



City of Eden Prairie

# Year 2 Measurement & Verification Report

November 2012

FOR THE  
LIFE OF  
YOUR  
BUILDING

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# 1. Executive Summary

## BACKGROUND

This report summarizes the Measurement and Verification (M&V) results for all three phases of the City of Eden Prairie performance contract and illustrates the energy and cost savings based on as-built conditions. Also included in this report are savings for FIMs implemented by the City of Eden Prairie. The following table depicts the overall energy and dollar savings for the City of Eden Prairie.

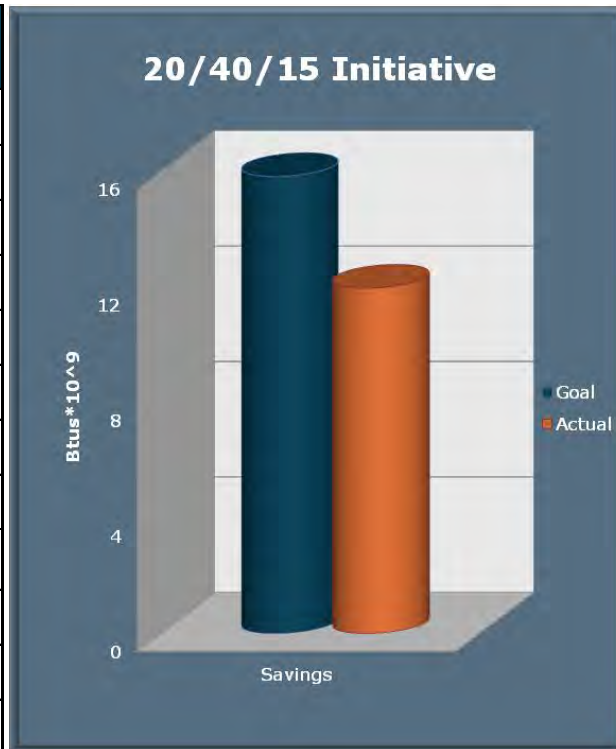
FIM	Energy Savings (kBtu)	Overall Savings
Interior Lighting Phase 1 & Phase 2	2,884,878	\$61,329
DDC Improvements Phase 1	54,152	\$1,190
Vending Machine Control Phase 1	59,508	\$1,298
Electric Generator Phase 1	0	\$21,839
Exterior Lighting Phase 1 & Phase 2	685,060	\$8,332
Replacement Desuperheater Phase 2	1,886,441	\$5,039
Power Factor Correction Phase 2	0	\$1,703
Water Efficiency Project Phase 2	648,007	\$12,177
Retro-Commissioning Phase 2	2,882,153	\$37,789
MAU-2 Demand Control Ventilation Phase 3	1,144,421	\$13,415
MAU-3 & 4 Demand Control Ventilation Phase 3	234,520	\$1,332
Chilled Water Variable Primary Conversion Phase 3	38,712	\$907
Desiccant Unit Modifications Phase 3	538,600	\$5,170
Round Lake Shelter Furnace and Water Heater Upgrade City Initiative	18,344	\$175
Homeward Hills Shelter Furnace and Condensing Unit Upgrade City Initiative	69,508	\$1,416
Community Center Wall Pack Upgrade City Initiative	89,454	\$1,966
Round Lake Shelter Lighting Upgrade City Initiative	10,448	\$230
Homeward Hill Shelter Lighting Upgrade City Initiative	5,963	\$131
Starring Lake Shelter Lighting Upgrade City Initiative	5,963	\$131
Senior Center Lighting Upgrade City Initiative	12,198	\$268
Rink 2 Team Rooms Lighting and Lighting Controls Upgrade City Initiative	20,275	\$446
Community Center Lighting Upgrade City Initiative	6,389	\$140
Riley House Boiler Upgrade City Initiative	30,645	\$293
ReCx Items Recommended by McKinstry City Initiative	635,579	\$10,056
<b>Total</b>	<b>11,961,218</b>	<b>\$186,772</b>

## 2. Environmental Impact

The performance savings of \$186,772 equates to the reduction of both natural gas and electric consumption. The FIMs implemented by McKinstry have totaled a savings of 49,412 therms of natural gas and 2,056,842 kWh of electric consumption. These savings are equal to the annual reduction of 2,039 metric tons of CO<sub>2</sub> into the atmosphere.

The following table illustrates the annual Metric Tons of CO<sub>2</sub> saved and equivalent number of cars taken off the road.

FIM Name	Annual Metric Tons CO <sub>2</sub> Saved	Equivalent Number of Cars off Road
Overall Interior Lighting	860	185
Vending Machine Controls	16	4
Overall Exterior Lighting	237	51
Replacement Desuperheater	144	31
Water Efficiency Project	34	7
Retro-Commissioning	552	119
MAU-2 Demand Control	114	25
MAU-3&4 Demand Control	24	5
Chilled Water Variable	11	2
Desiccant Unit Modifications	27	5
Boiler, Condenser	21	4
<b>Total</b>	<b>2,039</b>	<b>439</b>



### Progress to 20/40/15 Goal

The facility improvement measures implemented in phase 1, 2, and 3 along with initiatives taken by the City have contributed to the City of Eden Prairie's goal of a 20% increase in energy efficiency and a 40% increase in fuel efficiency by the year 2015.

Using the baseline year of 2005, the following table illustrates the percent energy reduction and the percent of the goal completed based on energy savings for each FIM:

Energy Type	Base Year	November 2012	Project Savings	% Reduction	Efficiency Increase	% Toward 20/40/15 Goal
Btus	94,963,257,448	83,017,775,326	11,961,218,276	12.6%	15%	75.5%

Environmental Impact information is intended for informational use only.

Please see Appendix A for Supplemental Information.

# 3. Appendices

## Appendix A

### ENVIRONMENTAL IMPACT

Progress toward 20/40/15 Goal.

Energy Type	Base Year	Project Savings	Post-Project	% Reduction
kWh	15,736,154	2,056,842	13,679,312	13%
Therm	412,715	49,412	363,303	12%

Knowing that there are 100000 Btus in 1 therm and 3412 Btus in 1 kWh we can convert therms and kWh and get a total energy consumption in Btus.

Energy Type	Base Year	November 2012	Project Savings	% Reduction	Efficiency Increase	% Toward 20/40/15 Goal
Btus	94,963,257,448	83,017,775,326	11,961,218,276	12.6%	15%	75.5%

20 % increase in energy efficiency equates to 16.667% decrease in energy consumption.

As of November 2012 the City of Eden Prairie has reduced energy consumption by 12.6%. Therefore, the City has increased its energy efficiency by 15% and is 75% of the way to its goal of increasing energy efficiency by 20% by 2015.

### GUARANTEE RECONCILIATION

The annual guaranteed performance savings of \$131,299 was exceeded through the installation and commissioning of the FIMs installed by McKinstry. The following table illustrates the utility savings realized to the guaranteed utility saving of only FIMs within the Performance Contract:

Annual Guaranteed Utility Savings	\$131,299
Annual Utility Savings Realized from PC FIMs	\$154,183
Annual Operational Savings Predicted	\$17,337
Annual Operational Savings Realized	\$17,337
Difference (Excess Savings)	\$22,884

# 3. Appendices

## Appendix M

### ACKNOWLEDGEMENT (CUSTOMER COPY)

#### Acknowledgement

This letter acknowledges receipt of the Year 2 Measurement and Verification (M&V) Report – City of Eden Prairie for the first full year of energy savings in accordance with the provisions outlined in the ENERGY COST SAVINGS GUARANTEE Section B., 2. of the Performance Contract.

McKinstry Essention	City of Eden Prairie
Signature	Signature
Title	Title
Date	Date

#### Continuation of M&V Services

In addition to the acknowledgement, it is understood that continuation of M&V Services will be provided to City of Eden Prairie annually per EXHIBIT 1 - FACILITIES SERVICES AGREEMENT which was made part of the original contract. The price for Year 3 measurement and verification for all three phases is \$6,500.

McKinstry Essention	City of Eden Prairie
Signature	Signature
Title	Title
Date	Date

#### Discontinuation of Renewal

In addition to the acknowledgement, and at the discretion of City of Eden Prairie, an authorized representative of the City may discontinue renewal of M&V Services provided per EXHIBIT 1 – FACILITIES SERVICES AGREEMENT made part of the original contract. Recognizing that per the terms of original contract, the guarantee will be terminated if the Technical Services Agreement is cancelled.

McKinstry Essention	City of Eden Prairie
Signature	Signature
Title	Title
Date	Date

McKinstry will invoice City of Eden Prairie for the continuation of measurement and verification services per EXHIBIT 1 – FACILITIES SERVICES AGREEMENT if City of Eden Prairie fails to provide McKinstry with the signed portion of either Continuation of M&V Services or Discontinuation of Renewal within 30 days of a signed acknowledgement of the receipt of the Measurement and Verification Report.



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