Energy Savings Assessment

PREPARED FOR

ASSESSMENT SITE

ASSESSMENT PERFORMED BY

Aerco
4285 Dawson St.
Burnaby, BC V5C 4B3

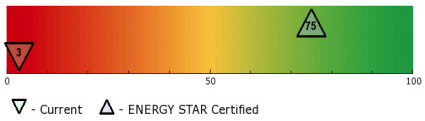
ASSESSMENT DATES
10/25/2011 – 11/01/2011

REPORT ID
190957

Executive Summary

Your Building's Energy Performance Benchmarks

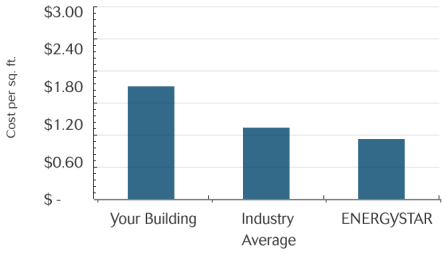
Energy Use



Your building's ENERGY STAR® Energy Performance Rating is **3**. Its Energy Use Index is **167.57 kbtu per sq. ft.**

Your building's ENERGY STAR score of 3 ranks you below average versus your peers, and falls well below the minimum rating of 75 that is required for ENERGY STAR certification.

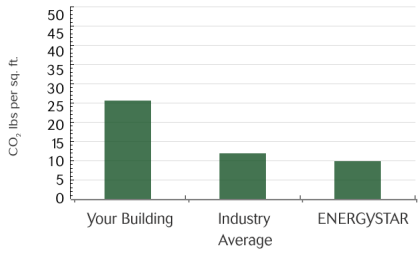
Cost



Your building's annual cost per square foot is **$1.76 per sq. ft.** overall.

Your building's cost per square foot is $0.65 more than the industry average. Your annual cost can be reduced by $52,366 or 37.0% by achieving an ENERGY STAR score of 50.

Carbon Footprint



Your building's annual carbon footprint is **933 metric tons of CO_2** or **25.59 lbs per sq. ft.**

Your building's carbon emissions are 116.4% more than the industry average, and can be reduced by 14 lbs per sq. ft. by achieving an ENERGY STAR score of 50.

You could save up to **$52,366** annually or $261,830 over 5 years by raising your ENERGY STAR score to the level of 50.

While a more detailed energy audit is required to quantify actual savings, the savings potential can be estimated by comparing the performance of your building to the ENERGY STAR database.

Key Findings

- Occupancy of this building is lower than industry average (lowers Energy Star)
- MUA units heating controls disfunctional
- Heating loop includes domestic
- Boiler cannot schedule temperature output
- Potential for light harvesting
-

How Does Your Building Use Electricity Today?

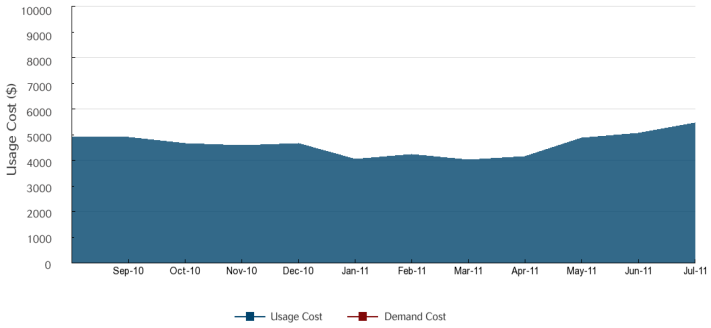
This page shows how electricity use in your building compares to outside weather and helps identify performance issues in the building. Typically your consumption should track the weather pattern for the type of heating or cooling equipment operating in your building. Overall flat consumption can be indicative of 1) simultaneous heating and cooling, 2) extended fan operation, 3) extensive reheat, and 4) an inefficient lighting system. Be aware, some variation can be caused by estimated meter readings which are "fixed" the next time the meter is actually read.

Utility Bill Analysis

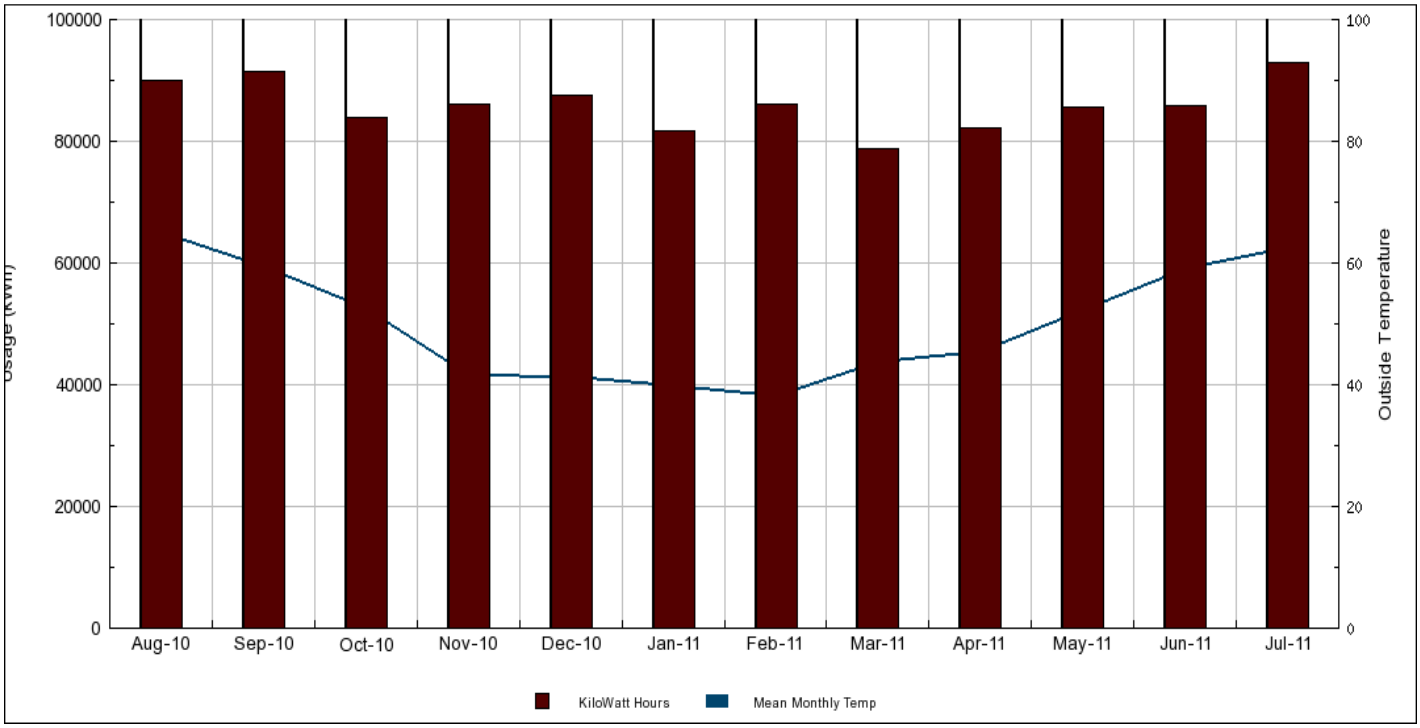
Electricity Consumption

- Electricity comprises 39% of your total utility cost, and 26% of your total utility consumption.
- Your Total Spend on Electricity is $55,663.25, so when considering savings opportunities, remember you can only save some percentage of that total.
- There are no demand costs for this building.

Monthly Electricity Costs



Electricity Consumption And Outside Air Temperature



How Does Your Building Use Natural Gas Today?

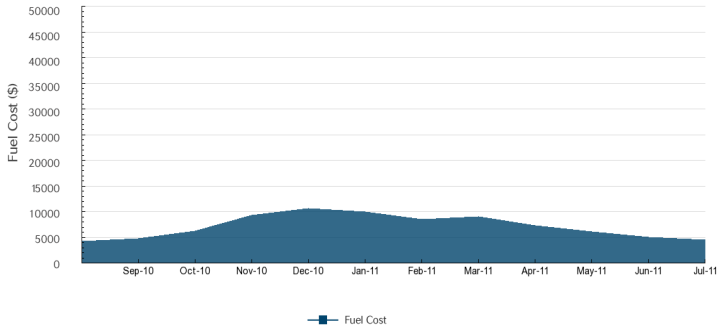
This page shows how Fuel is used in your building relative to outside weather and helps identify performance issues in the building. Typically your consumption should track the weather pattern for the type of heating equipment operating in your building. Overall excessive consumption can be indicative of 1) simultaneous heating and cooling, 2) extensive reheat, and 3) heating in warmer months. Be aware, some variation can be caused by estimated meter readings which are "fixed" the next time the meter is actually read

Utility Bill Analysis

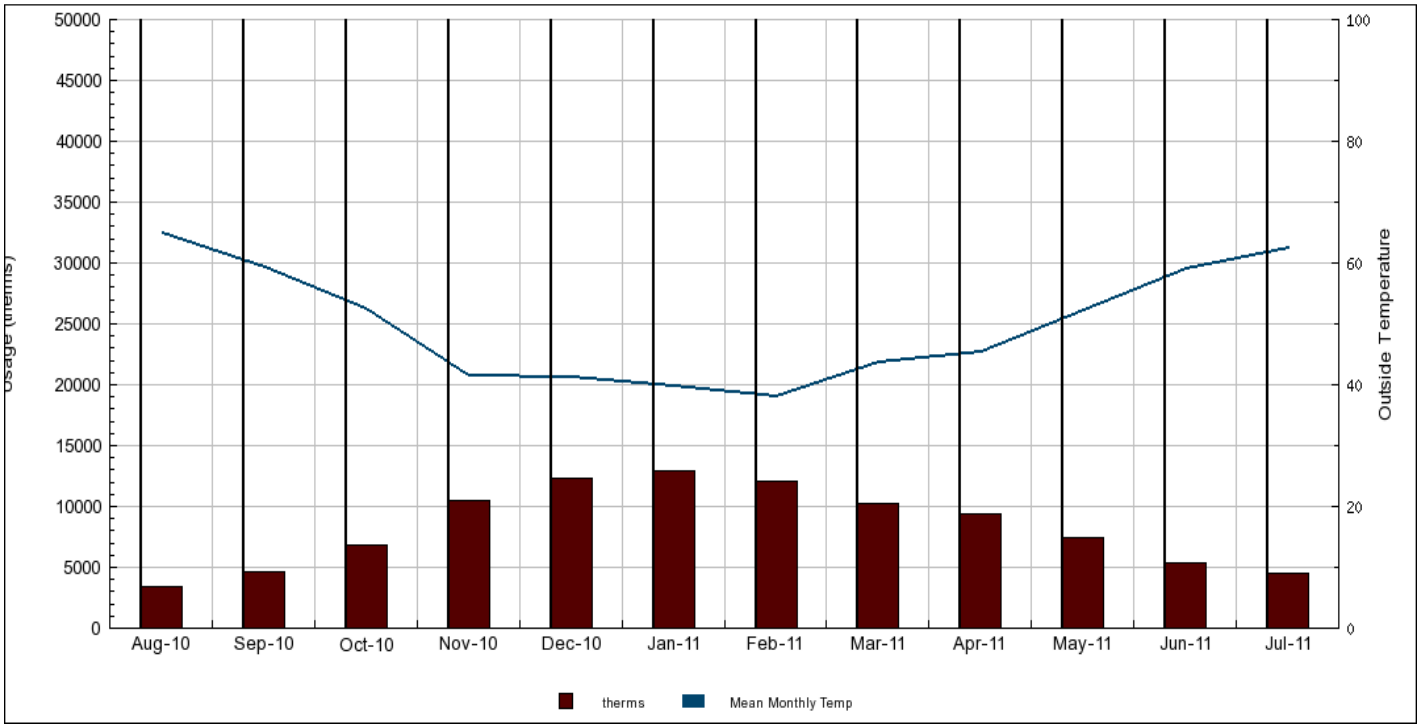
Natural Gas Consumption

- Fuel comprises 61% of your total utility cost, and 74% of your total utility consumption.
- Your Total Spend on Natural Gas is $85,866.00, so when considering savings opportunities, remember you can only save some percentage of that total.
- Demand costs do not apply to this meter type.

Monthly Natural Gas Costs



Natural Gas Consumption And Outside Air Temperature



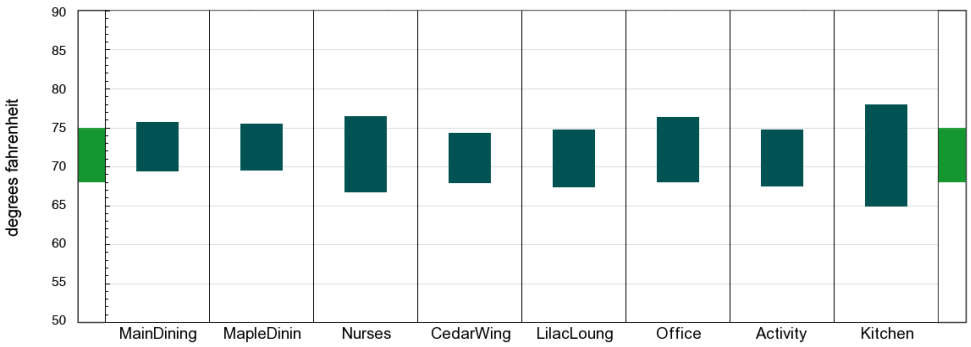
Building Comfort and Ventilation Analysis

This page shows the min/max range of temperature, humidity, and carbon dioxide levels measured during occupied periods. Reducing the range is critical to achieving a building under control that is properly ventilated which allows tenants to be comfortable and productive. The action ratings are based on the worst case found when comparing measured data during occupied hours against established industry guidelines (ENERGY STAR, BOMA, ASHRAE, DOE).

Temperature Findings

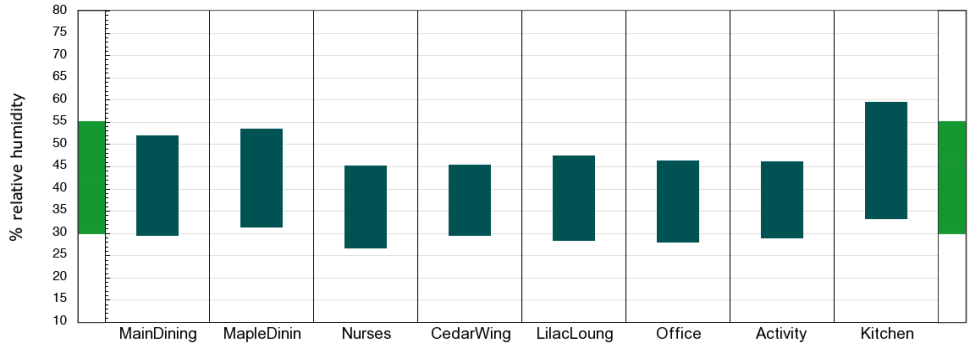
Your building is controlled well with little opportunity for savings.

- 3 space(s) were too warm at times
- 2 space(s) were too cool at times
- 1 space(s) had excessive temperature variation



Relative Humidity Findings

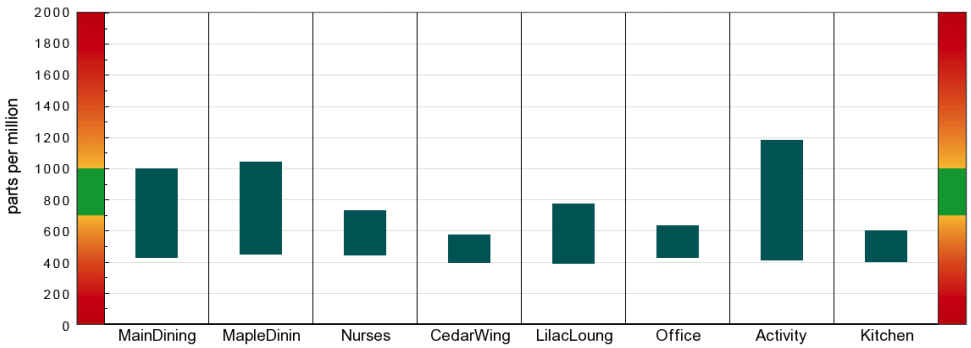
- 0 space(s) had high relative humidity at times
- 3 space(s) had low relative humidity at times



Carbon Dioxide Findings

Your building is over-ventilated and can save energy by reducing the overall amount of outside air ventilation

- 2 space(s) had elevated carbon dioxide levels
- 8 space(s) had low carbon dioxide levels



Temperature

[Sensor Range: 32 to 100 ºF; Resolution: 0.1 ºF; Calibration Accuracy: ± 1 ºF]

The ideal temperature is between 68 ºF and 75 ºF during the heating season and 72 ºF and 78 ºF during the cooling season, with variation of less than 3 ºF. Lowering the heating setpoint and raising the cooling setpoint can save significant energy while maintaining a comfortable and productive working environment.

Sources: ASHRAE Standard 55 – 1992, BOMA, ENERGY STAR, DOE

Alert Lvl	
	Occupied/Unoccupied Heating Setpoint is 75 / 70
	Occupied/Unoccupied Cooling Setpoint is 82 / 75

Energy Savings Opportunities

Our findings indicate there are several ways to save money by operating your building differently:

Energy Recommendations Based on Measurements

- Calibrate thermostat(s) to reduce temperature variation
- Verify the controls system is shutting the heating & cooling equipment off
- Move thermostat(s) to reduce temperature variation
- Balance air flow within duct system to reduce temperature variation

Further Comfort & Energy Recommendations

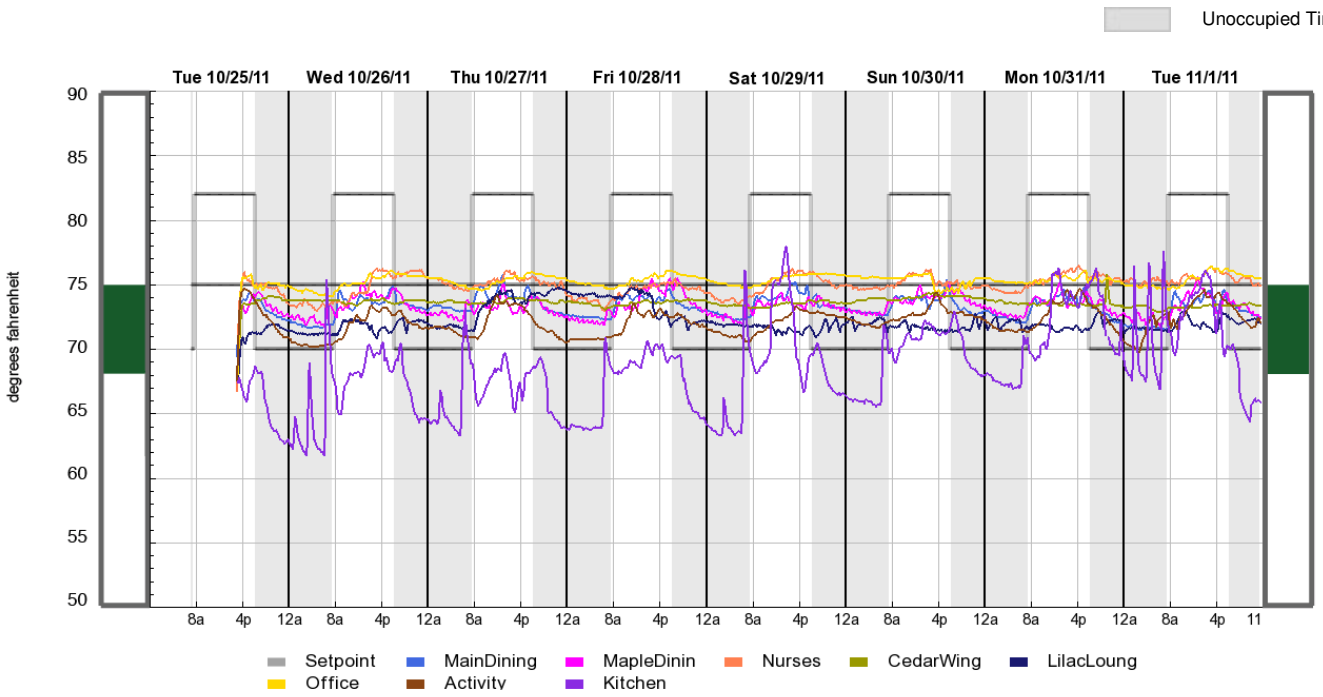
- Lower the heating set point
- Increase the amount of heating set back possible during the unoccupied times

Monitor Statistics

Monitor	Alert Lvl	Min ºF	Max ºF	Avg ºF	%ToR*	SV†
MainDining		69	76	74	3%	3
MapleDinin		70	76	74	4%	3
Nurses		67	76	75	69%	2
CedarWing		68	74	74	0%	1
LilacLoung		67	75	72	0%	3
Office		68	76	75	77%	2
Activity		68	75	73	0%	3
Kitchen		65	78	70	25%	11

These statistics are for occupied times only based on 10 minute averages.

** % Time out of Range † Spread Value is based on rolling 4hour per ASHRAE*



Relative Humidity

[Sensor Range: 10 to 95 %; Resolution: 1%; Calibration Accuracy: ± 5%]

Optimum comfort and health is achieved when relative humidity is maintained between 30% and 55%. Readings outside these boundaries may indicate ventilation issues which contribute to an increase of energy used to condition the space.

Sources: ASHRAE Standard 55 – 1992, American Lung Association, Indoor Air Quality Association, BOMA, ENERGY STAR, DOE

Analysis and Recommendations

Our findings indicate areas in your building that may have issues worth investigating for possible energy savings, and especially if there are comfort complaints.

Possible Causes

- Excessive sources of humidity

Recommended Actions

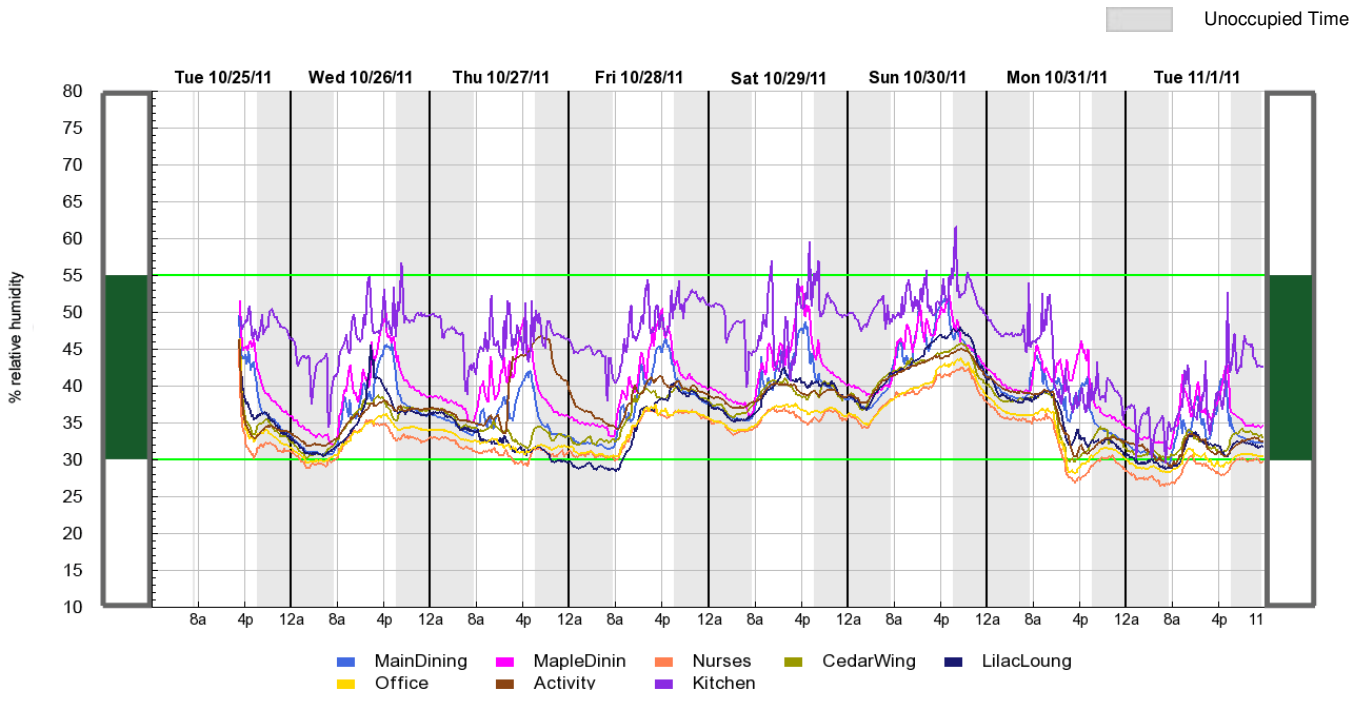
- Eliminate sources of humidity or install direct exhaust equipment in affected area

Monitor Statistics

Monitor	Alert Lvl	Min	Max	Avg	% ToR*
MainDining		30	52	40	0%
MapleDinin		31	54	43	0%
Nurses		27	45	33	23%
CedarWing		30	45	37	2%
LilacLoung		28	47	37	5%
Office		28	46	34	13%
Activity		29	46	37	2%
Kitchen		33	60	46	2%

These statistics are for occupied times only.

** % Time out of Range*



Carbon Dioxide

[Sensor Range: 0 to 2000 ppm; Resolution: 10 ppm; Calibration Accuracy: ± 100 ppm]

Monitoring carbon dioxide levels is an important aspect of ensuring a comfortable, healthy and energy efficient indoor environment. At levels above 1000 ppm, air becomes stale and less comfortable to breathe. Levels well below 1000 ppm may indicate excessive outside air, resulting in higher than necessary energy costs due to the need for conditioning of this additional outside air.

Sources: ASHRAE Standard 62-2001, U.S. Green Building Council, Indoor Air Quality Association, Health Canada, BOMA, ENERGY STAR, DOE

Energy Savings Opportunities

Our findings indicate there are several ways to save money by operating your building differently:

Energy Recommendations Based on Measurements

- Verify dampers are not stuck open or leaky
- Reduce the amount of outside air ventilation
- Install demand control ventilation

Comfort & Health Recommendations

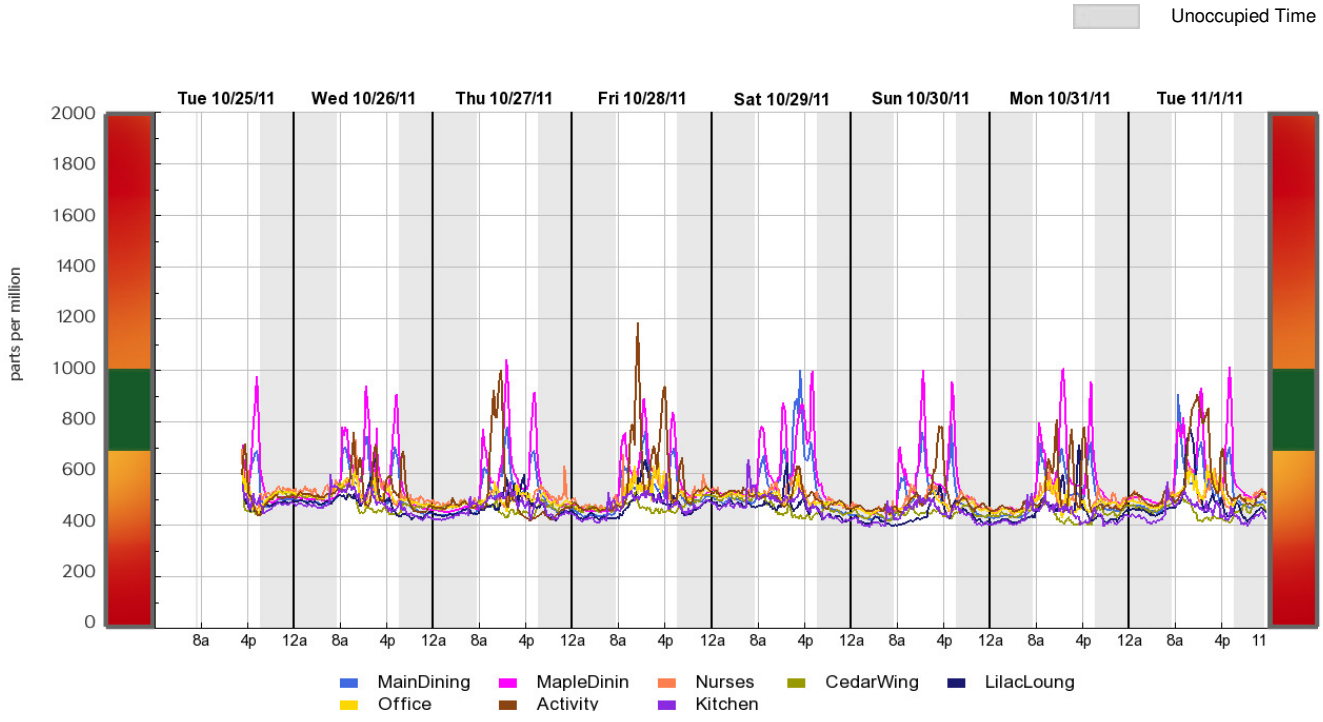
- Increase the amount of ventilation into the building.

Monitor Statistics

Monitor	Alert Lvl	Min	Max	Avg	% ToR*
MainDining		430	1000	595	90%
MapleDinin		453	1041	662	68%
Nurses		447	732	523	100%
CedarWing		399	577	454	100%
LilacLoung		395	772	492	98%
Office		430	636	516	100%
Activity		416	1185	574	84%
Kitchen		401	602	484	100%

These statistics are for occupied times only.

** % Time out of Range*



Lighting

Lighting controls and scheduling are some of the easiest low and no cost investments in energy efficiency. Controlling the artificial lights with occupancy or daylight controls and replacing inefficient bulbs can significantly reduce your electrical energy spend. In the graph below, artificial lights are represented by the sharp on/off of the curve, natural daylight by a gradual increase, and direct sunlight by the large spikes.

Sources: BOMA, ENERGY STAR, DOE

Energy Savings Opportunities

Our findings indicate there are several ways to save money by operating your building differently:

Energy Recommendations Based on Measurements

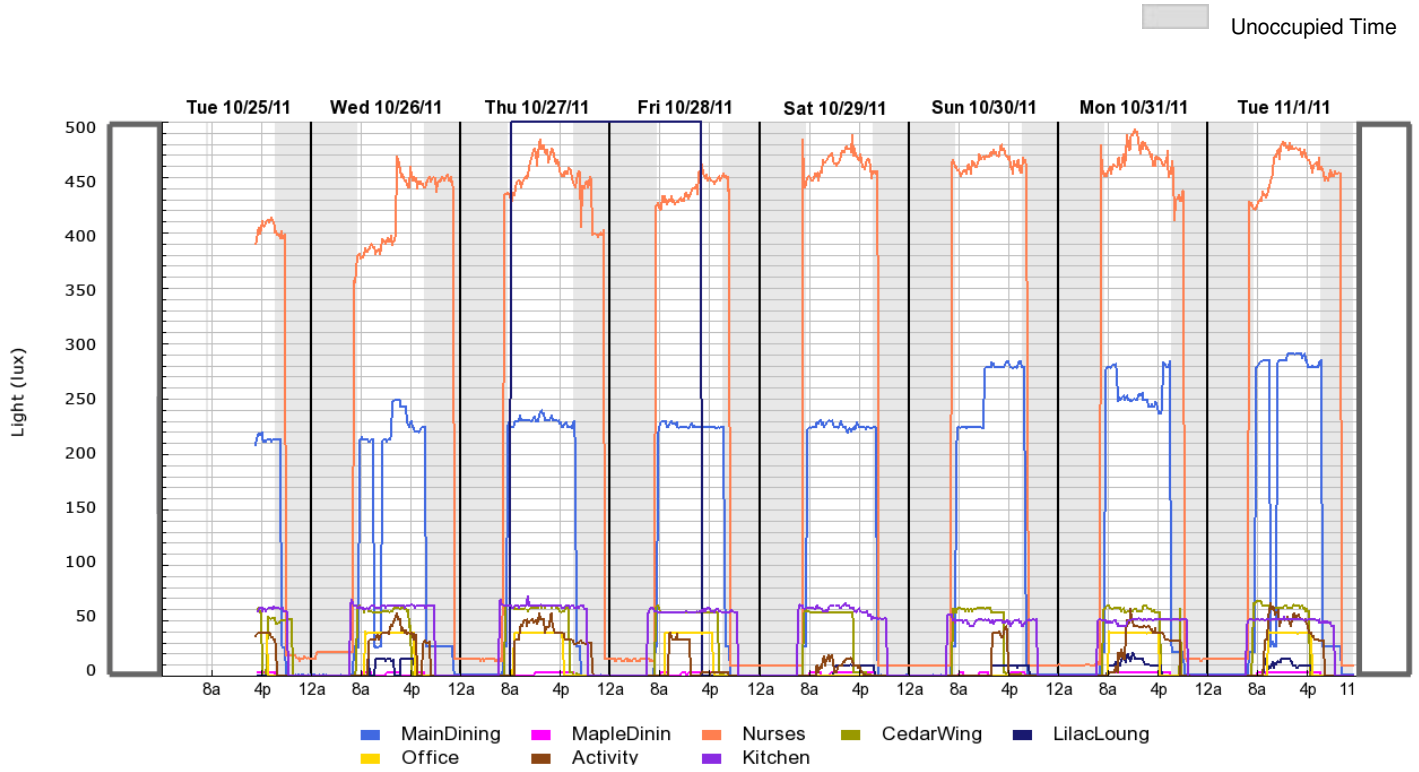
- Verify the light schedule & reduce unoccupied hours operation

Further Energy Recommendations

- Replace inefficient lamps with new high efficiency lamps
- Install occupancy sensors for individual zones
- Install daylight controls on the perimeter
- Reduce after hours use through coordination with the cleaning crews

Stated Schedule: 10 average occupied hours

Monitor	Alert Lvl	Measured On-Time
MainDining		10.49 hrs
MapleDinin		0 hrs
Nurses		13.9 hrs
CedarWing		9.22 hrs
LilacLoung		7.16 hrs
Office		5.65 hrs
Activity		6.76 hrs
Kitchen		14.42 hrs



Outdoor Conditions

Outdoor conditions recorded during the test period are included as part of this report.

The outdoor data included in this report was recorded at: Coquitlam, BC V3B 7X5

Outdoor Temperature

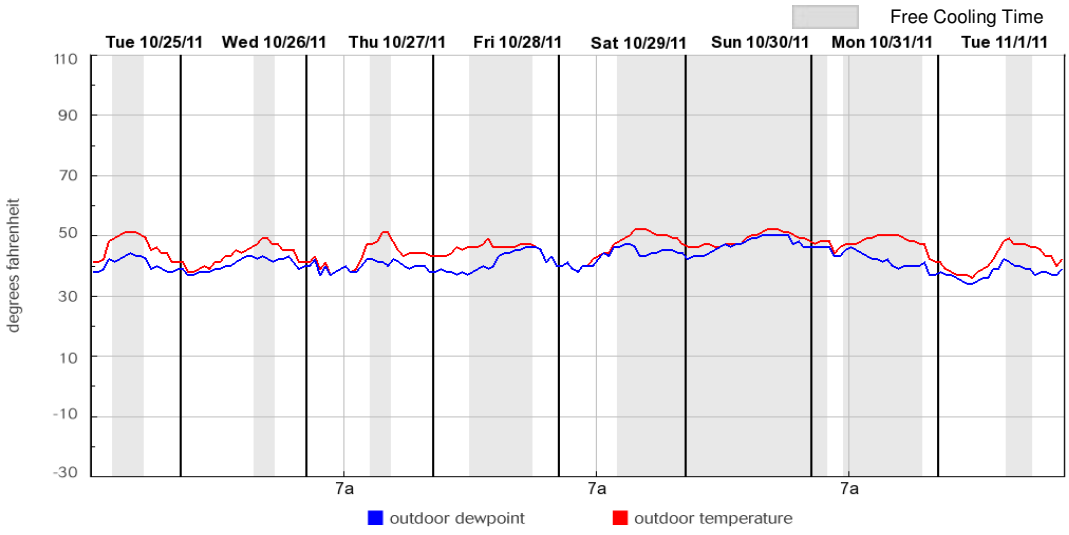
Test Period Avg: 10/25/11 – 11/1/11	Heating Degree Days	Cooling Degree Days
45 ºF	20	0

Outdoor Temperature and Dewpoint

A major factor in the total cost of heating and cooling a building is the heat lost (during heating season) or gained (during cooling season) due to the difference between indoor and outdoor temperatures. The amount of energy consumed to compensate for the difference between outdoor temperature and the desired indoor temperature is driven by three primary factors:

- Heat lost or gained due to conduction through walls, ceilings, and windows.
- Energy required to heat, cool, and dehumidify outside air entering the building, either through infiltration or mechanical ventilation.
- Heat gain due to solar load.

This chart shows the outdoor temperature and dewpoint during the test period at the test location.



More aggressive temperature setbacks during unoccupied periods may provide energy savings with no impact on occupant comfort. Proper ventilation control and use of an economizer for free cooling may also contribute significantly to energy savings.

Building and Monitor Placement Information

General Information

Contact Information	
Building Name	
Contact	
Address	
Building Information	
Building Background	Building Usage: Building Size (sq ft): **80378** # of Stories: Building Status: Construction type: LEED Cert.: Domestic Hot Water: Economizer: **No**
Additional Systems	Humidification: **No** Demand Control Ventilation: **No** Dehumidification: **No**

Monitor Placement

Building Area	Monitor Serial #
MainDining	21484
MapleDinin	21450
Nurses	21448
CedarWing	21445
LilacLoung	21444
Office	21438
Activity	21436
Kitchen	21417

HVAC Equipment

Current Heating System				
System Type	Number of Systems	BTU Capacity	Efficiency Rating	Efficiency Units
Current Cooling System				
System Type	Number of Systems	Tonnage Capacity	Efficiency Rating	Efficiency Units

Building Description

Senior Care Facility			
Gross Floor Area	**80378**	Number of Units	**153**
Average Number of Residents	**153**	Total Resident Capacity	**153**
Number of Workers on Main Shift	**30**	Number of PCs	**12**
Commercial Refrigeration Units	**7**	Number Of Commercial Washing Machines	**3**
Number Of Residential Washing Machines	**0**	Number Of Residential Electronic Lift Systems	**0**

Building Utility Information

Electric Utility Information

	Electric Usage		Electric Demand	
Date	kWh	Cost	KW	Cost
8/31/10	90,000	$4,946	187	$0
9/30/10	91,500	$4,909	175	$0
10/31/10	84,000	$4,678	183	$0
11/30/10	86,100	$4,584	161	$0
12/31/10	87,600	$4,667	164	$0
1/31/11	81,600	$4,056	160	$0
2/28/11	86,100	$4,238	159	$0
3/31/11	78,900	$4,015	165	$0
4/30/11	82,200	$4,151	160	$0
5/31/11	85,500	$4,871	175	$0
6/30/11	85,800	$5,078	185	$0
7/31/11	93,000	$5,471	192	$0
TOTAL:	1,032,300	$55,663	2,066	$0

Fuel Utility Information

	Fuel Usage	
Date	Usage	Cost
8/31/10	3,451	$4,312
9/30/10	4,579	$4,819
10/31/10	6,807	$6,247
11/30/10	10,428	$9,284
12/31/10	12,315	$10,695
1/31/11	12,969	$10,030
2/28/11	12,040	$8,468
3/31/11	10,191	$9,065
4/30/11	9,404	$7,283
5/31/11	7,404	$6,164
6/30/11	5,356	$5,022
7/31/11	4,522	$4,477
TOTAL:	99,464	$85,866

Roles and Responsibilities for an Effective Assessment

This assessment was conducted using a combination of on-site visual inspections, input generated through conversations with building maintenance personnel, and measurements made with the BuildingAdvice system. The overall accuracy of this assessment is enhanced by ensuring that accurate input is provided through each step.

Due to potential changes in occupancy, operations, and variable weather conditions, implementation of the proposed energy conservation measures does not guarantee a reduction in energy usage.

Key participants in this process – the building owner / maintenance personnel, the firm conducting the assessment, and AirAdvice all play a critical role in an effective assessment.

The building owner / maintenance personnel are responsible for providing:

1. Knowledgeable and accurate input as to the physical and operating parameters of the building under evaluation
2. Honest responses to questions about complaints and/or knowledge of issues
3. Commitment to provide resources necessary to address issues identified and correct problems noted in the visual inspection and monitoring

The firm conducting this assessment is responsible for:

1. Conducting a thorough interview of individuals knowledgeable about the building's performance
2. Following appropriate industry standards for inspection techniques, measurement techniques, and recommendations
3. Maintaining BuildingAdvice and other test equipment used in the assessment within calibration specifications recommended by manufacturers

AirAdvice is responsible for providing:

1. Monitoring equipment that performs within stated specifications
2. Web-based systems with a high degree of reliability and availability
3. Systems that ensure users are notified when calibration of units is necessary

Confidentiality of the data is preserved on behalf of the user of the BuildingAdvice system and their clients. AirAdvice will not disclose individual building information or test data without the client's written permission. AirAdvice may use aggregated data from the multiple buildings for reporting on industry findings and trends.