

DOI Annual Partners in Action Conference



**Fond du Lac Band of Lake Superior Chippewa
Emergency Preparedness & Climate Change**

**In 2007 the Reservation Business Committee signed a Kyoto accord to reduce use of fossil fuel 20% by 2020
A Strategic Energy Plan was written & energy audits were conducted on all large Band owned buildings with Minnesota Power Conservation Improvement Program**

**Technical Assistance and Funding:
Office of Indian Energy and Economic Development
Energy and Mineral Development Program
National Renewable Energy Laboratories**

**Environmental Protection Agency & Minnesota Power
assisted with the advancement of renewable energy
deployment while reducing Climate Change
On track for 21% reduction of fossil fuel by 2016**

LEED Resource Management Building



Fond du Lac built the first LEED building in Carlton County with a 12.25 kW solar electric system to power the building.

Energy Conservation Lighting Retrofits 15%

Cloquet Community Center Swimming Pool	4	M.H Fixtures	210	4 LED	50	160	640	6500	4160	\$332.80
Head Start Skylight Multi purpose room	24	M.H Fixtures	210	24 LED Flood	50	160	3840	4300	16512	\$1,320.96
Transportation parking lot	2	M.H Fixtures	460	2 LED	92	368	736	4300	3164.8	\$253.18
Resource Management Parking	4	M.H Fixtures	460	4 LED	100	360	1440	4360	6278.4	\$502.27
Black Bear Casino	1000	MR 16	50	1000 LED	7	43	43000	8760	376680	\$30,134.40
Black Bear Coffee shop	19	PAR 30	75	19 LED	8	67	1273	6500	8274.5	\$661.96
Black Bear Arcade	45	PAR 20	50	45 LED	8	42	1890	6500	12285	\$982.80
Administration Gym	30	M.H Fixtures	460	30 4 Lamp T5	220	240	7200	7200	51840	\$4,147.20
Bus Barn	10	P.S. w/ can	200	10 LED vapor tight	32	168	1680	1680	2822.4	\$225.79
Bus Barn Wash Bay	4	M.H Fixtures	285	4 LED vapor tight	108	177	708	5840	4134.72	\$330.78
Black Bear Stairwells	32	M.H Fixtures	125	16 LED	50	75	3200	8760	28032	\$2,242.56
Gas and Grocery Canopy	16	M.H Fixtures	460	16 LED	120	340	5440	5800	31552	\$2,524.16
Ojibwe School Garage	4	M.H Fixtures	210	4 LED wallpack	32	178	712	4300	3061.6	\$244.93
Resource Management recycling shed	4	P.S. w/ can	200	3 LED vapor tight	32	168	704	4000	2816	\$225.28
Resource Management recycling shed	4	Flood	90	4 LED	15	75	300	4000	1200	\$96.00
Bus Barn (inside)	9	In Can	200	9 LED vapor tight	32	168	1512	8000	12096	\$967.68
Black Bear Casino	200	PAR 30	90	200 LED PAR 30	15	75	15000	8760	131400	\$10,512.00
Gas and Grocery wallpack	10	M.H Fixtures	210	10 LED	32	178	1780	5800	10324	\$825.92
Gas and Grocery wallpack	2	M.H Fixtures	295	2 LED	50	245	490	5800	2842	\$227.36
Gas and Grocery wallpack	2	M.H Fixtures	460	2 LED	92	368	736	5800	4268.8	\$341.50
School Gym	24	M.H Fixtures	460	24 4 Lamp T5	220	240	5760	6000	34560	\$2,764.80
Resource Management Eagle Lights	2	M.H Fixtures	175	2 LED	36	139	278	4380	1217.64	\$97.41
Brookston School Waiting area	30	MR16 Hallogen	50	30 LED MR16	7	43	1290	5824	7512.96	\$601.04
Bus Barn Outside	5	M.H Fixtures	210	5 LED wallpack	50	160	800	4500	3600	\$288.00
Bus Barn Outside	1	M.H Fixtures	210	1 LED flood light	90	120	120	4500	540	\$43.20
Black Bear Parking Ramp	359	M.H Fixtures	210	359 Sun Park LED	50	160	57440	8760	503174.4	\$40,253.95
Resource Management Cold Storage	20	P.S. w/ can	200	20 LED vapor tight	32	168	3360	8000	26880	\$2,150.40
Min No Aya Win Clinic Track lighting	90	In Can	100	90 LED	8	92	8280	2500	20700	\$1,656.00
FDL radio 89.1 WGZS	16	In Can	65	16 LED	11	54	864	4300	3715.2	\$297.22
TOTAL	2100		8570	2083	2451	6119	203205	192824	1497854.42	\$119,828.35

**Dollars Saved annually
from lighting retrofits
\$ 119,828.35**

**CO2 saved annually
from lighting
retrofits
7,012,090 lbs**

**KWh saved annually
from lighting
retrofits
1,797,854.42 KWh**

The environment and humans benefit from Solar energy by reducing water scarcity, curbing pollution, mitigating climate change and creating better health outcomes

Environmental and Health Benefits of Achieving SunShot

Quantifying the externalities of fossil fuels would reduce solar costs by 3.5 cents per kilowatt hour.

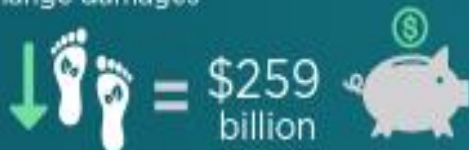
REDUCE WATER SCARCITY

Water consumption will drop in 36 states, enough to hydrate 1.3 million households



MITIGATE CLIMATE CHANGE

Reducing our carbon footprint could save \$259 billion in global climate change damages



CURB POLLUTION

By decreasing air pollution, solar can prevent \$167 billion in health and environmental damages



BETTER HEALTH OUTCOMES

Reducing pollutants can prevent unnecessary health care costs and save more than 25,000 lives





Fond du Lac 1 Megawatt Solar Project 5%



Sawyer Community Center Wood Chip District Heat 1%



Sawyer Community Center Wood Chip District Heat 1%



21 W. Superior St., Ste. 600 | Duluth, MN 55802 | 218.727.8448

CLIENT:
**FOND DU LAC BAND OF
LAKE SUPERIOR
CHIPPEWA**

1720 BIG LAKE ROAD
CLOQUET, MN 55720

THIS SQUARE APPEARS 10" x 10" ON
FULL SIZE SHEETS.

NO DATE ISSUED FOR

NO DATE REVISION

PRELIMINARY
NOT FOR CONSTRUCTION
07/XX/16

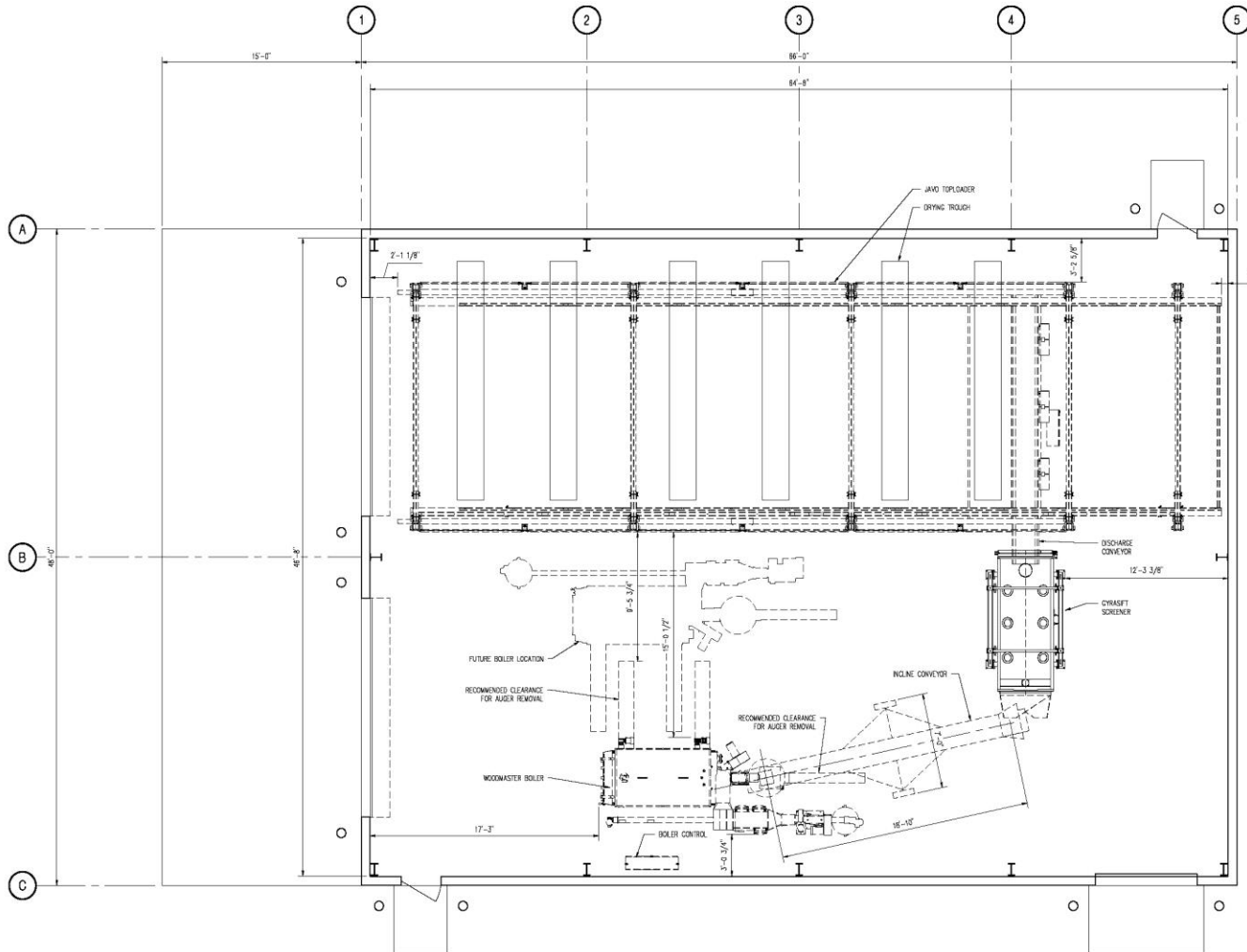
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PROJECT NAME:
**SAWYER
BIOMASS BUILDING**

DRAWING TITLE:
GENERAL ARRANGEMENT

FILE: J:\2016\1600 Drawing\1600.dwg
DRAWN BY: AHA
CHECKED BY: JUC
PLOT NO: 16104
DRAWING NO:

G0.01



1 GENERAL ARRANGEMENT
1/4"=1'-0"



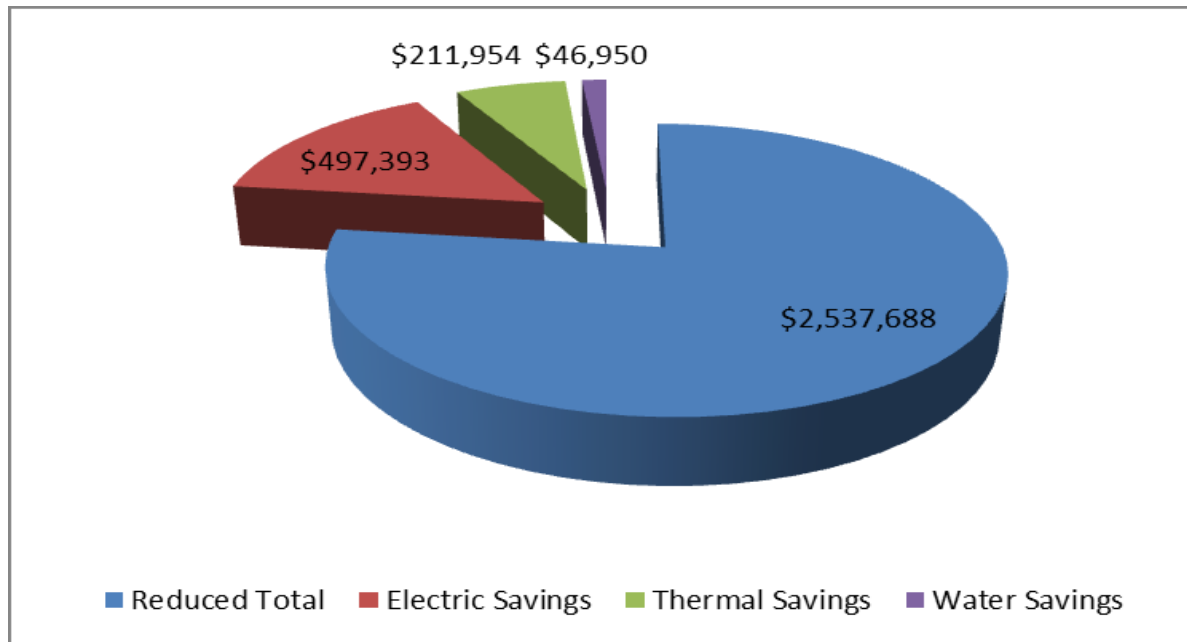
SEE G0.01 FOR DRAWING INDEX



NORESCO ENERGY SAVING PERFORMANCE CONTRACT

BASELINE ENERGY AND SAVINGS SUMMARY

Annual Baseline Energy Expense = \$3,293,985



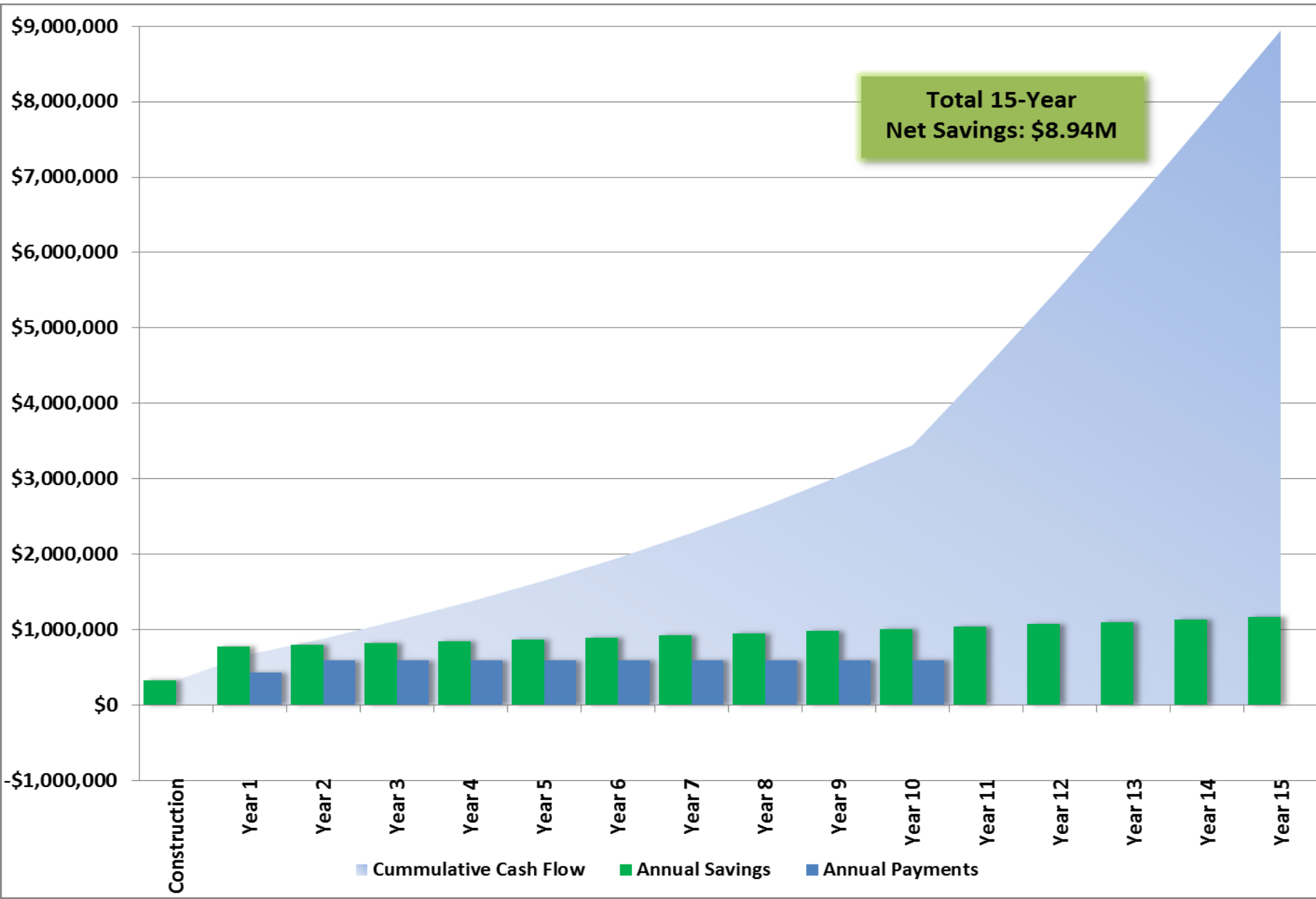
ECM Description	Implementation	Price Guaranteed Savings	Simple Payback
• Control System Upgrades	\$1,227,008	\$574,059	2.3 yrs
• Lighting Interior & Exterior	\$1,397,780	\$107,217	13.0 yrs
• Water Conservation	\$586,307	\$52,894	11.1 yrs
• Mechanical Equipment	\$1,482,057	\$38,233	30 yrs
• Recommend Project Total	\$4,693,153	\$772,403	6.1 yrs

PROJECT HIGHLIGHTS & BENEFITS

<ul style="list-style-type: none">• 24% Reduction in energy use and GHG Emissions• 17% Reduction in water consumption• Upgrade, optimize and standardize with non-proprietary control systems• New state-of-the-art LED lighting systems• New water conserving plumbing fixtures• New mechanical equipment (boilers, chiller, air systems) – replace end of life• Single source accountability & performance guarantee	<table><tr><th><u>Emission Type</u></th><th><u>Reductions per year</u></th></tr><tr><td>Carbon Dioxide (CO2)</td><td>11,219,344 lbs</td></tr><tr><td>Sulfur Oxides (Sox)</td><td>11,586 lbs</td></tr><tr><td>Nitrogen Oxides (NOx)</td><td>12,634 lbs</td></tr><tr><td>Equivalent Acres of Trees Planted</td><td>1,559</td></tr><tr><td>Equivalent Cars Removed from road</td><td>1,257</td></tr></table>	<u>Emission Type</u>	<u>Reductions per year</u>	Carbon Dioxide (CO2)	11,219,344 lbs	Sulfur Oxides (Sox)	11,586 lbs	Nitrogen Oxides (NOx)	12,634 lbs	Equivalent Acres of Trees Planted	1,559	Equivalent Cars Removed from road	1,257
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**\$4.7 MILLION IN BUILDING IMPROVEMENTS
FUNDED BY SAVINGS**

15 YEAR CUMULATIVE CASH FLOW



Future Energy and Climate Change Goal 50% by 2025

ENERGY PROJECTS: CLIMATE CHANGE POLUTION REDUCTION	FDL COST	YEARLY SAVINGS
ENTERPRISE AND PRGOGRAM BUILDINGS:		
Noresco retro fit energy performance contracting cost	\$4,693,153	\$772,403
Black Bear 1 megawatt solar project	\$0	\$103,744
1 megawatt solar project operation & maintenance funding budget	\$25,936	25% savings
Sawyer Community Center 1.7 MMBTU wood chip boiler project	\$50,000	\$25,000
Future two 500 kW solar projects	\$2,400,000	\$103,744
GE 1.5 XLE Wind Turbine Annual Energy Production (kWh) 5,017,135 X .08 =	\$4,400,000	\$401,371
RESIDENTIAL HOMES:		
Fond du Lac 0 net energy model home energy efficiency and renewable	\$150,000	\$3,000
Residential home renewable energy projects 2016 planned 5 home solar systems	\$60,000 Grant	\$1,000
Renewable energy project savings data from existing installed 9 systems	\$60,000 Grant	\$500
Housing energy efficiency project: 231 rentals, 38 mutual help, 96 NAHASDA		25% X \$1,600 = \$142,000
Energy audits on homes CIP funding \$250 X 355 homes	\$88,750	

Fond du Lac Band of Lake Superior Chippewa

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Environmental Program
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QUESTIONS?