1,623	191	309,993
2009	522	191	99,702	783	191	149,553	1,623	191	309,993
2010	522	191	99,702	783	191	149,553	1,623	191	309,993
2011	522	191	99,702	783	191	149,553	1,623	191	309,993
2012	522	191	99,702	783	191	149,553	1,623	191	309,993
2013	522	191	99,702	783	191	149,553	1,623	191	309,993
2014	522	191	99,702	783	191	149,553	1,623	191	309,993
2015	522	191	99,702	783	191	149,553	1,623	191	309,993
2016	522	191	99,702	783	191	149,553	1,623	191	309,993
2017	522	191	99,702	783	191	149,553	1,623	191	309,993
2018	522	191	99,702	783	191	149,553	1,623	191	309,993
2019	522	191	99,702	783	191	149,553	1,623	191	309,993
2020	522	191	99,702	783	191	149,553	1,623	191	309,993
2021	522	191	99,702	783	191	149,553	1,623	191	309,993
2022	522	191	99,702	783	191	149,553	1,623	191	309,993
2023	522	191	99,702	783	191	149,553	1,623	191	309,993
2024	522	191	99,702	783	191	149,553	1,623	191	309,993
2025	522	191	99,702	783	191	149,553	1,623	191	309,993

	Shoulder (April May October November)					
	Mid-Peak 7 am - 10 pm			Off Peak 10 pm - 7 am		
Year	Hours	kW	kWh	Hours	kW	kWh
Hours/Period	1,305			1,623		
2006	1,305	191	249,255	1,623	191	309,993
2007	1,305	191	249,255	1,623	191	309,993
2008	1,305	191	249,255	1,623	191	309,993
2009	1,305	191	249,255	1,623	191	309,993
2010	1,305	191	249,255	1,623	191	309,993
2011	1,305	191	249,255	1,623	191	309,993
2012	1,305	191	249,255	1,623	191	309,993
2013	1,305	191	249,255	1,623	191	309,993
2014	1,305	191	249,255	1,623	191	309,993
2015	1,305	191	249,255	1,623	191	309,993
2016	1,305	191	249,255	1,623	191	309,993
2017	1,305	191	249,255	1,623	191	309,993
2018	1,305	191	249,255	1,623	191	309,993
2019	1,305	191	249,255	1,623	191	309,993
2020	1,305	191	249,255	1,623	191	309,993
2021	1,305	191	249,255	1,623	191	309,993
2022	1,305	191	249,255	1,623	191	309,993
2023	1,305	191	249,255	1,623	191	309,993
2024	1,305	191	249,255	1,623	191	309,993
2025	1,305	191	249,255	1,623	191	309,993

FAMILY TRADITION FOODS (TECUMSEH) INC.
"The Best Vegetable-based Food Company"

Cold Storage Efficiency Project
FY-06

CAPITAL PROPOSAL

This project proposal is to cover the cost of labor and materials to make two alterations to the cold storage piping in order to (A) increase overall efficiencies in daily operation as well as (B) reduce the cost to defrost both cooling units in #6 cold storage warehouse.

Project Purpose

(A)- Presently the cold storage warehouses are kept at a temp of minus 5 to minus 10*F through the two stage ammonia system. During the off pack season the low stage pressure is run at a higher value (1psi) as we do not require the extreme low temp required to IQF freeze in the tunnels. This equates to a substantial hydro savings as documented. By installing a valve in the suction line of the low stage piping, the system can be separated into two separate suction pressures, one for the tunnels and one for the cold storage. This will allow the cold storage suction pressure to be run at a higher value during the pack production mode without affecting the tunnels reducing our hydro consumption.

(B)- Both the cooling units in #6 warehouse are missing important valves that aid in the defrost cycle of these units daily. Part (B) of the project encompasses installing the proper valving to pump the unit down prior to defrost therefore saving wasted heat/energy and shortening the defrost cycle to an acceptable level. Presently the evaporators defrost twice daily and use hot gas to melt the ice from the coil. In doing so there is a significant amount of heat introduced to the warehouse as well as this heat being added to a full coil of refrigerant which must either be boiled off or sent back to the engine room. By adding the proper valving to the system we can evaporate the liquid in the coil out prior to defrost thereby reducing the load on the system and shortening the defrost time by 40- minutes each time the coil defrosts.

Project Scope

Part (A)

1- Isolate the system and pump down during the Easter Monday shutdown
2- Install an eight inch isolation valve in the low pressure suction line next to #4 booster and relocate the suction line from LPR#1 to the downstream side of the new valve to separate the C.S. suction.
3- Install a pressure transducer and gauge line to the engine room office.
4- Install a 6" connection in the suction line for future expansion.
5- Re-insulate the exposed piping from the alterations.

Part (B)

1- Isolate and pump down the required piping to #6 cold storage.
2- Install two 3" CK-2 suction stop valves on units #1 and #2.
3- Fabricate and install valving and bleed off piping on both units.
4- Relocate the A4AK back pressure regulators on both units.
5- Re-insulate the exposed piping from the alterations.

Project Savings

The savings for this project is based on the comparison of hydro consumption from the previous two years against this year as we ran the engine room at 2psi all day every day vs. the previous years running normal conditions at 1" HG. The amount of KWH has been reduced per day by approx. 3500 kWh. The exact monthly savings to date are included as Appendix "A" and will continue for ten months of the year every year forward. There are two months during corn where the savings cannot be established due to the high load conditions.
Total savings per year equates to approximately $70,000 from the refrigeration system.

Project Cost

Total cost of this upgrade including material and installation is $22,000 Cdn.

Category …….. Profit Adding

Project Co-ordinator. Gil Beleutz ……Chief Engineer

This project is planned for in the fiscal year 2006.

Signing Authorities for this Project

Gil Beleutz _____
Chief Engineer

John Landschoot _____
Operations Manager

Steve Tultz _____
Support Service Manager/Sales

Rick Randall _____
Quality Assurance Manager

Bill Folliott _____
Financial Controller

John Omstead _____
President and CEO

Lessons Learned

Our Customers weather Residential, Commercial, or Industrial want to know how to conserve, and need help doing it. This requires face to face activity with customers, not just flyers sent in the mail. We have received many complements from customers who are surprised by the fact that we take a passion in helping them conserve electricity, and showing them how. How do we do this, we are visible in our 4 Municipalities, and will continue to be in 2006. The following programs have been well received, successful, and will be part of our on going activities.

Essex Power Sponsored Home Audit Program - Residential

Teaming up with a reputable and professional home inspection service has enabled Essex Power to promote the federal **EnerGuide for Houses Grants for Homeowners** program. By offering our customers and incentive of $75 off the price it only now cost them $75 for a professional home energy audit. We also give them three compact fluorescent lights as an incentive once the auditor makes the initial visit. The overall effect is educating customers, lowering their bills, and lowering peak demand on the entire power system.

The Home energy program has been promoted through the Essex Power website, bill inserts, magazine ads and local newspaper articles.

Since the programs inception in early 2005 seventy two homes within the Essex Power service territory have taken advantage of the Home Energy audit program resulting in an estimated 10,800 kWh/yr reduction.

Public Awareness and Trade Show Representation

Increasing public awareness and educating our customers has been a focus for Essex Power. We have developed promotional and educational materials, as well created interactive and static displays to help deliver the message of demand management. We have participated in home shows, industry specific tradeshows and displayed materials at each municipal office within our service territory. For 2006 we are already scheduled for 2 home shows, and the OSUM conference in our territory.

Essex Power Sponsored Commercial and Industrial Audit Program

Essex Power has developed a partnership with service providers in specific energy industry sectors to provide an audit and ‘best business case’ energy efficiency solution. Together, we establish a utility baseline, identify energy saving opportunities, and determine the best means to move forward.
Essex Power has established a load reduction Incentive program providing funding to assist companies in Load Reduction projects discovered during the audit process. To date we have completed 15 Audits in partnership.

Customers trust us in setting up these audits and look to us for information to complete any installations.

Currently we offer and incentive of $13.79/Mwh to a customer to reduce their lighting load.

Additionally we offer an incentive on a case by case basics for any Energy Efficient Project brought forward by a customer. This will be evaluated and if it meets certain criteria and incentive amount will be calculated and applied.

Seminars for Commercial and Industrial User

Organizations are realizing the importance of managing energy costs. But in order to manage these costs organizations need to understand their facility's energy consumption patterns, the pricing structure in their particular electricity marketplace and how this information can be used to improve their bottom line. Essex Power has developed seminars for large commercial and industrial users, focusing on the competitive value of **metering, monitoring and management**.

Offering efficiency seminars to large users has been a very effective way to increase our relationships with our larger customers, and will continue to do so.

Christmas Light Exchange Program

Essex Power sponsored a Christmas light exchange program for each municipality. The replacement LED lights consume on average 90% less energy than standard 5W Christmas bulbs. This was a tremendous success; we put a sign out in front of each display to inform the public of the savings, placed ads in the local newspapers, and decorated a bucket truck with LED lights and entered 2 local parades.

In 2006 we will have a xmas light exchange program for the public.

Employee Energy Savings Pilot Project

In order to test market an energy savings project that potentially can be conducted within an entire municipality, Essex Power employees will embarked upon an energy savings pilot project in their own homes. Armed with energy savings kits provided by Essex Power each employee has been challenged to reduce energy consumption in their own homes. Each employee is required to complete a home energy audit as well make low or no cost home energy saving improvements. The pilot project will be tracked, evaluated and improved and Essex Power will determine if the project is viable for a larger size group or even an entire municipality.

I have already received 3 outside request from our customers, to help them conduct an energy day at their facilities.

Essex Power Energy Conservation Web Sites

From our web site www.essexpower.ca, you can access to powerful, very informative websites, which we have received very positive feedback on. We will continue to update these web sites as we go forward. We have put on presentations at 10 grade schools show casing these sites with great response.

Kids Energy knows that getting the next generation of power consumers thinking about energy conservation today is a major step towards solving future power crises. The Kids Energy Web portal at www.essexpower.ca puts this knowledge into action! Young minds absorb information like powerful batteries storing energy. Kids Energy uses games, experiments and a Home Energy Audit project to provide a playful, interactive learning environment where young minds are exposed to energy, its uses, and how it's distributed.

A culture of conservation and demand management Energy conservation Essex Power knows that it doesn't take a lot of energy to conserve energy and strives to provide our customers with simple and affordable power saving solutions through the Energy Conservation Web portal at www.essexpower.ca. Through Web sites and interactive media, Essex Power is helping to create the culture of conservation at home and in businesses by offering home efficiency and renovation tips, and hands on solutions to improve profits and productivity.

Compact Fluorescent Light (CFL) retrofit program for public housing.

Essex Power has teamed up with Windsor-Essex County Housing Corporation (WECHC) to promote energy awareness and conservation to reduce actual power consumption within their service communities. by more than 288,000 kWh per year. The reduction will save $25,000 a year.

The program will replace standard incandescent light bulbs (average 80w) in 246 apartments (10 different buildings) located within the municipalities of Amherstburg (3), LaSalle (1), Leamington (5) and Tecumseh (1). In total over 2,000 bulbs were converted to Compact Fluorescent light bulbs (CFLs - average 17.5w) donated by Essex Power.

A sign was placed in the entrance of each building promoting the partnership, and will continue in 2006.

Utilismart Program

Essex Power has recently made Utilismart available to all interval meter customers, as part of its CDM program. Utilismart currently provides a wide range of services to Essex Power's, Industrial and Large Use consumers. Utilismart is a web-based service that provides customers with the information needed to make informed business decisions about electricity usage. It enables a company to visualize how it uses power.

Organizations could be operating under the impression that their business is a paragon of efficiency; meanwhile, they have been squandering and mismanaging their energy concerns for years. The Utilismart software monitors efficiency by identifying and avoiding the high peak

demand charges that appear on monthly utility bills due to out-of-control energy use. The lower the peak demands, the more a company can reduce the energy bill.

Utilismart also offers a Cost Prediction model to assist end users of electricity in reducing their consumption and demand, and now has the capability of predicting what your electricity will cost tomorrow! Now a company will have the information to make decisions on whether or not to shift or reduce the load.

We hosted a seminar on March 13th, 2006 for all of our larger users and provided Utilismart training, with excellent feedback!

Wholesale Embedded Generation Power Pool (Tri-Gen and Cogen Standby Power)

The Distributed Generation project is the first of its kind in the province. The concept emanated from the August 14, 2003 black out. The business model is to Aggregate the standby generation assets in Essex Power Lines area and bid, dispatch and control the total capacity as a single market participant into the wholesale electricity market and provide demand response to constrained transmission and distribution infrastructure.

In 2006 we are continuing to add to aggregation, and have the 4 municipalities investigating standby generation.

Conclusion

Our CDM program for 2005 was evaluated as a great success! With programs addressing the Residential, Commercial, and Industrial markets, it has strengthened our relationship as a utility, and provided good basics for the future.

	2005 CDM Expenditures	Total approved CDM
1. Energy Awareness Program	c – 14,404 o – 32,353	c – 20,000 o – 30,000
2. Residential Conservation <50 kW	c – 14,404 o – 51,943	c – 25,000 o – 55,000
3. General Service Conservation >50 kW	c – 0.00 o – 29,182	c – 60,000 o – 85,000
4. Large User – Standby & Co-Generation	c – 0.00 o – 12,480	c – 15,000 o – 135,000
5. Municipal Green Project – "Lead by Example" and "Doing the Right Thing"	c – 0.00 o – 25,248	c – 20,000 o – 80,000
6. 4kV Conversion	c – 114,607 o – 13,842	c – 139,904 o – 35,000
Total	$308,462	$699,904

Essex Power Sponsored Home Audit Program - Residential

Since the programs inception in early 2005 seventy two homes within the Essex Power service territory have taken advantage of the Home Energy audit program resulting in an estimated 10,800 kWh/yr reduction.

Public Awareness and Trade Show Representation

We have participated in home shows, industry specific tradeshows and displayed materials at all 4 municipal offices within our service territory. For 2006 we are already scheduled for 2 home shows, and the OSUM conference

Essex Power Sponsored Commercial and Industrial Audit Program

Have completed 1 Industrial audit which received the 5 k funding through NRcan, 10 Commercial audits, and more scheduled for 2006.

Seminars for Commercial and Industrial User

These have proved to be invaluable to the customer, and excellent relationship building. Our customers were invited to 4 seminars in 2005, and we just hosted our own in Mar/06. Additional ones are being planned for 2006.

Christmas Light Exchange Program

Each Municipality exchanged 5500 xmas lights, and saved an estimate $700.00 in electricity costs, and 39,600 kWh/yr.

In 2006 we will host a customer xmas light exchange program

Employee Energy Savings Pilot Project

We will have a program for our employees in 2006, and I presently have 3 customer businesses interested in hosted an Energy Conservation Day at there place of business, supported by energy kits developed by Essex Power.

Essex Power Energy Conservation Web Sites

In 2005 there were 3819 visitors to our 2 Energy Conservation Web Sites, which we will enhance and continue to promote in 2006. We combined this with school presentations for elementary grade students.

Compact Fluorescent Light (CFL) retrofit program for public housing.

Essex Power has teamed up with Windsor-Essex County Housing Corporation (WECHC) to promote energy awareness and conservation to reduce actual power consumption within their service communities by more than 288,000 kWh per year. The reduction will save $25,000 a year. We will participate in another program to be determined in 2006.

Utilismart Program

Utilismart also offers a Cost Prediction model to assist end users of electricity in reducing their consumption and demand, and now has the capability of predicting what your electricity will cost tomorrow! Now a company will have the information to make decisions on whether or not to shift or reduce the load.

Great tool to establish baseline, and to evaluate peak shaving, load shifting, power factor correction, and energy savings. This will lead to energy saving projects which may qualify for an incentive from Essex Power.

Wholesale Embedded Generation Power Pool (Tri-Gen and Cogen Standby Power)

Testing on the system with the IESO took place December 12 – 21, 2005.

- Entered Market December 22, 2005
- Starting hours in Market 6am – 11pm – Dec 22- Jan18, 2006
- Essex Power Rep has to be on call at all times while in the Market
- Changed Hours as Market Participant as of midnight Jan 18, 2006
- Now 24 hrs/day
- Called on for Energy +/- 18 times
- Total Generation for Dec/05 = 12,132 kWh

The existing Generators are in Hydro One territory and not part of our CDM Results, but as we go forward we will be including Essex Power Customers. This is included to explain how the program works and we will continue to expand into Essex Power Territory.

We are adding to the aggregation in 2006, and exploring the opportunity with our 4 municipalities.

Essex Power is continuing with all of our programs, and will be a Leader in Energy Conservation in Essex County. We did not allocate all of our CDM dollars to 4 Kv conversion, or Smart meters, we spread it over sectors of our market in order for us as a utility demonstrate we want to have a relationship with our customers and help them achieve energy efficiency.

We believe we are building a strong base of programs to incorporate into our rate structure, with the customer sharing in the benefits.

It's a Win Win situation!