

Re-Energize Maplewood Seed Grant

Shann Finwall, Environmental Planner, City of Maplewood



**GREAT PLAINS
INSTITUTE**



Maplewood



Re-Energize Maplewood Seed Grant

Metro CERT Annual Resource and Networking Event
October 10, 2019



Maplewood

How did we get started?

- Xcel Energy - Partners in Energy
- *Energize Maplewood!*
- 2040 Comprehensive Plan
- Metro CERT Seed Grant



Previous Mayor of Maplewood – Mayor Slawik –
Attending the Energize Maplewood! Kick Off Party



Maplewood

Re-Energize Maplewood! Program Introduction

- Build on the success of the *Energize Maplewood!* energy actions.
- **Develop a pathway towards** the City's 2040 Comprehensive Plan renewable energy goals.
- **Focus on:**
 - improved energy efficiency
 - solar energy generation opportunities
 - community awareness and education on benefits of energy efficiency, renewable energy, and funding and incentives



Re-Energize Maplewood! Program Partners

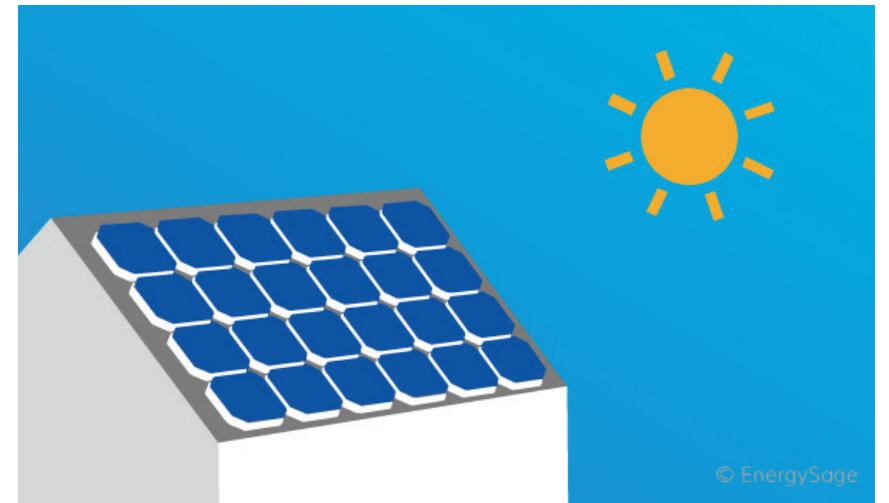


**MINNESOTA
CHAMBER OF
COMMERCE**

GROWING MINNESOTA
ENERGY SMART

Re-Energize Maplewood! Programs

- Battle of the Parks
- Re-Energize Your Home!
- Re-Energize Your Business!
- Top 40 Solar Sites





Maplewood

Battle of the Parks

- June – August 2018
- Two Manufactured Home Parks with Over 500 Homes Battled to be the “Biggest Energy Losers.”
- Home Energy Squad Visits
- Fourteen Home Energy Squad Visits Complete
- Winner Received a Fun Energy Party



Maplewood Nature Center Naturalist Carole Gernes and Sammy the Snake were a Hit at the Battle the Parks Energy



Re-Energize Your Home!

- 98 Energize Your Home!
Residential Energy
Challenge Households



Maplewood

Re-Energize Your Home!

- 98 Energize Your Home! Residential Energy Challenge households
- Using State's Solar Suitability tool, explored solar potential for each

The Minnesota Solar Suitability Analysis is an ongoing project led by graduate students in the Masters of Geographic Information Science program at the University of Minnesota. The project aims to map solar potential on a large scale across Minnesota using Lidar data and GIS technology with the goal of providing free and open source tools and data to the GIS community.

"Solar is Minnesota's single largest energy resource."

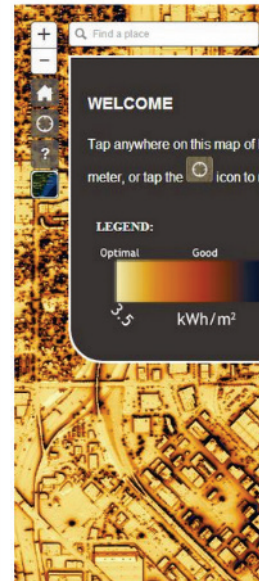
-National Renewable Energy Laboratory (NREL)



Re-Energize Your Home!

- 98 Energize Your Home! Residential Energy Challenge Households
- Using State's Solar Suitability tool, explored solar potential for each
- Sent package with:
 - Overview letter

The Minnesota Solar Suitability Analysis was developed by graduate students in the Masters of Science in GIS program at the University of Minnesota. The program used GIS technology with the goal of providing data to the GIS community.



Dear

The City of Maplewood would like to thank you for being a part of the 2016 Energize Maplewood program. The program helped nearly 100 households improve their energy efficiency and it was the participation by residents like you that made Energize Maplewood a great success!

For many Energize Maplewood households looking towards renewable energy is the next step in reducing long-term energy costs. And that is where the City's next program comes in: RE-Energize Maplewood, a program looking at the feasibility of on-site solar energy in the City of Maplewood.

In short – according to the State of Minnesota's Solar Suitability tool, **your home is OPTIMAL for the installation of solar pv**. This means that installing solar pv on your home should pay for itself rapidly, after which the solar pv system will provide you with "free" electricity for many years. Attached, you will find a preliminary report on the general suitability of your home for solar power.

And the savings are likely to be much better...

For calculation of payback, the State's Solar Suitability report uses a cost of \$4.05 per installed watt of solar pv. Currently, installed solar pv prices in the Twin Cities are running lower. As an example, the Midwest Renewable Energy Association (MREA) is running a group purchase program to leverage the bulk buying power of many residents and businesses. The MREA program's 2018 cost is 20%-27% lower. This means that your actual cost savings and payback time for installing solar may be that much better than reported in the attached Solar Suitability report!

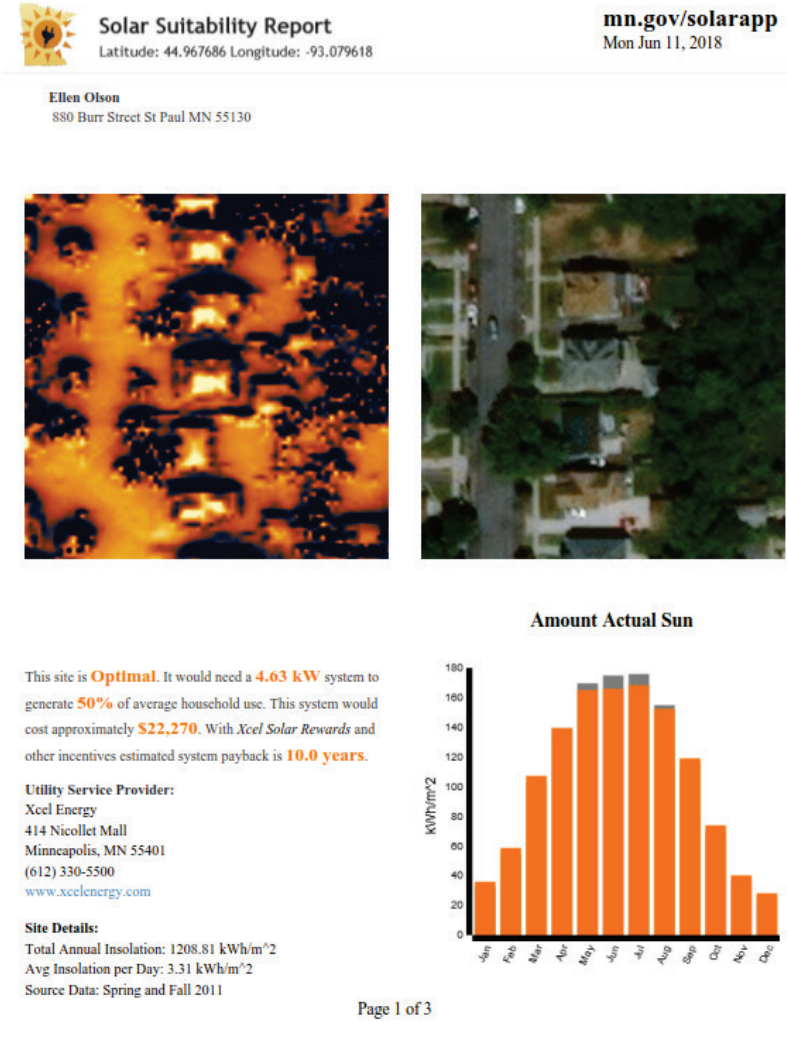
Because your home is OPTIMAL for solar pv, we encourage you to consider looking into solar pv for your home. You can learn more about the opportunities of solar pv for your home at the free "Solar Power Hour" on Wednesday September 19th at 6:30pm, Bruentrup Heritage Farm, 2170 County Road D East, Maplewood. You can also contact Ted Redmond with paleBLUEdot, free of charge, with any questions you have about solar pv or the potential for your home. Ted's contact is: 612-669-7056, redmond@paleblue-dot.org.

Sincerely,

RE-Energize Maplewood is supported through a State of Minnesota Clean Energy Resource Teams 2017 Seed Grant as well as through matching volunteer time by paleBLUEdot LLC, a Maplewood sustainability and renewable energy consultancy.

Re-Energize Your Home!

- 98 Energize Your Home! Residential Energy Challenge Households
- Using State's Solar Suitability tool, explored solar potential for each
- Sent package with:
 - Overview letter
 - Solar Suitability Report



Maplewood
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Re-Energize
Maplewood.

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Attached, you

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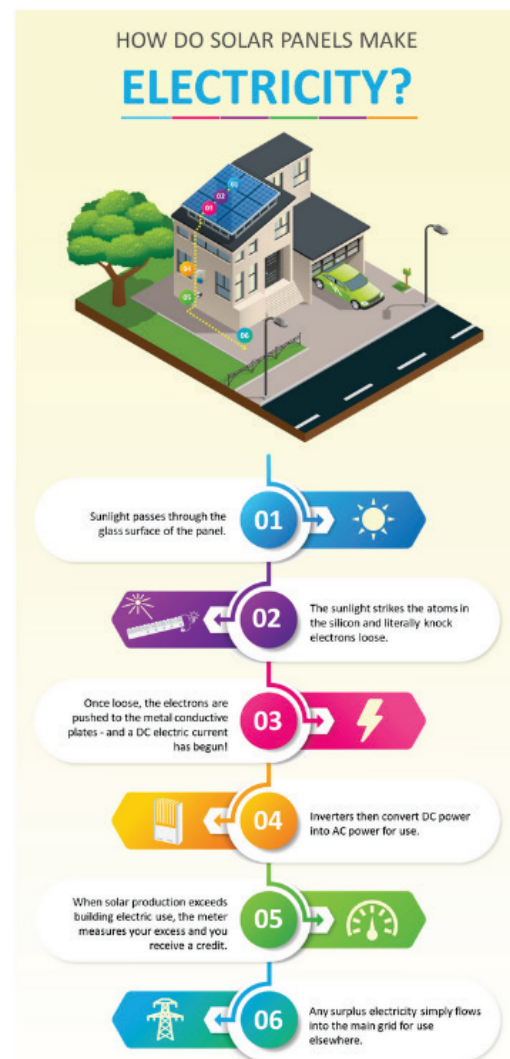
solar pv for your
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any questions

Source Teams 2017
and sustainability



Re-Energize Your Home!

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 - Educational content



THE BENEFITS OF SOLAR POWER

...FOR YOUR HOME:

SOLAR OWNERSHIP OPTIONS

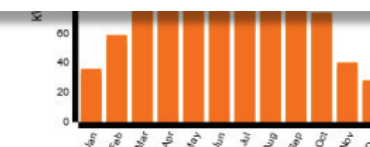
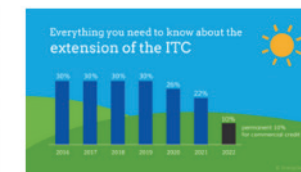
There are three common options for financing a solar pv array – purchasing a system, solar lease, (PPA). The main practical distinction between these approaches is in ownership.

SOLAR INCENTIVES IN MINNESOTA

Solar energy delivers positive environmental impacts, and contributes to our nation's energy independence. According to the Department of Energy, solar provides more jobs in electricity generation nationally (373,800) than coal, natural gas, oil, nuclear, and other fuels combined (288,000). To encourage the continued expansion of solar, governments, and utilities offer solar tax breaks and financial incentives to make solar more accessible for today's businesses and homeowners. As a result, you can reduce the net cost of your solar panel system by anywhere from 30 to 50 percent. The following are some of the incentives available:

The Federal Investment Tax Credit

The Investment Tax Credit (ITC) currently pays for 30% of every Solar installation through a tax credit claimed against the tax liability of the solar array owner.



Re-Energize Your |

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- 3 month followup with Solar Power Hour



HOW DO SOLAR PANELS MAKE

THE BENEFITS OF SOLAR POWER

Solar Twin Cities 2.0

JUL 18 Solar Power Hour in the City of Maplewood
Public · Hosted by Solar Twin Cities 2.0 and 4 others

★ Interested

Thursday, July 18, 2019 at 6:30 PM – 7:30 PM CDT
about 2 months ago

Maplewood Community Center [Show Map](#)

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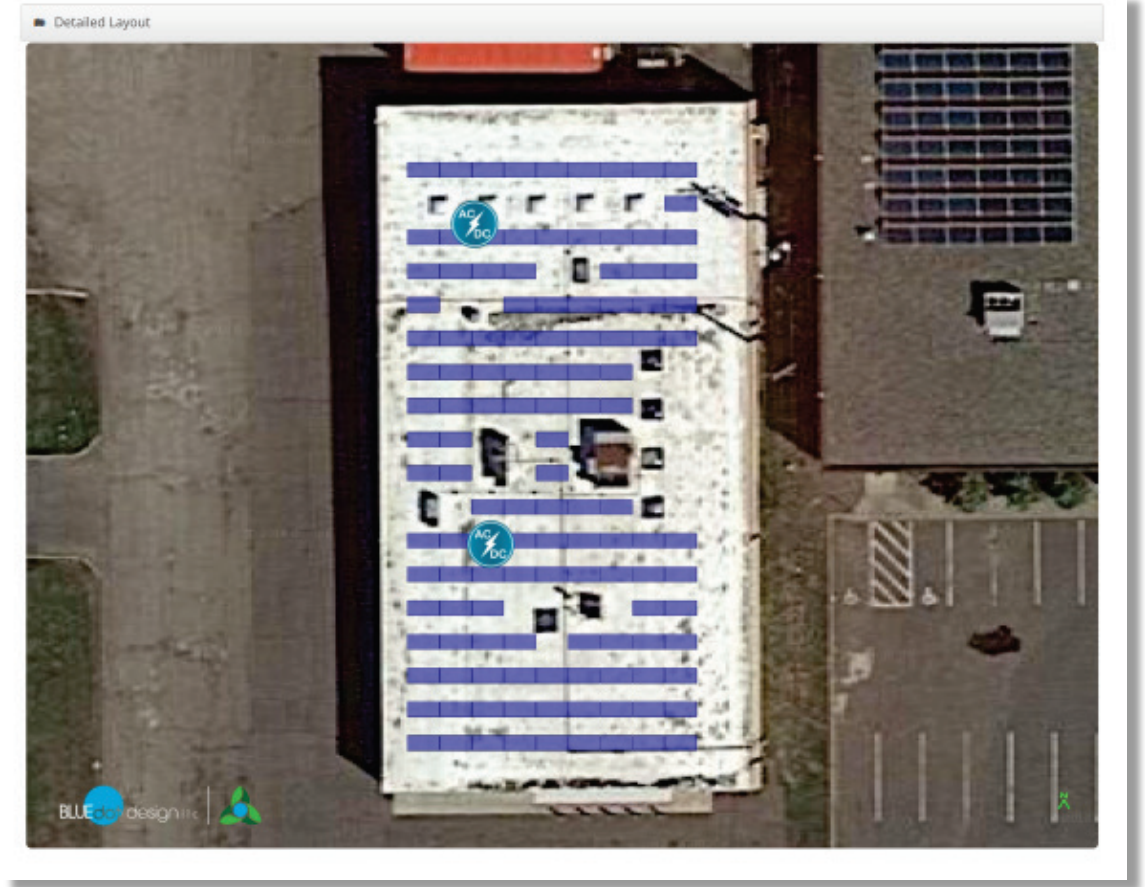
Maplewood

Re-Energize Your Business!

- 11 Energize Your Business!
Energy Efficiency
Participants
- 2016 program for energy
efficiency assessments +
recommendations
- ENERGY STAR
Benchmarking
- Resulting in energy
reduction of 480,000 kwh
annually!

Re-Energize Your Business!

- Revisited sites for solar potential
- Detailed solar feasibility assessment

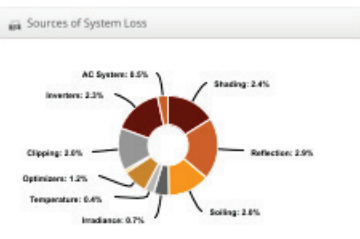
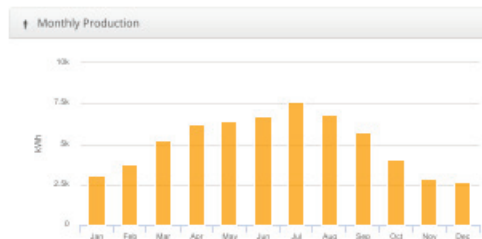
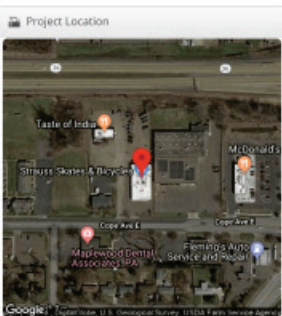




Rooftop 1 Strauss Skates, 1751 East Cope Avenue, Maplewood, MN 55109

- Revisited sites for solar potential
- Detailed solar feasibility assessment
- Projected array performance

System Metrics	
Design	Rooftop 1
Module DC Nameplate	43.8 kW
Inverter AC Nameplate	34.0 kW Load Ratio: 1.29
Annual Production	61.17 MWh
Performance Ratio	86.2%
kWh/kWp	1,396.1
Weather Dataset	TMV_10km_grid [45.05;-93.05] NREL (prospector)
Simulator Version	883bd9d9f68-2561898d05-2b8c6f3164-9a2f62ef9



Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,393.0	
	POA Irradiance	1,622.0	16.4%
	Shaded Irradiance	1,583.5	-2.4%
	Irradiance after Reflection	1,536.9	-2.9%
	Irradiance after Soiling	1,506.1	-2.0%
	Total Collector Irradiance	1,506.1	0.0%
	Nameplate	65,889.6	
Energy (kWh)	Output at Irradiance Levels	65,415.3	-0.7%
	Output at Cell Temperature Derate	65,126.4	-0.4%
	Output After Mismatch	65,126.2	-0.0%
	Optimizer Output	64,344.3	-1.2%
	Optimal DC Output	64,260.1	-0.1%
	Constrained DC Output	62,947.6	-2.0%
	Inverter Output	61,473.5	-2.3%
	Energy to Grid	61,166.1	-0.5%
Temperature Metrics			
Avg. Operating Ambient Temp		10.2 °C	
Avg. Operating Cell Temp		17.5 °C	
Simulation Metrics			
		Operating Hours	4677
		Solved Hours	4677

J. Condition Set													
Description	Condition Set 1												
Weather Dataset	TMY, 10km grid (45.05, 93.05), NREL (prospector)												
Solar Angle Location	Meneo Lat/Lng												
Transposition Model	Perez Model												
Temperature Model	Sandia Model												
Temperature Model Parameters	Rack Type		a		b		Temperature Delta						
	Fixed Tilt		-3.56		-0.075		3°C						
	Flush Mount		-2.81		-0.0455		0°C						
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D	
	2	2	2	2	2	2	2	2	2	2	2	2	
Irradiation Variance	5%												
Cell Temperature Spread	4° C												
Module Binning Range	-2.5% to 2.5%												
AC System Derate	0.50%												
Module Characterizations	Module							Characterization					
	Sunmodule 5W 350 XL mono (SolarWorld)							Manufacturer R&D, PAN					
Component Characterizations	Device							Characterization					
	P400 NA (SolarEdge)							Mfg Spec: Sheet					
	SE17K (SolarEdge)							Spec Sheet: Efficiency					



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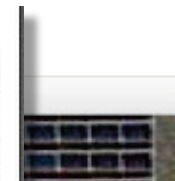
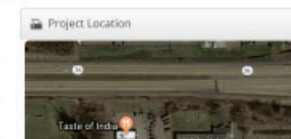
Re-Energize Your Business

- Revisited sites for solar potential
- Detailed solar feasibility assessment
- Projected array performance
- Cost estimate

Rooftop 1 Strauss Skates, 1751 East Cope Avenue, Maplewood, MN 55109

Report	
Project Name	Strauss Skates
Project Address	1751 East Cope Avenue, Maplewood, MN 55109
Prepared By	Del McNally bluedotdesign@gmail.com

System Metrics	
Design	Rooftop 1
Module DC Nameplate	43.8 kW
Inverter AC Nameplate	34.0 kW
Load Ratio	1.29



Monthly Production



Annual Production

Annual Production	
Description	Annual
Irradiance (kWh/m ²)	
Energy (kWh)	
Temperature Metrics	
Simulation Metrics	

OWNER Strauss Skates

PROJ: Rooftop Solar
LOC: Maplewood
TITLE: Roof Arrays

Order of Magnitude Budget - Solar PV Project Public Sector						DC Nameplate Capacity
Note: Costs are intended to illustrate Order of Magnitude and are preliminary in nature. Cost unit prices are based on 2017 national averages provided by the National Renewable Energy Laboratory, modified using local construction cost indices.						43.8
						Year 1 Generation Projection
						61.2
Acres: 0						
DESCRIPTION	Quantity	Unit Allow	Project Cost	SUB TOTAL	PERCENT TOTAL	Cost per watt
ADMINISTRATION COSTS						
LEGAL, FISCAL & ADMINISTRATIVE	1	2500	\$2,500	\$2,500	1.92%	\$0.06
LAND ACQUISITION	0	0	\$0			
LAND SALE - EXISTING STRUCTURES	0	0	\$0			
SOIL BORINGS	0	4200	\$0			
SURVEY	0	3500	\$0			
INSTALLATION COSTS						
Watt Rating						
PV Modules - Rooftop (Solarworld 350W)	350	125	271	\$33,874	84.59%	\$2.52
PV Modules - Ground Mount	350	0	271	\$0	0.00%	
PV Modules - Carport/Parking	350	0	271	\$0	0.00%	
Inverters	1	6614	\$6,614		6.00%	
Optimizers	125	60	\$7,500		6.81%	
Structural BOS	1	0	\$0		0.00%	
Electrical BOS	1	8831	\$8,831		8.02%	
Racking - Roof	1	8838	\$8,838		8.02%	
Racking - Ground Mount	1	0	\$0		0.00%	
Racking - Carport	1	0	\$0		0.00%	
Sales Tax	1	1729	\$1,729		1.57%	
Installation Labor	1	10101	\$10,101		9.17%	
Site Fencing	0	15	\$0		0.00%	
Site Grading	0	21780	\$0		0.00%	
Roof Patch/Repair	1	1287	\$1,287		1.17%	
Building Renovation - Not Included	0	0	\$0		0.00%	
Haz Mat Removal - Not Included	0	0	\$0		0.00%	
Permitting, Inspection, Interconnection	1	4468	\$4,468		4.06%	
Contingency	1	4381	\$4,381		3.98%	
Overhead	1	11267	\$11,267		10.23%	
Profit	1	11267	\$11,267		10.23%	
DEVELOPER OVERHEAD AND PROFESSIONAL FEES						
PROCUREMENT MANAGEMENT - Owner's Representative / Procurement Management			\$2,551	\$8,051	6.18%	\$0.18
PROCUREMENT MANAGEMENT - Design/Build Package			\$1,268			
PROCUREMENT MANAGEMENT - Utility Project Terms Determination (interconnection, process, and tariff)			\$0			
FINANCING - Preliminary Financial Modeling			\$0			
ENGINEERING - Structural Assessment			\$3,500			
ENGINEERING - Structural Modifications (not included)			\$0			
ENGINEERING - Civil			\$0			
COMMUNITY SOLAR MARKETING - Project Collateral Development			\$0			
Reimbursable Expenses			\$732			
CONTINGENCY						
OWNER'S PROJECT CONTINGENCY			\$9,516	\$9,516	7.31%	\$0.22
Project Total - FY 2018				\$130,225	100.00%	\$2.97



Maplewood

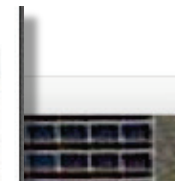
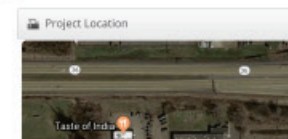
Re-Energize Your Business

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- Cost estimate
- Long-term payback

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OWNER Strauss Skates

PROJ.: Rooftop Solar

LOC.: Maplewood



Energy Generation Schedule (Based on Predicted Loss)

Potential Revenue Value

Operation Year	Calendar Year	Annual Energy Generation	% of 1st Year	% of Use	Utility Energy Used Rate	Utility Solar PV Purchase Rate	Value of Energy Used	Excess Solar KWH	Value of Solar KWH Sold	Solar Capacity Credit	Total Annual Value of Solar PV
1	2019	61,170 KWH	100.00%	122.34%	\$0.0925	\$0.0673	\$4,625.18	11,170	\$751.63	\$0.00	\$5,376.80
2	2020	60,681 KWH	99.20%	121.36%	\$0.0948	\$0.0690	\$4,740.80	10,681	\$736.67	\$0.00	\$5,477.47
3	2021	60,195 KWH	98.41%	120.39%	\$0.0972	\$0.0707	\$4,859.32	10,195	\$720.77	\$0.00	\$5,580.09
4	2022	59,714 KWH	97.62%	119.43%	\$0.0996	\$0.0725	\$4,980.81	9,714	\$703.89	\$0.00	\$5,684.70
5	2023	59,236 KWH	96.84%	118.47%	\$0.1021	\$0.0743	\$5,105.33	9,236	\$686.00	\$0.00	\$5,791.33
6	2024	58,762 KWH	96.06%	117.52%	\$0.1047	\$0.0761	\$5,232.96	8,762	\$667.08	\$0.00	\$5,900.04
7	2025	58,292 KWH	95.29%	116.58%	\$0.1073	\$0.0780	\$5,363.79	8,292	\$647.07	\$0.00	\$6,010.85
8	2026	57,826 KWH	94.53%	115.65%	\$0.1100	\$0.0800	\$5,497.88	7,826	\$625.94	\$0.00	\$6,123.82
9	2027	57,363 KWH	93.78%	114.73%	\$0.1127	\$0.0820	\$5,635.33	7,363	\$603.67	\$0.00	\$6,238.99
10	2028	56,904 KWH	93.03%	113.81%	\$0.1155	\$0.0840	\$5,776.21	6,904	\$580.19	\$0.00	\$6,356.40
11	2029	56,449 KWH	92.28%	112.90%	\$0.1184	\$0.0861	\$5,920.62	6,449	\$555.49	\$0.00	\$6,476.10
12	2030	55,997 KWH	91.54%	111.99%	\$0.1214	\$0.0883	\$6,068.63	5,997	\$529.50	\$0.00	\$6,598.13
13	2031	55,549 KWH	90.81%	111.10%	\$0.1244	\$0.0905	\$6,220.35	5,549	\$502.20	\$0.00	\$6,722.54
14	2032	55,105 KWH	90.08%	110.21%	\$0.1275	\$0.0928	\$6,375.86	5,105	\$473.53	\$0.00	\$6,849.39
15	2033	54,664 KWH	89.36%	109.33%	\$0.1307	\$0.0951	\$6,535.25	4,664	\$443.45	\$0.00	\$6,978.71
16	2034	54,227 KWH	88.65%	108.45%	\$0.1340	\$0.0975	\$6,698.63	4,227	\$411.92	\$0.00	\$7,110.55
17	2035	53,793 KWH	87.94%	107.59%	\$0.1373	\$0.0999	\$6,866.10	3,793	\$378.89	\$0.00	\$7,244.98
18	2036	53,363 KWH	87.24%	106.73%	\$0.1408	\$0.1024	\$7,037.75	3,363	\$344.29	\$0.00	\$7,382.05
19	2037	52,936 KWH	86.54%	105.87%	\$0.1443	\$0.1049	\$7,213.69	2,936	\$308.10	\$0.00	\$7,521.79
20	2038	52,512 KWH	85.85%	105.02%	\$0.1479	\$0.1076	\$7,394.04	2,512	\$270.25	\$0.00	\$7,664.28
21	2039	52,092 KWH	85.16%	104.18%	\$0.1516	\$0.1103	\$7,578.89	2,092	\$230.68	\$0.00	\$7,809.57
22	2040	51,675 KWH	84.48%	103.35%	\$0.1554	\$0.1130	\$7,768.36	1,675	\$189.35	\$0.00	\$7,957.71
23	2041	51,262 KWH	83.80%	102.52%	\$0.1593	\$0.1158	\$7,962.57	1,262	\$146.19	\$0.00	\$8,108.76
24	2042	50,852 KWH	83.13%	101.70%	\$0.1632	\$0.1187	\$8,161.63	852	\$101.15	\$0.00	\$8,262.79
0.8247	25	50,445 KWH	82.47%	100.89%	\$0.1673	\$0.1217	\$8,365.67	445	\$54.17	\$0.00	\$8,419.84
	26	50,041 KWH	81.81%	100.08%	\$0.1715	\$0.1248	\$8,574.82	41	\$5.18	\$0.00	\$8,579.99
	27	49,641 KWH	81.15%	99.28%	\$0.1758	\$0.1279	\$8,726.11	0	\$0.00	\$0.00	\$8,726.11
	28	49,244 KWH	80.50%	98.49%	\$0.1802	\$0.1311	\$8,872.71	0	\$0.00	\$0.00	\$8,872.71
	29	48,850 KWH	79.86%	97.70%	\$0.1847	\$0.1343	\$9,021.77	0	\$0.00	\$0.00	\$9,021.77
	30	48,459 KWH	79.22%	96.92%	\$0.1893	\$0.1377	\$9,173.34	0	\$0.00	\$0.00	\$9,173.34

Project Total - FY 2018

\$130,225 100.00%

\$2.97



Maplewood

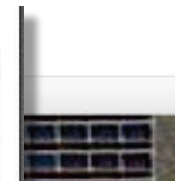
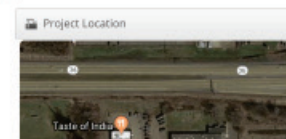
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- Cost estimate
- Long-term payback
- Summary of potential

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OWNER Strauss Skates
PROJ: Rooftop Solar
LOC.: Maplewood



Energy Generation Schedule (Based on Predicted Loss)

Potential Revenue Value

Site Summary

Potential Annual Solar Energy Generation

61.2_{MWH}

Achieves Net Zero:

Yes

25 years +

Opinion of Project Budget:

\$130,225

Net Project Cost (with ITC Credit):

\$74,554

Anticipated Value To Owner:

\$214,022

Site Quality for Solar:

Excellent

Total Annual
Value of Solar
PV

\$5,376.80
\$5,477.47
\$5,580.09
\$5,684.70
\$5,791.33
\$5,900.04
\$6,010.85
\$6,123.82
\$6,238.99
\$6,356.40
\$6,476.10
\$6,598.13
\$6,722.54
\$6,849.39
\$6,978.71
\$7,110.55
\$7,244.98
\$7,382.05
\$7,521.79
\$7,664.28
\$7,809.57
\$7,957.71
\$8,108.76
\$8,262.79
\$8,419.84
\$8,579.99
\$8,726.11
\$8,872.71
\$9,021.77
\$9,173.34

29	2047	48,850 KWH	79.86%	97.70%	\$0.1847	\$0.1343	\$9,021.77	0	\$0.00	\$0.00
30	2048	48,459 KWH	79.22%	96.92%	\$0.1893	\$0.1377	\$9,173.34	0	\$0.00	\$0.00

Project Total - FY 2018

\$130,225

100.00%

\$2.97



Maplewood

Re-Energize Your Business!

- Sent package with:
 - Overview letter



Dear

The City of Maplewood has received a grant from the State of Minnesota in support of the City's RE-Energize Maplewood! program. The effort is looking at the feasibility of on-site solar energy in the City of Maplewood. As a part of this program, we've reviewed solar electricity opportunities City-wide and have identified the "Top 30" sites in an effort to help key businesses and organizations in the community explore the potential of solar electricity on their property.

In short – according to the State of Minnesota's Solar Suitability tool, **your business is OPTIMAL for the installation of solar pv**. This means that installing solar pv on your business should pay for itself rapidly, after which the solar pv system will provide you with "free" electricity for many years. Attached, you will find a preliminary report on the suitability of your business for solar power and a preliminary solar array concept and opinion of cost and payback.

Why use solar for your business?

- **Receive Tax Credit** - If you purchase a solar power system before December 31, 2019, your business is eligible for a Federal tax credit equal to 30% of the project costs AND recover the cost of the system through MACRS depreciation.
- **Reduce Operating Costs** - Solar power systems will reduce or even eliminate your office building's electric bill. EnergySage Marketplace Data indicates the average commercial property owner's electric bill drops 75% - from \$1,950 to \$500 – after switching to solar.
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Sincerely,



Maplewood

Re-Energize Your Business

- Sent package with:
 - Overview letter
 - Solar Feasibility Assessment Report

Preliminary Solar Feasibility Assessment

Solar Feasibility - Strauss Skates and Bikes

With your engagement in the 2016/17 Energize Maplewood energy efficiency program, combined with your on-going energy conservation efforts, Strauss Skates has achieved an ENERGY STAR Score of 96 - meaning your energy conservation out-performs 96% of your peers nationally! With your significant energy savings efforts, your building is ready for the next step in energy cost savings - installing a solar pv!

Concept Design

The following pages illustrate a preliminary solar array concept design and analysis. The analysis includes a review of the array's projected annual electric generation month-by-month, a review of the system components required, and a detailed assessment of the array's anticipated performance including "system losses" (typical losses of the sun's energy potential through site and array characteristics).

The roof configuration of the Strauss Skates building is well suited for solar pv installation. Though there are rooftop equipment which reduce the total availability of solar pv, the roof's orientation and lack of solar obstructions provide great solar exposure. The capacity available on the flat roof portion alone appears to be sufficient to meet the site's current and historic electricity use - Strauss Skates could produce all of its own electricity on-site! A structural feasibility review should be conducted in order to validate the roof's structural capacity for a solar pv array. This structural review should be conducted by the solar installer prior to finalizing a solar array bid or proceeding with an installation.

Potential Energy and Financial Performance

The concept array shown is projected to produce nearly 1,640,000 Kwh over the next 30 years. The estimated total value of the electricity this array is capable of generating over that period of time is nearly \$215,000. This value exceeds the estimated total project cost at a 2.9:1 Value to Cost ratio, meaning this array is anticipated to provide your organization a significant "return on investment" providing a long-term cost savings on your electricity costs.

This solar array may qualify your business for a tax credit of approximately \$39,000 as well as equipment value depreciation.

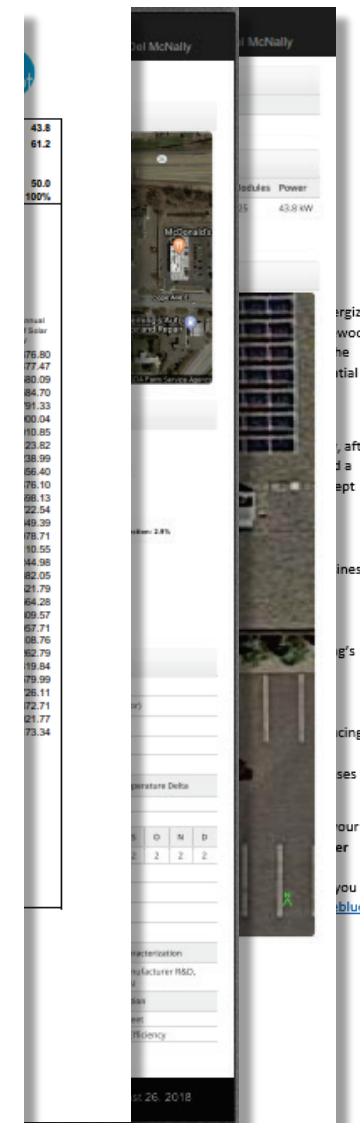
Finally, should your organization pursue a "third party ownership" model, this array should provide your organization with immediate electricity cost savings without "up front" costs.

Site Summary

Potential Annual Solar Energy Generation	61.2MWH
Achieves Net Zero:	Yes 25 years +
Opinion of Project Budget:	\$130,225
Net Project Cost (with ITC Credit):	\$74,554
Anticipated Value To Owner:	\$214,022
Site Quality for Solar:	Excellent



RE-Energize Maplewood





Maplewood

Re-Energize Your Business!

- Sent package with:
 - Overview letter
 - Solar feasibility
 - Assessment report
 - Educational content

Preliminary Solar Feasibility Assessment

...FOR YOUR BUSINESS:

Receive Tax Credit

If you purchase a solar power system before December 31, 2019, your business is eligible for a Federal tax credit equal to 30% of the project costs AND recover the cost of the system through MACRS depreciation.

Modified Accelerated Cost Recovery System (MACRS)

The U.S. tax code allows for a [tax deduction for the recovery of the cost of tangible property](#) over the useful life of the property. The Modified Accelerated Cost Recovery System (MACRS) is the current depreciation method for most property. The market certainty provided by MACRS allows businesses in a variety of economic sectors to continue making long-term investments and has been found to be a significant driver of private investment for the solar industry and other energy industries. Businesses can write off the value of their solar energy system through using MACRS, reducing their tax burden and accelerating returns on solar investments. Accelerated depreciation can reduce net system cost by an additional 30 percent.

Note: The Consolidated Appropriations Act, signed in December 2015, extended the "placed in service" deadline for bonus depreciation. Equipment placed in service before January 1, 2018 can qualify for 50% bonus depreciation. Equipment placed in service during 2018 can qualify for 40% bonus depreciation. And equipment placed in service during 2019 can qualify for 30% bonus depreciation.

Examination of Corporate Depreciation Deduction

Re-Energize Your Business!

- Sent package with:
 - Overview letter
 - Solar feasibility
 - Assessment report
 - Educational content
- 3 month follow-up letter with more resources

Preliminary Solar Feasibility Assessment

...FOR YOUR BUSINESS:

Receive Tax Credit

If you purchase a solar power system before December 31, 2019, your business is eligible for The Investment Tax Credit (ITC) of 30% of all associated solar project costs.

Modified Accelerated Cost Recovery System (MACRS)

The U.S. tax code allows for the useful life of the property current depreciation method businesses in a variety of economic industries. Businesses can reduce their tax burden and can reduce net system cost.

Note: The Consolidated Appliance Energy Efficiency Incentive Act (CEEI) signed in December 2015, extends the "placed in service" deadline for depreciation. Equipment placed in service before January 1, 2018 can qualify for bonus depreciation. Equipment placed in service during 2018 can qualify for bonus depreciation. And equipment placed in service during 2019 can qualify for bonus depreciation.



October 10, 2018

Energize Maplewood! – Building Tune Up Participant

I am following up on the package of information you received from the City of Maplewood a few weeks ago. As that information outlined, according to the State of Minnesota's Solar Suitability tool, your business is OPTIMAL for the installation of solar PV. We thought we would share some additional information with you which, as a business owner, helps to underscore the business case of "going solar!"

The Federal Investment Tax Credit: If you purchase and install a solar power system before December 31, 2019, your business is eligible for The Investment Tax Credit (ITC) of 30% of all associated solar project costs.

Accelerated Depreciation: Businesses can write off the value of their solar energy system through the Modified Accelerated Cost Recovery System (MACRS), reducing their tax burden and accelerating returns on solar investments - reducing net system cost by an additional 30% or more in some cases.

Reduce Operating Costs: Solar power systems will reduce or even eliminate your office building's electric bill. EnergySage Marketplace Data indicates the average commercial property owner's electric bill drops 75% - from \$1,950 to \$500 - after switching to solar.

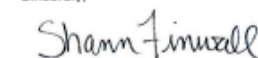
PACE Financing: Property Assessed Clean Energy or PACE allows businesses and eligible nonprofit organizations to obtain solar systems without upfront costs through a voluntary special assessment placed onto the property tax statement.

Ownership Options: In addition to direct ownership, there are common options for third party solar array ownership such as a Power Purchase Agreement (PPA). In a PPA, you typically have no up-front costs and simply pay for the electricity produced by the system. Usually, this electricity costs less than the electricity provided by your utility, meaning you save money from the day it is installed.

You can learn more about solar benefits, incentives, and ownership options here:
<http://www.bluedotregister.org/renewable-energy/>

One of our Re-Energize Maplewood! team members will visit you in the next few weeks to see if they can help answer any renewable energy or energy efficiency questions you may have. In the meantime, don't hesitate to contact me.

Sincerely,



Shann Finwall, AICP, Environmental Planner
(651) 249-2304
shann.finwall@maplewoodmn.gov

Environmental and Economic Development, 1902 County Rd B East, Maplewood MN 55109
(651) 249-2300 FAX: (651) 249-2319
www.maplewoodmn.gov

Re-Energize Your Business!

- Sent package with:
 - Overview letter
 - Solar Feasibility Assessment Report
 - Educational Content
- 3 month follow-up letter with more resources
- And invitation to Solar Power Hour



Solar Twin Cities 2.0

JUL 18 Solar Power Hour in the City of Maplewood
Public · Hosted by Solar Twin Cities 2.0 and 4 others

★ Interested

🕒 Thursday, July 18, 2019 at 6:30 PM – 7:30 PM CDT
about 2 months ago

📍 Maplewood Community Center [Show Map](#)

Service during 2019 can qualify for bonus depreciation.

Environmental and Economic Development, 1902 County Rd B East, Maplewood MN 55109
(651) 249-2300 FAX: (651) 249-2319
www.maplewoodmn.gov



Solar Top 40

- Proactively identified 40 significant solar sites

		Building Type	SF
Site 1		Industrial	119,650
Site 2		Retail	103,240
Site 3		Retail	37,000
Site 4		Retail	67,035
Site 5		Retail	64,664
Site 6		School	69,000
Site 7		Religious	36,600
Site 8		Commercial	107,911
Site 9		Senior Living	75,400
Site 10		Multifamily Residential	280,800
Site 11		Commercial	79,670
Site 12		Retail	1,032,922
Site 13		School	105,196
Site 14		Retail	69,522
Site 15		Retail	168,760
Site 16		Retail	34,580
Site 17		Retail	38,960
Site 18		Commercial	102,929
Site 19		Industrial	79,391
Site 20		Government	176,936
Site 21		Government	29,375
Site 22		Commercial	107,780
Site 23		Industrial	62,500
Site 24		Healthcare	378,250
Site 25		Commercial	174,848
Site 26		Government	250,000
Site 27		Retail	50,625
Site 28		Healthcare	21,294
Site 29		Religious	159,720
Site 30		Commercial	93,280

Nameplate Capacity (KW dc)	Estimated Annual Solar Generation (Yr 1)	Estimated Project Cost (after incentives except non-profit)	Estimated Value of Solar (30 year)	Value to Cost Ratio	Achieves Net Zero
878.6	1,158,200	\$948,234	\$4,519,178	4.77	No
541.5	741,000	\$658,688	\$2,849,626	4.33	No
264.2	358,500	\$501,353	\$1,377,824	2.75	No
419.9	581,700	\$521,921	\$2,225,331	4.26	No
253.4	346,700	\$346,971	\$346,971	3.83	No
254.5	333,100	\$607,671	\$1,296,245	3.73	No
284.7	390,400	\$880,767	\$1,495,701	2.97	Yes
494.9	691,100	\$604,176	\$2,638,292	4.37	No
414.1	568,700	\$715,320	\$3,026,191	4.23	No
588.8	762,200	\$692,070	\$4,121,788	5.96	No
383.2	530,800	\$486,765	\$2,029,848	4.17	No
3163.4	4,350,000	\$3,065,282	\$13,634,880	4.45	No
370.9	490,300	\$827,318	\$1,905,642	4.02	No
529.4	593,900	\$709,167	\$2,458,890	3.47	No
1140.0	1,613,000	\$1,103,413	\$6,142,523	5.57	Yes
198.5	274,870	\$321,994	\$1,046,627	3.25	No
220.5	307,600	\$300,946	\$1,169,363	3.89	Yes
482.1	812,000	\$661,330	\$2,917,266	4.41	No
553.7	730,030	\$654,537	\$2,844,779	4.35	Yes
361.2	464,600	\$786,652	\$1,823,311	4.05	No
105.8	147,300	\$270,032	\$555,357	3.59	No
645.6	902,800	\$739,928	\$3,447,736	4.66	No
391.0	551,100	\$864,758	\$2,095,136	4.23	No
1049.9	1,416,300	\$1,779,692	\$5,482,988	5.38	No
442.8	591,000	\$564,676	\$2,291,073	4.06	No
1995.0	2,768,800	\$3,323,500	\$10,621,538	5.58	No
294.0	408,600	\$388,050	\$1,558,512	4.02	No
230.8	312,200	\$755,248	\$1,199,977	2.78	Yes
699.8	943,700	\$1,343,783	\$3,650,627	4.75	Yes
297.9	414,600	\$463,657	\$1,580,765	3.41	No



Solar Top 40

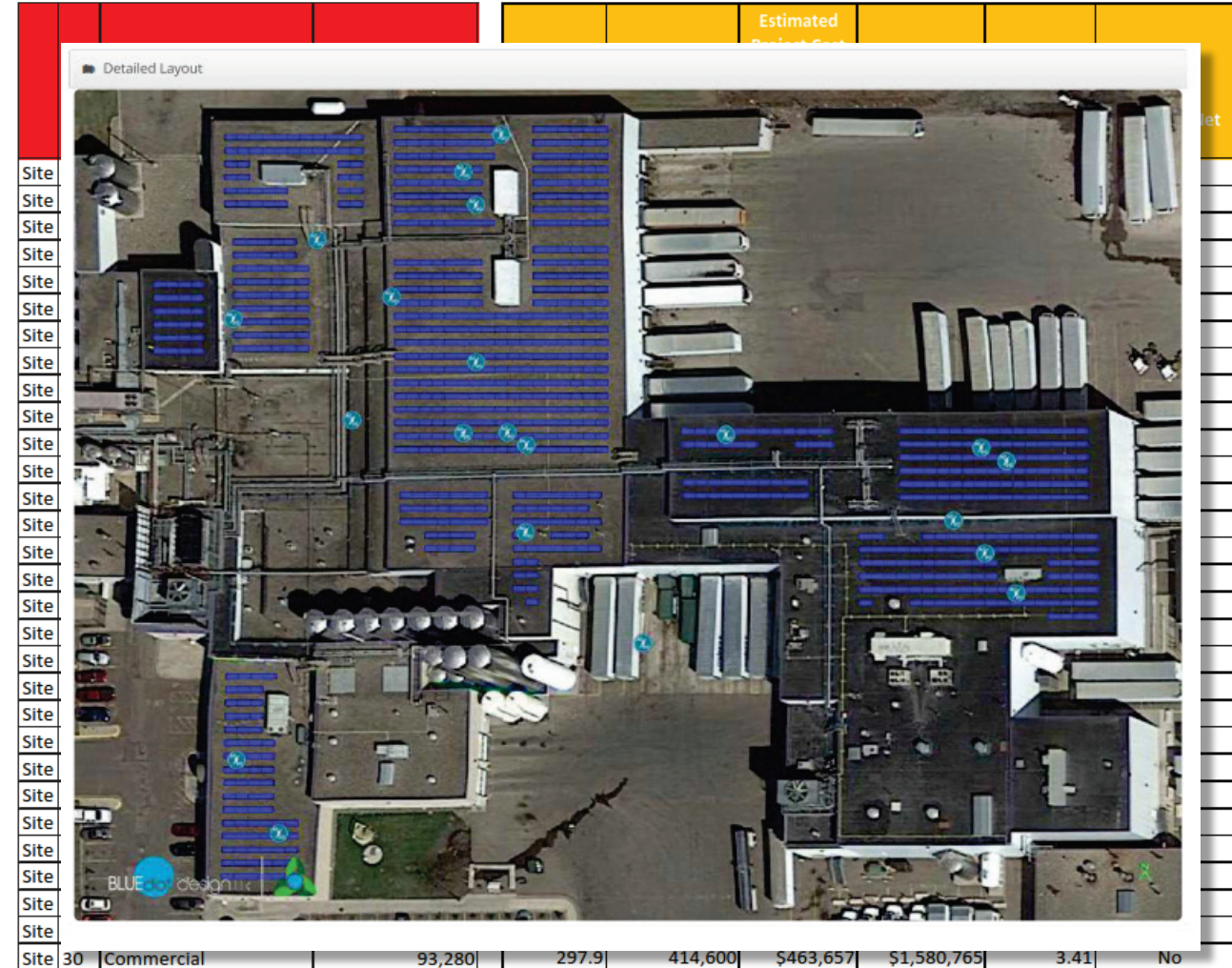
- Proactively identified 40 significant solar sites
- Range of building types found in Maplewood

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- Range of building types found in Maplewood
- Conducted detailed solar feasibility on each site





Solar Top 40

- Proactively identified 40 significant solar sites
- Range of building types found in Maplewood
- Conducted detailed solar feasibility on each site
- Shared assessment, potential economic payback, solar resources and resources with each property owner



Dear

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Sincerely,

Results of Solar Assessment

Re-Energize Maplewood!
projects represent

- 29,169,900 kwh of solar electricity capacity
- Meeting City's 2025 Renewable Energy goal
- Potential of 286,300 metric tons of GHG Reduction
- Up to \$109,000,000 in electricity cost savings for owners



Prepared by:



Re-Energize Maplewood! Outreach

- Letters
- Site Visits
- Videos
- Door Hangars
- Celebrations
- Events
- Newsletters
- Website
- Presentations

Terry Chaney of CEE and Shann Finwall of Maplewood having fun promoting *Re-Energize Maplewood!* at the RWMWD Waterfest Event



Next Steps

- Organizing a group purchase for commercial properties in City
- Working with LMI to advance solar
 - Research approaches to advancing solar for LMI communities
 - Coordinating with Ramsey County to explore program opportunities



Thank You

www.maplewoodmn.gov/reenergize

Shann Finwall, Environmental Planner
City of Maplewood
(651) 249-2304
shann.finwall@maplewoodmn.gov

Ted Redmond, Co-Founder
paleBLUEdot, llc
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