Strategic Energy Management Plan

College of New Caledonia
BRITISH COLUMBIA • CANADA

November, 2009

Table of Contents

1. OUR ORGANIZATION

1.1 Organizational Profile

Organization Profile								
PEOPLE	Sector	☐ Government ✓ Education ☐ Health ☐ Commercial (_____) ☐ Other (_____)						
	Number of Employees	Total (Should equal that in Section 1.2		Number of Sites		1 (3 facilities)		
	Number of stakeholders	6 Stakeholder groups		Energy Manager		Peter Rowles, P.Eng. Energy Advantage Inc.		
	Executive Support	John Bowman Penny Fahlman Jim Hoyer Burke Gulbranson Randal Heidt		Energy Committee		Jim Hoyer Burke Gulbranson Jeff Shaw Neil Richards Larry Kabatoff		
	Energy Volunteers	None						
OPERATIONS	Energy Management Issues / Obstacles	▪ Demonstrated corporate commitment ▪ Understanding of performance and opportunities ▪ Awareness and training ▪ Resourcing ▪ Procedures - plant design/retrofit, purchasing/replacement						
	Core Business Metrics	1. Number of students 2. Floor Area						
	Business Year	April 01				March 31		
	Budget Cycle	April 01				March 31		
	Maintenance Cycle	April 01				March 31		
	Maintenance Budget	Previous Year	N/A	Current Year	N/A	Year 1	N/A	Year 2	N/A
	Energy Efficiency Projects Budget	Previous Year	N/A	Current Year	N/A	Year 1	N/A	Year 2	N/A
	Operations Budget	Previous Year	N/A	Current Year	$3,300,000	Year 1	$3,300,000	Year 2	$3,300,000
	Utilities budget	Previous Year	N/A	Current Year	N/A	Year 1	N/A	Year 2	N/A

	Other Incentives			Current Year	N/A	Year 1	N/A	Year 2	N/A
	Capital Budget	Previous Year	N/A	Current Year	N/A	Year 1	N/A	Year 2	N/A

1.2 Facility Profile

Facility Profile *(April 1, 2008 to March 31, 2009)*							
Site (location or name)	**Number of Students *(Fall Semester)***	**Size**	**Annual**	**Annual**	**Energy Intensity, kWh/sq.ft.**	**Energy Intensity, $/sq.ft.**	**Energy Intensity per Student, ekWh/student**
		(ft2)	**Energy Consumption (ekWh)**	**Energy Cost ($)**			
Main Campus	N/A	384,537	12,865,863	$ 622,188	33.46	1.62	N/A
Nicholson Building	N/A	24,197	580,837	$ 33,582	24.00	1.39	N/A
Brink Building	N/A	58,900	1,409,260	$ 70,282	23.93	1.19	N/A
TOTAL	**2219**	**467,634**	**14,855,960**	**$ 726,052**	**31.77**	**1.55**	**6,695**

1.3 Key Performance Indicators

Key Performance Indicator *(April 1, 2008 to March 31, 2009)*			
Variable	**Current Fall Enrollment**	**Last Year Fall Enrollment**	**2 Years Ago Fall Enrollment**
Total Number of Students for Prince George Campus	2443	2219	2312

1.4 List of Stakeholders

Definition:

The following persons, groups, or organizations have a direct or indirect stake in the College of New Caledonia because they can affect or be affected by the organization's actions, objectives, and policies:

Students
College Employees
Board of Governors
Ministry of Advanced Education
Community
Energy Utility

1.5 List of Energy Volunteers

There are no energy volunteers at this time.

2. OUR COMMITMENT

2.1 Energy Policy

The following Energy Policy has been prepared by the Energy Committee and reviewed by senior executives of the College and is in the process of being approved by the President of the College.

Mission Statement

Energy management, with a focus on long-term sustainability, has become an important part of how our organization operates and interacts within the larger community. CNC is committed to the sustainable management of energy practices for its operations. Through improved efficiency, demand conservation, and the use of available clean energy alternatives, CNC will maintain an efficient, effective, and transparent energy program. This will provide a better future for our organization, the community and the environment.

Guiding Principles

CNC will support this goal with the help of five guiding principles:

- **Leadership**: CNC will strive to meet or exceed sector benchmarks or standards.
- **Transparency**: Clear, open communication, internally and externally to the organization, is key for the successful management of an energy program. CNC is committed to a transparent and open energy management program.
- **Innovation**: CNC, as an institution of higher education, will seek out opportunities to incorporate innovative ideas and technology in its energy management program.
- **Inclusion**: CNC's energy management program will be a collaborative effort engaging all stakeholders. New ideas will be actively encouraged from all employees, students and community members.
- **Balance**: CNC believes that the most successful energy management program will have a balance between conservation and the comfort of our students and employees.

Specific Objectives

CNC will:

- Reduce consumption and increase efficiency in our energy consumption.
- Promote an informed and involved community of employees that works towards continual improvement in energy management practices.
- Pursue opportunities to engage, collaborate and partner with organizations and other orders of government on programs and legislative initiatives to improve energy consumption.
- Actively pursue available technologies to reduce consumption, improve efficiency and make use of clean and sustainable energy technologies.
- Provide consistent and clear communication to internal and external communities with respect to our energy program.
- Continually seek out new ways to improve our energy performance, meet stated goals and contribute to a sustainable energy future.

2.2 Sustainability Policy

The College of New Caledonia has a Sustainability Committee and is the process of developing a Sustainability Policy. CNC has recently developed a Carbon Neutral Action Plan in compliance with the provincial government's Greenhouse Gas Reduction ACT.

2.3 Why Energy Management is Important to CNC?

Energy Management is important to the College of New Caledonia for variety of reasons. Participation in EMP helps CNC to:

- Identify and implement opportunities to save energy.
- Reduce energy cost and consumption.
- Lower utility rates.
- Gain environmental benefits with focus on long-term sustainability.
- Set a good example within community.

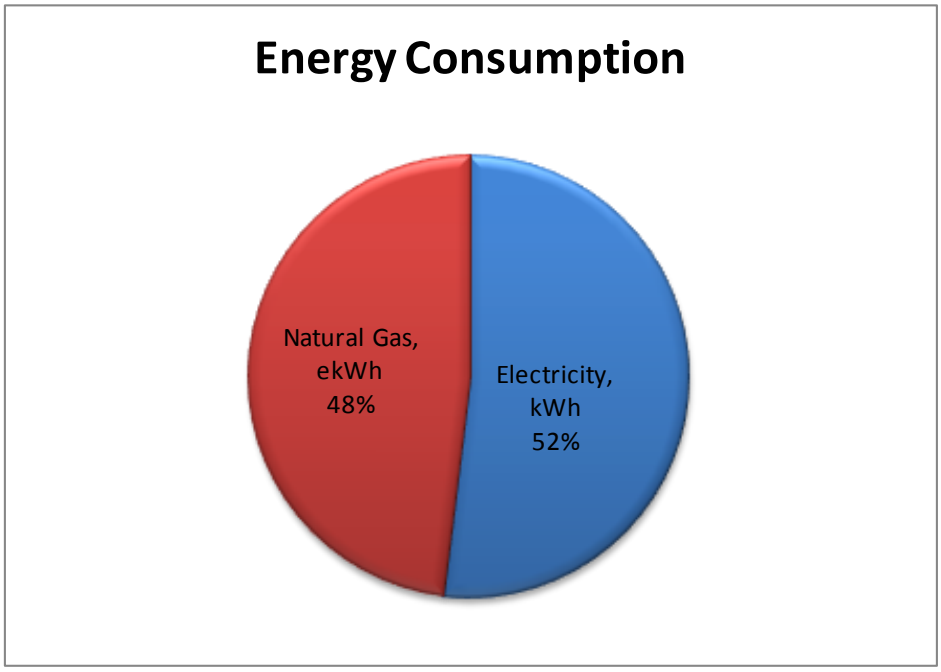
3. UNDERSTANING OUR SITUATION

3.1 Energy Consumption and Costs

Energy consumption and costs are being reported on a fiscal year basis. The fiscal year end is March 31st.

Facility Profile *(April 1, 2008 to March 31, 2009)*					
Site (location or name)	**Size (ft2)**	**Annual Energy Consumption (ekWh)**	**Annual Energy Cost ($)**	**Energy Intensity, kWh/sq.ft.**	**Energy Intensity, $/sq.ft.**
Main Campus	384,537	12,865,863	$ 622,188	33.46	1.62
Nicholson Building	24,197	580,837	$ 33,582	24.00	1.39
Brink Building	58,900	1,409,260	$ 70,282	23.93	1.19
TOTAL	**467,634**	**14,855,960**	**$ 726,052**	**31.77**	**1.55**

CNC Total Utility Costs April 01, 2008 – March 31, 2009



Electricity and Natural Gas Cost and Consumption per Facility

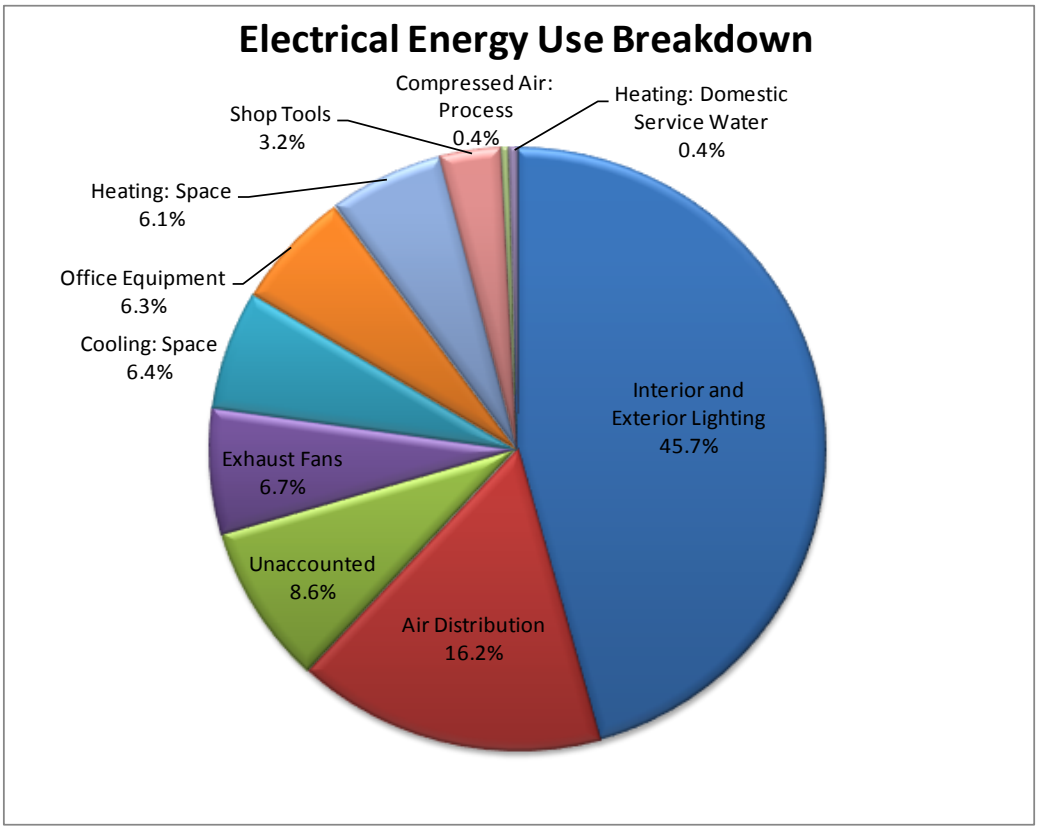
Utility (April 01,2008-March 31, 2009)	Consumption	Costs	
	Unit	$	%
Main Campus			
Electricity, kWh	5,901,501	$325,495.55	52%
Natural Gas, ekWh	6,964,361	$296,692.41	48%
Nicholson Building			
Electricity, kWh	180,096	$14,246.59	42%
Natural Gas, ekWh	400,741	$19,335.46	58%
Brink Building			
Electricity, kWh	551,409	$37,232.67	53%
Natural Gas, ekWh	857,852	$33,049.01	47%
Total			
Electricity, kWh	6,633,006	$376,974.81	52%
Natural Gas, ekWh	8,222,954	$349,076.88	48%

3.2 Energy Breakdown

A detailed energy audit was completed in 2008. The results of the audit provided a breakdown of electricity and gas usage for the campus. CNC's overall electrical energy use is broken down in the following table. As indicated lighting is the major consumer of energy at 45.7% of total usage.

Electrical Energy Use Breakdown

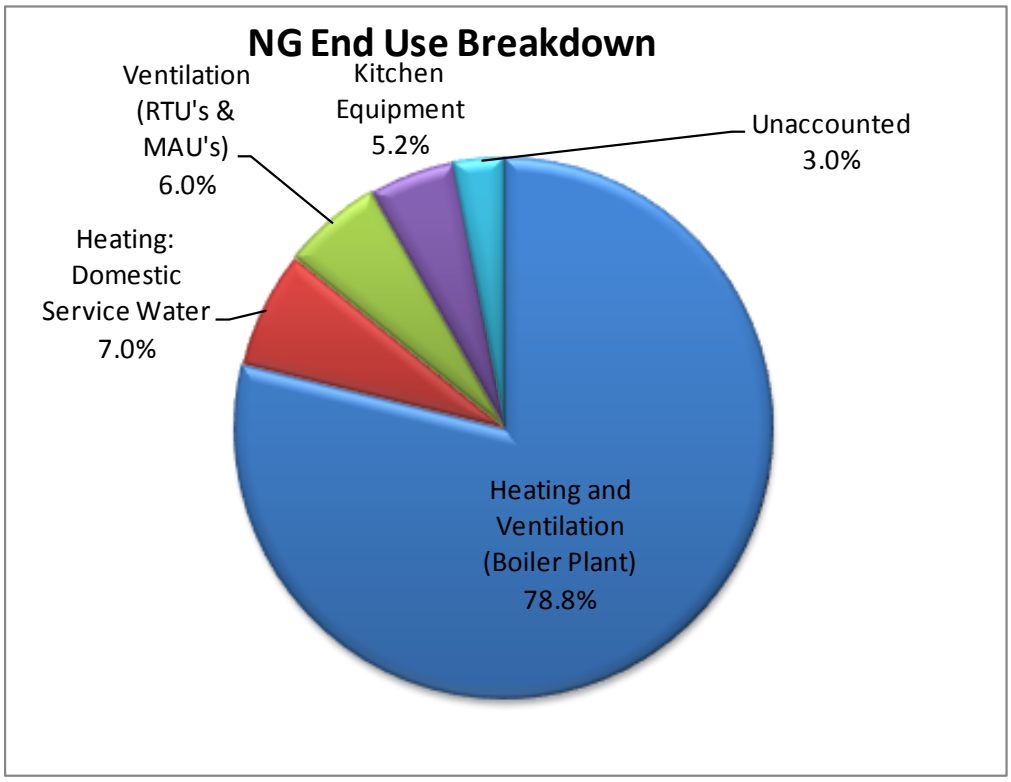
Rank	End Use	End Use Percent	Electricity Use (MWh/yr)	Cost ($/yr)
1	Interior and Exterior Lighting	45.7%	3,031.28	$172,277
2	Air Distribution	16.2%	1,074.55	$61,070
3	Unaccounted	8.6%	570.44	$32,420
4	Exhaust Fans	6.7%	444.41	$25,257
5	Cooling: Space	6.4%	424.51	$24,126
11	Office Equipment	6.3%	417.88	$23,749
7	Heating: Space	6.1%	404.61	$22,995
8	Shop Tools	3.2%	212.26	$12,063
9	Compressed Air: Process	0.4%	26.53	$1,508
10	Heating: Domestic Service Water	0.4%	26.53	$1,508
Total:		**100.0%**	**6,633**	**$ 376,974.81**



CNC's overall natural gas energy use is broken down in the following table. As shown here, space heating represents 79% of gas consumption.

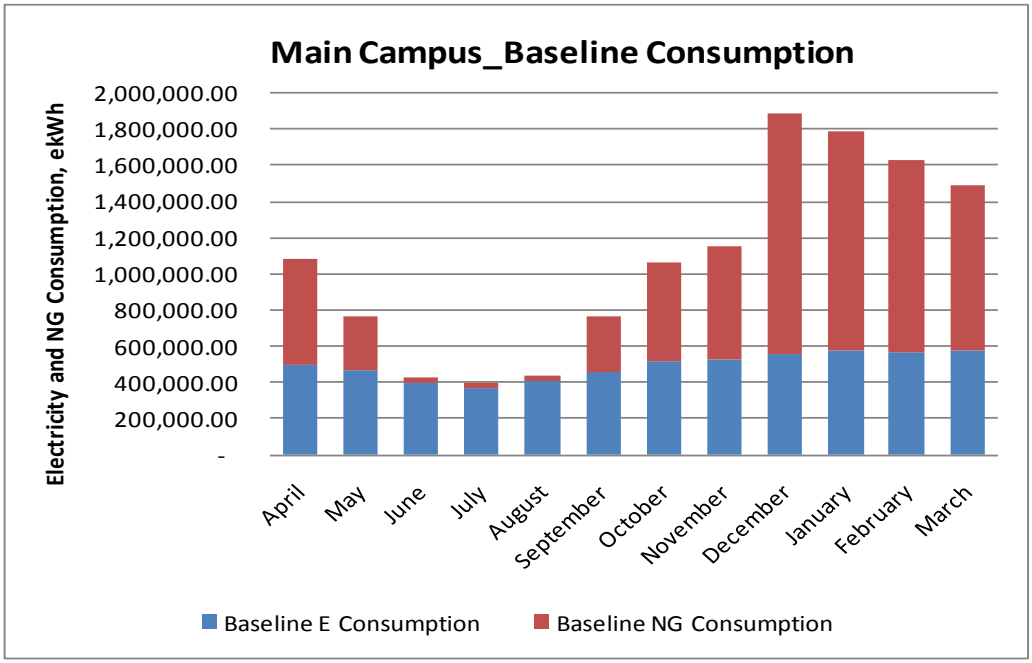
Natural Gas Energy Use Breakdown

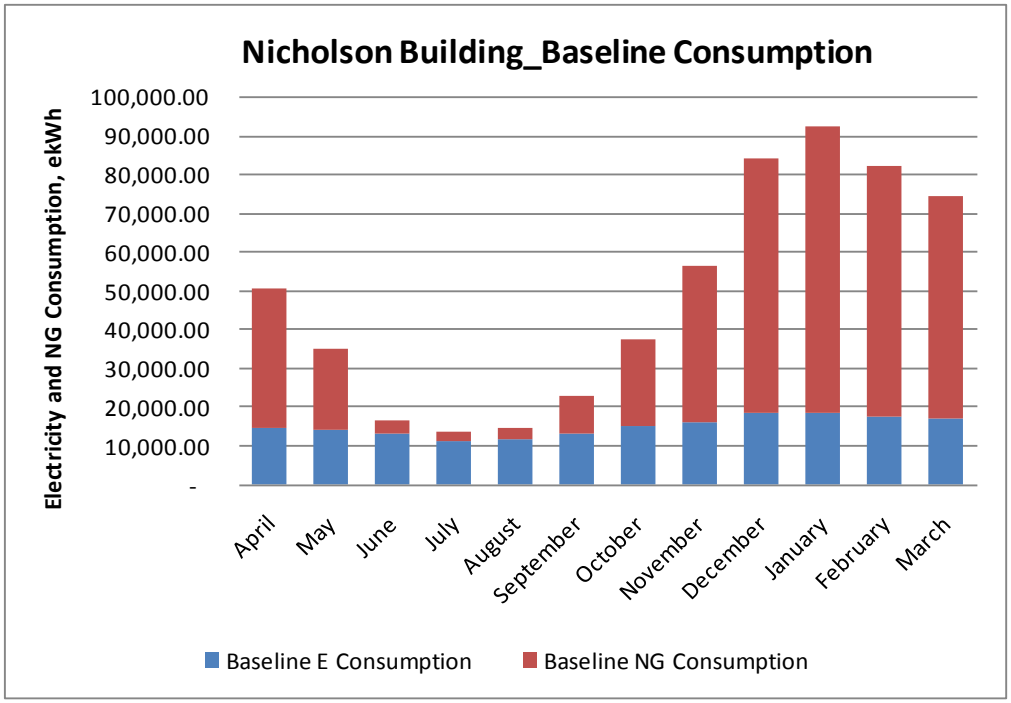
Rank	End Use	End Use Percent	Natural Gas Use (eMWh/yr)	Cost ($/yr)
1	Heating and Ventilation (Boiler Plant)	78.8%	6,479.69	$275,073
2	Heating: Domestic Service Water	7.0%	575.61	$24,435
3	Ventilation (RTU's & MAU's)	6.0%	493.38	$20,945
4	Kitchen Equipment	5.2%	427.59	$18,152
5	Unaccounted	3.0%	246.69	$10,472
Totals:		**100.0%**	**8222.95**	**$ 349,076.88**

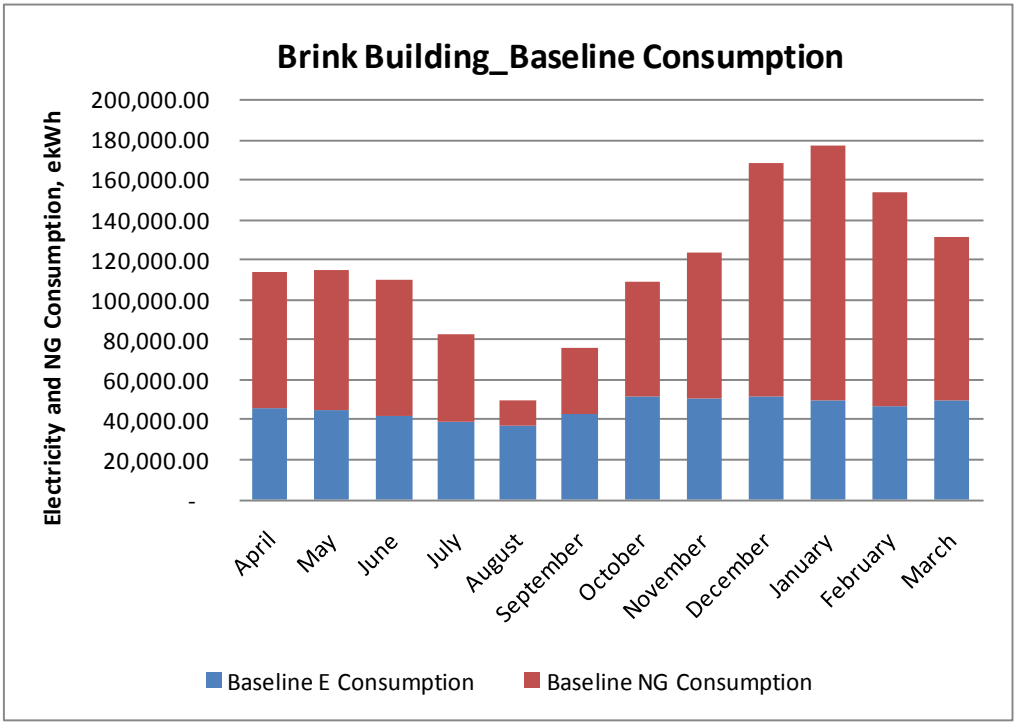


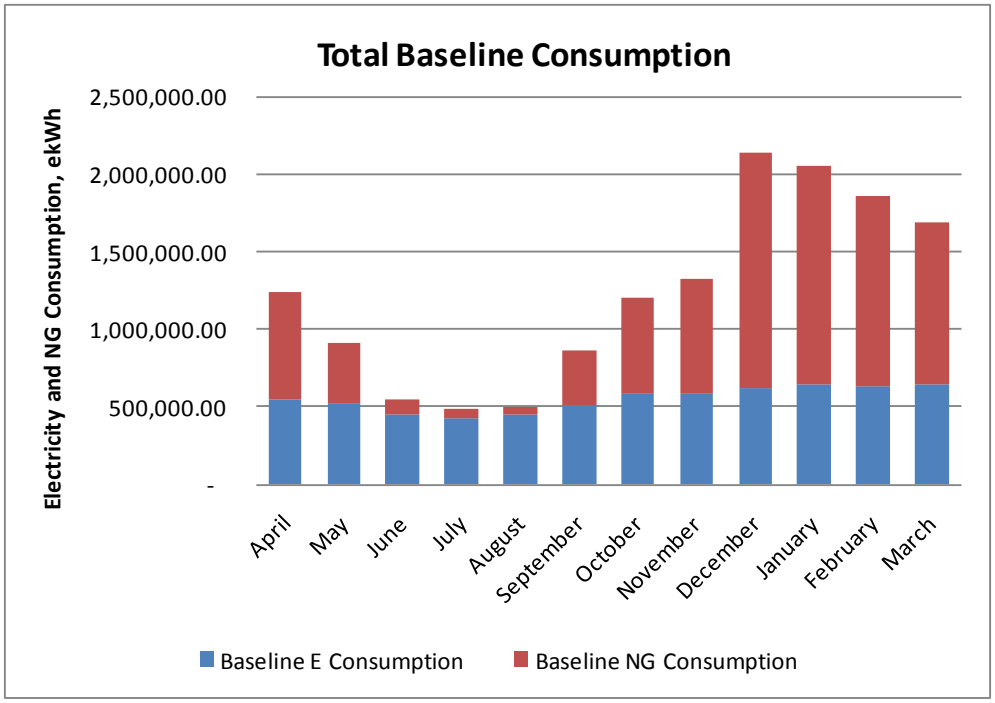
3.3 Baseline Energy Use

The following chart demonstrates baseline electrical and natural consumption. The fiscal period April 01, 2008 – March 31, 2009 was selected for the purpose of baselining, as well as Energy Intensity Index (ekWh/sq.ft.) for the same period.

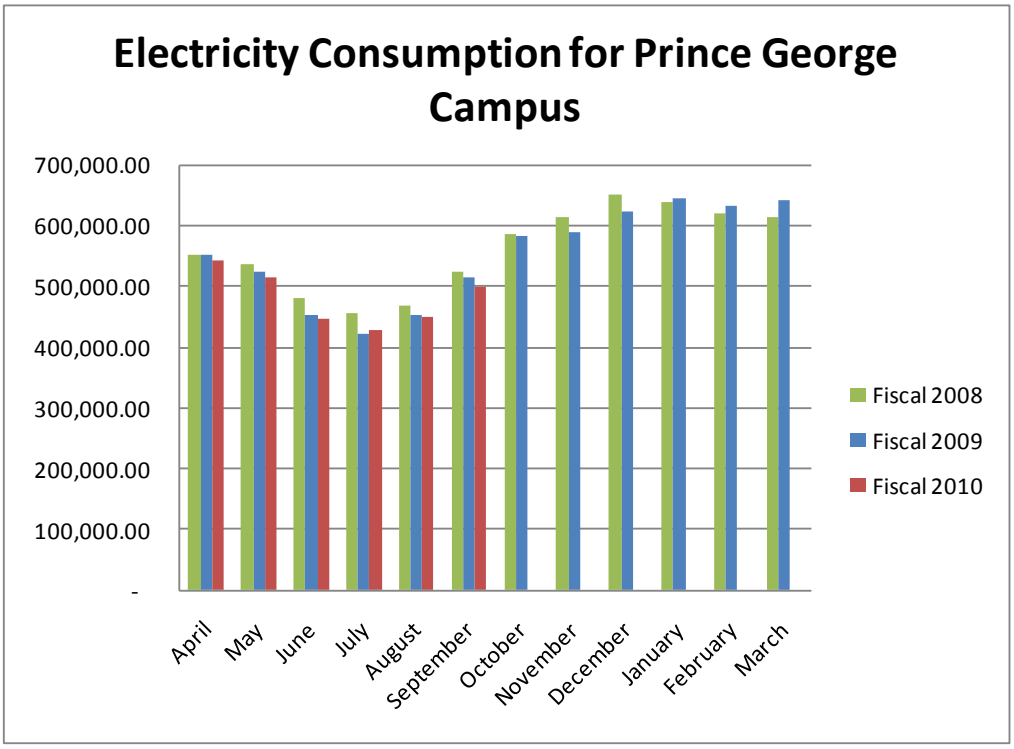


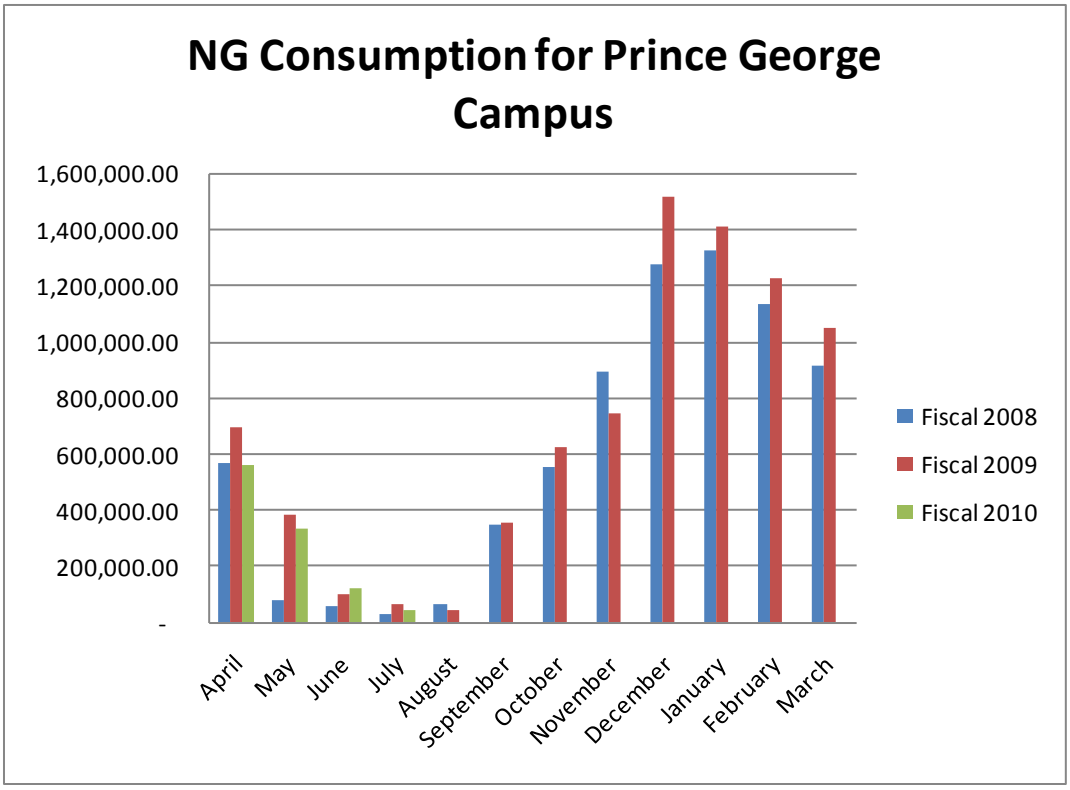

Nicholson Building_Baseline Consumption
Electricity and NG Consumption, ekWh
100,000.00
90,000.00
80,000.00
70,000.00
60,000.00
50,000.00
40,000.00
30,000.00
20,000.00
10,000.00
-
April
May
June
July
August
September
October
November
December
January
February
March
Baseline E Consumption
Baseline NG Consumption

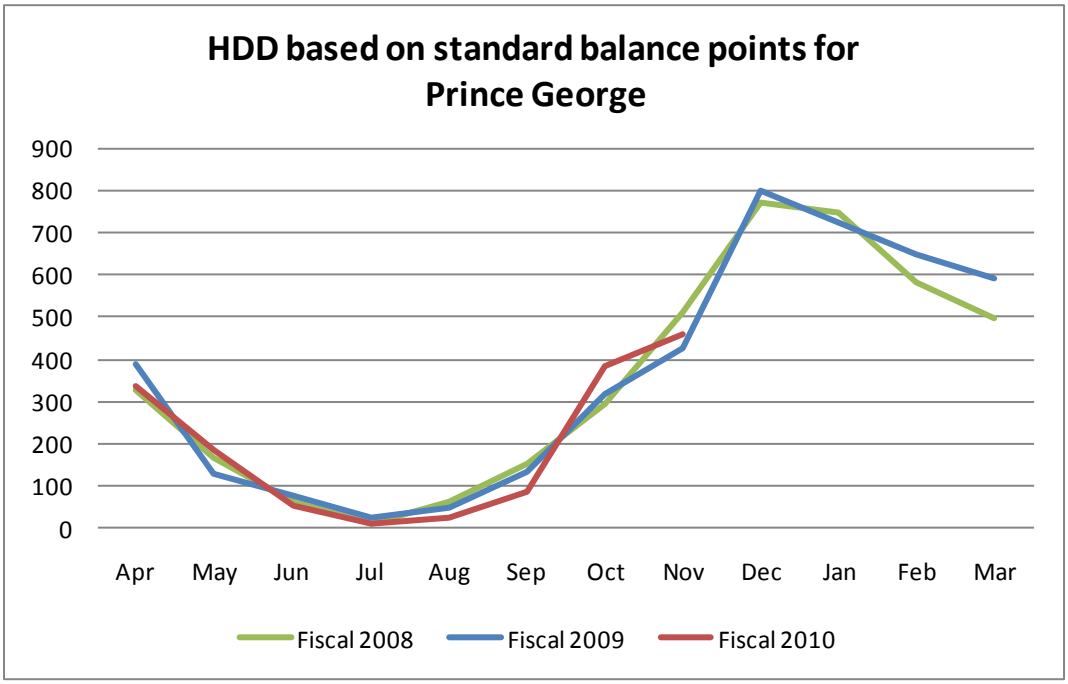

Brink Building_Baseline Consumption
Electricity and NG Consumption, ekWh
200,000.00
180,000.00
160,000.00
140,000.00
120,000.00
100,000.00
80,000.00
60,000.00
40,000.00
20,000.00
-
April
May
June
July
August
September
October
November
December
January
February
March
Baseline E Consumption
Baseline NG Consumption

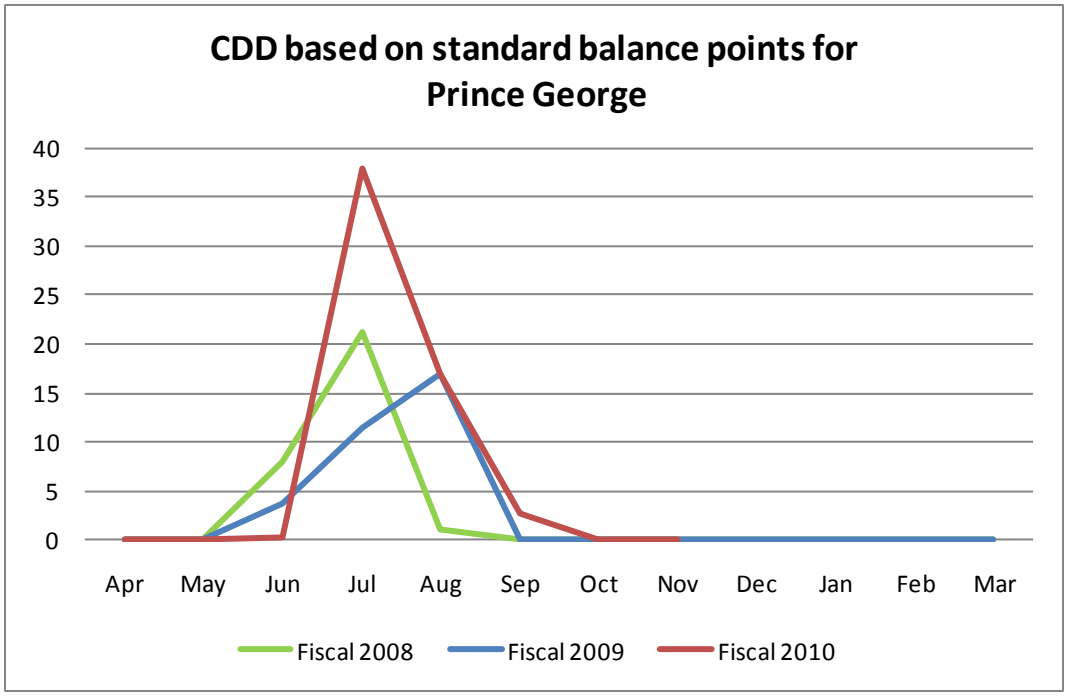


The following charts demonstrate comparison between consumption of electricity and natural gas in fiscal years 2008, 2009, and 2010.




NG Consumption for Prince George Campus
1,600,000.00
1,400,000.00
1,200,000.00
1,000,000.00
800,000.00
600,000.00
400,000.00
200,000.00
-
April
May
June
July
August
September
October
November
December
January
February
March
Fiscal 2008
Fiscal 2009
Fiscal 2010

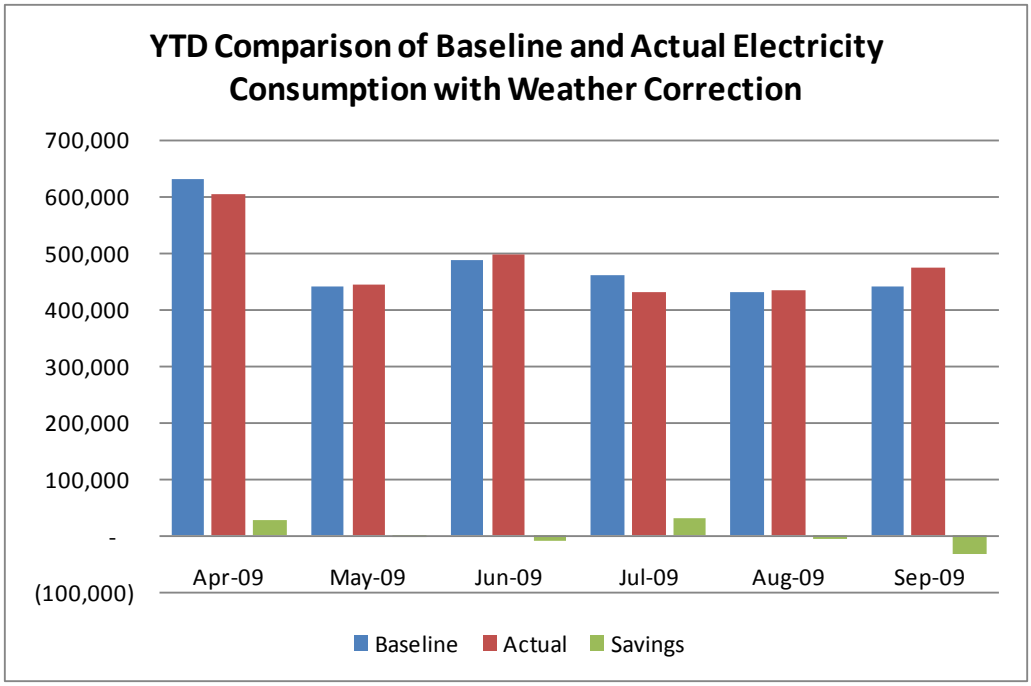

HDD based on standard balance points for Prince George
900
800
700
600
500
400
300
200
100
0
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Fiscal 2008
Fiscal 2009
Fiscal 2010



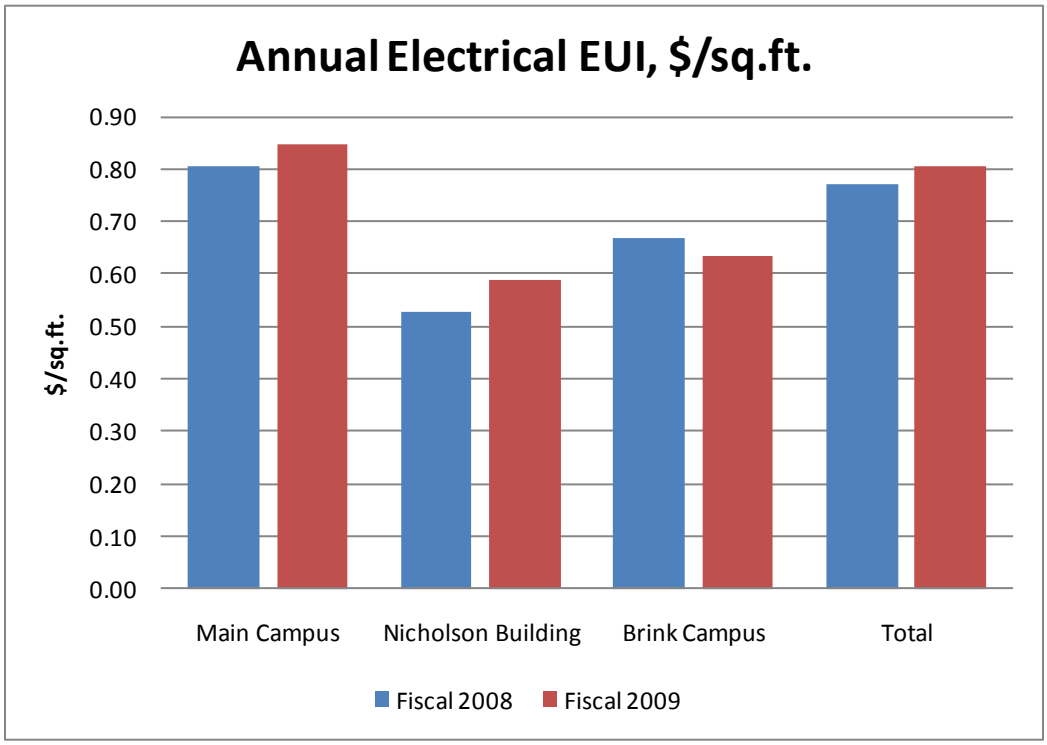
The following chart represents year-to-date electricity savings based on weather normalization analysis which is presented and explained in section 3.4.

YTD Comparison of Baseline and Actual Electricity Consumption with Weather Correction

kWh	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09
Baseline	632,455	441,620	486,682	461,315	430,792	441,911
Actual	605,878	444,238	496,198	430,438	435,598	475,318
Baseline - Actual	26,577	- 2,619	- 9,516	30,877	- 4,807	- 33,407
Savings	4.2%	-0.6%	-2.0%	6.7%	-1.1%	-7.6%
Total Savings YTD						**7,106**



Based on the cost and consumption charts electrical and natural gas consumption patterns repeat from year to year. Electricity and natural gas consumption peaks are observed during winter months. Current year demonstrated higher cost and consumption over last 12 months.



3.4 Savings Opportunity Assessment - Energy Consumption & Cost Intensity

To make a fair comparison between energy consumption in two or more periods and determine energy savings, weather normalization analysis is performed. Weather normalization is a mathematical method which is usually based on regression analysis of past energy data. As a result of weather normalization a regression equation is derived, and it used as a representation of building's energy consumption. This method allows one to compare how much energy the building should have used during the performance period based on its consumption patterns during the baseline period with actual energy consumption during the performance period.

Regression equation consists of two parts: the baseload (non-weather depended energy consumption) and the weather sensitive part (energy consumption which depends upon outside temperature and is described by regression coefficient). Along with the regression equation, building's balance point is determined.

Regression Equation:

Energy Consumption = (Baseload x Days) + (Regression Coefficient x HDD/CDD)

Balance point represents the most accurate reflection of the outside temperature at which a building becomes weather sensitive. If the actual balance points are not used when applying the equations and instead a standard set of balance points is chosen, these regression equations will provide skewed results.

The equations are also represented with their accompanying statistical indicators (or determining statistics.) These indicators are a measure of the overall "goodness of fit" in the correlation coefficient (R^2) and the coefficient of variance (CVRMSE) which is a test score describing how far, on average, the actual consumption points are from what the baseline equation defines. Test of statistical significance are also carried out (t-tests).

To determine regression equations for each building Metrix® software was used.

To identify baseline regression equation, data from fiscal years 2009 and 2008 was used.

The results of regression analysis are presented in the table below:

Regression Equations

Facility Name	Utility Type	Balance Point	Baseload	Regression Coefficient	R2	CVRMSE	Baseline Period Used
Main Campus	E	HDD = 19.8 °C	11,363.0	319.24	0.958	3.58	03/19/2008 - 03/18/2009
Main Campus	NG	HDD = 14.0 °C	68.3	161.63	0.983	10.63	04/01/2008 - 03/31/2009
Brink Building	E	HDD = 19.7°C	1,186.2	20.64	0.816	5.89	03/19/2008 - 03/18/2009
Brink Building	NG	HDD = 10 °C	23.6	19.86	0.993	8.53	12/19/2006 - 01/18/2008
Nicholson Building	E	HDD = 18.2 °C	356.3	9.5	0.821	8.19	03/19/2008 - 03/18/2009
Nicholson Building	NG	HDD = 12.3 °C	5.2	10.73	0.984	11.88	04/18/2008 - 04/20/2009

Graphical interpretation of the regression equations may be found in Appendix C.

3.5 Benchmarking Analysis – Building Energy Performance Index

To perform Benchmarking analysis, data from Natural Resources Canada (NRCan) was used. Comparison was done between national average (82 colleges were considered to establish regional and national benchmarks) and energy intensity indexes for each of three facilities. According to NRCan the following benchmarks apply for colleges: in British Columbia annual (total) energy consumption per unit of area is:

British Columbia averages

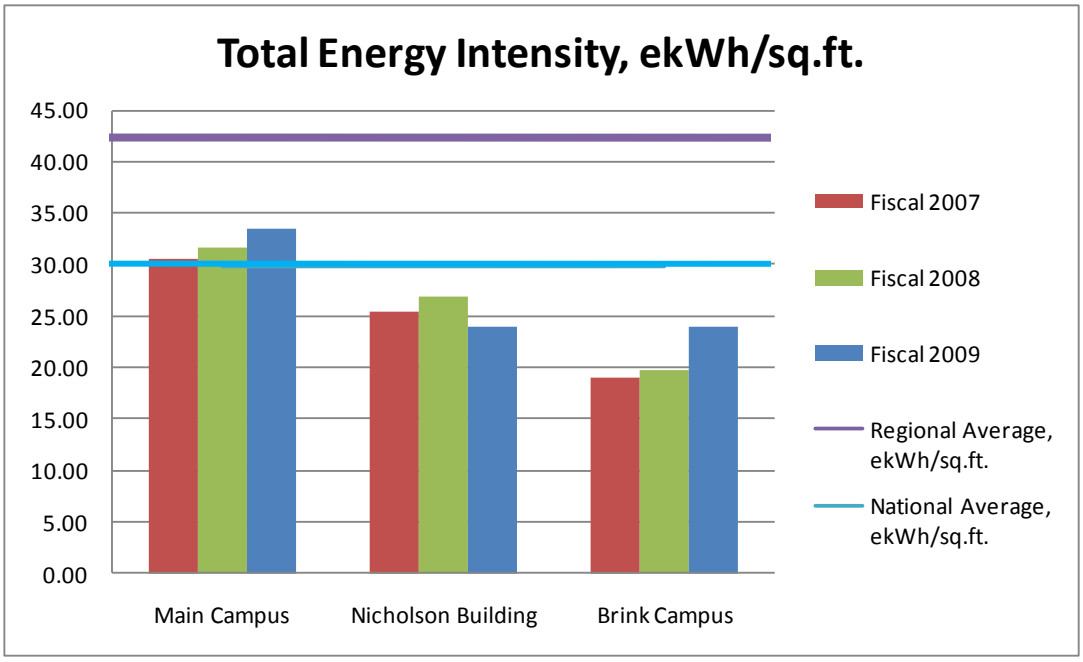
Total Energy = 42.3 ekWh/ft^2

National Averages:

Total Energy = 29.8 ekWh/ft^2

Total Energy Intensity, ekWh/sq.ft.

Facility Name	2007 Energy Intensity, ekWh/sq.ft.2	2007 Energy Intensity, $/sq.ft2	2008 Energy Intensity, ekWh/sq.ft.2	2008 Energy Intensity, $/sq.ft2	2009 Energy Intensity, ekWh/sq.ft.2	2009 Energy Intensity, $/sq.ft2
Main Campus	30.57	16.26	31.66	16.80	33.46	18.96
Nicholson Building	25.40	19.56	26.88	20.36	24.00	17.15
Brink Building	18.97	10.87	19.76	11.09	23.93	15.20
Total	**28.84**	**15.75**	**29.92**	**16.27**	**31.77**	**18.39**



Based on this analysis all of the CNC's Prince George facilities are below regional benchmarks. However, Main Campus is above national regional benchmarks, most likely because of the power plant included under this facility which has a lot of energy intensive equipment.

3.6 Asset Registry

Major equipment inventory for each facility and associated with them energy intensities are presented in tables below. The data is taken from Energy Audit report and based on 2008 information. More detailed list of equipment is attached to Appendix D.

Based on this analysis the largest amount of energy is consumed by lighting load.

NICHOLSON BUILDING

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/ sq.ft.**
1	Heating Coil Units	-	-	188,415	7.79
2	Gas Furnace	674.20	187,292.76		7.74
3	Lighting	-	-	88,469	3.66
4	Plug Load	-	-	12,008	0.50
5	Unaccounted for Gas	33.00	9,167.40		0.38
Building Totals:		**707.20**	**196,460.16**	**288,892.00**	**20.06**

MAIN CAMPUS

100 Electrical Room

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity**
1	Lighting	-	-	367,840.00	10.65
2	AHU-1	-	-	49,257.00	1.43
3	Plug Load	-	-	38,755.00	1.12
4	DHW	-	-	16,117.00	0.47
5	Exhaust Fans	-	-		0.00
Building Totals:		-	**-**	**471,969.00**	**13.66**

200 Food Services

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Lighting Load		-	516,891.00	6.48
2	Kitchen Equipment	1,265.20	351,472.56		4.41
3	DHW	955.80	265,521.24		3.33
4	Plug Load		-	81,363.00	1.02
5	AHU-8		-	80,146.00	1.00
6	Exhaust Fans		-	72,374.00	0.91
7	AHU-4		-	62,614.00	0.79
8	AHU-2		-	52,673.00	0.66
9	AHU-7		-	21,868.00	0.27
Building Totals:		**2,221.00**	**616,993.80**	**887,929.00**	**18.87**

300 Computer and Classroom

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Lighting	-	-	374,066.00	5.42
2	AHU-5	-	-	87,659.00	1.27
3	AHU-3	-	-	85,942.00	1.25
4	AHU-6	-	-	82,872.00	1.20
5	ACU-1	-	-	12,592.00	0.18
6	Plug Load	-	-	8,760.00	0.13
Building Totals:		**-**	**-**	**651,891.00**	**9.45**

450 Daycare and 400 Dental

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Lighting	-	-	111,674.00	4.97
2	DHW	391.60	108,786.48	-	4.84
3	Lighting	-	-	25,245.00	1.12
4	AHU-17	-	-	17,935.00	0.80
5	Plug Load	-	-	14,569.00	0.65
6	AHU-18	-	-	12,930.00	0.58
7	Plug Load	-	-	11,193.00	0.50
8	AHU-16	-	-	2,199.00	0.10
9	Exhaust Fans	-	-	1,672.00	0.07
10	Exhaust Fans	-	-	1,434.00	0.06
Building Totals:		**391.60**	**108,786.48**	**198,851.00**	**13.69**

500 Gymnasium

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Lighting			229,499.00	8.37
2	AHU-9		-	32,512.00	1.19
3	Plug Load		-	15,865.00	0.58
4	DHW	39.80	11,056.44	-	0.40
5	AHU-10		-	10,054.00	0.37
6	Exhaust Fans			3,235.00	0.12
Building Totals:		**39.80**	**11,056.44**	**291,165.00**	**11.02**

700 Library

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Lighting	-		509,878.00	7.57
2	AHU-720	-	-	149,270.00	2.22
3	AHU-719	-	-	104,774.00	1.56
4	Plug Load	-	-	92,065.00	1.37
5	Exhaust Fans	-		12,973.00	0.19
6	ACU	-	-	10,366.00	0.15
Building Totals:		**-**	**-**	**879,326.00**	**13.06**

800 Industrial Education

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Shop Equipment	-	-	1,597,721	27.10
2	MAU-1	1,644.00	456,703.20	39,243	8.41
3	Lighting	-	-	301,123	5.11
4	Exhaust	-	-	300,663	5.10
5	Plug Load	-	-	50,448	0.86
6	MU-1	-	-	19,156	0.32
7	AHU-14	-	-	11,694	0.20
8	DHW	39.80	11,056.44	-	0.19
9	MU-2	-	-	9,812	0.17
10	AHU-2	-	-	5,625	0.10
11	AHU-15	-	-	1,694	0.03
12	MAU-1 Gring Room	-	-	932	0.02
13	AHU-1	-	-	634	0.01
14	HVAC	-	-	-	0.00
15	Unit heaters	-	-	-	0.00
Building Totals:		**1,683.80**	**467,759.64**	**2,338,745.00**	**47.60**

940 Maintenance Workshop

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Plug Load	-	-	2,562	1.89
2	Lighting	-	-	2,346	1.73
Building Totals:		-	-	**4,908.00**	**3.62**

960 Power Plant

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Boiler Plant	15,638.70	4,344,430.86	349,547.00	541.03
2	Unaccounted	576.90	160,262.82	517,821	78.16
3	Chiller Plant	-	-	205,244.00	23.66
4	Compressed Air	-	-	28,590.00	3.30
5	Lighting	-	-	18,144.00	2.09
6	DWH	-	-	10,278.00	1.18
7	Plug Load	-	-	1,770	0.20
Building Totals:		**16,215.60**	**4,504,693.68**	**1,131,394.00**	**649.62**

960A Tunnel

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Lighting	-	-	39,682	9.92
2	Plug Load	-	-	3,548	0.89
Building Totals:		-	-	**43,230.00**	**10.81**

980 Power Engineering

Asset Registry					
Rank	**System**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Teaching Boilers	388.40	107,897.52	-	15.40
2	Lighting	-	-	43,160	6.16
3	Plug Load	-	-	8,760	1.25
Building Totals:		**388.40**	**107,897.52**	**51,920.00**	**22.81**

1000 Brink Building

Asset Registry						
Rank	**System**	**Make/Model**	**Fuel Energy (GJ)**	**Fuel Energy (ekWh)**	**Electrical Energy (kWh)**	**Energy Intensity, ekWh/sq.ft.**
1	Lighting		-	-	202,576	3.44
2	MUA-2	Engineered Air/DJ-100-0	329.00	91,396.20	16,177	1.83
3	MUA-3	Engineered Air/DJ-100-0	315.30	87,590.34	15,011	1.74
4	MUA-1	Engineered Air/DJ-100-0	293.60	81,562.08	13,919	1.62
5	DWH		282.40	78,450.72	-	1.33
6	UAF		124.00	34,447.20	39,420	1.25
7	PLUG		-	-	52,089	0.88
8	ST		-	-	44,928	0.76
9	Exhaust Fans		-	-	26,837	0.46
10	RTU-14	Lennox/LGC0 120S2B	48.00	13,334.40	10,517.00	0.40
11	RTU-10	Lennox/GCS1 6-653-125	46.10	12,806.58	8,177.00	0.36
12	RTU-07	Lennox/LGC0 42S2B	40.80	11,334.24	8,203.00	0.33
13	RTU-15	Lennox/LGC0 48S2B	28.80	8,000.64	10,834.00	0.32
14	RTU-09	Lennox/GCS1 6-653-125	36.90	10,250.82	8,496.00	0.32
15	RTU-08	Lennox/GCS1 6-653-125	35.80	9,945.24	7,216.00	0.29
16	DE		-	-	14,607	0.25
17	RTU-13	Lennox/LGC0 48S2B	28.80	8,000.64	5,746.00	0.23
18	RTU-11	Lennox/LGC0 48S2B	28.80	8,000.64	5,067.00	0.22
19	RTU-12	Lennox/LGC0 48S2B	28.80	8,000.64	4,564.00	0.21
20	RTU-06	Lennox/LGC0 60S2B	23.00	6,389.40	5,768.00	0.21
21	RTU-03	Lennox/LGC0 42S2B	23.00	6,389.40	5,025.00	0.19
22	RTU-05	Lennox/LGC0 42S2B	23.00	6,389.40	5,025.00	0.19
23	RTU-04	Lennox/LGC0 48S2B	23.00	6,389.40	5,023.00	0.19
24	RTU-02	Lennox/LGC0 36S2B	23.00	6,389.40	4,828.00	0.19
25	RTU-01	Lennox/LGC0 36S2B	23.00	6,389.40	4,652.00	0.19
26	Electric baseboard Heating		-	-	7,008	0.12
Building Total			**1,805.10**	**501,456.78**	**531,713.00**	**17.54**

4. OUR ACTIONS

CNC's Energy Management Program was initiated in January 2009 with the appointment of Energy Advantage to fill the Energy Manager's role. An Executive Committee and Operations Energy Committee were formed in January. The Executive Committee met 5 times during the year including 3 quarterly meetings with BC Hydro. The Operations Energy Committee met 7 times during the year. The notes from these meetings are presented in Appendix E. Major activities during the year were:

- Collection and organization of Baseline and ongoing monthly energy cost and consumption data
- Baseline analysis and Metrix® tuning for weather normalization
- Review of Energy Audit recommendations and development of retrofit plan
- Preparation and execution of feasibility study to upgrade power plant
- Energy Awareness opportunity assessment
- Incorporation of energy efficiency standards into procurement policies
- Development of Energy Policy
- Completion of an IT Optimization Study
- Preparation of application for BC Hydro's continuous optimization program.

As a result of this work CNC has developed a long term goal to achieve an energy intensity reduction of 15% by the end of fiscal year 2013 (3 years) by the implementation of cost-effective energy management initiatives at our facilities in Prince George.

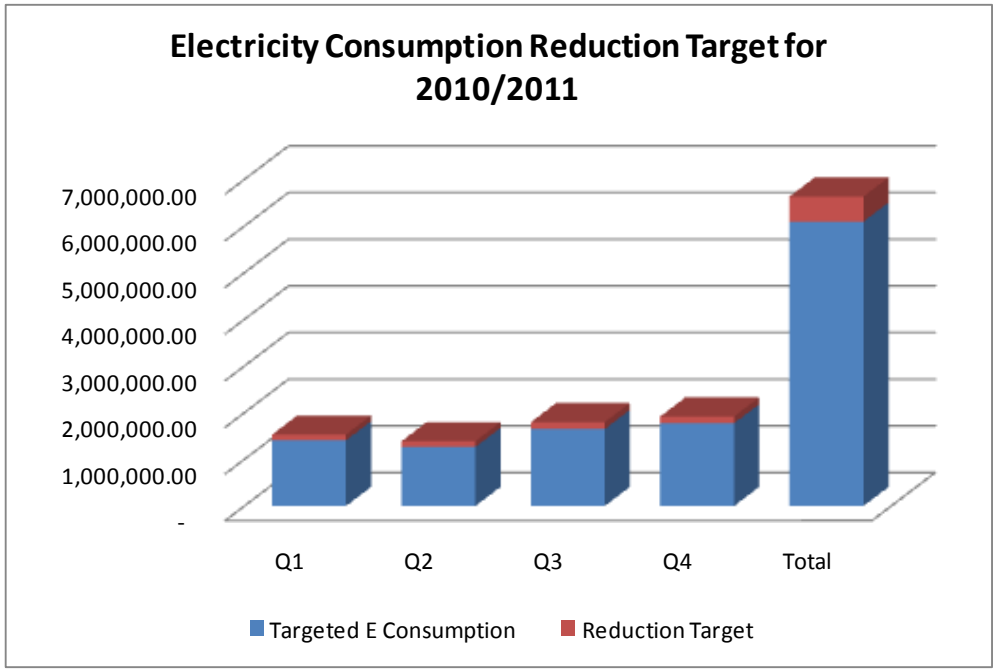
4.1 Quarterly Goals and Objectives

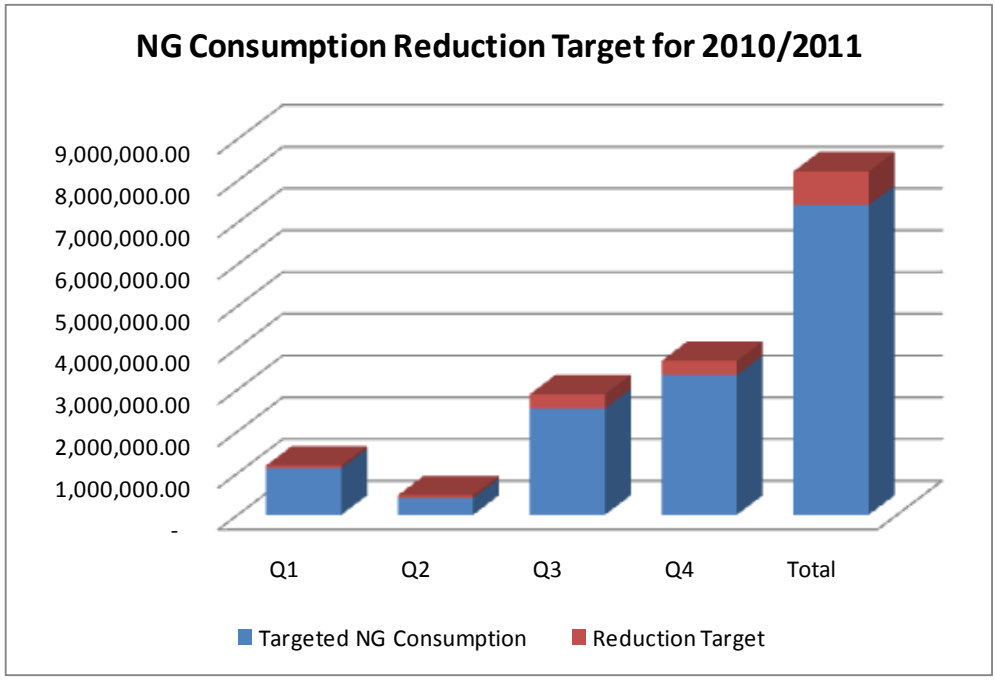
Quarterly Electricity Reduction Targets

Baseline (Fiscal 2009) Years Quarterly Consumption	Electricity Reduction Target	
kWh	kWh	%
1,531,434.58	122,904	8%
1,388,039.20	122,904	9%
1,795,454.60	145,348	8%
1,918,077.82	145,348	8%
6,633,006.19	**536,503**	**8%**

Quarterly Natural Gas Reduction Targets

Baseline (Fiscal 2009) Years Quarterly Consumption	Natural Gas Reduction Target	
kWh	kWh	%
1,180,714.97	61,672	5%
467,039.39	61,672	13%
2,885,967.72	340,167	12%
3,689,231.48	340,167	9%
8,222,953.57	**803,678**	**10%**


Electricity Consumption Reduction Target for 2010/2011
7,000,000.00
6,000,000.00
5,000,000.00
4,000,000.00
3,000,000.00
2,000,000.00
1,000,000.00
-
Q1
Q2
Q3
Q4
Total
Targeted E Consumption
Reduction Target


NG Consumption Reduction Target for 2010/2011
9,000,000.00
8,000,000.00
7,000,000.00
6,000,000.00
5,000,000.00
4,000,000.00
3,000,000.00
2,000,000.00
1,000,000.00
-
Q1
Q2
Q3
Q4
Total
Targeted NG Consumption
Reduction Target

4.2 Annual Goals and Objectives

Annual Electricity Reduction Targets

Year	Electricity Consumption Reduction Targets	
Fiscal 2009	0	0%
Fiscal 2010	30,713	0%
Fiscal 2011	536,503	8%
Fiscal 2012	1,024,140	15%
Fiscal 2013	1,368,833	21%

Annual Natural Gas Reduction Targets

Year	NG Consumption Reduction Targets	
Fiscal 2009	0	0%
Fiscal 2010	-	0%
Fiscal 2011	803,678	10%
Fiscal 2012	1,360,667	17%
Fiscal 2013	1,360,667	17%

4.3 Annual Energy Intensity by Key Performance Indicators

Are you becoming more Energy Efficient?

Year	Annual Electricity Consumption, kWh	Number of Students (Fall Semester)	Area, sq.ft.	Energy Intensity per Student (kWh/ student)	Energy Intensity (kWh/ sq.ft.)	Percent Decrease per year (%)	Percent Decrease per year (%)
Fiscal 2009	6,633,006	2,219	467,634	2,989	14.18	0%	0%
Fiscal 2010	5,758,066	2,443	467,634	2,357	12.31	21%	13%

Annual consumption for 2010 has been estimated based on 6 months of data.

4.4 Planned Actions (Project List)

The following table provides a list of projects which the college plans to implement over the next 3 years subject to the availability of Capital funding. The overall program is expected to reduce electricity usage by 1,700,000 kWh per year.

Energy Management Assessment (EMA) - Technical Projects

Potential Projects

Project Name	Description	Location	Potential Electrical Svgs (kWh)	Potential Other Fuel Svgs (GJ)	Potential Total Svgs (Energy + Operational)	Projected Total Cost	Potential BC Hydro Incentive	Potential NRCan Incentive	Total Potential Incentives	Projected Simple Pay Back	Status
5.2.1 - Comprehensive Lighting	Lighting	Main Campus	151,973	-	$ 8,220	$ 128,300	$ 12,158	$ 5,471	$ 17,628	13.46	Investigating Incentives
5.3.1 - Brink Classroom 1031 RT	Recommissioning	Brink Building	-	76	$ 869	$ 460	$ -	$ -	$ -	0.53	Investigating Incentives
5.3.10 - Demand Control Ventilation	BAS	Main Campus	-	32	$ 302	$ 2,190	$ -	$ 320	$ 320	6.19	Investigating Incentives
5.3.11 - Insulate Domestic HW Piping	Mechanical	Main Campus	-	17	$ 160	$ 1,680	$ -	$ 170	$ 170	9.44	Investigating Incentives
5.3.2 - Full Recirculation in Un.	Recommissioning	Main Campus	-	66	$ 627	$ 1,380	-$ 315	$ 660	$ 345	1.65	Investigating Incentives
5.3.4 - Industrial Education Bu	BAS	Industrial Education Building	77	350	$ 3,316	$ 23,580	$ -	$ 3,503	$ 3,503	6.05	Investigating Incentives
5.3.6 - Holiday Scheduling	Recommissioning	Main Campus	24,519	332	$ 4,066	$ 1,380	$ -	$ -	$ -	0.34	Investigating Incentives
5.3.7 - Reduce Ventilation for Caf and Kit	Recommissioning	Main Campus	34,412	365	$ 4,678	$ 53,360	$ 2,753	$ 4,889	$ 7,642	9.77	Investigating Incentives
5.3.8 - Align Operating Hours of AHU-720	Recommissioning	Main Campus	20,593	115	$ 1,862	$ 110	$ -	$ -	$ -	0.06	Investigating Incentives
5.3.9 - Zone Isolation for Block 700 1st floo	Recommissioning	Main Campus	2,111	111	$ 1,132	$ 2,760	$ 169	$ 1,186	$ 1,355	1.24	Investigating Incentives
5.4.1 Standby Mode for Brink RTUs	BAS	Main Campus	2,334	33	$ 464	$ 6,785	$ 187	$ 414	$ 601	13.33	Investigating Incentives
5.4.2 - Change VIV to VSD	HVAC	Main Campus	152,606	-	$ 5,748	$ 113,965	$ 12,208	$ 5,493	$ 17,702	16.75	Investigating Incentives
5.4.5 - Theatre Isolation	BAS	Main Campus	5,731	30	$ 503	$ 5,175	$ 458	$ 506	$ 965	8.37	Investigating Incentives
5.4.8 - Lighting Retrofits	Lighting	Main Campus	1,028,935	-	$ 59,359	$ 815,398	$ 82,315	$ 37,039	$ 119,353	11.73	Investigating Incentives
5.4.9 - Gym Lighting Upgrade	Lighting	Main Campus	26,551	-	$ 1,000	$ 60,000	$ 2,124	$ 956	$ 3,080	56.92	Investigating Incentives
5.4.10 - Seating Area Lighting	Lighting	Main Campus	23,364	-	$ 880	$ 40,000	$ 1,869	$ 841	$ 2,710	42.37	Receiving quotes for supply and installation
5.5.1 Power Plant Upgrade	Chilers/Boilers	Power Plant	103,200	2,500	$ 29,870	TBD	TBD	TBD	TBD	TBD	RFP for feasibility study issued. Study to be
Power Management Software											
			1,576,406	4,027	$ 123,056	$1,256,523	$113,926	$ 61,447	$ 175,374	8.79	

5. APPENDIX A

Eg. EMA cover letter + EMA Gantt chart (Action Timeline) + EMA journal notes

BC hydro
powersmart

reliable power,
at low cost,
for generations

June 30, 2008

James Hoyer
Director, Facility Services
College of New Caledonia (CNC)
Prince George, BC

Dear James,

Thank you for your time and that of your management team on June 24th. I appreciated your input and feedback and trust that you found the One-2-Five Energy diagnostic session an informative and worthwhile exercise.

The One-2-Five Energy diagnostic session revealed that:

- You rated your operations at the 1 Star level;
- Your organization has an IBR of 0.83; and
- An annual savings in the region of 12.8% to 16.7% could be available.

Based on the results of the diagnostic session, it is recommended that you focus on the following elements to continue to improve energy management:

1.1 Demonstrated leadership commitment

Arrange for an executive-level officer to sign an energy-specific policy or directive containing specific, quantitative goals and objectives for improving energy efficiency and/or reducing energy costs.

2.1 Understanding Performance and Opportunities

Establish the energy consumption and determine the potential energy savings for each major operational area or system.

4.2 Awareness and Training

Conduct basic energy-awareness activities within your organization, focusing on cost savings and environmental issues associated with energy use.

4.3 Resourcing

Develop resource planning activities to ensure access to enough suitably skilled people to rectify energy waste in a timely manner.

8.2 Procedures for Equipment Selection

Document and communicate the purchase guidelines to be used for selection of energy efficient equipment.

Included in this package are a detailed Energy Management System Action Plan and Diagnostic Report that outline these recommendations in further detail. Also included is a draft Energy Management Action Plan Timeline that can serve as a starting point for identifying the specific task items necessary for implementation of the recommended actions outlined and provide a template for managing the ongoing progress toward implementation. I will work with you to finalize the draft Action Plan Timeline.

BC Hydro would like to thank CNC for your participation in the One-2-Five Energy diagnostic session, and we look forward to working with you in implementing these recommendations and supporting your energy management activities.

Sincerely,

Lindsay Smilgis
Key Account Manager

One-2-Five Energy Management System Action Plan Draft Timeline
CNC- June 2008

One-2-Five Energy Recommended Actions	Timeline											
	Mo 1	Mo 2	Mo 3	Mo 4	Mo 5	Mo 6	Mo 7	Mo 8	Mo 9	Mo 10	Mo 11	Mo 12
1.1 Demonstrated Leadership Commitment												
1.1.1 Quantify the benefit of energy conservation activities conducted to date	C, B											
>Specify numerous projects and activities undertaken to date												
>Specify the financial benefits as well as public image and marketability benefits												
1.1.2 Outline the additional benefits possible by having an organization-wide directive for energy conservation		C,B										
>Include financial benefits to organization												
>Include positive impact to CNC image												
1.1.3 Review sample energy policy statements created by other organizations		C,B										
1.1.4 Create an energy management statement as a stand-alone policy or as part of an existing broader environmental program			C,B									
>If part of a broader sustainability policy, include a separate commitment statement specifically aimed at energy issues												
>Establish clear and quantifiable goals for the organization that pertain directly and exclusively to energy												
>Initial goals for energy can be based on existing knowledge of opportunities, comparison with performance metrics of other entities, or indicative savings resulting from the One-2-Five exercise												
1.1.5 Identify key individual within the highest levels of leadership to sponsor an organization level energy policy			C,B									
1.1.6 Present draft energy policy and potential benefits (quantitative and qualitative) to identified leadership for signature				C								
>May require modification as called out by leadership prior to signature												
1.1.7 Communicate energy policy to all of the organization and reinforce over time by creating regular reporting to management on the progress made toward goals in the policy statement.					C,B							
1.1.8 Deliver summary reporting on a regular basis to Executive management on progress towards policy goals									C			
>Report should go to leadership sponsor that has signed the energy policy												
2.1 Understanding Performance and Opportunities												
2.1.1 Identify areas, locations, or systems where energy analysis or upgrade activities have previously been performed	C,B											
>Call out specifically the extent of past analysis or upgrade activity for each areas												
>Call out known additional areas for analysis or upgrade opportunity												
>Create Workscope for additional energy audits or analysis of opportunities												
>Workscope should consider operational, behavioral, instructional issues in addition to hardware issues												
>Workscope should consider load management and rate reviews as appropriate												
>Workscope should include quantifying energy use and savings per system												
2.1.2 Identify areas, locations or systems where no previous energy analysis or upgrade activities have been performed	C,B											
>Create Workscope for additional energy audits or analysis of opportunities												
>Workscope should consider operational, behavioral, instructional issues in addition to hardware issues												
>Workscope should consider load management and rate reviews as appropriate												
>Workscope should include quantifying energy use and savings per system												
2.1.3 Identify and select qualified resources (internal, utility partner, third party, etc) to execute workscopes		C,B										
2.1.4 Schedule and conduct energy baseline studies			C,B									
2.1.5 Analyze energy baseline study results				C,B								
> Identify Opportunities for Savings that meet investment criteria												
> Investigate Available Utility Rebate & Support Programs												
> Compile Business-Case Models for Project Justification												
2.1.6 Use Baseline Study results to establish energy use / major system metrics					C,B-3.1.1, 9.2.1							
2.1.7 Use Baseline Study results to establish potential savings / energy system quantification						C,B-3.1.1, 9.2.1						
2.1.8 Compile multi-year capital plan for approved energy projects across the portfolio							C,B					
2.1.9 Obtain management approval, as needed, to implement the projects in the multi-year plan								C-1.1.6				
4.2 Awareness and Training												
4.2.1 Evaluate passed energy awareness activities and effectiveness		C,B										
4.2.2 Determine activities to implement as part of energy awareness campaign			C,B									
>Newsletter Articles												
>Intranet communication												
>Visible signage												
>Suggestion and recognition programs												
4.2.3 Consider appropriate meeting forum for soliciting energy conservation ideas from non-facilities staff & employees				C,B								
>Could be part of existing operational, safety, or sustainability group meetings												
>Sponsor an "Energy Challenge Day" for employees, faculty, students												
>Engage existing employee environmental or activist groups												
>Engage faculty and students through curriculum												
>Suggestion boxes												
4.2.4 Implement regular opportunities for soliciting ideas from staff					C,B							
4.2.5 Report back to staff on ideas implemented and corresponding results						C						
4.2.6 Consider recognition awards for contributed ideas that result in measurable improvements in energy conservation							C,B					
4.2.7 Identify available sources of required awareness assistance and materials								C,B				
4.2.8 Schedule and deliver awareness activities								C,B				
>Consider phased delivery of different activities to keep energy issues fresh												
4.2.9 Evaluate effectiveness of awareness campaign and adjust as necessary											C	

One-2-Five Energy Management System Action Plan Draft Timeline
CNC- June 2008

One-2-Five Energy Recommended Actions	Timeline											
	Mo 1	Mo 2	Mo 3	Mo 4	Mo 5	Mo 6	Mo 7	Mo 8	Mo 9	Mo 10	Mo 11	Mo 12
4.3 Resourcing												
4.3.1 Identify specific energy management tasks not receiving sufficient coverage	C											
4.3.2 Quantify the time commitment required to address the outstanding energy management tasks		C										
4.3.3 Establish an outline of the general skill sets required to manage the outstanding energy management tasks			C,B									
>Make allowance for skill sets that can be provided or reinforced through training												
4.3.4 Investigate the possible sources of "high-quality, low-cost" personnel (BC Hydro EM Program, Student Intern, etc)				C,B								
4.3.5 Prepare justification and obtain approval for new resource					C-1.1.7							
4.3.6 Conduct candidate selection process						C,B						
>Prepare candidate selection criteria												
>Advertise available position												
>Schedule interviews with interested candidates												
>Select most qualified candidates												
4.3.7 Outline training requirements needed (if any) for new resource							C,B					
4.3.8 Identify sources of required training and deliver the training								C,B				
4.3.9 Assign to new resource energy management tasks not currently receiving sufficient coverage									C			
8.2 Procedures for Equipment Selection												
8.2.1 Identify sources of purchase guidelines for selection of general energy-using equipment (ie, computers, copiers, printers, etc)	C,B											
>Make adjustments or allowances as needed												
8.2.2 Review Facilities Mgmt equipment purchase guidelines based on life-cycle analysis for high energy-using equipment	C,B											
>Make adjustments or allowances as needed												
8.2.3 Identify the multiple equipment purchase points across the organization		C										
8.2.4 Identify the decision makers with coverage over those multiple purchase points			C									
8.2.5 Calculate the benefit of using energy efficiency guidelines to manage equipment purchases across the organization				C,B								
8.2.6 Present the business case to organization decision makers for adopting energy efficient purchase guidelines					C							
8.2.7 Document in official records energy efficient purchase guidelines of general and high energy-using equipment						C						
8.2.8 Devise a mechanism to ensure guidelines are followed (ie, paperwork audit trail)							C					
8.2.9 Reinforce efficient guidelines with appropriate training and instruction for procurement personnel								C,B				
8.2.10 Work with the multiple organization purchase points to adjust guideline as needed over time											C	
Follow-Up One-2-Five Energy Session & Obtain Next Recommended Actions												

INDEX
C= Tasks to be completed by CNC
B = Tasks to be completed in partnership with BC Hydro

Yet to Start
In Progress
Pending
Complete
Original Schedule
Revised Schedule

HATCH energy

BC hydro powersmart

EMA Progress Report – Q4

CNC Energy Management System Action Plan 2009

AREA ID	**1.1 – Demonstrated Leadership Commitment**
AREA DESCRIPTION	Arrange for an executive-level officer to sign and sponsor an energy-specific policy or directive containing specific, quantitative goals and objectives for improving energy efficiency and/or reducing energy costs.
BACKGROUND	Executive Committee formed and Kick –off meeting held in January. PowerSmart Commitment letter signed and submitted.
START DATE	January 09
EST COMPLETION DATE	December 09
CURRENT STATUS	In Progress
ASSIGNED TO:	Peter Rowles , Burke Gulbranson Reassigned to Sustainability Committee – Dan Bradshaw, Gord Kerr, Randall Heidt – June 4 2009
TASK PROGRESS	1.1.1 –Completed 1.1.2 –Completed 1.1.3 – Completed Draft Energy Policy reviewed, Sustainability Committee terms of reference reviewed. 1.1.4 – In progress – draft policy and terms of reference being redrafted for review and approval. Quantifiable goals are being based on audits and awareness survey which have been completed. 1.1.5 – President of College – John Bowman has been identified and has agreed to be Executive Sponsor 1.1.6 – Presentation of draft policy to executive sponsor was completed in November and is included in SEMP 1.1.7 – Communication of policy is rescheduled to New Year 1.1.8 – Delivery of Summary report made to President in November. SEMP prepared and presented in December
CHALLENGES	Funding – College is currently operating with a deficit budget. Chairman of Sustainabilty Committee (Dan Bradshaw) left the college at the end of August. Sustainability committee reconvened in November.

EMA Progress Report – Q4

CNC Energy Management System Action Plan 2009

AREA ID	**2.1 – Understanding Performance and Opportunities**
AREA DESCRIPTION	Establish the energy consumption and determine the potential energy savings for each major operational area or system.
BACKGROUND	Energy Audit completed by Prism Engineering in 2008 Mechanical systems audit completed by TFMCI in 2007
START DATE	January 2009
EST COMPLETION DATE	December 2009
CURRENT STATUS	In progress
ASSIGNED TO:	Peter Rowles
TASK PROGRESS	2.1.1 –Complete 2.1.2 –Complete – Scope of work for feasibility study for power plant upgrades prepared and RFP issued June 3 09 2.1.3 – Complete – Energy Manager – Energy Advantage selected in December 08 to complete workscope 2.1.4 – Complete – Baseline data (2008) analyzed, Prism audit report and TFMI report reviewed, walk-thru audit to identify awareness opportunities completed 2.1.5 – List of potential projects identified and ranked for implementation. Preliminary Business cases prepared. Will be seeking PSECA funding for these projects. Applications due in September. 2.1.6 – Complete -Energy use and major system metrics being developed 2.1.7 – Complete Potential energy savings being quantified 2.1.8 – Capital Plan being developed 2.1.9 – Approval for capital plan expected in Q4. Proposed projects are approved to proceed subject to available funding.
CHALLENGES	Sources of funding an issue. Some smaller projects such as Gymnasium retrofit can be completed in short term. Applications for PSECA 3 and BC Hydro funding will be required for implementation.

EMA Progress Report – Q4

CNC Energy Management System Action Plan 2009

AREA ID	**4.2 – Awareness and Training**
AREA DESCRIPTION	Conduct basic energy-awareness activities within your organization, focusing on cost savings and environmental issues associated with energy use.
BACKGROUND	Sustainability Committee formed in the past. Currently no activities.
START DATE	January 2009
EST COMPLETION DATE	December 2009
CURRENT STATUS	In Progress
ASSIGNED TO:	Peter Rowles and Sustainability Committee – Dan Bradshaw, Randal Heidt and Gord Kerr Randal Heidt is taking lead on staff and student awareness
TASK PROGRESS	4.2.1 –Completed 4.2.2 –Completed – Energy Awareness walk-thrus completed in April and May. Results represented to Energy Committee and Sustainability Committee in May and June. Ideas for Newsletters, posters, surveys and internet communication were discussed 4.2.3 – Completed. To be included as part of Sustainability program 4.2.4 – Opportunities being discussed at monthly meetings 4.2.5 – Postponed until Q4 4.2.6 – Postponed until Q4 4.2.7 – Complete BC Hydro, Terasen Gas and Energy advantage are supplying materials for student awareness campaign. 4.2.8 – Launch currently planned for early in school year. Program launch at Student orientation on September 10 09. Draft communication plan prepared. 4.2.9 – Planned for early 2010
CHALLENGES	Securing internal resources to prepare awareness material and organize program launch by the fall.

EMA Progress Report – Q4

CNC Energy Management System Action Plan 2009

AREA ID	**4.3 – Resourcing**
AREA DESCRIPTION	Develop resource planning activities to ensure access to enough suitably skilled people to rectify energy waste in a timely manner.
BACKGROUND	Assessment of Power Plant resourcing issues covered in TFMCI report. Assessment of Energy Manager resource requirements identified in one to Five Assessment This task is largely completed with the selection of EAI as an energy manager.
START DATE	January 09
EST COMPLETION DATE	December 09
CURRENT STATUS	In Progress
ASSIGNED TO:	Peter Rowles, Burke Gulbranson
TASK PROGRESS	4.3.1 –Complete 4.3.2 –Complete 4.3.3 –Complete 4.3.4 – Complete 4.3.5 – Complete 4.3.6 – Complete 4.3.7 – Complete
CHALLENGES	

EMA Progress Report – Q4

CNC Energy Management System Action Plan 2009

AREA ID	**8.2 Procedures for Equipment Selection**
AREA DESCRIPTION	Document and communicate the purchase guidelines to be used for selection of energy efficient equipment.
BACKGROUND	The CNC management personnel seem to have a good understanding of potential energy efficiency guidelines to use in determining the potential replacement options of energy-using equipment. However, given the multiple purchase points throughout the organization for energy-using equipment, the recommendation in this area is to formalize these guidelines, which are currently applied on an informal basis, to ensure that their application happens more consistently across all relevant areas of the organization and on a more routine basis. A further improvement would include adopting purchasing guidelines based on life cycle cost analysis in the selection of significant or high energy-using equipment. Finally, the energy efficient guidelines established should be supported with a check-and-balance system in the form of protocols that ensure that the guidelines established are routinely applied at all level and by all personnel with authority to purchase energy-using equipment, particularly in areas with heavy energy use patterns.
START DATE	January 09
EST COMPLETION DATE	December 09
CURRENT STATUS	In Progress
ASSIGNED TO:	Peter Rowles, Trish Bichon
TASK PROGRESS	8.2.1 –Complete 8.2.2 –Complete - have reviewed equipment purchases and made recommendations to include products list in BC Hydro's Product Incentive Program. Life cycle analysis being included as part of analysis for Power Plant upgrades and retrofit projects. 8.2.3 – Equipment purchases completed through procurement department 8.2.4 – Key decision makers are in facilities management and IT w.r.t. computers 8.2.5 – Reviewed BC Hydro's PIP program with procurement department and agreed to used products listed in program as standard for purchasing. Also considering direct purchase of natural gas based on recommendation form Energy Committee. 8.2.6 – Energy efficiency quidelines included in recent rfp for lighting equipment 8.2.7 – Mechanism (process) for tracking energy efficient purchases is being developed. 8.2.8 – In progress 8.2.9 – In Progress 8.2.10 – In Progress
CHALLENGES	

Energy Management Assessment (EMA) - Technical Projects

Potential Projects

Project Name	Description	Location	Potential Electrical Svgs (kWh)	Potential Other Fuel Svgs (GJ)	Potential Total Svgs (Energy + Operational)	Projected Total Cost	Potential BC Hydro Incentive	Potential NRCan Incentive	Total Potential Incentives	Projected Simple Pay Back	Status
5.2.1 - Comprehensive Lighting	Lighting	Main Campus	151,973	-	$ 8,220	$ 128,300	$ 12,158	$ 5,471	$ 17,628	13.46	Investigating Incentives
5.3.1 - Brink Classroom 1031 RT	Recommissioning	Brink Building	-	76	$ 869	$ 460	$ -	$ -	$ -	0.53	Investigating Incentives
5.3.10 - Demand Control Ventilation	BAS	Main Campus	-	32	$ 302	$ 2,190	$ -	$ 320	$ 320	6.19	Investigating Incentives
5.3.4 - Industrial Education Bu	BAS	Industrial Education Building	77	350	$ 3,316	$ 23,580	$ -	$ 3,503	$ 3,503	6.05	Investigating Incentives
5.3.7 - Reduce Ventilation for Caf and Kit.	Recommissioning	Main Campus	34,412	365	$ 4,678	$ 53,360	$ 2,753	$ 4,889	$ 7,642	9.77	Investigating Incentives
5.4.1 Standby Mode for Brink RTUs	BAS	Main Campus	2,334	33	$ 464	$ 6,785	$ 187	$ 414	$ 601	13.33	Investigating Incentives
5.4.2 - Change VIV to VSD	HVAC	Main Campus	152,606	-	$ 5,748	$ 113,965	$ 12,208	$ 5,493	$ 17,702	16.75	Investigating Incentives
5.4.5 - Theatre Isolation	BAS	Main Campus	5,731	30	$ 503	$ 5,175	$ 458	$ 506	$ 965	8.37	Investigating Incentives
5.4.8 - Lighting Retrofits	Lighting	Main Campus	1,028,935	-	$ 59,359	$ 815,398	$ 82,315	$ 37,039	$ 119,353	11.73	Investigating Incentives
5.4.10 - Seating Area Lighting	Lighting	Main Campus	23,364	-	$ 880	$ 40,000	$ 1,869	$ 841	$ 2,710	42.37	Receiving quotes for supply and installation
5.5.1 Power Plant Upgrade	Chilers/Boilers	Power Plant	103,200	2,500	$ 29,870	$ 600,000	TBD	TBD	TBD	TBD	RFP for feasibility study issued. Study to be complete by Sept. 09
Power Management Software			100,000	-		TBD	TBD	TBD	TBD	TBD	Study Complete
			1,602,632	3,386	$ 114,209	$1,189,213	$ 111,948	$ 58,476	$ 170,424	8.92	

Approved Projects

Project Name		Description	Est Electrical Svgs (kWh)	Est Other Fuel Svgs	Est Total Svgs (Energy + Operational)	Est Total Cost	Est BC Hydro Incentive			Simple Pay Back	Next Steps	Est Start Date
5.3.8 - Align Operating Hours of AHU-720	Recommissioning	Main Campus	20,593	115	$ 1,862	$ 110	$ -	$ -	$ -	0.06		Dec-09
5.3.6 - Holiday Scheduling	Recommissioning	Main Campus	24,519	332	$ 4,066	$ 1,380	$ -	$ -	$ -	0.34		Dec-09
5.3.11 - Insulate Domestic HW Piping	Mechanical	Main Campus	-	17	$ 160	$ 1,680	$ -		$ -	10.50		Dec-09
5.3.9 - Zone Isolation for Block 700 1st floor	Recommissioning	Main Campus	2,111	111	$ 1,132	$ 2,760			$ -	2.44		Dec-09
5.3.2 - Full Recirculation in Un.	Recommissioning	Main Campus	-	66	$ 627	$ 1,380			$ -	2.20		Dec-09
5.4.9 - Gym Lighting Upgrade	Lighting	Main Campus	26,551	-	$ 1,000	$ 35,000	$ 2,124	$ 956	$ 3,080	31.92		
			47,223	641	7,847	7,310				0.93		

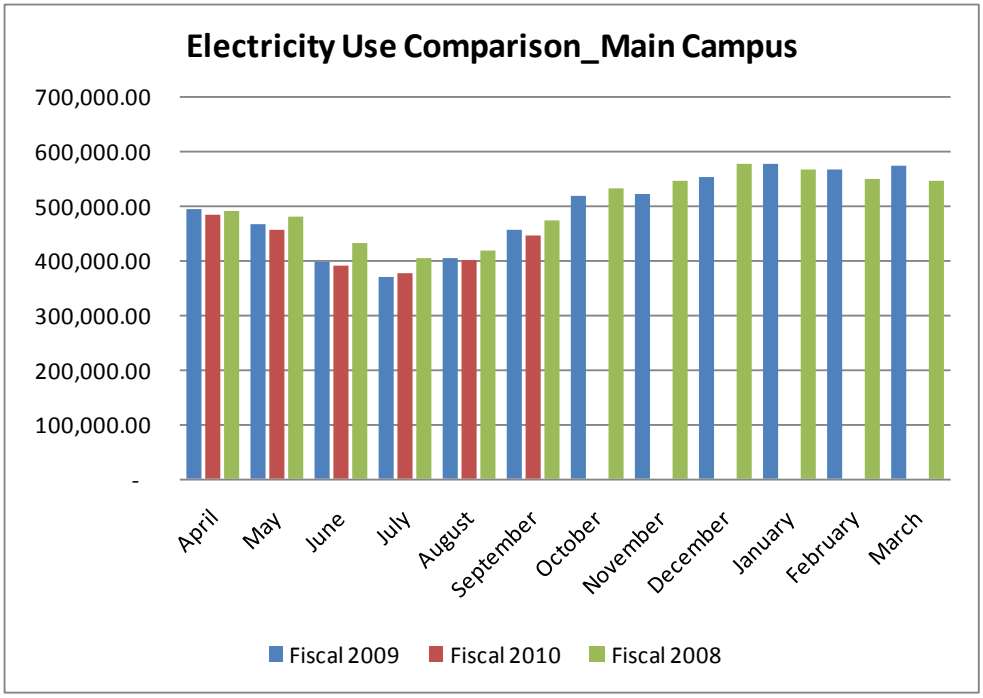
Projects In Progress

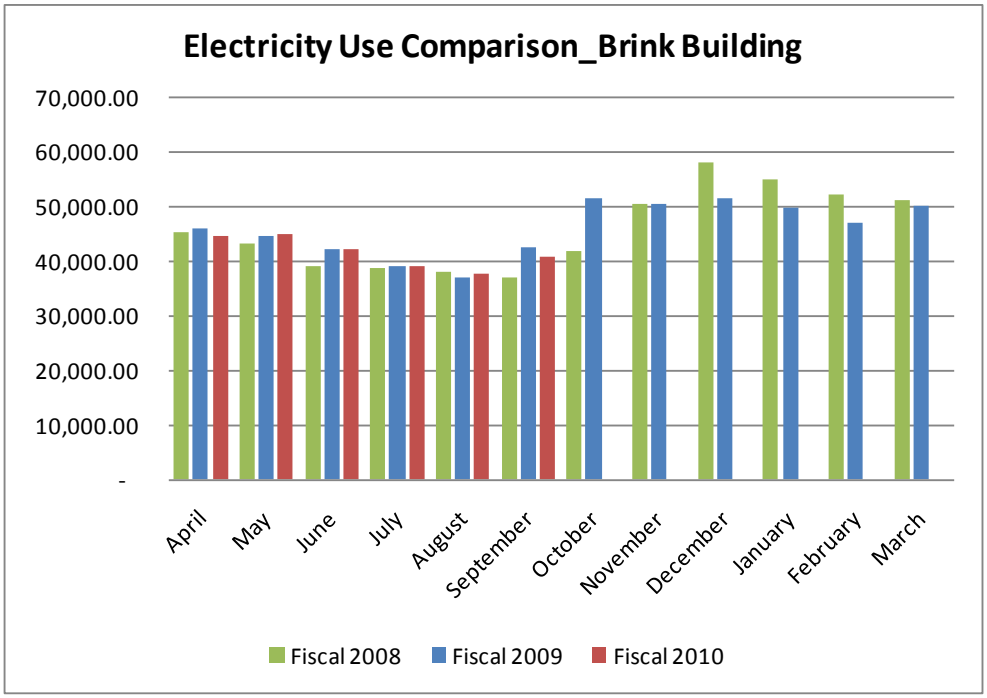
Project Name		Description	Electrical Svgs (kWh)	Other Fuel Svgs	Total Svgs (Energy + Operational)	Total Cost	BC Hydro Incentive			Simple Pay Back	Status	Date Started	% Complete	Projected Completion Date

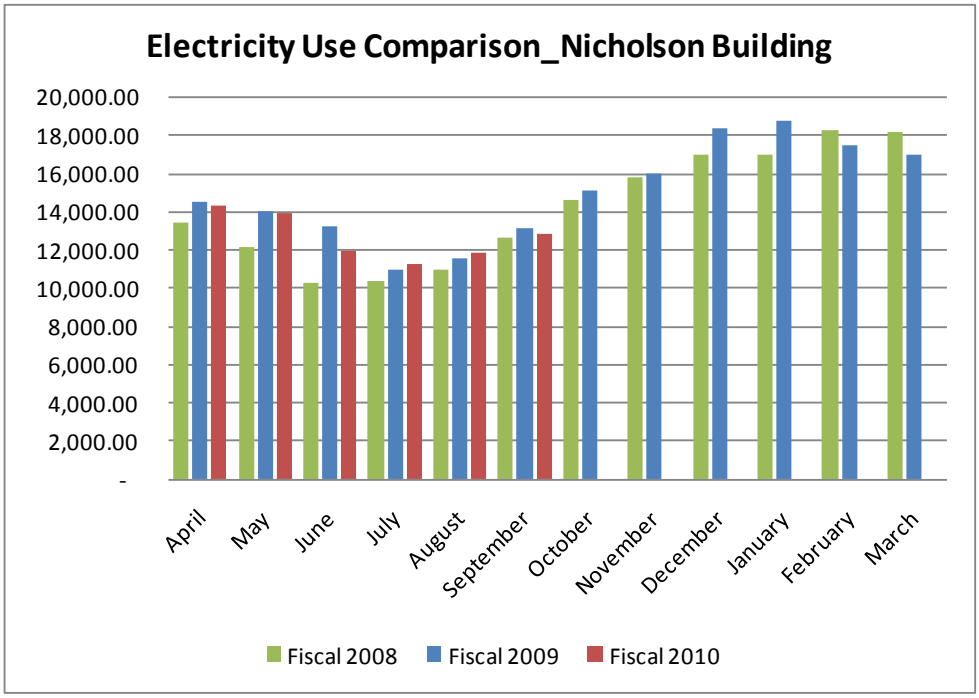
Behavioural/ Education Programs (If Applicable)

Project Name	Description	Location	Electrical Svgs (kWh)	Potential Other Fuel Svgs (GJ)	Total Svgs (Energy + Operational)	BC Hydro Incentive	Objectives	Date Started	% Complete	Projected Completion Date
Energy Awareness	Awareness	Main Campus	200,000	870	$ 18,700	TBD	Objective is reduce energy use by 3% through student and staff awareness	Fall 09	0	2010
Natural Gas Procurement	Procurement	Main Campus			$ 20,000		Convert to direct purchase of natural gas from system gas.	Fall 09	0	
Purchasing procedures	Procurement	Main Campus	TBD	TBD	TBD		Standardize on energy efficienct products	9-Jun	50	Mar-10

6. APPENDIX B – BASELINE DETAILS






Electricity Use Comparison_Nicholson Building
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18,000.00
16,000.00
14,000.00
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6,000.00
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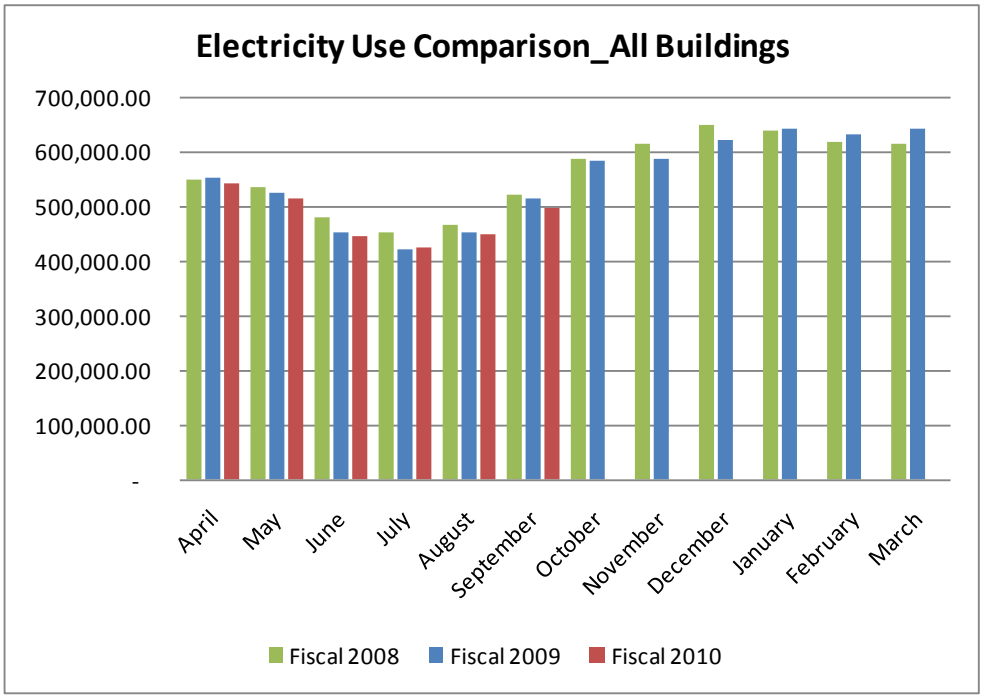
Electricity Use Comparison_All Buildings
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300,000.00
200,000.00
100,000.00
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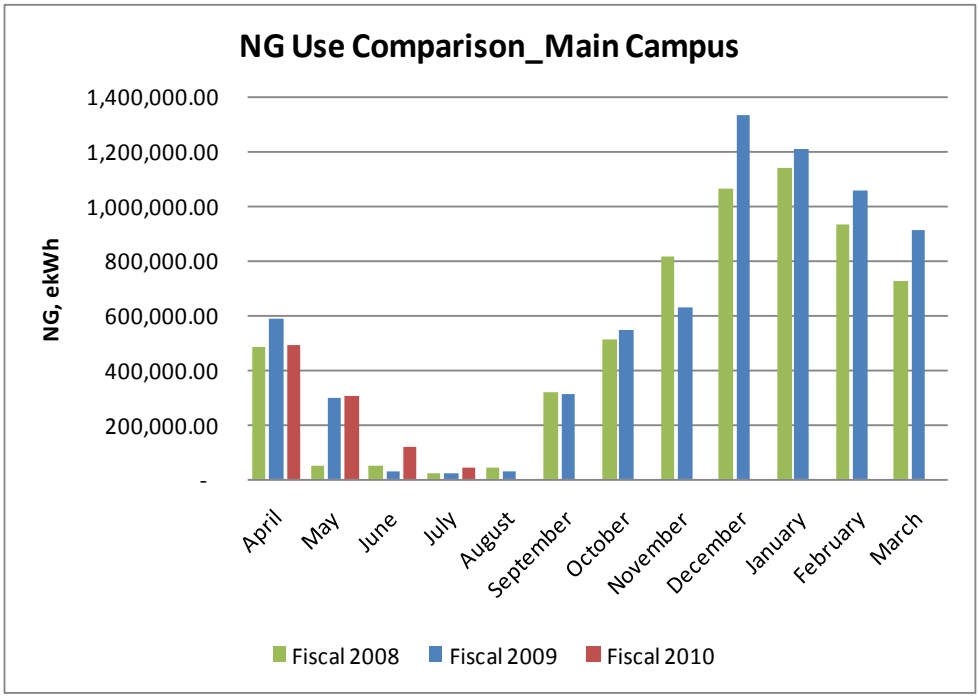
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NG, ekWh
1,400,000.00
1,200,000.00
1,000,000.00
800,000.00
600,000.00
400,000.00
200,000.00
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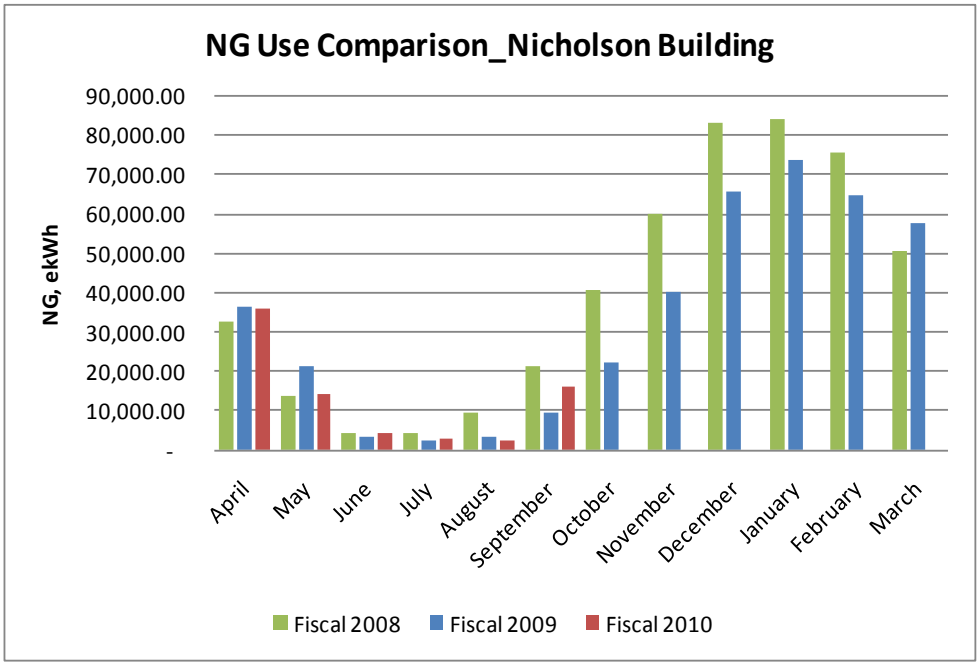
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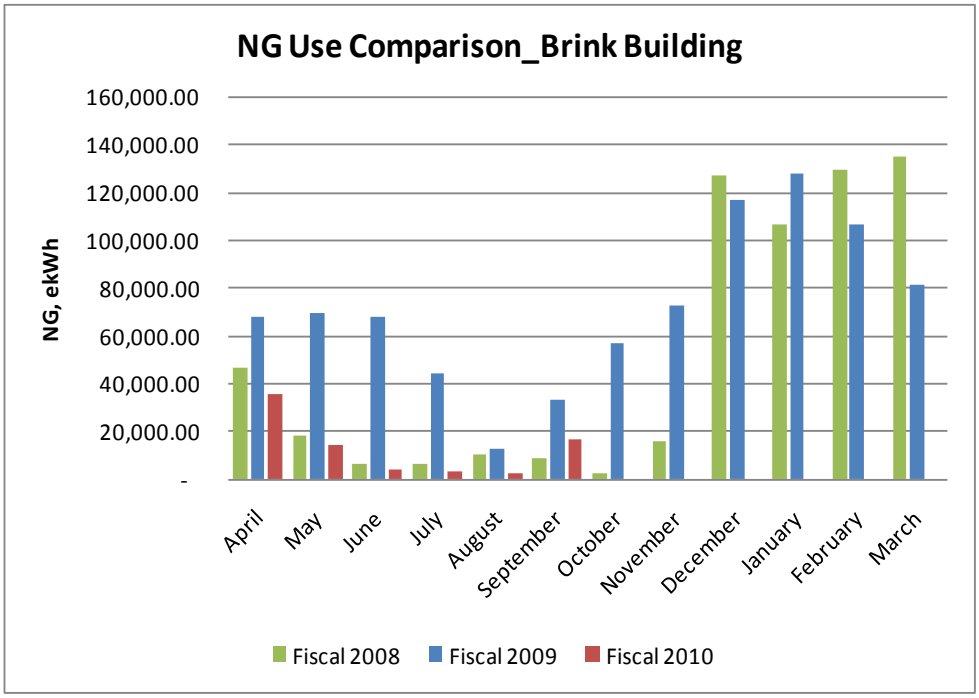
NG Use Comparison_Brink Building
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160,000.00
140,000.00
120,000.00
100,000.00
80,000.00
60,000.00
40,000.00
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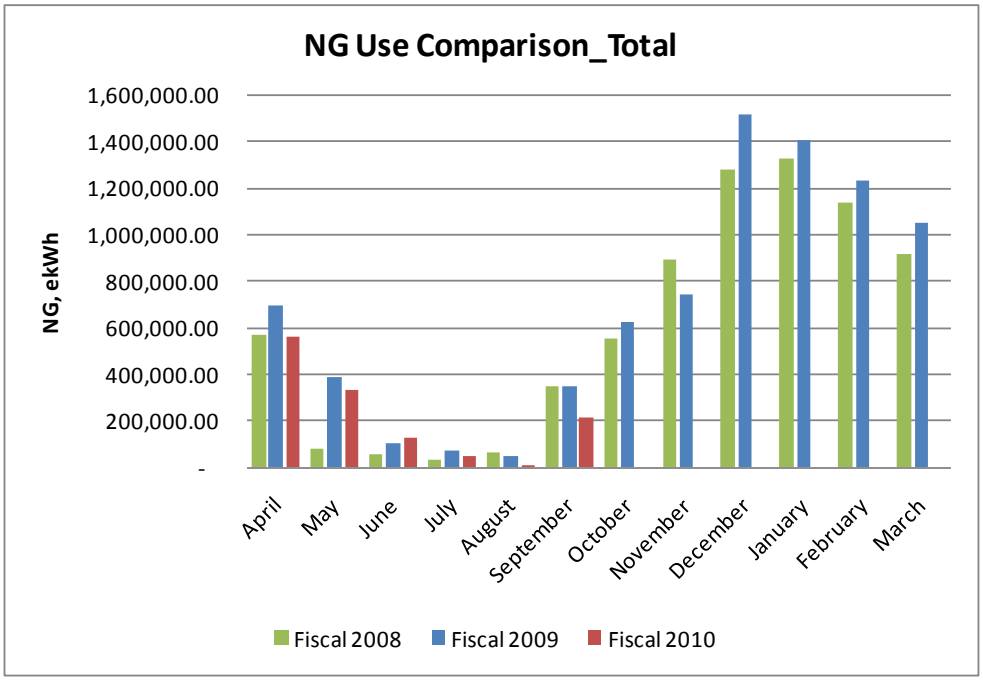
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1,200,000.00
1,000,000.00
800,000.00
600,000.00
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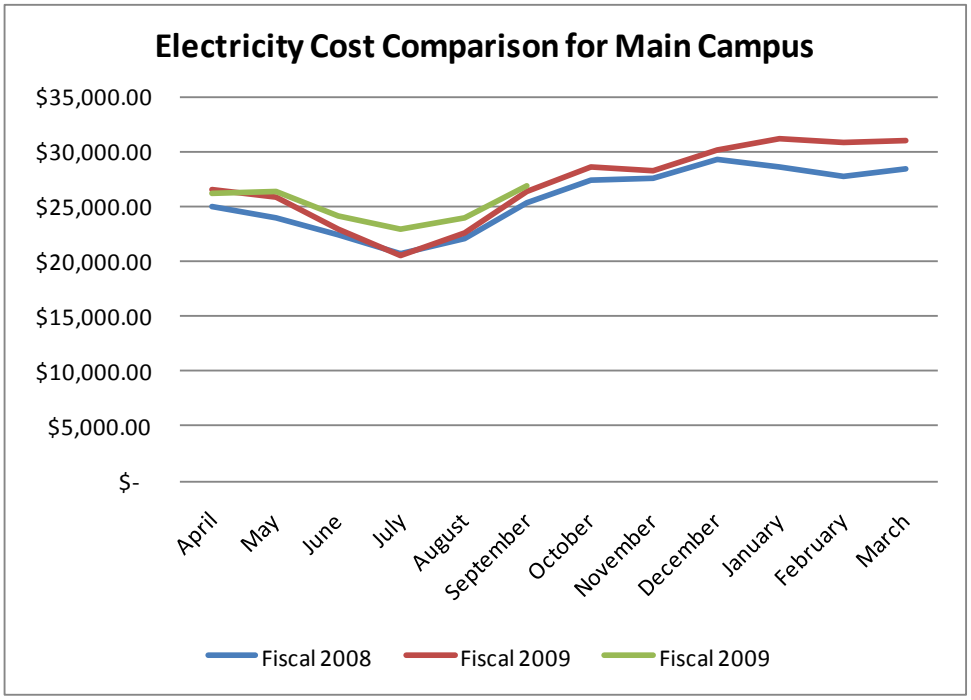
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$25,000.00
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$15,000.00
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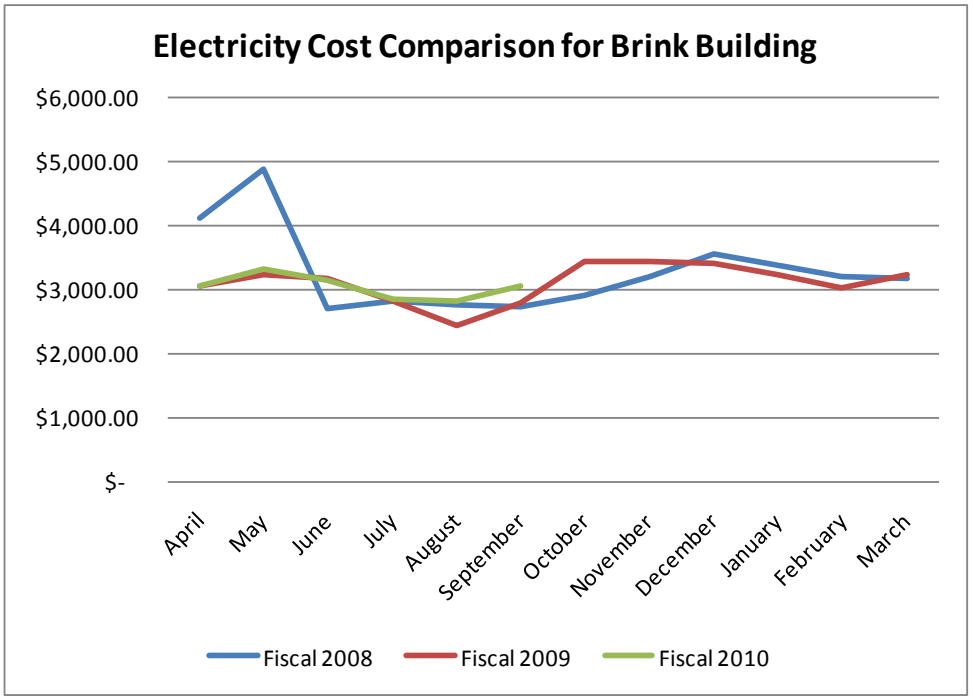
Electricity Cost Comparison for Brink Building
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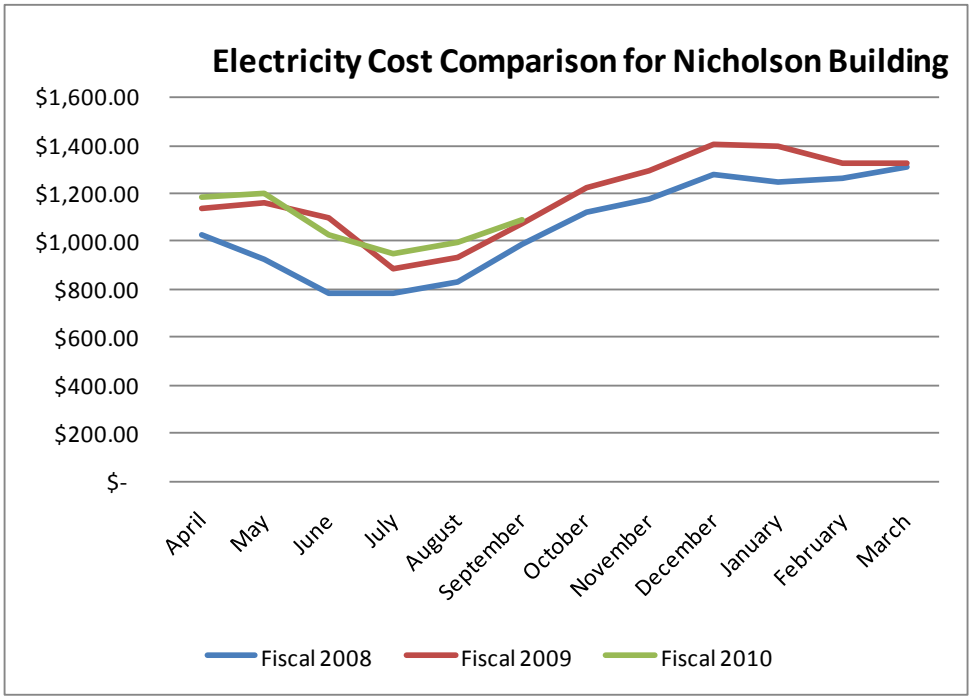
Electricity Cost Comparison for Nicholson Building
$1,600.00
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$1,200.00
$1,000.00
$800.00
$600.00
$400.00
$200.00
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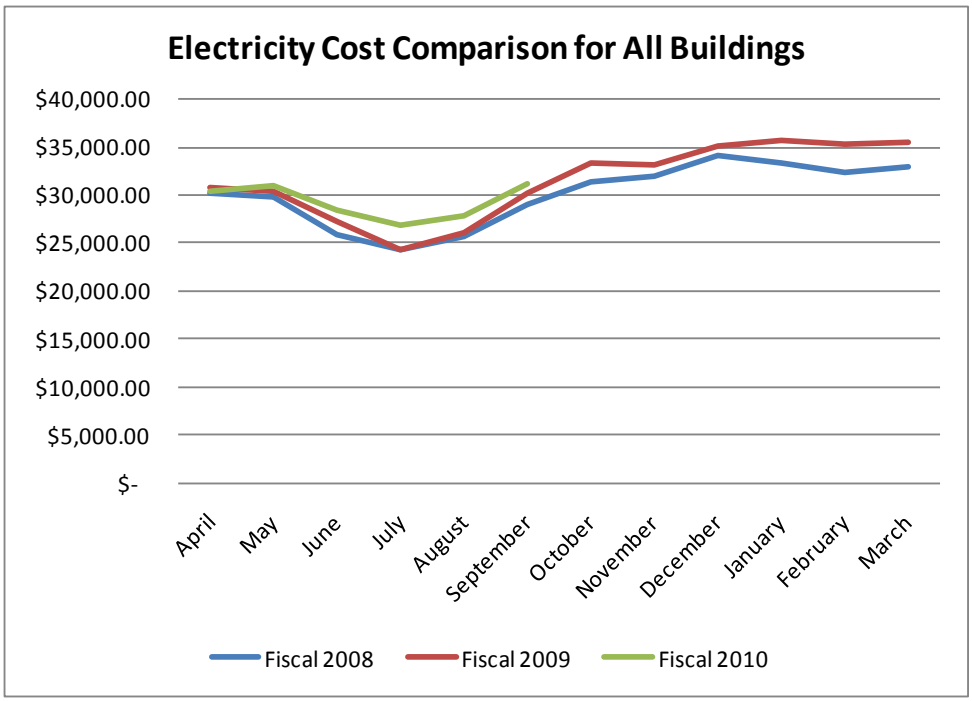
Electricity Cost Comparison for All Buildings
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$35,000.00
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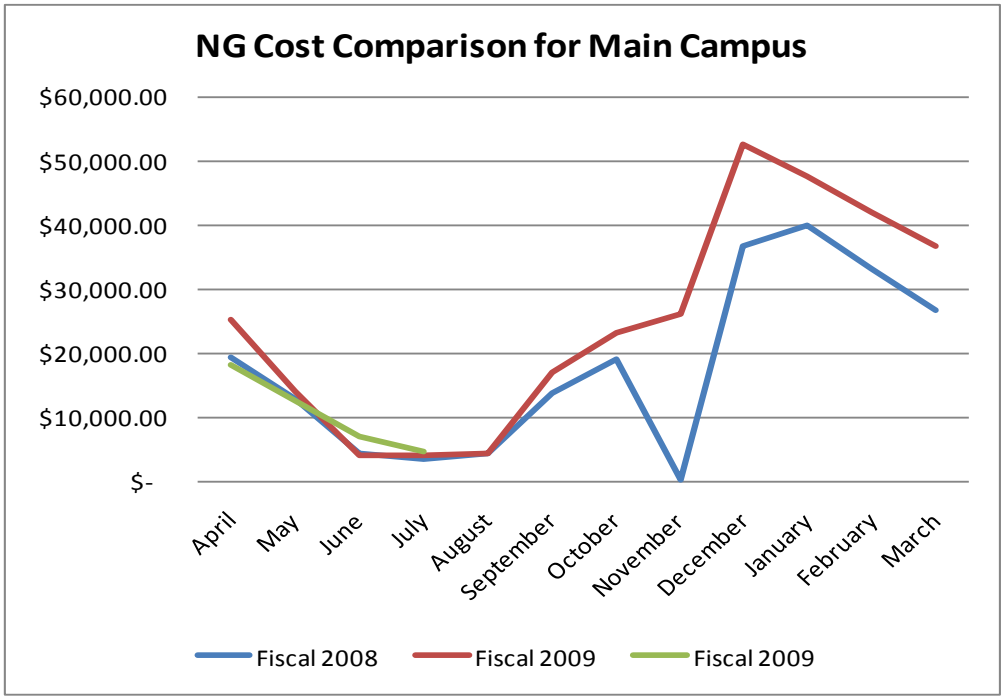
NG Cost Comparison for Main Campus
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$50,000.00
$40,000.00
$30,000.00
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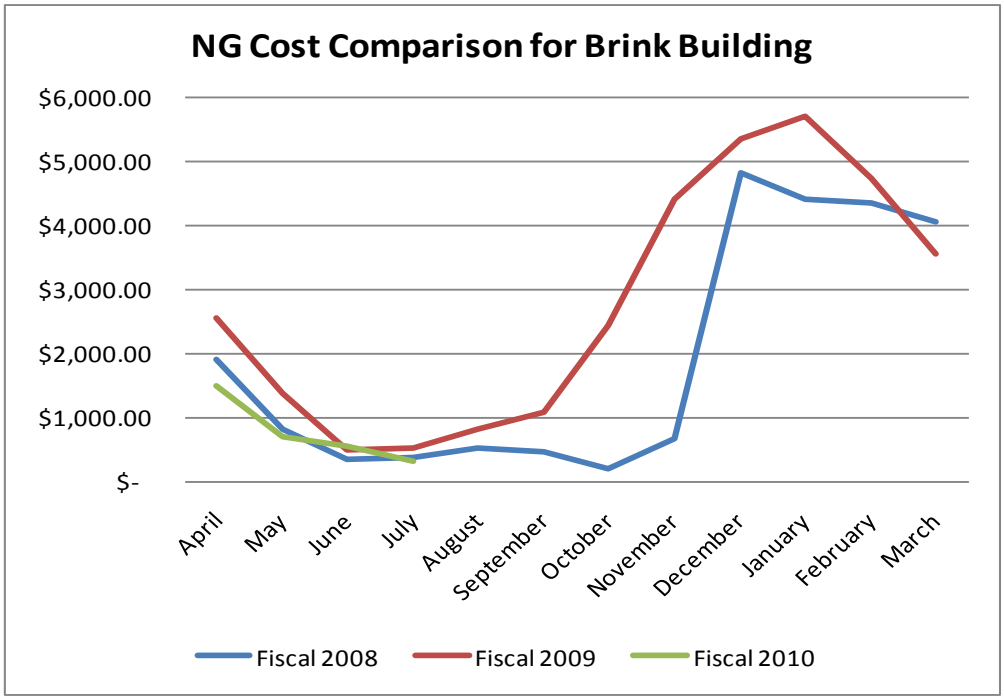
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$5,000.00
$4,000.00
$3,000.00
$2,000.00
$1,000.00
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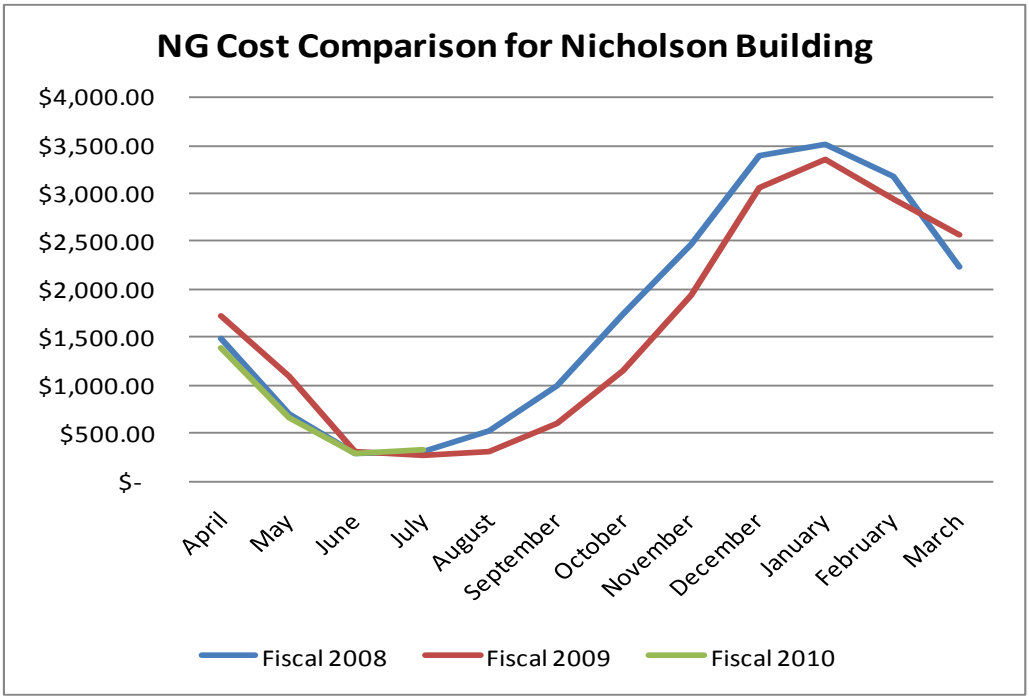
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$2,500.00
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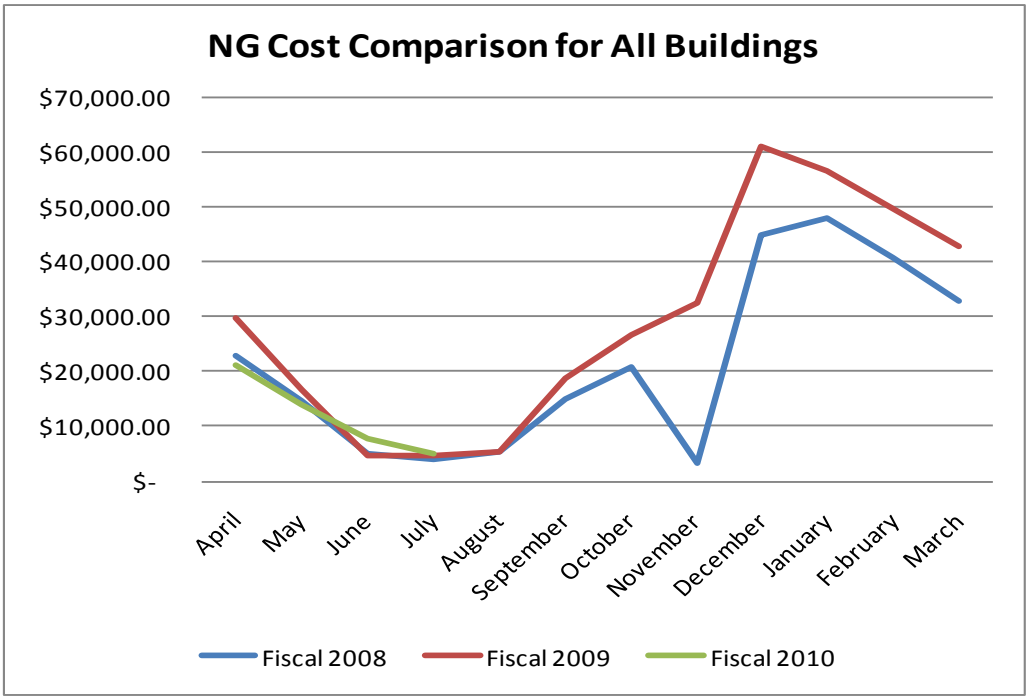
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$20,000.00
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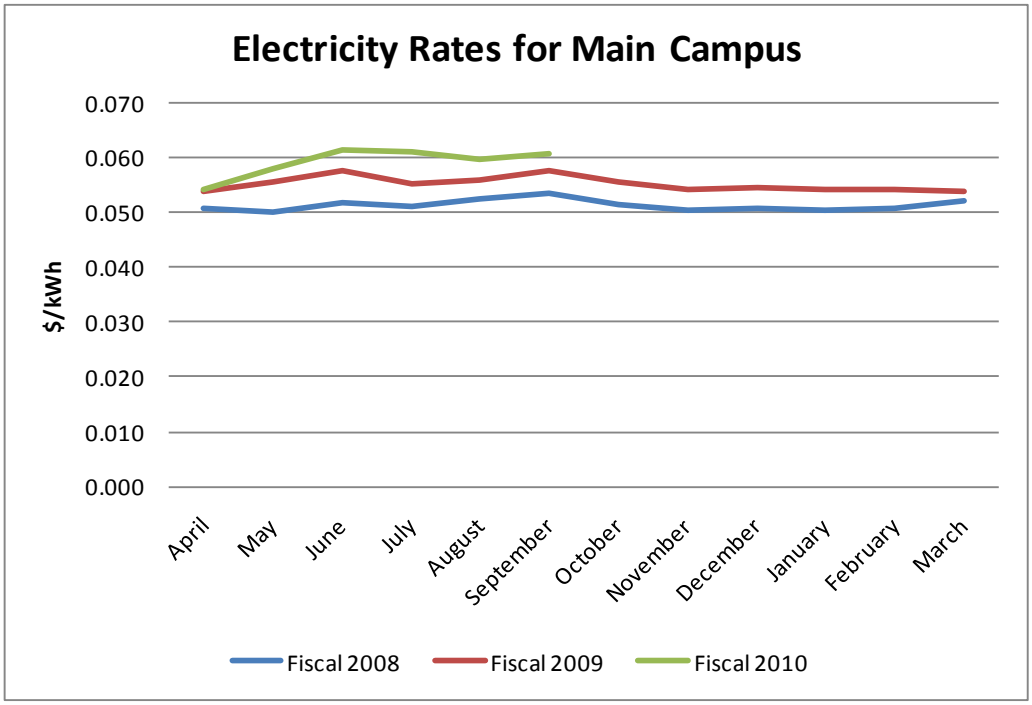
Electricity Rates for Main Campus
$/kWh
0.070
0.060
0.050
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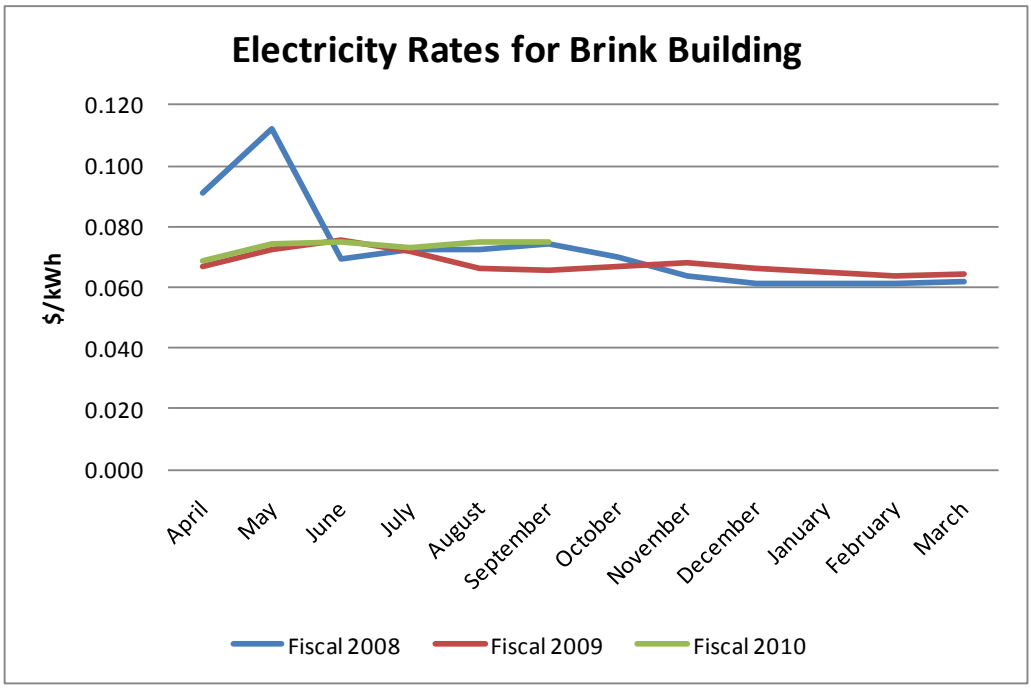
Electricity Rates for Brink Building
$/kWh
0.120
0.100
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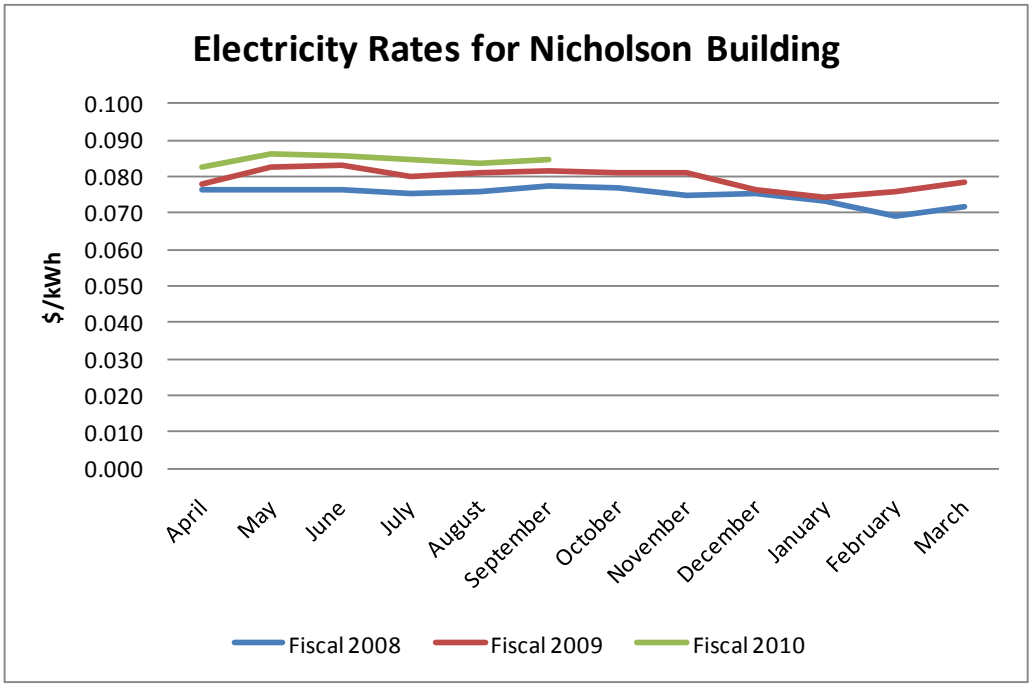
Electricity Rates for Nicholson Building
$/kWh
0.100
0.090
0.080
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0.040
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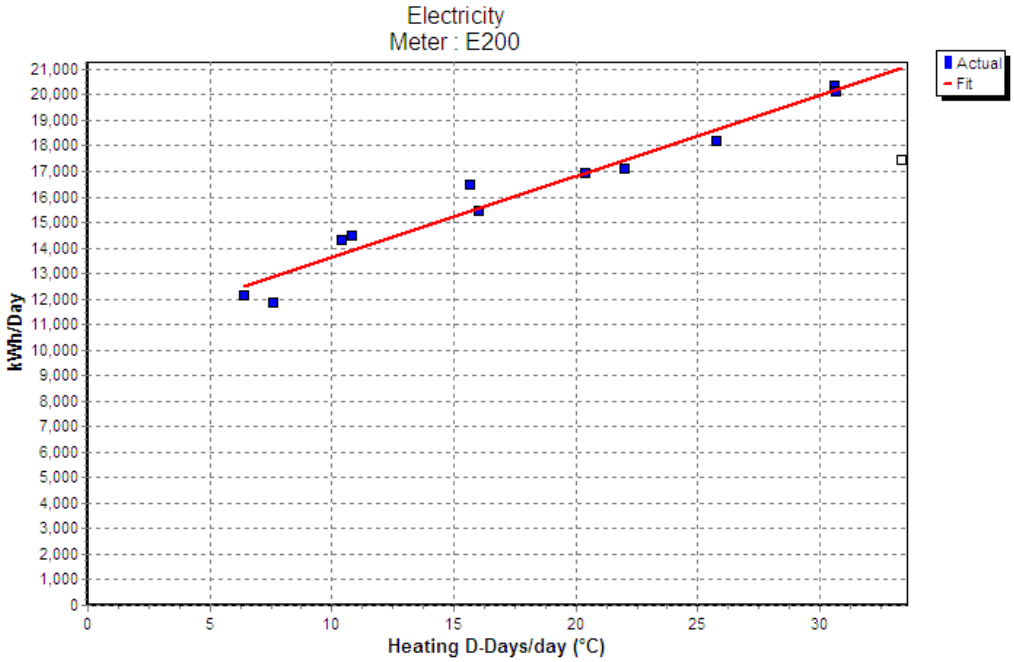
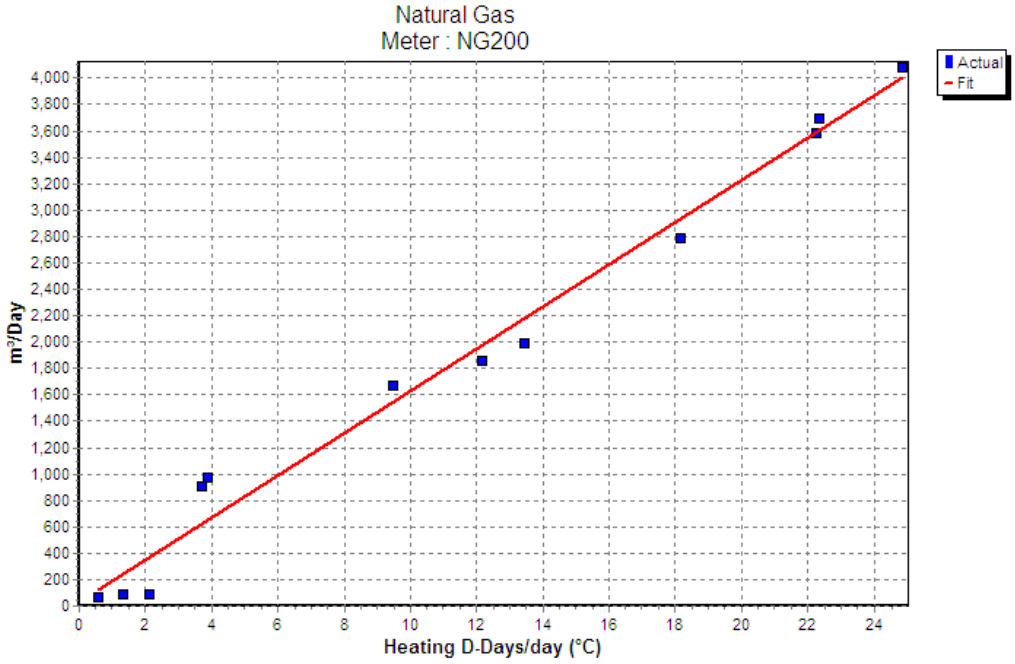
7. APPENDIX C – METRIX® ANALYSIS RESULTS

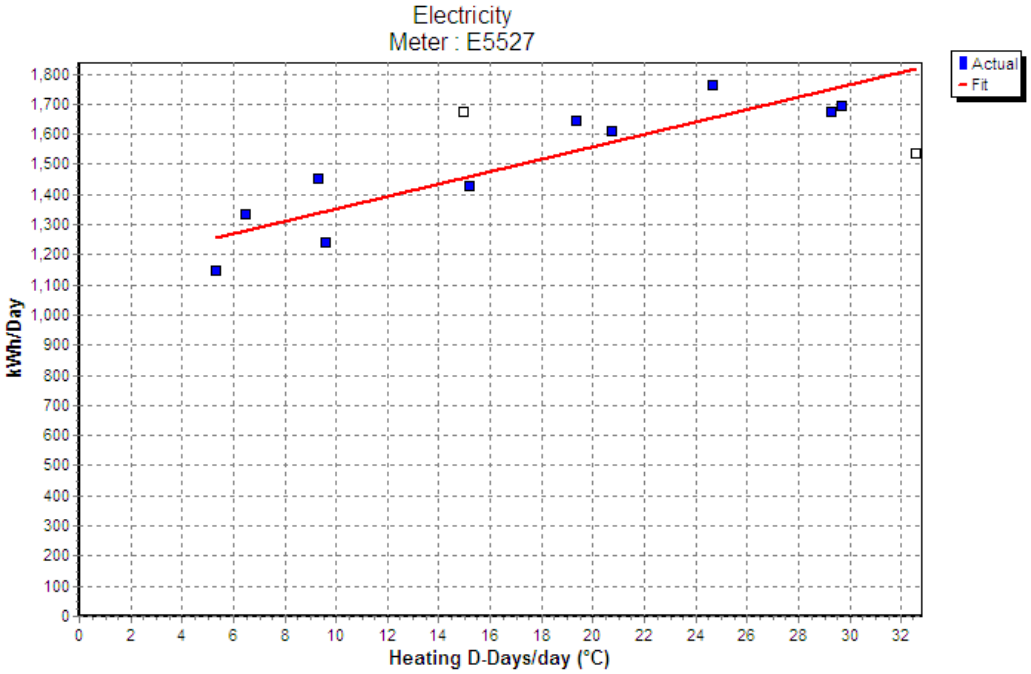
Main Campus (Electrical Meter)



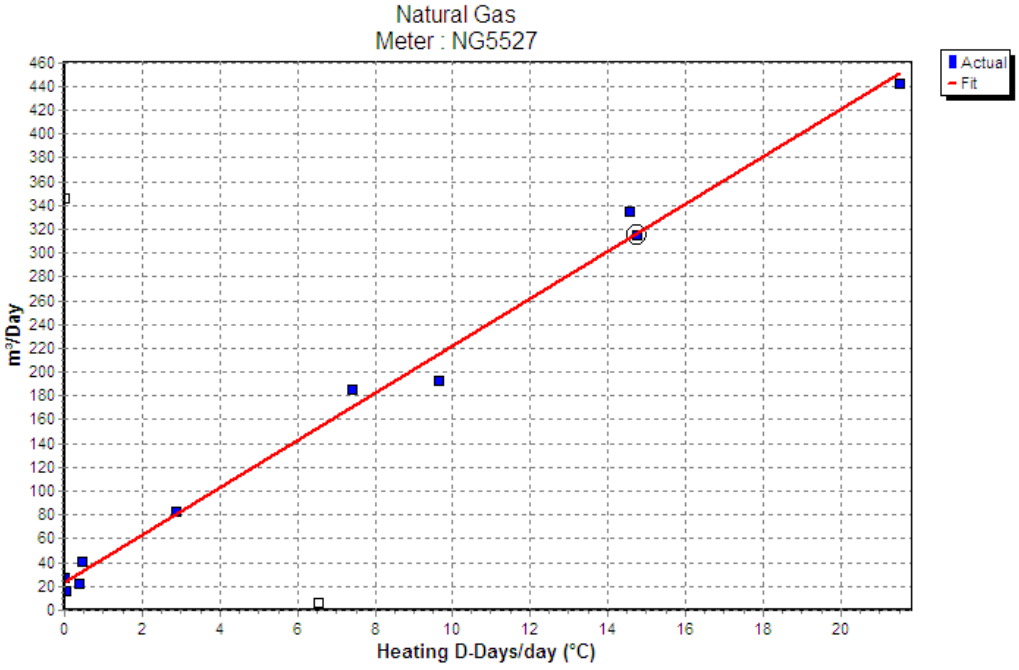
Main Campus (Natural Gas Meter)



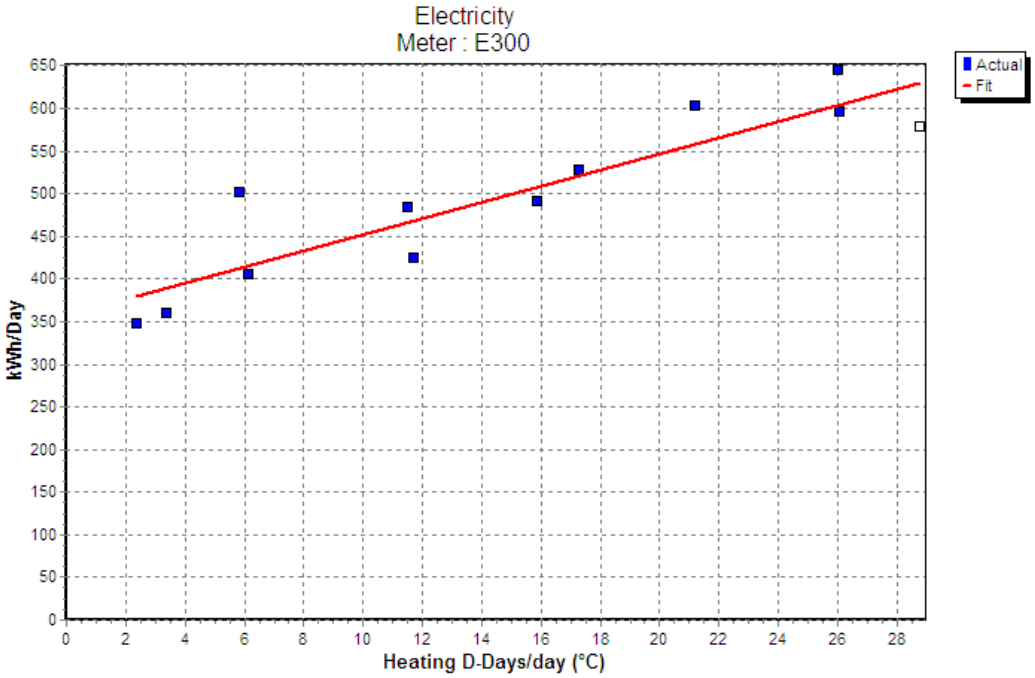
Brink Building (Electrical Meter)



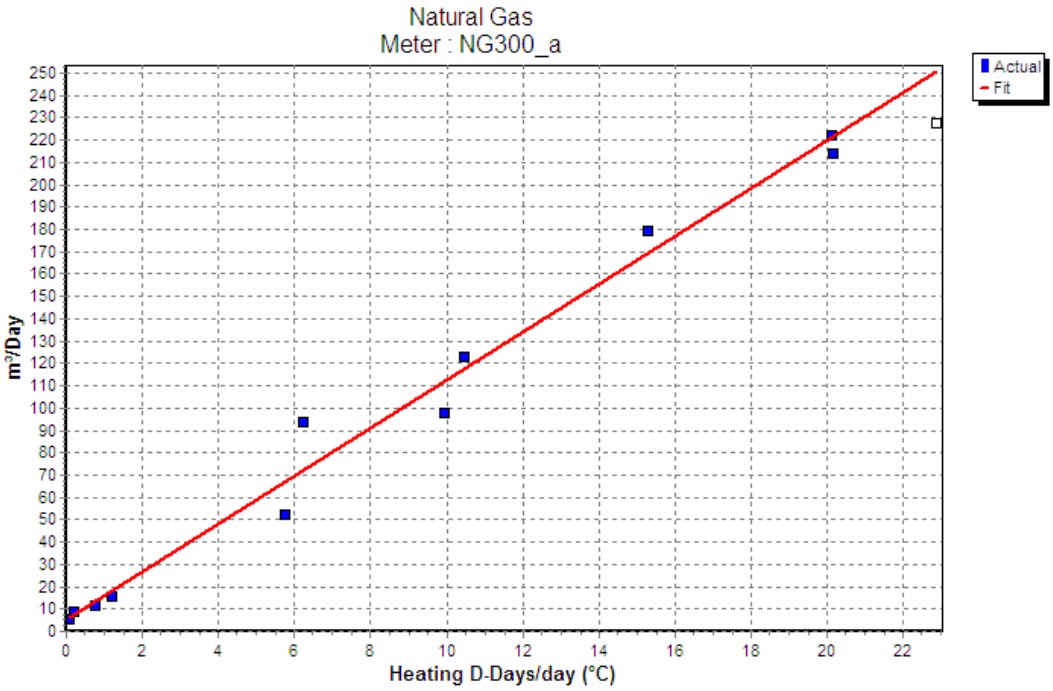
Brink Building (Natural Gas Meter)



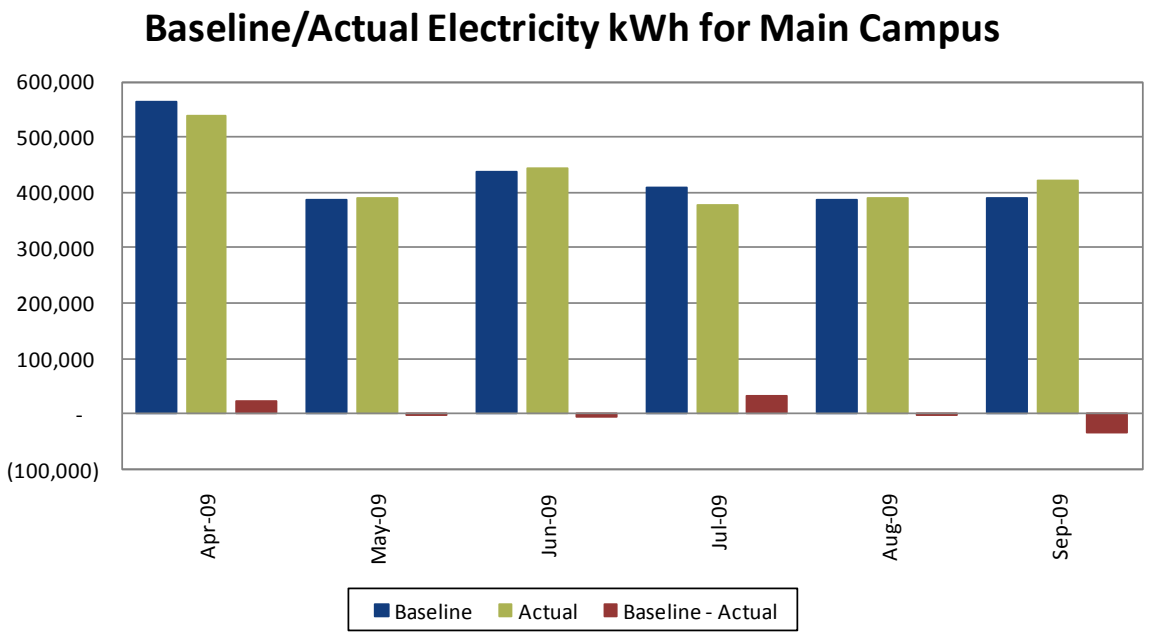
Nicholson Building (Electrical Meter)

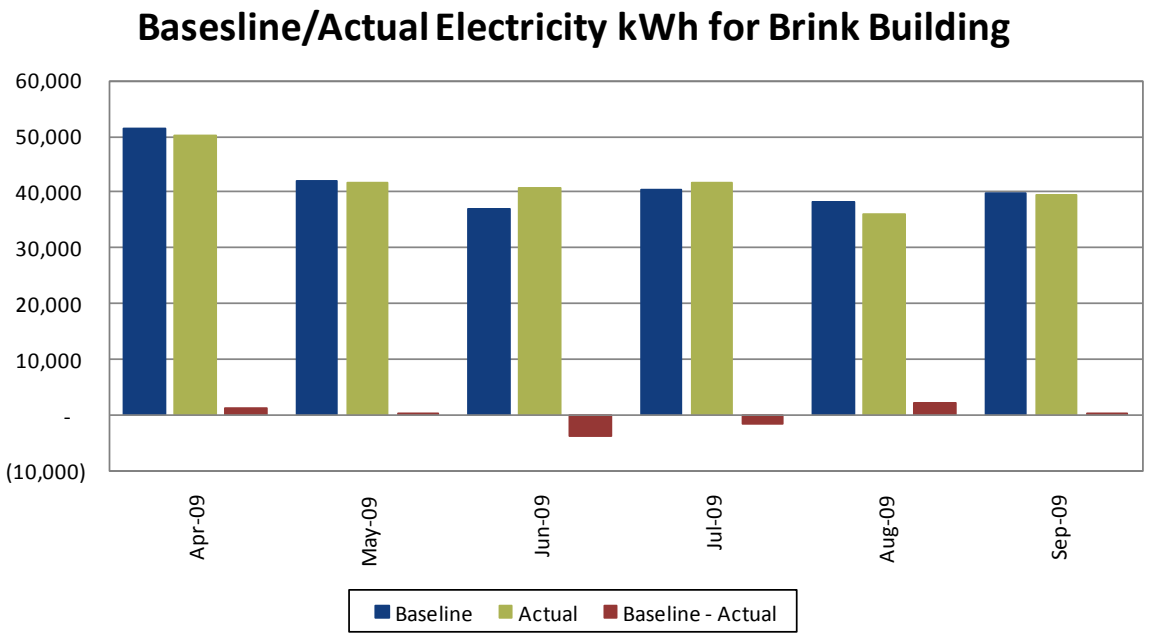


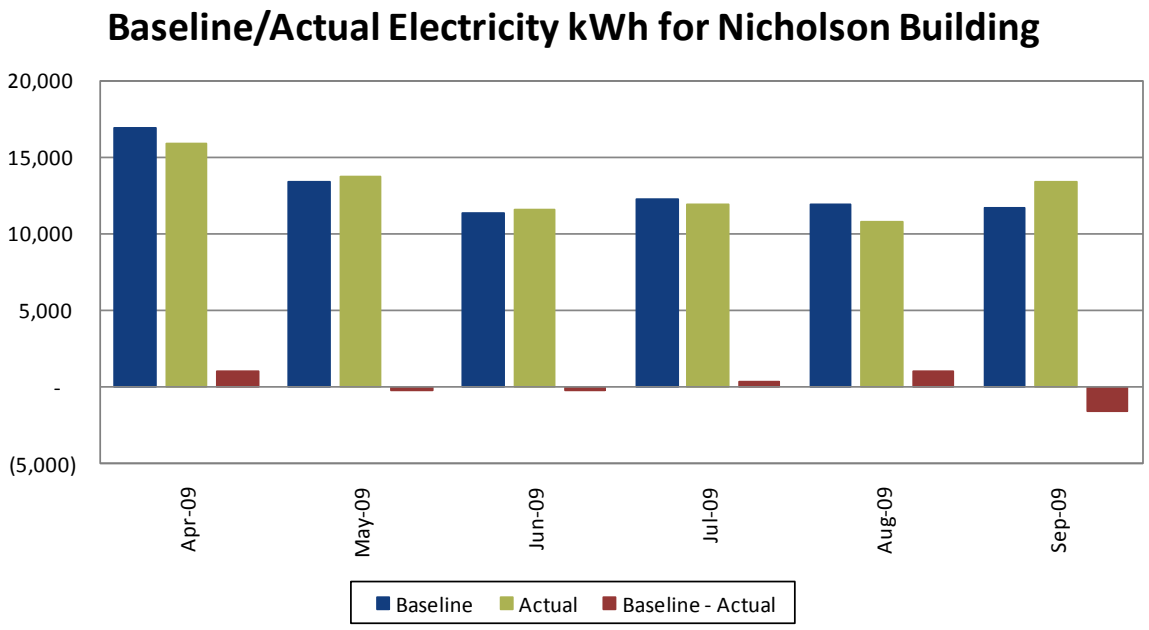
Nicholson Building (Natural Gas Meter)

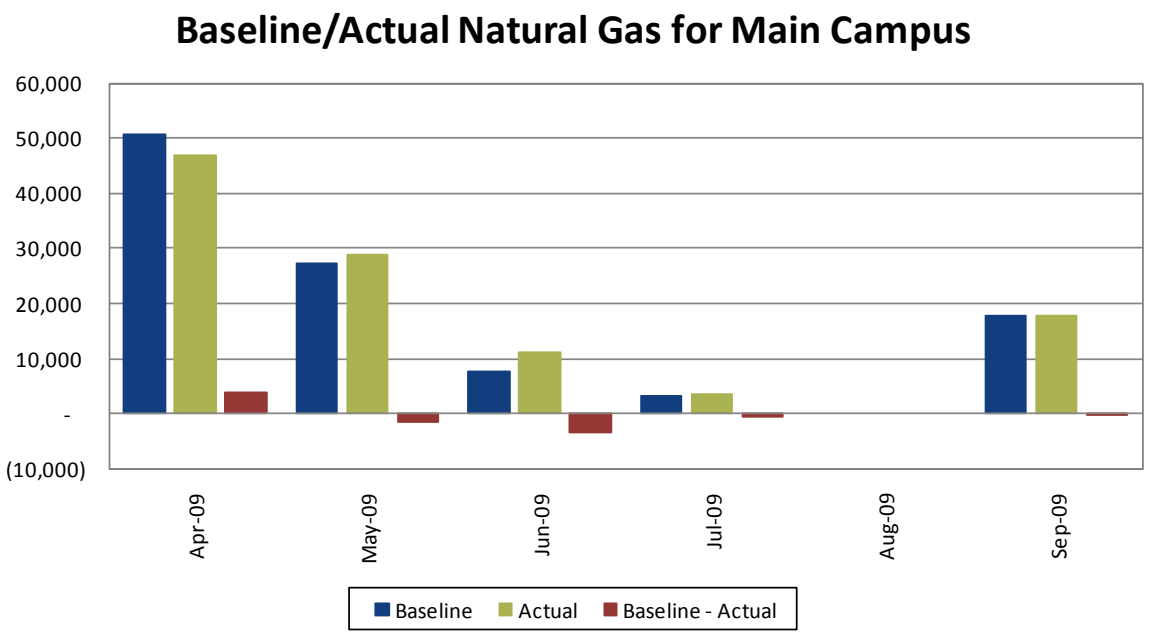


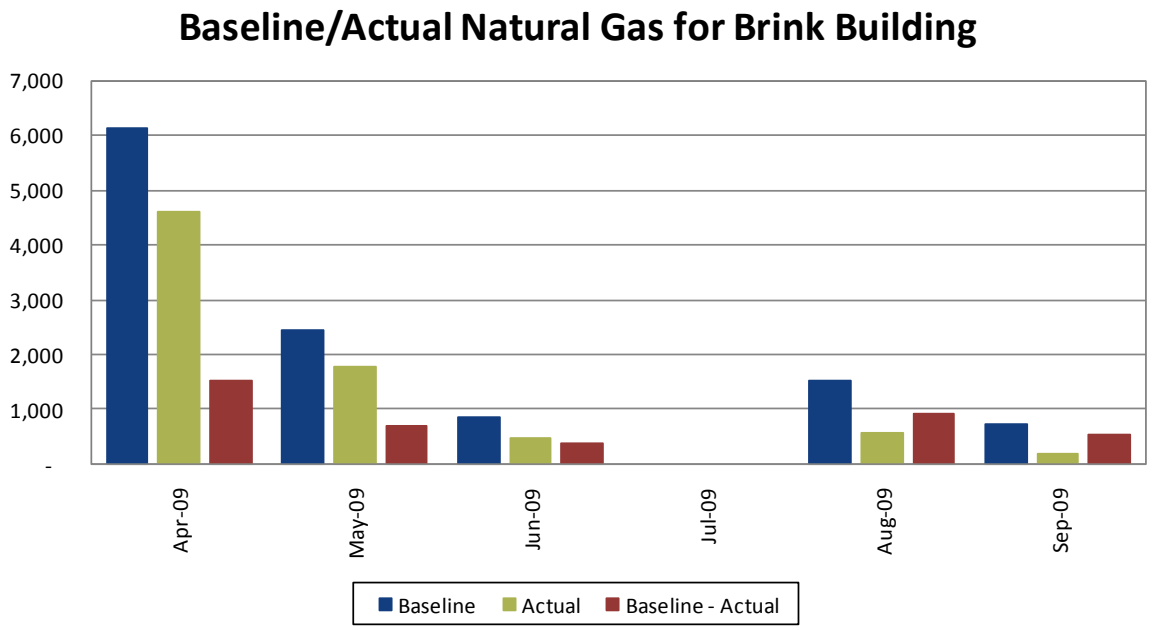
Savings Report *(April 01, 2009 – September 31, 2009)*

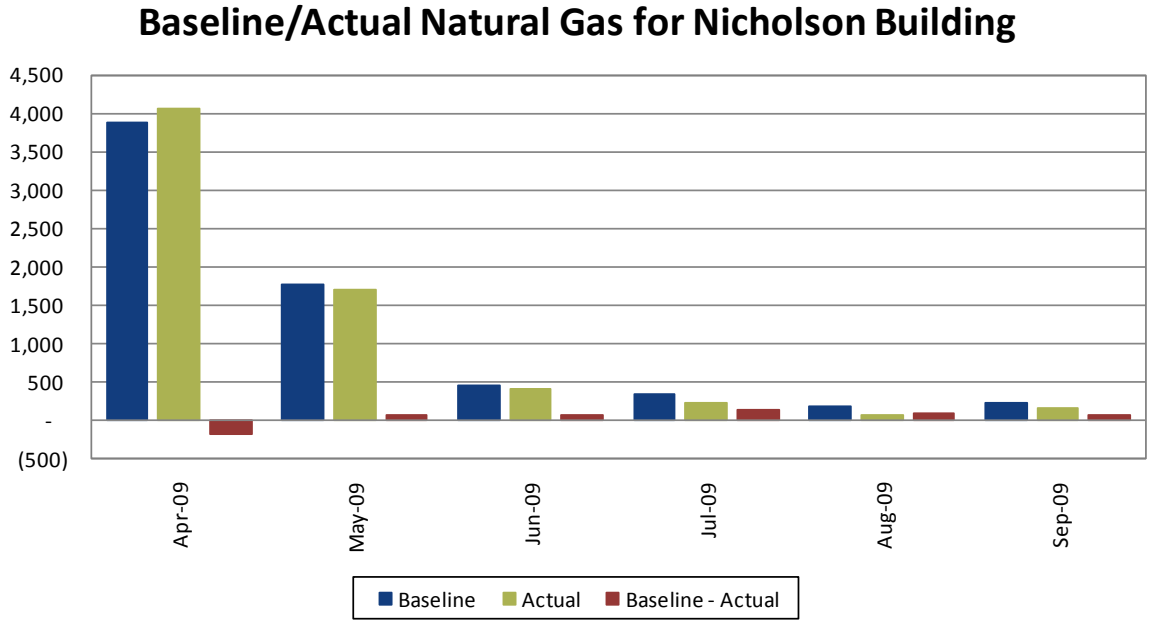





Baseline/Actual Electricity kWh for Nicholson Building
20,000
15,000
10,000
5,000
-
(5,000)
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Baseline
Actual
Baseline - Actual


Baseline/Actual Natural Gas for Main Campus
60,000
50,000
40,000
30,000
20,000
10,000
-
(10,000)
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Baseline
Actual
Baseline - Actual


Baseline/Actual Natural Gas for Brink Building
7,000
6,000
5,000
4,000
3,000
2,000
1,000
-
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Baseline
Actual
Baseline - Actual


Baseline/Actual Natural Gas for Nicholson Building
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-
(500)
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Baseline
Actual
Baseline - Actual

8. APPENDIX D – ASSET REGISTRY

#200 - 4021 East Hastings Street, Burnaby, BC V5C 2J1 • Telephone: (604) 298-4858 • Fax: (604) 298-8143 • www.prismengineering.com

Parameter Name	Parameter Description	Abbrev	Default Value
TAG	Equipment Tag Number or Designator	TAG	None
Tag Type	Equipment Designator Type (See Tag type Table)	Tag Type	None
Part Description	Detail Equipment Description		
Energy End Use	Energy End Use Type. System level parameter only.		
System Name	System Designator or Tag Name or short descriptor.		
Service Area Name	Description of Floor Area Serviced by Equipment		
Make	Equipment Manufacturer		
Model	Equipment Model Number, usually from the nameplate.		
Serial Num	Equipment Serial Number, usually from the nameplate.	Serial Num	None
Fuel Type	Type of Fuel i.e. Natural Gas, Electricity, Propane, or Oil		Electric
Rating	Equipment Energy Rating or Capacity	Rating	0
Units	Units of *output* energy for motors (hp, kW) or input energy for burners (MBH)		hp
Quantity	Number of this type of equipment (e.g. for PCs and Vending Machines can be > 0)	Qty	1
Nameplate FLA	Full Load Amperage Draw from equipment nameplate.	FLA	0
Measured Amps	Actual Equipment Current Draw from previous measurement or our readings.	MA	0
Voltage	Equipment Nominal Voltage (Required if Amps are available)	Voltage	115
Num Phases	Number of Phases (1 or 3). Used in calculation with Measured Amps	#Ph	1
Frequency Hz	Frequency (50 or 60) Not used in calculations.		60
Power Factor	Equipment Power Factor (default 0.85 for motors)	PF	0.85
Controls	Controller Type i.e. Programmable or Manual or DDC		
Design Flow (CFM/GPM)	Fan or pump design flow rate from specifications or based on horsepower estimate. Ventilation calculations use flow value if Outdoor Air is greater than 0%. The calculation uses a load factor of 0.85 x design flow.		0
Measured Flow (CFM/GPM)	Fan or Pump Measured flow rate from previous measurement or our readings. Ventilation calculations use measured flow value if Outdoor Air is greater than 0%. Measured Flow takes priority over Design Flow and is used at 100% load factor.		0
OA percent	Outdoor air as percent of total fan airflow. Used for ventilation calculations.	%OA	0%
Load Factor	Load Factor or % of Nameplate Rating under normal operation.	Mtr_LF	80%
% System On Factor	% of Time System Is On e.g. Boiler on 10 minutes/hour = 1/6 = 16.7%	SOF	100%
Demand Diversity	Percent of Peak Electrical Demand over an annual period. For example, if a 200 kW chiller is operated at peak load 4 months per year, then the diversity would be 4/12 x 100% or 33%. Factor is used for electrical cost savings.		100%
Efficiency (%)	Equipment Efficiency in Percent e.g 80% for Motor > 1 hp, 100% for heater	Eff	80%
System AFUE (%)	Gas Appliance Annual Fuel Utilization Efficiency (Default 80% for Commercial Boiler). Used mainly for calculation of Ventilation energy for supply fans.	System AFUE	80%
Operating LF	Operating Factor applied to account for reduced load from a flow control device such as a variable speed drive. It is equivalent to a single point on an operating profile.	Op_LF	100%
Flow Control	Method of Flow Control such as an Inlet Vane or a Variable Speed Drive		Full Flow
Operating Profile	Typical Equipment Operating profile estimated over an annual period based on hours of operation at different flow rates.		Constant Load
% Heat Recovery	Heat Recovery Factor from existing or new HRV or Run Around Loop in %.	% HR	0%
System Description	Brief System Description.		

Equipment and System Tag Type Listing

Code	Description
3WV	3 Way Valve
AC	Air Compressor
ACC	Air Compressor Controls
ACD	Air Compressor Dryer
ACL	Air Cleaner
ACU	Air Conditioning Unit
AHU	Air Handling Unit
B	Boiler
BFP	Back Flow Preventer
BL	Aeration Blower
C	Clock
CD	Clothes Dryer
CHC	Centrifugal Chiller
CHL	Chairlift or Gondola Motor Drive
CHR	Reciprocating Chiller
CHRT	Rotary Chiller
CHS	Screw Chiller
COP	Copiers
CP	Control Panel
CTW	Cooling Tower
CV	Control Valve
DC	Dust Collector
DHWT	Domestic Hot Water Tank
DRY-E	Electric Drier
DRY-G	Gas Drier
DW	Dishwasher
E	Elevator
EBB	Electric Baseboard Heater
EC	Electric Coil
EF	Exhaust Fan
EH	Exhaust Hood
EHTR	Portable Electric Heater
EIRH	Electric Infrared Radiant Heater
ELPS	Emergency Light Power Sup
EP	Electrical Panel
F	Furnace
FA	Fire Alarm System
FAN	Fan
FB	Furnace Blower
FC	Fan Coil Unit
FCT	Foam Cutter for Primary Effluent Treatment
FD	Forced Draft Fan
FEF	Fume Hood Exhaust Fan
FF	Force Flow
FH	Fume Hood
FS	Flow Switch
GC	Growth Chamber
GIRH	Gas Infrared Radiant Heating
HC	Heating Coil
HP	Packaged Heat Pump System
HRV	Heat Recovery Ventilator
HTR	Hot Water or Other Electric Heater
HUM	Humidifier
HV	Heater Ventilator
HWH	Hot Water Heat
HWT	Hot Water Tank
IF	In Line Fan
IM	Ice Machine
LCP	Light Control Panel
LP	Light Panel
LTG	Lighting
MUA	Make-up Air Unit
MX	Mixer
NSB	Night Set Back Temp Contr
P	Pump
PA	Public Address System
PC	Pneumatic Controls
PCS	Personal Computers
PLUG	General Plug Load not including PCs
PRN	Printers
PRV	Pressure Regulator Valve
PW	Power Washer
RC	Refrigeration Compressor
REF	Refrigeration System (Non Walk-in)
RF	Return Fan
RTU	Roof Top Unit
RV	Relief Valve
S	Stove
SF	Supply Fan
SP	Sprinkler Control Panel

Equipment and System Tag Type Listing

Code	Description
SPV	Sprinkler Valve
SV	Safety Valve
SWP	Switch Panel
T	Transformer
UDF	Undefined
UV	Unit Ventilator
UV-G	Unit Ventilator with Gas Fired Heating
VEND	Vending Machines
VP	Vacuum Pump
WCL	Wheel Chair Lift
WFW	Wire Feed Welder
XT	Expansion Tank
SQ	Scientific Equipment
CH-ABS	Absorption Chiller
CU	Condensing Unit
STP	Stand Pipe
SWG	Switch Gear
SWU	Switch Unit
TOOLS	Shop Tools and Equipment
UH	Unit Heater
UV-DX	Unit Ventilator with Hot Water and DX Coil for Cooling
VAV	Variable Air Volume Box
VLV	Valve
WASH	Washing Machine
WF	Walk in Freezer
XCHGR	Heat Exchanger
ZD	Mechanical Zone Damper
UPS	Uninterruptible Power Supply
GB	Gas Burner
GEN	Generator

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 100 Electrical Classroom **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: AHU-1																										
AHU-1-S	SUPPLY FAN	1	15. hp	575	3	0	0	80%	85%	86%	4	10.4	Constant Load	FF	100%	100%	10.4	4,732	100%	4,732	49,257	25,000	0.00	10%	0%	0.0
System Name: DHW																										
HEATER	DOM HW HEATER (SUMMER)	1	40. Kw	208	3	0	0	100%	85%	100%	3	40.0	Constant Load	FF	100%	100%	40.0	2,015	20%	403	16,117	0	0.00	0%	0%	0.0
System Name: EFS																										
EF-1		1	-	0	0	0	0	80%	85%	100%	-	0.0	Constant Load	FF	100%	100%	0.0	4,732	100%	4,732	0	0	0.00	0%	0%	0.0
System Name: LTG_PR2008265_BLDG2121																										
LTG-PO	Retrofit Ltg Updated 24 Oct 08	1	25.3 kW	120	1	0	0	100%	95%	100%	3	25.3	Constant Load	FF	100%	100%	25.3	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PO	Retrofit Ltg Updated 24 Oct 08	1	25.3 kW	120	1	0	0	100%	95%	100%	3	25.3	Constant Load	FF	100%	100%	25.3	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 24 Oct 08	1	55.1 kW	120	1	0	0	100%	95%	100%	3	55.1	Constant Load	FF	100%	100%	55.1	8,760	38%	3,341	183,920	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 24 Oct 08	1	55.1 kW	120	1	0	0	100%	95%	100%	3	55.1	Constant Load	FF	100%	100%	55.1	8,760	38%	3,341	183,920	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG		23	1. kW	115	1	0	0	100%	85%	100%	3	23.0	Constant Load	FF	100%	100%	23.0	8,760	19%	1,685	38,755	0	0.00	0%	0%	0.0
Building Totals:												234.0					234.0				471,969					0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 1000 John A. Brink **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: DE																										
CE	Chip extractor	1	5. HP	460	3	0	6.2	80%	85%	83%	2	3.4	Constant Load	FF	100%	100%	3.4	6,715	12%	799	2,684	0	0.00	0%	0%	0.0
DE	Sawdust extractor	1	20. hp	575	1	0	0	80%	85%	80%	4	14.9	Constant Load	FF	100%	100%	14.9	6,715	12%	799	11,923	0	0.00	0%	0%	0.0
System Name: DWH																										
DHW		2	55. MBH	0	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	28%	2,435	0	0	0.00	0%	0%	282.4
System Name: EBH																										
EBBH-1	Electric baseboard heating	10	1. kW	115	1	0	0	100%	85%	100%	3	10.0	Constant Load	FF	100%	100%	10.0	8,760	8%	701	7,008	0	0.00	0%	0%	0.0
System Name: EFS																										
EF-1	Auto repair shop	1	1. hp	575	3	3	1.5	80%	85%	77%	1	2.7	Constant Load	FF	100%	100%	2.7	2,652	100%	2,652	7,184	0	0.00	0%	0%	0.0
EF-10	Electrical Shop	1	325. Watt	115	1	4	4.9	80%	85%	80%	1	0.4	Constant Load	FF	100%	100%	0.4	2,600	100%	2,600	966	0	480.99	0%	0%	0.0
EF-11	Janitors Closet	1	48. Watt	115	1	0	0.43	80%	85%	80%	1	0.0	Constant Load	FF	100%	100%	0.0	8,760	40%	3,504	144	0	197.06	0%	0%	0.0
EF-12	Electrical 161	1	405. Watt	115	1	0	3.77	80%	85%	80%	2	0.3	Constant Load	FF	100%	100%	0.3	2,600	100%	2,600	767	0	671.69	0%	0%	0.0
EF-13	Electrical 161	1	405. Watt	115	1	2	3.77	80%	85%	80%	1	0.2	Constant Load	FF	100%	100%	0.2	2,600	100%	2,600	610	0	671.69	0%	0%	0.0
EF-2	Electrical Fab Shop	1	.3 hp	115	1	5	4.1	80%	85%	80%	1	0.4	Constant Load	FF	100%	100%	0.4	2,600	100%	2,600	1,151	0	1,500.18	0%	0%	0.0
EF-3	Carpentry/workshop	1	1. hp	575	3	0	1.5	80%	85%	77%	2	1.0	Constant Load	FF	100%	100%	1.0	2,600	100%	2,600	2,641	0	0.00	0%	0%	0.0
EF-4	Auto Exhaust (tail pipe)	1	5. hp	575	3	0	5.8	80%	85%	82%	2	3.9	Constant Load	FF	100%	100%	3.9	2,652	100%	2,652	10,417	0	7,500.00	0%	0%	0.0
EF-5	Washrooms	1	.3 hp	115	1	5	5.5	80%	85%	80%	1	0.4	Constant Load	FF	100%	100%	0.4	2,600	100%	2,600	1,151	0	1,099.71	0%	0%	0.0
EF-6	Tool Storage	1	.3 hp	115	1	4	5	80%	85%	80%	1	0.4	Constant Load	FF	100%	100%	0.4	2,652	100%	2,652	1,151	0	500.06	0%	0%	0.0
EF-7	Janitors closet	1	53. Watt	115	1	1	0.62	80%	85%	80%	1	0.1	Constant Load	FF	100%	100%	0.1	8,760	30%	2,628	154	0	103.83	0%	0%	0.0
EF-8	Ceiling	1	48. Watt	115	1	0	0.43	80%	85%	80%	1	0.0	Constant Load	FF	100%	100%	0.0	8,760	30%	2,628	116	0	197.06	0%	0%	0.0
EF-9	Café	1	129. Watt	115	1	2	1.7	80%	85%	80%	1	0.1	Constant Load	FF	100%	100%	0.1	8,760	30%	2,628	385	0	133.49	0%	0%	0.0
System Name: LTG_PR2008265_BLDG2137																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	57.5 kW	120	1	0	0	100%	95%	100%	3	57.5	Constant Load	FF	100%	100%	57.5	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	84.6 kW	120	1	0	0	100%	95%	100%	3	84.6	Constant Load	FF	100%	100%	84.6	8,760	27%	2,395	202,576	0	0.00	0%	0%	0.0
System Name: MUA-1																										
GB_MUA	Gas Burner for MUA-1	1	1000. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	2,652	10%	278	0	0	0.00	0%	0%	293.6
SF_MUA-	Supply Fan for MUA-1	1	7.5 hp	575	3	6	7.7	80%	85%	83%	1	5.2	Constant Load	FF	100%	100%	5.2	2,652	100%	2,652	13,919	6,531	7,000.00	100%	0%	0.0
System Name: MUA-2																										
GB_MUA	Gas Burner for MUA-2	1	1000. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	2,600	12%	312	0	0	0.00	0%	0%	329.0
SF_MUA-	Supply Fan for MUA-2	1	7.5 hp	575	3	7	7.7	80%	85%	83%	1	6.2	Constant Load	FF	100%	100%	6.2	2,600	100%	2,600	16,177	7,842	7,000.00	100%	0%	0.0
System Name: MUA-3																										
GB_MUA	Gas Burner for MUA-3	1	1000. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	2,600	12%	299	0	0	0.00	0%	0%	315.3
SF_MUA-	Supply Fan for MUA-3	1	7.5 hp	575	3	7	7.7	80%	85%	83%	1	5.8	Constant Load	FF	100%	100%	5.8	2,600	100%	2,600	15,011	7,340	7,000.00	100%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	14	1. kW	115	1	0	0	100%	85%	100%	3	14.0	Constant Load	FF	100%	100%	14.0	8,760	42%	3,721	52,089	0	0.00	0%	0%	0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 1000 John A. Brink **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: RTU-01																										
CF-RTU-	Condenser Fan for RTU-1	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH_RTU-	Duct heater for RTU-1	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-1	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	16%	280	0	0	0.00	0%	0%	23.0
RC_RTU-	Refrigeration Compressor for RTU-1	1	3.2 kW	575	3	0	0	80%	85%	80%	3	3.2	Constant Load	FF	100%	100%	3.2	650	25%	163	518	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-1	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	0.7	Constant Load	FF	100%	100%	0.7	2,600	100%	2,600	1,827	1,166	1,197.18	10%	0%	0.0
System Name: RTU-02																										
CF-RTU-	Condenser fan for RTU-2	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH-RTU-	Duct Heater for RTU-2	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-2	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	16%	280	0	0	0.00	0%	0%	23.0
RC_RTU-	Refrigeration Compressor for RTU-2	1	3.2 kW	575	3	0	0	80%	85%	80%	3	3.2	Constant Load	FF	100%	100%	3.2	650	25%	163	518	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-2	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	0.8	Constant Load	FF	100%	100%	0.8	2,600	100%	2,600	2,003	1,270	1,197.18	10%	0%	0.0
System Name: RTU-03																										
CF-RTU-	Condenser fan for RTU-3	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH-RTU-	Duct Heater for RTU-3	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-3	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	16%	280	0	0	0.00	0%	0%	23.0
RC_RTU-	Refrigeration Compressor for RTU-3	1	3.7 kW	575	3	0	0	80%	85%	80%	3	3.7	Constant Load	FF	100%	100%	3.7	650	25%	163	605	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-3	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	0.8	Constant Load	FF	100%	100%	0.8	2,600	100%	2,600	2,113	1,370	1,197.18	10%	0%	0.0
System Name: RTU-04																										
CF-RTU-	Condenser fan for RTU-4	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-4	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-4	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	16%	280	0	0	0.00	0%	0%	23.0
RC_RTU-	Refrigeration Compressor for RTU-4	1	4.3 kW	575	3	0	0	80%	85%	80%	3	4.3	Constant Load	FF	100%	100%	4.3	650	25%	163	691	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-4	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	0.8	Constant Load	FF	100%	100%	0.8	2,600	100%	2,600	2,025	1,640	1,197.18	10%	0%	0.0
System Name: RTU-05																										
CF-RTU-	Condenser fan for RTU-5	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-5	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-5	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	16%	280	0	0	0.00	0%	0%	23.0
RC_RTU-	Refrigeration Compressor for RTU-5	1	3.7 kW	575	3	0	0	80%	85%	80%	3	3.7	Constant Load	FF	100%	100%	3.7	650	25%	163	605	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-5	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	0.8	Constant Load	FF	100%	100%	0.8	2,600	100%	2,600	2,113	1,484	1,197.18	10%	0%	0.0
System Name: RTU-06																										
CF-RTU-	Condenser fan for RTU-6	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-6	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-6	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	16%	280	0	0	0.00	0%	0%	23.0
RC_RTU-	Refrigeration Compressor for RTU-4	1	5.5 kW	575	3	0	0	80%	85%	80%	3	5.4	Constant Load	FF	100%	100%	5.4	650	25%	163	886	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-4	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	1.0	Constant Load	FF	100%	100%	1.0	2,600	100%	2,600	2,575	2,180	1,197.18	10%	0%	0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 1000 John A. Brink **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: RTU-07																										
CF-RTU-	Condenser fan for RTU-7	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	1,008	30%	302	184	0	0.00	0%	0%	0.0
DH-RTU-	Duct Heater for RTU-7	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	3,100	25%	775	3,875	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-7	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	3,100	16%	496	0	0	0.00	0%	0%	40.8
RC_RTU-	Refrigeration Compressor for RTU-7	1	3.7 kW	575	3	0	0	80%	85%	80%	3	3.7	Constant Load	FF	100%	100%	3.7	1,008	25%	252	937	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-7	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	0.8	Constant Load	FF	100%	100%	0.8	4,030	100%	4,030	3,207	1,547	1,197.18	10%	0%	0.0
System Name: RTU-08																										
CF-RTU-	Condenser fan for RTU-8	1	.3 hp	208	1	0	1.9	80%	85%	55%	2	0.3	Constant Load	FF	100%	100%	0.3	553	30%	166	45	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-8	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,700	25%	425	2,125	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-8	1	125. MBH	120	1	0	0	80%	85%	76%	-	0.0	Constant Load	FF	100%	100%	0.0	1,700	16%	272	0	0	0.00	0%	0%	35.8
RC_RTU-	Refrigeration Compressor for RTU-8	1	6.6 Kw	600	3	0	0	80%	85%	80%	3	6.6	Constant Load	FF	100%	100%	6.6	553	25%	138	907	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-8	1	.8 hp	600	3	2	0	80%	85%	75%	1	1.9	Constant Load	FF	100%	100%	1.9	2,210	100%	2,210	4,139	2,321	945.00	10%	0%	0.0
System Name: RTU-09																										
CF-RTU-	Condenser fan for RTU-9	1	.3 hp	208	1	0	1.9	80%	85%	55%	2	0.3	Constant Load	FF	100%	100%	0.3	1,750	30%	525	141	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-9	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-9	1	125. MBH	120	1	0	0	80%	85%	76%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	16%	280	0	0	0.00	0%	0%	36.9
RC_RTU-	Refrigeration Compressor for RTU-9	1	6.6 Kw	600	3	0	0	80%	85%	80%	3	6.6	Constant Load	FF	100%	100%	6.6	650	25%	163	1,068	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-9	1	.8 hp	600	3	2	0	80%	85%	75%	1	2.0	Constant Load	FF	100%	100%	2.0	2,600	100%	2,600	5,099	2,247	945.00	10%	0%	0.0
System Name: RTU-10																										
CF-RTU-	Condenser fan for RTU-10	1	.3 hp	208	1	0	1.9	80%	85%	55%	2	0.3	Constant Load	FF	100%	100%	0.3	650	30%	195	52	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-10	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-10	1	125. MBH	120	1	0	0	80%	85%	76%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	20%	350	0	0	0.00	0%	0%	46.1
RC_RTU-	Refrigeration Compressor for RTU-10	1	6.6 Kw	600	3	0	0	80%	85%	80%	3	6.6	Constant Load	FF	100%	100%	6.6	650	25%	163	1,068	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-10	1	.8 hp	600	3	2	0	80%	85%	75%	1	1.9	Constant Load	FF	100%	100%	1.9	2,600	100%	2,600	4,869	2,321	945.00	10%	0%	0.0
System Name: RTU-11																										
CF-RTU-	Condenser fan for RTU-11	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-11	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-11	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	20%	350	0	0	0.00	0%	0%	28.8
RC_RTU-	Refrigeration Compressor for RTU-11	1	4.3 kW	575	3	0	0	80%	85%	80%	3	4.3	Constant Load	FF	100%	100%	4.3	650	25%	163	691	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-11	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	0.8	Constant Load	FF	100%	100%	0.8	2,600	100%	2,600	2,069	1,560	1,197.18	10%	0%	0.0
System Name: RTU-12																										
CF_RTU-	Condenser fan for RTU-12	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-12	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-12	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	20%	350	0	0	0.00	0%	0%	28.8
RC_RTU-	Refrigeration Compressor for RTU-12	1	3.2 kW	575	3	0	0	80%	85%	80%	3	3.2	Constant Load	FF	100%	100%	3.2	650	25%	163	518	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-12	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	0.7	Constant Load	FF	100%	100%	0.7	2,600	100%	2,600	1,739	1,250	1,197.18	10%	0%	0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 1000 John A. Brink **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: RTU-13																										
CF-RTU-	Condenser fan for RTU-13	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-13	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-13	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	20%	350	0	0	0.00	0%	0%	28.8
RC_RTU-	Refrigeration Compressor for RTU-13	1	5.5 kW	575	3	0	0	80%	85%	80%	3	5.4	Constant Load	FF	100%	100%	5.4	650	25%	163	886	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-13	1	1.5 hp	575	3	1	1.9	80%	85%	77%	1	1.0	Constant Load	FF	100%	100%	1.0	2,600	100%	2,600	2,553	2,012	1,197.18	10%	0%	0.0
System Name: RTU-14																										
CF-RTU-	Condenser fan for RTU-14	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-14	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-6	1	130. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	20%	350	0	0	0.00	0%	0%	48.0
RC_RTU-	Refrigeration Compressor for RTU-14	1	11.7 kW	120	1	0	0	80%	85%	80%	3	11.6	Constant Load	FF	100%	100%	11.6	650	25%	163	1,893	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-14	1	3. hp	575	3	3	3.44	80%	85%	80%	1	2.4	Constant Load	FF	100%	100%	2.4	2,600	100%	2,600	6,317	3,775	3,803.43	10%	0%	0.0
System Name: RTU-15																										
CF-RTU-	Condenser fan for RTU-15	1	.3 hp	575	3	0	0.9	80%	85%	65%	2	0.6	Constant Load	FF	100%	100%	0.6	650	30%	195	119	0	0.00	0%	0%	0.0
DH_RTU-	Duct Heater for RTU-15	1	5. Kw	575	3	0	0	100%	85%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	1,750	25%	438	2,188	0	0.00	0%	0%	0.0
GB_RTU-	Gas burner for RTU-15	1	78. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,750	20%	350	0	0	0.00	0%	0%	28.8
RC_RTU-	Refrigeration Compressor for RTU-15	1	4.3 kW	575	3	0	0	80%	85%	80%	3	4.3	Constant Load	FF	100%	100%	4.3	650	25%	163	691	0	0.00	0%	0%	0.0
SF_RTU-	Supply fan for RTU-15	1	1.5 hp	575	3	4	1.9	80%	85%	77%	1	3.0	Constant Load	FF	100%	100%	3.0	2,600	100%	2,600	7,836	1,543	1,197.18	10%	0%	0.0
System Name: ST																										
ET	Electric tools	18	1. kW	208	3	0	0	60%	85%	100%	3	10.8	Constant Load	FF	100%	100%	10.8	2,600	40%	1,040	11,232	0	0.00	0%	0%	0.0
WT	Woodwork tools	54	1. kW	208	3	0	0	60%	85%	100%	3	32.4	Constant Load	FF	100%	100%	32.4	2,600	40%	1,040	33,696	0	0.00	0%	0%	0.0
System Name: UAF																										
AUFE	Unaccounted electric equipment	5	1. kW	115	1	0	0	100%	100%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	8,760	90%	7,884	39,420	0	0.00	0%	0%	0.0
UAFG	Unaccounted for Gas	1	1000. MBH	0	1	0	0	80%	85%	60%	-	0.0	Constant Load	FF	100%	100%	0.0	6,715	2%	118	0	0	0.00	0%	0%	124.0
Building Totals:												438.0					438.0				531,699					1,805.2

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 1200 Residences **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: GAS FURN																										
FUR	Gas Furnace	2	100. MBH	115	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	37%	3,197	0	0	0.00	0%	0%	674.2
System Name: HC Units																										
Baseboar	Electric Baseboard heating	88	1.5 kW	115	1	0	0	100%	85%	100%	3	132.0	Constant Load	FF	100%	100%	132.0	5,372	20%	1,074	141,828	0	0.00	0%	0%	0.0
HC Unit	Heating Cooling Units	94	1.9 kW	208	1	0	3.2	100%	85%	80%	2	53.2	Constant Load	FF	100%	100%	53.2	8,760	10%	876	46,587	0	0.00	0%	0%	0.0
System Name: LTG_PR2008265_BLDG2133																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	5. kW	120	1	0	0	100%	95%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	12.3 kW	120	1	0	0	100%	95%	100%	3	12.3	Constant Load	FF	100%	100%	12.3	8,760	82%	7,210	88,469	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	8	1. kW	115	1	0	0	100%	85%	100%	3	8.0	Constant Load	FF	100%	100%	8.0	8,760	17%	1,501	12,008	0	0.00	0%	0%	0.0
System Name: UAF																										
AUFG	Unaccouned for Gas	1	1000. MBH	0	1	0	0	100%	85%	60%	-	0.0	Constant Load	FF	100%	100%	0.0	6,715	0%	31	0	0	0.00	0%	0%	33.0
Building Totals:												210.5					210.5				288,892					707.2

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 200 Food Services **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: *AHU-2*																										
AHU-2-S	CAFETERIA - MULTIZONE	1	20. hp	600	3	0	0	80%	85%	86%	4	13.9	Constant Load	FF	100%	100%	13.9	3,795	100%	3,795	52,673	17,600	12,000.00	100%	0%	0.0
System Name: *AHU-4*																										
AHU-4-S	COMPUTER LABS SUPPLY FAN	1	25. hp	600	3	0	24	80%	85%	88%	2	17.0	CNC AHU-4 P	VIV	100%	67%	11.3	3,900	100%	3,900	44,128	23,500	0.00	10%	0%	0.0
F-10(AH	SCIENCES RETURN FAN	1	10. hp	575	3	0	0	80%	85%	84%	4	7.1	CNC AHU-4 P	VIV	100%	67%	4.7	3,900	100%	3,900	18,486	18,000	0.00	0%	0%	0.0
System Name: *AHU-7*																										
AHU-7-S	KITCHEN SUPPLY FAN	1	7.5 hp	600	3	0	0	80%	85%	83%	4	5.4	Constant Load	FF	100%	100%	5.4	4,055	100%	4,055	21,868	8,500	0.00	100%	0%	0.0
System Name: *AHU-8*																										
AHU-8- S	SCIENCES SUPPLY FAN	1	25. hp	600	3	0	24	80%	85%	88%	2	17.0	CNC AHU-4 P	VIV	100%	67%	11.3	4,992	100%	4,992	56,484	20,000	0.00	10%	0%	0.0
F-12 (AH	SCIENCES RETURN FAN	1	10. hp	575	3	0	0	80%	85%	84%	4	7.1	CNC AHU-4 P	VIV	100%	67%	4.7	4,992	100%	4,992	23,662	17,000	0.00	0%	0%	0.0
System Name: *DHW*																										
B-11	DOM HW BOILER (SUMMER)	1	3000. MBH	115	1	0	0	80%	85%	90%	-	0.0	Constant Load	FF	100%	100%	0.0	2,015	15%	302	0	0	0.00	0%	0%	955.8
System Name: *EFS*																										
EF-6	KITCHEN HOOD EXH FAN	1	10. hp	480	3	0	0	80%	85%	80%	4	7.5	Constant Load	FF	100%	100%	7.5	4,055	100%	4,055	30,251	6,600	0.00	0%	0%	0.0
EF-7	CAFETERIA EXHAUST	1	10. hp	600	3	0	0	80%	85%	80%	4	7.5	Constant Load	FF	100%	100%	7.5	3,795	100%	3,795	28,312	8,200	0.00	0%	0%	0.0
EF-8	KITCHEN HOOD EXHAUST	1	5. hp	480	3	0	0	80%	85%	82%	4	3.6	Constant Load	FF	100%	100%	3.6	3,795	100%	3,795	13,811	0	8,600.62	0%	0%	0.0
System Name: *KITCHEN*																										
Kit-Eq		1	600. MBH	115	1	0	0	80%	100%	82%	-	0.0	Constant Load	FF	100%	100%	0.0	2,000	100%	2,000	0	0	0.00	0%	0%	1,265.2
System Name: *LTG_PR2008265_BLDG2122*																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	57. kW	120	1	0	0	100%	95%	100%	3	57.0	Constant Load	FF	100%	100%	57.0	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	118.1 kW	120	1	0	0	100%	95%	100%	3	118.1	Constant Load	FF	100%	100%	118.1	8,760	50%	4,378	516,891	0	0.00	0%	0%	0.0
System Name: *PLUG*																										
PLUG	Plug loads	30	1. kW	115	1	0	0	100%	85%	100%	3	30.0	Constant Load	FF	100%	100%	30.0	8,760	31%	2,712	81,363	0	0.00	0%	0%	0.0
Building Totals:												291.1					275.0				887,928					2,221.1

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 300 Computer & Classroom **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: ACU-1																										
CF_ACU-	Condenser Fan for ACU-1	1	.8 hp	208	3	0	3.5	80%	85%	80%	2	0.9	Constant Load	FF	100%	100%	0.9	5,460	25%	1,365	1,170	0	0.00	0%	0%	0.0
EF_ACU-	Evaporator Fan for ACU-1	1	1. hp	208	3	0	0	80%	85%	80%	4	0.7	Constant Load	FF	100%	100%	0.7	5,460	100%	5,460	4,073	0	0.00	0%	0%	0.0
RC_ACU	Refrigeration Compressor for ACU-1	1	6.7 Kw	208	3	0	0	80%	85%	80%	3	6.7	Constant Load	FF	100%	100%	6.7	5,460	20%	1,092	7,349	0	0.00	0%	0%	0.0
System Name: AHU-3																										
AHU-3-S	COMPUTER LABS - SUPPLY FAN	1	25. hp	600	3	0	24	80%	85%	88%	2	17.0	CNC AHU-3 P	VIV	100%	64%	10.8	4,368	100%	4,368	47,376	21,500	0.00	10%	0%	0.0
F-1 (AHU	AHU-3 Return Fan	1	7.5 hp	600	3	0	0	80%	85%	83%	4	5.4	CNC AHU-3 P	VIV	100%	64%	3.4	4,368	50%	2,184	7,532	0	13,000.00	0%	0%	0.0
F-5(AHU-	SCIENCES RETURN FAN	1	10. hp	575	3	0	0	80%	85%	84%	4	7.1	Constant Load	FF	100%	100%	7.1	4,368	100%	4,368	31,034	18,000	0.00	0%	0%	0.0
System Name: AHU-5																										
AHU-5-S	COMPUTER LABS SUPPLY FAN	1	25. hp	600	3	0	24	80%	85%	88%	2	17.0	CNC AHU-4 P	VIV	100%	67%	11.3	5,460	100%	5,460	61,779	23,500	0.00	10%	0%	0.0
F-11(AH	SCIENCES RETURN FAN	1	10. hp	575	3	0	0	80%	85%	84%	4	7.1	CNC AHU-4 P	VIV	100%	67%	4.7	5,460	100%	5,460	25,880	18,000	0.00	0%	0%	0.0
System Name: AHU-6																										
AHU-6-S	COMPUTER LABS SUPPLY FAN	1	25. hp	600	3	19	24	80%	85%	88%	1	16.8	CNC AHU-4 P	VIV	100%	67%	11.2	5,200	100%	5,200	58,225	20,000	0.00	10%	0%	0.0
F-12(AH	COMPUTER LABS RETURN FAN	1	10. hp	575	3	0	0	80%	85%	84%	4	7.1	CNC AHU-4 P	VIV	100%	67%	4.7	5,200	100%	5,200	24,647	17,000	0.00	0%	0%	0.0
System Name: LTG_PR2008265_BLDG2123																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	47.5 kW	120	1	0	0	100%	95%	100%	3	47.5	Constant Load	FF	100%	100%	47.5	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	91. kW	120	1	0	0	100%	95%	100%	3	91.0	Constant Load	FF	100%	100%	91.0	8,760	47%	4,112	374,066	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	1	1. kW	115	1	0	0	100%	85%	100%	3	1.0	Constant Load	FF	100%	100%	1.0	8,760	100%	8,760	8,760	0	0.00	0%	0%	0.0
Building Totals:												225.3					201.2				651,891					0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 400 Dentistry **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: AHU-16																										
AHU-16-	DENTAL SUPPLY FAN	1	5. hp	600	3	0	0	80%	85%	82%	4	3.6	Constant Load	FF	100%	100%	3.6	5,037	12%	604	2,199	6,000	0.00	10%	0%	0.0
System Name: AHU-17																										
AHU-17-	DENTAL SUPPLY FAN	1	10. hp	600	3	0	0	80%	85%	84%	4	7.1	CNC - AH17 P	OD	100%	88%	6.3	2,860	100%	2,860	17,935	11,100	7,742.46	10%	0%	0.0
System Name: DHW																										
DHWT-2	Domestic Hot Water (summer)	1	98. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	20%	1,752	0	0	0.00	0%	0%	181.0
DWHT-1	Domestic Hot Water (Summer)	3	38. MBH	115	1	0	0	80%	100%	75%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	20%	1,752	0	0	0.00	0%	0%	210.6
System Name: EFS																										
MISC Ex	Miscellaneous Exhaust (est)	5	.1 hp	115	1	0	1	80%	85%	55%	2	0.4	Constant Load	FF	100%	100%	0.4	8,760	4%	307	120	0	0.00	0%	0%	0.0
WR-EX	Washroom Exhaust (est)	2	.3 hp	115	1	0	0	80%	85%	55%	4	0.5	Constant Load	FF	100%	100%	0.5	2,860	100%	2,860	1,552	0	0.00	0%	0%	0.0
System Name: LTG_PR2008265_BLDG2124																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	16.1 kW	120	1	0	0	100%	95%	100%	3	16.1	Constant Load	FF	100%	100%	16.1	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	24.6 kW	120	1	0	0	100%	95%	100%	3	24.6	Constant Load	FF	100%	100%	24.6	8,760	52%	4,531	111,674	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	8	1. kW	115	1	0	0	100%	85%	100%	3	8.0	Constant Load	FF	100%	100%	8.0	8,760	21%	1,821	14,569	0	0.00	0%	0%	0.0
Building Totals:												60.5					59.6				148,050					391.6

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 450 Daycare **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: AHU-18																										
AHU-18-	DAY CARE SUPPLY FAN	1	7.5 hp	208	3	12	21.3	80%	85%	83%	1	3.6	Constant Load	FF	100%	100%	3.6	3,640	100%	3,640	12,930	5,300	55,000.00	10%	0%	0.0
System Name: EFS																										
EF-88/89	Exhaust fans	4	.1 hp	115	1	0	1.7	80%	85%	55%	2	0.5	Constant Load	FF	100%	100%	0.5	6,715	40%	2,696	1,434	0	0.00	0%	0%	0.0
System Name: LTG_PR2008265_BLDG2125																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	5. kW	120	1	0	0	100%	95%	100%	3	5.0	Constant Load	FF	100%	100%	5.0	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	9.2 kW	120	1	0	0	100%	95%	100%	3	9.2	Constant Load	FF	100%	100%	9.2	8,760	31%	2,732	25,245	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	8	1. kW	115	1	0	0	100%	85%	100%	3	8.0	Constant Load	FF	100%	100%	8.0	8,760	16%	1,399	11,193	0	0.00	0%	0%	0.0
Building Totals:												26.4					26.4				50,802					0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 500 Gym **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: AHU-10																										
AHU-10-	GYM SUPPLY FAN	1	5. hp	600	3	4	0	80%	85%	82%	1	3.6	Constant Load	FF	100%	100%	3.6	2,756	100%	2,756	10,054	5,000	0.00	10%	0%	0.0
System Name: AHU-9																										
AHU-9-S	GYM SUPPLY FAN	1	15. hp	600	3	10	0	80%	85%	86%	1	8.5	Constant Load	FF	100%	100%	8.5	3,822	100%	3,822	32,512	12,000	0.00	10%	0%	0.0
System Name: DHW																										
B-12	DOM HW BOILER (SUMMER)	1	125. MBH	115	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	2,015	15%	302	0	0	0.00	0%	0%	39.8
System Name: EFS																										
EF-1	GYM EXH FAN	1	.8 hp	575	3	1	1.25	80%	85%	75%	1	0.8	Constant Load	FF	100%	100%	0.8	3,822	100%	3,822	3,235	0	0.00	0%	0%	0.0
System Name: LTG_PR2008265_BLDG2126																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	29.7 kW	120	1	0	0	100%	95%	100%	3	29.7	Constant Load	FF	100%	100%	29.7	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	41.8 kW	120	1	0	0	100%	95%	100%	3	41.8	Constant Load	FF	100%	100%	41.8	8,760	63%	5,490	229,499	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	3	1. kW	115	1	0	0	100%	85%	100%	3	3.0	Constant Load	FF	100%	100%	3.0	8,760	60%	5,288	15,865	0	0.00	0%	0%	0.0
Building Totals:												87.5					87.5				291,166					39.8

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 700 Library **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: ACU																										
AC	COMPUTER RM AC UNIT	1	10. hp	208	3	0	31	80%	85%	80%	2	7.6	Constant Load	FF	100%	100%	7.6	5,460	25%	1,365	10,366	0	0.00	0%	0%	0.0
System Name: AHU-719																										
AHU-719	STUDENT SERVICES RETURN FAN	1	20. hp	600	3	0	0	80%	85%	86%	4	13.9	CNC - AH17 P	VFD	100%	37%	5.1	3,900	100%	3,900	19,955	32,000	0.00	0%	0%	0.0
AHU-719	STUDENT SERVICES SUPPLY FAN	1	50. hp	115	1	0	0	80%	85%	89%	4	33.5	CNC - AH17 P	VIV	100%	65%	21.7	3,900	100%	3,900	84,819	34,000	0.00	15%	0%	0.0
System Name: AHU-720																										
AHU-720	LIBRARY RETURN FAN	1	20. hp	600	3	0	0	80%	85%	86%	4	13.9	CNC - AH17 P	VIV	100%	65%	9.0	5,460	100%	5,460	49,156	29,000	0.00	0%	5%	0.0
AHU-720	LIBRARY SUPPLY FAN	1	40. hp	600	3	0	40	80%	85%	89%	2	28.3	CNC - AH17 P	VIV	100%	65%	18.3	5,460	100%	5,460	100,114	29,000	0.00	20%	0%	0.0
System Name: EFS																										
EF 4/5	ELEC ROOM MAIN/SECOND	2	.1 hp	115	1	2	2.6	80%	85%	65%	1	0.3	Constant Load	FF	100%	100%	0.3	8,760	20%	1,752	548	0	0.00	0%	0%	0.0
EF-1	Elevator	1	.1 hp	115	1	2	2	80%	85%	5500%	1	0.2	Constant Load	FF	100%	100%	0.2	8,760	20%	1,752	325	0	0.00	0%	0%	0.0
EF-11	Fume hood	1	1. hp	575	3	0	1.1	80%	85%	77%	2	0.7	Constant Load	FF	100%	100%	0.7	8,760	10%	876	653	1	0.00	0%	0%	0.0
EF-12	Anatomy	1	.3 hp	115	1	0	4.2	80%	85%	65%	2	0.3	Constant Load	FF	100%	100%	0.3	8,760	10%	876	288	4	0.00	0%	0%	0.0
EF-2/3	W/R MAIN/SECOND	2	.3 hp	115	1	0	5.9	80%	85%	65%	2	0.9	Constant Load	FF	100%	100%	0.9	5,460	100%	5,460	5,038	6	0.00	0%	0%	0.0
EF-6	JANITOR	1	. hp	115	1	1	1.1	80%	85%	50%	1	0.1	Constant Load	FF	100%	100%	0.1	8,760	100%	8,760	942	0	0.00	0%	0%	0.0
EF-7	W/R East	1	.3 hp	120	1	0	4.8	80%	85%	55%	2	0.4	Constant Load	FF	100%	100%	0.4	5,460	100%	5,460	2,139	4	0.00	0%	0%	0.0
EF-709/1	Fume Hood	2	2. hp	575	3	2	2	80%	85%	80%	1	3.5	Constant Load	FF	100%	100%	3.5	8,760	10%	876	3,040	0	3,000.00	0%	0%	0.0
System Name: LTG_PR2008265_BLDG2127																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	61.8 kW	120	1	0	0	100%	95%	100%	3	61.8	Constant Load	FF	100%	100%	61.8	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	97.9 kW	120	1	0	0	100%	95%	100%	3	97.9	Constant Load	FF	100%	100%	97.9	8,760	59%	5,207	509,878	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	38	1. kW	115	1	0	0	100%	85%	100%	3	38.0	Constant Load	FF	100%	100%	38.0	8,760	28%	2,423	92,065	0	0.00	0%	0%	0.0
Building Totals:												301.4					266.0				879,326					0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 800 Industrial Education **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: *AHU-11*																										
AHU-11-	SUPPLY FAN	1	1. hp	208	1	0	5	80%	85%	77%	2	0.7	Constant Load	FF	100%	100%	0.7	2,990	30%	897	634	4,000	0.00	0%	0%	0.0
System Name: *AHU-12*																										
SF_AHU-	SUPPLY FAN	1	2. hp	208	3	0	0	80%	85%	80%	4	1.5	Constant Load	FF	100%	100%	1.5	3,770	100%	3,770	5,625	8,000	2,000.00	0%	0%	0.0
System Name: *AHU-14*																										
AHU-14-	SUPPLY FAN	1	7.5 hp	208	3	0	21.6	80%	85%	80%	2	5.3	Constant Load	FF	100%	100%	5.3	2,210	100%	2,210	11,694	6,800	10,000.00	10%	0%	0.0
System Name: *AHU-15*																										
AHU-15-	SUPPLY FAN	1	1.5 hp	208	3	0	1.9	80%	85%	80%	2	0.5	Constant Load	FF	100%	100%	0.5	3,640	100%	3,640	1,694	3,000	2,200.00	10%	0%	0.0
System Name: *DHW*																										
B-10	DOMESTIC HOT WATER BOILER (S	1	125. MBH	115	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	2,015	15%	302	0	0	0.00	0%	0%	39.8
System Name: *EXHAUST*																										
EF1A	WELDING EXHAUST FAN	1	10. hp	208	3	0	0	80%	85%	84%	4	7.1	Constant Load	FF	100%	100%	7.1	1,717	100%	1,717	12,199	14,000	0.00	0%	0%	0.0
EF1B	WELDING EXHAUST FAN	1	7.5 hp	208	1	0	0	80%	85%	83%	4	5.4	Constant Load	FF	100%	100%	5.4	1,717	100%	1,717	9,259	8,000	0.00	0%	0%	0.0
EXH FAN	GRINDING EXHAUST FAN	1	10. hp	208	3	0	0	80%	85%	84%	4	7.1	Constant Load	FF	100%	100%	7.1	6,715	40%	2,693	19,132	17,000	0.00	0%	0%	0.0
EXH FAN	WELDING EXHAUST FAN	1	2. hp	208	3	0	0	80%	85%	80%	4	1.5	Constant Load	FF	100%	100%	1.5	6,715	40%	2,693	4,018	2,000	0.00	0%	0%	0.0
EXH FAN	MILLWRIGHT EXHAUST FAN	1	3. hp	208	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	3,770	100%	3,770	8,437	3,000	0.00	0%	0%	0.0
EXH FAN	MILLWRIGHT EXHAUST FAN	1	3. hp	208	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	3,770	100%	3,770	8,437	3,000	0.00	0%	0%	0.0
F-24	GRINDING EXHAUST FAN	1	40. hp	208	3	0	0	80%	85%	89%	4	26.8	Constant Load	FF	100%	100%	26.8	6,715	40%	2,693	72,229	10,000	0.00	0%	0%	0.0
FILTER	WELDING RECIRC FAN	1	100. hp	600	3	70	0	80%	85%	91%	1	61.8	Constant Load	FF	100%	100%	61.8	2,700	100%	2,700	166,952	38,000	0.00	0%	0%	0.0
System Name: *HVAC*																										
AHU-13-	SUPPLY FAN	1	2. hp	208	3	0	0	80%	85%	80%	4	1.5	Constant Load	FF	100%	100%	1.5	1,717	0%	0	0	8,000	2,000.00	10%	0%	0.0
System Name: *LTG_PR2008265_BLDG2128*																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	54.9 kW	120	1	0	0	100%	95%	100%	3	54.9	Constant Load	FF	100%	100%	54.9	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	79.4 kW	120	1	0	0	100%	95%	100%	3	79.4	Constant Load	FF	100%	100%	79.4	8,760	43%	3,793	301,123	0	0.00	0%	0%	0.0
System Name: *MAU-1*																										
MUA-GB	WELDING MAKE UP AIR UNIT BUR	1	2068. MBH	115	1	0	0	80%	85%	100%	-	0.0	Constant Load	FF	100%	100%	0.0	3,770	20%	754	0	16,000	0.00	0%	0%	1,644.0
MUA-SF	WELDING MAKE UP AIR UNIT FAN	1	15. hp	600	3	0	0	80%	85%	86%	4	10.4	Constant Load	FF	100%	100%	10.4	3,770	100%	3,770	39,243	16,000	0.00	100%	0%	0.0
System Name: *MAU-1 Gring Room*																										
GB_MAU	Gas Burner for MAU-1	1	297. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	4%	350	0	0	0.00	0%	0%	109.7
SF_MAU-	Supplu fan for MAU-1	1	1.5 hp	575	3	0	4.1	80%	85%	80%	2	2.8	Constant Load	FF	100%	100%	2.8	6,715	5%	336	932	0	2,700.00	100%	0%	0.0
System Name: *MU-1*																										
MU-1	MAKE UP AIR UNIT, GRINDING RM	1	10. hp	600	3	0	0	80%	85%	84%	4	7.1	Constant Load	FF	100%	100%	7.1	6,715	40%	2,696	19,156	19,000	7,742.46	0%	0%	0.0
System Name: *MU-2*																										
MU-2	MAKE UP AIR UNIT, WELDING SHO	1	5. hp	600	3	0	0	80%	85%	82%	4	3.6	Constant Load	FF	100%	100%	3.6	6,715	40%	2,696	9,812	6,000	0.00	0%	0%	0.0
System Name: *PLUG*																										
PLUG	Plug loads	25	1. kW	115	1	0	0	100%	85%	100%	3	25.0	Constant Load	FF	100%	100%	25.0	8,760	23%	2,018	50,448	0	0.00	0%	0%	0.0

**** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.***

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 800 Industrial Education **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: SHOPT																										
MISC	Miscellaneous shop equipment	80	1. kW	115	1	0	0	80%	85%	100%	3	64.0	Constant Load	FF	100%	100%	64.0	2,700	20%	540	34,560	0	0.00	0%	0%	0.0
M-T	Machine Tools	40	1. hp	115	1	0	0	80%	85%	100%	4	23.9	Constant Load	FF	100%	100%	23.9	2,700	20%	540	12,891	0	0.00	0%	0%	0.0
WELD	Welding Equipment	32	13. kW	115	1	0	0	100%	100%	100%	3	416.0	Constant Load	FF	100%	100%	416.0	2,700	10%	270	112,320	0	0.00	0%	0%	0.0
System Name: UH																										
UH-	Unit heaters	9	80. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	15%	1,314	0	0	0.00	0%	0%	997.5
Building Totals:												810.8					810.8				900,797					2,791.1

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 940 Maintenance Workshop **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: LTG_PR2008265_BLDG2129																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	.4 kW	120	1	0	0	100%	95%	100%	3	0.4	Constant Load	FF	100%	100%	0.4	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	.7 kW	120	1	0	0	100%	95%	100%	3	0.7	Constant Load	FF	100%	100%	0.7	8,760	38%	3,301	2,346	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	1	1. kW	115	1	0	0	100%	85%	100%	3	1.0	Constant Load	FF	100%	100%	1.0	8,760	29%	2,562	2,562	0	0.00	0%	0%	0.0
Building Totals:												2.1					2.1				4,908					0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 960 Power Plant **Client ID** 326

System Name: BOILER PLANT

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
B-3	HOT WATER BOILER	1	4200. MBH	0	1	0	0	80%	100%	82%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	12%	1,092	0	0	0.00	0%	0%	4,837.3
B-4	HOT WATER BOILER	1	2090. MBH	115	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	21%	1,820	0	0	0.00	0%	0%	4,011.3
B-5	HOT WATER BOILER	1	14650. MB	115	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	5%	415	0	0	0.00	0%	0%	6,417.7
B-6	HOT WATER BOILER	1	14650. MB	115	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	0%	5	0	0	0.00	0%	0%	75.8
MUA-2	MAKE UP AIR UNIT FAN	1	5. hp	600	3	0	0	80%	85%	82%	4	3.6	Constant Load	FF	100%	100%	3.6	1,717	100%	1,717	6,248	5,000	0.00	100%	0%	0.0
MUA-2G	MAKE UP AIR UNIT BURNER	1	800. MBH	230	1	0	0	80%	100%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	1,717	20%	343	0	5,000	0.00	100%	0%	289.7
P-1	CAMPUS HEATING PUMP #1	1	20. hp	575	3	0	19.3	80%	85%	91%	2	13.1	Constant Load	FF	100%	100%	13.1	8,760	67%	5,843	76,370	0	0.00	0%	0%	0.0
P-11	CAMPUS HEATING PUMP	1	20. hp	575	3	0	19.3	80%	85%	91%	2	13.1	Constant Load	FF	100%	100%	13.1	8,760	0%	0	0	0	0.00	0%	0%	0.0
P-16 & 1	Perimeter Rad Block 100 (est)	2	.3 hp	115	1	0	5.8	80%	85%	55%	2	0.9	Constant Load	FF	100%	100%	0.9	8,760	50%	4,380	3,973	0	0.00	0%	0%	0.0
P-18	AHU-1 Preheat coil (est)	1	.3 hp	115	1	0	5.8	80%	85%	55%	2	0.5	Constant Load	FF	100%	100%	0.5	8,760	50%	4,380	1,987	0	0.00	0%	0%	0.0
P-19	AHU-1 Re-heat coil	1	.5 hp	600	3	0	0	80%	85%	70%	4	0.4	Constant Load	FF	100%	100%	0.4	8,760	50%	4,380	1,867	0	0.00	0%	0%	0.0
P-2	CAMPUS HEATING PUMP #2	1	20. hp	575	3	0	19.3	80%	85%	91%	2	13.1	Constant Load	FF	100%	100%	13.1	8,760	67%	5,843	76,370	0	0.00	0%	0%	0.0
P-21	Pre-heat coil AHU-2	1	.8 hp	575	3	0	1.1	80%	85%	75%	2	0.7	Constant Load	FF	100%	100%	0.7	8,760	50%	4,380	3,263	0	0.00	0%	0%	0.0
P-23	AHU-2 Heating Coil	1	.8 hp	575	3	0	1.1	80%	85%	75%	2	0.7	Constant Load	FF	100%	100%	0.7	8,760	50%	4,380	3,263	0	0.00	0%	0%	0.0
P-25	Const. temp circuit 200/300 circuit	1	1.5 MBH	575	3	0	0	80%	85%	77%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	50%	4,380	0	0	0.00	0%	0%	6.9
P-30	AHU-5 Heating Coil	1	3. hp	575	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	50%	4,380	9,802	0	0.00	0%	0%	0.0
P-31 & 3	Perimeter rad 200/300 block	2	1.5 hp	575	3	0	0	80%	85%	77%	4	2.3	Constant Load	FF	100%	100%	2.3	8,760	50%	4,380	10,184	0	0.00	0%	0%	0.0
P-38	Gym Preheat & Multizone (est)	1	.3 hp	115	1	0	0	80%	85%	75%	4	0.2	Constant Load	FF	100%	100%	0.2	8,760	50%	4,380	871	0	25.00	0%	0%	0.0
P-39	Gym re-heat & multizone	1	.8 hp	575	3	0	0	80%	85%	77%	4	0.6	Constant Load	FF	100%	100%	0.6	8,760	50%	4,380	2,546	0	856.00	0%	0%	0.0
P-40	Gym ancillary heating	1	.2 hp	115	1	0	0	80%	85%	55%	4	0.2	Constant Load	FF	100%	100%	0.2	8,760	50%	4,380	794	0	0.00	0%	0%	0.0
P-61	Shop 2 Radiation 800 block	1	.5 hp	208	3	6	2.2	80%	85%	70%	1	1.8	Constant Load	FF	100%	100%	1.8	1,400	100%	1,400	2,487	0	0.00	0%	0%	0.0
P-62	Unit Heaters 800 block (est)	1	.3 hp	208	3	2	2.2	80%	85%	80%	1	0.5	Constant Load	FF	100%	100%	0.5	1,400	100%	1,400	729	0	0.00	0%	0%	0.0
P-63	HD Mechanics	1	1.5 hp	208	3	0	0	80%	85%	80%	4	1.1	Constant Load	FF	100%	100%	1.1	8,760	50%	4,380	4,901	0	0.00	0%	0%	0.0
P-64	Millwright - 800 Block	1	.8 hp	208	1	2	2.9	80%	85%	75%	1	0.4	Constant Load	FF	100%	100%	0.4	8,760	50%	4,380	1,859	0	0.00	0%	0%	0.0
P-65	Welding - 800 Block	1	.8 hp	208	1	2	2.9	80%	85%	75%	1	0.4	Constant Load	FF	100%	100%	0.4	8,760	50%	4,380	1,704	0	0.00	0%	0%	0.0
P-7	CIRC PUMP (B-3)	1	5. hp	208	3	0	0	80%	85%	80%	4	3.7	Constant Load	FF	100%	100%	3.7	8,760	49%	4,266	15,913	0	0.00	0%	0%	0.0
P-70	AHU-3 Heating Coil (est)	1	.5 hp	115	1	0	0	80%	85%	70%	4	0.4	Constant Load	FF	100%	100%	0.4	8,760	50%	4,380	1,867	0	0.00	0%	0%	0.0
P-701 &	AHU-719 Heating coil	2	520. Watt	115	1	5	4.9	80%	85%	70%	1	0.9	Constant Load	FF	100%	100%	0.9	8,760	25%	2,190	1,927	0	0.00	0%	0%	0.0
P-703/70	AHU-720 Heating coil	2	340. Watt	115	1	0	3.55	80%	85%	70%	2	0.6	Constant Load	FF	100%	100%	0.6	8,760	25%	2,190	1,216	3	0.00	0%	0%	0.0
P-705	HEATING PUMP	1	3. hp	208	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	67%	5,869	13,135	0	0.00	0%	0%	0.0
P-706	HEATING PUMP	1	3. hp	208	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	67%	5,869	13,135	0	0.00	0%	0%	0.0
P-71	AHU-4 Heating coil (est)	1	.5 hp	115	1	0	0	80%	85%	70%	4	0.4	Constant Load	FF	100%	100%	0.4	8,760	50%	4,380	1,867	0	0.00	0%	0%	0.0
P-8	CIRC PUMP (B-4)	1	5. hp	208	3	0	0	80%	85%	80%	4	3.7	Constant Load	FF	100%	100%	3.7	8,760	49%	4,266	15,913	0	0.00	0%	0%	0.0
P-81	Block 400 radiation	1	.8 hp	115	1	0	10.6	80%	85%	55%	2	0.8	Constant Load	FF	100%	100%	0.8	8,760	50%	4,380	3,631	0	76.00	0%	0%	0.0
P-82	AHU-16 Heating coil	1	.3 hp	115	1	0	0	80%	85%	65%	4	0.3	Constant Load	FF	100%	100%	0.3	8,760	50%	4,380	1,327	0	0.00	0%	0%	0.0
P-84	AHU-17 Heating coil	1	.3 hp	115	1	0	0	80%	85%	65%	4	0.3	Constant Load	FF	100%	100%	0.3	8,760	50%	4,380	1,327	0	0.00	0%	0%	0.0
P-87	AHU-1 450 Daycare heating coil	1	.5 hp	575	3	0	0.9	80%	85%	80%	2	0.6	Constant Load	FF	100%	100%	0.6	8,760	50%	4,380	2,670	0	0.00	0%	0%	0.0
P-AHU-6	AHU-6 Heating Pump	1	1.5 hp	575	3	0	0	80%	85%	77%	4	1.2	Constant Load	FF	100%	100%	1.2	8,760	50%	4,380	5,092	0	0.00	0%	0%	0.0
P-AHU-8	AHU-8 Heating Coil	1	1.5 hp	575	3	0	0	80%	85%	77%	4	1.2	Constant Load	FF	100%	100%	1.2	8,760	50%	4,380	5,092	0	0.00	0%	0%	0.0
PG-1	Glycol Pumps-1	3	3. hp	208	3	0	0	80%	85%	80%	4	6.7	Constant Load	FF	100%	100%	6.7	8,760	50%	4,380	29,407	0	0.00	0%	0%	0.0
PG-2	Glycol Pumps-2	4	2. hp	575	3	0	0	80%	85%	78%	4	6.1	Constant Load	FF	100%	100%	6.1	8,760	50%	4,380	26,810	0	192.00	0%	0%	0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 960 Power Plant **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: CHILLER PLANT																										
CH-1	CHILLER #1	1	300. kW	600	3	0	0	80%	85%	80%	3	300.0	Constant Load	FF	100%	100%	300.0	8,760	0%	0	0	0	0.00	0%	0%	0.0
CH-2	CHILLER #2	1	188. kW	600	3	0	0	80%	85%	80%	3	188.0	Constant Load	FF	100%	100%	188.0	2,686	25%	672	126,248	0	0.00	0%	0%	0.0
CT-1	COOLING TOWER #1	2	10. hp	600	3	0	0	70%	85%	84%	4	12.4	Constant Load	FF	100%	100%	12.4	8,760	14%	1,218	15,139	0	0.00	0%	0%	0.0
CT-2	COOLING TOWER #2	1	25. Hp	600	3	0	0	70%	85%	88%	4	14.8	Constant Load	FF	100%	100%	14.8	8,760	0%	0	0	0	0.00	0%	0%	0.0
P-22	AHU-2 Cooling coil	1	.8 hp	575	3	1	1.1	80%	85%	75%	1	0.8	Constant Load	FF	100%	100%	0.8	8,760	14%	1,218	1,031	0	0.00	300%	0%	0.0
P-24	AHU-3 cooling coil	1	3. hp	575	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	14%	1,218	2,725	0	0.00	0%	0%	0.0
P-28	AHU-4 Cooling coil	1	3. hp	575	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	14%	1,218	2,725	0	0.00	0%	0%	0.0
P-29	AHU-5	1	3. hp	575	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	14%	1,218	2,725	0	0.00	0%	0%	0.0
P-3	CHILLED WATER PUMP #1	1	25. hp	575	3	0	0	80%	85%	85%	4	17.6	Constant Load	FF	100%	100%	17.6	8,760	14%	1,218	21,373	0	0.00	0%	0%	0.0
P-33	AHU-6 Cooling Coil	1	3. hp	575	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	14%	1,218	2,725	0	0.00	0%	0%	0.0
P-36	AHU-8 Cooling Coil	1	3. hp	575	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	14%	1,218	2,725	0	0.00	0%	0%	0.0
P-4	CHILLED WATER PUMP #2	1	10. hp	600	3	0	0	80%	85%	90%	4	6.6	Constant Load	FF	100%	100%	6.6	8,760	14%	1,218	8,074	0	0.00	0%	0%	0.0
P-5	CONDENSOR WATER PUMP #1	1	25. hp	575	3	0	0	80%	85%	85%	4	17.6	Constant Load	FF	100%	100%	17.6	8,760	0%	0	0	0	0.00	0%	0%	0.0
P-6	CONDENSER WATER PUMP #2	1	20. hp	575	3	0	19.3	80%	85%	91%	2	13.1	Constant Load	FF	100%	100%	13.1	8,760	14%	1,218	15,915	0	0.00	0%	0%	0.0
P-707	CHILLED WATER PUMP	1	2. hp	115	1	0	0	100%	85%	77%	4	1.9	Constant Load	FF	100%	100%	1.9	8,760	14%	1,218	2,359	0	0.00	0%	0%	0.0
P-83	AHU-16 Cooling Coil	1	.3 hp	115	1	0	0	80%	85%	65%	4	0.3	Constant Load	FF	100%	100%	0.3	8,760	14%	1,218	369	0	0.00	0%	0%	0.0
P-85	AHU-17 Cooling Coil	1	.3 hp	115	1	0	0	80%	85%	65%	4	0.3	Constant Load	FF	100%	100%	0.3	8,760	14%	1,218	369	0	0.00	0%	0%	0.0
P-88	AHU-1 for block 450 daycare cooling	1	.5 hp	575	3	0	0.9	80%	85%	80%	2	0.6	Constant Load	FF	100%	100%	0.6	8,760	14%	1,218	742	0	0.00	0%	0%	0.0
System Name: COMPRESSED AIR																										
AC-1	AIR COMPRESSOR #1	1	25. hp	600	3	0	0	70%	85%	80%	4	16.3	Constant Load	FF	100%	100%	16.3	8,760	10%	876	14,295	0	0.00	0%	0%	0.0
AC-2	AIR COMPRESSOR #2	1	25. hp	600	3	0	0	70%	85%	80%	4	16.3	Constant Load	FF	100%	100%	16.3	8,760	10%	876	14,295	0	0.00	0%	0%	0.0
AC-3	New Recip Compressor	1	15. hp	575	3	0	0	80%	85%	90%	4	9.9	Constant Load	FF	100%	100%	9.9	8,760	0%	0	0	0	0.00	0%	0%	0.0
System Name: DWH																										
P-20	DHW pump for block 100	1	.1 hp	120	1	0	0	80%	85%	80%	4	0.1	Constant Load	FF	100%	100%	0.1	8,760	20%	1,752	163	0	40.00	0%	0%	0.0
P-24	DWH Pump for block 200	1	3. hp	575	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	20%	1,752	3,921	0	0.00	0%	0%	0.0
P-27	DHW for block 300	1	3. hp	575	3	0	0	80%	85%	80%	4	2.2	Constant Load	FF	100%	100%	2.2	8,760	20%	1,752	3,921	0	0.00	0%	0%	0.0
P-41	DHW main pump for Gym (est)	1	1. hp	575	3	0	1.5	80%	85%	80%	2	1.0	Constant Load	FF	100%	100%	1.0	8,760	20%	1,752	1,780	0	0.00	0%	0%	0.0
P-43	DHW Aux. pump for 500 Gym (est)	1	.2 hp	115	1	0	3.6	80%	85%	55%	2	0.3	Constant Load	FF	100%	100%	0.3	8,760	20%	1,752	493	0	0.00	0%	0%	0.0
System Name: LTG_PR2008265_BLDG2130																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	1.6 kW	120	1	0	0	100%	95%	100%	3	1.6	Constant Load	FF	100%	100%	1.6	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	1.6 kW	120	1	0	0	100%	95%	100%	3	1.6	Constant Load	FF	100%	100%	1.6	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	2.7 kW	120	1	0	0	100%	95%	100%	3	2.7	Constant Load	FF	100%	100%	2.7	8,760	39%	3,395	9,072	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	2.7 kW	120	1	0	0	100%	95%	100%	3	2.7	Constant Load	FF	100%	100%	2.7	8,760	39%	3,395	9,072	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	1	1. kW	115	1	0	0	100%	85%	100%	3	1.0	Constant Load	FF	100%	100%	1.0	8,760	20%	1,770	1,770	0	0.00	0%	0%	0.0
System Name: UAF																										
UAFE	Unaccounted Electrical equipment	60	1. kW	115	1	0	0	100%	100%	100%	3	60.0	Constant Load	FF	100%	100%	60.0	8,760	99%	8,630	517,821	0	0.00	0%	0%	0.0
UAFG	Unaccounted for Gas	1	1000. MBH	0	1	0	0	100%	85%	60%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	6%	547	0	0	0.00	0%	0%	576.9
Building Totals:												790.5					790.5				1,131,396					16,215.5

**** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.***

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 960A Tunnel **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: LTG_PR2008265_BLDG2131																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	1.9 kW	120	1	0	0	100%	95%	100%	3	1.9	Constant Load	FF	100%	100%	1.9	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	4.1 kW	120	1	0	0	100%	95%	100%	3	4.1	Constant Load	FF	100%	100%	4.1	8,760	110%	9,638	39,682	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	1	1. kW	115	1	0	0	100%	85%	100%	3	1.0	Constant Load	FF	100%	100%	1.0	8,760	41%	3,548	3,548	0	0.00	0%	0%	0.0
Building Totals:												7.1					7.1				43,230					0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** 980 Power Engineering **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: LTG_PR2008265_BLDG2132																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	6.9 kW	120	1	0	0	100%	95%	100%	3	6.9	Constant Load	FF	100%	100%	6.9	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	10.5 kW	120	1	0	0	100%	95%	100%	3	10.5	Constant Load	FF	100%	100%	10.5	8,760	47%	4,123	43,160	0	0.00	0%	0%	0.0
System Name: PLUG																										
PLUG	Plug loads	1	1. kW	115	1	0	0	100%	85%	100%	3	1.0	Constant Load	FF	100%	100%	1.0	8,760	100%	8,760	8,760	0	0.00	0%	0%	0.0
System Name: TEACHING BOILERS																										
B-1	Boiler 1 demostration	1	8400. MBH	120	1	0	0	80%	85%	84%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	0%	44	0	0	0.00	0%	0%	387.9
B-2	Boiler for Demonstration	1	9. MBH	120	1	0	0	80%	85%	80%	-	0.0	Constant Load	FF	100%	100%	0.0	8,760	0%	44	0	0	0.00	0%	0%	0.4
Building Totals:												18.4					18.4				51,920					388.3

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: College of New Caledonia - (revised 2008) **Building Name:** Exterior Lighting **Client ID** 326

TAG	Part Description	Qty	Motor Data: Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Existing Electrical Conditions: Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Fans,Pumps Compressors: Measured cfm/gpm	Design cfm/gpm	Existing Fuel Conditions: % OA	% HR	Fuel Energy (GJ)
System Name: LTG_PR2008265_BLDG2134																										
LTG-PO	Retrofit Ltg Updated 22 Oct 08	1	3.4 kW	120	1	0	0	100%	95%	100%	3	3.4	Constant Load	FF	100%	100%	3.4	8,760	0%	0	0	0	0.00	0%	0%	0.0
LTG-PRE	Existing Ltg Updated 22 Oct 08	1	3.5 kW	120	1	0	0	100%	95%	100%	3	3.5	Constant Load	FF	100%	100%	3.5	8,760	394%	34,504	120,903	0	0.00	0%	0%	0.0
Building Totals:												6.9					6.9				120,903					0.0

*** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.*

Existing Equipment Inventory and Energy Estimates

Client: *College of New Caledonia - (revised 2008)* ***Building Name:*** *Exterior Lighting* ***Client ID*** *326*

			Motor Data							Existing Electrical Conditions									Fans,Pumps Compressors		Existing Fuel Conditions		
TAG	Part Description	Qty	Rating	Volts	Phases	MA	FLA	LF	PF	%Eff	Peak kW Calc Method	Peak Demand (kW)	Profile	Flow Control	Mean % Flow	% Full Power	Avg Demand (kW)	Annual Hours Scheduled	%SOF	Annual Operating hours	Electrical Energy (kWh)	Measured cfm/gpm	Design cfm/gpm	% OA	% HR	Fuel Energy (GJ)
Project Totals:												3510.4					3434.1				6,454,878					24,559.9

Peak Demand Calculation Methods:
1) Peak Demand = Qty x MA x Volts x PF x sqrt(Phases) / 1000
2) Peak Demand = Qty x FLA x Volts x LF x PF x sqrt(Phases) / 1000
3) Peak Demand = Qty x (Rating / Efficiency) x LF
4) Peak Demand = Qty x 0.746 x (Rating / Efficiency) x LF

Avg Demand (kW) = % Full Power x Peak Demand (kW)

Annual Operating Hours = Annual Hours Scheduled x %SOF (System On Factor)

Electrical Energy (kWh) = Average Demand x Annual Operating Hours

Mean % Flow = time weighted mean flow
= sum(%time x %flow)

%Full Power = time weighted mean power
= sum(%time x %power)
where %power = f(%flow) as determined based on Flow Control method

***** Ventilation Consumption is included in Annual Energy Gas Consumption. Estimate applies only to Fans supplying Outdoor Air to building that requires heating.***

9. APPENDIX E – FLOOR PLANS

1100 BLOCK NICHOLSON CAMPUS (PARKING LOT K)

PARKING LOT H

STUDENT RESIDENCE

1200 BLOCK

PARKING LOT G

PARKING LOT C

PARKING LOT D

W

S

N

E

DENOTES HANDICAP PARKING AREA

NICHOLSON STREET

PARKING LOT B

500 BLOCK GYMNASIUM

M/CYCLE PARKING

BIKE COMPOUND

400 BLOCK DENTAL

450 BLOCK DAYCARE

PARKING LOT E

900 BLOCK TAPS

22nd. AVENUE

PARKING LOT A

300 BLOCK

940 BLOCK MIDSHOP

920 BLOCK FORESTRY

960 BLOCK POWER PLANT

980 BLOCK POWER ENGINEERING

CNC VEHICLE STORAGE

STAFF PARKING LOT F

700 BLOCK RESOURCE CENTER/LIBRARY

200 BLOCK

100 BLOCK

800 BLOCK MILLWRIGHT SHOP

800 BLOCK MACHINIST SHOP

800 BLOCK WELDING SHOPS

18th AVENUE

LYON STREET

AUTO COMPOUND

1000 BLOCK BRINK BUILDING

AUTOMOTIVE

ELECTRICAL

CARPENTRY

PARKING LOT J

CENTRAL STREET

HIGHWAY 97

LEVEL 1

COVERED ACCESS TO BOO BLOCK

1-474 1-469 1-470 1-471 1-472 1-473 1-468 1-467 1-463 1-464 1-465 1-461 1-466 1-462 1-460 1-459 1-458 1-476 1-475 1-451 1-452 1-453 1-454 1-455 MECH. 1-456 1-457 1-450 1-400 1-401 CLASSROOM 1-436 1-433 1-434 1-432 1-435 CLASSROOM 1-431 CLASSROOM 1-430 1-425 LAB 1-428 LAB 1-429 1-426 1-427 1-517A 1-517 1-519 1-518 1-410 1-422 1-424 1-421 1-423 1-409 1-420 1-419 1-417 1-418 1-425 1-402 1-408 1-416 X-RAY 1-407 1-414 1-415 X-RAY 1-406 X-RAY 1-405 1-413 DARK ROOM 1-404 1-412 X-RAY 1-403 1-411

1-355 CLASSROOM 1-315 CLASSROOM 1-316 CLASSROOM 1-317 1-318 1-323 1-324 1-322 1-321 1-320 1-344 1-345 1-346 1-355 1-349 1-348 1-347 CLASSROOM 1-314 CLASSROOM 1-310A CLASSROOM 1-308A 1-325 1-327 1-329 1-331 1-333 1-335 CLASSROOM 1-310B CLASSROOM 1-308B 1-326 1-328 1-330 1-332 1-334 1-336 1-350 1-340 CLASSROOM 1-311 CLASSROOM 1-309 1-339 SHIPPING/ RECEIVING 1-308 1-342 PRINT ROOM 1-343 MAIL ROOM 1-305 PARKING SERVICES 1-304B 1-304A MATH LAB 1-303 LECTURE THEATRE 1-306 PROJECTION 1-307

LOADING DOCK SHREDDING ROOM 1-223 1-231 FEMALE LOCKER ROOM 1-222 1-224 1-229 1-352 1-221 MALE WASHROOM 1-212 1-228A MALE LOCKER ROOM 1-212A 1-227A FEMALE WASHROOM 1-211 1-301 F/AID 1-210

1-220 1-229 MAIN KITCHEN 1-214 1-213 1-215 1-216B 1-216A 1-217 1-214 1-216 SERVERY 1-203 1-204 DISH ROOM 1-218 CAFETERIA 1-202 COOKING LAB 1-209 KODIAKS KITCHEN 1-207 KODIAKS DINING ROOM 1-206 ramp up

1-200 STUDENT UNION OFFICE 1-201 1-117 A CLASSROOM 1-117 1-120 1-119 1-128 1-127 1-126 1-125 1-124 1-129 1-130 STAFF LOUNGE 1-121 1-122A 1-122 CLASSROOM 1-123 1-228 1-131 1-118 1-116 1-132 MALE WASHROOM 1-114 1-113A FEMALE WASHROOM 1-113 CLASSROOM 1-115 1-226 1-103A 1-104A 1-103 1-104 1-227 1-133 1-111 1-105 1-102 1-132 CLASSROOM 1-112 1-106 1-134 1-107 1-108 1-109 1-110 CLASSROOM 1-101 ramp up

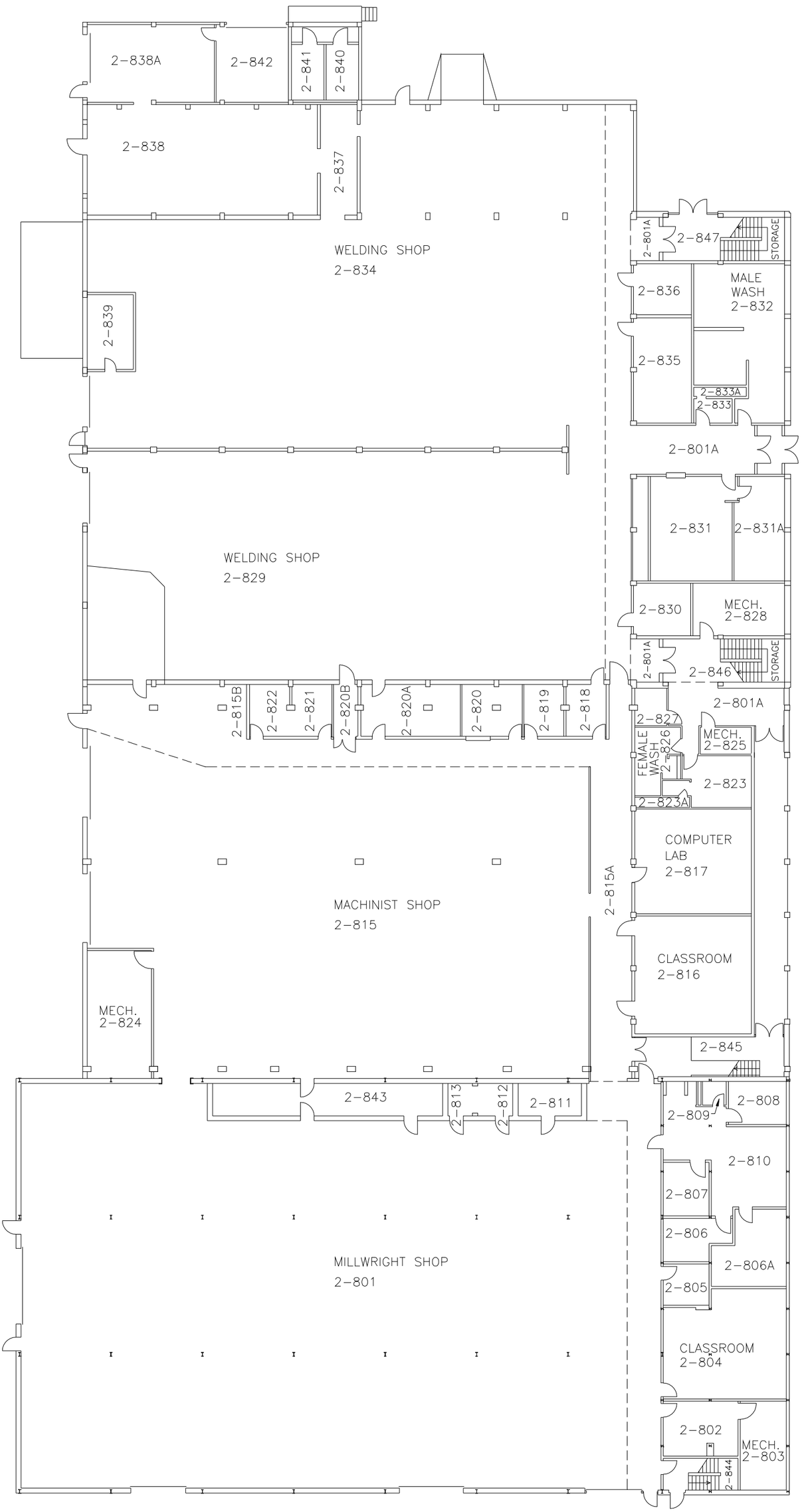
1-705 1-714 ATRIUM 1-713 1-706 ELEC 1-707 1-708 1-709 RBC BANK MACHINE FEMALE WASHROOM 1-710 H/CAP 1-711 MALE WASHROOM 1-712 CONCOURSE 1-704 COLLEGE STORE 1-715 1-716 1-717 DELI 1-718 1-719 1-720 1-736 1-734A MARKETING & ENROLLMENT SERVICES 1-734 1-721 1-722 1-725A 1-725B 1-726 1-727 1-728 1-729 1-730 1-731 1-735B CENTRE FOR STUDENT SUCCESS 1-733 1-733 1-735A CLASSROOM 1-723 CLASSROOM 1-724 CLASSROOM 1-725 1-737 1-703 1-702 SECURITY 1-738 1-701 ADMISSIONS & REGISTRATION 1-739 1-740 1-741 1-742 1-743 1-744 1-745 1-746 1-747 1-748 1-749 1-750 1-751 1-752 COUNSELLING 1-753 DISABILITY SUPPORT 1-754 1-755 EMPLOY SERVICES 1-756 FINANCIAL AID 1-758 1-759 1-760 1-761 1-762 STUDENT SERVICES 1-763 1-763A 1-764 1-765 FEMALE WASH 1-768 MALE WASH 1-767 H/CAP WASH 1-766 1-770 1-771 COMPUTER LAB 1-772 STUDY 1-774 FIRST NATIONS CLASSROOM 1-773 1-773A 1-775 1-779 1-780 1-781 1-776 1-777 1-782 1-783 1-778 1-784 CONTINUING EDUCATION 1-785 MEETING ROOM 1-769 1-787 1-786

1-518 1-506A 1-516 1-502A 1-503A 1-504A 1-504 1-503 1-510 1-505 FEMALE CHANGE 1-505 1-505A FEMALE WASHROOM 1-507 1-512B 1-512A MALE WASHROOM 1-509 MALE CHANGE 1-512 1-506 EQUIPMENT 1-508 1-508A 1-513 HANDBALL COURT 1-501A SQUASH COURT 1-501B 1-511 1-510 1-511A GYMNASIUM 1-514 1-514A 1-514B

LEVEL 2

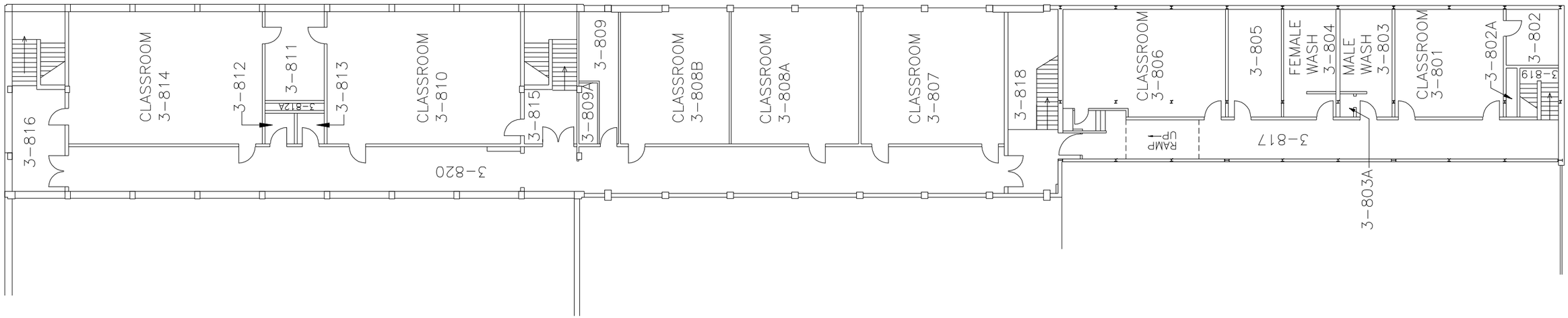
GPL COMPUTER LAB 2-307
LAPTOP LAB 2-308
MPL COMPUTER LAB 2-309
WPL COMPUTER LAB 2-310
FACILITIES SERVICES 2-332
MECHANICAL 2-236
NETWORK COMPUTER LAB 2-311
OPEN ACCESS COMPUTER LAB 2-314
INTERNET COMPUTER LAB 2-315
GPL2 COMPUTER LAB 2-312
MCL COMPUTER LAB 2-316
PLOT 2-318
TECH COMPUTER LAB 2-319
MAC/CE COMPUTER LAB 2-313
CONTROL 2-323
CLASSROOM 2-320
CLASSROOM 2-321
CLASSROOM 2-322
INT'L ED. 2-354
FEMALE WASHROOM 2-229
MALE WASHROOM 2-226
GEOGRAPHY LAB. 2-232
PSYCHOLOGY LAB. 2-243
CLASSROOM 2-244
MECHANICAL 2-249
PHYSICS LAB. 2-223
CHEMISTRY LAB. 2-201
CHEMISTRY LAB. 2-207
INST. ROOM 2-206
ILT 2-122
MEETING ROOM 2-125
MEETING ROOM 2-116
DEANS OFFICES 2-117
CLASSROOM 2-121
MEETING ROOM 2-108
CLASSROOM 2-107
TARGET CLASSROOM 2-106
MALE WASH. 2-101
FEMALE WASH. 2-103
TECHNICAL & ANCILLARY SERVICES 2-723
MEDIA SERVICES EQUIPMENT 2-710
MEDIA SERVICES 2-711
STUDIO 2-715
SPECIAL PURPOSE LAB 2-717
OPEN ACCESS LAB 2-718
CLASSROOM 2-720
RESOURCE CENTRE/LIBRARY 2-724
CLASSROOM 2-502
WEIGHT ROOM 2-504
KINETICS LAB 2-505
KINETICS LAB 2-505A
SPECTATORS 2-501

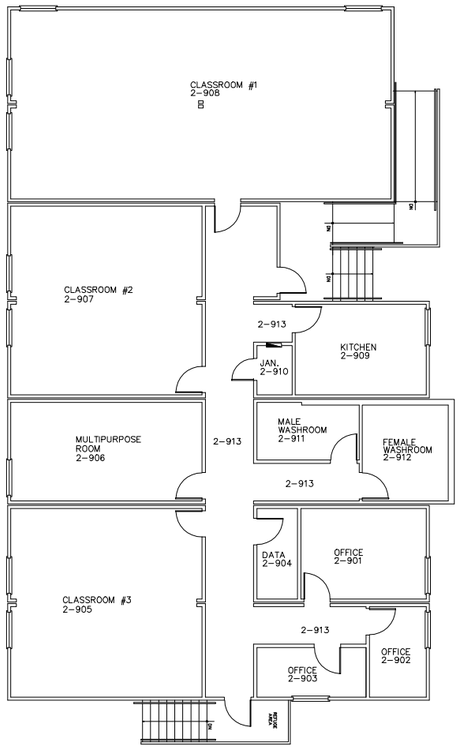

MECHANICAL PENTHOUSE ON ROOF
CLASSROOM 3-368
CLASSROOM 3-367
CLASSROOM 3-366
CLASSROOM 3-365
CLASSROOM 3-364
MECHANICAL 3-363
MECHANICAL 3-360
FORESTRY LAB. 1 3-234
FORESTRY PREP. 1 3-236
FORESTRY PREP. 2 3-235
FINE ARTS OFFICE 3-241
FINE ARTS PREP. 3-239
FINE ARTS LAB. 3-238
MECHANICAL 3-240
3-108A
3-126
3-120
NURSING LAB B 3-119
3-119A
CLASSROOM 3-108
3-118
NURSING LAB A 3-114
CLASSROOM 3-109
3-115
3-114A
3-111A
3-111
3-112
3-113
3-113A
CLASSROOM 3-110
CLASSROOM 3-107
CLASSROOM 3-106
CLASSROOM 3-105
3-341
3-340
3-339
3-338
3-337
3-336
3-335
3-334
3-333A
3-332
CLASSROOM 3-369
CLASSROOM 3-342
3-345
3-354
3-353
3-352
3-351
3-343
CLASSROOM 3-350
3-347
3-348
INFORMATION TECHNOLOGY 3-344
I/O ROOM 3-346
3-349
3-350A
FEMALE WASHROOM 3-357
3-356
3-233
3-232
3-231
3-230
3-229
3-228
MED LAB. 3-227
FORESTRY PREP. 3 3-224
MED LAB STORAGE 3-223
MED LAB PREP. 3-222
FORESTRY LAB. 2 3-221
HUMAN RESOURCES 3-333
3-330
3-326
3-327
3-328
BOARD ROOM 3-329
EXECUTIVE OFFICE 3-325
3-321
3-318
3-319
3-322
3-317
3-316
FINANCIAL SERVICES 3-315
3-311
3-312
3-313
3-314
3-310
3-309
3-306
3-308
3-307
MALE WASHROOM 3-304
3-301
3-305
ANATOMY LAB. 3-201
3-243
BIOLOGY LAB. 1 3-203
3-210
3-209
3-208
3-207
3-206
BIOLOGY LAB. 2 3-205
3-244
BIOLOGY LAB. 3 3-211
3-204
3-215
3-218
COLD ROOM 3-214
DARK ROOM 3-213
3-216
PLANT AQUARIA 3-212
ANIMALS 3-217
3-108
MALE WASH. 3-101
3-108A
FEMALE WASH. 3-103
3-104
ELEV.
MECHANICAL PENTHOUSE ON ROOF
LEVEL 3



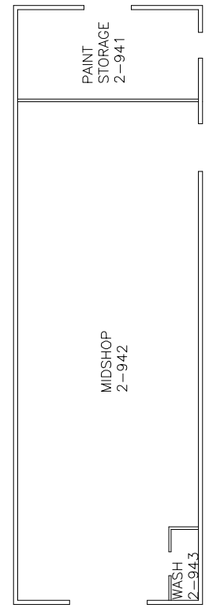
800 BLOCK – LEVEL 2

800 BLOCK – LEVEL 3

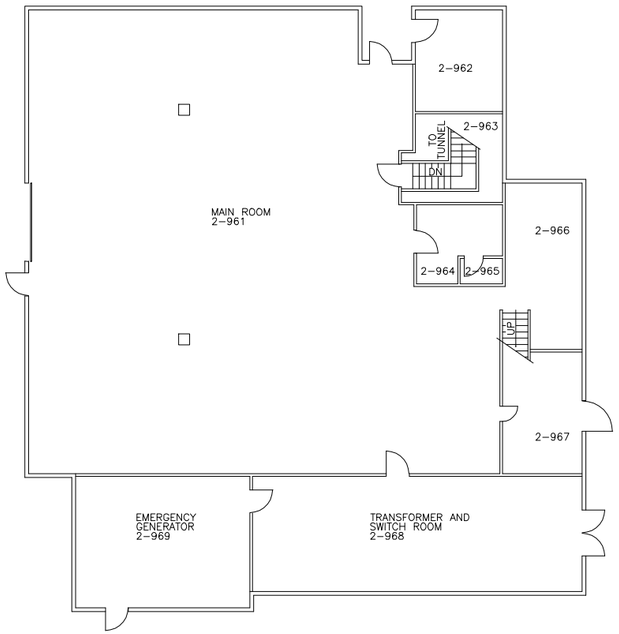




900 BLOCK – T.A.P.S.
NTS

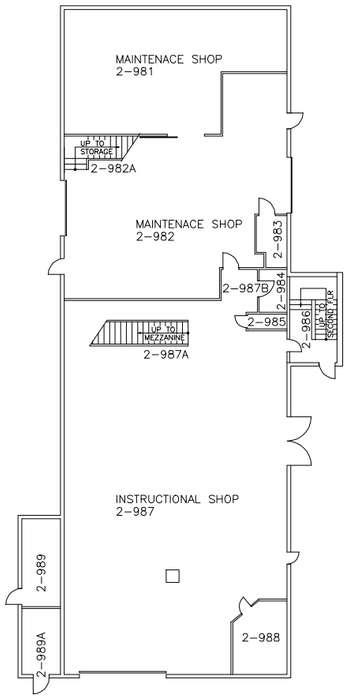


940 BLOCK – MIDSHOP
NTS

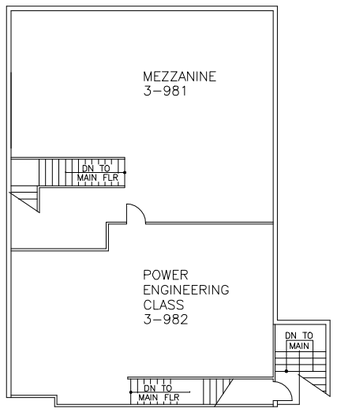


960 BLOCK – POWER PLANT
NTS

920 BLOCK – FORESTRY STORAGE
NTS



980 BLOCK – POWER ENGINEERING LEVEL 2
NTS

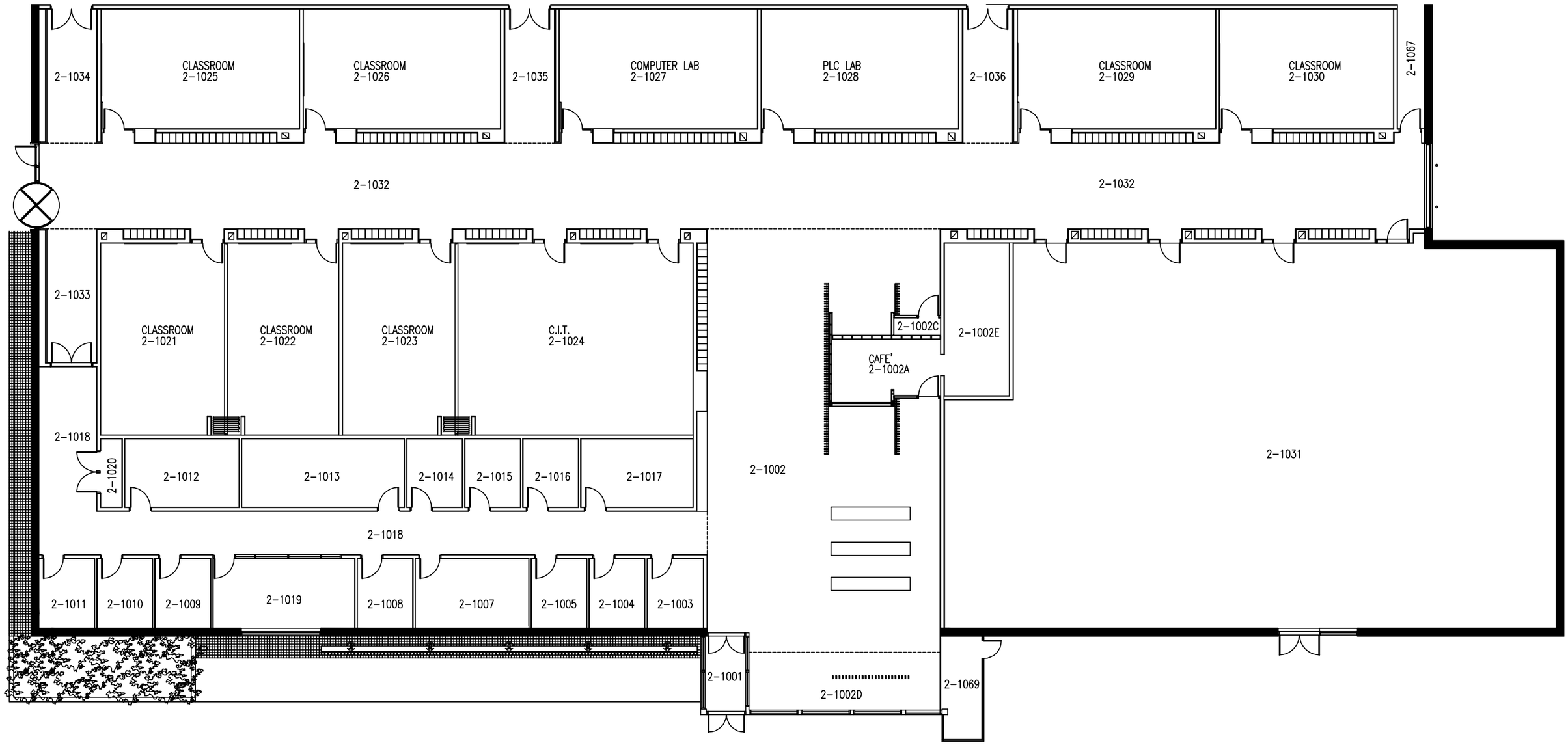


980 BLOCK – POWER ENGINEERING LEVEL 3
NTS

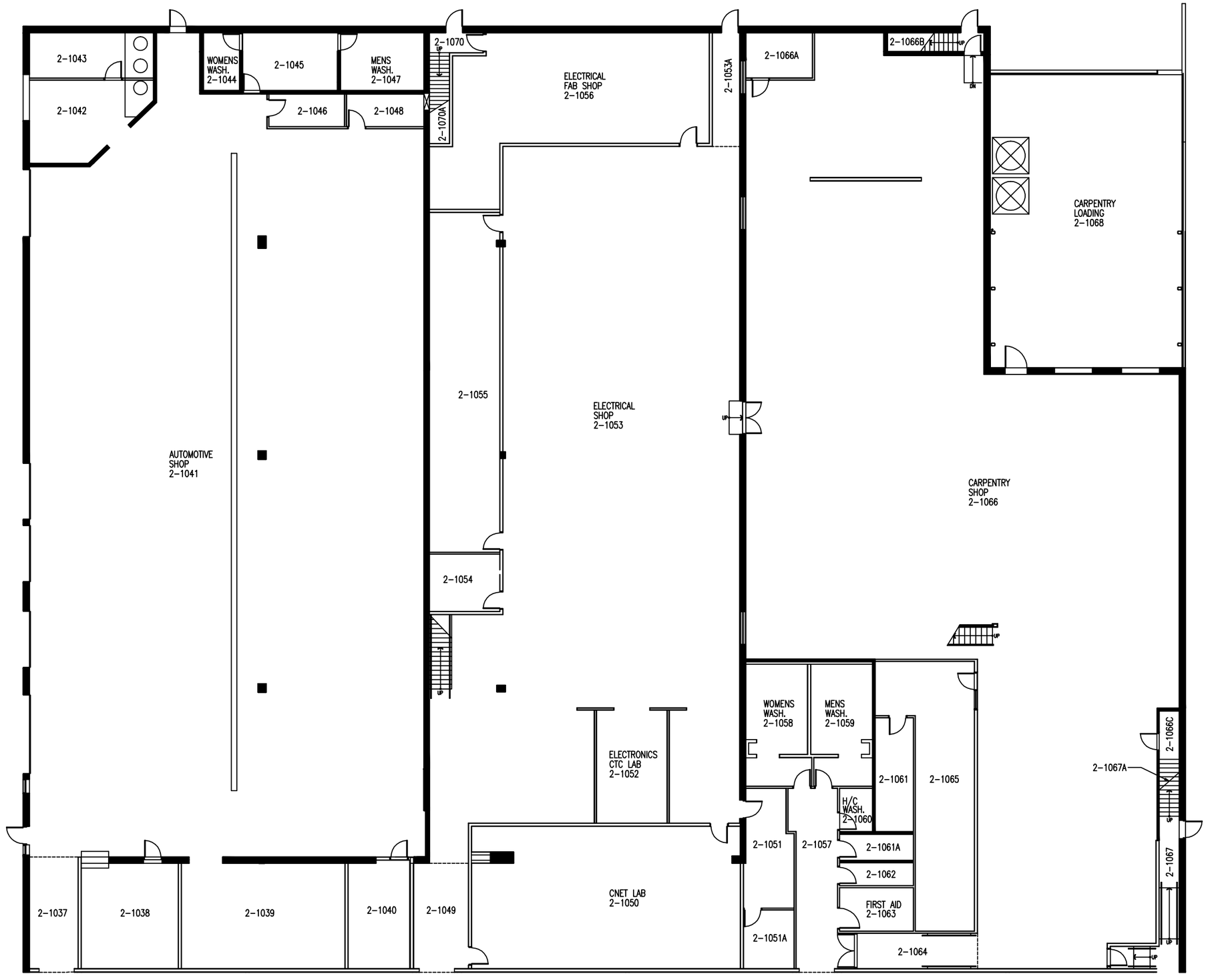
MAIN BUILDING - 900 BLOCKS

900 BLOCKS

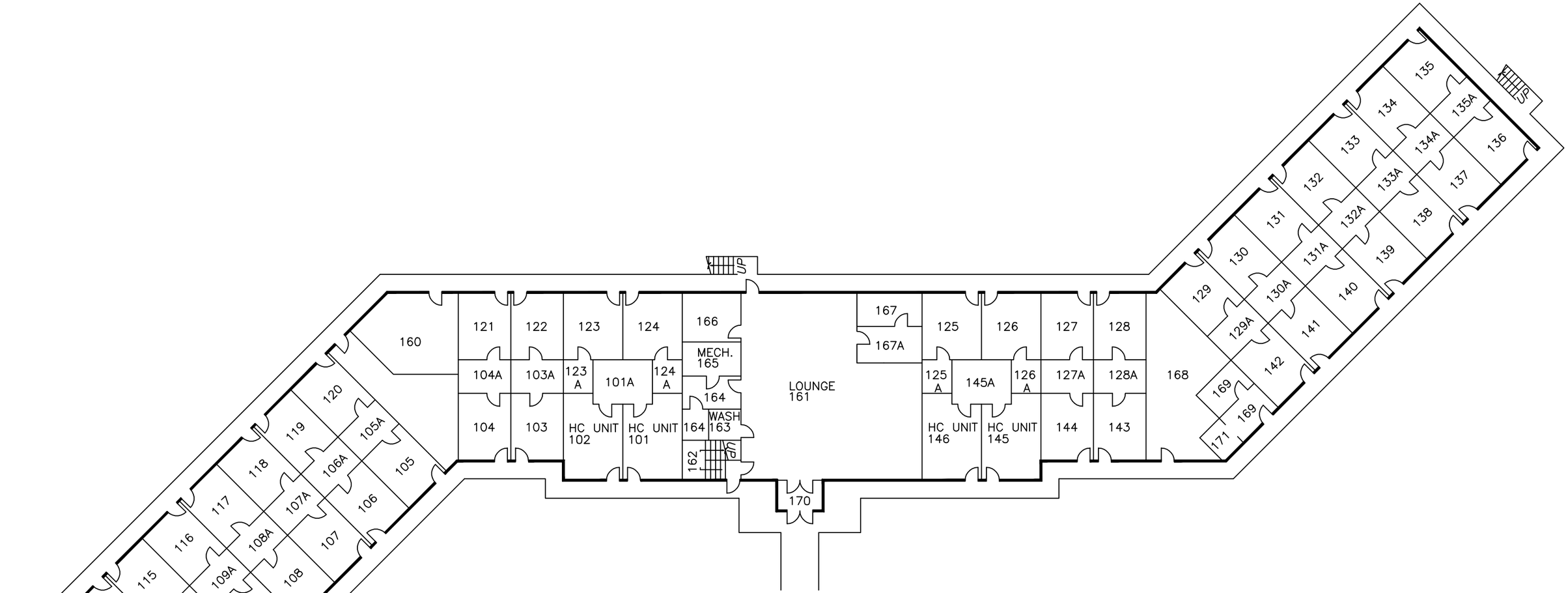
UPDATED: SEPTEMBER 10, 2008



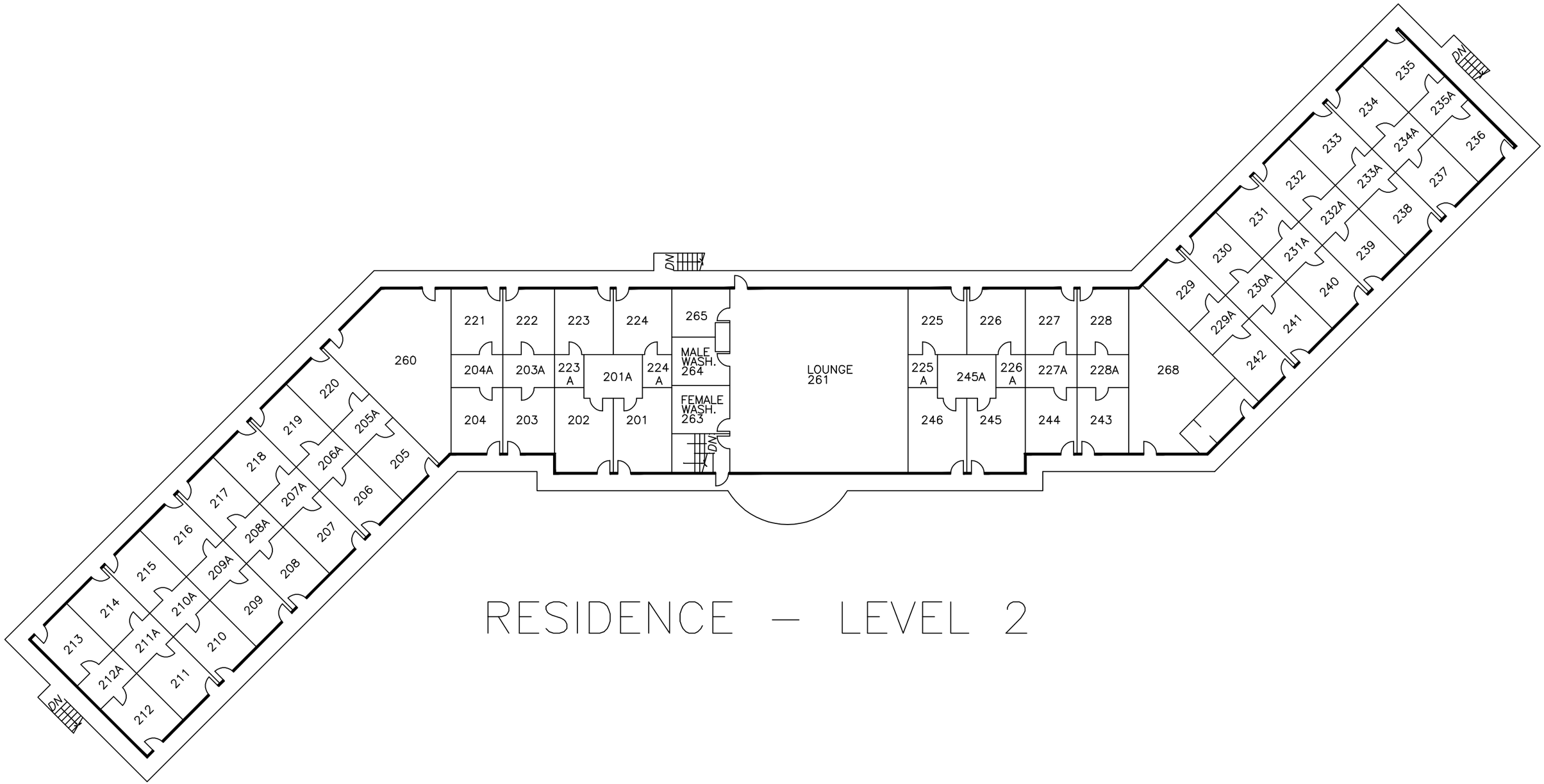
JOHN A BRINK - LEVEL 2 EAST



JOHN A BRINK – LEVEL 2 WEST



RESIDENCE – LEVEL 1



RESIDENCE – LEVEL 2