**1. [Ex. 1, App. 4] Please confirm that the sole author of the Enerspectrum report is Bart Burman. Please provide the curriculum vitae for Mr. Burman. Please list all proceedings before any regulator in which Mr. Burman has been qualified as an expert in conservation and demand management auditing and programs.**

RESPONSE:

Norfolk Power Distribution Inc. confirms that the sole author of the Enerspectrum report is Bart Burman. Please refer to Appendix A for Mr. Burman's curriculum vitae. Mr. Burman's 28 years of industry experience, including 7 years of representing LDCs in various regulatory procedures speak of his expertise.

**2. [Ex. 1, App. 4, 9th page – not numbered] Please provide the original calculations by the Applicant for TRC, LRAM and SSM for the Energy Audits for Major Customers program, and numerical details of each revision to those calculations made by the consultant. Please provide the basis for, and any calculations related to, the 147 kW savings assumption, the five year life, and the 30% free ridership. Please provide a list of the measures assumed to have been implemented by each customer as a result of the audit, and the assumptions with respect to each measure.**

In reviewing the calculations for the application and this IR, the original calculations could not be substantiated. Since the time of the original calculations significant staff turnover has occurred adding further difficultly. As a result Enerspectrum recalculated the TRC, LRAM and SSM for the Energy Audits of Major Customers program. The details of this are available in Appendix B.

The details of the 147 kW are available in Appendix C.

The five year life was an error and should have been 15 years. This is based on the type of system changes identified with the three major customers participating in the program. When referencing the OEB Commercial and Industrial tables for similar technologies the EE Technology life ranged from 15-20 Years. To be conservative a 15 year life was used.

It is NPDI's understanding that a 30% free ridership rate is acceptable for use in calculations for custom projects/programs in lieu of additional or supporting data to validate a more accurate free ridership rate. The free rider rate for custom projects, as defined in section 7.2.3 of the Board's Guidelines for Electricity Conservation and Demand Management, is 30%.[1]

1 Inputs and Assumptions for Calculating Total Resource Cost
March 28, 2008(Inputs_and_Assumptions_20080328.pdf)

# APPENDIX A

## Bart Burman, B.A.Sc., M.B.A., P.Eng.

Burman Energy Consultants Group, Inc.
98 Archibald Road
RR2 Kettleby, Ontario L0G 1J0

Email: bart.burman@burmanenergy.ca
Cell: 416-219-9976

## Education

Masters of Business Administration, University of Toronto, 1988
Bachelor of Applied Science, Electrical Engineering, University of Toronto, 1981

## Experience

**Managing Partner, EnerSpectrum Group, 2002 – July 16, 2009**
**President, EnerSpectrum Group, Inc., July 17, 2009 – Present**
**President, Burman Energy Consultants Group, Inc. (name change), November 1, 2009 – Present**

- Develop and deliver products and services to meet local distribution company (LDC) needs, including system optimization modeling and analysis, conservation and demand management (CDM) program development and implementation, total resource cost analysis and preparation of lost revenue (LRAM) and shared savings (SSM) cases from CDM results for rates filings.
- Successfully execute over 100 service contracts for more than 35 clients.
- Deliver presentations to EDA, OEB, OPA, ADM of Energy, Commission for Alternate Energy on industry issues and their solutions.
- Represent clients at association working groups.
- Associated with large industry consulting firms in delivering LDC asset management services.
- Certificate of Authorization from the Professional Engineers of Ontario.
- Member of Electricity Distributors' Association (EDA) Commercial Members Steering Committee since 2003.

**Ontario Hydro, Hydro One, 1981 - 2002**

Director, Corporate Development, 2000 - 2002

- Coordinated and negotiated utility acquisitions, including the structuring of due diligence.
- Spearheaded project management of Hydro One's service outsourcing, ensuring time lines, budgets and controls for ongoing monitoring.
- Delivered effective presentations, strategies and frameworks; managed key business imperatives.

Director, Distribution Operation Management, 1999 – 2000

- Designed and implemented emergency event response organization and led operations teams through several response and restoration efforts.
- Analyzed Ontario Hydro's distribution operations, worked with direct reports to identify necessary changes, worked as a team to brainstorm restructuring of functional areas, design and implement organizational structures and facilities, support I.T., and execute changes. Held direct report managers accountable for execution and provided coaching and support.
- Managed an annual operating budget of $30M
- Piloted the first Ontario Hydro distribution network specific GIS system to predict outage cause and provide effective feedback to the customer.

# APPENDIX A

Director, Investment Strategy, 1998 – 1999

Director, Distribution System Engineering and Sustainment, 1997 - 1998

- Designated chief engineer for the Ontario Hydro distribution system; directed investment planning, asset sustainment and engineering departments.
- Analyzed business decisions to ensure viability of new investments, thereby securing value delivery of the distribution network.
- Developed long range business plans and annual budgets for the distribution network ($200M annually). Monitored actual budget performance and projections and adjusted direction as required.
- Directed implementation and ongoing provision of a province wide computer standard and operating system platform.

Customer Supply Planning Manager, Field Operations, 1993 - 1997

- Implemented a process perspective as a management tool to facilitate continuous improvement and extract optimal team and individual performance.
- Introduced a customer transaction feedback system, which tracked service performance and enabled better response to the needs of the end use customer.
- Concluded several supply negotiations with large customers.
- Represented the company through presentations to industry groups.

Superintendent, Regional Sales Implementation/Service Quality, 1991 - 1993

- Acquired process, facilitation, team building and re-engineering expertise.
- Implemented and supported field sales and performance monitoring.

Held various progressive positions between 1981 and 1991.

Appendix B - 2005 Energy Audits - LRAM

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power |
| Number of years in study: | 15 |

**Project Description**

| | |
|---|---|
| Name of Project: | 2005 - Energy Audits for Major Customers |
| Description: | Energy Audits |

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

- ○ k$
- ◉ $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 8.57% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 3 | |
| Free Ridership Rate | 30% | |

**Output**

| | |
|---|---|
| NPV ($) | 528,699.22 |

| LDC Avoided Costs | Present | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| Avoided Energy | | 55,188.41 | 54,374.31 | 57,221.98 | 54,598.23 | 55,204.59 |
| Avoided Generation Capacity | | - | - | 7,078.52 | 7,924.33 | 6,778.88 |
| Avoided Transmission Capacity | | - | - | 532.90 | 546.18 | 559.45 |
| Avoided Distribution Capacity | | - | - | - | 680.33 | 697.34 |
| Avoided Distribution Losses | | - | - | - | - | - |
| Other Avoided Costs | | | | | | |
| Other Benefits | | | | | | |
| **Total (undiscounted) Avoided Costs** | - | 55,188.41 | 54,374.31 | 64,833.40 | 63,749.07 | 63,240.26 |
| **LDC Program Costs** | | | | | | |
| LDC OM&A Costs | -47,176.60 | | | | | |
| LDC Capital Costs | | | | | | |
| Incremental Equipment Costs | - | | | | | |
| Participant Costs | | | | | | |
| | | | | | | |
| | | | | | | |
| **Total Program Costs** | -47,176.60 | - | - | - | - | - |
| **Total Avoided Costs less Program Costs** | -47,176.60 | 55,188.41 | 54,374.31 | 64,833.40 | 63,749.07 | 63,240.26 |

| | | | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|
| Present value factor | 8.6% | 1.000 | 0.960 | 0.884 | 0.814 | 0.750 | 0.691 |
| Present value of cash flows | | -47,176.60 | 52,965.49 | 48,065.01 | 52,786.66 | 47,806.78 | 43,681.69 |
| Accumulated present value of cash flows | | -47,176.60 | 5,788.89 | 53,853.90 | 106,640.56 | 154,447.34 | 198,129.02 |

| | |
|---|---|
| **NPV TRC** | **528,699.22** |

APPENDIX B - 2005 Energy Audits - SSM

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power |
| Number of years in study: | 15 |

**Project Description**

| | |
|---|---|
| Name of Project: | 2005 - Energy Audits for Major Customers |
| Description: | Energy Audits |

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

- ○ k$
- ◉ $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 8.57% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 3 | |
| Free Ridership Rate | 30% | |

**Output**

| | |
|---|---|
| NPV ($) | 528,699.22 |

| LDC Avoided Costs | Present | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| Avoided Energy | | 55,188.41 | 54,374.31 | 57,221.98 | 54,598.23 | 55,204.59 |
| Avoided Generation Capacity | | - | - | 7,078.52 | 7,924.33 | 6,778.88 |
| Avoided Transmission Capacity | | - | - | 532.90 | 546.18 | 559.45 |
| Avoided Distribution Capacity | | - | - | - | 680.33 | 697.34 |
| Avoided Distribution Losses | | - | - | - | - | - |
| Other Avoided Costs | | | | | | |
| Other Benefits | | | | | | |
| **Total (undiscounted) Avoided Costs** | - | 55,188.41 | 54,374.31 | 64,833.40 | 63,749.07 | 63,240.26 |
| **LDC Program Costs** | | | | | | |
| LDC OM&A Costs | -47,176.60 | | | | | |
| LDC Capital Costs | | | | | | |
| Incremental Equipment Costs | - | | | | | |
| Participant Costs | | | | | | |
| | | | | | | |
| | | | | | | |
| **Total Program Costs** | -47,176.60 | - | - | - | - | - |
| **Total Avoided Costs less Program Costs** | -47,176.60 | 55,188.41 | 54,374.31 | 64,833.40 | 63,749.07 | 63,240.26 |

| | | | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|
| Present value factor | 8.6% | 1.000 | 0.960 | 0.884 | 0.814 | 0.750 | 0.691 |
| Present value of cash flows | | -47,176.60 | 52,965.49 | 48,065.01 | 52,786.66 | 47,806.78 | 43,681.69 |
| Accumulated present value of cash flows | | -47,176.60 | 5,788.89 | 53,853.90 | 106,640.56 | 154,447.34 | 198,129.02 |

| | |
|---|---|
| **NPV TRC** | **528,699.22** |

# APPENDIX B - 2006 Energy Audits - LRAM

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power |
| Number of years in study: | 15 |

**Project Description**

| | |
|---|---|
| Name of Project: | 2005 - Energy Audits for Major Customers |
| Description: | Energy Audits |

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

- ○ k$
- ◉ $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 6.51% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 9 | |
| Free Ridership Rate | 30% | |

**Output**

| | |
|---|---|
| NPV ($) | 780,058.25 |

| LDC Avoided Costs | Present | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Avoided Energy | | 57,518.11 | 60,530.42 | 57,754.97 | 58,396.39 |
| Avoided Generation Capacity | | - | 19,558.30 | 21,895.34 | 18,730.38 |
| Avoided Transmission Capacity | | - | 1,472.44 | 1,509.12 | 1,545.80 |
| Avoided Distribution Capacity | | - | - | 1,879.79 | 1,926.79 |
| Avoided Distribution Losses | | - | - | - | - |
| Other Avoided Costs | | | | | |
| Other Benefits | | | | | |
| Total (undiscounted) Avoided Costs | - | 57,518.11 | 81,561.16 | 83,039.22 | 80,599.36 |
| LDC Program Costs | | | | | |
| LDC OM&A Costs | -32,321.41 | | | | |
| LDC Capital Costs | | | | | |
| Incremental Equipment Costs | - | | | | |
| Participant Costs | | | | | |
| | | | | | |
| | | | | | |
| Total Program Costs | -32,321.41 | - | - | - | - |
| Total Avoided Costs less Program Costs | -32,321.41 | 57,518.11 | 81,561.16 | 83,039.22 | 80,599.36 |

| | | | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 |
| Present value of cash flows | | -32,321.41 | 55,732.61 | 74,198.96 | 70,926.30 | 64,634.62 |
| Accumulated present value of cash flows | | -32,321.41 | 23,411.20 | 97,610.16 | 168,536.46 | 233,171.08 |

| | |
|---|---|
| NPV TRC | 780,058.25 |

APPENDIX B - 2006 Energy Audits - LRAM

**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

- ○ k$
- ◉ $

**User Inputs**

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

| **LDC Avoided Costs** | **2011** |
|---|---|
| **Avoided Energy** | 58,226.57 |
| **Avoided Generation Capacity** | 22,380.04 |
| **Avoided Transmission Capacity** | 1,585.10 |
| **Avoided Distribution Capacity** | 1,974.96 |
| **Avoided Distribution Losses** | - |
| **Other Avoided Costs** | |
| **Other Benefits** | |
| **Total (undiscounted) Avoided Costs** | 84,166.67 |
| **LDC Program Costs** | |
| **LDC OM&A Costs** | |
| **LDC Capital Costs** | |
| **Incremental Equipment Costs** | |
| **Participant Costs** | |
| | |
| | |
| **Total Program Costs** | - |
| **Total Avoided Costs less Program Costs** | 84,166.67 |

| | **2011** |
|---|---|
| Present value factor | 0.753 |
| Present value of cash flows | 63,369.96 |
| Accumulated present value of cash flows | 296,541.04 |
| | |
| **NPV TRC** | |

# APPENDIX B - 2006 Energy Audits - SSM

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power |
| Number of years in study: | 15 |

**Project Description**

| | |
|---|---|
| Name of Project: | 2005 - Energy Audits for Major Customers |
| Description: | Energy Audits |

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

- ○ k$
- ◉ $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 6.51% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 9 | |
| Free Ridership Rate | 30% | |

**Output**

| | |
|---|---|
| NPV ($) | 780,058.25 |

| LDC Avoided Costs | Present | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| Avoided Energy | | 57,518.11 | 60,530.42 | 57,754.97 | 58,396.39 |
| Avoided Generation Capacity | | - | 19,558.30 | 21,895.34 | 18,730.38 |
| Avoided Transmission Capacity | | - | 1,472.44 | 1,509.12 | 1,545.80 |
| Avoided Distribution Capacity | | - | - | 1,879.79 | 1,926.79 |
| Avoided Distribution Losses | | - | - | - | - |
| Other Avoided Costs | | | | | |
| Other Benefits | | | | | |
| Total (undiscounted) Avoided Costs | - | 57,518.11 | 81,561.16 | 83,039.22 | 80,599.36 |
| LDC Program Costs | | | | | |
| LDC OM&A Costs | -32,321.41 | | | | |
| LDC Capital Costs | | | | | |
| Incremental Equipment Costs | - | | | | |
| Participant Costs | | | | | |
| | | | | | |
| | | | | | |
| Total Program Costs | -32,321.41 | - | - | - | - |
| Total Avoided Costs less Program Costs | -32,321.41 | 57,518.11 | 81,561.16 | 83,039.22 | 80,599.36 |

| | | | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 |
| Present value of cash flows | | -32,321.41 | 55,732.61 | 74,198.96 | 70,926.30 | 64,634.62 |
| Accumulated present value of cash flows | | -32,321.41 | 23,411.20 | 97,610.16 | 168,536.46 | 233,171.08 |

| | |
|---|---|
| NPV TRC | 780,058.25 |

# APPENDIX B - 2006 Energy Audits - SSM

**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

- ○ k$
- ◉ $

**User Inputs**

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

| **LDC Avoided Costs** | **2011** |
|---|---|
| **Avoided Energy** | 58,226.57 |
| **Avoided Generation Capacity** | 22,380.04 |
| **Avoided Transmission Capacity** | 1,585.10 |
| **Avoided Distribution Capacity** | 1,974.96 |
| **Avoided Distribution Losses** | - |
| **Other Avoided Costs** | |
| **Other Benefits** | |
| **Total (undiscounted) Avoided Costs** | 84,166.67 |
| **LDC Program Costs** | |
| **LDC OM&A Costs** | |
| **LDC Capital Costs** | |
| **Incremental Equipment Costs** | |
| **Participant Costs** | |
| | |
| | |
| **Total Program Costs** | - |
| **Total Avoided Costs less Program Costs** | 84,166.67 |

| | **2011** |
|---|---|
| Present value factor | 0.753 |
| Present value of cash flows | 63,369.96 |
| Accumulated present value of cash flows | 296,541.04 |
| | |
| **NPV TRC** | |

# APPENDIX C - 2005 ENERGY AUDITS

| Saving Identified Through Industrial Audit Program | | | | | | |
|---|---|---|---|---|---|---|
| | Electricity | | | | Natural gas | |
| **Customer** | **System** | **Peak** | **Energy** | **Hours of use** | **System** | **Energy (Cu M)** |
| **Canvil** | Compressed air | 63 | 395000 | | Treat line heaters | 74025 |
| | Air conditioning | 14 | 25760 | Summer only | | |
| **Total** | | **77** | **420760** | | | **74025** |
| **BorgWarner** | Weekend load reduction | 0 | 249000 | | | |
| | Air system | 10.63 | 92864 | | | |
| | Harperizer | 20.72 | 41440 | | | |
| | Office Air conditioning | 19 | 11250 | Summer only | | |
| **Total** | | **50.35** | **394554** | | | **0** |
| **Ranpro** | Prog Therm (Summer electrical | 20 | 10000 | | Roof insulation | 96293 |
| | Office windows | | 5333 | | Office windows | 896 |
| | | | | | Shipping doors | 14982 |
| **Total** | | **20** | **15333** | | | **112171** |
| **Grand Total** | | **147** | **830,647** | | | **186,196** |
| **Summer only** | | **53** | **47,010** | | | |
| **All year** | | **94** | **783,637** | | | **186,196** |