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Modelling of Adaptation to the National Energy Code for Buildings (NECB) 2011

Final Report

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TABLE OF CONTENTS

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EXECUTIVE SUMMARY

The purpose of this study is to provide specific details on how to vary the overall energy use of an NECB 2011 prescriptive building by 5% and 10% (increase and decrease), through varying the prescriptive code requirements for the envelope, HVAC, SHW, lighting, and fenestration percentage. This analysis was undertaken in seven locations (Victoria, Windsor, Montreal, Ottawa, Edmonton, Fort McMurray, and Yellowknife), and for six representative building types (midrise apartment, large office, strip mall, secondary school, big box retail, and warehouse). A description of each building type is provided in Table 1.

Tables 2 through 5 provide details on each of the measures/prescriptive variations evaluated when targeting the 5% and 10% (increase and decrease) in energy use. The measures were analyzed at four different efficiency levels (High, Mid-High, Mid-low, Low). The High level represents the most efficient, readily available level or product in the market place, while the low level represents the least efficient, readily available level or product in the market place. The Mid-High and Mid-Low levels represent typical efficiency levels between the High and Low levels and that of the levels prescribed in the NECB 2011.

The impact on overall energy use of each measure was determined using DOE2.1E simulation software. Where individual measures did not achieve the 5% and 10% targets (increase and decrease), combinations of measures were evaluated. The energy savings results for each measure are provided in Table 6 through Table 12.

Envelope Measures

The energy savings associated with the envelope measures were low/moderate, ranging between 3.0% and 13.7% for all building types and locations evaluated. The low/moderate energy savings for this measure is a result of the stringency of the NECB 2011 prescriptive requirements. With the exception of the warehouse in Victoria, none of the building types/locations meet the 10% energy savings target, and many of building types in colder climates did not meet the 5% energy savings target.

The energy increases associated with the envelope measures were large. The majority of the 5% and 10% energy increase targets were achieved through either a single envelope measure or a combination of envelope measures. Because of the stringency of the NECB 2011 prescriptive requirements for envelope, it was possible to significantly reduce the envelope U-values and achieve many of the 5% and 10% energy increase targets.

Lighting Measures

The energy savings associated with the lighting measures were very low, below 1.5% for all building types and locations evaluated. The small energy savings for this measure are a result of the prescriptive lighting requirements of the NECB 2011 being very stringent, and generally within 5% of the High-levels evaluated. None of the 5% or 10% energy saving targets were achieved through either individual lighting measures or through a combination of lighting measures.

The energy increases associated with the lighting measures were large. Although, none of the 5% energy increase targets were achieved through the lighting measures, several of the 10% energy increase targets were achieved through lighting power density (LPD) increases. Due to

the stringency of the NECB 2011 prescriptive lighting power density (LPD) requirement, large energy increases were obtainable by increasing the LPD to a value significantly less stringent than the NECB 2011.

HVAC and SHW Measures

The energy saving associated with the HVAC and SHW measures were moderate, ranging between 0.2% and 11.6% for all building types and locations evaluated. Due to the large number of individual HVAC measures, the HVAC and SHW category achieved the most number of 10% energy savings targets and a significant number of 5% energy savings targets.

The energy increases associated with the HVAC and SHW measures were similar in magnitude to the energy savings results, ranging between 0.3% and 14.1% for all building types and locations evaluated. There were less HVAC and SHW measures evaluated for the energy increase targets compared to the saving targets, because many of the NECB 2011 efficiency levels were already at the minimum prescribed federally (under the Energy Efficiency Act) and could not be reduced further.

Fenestration and Door to Gross Wall Area Ratio (FDWR) Measures

Modifying the FDWR resulted in both energy savings and energy increases, depending on the building type and location being considered. Energy savings were seen when the FDWR measure being analyzed was below that prescribed by the NECB 2011. The energy savings did not exceed 10% for any location or building type evaluated. Energy increases were seen when the FDWR measure being analyzed was above that prescribed by the NECB 2011. The energy increases did not exceed 10%, except for the office in Yellowknife.

1. INTRODUCTION

The purpose of this study is to provide specific details on how to vary the overall energy use of an NECB 2011 prescriptive building by 5% and 10% (increase and decrease), through varying the prescriptive code requirements for the envelope, HVAC, SHW, lighting, and fenestration percentage.

This analysis was undertaken in seven locations (Victoria, Windsor, Montreal, Ottawa, Edmonton, Fort McMurray, and Yellowknife), and for six representative building types (midrise apartment, large office, strip mall, secondary school, big box retail, and warehouse). The locations were selected because they represent major populated areas in all six of the NECB 2011 climate regions. A description of each building type evaluated is provided in Table 1.

The impact on overall energy use of varying the prescriptive code requirements for each building type and location was determined using DOE2.1E simulation software. For each building type and location, reference models were developed to represent a building matching the NECB 2011 prescriptive code requirements. These reference models were used as the baseline results on which all modifications targeting the 5% and 10% (increase and decrease) were evaluated. Each prescriptive variations/measures were evaluated one at a time and compared to the NECB 2011 baseline model results. Where individual measures did not achieve the 5% and 10% targets (increase and decrease), combinations of measures were evaluated.

Table 1: Building Model Descriptions

Building Type	Building Description
Large Office	The large office archetype represents a square 13,380 m² (144,000 ft²), 10-storey building with a wall-to-roof area ratio of 4.3 and window-to-wall ratio of 0.4. The zoning includes 5 uniformly loaded zones per floor, with a 146 m² (1,570ft²) perimeter zone on each of the four major orientations and a core zone that accounts for 57% of the floor space. The HVAC system is a single built-up variable air volume (VAV) system serving the entire building. A single natural gas boiler provides heating. A water-cooled electric compression chiller and cooling tower provides cooling. Walls are 75% curtain wall and 25% concrete block with exterior finish and interior insulation and drywall.
Secondary School	The secondary school archetype has 3-storeys, a wall-to-roof area ratio of 0.57, widow-to-wall ratio of 0.26 and a total floor area of 17,320 m^2 (186,436 ft^2). Six built-up variable air volume (VAV) systems serve the classrooms. The administrative area, library, cafeteria, and two gymnasiums each have dedicated built-up AHUs. Hydronic heating and cooling are provided by a single natural gas boiler and water-cooled chiller.
Mid-Rise Apartment	The mid-rise apartment archetype represents a square 3,900 m² (42,000ft²), 3-storey building with a wall-to-roof area ratio of 1.1 and a window-to-wall ratio of 0.29. There are 15 apartments and 1 core zone per floor. The HVAC system consists of package air conditioners (PACs) and hydronic baseboards serving each apartment with a hydronic heated, DX-cooled make-up air unit (MAU) providing fresh air to the core zones. Fresh air to the suites enters from the core zone via door undercuts. A single natural gas boiler provides heating. Walls are concrete block with exterior finish and interior insulation and drywall.
Strip Mall	The strip mall archetype consists of a number of retail outlets with a total ground floor area of 3,995m^2 (42,980ft²). Retail store areas range from 56m^2 (600 ft^2) to 223 m^2 (2400 ft^2). The window-to-wall area ratio is 0.20 and the wall-to-roof area ratio is 0.95. Walls are brick, with air gap and insulation applied over 12 inch concrete block with drywall inside. The HVAC system in each building is a roof-top packaged constant volume system. The packaged system has a natural gas furnace section and DX cooling section. No zone re-heat is provided.
Box Store	The box store archetype has a floor area of 8,279 m^2 (89,115 ft2). The building has a wall-to-roof area ratio of 0.3 . The window-to-wall ratio is 7.6%. Walls are a precast construction containing rigid insulation. The building is cooled and heated by 9 roof top units. Heating is provided by natural gas. The majority of the floor area is dedicated to sales, but there are small sections for an office, storage, receiving, and a greenhouse.
Warehouse	The warehouse archetype represents a 3,891 m^2 (41,883 ft^2), 1-storey building. The building contains an office area that is 10% of the total area of the building. The building has a wall-to-roof area ratio of 0.72. The window-to-wall ratio is 3.5%; the FWDR is 6.5%. Walls are tilt-up precast construction containing rigid insulation. The office area is served by a packaged constant volume system with a natural gas furnace and DX cooling section. The warehouse area contains natural gas-fired unit heaters and no cooling systems.

2. MEASURES EVALUATED

The measures analyzed when targeting the 5% and 10% energy savings/increase can be divided into four primary categories; 1) envelope U-value; 2) maximum fenestration and door to gross wall area ratio (FDWR); 3) HVAC and SHW efficiency; and 4) lighting. Individual measures (secondary measures) were analyzed at four different efficiency levels (High, Mid-High, Mid-low, Low) under each of the primary categories listed above.

Tables 2 through 5 provide details on each of the secondary measures evaluated, lists the efficiency levels analyzed (High, Mid-High, Mid-low, Low), provide references for each efficiency level selected, and list the NECB 2011 code requirements to which it is being compared.

The High level represents the most efficient, readily available level or product in the market place, while the low level represents the least efficient, readily available level or product in the market place. The Mid-High and Mid-Low levels represent typical efficiency levels between the High and Low levels and that of the levels prescribed in the NECB 2011. There are several measures that do not have either Low or Mid-Low levels, because the NECB 2011 prescribed level is already at the federally prescribed minimum (under energy efficiency act) and cannot be reduced further.

It should be noted that the Mid-High and Mid-Low levels were not evaluated for all secondary measures. The Mid-High and Mid-Low levels were only analyzed to target the ±5% savings, when the High and Low levels exceeded ±5% savings. When a measure was not evaluated, the "-" symbol was entered in the tables.

It should also be noted that the references listed under the "Explanations for Levels" in Tables 2 through 5 are reference points only, and are in no way used in the analysis of this study.

3. SIMULATION RESULTS

Each secondary measure listed in Tables 2 through Table 5, at each of the applicable efficiency levels (High, Mid-High, Mid-low, Low), were evaluated for the six archetype buildings and seven locations using DOE2.1E simulation software. When the individual secondary measures did not achieve the 5% or 10% increase/decrease in energy use compared to the NECB 2011, individual secondary measures were combined to achieve the targets. The impact on overall energy use of applying the secondary measures and the combinations of secondary measures is provided in Tables 6 through Table 12.

In addition to the results presented in Tables 6 through Table 12, Appendix A, Appendix B, Appendix C, and Appendix D provide a detailed breakdown of building energy use, by end-use, for each secondary measure evaluated.

3.1. Envelope U-Value Measures

3.1.1. Energy Savings Compared to NECB 2011 (5% and 10% Targets)

Table 6 presents the whole building energy saving results for the envelope U-value measures, for both individual measures and combined measures. The envelope U-value measures include more stringent window U-values, more stringent wall U-values, and more stringent roof U-values. The only individual U-value measures that meet or exceed the 5% energy savings target are 1) the High-level window U-value adjustment for the large office in Victoria, Edmonton, Montreal, Ottawa, Windsor, and Fort McMurray; 2) the High-level wall U-value adjustment for the warehouse in Victoria and Windsor; and 3) the High-level roof U-value adjustment for the big box retail in Victoria. All other individual measures fall below the 5% energy savings target.

Combining the most stringent envelope U-value measures (all High-level), results in energy savings ranging between 3.0% and 13.7%. With the exception of the warehouse in Victoria, none of the building types/locations meet the 10% target through a combination of the most stringent measures. Similarly, many of building types generally in colder climates, do not meet the 5% energy savings target through a combination of the most stringent envelope measures (all High-level). Because of the stringency of the NECB 2011 prescriptive requirements for envelope, only relatively small energy savings are seen by shifting the prescriptive envelope U-value to the most stringent levels.

Larger energy savings are seen in milder climates such as Victoria and Windsor, compared to colder climates such as Edmonton and Fort McMurray. The lower energy savings in the colder climates results from the prescriptive envelope requirements of the NECB 2011 for the cold climates (function of heating degree days), approaching that of the High-level values. Yellowknife does not show any energy savings results because the prescriptive envelope requirements for this location are equal to the High-level measures.

3.1.2. Energy Increase Compared to NECB 2011 (-5% and -10% Targets)

Table 7 presents the results for the increase in the whole building energy use for the envelope U-value measures, for both individual measures and combined measures. The envelope U-value measures include less stringent window U-values, less stringent wall U-values, and less stringent roof U-values. There are numerous individual U-value measures that meet or exceed the -5% and -10% target. Moreover, the majority of the -5% and -10% energy targets are achieved, within a reasonable tolerance, through either a single measure or a combination of measures. Because of the stringency of the NECB 2011 prescriptive U-value requirements, it is possible to significantly reduce the envelope U-values and achieve the -5% and -10% targets.

Larger increases in energy use are seen in colder climates such as Edmonton, Fort McMurray, and Yellowknife, when compared to milder climates such as Victoria and Windsor. The larger energy increases for colder climates results from not only the colder weather, but also the prescriptive envelope requirements of the NECB 2011 (function of heating degree days), being significantly more stringent in cold climates than in mild ones.

3.2. Lighting Measures

3.2.1. Energy Savings Compared to NECB 2011 (5% and 10% Targets)

Table 8 presents the whole building energy saving results for the lighting measures, for both individual measures and combined measures. The lighting adjustments include a reduction in the lighting power density (LPD), the addition of occupancy sensors to the parking garage, and the addition of continuous dimming to day lighting controls. The reduction in lighting power density applies to all building types and locations, while the addition of occupancy sensors to parking garage applies to the midrise apartment only, and the addition of continuous dimming to day lighting control applies to the large office only.

The reduction to the lighting power density resulted in only a small change to the overall energy savings. The energy savings for this measure is below 1.5% for all building types and locations. The small energy savings associated with this measure is a result of the prescriptive requirements of the NECB 2011 being very stringent, and generally within 5% of the High-levels evaluated.

Similarly, the energy savings associated with the addition of occupancy sensors to the parking garage was small. The energy savings for this measure is below 1.0% for all locations. The low energy savings associated with this measure, results from the low lighting power prescribed by the NECB 2011 for this space type (2.0 W/m^2). Since the lighting power draw for the parking garage is so low, the savings associated its reduction is low as well.

The energy savings associated with the addition of continuous dimming to the day lighting control was also small. The energy savings for this measure is below 0.5% for all locations. The low energy savings associated with this measure is a result of the NECB 2011 already prescribing two stage dimming control.

Neither of the 5% or 10% energy targets was achieved through either individual lighting measures or through a combination of lighting measures.

3.2.2. Energy Increase Compared to NECB 2011 (-5% and -10% Targets)

Table 9 presents the results for the increase in the whole building energy use for the lighting measures, for both individual measures and combined measures. The lighting adjustments include an increase to the lighting power density, and the addition of auto-on occupancy sensors control. The increase to the lighting power density applies to all building types and locations, while the addition of auto-on occupancy sensors control applies to only the large office, secondary school, and warehouse.

The increase in lighting power density had a varying effect on the energy use, depending on the building type evaluated. The largest impact was seen with the large office, the secondary school, and the big box retail. For these building types, the lighting power density prescribed by the NECB 2011 is significantly more stringent than the Low-level adjustment (based on the MNECB 1997). For the mid-rise apartment, strip mall, and warehouse there was only minor changes in

energy use, because the NECB 2011 prescriptive lighting power density was similar to the Low-level (based on MNECB 1997).

The addition of auto-on occupancy control had a very small impact on the energy use. This measure increased the energy use by a maximum of 0.2%. It should be noted that accurate evaluation of this measure is very difficult. The impact of changing from manual on (as prescribed in the NECB 2011) to auto-on is a function of the behaviour of any given individual and their tendency to be in rooms without the lights on. The impact of this measure was evaluated based on results from a study [1] that recorded the fraction of hours people will occupy a given space with the lights off.

None of the -5% energy targets were achieved through either individual lighting measures or through a combination of lighting measures. However, several of the -10% targets were achieved with the Low-level lighting power density (LPD) adjustment. Due to the stringency of the NECB 2011 prescriptive LPD requirement, large energy increases are obtainable by increasing the LPD to a value significantly less stringent than the NECB 2011.

3.3. HVAC and SHW Efficiency Measures

3.3.1. Energy Savings Compared to NECB 2011 (5% and 10% Targets)

Table 10 presents the whole building energy saving results for the HVAC and SHW measures, for both individual measures and combined measures. The HVAC and SHW measures include a boiler efficiency increase, a chiller efficiency increase, a DX cooling efficiency increase, a furnace efficiency increase, a DHW efficiency increase, a heat recovery effectiveness increase, and the addition of demand control ventilation.

The **boiler** efficiency measures resulted in some of the largest energy savings of all HVAC measures evaluated, with the high-level adjustment exceeding the 5% target in the mid-rise apartment and secondary school for all locations. The boiler efficiency adjustment only applied to the mid-rise apartment, the large office, and the secondary school. There were no Mid-high level adjustments (modulating boiler) evaluated for the large office and secondary school, because the NECB 2011 already prescribes modulating boilers for these cases.

The energy savings associated with the **chiller** and **DX cooling** measures were small, below 1.0% for every building type and location evaluated. The chiller and DX cooling efficiency measures show low energy savings, because the efficiency levels prescribed in the NECB 2011 are already in line with the High-levels evaluated. The chiller efficiency measures only applied to the large office and the secondary school, and the DX cooling efficiency measures only applied to the mid-rise apartment, the strip mall, the big box retail, and the warehouse.

The **furnace** efficiency measures showed moderate energy savings, ranging between 3.2% and 5.0% depending on the building type and location. The furnace efficiency measures only applied to the strip mall and the big box retail. There was no Mid-high level adjustment (modulating furnace) evaluated for the warehouse, because the NECB 2011 already prescribed modulation for the furnace in this building model.

The **heat recovery** effectiveness measures had varied effects on the energy savings, depending on the building type and location. The heat recovery measures applied to the office and school building types only. The office and school showed similar energy savings for the Mid-High adjustment, which was strictly an increase in the effectiveness value. However, the school showed significantly more energy savings when the heat content limit was increased (High-level adjustment). Increasing the heat content did not impact the office, because there were no additional systems that required heat recovery. For the school however, several new systems required heat recovery, resulting in increased savings.

The addition of **demand control ventilation** showed moderate savings, ranging between 1.4% and 7.0% depending on the building type and location. Both the High and Mid-high levels required the same spaces to have demand control ventilation, therefore only one set of results was generated for both levels. The addition of demand control ventilation was only evaluated for the large office and the secondary school. Demand control ventilation only applied to these building types, because they were the only buildings with spaces (classrooms and meeting rooms) with sufficiently high occupant densities to meet the demand control ventilation requirement.

The energy savings associated with the **DHW** adjustment was below 2.5% for all locations and building types, excluding the apartment which had higher energy savings due to a larger hot water demand.

Due to the number of individual HVAC measure adjustments, the HVAC and DHW category achieved the most number of 10% targets and a significant number of 5% targets. The mid-rise apartment, secondary school, and office showed the highest energy savings when combining measures. The strip mall and big box retail showed less energy savings when combining measures, because these buildings did not qualify for the DCV credit or the heat recovery credit. The warehouse showed the least energy savings, because the NECB 2011 already prescribed a modulating furnace for the warehouse building model.

3.3.2. Energy Increase Compared to NECB 2011 (-5% and -10% Targets)

Table 11 presents the results for the increase in the whole building energy use for the HVAC and SHW measures, for both individual measures and combined measures. The HVAC and SHW measures include a boiler efficiency decrease, a furnace efficiency decrease, and a heat recovery effectiveness decrease.

The **boiler** efficiency measure resulted in one of the largest energy increases of all HVAC and SHW measures evaluated, with the high-level adjustment exceeding the -5% target for the mid-rise apartment and secondary school for almost all locations. The boiler efficiency measure only applied to the mid-rise apartment, the large office, and the secondary school. There were no Low-level adjustments evaluated for the mid-rise apartment, because the NECB 2011 already prescribed non-modulating boilers in these building models.

The **furnace** efficiency measure had a varied impact on energy use, with a maximum increase of 5.7%. The furnace efficiency measure only applied to the strip mall, the big box retail, and the

warehouse. The furnace efficiency measure had the largest impact on the strip mall and the warehouse, and had a significantly smaller impact on the big box retail. The big box retail showed a smaller increase, because the NECB 2011 prescribed 81% thermal for this building model, while the strip mall and warehouse were prescribed 92.4% AFUE by NECB 2011.

The **heat recovery** effectiveness measure resulted in the largest increase in energy use of all the HVAC and SHW measures evaluated. The heat recovery measure impacted the office and school building types only. The Low level adjustment, which was the complete removal of heat recovery, showed energy increases in the mid-teens in the colder climates and was as high as -22.0% in Yellowknife. Although the Mid-low adjustment had an impact on the school, it did not impact the office. Decreasing the heat content did not change the number of systems requiring heat recovery in the office.

Through combining the boiler efficiency measure and the heat recovery effectiveness measures, the -10% target was generally achieved in both the secondary school and the office. No other building types were able to achieve the -10% through a combination of individual measures. The -5% target was generally achieved through the furnace efficiency individual measure, and generally not through a combination of individual measures.

3.4. Fenestration and Door to Gross Wall Area Ratio (FDWR) Measures

Table 12 presents the results for the FDWR adjustments. The NECB 2011 prescribes the maximum fenestration and door to gross wall area ratio (FDWR) as a function of heating degree days (HDD). To target the 5% and 10% (increase and decrease) in energy use, two measures were evaluated, 1) set the FDWR to a fixed value of 20%, 25%, 30%, and 40%; and 2) adjust the existing FDWR equation by shifting the FDWR up and down by 5% and 10%.

The FDWR measures did not apply to all buildings. The FDWR measures only applied to a building when one of the following was met 1) the FDWR measure being evaluated was **below** both the NECB 2011 prescribed FDWR and the archetype building FDWR; and 2) both the FDWR measure being evaluated and the archetype FDWR were **above** the NECB 2011 prescribed FDWR.

Setting the FDWR to one of 20%, 25%, 30%, or 40% resulted in both energy savings and energy increases, depending on the building type and location being considered. The energy savings did not exceed 10% for any location or building type evaluated. Similarly, the energy increases did not exceed 10%, except for the office in Yellowknife.

Shifting the FDWR equation by 5% and 10% resulted in both energy savings and energy increases. The energy savings were below 6.0% for all applicable building types and locations evaluated. Similarly, the energy increases did not exceed 6.5% for all building types and locations evaluated.

There were no combination measures evaluated, as all the FDWR measures can only be applied individually.

3.5. Measure Combinations – Tolerance ±0.5% of Targets

A summary of the measures required to achieve the 5% and 10% energy targets (increase and decrease) within a tolerance of ±0.5% is provided in Table 13, Table 14, Table 15, and Table 16. These tables list the measures (either individual or combined) by primary area. When there was no combination of measures in any of the primary areas that met the targets within the tolerance, measures were combined across all primary areas to achieve the targets within tolerance.

Except for the 10% energy savings target, the majority of all building types and locations achieved the targets within the ±0.5% tolerance. Many of the building types in the colder climates (Edmonton, Fort McMurray, Yellowknife), were unable to achieve the 10% energy savings target, because the NECB 2011 prescriptive envelope requirements for these locations were close to the High-level values evaluated. Therefore, the envelope measures showed low energy savings, and the resulting combination measures were not able to achieve the 10% target.

Whenever a building type for a given location was unable to meet the targets within the ±0.5% tolerance a "-" symbol was indicated. The N/A symbol indicates that measure combinations were not evaluated, because the target was already achieved in one of the four primary areas.

Table 2: Envelope U-Value Measures

Primary Area	Secondary Measures (by Level)	NECB 2011 Prescribed Levels	Explanations for Levels[1]
Adjust U-Values	**Window:** **High** – U-Value = 1.6 Triple Glazed, Argon Filled, Low e. **Mid-High** – U-Value = 2.0 Double Glazed, Argon Filled, Low e. **Mid-Low** – U-Value = 2.6 Double Glazed, Air Filled, Low e. **Low** – U-Value = 3.2 Double Glazed, Air Filled, no Low e	NECB 2011 U-Value Requirements (function of HDD) **Location** **U-Value** Victoria 2.4 Windsor 2.2 Montreal 2.2 Ottawa 2.2 Edmonton 2.2 Fort McMurray 2.2 Yellowknife 1.6	**High** - matches NECB 2011 requirement for Yellowknife **Mid-High** - matches ASHRAE 189-2011 requirement for Zones 7 and 8 (cold climates) **Mid-Low** - matches ASHRAE 189-2011 requirement for Zone 6 **Low** – matches MNECB 1997 requirement for Ontario with less than 40% glazing. U-value adjustment measures will be run for all building types and locations
	Wall: **High** – U-Value = 0.183 **Mid-High** – U-Value = 0.210 **Mid-Low** – U-Value = 0.370 **Low** – U-Value = 0.550	NECB 2011 U-Value Requirements (function of HDD) **Location** **U-Value** Victoria 0.315 Windsor 0.278 Montreal 0.247 Ottawa 0.247 Edmonton 0.210 Fort McMurray 0.210 Yellowknife 0.183	**High** - matches NECB 2011 requirement for Yellowknife **Mid-High** - matches NECB 2011 requirement for Edmonton. **Mid-Low** - matches MNECB 1997 requirement for various locations **Low** - matches MNECB 1997 requirement for Ontario – Region A. U-value adjustment measures will be run for all building types and locations
	Roof: **High** – U-Value = 0.142 **Mid-High** – U-Value = 0.162 **Mid-Low** – U-Value = 0.270 **Low** – U-Value = 0.480	NECB 2011 U-Value Requirements (function of HDD) **Location** **U-Value** Victoria 0.227 Windsor 0.183 Montreal 0.183 Ottawa 0.183 Edmonton 0.162 Fort McMurray 0.162 Yellowknife 0.142	**High** - matches NECB 2011 requirement for Yellowknife **Mid-High** - matches ASHRAE 189 -2011 requirement for Zones 7 and 8. **Mid-Low** - matches ASHRAE 90.1-2007 requirement for Zone 6. **Low** - matches MNECB 1997 requirement for Ontario U-value adjustment measures will be run for all building types and locations

1)The references listed under the "Explanations for Levels" are reference points only, and are in no way used in this analysis or study.

Table 3: FDWR Measures

Primary Area	Secondary Measures (by Level)	NECB 2011 Prescribed Levels	Explanations for Levels[1]
FDWR	**Adjust FDWR Equation:** **High** HDD<4000 = 0.30 4000 ≤ HDD ≤ 7000 (1700-0.20HDD)/3000 HDD>7000 = 0.10 **Mid-High** HDD<4000 = 0.35 4000 ≤ HDD ≤ 7000 (1850-0.20HDD)/3000 HDD>7000 = 0.15 **Mid-Low** HDD<4000 = 0.45 4000 ≤ HDD ≤ 7000 (2150-0.20HDD)/3000 HDD>7000 = 0.25 **Low** HDD<4000 = 0.50 4000 ≤ HDD ≤ 7000 (2300-0.20HDD)/3000 HDD>7000 = 0.30	**NECB 2011 FDWR**: HDD<4000 = 0.4 4000 ≤ HDD ≤ 7000 (2000-0.2HDD)/3000 HDD>7000 = 0.2 **Archetype building FDWR**: Apartment 0.29 Large Office 0.40 Strip Mall 0.20 School 0.26 Big Box Store 0.076 Warehouse 0.035	Changed the FDWR formula by shifting the equation by 5%, either up or down. FDWR Adjustment measures will not affect all building types, since some archetype buildings have FDWR below any of the proposed levels.
	Set to One Level for FDWR: **High** Set FDWR to 20% maximum **Mid-High** Set FDWR to 25% maximum **Mid-Low** Set FDWR to 30% maximum **Low** Set FDWR to 40% maximum	**NECB 2011 FDWR**: HDD<4000 = 0.4 4000 ≤ HDD ≤ 7000 (2000-0.2HDD)/3000 HDD>7000 = 0.2 **Archetype building FDWR**: Apartment 0.29 Large Office 0.40 Strip Mall 0.20 School 0.26 Big Box Store 0.076 Warehouse 0.035	**High** - Set equal to the lowest percent prescribed in the NECB 2011. **Mid-High** – Increased up 5% relative to the high level requirement. **Mid-Low** – Set equal to midpoint between the upper level (40%) and lower level (20%) prescribed by the NECB 2011 **Low** - Set equal to the highest percent prescribed in the NECB 2011. FDWR Adjustment measures will not affect all building types, since some archetype buildings have FDWR below any of the proposed levels.

1)The references listed under the "Explanations for Levels" are reference points only, and are in no way used in this analysis or study.

Table 4: HVAC and SHW Measures

Primary Area	Secondary Measures (by Level)	NECB 2011 Prescribed Levels	Explanations for Levels[1]
HVAC and SHW	**Boiler Efficiency:** **High** *Natural Gas* < 88kW - 89% AFUE ≥88kW and < 733kW - 89% thermal ≥ 733kW - 91% Combustion *Oil* < 88kW - 89% AFUE ≥88kW and < 733kW - 89% thermal ≥ 733kW - 91% Combustion **Mid-High** –Modulating on all capacities **Mid-Low** – 80% thermal efficiency **Low** – 80% thermal efficiency Remove staging/modulating	NECB 2011 boiler efficiency **Natural Gas** < 88kW - 85% AFUE ≥88kW and<733kW - 83% thermal ≥733kW - 83.3% combustion **Oil** < 88kW – 84.7% AFUE ≥88kWand<733kW- 83.4% thermal ≥733kW - 85.8% combustion Staging requirements >176kW – two stage >352kW – fully modulating	**High** - Set to match requirements of ASHRAE 189-2011 **Mid-High** – Extend NECB 2011 staging/modulation requirement to all capacity ranges **Mid-Low** - Set to match lowest efficiency in market, but leave NECB 2011 staging/modulating requirement. **Low** - Set to match lowest efficiency in market, and remove NECB 2011 staging/modulating requirement. Adjustment measures will be run for all building types and locations, where applicable
	Chiller Efficiency: **High** – Centrifugal Chiller 528 kW to 1,055 kW – COP=6.4 1,055 kW to 2,110 kW – COP=6.9 **Mid-High** – Centrifugal Chiller 528 kW to 1,055 kW – COP=6.0 1,055 kW to 2,110 kW – COP=6.4 **Mid-Low** – Cannot lower **Low** – Cannot lower	NECB 2011 chiller efficiency requirements. **Centrifugal Chiller** 528 kW to 1,055 kW COP=5.55 1,055 kW to 2,110 kW COP=6.10	**High** - Set to match top 25% of chillers in market. **Mid-High** – Set efficiency level to match those prescribed by FEMP **Mid-Low** – Cannot lower – NECB 2011 values equal to those prescribed federally. **Low** – Cannot lower – NECB 2011 values equal to those prescribed federally. Adjustment measures will be run for all building types and locations, where applicable
	DX Cooling Efficiency: **High** ≤19kW-SEER=15.0 >19kWand<40kW-EER=12.0 ≥40kWand<70kW-EER=12.0 ≤70kWand<223kW-EER=10.6 >223kW-EER=10.2 **Mid-High** – N/A **Mid-Low** – Cannot lower **Low** – Cannot lower	NECB 2011 air conditioner (DX) efficiency requirements. ≤19kW-SEER=14.0 >19kWand<40kW-EER=11.0 ≥40kWand<70kW-EER=10.8 ≤70kWand<223kW-EER=9.8 >223kW-EER=9.5	**High** -Set to Consortium of Energy Efficiency (CEE) Tier II efficiency levels. **Mid-High** – N/A – There is not sufficient space between the NECB 2011 level and the High level to justify a Mid-High level **Mid-Low** – Cannot lower – NECB 2011 values equal to those prescribed federally. **Low** – Cannot lower – NECB 2011 values equal to those prescribed federally. Adjustment measures will be run for all building types and locations, where applicable

1)The references listed under the "Explanations for Levels" are reference points only, and are in no way used in this analysis or study.

Table 4: HVAC and SHW Measures – Cont'd

Primary Area	Secondary Measures (by Level)	NECB 2011 Prescribed Levels	Explanations for Levels[(1)]
HVAC and SHW	**Furnace Heating Efficiency:** **High** N/A – Not enough products exceed NECB 2011 **Mid-High** Add modulation above 117.23kW **Mid-Low** *Natural Gas*: 80% thermal *Oil:* 78% SEUE **Low** Cannot Lower	NECB 2011 furnace efficiency requirements. **Gas-fired** ≤117.23 - 92.4% AFUE >117.23kW - 81% thermal **Oil-fired** ≤66kW - 84.5% thermal >66kW - 81.3% thermal	**High** – N/A – Efficiencies do not exceed those prescribed by NECB 2011, for non-weatherized furnaces. **Mid-High** – Add burner modulation to the burners, and keep efficiency as prescribed by NECB 2011 **Mid-Low** – Federal regulation - As per CSA-B212-M93 for oil; As per As per CSA3.2-01 for Natural Gas. **Low** – Cannot lower federal regulation Adjustment measures will be run for all building types and locations, where applicable
	DHW Efficiency: **High** *Natural Gas:* <22 kW – 0.62 energy factor ≥22kWand≤117 kW - 90%thermal >117 kW – 90% thermal *Oil:* ≤30.5 kW – 0.62 energy factor >30.5 kW – 82% thermal **Mid-High** –N/A-Negligible product available **Mid-Low** – Cannot lower below federal regulation **Low** – Cannot lower below federal regulation	NECB 2011 storage tank efficiency requirements. **Gas-fired** <22kW-0.67-0.0006V EF ≥22kWand ≤117 kW 0.67-0.0006V EF >117 kW – 80% thermal **Oil-fired** ≤30.5 kW – 0.55 energy factor >30.5 kW – 0.55 energy factor	**High** - Thermal efficiencies and energy factors based on products listed in AHRI database. **Natural gas** ≥22kW is set to a condensing efficiency. Energy factor <22kW taken as most common energy factor above the NECB 2011 level. **Oil** > 30.5kW taken as the most efficient model in the AHRI data base. Energy factor <30.5kW taken as most common energy factor above the NECB 2011 level. Adjustment measures will be run for all building types and locations, where applicable
	Require HRVs and ERVs: **High** Set the heat recovery effectiveness to 75% Decrease sensible heat content to 100 kW **Mid-High** – Set effectiveness to 75% **Mid-Low** - Set heat content to 200 kW. **Low** - No heat recovery required.	The NECB 2011 requires heat recovery, whenever the exhaust air has a sensible heat content exceeding 150 kW.	
	Automatic Controls – Demand Control Ventilation: **High** - Set to ASHRAE 189-2011 requirements **Mid-High** - Set to ASHRAE 90.1-2010 requirements **Mid-Low**–Cannot lower, NECB 2011 has no requirement **Low** – Cannot lower, NECB 2011 has no requirement	NECB 2011 has no requirement for demand control ventilation.	**High** – ASHRAE 189-2011 - Required for spaces larger than 500 ft^2 and with design occupancy for ventilation greater than 25 people per 1,000 ft^2 **Mid-High** – ASHRAE 90.1-2010 - Required for spaces larger than 500 ft^2 and with design occupancy for ventilation greater than 40 people per 1000 ft^2.

1)The references listed under the "Explanations for Levels" are reference points only, and are in no way used in this analysis or study.

Table 5: Lighting Measures

Primary Area	Secondary Measures (by Level)	NECB 2011 Prescribed Levels	Explanations for Levels[(1)]
Lighting	**Occupancy Sensors – Auto-on:** Occupancy sensor auto-on controls will be added to all spaces that are required to have occupancy sensor control, as per the NECB 2011.	NECB 2011 prescribes manual on/ auto off occupancy sensors, in prescribed spaces.	This measure involves changing the lighting control from the NECB 2011 manual on, to auto on. Accurate evaluation of this measure is very difficult. The impact of changing from manual on to auto-on is a function of the behaviour of any given individual and their tendency to be in rooms without the lights on. The impact of this change would increase the energy use of the lighting.
	Occupancy Sensors in Parking Garage: Add occupancy sensor control to parking garage lighting, in applicable buildings.	NECB 2011 does not prescribe occupancy sensor control for parking garage lighting.	The midrise apartment is the only building type that would have a parking garage, so this measure will only be applied to this building type.
	Continuous Dimming in Daylight Areas: Add continuous dimming to daylight controlled spaces, in applicable buildings.	NECB 2011 prescribes two stage daylighting in enclosed spaces that exceed 100m^2 of primary sidelight area.	No archetype buildings currently qualify for daylighting controls. To evaluate this measure, the high rise office will be modelled with daylighting control assuming in the exterior zone, and then the continuous dimming measure will be applied.
	Revise Lighting Power Density: **High** Set to ASHRAE 189-2011 e.g. Office = 9.2W/m^2 **Mid-Low** Set to ASHRAE 90.1-2004 e.g. Office = 11.0 W/m^2 **Low** Set equal to MNECB 1997 e.g. Office = 16.9 W/m^2	NECB 2011 prescribes lighting power density by building function and by space function. e.g. Office = 9.7W/m^2	The lighting power densities are based on existing codes. **Increase Minimum Efficiencies and New Technologies:** Increasing the minimum efficiency or the implementation of new technologies are methods that can be used to improve the lighting power density. Since the NECB 2011 prescribes only lighting power density, and does not prescribe efficiency or technologies, only the effect of changing the lighting power density will be evaluated.

1)The references listed under the "Explanations for Levels" are reference points only, and are in no way used in this analysis or study.

REFERENCES

1) Bill VonNeida, Doren Maniccia, Allan Tween. An Analysis of the Energy and Cost Savings Potential of Occupancy Sensors for Commercial Lighting Systems. IES Paper #43.

APPENDICES

Note to Appendices

The attached Appendices provide a breakdown of the building energy use, by end-use, for each measure evaluated. In addition to the energy use breakdown, the overall building operating cost for each measure is provided. The operating cost is provided as supplementary information only. The utility rates used for each building type and location are listed in Appendix E.

Appendix A: Detailed Energy Use Breakdown - Envelope Measures

Victoria Results

(Energy Savings Compared to NECB)

Victoria Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	250.9	250.9	250.9	250.9	250.9	250.9	250.9
Appliances	188.9	188.9	188.9	188.9	188.9	188.9	188.9
Space Heat	1,086.6	1,023.2	959.7	1,051.2	1,042.8	1,077.2	1,038.6
Space Cool	52.3	55.7	59.5	52.8	52.9	52.1	51.8
Heat Rejection	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	26.3	26.3	26.3	26.2	26.2	26.3	26.3
Fans	42.7	42.7	42.7	42.6	42.6	42.7	42.6
DHW	1,267.5	1,267.5	1,267.5	1,267.5	1,267.5	1,267.5	1,267.5
Total	2,915.1	2,855.1	2,795.4	2,880.1	2,871.8	2,905.5	2,866.6
Percent Change (%)	-	**2.1**	**4.1**	**1.2**	**1.5**	**0.3**	**1.7**
Electricity							
Peak Demand (kW)	68.6	68.6	68.6	68.2	68.1	68.5	68.4
Consumption (kWh)	159,746.0	160,465.0	161,297.0	159,743.0	159,735.0	159,667.0	159,451.0
Natural Gas							
Consumption (m^3)	62,085.2	60,425.3	58,759.8	61,158.6	60,934.7	61,838.8	60,828.3
Energy Charges ($)							
Electricity	14,681.0	14,745.0	14,818.0	14,681.0	14,680.0	14,674.0	14,654.0
Natural Gas	29,408.0	28,622.0	27,834.0	28,969.0	28,864.0	29,292.0	28,813.0
Total	44,089.0	43,367.0	42,652.0	43,650.0	43,544.0	43,966.0	43,467.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	-	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	-	1,689.0	-	1,689.0
Space Heat	1,359.1	1,093.4	902.1	-	1,248.4	-	1,324.2
Space Cool	402.1	413.9	421.6	-	403.3	-	403.3
Heat Rejection	484.8	491.4	497.3	-	483.7	-	485.3
Pumps	250.1	251.1	245.3	-	248.9	-	250.2
Fans	413.3	438.4	460.0	-	420.1	-	415.4
DHW	430.1	430.1	430.1	-	430.1	-	430.1
Total	6,971.2	6,749.9	6,588.1	-	6,866.0	-	6,940.2
Percent Change (%)	-	**3.2**	**5.5**	**-**	**1.5**	**-**	**0.4**
Electricity							
Peak Demand (kW)	466.2	469.8	472.5	-	465.5	-	446.1
Consumption (kWh)	1,439,439.0	1,451,782.0	1,459,947.0	-	1,440,978.0	-	1,440,514.0
Natural Gas							
Consumption (m^3)	47,468.0	40,419.7	35,344.9	-	44,531.7	-	46,547.1
Energy Charges ($)							
Electricity	94,138.0	95,002.0	95,605.0	-	94,219.0	-	94,214.0
Natural Gas	22,485.0	19,146.0	16,742.0	-	21,094.0	-	22,048.0
Total	116,623.0	114,148.0	112,347.0	-	115,313.0	-	116,262.0

Victoria Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	-	850.7
Appliances	140.6	-	140.6	-	140.6	-	140.6
Space Heat	2,122.8	-	2,011.8	-	2,058.7	-	1,998.2
Space Cool	73.0	-	75.4	-	73.0	-	68.8
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	423.0	-	422.9	-	419.1	-	394.8
DHW	307.6	-	307.6	-	307.6	-	307.6
Total	3,917.6	-	3,808.9	-	3,849.8	-	3,760.6
Percent Change (%)	**-**	**-**	**2.8**	**-**	**1.7**	**-**	**4.0**
Electricity							
Peak Demand (kW)	174.3	-	174.3	-	173.5	-	168.2
Consumption (kWh)	413,114.0	-	413,751.0	-	412,059.0	-	404,119.0
Natural Gas							
Consumption (m^3)	64,484.0	-	61,542.1	-	62,785.0	-	61,178.2
Energy Charges ($)							
Electricity	29,056.0	-	29,099.0	-	29,005.0	-	28,470.0
Natural Gas	30,545.0	-	29,151.0	-	29,740.0	-	28,979.0
Total	59,601.0	-	58,250.0	-	58,745.0	-	57,449.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	945.2
Space Heat	4,520.9	-	4,192.4	-	4,357.0	-	4,257.6
Space Cool	557.4	-	564.0	-	554.5	-	546.3
Heat Rejection	355.6	-	360.0	-	353.1	-	344.6
Pumps	1,558.0	-	1,555.4	-	1,551.2	-	1,532.5
Fans	727.2	-	731.0	-	722.4	-	709.8
DHW	2,635.2	-	2,635.2	-	2,635.2	-	2,635.2
Total	13,243.2	-	12,926.9	-	13,062.2	-	12,914.8
Percent Change (%)	**-**	**-**	**2.4**	**-**	**1.4**	**-**	**2.5**
Electricity							
Peak Demand (kW)	532.3	-	535.7	-	530.3	-	524.6
Consumption (kWh)	1,690,869.0	-	1,694,268.0	-	1,686,116.0	-	1,672,809.0
Natural Gas							
Consumption (m^3)	189,866.4	-	181,149.9	-	185,519.3	-	182,876.9
Energy Charges ($)							
Electricity	110,454.0	-	110,830.0	-	110,168.0	-	109,322.0
Natural Gas	87,773.0	-	83,744.0	-	85,764.0	-	84,543.0
Total	198,227.0	-	194,574.0	-	195,932.0	-	193,865.0

Victoria Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	2,053.4	2,053.4
Appliances	280.1	-	280.1	-	280.1	280.1	280.1
Space Heat	1,215.9	-	1,158.8	-	1,143.0	1,041.2	980.6
Space Cool	71.6	-	73.5	-	72.9	69.8	69.0
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	659.0	-	659.0	-	659.0	659.0	659.0
DHW	160.7	-	160.7	-	160.7	160.7	160.7
Total	4,440.6	-	4,385.4	-	4,368.9	4,264.1	4,202.7
Percent Change (%)	**-**	**-**	**1.2**	**-**	**1.6**	**4.0**	**5.4**
Electricity							
Peak Demand (kW)	283.9	-	284.3	-	283.8	280.9	279.7
Consumption (kWh)	865,634.0	-	864,265.0	-	863,540.0	863,397.0	862,574.0
Natural Gas							
Consumption (m^3)	35,137.7	-	33,802.5	-	33,435.9	30,667.5	29,116.8
Energy Charges ($)							
Electricity	56,832.0	-	56,711.0	-	56,664.0	56,594.0	56,503.0
Natural Gas	16,644.0	-	16,012.0	-	15,838.0	14,527.0	13,792.0
Total	73,476.0	-	72,723.0	-	72,502.0	71,121.0	70,295.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	293.5	-	293.5	293.5	293.5	293.5	293.5
Appliances	41.3	-	41.3	41.3	41.3	41.3	41.3
Space Heat	1,400.1	-	1,374.1	1,303.0	1,279.3	1,304.4	1,276.1
Space Cool	1.5	-	1.5	1.5	1.5	1.5	1.4
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	119.4	-	119.4	119.4	119.4	119.4	119.4
DHW	119.8	-	119.8	119.8	119.8	119.8	119.8
Total	1,975.7	-	1,949.7	1,878.6	1,854.8	1,880.0	1,851.6
Percent Change (%)	**-**	**-**	**1.3**	**4.9**	**6.1**	**4.8**	**6.3**
Electricity							
Peak Demand (kW)	43.1	-	43.5	42.8	42.8	42.9	42.8
Consumption (kWh)	134,475.0	-	132,695.0	133,444.0	133,199.0	133,503.0	133,219.0
Natural Gas							
Consumption (m^3)	39,574.4	-	39,059.4	37,097.1	36,489.7	37,127.9	36,403.0
Energy Charges ($)							
Electricity	11,692.0	-	11,532.0	11,600.0	11,578.0	11,592.0	11,563.0
Natural Gas	18,745.0	-	18,501.0	17,572.0	17,284.0	17,586.0	17,243.0
Total	30,437.0	-	30,033.0	29,172.0	28,862.0	29,178.0	28,806.0

Victoria Results

(Energy Increase Compared to NECB)

Victoria Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	250.9	-	250.9	-	250.9	250.9	250.9
Appliances	188.9	-	188.9	-	188.9	188.9	188.9
Space Heat	1,086.6	-	1,210.2	-	1,171.3	1,110.9	1,224.9
Space Cool	52.3	-	46.6	-	51.6	52.8	59.2
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	26.3	-	26.3	-	26.5	26.4	26.6
Fans	42.7	-	42.7	-	42.8	42.7	42.9
DHW	1,267.5	-	1,267.5	-	1,267.5	1,267.5	1,267.5
Total	2,915.1	-	3,033.1	-	2,999.5	2,940.0	3,060.9
Percent Change (%)	-	**-**	**-4.0**	**-**	**-2.9**	**-0.9**	**-5.0**
Electricity							
Peak Demand (kW)	68.6	-	68.6	-	69.5	68.8	76.0
Consumption (kWh)	159,746.0	-	158,618.0	-	159,951.0	159,998.0	162,299.0
Natural Gas							
Consumption (m^3)	62,085.2	-	65,321.0	-	64,304.9	62,723.4	65,710.1
Energy Charges ($)							
Electricity	14,681.0	-	14,576.0	-	14,698.0	14,705.0	14,950.0
Natural Gas	29,408.0	-	30,941.0	-	30,460.0	29,710.0	31,125.0
Total	44,089.0	-	45,517.0	-	45,158.0	44,415.0	46,075.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,942.6	-	1,942.6	-	1,942.6	-	1,942.6
Appliances	1,689.0	-	1,689.0	-	1,689.0	-	1,689.0
Space Heat	1,359.1	-	1,729.5	-	1,565.7	-	1,477.1
Space Cool	402.1	-	388.4	-	400.3	-	398.4
Heat Rejection	484.8	-	479.0	-	487.7	-	488.2
Pumps	250.1	-	249.1	-	252.3	-	244.1
Fans	413.3	-	385.2	-	401.9	-	407.6
DHW	430.1	-	430.1	-	430.1	-	430.1
Total	6,971.2	-	7,293.0	-	7,169.8	-	7,077.1
Percent Change (%)	-	**-**	**-4.6**	**-**	**-2.8**	**-**	**-1.5**
Electricity							
Peak Demand (kW)	466.2	-	462.5	-	467.7	-	467.8
Consumption (kWh)	1,439,439.0	-	1,425,939.0	-	1,437,211.0	-	1,436,087.0
Natural Gas							
Consumption (m^3)	47,468.0	-	57,298.6	-	52,954.3	-	50,603.1
Energy Charges ($)							
Electricity	94,138.0	-	93,176.0	-	94,022.0	-	93,971.0
Natural Gas	22,485.0	-	27,141.0	-	25,083.0	-	23,969.0
Total	116,623.0	-	120,317.0	-	119,105.0	-	117,940.0

Victoria Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	850.7	850.7
Appliances	140.6	-	140.6	-	140.6	140.6	140.6
Space Heat	2,122.8	-	2,227.2	-	2,236.7	2,190.7	2,493.4
Space Cool	73.0	-	70.8	-	72.8	75.1	84.0
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	423.0	-	423.3	-	430.0	437.1	499.1
DHW	307.6	-	307.6	-	307.6	307.6	307.6
Total	3,917.6	-	4,020.3	-	4,038.5	4,001.8	4,375.4
Percent Change (%)	-	**-**	**-2.6**	**-**	**-3.1**	**-2.1**	**-11.7**
Electricity							
Peak Demand (kW)	174.3	-	174.4	-	175.7	177.4	190.5
Consumption (kWh)	413,114.0	-	412,611.0	-	415,038.0	417,631.0	437,319.0
Natural Gas							
Consumption (m^3)	64,484.0	-	67,255.2	-	67,507.1	66,286.7	74,317.5
Energy Charges ($)							
Electricity	29,056.0	-	29,020.0	-	29,164.0	29,352.0	30,713.0
Natural Gas	30,545.0	-	31,857.0	-	31,976.0	31,399.0	35,202.0
Total	59,601.0	-	60,877.0	-	61,140.0	60,751.0	65,915.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	1,943.7	1,943.7
Appliances	945.2	-	945.2	-	945.2	945.2	945.2
Space Heat	4,520.9	-	4,831.6	-	4,812.3	4,650.8	5,245.8
Space Cool	557.4	-	552.3	-	562.7	562.6	586.7
Heat Rejection	355.6	-	351.7	-	360.2	360.8	384.9
Pumps	1,558.0	-	1,559.8	-	1,569.0	1,569.0	1,619.9
Fans	727.2	-	724.4	-	735.8	735.5	774.9
DHW	2,635.2	-	2,635.2	-	2,635.2	2,635.2	2,635.2
Total	13,243.2	-	13,543.8	-	13,564.1	13,402.7	14,136.4
Percent Change (%)	-	**-**	**-2.3**	**-**	**-2.4**	**-1.2**	**-6.7**
Electricity							
Peak Demand (kW)	532.3	-	529.3	-	535.8	535.9	552.1
Consumption (kWh)	1,690,869.0	-	1,688,075.0	-	1,699,057.0	1,699,091.0	1,737,613.0
Natural Gas							
Consumption (m^3)	189,866.4	-	198,107.1	-	197,594.9	193,312.2	209,099.4
Energy Charges ($)							
Electricity	110,454.0	-	110,142.0	-	110,963.0	110,980.0	113,403.0
Natural Gas	87,773.0	-	91,583.0	-	91,347.0	89,366.0	96,665.0
Total	198,227.0	-	201,725.0	-	202,310.0	200,346.0	210,068.0

Victoria Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	2,053.4	2,053.4
Appliances	280.1	-	280.1	-	280.1	280.1	280.1
Space Heat	1,215.9	-	1,256.2	-	1,353.6	1,348.1	1,925.6
Space Cool	71.6	-	70.5	-	69.6	72.8	78.6
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	659.0	-	659.0	-	659.0	659.0	659.0
DHW	160.7	-	160.7	-	160.7	160.7	160.7
Total	4,440.6	-	4,479.8	-	4,576.3	4,573.9	5,157.3
Percent Change (%)	-	**-**	**-0.9**	**-**	**-3.1**	**-3.0**	**-16.1**
Electricity							
Peak Demand (kW)	283.9	-	283.7	-	284.2	285.9	293.6
Consumption (kWh)	865,634.0	-	866,768.0	-	869,905.0	867,195.0	874,539.0
Natural Gas							
Consumption (m^3)	35,137.7	-	36,069.9	-	38,328.8	38,524.7	53,301.4
Energy Charges ($)							
Electricity	56,832.0	-	56,921.0	-	57,164.0	56,994.0	57,738.0
Natural Gas	16,644.0	-	17,085.0	-	18,155.0	18,248.0	25,248.0
Total	73,476.0	-	74,006.0	-	75,319.0	75,242.0	82,986.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	293.5	-	293.5	293.5	293.5	293.5	293.5
Appliances	41.3	-	41.3	41.3	41.3	41.3	41.3
Space Heat	1,400.1	-	1,418.9	1,439.4	1,596.3	1,466.6	1,744.4
Space Cool	1.5	-	1.5	1.5	1.6	1.6	2.0
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	119.4	-	119.4	119.4	119.4	119.4	119.4
DHW	119.8	-	119.8	119.8	119.8	119.8	119.8
Total	1,975.7	-	1,994.4	2,015.0	2,172.0	2,042.2	2,320.4
Percent Change (%)	-	**-**	**-0.9**	**-2.0**	**-9.9**	**-3.4**	**-17.5**
Electricity							
Peak Demand (kW)	43.1	-	42.8	43.1	43.5	43.2	43.9
Consumption (kWh)	134,475.0	-	135,874.0	134,913.0	136,734.0	135,201.0	138,720.0
Natural Gas							
Consumption (m^3)	39,574.4	-	39,938.3	40,576.5	44,568.1	41,270.7	48,316.1
Energy Charges ($)							
Electricity	11,692.0	-	11,819.0	11,732.0	11,898.0	11,768.0	12,126.0
Natural Gas	18,745.0	-	18,918.0	19,220.0	21,110.0	19,548.0	22,886.0
Total	30,437.0	-	30,737.0	30,952.0	33,008.0	31,316.0	35,012.0

Windsor Results

(Energy Savings Compared to NECB)

Windsor Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	250.9	-	250.9	-	250.9	-	250.9
Appliances	188.9	-	188.9	-	188.9	-	188.9
Space Heat	1,333.1	-	1,225.7	-	1,295.0	-	1,305.7
Space Cool	170.0	-	174.0	-	169.5	-	169.3
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	31.8	-	31.8	-	31.7	-	31.8
Fans	43.3	-	43.2	-	43.2	-	43.2
DHW	1,274.5	-	1,274.5	-	1,274.5	-	1,274.5
Total	3,292.5	-	3,189.0	-	3,253.8	-	3,264.4
Percent Change (%)	**-**	**-**	**3.1**	**-**	**1.2**	**-**	**0.9**
Electricity							
Peak Demand (kW)	84.0	-	83.3	-	83.3	-	83.9
Consumption (kWh)	195,227.0	-	195,927.0	-	194,929.0	-	194,939.0
Natural Gas							
Consumption (m^3)	68,710.8	-	65,897.6	-	67,711.5	-	67,991.4
Energy Charges ($)							
Electricity	17,878.0	-	17,927.0	-	17,840.0	-	17,856.0
Natural Gas	16,555.0	-	15,881.0	-	16,316.0	-	16,383.0
Total	34,433.0	-	33,808.0	-	34,156.0	-	34,239.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	-	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	-	1,689.0	-	1,689.0
Space Heat	1,876.5	1,673.1	1,403.7	-	1,776.4	-	1,854.7
Space Cool	736.4	742.6	751.4	-	736.1	-	736.4
Heat Rejection	676.0	676.4	677.2	-	674.3	-	675.3
Pumps	292.9	292.4	290.9	-	291.8	-	292.9
Fans	488.7	502.5	523.9	-	492.6	-	489.5
DHW	430.0	430.0	430.0	-	430.0	-	430.0
Total	8,132.1	7,948.7	7,708.8	-	8,032.8	-	8,110.5
Percent Change (%)	**-**	**2.3**	**5.2**	**-**	**1.2**	**-**	**0.3**
Electricity							
Peak Demand (kW)	521.1	521.3	521.7	-	520.0	-	520.8
Consumption (kWh)	1,618,220.0	1,623,766.0	1,631,967.0	-	1,618,447.0	-	1,618,262.0
Natural Gas							
Consumption (m^3)	61,197.8	55,801.1	48,652.0	-	58,541.4	-	60,621.2
Energy Charges ($)							
Electricity	134,587.0	135,022.0	135,654.0	-	134,607.0	-	134,602.0
Natural Gas	14,730.0	13,437.0	11,723.0	-	14,093.0	-	14,592.0
Total	149,317.0	148,459.0	147,377.0	-	148,700.0	-	149,194.0

Windsor Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	-	850.7
Appliances	140.6	-	140.6	-	140.6	-	140.6
Space Heat	2,552.0	-	2,460.7	-	2,499.4	-	2,487.2
Space Cool	308.6	-	310.5	-	307.4	-	304.1
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	456.9	-	454.1	-	452.8	-	444.2
DHW	308.6	-	308.6	-	308.6	-	308.6
Total	4,617.4	-	4,525.1	-	4,559.5	-	4,535.3
Percent Change (%)	**-**	**-**	**2.0**	**-**	**1.3**	**-**	**1.8**
Electricity							
Peak Demand (kW)	204.0	-	203.3	-	203.2	-	201.0
Consumption (kWh)	487,991.0	-	487,726.0	-	486,519.0	-	483,214.0
Natural Gas							
Consumption (m^3)	75,901.8	-	73,474.9	-	74,502.2	-	74,177.5
Energy Charges ($)							
Electricity	42,192.0	-	42,149.0	-	42,063.0	-	41,729.0
Natural Gas	18,254.0	-	17,673.0	-	17,920.0	-	17,842.0
Total	60,446.0	-	59,822.0	-	59,983.0	-	59,571.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	945.2
Space Heat	5,802.6	-	5,505.1	-	5,678.2	-	5,648.4
Space Cool	1,072.4	-	1,075.7	-	1,068.0	-	1,063.1
Heat Rejection	717.3	-	718.8	-	715.0	-	710.7
Pumps	1,900.1	-	1,893.1	-	1,892.9	-	1,881.3
Fans	806.2	-	805.7	-	801.9	-	794.8
DHW	2,651.1	-	2,651.1	-	2,651.1	-	2,651.1
Total	15,838.7	-	15,538.5	-	15,696.1	-	15,638.3
Percent Change (%)	**-**	**-**	**1.9**	**-**	**0.9**	**-**	**1.3**
Electricity							
Peak Demand (kW)	688.8	-	689.8	-	687.2	-	684.3
Consumption (kWh)	2,051,375.0	-	2,050,637.0	-	2,046,322.0	-	2,038,557.0
Natural Gas							
Consumption (m^3)	224,296.0	-	216,402.4	-	220,995.8	-	220,203.6
Energy Charges ($)							
Electricity	170,548.0	-	170,565.0	-	170,151.0	-	169,547.0
Natural Gas	53,685.0	-	51,814.0	-	52,903.0	-	52,715.0
Total	224,233.0	-	222,379.0	-	223,054.0	-	222,262.0

Windsor Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	-	2,053.4
Appliances	280.1	-	280.1	-	280.1	-	280.1
Space Heat	1,757.7	-	1,703.7	-	1,689.7	-	1,624.8
Space Cool	302.9	-	305.6	-	304.3	-	313.4
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	659.0	-	659.0	-	659.0	-	659.0
DHW	160.7	-	160.7	-	160.7	-	160.7
Total	5,213.6	-	5,162.4	-	5,147.1	-	5,091.3
Percent Change (%)	**-**	**-**	**1.0**	**-**	**1.3**	**-**	**2.3**
Electricity							
Peak Demand (kW)	299.5	-	299.7	-	299.2	-	305.4
Consumption (kWh)	940,595.0	-	939,293.0	-	938,549.0	-	942,144.0
Natural Gas							
Consumption (m^3)	48,486.9	-	47,252.5	-	46,919.4	-	45,094.3
Energy Charges ($)							
Electricity	78,756.0	-	78,652.0	-	78,592.0	-	79,067.0
Natural Gas	11,677.0	-	11,382.0	-	11,301.0	-	10,864.0
Total	90,433.0	-	90,034.0	-	89,893.0	-	89,931.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	293.5	-	293.5	293.5	293.5	-	293.5
Appliances	41.3	-	41.3	41.3	41.3	-	41.3
Space Heat	1,527.0	-	1,503.6	1,443.6	1,419.6	-	1,464.9
Space Cool	17.9	-	18.5	17.7	17.7	-	17.8
Heat Rejection	0.0	-	0.0	0.0	0.0	-	0.0
Pumps	0.0	-	0.0	0.0	0.0	-	0.0
Fans	119.4	-	119.4	119.4	119.4	-	119.4
DHW	119.8	-	119.8	119.8	119.8	-	119.8
Total	2,119.0	-	2,096.1	2,035.3	2,011.3	-	2,056.7
Percent Change (%)	**-**	**-**	**1.1**	**4.0**	**5.1**	**-**	**2.9**
Electricity							
Peak Demand (kW)	57.4	-	57.6	56.0	55.7	-	57.2
Consumption (kWh)	142,848.0	-	141,086.0	141,688.0	141,386.0	-	142,066.0
Natural Gas							
Consumption (m^3)	42,577.9	-	42,138.4	40,467.3	39,859.9	-	40,999.2
Energy Charges ($)							
Electricity	12,620.0	-	12,505.0	12,521.0	12,495.0	-	12,547.0
Natural Gas	10,268.0	-	10,162.0	9,760.0	9,614.0	-	9,888.0
Total	22,888.0	-	22,667.0	22,281.0	22,109.0	-	22,435.0

Windsor Results

(Energy Increase Compared to NECB)

Windsor Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	250.9	250.9	250.9	-	250.9	250.9	250.9
Appliances	188.9	188.9	188.9	-	188.9	188.9	188.9
Space Heat	1,333.1	1,404.9	1,511.1	-	1,444.1	1,388.0	1,515.6
Space Cool	170.0	167.7	165.1	-	172.0	172.3	179.5
Heat Rejection	0.0	0.0	0.0	-	0.0	0.0	0.0
Pumps	31.8	31.9	32.0	-	32.1	31.9	32.2
Fans	43.3	43.3	43.4	-	43.5	43.3	43.6
DHW	1,274.5	1,274.5	1,274.5	-	1,274.5	1,274.5	1,274.5
Total	3,292.5	3,362.1	3,465.8	-	3,405.9	3,349.8	3,485.3
Percent Change (%)	-	**-2.1**	**-5.3**	**-**	**-3.4**	**-1.7**	**-5.9**
Electricity							
Peak Demand (kW)	84.0	84.5	84.9	-	85.6	84.4	85.2
Consumption (kWh)	195,227.0	194,893.0	194,572.0	-	196,307.0	196,106.0	198,747.0
Natural Gas							
Consumption (m^3)	68,710.8	70,591.8	73,371.3	-	71,616.3	70,146.7	73,491.7
Energy Charges ($)							
Electricity	17,878.0	17,857.0	17,834.0	-	17,994.0	17,958.0	18,195.0
Natural Gas	16,555.0	17,006.0	17,672.0	-	17,251.0	16,899.0	17,700.0
Total	34,433.0	34,863.0	35,506.0	-	35,245.0	34,857.0	35,895.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	-	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	-	1,689.0	-	1,689.0
Space Heat	1,876.5	2,096.5	2,525.8	-	2,176.5	-	2,042.0
Space Cool	736.4	730.3	722.1	-	739.8	-	736.7
Heat Rejection	676.0	675.6	675.4	-	681.1	-	680.7
Pumps	292.9	293.5	303.6	-	304.2	-	294.0
Fans	488.7	475.3	451.4	-	478.3	-	484.1
DHW	430.0	430.0	430.0	-	430.0	-	430.0
Total	8,132.1	8,332.8	8,739.9	-	8,441.5	-	8,299.0
Percent Change (%)	-	**-2.5**	**-7.5**	**-**	**-3.8**	**-**	**-2.1**
Electricity							
Peak Demand (kW)	521.1	520.9	520.7	-	524.7	-	523.8
Consumption (kWh)	1,618,220.0	1,612,864.0	1,606,692.0	-	1,620,844.0	-	1,618,631.0
Natural Gas							
Consumption (m^3)	61,197.8	67,034.1	78,423.8	-	69,155.8	-	65,586.9
Energy Charges ($)							
Electricity	134,587.0	134,176.0	133,648.0	-	134,780.0	-	134,560.0
Natural Gas	14,730.0	16,129.0	18,855.0	-	16,637.0	-	15,782.0
Total	149,317.0	150,305.0	152,503.0	-	151,417.0	-	150,342.0

Windsor Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	850.7	850.7
Appliances	140.6	-	140.6	-	140.6	140.6	140.6
Space Heat	2,552.0	-	2,699.3	-	2,699.2	2,693.9	3,011.4
Space Cool	308.6	-	305.9	-	311.8	317.4	325.1
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	456.9	-	462.1	-	468.3	481.6	539.7
DHW	308.6	-	308.6	-	308.6	308.6	308.6
Total	4,617.4	-	4,767.1	-	4,779.2	4,792.9	5,176.1
Percent Change (%)	-	**-**	**-3.2**	**-**	**-3.5**	**-3.8**	**-12.1**
Electricity							
Peak Demand (kW)	204.0	-	205.3	-	206.4	209.7	206.6
Consumption (kWh)	487,991.0	-	488,664.0	-	492,051.0	497,313.0	515,576.0
Natural Gas							
Consumption (m^3)	75,901.8	-	79,806.6	-	79,803.8	79,666.6	88,086.5
Energy Charges ($)							
Electricity	42,192.0	-	42,281.0	-	42,550.0	43,075.0	44,444.0
Natural Gas	18,254.0	-	19,189.0	-	19,188.0	19,155.0	21,170.0
Total	60,446.0	-	61,470.0	-	61,738.0	62,230.0	65,614.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	1,943.7	1,943.7
Appliances	945.2	-	945.2	-	945.2	945.2	945.2
Space Heat	5,802.6	-	6,290.3	-	6,207.4	6,092.6	6,730.3
Space Cool	1,072.4	-	1,058.6	-	1,086.3	1,089.2	1,127.9
Heat Rejection	717.3	-	710.6	-	724.9	728.4	751.9
Pumps	1,900.1	-	1,885.4	-	1,924.6	1,932.5	2,003.4
Fans	806.2	-	809.4	-	822.5	827.2	878.3
DHW	2,651.1	-	2,651.1	-	2,651.1	2,651.1	2,651.1
Total	15,838.7	-	16,294.4	-	16,305.7	16,209.9	17,031.8
Percent Change (%)	-	**-**	**-2.9**	**-**	**-2.9**	**-2.3**	**-7.5**
Electricity							
Peak Demand (kW)	688.8	-	687.9	-	694.1	696.3	714.0
Consumption (kWh)	2,051,375.0	-	2,042,502.0	-	2,068,672.0	2,073,934.0	2,125,130.0
Natural Gas							
Consumption (m^3)	224,296.0	-	237,236.4	-	235,033.5	231,990.8	248,906.1
Energy Charges ($)							
Electricity	170,548.0	-	169,871.0	-	171,869.0	172,302.0	176,308.0
Natural Gas	53,685.0	-	56,754.0	-	56,231.0	55,510.0	59,522.0
Total	224,233.0	-	226,625.0	-	228,100.0	227,812.0	235,830.0

Windsor Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	2,053.4	2,053.4
Appliances	280.1	-	280.1	-	280.1	280.1	280.1
Space Heat	1,757.7	-	1,825.2	-	1,949.7	2,036.6	2,660.3
Space Cool	302.9	-	299.8	-	299.5	307.8	317.3
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	659.0	-	659.0	-	659.0	659.0	659.0
DHW	160.7	-	160.7	-	160.7	160.7	160.7
Total	5,213.6	-	5,278.1	-	5,402.3	5,497.4	6,130.6
Percent Change (%)	-	**-**	**-1.2**	**-**	**-3.6**	**-5.4**	**-17.6**
Electricity							
Peak Demand (kW)	299.5	-	299.4	-	300.3	303.0	308.6
Consumption (kWh)	940,595.0	-	942,480.0	-	946,879.0	944,795.0	954,017.0
Natural Gas							
Consumption (m^3)	48,486.9	-	50,018.0	-	52,892.8	55,616.3	71,537.9
Energy Charges ($)							
Electricity	78,756.0	-	78,901.0	-	79,225.0	79,204.0	80,099.0
Natural Gas	11,677.0	-	12,045.0	-	12,734.0	13,386.0	17,199.0
Total	90,433.0	-	90,946.0	-	91,959.0	92,590.0	97,298.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	293.5	-	293.5	293.5	293.5	293.5	293.5
Appliances	41.3	-	41.3	41.3	41.3	41.3	41.3
Space Heat	1,527.0	-	1,557.2	1,611.7	1,798.3	1,670.3	1,970.1
Space Cool	17.9	-	17.5	18.1	18.8	18.3	19.1
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	119.4	-	119.4	119.4	119.4	119.4	119.4
DHW	119.8	-	119.8	119.8	119.8	119.8	119.8
Total	2,119.0	-	2,148.7	2,203.9	2,391.2	2,262.7	2,563.2
Percent Change (%)	-	**-**	**-1.4**	**-4.0**	**-12.8**	**-6.8**	**-21.0**
Electricity							
Peak Demand (kW)	57.4	-	57.1	58.5	60.9	57.7	58.3
Consumption (kWh)	142,848.0	-	145,351.0	144,057.0	146,915.0	144,781.0	149,427.0
Natural Gas							
Consumption (m^3)	42,577.9	-	43,126.5	44,713.6	49,410.6	46,205.6	53,735.3
Energy Charges ($)							
Electricity	12,620.0	-	12,789.0	12,728.0	12,985.0	12,792.0	13,163.0
Natural Gas	10,268.0	-	10,400.0	10,782.0	11,909.0	11,141.0	12,947.0
Total	22,888.0	-	23,189.0	23,510.0	24,894.0	23,933.0	26,110.0

Montreal Results

(Energy Savings Compared to NECB)

Montreal Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	250.9	-	250.9	-	250.9	-	250.9
Appliances	188.9	-	188.9	-	188.9	-	188.9
Space Heat	1,675.7	-	1,550.6	-	1,646.0	-	1,648.5
Space Cool	123.2	-	127.3	-	126.9	-	122.6
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	33.0	-	32.9	-	33.0	-	33.0
Fans	43.1	-	43.0	-	43.0	-	43.1
DHW	1,342.3	-	1,342.3	-	1,342.3	-	1,342.3
Total	3,657.1	-	3,535.9	-	3,631.0	-	3,629.2
Percent Change (%)	**-**	**-**	**3.3**	**-**	**0.7**	**-**	**0.8**
Electricity							
Peak Demand (kW)	89.1	-	88.4	-	88.7	-	89.0
Consumption (kWh)	183,018.0	-	183,707.0	-	182,924.0	-	182,761.0
Natural Gas							
Consumption (m^3)	79,549.1	-	76,268.5	-	78,770.9	-	78,835.3
Energy Charges ($)							
Electricity	18,740.0	-	18,804.0	-	18,720.0	-	18,718.0
Natural Gas	25,827.0	-	24,792.0	-	25,582.0	-	25,602.0
Total	44,567.0	-	43,596.0	-	44,302.0	-	44,320.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	-	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	-	1,689.0	-	1,689.0
Space Heat	2,325.4	2,083.3	1,755.6	-	2,239.1	-	2,297.3
Space Cool	604.2	609.3	616.4	-	604.1	-	604.3
Heat Rejection	746.6	744.1	740.7	-	744.3	-	745.8
Pumps	302.2	299.1	298.7	-	298.2	-	302.2
Fans	457.2	470.2	490.5	-	460.3	-	458.2
DHW	454.0	454.0	454.0	-	454.0	-	454.0
Total	8,521.3	8,291.6	7,987.6	-	8,431.6	-	8,493.4
Percent Change (%)	**-**	**2.7**	**6.3**	**-**	**1.1**	**-**	**0.3**
Electricity							
Peak Demand (kW)	543.2	541.4	539.1	-	541.9	-	542.8
Consumption (kWh)	1,594,969.0	1,598,433.0	1,605,003.0	-	1,594,024.0	-	1,595,052.0
Natural Gas							
Consumption (m^3)	73,743.6	67,322.4	58,628.2	-	71,453.9	-	72,999.1
Energy Charges ($)							
Electricity	136,034.0	136,352.0	136,914.0	-	135,960.0	-	136,047.0
Natural Gas	23,761.0	21,756.0	19,025.0	-	23,047.0	-	23,529.0
Total	159,795.0	158,108.0	155,939.0	-	159,007.0	-	159,576.0

Montreal Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	-	850.7
Appliances	140.6	-	140.6	-	140.6	-	140.6
Space Heat	3,358.1	-	3,249.7	-	3,316.5	-	3,276.7
Space Cool	214.8	-	216.6	-	214.3	-	210.8
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	439.4	-	437.3	-	436.5	-	423.4
DHW	324.0	-	324.0	-	324.0	-	324.0
Total	5,327.5	-	5,218.9	-	5,282.6	-	5,226.2
Percent Change (%)	**-**	**-**	**2.0**	**-**	**0.8**	**-**	**1.9**
Electricity							
Peak Demand (kW)	214.5	-	213.9	-	213.8	-	210.7
Consumption (kWh)	457,073.0	-	456,994.0	-	456,130.0	-	451,510.0
Natural Gas							
Consumption (m^3)	97,693.2	-	94,818.4	-	96,590.3	-	95,537.8
Energy Charges ($)							
Electricity	42,647.0	-	42,608.0	-	42,551.0	-	42,041.0
Natural Gas	31,258.0	-	30,364.0	-	30,917.0	-	30,588.0
Total	73,905.0	-	72,972.0	-	73,468.0	-	72,629.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	945.2
Space Heat	7,372.6	-	7,014.1	-	7,274.3	-	7,182.7
Space Cool	910.6	-	913.1	-	907.9	-	901.1
Heat Rejection	755.6	-	753.7	-	753.9	-	748.8
Pumps	1,922.8	-	1,916.7	-	1,917.8	-	1,901.0
Fans	781.2	-	781.4	-	778.2	-	766.8
DHW	2,790.2	-	2,790.2	-	2,790.2	-	2,790.2
Total	17,421.8	-	17,058.1	-	17,311.2	-	17,179.3
Percent Change (%)	**-**	**-**	**2.1**	**-**	**0.6**	**-**	**1.4**
Electricity							
Peak Demand (kW)	690.3	-	688.8	-	689.0	-	685.4
Consumption (kWh)	2,016,402.0	-	2,014,962.0	-	2,012,965.0	-	2,001,812.0
Natural Gas							
Consumption (m^3)	269,639.4	-	260,127.9	-	267,033.4	-	264,598.1
Energy Charges ($)							
Electricity	171,479.0	-	171,496.0	-	171,215.0	-	170,356.0
Natural Gas	84,360.0	-	81,460.0	-	83,568.0	-	82,826.0
Total	255,839.0	-	252,956.0	-	254,783.0	-	253,182.0

Montreal Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	-	2,053.4
Appliances	280.1	-	280.1	-	280.1	-	280.1
Space Heat	2,483.9	-	2,419.9	-	2,427.1	-	2,320.7
Space Cool	247.1	-	249.8	-	248.1	-	245.1
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	659.0	-	659.0	-	659.0	-	659.0
DHW	160.7	-	160.7	-	160.7	-	160.7
Total	5,884.1	-	5,822.8	-	5,828.3	-	5,718.8
Percent Change (%)	**-**	**-**	**1.0**	**-**	**0.9**	**-**	**2.8**
Electricity							
Peak Demand (kW)	347.0	-	347.0	-	346.7	-	344.4
Consumption (kWh)	936,257.0	-	934,356.0	-	934,520.0	-	933,934.0
Natural Gas							
Consumption (m^3)	66,689.8	-	65,245.4	-	65,377.0	-	62,527.4
Energy Charges ($)							
Electricity	84,145.0	-	84,036.0	-	84,077.0	-	83,866.0
Natural Gas	21,488.0	-	21,034.0	-	21,076.0	-	20,180.0
Total	105,633.0	-	105,070.0	-	105,153.0	-	104,046.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	293.5	-	293.5	-	293.5	-	293.5
Appliances	41.3	-	41.3	-	41.3	-	41.3
Space Heat	1,894.7	-	1,866.8	-	1,814.1	-	1,818.9
Space Cool	11.6	-	11.9	-	11.6	-	11.6
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8	-	119.8
Total	2,480.3	-	2,452.7	-	2,399.7	-	2,404.5
Percent Change (%)	**-**	**-**	**1.1**	**-**	**3.3**	**-**	**3.1**
Electricity							
Peak Demand (kW)	49.9	-	49.9	-	49.4	-	49.7
Consumption (kWh)	144,195.0	-	141,858.0	-	143,214.0	-	143,213.0
Natural Gas							
Consumption (m^3)	52,036.2	-	51,526.8	-	49,990.0	-	50,118.8
Energy Charges ($)							
Electricity	13,670.0	-	13,520.0	-	13,603.0	-	13,575.0
Natural Gas	16,939.0	-	16,777.0	-	16,290.0	-	16,331.0
Total	30,609.0	-	30,297.0	-	29,893.0	-	29,906.0

Montreal Results

(Energy Increase Compared to NECB)

Montreal Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	250.9	250.9	250.9	-	250.9	250.9	250.9
Appliances	188.9	188.9	188.9	-	188.9	188.9	188.9
Space Heat	1,675.7	1,758.7	1,881.0	-	1,821.5	1,741.4	1,888.2
Space Cool	123.2	120.9	117.9	-	123.5	125.7	132.4
Heat Rejection	0.0	0.0	0.0	-	0.0	0.0	0.0
Pumps	33.0	33.1	33.2	-	33.3	33.1	33.4
Fans	43.1	43.1	43.2	-	43.3	43.2	43.5
DHW	1,342.3	1,342.3	1,342.3	-	1,342.3	1,342.3	1,342.3
Total	3,657.1	3,737.9	3,857.4	-	3,803.8	3,725.4	3,879.6
Percent Change (%)	-	**-2.2**	**-5.5**	**-**	**-4.0**	**-1.9**	**-6.1**
Electricity							
Peak Demand (kW)	89.1	89.6	90.2	-	91.0	89.9	91.8
Consumption (kWh)	183,018.0	182,659.0	182,291.0	-	183,714.0	183,957.0	186,453.0
Natural Gas							
Consumption (m^3)	79,549.1	81,726.8	84,934.6	-	83,375.5	81,273.3	85,125.0
Energy Charges ($)							
Electricity	18,740.0	18,703.0	18,658.0	-	18,831.0	18,840.0	19,118.0
Natural Gas	25,827.0	26,514.0	27,521.0	-	27,030.0	26,371.0	27,581.0
Total	44,567.0	45,217.0	46,179.0	-	45,861.0	45,211.0	46,699.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	2,325.4	2,590.6	3,096.5	2,498.0	2,756.4	-	2,544.2
Space Cool	604.2	599.1	590.5	604.6	605.1	-	604.4
Heat Rejection	746.6	749.2	754.2	750.8	757.1	-	752.7
Pumps	302.2	302.3	303.4	303.6	305.9	-	303.5
Fans	457.2	444.8	423.0	451.8	444.3	-	451.6
DHW	454.0	454.0	454.0	454.0	454.0	-	454.0
Total	8,521.3	8,771.6	9,253.3	8,694.4	8,954.3	-	8,742.0
Percent Change (%)	-	**-2.9**	**-8.6**	**-2.0**	**-5.1**	**-**	**-2.6**
Electricity							
Peak Demand (kW)	543.2	545.1	548.3	545.5	548.9	-	546.8
Consumption (kWh)	1,594,969.0	1,590,848.0	1,584,100.0	1,595,546.0	1,595,546.0	-	1,595,508.0
Natural Gas							
Consumption (m^3)	73,743.6	80,777.9	94,202.6	78,325.8	85,178.2	-	79,551.9
Energy Charges ($)							
Electricity	136,034.0	135,656.0	135,065.0	136,042.0	136,105.0	-	136,085.0
Natural Gas	23,761.0	25,953.0	30,125.0	25,190.0	27,317.0	-	25,569.0
Total	159,795.0	161,609.0	165,190.0	161,232.0	163,422.0	-	161,654.0

Montreal Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	850.7	850.7
Appliances	140.6	-	140.6	-	140.6	140.6	140.6
Space Heat	3,358.1	-	3,532.7	-	3,558.2	3,526.7	3,911.2
Space Cool	214.8	-	212.0	-	217.0	222.4	239.6
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	439.4	-	443.2	-	453.2	469.0	532.9
DHW	324.0	-	324.0	-	324.0	324.0	324.0
Total	5,327.5	-	5,503.0	-	5,543.7	5,533.3	5,999.1
Percent Change (%)	-	**-**	**-3.3**	**-**	**-4.1**	**-3.9**	**-12.6**
Electricity							
Peak Demand (kW)	214.5	-	215.5	-	217.7	221.7	236.7
Consumption (kWh)	457,073.0	-	457,330.0	-	461,517.0	467,417.0	489,961.0
Natural Gas							
Consumption (m^3)	97,693.2	-	102,325.8	-	103,003.2	102,166.2	112,369.1
Energy Charges ($)							
Electricity	42,647.0	-	42,720.0	-	43,091.0	43,757.0	46,129.0
Natural Gas	31,258.0	-	32,696.0	-	32,903.0	32,646.0	35,811.0
Total	73,905.0	-	75,416.0	-	75,994.0	76,403.0	81,940.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	1,943.7	1,943.7
Appliances	945.2	-	945.2	-	945.2	945.2	945.2
Space Heat	7,372.6	-	7,953.2	-	7,938.7	7,725.4	8,493.8
Space Cool	910.6	-	908.0	-	925.0	927.3	964.0
Heat Rejection	755.6	-	758.8	-	765.3	767.5	793.5
Pumps	1,922.8	-	1,932.8	-	1,951.4	1,960.1	2,036.7
Fans	781.2	-	782.0	-	799.5	806.5	863.6
DHW	2,790.2	-	2,790.2	-	2,790.2	2,790.2	2,790.2
Total	17,421.8	-	18,013.9	-	18,058.9	17,865.8	18,830.7
Percent Change (%)	-	**-**	**-3.4**	**-**	**-3.7**	**-2.5**	**-8.1**
Electricity							
Peak Demand (kW)	690.3	-	692.6	-	697.1	698.6	717.0
Consumption (kWh)	2,016,402.0	-	2,019,584.0	-	2,036,132.0	2,096,322.0	2,096,322.0
Natural Gas							
Consumption (m^3)	269,639.4	-	285,043.1	-	284,659.7	278,999.8	299,386.0
Energy Charges ($)							
Electricity	171,479.0	-	171,519.0	-	172,972.0	173,417.0	177,574.0
Natural Gas	84,360.0	-	89,028.0	-	88,907.0	87,196.0	93,368.0
Total	255,839.0	-	260,547.0	-	261,879.0	260,613.0	270,942.0

Montreal Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	2,053.4	2,053.4
Appliances	280.1	-	280.1	-	280.1	280.1	280.1
Space Heat	2,483.9	-	2,563.6	-	2,746.0	2,836.6	3,592.6
Space Cool	247.1	-	244.3	-	243.4	251.1	260.8
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	659.0	-	659.0	-	659.0	659.0	659.0
DHW	160.7	-	160.7	-	160.7	160.7	160.7
Total	5,884.1	-	5,961.1	-	6,142.5	6,240.8	7,006.5
Percent Change (%)	-	**-**	**-1.3**	**-**	**-4.4**	**-6.1**	**-19.1**
Electricity							
Peak Demand (kW)	347.0	-	346.9	-	348.2	350.8	357.3
Consumption (kWh)	936,257.0	-	938,920.0	-	945,127.0	940,981.0	951,966.0
Natural Gas							
Consumption (m^3)	66,689.8	-	68,478.4	-	72,699.5	75,703.0	94,969.6
Energy Charges ($)							
Electricity	84,145.0	-	84,359.0	-	84,647.0	84,761.0	85,995.0
Natural Gas	21,488.0	-	22,048.0	-	23,366.0	24,295.0	30,286.0
Total	105,633.0	-	106,407.0	-	108,013.0	109,056.0	116,281.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	293.5	-	293.5	293.5	293.5	293.5	293.5
Appliances	41.3	-	41.3	41.3	41.3	41.3	41.3
Space Heat	1,894.7	-	1,930.7	2,041.7	2,261.7	2,068.0	2,426.3
Space Cool	11.6	-	11.1	11.6	12.0	11.6	12.3
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	119.4	-	119.4	119.4	119.4	119.4	119.4
DHW	119.8	-	119.8	119.8	119.8	119.8	119.8
Total	2,480.3	-	2,515.9	2,627.4	2,847.8	2,653.7	3,012.6
Percent Change (%)	-	**-**	**-1.4**	**-5.9**	**-14.8**	**-7.0**	**-21.5**
Electricity							
Peak Demand (kW)	49.9	-	50.1	51.1	53.9	50.3	51.6
Consumption (kWh)	144,195.0	-	147,383.0	146,087.0	149,192.0	146,660.0	152,592.0
Natural Gas							
Consumption (m^3)	52,036.2	-	52,674.4	55,756.3	61,307.0	56,400.1	65,357.4
Energy Charges ($)							
Electricity	13,670.0	-	13,872.0	13,809.0	14,048.0	13,884.0	14,343.0
Natural Gas	16,939.0	-	17,141.0	18,116.0	19,872.0	18,319.0	21,152.0
Total	30,609.0	-	31,013.0	31,925.0	33,920.0	32,203.0	35,495.0

Ottawa Results

(Energy Savings Compared to NECB)

Ottawa Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	250.9	-	250.9	-	250.9	-	250.9
Appliances	188.9	-	188.9	-	188.9	-	188.9
Space Heat	1,741.5	-	1,612.4	-	1,709.9	-	1,710.7
Space Cool	114.3	-	118.0	-	114.5	-	113.8
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	33.2	-	33.1	-	33.2	-	33.2
Fans	43.4	-	43.2	-	43.3	-	43.3
DHW	1,356.0	-	1,356.0	-	1,356.0	-	1,356.0
Total	3,728.2	-	3,602.5	-	3,696.7	-	3,696.8
Percent Change (%)	**-**	**-**	**3.4**	**-**	**0.8**	**-**	**0.8**
Electricity							
Peak Demand (kW)	93.1	-	92.2	-	92.7	-	92.9
Consumption (kWh)	180,790.0	-	181,330.0	-	180,727.0	-	180,538.0
Natural Gas							
Consumption (m^3)	81,651.2	-	78,261.5	-	80,819.9	-	80,839.5
Energy Charges ($)							
Electricity	18,766.0	-	18,793.0	-	18,754.0	-	18,745.0
Natural Gas	22,450.0	-	21,577.0	-	22,236.0	-	22,241.0
Total	41,216.0	-	40,370.0	-	40,990.0	-	40,986.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	-	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	-	1,689.0	-	1,689.0
Space Heat	2,498.1	2,247.0	1,912.3	-	2,400.2	-	2,465.5
Space Cool	563.1	567.7	574.8	-	562.9	-	563.3
Heat Rejection	746.5	744.2	741.0	-	744.1	-	745.6
Pumps	293.9	293.2	293.1	-	293.0	-	293.8
Fans	436.5	450.3	470.3	-	440.0	-	437.7
DHW	458.5	458.5	458.5	-	458.5	-	458.5
Total	8,628.3	8,392.7	8,081.6	-	8,530.3	-	8,596.1
Percent Change (%)	**-**	**2.7**	**6.3**	**-**	**1.1**	**-**	**0.4**
Electricity							
Peak Demand (kW)	552.6	551.1	548.8	-	551.2	-	552.0
Consumption (kWh)	1,575,455.0	1,579,754.0	1,586,337.0	-	1,575,445.0	-	1,575,563.0
Natural Gas							
Consumption (m^3)	78,446.2	71,784.2	62,902.5	-	75,848.6	-	77,581.3
Energy Charges ($)							
Electricity	126,158.0	126,506.0	127,025.0	-	126,150.0	-	126,168.0
Natural Gas	21,484.0	19,768.0	17,472.0	-	20,818.0	-	21,262.0
Total	147,642.0	146,274.0	144,497.0	-	146,968.0	-	147,430.0

Ottawa Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	-	850.7
Appliances	140.6	-	140.6	-	140.6	-	140.6
Space Heat	3,491.0	-	3,379.1	-	3,447.3	-	3,404.6
Space Cool	193.7	-	195.9	-	193.4	-	190.2
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	435.2	-	432.7	-	432.3	-	421.0
DHW	327.1	-	327.1	-	327.1	-	327.1
Total	5,438.2	-	5,326.0	-	5,391.4	-	5,334.1
Percent Change (%)	**-**	**-**	**2.1**	**-**	**0.9**	**-**	**1.9**
Electricity							
Peak Demand (kW)	233.6	-	232.8	-	232.9	-	230.1
Consumption (kWh)	450,043.0	-	449,962.0	-	449,165.0	-	445,121.0
Natural Gas							
Consumption (m^3)	101,301.3	-	98,331.4	-	100,145.2	-	99,011.6
Energy Charges ($)							
Electricity	40,068.0	-	40,043.0	-	39,989.0	-	39,622.0
Natural Gas	27,369.0	-	26,605.0	-	27,072.0	-	26,780.0
Total	67,437.0	-	66,648.0	-	67,061.0	-	66,402.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	945.2
Space Heat	7,615.4	-	7,235.9	-	7,515.8	-	7,404.9
Space Cool	888.4	-	890.0	-	885.9	-	879.6
Heat Rejection	814.7	-	812.5	-	813.0	-	807.8
Pumps	1,892.1	-	1,883.2	-	1,887.0	-	1,871.4
Fans	769.9	-	769.0	-	767.2	-	758.1
DHW	2,818.5	-	2,818.5	-	2,818.5	-	2,818.5
Total	17,688.0	-	17,298.2	-	17,576.4	-	17,429.3
Percent Change (%)	**-**	**-**	**2.2**	**-**	**0.6**	**-**	**1.5**
Electricity							
Peak Demand (kW)	723.2	-	721.5	-	721.9	-	718.4
Consumption (kWh)	2,015,002.0	-	2,012,138.0	-	2,011,681.0	-	2,001,625.0
Natural Gas							
Consumption (m^3)	276,836.0	-	266,770.3	-	274,193.6	-	271,254.5
Energy Charges ($)							
Electricity	160,540.0	-	160,379.0	-	160,293.0	-	159,534.0
Natural Gas	72,036.0	-	69,494.0	-	71,369.0	-	70,627.0
Total	232,576.0	-	229,873.0	-	231,662.0	-	230,161.0

Ottawa Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

	NECB	Window		Wall		Roof	
		Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	-	2,053.4
Appliances	280.1	-	280.1	-	280.1	-	280.1
Space Heat	2,611.3	-	2,545.6	-	2,553.8	-	2,434.2
Space Cool	228.0	-	230.4	-	228.9	-	223.4
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	659.0	-	659.0	-	659.0	-	659.0
DHW	160.7	-	160.7	-	160.7	-	160.7
Total	5,992.4	-	5,929.1	-	5,935.8	-	5,810.7
Percent Change (%)	**-**	**-**	**1.1**	**-**	**0.9**	**-**	**3.0**
Electricity							
Peak Demand (kW)	362.3	-	362.4	-	362.0	-	352.4
Consumption (kWh)	933,866.0	-	931,708.0	-	931,971.0	-	930,723.0
Natural Gas							
Consumption (m^3)	69,791.2	-	68,318.9	-	68,472.8	-	65,270.6
Energy Charges ($)							
Electricity	78,160.0	-	77,997.0	-	78,024.0	-	77,793.0
Natural Gas	19,190.0	-	18,810.0	-	18,850.0	-	18,025.0
Total	97,350.0	-	96,807.0	-	96,874.0	-	95,818.0

Building Type: Warehouse

	NECB	Window		Wall		Roof	
		Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	293.5	-	293.5	-	293.5	-	293.5
Appliances	41.3	-	41.3	-	41.3	-	41.3
Space Heat	1,982.1	-	1,952.5	-	1,896.2	-	1,902.2
Space Cool	9.3	-	9.6	-	9.2	-	9.2
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8	-	119.8
Total	2,565.4	-	2,536.1	-	2,479.4	-	2,485.4
Percent Change (%)	**-**	**-**	**1.1**	**-**	**3.4**	**-**	**3.1**
Electricity							
Peak Demand (kW)	52.4	-	52.3	-	51.5	-	52.1
Consumption (kWh)	144,819.0	-	142,259.0	-	143,763.0	-	143,726.0
Natural Gas							
Consumption (m^3)	54,233.6	-	53,701.7	-	52,053.0	-	52,218.2
Energy Charges ($)							
Electricity	15,104.0	-	14,928.0	-	15,031.0	-	15,009.0
Natural Gas	15,252.0	-	15,113.0	-	14,686.0	-	14,729.0
Total	30,356.0	-	30,041.0	-	29,717.0	-	29,738.0

Ottawa Results

(Energy Increase Compared to NECB)

Ottawa Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	250.9	250.9	250.9	-	250.9	250.9	250.9
Appliances	188.9	188.9	188.9	-	188.9	188.9	188.9
Space Heat	1,741.5	1,827.4	1,954.4	-	1,898.4	1,809.8	1,963.9
Space Cool	114.3	112.2	109.6	-	114.2	116.3	122.1
Heat Rejection	0.0	0.0	0.0	-	0.0	0.0	0.0
Pumps	33.2	33.3	33.5	-	33.5	33.4	33.6
Fans	43.4	43.4	43.5	-	43.6	43.4	43.7
DHW	1,356.0	1,356.0	1,356.0	-	1,356.0	1,356.0	1,356.0
Total	3,728.2	3,812.2	3,936.8	-	3,885.5	3,798.7	3,959.1
Percent Change (%)	-	**-2.3**	**-5.6**	**-**	**-4.2**	**-1.9**	**-6.2**
Electricity							
Peak Demand (kW)	93.1	93.7	94.6	-	95.0	93.8	95.8
Consumption (kWh)	180,790.0	180,536.0	180,272.0	-	181,419.0	181,627.0	183,870.0
Natural Gas							
Consumption (m^3)	81,651.2	83,901.8	87,235.5	-	85,763.2	83,439.9	87,484.7
Energy Charges ($)							
Electricity	18,766.0	18,761.0	18,746.0	-	18,849.0	18,842.0	19,048.0
Natural Gas	22,450.0	23,030.0	23,885.0	-	23,506.0	22,911.0	23,949.0
Total	41,216.0	41,791.0	42,631.0	-	42,355.0	41,753.0	42,997.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	2,498.1	2,767.8	3,282.9	2,689.7	2,977.8	-	2,729.2
Space Cool	563.1	558.4	550.4	563.3	563.6	-	562.5
Heat Rejection	746.5	748.9	753.6	751.0	757.6	-	752.2
Pumps	293.9	294.6	296.1	295.6	298.1	-	295.2
Fans	436.5	423.2	401.4	430.3	421.9	-	430.1
DHW	458.5	458.5	458.5	458.5	458.5	-	458.5
Total	8,628.3	8,883.1	9,374.7	8,820.1	9,109.2	-	8,859.3
Percent Change (%)	-	**-3.0**	**-8.7**	**-2.2**	**-5.6**	**-**	**-2.7**
Electricity							
Peak Demand (kW)	552.6	554.2	557.2	555.2	559.0	-	556.1
Consumption (kWh)	1,575,455.0	1,571,334.0	1,564,778.0	1,575,533.0	1,575,801.0	-	1,575,458.0
Natural Gas							
Consumption (m^3)	78,446.2	85,600.8	99,269.1	83,529.5	91,173.9	-	84,576.3
Energy Charges ($)							
Electricity	126,158.0	125,832.0	125,314.0	126,178.0	126,224.0	-	126,168.0
Natural Gas	21,484.0	23,322.0	26,823.0	22,789.0	24,748.0	-	23,055.0
Total	147,642.0	149,154.0	152,137.0	148,967.0	150,972.0	-	149,223.0

Ottawa Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	850.7	850.7
Appliances	140.6	-	140.6	-	140.6	140.6	140.6
Space Heat	3,491.0	-	3,670.6	-	3,700.0	3,668.3	4,073.0
Space Cool	193.7	-	190.6	-	195.2	200.6	215.4
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	435.2	-	439.6	-	449.2	461.2	518.9
DHW	327.1	-	327.1	-	327.1	327.1	327.1
Total	5,438.2	-	5,619.1	-	5,662.7	5,648.5	6,125.7
Percent Change (%)	-	**-**	**-3.3**	**-**	**-4.1**	**-3.9**	**-12.6**
Electricity							
Peak Demand (kW)	233.6	-	235.0	-	237.0	240.5	255.0
Consumption (kWh)	450,043.0	-	450,404.0	-	454,340.0	459,188.0	479,336.0
Natural Gas							
Consumption (m^3)	101,301.3	-	106,068.2	-	106,849.2	106,009.4	116,744.2
Energy Charges ($)							
Electricity	40,068.0	-	40,122.0	-	40,438.0	40,887.0	42,680.0
Natural Gas	27,369.0	-	28,596.0	-	28,793.0	28,579.0	31,326.0
Total	67,437.0	-	68,718.0	-	69,231.0	69,466.0	74,006.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	1,943.7	1,943.7
Appliances	945.2	-	945.2	-	945.2	945.2	945.2
Space Heat	7,615.4	-	8,231.7	-	8,194.6	7,982.9	8,795.1
Space Cool	888.4	-	887.6	-	902.0	903.7	938.1
Heat Rejection	814.7	-	818.4	-	824.8	826.7	853.4
Pumps	1,892.1	-	1,906.9	-	1,920.8	1,925.4	1,996.7
Fans	769.9	-	772.8	-	787.7	790.6	838.4
DHW	2,818.5	-	2,818.5	-	2,818.5	2,818.5	2,818.5
Total	17,688.0	-	18,324.9	-	18,337.3	18,136.7	19,129.1
Percent Change (%)	-	**-**	**-3.6**	**-**	**-3.7**	**-2.5**	**-8.1**
Electricity							
Peak Demand (kW)	723.2	-	726.0	-	730.5	731.5	750.0
Consumption (kWh)	2,015,002.0	-	2,020,728.0	-	2,034,486.0	2,037,586.0	2,087,634.0
Natural Gas							
Consumption (m^3)	276,836.0	-	293,188.7	-	292,206.2	286,585.5	308,136.1
Energy Charges ($)							
Electricity	160,540.0	-	160,881.0	-	161,986.0	162,230.0	165,969.0
Natural Gas	72,036.0	-	76,164.0	-	75,913.0	74,497.0	79,931.0
Total	232,576.0	-	237,045.0	-	237,899.0	236,727.0	245,900.0

Ottawa Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	2,053.4	2,053.4
Appliances	280.1	-	280.1	-	280.1	280.1	280.1
Space Heat	2,611.3	-	2,693.9	-	2,886.1	2,979.0	3,767.6
Space Cool	228.0	-	225.2	-	223.5	227.2	225.9
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	659.0	-	659.0	-	659.0	659.0	659.0
DHW	160.7	-	160.7	-	160.7	160.7	160.7
Total	5,992.4	-	6,072.2	-	6,262.7	6,359.3	7,146.6
Percent Change (%)	-	**-**	**-1.3**	**-**	**-4.5**	**-6.1**	**-19.3**
Electricity							
Peak Demand (kW)	362.3	-	362.3	-	363.8	362.5	346.0
Consumption (kWh)	933,866.0	-	936,705.0	-	943,004.0	937,473.0	945,854.0
Natural Gas							
Consumption (m^3)	69,791.2	-	71,638.7	-	76,092.1	79,182.4	99,271.9
Energy Charges ($)							
Electricity	78,160.0	-	78,365.0	-	78,703.0	78,488.0	79,065.0
Natural Gas	19,190.0	-	19,667.0	-	20,814.0	21,604.0	26,762.0
Total	97,350.0	-	98,032.0	-	99,517.0	100,092.0	105,827.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	293.5	-	293.5	293.5	293.5	293.5	293.5
Appliances	41.3	-	41.3	41.3	41.3	41.3	41.3
Space Heat	1,982.1	-	2,019.9	2,138.6	2,371.3	2,164.8	2,540.2
Space Cool	9.3	-	9.0	9.4	9.7	9.6	9.6
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	119.4	-	119.4	119.4	119.4	119.4	119.4
DHW	119.8	-	119.8	119.8	119.8	119.8	119.8
Total	2,565.4	-	2,602.9	2,722.1	2,955.0	2,748.4	3,123.9
Percent Change (%)	-	**-**	**-1.5**	**-6.1**	**-15.2**	**-7.1**	**-21.8**
Electricity							
Peak Demand (kW)	52.4	-	52.6	54.1	56.8	53.2	54.2
Consumption (kWh)	144,819.0	-	148,251.0	146,809.0	149,994.0	147,501.0	153,621.0
Natural Gas							
Consumption (m^3)	54,233.6	-	54,899.7	58,199.9	64,075.4	58,832.6	68,209.7
Energy Charges ($)							
Electricity	15,104.0	-	15,340.0	15,246.0	15,476.0	15,327.0	15,782.0
Natural Gas	15,252.0	-	15,425.0	16,279.0	17,799.0	16,443.0	18,865.0
Total	30,356.0	-	30,765.0	31,525.0	33,275.0	31,770.0	34,647.0

Edmonton Results

(Energy Savings Compared to NECB)

Edmonton Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	250.9	250.9	250.9	-	250.9	-	250.9
Appliances	188.9	188.9	188.9	-	188.9	-	188.9
Space Heat	1,894.0	1,844.5	1,741.4	-	1,877.8	-	1,874.8
Space Cool	58.6	60.1	63.5	-	58.7	-	58.7
Heat Rejection	0.0	0.0	0.0	-	0.0	-	0.0
Pumps	35.6	35.6	35.6	-	35.6	-	35.6
Fans	43.0	43.0	43.0	-	43.0	-	43.0
DHW	1,425.5	1,425.5	1,425.5	-	1,425.5	-	1,425.5
Total	3,896.5	3,848.5	3,748.7	-	3,880.4	-	3,877.4
Percent Change (%)	**-**	**1.2**	**3.8**	**-**	**0.4**	**-**	**0.5**
Electricity							
Peak Demand (kW)	74.0	73.9	73.7	-	73.8	-	74.0
Consumption (kWh)	166,569.0	166,814.0	167,422.0	-	166,543.0	-	166,530.0
Natural Gas							
Consumption (m^3)	87,473.5	86,174.7	83,467.9	-	87,045.2	-	86,969.6
Energy Charges ($)							
Electricity	13,839.0	13,856.0	13,900.0	-	13,833.0	-	13,837.0
Natural Gas	20,926.0	20,615.0	19,968.0	-	20,824.0	-	20,805.0
Total	34,765.0	34,471.0	33,868.0	-	34,657.0	-	34,642.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	-	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	-	1,689.0	-	1,689.0
Space Heat	2,315.2	2,078.5	1,758.6	-	2,254.3	-	2,295.6
Space Cool	353.3	358.1	365.1	-	353.6	-	353.6
Heat Rejection	502.8	505.3	509.0	-	502.3	-	502.8
Pumps	243.2	243.0	242.9	-	242.8	-	243.2
Fans	459.1	475.3	500.8	-	461.8	-	460.3
DHW	481.1	481.1	481.1	-	481.1	-	481.1
Total	7,986.3	7,772.9	7,489.2	-	7,927.4	-	7,968.2
Percent Change (%)	**-**	**2.7**	**6.2**	**-**	**0.7**	**-**	**0.2**
Electricity							
Peak Demand (kW)	473.4	474.9	477.0	-	473.0	-	473.4
Consumption (kWh)	1,441,662.0	1,448,156.0	1,458,202.0	-	1,442,235.0	-	1,442,106.0
Natural Gas							
Consumption (m^3)	74,188.7	67,910.2	59,423.2	-	72,573.6	-	73,670.9
Energy Charges ($)							
Electricity	111,776.0	112,281.0	113,059.0	-	111,816.0	-	111,812.0
Natural Gas	17,748.0	16,246.0	14,215.0	-	17,362.0	-	17,624.0
Total	129,524.0	128,527.0	127,274.0	-	129,178.0	-	129,436.0

Edmonton Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	-	850.7
Appliances	140.6	-	140.6	-	140.6	-	140.6
Space Heat	3,810.7	-	3,679.3	-	3,787.9	-	3,763.6
Space Cool	81.0	-	82.7	-	81.0	-	79.8
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	393.3	-	393.2	-	392.0	-	386.9
DHW	343.1	-	343.1	-	343.1	-	343.1
Total	5,619.3	-	5,489.6	-	5,595.3	-	5,564.6
Percent Change (%)	**-**	**-**	**2.3**	**-**	**0.4**	**-**	**1.0**
Electricity							
Peak Demand (kW)	158.6	-	158.6	-	158.4	-	157.2
Consumption (kWh)	407,100.0	-	407,542.0	-	406,747.0	-	404,980.0
Natural Gas							
Consumption (m^3)	110,208.2	-	106,723.2	-	109,603.6	-	108,959.8
Energy Charges ($)							
Electricity	32,055.0	-	32,087.0	-	32,027.0	-	31,876.0
Natural Gas	26,365.0	-	25,531.0	-	26,221.0	-	26,067.0
Total	58,420.0	-	57,618.0	-	58,248.0	-	57,943.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	945.2
Space Heat	7,221.1	-	6,829.9	-	7,157.8	-	7,121.8
Space Cool	572.3	-	577.4	-	571.5	-	569.5
Heat Rejection	466.1	-	469.3	-	465.3	-	463.6
Pumps	1,722.7	-	1,714.6	-	1,720.7	-	1,715.5
Fans	744.6	-	747.6	-	743.3	-	739.4
DHW	2,960.0	-	2,960.0	-	2,960.0	-	2,960.0
Total	16,575.6	-	16,187.6	-	16,507.4	-	16,458.7
Percent Change (%)	**-**	**-**	**2.3**	**-**	**0.4**	**-**	**0.7**
Electricity							
Peak Demand (kW)	586.6	-	586.0	-	586.0	-	584.1
Consumption (kWh)	1,776,265.0	-	1,777,150.0	-	1,774,908.0	-	1,771,376.0
Natural Gas							
Consumption (m^3)	270,126.5	-	259,747.2	-	268,444.2	-	267,492.5
Energy Charges ($)							
Electricity	137,362.0	-	137,470.0	-	137,259.0	-	136,984.0
Natural Gas	56,544.0	-	54,372.0	-	56,192.0	-	55,993.0
Total	193,906.0	-	191,842.0	-	193,451.0	-	192,977.0

Edmonton Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	-	2,053.4
Appliances	280.1	-	280.1	-	280.1	-	280.1
Space Heat	2,689.3	-	2,614.9	-	2,661.8	-	2,586.1
Space Cool	92.8	-	94.5	-	93.0	-	93.3
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	659.0	-	659.0	-	659.0	-	659.0
DHW	160.7	-	160.7	-	160.7	-	160.7
Total	5,935.1	-	5,862.6	-	5,907.9	-	5,832.5
Percent Change (%)	**-**	**-**	**1.2**	**-**	**0.5**	**-**	**1.7**
Electricity							
Peak Demand (kW)	274.7	-	275.0	-	274.7	-	274.7
Consumption (kWh)	897,012.0	-	894,444.0	-	896,099.0	-	896,075.0
Natural Gas							
Consumption (m^3)	71,795.4	-	70,113.1	-	71,157.2	-	69,158.6
Energy Charges ($)							
Electricity	70,011.0	-	69,816.0	-	69,951.0	-	69,930.0
Natural Gas	17,175.0	-	16,773.0	-	17,023.0	-	16,545.0
Total	87,186.0	-	86,589.0	-	86,974.0	-	86,475.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	293.5	-	293.5	-	293.5	-	293.5
Appliances	41.3	-	41.3	-	41.3	-	41.3
Space Heat	2,118.1	-	2,084.6	-	2,076.3	-	2,073.5
Space Cool	4.4	-	4.5	-	4.4	-	4.3
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8	-	119.8
Total	2,696.5	-	2,663.1	-	2,654.7	-	2,651.9
Percent Change (%)	**-**	**-**	**1.2**	**-**	**1.5**	**-**	**1.7**
Electricity							
Peak Demand (kW)	45.1	-	45.3	-	45.0	-	45.0
Consumption (kWh)	144,368.0	-	141,430.0	-	143,867.0	-	143,751.0
Natural Gas							
Consumption (m^3)	57,754.9	-	57,150.3	-	56,694.0	-	56,629.6
Energy Charges ($)							
Electricity	11,568.0	-	11,363.0	-	11,534.0	-	11,518.0
Natural Gas	13,817.0	-	13,672.0	-	13,563.0	-	13,548.0
Total	25,385.0	-	25,035.0	-	25,097.0	-	25,066.0

Edmonton Results

(Energy Increase Compared to NECB)

Edmonton Results – Energy Increase Compared to NEC

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	250.9	250.9	250.9	250.9	250.9	250.9	250.9
Appliances	188.9	188.9	188.9	188.9	188.9	188.9	188.9
Space Heat	1,894.0	1,994.5	2,142.0	1,992.3	2,104.6	1,993.8	2,176.7
Space Cool	58.6	55.8	52.3	57.9	57.4	59.4	62.7
Heat Rejection	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	35.6	35.7	35.7	35.7	35.9	35.7	36.0
Fans	43.0	43.0	43.0	43.1	43.1	43.0	43.2
DHW	1,425.5	1,425.5	1,425.5	1,425.5	1,425.5	1,425.5	1,425.5
Total	3,896.5	3,994.3	4,138.3	3,994.3	4,106.3	3,997.2	4,183.9
Percent Change (%)	-	**-2.5**	**-6.2**	**-2.5**	**-5.4**	**-2.6**	**-7.4**
Electricity							
Peak Demand (kW)	74.0	74.2	74.4	74.9	75.6	74.3	75.7
Consumption (kWh)	166,569.0	166,144.0	165,666.0	166,767.0	167,039.0	167,161.0	168,793.0
Natural Gas							
Consumption (m^3)	87,473.5	37,822.1	93,973.1	90,045.9	92,993.4	90,087.9	94,882.8
Energy Charges ($)							
Electricity	13,839.0	13,807.0	13,771.0	13,870.0	13,907.0	13,888.0	14,034.0
Natural Gas	20,926.0	21,556.0	22,481.0	21,542.0	22,247.0	21,552.0	22,699.0
Total	34,765.0	35,363.0	36,252.0	35,412.0	36,154.0	35,440.0	36,733.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	2,315.2	2,570.7	3,063.5	2,605.4	2,949.1	-	2,591.6
Space Cool	353.3	348.5	340.1	351.9	350.4	-	350.3
Heat Rejection	502.8	500.2	495.7	505.0	507.4	-	503.8
Pumps	243.2	243.3	243.7	244.8	246.5	-	243.9
Fans	459.1	443.6	418.5	447.3	435.3	-	447.1
DHW	481.1	481.1	481.1	481.1	481.1	-	481.1
Total	7,986.3	8,219.1	8,674.1	8,267.1	8,601.4	-	8,249.4
Percent Change (%)	-	**-2.9**	**-8.6**	**-3.5**	**-7.7**	**-**	**-3.3**
Electricity							
Peak Demand (kW)	473.4	471.9	469.3	474.8	476.5	-	474.2
Consumption (kWh)	1,441,662.0	1,435,369.0	1,424,877.0	1,439,063.0	1,436,443.0	-	1,437,968.0
Natural Gas							
Consumption (m^3)	74,188.7	80,971.0	94,045.9	81,892.0	91,011.6	-	81,525.3
Energy Charges ($)							
Electricity	111,776.0	111,285.0	110,457.0	111,593.0	111,408.0	-	111,484.0
Natural Gas	17,748.0	19,371.0	22,499.0	19,591.0	21,773.0	-	19,503.0
Total	129,524.0	130,656.0	132,956.0	131,184.0	133,181.0	-	130,987.0

Edmonton Results – Energy Increase Compared to NEC

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	850.7	-	850.7	850.7	850.7	850.7	850.7
Appliances	140.6	-	140.6	140.6	140.6	140.6	140.6
Space Heat	3,810.7	-	4,016.5	3,935.4	4,077.8	4,070.6	4,551.8
Space Cool	81.0	-	78.2	80.6	80.6	86.6	96.4
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	393.3	-	396.2	401.2	410.4	425.1	482.2
DHW	343.1	-	343.1	343.1	343.1	343.1	343.1
Total	5,619.3	-	5,825.3	5,751.5	5,903.2	5,916.7	6,464.8
Percent Change (%)	-	**-**	**-3.7**	**-2.4**	**-5.1**	**-5.3**	**-15.0**
Electricity							
Peak Demand (kW)	158.6	-	158.9	159.9	161.4	165.2	177.0
Consumption (kWh)	407,100.0	-	407,154.0	409,192.0	411,752.0	417,489.0	436,082.0
Natural Gas							
Consumption (m^3)	110,208.2	-	115,669.3	113,519.6	117,295.6	117,105.3	129,872.2
Energy Charges ($)							
Electricity	32,055.0	-	32,064.0	32,226.0	32,432.0	32,930.0	34,487.0
Natural Gas	26,365.0	-	27,671.0	27,157.0	28,061.0	28,015.0	31,069.0
Total	58,420.0	-	59,735.0	59,383.0	60,493.0	60,945.0	65,556.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	1,943.7	1,943.7
Appliances	945.2	-	945.2	-	945.2	945.2	945.2
Space Heat	7,221.1	-	7,857.0	-	7,894.0	7,734.2	8,698.7
Space Cool	572.3	-	565.9	-	579.9	585.0	608.1
Heat Rejection	466.1	-	461.3	-	475.2	477.0	495.8
Pumps	1,722.7	-	1,726.5	-	1,742.4	1,755.4	1,811.4
Fans	744.6	-	741.5	-	758.5	769.2	814.6
DHW	2,960.0	-	2,960.0	-	2,960.0	2,960.0	2,960.0
Total	16,575.6	-	17,201.2	-	17,299.0	17,169.8	18,277.5
Percent Change (%)	-	**-**	**-3.8**	**-**	**-4.4**	**-3.6**	**-10.3**
Electricity							
Peak Demand (kW)	586.6	-	586.8	-	592.7	598.4	616.5
Consumption (kWh)	1,776,265.0	-	1,773,381.0	-	1,790,262.0	1,798,770.0	1,838,546.0
Natural Gas							
Consumption (m^3)	270,126.5	-	286,999.7	-	287,979.5	283,738.7	309,328.6
Energy Charges ($)							
Electricity	137,362.0	-	137,091.0	-	138,406.0	139,078.0	142,092.0
Natural Gas	56,544.0	-	60,076.0	-	60,282.0	59,394.0	64,751.0
Total	193,906.0	-	197,167.0	-	198,688.0	198,472.0	206,843.0

Edmonton Results – Energy Increase Compared to NEC

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	2,053.4	2,053.4	2,053.4	2,053.4
Appliances	280.1	-	280.1	280.1	280.1	280.1	280.1
Space Heat	2,689.3	-	2,780.7	2,860.7	3,047.8	3,231.7	4,172.4
Space Cool	92.8	-	90.7	90.7	88.6	94.2	97.0
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	659.0	-	659.0	659.0	659.0	659.0	659.0
DHW	160.7	-	160.7	160.7	160.7	160.7	160.7
Total	5,935.1	-	6,024.5	6,104.5	6,289.4	6,479.0	7,422.5
Percent Change (%)	-	**-**	**-1.5**	**-2.9**	**-6.0**	**-9.2**	**-25.1**
Electricity							
Peak Demand (kW)	274.7	-	274.3	275.0	275.4	279.1	286.1
Consumption (kWh)	897,012.0	-	900,387.0	902,851.0	909,300.0	903,080.0	914,229.0
Natural Gas							
Consumption (m^3)	71,795.4	-	73,841.6	75,731.0	80,019.3	85,642.8	109,612.0
Energy Charges ($)							
Electricity	70,011.0	-	70,258.0	70,392.0	70,818.0	70,522.0	71,426.0
Natural Gas	17,175.0	-	17,665.0	18,117.0	19,143.0	20,488.0	26,223.0
Total	87,186.0	-	87,923.0	88,509.0	89,961.0	91,010.0	97,649.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	293.5	-	293.5	293.5	293.5	293.5	293.5
Appliances	41.3	-	41.3	41.3	41.3	41.3	41.3
Space Heat	2,118.1	-	2,160.7	2,354.3	2,619.6	2,386.0	2,831.1
Space Cool	4.4	-	4.2	4.5	4.6	4.6	4.9
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	119.4	-	119.4	119.4	119.4	119.4	119.4
DHW	119.8	-	119.8	119.8	119.8	119.8	119.8
Total	2,696.5	-	2,739.0	2,932.8	3,198.3	2,964.6	3,410.0
Percent Change (%)	-	**-**	**-1.6**	**-8.8**	**-18.6**	**-9.9**	**-26.5**
Electricity							
Peak Demand (kW)	45.1	-	44.9	45.7	46.7	45.5	46.4
Consumption (kWh)	144,368.0	-	141,430.0	147,328.0	150,876.0	148,335.0	155,868.0
Natural Gas							
Consumption (m^3)	57,754.9	-	58,510.7	63,742.3	70,446.2	64,489.6	75,588.3
Energy Charges ($)							
Electricity	11,568.0	-	11,841.0	11,773.0	12,022.0	11,882.0	12,445.0
Natural Gas	13,817.0	-	13,998.0	15,249.0	16,854.0	15,428.0	18,083.0
Total	25,385.0	-	25,839.0	27,022.0	28,876.0	27,310.0	30,528.0

Fort McMurray Results

(Energy Savings Compared to NECB)

Fort McMurray Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	250.9	-	250.9	-	250.9	-	250.9
Appliances	188.9	-	188.9	-	188.9	-	188.9
Space Heat	2,224.3	-	2,091.5	-	2,207.6	-	2,200.9
Space Cool	64.3	-	67.9	-	64.3	-	64.0
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	37.1	-	37.0	-	37.0	-	37.1
Fans	43.2	-	43.2	-	43.2	-	43.2
DHW	1,461.6	-	1,461.6	-	1,461.6	-	1,461.6
Total	4,270.3	-	4,140.8	-	4,253.5	-	4,246.6
Percent Change (%)	**-**	**-**	**3.0**	**-**	**0.4**	**-**	**0.6**
Electricity							
Peak Demand (kW)	77.1	-	76.6	-	76.9	-	77.0
Consumption (kWh)	169,645.0	-	170,137.0	-	169,579.0	-	169,490.0
Natural Gas							
Consumption (m^3)	97,099.7	-	93,617.6	-	96,657.5	-	96,483.9
Energy Charges ($)							
Electricity	11,925.0	-	11,961.0	-	11,920.0	-	11,914.0
Natural Gas	23,229.0	-	22,396.0	-	23,123.0	-	23,082.0
Total	35,154.0	-	34,357.0	-	35,043.0	-	34,996.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	-	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	-	1,689.0	-	1,689.0
Space Heat	2,301.8	2,105.8	1,836.8	-	2,233.8	-	2,276.9
Space Cool	339.4	342.6	347.3	-	339.4	-	339.7
Heat Rejection	454.3	454.6	455.0	-	453.4	-	454.3
Pumps	237.0	236.8	236.7	-	236.4	-	236.9
Fans	435.0	446.5	464.3	-	435.8	-	436.2
DHW	492.8	492.8	492.8	-	492.8	-	492.8
Total	7,891.8	7,710.6	7,464.4	-	7,823.1	-	7,868.4
Percent Change (%)	**-**	**2.3**	**5.4**	**-**	**0.9**	**-**	**0.3**
Electricity							
Peak Demand (kW)	448.9	449.7	451.0	-	448.3	-	448.7
Consumption (kWh)	1,415,886.0	1,420,017.0	1,426,344.0	-	1,416,262.0	-	1,416,303.0
Natural Gas							
Consumption (m^3)	74,146.7	68,945.9	61,808.1	-	72,338.5	-	73,486.1
Energy Charges ($)							
Electricity	90,473.0	90,740.0	91,146.0	-	90,494.0	-	90,500.0
Natural Gas	17,738.0	16,494.0	14,786.0	-	17,306.0	-	17,580.0
Total	108,211.0	107,234.0	105,932.0	-	107,800.0	-	108,080.0

Fort McMurray Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	-	850.7
Appliances	140.6	-	140.6	-	140.6	-	140.6
Space Heat	4,494.0	-	4,360.5	-	4,467.0	-	4,432.7
Space Cool	100.5	-	101.6	-	100.4	-	99.2
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	451.0	-	448.8	-	449.2	-	443.5
DHW	351.2	-	351.2	-	351.2	-	351.2
Total	6,388.0	-	6,253.4	-	6,359.0	-	6,317.9
Percent Change (%)	**-**	**-**	**2.1**	**-**	**0.5**	**-**	**1.1**
Electricity							
Peak Demand (kW)	180.7	-	172.8	-	180.4	-	179.0
Consumption (kWh)	428,550.0	-	428,338.0	-	428,010.0	-	426,106.0
Natural Gas							
Consumption (m^3)	128,553.8	-	125,012.9	-	127,837.2	-	126,927.5
Energy Charges ($)							
Electricity	28,286.0	-	28,266.0	-	28,250.0	-	28,111.0
Natural Gas	30,754.0	-	29,907.0	-	30,583.0	-	30,365.0
Total	59,040.0	-	58,173.0	-	58,833.0	-	58,476.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	945.2
Space Heat	8,663.9	-	8,252.7	-	8,602.2	-	8,515.4
Space Cool	595.9	-	599.0	-	595.0	-	592.1
Heat Rejection	457.4	-	457.5	-	456.8	-	454.3
Pumps	1,765.1	-	1,761.4	-	1,763.1	-	1,756.0
Fans	754.1	-	754.8	-	752.6	-	747.6
DHW	3,034.6	-	3,034.6	-	3,034.6	-	3,034.6
Total	18,159.9	-	17,748.8	-	18,093.1	-	17,988.9
Percent Change (%)	**-**	**-**	**2.3**	**-**	**0.4**	**-**	**0.9**
Electricity							
Peak Demand (kW)	580.7	-	580.8	-	580.0	-	577.6
Consumption (kWh)	1,794,832.0	-	1,794,859.0	-	1,793,427.0	-	1,788,565.0
Natural Gas							
Consumption (m^3)	310,386.7	-	299,478.4	-	308,749.2	-	306,448.2
Energy Charges ($)							
Electricity	114,804.0	-	114,837.0	-	114,717.0	-	114,409.0
Natural Gas	64,973.0	-	62,690.0	-	64,630.0	-	64,149.0
Total	179,777.0	-	177,527.0	-	179,347.0	-	178,558.0

Fort McMurray Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	-	2,053.4	-	2,053.4
Appliances	280.1	-	280.1	-	280.1	-	280.1
Space Heat	3,452.5	-	3,375.9	-	3,422.1	-	3,334.2
Space Cool	111.3	-	112.8	-	111.6	-	111.2
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	659.0	-	659.0	-	659.0	-	659.0
DHW	160.7	-	160.7	-	160.7	-	160.7
Total	6,717.0	-	6,641.8	-	6,686.8	-	6,598.5
Percent Change (%)	**-**	**-**	**1.1**	**-**	**0.4**	**-**	**1.8**
Electricity							
Peak Demand (kW)	290.2	-	281.1	-	280.8	-	289.8
Consumption (kWh)	914,913.0	-	912,044.0	-	913,948.0	-	913,660.0
Natural Gas							
Consumption (m^3)	90,826.9	-	89,108.2	-	90,118.7	-	87,803.8
Energy Charges ($)							
Electricity	59,278.0	-	59,089.0	-	59,232.0	-	59,179.0
Natural Gas	21,729.0	-	21,317.0	-	21,559.0	-	21,005.0
Total	81,007.0	-	80,406.0	-	80,791.0	-	80,184.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	293.5	-	293.5	-	293.5	-	293.5
Appliances	41.3	-	41.3	-	41.3	-	41.3
Space Heat	2,423.4	-	2,388.9	-	2,379.3	-	2,373.8
Space Cool	6.3	-	6.4	-	6.2	-	6.2
Heat Rejection	0.0	-	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8	-	119.8
Total	3,003.7	-	2,969.3	-	2,959.5	-	2,954.0
Percent Change (%)	**-**	**-**	**1.1**	**-**	**1.5**	**-**	**1.7**
Electricity							
Peak Demand (kW)	50.9	-	50.9	-	50.8	-	50.8
Consumption (kWh)	149,685.0	-	149,685.0	-	149,117.0	-	148,940.0
Natural Gas							
Consumption (m^3)	65,396.6	-	65,396.6	-	64,279.7	-	64,150.9
Energy Charges ($)							
Electricity	10,023.0	-	10,023.0	-	9,993.0	-	9,973.0
Natural Gas	15,645.0	-	15,645.0	-	15,378.0	-	15,347.0
Total	25,668.0	-	25,668.0	-	25,371.0	-	25,320.0

Fort McMurray Results

(Energy Increase Compared to NECB)

Fort McMurray Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	250.9	-	250.9	250.9	250.9	250.9	250.9
Appliances	188.9	-	188.9	188.9	188.9	188.9	188.9
Space Heat	2,224.3	-	2,434.5	2,332.1	2,454.4	2,334.8	2,536.4
Space Cool	64.3	-	59.7	64.4	64.8	66.1	70.2
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	37.1	-	37.3	37.3	37.5	37.2	37.5
Fans	43.2	-	43.4	43.4	43.6	43.4	43.6
DHW	1,461.6	-	1,461.6	1,461.6	1,461.6	1,461.6	1,461.6
Total	4,270.3	-	4,476.2	4,378.6	4,501.6	4,382.9	4,589.2
Percent Change (%)	-	**-**	**-4.8**	**-2.5**	**-5.4**	**-2.6**	**-7.5**
Electricity							
Peak Demand (kW)	77.1	-	78.1	78.2	79.5	78.0	79.8
Consumption (kWh)	169,645.0	-	169,138.0	170,127.0	170,744.0	170,583.0	172,528.0
Natural Gas							
Consumption (m^3)	97,099.7	-	102,611.3	99,924.1	103,131.9	99,996.9	105,284.5
Energy Charges ($)							
Electricity	11,925.0	-	11,883.0	11,958.0	12,001.0	11,997.0	12,153.0
Natural Gas	23,229.0	-	24,547.0	23,905.0	24,672.0	23,922.0	25,187.0
Total	35,154.0	-	36,430.0	35,863.0	36,673.0	35,919.0	37,340.0

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	2,301.8	2,511.7	2,907.6	2,668.5	3,098.0	-	2,635.8
Space Cool	339.4	336.1	330.4	339.2	339.1	-	337.0
Heat Rejection	454.3	454.0	453.5	458.3	462.8	-	454.4
Pumps	237.0	237.3	237.8	239.9	243.1	-	238.1
Fans	435.0	423.7	405.1	421.7	408.7	-	424.4
DHW	492.8	492.8	492.8	492.8	492.8	-	492.8
Total	7,891.8	8,087.3	8,458.9	8,252.0	8,676.2	-	8,214.2
Percent Change (%)	-	**-2.5**	**-7.2**	**-4.6**	**-9.9**	**-**	**-4.1**
Electricity							
Peak Demand (kW)	448.9	448.0	446.4	446.3	449.5	-	451.8
Consumption (kWh)	1,415,886.0	1,411,871.0	1,405,154.0	1,414,077.0	1,412,601.0	-	1,412,655.0
Natural Gas							
Consumption (m^3)	74,146.7	79,717.0	90,219.4	83,876.6	95,271.9	-	83,008.8
Energy Charges ($)							
Electricity	90,473.0	90,213.0	89,785.0	90,368.0	90,286.0	-	90,272.0
Natural Gas	17,738.0	19,071.0	21,583.0	20,066.0	22,792.0	-	19,858.0
Total	108,211.0	109,284.0	111,368.0	110,434.0	113,078.0	-	110,130.0

Fort McMurray Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	850.7	-	850.7	-	850.7	850.7	850.7
Appliances	140.6	-	140.6	-	140.6	140.6	140.6
Space Heat	4,494.0	-	4,700.4	-	4,779.5	4,784.3	5,318.6
Space Cool	100.5	-	98.6	-	101.9	106.3	116.7
Heat Rejection	0.0	-	0.0	-	0.0	0.0	0.0
Pumps	0.0	-	0.0	-	0.0	0.0	0.0
Fans	451.0	-	454.8	-	470.6	482.8	540.8
DHW	351.2	-	351.2	-	351.2	351.2	351.2
Total	6,388.0	-	6,596.3	-	6,694.5	6,715.9	7,318.6
Percent Change (%)	-	**-**	**-3.3**	**-**	**-4.8**	**-5.1**	**-14.6**
Electricity							
Peak Demand (kW)	180.7	-	181.8	-	184.3	180.5	201.3
Consumption (kWh)	428,550.0	-	429,065.0	-	434,388.0	438,999.0	458,001.0
Natural Gas							
Consumption (m^3)	128,553.8	-	134,031.7	-	136,128.3	136,257.1	150,432.0
Energy Charges ($)							
Electricity	28,286.0	-	28,329.0	-	28,678.0	29,034.0	30,386.0
Natural Gas	30,754.0	-	32,065.0	-	32,566.0	32,597.0	35,988.0
Total	59,040.0	-	60,394.0	-	61,244.0	61,631.0	66,374.0

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,943.7	-	1,943.7	-	1,943.7	1,943.7	1,943.7
Appliances	945.2	-	945.2	-	945.2	945.2	945.2
Space Heat	8,663.9	-	9,312.3	-	9,476.4	9,268.8	10,350.4
Space Cool	595.9	-	592.3	-	608.1	610.4	636.2
Heat Rejection	457.4	-	457.6	-	465.8	468.8	488.3
Pumps	1,765.1	-	1,771.0	-	1,794.6	1,800.5	1,860.7
Fans	754.1	-	754.2	-	775.7	779.0	830.1
DHW	3,034.6	-	3,034.6	-	3,034.6	3,034.6	3,034.6
Total	18,159.9	-	18,810.8	-	19,044.1	18,851.1	20,089.2
Percent Change (%)	-	**-**	**-3.6**	**-**	**-4.9**	**-3.8**	**-10.6**
Electricity							
Peak Demand (kW)	580.7	-	580.2	-	589.7	569.1	583.2
Consumption (kWh)	1,794,832.0	-	1,795,544.0	-	1,814,747.0	1,818,797.0	1,862,288.0
Natural Gas							
Consumption (m^3)	310,386.7	-	327,590.2	-	331,945.7	326,437.0	355,133.9
Energy Charges ($)							
Electricity	114,804.0	-	114,801.0	-	116,009.0	116,293.0	118,995.0
Natural Gas	64,973.0	-	68,574.0	-	69,486.0	68,333.0	74,340.0
Total	179,777.0	-	183,375.0	-	185,495.0	184,626.0	193,335.0

Fort McMurray Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	2,053.4	2,053.4	2,053.4	2,053.4
Appliances	280.1	-	280.1	280.1	280.1	280.1	280.1
Space Heat	3,452.5	-	3,546.3	3,637.5	3,842.2	4,077.5	5,116.5
Space Cool	111.3	-	110.2	110.2	108.8	113.9	119.2
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	659.0	-	659.0	659.0	659.0	659.0	659.0
DHW	160.7	-	160.7	160.7	160.7	160.7	160.7
Total	6,717.0	-	6,809.6	6,900.8	7,104.1	7,344.5	8,388.8
Percent Change (%)	-	**-**	**-1.4**	**-2.7**	**-5.8**	**-9.3**	**-23.2**
Electricity							
Peak Demand (kW)	290.2	-	281.6	291.6	292.2	287.3	296.2
Consumption (kWh)	914,913.0	-	918,717.0	921,058.0	927,215.0	921,962.0	934,886.0
Natural Gas							
Consumption (m^3)	90,826.9	-	92,920.6	95,117.9	99,924.1	106,804.4	133,276.0
Energy Charges ($)							
Electricity	59,278.0	-	59,524.0	59,576.0	59,870.0	59,781.0	60,628.0
Natural Gas	21,729.0	-	22,229.0	22,755.0	23,905.0	25,551.0	31,884.0
Total	81,007.0	-	81,753.0	82,331.0	83,775.0	85,332.0	92,512.0

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	293.5	-	293.5	293.5	293.5	293.5	293.5
Appliances	41.3	-	41.3	41.3	41.3	41.3	41.3
Space Heat	2,423.4	-	2,466.2	2,673.4	2,950.1	2,720.7	3,208.6
Space Cool	6.3	-	6.1	6.5	6.7	6.5	6.9
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	119.4	-	119.4	119.4	119.4	119.4	119.4
DHW	119.8	-	119.8	119.8	119.8	119.8	119.8
Total	3,003.7	-	3,046.4	3,253.9	3,530.9	3,301.2	3,789.6
Percent Change (%)	-	**-**	**-1.4**	**-8.3**	**-17.6**	**-9.9**	**-26.2**
Electricity							
Peak Demand (kW)	50.9	-	50.2	51.9	53.4	51.4	52.4
Consumption (kWh)	149,685.0	-	153,729.0	152,990.0	156,774.0	154,416.0	163,122.0
Natural Gas							
Consumption (m^3)	65,396.6	-	66,143.9	71,719.8	78,709.3	72,839.5	84,965.4
Energy Charges ($)							
Electricity	10,023.0	-	10,250.0	10,206.0	10,412.0	10,321.0	10,855.0
Natural Gas	15,645.0	-	15,824.0	17,158.0	18,830.0	17,426.0	20,327.0
Total	25,668.0	-	26,074.0	27,364.0	29,242.0	27,747.0	31,182.0

Yellowknife Results

(Energy Savings Compared to NECB)

Yellowknife Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	250.9	-	-	-	-	-	-
Appliances	188.9	-	-	-	-	-	-
Space Heat	2,971.4	-	-	-	-	-	-
Space Cool	30.8	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-
Pumps	37.3	-	-	-	-	-	-
Fans	42.2	-	-	-	-	-	-
DHW	1,637.5	-	-	-	-	-	-
Total	5,158.9	-	-	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	-
Electricity							
Peak Demand (kW)	65.2	-	-	-	-	-	-
Consumption (kWh)	162,347.0	-	-	-	-	-	-
Oil							
Consumption (L)	118,264.7	-	-	-	-	-	-
Energy Charges ($)							
Electricity	35,862.0	-	-	-	-	-	-
Oil	104,073.0	-	-	-	-	-	-
Total	139,935.0	-	-	-	-	-	-

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,942.6	-	-	-	-	-	-
Appliances	1,689.0	-	-	-	-	-	-
Space Heat	2,884.8	-	-	-	-	-	-
Space Cool	222.3	-	-	-	-	-	-
Heat Rejection	404.9	-	-	-	-	-	-
Pumps	207.8	-	-	-	-	-	-
Fans	405.3	-	-	-	-	-	-
DHW	550.3	-	-	-	-	-	-
Total	8,307.1	-	-	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	-
Electricity							
Peak Demand (kW)	439.1	-	-	-	-	-	-
Consumption (kWh)	1,353,325.0	-	-	-	-	-	-
Oil							
Consumption (L)	88,807.7	-	-	-	-	-	-
Energy Charges ($)							
Electricity	282,133.0	-	-	-	-	-	-
Oil	78,150.7	-	-	-	-	-	-
Total	360,283.7	-	-	-	-	-	-

Yellowknife Results – Energy Savings Compared to NECB

Building Type: Strip Mall

	NECB	Window		Wall		Roof	
		Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	850.7	-	-	-	-	-	-
Appliances	140.6	-	-	-	-	-	-
Space Heat	6,091.7	-	-	-	-	-	-
Space Cool	48.0	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-
Fans	401.6	-	-	-	-	-	-
DHW	391.6	-	-	-	-	-	-
Total	7,924.1	-	-	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	-
Electricity							
Peak Demand (kW)	144.7	-	-	-	-	-	-
Consumption (kWh)	400,238.0	-	-	-	-	-	-
Oil							
Consumption (L)	167,613.5	-	-	-	-	-	-
Energy Charges ($)							
Electricity	84,490.0	-	-	-	-	-	-
Oil	147,499.9	-	-	-	-	-	-
Total	231,989.9	-	-	-	-	-	-

Building Type: Secondary School

	NECB	Window		Wall		Roof	
		Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	1,943.7	-	-	-	-	-	-
Appliances	945.2	-	-	-	-	-	-
Space Heat	11,151.6	-	-	-	-	-	-
Space Cool	442.5	-	-	-	-	-	-
Heat Rejection	361.2	-	-	-	-	-	-
Pumps	1,665.7	-	-	-	-	-	-
Fans	661.1	-	-	-	-	-	-
DHW	3,396.8	-	-	-	-	-	-
Total	20,567.8	-	-	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	-
Electricity							
Peak Demand (kW)	533.0	-	-	-	-	-	-
Consumption (kWh)	1,672,060.0	-	-	-	-	-	-
Oil							
Consumption (L)	376,120.6	-	-	-	-	-	-
Energy Charges ($)							
Electricity	349,660.0	-	-	-	-	-	-
Oil	330,986.1	-	-	-	-	-	-
Total	680,646.1	-	-	-	-	-	-

Yellowknife Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	2,053.4	-	-	-	-	-	-
Appliances	280.1	-	-	-	-	-	-
Space Heat	5,077.8	-	-	-	-	-	-
Space Cool	48.0	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-
Fans	659.0	-	-	-	-	-	-
DHW	164.6	-	-	-	-	-	-
Total	8,282.8	-	-	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	-
Electricity							
Peak Demand (kW)	254.3	-	-	-	-	-	-
Consumption (kWh)	923,746.0	-	-	-	-	-	-
Oil							
Consumption (L)	128,160.1	-	-	-	-	-	-
Energy Charges ($)							
Electricity	194,127.0	-	-	-	-	-	-
Oil	112,780.9	-	-	-	-	-	-
Total	306,907.9	-	-	-	-	-	-

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)							
Lights	293.5	-	-	-	-	-	-
Appliances	41.3	-	-	-	-	-	-
Space Heat	3,274.9	-	-	-	-	-	-
Space Cool	1.8	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-
Fans	119.4	-	-	-	-	-	-
DHW	121.6	-	-	-	-	-	-
Total	3,852.5	-	-	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	-
Electricity							
Peak Demand (kW)	52.7	-	-	-	-	-	-
Consumption (kWh)	154,147.0	-	-	-	-	-	-
Oil							
Consumption (L)	85,253.7	-	-	-	-	-	-
Energy Charges ($)							
Electricity	33,271.0	-	-	-	-	-	-
Oil	75,023.3	-	-	-	-	-	-
Total	108,294.3	-	-	-	-	-	-

Yellowknife Results

(Energy Increase Compared to NECB)

Yellowknife Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	250.9	250.9	250.9	250.9	250.9	250.9	250.9
Appliances	188.9	188.9	188.9	188.9	188.9	188.9	188.9
Space Heat	2,971.4	3,228.7	3,376.2	3,170.8	3,362.6	3,142.8	3,408.6
Space Cool	30.8	28.3	26.7	31.5	31.6	32.0	33.6
Heat Rejection	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	37.3	37.3	37.3	37.4	37.6	37.4	37.6
Fans	42.2	42.2	42.2	42.3	42.4	42.3	42.4
DHW	1,637.5	1,637.5	1,637.5	1,637.5	1,637.5	1,637.5	1,637.5
Total	5,158.9	5,413.7	5,559.7	5,359.3	5,551.4	5,331.7	5,599.5
Percent Change (%)	-	**-4.9**	**-7.8**	**-3.9**	**-7.6**	**-3.3**	**-8.5**
Electricity							
Peak Demand (kW)	65.2	66.1	66.1	66.9	67.5	66.5	67.5
Consumption (kWh)	162,347.0	162,494.0	162,543.0	163,266.0	163,953.0	163,269.0	164,653.0
Oil							
Consumption (L)	118,264.7	124,835.3	128,607.4	123,357.0	128,258.3	122,642.4	129,436.6
Energy Charges ($)							
Electricity	35,862.0	35,893.0	35,887.0	36,086.0	36,225.0	36,084.0	36,393.0
Oil	104,073.0	109,855.1	113,174.6	108,554.2	112,867.3	107,925.3	113,904.2
Total	139,935.0	145,748.1	149,061.6	144,640.2	149,092.3	144,009.3	150,297.2

Building Type: Large Office

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0
Space Heat	2,884.8	3,638.5	4,102.9	3,547.1	4,195.5	3,069.1	3,357.7
Space Cool	222.3	215.9	214.2	221.8	221.3	220.7	219.1
Heat Rejection	404.9	405.4	407.4	415.5	422.2	405.3	406.4
Pumps	207.8	208.3	214.0	211.6	215.1	208.1	209.1
Fans	405.3	380.8	368.5	386.7	372.0	399.5	391.7
DHW	550.3	550.3	550.3	550.3	550.3	550.3	550.3
Total	8,307.1	9,030.7	9,489.0	8,964.7	9,608.0	8,484.6	8,765.9
Percent Change (%)	-	**-8.7**	**-14.2**	**-7.9**	**-15.7**	**-2.1**	**-5.5**
Electricity							
Peak Demand (kW)	439.1	435.8	432.2	441.3	442.5	439.9	441.0
Consumption (kWh)	1,353,325.0	1,344,986.0	1,343,282.0	1,352,022.0	1,350,606.0	1,351,459.0	1,349,409.0
Oil							
Consumption (L)	88,807.7	108,295.7	120,302.2	105,933.7	122,694.2	93,575.3	101,035.1
Energy Charges ($)							
Electricity	282,133.0	280,261.0	279,763.0	281,793.0	281,452.0	281,732.0	281,300.0
Oil	78,150.7	95,300.2	105,865.9	93,221.6	107,970.9	82,346.3	88,910.9
Total	360,283.7	375,561.2	385,628.9	375,014.6	389,422.9	364,078.3	370,210.9

Yellowknife Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	850.7	850.7	850.7	850.7	850.7	850.7	850.7
Appliances	140.6	140.6	140.6	140.6	140.6	140.6	140.6
Space Heat	6,091.7	6,377.1	6,540.6	6,305.9	6,521.5	6,535.8	7,213.9
Space Cool	48.0	45.6	44.1	48.5	50.2	50.7	54.0
Heat Rejection	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fans	401.6	408.6	412.8	415.4	429.1	429.9	473.3
DHW	391.6	391.6	391.6	391.6	391.6	391.6	391.6
Total	7,924.1	8,214.1	8,380.3	8,152.7	8,383.7	8,399.3	9,124.1
Percent Change (%)	-	**-3.7**	**-5.8**	**-2.9**	**-5.8**	**-6.0**	**-15.1**
Electricity							
Peak Demand (kW)	144.7	145.5	146.0	146.5	148.5	150.4	158.2
Consumption (kWh)	400,238.0	401,520.0	402,257.0	404,211.0	408,494.0	408,854.0	421,830.0
Oil							
Consumption (L)	167,613.5	174,991.4	179,219.1	173,153.1	178,725.4	179,096.3	196,626.0
Energy Charges ($)							
Electricity	84,490.0	84,761.0	84,921.0	85,365.0	86,256.0	86,394.0	89,234.0
Oil	147,499.9	153,992.5	157,712.8	152,374.7	157,278.4	157,604.8	173,030.9
Total	231,989.9	238,753.5	242,633.8	237,739.7	243,534.4	243,998.8	262,264.9

Building Type: Secondary School

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	1,943.7	1,943.7	1,943.7	1,943.7	1,943.7	1,943.7	1,943.7
Appliances	945.2	945.2	945.2	945.2	945.2	945.2	945.2
Space Heat	11,151.6	11,851.9	12,252.8	11,752.1	12,332.5	12,101.6	13,535.1
Space Cool	442.5	437.2	434.7	446.8	450.9	453.1	468.6
Heat Rejection	361.2	357.5	355.5	366.9	372.3	375.5	394.8
Pumps	1,665.7	1,661.8	1,661.8	1,679.6	1,689.5	1,698.3	1,743.6
Fans	661.1	658.4	657.3	669.9	678.2	682.5	716.9
DHW	3,396.8	3,396.8	3,396.8	3,396.8	3,396.8	3,396.8	3,396.8
Total	20,567.8	21,252.5	21,647.7	21,201.0	21,809.1	21,596.7	23,144.8
Percent Change (%)	-	**-3.3**	**-5.3**	**-3.1**	**-6.0**	**-5.0**	**-12.5**
Electricity							
Peak Demand (kW)	533.0	530.8	529.7	537.2	541.2	543.3	557.8
Consumption (kWh)	1,672,060.0	1,667,731.0	1,666,163.0	1,681,140.0	1,688,832.0	1,693,992.0	1,725,795.0
Oil							
Consumption (L)	376,120.6	394,223.1	404,587.6	391,645.6	406,649.6	400,681.8	437,740.4
Energy Charges ($)							
Electricity	349,660.0	348,662.0	348,268.0	351,491.0	353,053.0	354,088.0	360,517.0
Oil	330,986.1	346,916.3	356,037.1	344,648.1	357,851.6	352,600.0	385,211.6
Total	680,646.1	695,578.3	704,305.1	696,139.1	710,904.6	706,688.0	745,728.6

Yellowknife Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	2,053.4	-	2,053.4	2,053.4	2,053.4	2,053.4	2,053.4
Appliances	280.1	-	280.1	280.1	280.1	280.1	280.1
Space Heat	5,077.8	-	5,313.8	5,385.0	5,671.5	6,016.8	7,361.9
Space Cool	48.0	-	46.4	47.6	46.5	48.5	50.4
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	659.0	-	659.0	659.0	659.0	659.0	659.0
DHW	164.6	-	164.6	164.6	164.6	164.6	164.6
Total	8,282.8	-	8,517.2	8,589.6	8,875.0	9,222.3	10,569.3
Percent Change (%)	-	**-**	**-2.8**	**-3.7**	**-7.1**	**-11.3**	**-27.6**
Electricity							
Peak Demand (kW)	254.3	-	254.2	255.2	255.5	257.0	262.5
Consumption (kWh)	923,746.0	-	934,232.0	932,302.0	939,101.0	933,022.0	947,595.0
Oil							
Consumption (L)	128,160.1	-	133,246.9	135,295.3	142,043.1	151,586.7	185,055.9
Energy Charges ($)							
Electricity	194,127.0	-	196,242.0	195,661.0	196,842.0	195,989.0	198,934.0
Oil	112,780.9	-	117,257.3	119,059.9	124,998.0	133,396.3	162,849.2
Total	306,907.9	-	313,499.3	314,720.9	321,840.0	329,385.3	361,783.2

Building Type: Warehouse

		Window		Wall		Roof	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)							
Lights	293.5	-	293.5	293.5	293.5	293.5	293.5
Appliances	41.3	-	41.3	41.3	41.3	41.3	41.3
Space Heat	3,274.9	-	3,381.4	3,689.3	4,083.2	3,743.1	4,401.8
Space Cool	1.8	-	1.7	1.9	2.0	1.9	2.1
Heat Rejection	0.0	-	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	-	0.0	0.0	0.0	0.0	0.0
Fans	119.4	-	119.4	119.4	119.4	119.4	119.4
DHW	121.6	-	121.6	121.6	121.6	121.6	121.6
Total	3,852.5	-	3,958.9	4,267.1	4,661.1	4,320.9	4,979.7
Percent Change (%)	-	**-**	**-2.8**	**-10.8**	**-21.0**	**-12.2**	**-29.3**
Electricity							
Peak Demand (kW)	52.7	-	50.8	54.3	56.0	52.8	53.3
Consumption (kWh)	154,147.0	-	164,279.0	158,928.0	163,284.0	161,568.0	173,142.0
Oil							
Consumption (L)	85,253.7	-	87,062.0	95,528.2	105,306.3	96,673.8	112,627.0
Energy Charges ($)							
Electricity	33,271.0	-	35,226.0	34,136.0	34,883.0	34,801.0	37,107.0
Oil	75,023.3	-	76,614.6	45,155.0	49,659.0	45,684.0	53,030.0
Total	108,294.3	-	111,840.6	79,291.0	84,542.0	80,485.0	90,137.0

Appendix B: Detailed Energy Use Breakdown – HVAC and SHW Measures

Victoria Results

(Energy Savings Compared to NECB)

Victoria Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	250.9	250.9	250.9	-	-	-	250.9	-	-	-	250.9	-	-	-	-
Appliances	188.9	188.9	188.9	-	-	-	188.9	-	-	-	188.9	-	-	-	-
Space Heat	1,086.6	1,005.2	900.9	-	-	-	1,086.6	-	-	-	1,086.6	-	-	-	-
Space Cool	52.3	52.3	52.3	-	-	-	47.8	-	-	-	52.3	-	-	-	-
Heat Rejection	0.0	0.0	0.0	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	26.3	26.3	26.3	-	-	-	26.3	-	-	-	26.3	-	-	-	-
Fans	42.7	42.7	42.7	-	-	-	42.7	-	-	-	42.7	-	-	-	-
DHW	1,267.5	1,267.5	1,267.5	-	-	-	1,267.5	-	-	-	1,126.6	-	-	-	-
Total	2,915.1	2,833.7	2,729.4	-	-	-	2,910.6	-	-	-	2,774.2	-	-	-	-
Percent Change (%)	-	**2.8**	**6.4**	-	-	-	**0.2**	-	-	-	**4.8**	-	-	-	-
Electricity															
Peak Demand (kW)	68.6	68.6	68.6	-	-	-	66.6	-	-	-	68.6	-	-	-	-
Consumption (kWh)	159,746.0	159,746.0	159,746.0	-	-	-	158,513.0	-	-	-	159,746.0	-	-	-	-
Natural Gas															
Consumption (m^3)	62,085.2	59,927.0	57,155.9	-	-	-	62,085.2	-	-	-	58,348.3	-	-	-	-
Energy Charges ($)															
Electricity	14,681.0	14,681.0	14,681.0	-	-	-	14,551.0	-	-	-	14,681.0	-	-	-	-
Natural Gas	29,408.0	28,386.0	27,074.0	-	-	-	29,408.0	-	-	-	27,639.0	-	-	-	-
Total	44,089.0	43,067.0	41,755.0	-	-	-	43,959.0	-	-	-	42,320.0	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,942.6	-	1,942.6	-	1,942.6	-	-	-	-	-	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	-	1,689.0	-	1,689.0	-	-	-	-	-	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	1,359.1	-	1,168.5	-	1,359.1	-	-	-	-	-	1,359.1	1,359.1	1,359.1	-	1,269.8
Space Cool	402.1	-	402.1	-	355.6	-	-	-	-	-	402.1	402.1	402.1	-	397.2
Heat Rejection	484.8	-	484.8	-	485.4	-	-	-	-	-	484.8	484.8	484.8	-	480.3
Pumps	250.1	-	250.1	-	250.1	-	-	-	-	-	250.1	250.1	250.1	-	250.0
Fans	413.3	-	413.3	-	413.3	-	-	-	-	-	413.3	413.3	413.3	-	415.4
DHW	430.1	-	430.1	-	430.1	-	-	-	-	-	382.3	430.1	430.1	-	430.1
Total	6,971.2	-	6,780.6	-	6,925.2	-	-	-	-	-	6,923.4	6,971.2	6,971.2	-	6,874.4
Percent Change (%)	-	-	**2.7**	-	**0.7**	-	-	-	-	-	**0.7**	**0.0**	**0.0**	-	**1.4**
Electricity															
Peak Demand (kW)	466.2	-	466.2	-	452.2	-	-	-	-	-	466.2	466.2	466.2	-	464.9
Consumption (kWh)	1,439,439.0	-	159,746.0	-	1,426,669.0	-	-	-	-	-	1,439,439.0	1,439,439.0	1,439,439.0	-	1,437,358.0
Natural Gas															
Consumption (m^3)	47,468.0	-	42,415.5	-	47,468.0	-	-	-	-	-	46,200.0	47,328.0	47,328.0	-	45,102.7
Energy Charges ($)															
Electricity	94,138.0	-	94,138.0	-	92,916.0	-	-	-	-	-	94,138.0	94,138.0	94,138.0	-	93,983.0
Natural Gas	22,485.0	-	20,091.0	-	22,485.0	-	-	-	-	-	21,884.0	22,485.0	22,485.0	-	21,364.0
Total	116,623.0	-	114,229.0	-	115,401.0	-	-	-	-	-	116,022.0	116,623.0	116,623.0	-	115,347.0

Victoria Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	850.7	850.7	-	-	850.7	-	-	-	-
Appliances	140.6	-	-	-	-	-	140.6	140.6	-	-	140.6	-	-	-	-
Space Heat	2,122.8	-	-	-	-	-	2,122.8	1,975.8	-	-	2,122.8	-	-	-	-
Space Cool	73.0	-	-	-	-	-	66.4	73.0	-	-	73.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	423.0	-	-	-	-	-	423.0	423.0	-	-	423.0	-	-	-	-
DHW	307.6	-	-	-	-	-	307.6	307.6	-	-	273.5	-	-	-	-
Total	3,917.6	-	-	-	-	-	3,911.0	3,770.7	-	-	3,883.4	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.2**	**3.8**	-	-	**0.9**	-	-	-	-
Electricity															
Peak Demand (kW)	174.3	-	-	-	-	-	166.5	174.3	-	-	174.3	-	-	-	-
Consumption (kWh)	413,114.0	-	-	-	-	-	411,283.0	413,114.0	-	-	413,114.0	-	-	-	-
Natural Gas															
Consumption (m^3)	64,484.0	-	-	-	-	-	64,484.0	60,587.6	-	-	63,577.1	-	-	-	-
Energy Charges ($)															
Electricity	29,056.0	-	-	-	-	-	28,804.0	29,056.0	-	-	29,056.0	-	-	-	-
Natural Gas	30,545.0	-	-	-	-	-	30,545.0	28,699.0	-	-	30,115.0	-	-	-	-
Total	59,601.0	-	-	-	-	-	59,349.0	57,755.0	-	-	59,171.0	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,943.7	-	1,943.7	-	1,943.7	-	-	-	-	-	1,943.7	1,943.7	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	-	-	-	-	945.2	945.2	945.2	-	945.2
Space Heat	4,520.9	-	3,859.0	-	4,520.9	-	-	-	-	-	4,520.9	4,516.3	4,405.3	-	4,038.8
Space Cool	557.4	-	557.4	-	492.9	-	-	-	-	-	557.4	557.4	557.4	-	557.8
Heat Rejection	355.6	-	355.6	-	356.3	-	-	-	-	-	355.6	355.6	355.6	-	359.0
Pumps	1,558.0	-	1,558.0	-	1,558.0	-	-	-	-	-	1,558.0	1,558.0	1,558.0	-	1,558.0
Fans	727.2	-	727.2	-	727.2	-	-	-	-	-	727.2	727.2	732.8	-	726.1
DHW	2,635.2	-	2,635.2	-	2,635.2	-	-	-	-	-	2,342.3	2,635.2	2,635.2	-	2,635.2
Total	13,243.2	-	12,581.3	-	13,179.3	-	-	-	-	-	12,950.3	13,238.7	13,133.1	-	12,763.7
Percent Change (%)	-	-	**5.0**	-	**0.5**	-	-	-	-	-	**2.2**	**0.0**	**0.8**	-	**3.6**
Electricity															
Peak Demand (kW)	532.3	-	532.3	-	518.0	-	-	-	-	-	532.3	532.3	532.3	-	533.6
Consumption (kWh)	1,690,869.0	-	1,690,869.0	-	1,673,128.0	-	-	-	-	-	1,690,869.0	1,690,891.0	1,692,410.0	-	1,691,605.0
Natural Gas															
Consumption (m^3)	189,866.4	-	172,304.5	-	189,866.4	-	-	-	-	-	182,098.8	189,746.0	186,798.5	-	177,074.3
Energy Charges ($)															
Electricity	110,454.0	-	110,454.0	-	109,034.0	-	-	-	-	-	110,454.0	110,455.0	110,533.0	-	110,519.0
Natural Gas	87,773.0	-	79,654.0	-	87,773.0	-	-	-	-	-	84,182.0	87,717.0	86,355.0	-	81,860.0
Total	198,227.0	-	190,108.0	-	196,807.0	-	-	-	-	-	194,636.0	198,172.0	196,888.0	-	192,379.0

Victoria Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	2,053.4	2,053.4	-	-	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-	-	280.1	280.1	-	-	280.1	-	-	-	-
Space Heat	1,215.9	-	-	-	-	-	1,215.9	1,067.8	-	-	1,215.9	-	-	-	-
Space Cool	71.6	-	-	-	-	-	65.8	71.6	-	-	71.6	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	659.0	-	-	-	-	-	659.0	659.0	-	-	659.0	-	-	-	-
DHW	160.7	-	-	-	-	-	160.7	160.7	-	-	142.5	-	-	-	-
Total	4,440.6	-	-	-	-	-	4,434.8	4,292.5	-	-	4,422.5	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.1**	**3.3**	-	-	**0.4**	-	-	-	-
Electricity															
Peak Demand (kW)	283.9	-	-	-	-	-	276.2	283.9	-	-	283.9	-	-	-	-
Consumption (kWh)	865,634.0	-	-	-	-	-	864,006.0	865,634.0	-	-	865,634.0	-	-	-	-
Natural Gas															
Consumption (m^3)	35,137.7	-	-	-	-	-	35,137.7	31,207.7	-	-	34,656.3	-	-	-	-
Energy Charges ($)															
Electricity	56,832.0	-	-	-	-	-	56,528.0	56,832.0	-	-	56,832.0	-	-	-	-
Natural Gas	16,644.0	-	-	-	-	-	16,644.0	14,783.0	-	-	16,416.0	-	-	-	-
Total	73,476.0	-	-	-	-	-	73,172.0	71,615.0	-	-	73,248.0	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	293.5	-	-	-	293.5	-	-	-	-
Appliances	41.3	-	-	-	-	-	41.3	-	-	-	41.3	-	-	-	-
Space Heat	1,400.1	-	-	-	-	-	1,400.1	-	-	-	1,400.1	-	-	-	-
Space Cool	1.5	-	-	-	-	-	1.4	-	-	-	1.5	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Fans	119.4	-	-	-	-	-	119.4	-	-	-	119.4	-	-	-	-
DHW	119.8	-	-	-	-	-	119.8	-	-	-	112.6	-	-	-	-
Total	1,975.7	-	-	-	-	-	1,975.6	-	-	-	1,968.4	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.0**	-	-	-	**0.4**	-	-	-	-
Electricity															
Peak Demand (kW)	43.1	-	-	-	-	-	42.6	-	-	-	43.1	-	-	-	-
Consumption (kWh)	134,475.0	-	-	-	-	-	134,446.0	-	-	-	134,475.0	-	-	-	-
Natural Gas															
Consumption (m^3)	39,574.4	-	-	-	-	-	39,574.4	-	-	-	39,378.5	-	-	-	-
Energy Charges ($)															
Electricity	11,692.0	-	-	-	-	-	11,683.0	-	-	-	11,692.0	-	-	-	-
Natural Gas	18,745.0	-	-	-	-	-	18,745.0	-	-	-	18,653.0	-	-	-	-
Total	30,437.0	-	-	-	-	-	30,428.0	-	-	-	30,345.0	-	-	-	-

Victoria Results

(Energy Increase Compared to NECB)

Victoria Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	250.9	250.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Appliances	188.9	188.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	1,086.6	1,126.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Cool	52.3	52.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Rejection	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps	26.3	26.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Fans	42.7	42.7	-	-	-	-	-	-	-	-	-	-	-	-	-
DHW	1,267.5	1,267.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	2,915.1	2,955.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Change (%)	-	**-1.4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	68.6	68.6	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumption (kWh)	159,746.0	159,746.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	62,085.2	59,927.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	14,681.0	14,681.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	29,408.0	28,386.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	44,089.0	43,067.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,942.6	1,942.6	1,942.6	-	-	-	-	-	-	-	-	-	1,942.6	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-	-	-	-	-	-	-	-	1,689.0	-	-
Space Heat	1,359.1	1,389.5	1,634.8	-	-	-	-	-	-	-	-	-	1,433.7	-	-
Space Cool	402.1	402.1	402.1	-	-	-	-	-	-	-	-	-	400.8	-	-
Heat Rejection	484.8	484.8	484.8	-	-	-	-	-	-	-	-	-	484.8	-	-
Pumps	250.1	250.1	250.1	-	-	-	-	-	-	-	-	-	250.2	-	-
Fans	413.3	413.3	413.3	-	-	-	-	-	-	-	-	-	413.2	-	-
DHW	430.1	430.1	430.1	-	-	-	-	-	-	-	-	-	430.1	-	-
Total	6,971.2	7,001.6	7,246.9	-	-	-	-	-	-	-	-	-	7,044.6	-	-
Percent Change (%)	-	**-0.4**	**-4.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-1.1**	**-**	**-**
Electricity															
Peak Demand (kW)	466.2	466.2	466.2	-	-	-	-	-	-	-	-	-	466.2	-	-
Consumption (kWh)	1,439,439.0	1,439,439.0	1,439,439.0	-	-	-	-	-	-	-	-	-	1,439,083.0	-	-
Natural Gas															
Consumption (m^3)	47,468.0	48,279.8	54,787.8	-	-	-	-	-	-	-	-	-	49,452.6	-	-
Energy Charges ($)															
Electricity	94,138.0	94,138.0	94,138.0	-	-	-	-	-	-	-	-	-	94,123.0	-	-
Natural Gas	22,485.0	22,869.0	25,951.0	-	-	-	-	-	-	-	-	-	23,424.0	-	-
Total	116,623.0	117,007.0	120,089.0	-	-	-	-	-	-	-	-	-	117,547.0	-	-

Victoria Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	-	850.7	-	-	-	-	-	-	-
Appliances	140.6	-	-	-	-	-	-	140.6	-	-	-	-	-	-	-
Space Heat	2,122.8	-	-	-	-	-	-	2,295.4	-	-	-	-	-	-	-
Space Cool	73.0	-	-	-	-	-	-	73.0	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	423.0	-	-	-	-	-	-	423.0	-	-	-	-	-	-	-
DHW	307.6	-	-	-	-	-	-	307.6	-	-	-	-	-	-	-
Total	3,917.6	-	-	-	-	-	-	4,090.2	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-4.4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	174.3	-	-	-	-	-	-	174.3	-	-	-	-	-	-	-
Consumption (kWh)	413,114.0	-	-	-	-	-	-	413,114.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	64,484.0	-	-	-	-	-	-	69,066.3	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	29,056.0	-	-	-	-	-	-	29,056.0	-	-	-	-	-	-	-
Natural Gas	30,545.0	-	-	-	-	-	-	32,715.0	-	-	-	-	-	-	-
Total	59,601.0	-	-	-	-	-	-	61,771.0	-	-	-	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,943.7	1,943.7	1,943.7	-	-	-	-	-	-	-	-	-	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-	-	-	-	-	-	-	-	945.2	-	-
Space Heat	4,520.9	4,623.5	5,455.8	-	-	-	-	-	-	-	-	-	4,713.8	-	-
Space Cool	557.4	557.4	557.4	-	-	-	-	-	-	-	-	-	557.4	-	-
Heat Rejection	355.6	355.6	355.6	-	-	-	-	-	-	-	-	-	355.6	-	-
Pumps	1,558.0	1,558.0	1,558.0	-	-	-	-	-	-	-	-	-	1,558.0	-	-
Fans	727.2	727.2	727.2	-	-	-	-	-	-	-	-	-	724.5	-	-
DHW	2,635.2	2,635.2	2,635.2	-	-	-	-	-	-	-	-	-	2,635.2	-	-
Total	13,243.2	13,345.8	14,178.1	-	-	-	-	-	-	-	-	-	13,433.4	-	-
Percent Change (%)	-	**-0.8**	**-7.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-1.4**	**-**	**-**
Electricity															
Peak Demand (kW)	532.3	532.3	532.3	-	-	-	-	-	-	-	-	-	532.3	-	-
Consumption (kWh)	1,690,869.0	1,690,869.0	1,690,869.0	-	-	-	-	-	-	-	-	-	1,690,118.0	-	-
Natural Gas															
Consumption (m^3)	189,866.4	192,590.0	214,672.5	-	-	-	-	-	-	-	-	-	194,986.1	-	-
Energy Charges ($)															
Electricity	110,454.0	110,454.0	110,454.0	-	-	-	-	-	-	-	-	-	110,411.0	-	-
Natural Gas	87,773.0	89,032.0	99,241.0	-	-	-	-	-	-	-	-	-	90,140.0	-	-
Total	198,227.0	199,486.0	209,695.0	-	-	-	-	-	-	-	-	-	200,551.0	-	-

Victoria Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	-	2,053.4	-	-	-	-	-	-	-
Appliances	280.1	-	-	-	-	-	-	280.1	-	-	-	-	-	-	-
Space Heat	1,215.9	-	-	-	-	-	-	1,230.5	-	-	-	-	-	-	-
Space Cool	71.6	-	-	-	-	-	-	71.6	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	659.0	-	-	-	-	-	-	659.0	-	-	-	-	-	-	-
DHW	160.7	-	-	-	-	-	-	160.7	-	-	-	-	-	-	-
Total	4,440.6	-	-	-	-	-	-	4,455.2	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-0.3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	283.9	-	-	-	-	-	-	283.9	-	-	-	-	-	-	-
Consumption (kWh)	865,634.0	-	-	-	-	-	-	865,634.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	35,137.7	-	-	-	-	-	-	35,524.0	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	56,832.0	-	-	-	-	-	-	56,832.0	-	-	-	-	-	-	-
Natural Gas	16,644.0	-	-	-	-	-	-	16,827.0	-	-	-	-	-	-	-
Total	73,476.0	-	-	-	-	-	-	73,659.0	-	-	-	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	-	293.5	-	-	-	-	-	-	-
Appliances	41.3	-	-	-	-	-	-	41.3	-	-	-	-	-	-	-
Space Heat	1,400.1	-	-	-	-	-	-	1,503.1	-	-	-	-	-	-	-
Space Cool	1.5	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	119.4	-	-	-	-	-	-	119.4	-	-	-	-	-	-	-
DHW	119.8	-	-	-	-	-	-	119.8	-	-	-	-	-	-	-
Total	1,975.7	-	-	-	-	-	-	2,078.6	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-5.2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	43.1	-	-	-	-	-	-	43.1	-	-	-	-	-	-	-
Consumption (kWh)	134,475.0	-	-	-	-	-	-	134,475.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	39,574.4	-	-	-	-	-	-	42,306.4	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	11,692.0	-	-	-	-	-	-	11,692.0	-	-	-	-	-	-	-
Natural Gas	18,745.0	-	-	-	-	-	-	20,039.0	-	-	-	-	-	-	-
Total	30,437.0	-	-	-	-	-	-	31,731.0	-	-	-	-	-	-	-

Windsor Results

(Energy Savings Compared to NECB)

Windsor Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	250.9	250.9	250.9	-	-	-	250.9	-	-	-	250.9	-	-	-	-
Appliances	188.9	188.9	188.9	-	-	-	188.9	-	-	-	188.9	-	-	-	-
Space Heat	1,333.1	1,223.1	1,092.0	-	-	-	1,333.1	-	-	-	1,333.1	-	-	-	-
Space Cool	170.0	170.0	170.0	-	-	-	155.5	-	-	-	170.0	-	-	-	-
Heat Rejection	0.0	0.0	0.0	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	31.8	31.8	31.8	-	-	-	31.8	-	-	-	31.8	-	-	-	-
Fans	43.3	43.3	43.3	-	-	-	43.3	-	-	-	43.3	-	-	-	-
DHW	1,274.5	1,274.5	1,274.5	-	-	-	1,274.5	-	-	-	1,132.9	-	-	-	-
Total	3,292.5	3,182.5	3,051.4	-	-	-	3,278.1	-	-	-	3,150.8	-	-	-	-
Percent Change (%)	-	**3.3**	**7.3**	-	-	-	**0.4**	-	-	-	**4.3**	-	-	-	-
Electricity															
Peak Demand (kW)	84.0	84.0	84.0	-	-	-	80.7	-	-	-	84.0	-	-	-	-
Consumption (kWh)	195,227.0	195,227.0	195,227.0	-	-	-	191,214.0	-	-	-	195,227.0	-	-	-	-
Natural Gas															
Consumption (m^3)	68,710.8	65,794.0	62,311.9	-	-	-	68,710.8	-	-	-	64,951.5	-	-	-	-
Energy Charges ($)															
Electricity	17,878.0	17,878.0	17,878.0	-	-	-	17,461.0	-	-	-	17,878.0	-	-	-	-
Natural Gas	16,555.0	15,856.0	15,022.0	-	-	-	16,555.0	-	-	-	15,653.0	-	-	-	-
Total	34,433.0	33,734.0	32,900.0	-	-	-	34,016.0	-	-	-	33,531.0	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,942.6	-	1,942.6	-	1,942.6	-	-	-	-	-	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	-	1,689.0	-	1,689.0	-	-	-	-	-	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	1,876.5	-	1,612.7	-	1,876.5	-	-	-	-	-	1,876.5	1,868.9	1,868.9	-	1,738.4
Space Cool	736.4	-	736.4	-	651.1	-	-	-	-	-	736.4	736.5	736.5	-	713.1
Heat Rejection	676.0	-	676.0	-	676.5	-	-	-	-	-	676.0	676.0	676.0	-	657.4
Pumps	292.9	-	292.9	-	292.9	-	-	-	-	-	292.9	292.9	292.9	-	291.9
Fans	488.7	-	488.7	-	488.7	-	-	-	-	-	488.7	488.7	488.7	-	489.7
DHW	430.0	-	430.0	-	430.0	-	-	-	-	-	382.3	430.0	430.0	-	430.0
Total	8,132.1	-	7,868.3	-	8,047.4	-	-	-	-	-	8,084.4	8,124.6	8,124.6	-	7,952.2
Percent Change (%)	-	-	**3.2**	-	**1.0**	-	-	-	-	-	**0.6**	**0.1**	**0.1**	-	**2.2**
Electricity															
Peak Demand (kW)	521.1	-	521.1	-	501.9	-	-	-	-	-	521.1	521.1	521.1	-	515.5
Consumption (kWh)	1,618,220.0	-	1,618,220.0	-	1,594,681.0	-	-	-	-	-	1,618,220.0	1,618,241.0	1,618,241.0	-	1,606,605.0
Natural Gas															
Consumption (m^3)	61,197.8	-	54,200.0	-	61,197.8	-	-	-	-	-	59,929.8	60,996.3	60,996.3	-	57,536.5
Energy Charges ($)															
Electricity	134,587.0	-	134,587.0	-	132,042.0	-	-	-	-	-	134,587.0	134,589.0	134,589.0	-	133,647.0
Natural Gas	14,730.0	-	13,053.0	-	14,730.0	-	-	-	-	-	14,425.0	14,682.0	14,682.0	-	13,853.0
Total	149,317.0	-	147,640.0	-	146,772.0	-	-	-	-	-	149,012.0	149,271.0	149,271.0	-	147,500.0

Windsor Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	850.7	850.7	-	-	850.7	-	-	-	-
Appliances	140.6	-	-	-	-	-	140.6	140.6	-	-	140.6	-	-	-	-
Space Heat	2,552.0	-	-	-	-	-	2,552.0	2,386.8	-	-	2,552.0	-	-	-	-
Space Cool	308.6	-	-	-	-	-	281.0	308.6	-	-	308.6	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	456.9	-	-	-	-	-	456.9	456.9	-	-	456.9	-	-	-	-
DHW	308.6	-	-	-	-	-	308.6	308.6	-	-	274.3	-	-	-	-
Total	4,617.4	-	-	-	-	-	4,589.8	4,452.2	-	-	4,583.1	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.6**	**3.6**	-	-	**0.7**	-	-	-	-
Electricity															
Peak Demand (kW)	204.0	-	-	-	-	-	193.7	204.0	-	-	204.0	-	-	-	-
Consumption (kWh)	487,991.0	-	-	-	-	-	480,331.0	487,991.0	-	-	487,991.0	-	-	-	-
Natural Gas															
Consumption (m^3)	75,901.8	-	-	-	-	-	75,901.8	71,518.3	-	-	74,992.1	-	-	-	-
Energy Charges ($)															
Electricity	42,192.0	-	-	-	-	-	41,257.0	42,192.0	-	-	42,192.0	-	-	-	-
Natural Gas	18,254.0	-	-	-	-	-	18,254.0	17,204.0	-	-	18,036.0	-	-	-	-
Total	60,446.0	-	-	-	-	-	59,511.0	59,396.0	-	-	60,228.0	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,943.7	-	1,943.7	-	1,943.7	-	-	-	-	-	1,943.7	1,943.7	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	-	-	-	-	945.2	945.2	945.2	-	945.2
Space Heat	5,802.6	-	4,975.4	-	5,802.6	-	-	-	-	-	5,802.6	5,730.8	4,938.9	-	5,081.0
Space Cool	1,072.4	-	1,072.4	-	948.3	-	-	-	-	-	1,072.4	1,072.5	1,072.6	-	1,025.1
Heat Rejection	717.3	-	717.3	-	718.2	-	-	-	-	-	717.3	717.3	717.3	-	677.7
Pumps	1,900.1	-	1,900.1	-	1,900.1	-	-	-	-	-	1,900.1	1,900.1	1,900.1	-	1,900.1
Fans	806.2	-	806.2	-	806.2	-	-	-	-	-	806.2	807.3	819.1	-	805.4
DHW	2,651.1	-	2,651.1	-	2,651.1	-	-	-	-	-	2,356.7	2,651.1	2,651.1	-	2,651.1
Total	15,838.7	-	15,011.4	-	15,715.5	-	-	-	-	-	15,544.2	15,767.9	14,988.0	-	15,029.3
Percent Change (%)	-	-	**5.2**	-	**0.8**	-	-	-	-	-	**1.9**	**0.4**	**5.4**	-	**5.1**
Electricity															
Peak Demand (kW)	688.8	-	688.8	-	660.6	-	-	-	-	-	688.8	688.8	688.8	-	67,306.0
Consumption (kWh)	2,051,375.0	-	2,051,375.0	-	2,017,153.0	-	-	-	-	-	2,051,375.0	2,051,674.0	2,055,005.0	-	2,026,987.0
Natural Gas															
Consumption (m^3)	224,296.0	-	202,345.0	-	224,296.0	-	-	-	-	-	216,483.5	222,389.7	201,379.3	-	205,147.0
Energy Charges ($)															
Electricity	170,548.0	-	170,548.0	-	166,996.0	-	-	-	-	-	170,548.0	170,567.0	170,823.0	-	168,341.0
Natural Gas	53,685.0	-	48,480.0	-	53,685.0	-	-	-	-	-	51,821.0	53,235.0	48,257.0	-	49,148.0
Total	224,233.0	-	219,028.0	-	220,681.0	-	-	-	-	-	222,369.0	223,802.0	219,080.0	-	217,489.0

Windsor Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	2,053.4	2,053.4	-	-	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-	-	280.1	280.1	-	-	280.1	-	-	-	-
Space Heat	1,757.7	-	-	-	-	-	1,757.7	1,569.2	-	-	1,757.7	-	-	-	-
Space Cool	302.9	-	-	-	-	-	278.6	302.9	-	-	302.9	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	659.0	-	-	-	-	-	659.0	659.0	-	-	659.0	-	-	-	-
DHW	160.7	-	-	-	-	-	160.7	160.7	-	-	142.4	-	-	-	-
Total	5,213.6	-	-	-	-	-	5,189.4	5,025.2	-	-	5,195.4	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.5**	**3.6**	-	-	**0.4**	-	-	-	-
Electricity															
Peak Demand (kW)	299.5	-	-	-	-	-	290.5	299.5	-	-	299.5	-	-	-	-
Consumption (kWh)	940,595.0	-	-	-	-	-	933,861.0	940,595.0	-	-	940,595.0	-	-	-	-
Natural Gas															
Consumption (m^3)	48,486.9	-	-	-	-	-	48,486.9	43,487.6	-	-	48,002.6	-	-	-	-
Energy Charges ($)															
Electricity	78,756.0	-	-	-	-	-	77,924.0	78,756.0	-	-	78,756.0	-	-	-	-
Natural Gas	11,677.0	-	-	-	-	-	11,677.0	10,479.0	-	-	11,561.0	-	-	-	-
Total	90,433.0	-	-	-	-	-	89,601.0	89,235.0	-	-	90,317.0	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	293.5	-	-	-	293.5	-	-	-	-
Appliances	41.3	-	-	-	-	-	41.3	-	-	-	41.3	-	-	-	-
Space Heat	1,527.0	-	-	-	-	-	1,527.0	-	-	-	1,527.0	-	-	-	-
Space Cool	17.9	-	-	-	-	-	16.7	-	-	-	17.9	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Fans	119.4	-	-	-	-	-	119.4	-	-	-	119.4	-	-	-	-
DHW	119.8	-	-	-	-	-	119.8	-	-	-	112.5	-	-	-	-
Total	2,119.0	-	-	-	-	-	2,117.8	-	-	-	2,111.6	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.1**	-	-	-	**0.3**	-	-	-	-
Electricity															
Peak Demand (kW)	57.4	-	-	-	-	-	56.6	-	-	-	57.4	-	-	-	-
Consumption (kWh)	142,848.0	-	-	-	-	-	142,516.0	-	-	-	142,848.0	-	-	-	-
Natural Gas															
Consumption (m^3)	42,577.9	-	-	-	-	-	42,577.9	-	-	-	42,379.1	-	-	-	-
Energy Charges ($)															
Electricity	12,620.0	-	-	-	-	-	12,570.0	-	-	-	12,620.0	-	-	-	-
Natural Gas	10,268.0	-	-	-	-	-	10,268.0	-	-	-	10,220.0	-	-	-	-
Total	22,888.0	-	-	-	-	-	22,838.0	-	-	-	22,840.0	-	-	-	-

Windsor Results

(Energy Increase Compared to NECB)

Windsor Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	250.9	250.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Appliances	188.9	188.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	1,333.1	1,382.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Cool	170.0	170.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Rejection	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps	31.8	31.8	-	-	-	-	-	-	-	-	-	-	-	-	-
Fans	43.3	43.3	-	-	-	-	-	-	-	-	-	-	-	-	-
DHW	1,274.5	1,274.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	3,292.5	3,341.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Change (%)	-	**-1.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	84.0	84.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumption (kWh)	195,227.0	195,227.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	68,710.8	70,020.8	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	17,878.0	17,878.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	16,555.0	16,869.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	34,433.0	34,747.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,942.6	1,942.6	1,942.6	-	-	-	-	-	-	-	-	-	1,942.6	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-	-	-	-	-	-	-	-	1,689.0	-	-
Space Heat	1,876.5	1,918.7	2,260.8	-	-	-	-	-	-	-	-	-	2,311.7	-	-
Space Cool	736.4	736.4	736.4	-	-	-	-	-	-	-	-	-	731.9	-	-
Heat Rejection	676.0	676.0	676.0	-	-	-	-	-	-	-	-	-	676.0	-	-
Pumps	292.9	292.9	292.9	-	-	-	-	-	-	-	-	-	293.4	-	-
Fans	488.7	488.7	488.7	-	-	-	-	-	-	-	-	-	488.5	-	-
DHW	430.0	430.0	430.0	-	-	-	-	-	-	-	-	-	430.0	-	-
Total	8,132.1	8,174.3	8,516.4	-	-	-	-	-	-	-	-	-	8,563.1	-	-
Percent Change (%)	-	**-0.5**	**-4.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-5.3**	**-**	**-**
Electricity															
Peak Demand (kW)	521.1	521.1	521.1	-	-	-	-	-	-	-	-	-	521.1	-	-
Consumption (kWh)	1,618,220.0	1,618,220.0	1,618,220.0	-	-	-	-	-	-	-	-	-	1,617,050.0	-	-
Natural Gas															
Consumption (m^3)	61,197.8	62,317.5	71,392.3	-	-	-	-	-	-	-	-	-	72,747.1	-	-
Energy Charges ($)															
Electricity	134,587.0	134,587.0	134,587.0	-	-	-	-	-	-	-	-	-	134,519.0	-	-
Natural Gas	14,730.0	14,998.0	17,173.0	-	-	-	-	-	-	-	-	-	17,492.0	-	-
Total	149,317.0	149,585.0	151,760.0	-	-	-	-	-	-	-	-	-	152,011.0	-	-

Windsor Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	-	850.7	-	-	-	-	-	-	-
Appliances	140.6	-	-	-	-	-	-	140.6	-	-	-	-	-	-	-
Space Heat	2,552.0	-	-	-	-	-	-	2,760.0	-	-	-	-	-	-	-
Space Cool	308.6	-	-	-	-	-	-	308.6	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	456.9	-	-	-	-	-	-	456.9	-	-	-	-	-	-	-
DHW	308.6	-	-	-	-	-	-	308.6	-	-	-	-	-	-	-
Total	4,617.4	-	-	-	-	-	-	4,825.3	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-4.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	204.0	-	-	-	-	-	-	204.0	-	-	-	-	-	-	-
Consumption (kWh)	487,991.0	-	-	-	-	-	-	487,991.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	75,901.8	-	-	-	-	-	-	81,418.9	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	42,192.0	-	-	-	-	-	-	42,192.0	-	-	-	-	-	-	-
Natural Gas	18,254.0	-	-	-	-	-	-	19,574.0	-	-	-	-	-	-	-
Total	60,446.0	-	-	-	-	-	-	61,766.0	-	-	-	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,943.7	1,943.7	1,943.7	-	-	-	-	-	-	-	-	-	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-	-	-	-	-	-	-	-	945.2	-	-
Space Heat	5,802.6	5,934.4	6,907.6	-	-	-	-	-	-	-	-	-	6,165.5	-	-
Space Cool	1,072.4	1,072.4	1,072.4	-	-	-	-	-	-	-	-	-	1,072.4	-	-
Heat Rejection	717.3	717.3	717.3	-	-	-	-	-	-	-	-	-	717.3	-	-
Pumps	1,900.1	1,900.1	1,900.1	-	-	-	-	-	-	-	-	-	1,900.1	-	-
Fans	806.2	806.2	806.2	-	-	-	-	-	-	-	-	-	803.5	-	-
DHW	2,651.1	2,651.1	2,651.1	-	-	-	-	-	-	-	-	-	2,651.1	-	-
Total	15,838.7	15,970.4	16,943.7	-	-	-	-	-	-	-	-	-	16,198.8	-	-
Percent Change (%)	-	**-0.8**	**-7.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-2.3**	**-**	**-**
Electricity															
Peak Demand (kW)	688.8	688.8	688.8	-	-	-	-	-	-	-	-	-	688.8	-	-
Consumption (kWh)	2,051,375.0	2,051,375.0	2,051,375.0	-	-	-	-	-	-	-	-	-	2,050,615.0	-	-
Natural Gas															
Consumption (m^3)	224,296.0	227,789.3	253,614.3	-	-	-	-	-	-	-	-	-	233,925.0	-	-
Energy Charges ($)															
Electricity	170,548.0	170,548.0	170,548.0	-	-	-	-	-	-	-	-	-	170,483.0	-	-
Natural Gas	53,685.0	54,513.0	60,636.0	-	-	-	-	-	-	-	-	-	55,964.0	-	-
Total	224,233.0	225,061.0	231,184.0	-	-	-	-	-	-	-	-	-	226,447.0	-	-

Windsor Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	-	2,053.4	-	-	-	-	-	-	-
Appliances	280.1	-	-	-	-	-	-	280.1	-	-	-	-	-	-	-
Space Heat	1,757.7	-	-	-	-	-	-	1,778.3	-	-	-	-	-	-	-
Space Cool	302.9	-	-	-	-	-	-	302.9	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	659.0	-	-	-	-	-	-	659.0	-	-	-	-	-	-	-
DHW	160.7	-	-	-	-	-	-	160.7	-	-	-	-	-	-	-
Total	5,213.6	-	-	-	-	-	-	5,234.3	-	-	-	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	-	**-0.4**	-	-	-	-	-	-	-
Electricity															
Peak Demand (kW)	299.5	-	-	-	-	-	-	299.5	-	-	-	-	-	-	-
Consumption (kWh)	940,595.0	-	-	-	-	-	-	940,595.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	48,486.9	-	-	-	-	-	-	49,035.5	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	78,756.0	-	-	-	-	-	-	78,756.0	-	-	-	-	-	-	-
Natural Gas	11,677.0	-	-	-	-	-	-	11,809.0	-	-	-	-	-	-	-
Total	90,433.0	-	-	-	-	-	-	90,565.0	-	-	-	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	-	293.5	-	-	-	-	-	-	-
Appliances	41.3	-	-	-	-	-	-	41.3	-	-	-	-	-	-	-
Space Heat	1,527.0	-	-	-	-	-	-	1,624.0	-	-	-	-	-	-	-
Space Cool	17.9	-	-	-	-	-	-	17.9	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	119.4	-	-	-	-	-	-	119.4	-	-	-	-	-	-	-
DHW	119.8	-	-	-	-	-	-	119.8	-	-	-	-	-	-	-
Total	2,119.0	-	-	-	-	-	-	2,216.0	-	-	-	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	-	**-4.6**	-	-	-	-	-	-	-
Electricity															
Peak Demand (kW)	57.4	-	-	-	-	-	-	57.4	-	-	-	-	-	-	-
Consumption (kWh)	142,848.0	-	-	-	-	-	-	142,848.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	42,577.9	-	-	-	-	-	-	45,150.3	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	12,620.0	-	-	-	-	-	-	12,620.0	-	-	-	-	-	-	-
Natural Gas	10,268.0	-	-	-	-	-	-	10,887.0	-	-	-	-	-	-	-
Total	22,888.0	-	-	-	-	-	-	23,507.0	-	-	-	-	-	-	-

Montreal Results

(Energy Savings Compared to NECB)

Montreal Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	250.9	250.9	250.9	-	-	-	250.9	-	-	-	250.9	-	-	-	-
Appliances	188.9	188.9	188.9	-	-	-	188.9	-	-	-	188.9	-	-	-	-
Space Heat	1,675.7	1,577.6	1,425.4	-	-	-	1,675.7	-	-	-	1,675.7	-	-	-	-
Space Cool	123.2	123.2	123.2	-	-	-	112.7	-	-	-	123.2	-	-	-	-
Heat Rejection	0.0	0.0	0.0	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	33.0	33.0	33.0	-	-	-	33.0	-	-	-	33.0	-	-	-	-
Fans	43.1	43.1	43.1	-	-	-	43.1	-	-	-	43.1	-	-	-	-
DHW	1,342.3	1,342.3	1,342.3	-	-	-	1,342.3	-	-	-	1,193.1	-	-	-	-
Total	3,657.1	3,559.0	3,406.8	-	-	-	3,646.6	-	-	-	3,507.9	-	-	-	-
Percent Change (%)	-	**2.7**	**6.8**	-	-	-	**0.3**	-	-	-	**4.1**	-	-	-	-
Electricity															
Peak Demand (kW)	89.1	89.1	89.1	-	-	-	85.5	-	-	-	89.1	-	-	-	-
Consumption (kWh)	183,018.0	183,018.0	183,018.0	-	-	-	180,109.0	-	-	-	183,018.0	-	-	-	-
Natural Gas															
Consumption (m^3)	79,549.1	76,945.9	72,909.5	-	-	-	79,549.1	-	-	-	75,591.1	-	-	-	-
Energy Charges ($)															
Electricity	18,740.0	18,740.0	18,740.0	-	-	-	18,353.0	-	-	-	18,740.0	-	-	-	-
Natural Gas	25,827.0	25,007.0	23,733.0	-	-	-	25,827.0	-	-	-	24,560.0	-	-	-	-
Total	44,567.0	43,747.0	42,473.0	-	-	-	44,180.0	-	-	-	43,300.0	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,942.6	-	1,942.6	-	1,942.6	-	-	-	-	-	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	-	1,689.0	-	1,689.0	-	-	-	-	-	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	2,325.4	-	1,996.5	-	2,325.4	-	-	-	-	-	2,325.4	2,287.9	2,287.9	-	2,108.1
Space Cool	604.2	-	604.2	-	534.3	-	-	-	-	-	604.2	604.6	604.6	-	584.0
Heat Rejection	746.6	-	746.6	-	747.4	-	-	-	-	-	746.6	746.6	746.6	-	708.5
Pumps	302.2	-	302.2	-	302.2	-	-	-	-	-	302.2	302.2	302.2	-	301.4
Fans	457.2	-	457.2	-	457.2	-	-	-	-	-	457.2	457.2	457.2	-	458.5
DHW	454.0	-	454.0	-	454.0	-	-	-	-	-	403.5	454.0	454.0	-	454.0
Total	8,521.3	-	8,192.3	-	8,452.1	-	-	-	-	-	8,470.9	8,484.1	8,484.1	-	8,246.2
Percent Change (%)	-	-	**3.9**	-	**0.8**	-	-	-	-	-	**0.6**	**0.4**	**0.4**	-	**3.2**
Electricity															
Peak Demand (kW)	543.2	-	543.2	-	521.5	-	-	-	-	-	543.2	543.2	543.2	-	531.4
Consumption (kWh)	1,594,969.0	-	1,594,969.0	-	1,575,757.0	-	-	-	-	-	1,594,969.0	1,595,079.0	1,595,079.0	-	1,578,918.0
Natural Gas															
Consumption (m^3)	73,743.6	-	65,015.9	-	73,743.6	-	-	-	-	-	72,405.6	72,749.9	72,749.9	-	67,980.2
Energy Charges ($)															
Electricity	136,034.0	-	136,034.0	-	133,618.0	-	-	-	-	-	136,034.0	136,039.0	136,039.0	-	134,788.0
Natural Gas	23,761.0	-	21,045.0	-	23,761.0	-	-	-	-	-	23,330.0	23,453.0	23,453.0	-	21,968.0
Total	159,795.0	-	157,079.0	-	157,379.0	-	-	-	-	-	159,364.0	159,492.0	159,492.0	-	156,756.0

Montreal Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	850.7	850.7	-	-	850.7	-	-	-	-
Appliances	140.6	-	-	-	-	-	140.6	140.6	-	-	140.6	-	-	-	-
Space Heat	3,358.1	-	-	-	-	-	3,358.1	3,166.7	-	-	3,358.1	-	-	-	-
Space Cool	214.8	-	-	-	-	-	195.6	214.8	-	-	214.8	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	439.4	-	-	-	-	-	439.4	439.4	-	-	439.4	-	-	-	-
DHW	324.0	-	-	-	-	-	324.0	324.0	-	-	288.0	-	-	-	-
Total	5,327.5	-	-	-	-	-	5,308.3	5,136.1	-	-	5,291.5	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.4**	**3.6**	-	-	**0.7**	-	-	-	-
Electricity															
Peak Demand (kW)	214.5	-	-	-	-	-	203.2	214.5	-	-	214.5	-	-	-	-
Consumption (kWh)	457,073.0	-	-	-	-	-	451,741.0	457,073.0	-	-	457,073.0	-	-	-	-
Natural Gas															
Consumption (m^3)	97,693.2	-	-	-	-	-	97,693.2	92,615.5	-	-	96,738.7	-	-	-	-
Energy Charges ($)															
Electricity	42,647.0	-	-	-	-	-	41,704.0	42,647.0	-	-	42,647.0	-	-	-	-
Natural Gas	31,258.0	-	-	-	-	-	31,258.0	29,673.0	-	-	30,953.0	-	-	-	-
Total	73,905.0	-	-	-	-	-	72,962.0	72,320.0	-	-	73,600.0	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,943.7	-	1,943.7	-	1,943.7	-	-	-	-	-	1,943.7	1,943.7	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	-	-	-	-	945.2	945.2	945.2	-	945.2
Space Heat	7,372.6	-	6,321.9	-	7,372.6	-	-	-	-	-	7,372.6	7,187.8	5,862.2	-	6,442.5
Space Cool	910.6	-	910.6	-	805.2	-	-	-	-	-	910.6	910.6	910.7	-	877.0
Heat Rejection	755.6	-	755.6	-	756.9	-	-	-	-	-	755.6	755.6	755.6	-	701.9
Pumps	1,922.8	-	1,922.8	-	1,922.8	-	-	-	-	-	1,922.8	1,922.8	1,922.8	-	1,922.8
Fans	781.2	-	781.2	-	781.2	-	-	-	-	-	781.2	785.2	798.0	-	778.0
DHW	2,790.2	-	2,790.2	-	2,790.2	-	-	-	-	-	2,480.2	2,790.2	2,790.2	-	2,790.2
Total	17,421.8	-	16,371.1	-	17,317.6	-	-	-	-	-	17,111.8	17,241.1	15,928.3	-	16,401.2
Percent Change (%)	-	-	**6.0**	-	**0.6**	-	-	-	-	-	**1.8**	**1.0**	**8.6**	-	**5.9**
Electricity															
Peak Demand (kW)	690.3	-	690.3	-	659.8	-	-	-	-	-	690.3	690.3	690.3	-	668.4
Consumption (kWh)	2,016,402.0	-	2,016,402.0	-	1,987,471.0	-	-	-	-	-	2,016,402.0	2,017,538.0	2,021,083.0	-	1,991,260.0
Natural Gas															
Consumption (m^3)	269,639.4	-	241,762.7	-	269,639.4	-	-	-	-	-	261,415.5	264,738.1	229,566.8	-	244,959.3
Energy Charges ($)															
Electricity	171,479.0	-	171,479.0	-	168,202.0	-	-	-	-	-	171,479.0	171,536.0	171,802.0	-	169,303.0
Natural Gas	84,360.0	-	75,871.0	-	84,360.0	-	-	-	-	-	81,824.0	82,877.0	72,165.0	-	76,856.0
Total	255,839.0	-	247,350.0	-	252,562.0	-	-	-	-	-	253,303.0	254,413.0	243,967.0	-	246,159.0

Montreal Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	2,053.4	2,053.4	-	-	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-	-	280.1	280.1	-	-	280.1	-	-	-	-
Space Heat	2,483.9	-	-	-	-	-	2,483.9	2,240.5	-	-	2,483.9	-	-	-	-
Space Cool	247.1	-	-	-	-	-	233.1	247.1	-	-	247.1	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	659.0	-	-	-	-	-	659.0	659.0	-	-	659.0	-	-	-	-
DHW	160.7	-	-	-	-	-	160.7	160.7	-	-	142.3	-	-	-	-
Total	5,884.1	-	-	-	-	-	5,870.1	5,640.7	-	-	5,865.7	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.2**	**4.1**	-	-	**0.3**	-	-	-	-
Electricity															
Peak Demand (kW)	347.0	-	-	-	-	-	337.9	347.0	-	-	347.0	-	-	-	-
Consumption (kWh)	936,257.0	-	-	-	-	-	932,374.0	936,257.0	-	-	936,257.0	-	-	-	-
Natural Gas															
Consumption (m^3)	66,689.8	-	-	-	-	-	66,689.8	60,232.1	-	-	66,202.7	-	-	-	-
Energy Charges ($)															
Electricity	84,145.0	-	-	-	-	-	83,437.0	84,145.0	-	-	84,145.0	-	-	-	-
Natural Gas	21,488.0	-	-	-	-	-	21,488.0	19,458.0	-	-	21,330.0	-	-	-	-
Total	105,633.0	-	-	-	-	-	104,925.0	103,603.0	-	-	105,475.0	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	293.5	-	-	-	293.5	-	-	-	-
Appliances	41.3	-	-	-	-	-	41.3	-	-	-	41.3	-	-	-	-
Space Heat	1,894.7	-	-	-	-	-	1,894.7	-	-	-	1,894.7	-	-	-	-
Space Cool	11.6	-	-	-	-	-	10.8	-	-	-	11.6	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Fans	119.4	-	-	-	-	-	119.4	-	-	-	119.4	-	-	-	-
DHW	119.8	-	-	-	-	-	119.8	-	-	-	112.5	-	-	-	-
Total	2,480.3	-	-	-	-	-	2,479.6	-	-	-	2,473.0	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.0**	-	-	-	**0.3**	-	-	-	-
Electricity															
Peak Demand (kW)	49.9	-	-	-	-	-	49.2	-	-	-	49.9	-	-	-	-
Consumption (kWh)	144,195.0	-	-	-	-	-	143,981.0	-	-	-	144,195.0	-	-	-	-
Natural Gas															
Consumption (m^3)	52,036.2	-	-	-	-	-	52,036.2	-	-	-	51,840.3	-	-	-	-
Energy Charges ($)															
Electricity	13,670.0	-	-	-	-	-	13,618.0	-	-	-	13,670.0	-	-	-	-
Natural Gas	16,939.0	-	-	-	-	-	16,939.0	-	-	-	16,875.0	-	-	-	-
Total	30,609.0	-	-	-	-	-	30,557.0	-	-	-	30,545.0	-	-	-	-

Montreal Results

(Energy Increase Compared to NECB)

Montreal Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	250.9	250.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Appliances	188.9	188.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	1,675.7	1,737.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Cool	123.2	123.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Rejection	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps	33.0	33.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Fans	43.1	43.1	-	-	-	-	-	-	-	-	-	-	-	-	-
DHW	1,342.3	1,342.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	3,657.1	3,719.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Change (%)	-	**-1.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	89.1	89.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumption (kWh)	183,018.0	183,018.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	79,549.1	81,195.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	18,740.0	18,740.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	25,827.0	26,347.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	44,567.0	45,087.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,942.6	1,942.6	1,942.6	-	-	-	-	-	-	-	-	-	1,942.6	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-	-	-	-	-	-	-	-	1,689.0	-	-
Space Heat	2,325.4	2,377.8	2,811.2	-	-	-	-	-	-	-	-	-	3,055.3	-	-
Space Cool	604.2	604.2	604.2	-	-	-	-	-	-	-	-	-	598.9	-	-
Heat Rejection	746.6	746.6	746.6	-	-	-	-	-	-	-	-	-	746.6	-	-
Pumps	302.2	302.2	302.2	-	-	-	-	-	-	-	-	-	303.0	-	-
Fans	457.2	457.2	457.2	-	-	-	-	-	-	-	-	-	456.9	-	-
DHW	454.0	454.0	454.0	-	-	-	-	-	-	-	-	-	454.0	-	-
Total	8,521.3	8,573.6	9,007.0	-	-	-	-	-	-	-	-	-	9,246.3	-	-
Percent Change (%)	-	**-0.6**	**-5.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-8.5**	**-**	**-**
Electricity															
Peak Demand (kW)	543.2	543.2	543.2	-	-	-	-	-	-	-	-	-	543.2	-	-
Consumption (kWh)	1,594,969.0	1,594,969.0	1,594,969.0	-	-	-	-	-	-	-	-	-	1,593,634.0	-	-
Natural Gas															
Consumption (m^3)	73,743.6	75,132.0	86,630.9	-	-	-	-	-	-	-	-	-	93,108.2	-	-
Energy Charges ($)															
Electricity	136,034.0	136,034.0	136,034.0	-	-	-	-	-	-	-	-	-	135,912.0	-	-
Natural Gas	23,761.0	24,193.0	27,765.0	-	-	-	-	-	-	-	-	-	29,728.0	-	-
Total	159,795.0	160,227.0	163,799.0	-	-	-	-	-	-	-	-	-	165,640.0	-	-

Montreal Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	-	850.7	-	-	-	-	-	-	-
Appliances	140.6	-	-	-	-	-	-	140.6	-	-	-	-	-	-	-
Space Heat	3,358.1	-	-	-	-	-	-	3,631.9	-	-	-	-	-	-	-
Space Cool	214.8	-	-	-	-	-	-	214.8	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	439.4	-	-	-	-	-	-	439.4	-	-	-	-	-	-	-
DHW	324.0	-	-	-	-	-	-	324.0	-	-	-	-	-	-	-
Total	5,327.5	-	-	-	-	-	-	5,601.4	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-5.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	214.5	-	-	-	-	-	-	214.5	-	-	-	-	-	-	-
Consumption (kWh)	457,073.0	-	-	-	-	-	-	457,073.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	97,693.2	-	-	-	-	-	-	104,959.8	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	42,647.0	-	-	-	-	-	-	42,647.0	-	-	-	-	-	-	-
Natural Gas	31,258.0	-	-	-	-	-	-	33,502.0	-	-	-	-	-	-	-
Total	73,905.0	-	-	-	-	-	-	76,149.0	-	-	-	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,943.7	1,943.7	1,943.7	-	-	-	-	-	-	-	-	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-	-	-	-	-	-	-	945.2	945.2	-	-
Space Heat	7,372.6	7,540.0	8,786.9	-	-	-	-	-	-	-	-	7,695.3	8,183.3	-	-
Space Cool	910.6	910.6	910.6	-	-	-	-	-	-	-	-	910.6	910.6	-	-
Heat Rejection	755.6	755.6	755.6	-	-	-	-	-	-	-	-	755.6	755.6	-	-
Pumps	1,922.8	1,922.8	1,922.8	-	-	-	-	-	-	-	-	1,922.8	1,922.8	-	-
Fans	781.2	781.2	781.2	-	-	-	-	-	-	-	-	775.3	772.7	-	-
DHW	2,790.2	2,790.2	2,790.2	-	-	-	-	-	-	-	-	2,790.2	2,790.2	-	-
Total	17,421.8	17,589.2	18,836.1	-	-	-	-	-	-	-	-	17,738.6	18,224.1	-	-
Percent Change (%)	-	**-1.0**	**-8.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-1.8**	**-4.6**	**-**	**-**
Electricity															
Peak Demand (kW)	690.3	690.3	690.3	-	-	-	-	-	-	-	-	690.3	690.3	-	-
Consumption (kWh)	2,016,402.0	2,016,402.0	2,016,402.0	-	-	-	-	-	-	-	-	2,014,778.0	2,014,051.0	-	-
Natural Gas															
Consumption (m^3)	269,639.4	274,081.7	307,162.0	-	-	-	-	-	-	-	-	278,199.2	291,150.9	-	-
Energy Charges ($)															
Electricity	171,479.0	171,479.0	171,479.0	-	-	-	-	-	-	-	-	171,348.0	171,273.0	-	-
Natural Gas	84,360.0	85,702.0	95,724.0	-	-	-	-	-	-	-	-	86,940.0	90,842.0	-	-
Total	255,839.0	257,181.0	267,203.0	-	-	-	-	-	-	-	-	258,288.0	262,115.0	-	-

Montreal Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	-	2,053.4	-	-	-	-	-	-	-
Appliances	280.1	-	-	-	-	-	-	280.1	-	-	-	-	-	-	-
Space Heat	2,483.9	-	-	-	-	-	-	2,513.0	-	-	-	-	-	-	-
Space Cool	247.1	-	-	-	-	-	-	247.1	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	659.0	-	-	-	-	-	-	659.0	-	-	-	-	-	-	-
DHW	160.7	-	-	-	-	-	-	160.7	-	-	-	-	-	-	-
Total	5,884.1	-	-	-	-	-	-	5,913.2	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-0.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	347.0	-	-	-	-	-	-	347.0	-	-	-	-	-	-	-
Consumption (kWh)	936,257.0	-	-	-	-	-	-	936,257.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	66,689.8	-	-	-	-	-	-	67,462.3	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	84,145.0	-	-	-	-	-	-	84,145.0	-	-	-	-	-	-	-
Natural Gas	21,488.0	-	-	-	-	-	-	21,727.0	-	-	-	-	-	-	-
Total	105,633.0	-	-	-	-	-	-	105,872.0	-	-	-	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	-	293.5	-	-	-	-	-	-	-
Appliances	41.3	-	-	-	-	-	-	41.3	-	-	-	-	-	-	-
Space Heat	1,894.7	-	-	-	-	-	-	2,005.4	-	-	-	-	-	-	-
Space Cool	11.6	-	-	-	-	-	-	11.6	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	119.4	-	-	-	-	-	-	119.4	-	-	-	-	-	-	-
DHW	119.8	-	-	-	-	-	-	119.8	-	-	-	-	-	-	-
Total	2,480.3	-	-	-	-	-	-	2,591.0	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-4.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	49.9	-	-	-	-	-	-	49.9	-	-	-	-	-	-	-
Consumption (kWh)	144,195.0	-	-	-	-	-	-	144,195.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	52,036.2	-	-	-	-	-	-	54,972.5	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	13,670.0	-	-	-	-	-	-	13,670.0	-	-	-	-	-	-	-
Natural Gas	16,939.0	-	-	-	-	-	-	17,868.0	-	-	-	-	-	-	-
Total	30,609.0	-	-	-	-	-	-	31,538.0	-	-	-	-	-	-	-

Ottawa Results

(Energy Savings Compared to NECB)

Ottawa Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	250.9	250.9	250.9	-	-	-	250.9	-	-	-	250.9	-	-	-	-
Appliances	188.9	188.9	188.9	-	-	-	188.9	-	-	-	188.9	-	-	-	-
Space Heat	1,741.5	1,644.6	1,488.0	-	-	-	1,741.5	-	-	-	1,741.5	-	-	-	-
Space Cool	114.3	114.3	114.3	-	-	-	104.6	-	-	-	114.3	-	-	-	-
Heat Rejection	0.0	0.0	0.0	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	33.2	33.2	33.2	-	-	-	33.2	-	-	-	33.2	-	-	-	-
Fans	43.4	43.4	43.4	-	-	-	43.4	-	-	-	43.4	-	-	-	-
DHW	1,356.0	1,356.0	1,356.0	-	-	-	1,356.0	-	-	-	1,205.4	-	-	-	-
Total	3,728.2	3,631.2	3,474.7	-	-	-	3,718.5	-	-	-	3,577.6	-	-	-	-
Percent Change (%)	-	**2.6**	**6.8**	-	-	-	**0.3**	-	-	-	**4.0**	-	-	-	-
Electricity															
Peak Demand (kW)	93.1	93.1	93.1	-	-	-	89.1	-	-	-	93.1	-	-	-	-
Consumption (kWh)	180,790.0	180,790.0	180,790.0	-	-	-	178,092.0	-	-	-	180,790.0	-	-	-	-
Natural Gas															
Consumption (m^3)	81,651.2	79,076.0	74,922.1	-	-	-	81,651.2	-	-	-	77,654.0	-	-	-	-
Energy Charges ($)															
Electricity	18,766.0	18,766.0	18,766.0	-	-	-	18,489.0	-	-	-	18,766.0	-	-	-	-
Natural Gas	22,450.0	21,787.0	20,719.0	-	-	-	22,450.0	-	-	-	21,412.0	-	-	-	-
Total	41,216.0	40,553.0	39,485.0	-	-	-	40,939.0	-	-	-	40,178.0	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,942.6	-	1,942.6	-	1,942.6	-	-	-	-	-	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	-	1,689.0	-	1,689.0	-	-	-	-	-	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	2,498.1	-	2,149.4	-	2,498.1	-	-	-	-	-	2,498.1	2,455.1	2,455.1	-	2,263.8
Space Cool	563.1	-	563.1	-	497.9	-	-	-	-	-	563.1	563.7	563.7	-	546.5
Heat Rejection	746.5	-	746.5	-	747.3	-	-	-	-	-	746.5	746.5	746.5	-	719.8
Pumps	293.9	-	293.9	-	293.9	-	-	-	-	-	293.9	293.8	293.8	-	293.1
Fans	436.5	-	436.5	-	436.5	-	-	-	-	-	436.5	436.5	436.5	-	438.0
DHW	458.5	-	458.5	-	458.5	-	-	-	-	-	407.5	458.5	458.5	-	458.5
Total	8,628.3	-	8,279.5	-	8,563.9	-	-	-	-	-	8,577.3	8,585.8	8,585.8	-	8,351.3
Percent Change (%)	-	-	**4.0**	-	**0.7**	-	-	-	-	-	**0.6**	**0.5**	**0.5**	-	**3.2**
Electricity															
Peak Demand (kW)	552.6	-	552.6	-	530.8	-	-	-	-	-	552.6	552.6	552.6	-	544.0
Consumption (kWh)	1,575,455.0	-	1,575,455.0	-	1,557,571.0	-	-	-	-	-	1,575,455.0	1,575,602.0	1,575,602.0	-	1,563,608.0
Natural Gas															
Consumption (m^3)	78,446.2	-	69,192.2	-	78,446.2	-	-	-	-	-	77,094.2	77,304.2	77,304.2	-	72,229.3
Energy Charges ($)															
Electricity	126,158.0	-	126,158.0	-	124,375.0	-	-	-	-	-	126,158.0	126,167.0	126,167.0	-	125,273.0
Natural Gas	21,484.0	-	19,104.0	-	21,484.0	-	-	-	-	-	21,128.0	21,193.0	21,193.0	-	19,890.0
Total	147,642.0	-	145,262.0	-	145,859.0	-	-	-	-	-	147,286.0	147,360.0	147,360.0	-	145,163.0

Ottawa Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	850.7	850.7	-	-	850.7	-	-	-	-
Appliances	140.6	-	-	-	-	-	140.6	140.6	-	-	140.6	-	-	-	-
Space Heat	3,491.0	-	-	-	-	-	3,491.0	3,303.2	-	-	3,491.0	-	-	-	-
Space Cool	193.7	-	-	-	-	-	176.4	193.7	-	-	193.7	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	435.2	-	-	-	-	-	435.2	435.2	-	-	435.2	-	-	-	-
DHW	327.1	-	-	-	-	-	327.1	327.1	-	-	290.8	-	-	-	-
Total	5,438.2	-	-	-	-	-	5,420.9	5,250.4	-	-	5,401.9	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.3**	**3.5**	-	-	**0.7**	-	-	-	-
Electricity															
Peak Demand (kW)	233.6	-	-	-	-	-	220.6	233.6	-	-	233.6	-	-	-	-
Consumption (kWh)	450,043.0	-	-	-	-	-	445,238.0	450,043.0	-	-	450,043.0	-	-	-	-
Natural Gas															
Consumption (m^3)	101,301.3	-	-	-	-	-	101,301.3	96,318.8	-	-	100,338.4	-	-	-	-
Energy Charges ($)															
Electricity	40,068.0	-	-	-	-	-	39,446.0	40,068.0	-	-	40,068.0	-	-	-	-
Natural Gas	27,369.0	-	-	-	-	-	27,369.0	26,086.0	-	-	27,117.0	-	-	-	-
Total	67,437.0	-	-	-	-	-	66,815.0	66,154.0	-	-	67,185.0	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,943.7	-	1,943.7	-	1,943.7	-	-	-	-	-	1,943.7	1,943.7	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	-	-	-	-	945.2	945.2	945.2	-	945.2
Space Heat	7,615.4	-	6,540.2	-	7,615.4	-	-	-	-	-	7,615.4	7,417.9	6,356.2	-	6,633.2
Space Cool	888.4	-	888.4	-	785.6	-	-	-	-	-	888.4	888.4	888.5	-	856.7
Heat Rejection	814.7	-	814.7	-	816.1	-	-	-	-	-	814.7	814.7	814.7	-	753.8
Pumps	1,892.1	-	1,892.1	-	1,892.1	-	-	-	-	-	1,892.1	1,892.1	1,892.1	-	1,892.1
Fans	769.9	-	769.9	-	769.9	-	-	-	-	-	769.9	774.4	788.1	-	767.0
DHW	2,818.5	-	2,818.5	-	2,818.5	-	-	-	-	-	2,505.3	2,818.5	2,818.5	-	2,818.5
Total	17,688.0	-	16,612.7	-	17,586.6	-	-	-	-	-	17,374.7	17,495.0	16,446.9	-	16,610.2
Percent Change (%)	-	-	**6.1**	-	**0.6**	-	-	-	-	-	**1.8**	**1.1**	**7.0**	-	**6.1**
Electricity															
Peak Demand (kW)	723.2	-	723.2	-	690.1	-	-	-	-	-	723.2	723.2	723.2	-	698.0
Consumption (kWh)	2,015,002.0	-	2,015,002.0	-	1,986,841.0	-	-	-	-	-	2,015,002.0	2,016,266.0	2,020,067.0	-	1,988,470.0
Natural Gas															
Consumption (m^3)	276,836.0	-	248,307.1	-	276,836.0	-	-	-	-	-	268,525.4	271,598.8	243,425.4	-	250,775.9
Energy Charges ($)															
Electricity	160,540.0	-	160,540.0	-	157,895.0	-	-	-	-	-	160,540.0	160,618.0	160,900.0	-	158,442.0
Natural Gas	72,036.0	-	64,843.0	-	72,036.0	-	-	-	-	-	69,913.0	70,720.0	63,627.0	-	65,470.0
Total	232,576.0	-	225,383.0	-	229,931.0	-	-	-	-	-	230,453.0	231,338.0	224,527.0	-	223,912.0

Ottawa Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	2,053.4	2,053.4	-	-	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-	-	280.1	280.1	-	-	280.1	-	-	-	-
Space Heat	2,611.3	-	-	-	-	-	2,611.3	2,360.8	-	-	2,611.3	-	-	-	-
Space Cool	228.0	-	-	-	-	-	215.1	228.0	-	-	228.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	659.0	-	-	-	-	-	659.0	659.0	-	-	659.0	-	-	-	-
DHW	160.7	-	-	-	-	-	160.7	160.7	-	-	142.4	-	-	-	-
Total	5,992.4	-	-	-	-	-	5,979.5	5,741.9	-	-	5,974.1	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.2**	**4.2**	-	-	**0.3**	-	-	-	-
Electricity															
Peak Demand (kW)	362.3	-	-	-	-	-	352.3	362.3	-	-	362.3	-	-	-	-
Consumption (kWh)	933,866.0	-	-	-	-	-	930,283.0	933,866.0	-	-	933,866.0	-	-	-	-
Natural Gas															
Consumption (m^3)	69,791.2	-	-	-	-	-	69,791.2	63,146.0	-	-	69,307.0	-	-	-	-
Energy Charges ($)															
Electricity	78,160.0	-	-	-	-	-	77,692.0	78,160.0	-	-	78,160.0	-	-	-	-
Natural Gas	19,190.0	-	-	-	-	-	19,190.0	17,478.0	-	-	19,060.0	-	-	-	-
Total	97,350.0	-	-	-	-	-	96,882.0	95,638.0	-	-	97,220.0	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	293.5	-	-	-	293.5	-	-	-	-
Appliances	41.3	-	-	-	-	-	41.3	-	-	-	41.3	-	-	-	-
Space Heat	1,982.1	-	-	-	-	-	1,982.1	-	-	-	1,982.1	-	-	-	-
Space Cool	9.3	-	-	-	-	-	8.7	-	-	-	9.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Fans	119.4	-	-	-	-	-	119.4	-	-	-	119.4	-	-	-	-
DHW	119.8	-	-	-	-	-	119.8	-	-	-	112.7	-	-	-	-
Total	2,565.4	-	-	-	-	-	2,564.8	-	-	-	2,558.2	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.0**	-	-	-	**0.3**	-	-	-	-
Electricity															
Peak Demand (kW)	52.4	-	-	-	-	-	51.6	-	-	-	52.4	-	-	-	-
Consumption (kWh)	144,819.0	-	-	-	-	-	144,646.0	-	-	-	144,819.0	-	-	-	-
Natural Gas															
Consumption (m^3)	54,233.6	-	-	-	-	-	54,233.6	-	-	-	54,043.2	-	-	-	-
Energy Charges ($)															
Electricity	15,104.0	-	-	-	-	-	15,074.0	-	-	-	15,104.0	-	-	-	-
Natural Gas	15,252.0	-	-	-	-	-	15,252.0	-	-	-	15,201.0	-	-	-	-
Total	30,356.0	-	-	-	-	-	30,326.0	-	-	-	30,305.0	-	-	-	-

Ottawa Results

(Energy Increase Compared to NECB)

Edmonton Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	250.9	250.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Appliances	188.9	188.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	1,741.5	1,806.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Cool	114.3	114.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Rejection	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps	33.2	33.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Fans	43.4	43.4	-	-	-	-	-	-	-	-	-	-	-	-	-
DHW	1,356.0	1,356.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	3,728.2	3,792.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Change (%)	-	**-1.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	93.1	93.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumption (kWh)	180,790.0	180,790.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	81,651.2	83,364.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	18,766.0	18,766.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	22,450.0	22,890.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	41,216.0	41,656.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,942.6	1,942.6	1,942.6	-	-	-	-	-	-	-	-	-	1,942.6	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-	-	-	-	-	-	-	-	1,689.0	-	-
Space Heat	2,498.1	2,554.4	3,002.4	-	-	-	-	-	-	-	-	-	3,263.6	-	-
Space Cool	563.1	563.1	563.1	-	-	-	-	-	-	-	-	-	557.1	-	-
Heat Rejection	746.5	746.5	746.5	-	-	-	-	-	-	-	-	-	746.5	-	-
Pumps	293.9	293.9	293.9	-	-	-	-	-	-	-	-	-	294.7	-	-
Fans	436.5	436.5	436.5	-	-	-	-	-	-	-	-	-	436.2	-	-
DHW	458.5	458.5	458.5	-	-	-	-	-	-	-	-	-	458.5	-	-
Total	8,628.3	8,684.5	9,132.6	-	-	-	-	-	-	-	-	-	9,388.3	-	-
Percent Change (%)	-	**-0.7**	**-5.8**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-8.8**	**-**	**-**
Electricity															
Peak Demand (kW)	552.6	552.6	552.6	-	-	-	-	-	-	-	-	-	552.6	-	-
Consumption (kWh)	1,575,455.0	1,575,455.0	1,575,455.0	-	-	-	-	-	-	-	-	-	1,573,924.0	-	-
Natural Gas															
Consumption (m^3)	78,446.2	79,938.2	91,826.1	-	-	-	-	-	-	-	-	-	98,756.8	-	-
Energy Charges ($)															
Electricity	126,158.0	126,158.0	126,158.0	-	-	-	-	-	-	-	-	-	126,038.0	-	-
Natural Gas	21,484.0	21,866.0	24,912.0	-	-	-	-	-	-	-	-	-	26,653.0	-	-
Total	147,642.0	148,024.0	151,070.0	-	-	-	-	-	-	-	-	-	152,691.0	-	-

Edmonton Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	-	850.7	-	-	-	-	-	-	-
Appliances	140.6	-	-	-	-	-	-	140.6	-	-	-	-	-	-	-
Space Heat	3,491.0	-	-	-	-	-	-	3,776.3	-	-	-	-	-	-	-
Space Cool	193.7	-	-	-	-	-	-	193.7	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	435.2	-	-	-	-	-	-	435.2	-	-	-	-	-	-	-
DHW	327.1	-	-	-	-	-	-	327.1	-	-	-	-	-	-	-
Total	5,438.2	-	-	-	-	-	-	5,723.5	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-5.2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	233.6	-	-	-	-	-	-	233.6	-	-	-	-	-	-	-
Consumption (kWh)	450,043.0	-	-	-	-	-	-	450,043.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	101,301.3	-	-	-	-	-	-	108,870.2	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	40,068.0	-	-	-	-	-	-	40,068.0	-	-	-	-	-	-	-
Natural Gas	27,369.0	-	-	-	-	-	-	29,307.0	-	-	-	-	-	-	-
Total	67,437.0	-	-	-	-	-	-	69,375.0	-	-	-	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,943.7	1,943.7	1,943.7	-	-	-	-	-	-	-	-	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-	-	-	-	-	-	-	945.2	945.2	-	-
Space Heat	7,615.4	7,788.3	9,037.4	-	-	-	-	-	-	-	-	7,944.0	8,440.6	-	-
Space Cool	888.4	888.4	888.4	-	-	-	-	-	-	-	-	888.4	888.3	-	-
Heat Rejection	814.7	814.7	814.7	-	-	-	-	-	-	-	-	814.7	814.7	-	-
Pumps	1,892.1	1,892.1	1,892.1	-	-	-	-	-	-	-	-	1,892.1	1,892.1	-	-
Fans	769.9	769.9	769.9	-	-	-	-	-	-	-	-	764.0	761.5	-	-
DHW	2,818.5	2,818.5	2,818.5	-	-	-	-	-	-	-	-	2,818.5	2,818.5	-	-
Total	17,688.0	17,860.9	19,110.0	-	-	-	-	-	-	-	-	18,010.6	18,504.7	-	-
Percent Change (%)	-	**-1.0**	**-8.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-1.8**	**-4.6**	**-**	**-**
Electricity															
Peak Demand (kW)	723.2	723.2	723.2	-	-	-	-	-	-	-	-	723.2	723.2	-	-
Consumption (kWh)	2,015,002.0	2,015,002.0	2,015,002.0	-	-	-	-	-	-	-	-	2,013,348.0	2,012,643.0	-	-
Natural Gas															
Consumption (m^3)	276,836.0	281,423.8	314,568.6	-	-	-	-	-	-	-	-	285,555.4	298,731.0	-	-
Energy Charges ($)															
Electricity	160,540.0	160,540.0	160,540.0	-	-	-	-	-	-	-	-	160,416.0	160,350.0	-	-
Natural Gas	72,036.0	73,192.0	81,545.0	-	-	-	-	-	-	-	-	74,231.0	77,544.0	-	-
Total	232,576.0	233,732.0	242,085.0	-	-	-	-	-	-	-	-	234,647.0	237,894.0	-	-

Edmonton Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	-	2,053.4	-	-	-	-	-	-	-
Appliances	280.1	-	-	-	-	-	-	280.1	-	-	-	-	-	-	-
Space Heat	2,611.3	-	-	-	-	-	-	2,641.9	-	-	-	-	-	-	-
Space Cool	228.0	-	-	-	-	-	-	228.0	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	659.0	-	-	-	-	-	-	659.0	-	-	-	-	-	-	-
DHW	160.7	-	-	-	-	-	-	160.7	-	-	-	-	-	-	-
Total	5,992.4	-	-	-	-	-	-	6,022.9	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-0.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	362.3	-	-	-	-	-	-	362.3	-	-	-	-	-	-	-
Consumption (kWh)	933,866.0	-	-	-	-	-	-	933,866.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	69,791.2	-	-	-	-	-	-	70,603.0	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	78,160.0	-	-	-	-	-	-	78,160.0	-	-	-	-	-	-	-
Natural Gas	19,190.0	-	-	-	-	-	-	19,398.0	-	-	-	-	-	-	-
Total	97,350.0	-	-	-	-	-	-	97,558.0	-	-	-	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	-	293.5	-	-	-	-	-	-	-
Appliances	41.3	-	-	-	-	-	-	41.3	-	-	-	-	-	-	-
Space Heat	1,982.1	-	-	-	-	-	-	2,095.6	-	-	-	-	-	-	-
Space Cool	9.3	-	-	-	-	-	-	9.3	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	119.4	-	-	-	-	-	-	119.4	-	-	-	-	-	-	-
DHW	119.8	-	-	-	-	-	-	119.8	-	-	-	-	-	-	-
Total	2,565.4	-	-	-	-	-	-	2,678.9	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-4.4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	52.4	-	-	-	-	-	-	52.4	-	-	-	-	-	-	-
Consumption (kWh)	144,819.0	-	-	-	-	-	-	144,819.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	54,233.6	-	-	-	-	-	-	57,245.4	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	15,104.0	-	-	-	-	-	-	15,104.0	-	-	-	-	-	-	-
Natural Gas	15,252.0	-	-	-	-	-	-	16,034.0	-	-	-	-	-	-	-
Total	30,356.0	-	-	-	-	-	-	31,138.0	-	-	-	-	-	-	-

Edmonton Results

(Energy Savings Compared to NECB)

Edmonton Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	250.9	250.9	250.9	-	-	-	250.9	-	-	-	250.9	-	-	-	-
Appliances	188.9	188.9	188.9	-	-	-	188.9	-	-	-	188.9	-	-	-	-
Space Heat	1,894.0	1,778.0	1,604.3	-	-	-	1,894.0	-	-	-	1,894.0	-	-	-	-
Space Cool	58.6	58.6	58.6	-	-	-	53.6	-	-	-	58.6	-	-	-	-
Heat Rejection	0.0	0.0	0.0	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	35.6	35.6	35.6	-	-	-	35.6	-	-	-	35.6	-	-	-	-
Fans	43.0	43.0	43.0	-	-	-	43.0	-	-	-	43.0	-	-	-	-
DHW	1,425.5	1,425.5	1,425.5	-	-	-	1,425.5	-	-	-	1,267.1	-	-	-	-
Total	3,896.5	3,780.5	3,606.8	-	-	-	3,891.5	-	-	-	3,738.1	-	-	-	-
Percent Change (%)	-	**3.0**	**7.4**	-	-	-	**0.1**	-	-	-	**4.1**	-	-	-	-
Electricity															
Peak Demand (kW)	74.0	74.0	74.0	-	-	-	71.6	-	-	-	74.0	-	-	-	-
Consumption (kWh)	166,569.0	166,569.0	166,569.0	-	-	-	165,186.0	-	-	-	166,569.0	-	-	-	-
Natural Gas															
Consumption (m^3)	87,473.5	84,394.4	79,784.2	-	-	-	87,473.5	-	-	-	83,269.1	-	-	-	-
Energy Charges ($)															
Electricity	13,839.0	13,839.0	13,839.0	-	-	-	13,691.0	-	-	-	13,839.0	-	-	-	-
Natural Gas	20,926.0	20,190.0	19,087.0	-	-	-	20,926.0	-	-	-	19,921.0	-	-	-	-
Total	34,765.0	34,029.0	32,926.0	-	-	-	34,617.0	-	-	-	33,760.0	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,942.6	-	1,942.6	-	1,942.6	-	-	-	-	-	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	-	1,689.0	-	1,689.0	-	-	-	-	-	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	2,315.2	-	1,983.1	-	2,315.2	-	-	-	-	-	2,315.2	2,264.6	2,264.6	-	2,075.8
Space Cool	353.3	-	353.3	-	312.4	-	-	-	-	-	353.3	354.2	354.2	-	345.9
Heat Rejection	502.8	-	502.8	-	503.5	-	-	-	-	-	502.8	502.8	502.8	-	491.9
Pumps	243.2	-	243.2	-	243.2	-	-	-	-	-	243.2	243.1	243.1	-	242.9
Fans	459.1	-	459.1	-	459.1	-	-	-	-	-	459.1	459.1	459.1	-	460.1
DHW	481.1	-	481.1	-	481.1	-	-	-	-	-	427.6	481.1	481.1	-	481.1
Total	7,986.3	-	7,654.1	-	7,946.0	-	-	-	-	-	7,932.8	7,936.5	7,936.5	-	7,729.3
Percent Change (%)	-	-	**4.2**	-	**0.5**	-	-	-	-	-	**0.7**	**0.6**	**0.6**	-	**3.2**
Electricity															
Peak Demand (kW)	473.4	-	473.4	-	458.7	-	-	-	-	-	473.4	473.4	473.4	-	470.1
Consumption (kWh)	1,441,662.0	-	1,441,662.0	-	1,430,473.0	-	-	-	-	-	1,441,662.0	1,441,910.0	1,441,910.0	-	1,436,776.0
Natural Gas															
Consumption (m^3)	74,188.7	-	65,377.0	-	74,188.7	-	-	-	-	-	72,772.3	72,845.1	72,845.1	-	67,837.4
Energy Charges ($)															
Electricity	111,776.0	-	111,776.0	-	110,686.0	-	-	-	-	-	111,776.0	111,792.0	111,792.0	-	111,410.0
Natural Gas	17,748.0	-	15,640.0	-	17,748.0	-	-	-	-	-	17,409.0	17,427.0	17,427.0	-	16,229.0
Total	129,524.0	-	127,416.0	-	128,434.0	-	-	-	-	-	129,185.0	129,219.0	129,219.0	-	127,639.0

Edmonton Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	850.7	850.7	-	-	850.7	-	-	-	-
Appliances	140.6	-	-	-	-	-	140.6	140.6	-	-	140.6	-	-	-	-
Space Heat	3,810.7	-	-	-	-	-	3,810.7	3,572.4	-	-	3,810.7	-	-	-	-
Space Cool	81.0	-	-	-	-	-	73.7	81.0	-	-	81.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	393.3	-	-	-	-	-	393.3	393.3	-	-	393.3	-	-	-	-
DHW	343.1	-	-	-	-	-	343.1	343.1	-	-	305.0	-	-	-	-
Total	5,619.3	-	-	-	-	-	5,612.0	5,381.1	-	-	5,581.2	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.1**	**4.2**	-	-	**0.7**	-	-	-	-
Electricity															
Peak Demand (kW)	158.6	-	-	-	-	-	152.0	158.6	-	-	158.6	-	-	-	-
Consumption (kWh)	407,100.0	-	-	-	-	-	405,079.0	407,100.0	-	-	407,100.0	-	-	-	-
Natural Gas															
Consumption (m^3)	110,208.2	-	-	-	-	-	110,208.2	103,890.5	-	-	109,197.7	-	-	-	-
Energy Charges ($)															
Electricity	32,055.0	-	-	-	-	-	31,793.0	32,055.0	-	-	32,055.0	-	-	-	-
Natural Gas	26,365.0	-	-	-	-	-	26,365.0	24,853.0	-	-	26,123.0	-	-	-	-
Total	58,420.0	-	-	-	-	-	58,158.0	56,908.0	-	-	58,178.0	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,943.7	-	1,943.7	-	1,943.7	-	-	-	-	-	1,943.7	1,943.7	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	-	-	-	-	945.2	945.2	945.2	-	945.2
Space Heat	7,221.1	-	6,179.8	-	7,221.1	-	-	-	-	-	7,221.1	6,856.1	5,300.2	-	6,500.9
Space Cool	572.3	-	572.3	-	506.1	-	-	-	-	-	572.3	572.3	572.3	-	559.8
Heat Rejection	466.1	-	466.1	-	467.0	-	-	-	-	-	466.1	466.1	466.1	-	420.5
Pumps	1,722.7	-	1,722.7	-	1,722.7	-	-	-	-	-	1,722.7	1,722.7	1,722.7	-	1,722.7
Fans	744.6	-	744.6	-	744.6	-	-	-	-	-	744.6	752.4	766.3	-	738.4
DHW	2,960.0	-	2,960.0	-	2,960.0	-	-	-	-	-	2,631.0	2,960.0	2,960.0	-	2,960.0
Total	16,575.6	-	15,534.3	-	16,510.3	-	-	-	-	-	16,246.6	16,218.5	14,676.5	-	15,791.2
Percent Change (%)	-	-	**6.3**	-	**0.4**	-	-	-	-	-	**2.0**	**2.2**	**11.5**	-	**4.7**
Electricity															
Peak Demand (kW)	586.6	-	586.6	-	568.5	-	-	-	-	-	586.6	586.6	586.6	-	574.9
Consumption (kWh)	1,776,265.0	-	1,776,265.0	-	1,758,130.0	-	-	-	-	-	1,776,265.0	1,778,437.0	1,782,307.0	-	1,758,416.0
Natural Gas															
Consumption (m^3)	270,126.5	-	242,496.0	-	270,126.5	-	-	-	-	-	261,395.9	260,441.4	219,159.5	-	251,019.5
Energy Charges ($)															
Electricity	137,362.0	-	137,362.0	-	135,777.0	-	-	-	-	-	137,362.0	137,507.0	137,792.0	-	136,007.0
Natural Gas	56,544.0	-	50,761.0	-	56,544.0	-	-	-	-	-	54,718.0	54,517.0	45,876.0	-	52,545.0
Total	193,906.0	-	188,123.0	-	192,321.0	-	-	-	-	-	192,080.0	192,024.0	183,668.0	-	188,552.0

Edmonton Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	2,053.4	2,053.4	-	-	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-	-	280.1	280.1	-	-	280.1	-	-	-	-
Space Heat	2,689.3	-	-	-	-	-	2,689.3	2,410.6	-	-	2,689.3	-	-	-	-
Space Cool	92.8	-	-	-	-	-	85.2	92.8	-	-	92.8	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	659.0	-	-	-	-	-	659.0	659.0	-	-	659.0	-	-	-	-
DHW	160.7	-	-	-	-	-	160.7	160.7	-	-	142.4	-	-	-	-
Total	5,935.1	-	-	-	-	-	5,927.6	5,656.5	-	-	5,916.9	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.1**	**4.7**	-	-	**0.3**	-	-	-	-
Electricity															
Peak Demand (kW)	274.7	-	-	-	-	-	267.7	274.7	-	-	274.7	-	-	-	-
Consumption (kWh)	897,012.0	-	-	-	-	-	894,924.0	897,012.0	-	-	897,012.0	-	-	-	-
Natural Gas															
Consumption (m^3)	71,795.4	-	-	-	-	-	71,795.4	64,402.9	-	-	71,308.4	-	-	-	-
Energy Charges ($)															
Electricity	70,011.0	-	-	-	-	-	69,744.0	70,011.0	-	-	70,011.0	-	-	-	-
Natural Gas	17,175.0	-	-	-	-	-	17,175.0	15,407.0	-	-	17,059.0	-	-	-	-
Total	87,186.0	-	-	-	-	-	86,919.0	85,418.0	-	-	87,070.0	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	293.5	-	-	-	293.5	-	-	-	-
Appliances	41.3	-	-	-	-	-	41.3	-	-	-	41.3	-	-	-	-
Space Heat	2,118.1	-	-	-	-	-	2,118.1	-	-	-	2,118.1	-	-	-	-
Space Cool	4.4	-	-	-	-	-	4.1	-	-	-	4.4	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Fans	119.4	-	-	-	-	-	119.4	-	-	-	119.4	-	-	-	-
DHW	119.8	-	-	-	-	-	119.8	-	-	-	112.5	-	-	-	-
Total	2,696.5	-	-	-	-	-	2,696.2	-	-	-	2,689.1	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.0**	-	-	-	**0.3**	-	-	-	-
Electricity															
Peak Demand (kW)	45.1	-	-	-	-	-	44.6	-	-	-	45.1	-	-	-	-
Consumption (kWh)	144,368.0	-	-	-	-	-	144,287.0	-	-	-	144,368.0	-	-	-	-
Natural Gas															
Consumption (m^3)	57,754.9	-	-	-	-	-	57,754.9	-	-	-	57,558.9	-	-	-	-
Energy Charges ($)															
Electricity	11,568.0	-	-	-	-	-	11,553.0	-	-	-	11,568.0	-	-	-	-
Natural Gas	13,817.0	-	-	-	-	-	13,817.0	-	-	-	13,770.0	-	-	-	-
Total	25,385.0	-	-	-	-	-	25,370.0	-	-	-	25,338.0	-	-	-	-

Edmonton Results

(Energy Increase Compared to NECB)

Edmonton Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	250.9	250.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Appliances	188.9	188.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	1,894.0	1,964.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Cool	58.6	58.6	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Rejection	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps	35.6	35.6	-	-	-	-	-	-	-	-	-	-	-	-	-
Fans	43.0	43.0	-	-	-	-	-	-	-	-	-	-	-	-	-
DHW	1,425.5	1,425.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	3,896.5	3,966.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Change (%)	-	**-1.8**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	74.0	74.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumption (kWh)	166,569.0	166,569.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	87,473.5	89,334.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	13,839.0	13,839.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	20,926.0	21,372.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	34,765.0	35,211.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,942.6	1,942.6	1,942.6	-	-	-	-	-	-	-	-	-	1,942.6	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-	-	-	-	-	-	-	-	1,689.0	-	-
Space Heat	2,315.2	2,367.2	2,820.3	-	-	-	-	-	-	-	-	-	3,095.3	-	-
Space Cool	353.3	353.3	353.3	-	-	-	-	-	-	-	-	-	345.4	-	-
Heat Rejection	502.8	502.8	502.8	-	-	-	-	-	-	-	-	-	502.8	-	-
Pumps	243.2	243.2	243.2	-	-	-	-	-	-	-	-	-	244.1	-	-
Fans	459.1	459.1	459.1	-	-	-	-	-	-	-	-	-	458.6	-	-
DHW	481.1	481.1	481.1	-	-	-	-	-	-	-	-	-	481.1	-	-
Total	7,986.3	8,038.3	8,491.4	-	-	-	-	-	-	-	-	-	8,758.8	-	-
Percent Change (%)	-	**-0.7**	**-6.3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-9.7**	**-**	**-**
Electricity															
Peak Demand (kW)	473.4	473.4	473.4	-	-	-	-	-	-	-	-	-	473.4	-	-
Consumption (kWh)	1,441,662.0	1,441,662.0	1,441,662.0	-	-	-	-	-	-	-	-	-	1,439,579.0	-	-
Natural Gas															
Consumption (m^3)	74,188.7	75,571.5	87,591.0	-	-	-	-	-	-	-	-	-	94,888.4	-	-
Energy Charges ($)															
Electricity	111,776.0	111,776.0	111,776.0	-	-	-	-	-	-	-	-	-	111,636.0	-	-
Natural Gas	17,748.0	18,079.0	20,955.0	-	-	-	-	-	-	-	-	-	22,700.0	-	-
Total	129,524.0	129,855.0	132,731.0	-	-	-	-	-	-	-	-	-	134,336.0	-	-

Edmonton Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	-	850.7	-	-	-	-	-	-	-
Appliances	140.6	-	-	-	-	-	-	140.6	-	-	-	-	-	-	-
Space Heat	3,810.7	-	-	-	-	-	-	4,121.6	-	-	-	-	-	-	-
Space Cool	81.0	-	-	-	-	-	-	81.0	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	393.3	-	-	-	-	-	-	393.3	-	-	-	-	-	-	-
DHW	343.1	-	-	-	-	-	-	343.1	-	-	-	-	-	-	-
Total	5,619.3	-	-	-	-	-	-	5,930.2	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-5.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	158.6	-	-	-	-	-	-	158.6	-	-	-	-	-	-	-
Consumption (kWh)	407,100.0	-	-	-	-	-	-	407,100.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	110,208.2	-	-	-	-	-	-	118,457.3	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	32,055.0	-	-	-	-	-	-	32,055.0	-	-	-	-	-	-	-
Natural Gas	26,365.0	-	-	-	-	-	-	28,339.0	-	-	-	-	-	-	-
Total	58,420.0	-	-	-	-	-	-	60,394.0	-	-	-	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,943.7	1,943.7	1,943.7	-	-	-	-	-	-	-	-	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-	-	-	-	-	-	-	945.2	945.2	-	-
Space Heat	7,221.1	7,385.0	8,663.3	-	-	-	-	-	-	-	-	7,923.2	8,776.0	-	-
Space Cool	572.3	572.3	572.3	-	-	-	-	-	-	-	-	572.2	572.2	-	-
Heat Rejection	466.1	466.1	466.1	-	-	-	-	-	-	-	-	466.1	466.1	-	-
Pumps	1,722.7	1,722.7	1,722.7	-	-	-	-	-	-	-	-	1,722.7	1,722.7	-	-
Fans	744.6	744.6	744.6	-	-	-	-	-	-	-	-	739.9	728.5	-	-
DHW	2,960.0	2,960.0	2,960.0	-	-	-	-	-	-	-	-	2,960.0	2,960.0	-	-
Total	16,575.6	16,739.6	18,017.9	-	-	-	-	-	-	-	-	17,273.0	18,114.4	-	-
Percent Change (%)	-	**-1.0**	**-8.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-4.2**	**-9.3**	**-**	**-**
Electricity															
Peak Demand (kW)	586.6	586.6	586.6	-	-	-	-	-	-	-	-	586.6	586.6	-	-
Consumption (kWh)	1,776,265.0	1,776,265.0	1,776,265.0	-	-	-	-	-	-	-	-	1,774,966.0	1,771,760.0	-	-
Natural Gas															
Consumption (m^3)	270,126.5	274,476.3	308,393.7	-	-	-	-	-	-	-	-	288,752.0	311,380.4	-	-
Energy Charges ($)															
Electricity	137,362.0	137,362.0	137,362.0	-	-	-	-	-	-	-	-	137,258.0	137,011.0	-	-
Natural Gas	56,544.0	57,455.0	64,555.0	-	-	-	-	-	-	-	-	60,444.0	65,180.0	-	-
Total	193,906.0	194,817.0	201,917.0	-	-	-	-	-	-	-	-	197,702.0	202,191.0	-	-

Edmonton Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	-	2,053.4	-	-	-	-	-	-	-
Appliances	280.1	-	-	-	-	-	-	280.1	-	-	-	-	-	-	-
Space Heat	2,689.3	-	-	-	-	-	-	2,720.8	-	-	-	-	-	-	-
Space Cool	92.8	-	-	-	-	-	-	92.8	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	659.0	-	-	-	-	-	-	659.0	-	-	-	-	-	-	-
DHW	160.7	-	-	-	-	-	-	160.7	-	-	-	-	-	-	-
Total	5,935.1	-	-	-	-	-	-	5,966.7	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-0.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	274.7	-	-	-	-	-	-	274.7	-	-	-	-	-	-	-
Consumption (kWh)	897,012.0	-	-	-	-	-	-	897,012.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	71,795.4	-	-	-	-	-	-	72,629.6	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	70,011.0	-	-	-	-	-	-	70,011.0	-	-	-	-	-	-	-
Natural Gas	17,175.0	-	-	-	-	-	-	17,375.0	-	-	-	-	-	-	-
Total	87,186.0	-	-	-	-	-	-	87,386.0	-	-	-	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	-	293.5	-	-	-	-	-	-	-
Appliances	41.3	-	-	-	-	-	-	41.3	-	-	-	-	-	-	-
Space Heat	2,118.1	-	-	-	-	-	-	2,243.4	-	-	-	-	-	-	-
Space Cool	4.4	-	-	-	-	-	-	4.4	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	119.4	-	-	-	-	-	-	119.4	-	-	-	-	-	-	-
DHW	119.8	-	-	-	-	-	-	119.8	-	-	-	-	-	-	-
Total	2,696.5	-	-	-	-	-	-	2,821.8	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-4.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	45.1	-	-	-	-	-	-	45.1	-	-	-	-	-	-	-
Consumption (kWh)	144,368.0	-	-	-	-	-	-	144,368.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	57,754.9	-	-	-	-	-	-	61,080.3	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	11,568.0	-	-	-	-	-	-	11,568.0	-	-	-	-	-	-	-
Natural Gas	13,817.0	-	-	-	-	-	-	14,613.0	-	-	-	-	-	-	-
Total	25,385.0	-	-	-	-	-	-	26,181.0	-	-	-	-	-	-	-

Fort McMurray Results

(Energy Savings Compared to NECB)

Fort McMurray Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	250.9	250.9	250.9	-	-	-	250.9	-	-	-	250.9	-	-	-	-
Appliances	188.9	188.9	188.9	-	-	-	188.9	-	-	-	188.9	-	-	-	-
Space Heat	2,224.3	2,093.1	1,890.8	-	-	-	2,224.3	-	-	-	2,224.3	-	-	-	-
Space Cool	64.3	64.3	64.3	-	-	-	58.8	-	-	-	64.3	-	-	-	-
Heat Rejection	0.0	0.0	0.0	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	37.1	37.1	37.1	-	-	-	37.1	-	-	-	37.1	-	-	-	-
Fans	43.2	43.2	43.2	-	-	-	43.2	-	-	-	43.2	-	-	-	-
DHW	1,461.6	1,461.6	1,461.6	-	-	-	1,461.6	-	-	-	1,299.2	-	-	-	-
Total	4,270.3	4,139.1	3,936.8	-	-	-	4,264.8	-	-	-	4,107.9	-	-	-	-
Percent Change (%)	**-**	**3.1**	**7.8**	**-**	**-**	**-**	**0.1**	**-**	**-**	**-**	**3.8**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	77.1	77.1	77.1	-	-	-	73.0	-	-	-	75.5	-	-	-	-
Consumption (kWh)	169,645.0	169,645.0	169,645.0	-	-	-	168,127.0	-	-	-	169,645.0	-	-	-	-
Natural Gas															
Consumption (m^3)	97,099.7	93,614.8	88,251.6	-	-	-	97,099.7	-	-	-	92,789.1	-	-	-	-
Energy Charges ($)															
Electricity	11,925.0	11,925.0	11,925.0	-	-	-	11,776.0	-	-	-	11,925.0	-	-	-	-
Natural Gas	23,229.0	22,396.0	21,112.0	-	-	-	23,229.0	-	-	-	22,198.0	-	-	-	-
Total	35,154.0	34,321.0	33,037.0	-	-	-	35,005.0	-	-	-	34,123.0	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,942.6	-	1,942.6	-	1,942.6	-	-	-	-	-	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	-	1,689.0	-	1,689.0	-	-	-	-	-	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	2,301.8	-	1,983.0	-	2,301.8	-	-	-	-	-	2,301.8	2,171.4	2,171.4	-	1,946.4
Space Cool	339.4	-	339.4	-	300.1	-	-	-	-	-	339.4	341.7	341.7	-	332.8
Heat Rejection	454.3	-	454.3	-	454.8	-	-	-	-	-	454.3	454.3	454.3	-	440.9
Pumps	237.0	-	237.0	-	237.0	-	-	-	-	-	237.0	236.8	236.8	-	236.5
Fans	435.0	-	435.0	-	435.0	-	-	-	-	-	435.0	435.0	435.0	-	436.0
DHW	492.8	-	492.8	-	492.8	-	-	-	-	-	438.0	492.8	492.8	-	492.8
Total	7,891.8	-	7,573.0	-	7,853.1	-	-	-	-	-	7,837.0	7,763.6	7,763.6	-	7,517.0
Percent Change (%)	**-**	**-**	**4.0**	**-**	**0.5**	**-**	**-**	**-**	**-**	**-**	**0.7**	**1.6**	**1.6**	**-**	**4.7**
Electricity															
Peak Demand (kW)	448.9	-	448.9	-	436.0	-	-	-	-	-	448.9	448.9	448.9	-	447.5
Consumption (kWh)	1,415,886.0	-	1,415,886.0	-	1,405,130.0	-	-	-	-	-	1,415,886.0	1,416,498.0	1,416,498.0	-	1,410,512.0
Natural Gas															
Consumption (m^3)	74,146.7	-	65,687.7	-	74,146.7	-	-	-	-	-	72,694.0	70,687.0	70,687.0	-	64,713.6
Energy Charges ($)															
Electricity	90,473.0	-	90,473.0	-	89,565.0	-	-	-	-	-	90,473.0	90,503.0	90,503.0	-	90,144.0
Natural Gas	17,738.0	-	15,714.0	-	17,738.0	-	-	-	-	-	17,390.0	16,911.0	16,911.0	-	15,482.0
Total	108,211.0	-	106,187.0	-	107,303.0	-	-	-	-	-	107,863.0	107,414.0	107,414.0	-	105,626.0

Fort McMurray Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	850.7	850.7	-	-	850.7	-	-	-	-
Appliances	140.6	-	-	-	-	-	140.6	140.6	-	-	140.6	-	-	-	-
Space Heat	4,494.0	-	-	-	-	-	4,494.0	4,248.5	-	-	4,494.0	-	-	-	-
Space Cool	100.5	-	-	-	-	-	91.5	100.5	-	-	100.5	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	451.0	-	-	-	-	-	451.0	451.0	-	-	451.0	-	-	-	-
DHW	351.2	-	-	-	-	-	351.2	351.2	-	-	312.2	-	-	-	-
Total	6,388.0	-	-	-	-	-	6,379.0	6,142.5	-	-	6,348.9	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.1**	**3.8**	-	-	**0.6**	-	-	-	-
Electricity															
Peak Demand (kW)	180.7	-	-	-	-	-	165.6	180.7	-	-	180.7	-	-	-	-
Consumption (kWh)	428,550.0	-	-	-	-	-	426,050.0	428,550.0	-	-	428,550.0	-	-	-	-
Natural Gas															
Consumption (m^3)	128,553.8	-	-	-	-	-	128,553.8	122,040.2	-	-	127,518.1	-	-	-	-
Energy Charges ($)															
Electricity	28,286.0	-	-	-	-	-	27,985.0	28,286.0	-	-	28,286.0	-	-	-	-
Natural Gas	30,754.0	-	-	-	-	-	30,754.0	29,196.0	-	-	30,506.0	-	-	-	-
Total	59,040.0	-	-	-	-	-	58,739.0	57,482.0	-	-	58,792.0	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,943.7	-	1,943.7	-	1,943.7	-	-	-	-	-	1,943.7	1,943.7	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	-	-	-	-	945.2	945.2	945.2	-	945.2
Space Heat	8,663.9	-	7,451.9	-	8,663.9	-	-	-	-	-	8,663.9	8,024.3	6,476.3	-	7,847.9
Space Cool	595.9	-	595.9	-	526.9	-	-	-	-	-	595.9	595.9	595.9	-	588.6
Heat Rejection	457.4	-	457.4	-	458.3	-	-	-	-	-	457.4	457.4	457.4	-	439.2
Pumps	1,765.1	-	1,765.1	-	1,765.1	-	-	-	-	-	1,765.1	1,765.1	1,765.1	-	1,765.1
Fans	754.1	-	754.1	-	754.1	-	-	-	-	-	754.1	766.8	769.7	-	745.7
DHW	3,034.6	-	3,034.6	-	3,034.6	-	-	-	-	-	2,697.6	3,034.6	3,034.6	-	3,034.6
Total	18,159.9	-	16,947.9	-	18,091.8	-	-	-	-	-	17,822.9	17,533.0	15,987.9	-	17,310.0
Percent Change (%)	-	-	**6.7**	-	**0.4**	-	-	-	-	-	**1.9**	**3.5**	**12.0**	-	**4.7**
Electricity															
Peak Demand (kW)	580.7	-	580.7	-	563.1	-	-	-	-	-	580.7	580.7	580.7	-	577.0
Consumption (kWh)	1,794,832.0	-	1,794,832.0	-	1,775,925.0	-	-	-	-	-	1,794,832.0	1,798,365.0	1,799,156.0	-	1,785,401.0
Natural Gas															
Consumption (m^3)	310,386.7	-	278,230.0	-	310,386.7	-	-	-	-	-	301,446.2	293,418.2	252,349.1	-	288,738.0
Energy Charges ($)															
Electricity	114,804.0	-	114,804.0	-	113,377.0	-	-	-	-	-	114,804.0	114,986.0	115,032.0	-	114,181.0
Natural Gas	64,973.0	-	58,242.0	-	64,973.0	-	-	-	-	-	63,101.0	61,421.0	52,824.0	-	60,442.0
Total	179,777.0	-	173,046.0	-	178,350.0	-	-	-	-	-	177,905.0	176,407.0	167,856.0	-	174,623.0

Fort McMurray Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	2,053.4	2,053.4	-	-	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-	-	280.1	280.1	-	-	280.1	-	-	-	-
Space Heat	3,452.5	-	-	-	-	-	3,452.5	3,134.8	-	-	3,452.5	-	-	-	-
Space Cool	111.3	-	-	-	-	-	102.4	111.3	-	-	111.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	659.0	-	-	-	-	-	659.0	659.0	-	-	659.0	-	-	-	-
DHW	160.7	-	-	-	-	-	160.7	160.7	-	-	142.4	-	-	-	-
Total	6,717.0	-	-	-	-	-	6,708.0	6,399.2	-	-	6,698.7	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.1**	**4.7**	-	-	**0.3**	-	-	-	-
Electricity															
Peak Demand (kW)	290.2	-	-	-	-	-	273.4	280.9	-	-	290.2	-	-	-	-
Consumption (kWh)	914,913.0	-	-	-	-	-	912,428.0	914,913.0	-	-	914,913.0	-	-	-	-
Natural Gas															
Consumption (m^3)	90,826.9	-	-	-	-	-	90,826.9	82,395.8	-	-	90,342.6	-	-	-	-
Energy Charges ($)															
Electricity	59,278.0	-	-	-	-	-	58,996.0	59,278.0	-	-	59,278.0	-	-	-	-
Natural Gas	21,729.0	-	-	-	-	-	21,729.0	19,711.0	-	-	21,613.0	-	-	-	-
Total	81,007.0	-	-	-	-	-	80,725.0	78,989.0	-	-	80,891.0	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	293.5	-	-	-	293.5	-	-	-	-
Appliances	41.3	-	-	-	-	-	41.3	-	-	-	41.3	-	-	-	-
Space Heat	2,423.4	-	-	-	-	-	2,423.4	-	-	-	2,423.4	-	-	-	-
Space Cool	6.3	-	-	-	-	-	5.8	-	-	-	6.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Fans	119.4	-	-	-	-	-	119.4	-	-	-	119.4	-	-	-	-
DHW	119.8	-	-	-	-	-	119.8	-	-	-	112.5	-	-	-	-
Total	3,003.7	-	-	-	-	-	3,003.2	-	-	-	2,996.3	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.0**	-	-	-	**0.2**	-	-	-	-
Electricity															
Peak Demand (kW)	50.9	-	-	-	-	-	50.3	-	-	-	50.9	-	-	-	-
Consumption (kWh)	149,685.0	-	-	-	-	-	149,569.0	-	-	-	149,685.0	-	-	-	-
Natural Gas															
Consumption (m^3)	65,396.6	-	-	-	-	-	65,396.6	-	-	-	65,197.8	-	-	-	-
Energy Charges ($)															
Electricity	10,023.0	-	-	-	-	-	10,006.0	-	-	-	10,023.0	-	-	-	-
Natural Gas	15,645.0	-	-	-	-	-	15,645.0	-	-	-	15,598.0	-	-	-	-
Total	25,668.0	-	-	-	-	-	25,651.0	-	-	-	25,621.0	-	-	-	-

Fort McMurray Results

(Energy Increase Compared to NECB)

Fort McMurray Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	250.9	250.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Appliances	188.9	188.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	2,224.3	2,306.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Cool	64.3	64.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Rejection	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps	37.1	37.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Fans	43.2	43.2	-	-	-	-	-	-	-	-	-	-	-	-	-
DHW	1,461.6	1,461.6	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	4,270.3	4,352.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Change (%)	-	**-1.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	77.1	77.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumption (kWh)	169,645.0	169,645.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	97,099.7	99,285.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	11,925.0	11,925.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Natural Gas	23,229.0	23,752.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	35,154.0	35,677.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,942.6	1,942.6	1,942.6	-	-	-	-	-	-	-	-	-	1,942.6	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-	-	-	-	-	-	-	-	1,689.0	-	-
Space Heat	2,301.8	2,353.6	2,755.6	-	-	-	-	-	-	-	-	-	3,422.5	-	-
Space Cool	339.4	339.4	339.4	-	-	-	-	-	-	-	-	-	332.3	-	-
Heat Rejection	454.3	454.3	454.3	-	-	-	-	-	-	-	-	-	454.3	-	-
Pumps	237.0	237.0	237.0	-	-	-	-	-	-	-	-	-	238.2	-	-
Fans	435.0	435.0	435.0	-	-	-	-	-	-	-	-	-	434.4	-	-
DHW	492.8	492.8	492.8	-	-	-	-	-	-	-	-	-	492.8	-	-
Total	7,891.8	7,943.6	8,345.5	-	-	-	-	-	-	-	-	-	9,006.1	-	-
Percent Change (%)	-	**-0.7**	**-5.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-14.1**	**-**	**-**
Electricity															
Peak Demand (kW)	448.9	448.9	448.9	-	-	-	-	-	-	-	-	-	448.9	-	-
Consumption (kWh)	1,415,886.0	1,415,886.0	1,415,886.0	-	-	-	-	-	-	-	-	-	1,414,116.0	-	-
Natural Gas															
Consumption (m^3)	74,146.7	75,521.1	86,185.9	-	-	-	-	-	-	-	-	-	103,882.1	-	-
Energy Charges ($)															
Electricity	90,473.0	90,473.0	90,473.0	-	-	-	-	-	-	-	-	-	90,373.0	-	-
Natural Gas	17,738.0	18,067.0	20,618.0	-	-	-	-	-	-	-	-	-	24,852.0	-	-
Total	108,211.0	108,540.0	111,091.0	-	-	-	-	-	-	-	-	-	115,225.0	-	-

Fort McMurray Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	-	850.7	-	-	-	-	-	-	-
Appliances	140.6	-	-	-	-	-	-	140.6	-	-	-	-	-	-	-
Space Heat	4,494.0	-	-	-	-	-	-	4,861.0	-	-	-	-	-	-	-
Space Cool	100.5	-	-	-	-	-	-	100.5	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	451.0	-	-	-	-	-	-	451.0	-	-	-	-	-	-	-
DHW	351.2	-	-	-	-	-	-	351.2	-	-	-	-	-	-	-
Total	6,388.0	-	-	-	-	-	-	6,755.0	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-5.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	180.7	-	-	-	-	-	-	180.7	-	-	-	-	-	-	-
Consumption (kWh)	428,550.0	-	-	-	-	-	-	428,550.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	128,553.8	-	-	-	-	-	-	138,292.1	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	28,286.0	-	-	-	-	-	-	28,286.0	-	-	-	-	-	-	-
Natural Gas	30,754.0	-	-	-	-	-	-	33,083.0	-	-	-	-	-	-	-
Total	59,040.0	-	-	-	-	-	-	61,369.0	-	-	-	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,943.7	1,943.7	1,943.7	-	-	-	-	-	-	-	-	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-	-	-	-	-	-	-	945.2	945.2	-	-
Space Heat	8,663.9	8,860.6	10,259.8	-	-	-	-	-	-	-	-	9,809.5	10,877.8	-	-
Space Cool	595.9	595.9	595.9	-	-	-	-	-	-	-	-	595.8	595.8	-	-
Heat Rejection	457.4	457.4	457.4	-	-	-	-	-	-	-	-	457.4	457.4	-	-
Pumps	1,765.1	1,765.1	1,765.1	-	-	-	-	-	-	-	-	1,765.1	1,765.1	-	-
Fans	754.1	754.1	754.1	-	-	-	-	-	-	-	-	745.1	736.2	-	-
DHW	3,034.6	3,034.6	3,034.6	-	-	-	-	-	-	-	-	3,034.6	3,034.6	-	-
Total	18,159.9	18,356.6	19,755.8	-	-	-	-	-	-	-	-	19,296.4	20,355.7	-	-
Percent Change (%)	-	**-1.1**	**-8.8**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-6.3**	**-12.1**	**-**	**-**
Electricity															
Peak Demand (kW)	580.7	580.7	580.7	-	-	-	-	-	-	-	-	580.7	580.6	-	-
Consumption (kWh)	1,794,832.0	1,794,832.0	1,794,832.0	-	-	-	-	-	-	-	-	1,792,320.0	1,789,814.0	-	-
Natural Gas															
Consumption (m^3)	310,386.7	315,607.1	352,729.4	-	-	-	-	-	-	-	-	340,782.6	369,126.8	-	-
Energy Charges ($)															
Electricity	114,804.0	114,804.0	114,804.0	-	-	-	-	-	-	-	-	114,641.0	114,482.0	-	-
Natural Gas	64,973.0	66,066.0	73,837.0	-	-	-	-	-	-	-	-	71,336.0	77,269.0	-	-
Total	179,777.0	180,870.0	188,641.0	-	-	-	-	-	-	-	-	185,977.0	191,751.0	-	-

Fort McMurray Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	-	2,053.4	-	-	-	-	-	-	-
Appliances	280.1	-	-	-	-	-	-	280.1	-	-	-	-	-	-	-
Space Heat	3,452.5	-	-	-	-	-	-	3,492.5	-	-	-	-	-	-	-
Space Cool	111.3	-	-	-	-	-	-	111.3	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	659.0	-	-	-	-	-	-	659.0	-	-	-	-	-	-	-
DHW	160.7	-	-	-	-	-	-	160.7	-	-	-	-	-	-	-
Total	6,717.0	-	-	-	-	-	-	6,756.9	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-0.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	290.2	-	-	-	-	-	-	290.2	-	-	-	-	-	-	-
Consumption (kWh)	914,913.0	-	-	-	-	-	-	914,913.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	90,826.9	-	-	-	-	-	-	91,890.5	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	59,278.0	-	-	-	-	-	-	59,278.0	-	-	-	-	-	-	-
Natural Gas	21,729.0	-	-	-	-	-	-	21,983.0	-	-	-	-	-	-	-
Total	81,007.0	-	-	-	-	-	-	81,261.0	-	-	-	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	-	293.5	-	-	-	-	-	-	-
Appliances	41.3	-	-	-	-	-	-	41.3	-	-	-	-	-	-	-
Space Heat	2,423.4	-	-	-	-	-	-	2,552.8	-	-	-	-	-	-	-
Space Cool	6.3	-	-	-	-	-	-	6.3	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	119.4	-	-	-	-	-	-	119.4	-	-	-	-	-	-	-
DHW	119.8	-	-	-	-	-	-	119.8	-	-	-	-	-	-	-
Total	3,003.7	-	-	-	-	-	-	3,133.1	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-4.3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	50.9	-	-	-	-	-	-	50.9	-	-	-	-	-	-	-
Consumption (kWh)	149,685.0	-	-	-	-	-	-	149,685.0	-	-	-	-	-	-	-
Natural Gas															
Consumption (m^3)	65,396.6	-	-	-	-	-	-	68,831.1	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	10,023.0	-	-	-	-	-	-	10,023.0	-	-	-	-	-	-	-
Natural Gas	15,645.0	-	-	-	-	-	-	16,467.0	-	-	-	-	-	-	-
Total	25,668.0	-	-	-	-	-	-	26,490.0	-	-	-	-	-	-	-

Yellowknife Results

(Energy Savings Compared to NECB)

Yellowknife Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	250.9	250.9	250.9	-	-	-	250.9	-	-	-	250.9	-	-	-	-
Appliances	188.9	188.9	188.9	-	-	-	188.9	-	-	-	188.9	-	-	-	-
Space Heat	2,971.4	2,809.1	2,555.2	-	-	-	2,971.4	-	-	-	2,971.4	-	-	-	-
Space Cool	30.8	30.8	30.8	-	-	-	28.2	-	-	-	30.8	-	-	-	-
Heat Rejection	0.0	0.0	0.0	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	37.3	37.3	37.3	-	-	-	37.3	-	-	-	37.3	-	-	-	-
Fans	42.2	42.2	42.2	-	-	-	42.2	-	-	-	42.2	-	-	-	-
DHW	1,637.5	1,637.5	1,637.5	-	-	-	1,637.5	-	-	-	1,557.6	-	-	-	-
Total	5,158.9	4,996.7	4,742.7	-	-	-	5,156.3	-	-	-	5,079.1	-	-	-	-
Percent Change (%)	**-**	**3.1**	**8.1**	**-**	**-**	**-**	**0.1**	**-**	**-**	**-**	**1.5**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	65.2	65.2	65.2	-	-	-	63.6	-	-	-	65.2	-	-	-	-
Consumption (kWh)	162,347.0	162,347.0	162,347.0	-	-	-	161,621.0	-	-	-	162,347.0	-	-	-	-
Oil															
Consumption (L)	118,264.7	114,069.8	107,504.7	-	-	-	118,264.7	-	-	-	116,202.7	-	-	-	-
Energy Charges ($)															
Electricity	35,862.0	35,862.0	35,862.0	-	-	-	35,654.0	-	-	-	35,862.0	-	-	-	-
Oil	104,073.0	100,381.4	94,604.2	-	-	-	104,073.0	-	-	-	102,258.4	-	-	-	-
Total	139,935.0	136,243.4	130,466.2	-	-	-	139,727.0	-	-	-	138,120.4	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,942.6	-	1,942.6	-	1,942.6	-	-	-	-	-	1,942.6	1,942.6	1,942.6	-	1,942.6
Appliances	1,689.0	-	1,689.0	-	1,689.0	-	-	-	-	-	1,689.0	1,689.0	1,689.0	-	1,689.0
Space Heat	2,884.8	-	2,564.8	-	2,884.8	-	-	-	-	-	2,884.8	2,451.8	2,451.8	-	2,487.1
Space Cool	222.3	-	222.3	-	196.5	-	-	-	-	-	222.3	228.6	228.6	-	219.3
Heat Rejection	404.9	-	404.9	-	405.5	-	-	-	-	-	404.9	404.9	404.9	-	401.6
Pumps	207.8	-	207.8	-	207.8	-	-	-	-	-	207.8	207.4	207.4	-	207.4
Fans	405.3	-	405.3	-	405.3	-	-	-	-	-	405.3	405.5	405.5	-	406.5
DHW	550.3	-	550.3	-	550.3	-	-	-	-	-	523.5	550.3	550.3	-	550.3
Total	8,307.1	-	7,987.1	-	8,281.9	-	-	-	-	-	8,280.3	7,880.1	7,880.1	-	7,903.7
Percent Change (%)	**-**	**-**	**3.9**	**-**	**0.3**	**-**	**-**	**-**	**-**	**-**	**0.3**	**5.1**	**5.1**	**-**	**4.9**
Electricity															
Peak Demand (kW)	439.1	-	439.1	-	427.3	-	-	-	-	-	439.1	439.1	439.1	-	438.3
Consumption (kWh)	1,353,325.0	-	1,353,325.0	-	1,346,329.0	-	-	-	-	-	1,353,325.0	1,355,001.0	1,355,001.0	-	1,351,766.0
Oil															
Consumption (L)	88,807.7	-	80,535.1	-	88,807.7	-	-	-	-	-	88,114.9	77,616.7	77,616.7	-	78,524.9
Energy Charges ($)															
Electricity	282,133.0	-	282,133.0	-	280,403.0	-	-	-	-	-	282,133.0	282,433.0	282,433.0	-	281,808.0
Oil	78,150.7	-	70,870.9	-	78,150.7	-	-	-	-	-	77,541.1	68,302.7	68,302.7	-	69,102.0
Total	360,283.7	-	353,003.9	-	358,553.7	-	-	-	-	-	359,674.1	350,735.7	350,735.7	-	350,910.0

Yellowknife Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	850.7	850.7	-	-	850.7	-	-	-	-
Appliances	140.6	-	-	-	-	-	140.6	140.6	-	-	140.6	-	-	-	-
Space Heat	6,091.7	-	-	-	-	-	6,091.7	5,834.8	-	-	6,091.7	-	-	-	-
Space Cool	48.0	-	-	-	-	-	43.8	48.0	-	-	48.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	401.6	-	-	-	-	-	401.6	401.6	-	-	401.6	-	-	-	-
DHW	391.6	-	-	-	-	-	391.6	391.6	-	-	372.5	-	-	-	-
Total	7,924.1	-	-	-	-	-	7,919.9	7,667.3	-	-	7,905.0	-	-	-	-
Percent Change (%)	**-**	**-**	**-**	**-**	**-**	**-**	**0.1**	**3.2**	**-**	**-**	**0.2**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	144.7	-	-	-	-	-	139.5	144.7	-	-	144.7	-	-	-	-
Consumption (kWh)	400,238.0	-	-	-	-	-	399,059.0	400,238.0	-	-	400,238.0	-	-	-	-
Oil															
Consumption (L)	167,613.5	-	-	-	-	-	167,613.5	160,972.1	-	-	167,119.9	-	-	-	-
Energy Charges ($)															
Electricity	84,490.0	-	-	-	-	-	84,095.0	84,095.0	-	-	84,490.0	-	-	-	-
Oil	147,499.9	-	-	-	-	-	147,499.9	141,655.4	-	-	147,065.5	-	-	-	-
Total	231,989.9	-	-	-	-	-	231,594.9	225,750.4	-	-	231,555.5	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	1,943.7	-	1,943.7	-	1,943.7	-	-	-	-	-	1,943.7	1,943.7	1,943.7	-	1,943.7
Appliances	945.2	-	945.2	-	945.2	-	-	-	-	-	945.2	945.2	945.2	-	945.2
Space Heat	11,151.6	-	9,907.8	-	11,151.6	-	-	-	-	-	11,151.6	10,176.6	7,847.1	-	9,724.1
Space Cool	442.5	-	442.5	-	391.3	-	-	-	-	-	442.5	442.5	442.5	-	441.6
Heat Rejection	361.2	-	361.2	-	361.9	-	-	-	-	-	361.2	361.2	361.2	-	357.9
Pumps	1,665.7	-	1,665.7	-	1,665.7	-	-	-	-	-	1,665.7	1,665.8	1,665.6	-	1,665.6
Fans	661.1	-	661.1	-	661.1	-	-	-	-	-	661.1	677.7	681.6	-	654.6
DHW	3,396.8	-	3,396.8	-	3,396.8	-	-	-	-	-	3,231.3	3,396.8	3,396.8	-	3,396.8
Total	20,567.8	-	19,324.0	-	20,517.3	-	-	-	-	-	20,402.2	19,609.5	17,283.6	-	19,129.5
Percent Change (%)	**-**	**-**	**6.0**	**-**	**0.2**	**-**	**-**	**-**	**-**	**-**	**0.8**	**4.7**	**16.0**	**-**	**7.0**
Electricity															
Peak Demand (kW)	533.0	-	533.0	-	518.2	-	-	-	-	-	533.0	533.0	533.0	-	531.6
Consumption (kWh)	1,672,060.0	-	1,672,060.0	-	1,658,044.0	-	-	-	-	-	1,672,060.0	1,676,675.0	1,677,689.0	-	1,669,051.0
Oil															
Consumption (L)	376,120.6	-	343,966.0	-	376,120.6	-	-	-	-	-	371,841.1	350,915.7	290,686.9	-	339,214.7
Energy Charges ($)															
Electricity	349,660.0	-	349,660.0	-	346,549.0	-	-	-	-	-	349,660.0	350,583.0	350,808.0	-	349,038.0
Oil	330,986.1	-	302,690.1	-	330,986.1	-	-	-	-	-	327,220.2	308,805.8	255,804.4	-	298,508.9
Total	680,646.1	-	652,350.1	-	677,535.1	-	-	-	-	-	676,880.2	659,388.8	606,612.4	-	647,546.9

Yellowknife Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	2,053.4	2,053.4	-	-	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-	-	280.1	280.1	-	-	280.1	-	-	-	-
Space Heat	5,077.8	-	-	-	-	-	5,077.8	4,660.4	-	-	5,077.8	-	-	-	-
Space Cool	48.0	-	-	-	-	-	44.1	48.0	-	-	48.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	-	-	-	-
Fans	659.0	-	-	-	-	-	659.0	659.0	-	-	659.0	-	-	-	-
DHW	164.6	-	-	-	-	-	164.6	164.6	-	-	142.4	-	-	-	-
Total	8,282.8	-	-	-	-	-	8,278.9	7,865.4	-	-	8,260.7	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.0**	**5.0**	-	-	**0.3**	-	-	-	-
Electricity															
Peak Demand (kW)	254.3	-	-	-	-	-	249.0	254.3	-	-	254.3	-	-	-	-
Consumption (kWh)	923,746.0	-	-	-	-	-	922,657.0	923,746.0	-	-	923,746.0	-	-	-	-
Oil															
Consumption (L)	128,160.1	-	-	-	-	-	128,160.1	117,367.4	-	-	127,590.1	-	-	-	-
Energy Charges ($)															
Electricity	194,127.0	-	-	-	-	-	193,766.0	193,766.0	-	-	194,127.0	-	-	-	-
Oil	112,780.9	-	-	-	-	-	112,780.9	103,283.3	-	-	112,279.3	-	-	-	-
Total	306,907.9	-	-	-	-	-	306,546.9	297,049.3	-	-	306,406.3	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High	Mid-High	High
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	293.5	-	-	-	293.5	-	-	-	-
Appliances	41.3	-	-	-	-	-	41.3	-	-	-	41.3	-	-	-	-
Space Heat	3,274.9	-	-	-	-	-	3,274.9	-	-	-	3,274.9	-	-	-	-
Space Cool	1.8	-	-	-	-	-	1.7	-	-	-	1.8	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Pumps	0.0	-	-	-	-	-	0.0	-	-	-	0.0	-	-	-	-
Fans	119.4	-	-	-	-	-	119.4	-	-	-	119.4	-	-	-	-
DHW	121.6	-	-	-	-	-	121.6	-	-	-	112.5	-	-	-	-
Total	3,852.5	-	-	-	-	-	3,852.4	-	-	-	3,843.4	-	-	-	-
Percent Change (%)	-	-	-	-	-	-	**0.0**	-	-	-	**0.2**	-	-	-	-
Electricity															
Peak Demand (kW)	52.7	-	-	-	-	-	52.1	-	-	-	52.7	-	-	-	-
Consumption (kWh)	154,147.0	-	-	-	-	-	154,113.0	-	-	-	154,147.0	-	-	-	-
Oil															
Consumption (L)	85,253.7	-	-	-	-	-	85,253.7	-	-	-	85,016.4	-	-	-	-
Energy Charges ($)															
Electricity	33,271.0	-	-	-	-	-	33,250.0	-	-	-	33,271.0	-	-	-	-
Oil	75,023.3	-	-	-	-	-	75,023.3	-	-	-	74,814.4	-	-	-	-
Total	108,294.3	-	-	-	-	-	108,273.3	-	-	-	108,085.4	-	-	-	-

Yellowknife Results

(Energy Increase Compared to NECB)

Yellowknife Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	250.9	250.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Appliances	188.9	188.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	2,971.4	3,096.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Cool	30.8	30.8	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Rejection	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps	37.3	37.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Fans	42.2	42.2	-	-	-	-	-	-	-	-	-	-	-	-	-
DHW	1,637.5	1,637.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	5,158.9	5,283.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Change (%)	-	**-2.4**	-	-	-	-	-	-	-	-	-	-	-	-	-
Electricity															
Peak Demand (kW)	65.2	65.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumption (kWh)	162,347.0	162,347.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil															
Consumption (L)	118,264.7	121,494.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	35,862.0	35,862.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil	104,073.0	106,914.8	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	139,935.0	142,776.8	-	-	-	-	-	-	-	-	-	-	-	-	-

Building Type: Large Office

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,942.6	1,942.6	1,942.6	-	-	-	-	-	-	-	-	-	1,942.6	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-	-	-	-	-	-	-	-	1,689.0	-	-
Space Heat	2,884.8	3,039.9	3,536.7	-	-	-	-	-	-	-	-	-	4,721.1	-	-
Space Cool	222.3	222.3	222.3	-	-	-	-	-	-	-	-	-	214.6	-	-
Heat Rejection	404.9	404.9	404.9	-	-	-	-	-	-	-	-	-	404.9	-	-
Pumps	207.8	207.8	207.8	-	-	-	-	-	-	-	-	-	209.8	-	-
Fans	405.3	405.3	405.3	-	-	-	-	-	-	-	-	-	404.4	-	-
DHW	550.3	550.3	550.3	-	-	-	-	-	-	-	-	-	550.3	-	-
Total	8,307.1	8,462.1	8,958.9	-	-	-	-	-	-	-	-	-	10,136.7	-	-
Percent Change (%)	-	**-1.9**	**-7.8**	-	-	-	-	-	-	-	-	-	**-22.0**	-	-
Electricity															
Peak Demand (kW)	439.1	439.1	439.1	-	-	-	-	-	-	-	-	-	439.1	-	-
Consumption (kWh)	1,353,325.0	1,353,325.0	1,353,325.0	-	-	-	-	-	-	-	-	-	1,351,481.0	-	-
Oil															
Consumption (L)	88,807.7	92,819.8	105,663.7	-	-	-	-	-	-	-	-	-	136,285.4	-	-
Energy Charges ($)															
Electricity	282,133.0	282,133.0	282,133.0	-	-	-	-	-	-	-	-	-	281,724.0	-	-
Oil	78,150.7	81,681.4	92,984.0	-	-	-	-	-	-	-	-	-	119,931.1	-	-
Total	360,283.7	363,814.4	375,117.0	-	-	-	-	-	-	-	-	-	401,655.1	-	-

Yellowknife Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	850.7	-	-	-	-	-	-	850.7	-	-	-	-	-	-	-
Appliances	140.6	-	-	-	-	-	-	140.6	-	-	-	-	-	-	-
Space Heat	6,091.7	-	-	-	-	-	-	6,385.1	-	-	-	-	-	-	-
Space Cool	48.0	-	-	-	-	-	-	48.0	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	401.6	-	-	-	-	-	-	401.6	-	-	-	-	-	-	-
DHW	391.6	-	-	-	-	-	-	391.6	-	-	-	-	-	-	-
Total	7,924.1	-	-	-	-	-	-	8,217.5	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-3.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	144.7	-	-	-	-	-	-	144.7	-	-	-	-	-	-	-
Consumption (kWh)	400,238.0	-	-	-	-	-	-	400,238.0	-	-	-	-	-	-	-
Oil															
Consumption (L)	167,613.5	-	-	-	-	-	-	175,198.7	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	84,490.0	-	-	-	-	-	-	84,490.0	-	-	-	-	-	-	-
Oil	147,499.9	-	-	-	-	-	-	154,174.9	-	-	-	-	-	-	-
Total	231,989.9	-	-	-	-	-	-	238,664.9	-	-	-	-	-	-	-

Building Type: Secondary School

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	1,943.7	1,943.7	1,943.7	-	-	-	-	-	-	-	-	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-	-	-	-	-	-	-	945.2	945.2	-	-
Space Heat	11,151.6	11,753.4	13,493.1	-	-	-	-	-	-	-	-	12,643.3	14,034.8	-	-
Space Cool	442.5	442.5	442.5	-	-	-	-	-	-	-	-	442.5	442.5	-	-
Heat Rejection	361.2	361.2	361.2	-	-	-	-	-	-	-	-	361.2	361.2	-	-
Pumps	1,665.7	1,665.7	1,665.7	-	-	-	-	-	-	-	-	1,665.8	1,665.8	-	-
Fans	661.1	661.1	661.1	-	-	-	-	-	-	-	-	652.3	644.0	-	-
DHW	3,396.8	3,396.8	3,396.8	-	-	-	-	-	-	-	-	3,396.8	3,396.8	-	-
Total	20,567.8	21,169.6	22,909.3	-	-	-	-	-	-	-	-	22,050.7	23,433.9	-	-
Percent Change (%)	-	**-2.9**	**-11.4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-7.2**	**-13.9**	**-**	**-**
Electricity															
Peak Demand (kW)	533.0	533.0	533.0	-	-	-	-	-	-	-	-	533.0	532.9	-	-
Consumption (kWh)	1,672,060.0	1,672,060.0	1,672,060.0	-	-	-	-	-	-	-	-	1,669,616.0	1,667,313.0	-	-
Oil															
Consumption (L)	376,120.6	391,678.3	436,657.6	-	-	-	-	-	-	-	-	414,687.6	450,660.7	-	-
Energy Charges ($)															
Electricity	349,660.0	349,660.0	349,660.0	-	-	-	-	-	-	-	-	349,091.0	348,571.0	-	-
Oil	330,986.1	344,676.9	384,258.7	-	-	-	-	-	-	-	-	364,925.0	396,581.4	-	-
Total	680,646.1	694,336.9	733,918.7	-	-	-	-	-	-	-	-	714,016.0	745,152.4	-	-

Yellowknife Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	2,053.4	-	-	-	-	-	-	2,053.4	-	-	-	-	-	-	-
Appliances	280.1	-	-	-	-	-	-	280.1	-	-	-	-	-	-	-
Space Heat	5,077.8	-	-	-	-	-	-	4,663.2	-	-	-	-	-	-	-
Space Cool	48.0	-	-	-	-	-	-	48.0	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	659.0	-	-	-	-	-	-	659.0	-	-	-	-	-	-	-
DHW	164.6	-	-	-	-	-	-	164.6	-	-	-	-	-	-	-
Total	8,282.8	-	-	-	-	-	-	7,868.2	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**5.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	254.3	-	-	-	-	-	-	254.3	-	-	-	-	-	-	-
Consumption (kWh)	923,746.0	-	-	-	-	-	-	923,746.0	-	-	-	-	-	-	-
Oil															
Consumption (L)	128,160.1	-	-	-	-	-	-	117,367.4	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	194,127.0	-	-	-	-	-	-	193,766.0	-	-	-	-	-	-	-
Oil	112,780.9	-	-	-	-	-	-	103,283.3	-	-	-	-	-	-	-
Total	306,907.9	-	-	-	-	-	-	297,049.3	-	-	-	-	-	-	-

Building Type: Warehouse

		Boiler		Chiller		DX Cooling		Furnace		DHW		HRV		DCV	
	NECB	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)															
Lights	293.5	-	-	-	-	-	-	293.5	-	-	-	-	-	-	-
Appliances	41.3	-	-	-	-	-	-	41.3	-	-	-	-	-	-	-
Space Heat	3,274.9	-	-	-	-	-	-	3,292.8	-	-	-	-	-	-	-
Space Cool	1.8	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-
Heat Rejection	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pumps	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Fans	119.4	-	-	-	-	-	-	119.4	-	-	-	-	-	-	-
DHW	121.6	-	-	-	-	-	-	121.6	-	-	-	-	-	-	-
Total	3,852.5	-	-	-	-	-	-	3,870.5	-	-	-	-	-	-	-
Percent Change (%)	-	**-**	**-**	**-**	**-**	**-**	**-**	**-0.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Electricity															
Peak Demand (kW)	52.7	-	-	-	-	-	-	52.7	-	-	-	-	-	-	-
Consumption (kWh)	154,147.0	-	-	-	-	-	-	154,147.0	-	-	-	-	-	-	-
Oil															
Consumption (L)	85,253.7	-	-	-	-	-	-	85,717.4	-	-	-	-	-	-	-
Energy Charges ($)															
Electricity	33,271.0	-	-	-	-	-	-	33,271.0	-	-	-	-	-	-	-
Oil	75,023.3	-	-	-	-	-	-	75,431.3	-	-	-	-	-	-	-
Total	108,294.3	-	-	-	-	-	-	108,702.3	-	-	-	-	-	-	-

Appendix C: Detailed Energy Use Breakdown - Lighting Measures

Victoria Results

(Energy Savings Compared to NECB)

Building Type: Mid-rise Apartment

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-High**	**High**	**Mid-High**	**High**
End-Use (GJ)					
Lights	250.9	-	236.8	-	-
Appliances	188.9	-	188.9	-	-
Space Heat	1,086.6	-	1,101.4	-	-
Space Cool	52.3	-	50.8	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	26.3	-	26.3	-	-
Fans	42.7	-	42.6	-	-
DHW	1,267.5	-	1,267.5	-	-
Total	2,915.1	-	2,914.2	-	-
Percent Change (%)	**-**	**-**	**0.0**	**-**	**-**
Electricity					
Peak Demand (kW)	68.6	-	67.1	-	-
Consumption (kWh)	159,746.0	-	155,440.0	-	-
Natural Gas					
Consumption (m^3)	62,085.2	-	62,474.3	-	-
Energy Charges ($)					
Electricity	14,681.0	-	14,275.0	-	-
Natural Gas	29,408.0	-	29,592.0	-	-
Total	44,089.0	-	43,867.0	-	-

Building Type: Large Office

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-High**	**High**	**Mid-High**	**High**
End-Use (GJ)					
Lights	1,942.6	-	1,845.5	-	1,950.3
Appliances	1,689.0	-	1,689.0	-	1,689.0
Space Heat	1,359.1	-	1,386.0	-	1,359.1
Space Cool	402.1	-	397.2	-	402.1
Heat Rejection	484.8	-	481.1	-	484.8
Pumps	250.1	-	248.7	-	250.1
Fans	413.3	-	406.5	-	413.3
DHW	430.1	-	430.1	-	430.1
Total	6,971.2	-	6,884.1	-	6,978.9
Percent Change (%)	**-**	**-**	**1.2**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	466.2	-	458.2	-	466.2
Consumption (kWh)	1,439,439.0	-	1,407,772.0	-	1,441,576.0
Natural Gas					
Consumption (m^3)	47,468.0	-	48,184.6	-	47,468.0
Energy Charges ($)					
Electricity	94,138.0	-	92,100.0	-	94,237.0
Natural Gas	22,485.0	-	22,824.0	-	22,485.0
Total	116,623.0	-	114,924.0	-	116,722.0

Building Type: Strip Mall

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	850.7	-	805.9	-	-
Appliances	140.6	-	140.6	-	-
Space Heat	2,122.8	-	2,162.9	-	-
Space Cool	73.0	-	70.7	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	423.0	-	417.3	-	-
DHW	307.6	-	307.6	-	-
Total	3,917.6	-	3,904.9	-	-
Percent Change (%)	**-**	**-**	**0.3**	**-**	**-**
Electricity					
Peak Demand (kW)	174.3	-	170.2	-	-
Consumption (kWh)	413,114.0	-	398,453.0	-	-
Natural Gas					
Consumption (m^3)	64,484.0	-	65,547.7	-	-
Energy Charges ($)					
Electricity	29,056.0	-	28,229.0	-	-
Natural Gas	30,545.0	-	31,049.0	-	-
Total	59,601.0	-	59,278.0	-	-

Building Type: Secondary School

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,943.7	-	1,749.2	-	1,965.2
Appliances	945.2	-	945.2	-	945.2
Space Heat	4,520.9	-	4,597.3	-	4,520.9
Space Cool	557.4	-	543.9	-	557.4
Heat Rejection	355.6	-	346.6	-	355.6
Pumps	1,558.0	-	1,537.7	-	1,558.0
Fans	727.2	-	709.6	-	727.2
DHW	2,635.2	-	2,635.2	-	2,635.2
Total	13,243.2	-	13,064.5	-	13,264.7
Percent Change (%)	**-**	**-**	**1.3**	**-**	**-0.2**
Electricity					
Peak Demand (kW)	532.3	-	509.6	-	532.3
Consumption (kWh)	1,690,869.0	-	1,620,021.0	-	1,696,846.0
Natural Gas					
Consumption (m^3)	189,866.4	-	191,893.0	-	189,866.4
Energy Charges ($)					
Electricity	110,454.0	-	105,512.0	-	110,726.1
Natural Gas	87,773.0	-	88,710.0	-	87,773.0
Total	198,227.0	-	194,222.0	-	198,499.1

Victoria Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	2,053.4	-	1,946.5	-	-
Appliances	280.1	-	280.1	-	-
Space Heat	1,215.9	-	1,276.9	-	-
Space Cool	71.6	-	67.3	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	659.0	-	659.0	-	-
DHW	160.7	-	160.7	-	-
Total	4,440.6	-	4,390.5	-	-
Percent Change (%)	**-**	**-**	**1.1**	**-**	**-**
Electricity					
Peak Demand (kW)	283.9	-	275.4	-	-
Consumption (kWh)	865,634.0	-	835,610.0	-	-
Natural Gas					
Consumption (m^3)	35,137.7	-	36,674.5	-	-
Energy Charges ($)					
Electricity	56,832.0	-	54,878.0	-	-
Natural Gas	16,644.0	-	17,372.0	-	-
Total	73,476.0	-	72,250.0	-	-

Building Type: Warehouse

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	293.5	-	240.7	-	293.7
Appliances	41.3	-	41.3	-	41.3
Space Heat	1,400.1	-	1,455.1	-	1,400.1
Space Cool	1.5	-	1.5	-	1.5
Heat Rejection	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8
Total	1,975.7	-	1,977.8	-	1,975.9
Percent Change (%)	**-**	**-**	**-0.1**	**-**	**0.0**
Electricity					
Peak Demand (kW)	43.1	-	38.3	-	43.1
Consumption (kWh)	134,475.0	-	120,048.0	-	134,548.0
Natural Gas					
Consumption (m^3)	39,574.4	-	41,010.4	-	39,574.4
Energy Charges ($)					
Electricity	11,692.0	-	10,252.0	-	11,698.2
Natural Gas	18,745.0	-	19,426.0	-	18,745.0
Total	30,437.0	-	29,678.0	-	30,443.2

Victoria Results – Energy Savings Compared to NECB

Building Type: Mid-Rise Apartment

	NECB	Parking Garage Occupancy Sensors
End-Use (GJ)		
Lights	321.2	290.5
Appliances	188.9	188.9
Space Heat	1,112.4	1,115.3
Space Cool	56.1	54.7
Heat Rejection	0.0	0.0
Pumps	26.4	26.4
Fans	51.2	51.2
DHW	1,267.5	1,267.5
Total	3,023.7	2,994.4
Percent Change (%)	-	**1.0**
Electricity		
Peak Demand (kW)	72.7	72.0
Consumption (kWh)	182,816.0	173,899.0
Natural Gas		
Consumption (m^3)	62,762.6	62,838.1
Energy Charges ($)		
Electricity	16,533.0	15,904.0
Natural Gas	29,729.0	29,765.0
Total	46,262.0	45,669.0

Building Type: Large Office

	NECB	Continuous Dimming in Day Light Areas
End-Use (GJ)		
Lights	1,518.5	1,463.6
Appliances	1,689.0	1,689.0
Space Heat	1,515.0	1,560.6
Space Cool	375.9	374.9
Heat Rejection	466.8	466.2
Pumps	239.5	239.5
Fans	385.9	383.9
DHW	430.1	430.1
Total	6,620.8	6,607.8
Percent Change (%)	-	**0.2**
Electricity		
Peak Demand (kW)	402.3	402.0
Consumption (kWh)	1,298,794.0	1,282,519.0
Natural Gas		
Consumption (m^3)	51,607.9	52,814.4
Energy Charges ($)		
Electricity	83,568.0	82,641.0
Natural Gas	24,445.0	25,017.0
Total	108,013.0	107,658.0

Victoria Results

(Energy Increase Compared to NECB)

Building Type: Mid-rise Apartment

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	290.8	353.1	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,086.6	1,045.9	983.4	-	-
Space Cool	52.3	56.7	64.4	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	26.3	26.4	26.6	-	-
Fans	42.7	42.8	42.9	-	-
DHW	1,267.5	1,267.5	1,267.5	-	-
Total	2,915.1	2,918.9	2,926.7	-	-
Percent Change (%)	-	**-0.1**	**-0.4**	**-**	**-**
Electricity					
Peak Demand (kW)	68.6	72.8	79.3	-	-
Consumption (kWh)	159,746.0	171,977.0	191,290.0	-	-
Natural Gas					
Consumption (m^3)	62,085.2	61,018.7	59,381.2	-	-
Energy Charges ($)					
Electricity	14,681.0	15,820.0	17,344.0	-	-
Natural Gas	29,408.0	28,903.0	28,127.0	-	-
Total	44,089.0	44,723.0	45,471.0	-	-

Building Type: Large Office

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	2,183.4	3,459.5	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-
Space Heat	1,359.1	1,294.4	999.9	-	-
Space Cool	402.1	414.8	479.8	-	-
Heat Rejection	484.8	496.1	555.6	-	-
Pumps	250.1	253.6	253.6	-	-
Fans	413.3	430.8	430.8	-	-
DHW	430.1	430.1	430.1	-	-
Total	6,971.2	7,192.2	8,298.4	-	-
Percent Change (%)	-	**-3.2**	**-19.0**	**-**	**-**
Electricity					
Peak Demand (kW)	466.2	486.7	594.8	-	-
Consumption (kWh)	1,439,439.0	1,518,810.0	1,942,596.0	-	-
Natural Gas					
Consumption (m^3)	47,468.0	45,754.9	37,942.5	-	-
Energy Charges ($)					
Electricity	94,138.0	99,251.0	126,539.0	-	-
Natural Gas	22,485.0	21,673.0	17,972.0	-	-
Total	116,623.0	120,924.0	144,511.0	-	-

Building Type: Strip Mall

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	908.9	923.4	-	-
Appliances	140.6	140.6	140.6	-	-
Space Heat	2,122.8	2,071.3	2,058.5	-	-
Space Cool	73.0	76.1	76.8	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	423.0	430.4	432.3	-	-
DHW	307.6	307.6	307.6	-	-
Total	3,917.6	3,934.9	3,939.2	-	-
Percent Change (%)	-	**-0.4**	**-0.6**	**-**	**-**
Electricity					
Peak Demand (kW)	174.3	179.7	181.0	-	-
Consumption (kWh)	413,114.0	432,205.0	436,966.0	-	-
Natural Gas					
Consumption (m^3)	64,484.0	63,120.9	62,779.4	-	-
Energy Charges ($)					
Electricity	29,056.0	30,154.0	30,433.0	-	-
Natural Gas	30,545.0	29,898.0	29,738.0	-	-
Total	59,601.0	60,052.0	60,171.0	-	-

Building Type: Secondary School

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,943.7	2,442.0	3,579.0	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	4,520.9	4,334.7	3,950.6	-	-
Space Cool	557.4	592.8	677.2	-	-
Heat Rejection	355.6	378.7	430.3	-	-
Pumps	1,558.0	1,609.3	1,725.7	-	-
Fans	727.2	772.6	879.0	-	-
DHW	2,635.2	2,635.2	2,635.2	-	-
Total	13,243.2	13,710.5	14,822.1	-	-
Percent Change (%)	-	**-3.5**	**-11.9**	**-**	**-**
Electricity					
Peak Demand (kW)	532.3	590.4	723.2	-	-
Consumption (kWh)	1,690,869.0	1,872,410.0	2,287,869.0	-	-
Natural Gas					
Consumption (m^3)	189,866.4	184,925.9	174,731.4	-	-
Energy Charges ($)					
Electricity	110,454.0	123,138.0	152,190.0	-	-
Natural Gas	87,773.0	85,489.0	80,777.0	-	-
Total	198,227.0	208,627.0	232,967.0	-	-

Building Type: Big Box Retail

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	2,195.3	3,330.8	-	-
Appliances	280.1	280.1	280.1	-	-
Space Heat	1,215.9	1,138.0	615.9	-	-
Space Cool	71.6	77.7	141.1	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	659.0	659.0	659.0	-	-
DHW	160.7	160.7	160.7	-	-
Total	4,440.6	4,510.8	5,187.5	-	-
Percent Change (%)	-	**-1.6**	**-16.8**	**-**	**-**
Electricity					
Peak Demand (kW)	283.9	295.2	381.0	-	-
Consumption (kWh)	865,634.0	905,659.0	1,231,616.0	-	-
Natural Gas					
Consumption (m^3)	35,137.7	33,175.5	19,997.1	-	-
Energy Charges ($)					
Electricity	56,832.0	59,431.0	80,823.0	-	-
Natural Gas	16,644.0	15,715.0	9,472.0	-	-
Total	73,476.0	75,146.0	90,295.0	-	-

Building Type: Warehouse

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	351.8	434.8	-	-
Appliances	41.3	41.3	41.3	-	-
Space Heat	1,400.1	1,340.9	1,259.3	-	-
Space Cool	1.5	1.6	1.8	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	119.4	119.4	119.4	-	-
DHW	119.8	119.8	119.8	-	-
Total	1,975.7	1,974.9	1,976.5	-	-
Percent Change (%)	-	**0.04**	**-0.04**	**-**	**-**
Electricity					
Peak Demand (kW)	43.1	48.3	55.7	-	-
Consumption (kWh)	134,475.0	150,450.0	173,184.0	-	-
Natural Gas					
Consumption (m^3)	39,574.4	38,029.3	35,899.1	-	-
Energy Charges ($)					
Electricity	11,692.0	13,311.0	15,531.0	-	-
Natural Gas	18,745.0	18,013.0	17,005.0	-	-
Total	30,437.0	31,324.0	32,536.0	-	-

Windsor Results

(Energy Savings Compared to NECB)

Windsor Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	250.9	-	236.8	-	-
Appliances	188.9	-	188.9	-	-
Space Heat	1,333.1	-	1,344.7	-	-
Space Cool	170.0	-	167.2	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	31.8	-	31.8	-	-
Fans	43.3	-	43.2	-	-
DHW	1,274.5	-	1,274.5	-	-
Total	3,292.5	-	3,287.1	-	-
Percent Change (%)	**-**	**-**	**0.2**	**-**	**-**
Electricity					
Peak Demand (kW)	84.0	-	82.4	-	-
Consumption (kWh)	195,227.0	-	190,556.0	-	-
Natural Gas					
Consumption (m^3)	68,710.8	-	69,015.9	-	-
Energy Charges ($)					
Electricity	17,878.0	-	17,460.0	-	-
Natural Gas	16,555.0	-	16,628.0	-	-
Total	34,433.0	-	34,088.0	-	-

Building Type: Large Office

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,942.6	-	1,845.5	-	1,950.3
Appliances	1,689.0	-	1,689.0	-	1,689.0
Space Heat	1,876.5	-	1,904.8	-	1,876.5
Space Cool	736.4	-	728.8	-	736.4
Heat Rejection	676.0	-	671.1	-	676.0
Pumps	292.9	-	291.4	-	292.9
Fans	488.7	-	480.7	-	488.7
DHW	430.0	-	430.0	-	430.0
Total	8,132.1	-	8,041.3	-	8,139.8
Percent Change (%)	**-**	**-**	**1.1**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	521.1	-	512.8	-	521.1
Consumption (kWh)	1,618,220.0	-	1,585,141.0	-	1,620,357.0
Natural Gas					
Consumption (m^3)	61,197.8	-	61,948.0	-	61,197.8
Energy Charges ($)					
Electricity	134,587.0	-	131,917.0	-	134,710.6
Natural Gas	14,730.0	-	14,910.0	-	14,730.0
Total	149,317.0	-	146,827.0	-	149,440.6

Windsor Results – Energy Savings Compared to NECB

Building Type: Strip Mall

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	850.7	-	805.9	-	-
Appliances	140.6	-	140.6	-	-
Space Heat	2,552.0	-	2,585.4	-	-
Space Cool	308.6	-	302.6	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	456.9	-	451.3	-	-
DHW	308.6	-	308.6	-	-
Total	4,617.4	-	4,594.3	-	-
Percent Change (%)	**-**	**-**	**0.5**	**-**	**-**
Electricity					
Peak Demand (kW)	204.0	-	199.9	-	-
Consumption (kWh)	487,991.0	-	472,314.0	-	-
Natural Gas					
Consumption (m^3)	75,901.8	-	76,786.3	-	-
Energy Charges ($)					
Electricity	42,192.0	-	40,914.0	-	-
Natural Gas	18,254.0	-	18,466.0	-	-
Total	60,446.0	-	59,380.0	-	-

Building Type: Secondary School

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,943.7	-	1,749.2	-	1,965.2
Appliances	945.2	-	945.2	-	945.2
Space Heat	5,802.6	-	5,854.1	-	5,802.6
Space Cool	1,072.4	-	1,051.1	-	1,072.4
Heat Rejection	717.3	-	707.1	-	717.3
Pumps	1,900.1	-	1,876.2	-	1,900.1
Fans	806.2	-	787.8	-	806.2
DHW	2,651.1	-	2,651.1	-	2,651.1
Total	15,838.7	-	15,621.7	-	15,860.2
Percent Change (%)	**-**	**-**	**1.4**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	688.8	-	665.6	-	688.8
Consumption (kWh)	2,051,375.0	-	1,976,819.0	-	2,057,352.0
Natural Gas					
Consumption (m^3)	224,296.0	-	225,662.0	-	224,296.0
Energy Charges ($)					
Electricity	170,548.0	-	164,155.0	-	170,893.8
Natural Gas	53,685.0	-	54,010.0	-	53,685.0
Total	224,233.0	-	218,165.0	-	224,578.8

Windsor Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	2,053.4	-	1,946.5	-	-
Appliances	280.1	-	280.1	-	-
Space Heat	1,757.7	-	1,812.9	-	-
Space Cool	302.9	-	293.3	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	659.0	-	659.0	-	-
DHW	160.7	-	160.7	-	-
Total	5,213.6	-	5,152.4	-	-
Percent Change (%)	**-**	**-**	**1.2**	**-**	**-**
Electricity					
Peak Demand (kW)	299.5	-	291.2	-	-
Consumption (kWh)	940,595.0	-	909,093.0	-	-
Natural Gas					
Consumption (m^3)	48,486.9	-	49,872.5	-	-
Energy Charges ($)					
Electricity	78,756.0	-	76,188.0	-	-
Natural Gas	11,677.0	-	12,010.0	-	-
Total	90,433.0	-	88,198.0	-	-

Building Type: Warehouse

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	293.5	-	240.7	-	293.7
Appliances	41.3	-	41.3	-	41.3
Space Heat	1,527.0	-	1,569.7	-	1,527.0
Space Cool	17.9	-	17.5	-	17.9
Heat Rejection	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8
Total	2,119.0	-	2,108.5	-	2,119.3
Percent Change (%)	**-**	**-**	**0.5**	**-**	**0.0**
Electricity					
Peak Demand (kW)	57.4	-	52.6	-	57.4
Consumption (kWh)	142,848.0	-	128,325.0	-	142,921.0
Natural Gas					
Consumption (m^3)	42,577.9	-	43,686.3	-	42,577.9
Energy Charges ($)					
Electricity	12,620.0	-	11,341.0	-	12,624.2
Natural Gas	10,268.0	-	10,535.0	-	10,268.0
Total	22,888.0	-	21,876.0	-	22,892.2

Windsor Results – Energy Savings Compared to NECB

Building Type: Mid-Rise Apartment

	NECB	Parking Garage Occupancy Sensors
End-Use (GJ)		
Lights	321.2	290.5
Appliances	188.9	188.9
Space Heat	1,381.9	1,386.8
Space Cool	178.2	175.2
Heat Rejection	0.0	0.0
Pumps	31.9	31.9
Fans	51.8	51.8
DHW	1,274.5	1,274.5
Total	3,428.4	3,399.5
Percent Change (%)	-	**0.8**
Electricity		
Peak Demand (kW)	88.2	87.5
Consumption (kWh)	219,225.0	210,154.0
Natural Gas		
Consumption (m^3)	69,995.6	70,127.1
Energy Charges ($)		
Electricity	19,651.0	19,057.0
Natural Gas	16,863.0	16,894.0
Total	36,514.0	35,951.0

Building Type: Large Office

	NECB	Continuous Dimming in Day Light Areas
End-Use (GJ)		
Lights	1,478.1	1,430.8
Appliances	1,689.0	1,689.0
Space Heat	2,054.3	2,088.3
Space Cool	693.1	691.1
Heat Rejection	640.6	640.1
Pumps	282.9	282.8
Fans	452.4	449.8
DHW	430.0	430.0
Total	7,720.4	7,701.9
Percent Change (%)	-	**0.2**
Electricity		
Peak Demand (kW)	451.8	451.5
Consumption (kWh)	1,454,466.0	1,439,883.0
Natural Gas		
Consumption (m^3)	65,917.2	66,815.7
Energy Charges ($)		
Electricity	119,607.0	118,336.0
Natural Gas	15,862.0	16,078.0
Total	135,469.0	134,414.0

Windsor Results

(Energy Increase Compared to NECB)

Building Type: Mid-rise Apartment

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	290.8	353.1	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,333.1	1,301.4	1,252.9	-	-
Space Cool	170.0	177.9	189.5	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	31.8	32.0	32.2	-	-
Fans	43.3	43.4	43.5	-	-
DHW	1,274.5	1,274.5	1,274.5	-	-
Total	3,292.5	3,308.8	3,334.6	-	-
Percent Change (%)	-	**-0.5**	**-1.3**	**-**	**-**
Electricity					
Peak Demand (kW)	84.0	88.5	94.4	-	-
Consumption (kWh)	195,227.0	208,458.0	228,925.0	-	-
Natural Gas					
Consumption (m^3)	68,710.8	67,879.4	66,608.6	-	-
Energy Charges ($)					
Electricity	17,878.0	19,063.0	17,878.0	-	-
Natural Gas	16,555.0	16,356.0	16,869.0	-	-
Total	34,433.0	35,419.0	34,747.0	-	-

Building Type: Large Office

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	2,183.4	3,459.5	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-
Space Heat	1,876.5	1,808.0	1,487.6	-	-
Space Cool	736.4	755.1	853.1	-	-
Heat Rejection	676.0	688.1	751.5	-	-
Pumps	292.9	296.6	316.2	-	-
Fans	488.7	509.0	628.1	-	-
DHW	430.0	430.0	430.0	-	-
Total	8,132.1	8,359.1	9,614.9	-	-
Percent Change (%)	-	**-2.8**	**-18.2**	**-**	**-**
Electricity					
Peak Demand (kW)	521.1	541.6	650.3	-	-
Consumption (kWh)	1,618,220.0	1,700,311.0	2,138,135.0	-	-
Natural Gas					
Consumption (m^3)	61,197.8	59,381.2	50,877.4	-	-
Energy Charges ($)					
Electricity	134,587.0	141,216.0	176,574.0	-	-
Natural Gas	14,730.0	14,294.0	12,256.0	-	-
Total	149,317.0	155,510.0	188,830.0	-	-

Building Type: Strip Mall

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-Low**	**Low**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	850.7	908.9	923.4	-	-
Appliances	140.6	140.6	140.6	-	-
Space Heat	2,552.0	2,509.2	2,498.6	-	-
Space Cool	308.6	316.1	318.0	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	456.9	464.1	466.0	-	-
DHW	308.6	308.6	308.6	-	-
Total	4,617.4	4,647.5	4,655.1	-	-
Percent Change (%)	-	**-0.7**	**-0.8**	**-**	**-**
Electricity					
Peak Demand (kW)	204.0	290.5	210.8	-	-
Consumption (kWh)	487,991.0	508,239.0	513,326.0	-	-
Natural Gas					
Consumption (m^3)	75,901.8	74,762.5	74,482.6	-	-
Energy Charges ($)					
Electricity	42,192.0	43,844.0	44,258.0	-	-
Natural Gas	18,254.0	17,982.0	17,914.0	-	-
Total	60,446.0	61,826.0	62,172.0	-	-

Building Type: Secondary School

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-Low**	**Low**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	1,943.7	2,442.0	3,579.0	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	5,802.6	5,676.2	5,392.6	-	-
Space Cool	1,072.4	1,127.3	1,252.5	-	-
Heat Rejection	717.3	743.1	801.1	-	-
Pumps	1,900.1	1,962.2	2,099.2	-	-
Fans	806.2	853.9	964.7	-	-
DHW	2,651.1	2,651.1	2,651.1	-	-
Total	15,838.7	16,401.0	17,685.4	-	-
Percent Change (%)	-	**-3.6**	**-11.7**	**-**	**-**
Electricity					
Peak Demand (kW)	688.8	748.2	883.3	-	-
Consumption (kWh)	2,051,375.0	2,242,693.0	2,678,233.0	-	-
Natural Gas					
Consumption (m^3)	224,296.0	220,939.8	213,415.7	-	-
Energy Charges ($)					
Electricity	170,548.0	186,935.0	224,244.0	-	-
Natural Gas	53,685.0	52,888.0	51,100.0	-	-
Total	224,233.0	239,823.0	275,344.0	-	-

Windsor Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	2,195.3	3,330.8	-	-
Appliances	280.1	280.1	280.1	-	-
Space Heat	1,757.7	1,685.2	1,168.3	-	-
Space Cool	302.9	315.8	422.5	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	659.0	659.0	659.0	-	-
DHW	160.7	160.7	160.7	-	-
Total	5,213.6	5,296.0	6,021.3	-	-
Percent Change (%)	-	**-1.6**	**-15.5**	**-**	**-**
Electricity					
Peak Demand (kW)	299.5	310.5	393.8	-	-
Consumption (kWh)	940,595.0	982,541.0	1,319,886.0	-	-
Natural Gas					
Consumption (m^3)	48,486.9	46,667.4	33,687.8	-	-
Energy Charges ($)					
Electricity	78,756.0	82,169.0	109,377.0	-	-
Natural Gas	11,677.0	11,241.0	8,124.0	-	-
Total	90,433.0	93,410.0	117,501.0	-	-

Building Type: Warehouse

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	351.8	434.8	-	-
Appliances	41.3	41.3	41.3	-	-
Space Heat	1,527.0	1,480.6	1,416.8	-	-
Space Cool	17.9	18.5	19.2	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	119.4	119.4	119.4	-	-
DHW	119.8	119.8	119.8	-	-
Total	2,119.0	2,131.4	2,151.3	-	-
Percent Change (%)	-	**-0.6**	**-1.5**	**-**	**-**
Electricity					
Peak Demand (kW)	57.4	62.6	70.2	-	-
Consumption (kWh)	142,848.0	158,961.0	181,862.0	-	-
Natural Gas					
Consumption (m^3)	42,577.9	41,368.7	39,708.8	-	-
Energy Charges ($)					
Electricity	12,620.0	14,038.0	16,058.0	-	-
Natural Gas	10,268.0	9,977.0	9,577.0	-	-
Total	22,888.0	24,015.0	25,635.0	-	-

Montreal Results

(Energy Savings Compared to NECB)

Montreal Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	250.9	-	236.8	-	-
Appliances	188.9	-	188.9	-	-
Space Heat	1,675.7	-	1,687.7	-	-
Space Cool	123.2	-	120.9	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	33.0	-	33.0	-	-
Fans	43.1	-	43.1	-	-
DHW	1,342.3	-	1,342.3	-	-
Total	3,657.1	-	3,652.6	-	-
Percent Change (%)	**-**	**-**	**0.1**	**-**	**-**
Electricity					
Peak Demand (kW)	89.1	-	87.6	-	-
Consumption (kWh)	183,018.0	-	178,471.0	-	-
Natural Gas					
Consumption (m^3)	79,549.1	-	79,865.4	-	-
Energy Charges ($)					
Electricity	18,740.0	-	18,285.0	-	-
Natural Gas	25,827.0	-	25,927.0	-	-
Total	44,567.0	-	44,212.0	-	-

Building Type: Large Office

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,942.6	-	1,845.5	-	1,950.3
Appliances	1,689.0	-	1,689.0	-	1,689.0
Space Heat	2,325.4	-	2,359.8	-	2,325.4
Space Cool	604.2	-	598.0	-	604.2
Heat Rejection	746.6	-	742.1	-	746.6
Pumps	302.2	-	300.7	-	302.2
Fans	457.2	-	450.1	-	457.2
DHW	454.0	-	454.0	-	454.0
Total	8,521.3	-	8,439.1	-	8,529.0
Percent Change (%)	**-**	**-**	**1.0**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	543.2	-	535.0	-	543.2
Consumption (kWh)	1,594,969.0	-	1,562,591.0	-	1,597,106.0
Natural Gas					
Consumption (m^3)	73,743.6	-	74,656.2	-	73,743.6
Energy Charges ($)					
Electricity	136,034.0	-	133,341.0	-	136,130.4
Natural Gas	23,761.0	-	24,046.0	-	23,761.0
Total	159,795.0	-	157,387.0	-	159,891.4

Montreal Results – Energy Savings Compared to NECB

Building Type: Strip Mall

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	850.7	-	805.9	-	-
Appliances	140.6	-	140.6	-	-
Space Heat	3,358.1	-	3,394.4	-	-
Space Cool	214.8	-	210.2	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	439.4	-	433.8	-	-
DHW	324.0	-	324.0	-	-
Total	5,327.5	-	5,308.8	-	-
Percent Change (%)	**-**	**-**	**0.4**	**-**	**-**
Electricity					
Peak Demand (kW)	214.5	-	210.5	-	-
Consumption (kWh)	457,073.0	-	441,790.0	-	-
Natural Gas					
Consumption (m^3)	97,693.2	-	98,656.1	-	-
Energy Charges ($)					
Electricity	42,647.0	-	41,356.0	-	-
Natural Gas	31,258.0	-	31,559.0	-	-
Total	73,905.0	-	72,915.0	-	-

Building Type: Secondary School

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,943.7	-	1,749.2	-	1,965.2
Appliances	945.2	-	945.2	-	945.2
Space Heat	7,372.6	-	7,429.6	-	7,372.6
Space Cool	910.6	-	892.8	-	910.6
Heat Rejection	755.6	-	746.2	-	755.6
Pumps	1,922.8	-	1,899.0	-	1,922.8
Fans	781.2	-	763.6	-	781.2
DHW	2,790.2	-	2,790.2	-	2,790.2
Total	17,421.8	-	17,215.8	-	17,443.3
Percent Change (%)	**-**	**-**	**1.2**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	690.3	-	667.6	-	690.3
Consumption (kWh)	2,016,402.0	-	1,943,338.0	-	2,022,379.0
Natural Gas					
Consumption (m^3)	269,639.4	-	271,153.8	-	269,639.4
Energy Charges ($)					
Electricity	171,479.0	-	164,831.0	-	171,748.6
Natural Gas	84,360.0	-	84,824.0	-	84,360.0
Total	255,839.0	-	249,655.0	-	256,108.6

Montreal Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	2,053.4	-	1,946.5	-	-
Appliances	280.1	-	280.1	-	-
Space Heat	2,483.9	-	2,547.2	-	-
Space Cool	247.1	-	238.6	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	659.0	-	659.0	-	-
DHW	160.7	-	160.7	-	-
Total	5,884.1	-	5,832.1	-	-
Percent Change (%)	**-**	**-**	**0.9**	**-**	**-**
Electricity					
Peak Demand (kW)	347.0	-	338.4	-	-
Consumption (kWh)	936,257.0	-	905,181.0	-	-
Natural Gas					
Consumption (m^3)	66,689.8	-	68,279.7	-	-
Energy Charges ($)					
Electricity	84,145.0	-	81,496.0	-	-
Natural Gas	21,488.0	-	21,987.0	-	-
Total	105,633.0	-	103,483.0	-	-

Building Type: Warehouse

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	293.5	-	240.7	-	293.7
Appliances	41.3	-	41.3	-	41.3
Space Heat	1,894.7	-	1,940.7	-	1,894.7
Space Cool	11.6	-	11.1	-	11.6
Heat Rejection	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8
Total	2,480.3	-	2,473.1	-	2,480.6
Percent Change (%)	**-**	**-**	**0.3**	**-**	**0.0**
Electricity					
Peak Demand (kW)	49.9	-	45.1	-	49.9
Consumption (kWh)	144,195.0	-	129,714.0	-	144,268.0
Natural Gas					
Consumption (m^3)	52,036.2	-	53,225.9	-	52,036.2
Energy Charges ($)					
Electricity	13,670.0	-	12,281.0	-	13,673.3
Natural Gas	16,939.0	-	17,319.0	-	16,939.0
Total	30,609.0	-	29,600.0	-	30,612.3

Montreal Results – Energy Savings Compared to NECB

Building Type: Mid-Rise Apartment

	NECB	Parking Garage Occupancy Sensors
End-Use (GJ)		
Lights	321.2	290.5
Appliances	188.9	188.9
Space Heat	1,755.5	1,761.6
Space Cool	130.7	129.1
Heat Rejection	0.0	0.0
Pumps	33.1	33.1
Fans	51.6	51.6
DHW	1,342.3	1,342.3
Total	3,823.2	3,797.0
Percent Change (%)	-	**0.7**
Electricity		
Peak Demand (kW)	93.5	92.8
Consumption (kWh)	207,111.0	198,113.0
Natural Gas		
Consumption (m^3)	81,656.8	81,819.2
Energy Charges ($)		
Electricity	20,495.0	19,972.0
Natural Gas	26,492.0	26,543.0
Total	46,987.0	46,515.0

Building Type: Large Office

	NECB	Continuous Dimming in Day Light Areas
End-Use (GJ)		
Lights	1,480.7	1,433.5
Appliances	1,689.0	1,689.0
Space Heat	2,525.7	2,561.4
Space Cool	568.1	566.5
Heat Rejection	711.2	711.0
Pumps	287.4	287.3
Fans	427.9	425.5
DHW	454.0	454.0
Total	8,143.9	8,128.2
Percent Change (%)	-	**0.2**
Electricity		
Peak Demand (kW)	473.8	473.7
Consumption (kWh)	1,434,530.0	1,420,228.0
Natural Gas		
Consumption (m^3)	79,059.2	80,008.1
Energy Charges ($)		
Electricity	120,479.0	119,224.0
Natural Gas	25,433.0	25,729.0
Total	145,912.0	144,953.0

Montreal Results

(Energy Increase Compared to NECB)

Building Type: Mid-rise Apartment

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	290.8	353.1	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,675.7	1,641.4	1,589.3	-	-
Space Cool	123.2	129.8	140.4	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	33.0	33.1	33.3	-	-
Fans	43.1	43.2	43.4	-	-
DHW	1,342.3	1,342.3	1,342.3	-	-
Total	3,657.1	3,669.5	3,690.7	-	-
Percent Change (%)	-	**-0.3**	**-0.9**	**-**	**-**
Electricity					
Peak Demand (kW)	89.1	93.6	100.5	-	-
Consumption (kWh)	183,018.0	195,875.0	216,067.0	-	-
Natural Gas					
Consumption (m^3)	79,549.1	78,650.5	77,284.6	-	-
Energy Charges ($)					
Electricity	18,740.0	20,029.0	22,049.0	-	-
Natural Gas	25,827.0	25,543.0	25,112.0	-	-
Total	44,567.0	45,572.0	47,161.0	-	-

Building Type: Large Office

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	2,183.4	3,459.5	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-
Space Heat	2,325.4	2,245.4	1,866.3	-	-
Space Cool	604.2	619.6	699.0	-	-
Heat Rejection	746.6	757.7	816.5	-	-
Pumps	302.2	306.0	325.1	-	-
Fans	457.2	475.7	585.9	-	-
DHW	454.0	454.0	454.0	-	-
Total	8,521.3	8,730.7	9,895.2	-	-
Percent Change (%)	-	**-2.5**	**-16.1**	**-**	**-**
Electricity					
Peak Demand (kW)	543.2	563.6	671.2	-	-
Consumption (kWh)	1,594,969.0	1,675,379.0	2,104,157.0	-	-
Natural Gas					
Consumption (m^3)	73,743.6	71,621.9	61,561.7	-	-
Energy Charges ($)					
Electricity	136,034.0	142,723.0	178,110.0	-	-
Natural Gas	23,761.0	23,097.0	19,944.0	-	-
Total	159,795.0	165,820.0	198,054.0	-	-

Building Type: Strip Mall

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	908.9	923.4	-	-
Appliances	140.6	140.6	140.6	-	-
Space Heat	3,358.1	3,311.3	3,299.6	-	-
Space Cool	214.8	220.8	222.2	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	439.4	446.8	448.6	-	-
DHW	324.0	324.0	324.0	-	-
Total	5,327.5	5,352.4	5,358.5	-	-
Percent Change (%)	-	**-0.5**	**-0.6**	**-**	**-**
Electricity					
Peak Demand (kW)	214.5	220.0	221.4	-	-
Consumption (kWh)	457,073.0	476,954.0	481,902.0	-	-
Natural Gas					
Consumption (m^3)	97,693.2	96,455.9	96,142.4	-	-
Energy Charges ($)					
Electricity	42,647.0	44,334.0	44,754.0	-	-
Natural Gas	31,258.0	30,870.0	30,772.0	-	-
Total	73,905.0	75,204.0	75,526.0	-	-

Building Type: Secondary School

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,943.7	2,442.0	3,579.0	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	7,372.6	7,233.4	6,902.1	-	-
Space Cool	910.6	956.7	1,062.2	-	-
Heat Rejection	755.6	780.7	836.7	-	-
Pumps	1,922.8	1,984.6	2,120.0	-	-
Fans	781.2	826.6	931.6	-	-
DHW	2,790.2	2,790.2	2,790.2	-	-
Total	17,421.8	17,959.4	19,166.9	-	-
Percent Change (%)	-	**-3.1**	**-10.0**	**-**	**-**
Electricity					
Peak Demand (kW)	690.3	748.9	882.0	-	-
Consumption (kWh)	2,016,402.0	2,204,390.0	2,631,828.0	-	-
Natural Gas					
Consumption (m^3)	269,639.4	265,944.5	257,158.0	-	-
Energy Charges ($)					
Electricity	171,479.0	188,253.0	225,308.0	-	-
Natural Gas	84,360.0	83,229.0	80,539.0	-	-
Total	255,839.0	271,482.0	305,847.0	-	-

Building Type: Big Box Retail

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-Low**	**Low**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	2,053.4	2,195.3	3,330.8	-	-
Appliances	280.1	280.1	280.1	-	-
Space Heat	2,483.9	2,401.5	1,805.8	-	-
Space Cool	247.1	258.7	355.4	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	659.0	659.0	659.0	-	-
DHW	160.7	160.7	160.7	-	-
Total	5,884.1	5,955.3	6,591.7	-	-
Percent Change (%)	-	**-1.2**	**-12.0**	**-**	**-**
Electricity					
Peak Demand (kW)	347.0	358.3	447.9	-	-
Consumption (kWh)	936,257.0	977,667.0	1,310,854.0	-	-
Natural Gas					
Consumption (m^3)	66,689.8	64,624.0	49,684.9	-	-
Energy Charges ($)					
Electricity	84,145.0	87,723.0	115,985.0	-	-
Natural Gas	21,488.0	20,836.0	16,093.0	-	-
Total	105,633.0	108,559.0	132,078.0	-	-

Building Type: Warehouse

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-Low**	**Low**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	293.5	351.8	434.8	-	-
Appliances	41.3	41.3	41.3	-	-
Space Heat	1,894.7	1,845.0	1,776.1	-	-
Space Cool	11.6	12.0	12.4	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	119.4	119.4	119.4	-	-
DHW	119.8	119.8	119.8	-	-
Total	2,480.3	2,489.4	2,503.9	-	-
Percent Change (%)	-	**-0.4**	**-0.9**	**-**	**-**
Electricity					
Peak Demand (kW)	49.9	55.2	62.8	-	-
Consumption (kWh)	144,195.0	160,207.0	182,943.0	-	-
Natural Gas					
Consumption (m^3)	52,036.2	50,745.8	48,959.9	-	-
Energy Charges ($)					
Electricity	13,670.0	15,207.0	17,396.0	-	-
Natural Gas	16,939.0	16,525.0	15,955.0	-	-
Total	30,609.0	31,732.0	33,351.0	-	-

Ottawa Results

(Energy Savings Compared to NECB)

Ottawa Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	250.9	-	236.8	-	-
Appliances	188.9	-	188.9	-	-
Space Heat	1,741.5	-	1,754.2	-	-
Space Cool	114.3	-	112.1	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	33.2	-	33.2	-	-
Fans	43.4	-	43.3	-	-
DHW	1,356.0	-	1,356.0	-	-
Total	3,728.2	-	3,724.5	-	-
Percent Change (%)	**-**	**-**	**0.1**	**-**	**-**
Electricity					
Peak Demand (kW)	93.1	-	91.5	-	-
Consumption (kWh)	180,790.0	-	176,275.0	-	-
Natural Gas					
Consumption (m^3)	81,651.2	-	81,981.5	-	-
Energy Charges ($)					
Electricity	18,766.0	-	18,390.0	-	-
Natural Gas	22,450.0	-	22,536.0	-	-
Total	41,216.0	-	40,926.0	-	-

Building Type: Large Office

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,942.6	-	1,845.5	-	1,950.3
Appliances	1,689.0	-	1,689.0	-	1,689.0
Space Heat	2,498.1	-	2,533.7	-	2,498.1
Space Cool	563.1	-	557.0	-	563.1
Heat Rejection	746.5	-	741.7	-	746.5
Pumps	293.9	-	292.3	-	293.9
Fans	436.5	-	429.5	-	436.5
DHW	458.5	-	458.5	-	458.5
Total	8,628.3	-	8,547.1	-	8,636.0
Percent Change (%)	**-**	**-**	**0.9**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	552.6	-	544.2	-	552.6
Consumption (kWh)	1,575,455.0	-	1,543,018.0	-	1,577,592.0
Natural Gas					
Consumption (m^3)	78,446.2	-	79,389.5	-	78,446.2
Energy Charges ($)					
Electricity	126,158.0	-	123,663.0	-	126,279.4
Natural Gas	21,484.0	-	21,727.0	-	21,484.0
Total	147,642.0	-	145,390.0	-	147,763.4

Ottawa Results – Energy Savings Compared to NECB

Building Type: Strip Mall

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	850.7	-	805.9	-	-
Appliances	140.6	-	140.6	-	-
Space Heat	3,491.0	-	3,527.2	-	-
Space Cool	193.7	-	189.1	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	435.2	-	429.6	-	-
DHW	327.1	-	327.1	-	-
Total	5,438.2	-	5,419.4	-	-
Percent Change (%)	**-**	**-**	**0.3**	**-**	**-**
Electricity					
Peak Demand (kW)	233.6	-	229.3	-	-
Consumption (kWh)	450,043.0	-	434,762.0	-	-
Natural Gas					
Consumption (m^3)	101,301.3	-	102,264.2	-	-
Energy Charges ($)					
Electricity	40,068.0	-	38,874.0	-	-
Natural Gas	27,369.0	-	27,618.0	-	-
Total	67,437.0	-	66,492.0	-	-

Building Type: Secondary School

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,943.7	-	1,749.2	-	1,965.2
Appliances	945.2	-	945.2	-	945.2
Space Heat	7,615.4	-	7,669.7	-	7,615.4
Space Cool	888.4	-	870.0	-	888.4
Heat Rejection	814.7	-	804.6	-	814.7
Pumps	1,892.1	-	1,865.6	-	1,892.1
Fans	769.9	-	752.3	-	769.9
DHW	2,818.5	-	2,818.5	-	2,818.5
Total	17,688.0	-	17,475.2	-	17,709.5
Percent Change (%)	**-**	**-**	**1.2**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	723.2	-	700.0	-	723.2
Consumption (kWh)	2,015,002.0	-	1,940,802.0	-	2,020,979.0
Natural Gas					
Consumption (m^3)	276,836.0	-	278,277.6	-	276,836.0
Energy Charges ($)					
Electricity	160,540.0	-	154,522.0	-	160,879.6
Natural Gas	72,036.0	-	72,403.0	-	72,036.0
Total	232,576.0	-	226,925.0	-	232,915.6

Ottawa Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	2,053.4	-	1,946.5	-	-
Appliances	280.1	-	280.1	-	-
Space Heat	2,611.3	-	2,673.3	-	-
Space Cool	228.0	-	220.1	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	659.0	-	659.0	-	-
DHW	160.7	-	160.7	-	-
Total	5,992.4	-	5,939.6	-	-
Percent Change (%)	**-**	**-**	**0.9**	**-**	**-**
Electricity					
Peak Demand (kW)	362.3	-	353.2	-	-
Consumption (kWh)	933,866.0	-	902,985.0	-	-
Natural Gas					
Consumption (m^3)	69,791.2	-	71,344.8	-	-
Energy Charges ($)					
Electricity	78,160.0	-	75,738.0	-	-
Natural Gas	19,190.0	-	19,591.0	-	-
Total	97,350.0	-	95,329.0	-	-

Building Type: Warehouse

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	293.5	-	240.7	-	293.7
Appliances	41.3	-	41.3	-	41.3
Space Heat	1,982.1	-	2,029.3	-	1,982.1
Space Cool	9.3	-	9.0	-	9.3
Heat Rejection	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8
Total	2,565.4	-	2,559.6	-	2,565.7
Percent Change (%)	**-**	**-**	**0.2**	**-**	**0.0**
Electricity					
Peak Demand (kW)	52.4	-	47.5	-	52.4
Consumption (kWh)	144,819.0	-	130,391.0	-	144,892.0
Natural Gas					
Consumption (m^3)	54,233.6	-	55,456.8	-	54,233.6
Energy Charges ($)					
Electricity	15,104.0	-	13,892.0	-	15,108.1
Natural Gas	15,252.0	-	15,573.0	-	15,252.0
Total	30,356.0	-	29,465.0	-	30,360.1

Ottawa Results – Energy Savings Compared to NECB

Building Type: Mid-Rise Apartment

	NECB	Parking Garage Occupancy Sensors
End-Use (GJ)		
Lights	321.2	290.5
Appliances	188.9	188.9
Space Heat	1,828.2	1,834.5
Space Cool	121.8	120.1
Heat Rejection	0.0	0.0
Pumps	33.3	33.3
Fans	51.9	51.9
DHW	1,356.0	1,356.0
Total	3,901.3	3,875.1
Percent Change (%)	-	**0.7**
Electricity		
Peak Demand (kW)	97.4	96.7
Consumption (kWh)	204,908.0	195,877.0
Natural Gas		
Consumption (m^3)	83,938.1	84,106.1
Energy Charges ($)		
Electricity	20,484.0	19,909.0
Natural Gas	23,037.0	23,080.0
Total	43,521.0	42,989.0

Building Type: Large Office

	NECB	Continuous Dimming in Day Light Areas
End-Use (GJ)		
Lights	1,507.9	1,452.4
Appliances	1,689.0	1,689.0
Space Heat	2,695.5	2,738.8
Space Cool	528.9	527.0
Heat Rejection	710.4	709.7
Pumps	281.5	281.5
Fans	411.2	408.5
DHW	458.5	458.5
Total	8,282.9	8,265.3
Percent Change (%)	-	**0.2**
Electricity		
Peak Demand (kW)	482.6	482.3
Consumption (kWh)	1,424,696.0	1,407,793.0
Natural Gas		
Consumption (m^3)	83,683.4	84,831.1
Energy Charges ($)		
Electricity	113,642.0	112,353.0
Natural Gas	22,837.0	23,133.0
Total	136,479.0	135,486.0

Ottawa Results

(Energy Increase Compared to NECB)

Ottawa Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	290.8	353.1	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,741.5	1,706.3	1,652.6	-	-
Space Cool	114.3	120.6	130.8	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	33.2	33.4	33.6	-	-
Fans	43.4	43.5	43.6	-	-
DHW	1,356.0	1,356.0	1,356.0	-	-
Total	3,728.2	3,739.4	3,758.6	-	-
Percent Change (%)	-	**-0.3**	**-0.8**	**-**	**-**
Electricity					
Peak Demand (kW)	93.1	97.6	104.6	-	-
Consumption (kWh)	180,790.0	193,583.0	213,677.0	-	-
Natural Gas					
Consumption (m^3)	81,651.2	80,724.7	79,316.7	-	-
Energy Charges ($)					
Electricity	18,766.0	19,850.0	21,561.0	-	-
Natural Gas	22,450.0	22,211.0	21,846.0	-	-
Total	41,216.0	42,061.0	43,407.0	-	-

Building Type: Large Office

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	2,183.4	3,459.5	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-
Space Heat	2,498.1	2,410.8	2,009.6	-	-
Space Cool	563.1	578.2	657.2	-	-
Heat Rejection	746.5	758.4	820.4	-	-
Pumps	293.9	297.9	319.8	-	-
Fans	436.5	454.9	565.2	-	-
DHW	458.5	458.5	458.5	-	-
Total	8,628.3	8,831.0	9,979.2	-	-
Percent Change (%)	-	**-2.3**	**-15.7**	**-**	**-**
Electricity					
Peak Demand (kW)	552.6	573.3	682.7	-	-
Consumption (kWh)	1,575,455.0	1,656,022.0	2,086,417.0	-	-
Natural Gas					
Consumption (m^3)	78,446.2	76,128.5	65,480.5	-	-
Energy Charges ($)					
Electricity	126,158.0	132,362.0	165,462.0	-	-
Natural Gas	21,484.0	20,888.0	18,135.0	-	-
Total	147,642.0	153,250.0	183,597.0	-	-

Ottawa Results – Energy Increase Compared to NECB

Building Type: Strip Mall

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	908.9	923.4	-	-
Appliances	140.6	140.6	140.6	-	-
Space Heat	3,491.0	3,444.2	3,432.4	-	-
Space Cool	193.7	199.9	201.4	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	435.2	442.6	444.5	-	-
DHW	327.1	327.1	327.1	-	-
Total	5,438.2	5,463.1	5,469.4	-	-
Percent Change (%)	-	**-0.5**	**-0.6**	**-**	**-**
Electricity					
Peak Demand (kW)	233.6	239.3	240.7	-	-
Consumption (kWh)	450,043.0	469,978.0	474,979.0	-	-
Natural Gas					
Consumption (m^3)	101,301.3	100,058.5	99,750.5	-	-
Energy Charges ($)					
Electricity	40,068.0	41,622.0	42,011.0	-	-
Natural Gas	27,369.0	27,048.0	26,969.0	-	-
Total	67,437.0	68,670.0	68,980.0	-	-

Building Type: Secondary School

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,943.7	2,442.0	3,579.0	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	7,615.4	7,471.8	7,145.3	-	-
Space Cool	888.4	935.7	1,043.9	-	-
Heat Rejection	814.7	840.4	897.4	-	-
Pumps	1,892.1	1,958.4	2,107.2	-	-
Fans	769.9	815.4	920.6	-	-
DHW	2,818.5	2,818.5	2,818.5	-	-
Total	17,688.0	18,227.5	19,457.1	-	-
Percent Change (%)	-	**-3.1**	**-10.0**	**-**	**-**
Electricity					
Peak Demand (kW)	723.2	782.5	917.0	-	-
Consumption (kWh)	2,015,002.0	2,204,751.0	2,637,014.0	-	-
Natural Gas					
Consumption (m^3)	276,836.0	273,026.4	264,365.8	-	-
Energy Charges ($)					
Electricity	160,540.0	175,950.0	211,075.0	-	-
Natural Gas	72,036.0	71,070.0	68,875.0	-	-
Total	232,576.0	247,020.0	279,950.0	-	-

Ottawa Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	2,195.3	3,330.8	-	-
Appliances	280.1	280.1	280.1	-	-
Space Heat	2,611.3	2,529.6	1,914.7	-	-
Space Cool	228.0	239.0	333.1	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	659.0	659.0	659.0	-	-
DHW	160.7	160.7	160.7	-	-
Total	5,992.4	6,063.6	6,678.3	-	-
Percent Change (%)	-	**-1.2**	**-11.4**	**-**	**-**
Electricity					
Peak Demand (kW)	362.3	374.3	470.4	-	-
Consumption (kWh)	933,866.0	975,064.0	1,306,919.0	-	-
Natural Gas					
Consumption (m^3)	69,791.2	67,747.9	52,358.1	-	-
Energy Charges ($)					
Electricity	78,160.0	81,432.0	107,373.0	-	-
Natural Gas	19,190.0	18,661.0	14,673.0	-	-
Total	97,350.0	100,093.0	122,046.0	-	-

Building Type: Warehouse

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	351.8	434.8	-	-
Appliances	41.3	41.3	41.3	-	-
Space Heat	1,982.1	1,930.8	1,860.0	-	-
Space Cool	9.3	9.6	10.2	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	119.4	119.4	119.4	-	-
DHW	119.8	119.8	119.8	-	-
Total	2,565.4	2,572.9	2,585.7	-	-
Percent Change (%)	-	**-0.3**	**-0.8**	**-**	**-**
Electricity					
Peak Demand (kW)	52.4	57.8	65.5	-	-
Consumption (kWh)	144,819.0	160,782.0	183,529.0	-	-
Natural Gas					
Consumption (m^3)	54,233.6	52,906.8	51,073.3	-	-
Energy Charges ($)					
Electricity	15,104.0	16,445.0	18,362.0	-	-
Natural Gas	15,252.0	14,902.0	14,420.0	-	-
Total	30,356.0	31,347.0	32,782.0	-	-

Edmonton Results

(Energy Savings Compared to NECB)

Edmonton Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	250.9	-	236.8	-	-
Appliances	188.9	-	188.9	-	-
Space Heat	1,894.0	-	1,906.8	-	-
Space Cool	58.6	-	57.1	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	35.6	-	35.6	-	-
Fans	43.0	-	43.0	-	-
DHW	1,425.5	-	1,425.5	-	-
Total	3,896.5	-	3,893.7	-	-
Percent Change (%)	**-**	**-**	**0.1**	**-**	**-**
Electricity					
Peak Demand (kW)	74.0	-	72.4	-	-
Consumption (kWh)	166,569.0	-	162,264.0	-	-
Natural Gas					
Consumption (m^3)	87,473.5	-	87,806.6	-	-
Energy Charges ($)					
Electricity	13,839.0	-	13,484.0	-	-
Natural Gas	20,926.0	-	21,006.0	-	-
Total	34,765.0	-	34,490.0	-	-

Building Type: Large Office

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,942.6	-	1,845.5	-	1,950.3
Appliances	1,689.0	-	1,689.0	-	1,689.0
Space Heat	2,315.2	-	2,351.6	-	2,315.2
Space Cool	353.3	-	348.7	-	353.3
Heat Rejection	502.8	-	498.2	-	502.8
Pumps	243.2	-	241.8	-	243.2
Fans	459.1	-	450.8	-	459.1
DHW	481.1	-	481.1	-	481.1
Total	7,986.3	-	7,906.7	-	7,993.9
Percent Change (%)	**-**	**-**	**1.0**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	473.4	-	465.0	-	473.4
Consumption (kWh)	1,441,662.0	-	1,409,453.0	-	1,443,799.0
Natural Gas					
Consumption (m^3)	74,188.7	-	75,157.2	-	74,188.7
Energy Charges ($)					
Electricity	111,776.0	-	109,305.0	-	111,912.3
Natural Gas	17,748.0	-	17,980.0	-	17,748.0
Total	129,524.0	-	127,285.0	-	129,660.3

Edmonton Results – Energy Savings Compared to NECB

Building Type: Strip Mall

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	850.7	-	805.9	-	-
Appliances	140.6	-	140.6	-	-
Space Heat	3,810.7	-	3,852.8	-	-
Space Cool	81.0	-	78.2	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	393.3	-	388.5	-	-
DHW	343.1	-	343.1	-	-
Total	5,619.3	-	5,609.0	-	-
Percent Change (%)	**-**	**-**	**0.2**	**-**	**-**
Electricity					
Peak Demand (kW)	158.6	-	154.6	-	-
Consumption (kWh)	407,100.0	-	392,537.0	-	-
Natural Gas					
Consumption (m^3)	110,208.2	-	111,325.0	-	-
Energy Charges ($)					
Electricity	32,055.0	-	30,930.0	-	-
Natural Gas	26,365.0	-	26,632.0	-	-
Total	58,420.0	-	57,562.0	-	-

Building Type: Secondary School

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,943.7	-	1,749.2	-	1,965.2
Appliances	945.2	-	945.2	-	945.2
Space Heat	7,221.1	-	7,288.4	-	7,221.1
Space Cool	572.3	-	559.3	-	572.3
Heat Rejection	466.1	-	457.6	-	466.1
Pumps	1,722.7	-	1,700.7	-	1,722.7
Fans	744.6	-	726.3	-	744.6
DHW	2,960.0	-	2,960.0	-	2,960.0
Total	16,575.6	-	16,386.6	-	16,597.1
Percent Change (%)	**-**	**-**	**1.1**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	586.6	-	563.2	-	586.6
Consumption (kWh)	1,776,265.0	-	1,705,073.0	-	1,782,242.0
Natural Gas					
Consumption (m^3)	270,126.5	-	271,912.3	-	270,126.5
Energy Charges ($)					
Electricity	137,362.0	-	131,702.0	-	137,743.3
Natural Gas	56,544.0	-	56,918.0	-	56,544.0
Total	193,906.0	-	188,620.0	-	194,287.3

Edmonton Results – Energy Savings Compared to NECB

Building Type: Big Box Retail

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	2,053.4	-	1,946.5	-	-
Appliances	280.1	-	280.1	-	-
Space Heat	2,689.3	-	2,760.2	-	-
Space Cool	92.8	-	87.9	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	659.0	-	659.0	-	-
DHW	160.7	-	160.7	-	-
Total	5,935.1	-	5,894.4	-	-
Percent Change (%)	**-**	**-**	**0.7**	**-**	**-**
Electricity					
Peak Demand (kW)	274.7	-	266.3	-	-
Consumption (kWh)	897,012.0	-	867,077.0	-	-
Natural Gas					
Consumption (m^3)	71,795.4	-	73,572.9	-	-
Energy Charges ($)					
Electricity	70,011.0	-	67,699.0	-	-
Natural Gas	17,175.0	-	17,601.0	-	-
Total	87,186.0	-	85,300.0	-	-

Building Type: Warehouse

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	293.5	-	240.7	-	293.7
Appliances	41.3	-	41.3	-	41.3
Space Heat	2,118.1	-	2,173.5	-	2,118.1
Space Cool	4.4	-	4.3	-	4.4
Heat Rejection	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8
Total	2,696.5	-	2,699.1	-	2,696.8
Percent Change (%)	**-**	**-**	**-0.1**	**-**	**0.0**
Electricity					
Peak Demand (kW)	45.1	-	40.4	-	45.1
Consumption (kWh)	144,368.0	-	130,043.0	-	144,441.0
Natural Gas					
Consumption (m^3)	57,754.9	-	59,190.8	-	57,754.9
Energy Charges ($)					
Electricity	11,568.0	-	10,411.0	-	11,572.7
Natural Gas	13,817.0	-	14,161.0	-	13,817.0
Total	25,385.0	-	24,572.0	-	25,389.7

Edmonton Results – Energy Savings Compared to NECB

Building Type: Mid-Rise Apartment

	NECB	Parking Garage Occupancy Sensors
End-Use (GJ)		
Lights	321.2	290.5
Appliances	188.9	188.9
Space Heat	1,988.1	1,998.8
Space Cool	64.2	63.0
Heat Rejection	0.0	0.0
Pumps	35.7	35.7
Fans	51.5	51.5
DHW	1,425.5	1,425.5
Total	4,075.2	4,053.9
Percent Change (%)	-	**0.5**
Electricity		
Peak Demand (kW)	78.2	77.5
Consumption (kWh)	190,166.0	181,293.0
Natural Gas		
Consumption (m^3)	89,959.1	90,241.8
Energy Charges ($)		
Electricity	15,564.0	14,960.0
Natural Gas	21,521.0	21,588.0
Total	37,085.0	36,548.0

Building Type: Large Office

	NECB	Continuous Dimming in Day Light Areas
End-Use (GJ)		
Lights	1,527.8	1,466.3
Appliances	1,689.0	1,689.0
Space Heat	2,499.3	2,549.8
Space Cool	327.1	325.8
Heat Rejection	469.4	468.7
Pumps	232.4	232.3
Fans	431.6	428.6
DHW	481.1	481.1
Total	7,657.5	7,641.5
Percent Change (%)	-	**0.2**
Electricity		
Peak Demand (kW)	404.0	403.6
Consumption (kWh)	1,299,207.0	1,280,722.0
Natural Gas		
Consumption (m^3)	79,076.0	80,416.8
Energy Charges ($)		
Electricity	100,030.0	98,580.0
Natural Gas	18,917.0	19,238.0
Total	118,947.0	117,818.0

Edmonton Results

(Energy Increase Compared to NECB)

Edmonton Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	290.8	353.1	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,894.0	1,855.1	1,795.1	-	-
Space Cool	58.6	62.8	70.1	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	35.6	35.7	35.9	-	-
Fans	43.0	43.1	43.2	-	-
DHW	1,425.5	1,425.5	1,425.5	-	-
Total	3,896.5	3,901.8	3,911.8	-	-
Percent Change (%)	-	**-0.1**	**-0.4**	**-**	**-**
Electricity					
Peak Demand (kW)	74.0	78.3	85.2	-	-
Consumption (kWh)	166,569.0	178,738.0	197,990.0	-	-
Natural Gas					
Consumption (m^3)	87,473.5	86,451.8	84,875.9	-	-
Energy Charges ($)					
Electricity	13,839.0	14,839.0	16,422.0	-	-
Natural Gas	20,926.0	20,682.0	20,305.0	-	-
Total	34,765.0	35,521.0	36,727.0	-	-

Building Type: Large Office

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	2,183.4	3,459.5	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-
Space Heat	2,315.2	2,226.6	1,805.6	-	-
Space Cool	353.3	364.5	422.4	-	-
Heat Rejection	502.8	514.2	574.0	-	-
Pumps	243.2	246.6	264.8	-	-
Fans	459.1	480.3	607.2	-	-
DHW	481.1	481.1	481.1	-	-
Total	7,986.3	8,185.7	9,303.6	-	-
Percent Change (%)	-	**-2.5**	**-16.5**	**-**	**-**
Electricity					
Peak Demand (kW)	473.4	494.1	603.6	-	-
Consumption (kWh)	1,441,662.0	1,521,667.0	1,949,147.0	-	-
Natural Gas					
Consumption (m^3)	74,188.7	71,837.4	60,671.6	-	-
Energy Charges ($)					
Electricity	111,776.0	117,916.0	150,699.0	-	-
Natural Gas	17,748.0	17,186.0	14,514.0	-	-
Total	129,524.0	135,102.0	165,213.0	-	-

Building Type: Strip Mall

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-Low**	**Low**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	850.7	908.9	923.4	-	-
Appliances	140.6	140.6	140.6	-	-
Space Heat	3,810.7	3,755.9	3,742.4	-	-
Space Cool	81.0	84.5	85.4	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	393.3	399.9	401.5	-	-
DHW	343.1	343.1	343.1	-	-
Total	5,619.3	5,632.7	5,636.4	-	-
Percent Change (%)	-	**-0.2**	**-0.3**	**-**	**-**
Electricity					
Peak Demand (kW)	158.6	163.8	165.1	-	-
Consumption (kWh)	407,100.0	426,041.0	430,799.0	-	-
Natural Gas					
Consumption (m^3)	110,208.2	108,755.4	108,397.1	-	-
Energy Charges ($)					
Electricity	32,055.0	33,518.0	33,885.0	-	-
Natural Gas	26,365.0	26,017.0	25,932.0	-	-
Total	58,420.0	59,535.0	59,817.0	-	-

Building Type: Secondary School

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-Low**	**Low**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	1,943.7	2,442.0	3,579.0	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	7,221.1	7,055.7	6,692.0	-	-
Space Cool	572.3	606.2	686.1	-	-
Heat Rejection	466.1	487.9	536.5	-	-
Pumps	1,722.7	1,772.2	1,895.2	-	-
Fans	744.6	791.9	900.6	-	-
DHW	2,960.0	2,960.0	2,960.0	-	-
Total	16,575.6	17,061.1	18,194.4	-	-
Percent Change (%)	-	**-2.9**	**-9.8**	**-**	**-**
Electricity					
Peak Demand (kW)	586.6	646.2	782.5	-	-
Consumption (kWh)	1,776,265.0	1,957,043.0	2,372,898.0	-	-
Natural Gas					
Consumption (m^3)	270,126.5	265,740.2	256,088.7	-	-
Energy Charges ($)					
Electricity	137,362.0	151,742.0	184,798.0	-	-
Natural Gas	56,544.0	55,626.0	53,606.0	-	-
Total	193,906.0	207,368.0	238,404.0	-	-

Edmonton Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	2,195.3	3,330.8	-	-
Appliances	280.1	280.1	280.1	-	-
Space Heat	2,689.3	2,596.7	1,924.4	-	-
Space Cool	92.8	99.3	160.8	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	659.0	659.0	659.0	-	-
DHW	160.7	160.7	160.7	-	-
Total	5,935.1	5,991.1	6,515.7	-	-
Percent Change (%)	-	**-0.9**	**-9.8**	**-**	**-**
Electricity					
Peak Demand (kW)	274.7	285.8	371.1	-	-
Consumption (kWh)	897,012.0	936,855.0	1,259,041.0	-	-
Natural Gas					
Consumption (m^3)	71,795.4	69,472.1	52,621.2	-	-
Energy Charges ($)					
Electricity	70,011.0	73,087.0	97,974.0	-	-
Natural Gas	17,175.0	16,620.0	12,588.0	-	-
Total	87,186.0	89,707.0	110,562.0	-	-

Building Type: Warehouse

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	351.8	434.8	-	-
Appliances	41.3	41.3	41.3	-	-
Space Heat	2,118.1	2,058.4	1,975.5	-	-
Space Cool	4.4	4.5	4.7	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	119.4	119.4	119.4	-	-
DHW	119.8	119.8	119.8	-	-
Total	2,696.5	2,695.3	2,695.6	-	-
Percent Change (%)	-	**0.04**	**0.03**	**-**	**-**
Electricity					
Peak Demand (kW)	45.1	50.3	57.8	-	-
Consumption (kWh)	144,368.0	160,220.0	182,782.0	-	-
Natural Gas					
Consumption (m^3)	57,754.9	56,209.8	54,062.8	-	-
Energy Charges ($)					
Electricity	11,568.0	12,849.0	14,673.0	-	-
Natural Gas	13,817.0	13,447.0	12,933.0	-	-
Total	25,385.0	26,296.0	27,606.0	-	-

Fort McMurray Results

(Energy Savings Compared to NECB)

Fort McMurray Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	250.9	-	236.8	-	-
Appliances	188.9	-	188.9	-	-
Space Heat	2,224.3	-	2,238.5	-	-
Space Cool	64.3	-	62.7	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	37.1	-	37.0	-	-
Fans	43.2	-	43.2	-	-
DHW	1,461.6	-	1,461.6	-	-
Total	4,270.3	-	4,268.7	-	-
Percent Change (%)	**-**	**-**	**0.0**	**-**	**-**
Electricity					
Peak Demand (kW)	77.1	-	75.5	-	-
Consumption (kWh)	169,645.0	-	165,298.0	-	-
Natural Gas					
Consumption (m^3)	97,099.7	-	97,472.0	-	-
Energy Charges ($)					
Electricity	11,925.0	-	11,623.0	-	-
Natural Gas	23,229.0	-	23,318.0	-	-
Total	35,154.0	-	34,941.0	-	-

Building Type: Large Office

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,942.6	-	1,845.5	-	1,950.3
Appliances	1,689.0	-	1,689.0	-	1,689.0
Space Heat	2,301.8	-	2,342.8	-	2,301.8
Space Cool	339.4	-	334.7	-	339.4
Heat Rejection	454.3	-	449.4	-	454.3
Pumps	237.0	-	235.7	-	237.0
Fans	435.0	-	427.3	-	435.0
DHW	492.8	-	492.8	-	492.8
Total	7,891.8	-	7,817.1	-	7,899.5
Percent Change (%)	**-**	**-**	**0.9**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	448.9	-	440.5	-	448.9
Consumption (kWh)	1,415,886.0	-	1,383,743.0	-	1,418,023.0
Natural Gas					
Consumption (m^3)	74,146.7	-	75,235.6	-	74,146.7
Energy Charges ($)					
Electricity	90,473.0	-	88,442.0	-	90,579.4
Natural Gas	17,738.0	-	17,999.0	-	17,738.0
Total	108,211.0	-	106,441.0	-	108,317.4

Building Type: Strip Mall

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	850.7	-	805.9	-	-
Appliances	140.6	-	140.6	-	-
Space Heat	4,494.0	-	4,535.1	-	-
Space Cool	100.5	-	97.9	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	451.0	-	446.1	-	-
DHW	351.2	-	351.2	-	-
Total	6,388.0	-	6,376.8	-	-
Percent Change (%)	**-**	**-**	**0.2**	**-**	**-**
Electricity					
Peak Demand (kW)	180.7	-	169.2	-	-
Consumption (kWh)	428,550.0	-	414,012.0	-	-
Natural Gas					
Consumption (m^3)	128,553.8	-	129,645.5	-	-
Energy Charges ($)					
Electricity	28,286.0	-	27,356.0	-	-
Natural Gas	30,754.0	-	31,015.0	-	-
Total	59,040.0	-	58,371.0	-	-

Building Type: Secondary School

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,943.7	-	1,749.2	-	1,965.2
Appliances	945.2	-	945.2	-	945.2
Space Heat	8,663.9	-	8,733.6	-	8,663.9
Space Cool	595.9	-	582.5	-	595.9
Heat Rejection	457.4	-	448.3	-	457.4
Pumps	1,765.1	-	1,743.4	-	1,765.1
Fans	754.1	-	736.8	-	754.1
DHW	3,034.6	-	3,034.6	-	3,034.6
Total	18,159.9	-	17,973.6	-	18,181.4
Percent Change (%)	**-**	**-**	**1.0**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	580.7	-	557.8	-	580.7
Consumption (kWh)	1,794,832.0	-	1,723,713.0	-	1,800,809.0
Natural Gas					
Consumption (m^3)	310,386.7	-	312,236.9	-	310,386.7
Energy Charges ($)					
Electricity	114,804.0	-	110,106.0	-	115,101.6
Natural Gas	64,973.0	-	65,361.0	-	64,973.0
Total	179,777.0	-	175,467.0	-	180,074.6

Building Type: Big Box Retail

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	2,053.4	-	1,946.5	-	-
Appliances	280.1	-	280.1	-	-
Space Heat	3,452.5	-	3,526.3	-	-
Space Cool	111.3	-	106.7	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	659.0	-	659.0	-	-
DHW	160.7	-	160.7	-	-
Total	6,717.0	-	6,679.2	-	-
Percent Change (%)	-	-	**0.6**	-	-
Electricity					
Peak Demand (kW)	290.2	-	272.5	-	-
Consumption (kWh)	914,913.0	-	885,030.0	-	-
Natural Gas					
Consumption (m^3)	90,826.9	-	92,679.9	-	-
Energy Charges ($)					
Electricity	59,278.0	-	57,376.0	-	-
Natural Gas	21,729.0	-	22,172.0	-	-
Total	81,007.0	-	79,548.0	-	-

Building Type: Warehouse

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	293.5	-	240.7	-	293.7
Appliances	41.3	-	41.3	-	41.3
Space Heat	2,423.4	-	2,476.3	-	2,423.4
Space Cool	6.3	-	6.1	-	6.3
Heat Rejection	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4
DHW	119.8	-	119.8	-	119.8
Total	3,003.7	-	3,003.7	-	3,003.9
Percent Change (%)	-	-	**0.0**	-	**0.0**
Electricity					
Peak Demand (kW)	50.9	-	46.1	-	50.9
Consumption (kWh)	149,685.0	-	135,365.0	-	149,758.0
Natural Gas					
Consumption (m^3)	65,396.6	-	66,765.3	-	65,396.6
Energy Charges ($)					
Electricity	10,023.0	-	9,055.0	-	10,026.6
Natural Gas	15,645.0	-	15,973.0	-	15,645.0
Total	25,668.0	-	25,028.0	-	25,671.6

Fort McMurray Results – Energy Savings Compared to NECB

Building Type: Mid-Rise Apartment

	NECB	Parking Garage Occupancy Sensors
End-Use (GJ)		
Lights	321.2	290.5
Appliances	188.9	188.9
Space Heat	2,360.1	2,373.7
Space Cool	70.3	69.1
Heat Rejection	0.0	0.0
Pumps	37.2	37.2
Fans	51.9	51.9
DHW	1,461.6	1,461.6
Total	4,491.2	4,472.8
Percent Change (%)	-	**0.4**
Electricity		
Peak Demand (kW)	81.6	81.0
Consumption (kWh)	193,371.0	184,493.0
Natural Gas		
Consumption (m^3)	100,693.9	101,052.1
Energy Charges ($)		
Electricity	13,322.0	12,840.0
Natural Gas	24,089.0	24,175.0
Total	37,411.0	37,015.0

Building Type: Large Office

	NECB	Continuous Dimming in Day Light Areas
End-Use (GJ)		
Lights	1,599.3	1,521.6
Appliances	1,689.0	1,689.0
Space Heat	2,435.0	2,493.3
Space Cool	314.9	312.1
Heat Rejection	423.7	419.2
Pumps	227.3	227.1
Fans	412.3	407.7
DHW	492.8	492.8
Total	7,594.2	7,562.8
Percent Change (%)	-	**0.4**
Electricity		
Peak Demand (kW)	393.4	384.4
Consumption (kWh)	1,296,225.0	1,271,305.0
Natural Gas		
Consumption (m^3)	77,682.0	79,227.2
Energy Charges ($)		
Electricity	82,200.0	80,551.0
Natural Gas	18,584.0	18,953.0
Total	100,784.0	99,504.0

Fort McMurray Results

(Energy Increase Compared to NECB)

Fort McMurray Results – Energy Increase Compared to NECB

Building Type: Mid-rise Apartment

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	290.8	353.1	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	2,224.3	2,184.5	2,123.9	-	-
Space Cool	64.3	69.0	76.7	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	37.1	37.2	37.4	-	-
Fans	43.2	43.4	43.5	-	-
DHW	1,461.6	1,461.6	1,461.6	-	-
Total	4,270.3	4,275.3	4,285.2	-	-
Percent Change (%)	-	**-0.1**	**-0.3**	**-**	**-**
Electricity					
Peak Demand (kW)	77.1	81.6	88.7	-	-
Consumption (kWh)	169,645.0	181,963.0	201,319.0	-	-
Natural Gas					
Consumption (m^3)	97,099.7	96,052.9	94,465.7	-	-
Energy Charges ($)					
Electricity	11,925.0	12,781.0	14,123.0	-	-
Natural Gas	23,229.0	22,979.0	22,599.0	-	-
Total	35,154.0	35,760.0	36,722.0	-	-

Building Type: Large Office

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	2,183.4	3,459.5	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-
Space Heat	2,301.8	2,202.6	1,738.4	-	-
Space Cool	339.4	350.9	411.0	-	-
Heat Rejection	454.3	466.2	528.7	-	-
Pumps	237.0	240.4	258.7	-	-
Fans	435.0	454.8	574.4	-	-
DHW	492.8	492.8	492.8	-	-
Total	7,891.8	8,080.0	9,152.4	-	-
Percent Change (%)	-	**-2.4**	**-16.0**	**-**	**-**
Electricity					
Peak Demand (kW)	448.9	496.6	580.1	-	-
Consumption (kWh)	1,415,886.0	1,495,721.0	1,922,555.0	-	-
Natural Gas					
Consumption (m^3)	74,146.7	71,515.5	59,199.2	-	-
Energy Charges ($)					
Electricity	90,473.0	95,522.0	122,487.0	-	-
Natural Gas	17,738.0	17,108.0	14,162.0	-	-
Total	108,211.0	112,630.0	136,649.0	-	-

Building Type: Strip Mall

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	908.9	923.4	-	-
Appliances	140.6	140.6	140.6	-	-
Space Heat	4,494.0	4,440.7	4,427.4	-	-
Space Cool	100.5	104.0	104.9	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	451.0	457.5	459.1	-	-
DHW	351.2	351.2	351.2	-	-
Total	6,388.0	6,402.9	6,406.6	-	-
Percent Change (%)	-	**-0.2**	**-0.3**	**-**	**-**
Electricity					
Peak Demand (kW)	180.7	178.5	187.4	-	-
Consumption (kWh)	428,550.0	447,484.0	452,210.0	-	-
Natural Gas					
Consumption (m^3)	128,553.8	127,140.2	126,784.7	-	-
Energy Charges ($)					
Electricity	28,286.0	29,496.0	29,798.0	-	-
Natural Gas	30,754.0	30,416.0	30,331.0	-	-
Total	59,040.0	59,912.0	60,129.0	-	-

Building Type: Secondary School

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,943.7	2,442.0	3,579.0	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	8,663.9	8,493.7	8,136.7	-	-
Space Cool	595.9	630.9	712.2	-	-
Heat Rejection	457.4	480.8	533.2	-	-
Pumps	1,765.1	1,822.2	1,946.2	-	-
Fans	754.1	798.9	902.0	-	-
DHW	3,034.6	3,034.6	3,034.6	-	-
Total	18,159.9	18,648.3	19,788.9	-	-
Percent Change (%)	-	**-2.7**	**-9.0**	**-**	**-**
Electricity					
Peak Demand (kW)	580.7	639.5	773.5	-	-
Consumption (kWh)	1,794,832.0	1,977,788.0	2,393,785.0	-	-
Natural Gas					
Consumption (m^3)	310,386.7	305,871.6	296,399.3	-	-
Energy Charges ($)					
Electricity	114,804.0	126,893.0	154,403.0	-	-
Natural Gas	64,973.0	64,028.0	62,045.0	-	-
Total	179,777.0	190,921.0	216,448.0	-	-

Fort McMurray Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	2,195.3	3,330.8	-	-
Appliances	280.1	280.1	280.1	-	-
Space Heat	3,452.5	3,357.5	2,649.3	-	-
Space Cool	111.3	117.7	174.9	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	659.0	659.0	659.0	-	-
DHW	160.7	160.7	160.7	-	-
Total	6,717.0	6,770.3	7,254.7	-	-
Percent Change (%)	-	**-0.8**	**-8.0**	**-**	**-**
Electricity					
Peak Demand (kW)	290.2	301.4	385.1	-	-
Consumption (kWh)	914,913.0	954,689.0	1,275,527.0	-	-
Natural Gas					
Consumption (m^3)	90,826.9	88,442.0	70,650.6	-	-
Energy Charges ($)					
Electricity	59,278.0	61,809.0	82,272.0	-	-
Natural Gas	21,729.0	21,158.0	16,901.0	-	-
Total	81,007.0	82,967.0	99,173.0	-	-

Building Type: Warehouse

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	351.8	434.8	-	-
Appliances	41.3	41.3	41.3	-	-
Space Heat	2,423.4	2,365.7	2,286.1	-	-
Space Cool	6.3	6.4	6.6	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	119.4	119.4	119.4	-	-
DHW	119.8	119.8	119.8	-	-
Total	3,003.7	3,004.6	3,008.1	-	-
Percent Change (%)	-	**0.0**	**-0.1**	**-**	**-**
Electricity					
Peak Demand (kW)	50.9	56.2	59.9	-	-
Consumption (kWh)	149,685.0	165,526.0	188,084.0	-	-
Natural Gas					
Consumption (m^3)	65,396.6	63,907.4	61,847.2	-	-
Energy Charges ($)					
Electricity	10,023.0	11,094.0	12,619.0	-	-
Natural Gas	15,645.0	15,289.0	14,796.0	-	-
Total	25,668.0	26,383.0	27,415.0	-	-

Yellowknife Results

(Energy Savings Compared to NECB)

Yellowknife Results – Energy Savings Compared to NECB

Building Type: Mid-rise Apartment

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	250.9	-	236.8	-	-
Appliances	188.9	-	188.9	-	-
Space Heat	2,971.4	-	2,987.1	-	-
Space Cool	30.8	-	30.4	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	37.3	-	37.3	-	-
Fans	42.2	-	42.2	-	-
DHW	1,637.5	-	1,637.5	-	-
Total	5,158.9	-	5,160.0	-	-
Percent Change (%)	**-**	**-**	**0.0**	**-**	**-**
Electricity					
Peak Demand (kW)	65.2	-	64.6	-	-
Consumption (kWh)	162,347.0	-	158,344.0	-	-
Oil					
Consumption (L)	118,264.7	-	118,663.0	-	-
Energy Charges ($)					
Electricity	35,862.0	-	42,637.0	-	-
Oil	104,073.0	-	104,423.4	-	-
Total	139,935.0	-	147,060.4	-	-

Building Type: Large Office

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,942.6	-	1,845.5	-	1,950.3
Appliances	1,689.0	-	1,689.0	-	1,689.0
Space Heat	2,884.8	-	2,934.7	-	2,884.8
Space Cool	222.3	-	218.9	-	222.3
Heat Rejection	404.9	-	400.9	-	404.9
Pumps	207.8	-	206.5	-	207.8
Fans	405.3	-	399.0	-	405.3
DHW	550.3	-	550.3	-	550.3
Total	8,307.1	-	8,244.8	-	8,314.7
Percent Change (%)	**-**	**-**	**0.7**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	439.1	-	430.6	-	439.1
Consumption (kWh)	1,353,325.0	-	1,322,175.0	-	1,355,462.0
Oil					
Consumption (L)	88,807.7	-	90,097.8	-	88,807.7
Energy Charges ($)					
Electricity	282,133.0	-	275,645.0	-	282,516.3
Oil	78,150.7	-	79,286.0	-	78,150.7
Total	360,283.7	-	354,931.0	-	360,667.1

Yellowknife Results – Energy Savings Compared to NECB

Building Type: Strip Mall

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	850.7	-	805.9	-	-
Appliances	140.6	-	140.6	-	-
Space Heat	6,091.7	-	6,135.8	-	-
Space Cool	48.0	-	46.3	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	401.6	-	397.4	-	-
DHW	391.6	-	391.6	-	-
Total	7,924.1	-	7,917.6	-	-
Percent Change (%)	**-**	**-**	**0.1**	**-**	**-**
Electricity					
Peak Demand (kW)	144.7	-	140.9	-	-
Consumption (kWh)	400,238.0	-	386,157.0	-	-
Oil					
Consumption (L)	167,613.5	-	168,753.6	-	-
Energy Charges ($)					
Electricity	84,490.0	-	81,545.0	-	-
Oil	147,499.9	-	148,503.2	-	-
Total	231,989.9	-	230,048.2	-	-

Building Type: Secondary School

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	1,943.7	-	1,749.2	-	1,965.2
Appliances	945.2	-	945.2	-	945.2
Space Heat	11,151.6	-	11,220.6	-	11,151.6
Space Cool	442.5	-	432.0	-	442.5
Heat Rejection	361.2	-	352.3	-	361.2
Pumps	1,665.7	-	1,644.1	-	1,665.7
Fans	661.1	-	646.4	-	661.1
DHW	3,396.8	-	3,396.8	-	3,396.8
Total	20,567.8	-	20,386.5	-	20,589.3
Percent Change (%)	**-**	**-**	**0.9**	**-**	**-0.1**
Electricity					
Peak Demand (kW)	533.0	-	510.2	-	533.0
Consumption (kWh)	1,672,060.0	-	1,602,549.0	-	1,678,037.0
Oil					
Consumption (L)	376,120.6	-	377,901.7	-	376,120.6
Energy Charges ($)					
Electricity	349,660.0	-	334,756.0	-	350,732.2
Oil	330,986.1	-	332,553.5	-	330,986.1
Total	680,646.1	-	667,309.5	-	681,718.3

Building Type: Big Box Retail

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	2,053.4	-	1,946.5	-	-
Appliances	280.1	-	280.1	-	-
Space Heat	5,077.8	-	5,160.4	-	-
Space Cool	48.0	-	44.8	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	659.0	-	659.0	-	-
DHW	164.6	-	164.6	-	-
Total	8,282.8	-	8,255.4	-	-
Percent Change (%)	**-**	**-**	**0.3**	**-**	**-**
Electricity					
Peak Demand (kW)	254.3	-	246.1	-	-
Consumption (kWh)	923,746.0	-	894,382.0	-	-
Oil					
Consumption (L)	128,160.1	-	130,183.9	-	-
Energy Charges ($)					
Electricity	194,127.0	-	187,973.0	-	-
Oil	112,780.9	-	114,561.9	-	-
Total	306,907.9	-	302,534.9	-	-

Building Type: Warehouse

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-High	High	Mid-High	High
End-Use (GJ)					
Lights	293.5	-	240.7	-	293.7
Appliances	41.3	-	41.3	-	41.3
Space Heat	3,274.9	-	3,333.9	-	3,274.9
Space Cool	1.8	-	1.8	-	1.8
Heat Rejection	0.0	-	0.0	-	0.0
Pumps	0.0	-	0.0	-	0.0
Fans	119.4	-	119.4	-	119.4
DHW	121.6	-	121.6	-	121.6
Total	3,852.5	-	3,858.7	-	3,852.8
Percent Change (%)	**-**	**-**	**-0.2**	**-**	**0.0**
Electricity					
Peak Demand (kW)	52.7	-	48.0	-	52.7
Consumption (kWh)	154,147.0	-	139,919.0	-	154,220.0
Oil					
Consumption (L)	85,253.7	-	86,737.5	-	85,253.7
Energy Charges ($)					
Electricity	33,271.0	-	30,166.0	-	33,284.1
Oil	75,023.3	-	76,329.0	-	75,023.3
Total	108,294.3	-	106,495.0	-	108,307.4

Yellowknife Results – Energy Savings Compared to NECB

Building Type: Mid-Rise Apartment

	NECB	Parking Garage Occupancy Sensors
End-Use (GJ)		
Lights	321.2	290.5
Appliances	188.9	188.9
Space Heat	3,189.7	3,219.8
Space Cool	36.7	35.8
Heat Rejection	0.0	0.0
Pumps	37.4	37.4
Fans	50.8	50.8
DHW	1,637.5	1,637.5
Total	5,462.2	5,460.7
Percent Change (%)	-	**0.0**
Electricity		
Peak Demand (kW)	69.1	68.4
Consumption (kWh)	186,022.0	177,246.0
Natural Gas		
Consumption (L)	123,899.8	124,679.8
Energy Charges ($)		
Electricity	40,611.0	38,950.0
Oil	109,031.8	109,718.3
Total	149,642.8	148,668.3

Building Type: Large Office

	NECB	Continuous Dimming in Day Light Areas
End-Use (GJ)		
Lights	1,697.0	1,609.0
Appliances	1,689.0	1,689.0
Space Heat	2,979.0	3,040.4
Space Cool	208.1	205.3
Heat Rejection	377.3	373.3
Pumps	198.8	197.7
Fans	397.3	394.0
DHW	550.3	550.3
Total	8,096.8	8,059.0
Percent Change (%)	-	**0.5**
Electricity		
Peak Demand (kW)	383.2	373.0
Consumption (kWh)	1,268,747.0	1,241,194.0
Natural Gas		
Consumption (L)	91,246.0	92,830.7
Energy Charges ($)		
Electricity	263,511.0	257,749.0
Oil	80,296.5	81,691.0
Total	343,807.5	339,440.0

Yellowknife Results

(Energy Increase Compared to NECB)

Building Type: Mid-rise Apartment

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	290.8	353.1	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	2,971.4	2,928.9	2,863.4	-	-
Space Cool	30.8	34.0	39.3	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	37.3	37.4	37.6	-	-
Fans	42.2	42.3	42.5	-	-
DHW	1,637.5	1,637.5	1,637.5	-	-
Total	5,158.9	5,159.8	5,162.3	-	-
Percent Change (%)	-	**0.0**	**-0.1**	**-**	**-**
Electricity					
Peak Demand (kW)	65.2	69.3	76.6	-	-
Consumption (kWh)	162,347.0	174,239.0	192,940.0	-	-
Oil					
Consumption (L)	118,264.7	117,176.5	115,501.8	-	-
Energy Charges ($)					
Electricity	35,862.0	38,498.0	42,637.0	-	-
Oil	104,073.0	103,115.3	101,641.6	-	-
Total	139,935.0	141,613.3	144,278.6	-	-

Building Type: Large Office

	NECB	Lighting		Auto - Occ. Sensors	
		Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	2,183.4	3,459.5	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-
Space Heat	2,884.8	2,762.6	2,175.9	-	-
Space Cool	222.3	230.6	273.7	-	-
Heat Rejection	404.9	415.0	468.8	-	-
Pumps	207.8	211.1	228.4	-	-
Fans	405.3	422.1	527.7	-	-
DHW	550.3	550.3	550.3	-	-
Total	8,307.1	8,464.1	9,373.3	-	-
Percent Change (%)	-	**-1.9**	**-12.8**	**-**	**-**
Electricity					
Peak Demand (kW)	439.1	460.4	571.4	-	-
Consumption (kWh)	1,353,325.0	1,430,883.0	1,846,412.0	-	-
Oil					
Consumption (L)	88,807.7	85,651.9	70,481.5	-	-
Energy Charges ($)					
Electricity	282,133.0	298,284.0	384,782.0	-	-
Oil	78,150.7	75,373.7	33,544.0	-	-
Total	360,283.7	373,657.7	418,326.0	-	-

Building Type: Strip Mall

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-Low**	**Low**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	850.7	908.9	923.4	-	-
Appliances	140.6	140.6	140.6	-	-
Space Heat	6,091.7	6,035.9	6,022.0	-	-
Space Cool	48.0	50.5	51.0	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	401.6	406.9	408.3	-	-
DHW	391.6	391.6	391.6	-	-
Total	7,924.1	7,934.3	7,936.9	-	-
Percent Change (%)	-	**-0.1**	**-0.2**	**-**	**-**
Electricity					
Peak Demand (kW)	144.7	149.8	151.0	-	-
Consumption (kWh)	400,238.0	418,566.0	423,117.0	-	-
Oil					
Consumption (L)	167,613.5	166,170.7	165,813.4	-	-
Energy Charges ($)					
Electricity	84,490.0	88,330.0	89,283.0	-	-
Oil	147,499.9	146,230.2	145,915.8	-	-
Total	231,989.9	234,560.2	235,198.8	-	-

Building Type: Secondary School

		Lighting		Auto - Occ. Sensors	
	NECB	**Mid-Low**	**Low**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	1,943.7	2,442.0	3,579.0	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	11,151.6	10,981.0	10,633.9	-	-
Space Cool	442.5	469.8	534.8	-	-
Heat Rejection	361.2	383.8	435.1	-	-
Pumps	1,665.7	1,722.0	1,854.0	-	-
Fans	661.1	700.3	795.3	-	-
DHW	3,396.8	3,396.8	3,396.8	-	-
Total	20,567.8	21,040.9	22,174.0	-	-
Percent Change (%)	-	**-2.3**	**-7.8**	**-**	**-**
Electricity					
Peak Demand (kW)	533.0	591.5	725.4	-	-
Consumption (kWh)	1,672,060.0	1,850,871.0	2,262,050.0	-	-
Oil					
Consumption (L)	376,120.6	371,710.2	362,734.0	-	-
Energy Charges ($)					
Electricity	349,660.0	388,003.0	476,169.0	-	-
Oil	330,986.1	327,105.0	319,205.9	-	-
Total	680,646.1	715,108.0	795,374.9	-	-

Yellowknife Results – Energy Increase Compared to NECB

Building Type: Big Box Retail

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	2,195.3	3,330.8	-	-
Appliances	280.1	280.1	280.1	-	-
Space Heat	5,077.8	4,967.6	4,144.8	-	-
Space Cool	48.0	52.5	96.4	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	659.0	659.0	659.0	-	-
DHW	164.6	164.6	164.6	-	-
Total	8,282.8	8,319.0	8,675.7	-	-
Percent Change (%)	-	**-0.4**	**-4.7**	**-**	**-**
Electricity					
Peak Demand (kW)	254.3	265.3	349.9	-	-
Consumption (kWh)	923,746.0	962,868.0	1,278,404.0	-	-
Oil					
Consumption (L)	128,160.1	125,457.2	105,311.8	-	-
Energy Charges ($)					
Electricity	194,127.0	202,326.0	268,596.0	-	-
Oil	112,780.9	110,402.3	92,674.4	-	-
Total	306,907.9	312,728.3	361,270.4	-	-

Building Type: Warehouse

		Lighting		Auto - Occ. Sensors	
	NECB	Mid-Low	Low	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	351.8	434.8	-	-
Appliances	41.3	41.3	41.3	-	-
Space Heat	3,274.9	3,210.7	3,121.1	-	-
Space Cool	1.8	1.9	2.0	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	119.4	119.4	119.4	-	-
DHW	121.6	121.6	121.6	-	-
Total	3,852.5	3,846.8	3,840.3	-	-
Percent Change (%)	-	**0.1**	**0.3**	**-**	**-**
Electricity					
Peak Demand (kW)	52.7	57.9	65.3	-	-
Consumption (kWh)	154,147.0	169,892.0	192,306.0	-	-
Oil					
Consumption (L)	85,253.7	83,639.0	81,386.1	-	-
Energy Charges ($)					
Electricity	33,271.0	36,708.0	41,602.0	-	-
Oil	75,023.3	73,602.3	71,619.8	-	-
Total	108,294.3	110,310.3	113,221.8	-	-

Appendix D: Detailed Energy Use Breakdown - Fenestration and Door to Wall Area Ratio (FDWR) Measures

Victoria Results

Victoria Results

Building Type: Mid-rise Apartment

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	250.9	250.9	250.9	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,086.6	1,061.3	1,075.2	-	-
Space Cool	52.3	36.4	44.3	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	26.3	25.8	26.0	-	-
Fans	42.7	42.2	42.4	-	-
DHW	1,267.5	1,267.5	1,267.5	-	-
Total	2,915.1	2,872.9	2,895.2	-	-
Percent Change (%)	-	**1.4**	**0.7**	-	-
Electricity					
Peak Demand (kW)	68.6	65.6	67.1	-	-
Consumption (kWh)	159,746.0	154,949.0	157,329.0	-	-
Natural Gas					
Consumption (m^3)	62,085.2	61,424.6	61,788.5	-	-
Energy Charges ($)					
Electricity	14,681.0	14,181.0	14,440.0	-	-
Natural Gas	29,408.0	29,095.0	29,267.0	-	-
Total	44,089.0	43,276.0	43,707.0	-	-

Building Type: Mid-rise Apartment

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	-	-	-	-
Appliances	188.9	-	-	-	-
Space Heat	1,086.6	-	-	-	-
Space Cool	52.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	26.3	-	-	-	-
Fans	42.7	-	-	-	-
DHW	1,267.5	-	-	-	-
Total	2,915.1	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	68.6	-	-	-	-
Consumption (kWh)	159,746.0	-	-	-	-
Natural Gas					
Consumption (m^3)	62,085.2	-	-	-	-
Energy Charges ($)					
Electricity	14,681.0	-	-	-	-
Natural Gas	29,408.0	-	-	-	-
Total	44,089.0	-	-	-	-

Victoria Results

Building Type: Large Office

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	-
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	-
Space Heat	1,359.1	1,047.6	1,124.3	1,201.8	-
Space Cool	402.1	320.5	340.2	360.1	-
Heat Rejection	484.8	380.6	406.9	433.0	-
Pumps	250.1	185.4	199.9	214.8	-
Fans	413.3	422.2	415.4	412.3	-
DHW	430.1	430.1	430.1	430.1	-
Total	6,971.2	6,418.1	6,548.4	6,683.6	-
Percent Change (%)	**-**	**7.9**	**6.1**	**4.1**	**-**
Electricity					
Peak Demand (kW)	466.2	408.0	424.2	438.3	-
Consumption (kWh)	1,439,439.0	1,372,324.0	1,387,213.0	1,403,250.0	-
Natural Gas					
Consumption (m^3)	47,468.0	39,207.7	41,242.7	43,294.5	-
Energy Charges ($)					
Electricity	94,138.0	88,432.0	89,783.0	91,170.0	-
Natural Gas	22,485.0	18,572.0	19,535.0	20,508.0	-
Total	116,623.0	107,004.0	109,318.0	111,678.0	-

Building Type: Large Office

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-
Space Heat	1,359.1	1,280.2	1,201.8	-	-
Space Cool	402.1	381.9	360.1	-	-
Heat Rejection	484.8	459.0	433.0	-	-
Pumps	250.1	235.2	214.8	-	-
Fans	413.3	411.8	412.3	-	-
DHW	430.1	430.1	430.1	-	-
Total	6,971.2	6,829.8	6,683.6	-	-
Percent Change (%)	**-**	**2.0**	**4.1**	**-**	**-**
Electricity					
Peak Demand (kW)	466.2	433.7	438.3	-	-
Consumption (kWh)	1,439,439.0	1,422,077.0	1,403,250.0	-	-
Natural Gas					
Consumption (m^3)	47,468.0	45,379.8	43,294.5	-	-
Energy Charges ($)					
Electricity	94,138.0	92,692.0	91,170.0	-	-
Natural Gas	22,485.0	21,495.0	20,508.0	-	-
Total	116,623.0	114,187.0	111,678.0	-	-

Victoria Results

Building Type: Strip Mall

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	2,122.8	-	-	-	-
Space Cool	73.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	423.0	-	-	-	-
DHW	307.6	-	-	-	-
Total	3,917.6	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	174.3	-	-	-	-
Consumption (kWh)	413,114.0	-	-	-	-
Natural Gas					
Consumption (m^3)	64,484.0	-	-	-	-
Energy Charges ($)					
Electricity	29,056.0	-	-	-	-
Natural Gas	30,545.0	-	-	-	-
Total	59,601.0	-	-	-	-

Building Type: Strip Mall

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	2,122.8	-	-	-	-
Space Cool	73.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	423.0	-	-	-	-
DHW	307.6	-	-	-	-
Total	3,917.6	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	174.3	-	-	-	-
Consumption (kWh)	413,114.0	-	-	-	-
Natural Gas					
Consumption (m^3)	64,484.0	-	-	-	-
Energy Charges ($)					
Electricity	29,056.0	-	-	-	-
Natural Gas	30,545.0	-	-	-	-
Total	59,601.0	-	-	-	-

Victoria Results

Building Type: Secondary School

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,943.7	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	4,520.9	4,280.7	4,474.1	-	-
Space Cool	557.4	520.6	549.9	-	-
Heat Rejection	355.6	329.7	349.4	-	-
Pumps	1,558.0	1,499.0	1,546.3	-	-
Fans	727.2	685.9	719.0	-	-
DHW	2,635.2	2,635.2	2,635.2	-	-
Total	13,243.2	12,839.9	13,162.9	-	-
Percent Change (%)	-	**3.0**	**0.6**	-	-
Electricity					
Peak Demand (kW)	532.3	509.5	527.6	-	-
Consumption (kWh)	1,690,869.0	1,645,572.0	1,681,541.0	-	-
Natural Gas					
Consumption (m^3)	189,866.4	183,492.7	188,626.4	-	-
Energy Charges ($)					
Electricity	110,454.0	107,381.0	109,824.0	-	-
Natural Gas	87,773.0	84,826.0	87,200.0	-	-
Total	198,227.0	192,207.0	197,024.0	-	-

Building Type: Secondary School

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,943.7	-	-	-	-
Appliances	945.2	-	-	-	-
Space Heat	4,520.9	-	-	-	-
Space Cool	557.4	-	-	-	-
Heat Rejection	355.6	-	-	-	-
Pumps	1,558.0	-	-	-	-
Fans	727.2	-	-	-	-
DHW	2,635.2	-	-	-	-
Total	13,243.2	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	532.3	-	-	-	-
Consumption (kWh)	1,690,869.0	-	-	-	-
Natural Gas					
Consumption (m^3)	189,866.4	-	-	-	-
Energy Charges ($)					
Electricity	110,454.0	-	-	-	-
Natural Gas	87,773.0	-	-	-	-
Total	198,227.0	-	-	-	-

Victoria Results

Building Type: Big Box Retail

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	1,215.9	-	-	-	-
Space Cool	71.6	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	4,440.6	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	283.9	-	-	-	-
Consumption (kWh)	865,634.0	-	-	-	-
Natural Gas					
Consumption (m^3)	35,137.7	-	-	-	-
Energy Charges ($)					
Electricity	56,832.0	-	-	-	-
Natural Gas	16,644.0	-	-	-	-
Total	73,476.0	-	-	-	-

Building Type: Big Box Retail

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	1,215.9	-	-	-	-
Space Cool	71.6	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	4,440.6	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	283.9	-	-	-	-
Consumption (kWh)	865,634.0	-	-	-	-
Natural Gas					
Consumption (m^3)	35,137.7	-	-	-	-
Energy Charges ($)					
Electricity	56,832.0	-	-	-	-
Natural Gas	16,644.0	-	-	-	-
Total	73,476.0	-	-	-	-

Victoria Results

Building Type: Warehouse

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	1,400.1	-	-	-	-
Space Cool	1.5	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	1,975.7	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	43.1	-	-	-	-
Consumption (kWh)	134,475.0	-	-	-	-
Natural Gas					
Consumption (m^3)	39,574.4	-	-	-	-
Energy Charges ($)					
Electricity	11,692.0	-	-	-	-
Natural Gas	18,745.0	-	-	-	-
Total	30,437.0	-	-	-	-

Building Type: Warehouse

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	1,400.1	-	-	-	-
Space Cool	1.5	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	1,975.7	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	43.1	-	-	-	-
Consumption (kWh)	134,475.0	-	-	-	-
Natural Gas					
Consumption (m^3)	39,574.4	-	-	-	-
Energy Charges ($)					
Electricity	11,692.0	-	-	-	-
Natural Gas	18,745.0	-	-	-	-
Total	30,437.0	-	-	-	-

Windsor Results

Windsor Results

Building Type: Mid-rise Apartment

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	250.9	250.9	250.9	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,333.1	1,304.9	1,320.7	-	-
Space Cool	170.0	144.5	158.0	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	31.8	31.2	31.5	-	-
Fans	43.3	42.7	43.0	-	-
DHW	1,274.5	1,274.5	1,274.5	-	-
Total	3,292.5	3,237.6	3,267.6	-	-
Percent Change (%)	**-**	**1.7**	**0.8**	**-**	**-**
Electricity					
Peak Demand (kW)	84.0	79.8	82.2	-	-
Consumption (kWh)	195,227.0	187,696.0	191,691.0	-	-
Natural Gas					
Consumption (m^3)	68,710.8	67,971.8	68,386.1	-	-
Energy Charges ($)					
Electricity	17,878.0	17,082.0	17,514.0	-	-
Natural Gas	16,555.0	16,379.0	16,477.0	-	-
Total	34,433.0	33,461.0	33,991.0	-	-

Building Type: Mid-rise Apartment

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	-	-	-	-
Appliances	188.9	-	-	-	-
Space Heat	1,333.1	-	-	-	-
Space Cool	170.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	31.8	-	-	-	-
Fans	43.3	-	-	-	-
DHW	1,274.5	-	-	-	-
Total	3,292.5	-	-	-	-
Percent Change (%)	**-**	**-**	**-**	**-**	**-**
Electricity					
Peak Demand (kW)	84.0	-	-	-	-
Consumption (kWh)	195,227.0	-	-	-	-
Natural Gas					
Consumption (m^3)	68,710.8	-	-	-	-
Energy Charges ($)					
Electricity	17,878.0	-	-	-	-
Natural Gas	16,555.0	-	-	-	-
Total	34,433.0	-	-	-	-

Windsor Results

Building Type: Large Office

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	-
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	-
Space Heat	1,876.5	1,567.5	1,641.1	1,716.7	-
Space Cool	736.4	611.0	642.6	673.9	-
Heat Rejection	676.0	566.2	594.8	622.4	-
Pumps	292.9	229.1	245.0	260.9	-
Fans	488.7	470.7	472.1	476.3	-
DHW	430.0	430.0	430.0	430.0	-
Total	8,132.1	7,506.2	7,657.2	7,811.9	-
Percent Change (%)	**-**	**7.7**	**5.8**	**3.9**	**-**
Electricity					
Peak Demand (kW)	521.1	468.1	482.0	495.5	-
Consumption (kWh)	1,618,220.0	1,530,180.0	1,551,701.0	1,573,667.0	-
Natural Gas					
Consumption (m^3)	61,197.8	53,001.9	54,952.9	56,957.1	-
Energy Charges ($)					
Electricity	134,587.0	125,809.0	127,994.0	130,195.0	-
Natural Gas	14,730.0	12,767.0	13,235.0	13,715.0	-
Total	149,317.0	138,576.0	141,229.0	143,910.0	-

Building Type: Large Office

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	-	-
Appliances	1,689.0	1,689.0	1,689.0	-	-
Space Heat	1,876.5	1,795.2	1,716.7	-	-
Space Cool	736.4	705.1	673.9	-	-
Heat Rejection	676.0	649.4	622.4	-	-
Pumps	292.9	276.6	260.9	-	-
Fans	488.7	481.8	476.3	-	-
DHW	430.0	430.0	430.0	-	-
Total	8,132.1	7,969.8	7,811.9	-	-
Percent Change (%)	**-**	**2.0**	**3.9**	**-**	**-**
Electricity					
Peak Demand (kW)	521.1	508.4	495.5	-	-
Consumption (kWh)	1,618,220.0	1,595,725.0	1,573,667.0	-	-
Natural Gas					
Consumption (m^3)	61,197.8	59,042.5	56,957.1	-	-
Energy Charges ($)					
Electricity	134,587.0	132,384.0	130,195.0	-	-
Natural Gas	14,730.0	14,214.0	13,715.0	-	-
Total	149,317.0	146,598.0	143,910.0	-	-

Windsor Results

Building Type: Strip Mall

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	2,552.0	-	-	-	-
Space Cool	308.6	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	456.9	-	-	-	-
DHW	308.6	-	-	-	-
Total	4,617.4	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	204.0	-	-	-	-
Consumption (kWh)	487,991.0	-	-	-	-
Natural Gas					
Consumption (m^3)	75,901.8	-	-	-	-
Energy Charges ($)					
Electricity	42,192.0	-	-	-	-
Natural Gas	18,254.0	-	-	-	-
Total	60,446.0	-	-	-	-

Building Type: Strip Mall

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	2,552.0	-	-	-	-
Space Cool	308.6	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	456.9	-	-	-	-
DHW	308.6	-	-	-	-
Total	4,617.4	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	204.0	-	-	-	-
Consumption (kWh)	487,991.0	-	-	-	-
Natural Gas					
Consumption (m^3)	75,901.8	-	-	-	-
Energy Charges ($)					
Electricity	42,192.0	-	-	-	-
Natural Gas	18,254.0	-	-	-	-
Total	60,446.0	-	-	-	-

Windsor Results

Building Type: Secondary School

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,943.7	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	5,802.6	5,527.6	5,751.1	-	-
Space Cool	1,072.4	1,003.4	1,060.9	-	-
Heat Rejection	717.3	676.4	710.4	-	-
Pumps	1,900.1	1,799.5	1,885.3	-	-
Fans	806.2	760.5	797.2	-	-
DHW	2,651.1	2,651.1	2,651.1	-	-
Total	15,838.7	15,307.4	15,744.9	-	-
Percent Change (%)	**-**	**3.4**	**0.6**	**-**	**-**
Electricity					
Peak Demand (kW)	688.8	642.3	683.9	-	-
Consumption (kWh)	2,051,375.0	1,980,194.0	2,039,620.0	-	-
Natural Gas					
Consumption (m^3)	224,296.0	216,998.6	222,930.0	-	-
Energy Charges ($)					
Electricity	170,548.0	164,703.0	169,551.0	-	-
Natural Gas	53,685.0	51,957.0	53,362.0	-	-
Total	224,233.0	216,660.0	222,913.0	-	-

Building Type: Secondary School

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,943.7	-	-	-	-
Appliances	945.2	-	-	-	-
Space Heat	5,802.6	-	-	-	-
Space Cool	1,072.4	-	-	-	-
Heat Rejection	717.3	-	-	-	-
Pumps	1,900.1	-	-	-	-
Fans	806.2	-	-	-	-
DHW	2,651.1	-	-	-	-
Total	15,838.7	-	-	-	-
Percent Change (%)	**-**	**-**	**-**	**-**	**-**
Electricity					
Peak Demand (kW)	688.8	-	-	-	-
Consumption (kWh)	2,051,375.0	-	-	-	-
Natural Gas					
Consumption (m^3)	224,296.0	-	-	-	-
Energy Charges ($)					
Electricity	170,548.0	-	-	-	-
Natural Gas	53,685.0	-	-	-	-
Total	224,233.0	-	-	-	-

Windsor Results

Building Type: Big Box Retail

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	1,757.7	-	-	-	-
Space Cool	302.9	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	5,213.6	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	299.5	-	-	-	-
Consumption (kWh)	940,595.0	-	-	-	-
Natural Gas					
Consumption (m^3)	48,486.9	-	-	-	-
Energy Charges ($)					
Electricity	78,756.0	-	-	-	-
Natural Gas	11,677.0	-	-	-	-
Total	90,433.0	-	-	-	-

Building Type: Big Box Retail

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	1,757.7	-	-	-	-
Space Cool	302.9	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	5,213.6	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	299.5	-	-	-	-
Consumption (kWh)	940,595.0	-	-	-	-
Natural Gas					
Consumption (m^3)	48,486.9	-	-	-	-
Energy Charges ($)					
Electricity	78,756.0	-	-	-	-
Natural Gas	11,677.0	-	-	-	-
Total	90,433.0	-	-	-	-

Windsor Results

Building Type: Warehouse

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	1,527.0	-	-	-	-
Space Cool	17.9	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	2,119.0	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	57.4	-	-	-	-
Consumption (kWh)	142,848.0	-	-	-	-
Natural Gas					
Consumption (m^3)	42,577.9	-	-	-	-
Energy Charges ($)					
Electricity	12,620.0	-	-	-	-
Natural Gas	10,268.0	-	-	-	-
Total	22,888.0	-	-	-	-

Building Type: Warehouse

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	1,527.0	-	-	-	-
Space Cool	17.9	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	2,119.0	-	-	-	-
Percent Change (%)	-	-	-		
Electricity					
Peak Demand (kW)	57.4	-	-	-	-
Consumption (kWh)	142,848.0	-	-	-	-
Natural Gas					
Consumption (m^3)	42,577.9	-	-	-	-
Energy Charges ($)					
Electricity	12,620.0	-	-	-	-
Natural Gas	10,268.0	-	-	-	-
Total	22,888.0	-	-	-	-

Montreal Results

Montreal Results

Building Type: Mid-rise Apartment

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	250.9	250.9	250.9	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,675.7	1,637.0	1,657.9	-	-
Space Cool	123.2	102.3	113.3	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	33.0	32.5	32.8	-	-
Fans	43.1	42.6	42.9	-	-
DHW	1,342.3	1,342.3	1,342.3	-	-
Total	3,657.1	3,596.4	3,628.9	-	-
Percent Change (%)	**-**	**1.7**	**0.8**	**-**	**-**
Electricity					
Peak Demand (kW)	89.1	85.3	87.4	-	-
Consumption (kWh)	183,018.0	176,751.0	180,068.0	-	-
Natural Gas					
Consumption (m^3)	79,549.1	78,538.6	79,084.4	-	-
Energy Charges ($)					
Electricity	18,740.0	18,012.0	18,393.0	-	-
Natural Gas	25,827.0	25,509.0	25,680.0	-	-
Total	44,567.0	43,521.0	44,073.0	-	-

Building Type: Mid-rise Apartment

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	-	250.9	-	-
Appliances	188.9	-	188.9	-	-
Space Heat	1,675.7	-	1,674.3	-	-
Space Cool	123.2	-	122.6	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	33.0	-	33.0	-	-
Fans	43.1	-	43.1	-	-
DHW	1,342.3	-	1,342.3	-	-
Total	3,657.1	-	3,655.0	-	-
Percent Change (%)	**-**	**-**	**0.1**	**-**	**-**
Electricity					
Peak Demand (kW)	89.1	-	89.0	-	-
Consumption (kWh)	183,018.0	-	182,829.0	-	-
Natural Gas					
Consumption (m^3)	79,549.1	-	79,512.7	-	-
Energy Charges ($)					
Electricity	18,740.0	-	18,719.0	-	-
Natural Gas	25,827.0	-	25,816.0	-	-
Total	44,567.0	-	44,535.0	-	-

Montreal Results

Building Type: Large Office

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0
Space Heat	2,325.4	1,949.0	2,046.0	2,146.5	2,353.2
Space Cool	604.2	504.1	530.8	557.5	611.2
Heat Rejection	746.6	642.1	670.4	698.5	753.6
Pumps	302.2	237.8	253.9	270.2	306.5
Fans	457.2	449.8	448.7	450.4	458.7
DHW	454.0	454.0	454.0	454.0	454.0
Total	8,521.3	7,868.3	8,035.4	8,208.8	8,568.8
Percent Change (%)	-	**7.7**	**5.7**	**3.7**	**-0.6**
Electricity					
Peak Demand (kW)	543.2	495.6	508.4	521.2	546.5
Consumption (kWh)	1,594,969.0	1,518,160.0	1,537,644.0	1,557,875.0	1,600,459.0
Natural Gas					
Consumption (m^3)	73,743.6	63,756.3	66,328.7	68,996.3	74,479.8
Energy Charges ($)					
Electricity	136,034.0	127,788.0	129,940.0	132,133.0	136,611.0
Natural Gas	23,761.0	20,655.0	21,461.0	22,288.0	23,990.0
Total	159,795.0	148,443.0	151,401.0	154,421.0	160,601.0

Building Type: Large Office

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	-
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	-
Space Heat	2,325.4	2,222.1	2,120.0	2,353.2	-
Space Cool	604.2	577.3	550.6	611.2	-
Heat Rejection	746.6	719.1	691.2	753.6	-
Pumps	302.2	282.0	266.0	306.5	-
Fans	457.2	452.6	449.8	458.7	-
DHW	454.0	454.0	454.0	454.0	-
Total	8,521.3	8,338.8	8,163.2	8,568.8	-
Percent Change (%)	-	**2.1**	**4.2**	**-0.6**	**-**
Electricity					
Peak Demand (kW)	543.2	530.6	517.9	546.5	-
Consumption (kWh)	1,594,969.0	1,572,967.0	1,552,548.0	1,600,459.0	-
Natural Gas					
Consumption (m^3)	73,743.6	71,006.1	68,296.5	74,479.8	-
Energy Charges ($)					
Electricity	136,034.0	133,753.0	131,558.0	136,611.0	-
Natural Gas	23,761.0	22,911.0	22,071.0	23,990.0	-
Total	159,795.0	156,664.0	153,629.0	160,601.0	-

Montreal Results

Building Type: Strip Mall

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	3,358.1	-	-	-	-
Space Cool	214.8	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	439.4	-	-	-	-
DHW	324.0	-	-	-	-
Total	5,327.5	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	214.5	-	-	-	-
Consumption (kWh)	457,073.0	-	-	-	-
Natural Gas					
Consumption (m^3)	97,693.2	-	-	-	-
Energy Charges ($)					
Electricity	42,647.0	-	-	-	-
Natural Gas	31,258.0	-	-	-	-
Total	73,905.0	-	-	-	-

Building Type: Strip Mall

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	3,358.1	-	-	-	-
Space Cool	214.8	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	439.4	-	-	-	-
DHW	324.0	-	-	-	-
Total	5,327.5	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	214.5	-	-	-	-
Consumption (kWh)	457,073.0	-	-	-	-
Natural Gas					
Consumption (m^3)	97,693.2	-	-	-	-
Energy Charges ($)					
Electricity	42,647.0	-	-	-	-
Natural Gas	31,258.0	-	-	-	-
Total	73,905.0	-	-	-	-

Montreal Results

Building Type: Secondary School

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,943.7	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	7,372.6	7,062.3	7,314.0	-	-
Space Cool	910.6	861.8	901.1	-	-
Heat Rejection	755.6	731.4	750.9	-	-
Pumps	1,922.8	1,847.6	1,908.1	-	-
Fans	781.2	737.2	772.4	-	-
DHW	2,790.2	2,790.2	2,790.2	-	-
Total	17,421.8	16,919.3	17,325.6	-	-
Percent Change (%)	-	**2.9**	**0.6**	-	-
Electricity					
Peak Demand (kW)	690.3	673.7	687.1	-	-
Consumption (kWh)	2,016,402.0	1,963,007.0	2,005,964.0	-	-
Natural Gas					
Consumption (m^3)	269,639.4	261,407.1	268,083.1	-	-
Energy Charges ($)					
Electricity	171,479.0	166,959.0	170,601.0	-	-
Natural Gas	84,360.0	81,857.0	83,889.0	-	-
Total	255,839.0	248,816.0	254,490.0	-	-

Building Type: Secondary School

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,943.7	-	-	-	-
Appliances	945.2	-	-	-	-
Space Heat	7,372.6	-	-	-	-
Space Cool	910.6	-	-	-	-
Heat Rejection	755.6	-	-	-	-
Pumps	1,922.8	-	-	-	-
Fans	781.2	-	-	-	-
DHW	2,790.2	-	-	-	-
Total	17,421.8	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	690.3	-	-	-	-
Consumption (kWh)	2,016,402.0	-	-	-	-
Natural Gas					
Consumption (m^3)	269,639.4	-	-	-	-
Energy Charges ($)					
Electricity	171,479.0	-	-	-	-
Natural Gas	84,360.0	-	-	-	-
Total	255,839.0	-	-	-	-

Montreal Results

Building Type: Big Box Retail

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	2,483.9	-	-	-	-
Space Cool	247.1	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	5,884.1	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	347.0	-	-	-	-
Consumption (kWh)	936,257.0	-	-	-	-
Natural Gas					
Consumption (m^3)	66,689.8	-	-	-	-
Energy Charges ($)					
Electricity	84,145.0	-	-	-	-
Natural Gas	21,488.0	-	-	-	-
Total	105,633.0	-	-	-	-

Building Type: Big Box Retail

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	2,483.9	-	-	-	-
Space Cool	247.1	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	5,884.1	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	347.0	-	-	-	-
Consumption (kWh)	936,257.0	-	-	-	-
Natural Gas					
Consumption (m^3)	66,689.8	-	-	-	-
Energy Charges ($)					
Electricity	84,145.0	-	-	-	-
Natural Gas	21,488.0	-	-	-	-
Total	105,633.0	-	-	-	-

Montreal Results

Building Type: Warehouse

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	1,894.7	-	-	-	-
Space Cool	11.6	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	2,480.3	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	49.9	-	-	-	-
Consumption (kWh)	144,195.0	-	-	-	-
Natural Gas					
Consumption (m^3)	52,036.2	-	-	-	-
Energy Charges ($)					
Electricity	13,670.0	-	-	-	-
Natural Gas	16,939.0	-	-	-	-
Total	30,609.0	-	-	-	-

Building Type: Warehouse

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	1,894.7	-	-	-	-
Space Cool	11.6	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	2,480.3	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	49.9	-	-	-	-
Consumption (kWh)	144,195.0	-	-	-	-
Natural Gas					
Consumption (m^3)	52,036.2	-	-	-	-
Energy Charges ($)					
Electricity	13,670.0	-	-	-	-
Natural Gas	16,939.0	-	-	-	-
Total	30,609.0	-	-	-	-

Ottawa Results

Ottawa Results

Building Type: Mid-rise Apartment

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	250.9	250.9	250.9	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,741.5	1,696.8	1,721.4	-	-
Space Cool	114.3	95.3	105.3	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	33.2	32.7	33.0	-	-
Fans	43.4	42.9	43.1	-	-
DHW	1,356.0	1,356.0	1,356.0	-	-
Total	3,728.2	3,663.5	3,698.6	-	-
Percent Change (%)	**-**	**1.7**	**0.8**	**-**	**-**
Electricity					
Peak Demand (kW)	93.1	89.1	91.3	-	-
Consumption (kWh)	180,790.0	175,077.0	178,076.0	-	-
Natural Gas					
Consumption (m^3)	81,651.2	80,478.4	81,125.0	-	-
Energy Charges ($)					
Electricity	18,766.0	18,247.0	18,526.0	-	-
Natural Gas	22,450.0	22,148.0	22,314.0	-	-
Total	41,216.0	40,395.0	40,840.0	-	-

Building Type: Mid-rise Apartment

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	-	250.9	-	-
Appliances	188.9	-	188.9	-	-
Space Heat	1,741.5	-	1,728.8	-	-
Space Cool	114.3	-	109.6	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	33.2	-	33.1	-	-
Fans	43.4	-	43.2	-	-
DHW	1,356.0	-	1,356.0	-	-
Total	3,728.2	-	3,710.5	-	-
Percent Change (%)	**-**	**-**	**0.5**	**-**	**-**
Electricity					
Peak Demand (kW)	93.1	-	92.2	-	-
Consumption (kWh)	180,790.0	-	179,378.0	-	-
Natural Gas					
Consumption (m^3)	81,651.2	-	81,318.1	-	-
Energy Charges ($)					
Electricity	18,766.0	-	18,647.0	-	-
Natural Gas	22,450.0	-	22,364.0	-	-
Total	41,216.0	-	41,011.0	-	-

Ottawa Results

Building Type: Large Office

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0
Space Heat	2,498.1	2,092.5	2,210.6	2,332.7	2,581.2
Space Cool	563.1	481.9	506.2	530.6	579.2
Heat Rejection	746.5	651.0	680.1	708.5	765.1
Pumps	293.9	240.6	257.0	273.3	304.3
Fans	436.5	437.2	433.4	433.1	439.4
DHW	458.5	458.5	458.5	458.5	458.5
Total	8,628.3	7,993.2	8,177.5	8,368.4	8,759.3
Percent Change (%)	-	**7.4**	**5.2**	**3.0**	**-1.5**
Electricity					
Peak Demand (kW)	552.6	506.3	520.7	534.1	561.7
Consumption (kWh)	1,575,455.0	1,511,713.0	1,530,104.0	1,549,213.0	1,588,793.0
Natural Gas					
Consumption (m^3)	78,446.2	67,683.5	70,818.5	74,057.1	80,649.1
Energy Charges ($)					
Electricity	126,158.0	120,325.0	122,032.0	123,780.0	127,361.0
Natural Gas	21,484.0	18,721.0	19,527.0	20,359.0	22,048.0
Total	147,642.0	139,046.0	141,559.0	144,139.0	149,409.0

Building Type: Large Office

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	-
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	-
Space Heat	2,498.1	2,373.3	2,252.2	2,581.2	-
Space Cool	563.1	538.8	514.3	579.2	-
Heat Rejection	746.5	718.0	689.6	765.1	-
Pumps	293.9	278.7	262.5	304.3	-
Fans	436.5	433.6	433.0	439.4	-
DHW	458.5	458.5	458.5	458.5	-
Total	8,628.3	8,432.5	8,241.7	8,759.3	-
Percent Change (%)	-	**2.3**	**4.5**	**-1.5**	**-**
Electricity					
Peak Demand (kW)	552.6	538.7	525.1	561.7	-
Consumption (kWh)	1,575,455.0	1,555,743.0	1,536,384.0	1,588,793.0	-
Natural Gas					
Consumption (m^3)	78,446.2	75,134.8	71,921.4	80,649.1	-
Energy Charges ($)					
Electricity	126,158.0	124,372.0	122,608.0	127,361.0	-
Natural Gas	21,484.0	20,636.0	19,810.0	22,048.0	-
Total	147,642.0	145,008.0	142,418.0	149,409.0	-

Ottawa Results

Building Type: Strip Mall

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	3,491.0	-	-	-	-
Space Cool	193.7	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	435.2	-	-	-	-
DHW	327.1	-	-	-	-
Total	5,438.2	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	233.6	-	-	-	-
Consumption (kWh)	450,043.0	-	-	-	-
Natural Gas					
Consumption (m^3)	101,301.3	-	-	-	-
Energy Charges ($)					
Electricity	40,068.0	-	-	-	-
Natural Gas	27,369.0	-	-	-	-
Total	67,437.0	-	-	-	-

Building Type: Strip Mall

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	3,491.0	-	-	-	-
Space Cool	193.7	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	435.2	-	-	-	-
DHW	327.1	-	-	-	-
Total	5,438.2	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	233.6	-	-	-	-
Consumption (kWh)	450,043.0	-	-	-	-
Natural Gas					
Consumption (m^3)	101,301.3	-	-	-	-
Energy Charges ($)					
Electricity	40,068.0	-	-	-	-
Natural Gas	27,369.0	-	-	-	-
Total	67,437.0	-	-	-	-

Ottawa Results

Building Type: Secondary School

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,943.7	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	7,615.4	7,291.6	7,556.5	-	-
Space Cool	888.4	844.1	879.5	-	-
Heat Rejection	814.7	789.8	809.8	-	-
Pumps	1,892.1	1,819.2	1,878.1	-	-
Fans	769.9	727.8	761.6	-	-
DHW	2,818.5	2,818.5	2,818.5	-	-
Total	17,688.0	17,180.0	17,593.1	-	-
Percent Change (%)	-	**2.9**	**0.5**	-	-
Electricity					
Peak Demand (kW)	723.2	705.3	719.7	-	-
Consumption (kWh)	2,015,002.0	1,963,828.0	2,005,011.0	-	-
Natural Gas					
Consumption (m^3)	276,836.0	268,245.4	275,274.1	-	-
Energy Charges ($)					
Electricity	160,540.0	156,573.0	159,763.0	-	-
Natural Gas	72,036.0	69,872.0	71,643.0	-	-
Total	232,576.0	226,445.0	231,406.0	-	-

Building Type: Secondary School

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,943.7	-	-	-	-
Appliances	945.2	-	-	-	-
Space Heat	7,615.4	-	-	-	-
Space Cool	888.4	-	-	-	-
Heat Rejection	814.7	-	-	-	-
Pumps	1,892.1	-	-	-	-
Fans	769.9	-	-	-	-
DHW	2,818.5	-	-	-	-
Total	17,688.0	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	723.2	-	-	-	-
Consumption (kWh)	2,015,002.0	-	-	-	-
Natural Gas					
Consumption (m^3)	276,836.0	-	-	-	-
Energy Charges ($)					
Electricity	160,540.0	-	-	-	-
Natural Gas	72,036.0	-	-	-	-
Total	232,576.0	-	-	-	-

Ottawa Results

Building Type: Big Box Retail

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	2,611.3	-	-	-	-
Space Cool	228.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	5,992.4	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	362.3	-	-	-	-
Consumption (kWh)	933,866.0	-	-	-	-
Natural Gas					
Consumption (m^3)	69,791.2	-	-	-	-
Energy Charges ($)					
Electricity	78,160.0	-	-	-	-
Natural Gas	19,190.0	-	-	-	-
Total	97,350.0	-	-	-	-

Building Type: Big Box Retail

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	2,611.3	-	-	-	-
Space Cool	228.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	5,992.4	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	362.3	-	-	-	-
Consumption (kWh)	933,866.0	-	-	-	-
Natural Gas					
Consumption (m^3)	69,791.2	-	-	-	-
Energy Charges ($)					
Electricity	78,160.0	-	-	-	-
Natural Gas	19,190.0	-	-	-	-
Total	97,350.0	-	-	-	-

Ottawa Results

Building Type: Warehouse

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	1,982.1	-	-	-	-
Space Cool	9.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	2,565.4	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	52.4	-	-	-	-
Consumption (kWh)	144,819.0	-	-	-	-
Natural Gas					
Consumption (m^3)	54,233.6	-	-	-	-
Energy Charges ($)					
Electricity	15,104.0	-	-	-	-
Natural Gas	15,252.0	-	-	-	-
Total	30,356.0	-	-	-	-

Building Type: Warehouse

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	1,982.1	-	-	-	-
Space Cool	9.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	2,565.4	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	52.4	-	-	-	-
Consumption (kWh)	144,819.0	-	-	-	-
Natural Gas					
Consumption (m^3)	54,233.6	-	-	-	-
Energy Charges ($)					
Electricity	15,104.0	-	-	-	-
Natural Gas	15,252.0	-	-	-	-
Total	30,356.0	-	-	-	-

Edmonton Results

Edmonton Results

Building Type: Mid-rise Apartment

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	250.9	250.9	250.9	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,894.0	1,848.9	1,873.8	-	-
Space Cool	58.6	41.7	50.2	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	35.6	35.0	35.3	-	-
Fans	43.0	42.3	42.7	-	-
DHW	1,425.5	1,425.5	1,425.5	-	-
Total	3,896.5	3,833.1	3,867.3	-	-
Percent Change (%)	-	**1.6**	**0.7**	-	-
Electricity					
Peak Demand (kW)	74.0	70.4	72.4	-	-
Consumption (kWh)	166,569.0	161,326.0	164,003.0	-	-
Natural Gas					
Consumption (m^3)	87,473.5	86,292.2	86,941.6	-	-
Energy Charges ($)					
Electricity	13,839.0	13,366.0	13,610.0	-	-
Natural Gas	20,926.0	20,643.0	20,799.0	-	-
Total	34,765.0	34,009.0	34,409.0	-	-

Building Type: Mid-rise Apartment

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	250.9	250.9	-	-
Appliances	188.9	188.9	188.9	-	-
Space Heat	1,894.0	1,886.2	1,858.8	-	-
Space Cool	58.6	55.7	45.6	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	35.6	35.5	35.1	-	-
Fans	43.0	42.9	42.5	-	-
DHW	1,425.5	1,425.5	1,425.5	-	-
Total	3,896.5	3,885.6	3,847.3	-	-
Percent Change (%)	-	**0.3**	**1.3**	-	-
Electricity					
Peak Demand (kW)	74.0	73.5	71.3	-	-
Consumption (kWh)	166,569.0	165,674.0	162,533.0	-	-
Natural Gas					
Consumption (m^3)	87,473.5	87,269.1	86,549.7	-	-
Energy Charges ($)					
Electricity	13,839.0	13,760.0	13,479.0	-	-
Natural Gas	20,926.0	20,877.0	20,705.0	-	-
Total	34,765.0	34,637.0	34,184.0	-	-

Edmonton Results

Building Type: Large Office

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0
Space Heat	2,315.2	1,940.3	2,088.1	2,239.2	2,544.8
Space Cool	353.3	305.4	324.3	343.5	382.8
Heat Rejection	502.8	429.5	459.1	488.3	545.7
Pumps	243.2	206.2	221.0	235.8	265.3
Fans	459.1	463.2	458.7	458.2	465.0
DHW	481.1	481.1	481.1	481.1	481.1
Total	7,986.3	7,457.2	7,663.8	7,877.7	8,316.3
Percent Change (%)	-	**6.6**	**4.0**	**1.4**	**-4.1**
Electricity					
Peak Demand (kW)	473.4	435.1	450.3	465.7	496.1
Consumption (kWh)	1,441,662.0	1,398,862.0	1,415,193.0	1,432,613.0	1,469,557.0
Natural Gas					
Consumption (m^3)	74,188.7	64,243.3	68,164.9	72,176.1	80,282.4
Energy Charges ($)					
Electricity	111,776.0	107,947.0	109,427.0	110,978.0	114,218.0
Natural Gas	17,748.0	15,369.0	16,307.0	17,267.0	19,206.0
Total	129,524.0	123,316.0	125,734.0	128,245.0	133,424.0

Building Type: Large Office

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0
Space Heat	2,315.2	2,163.2	2,013.5	2,468.2	2,544.8
Space Cool	353.3	333.9	314.8	372.9	382.8
Heat Rejection	502.8	473.8	444.3	531.4	545.7
Pumps	243.2	228.4	213.6	257.9	265.3
Fans	459.1	458.0	460.3	462.5	465.0
DHW	481.1	481.1	481.1	481.1	481.1
Total	7,986.3	7,769.9	7,559.2	8,205.6	8,316.3
Percent Change (%)	-	**2.7**	**5.3**	**-2.7**	**-4.1**
Electricity					
Peak Demand (kW)	473.4	458.0	442.6	488.5	496.1
Consumption (kWh)	1,441,662.0	1,423,797.0	1,406,857.0	1,460,106.0	1,469,557.0
Natural Gas					
Consumption (m^3)	74,188.7	70,157.9	66,185.9	78,250.3	80,282.4
Energy Charges ($)					
Electricity	111,776.0	110,195.0	108,675.0	113,395.0	114,218.0
Natural Gas	17,748.0	16,784.0	15,834.0	18,720.0	19,206.0
Total	129,524.0	126,979.0	124,509.0	132,115.0	133,424.0

Edmonton Results

Building Type: Strip Mall

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	3,810.7	-	-	-	-
Space Cool	81.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	393.3	-	-	-	-
DHW	343.1	-	-	-	-
Total	5,619.3	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	158.6	-	-	-	-
Consumption (kWh)	407,100.0	-	-	-	-
Natural Gas					
Consumption (m^3)	110,208.2	-	-	-	-
Energy Charges ($)					
Electricity	32,055.0	-	-	-	-
Natural Gas	26,365.0	-	-	-	-
Total	58,420.0	-	-	-	-

Building Type: Strip Mall

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	3,810.7	-	-	-	-
Space Cool	81.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	393.3	-	-	-	-
DHW	343.1	-	-	-	-
Total	5,619.3	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	158.6	-	-	-	-
Consumption (kWh)	407,100.0	-	-	-	-
Natural Gas					
Consumption (m^3)	110,208.2	-	-	-	-
Energy Charges ($)					
Electricity	32,055.0	-	-	-	-
Natural Gas	26,365.0	-	-	-	-
Total	58,420.0	-	-	-	-

Edmonton Results

Building Type: Secondary School

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,943.7	1,943.7	1,943.7	-	-
Appliances	945.2	945.2	945.2	-	-
Space Heat	7,221.1	6,876.8	7,153.3	-	-
Space Cool	572.3	534.0	564.8	-	-
Heat Rejection	466.1	436.6	460.5	-	-
Pumps	1,722.7	1,651.4	1,708.9	-	-
Fans	744.6	698.4	735.6	-	-
DHW	2,960.0	2,960.0	2,960.0	-	-
Total	16,575.6	16,046.1	16,472.0	-	-
Percent Change (%)	**-**	**3.2**	**0.6**	**-**	**-**
Electricity					
Peak Demand (kW)	586.6	563.1	582.2	-	-
Consumption (kWh)	1,776,265.0	1,724,796.0	1,766,300.0	-	-
Natural Gas					
Consumption (m^3)	270,126.5	260,990.0	268,329.4	-	-
Energy Charges ($)					
Electricity	137,362.0	133,373.0	136,589.0	-	-
Natural Gas	56,544.0	54,632.0	56,168.0	-	-
Total	193,906.0	188,005.0	192,757.0	-	-

Building Type: Secondary School

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,943.7	-	1,943.7	-	-
Appliances	945.2	-	945.2	-	-
Space Heat	7,221.1	-	7,022.6	-	-
Space Cool	572.3	-	550.5	-	-
Heat Rejection	466.1	-	449.3	-	-
Pumps	1,722.7	-	1,682.0	-	-
Fans	744.6	-	718.1	-	-
DHW	2,960.0	-	2,960.0	-	-
Total	16,575.6	-	16,271.4	-	-
Percent Change (%)	**-**	**-**	**1.8**	**-**	**-**
Electricity					
Peak Demand (kW)	586.6	-	573.4	-	-
Consumption (kWh)	1,776,265.0	-	1,746,877.0	-	-
Natural Gas					
Consumption (m^3)	270,126.5	-	264,861.3	-	-
Energy Charges ($)					
Electricity	137,362.0	-	135,083.0	-	-
Natural Gas	56,544.0	-	55,442.0	-	-
Total	193,906.0	-	190,525.0	-	-

Edmonton Results

Building Type: Big Box Retail

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	2,689.3	-	-	-	-
Space Cool	92.8	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	5,935.1	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	274.7	-	-	-	-
Consumption (kWh)	897,012.0	-	-	-	-
Natural Gas					
Consumption (m^3)	71,795.4	-	-	-	-
Energy Charges ($)					
Electricity	70,011.0	-	-	-	-
Natural Gas	17,175.0	-	-	-	-
Total	87,186.0	-	-	-	-

Building Type: Big Box Retail

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	2,689.3	-	-	-	-
Space Cool	92.8	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	5,935.1	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	274.7	-	-	-	-
Consumption (kWh)	897,012.0	-	-	-	-
Natural Gas					
Consumption (m^3)	71,795.4	-	-	-	-
Energy Charges ($)					
Electricity	70,011.0	-	-	-	-
Natural Gas	17,175.0	-	-	-	-
Total	87,186.0	-	-	-	-

Edmonton Results

Building Type: Warehouse

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	2,118.1	-	-	-	-
Space Cool	4.4	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	2,696.5	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	45.1	-	-	-	-
Consumption (kWh)	144,368.0	-	-	-	-
Natural Gas					
Consumption (m^3)	57,754.9	-	-	-	-
Energy Charges ($)					
Electricity	11,568.0	-	-	-	-
Natural Gas	13,817.0	-	-	-	-
Total	25,385.0	-	-	-	-

Building Type: Warehouse

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	2,118.1	-	-	-	-
Space Cool	4.4	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	2,696.5	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	45.1	-	-	-	-
Consumption (kWh)	144,368.0	-	-	-	-
Natural Gas					
Consumption (m^3)	57,754.9	-	-	-	-
Energy Charges ($)					
Electricity	11,568.0	-	-	-	-
Natural Gas	13,817.0	-	-	-	-
Total	25,385.0	-	-	-	-

Fort McMurray Results

Fort McMurray Results

Building Type: Mid-rise Apartment

	NECB	FDWR Percentage			
		20.0%	25.0%	29.0%	40.0%
End-Use (GJ)					
Lights	250.9	250.9	-	250.9	-
Appliances	188.9	188.9	-	188.9	-
Space Heat	2,224.3	2,191.1	-	2,253.9	-
Space Cool	64.3	53.8	-	74.0	-
Heat Rejection	0.0	0.0	-	0.0	-
Pumps	37.1	36.7	-	37.4	-
Fans	43.2	42.9	-	43.5	-
DHW	1,461.6	1,461.6	-	1,461.6	-
Total	4,270.3	4,225.9	-	4,310.2	-
Percent Change (%)	**-**	**1.0**	**-**	**-0.9**	**-**
Electricity					
Peak Demand (kW)	77.1	74.7	-	79.1	-
Consumption (kWh)	169,645.0	166,413.0	-	172,597.0	-
Natural Gas					
Consumption (m^3)	97,099.7	96,229.2	-	97,872.3	-
Energy Charges ($)					
Electricity	11,925.0	11,646.0	-	12,164.0	-
Natural Gas	23,229.0	23,021.0	-	23,414.0	-
Total	35,154.0	34,667.0	-	35,578.0	-

Building Type: Mid-rise Apartment

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	250.9	250.9	250.9	-
Appliances	188.9	188.9	188.9	188.9	-
Space Heat	2,224.3	2,191.1	2,165.3	2,253.9	-
Space Cool	64.3	53.8	44.1	74.0	-
Heat Rejection	0.0	0.0	0.0	0.0	-
Pumps	37.1	36.7	36.3	37.4	-
Fans	43.2	42.9	42.5	43.5	-
DHW	1,461.6	1,461.6	1,461.6	1,461.6	-
Total	4,270.3	4,225.9	4,189.6	4,310.2	-
Percent Change (%)	**-**	**1.0**	**1.9**	**-0.9**	**-**
Electricity					
Peak Demand (kW)	77.1	74.7	72.3	79.1	-
Consumption (kWh)	169,645.0	166,413.0	163,405.0	172,597.0	-
Natural Gas					
Consumption (m^3)	97,099.7	96,229.2	95,554.6	97,872.3	-
Energy Charges ($)					
Electricity	11,925.0	11,646.0	11,399.0	12,164.0	-
Natural Gas	23,229.0	23,021.0	22,859.0	23,414.0	-
Total	35,154.0	34,667.0	34,258.0	35,578.0	-

Fort McMurray Results

Building Type: Large Office

		FDWR Percentage			
	NECB	**20.0%**	**25.0%**	**30.0%**	**40.0%**
End-Use (GJ)					
Lights	1,942.6	1,942.6	-	1,942.6	1,942.6
Appliances	1,689.0	1,689.0	-	1,689.0	1,689.0
Space Heat	2,301.8	2,120.3	-	2,485.3	2,857.0
Space Cool	339.4	318.3	-	360.7	405.1
Heat Rejection	454.3	427.2	-	481.0	543.1
Pumps	237.0	220.5	-	253.6	287.2
Fans	435.0	439.4	-	433.9	439.1
DHW	492.8	492.8	-	492.8	492.8
Total	7,891.8	7,650.2	-	8,139.0	8,656.0
Percent Change (%)	**-**	**3.1**	**-**	**-3.1**	**-9.7**
Electricity					
Peak Demand (kW)	448.9	431.9	-	457.4	497.5
Consumption (kWh)	1,415,886.0	1,399,180.0	-	1,433,596.0	1,473,936.0
Natural Gas					
Consumption (m^3)	74,146.7	69,332.2	-	79,014.4	88,878.6
Energy Charges ($)					
Electricity	90,473.0	89,190.0	-	91,822.0	94,788.0
Natural Gas	17,738.0	16,586.0	-	18,903.0	21,262.0
Total	108,211.0	105,776.0	-	110,725.0	116,050.0

Building Type: Large Office

		FDWR Equation			
	NECB	**Mid-High**	**High**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0
Space Heat	2,301.8	2,120.3	1,941.3	2,485.3	2,670.2
Space Cool	339.4	318.3	297.5	360.7	382.5
Heat Rejection	454.3	427.2	399.9	481.0	509.1
Pumps	237.0	220.5	204.1	253.6	270.4
Fans	435.0	439.4	450.0	433.9	435.5
DHW	492.8	492.8	492.8	492.8	492.8
Total	7,891.8	7,650.2	7,417.2	8,139.0	8,392.1
Percent Change (%)	**-**	**3.1**	**6.0**	**-3.1**	**-6.3**
Electricity					
Peak Demand (kW)	448.9	431.9	419.2	457.4	471.7
Consumption (kWh)	1,415,886.0	1,399,180.0	1,384,198.0	1,433,596.0	1,452,523.0
Natural Gas					
Consumption (m^3)	74,146.7	69,332.2	64,582.0	79,014.4	83,921.3
Energy Charges ($)					
Electricity	90,473.0	89,190.0	1,384,198.0	91,822.0	93,231.0
Natural Gas	17,738.0	16,586.0	23,072.0	18,903.0	20,077.0
Total	108,211.0	105,776.0	1,407,270.0	110,725.0	113,308.0

Fort McMurray Results

Building Type: Strip Mall

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	4,494.0	-	-	-	-
Space Cool	100.5	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	451.0	-	-	-	-
DHW	351.2	-	-	-	-
Total	6,388.0	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	180.7	-	-	-	-
Consumption (kWh)	428,550.0	-	-	-	-
Natural Gas					
Consumption (m^3)	128,553.8	-	-	-	-
Energy Charges ($)					
Electricity	28,286.0	-	-	-	-
Natural Gas	30,754.0	-	-	-	-
Total	59,040.0	-	-	-	-

Building Type: Strip Mall

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	-	850.7	-	-
Appliances	140.6	-	140.6	-	-
Space Heat	4,494.0	-	4,457.7	-	-
Space Cool	100.5	-	90.6	-	-
Heat Rejection	0.0	-	0.0	-	-
Pumps	0.0	-	0.0	-	-
Fans	451.0	-	415.0	-	-
DHW	351.2	-	351.2	-	-
Total	6,388.0	-	6,305.8	-	-
Percent Change (%)	-	-	**1.3**	-	-
Electricity					
Peak Demand (kW)	180.7	-	173.6	-	-
Consumption (kWh)	428,550.0	-	415,794.0	-	-
Natural Gas					
Consumption (m^3)	128,553.8	-	127,590.9	-	-
Energy Charges ($)					
Electricity	28,286.0	-	27,421.0	-	-
Natural Gas	30,754.0	-	30,523.0	-	-
Total	59,040.0	-	57,944.0	-	-

Fort McMurray Results

Building Type: Secondary School

		FDWR Percentage			
	NECB	**20.0%**	**25.0%**	**26.2%**	**40.0%**
End-Use (GJ)					
Lights	1,943.7	1,943.7	-	1,943.7	-
Appliances	945.2	945.2	-	945.2	-
Space Heat	8,663.9	8,344.4	-	8,743.2	-
Space Cool	595.9	563.6	-	604.0	-
Heat Rejection	457.4	437.3	-	462.4	-
Pumps	1,765.1	1,704.9	-	1,779.8	-
Fans	754.1	715.7	-	763.8	-
DHW	3,034.6	3,034.6	-	3,034.6	-
Total	18,159.9	17,689.5	-	18,276.7	-
Percent Change (%)	**-**	**2.6**	**-**	**-0.6**	**-**
Electricity					
Peak Demand (kW)	580.7	559.9	-	585.9	-
Consumption (kWh)	1,794,832.0	1,752,899.0	-	1,805,247.0	-
Natural Gas					
Consumption (m^3)	310,386.7	301,910.8	-	312,491.6	-
Energy Charges ($)					
Electricity	114,804.0	112,117.0	-	115,470.0	-
Natural Gas	64,973.0	63,199.0	-	65,414.0	-
Total	179,777.0	175,316.0	-	180,884.0	-

Building Type: Secondary School

		FDWR Equation			
	NECB	**Mid-High**	**High**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	1,943.7	1,943.7	1,943.7	1,943.7	-
Appliances	945.2	945.2	945.2	945.2	-
Space Heat	8,663.9	8,344.4	8,043.3	8,743.2	-
Space Cool	595.9	563.6	531.9	604.0	-
Heat Rejection	457.4	437.3	416.9	462.4	-
Pumps	1,765.1	1,704.9	1,645.8	1,779.8	-
Fans	754.1	715.7	678.3	763.8	-
DHW	3,034.6	3,034.6	3,034.6	3,034.6	-
Total	18,159.9	17,689.5	17,239.8	18,276.7	-
Percent Change (%)	**-**	**2.6**	**5.1**	**-0.6**	**-**
Electricity					
Peak Demand (kW)	580.7	559.9	538.9	585.9	-
Consumption (kWh)	1,794,832.0	1,752,899.0	1,711,632.0	1,805,247.0	-
Natural Gas					
Consumption (m^3)	310,386.7	301,910.8	293,922.0	312,491.6	-
Energy Charges ($)					
Electricity	114,804.0	112,117.0	109,462.0	115,470.0	-
Natural Gas	64,973.0	63,199.0	61,527.0	65,414.0	-
Total	179,777.0	175,316.0	170,989.0	180,884.0	-

Fort McMurray Results

Building Type: Big Box Retail

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	3,452.5	-	-	-	-
Space Cool	111.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	6,717.0	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	290.2	-	-	-	-
Consumption (kWh)	914,913.0	-	-	-	-
Natural Gas					
Consumption (m^3)	90,826.9	-	-	-	-
Energy Charges ($)					
Electricity	59,278.0	-	-	-	-
Natural Gas	21,729.0	-	-	-	-
Total	81,007.0	-	-	-	-

Building Type: Big Box Retail

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	3,452.5	-	-	-	-
Space Cool	111.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	160.7	-	-	-	-
Total	6,717.0	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	290.2	-	-	-	-
Consumption (kWh)	914,913.0	-	-	-	-
Natural Gas					
Consumption (m^3)	90,826.9	-	-	-	-
Energy Charges ($)					
Electricity	59,278.0	-	-	-	-
Natural Gas	21,729.0	-	-	-	-
Total	81,007.0	-	-	-	-

Fort McMurray Results

Building Type: Warehouse

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	2,423.4	-	-	-	-
Space Cool	6.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	3,003.7	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	50.9	-	-	-	-
Consumption (kWh)	149,685.0	-	-	-	-
Natural Gas					
Consumption (m^3)	65,396.6	-	-	-	-
Energy Charges ($)					
Electricity	10,023.0	-	-	-	-
Natural Gas	15,645.0	-	-	-	-
Total	25,668.0	-	-	-	-

Building Type: Warehouse

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	2,423.4	-	-	-	-
Space Cool	6.3	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	119.8	-	-	-	-
Total	3,003.7	-	-	-	-
Percent Change (%)	-			-	-
Electricity					
Peak Demand (kW)	50.9	-	-	-	-
Consumption (kWh)	149,685.0	-	-	-	-
Natural Gas					
Consumption (m^3)	65,396.6	-	-	-	-
Energy Charges ($)					
Electricity	10,023.0	-	-	-	-
Natural Gas	15,645.0	-	-	-	-
Total	25,668.0	-	-	-	-

Yellowknife Results

Yellowknife Results

Building Type: Mid-rise Apartment

		FDWR Percentage			
	NECB	20.0%	25.0%	29.0%	40.0%
End-Use (GJ)					
Lights	250.9	-	250.9	250.9	-
Appliances	188.9	-	188.9	188.9	-
Space Heat	2,971.4	-	2,989.3	3,007.1	-
Space Cool	30.8	-	39.0	46.4	-
Heat Rejection	0.0	-	0.0	0.0	-
Pumps	37.3	-	37.8	38.1	-
Fans	42.2	-	42.6	42.9	-
DHW	1,637.5	-	1,637.5	1,637.5	-
Total	5,158.9	-	5,185.9	5,211.7	-
Percent Change (%)	**-**	**-**	**-0.5**	**-1.0**	**-**
Electricity					
Peak Demand (kW)	65.2	-	67.3	68.9	-
Consumption (kWh)	162,347.0	-	164,947.0	167,250.0	-
Oil					
Consumption (L)	118,264.7	-	118,717.5	119,173.0	-
Energy Charges ($)					
Electricity	35,862.0	-	36,501.0	37,054.0	-
Oil	104,073.0	-	104,471.4	104,872.2	-
Total	139,935.0	-	140,972.4	141,926.2	-

Building Type: Mid-rise Apartment

		FDWR Equation			
	NECB	Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	250.9	250.9	250.9	250.9	250.9
Appliances	188.9	188.9	188.9	188.9	188.9
Space Heat	2,971.4	2,957.5	2,941.4	2,989.3	3,007.1
Space Cool	30.8	24.2	18.2	39.0	46.4
Heat Rejection	0.0	0.0	0.0	0.0	0.0
Pumps	37.3	37.0	36.7	37.8	38.1
Fans	42.2	41.9	41.6	42.6	42.9
DHW	1,637.5	1,637.5	1,637.5	1,637.5	1,637.5
Total	5,158.9	5,137.9	5,115.1	5,185.9	5,211.7
Percent Change (%)	**-**	**0.4**	**0.8**	**-0.5**	**-1.0**
Electricity					
Peak Demand (kW)	65.2	64.1	61.8	67.3	68.9
Consumption (kWh)	162,347.0	160,302.0	158,402.0	164,947.0	167,250.0
Oil					
Consumption (L)	118,264.7	117,907.4	117,495.6	118,717.5	119,173.0
Energy Charges ($)					
Electricity	35,862.0	35,346.0	34,860.0	36,501.0	37,054.0
Oil	104,073.0	103,758.5	103,396.1	104,471.4	104,872.2
Total	139,935.0	139,104.5	138,256.1	140,972.4	141,926.2

Yellowknife Results

Building Type: Large Office

		FDWR Percentage			
	NECB	20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	1,942.6	-	1,942.6	1,942.6	1,942.6
Appliances	1,689.0	-	1,689.0	1,689.0	1,689.0
Space Heat	2,884.8	-	3,058.4	3,237.7	3,600.2
Space Cool	222.3	-	241.5	259.9	296.4
Heat Rejection	404.9	-	452.5	491.8	563.5
Pumps	207.8	-	224.3	240.9	283.3
Fans	405.3	-	403.2	405.1	416.4
DHW	550.3	-	550.3	550.3	550.3
Total	8,307.1	-	8,561.8	8,817.2	9,341.7
Percent Change (%)	-	-	**-3.1**	**-6.1**	**-12.5**
Electricity					
Peak Demand (kW)	439.1	-	456.3	475.9	512.4
Consumption (kWh)	1,353,325.0	-	1,375,853.0	1,397,015.0	1,442,004.0
Oil					
Consumption (L)	88,807.7	-	93,299.9	97,931.2	107,305.6
Energy Charges ($)					
Electricity	282,133.0	-	287,027.0	291,673.0	301,444.0
Oil	78,150.7	-	82,103.9	46,196.0	50,497.0
Total	360,283.7	-	369,130.9	337,869.0	351,941.0

Building Type: Large Office

		FDWR Equation			
	NECB	Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	1,942.6	1,942.6	1,942.6	1,942.6	1,942.6
Appliances	1,689.0	1,689.0	1,689.0	1,689.0	1,689.0
Space Heat	2,884.8	2,716.3	2,556.8	3,058.4	3,237.7
Space Cool	222.3	203.6	185.4	241.5	259.9
Heat Rejection	404.9	358.6	311.1	452.5	491.8
Pumps	207.8	191.4	175.0	224.3	240.9
Fans	405.3	413.8	432.5	403.2	405.1
DHW	550.3	550.3	550.3	550.3	550.3
Total	8,307.1	8,065.7	7,842.8	8,561.8	8,817.2
Percent Change (%)	-	**2.9**	**5.6**	**-3.1**	**-6.1**
Electricity					
Peak Demand (kW)	439.1	419.3	393.3	456.3	475.9
Consumption (kWh)	1,353,325.0	1,333,079.0	1,315,463.0	1,375,853.0	1,397,015.0
Oil					
Consumption (L)	88,807.7	84,451.8	80,327.8	93,299.9	97,931.2
Energy Charges ($)					
Electricity	282,133.0	277,664.0	273,672.0	287,027.0	291,673.0
Oil	78,150.7	74,317.6	38,123.0	82,103.9	46,196.0
Total	360,283.7	351,981.6	311,795.0	369,130.9	337,869.0

Yellowknife Results

Building Type: Strip Mall

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	850.7	-	-	-	-
Appliances	140.6	-	-	-	-
Space Heat	6,091.7	-	-	-	-
Space Cool	48.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	401.6	-	-	-	-
DHW	391.6	-	-	-	-
Total	7,924.1	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	144.7	-	-	-	-
Consumption (kWh)	400,238.0	-	-	-	-
Oil					
Consumption (L)	167,613.5	-	-	-	-
Energy Charges ($)					
Electricity	84,490.0	-	-	-	-
Oil	147,499.9	-	-	-	-
Total	231,989.9	-	-	-	-

Building Type: Strip Mall

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	850.7	850.7	850.7	-	-
Appliances	140.6	140.6	140.6	-	-
Space Heat	6,091.7	6,067.3	6,045.6	-	-
Space Cool	48.0	40.6	33.6	-	-
Heat Rejection	0.0	0.0	0.0	-	-
Pumps	0.0	0.0	0.0	-	-
Fans	401.6	366.2	331.4	-	-
DHW	391.6	391.6	391.6	-	-
Total	7,924.1	7,856.9	7,793.4	-	-
Percent Change (%)	-	**0.8**	**1.7**	-	-
Electricity					
Peak Demand (kW)	144.7	137.8	131.1	-	-
Consumption (kWh)	400,238.0	388,340.0	376,719.0	-	-
Oil					
Consumption (L)	167,613.5	166,980.8	166,421.6	-	-
Energy Charges ($)					
Electricity	84,490.0	81,939.0	79,433.0	-	-
Oil	147,499.9	146,943.1	146,451.0	-	-
Total	231,989.9	228,882.1	225,884.0	-	-

Yellowknife Results

Building Type: Secondary School

		FDWR Percentage			
	NECB	**20.0%**	**25.0%**	**26.2%**	**40.0%**
End-Use (GJ)					
Lights	1,943.7	-	1,943.7	1,943.7	-
Appliances	945.2	-	945.2	945.2	-
Space Heat	11,151.6	-	11,518.3	11,612.1	-
Space Cool	442.5	-	472.8	480.5	-
Heat Rejection	361.2	-	392.0	399.5	-
Pumps	1,665.7	-	1,729.4	1,745.5	-
Fans	661.1	-	699.6	709.7	-
DHW	3,396.8	-	3,396.8	3,396.8	-
Total	20,567.8	-	21,097.8	21,233.1	-
Percent Change (%)	**-**	**-**	**-2.6**	**-3.2**	**-**
Electricity					
Peak Demand (kW)	533.0	-	555.5	561.1	-
Consumption (kWh)	1,672,060.0	-	1,717,436.0	1,728,945.0	-
Oil					
Consumption (L)	376,120.6	-	385,601.4	388,026.2	-
Energy Charges ($)					
Electricity	349,660.0	-	359,119.0	361,532.0	-
Oil	330,986.1	-	339,329.2	341,463.0	-
Total	680,646.1	-	698,448.2	702,995.0	-

Building Type: Secondary School

		FDWR Equation			
	NECB	**Mid-High**	**High**	**Mid-Low**	**Low**
End-Use (GJ)					
Lights	1,943.7	1,943.7	1,943.7	1,943.7	1,943.7
Appliances	945.2	945.2	945.2	945.2	945.2
Space Heat	11,151.6	10,814.8	10,508.2	11,518.3	11,612.1
Space Cool	442.5	412.7	384.0	472.8	480.5
Heat Rejection	361.2	329.5	296.1	392.0	399.5
Pumps	1,665.7	1,604.6	1,547.5	1,729.4	1,745.5
Fans	661.1	625.2	592.1	699.6	709.7
DHW	3,396.8	3,396.8	3,396.8	3,396.8	3,396.8
Total	20,567.8	20,072.5	19,613.6	21,097.8	21,233.1
Percent Change (%)	**-**	**2.4**	**4.6**	**-2.6**	**-3.2**
Electricity					
Peak Demand (kW)	533.0	510.3	484.6	555.5	561.1
Consumption (kWh)	1,672,060.0	1,628,042.0	1,585,716.0	1,717,436.0	1,728,945.0
Oil					
Consumption (L)	376,120.6	367,414.4	359,485.5	385,601.4	388,026.2
Energy Charges ($)					
Electricity	349,660.0	340,455.0	331,535.0	359,119.0	361,532.0
Oil	330,986.1	323,324.7	316,347.3	339,329.2	341,463.0
Total	680,646.1	663,779.7	647,882.3	698,448.2	702,995.0

Yellowknife Results

Building Type: Big Box Retail

	NECB	FDWR Percentage			
		20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	5,077.8	-	-	-	-
Space Cool	48.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	164.6	-	-	-	-
Total	8,282.8	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	254.3	-	-	-	-
Consumption (kWh)	923,746.0	-	-	-	-
Oil					
Consumption (L)	128,160.1	-	-	-	-
Energy Charges ($)					
Electricity	194,127.0	-	-	-	-
Oil	112,780.9	-	-	-	-
Total	306,907.9	-	-	-	-

Building Type: Big Box Retail

	NECB	FDWR Equation			
		Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	2,053.4	-	-	-	-
Appliances	280.1	-	-	-	-
Space Heat	5,077.8	-	-	-	-
Space Cool	48.0	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	659.0	-	-	-	-
DHW	164.6	-	-	-	-
Total	8,282.8	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	254.3	-	-	-	-
Consumption (kWh)	923,746.0	-	-	-	-
Oil					
Consumption (L)	128,160.1	-	-	-	-
Energy Charges ($)					
Electricity	194,127.0	-	-	-	-
Oil	112,780.9	-	-	-	-
Total	306,907.9	-	-	-	-

Yellowknife Results

Building Type: Warehouse

		FDWR Percentage			
	NECB	20.0%	25.0%	30.0%	40.0%
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	3,274.9	-	-	-	-
Space Cool	1.8	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	121.6	-	-	-	-
Total	3,852.5	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	52.7	-	-	-	-
Consumption (kWh)	154,147.0	-	-	-	-
Oil					
Consumption (L)	85,253.7	-	-	-	-
Energy Charges ($)					
Electricity	33,271.0	-	-	-	-
Oil	75,023.3	-	-	-	-
Total	108,294.3	-	-	-	-

Building Type: Warehouse

		FDWR Equation			
	NECB	Mid-High	High	Mid-Low	Low
End-Use (GJ)					
Lights	293.5	-	-	-	-
Appliances	41.3	-	-	-	-
Space Heat	3,274.9	-	-	-	-
Space Cool	1.8	-	-	-	-
Heat Rejection	0.0	-	-	-	-
Pumps	0.0	-	-	-	-
Fans	119.4	-	-	-	-
DHW	121.6	-	-	-	-
Total	3,852.5	-	-	-	-
Percent Change (%)	-	-	-	-	-
Electricity					
Peak Demand (kW)	52.7	-	-	-	-
Consumption (kWh)	154,147.0	-	-	-	-
Oil					
Consumption (L)	85,253.7	-	-	-	-
Energy Charges ($)					
Electricity	33,271.0	-	-	-	-
Oil	75,023.3	-	-	-	-
Total	108,294.3	-	-	-	-

Appendix E: Utility Rates

Utility Rates Used for Modelling

Location	Building Type	Electricity Rate		Natural Gas Rate	
		Rate Schedule	Date	Rate Schedule	Date
Victoria	Mid-Rise Apartment	BC Hydro - Commercial Demand 35kW and Over	April 2010	Terasen Gas - Commercial Rate 2 Schedule (2000-5999 GJ per year)	January 2009
	Large Office	BC Hydro - Commercial Demand 35kW and Over	April 2010	Terasen Gas - Commercial Rate 2 Schedule (2000-5999 GJ per year)	January 2009
	Strip Mall	BC Hydro - Commercial Demand 35kW and Over	April 2010	Terasen Gas - Commercial Rate 2 Schedule (2000-5999 GJ per year)	January 2009
	School	BC Hydro - Commercial Demand 35kW and Over	April 2010	Terasen Gas - Commercial Rate 3 Schedule (Greater than 6000 GJ per year)	January 2009
	Retail	BC Hydro - Commercial Demand 35kW and Over	April 2010	Terasen Gas - Commercial Rate 2 Schedule (2000-5999 GJ per year)	January 2009
	Warehouse	BC Hydro - Commercial Demand 35kW and Over	April 2010	Terasen Gas - Commercial Rate 2 Schedule (2000-5999 GJ per year)	January 2009
Windsor	Mid-Rise Apartment	Enwin - Commercial - General Service Over 50kWh Energy Rate - Average from IESO	November 2009	Union Gas - Rate M2 (using 73000 M^3 per year)	January 2010
	Large Office	Enwin - Commercial - General Service Over 50kWh Energy Rate - Average from IESO	November 2009	Union Gas - Rate M2 (using 73000 M^3 per year)	January 2010
	Strip Mall	Enwin - Commercial - General Service Over 50kWh Energy Rate - Average from IESO	November 2009	Union Gas - Rate M2 (using 73000 M^3 per year)	January 2010
	School	Enwin - Commercial - General Service Over 50kWh Energy Rate - Average from IESO	November 2009	Union Gas - Rate M2 (using 73000 M^3 per year)	January 2010
	Retail	Enwin - Commercial - General Service Over 50kWh Energy Rate - Average from IESO	November 2009	Union Gas - Rate M2 (using 73000 M^3 per year)	January 2010
	Warehouse	Enwin - Commercial - General Service Over 50kWh Energy Rate - Average from IESO	November 2009	Union Gas - Rate M2 (using 73000 M^3 per year)	January 2010
Montreal	Mid-Rise Apartment	Hydro Quebec - Business Rate M Demand Over 100 kW, less than 5000 kW	April 2009	Gaz Metro - Rate D3 (using minimum 333 M^3 per day)	January 2010
	Large Office	Hydro Quebec - Business Rate M Demand Over 100 kW, less than 5000 kW	April 2009	Gaz Metro - Rate D3 (using minimum 333 M^3 per day)	January 2010
	Strip Mall	Hydro Quebec - Business Rate M Demand Over 100 kW, less than 5000 kW	April 2009	Gaz Metro - Rate D3 (using minimum 333 M^3 per day)	January 2010
	School	Hydro Quebec - Business Rate M Demand Over 100 kW, less than 5000 kW	April 2009	Gaz Metro - Rate D3 (using minimum 333 M^3 per day)	January 2010
	Retail	Hydro Quebec - Business Rate M Demand Over 100 kW, less than 5000 kW	April 2009	Gaz Metro - Rate D3 (using minimum 333 M^3 per day)	January 2010
	Warehouse	Hydro Quebec - Business Rate M Demand Over 100 kW, less than 5000 kW	April 2009	Gaz Metro - Rate D3 (using minimum 333 M^3 per day)	January 2010
Ottawa	Mid-Rise Apartment	Hydro Ottawa - Commercial - Over 50kWh, < 1500 kW Energy Rate - Average from IESO	May 2010	Enbridge - Commerical and Industrial - Rate 6	April 2010
	Large Office	Hydro Ottawa - Commercial - Over 50kWh, < 1500 kW Energy Rate - Average from IESO	May 2010	Enbridge - Commerical and Industrial - Rate 6	April 2010
	Strip Mall	Hydro Ottawa - Commercial - Over 50kWh, < 1500 kW Energy Rate - Average from IESO	May 2010	Enbridge - Commerical and Industrial - Rate 6	April 2010
	School	Hydro Ottawa - Commercial - Over 50kWh, < 1500 kW Energy Rate - Average from IESO	May 2010	Enbridge - Commerical and Industrial - Rate 6	April 2010
	Retail	Hydro Ottawa - Commercial - Over 50kWh, < 1500 kW Energy Rate - Average from IESO	May 2010	Enbridge - Commerical and Industrial - Rate 6	April 2010
	Warehouse	Hydro Ottawa - Commercial - Over 50kWh, < 1500 kW Energy Rate - Average from IESO	May 2010	Enbridge - Commerical and Industrial - Rate 6	April 2010

Utility Rates Used for Modelling

Location	Building Type	Electricity Rate		Natural Gas Rate	
		Rate Schedule	Date	Rate Schedule	Date
Edmonton	Mid-Rise Apartment	EPCOR - Commercial Industrial - 150 kVa to 5000 kVa Energy Rate - AESO	March 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010
	Large Office	EPCOR - Commercial Industrial - 150 kVa to 5000 kVa Energy Rate - Average from AESO	March 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010
	Strip Mall	EPCOR - Commercial Industrial - 150 kVa to 5000 kVa Energy Rate - Average from AESO	March 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010
	School	EPCOR - Commercial Industrial - 150 kVa to 5000 kVa Energy Rate - Average from AESO	March 2010	ATCO Gas - High Use Delivery Service Rates (More than 8000 GJ Annually)	March 2010
	Retail	EPCOR - Commercial Industrial - 150 kVa to 5000 kVa Energy Rate - Average from AESO	March 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010
	Warehouse	EPCOR - Commercial Industrial - 150 kVa to 5000 kVa Energy Rate - Average from AESO	March 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010
Fort McMurray	Mid-Rise Apartment	ATCO Eletric Energy Rate - Average from AESO	January 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010
	Large Office	ATCO Eletric Energy Rate - Average from AESO	January 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010
	Strip Mall	ATCO Eletric Energy Rate - Average from AESO	January 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010
	School	ATCO Eletric Energy Rate - Average from AESO	January 2010	ATCO Gas - High Use Delivery Service Rates (More than 8000 GJ Annually)	March 2010
	Retail	ATCO Eletric Energy Rate - Average from AESO	January 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010
	Warehouse	ATCO Eletric Energy Rate - Average from AESO	January 2010	ATCO Gas - Low Use Delivery Service Rates (less than 8000 GJ Annually)	March 2010

Location	Building Type	Electricity Rate		Oil Rate	
		Rate Schedule	Date	Rate Schedule	Date
Yellowknife	Mid-Rise Apartment	Northland Utilities - Commercial Rate	February 2009	Polar Fuels - Average Oil Rate	Febaruary 2010
	Large Office	Northland Utilities - Commercial Rate	February 2009	Polar Fuels - Average Oil Rate	Febaruary 2010
	Strip Mall	Northland Utilities - Commercial Rate	February 2009	Polar Fuels - Average Oil Rate	Febaruary 2010
	School	Northland Utilities - Commercial Rate	February 2009	Polar Fuels - Average Oil Rate	Febaruary 2010
	Retail	Northland Utilities - Commercial Rate	February 2009	Polar Fuels - Average Oil Rate	Febaruary 2010
	Warehouse	Northland Utilities - Commercial Rate	February 2009	Polar Fuels - Average Oil Rate	Febaruary 2010

Modelling of Adaptation to the National Energy Code for Buildings (NECB) 2011

Heat Recovery for Dwelling Units
With Self Contained HVAC Systems

Addendum to Final Report

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Heat Recovery for Dwelling Units with Self Contained HVAC Systems

The NECB 2011 prescribes heat recovery on self-contained mechanical ventilation systems that serve a single dwelling unit. This requirement applies to all NECB 2011 climates zones, except for zone 4, 5, and 6. Of the seven locations evaluated in this study, only Edmonton, Fort McMurray, and Yellowknife required heat recovery under this prescriptive requirement. The heat recovery effectiveness value prescribed for each of these three locations is 50%.

To evaluate the effect of modifying the NECB 2011 dwelling unit heat recovery requirement, two alternate efficiency levels (High and Low) were evaluated. The Low level requirement represents the removal of heat recovery, and the High level requirement represents increasing the effectiveness value to 75%. The NECB 2011 prescriptive level, the Low level, and the High level, were applied to a mid-rise apartment building described in Table 1.

Table 1: Apartment Building Description for Self-Contained Mechanical Ventilation

Mid-Rise Apartment (Self-Contained)	This mid-rise apartment archetype represents a square 3,900 m² (42,000ft²), 3-storey building with a wall-to-roof area ratio of 1.1 and a window-to-wall ratio of 0.29. There are 15 apartments and 1 core zone per floor. The HVAC system consists of package air conditioners (PACs) and hydronic baseboards serving each apartment. The ventilation to each suite is self-contained and provided via the PAC. A single natural gas boiler provides heating. Walls are concrete block with exterior finish and interior insulation and drywall.

Table 2 provides a summary of the energy savings results for each level (High and Low), compared to the NECB 2011 prescriptive level.

Table 2: Self Contained Mechanical Ventilation in Dwelling Unit - Heat Recovery Results

Building Type	Location	Energy Savings Relative to NECB (%)	
		Low	High
Mid-rise Apartment (Self-Contained)	Edmonton	-13.3	6.2
	Fort McMurray	-14.1	6.7
	Yellowknife	-15.8	7.6

The removal of the heat recovery requirement (i.e. Low level) had a large impact on the overall energy use. The removal of the heat recovery increased the energy use for each location by a similar magnitude, with a maximum increase seen in Yellowknife at 15.8%.

Increasing the heat recovery effectiveness from 50% to 75% (i.e. High Level) had a moderate impact on energy savings. The increase in effectiveness had a similar impact on each location, with the largest savings seen in Yellowknife at 7.6%.

A detailed energy use breakdown by end-use, for each efficiency level and location is provided in Table 3, Table 4, and Table 5.

Table 3: Self Contained Dwelling Unit Heat Recovery Results- Edmonton

	NECB	Suite HRV	
		Low	High
End-Use (GJ)			
Lights	250.9	250.9	250.9
Appliances	188.9	188.9	188.9
Space Heat	1,345.6	1,760.6	1,151.4
Space Cool	34.6	34.1	34.9
Heat Rejection	0.0	0.0	0.0
Pumps	24.6	27.4	23.2
Fans	15.3	15.3	15.3
DHW	1,282.9	1,282.9	1,282.9
Total	3,142.8	3,560.0	2,947.5
Percent Change (%)	-	**-13.3**	**6.2**
Electricity			
Peak Demand (kW)	70.7	72.7	69.8
Consumption (kWh)	147,420.0	149,405.0	146,487.0
Natural Gas			
Consumption (m^3)	69,304.2	80,184.5	64,209.7
Energy Charges ($)			
Electricity	12,493.0	12,645.0	12,421.0
Natural Gas	16,580.0	19,183.0	15,361.0
Total	29,073.0	31,828.0	27,782.0

Table 4: Self Contained Dwelling Unit Heat Recovery Results – Fort McMurray

	NECB	Suite HRV	
		Low	High
End-Use (GJ)			
Lights	250.9	250.9	250.9
Appliances	188.9	188.9	188.9
Space Heat	1,582.9	2,063.4	1,354.5
Space Cool	42.1	42.2	42.1
Heat Rejection	0.0	0.0	0.0
Pumps	25.2	28.2	23.7
Fans	15.6	15.6	15.6
DHW	1,318.3	1,318.3	1,318.3
Total	3,423.9	3,907.5	3,194.1
Percent Change (%)	-	**-14.1**	**6.7**
Electricity			
Peak Demand (kW)	75.4	77.9	74.2
Consumption (kWh)	150,437.0	152,870.0	149,290.0
Natural Gas			
Consumption (m^3)	76,475.6	89,074.6	70,488.2
Energy Charges ($)			
Electricity	10,827.0	10,992.0	10,745.0
Natural Gas	18,295.0	21,309.0	16,863.0
Total	29,122.0	32,301.0	27,608.0

Table 5: Self Contained Dwelling Unit Heat Recovery Results – Yellowknife

		Suite HRV	
	NECB	Low	High
End-Use (GJ)			
Lights	250.9	250.9	250.9
Appliances	188.9	188.9	188.9
Space Heat	2,116.5	2,774.5	1,799.4
Space Cool	20.8	19.8	21.4
Heat Rejection	0.0	0.0	0.0
Pumps	24.5	27.8	22.9
Fans	14.6	14.6	14.6
DHW	1,559.1	1,559.1	1,559.1
Total	4,175.2	4,835.5	3,857.1
Percent Change (%)	-	**-15.8**	**7.6**
Electricity			
Peak Demand (kW)	64.4	65.5	63.9
Consumption (kWh)	145,668.0	148,403.0	144,363.0
Oil			
Consumption (L)	94,385.4	111,203.2	86,284.7
Energy Charges ($)			
Electricity	32,630.0	33,178.0	32,374.0
Oil	83,059.2	97,858.8	75,930.5
Total	115,689.2	131,036.8	108,304.5