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# Le Sueur County, MN

Tuesday, June 21, 2016

Board Meeting

## Item 5

**9:55 a.m. Jim McMillen, Maintenance (5 min)**

*RE: Lighting*

Staff Contact:

# Le Sueur County Courthouse

## BUILDING INTERIOR LAMP AND BALLAST OPTION

### Building Lighting Upgrade Summary

TRC will supply materials and the installation for conversion of your existing lighting systems. All equipment meets necessary requirements to qualify for the lighting rebates. Disposal costs are included in proposal price.

## ENERGY SAVINGS

Current Annual lighting cost	\$13,357.62
Current KW	57.695
Current KWH	133,576
Proposed Annual lighting cost	\$6,098.79
Proposed KW	26.429
Proposed KWH	60,988
KW saved	31.267
KWH saved	72,588
Annual Energy Cost Savings	\$7,258.83
• MONTHLY	\$604.90
• DAILY	\$30.25

(cost per business day of not doing retrofit)

## MAINTENANCE SAVINGS

<b>( Difference Between Existing Systems Cost to Maintain and New Systems Costs to Maintain )</b>
Estimated Total Maintenance Savings for the First Five Years \$43,324.03
Average Annual Maintenance Savings (5-year average)
<b>\$8,664.81</b>

ESTIMATED MAINTENANCE SAVINGS YEARS ONE - FIVE	
Year 1	\$8,684.74
Year 2	\$8,684.74
Year 3	\$8,684.74
Year 4	\$8,634.91
Year 5	\$8,634.91

Total Project Investment	\$85,300.00
Estimated Utility Rebate	\$ (12,937.00)
<b>Total Net Project Investment</b>	<b>\$72,363.00</b>
Project Simple Payback (based on energy and maintenance savings) in years	4.54
Project Simple Payback (based on energy-excluding Maintenance savings) in years	9.97
<b>Return On Investment with Maintenance Savings</b>	<b>11.97%</b>
<b>Return On Investment Excluding Maintenance Savings</b>	<b>10.03%</b>

## ENVIRONMENTAL IMPACT\* (ANNUALLY)

Total greenhouse gas reduction (Metric Tons of CO2)	50.1
Passenger cars not driven for one year	9.8
Gallons of gasoline	5611.4
Acres of forest preserved from deforestation	0.50
Tons of waste recycled instead of landfilled	17.44

\*SOURCE: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>



# THE RETROFIT COMPANIES

1010 HOFFMAN DRIVE, SUITE A  
 OWATONNA, MN 55060  
 800-795-1230 or 507-455-2181 phone  
 507-455-2192 fax



## Turn-Key Quote

### Customer

Name: Le Sueur County Courthouse  
 Address: 88 S PARK AVENUE  
 City: LE CENTER State: MN ZIP: 56057  
 Attn: JIM MCMILLEN

Date: 06/07/16  
 Order No. \_\_\_\_\_  
 Rep: LUANN VERDUZCO  
 PO# \_\_\_\_\_

Qty	Description	Unit Price	TOTAL
1	BUILDING INTERIOR LAMP AND BALLAST OPTION Complete Lighting Retrofit per Analysis Dated 06/07/16  MVEC Rebate Payable to Customer. <b>Preapproval required for Custom Rebates!</b>  <b>Credit for purchase of Turnkey project with TRC</b> Includes: Material, Labor, Shipping, Tax, Lamp & Ballast Recycling* & Permit.  <i>Visa &amp; MasterCard are accepted and will be charged 3% for processing</i> *For all instances of PCB containing ballasts, generator must obtain EPA ID number and complete profile/manifest paperwork to ensure proper off-site disposal upon completion of the project.		\$85,300.00  \$ (12,937.00)  (\$4,200.00)
<b>This proposal is valid for 30 days.</b>		Subtotal	<b>\$68,163.00</b>
<b>Terms: 50% Gross Project Value Down, Balance upon completion.</b>		Shipping & Handling	<b>Included</b>
<b>Project Financed _____</b>		Taxes	n/a
<b>If the invoice ages past 60 days a lien will be filed.</b>		<b>TOTAL</b>	<b>\$68,163.00</b>

Signature \_\_\_\_\_  
 Title \_\_\_\_\_  
 Date \_\_\_\_\_

1.5% FINANCE CHARGES ON ALL PAST DUE ACCOUNTS.

\_\_\_\_\_ My initials indicate I am aware of TRC's Warranty policy. At project completion, the TRC project foreman will offer a final walk-thru. Your signature will indicate work is completed as expected and in good working order.

TRC offers the full manufacturer's warranty for turn-key installations. We offer this assistance to ensure that your projects continue to offer the energy savings, as well as the maintenance savings we have carefully explained in the decision making phase of the project.

- The project completion date offers the start date for tracking the warranty period.
- Labor, Delivery, Shipping, and Installation Equipment is not included

Any changes in the above specifications shall be made in writing, and as evidence of agreement, shall be signed by both parties. The contractor shall not be held responsible or liable for any loss, damage or delay due to causes beyond his control. If the purchaser disposes of the property by sale or otherwise before this contract has been fulfilled, the full unpaid amount of the contract shall become due and payable at once.  
 PLEASE TAKE NOTICE:

(a) ANY PERSON OR COMPANY SUPPLYING LABOR OR MATERIALS FOR THIS IMPROVEMENT TO YOUR PROPERTY MAY FILE A LIEN AGAINST YOUR PROPERTY IF THAT PERSON OR COMPANY IS NOT PAID FOR THE CONTRIBUTIONS.

(b) UNDER MINNESOTA LAW YOU HAVE THE RIGHT TO PAY PERSONS WHO SUPPLIED LABOR OR MATERIALS FOR THIS IMPROVEMENT DIRECTLY AND DEDUCT THIS AMOUNT FROM OUR CONTRACT PRICE, OR WITHHOLD THE AMOUNTS DUE THEM FROM US UNTIL 120 DAYS AFTER COMPLETION OF

THE IMPROVEMENT UNLESS WE GIVE YOU A LIEN WAIVER SIGNED BY PERSONS WHO SUPPLIED ANY LABOR OR MATERIAL FOR THE IMPROVEMENT AND WHO GAVE YOU TIMELY NOTICE.



# Le Sueur County Courthouse

## EXTERIOR

### Building Lighting Upgrade Summary

TRC will supply materials and the installation for conversion of your existing lighting systems. All equipment meets necessary requirements to qualify for the lighting rebates. Disposal costs are included in proposal price.

## ENERGY SAVINGS

Current Annual lighting cost	\$1,702.51
Current KW	3.887
Current KWH	17,025
Proposed Annual lighting cost	\$584.73
Proposed KW	1.335
Proposed KWH	5,847
KW saved	2.552
KWH saved	11,178
Annual Energy Cost Savings	\$1,117.78
• MONTHLY	\$93.15
• DAILY	(cost per business day of not doing retrofit) \$4.66

## MAINTENANCE SAVINGS

( Difference Between Existing Systems Cost to Maintain and New Systems Costs to Maintain )
Estimated Total Maintenance Savings for the First Five Years \$2,116.05
Average Annual Maintenance Savings (5-year average)
<b>\$423.21</b>

ESTIMATED MAINTENANCE SAVINGS YEARS ONE - FIVE	
Year 1	\$423.21
Year 2	\$423.21
Year 3	\$423.21
Year 4	\$423.21
Year 5	\$423.21

Total Project Investment	\$12,388.00
Estimated Utility Rebate	\$ (745.70)
Total Net Project Investment	\$11,642.30
Project Simple Payback (based on energy and maintenance savings) in years	7.56
Project Simple Payback (based on energy-excluding Maintenance savings) in years	10.42
Return On Investment with Maintenance Savings	3.64%
Return On Investment Excluding Maintenance Savings	9.60%

## ENVIRONMENTAL IMPACT\* (ANNUALLY)

Total greenhouse gas reduction (Metric Tons of CO2)	7.7
Passenger cars not driven for one year	1.5
Gallons of gasoline	864.1
Acres of forest preserved from deforestation	0.08
Tons of waste recycled instead of landfilled	2.69

\*SOURCE: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>



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1010 HOFFMAN DRIVE, SUITE A  
 OWATONNA, MN 55060  
 800-795-1230 or 507-455-2181 phone  
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## Turn-Key Quote

### Customer

Name: Le Sueur County Courthouse  
 Address: 88 S PARK AVENUE  
 City: LE CENTER State: MN ZIP: 56057  
 Attn: JIM MCMILLEN

Date: 05/05/16  
 Order No. \_\_\_\_\_  
 Rep: LUANN VERDUZCO  
 PO# \_\_\_\_\_

Qty	Description	Unit Price	TOTAL
1	<p>EXTERIOR</p> <p>Complete Lighting Retrofit per Analysis Dated 05/05/16</p> <p>LED Instant Rebate - Property of TRC</p> <p>Includes: Material, Labor, Shipping, Tax, Lamp &amp; Ballast Recycling* &amp; Permit.</p> <p>Visa &amp; MasterCard are accepted and will be charged 3% for processing</p> <p>*For all instances of PCB containing ballasts, generator must obtain EPA ID number and complete profile/manifest paperwork to ensure proper off-site disposal upon completion of the project.</p>		<p>\$12,388.00</p> <p><b>\$ (745.70)</b></p>

**This proposal is valid for 30 days.**

**Terms: 50% Gross Project Value Down, Balance upon completion.**

Project Financed \_\_\_\_\_

**If the invoice ages past 60 days a lien will be filed.**

Subtotal	<b>\$11,642.30</b>
Shipping & Handling	<b>Included</b>
Taxes	n/a
<b>TOTAL</b>	<b>\$11,642.30</b>

Signature \_\_\_\_\_  
 Title \_\_\_\_\_  
 Date \_\_\_\_\_

1.5% FINANCE CHARGES ON ALL PAST DUE ACCOUNTS.

\_\_\_\_\_ My initials indicate I am aware of TRC's Warranty policy. At project completion, the TRC project foreman will offer a final walk-thru. Your signature will indicate work is completed as expected and in good working order.

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delay due to causes beyond his control. If the purchaser disposes of the property by sale or otherwise before this contract has been fulfilled, the full unpaid amount of the contract shall become due and payable at once.

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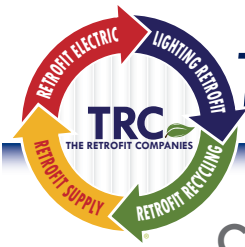
THE IMPROVEMENT UNLESS WE GIVE YOU A LIEN WAIVER SIGNED BY PERSONS WHO SUPPLIED ANY LABOR OR MATERIAL FOR THE IMPROVEMENT AND WHO GAVE YOU TIMELY NOTICE.



The Retrofit Companies

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6/7/2016



## CASE STUDY: LED RETROFIT IN COMMERCIAL & OFFICE SPACES



**AFTER**



**BEFORE**

This bank invested in an audit, or lighting study, as a way to successfully plan for their lighting retrofit, and to understand how the results of the project could positively impact their business.

The existing lighting system was comprised primarily of 32 watt T8 fixtures, some U-bend lamps, some CFL's, and a few Metal Halides (atrium photo above).

As a result of the study, and the goals of the company, TRC designed a new LED lighting system. Savings beyond energy reduction for this client include a decrease in the maintenance costs required to keep the T8's and CFL's operational. In the single area shown above, we also see a dramatic aesthetic improvement. Visit TRC's blog to read the whole story on that project area: <http://blog.retrofitcompanies.com/blog/instant-energy-reduction-with-led-retrofit>

### PROJECT GOALS & SUCCESSES

- Inefficient T8 lamps retired & recycled
- Redesign removed 4% of unnecessary fixtures
- kWh reduced by 62% & decreased kW by 60%
- Project rebate over \$49,000
- Annual savings almost \$22k / over **\$90 a day!**
- Maintenance costs reduced with 5 yr warranty!
- 4.5 year payback
- All old materials recycled safely & responsibly.

### ENVIRONMENTAL IMPACT

#### CARBON SAVINGS TOTAL GREENHOUSE GAS REDUCTION

**192.8 Metric Tons equivalent to:**

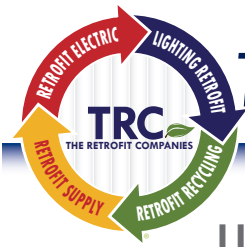
Passenger cars not driven for one year **37.8** 

Gallons of gasoline saved **21,612** 

Acres of forest preserved from deforestation **1.91** 

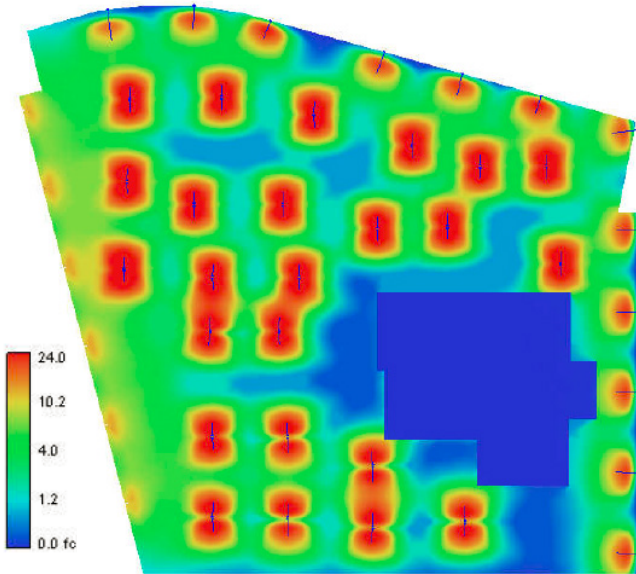
Tons of waste recycled vs. land filled **67.17** 



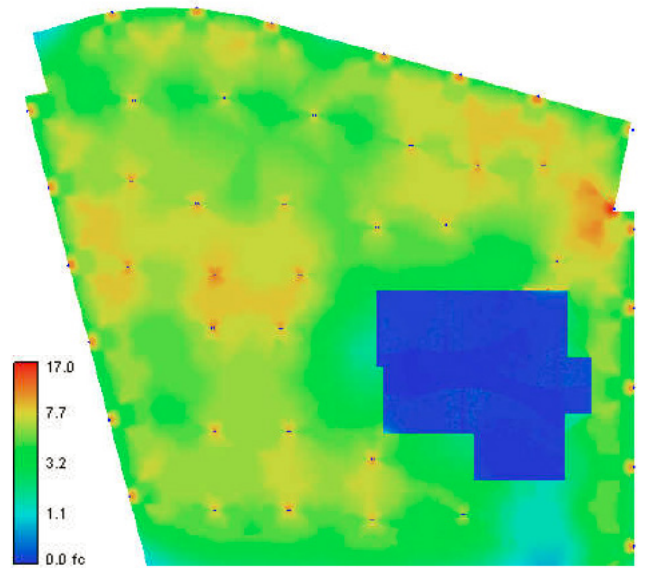


**LIGHTING CASE STUDY: LED AUTO SALES LOT REDESIGN**

**COMPETITOR 1:1 RETROFIT**



**TRC SYSTEM REDESIGN**



This client took initiative to educate himself about the kind of fixture and results that he wanted for the auto lot at his business. He needed an evenly lit lot that made the cars look great when people drove by and that had fewer shadowy areas so it would be safer at night. LED was an obvious savings solution. The competitor's 1:1 retrofit project was 4.6 average foot candles with a whopping max of 50, leading to all the red 'hot spots' you see in the graphic above. It saved energy, but it wasn't the best design. Most importantly, it did not achieve the client's goals. A thoughtful redesign achieved the client's goals and allowed even more savings to be captured. **TRC reduced the number of total fixtures and used custom optics packages on those fixtures, to achieve a highly efficient, evenly lit lot with 5.6 average foot candles, and a maximum of 10.4. No hot spots, even light, and tons of energy savings!**

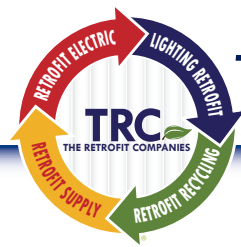
**PROJECT GOALS & SUCCESSES**

- Inefficient HID fixtures retired & recycled
- 48 unnecessary fixtures removed from use!
- New lighting layout for maximum efficiency
- Decreased kW & kWh by 85% overall
- Project rebate \$53,000
- Annual savings almost \$46K/ **\$3825 a month!**
- New fixtures contain no hazardous materials

**ENVIRONMENTAL IMPACT**

**CARBON SAVINGS GREENHOUSE GAS REDUCTION**  
**316.6 Metric Tons equivalent to:**

- Passenger cars not driven for a year **62**
- Gallons of gasoline saved **35,490**
- Acres of forest preserved **3.1**
- Tons of waste recycled vs. land filled **110**



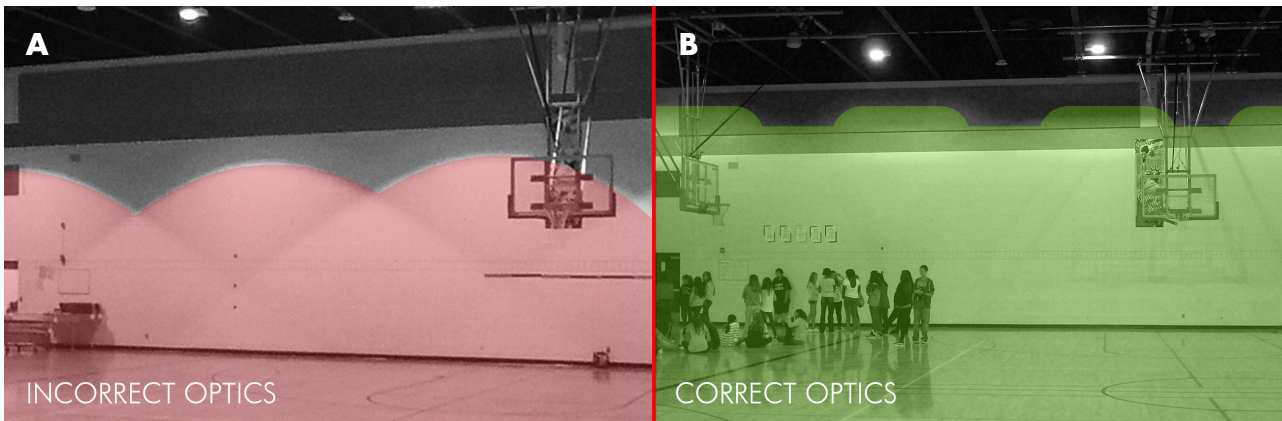
## INCORRECT OPTICS CAN RUIN YOUR LED PROJECT

Imagine in this scenario, the same project is being presented by two different lighting contractors. The quotes presented to the customer both promise dramatic energy savings and reduced maintenance costs that match the project goals. Imagine further that you were purchasing this lighting project, and that each quote you received is equal in cost. How would you know which project to purchase? Looking at the results photos for incorrect optics and the final after photo here, which would you want? This is an issue that can happen any time two energy-efficient lighting designs are presented by different contractors. In this example, the only variable in the final results is one digit in a fixture code. The fixture manufacturer, layout, installation, and project area are all the same.

**CORPORATE**  
1010 Hoffman Drive, Ste A  
Owatonna, MN 55060  
p. 507-455-2181  
f. 507-455-2192

**TWIN CITIES**  
2960 Yorkton Blvd  
Little Canada, MN 55117  
p. 651-766-7422  
f. 651-766-9900

CONTRACTOR #EA002116



### NEW CONSTRUCTION DESIGN MATTERS

#### Existing CFL high bay system

- 66 total fixtures
- 8-lamps with 4 ballasts each
- 42 watts/lamp, 336 watts/fixture

Even though this isn't a very old system and was engineered to be efficient, no consideration was given to the cost of future maintenance. Once the client figured out what they were spending in new lamp and ballast costs every year, they knew they needed a better design.



BEFORE RETROFIT

**A new LED lighting system was designed. Half of the fixtures were removed, light levels increased in the new design, and this customer was set to save \$6,700 in energy costs annually.** The photos here labeled A and B use the exact same fixture, with different optics that dramatically impact the project outcome. When the scalloped image was created on the wall, Horizontal and Vertical photometric imaging by the TRC design department quickly identified what would fix the problem. There is a one letter difference in the part number to create the photographed results in images A versus B.

Compared to the original lighting system, engineered as efficient, this replacement is 60% more efficient and drastically reduced the cost of maintenance for this client. **The Retrofit Companies has over 20 years of experience delivering the light levels and quality you want, while maximizing your energy savings.**



LED RETROFIT INCORRECT OPTICS



AFTER RETROFIT CORRECT OPTICS

Copyright © 2016. Read the whole story: <http://blog.retrofitcompanies.com/blog/how-a-single-variable-can-ruin-a-lighting-project>



Thank you - Message (HTML)

File Message Adobe PDF

Ignore X Reply Reply All Forward Junk Delete Respond Quick Steps Move Rules OneNote Actions Mark Unread Categorize Follow Up Translate Zoom

**From:** Tom Zarnke  
**Sent:** Tuesday, March 04, 2014 6:09 AM  
**To:** Allison Akre  
**Subject:** Thank you

Allison,

Good morning. I just wanted to take a minute to thank you for all the diligent work you have put in on my two recent projects. The initial scope for these two plants were \$200,000 and \$75,000. Your patience and perseverance to answer my questions and look at alternatives resulted in project costs of \$145,000 and \$45,000, respectively. I also appreciate the fine work you did with Xcel Energy and Minnesota Power to maximize the rebate structure. My customers were very happy with these packages, and you have made me look good!

The lighting plans are impressive, and I am sure that you are also pleased at the outcomes. Please feel free to use me as reference, and I look forward to working with you and Retrofit again.

Regards,

**Tom Zarnke, PE**  
Zarnke Engineering, Inc.  
Woodbury, MN 55125



June 26, 2015

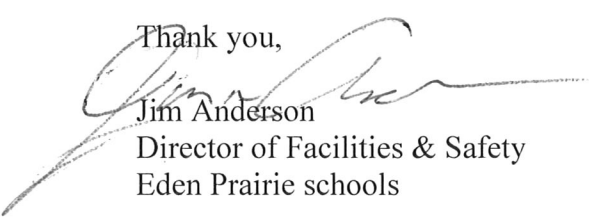
Jim Anderson  
Director of Facilities & Safety  
Eden Prairie Schools  
8100 School Road  
Eden Prairie, MN 55344

The Retrofit Companies,

I want to thank the Retrofit Companies for their excellent customer service provided during our lighting survey at Eden Prairie Schools, Oak Point Elementary School Pool. Wendy and her staff were responsive to our needs and professional throughout the process. Even knowing the Retrofit Companies may not get the lighting replacement work they continued to provide lighting placement drawings, equipment cut sheets, and assistance.

They helped the school district maneuver the rebate process with Xcel Energy. Wendy and her staff were flexible and responsive to the school district needs.

Thank you,



Jim Anderson  
Director of Facilities & Safety  
Eden Prairie schools