

Annual Report 2014 – 2024: Lighting and Operation Changes

- Ice rinks were prepared and maintained at McKenna, Keyes and Ostrander parks with timers used to control the lighting for the rinks.
- Following the completion of the Public Safety Building (PSB) decommissioning project in 2013, staff focused on improving the operational efficiencies of the building's HVAC automation system by utilizing Setpoint Systems Corporation in managing the PSB's HVAC automation software,
 - o The Public Safety building has seen a reduction of \$33,217 to their annual electric bill as compared to 2011. This is the result of the recommissioning in 2013 and changes made to the building automation system. (Update from 2016)
- In 2014, two Top Valu buildings had lighting fixtures in the cooler doors, the cash register area and customer entrances were replaced with more efficient LED fixtures; all three liquor stores had energy audits performed by Xcel Energy.
- In 2015, all the exterior 150 watt incandescent wall pack lights at the Public Safety building were replaced with 19 watt LED wall packs.
- In addition to the various lighting replacements and retrofits already completed in prior years, in 2015 improved vestibule lighting was installed at both Top Valu I and II, and additional illuminated signage was installed at Top Valu II. Also in 2015, a sophisticated energy management system was installed at all three stores, subsidized with rebates from Xcel Energy.
 - o This system has less than a two-year investment payback period, primarily due to more energy-efficient operation of the beer coolers.
 - o ECM motors and fan controls were installed at both Top Valu liquor stores and have generated a reduction in the electric bills of \$1,300 to \$2,000 per month.
 - Task: Equipment improvements should be included in B3 so the energy savings can be calculated;
 - o Two stores which have reduced electric bills by \$1,300 - \$2,000 per month since 2015; this is an estimated savings of \$156,000 - \$240,000 over the last decade or roughly \$13,000 - \$20,000 per year.
- In 2016, Top Valu I store qualified for a state incentive program to install solar energy panels on its roof and began purchasing a portion of its electricity from the solar vendor that installed the panels. After a period of years, ownership of the panels will revert to the City, and then the electricity from the panels will be available to the City for free.
 - o Task: Identify how much solar energy is purchased per year?
- In 2016, Public Works Department and a vendor implemented a new HVAC and lighting control system. The new library officially opened June 25, 2016 and was added to our Delta Controls building automation system and Pacom security system.
- In 2017, a subscription for Solar Gardens was approved by the City Council. It is calculated that adding Solar Gardens to our solar power at four buildings may save an additional \$600,000 in electrical costs over a 25-year period. We are purchasing renewable energy from the following gardens:
 - o Johnson Garden 1 - 8,055 kWh
 - o Johnson Garden 2 - 8,055 kWh
 - o Scandia Garden - 22,292 kWh
- In 2018, the library contains design features that help minimize the building's impact on the environment, such as day lighting, sun-sensitive LED lighting and energy saving underfloor air distribution systems.

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- In 2019, the City increased its subscriptions to additional solar gardens that will run online in 2020 or early 2021.
- In 2020, updates were made to the access control software to remotely lock buildings.
- In 2021, interior improvements to Top Valu #3 included new flooring and finishes to match the other two stores, a dropped ceiling with LED lighting, and the replacement and relocation of the checkout counters. Top Valu 1 and 2 retrofitted the show floor 2x2 troffers to LED fixtures. A point-of-use water heater in the library workroom was replaced and building systems automation was adjusted in the library to maximize energy efficiency. Interior lights were retrofitted to LED fixtures at the Public Safety building. More renewable energy was purchased, as more solar garden subscriptions came online.
- In 2022, the ventilation component of the HVAC system was retrofitted with external brackets to accept non-specified filters; the first filter change since building construction of the library in 2016. Best practice is to replace system filters every five to seven years. Facility Maintenance department worked with the liquor operations manager on the second phase of LED retrofits for both Top Valu 1 and 2 including LED lights around the show floor and additional lights at the checkout at Top Valu 1. An EV charger was installed at Public Works for two new EV vehicles. New LED bollards were installed in the front of the Public Safety building. More renewable energy was purchased as more solar garden subscriptions came online.
 - Increased EV charging capacity; solar garden subscriptions; lighting efficiency

Purchase Requisition

5-19-10

Date: 5/12/2010 Purchase from: AID ELECTRIC SERVICE INC

PurchReq ID: 6063

Dept: Public Works 1622 93RD LN NE

PO #: 48974

Requested by: Kevin Hansen

Inv #:

Purpose: MSC Improvement

BLAINE, MN 55449

Vendor code: 003890

Qty	Unit	Description	Unit cost	Amount
22	ea	overhead fixture	237.61	5227.42
10	ea	overhead fixture w/senso	332.66	3326.60
1	ea	Xcel rebate	-4099.72	-4099.72

SUBTOTAL: \$4,454.30

Fund	Dept	Obj	Amount
701	49950	4020	4454.30

TOTAL: \$4,454.30

Notes: Retro-fit lighting in MSC basement to save energy and reduce electric cost. Replaced 32 lights.

Tax rate: 0.000%

SALES TAX: \$0.00**TOTAL: \$4,454.30****FOR FINANCE DEPT USE ONLY**Approval Code: WRFDepartment Code: 8**APPROVALS**FINANCE:
Line Item Balance:COUNCIL (if required):
Date approved:Div./Dept.Head: Kevin HansenDate: 5/12/10City Manager: [Signature]

5-19-10

AID ELECTRIC CORPORATION

1622 93rd Lane NE

Blaine MN 55449

Phone: 763-571-7267 Fax: 763-571-4735

INVOICE

34112

INVOICE NUMBER

CUSTOMER

CITY OF COLUMBIA HEIGHTS
637 38TH AVENUE NE
COLUMBIA HTS MN 55421

DATE

01/29/2010

REFERENCE

PO# 48974

TELEPHONE

763-706-3700

ORDER NUMBER 7358A-1

CUST NO 101208

COLPW

Sold by BK

JOB LOCATION

PUBLIC WORKS BLDG
637 38TH AVE NE

JOB DETAILS

LIGHTING RETRO-FIT IN LOWER LEVEL
SUM OF \$9181.00

NOW ACCEPTING VISA AND MASTERCARD (CIRCLE ONE)

ACCT# EXP DATE

FINAL BILLING - DETAIL

OVERHEAD FIXTURES QTY: 22 @ \$237.61	5,227.42
TBW 632EB2-8	

OVERHEAD FIXTURE W/SENSOR QTY: 10 @ \$332.66	3,326.60
TBW 632EB4PS-8-MD	

XCEL REBATE QTY: 1 @ (\$4099.74)	-4,099.74
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Page 1

PAY THIS
AMOUNT ►

\$

4,454.28

AID ELECTRIC CORPORATION

1622 93rd Lane NE

Blaine MN 55449

CUSTOMER:
CUST. NO.

CITY OF COLUMBIA HEIGHTS

101208

Inv #: 34846

DATE:

01/29/2010

PAY THIS
AMOUNT ►

\$

4,454.28

TERMS 10 DAYS NET 30

LATE FEE IS 18% ANNUALLY

PLEASE DETACH THIS PORTION & RETURN WITH YOUR REMITTANCE.



One-Stop Efficiency Shop
Building Energy Efficiency Program

Lighting System Analysis

Cost Saving Recommendations

Customer Report

September 23, 2009

Property Address:

Columbia HTS - Public Works-Lower Level

637 38th Ave NE

Columbia Heights, MN 55421

Prepared for:

Thomas, Barb

Columbia HTS - Public Works

637 38th Ave NE

Columbia Heights, MN 55421

Ph: (763) 706-3700



Center for
Energy and
Environment
www.mncee.org

Prepared by Lighting Specialist:

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Program Coordinator:

- Audits
- Financing
- Contractors
- Rebates

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212 3rd Avenue North, Suite 560
Minneapolis, Minnesota 55401

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E-mail: kfunk@mncee.org

One-Stop Efficiency Shop

Summary of Recommended Lighting Upgrades

Lighting Upgrades		Estimated Costs	Estimated Annual Savings	Payback
Total Installed Cost	<i>Before rebate</i>	\$9,181.00		
One-Stop Efficiency Shop Rebate*		\$4,099.72		
Your Final Cost	<i>After rebate</i>	\$5,081.28	\$2,145.68 ^(a)	2.4 years
⇒ Rebate equals 45% of installed cost. (Including special orders)				
*This offer is only valid for a period of 45 days. The project costs are based on current equipment pricing, utility rebate levels and customer eligibility requirements. After this offer's expiration date of 11/07/2009 you must request pre-approval and an updated rebate offer from the One-Stop program before starting the job.				

Xcel Energy Financing Option				
Estimated monthly savings			\$178.81 ^(a)	
Monthly loan payments at 3.9% for 31 month term			\$180.75 ^(b)	2.6 years
(b) Estimate based on a loan amount of \$5,281.28, including a \$200 loan processing fee. The loan term has a maximum of 5 years, with monthly payments not less than the estimated monthly savings. Final terms and conditions set by bank upon loan approval.				(Including Xcel Loan Financing Charges)

Utility Cost Analysis	Demand (kW)	Energy (kWh)	Annual Cost	CO2 (lbs) *
Existing Lights	14.528	34,083	\$3,611.68	57,941
New Lights	5.897	13,834	\$1,466.00	23,518
Estimated Savings	8.631	20,248	\$2,145.68 ^(a)	34,422 *

* How do CO2 emissions affect me and my business? ¶ Rising concentrations of greenhouse gasses (GHG) produce an increase in the average surface temperature of the Earth over time. Rising temperatures produce changes in precipitation patterns, storm severity, and sea level commonly referred to as "climate change." ¶ Carbon dioxide (CO2), methane, nitrous oxide and four groups of fluorinated gases (sulfur hexafluoride, HFCs, PFCs and CFCs) are the major GHG. In the U.S., GHG emissions come primarily from the combustion of fossil fuels in energy use. CO2 emissions from coal-fired electricity generation comprise nearly 80 percent of the total CO2 emissions produced by the generation of electricity in the U.S. ¶ Installing energy-efficient lighting and implementing other conservation measures that reduce electric energy use significantly reduces GHG emissions and mitigates global climate change. Read more at: www.eia.doe.gov or www.epa.gov

(a) Savings estimates are based on standard engineering calculations and are NOT guaranteed. Your actual savings may be higher or lower depending on various factors, including how you operate your lights and other electric equipment in your building.
Electric Utility Rates = \$0.0585/kWh and \$9.28/kWh.

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One-Stop Efficiency Shop
Recommended Lighting Projects

Recommended Lighting System Upgrades			Schedule Name & Hours/year of Operation	Installed Cost (Without Rebate)	Estimated Annual Savings	Selected
Area A: Lower Level						
Project: #1			Operating Hours 2,346 hrs/yr	\$9,181.00 Incl Special Order	\$2,145.68	<input checked="" type="checkbox"/>
Qty	Watts	EXISTING Luminaire	Qty	Watts	NEW Luminaire	
32	454	MV 0400W STD1 1L	22	220	ST8 4' 36W 6ELC3 IS (HiPer) 6L-NewFix	
			10	151	T8 4' 32E4-4L/HLO New Fixture - sensor	
Totals (Including special orders)				\$9,181.00	\$2,145.68	

One-Stop Efficiency Shop Customer Participation Agreement

I, the undersigned, agree that to the best of my knowledge the lighting schedule below accurately describes how the lights are operated at the facility listed in this document. I understand that the energy or cost savings reflected in this analysis are estimates, and that Center for Energy and Environment (CEE) and Xcel Energy do not guarantee that a specific level of energy or cost savings will result from the implementation of energy conservation measures or the use of products funded under this program. I also give CEE permission to submit, on my behalf, all Xcel Energy rebate and financing forms required for the One-Stop Efficiency Shop program.

I understand that all electrical code violations that are found during the lighting system inspection or during installation must be brought up to code at the customer's expense. Costs for correcting code violations are NOT included in the installation costs quoted in this document.

I understand that my lighting contractor must contact the auditor in order to participate in the One-Stop Program, and that I WILL NOT BE ELIGIBLE FOR THE REBATE UNLESS MY CONTRACTOR CONTACTS THE AUDITOR. (One-Stop Auditor: Jamie Fitzke, Cell Ph. 612-670-2100)

Select One
<input type="checkbox"/> Financed
<input type="checkbox"/> Cash

Signature **Walt Fehst** Date **5/17/10**
 Customer Cost: \$5,081.28 (Including special orders)

Lighting Schedules

Your lighting savings are based on the following average hours of operation							
Lighting Schedule Name	Mon	Tues	Wed	Thur	Fri	Sat	Sun
Operating Hours	9.0 hrs	9.0 hrs	9.0 hrs	9.0 hrs	9.0 hrs		
2,346 hrs/yr							

XCEL ENERGY ONE-STOP EFFICIENCY SHOP PROGRAM RULES

CUSTOMER QUALIFICATIONS

- One-Stop Efficiency Shop Lighting Efficiency Program rebates apply only to lighting retrofits for Xcel Energy electric business customers in Minnesota.
- This program applies only to lighting systems (equipment) operating during normal business hours or peak demand periods.

REBATE PROGRAM GUIDELINES

- Xcel Energy offers cash rebates to customers who purchase and install qualifying energy-efficient lighting products in existing buildings. The rebate check will be sent to the contractor listed on the retrofit invoice. Maximum rebate amount is 60% of installation and equipment costs. The rebates are based on calculated electric demand (KW) savings.
- Energy-efficient equipment must result in load reduction.
- One-Stop Efficiency Shop recommends Illuminating Engineering Society (IES) light levels.

C&I Lighting incentives cover:

- Fluorescent T12s to T8 or T5 with electronic ballasts
- Mercury vapor to metal halide or high pressure sodium
- Incandescent to fluorescent, T8, T5, MH, HPS or CFL
- Incandescent exit signs to LED exit signs
- Metal halide or T12 strips to industrial multi-CFL fixture
- Metal halide or high-pressure sodium to pulse-start metal halide (must result in lamp wattage reduction)
- HID sources to fluorescent

C&I Lighting incentives do not cover

- Incandescent to tungsten halogen
- Conversions to energy saving T12 fluorescent products
- Incandescent exit signs to compact fluorescent exit signs
- Compact fluorescent exit signs to LED exit signs

- See your One-Stop Efficiency Shop representative to determine qualification of custom or specialty lighting projects.
- Energy-efficient electronic and cathode-disconnect ballasts must meet the following minimum performance criteria:
 - Power factor greater than 90%
 - Current Crest Factor (CCF) less than 1.7
 - U.L.-approved Class 'P'
 - Total Harmonic Distortion (THD) less than 20%
 - Class 'A' sound rating
 - Three-year warranty
 - Ballast factor greater than 0.7
- Reflectors must be installed permanently in the fixture, have a minimum 4-year manufacturer's product warranty, be U.L.-approved and result in the permanent removal of fluorescent lamps from the existing fixture and permanent repositioning of remaining lamps, when required for optimum lighting performance.
- Compact fluorescent lamps must meet the following minimum criteria:
 - Power factor > 90%
 - Total Harmonic Distortion (THD) < 35%

WARRANTY INFORMATION

Warranties are between customer and equipment manufacturer(s) and lighting retrofit vendors. Xcel Energy and the Center for Energy and Environment (CEE) make no warranties, expressed or implied, with respect to equipment operation, material, workmanship or manufacturing. Xcel Energy and CEE do not guarantee that a specific level of energy or cost savings will result from the implementation of energy conservation measures or the use of products funded under this program. In no event shall Xcel Energy or CEE be liable for any incidental or consequential damages. Xcel Energy and CEE are not responsible for the disposal of lamps and/or ballasts replaced as a result of this program, when required for optimum lighting performance.

OTHER IMPORTANT REBATE PROGRAM RULES

- Installation must be complete before submitting rebate.
- Xcel Energy will issue rebates in the form of checks, not utility bill credits. Rebate and financing checks will be sent directly to the lighting contractor that submits an invoice. The minimum rebate is \$5.
- Customers and vendors must submit itemized equipment invoices along with rebate applications. To ensure that the equipment installed meets One-Stop Efficiency Shop's performance standards, these invoices must itemize labor charges, quantity and price of the equipment installed, and information regarding the manufacturer and model numbers for all lamps, ballasts and fixtures included in the rebate.
- Xcel Energy and CEE reserve the right to conduct random inspections of installations. Retain one sample of each type of old lamp or ballast for at least 90 days.
- Customers must apply for rebates within one year of the purchase date shown on the equipment invoice.

One-Stop Efficiency Shop's conservation rebate programs are subject to 60 days' notice of cancellation. The customer is responsible for checking with a One-Stop Efficiency Shop representative to ask whether or not the program is still in effect and to verify program parameters.

REBATE CHECKS WILL BE SENT TO YOUR CONTRACTOR IN 6-8 WEEKS