CUSTOMER SUMMARY PAGE

Customer Name:	BVSD – New Vista	Account Number(s):	53-3425930-8
Service Address:	700 20th St., Boulder, CO 80301		
Additional Service Address:		Additional Service Address:	
Customer Contact:	Ghita Carroll	Site Contact:	
Phone:	720-561-5181	Phone:	

Xcel Energy Rep:	Melanie Gavin	Energy Auditor:	Xiang (Shawn) Liu
Phone:	303-294-2359	Company:	Nexant, Inc.
Fax:		Phone:	303-998-2474

Building Type:	School	Peak Demand:	76 kW
Electric Service Provided by:	Xcel Energy	Gas Service Provided by:	Xcel (Transport)
Date of Site Visit:	Nov. 10, 2009	Square Footage:	76,805

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The suggestions in this Energy Assessment ("Assessment") are provided as a service to Xcel Energy customers and are based on a visual analysis of conditions observed at the time of the survey, information provided by the customer and from Xcel Energy, and costs based on the energy assessor's experience on similar projects. The performance guidelines provided in the Assessment are for informational purposes only and are not to be construed as a design document. Xcel Energy will not benefit in any way from a customer's decision to select a particular contractor or vendor to supply or install the products and measures suggested by the energy assessor.

Xcel Energy and the energy assessor do not guarantee that any specific level of energy or costs savings will result from implementing any energy conservation measures described in this Assessment. Xcel Energy and the energy assessor shall not, under any circumstances, be liable to the customer in the event that potential energy savings are not achieved.

Xcel Energy advises that customers check with their Xcel Energy Account Manager to determine the estimated value of their rebate (if any) and to verify that the equipment qualifies for Xcel Energy programs prior to implementation of any conservation measure. Some measures identified in this report may qualify for an Xcel Energy Custom Efficiency rebate. Custom Efficiency projects require pre-approval prior to purchase and installation. The customer is responsible for submitting project information to their Xcel Energy Account Manager to obtain pre-approval for Custom Efficiency projects and to determine the eligible custom rebate amount.

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Executive Summary

New Vista High School (i.e., Boulder Valley School District) requested that Xcel Energy perform an energy assessment to identify energy-related opportunities that show potential for improvement and investment options. This is the first step toward developing a long-term energy plan for New Vista High School. Nexant, Inc. visited the customer's business site on November 10, 2009 and met with Ghita Carroll and Bryan Elster. Table 1 below describes recommended energy conservation opportunities (ECOs), for which costs, savings, rebates, and paybacks are calculated. This report also describes strategic opportunities, which are additional energy saving projects that require further study before implementation.

Table 1: Summary of Energy Conservation Opportunities

	Energy Conservation Opportunity	Estimated Demand Savings (kW)	Estimated Energy Savings (kWh)	Estimated Thermal Savings (Therms)	Estimated Annual Cost Savings ($)	Estimated Capital Cost ($)	Simple Payback (Years)	Estimated Xcel Energy Incentives ($)*
Payback less than 2 years (low/no cost opportunities)								
1	Lighting Retrofits	3.9	12,801	-122	$948	$2,343	0.0	$2,343
2	Lighting Controls	0.0	1,959	-19	$145	$192	1.1	$30
3	Thermostats Reset and Temperature Setbacks	0.0	0	2,755	$3,479	$0	0.0	$0
4	Computer Energy Conservation	0.9	14,831	-85	$1,170	$1,484	1.3	$0
Retrofit opportunities payback 2 – 10+ years								
5	Vending Machine Control	0.0	1,200	0	$103	$300	2.9	$0
	Total	**4.8**	**30,791**	**2,530**	**$5,845**	**$4,319**	**0.3**	**$2,373**

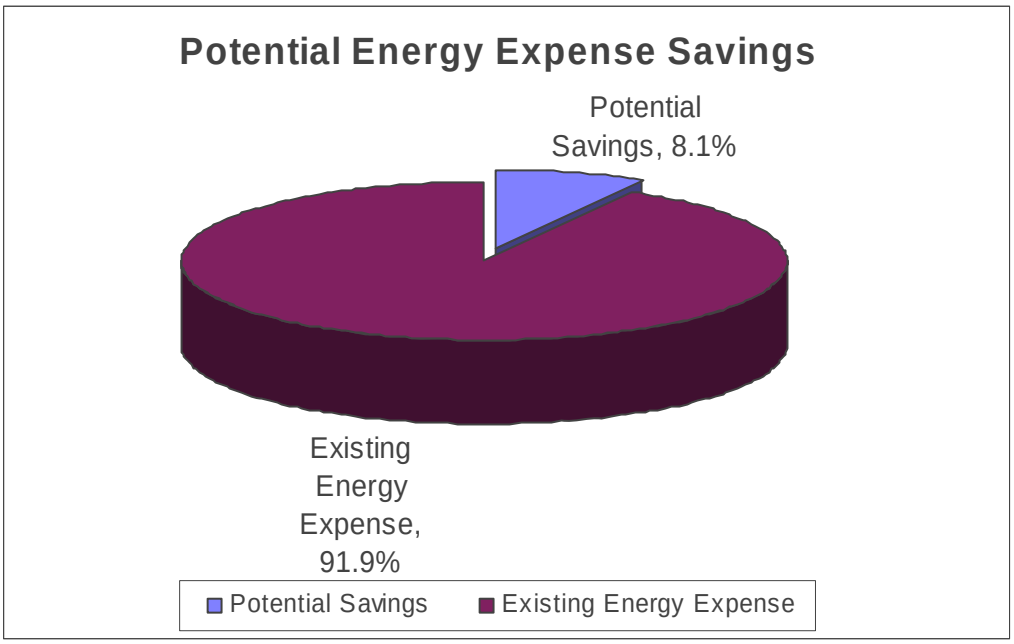
Strategic Opportunities Summary

Strategic opportunities are measures that are recommended, but could not be fully evaluated for this report. Further study is recommended before implementing these measures:

- Retro-commissioning
- RTU Operation and Maintenance
- Incorporating the RTU Control onto the DDC system
- Familiarization with Rebate Programs

Potential Energy Expense Savings

The following chart shows the potential percentage of this facility's annual energy expense that could be saved by implementing all of the Energy Conservation Opportunities recommended in this report.



Suggested Follow-up Action

1. Your Xcel Energy account representative, Melanie Gavin, will answer any questions regarding this Energy Assessment.
2. Xiang (Shawn) Liu at Nexant, Inc. will answer any questions regarding this Energy Assessment.

If you have any questions or need additional information, please do not hesitate to call.

Sincerely,
Xiang (Shawn) Liu
Project Engineer
Energy and Carbon Management
Nexant, Inc.
303-998-2474
1401 Walnut St., Suite 400
Boulder, CO 80302

Facility and Operations Description

New Vista High School is located at 700 20th St. in Boulder, Colorado. The 76,805 square foot building opened its doors in the Fall of 1993 and has had no major additions. The school provides education for approximately 310 students and has a fulltime staff of about 60. The school hours are generally 7:30 a.m. to 3 p.m. Monday through Friday. The school is used for other events, such as life long learning, adult learning at night and church events at weekends. The schedule of these events is assumed to be 5 p.m. to 10 p.m. Monday through Friday, and 8 a.m. to 1 p.m. Saturday and Sunday.

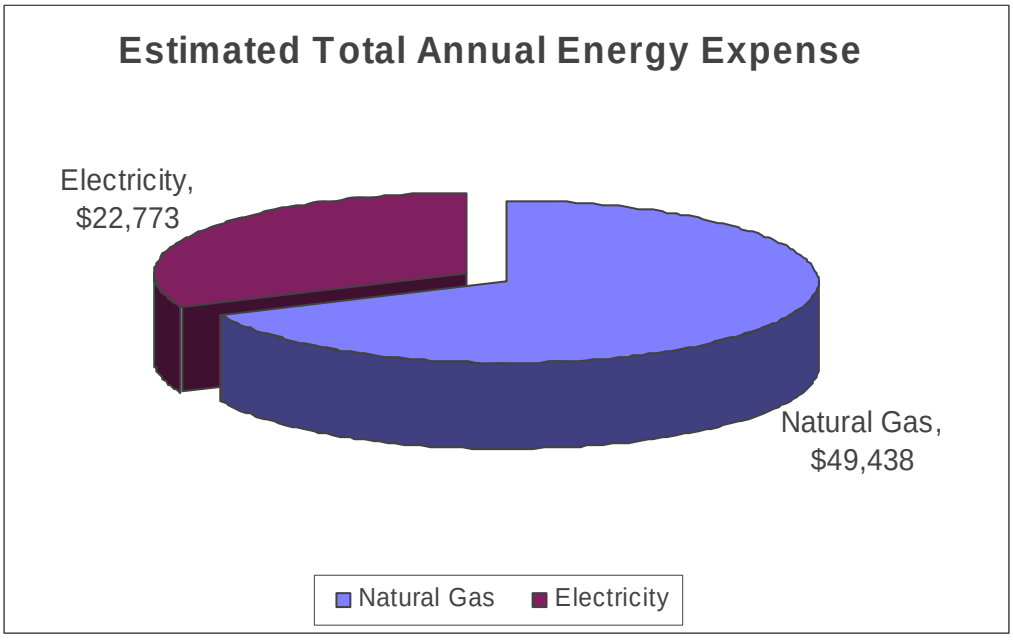
The building houses offices, classrooms, a gymnasium, an auditorium, and a library. One rooftop unit (RTU) with 7.5-ton DX cooling and electric heating, serves the offices. It is a single-zone unit, but handles multiple rooms with the thermostat in the principal's office. Unit ventilators (UVs) provide heating to the classrooms. The library, the gyms and the auditorium are served by heating and ventilation units (HVUs) with no mechanical cooling. Three gas fired steam boilers with a capacity of 2,167 lbs/hr each provides heating to all the UVs and HVUs, and was installed in ~1997. Summer night, outside air night purge is performed to cool the building envelope so the building can stay cool longer in the mornings, which makes it more comfortable for the occupants due to the lack of mechanical cooling. Mechanical cooling is not available in the classrooms, the library, the auditorium and the gym. The school has a direct digital control (DDC) system to control some of the HVAC systems. The DDC system enables the UVs, HVUs, exhaust fans, and boilers. The DDC systems also provide scheduling, nigh purge, and switchover between heating and cooling. The office RTU is not on the DDC system.

Domestic hot water (DHW) in the school is provided by natural gas water heaters. There is no kitchen or showers (that are used anymore) in the school.

Most lighting fixtures in the classrooms, the offices and the library were upgraded to T8 lighting in late 90's. The gym is lit by twenty nine (29) 250W metal halide fixtures. Most rooms are equipped with occupancy sensors. Lighting control is not on the DDC system. About 80 computers are used in the school. Other energy uses include 2 vending machines, office equipment, and miscellaneous classroom equipment.

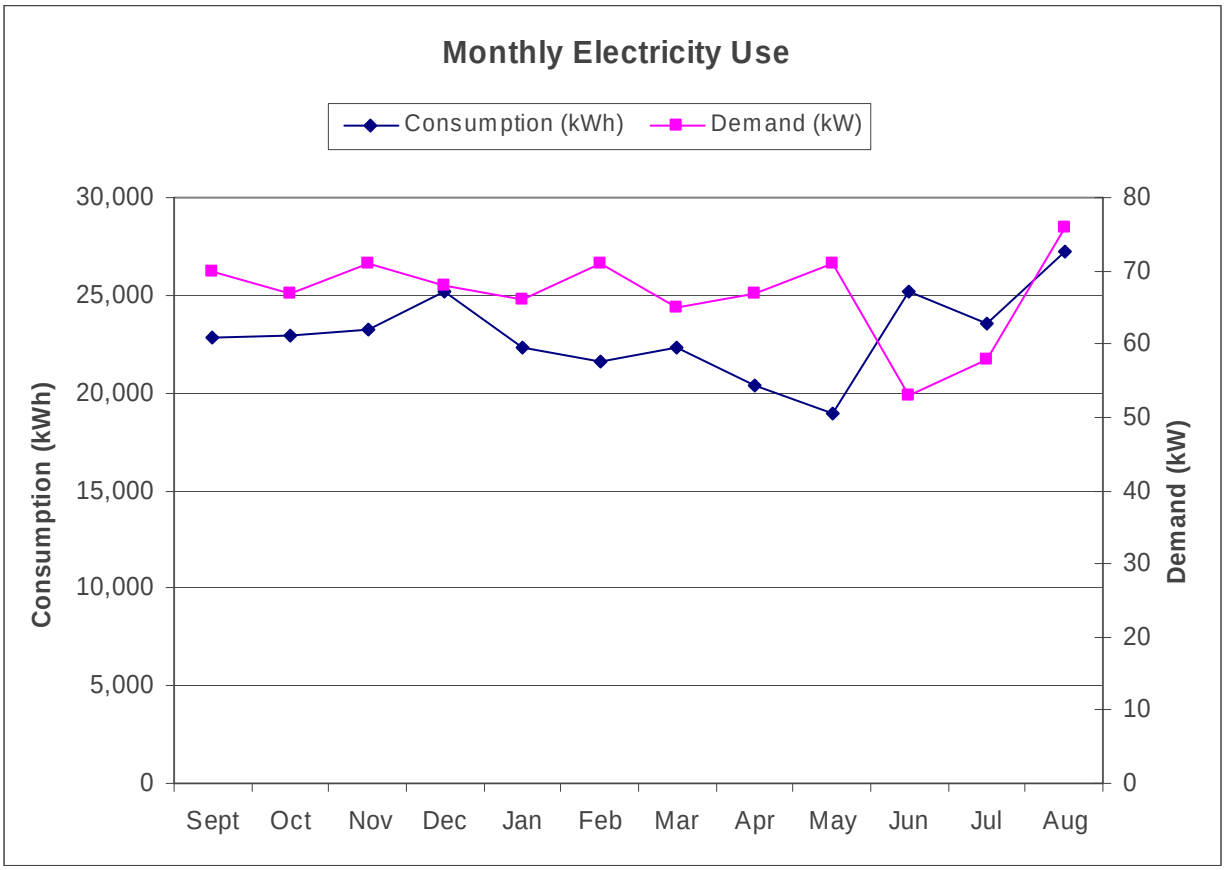
Energy Profile

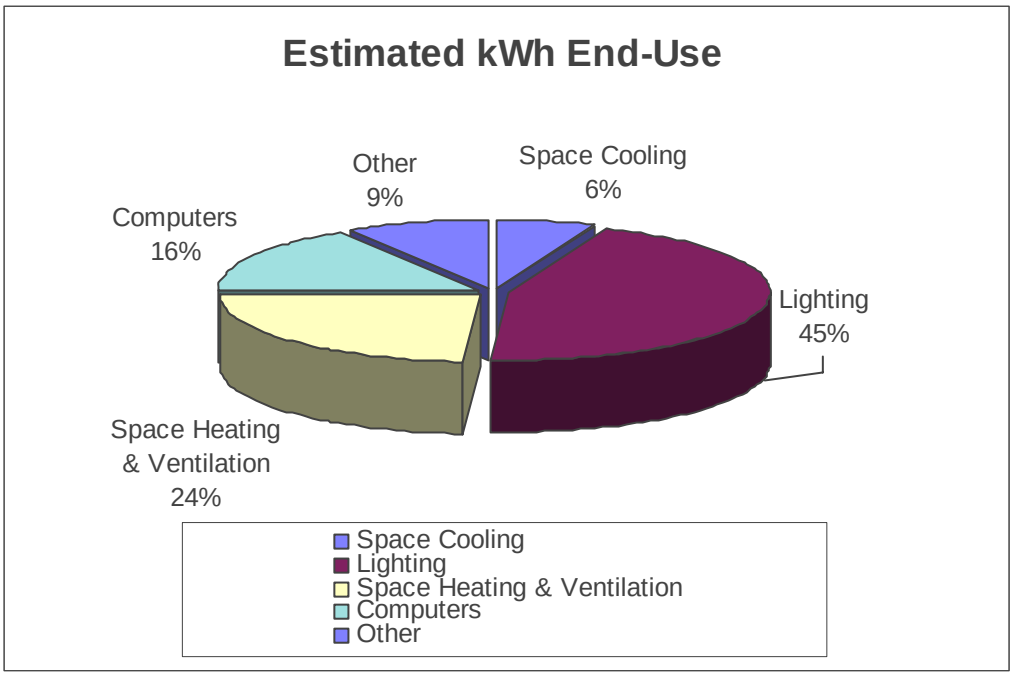
The following charts identify your electricity and natural gas usage.



One Year of Electricity Consumption – Sept. 2008 – Aug. 2009

Month	Days	Actual Demand	Billed Demand	Energy	Total Cost	Blended Cost/kWh	Load Factor
		kW	kW	kWh	$	$ / kWh	%
Sept	29	70	70	22,785	$2,196	$0.10	46.8%
Oct	31	67	67	22,944	$1,940	$0.08	46.0%
Nov	31	71	71	23,265	$2,013	$0.09	44.0%
Dec	34	68	68	25,220	$1,884	$0.07	45.5%
Jan	29	66	66	22,357	$1,665	$0.07	48.7%
Feb	29	71	71	21,644	$1,726	$0.08	43.8%
Mar	32	65	65	22,370	$1,682	$0.08	44.8%
Apr	29	67	67	20,364	$1,677	$0.08	43.7%
May	30	71	71	18,893	$1,758	$0.09	37.0%
Jun	32	53	53	25,166	$1,828	$0.07	61.8%
Jul	29	58	58	23,575	$1,966	$0.08	58.4%
Aug	30	76	76	27,252	$2,440	$0.09	49.8%
Total	**365**			**275,835**	**$22,773**		
Avg.						**$0.08**	**47.5%**

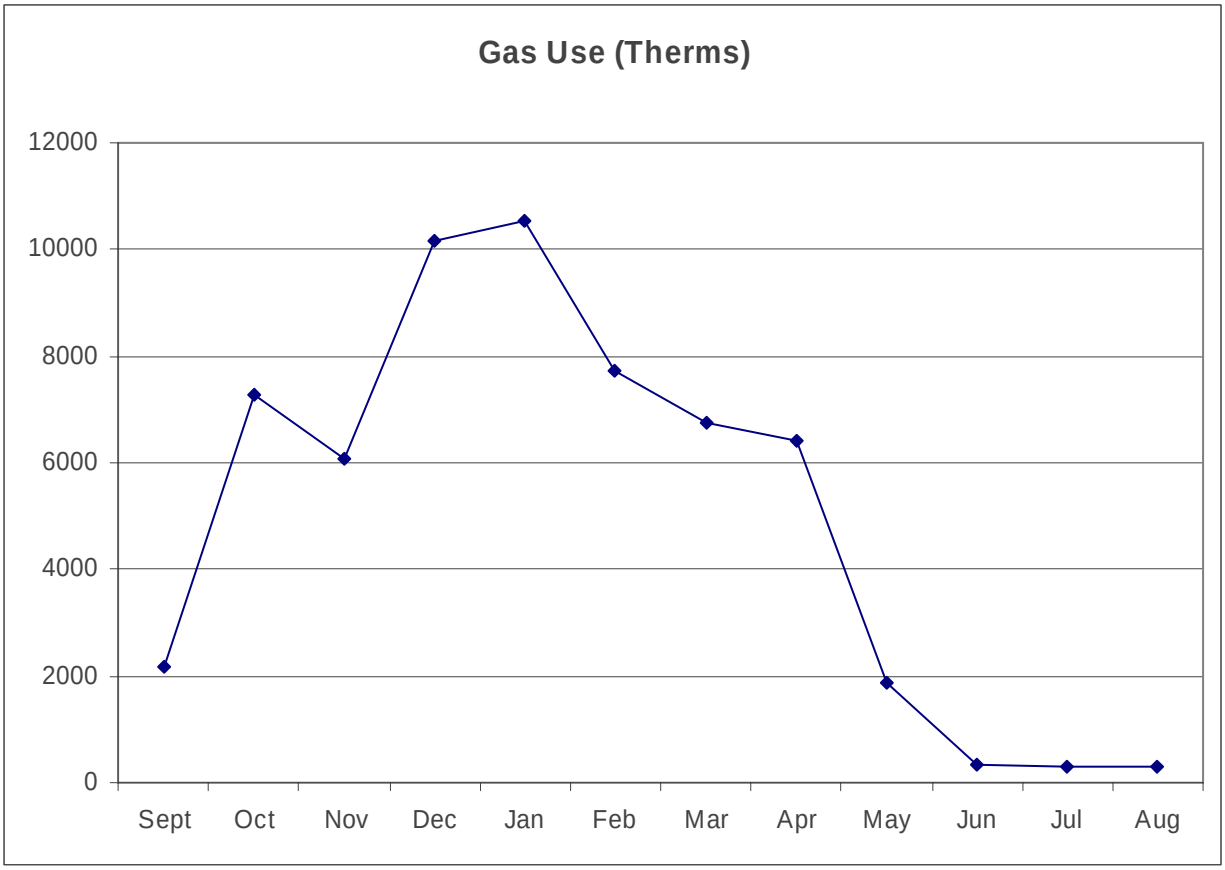


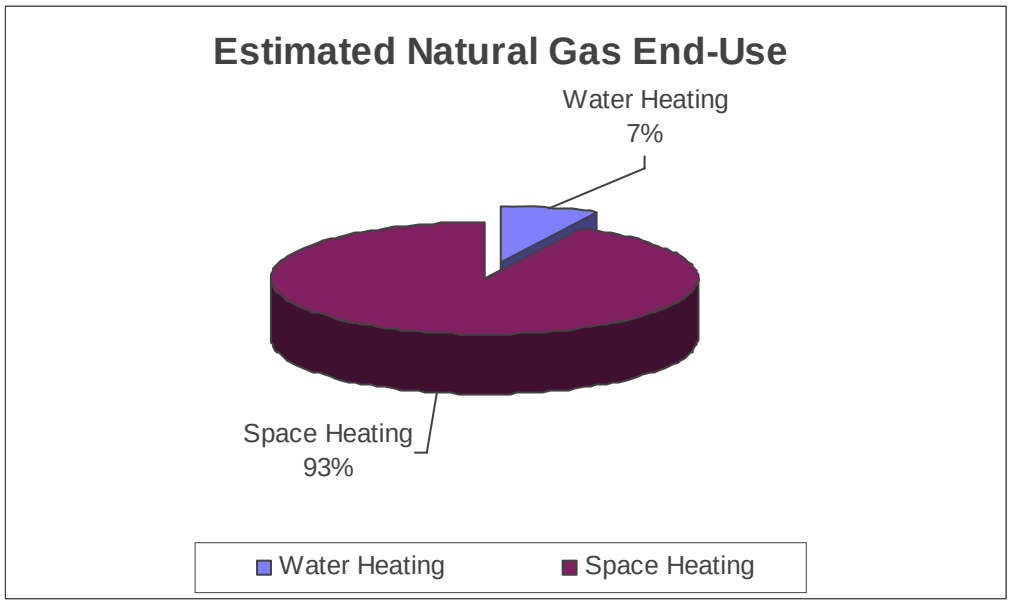


This chart is an estimate based upon data taken from the facility on the day of the audit, the utility bills and typical energy consumption of similar facilities.

One Year of Natural Gas Consumption - Sept. 2008 – Aug. 2009

Month	Days	Total Energy	Total Cost	Blended Cost/Therm
		Therms	$	$ / Therm
Sept	30	2160	$1,378	$0.64
Oct	29	7280	$4,553	$0.63
Nov	32	6070	$5,475	$0.90
Dec	30	10160	$8,437	$0.83
Jan	29	10520	$9,761	$0.93
Feb	32	7740	$6,263	$0.81
Mar	29	6740	$5,150	$0.76
Apr	29	6410	$4,303	$0.67
May	34	1870	$1,576	$0.84
Jun	31	330	$878	$2.66
Jul	31	310	$839	$2.71
Aug	29	310	$824	$2.66
Total	**365**	**59,900**	**$49,438**	
Avg.				**$8.25**





This chart is an estimate based upon data taken from the facility on the day of the audit, the utility bills and typical energy consumption of similar facilities.

Energy Star Benchmarking Results

EnergyStar benchmarking was not requested, however, the overall energy intensity was calculated by hand to compare this facility's energy usage to similar facilities. The energy intensity of New Vista H.S. is 90.2 kBtu/ft^2 which is higher than the national average of 83.1 kBtu/ft^2 for educational facilities. This difference is most likely attributable to the extensive usage of the facility for other events at night and weekends.

Energy Conservation Opportunity Analysis

Table 2 below describes recommended energy conservation opportunities (ECO), for which costs, savings, rebates, and paybacks are calculated.

Table 2: Summary of Energy Conservation Opportunities

	Energy Conservation Opportunity	Estimated Demand Savings (kW)	Estimated Energy Savings (kWh)	Estimated Thermal Savings (Therms)	Estimated Annual Cost Savings ($)	Estimated Capital Cost ($)	Simple Payback (Years)	Estimated Xcel Energy Incentives ($)*
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Opportunity 1 – Lighting Retrofit

Most of the lighting in New Vista H.S. is energy efficient; however, there is still an opportunity for lighting upgrades. The school's gyms are illuminated with 250-Watt metal halide lamps. These areas can be retrofit with four-lamp, four-foot fixtures with 32-Watt T8 lamps and premium efficiency electronic ballasts. The retrofit will require the replacement of the entire fixture. The retrofits will maintain or improve the existing lighting levels and quality in the facility.

Xcel Energy currently offers rebates for upgrading lighting systems through its Lighting Efficiency program. Replacing the 250-Watt metal halides with a four-lamp T8 system is eligible for a rebate of $85 per fixture. The scope of the proposed lighting retrofit, including potential rebates from Xcel Energy is shown in Table 3.

Table 3. Scope of Lighting Retrofit

Qty	Existing Fixture	Existing Lamp Wattage	Existing Ballast Type	Existing Total Input Wattage	Proposed Fixture	Proposed Lamp Wattage	Proposed Ballast Type	Proposed Total Input Wattage	Xcel Energy Rebate
29	1-lamp metal halide	250	Magnetic	295	4-lamp, 4-ft fluorescent	32	Electronic	112	$85

The summary of the costs, savings, rebates, and paybacks for this ECO are given in Table 2. The assumptions that were included in this analysis include:

- 3,822 annual operating hours
- Interactive heating savings were included

Opportunity 2 – Lighting Controls

The gym has twelve skylights. It was noted during the walk-through that lights in the gym were left on even though there was enough sunlight. It is recommended photo sensors be installed to turn off lights in the gym when the sunlight is enough.

Xcel Energy offers a prescriptive rebate of $30 per photocell. These rebates are available through Xcel Energy's Lighting Efficiency program. Table 4 below shows the spaces in each suite where occupancy sensors are recommended.

Table 4. Scope of Lighting Controls ECO[1]

Qty	Control Type	Location Type	Controlled Fixtures	Fixtures per Room
1	Photocell	Gym	4-lamp, 4-foot, 32-Watt T8	29

[1] This measure is based on the previous opportunity.

The summary of the costs, savings, rebates, and paybacks for this ECO are given in Table 2. The assumptions that were included in this analysis are listed below:

- 30% reduction annual operating hours
- Interactive heating savings were included

Opportunity 3 –Thermostats Reset and Temperature Setbacks

It was observed during the audit that the offices have a heating temperature setpoint of 74°F for occupied hours. The temperature setpoints programmed into the schedule have a significant effect on how much energy is used for heating and cooling. Occupied temperature setpoints of 68°F in the wintertime and 75°F in the summertime are recommended.

Temperature setbacks are a great way to reduce energy losses through the building envelope during unoccupied hours. Typical unoccupied temperature setbacks are 60°F in the wintertime and 85°F in the summertime. It is also recommended the temperature setpoint of the gym be setback when it's not in use during the weekdays.

The recommended occupied and unoccupied setpoint and setback temperatures mentioned above should be comfortable for most people who are dressed appropriately for the season, as researched by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE Standard 55 – Thermal Environmental Conditions for human occupancy). These temperatures are intended to balance comfort and energy conservation.

Opportunity 4 – Computer Energy Conservation

Computers are large energy users in buildings today. There are many things that can be done to reduce the energy consumption of computers during the day. Enabling the "Turn Off Monitor", "Sleep" and "Hibernate" functions during the day and shutting down the computer at night are simple ways to reduce computer energy consumption. A screen saver does not save energy because the monitor is still operating.

If it is difficult to utilize these computer settings throughout the office, there are also network software programs that can monitor and control the energy usage of all networked computers. These programs typically have a low cost and a short payback. Implementing the network software may be eligible for an Xcel rebate through the Custom Efficiency Program.

Another energy saving measure is to replace cathode ray tube (CRT) monitors with liquid crystal display (LCD) monitors. CRT monitors use anywhere from 100-120 watts while LCD monitors use 30-45 watts.

Opportunity 5 – Vending Machine Controls

Vending machines are typically operational for 24 hours a day, regardless of the presence of any nearby occupants. Vending machine controllers act like occupancy sensors which cycle off the vending machine when the nearby space is unoccupied. Energy savings are seen from shutting off lights and reduced usage of the compressor. Vending machine controls cycle the compressor on periodically, even in the absence of employees, to ensure that the beverages remain cool. Maintenance savings are also achievable through reduced running time of vending machine components.

The summary of the costs, savings, rebates, and paybacks for this ECO are given in Table 2. The assumptions that were included in this analysis are listed below:

- Vending machines:
  - Cooled: 2

Strategic Opportunity Analysis

In addition to the Energy Conservation Opportunities described and evaluated in the previous section, there were also other energy related measures that were identified during our audit. These energy measures were not fully evaluated as Energy Conservation Opportunities for one of several reasons: 1) they are outside the scope of a walk-through analysis, 2) there was not enough information to estimate or evaluate the recommendations 3) the measures may not be desirable presently, but should be considered in the future, 4) the measures are already completely or partially being done and should continue as regular practice. These recommended measures should be considered as part of the facility's future energy efficiency plan.

Opportunity 6 – Retro-commissioning

Retro-commissioning is an economical way to "tune-up" the HVAC system at New Vista H.S., both by making easy on-site adjustments of the current equipment and suggesting other larger capital improvements that will help save energy.

Much of the equipment at New Vista H.S. is original to the building and is likely operating at less than optimal performance. Retro-commissioning could help determine if equipment is operating as it was originally designed. It was reported during the walk-through that the pneumatic control system has a number of air leaks. Retro-commissioning will identify faults in the control system and propose a plan to repair and improve the system. In addition to measuring and verifying the mechanical operation of the

equipment, retro-commissioning is highly recommended to assess how well the current set-points and schedules match the actual needs of the building.

Since this building does not have cooling in most of it, retro-commissioning would focus on heating and ventilation of the building, and would verify that:

1) Boilers are operating correctly.
2) Ventilation requirements are being met.
3) Valves and pumps are operating correctly.
4) Fans are operating correctly.
5) Controls are operating correctly.
6) Equipment schedules are appropriate.
7) Documentation of the system is current.

Boiler operation: The boilers are original equipment and are now nearly 12 years old. They need to be checked to verify that they are still operating correctly and to determine the potential savings from upgrading the boilers.

Ventilation requirements: The building needs to be checked to verify that sufficient fresh air is provided in order to maintain indoor air quality. A building that performed well at one time may begin to perform poorly as it ages and as rooms are re-configured and used for different purposes.

Valves and pumps: Valves and pumps tend to malfunction as they age, affecting fluid flow and building occupant comfort. It was noted during the walk-thru that a lot of the classrooms become too hot during the winter. This is a classic example of a RCx issue where the valves are most likely not functioning, causing the spaces to be overheated, resulting in excess energy use. If these components do not function optimally they can waste a significant amount of energy overtime.

Fans and dampers: Fans and dampers need to be checked to ensure they are providing adequate air flow when it is needed, but not permitting conditioned air to escape unnecessarily. The fan motors should also be checked to see if upgrades to more efficient motors should be considered.

Controls: Retro-commissioning will identify problems with the current control system and the proposed repairs will result in a smoothly functioning system requiring reduced labor from facility staff.

Equipment schedules determine when equipment should and should not be operating. Verifying that the schedules and set-points will ensure that the heating system only operates when needed. A good, low cost measure, is to install override timers on the HVAC systems, allowing a temporary override control for unscheduled events, without programming the building to run excessively.

System documentation: A retro-commissioning project will result in documentation of the system and ensure that the knowledge gained during the project is then passed on to on-site personnel.

In addition to the obvious cost savings from energy efficiency improvements (typically 5-20%), retro-commissioning may also result in improvements in comfort, longer equipment life, and reduced staff labor. Retro-commissioning the HVAC system may qualify for a rebate from Xcel Energy's Recommissioning Program. Xcel provides up to 75% of the cost of a recommissioning study, up to $25,000.

<u>Opportunity 7 – RTU Operation and Maintenance</u>

Making sure that the RTU is operating properly can help reduce energy costs during the year. Here is a compilation of good practices that can be done to ensure efficient use.

i. Utilize air handling unit economizing controls: Economizers mix indoor and outdoor air such that the least amount of energy is needed to heat and cool the building. Have your mechanical contractor check the HVAC economizer settings to make sure they have proper function and settings.
ii. Check lock out on cooling equipment compressors in the winter and make sure the compressors can be locked out when the outside air temperature is under certain threshold, for example 55°F.
iii. Cleaning condenser coil fins: Cleaning these fins will ensure more efficient heat transfer and thus more efficient operation of the unit.

iv. Clean and replace air handling filters: This will ensure that the units are expounding the least amount of energy to supply air to the system.

v. Check lockout on the electric heaters and make sure they can be locked out when the temperature is over certain threshold, for example 70°F. It is a good idea to make sure these lockouts are functioning at the appropriate temperatures.

Opportunity 8 – Incorporating the RTU Control onto the DDC system

RTU currently is not controlled by the DDC system. We were told in the audit that the control wires are ready to be connected to the DDC system. It is recommended the control be incorporated into the DDC so optimized scheduling, outside air ratio control, air-side economizing and other RTU energy optimization control algorithms can be programmed and applied. Since the wires are all ready, the costs of this opportunity is minized.

Opportunity 9 – Familiarization with Rebate Programs

New Vista High School has a large amount of energy using equipment for various purposes. Due to the natural lifecycle and turnover of equipment, as well as the expansion and development of new systems, new equipment is installed periodically. It is recommended that staff at New Vista High School familiarize themselves with all of the rebate programs available to them through Xcel Energy. These rebate programs are designed to reduce the capital cost required to install high-efficiency equipment, reduce paybacks, and make energy-efficiency a more attractive proposition. Additionally, changes in market forces rebate programs to constantly shift their requirements and incentive levels. It is recommended that New Vista High School keep up to date with current program offerings so that economic and purchasing decisions can be made in an educated manner. More information about programs offered by Xcel Energy can be found on their website at:
http://www.xcelenergy.com/SiteCollectionDocuments/docs/ConservationProgramsSummariesCO.pdf
Applications can be downloaded by selecting Colorado from the pull down menu and clicking on the appropriate program on the left on the following web page:
http://www.xcelenergy.com/Business/Programs_Resources

Payment Options

In addition to the energy conservation measures we recommend in this energy assessment, Xcel Energy offers cash rebates and a variety of payment and billing programs to better manage your cash flow. *BillWise from Xcel Energy*[SM] programs include payment options like:

- Auto Pay – a simple and convenient way to have monthly energy payment automatically withdrawn from a bank account on the day it is due.
- EFT (Electronic Funds Transfer) – allows simplification of the bill paying process and improving cash management by directly transferring money from your account to Xcel Energy.
- Pay By Phone – allows quick and secure transfer of energy payment from a bank account directly to Xcel Energy, right over the phone, at no cost.
- Credit/Debit Cards Payments – allows payment of energy bill online or by phone using a credit or debit card for a small fee.

The Billing options include – EDI (Electronic Data Interchange) which allows receipt of your energy bill electronically the day after the billing cycle is complete. More information on all these programs can be obtained by discussing eligibility requirements with your Xcel Energy representative. You also can call the Business Solution Center at 1-800-481-4700 or visit us at xcelenergy.com for more information about qualifying for cash rebates, discount rates or billing/payment options.

Glossary

The following definitions will help you understand the information and how it relates to your energy bills.

Actual Demand is the highest average 15 minutes of demand over a billing period.

Billed Demand is the actual demand plus the adjusted demand for power factor correction.

A CCF is 100 cubic feet of natural gas. A therm is a unit of energy equivalent to 100,000 BTU. For the purposes of measuring energy use, a therm and a CCF of natural gas are equivalent.

Load Factor is a measure of efficiency. Load factor is the ratio of average load in kilowatt supplied during a designated period to the peak load occurring that period.

$$\text{Load Factor} = \frac{\text{kWh supplied in a period}}{\text{Peak kW in a period X Hours in a Period}}$$

An Energy Conservation Opportunity is an energy saving measure that was evaluated with estimated costs, savings, rebates, and simple payback.

Strategic Opportunities are recommended measures that were not fully evaluated for this report.