

Duluth Seaway Port Authority

802 Garfield Avenue

Duluth, MN 55802

ENERGY ANALYSIS

Electrification and Greenhouse Gas Reduction

July 11, 2022



**Duluth Seaway
Port Authority**

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Customer Information

Facility Information:

Business Name: Duluth Seaway Port Authority
Service Address: 802 Garfield Avenue, Duluth, MN 55802
Building/Business Type: Port Authority

Utility Type: Electric
Utility Provider: Minnesota Power
Utility Type: Natural Gas
Utility Provider: Comfort Systems
Utility Type: Fuel Oil & Propane
Utility Provider: Como Oil

Customer Contact: Dean Lembke – Director of Building and Facilities
Customer Phone #: (218) 393-5450
Customer Email: dlembke@duluthport.com

Date of Analysis: July 11, 2022
Annual Electric Usage: 878,645 kWh/Year
Annual Natural Gas Usage: 35,530 CCF/year
Annual LPG Usage: 28,643 gal/Year
Annual #1 Fuel Oil Usage: 7,472 gal/Year
Annual 86 Biodiesel Usage: 10,870 gal/Year
Annual CO2 Emissions: 918 Ton CO2/year

MN Power Representative

Name: Chad Trebilcock
Email: ctrebilcock@mnpower.com
Phone: (218) 355-2206

Consultant Contact

Name: Doug Eli
Email: deli@frontierenergy.com
Phone: (763) 222-3039

Consulting Firm: Frontier Energy
7935 Stone Creek Drive, Suite 140
Chanhassen, MN 55317
Phone: (952) 767-7455

Executive Summary

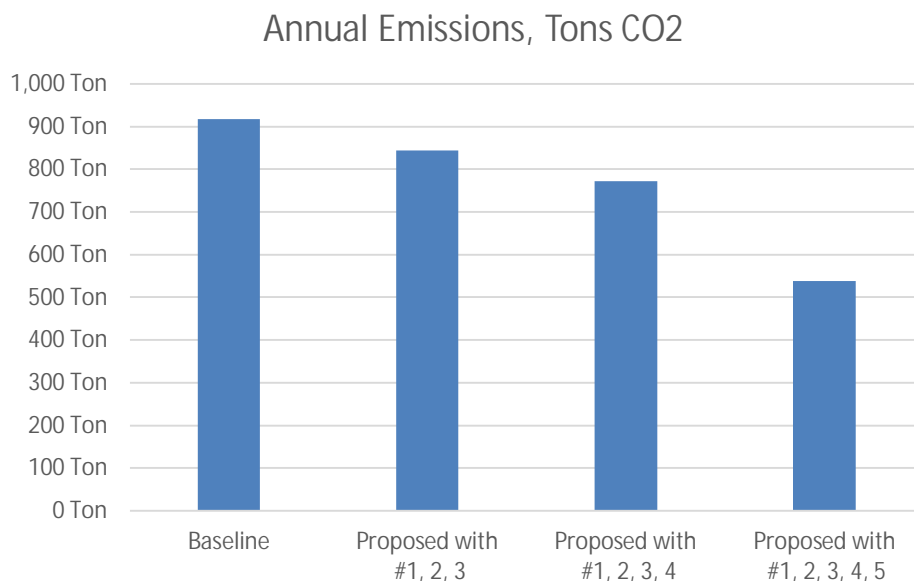
Duluth Seaway Port Authority requested an audit be conducted at their facilities in Duluth, MN. Representatives from Minnesota Power and Frontier Energy visited the client's site on June 1st, and July 11th. An Energy Analysis is the first step toward identifying opportunities to keep operating costs low, remain competitive in the marketplace, and start saving energy and money. This report contains specific recommendations to reduce energy usage and look at replacing technologies that use fossil fuels with technologies that use electricity as a source of energy. Some of these recommendations may qualify for a rebate to help reduce your initial equipment costs and provide a faster payback on your energy investment.

This report looks at opportunities for greenhouse gas reduction and overall energy efficiency. Implementing the right solution will reduce annual greenhouse gas emissions and reduce annual energy costs at the same time.

The following is a summary of the top recommendations to implement:

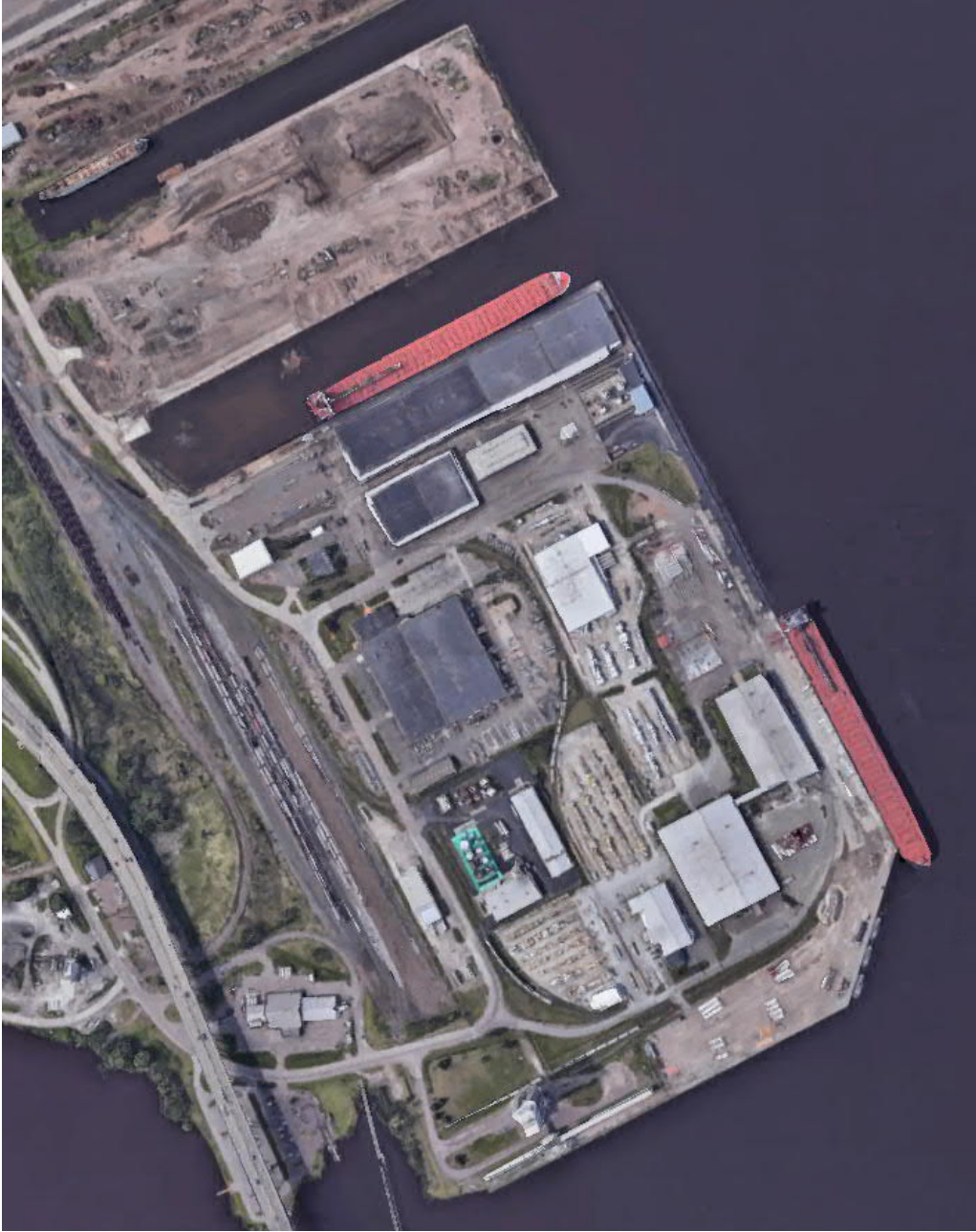
1. LED lighting
2. Air handler fan VFDs
3. Interruptible heat pump for the administration building
4. Electric forklifts
5. Solar panel array

Greenhouse gas reductions from the recommendations included in this report:



Facility and Operations Description

Duluth Seaway Port Authority manages over 20 building and 150 acres of property in the port of Duluth, MN. The buildings range in use from the administration office to unloading warehouses and terminals for shipping. The following pages describe the existing energy usage and CO2 emissions.



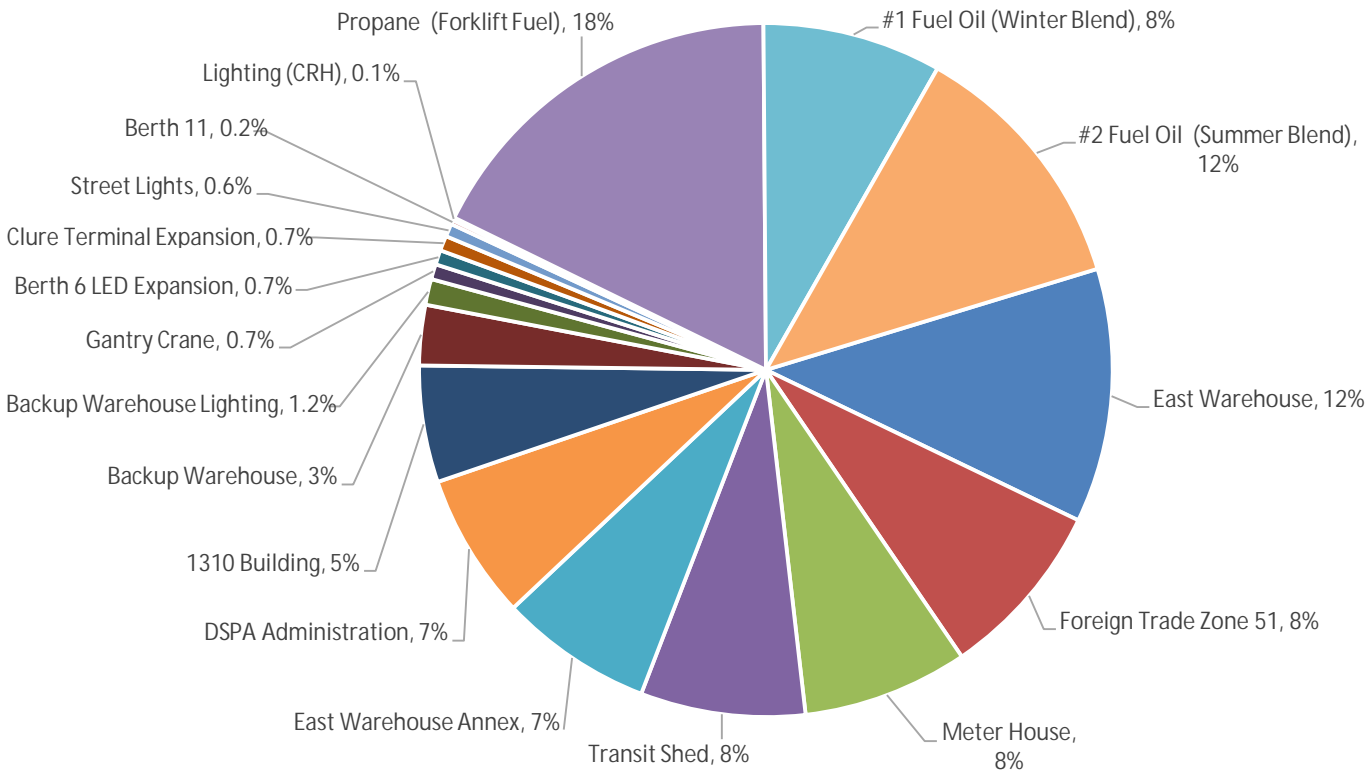
Duluth Port Authority

Energy Use

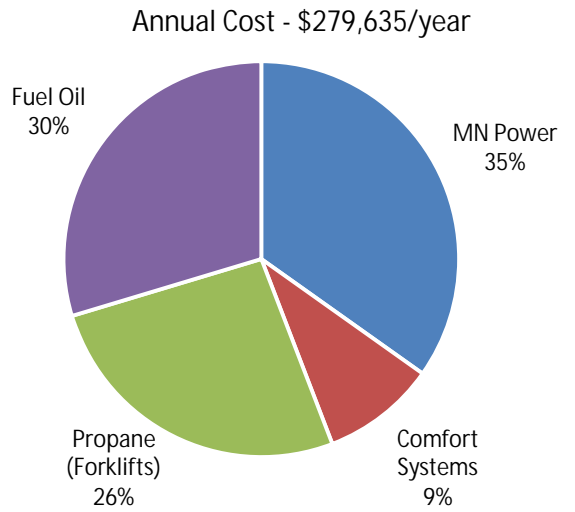
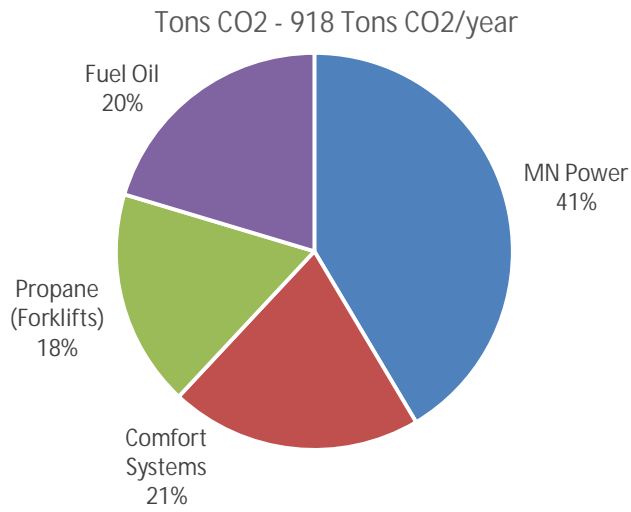
Account Designation	MN Power Meter #	Comfort Systems Account #	Electric			Electric Breakdown			Natural Gas			Natural Gas Breakdown		Como Oil		Emissions
			Annual Usage, kWh	Annual Emissions, Tons CO2	Annual Cost	HVAC	Lighting	Misc. & Shop Equipment	Annual Usage, CCF	Annual Emissions, Tons CO2	Annual Cost	Heating, CCF	Hot Water, CCF	Annual Usage, Gallons	Annual Cost	Annual, Tons CO2
East Warehouse	574241	230523966-001	163,976	71.0	\$27,040	32,914	46,147	84,915	7,141	37.8	\$5,345	7,141				108.8
Foreign Trade Zone 51	518400	230523968-002	39,257	17.0	\$5,397	6,999	32,258		11,197	59.3	\$7,352	11,197				76.3
Meter House	500012	270762050-002	12,424	5.4	\$1,577		12,424		12,374	65.6	\$10,517	12,374				71.0
Transit Shed	570746		162,864	70.5	\$14,320	28,080	71,466	63,318								70.5
East Warehouse Annex	571976	230523982-001	150,719	65.3	\$10,830	62,572	84,737	3,410								65.3
DSPA Administration	577621	230529420-003	84,698	36.7	\$10,359	63,491	14,493	6,714	4,819	25.5	\$3,405	4,063	756			62.2
1310 Building	574342		115,584	50.0	\$9,250	7,470	65,378	42,736								50.0
Backup Warehouse	573070		59,662	25.8	\$7,570	53,144		6,518								25.8
Backup Warehouse Lighting	573653		25,297	11.0	\$3,372		25,297									11.0
Gantry Crane	574232		15,120	6.5	\$4,750		15,120									6.5
Berth 6 LED Expansion	557504		14,601	6.3	\$1,180		14,601									6.3
Clure Terminal Expansion	514305		14,373	6.2	\$2,002	4,690	7,896	1,788								6.2
Street Lights	613361		12,864	5.6	\$742		12,864									5.6
Berth 11	514294		4,231	1.8	\$354		4,231									1.8
Lighting (CRH)	574356		2,976	1.3	\$377		2,976									1.3
Propane (Forklift Fuel)														28,643 LPG	\$69,524	161.9
#1 Fuel Oil (Winter Blend)														7,472 #1 Fuel Oil	\$34,370	76.4
#2 Fuel Oil (Summer Blend)														10,870 #2 Fuel Oil	\$50,001	110.7
Total			878,645	380.5	\$99,121	259,360	409,887	209,399	35,530	188.3	\$26,619	34,774	756	46,985 gallons	\$153,895	917.8

The chart above identifies the previous two-year average energy usage, CO2 emissions, and annual cost for each account. The accounts shown contribute to approximately 918 Tons of CO2 emissions per year. Fuel oil and propane forklift fuel account for the largest fraction of CO2 emission.

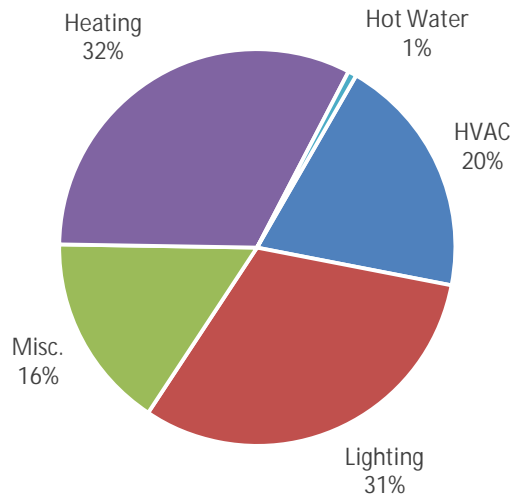
Breakdown of CO2 Emissions



Below is a breakdown of the emissions and annual cost based on utility type. Fuel oil and propane costs are estimate based on current fuel rates.



Minnesota Power Electric Tons CO2 - 380.5 Tons CO2



Energy Conservation Opportunities

Measures identified were chosen based on potential cost savings and CO2 emission reductions and energy cost savings. Specifications, sequence of operations, and energy efficient upgrade options may also be taken into consideration. For the recommendations evaluated in this report, the cost of taking energy conservation measures were based on the following calculations.

\$12	monthly charge MP
\$6.50	per kW 25D rate
\$0.06054	per kWh 25D rate
\$0.05888	per kWh Interruptible rate
\$0.85	per CCF
\$46	monthly charge CS
\$2.60	LPG \$/gallon
\$4.60	Fuel Oil \$/gallon
0.000433	Ton CO2/kWh
0.0053	Ton CO2/CCF NG
0.005653333	Ton CO2/ gal LPG
0.010229	Ton CO2/ gal #1 Fuel Oil
0.01018	Ton CO2/ gal 86 Biodiesel
0.00341214	MMBTU/kWh
0.1037	MMBTU/CCF NG
0.0915	MMBTU/gal LPG
0.13869	MMBTU/gal #1 Fuel Oil
0.118	MMBTU/gal 86 Biodiesel

Minnesota Power and Comfort Systems have many incentive opportunities and programs for energy projects. Incentives can help cover the cost of many of the upgrades mentioned in this audit. Some projects must be pre-approved; for more information on the available programs, reach out to your utility representative, or contact Frontier Energy. Also included in this report are grant options for relevant recommendation.

Summary by Payback

ECM #	Account Name	Description	Annual Cost Saved	Annual CO2 Reduced	Estimated Project Cost*	Estimated Rebate	Estimated Cost After Rebate	Simple Payback	% CO2 Reduced
1	Clure Terminal Expansion	Guard Shack Lighting	\$16	0.1	\$30	\$8	\$22	1.4	0.0%
2	Administration Building	Domestic Hot Water Circ Pump Controls	\$20	0.1	\$50	\$12	\$38	1.9	0.0%
3	Backup Warehouse	LED Lighting	\$1,544	5.4	\$6,250	\$2,440	\$3,810	2.5	0.6%
4	Clure Terminal Expansion	Air Source Heat Pump	\$437	1.6	\$2,595	\$1,000	\$1,595	3.6	0.2%
5	1310 Building	LED Lighting	\$1,229	7.4	\$7,720	\$2,494	\$5,226	4.3	0.8%
6	East Warehouse Annex	LED Lighting	\$3,975	21.1	\$27,180	\$8,816	\$18,364	4.6	2.3%
7	Backup Warehouse	AHU Supply Fan VFDs	\$669	4.8	\$3,796	\$387	\$3,409	5.1	0.5%
8	East Warehouse	LED Lighting	\$1,651	8.6	\$16,550	\$5,357	\$11,193	6.8	0.9%
9	Transit Shed	Transit Shed LED Lighting	\$3,983	17.9	\$42,210	\$11,237	\$30,973	7.8	1.9%
10	Foreign Trade Zone 51	LED Lighting	\$298	1.3	\$5,000	\$1,600	\$3,400	11.4	0.1%
11	Forklifts	Electric Forklifts	\$51,641	72.1	\$720,000	\$0	\$720,000	13.9	7.9%
12	Administration Building	Boiler to Electric Heat Pump	\$938	4.7	\$20,000	\$1,172	\$18,828	20.1	0.5%
13	Transit Shed	Solar Panels	\$59,136	232.8	\$1,856,400	\$0	\$1,856,400	31.4	25.4%
14	Administration Building	Gas to Electric Heat Pump Water Heater	\$20	1.3	\$5,000	\$55	\$4,945	245.7	0.1%
Total			\$125,555	379.2	2,712,781	\$34,577	\$2,678,204	21.3	41.3%

Conservation Opportunity Analysis

All energy conservation measures (ECMs) listed below are estimates, and additional engineering and analysis is required to evaluate final cost and savings estimates. Additional details for each ECM (e.g., costs, operating assumptions) is provided in the corresponding worksheet in the appendix.

- **LED Lighting:** Consider replacing the lighting throughout the warehouses and break rooms with LED fixtures. All values are estimates based on information provided at the time. Fixtures counts, recommended wattages, rebates for each area are found in the appendix.
- **Administration Building Circulation Pump Controls:** The domestic hot water circulation pumps currently operate 24/7, and these could be shut off in the evenings and nights with timer controls.
- **Backup Warehouse:** The backup warehouse had multiple air handlers for fresh air circulation. Consider installing VFDs on the AHU supply fans that serve the warehouse. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.
- **Electric Forklifts:** The DSP has 24 operational propane forklifts, which produce approximately 162 Ton CO₂ emissions per year. Equivalent electric forklifts would account for approximately 90 Ton CO₂ emissions per year. Rates for delivered fuels can fluctuate significantly, however at the current rates, electric forklifts could save over \$50,000 per year in utility costs. Also, the Minnesota Pollution Control Agency has grants available for converting to electric forklifts and port cargo handling equipment. More information can be found at this link: [Cleaner heavy-duty vehicles | Minnesota Pollution Control Agency \(state.mn.us\)](https://www.mn.gov/energy/cleaner-heavy-duty-vehicles)
- **Administration Building Electric Heat Pump Heating:** Recommend adding an electric air to water heat pump, on an interruptible meter, to utilize a more efficient and affordable heating source for the existing heating hot water loop when ambient temperatures are sufficient. Breakeven COP is the COP rating to switch to gas heating, based on the unit's COP at outdoor temperature. When a heat pump is below 2.23 COP, there is a negative CO₂ emission impact, and below 1.98 COP the current gas rates are more cost effective. Example: Trane AXM 30T Air-Water Heat Pump has a COP of 2.03 at 0°F and 2.62 at 25°F. Based on historical weather data, approximately 85% of the annual heating load is above the breakeven COP rating of 2, at around 0°F for this example. The calculations assume the average COP will be 3.0 when operating above the breakeven COP, and switched to gas boiler operation when operating below the breakeven COP. Work with Minnesota Power for new interruptible service to get the best rate and benefit from redundant heating systems from both gas and electric utilities.

Onsite Renewable Projects

Duluth Port Authority expressed interest in options for future onsite solar panel installations. The transit building is the first choice for an installation. This roof alone has space capacity for up to 1.6 MW of solar panels. The following pages contain a production report and proposal to use 25% of the roof space for a solar panel array. The results show an estimated 537,600 kWh of production.



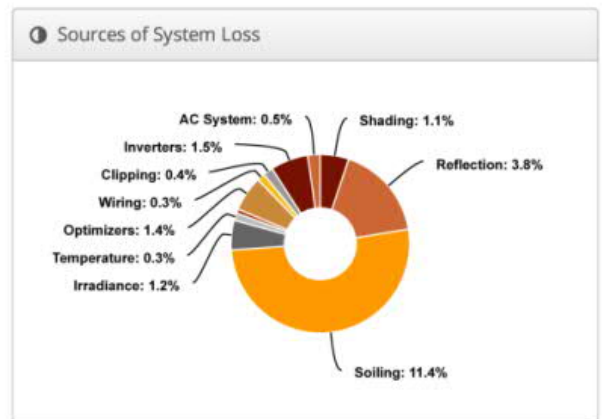
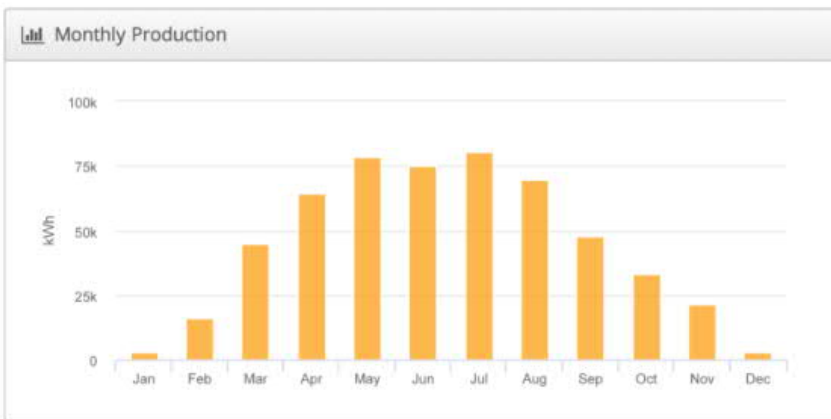
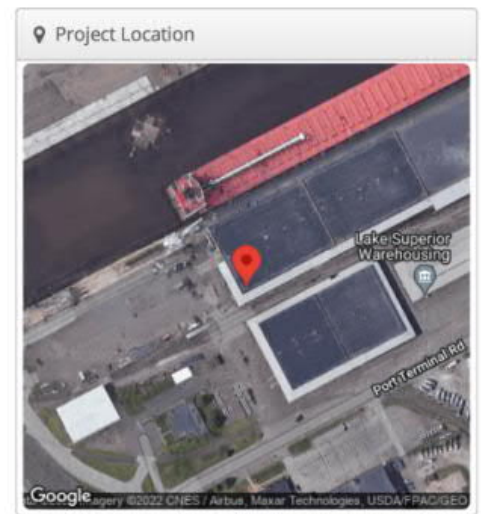
Annual Production Report produced by Thomas Vagts

Design 1 Transit Shed, 1210 Port Terminal Rd, Duluth, MN

Report

Project Name	Transit Shed
Project Address	1210 Port Terminal Rd, Duluth, MN
Prepared By	Thomas Vagts tom.vagts@rareenergy.us

System Metrics	
Design	Design 1
Module DC Nameplate	464.1 kW
Inverter AC Nameplate	400.0 kW Load Ratio: 1.16
Annual Production	537.6 MWh
Performance Ratio	79.6%
kWh/kWp	1,158.4
Weather Dataset	TMY, 10km grid (46.75, -92.15), NREL (prospector)
Simulator Version	f57c42ab6e-379fc51964-2504af6b08-813978d04d



⚡ Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m ²)	Annual Global Horizontal Irradiance	1,348.7	
	PDA Irradiance	1,456.0	8.0%
	Shaded Irradiance	1,439.4	-1.1%
	Irradiance after Reflection	1,384.7	-3.8%
	Irradiance after Soiling	1,227.3	-11.4%
	Total Collector Irradiance	1,227.3	0.0%
Energy (kWh)	Nameplate	569,699.0	
	Output at Irradiance Levels	562,963.1	-1.2%
	Output at Cell Temperature Derate	561,274.0	-0.3%
	Output After Mismatch	560,332.0	-0.2%
	Optimizer Output	552,471.6	-1.4%
	Optimal DC Output	550,764.3	-0.3%
	Constrained DC Output	548,563.6	-0.4%
	Inverter Output	540,318.9	-1.5%
	Energy to Grid	537,617.2	-0.5%
	Temperature Metrics		
	Avg. Operating Ambient Temp		8.0 °C
	Avg. Operating Cell Temp		13.9 °C
Simulation Metrics			
	Operating Hours	4675	
	Solved Hours	4675	

🏠 Condition Set												
Description	10 Degree Snow Losses											
Weather Dataset	TMY, 10km grid (46.75,-92.15), NREL (prospector)											
Solar Angle Location	Meteo 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								
	East-West	-3.56	-0.075	3°C								
	Carport	-3.56	-0.075	3°C								
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D
	85	47	16	2	2	2	2	2	2	2	13	85
Irradiation Variance	5%											
Cell Temperature Spread	4° C											
Module Binning Range	-2.5% to 2.5%											
AC System Derate	0.50%											
Module Characterizations	Module	Uploaded By	Characterization									
	JKM410M-72HL-V (2022) (Jinko)	HelioScope	Spec Sheet Characterization, PAN									
Component Characterizations	Device	Uploaded By	Characterization									

📦 Components		
Component	Name	Count
Inverters	SE100KUS (2022) (SolarEdge)	4 (400.0 kW)
Strings	10 AWG (Copper)	31 (5,730.3 ft)
Optimizers	P1101 (SolarEdge)	574 (631.4 kW)
Module	Jinko, JKM410M-72HL-V (2022) (410W)	1,132 (464.1 kW)

🔌 Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	13-37	Along Racking

🏠 Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Fixed Tilt	Landscape (Horizontal)	10°	152.41°	1.6 ft	1x1	1,132	1,132	464.1 kW

Available Grants

Contact Minnesota Power and Comfort Systems for rebates described in this report. In addition, the Minnesota Pollution Control Agency currently has grants for converting to heavy-duty electric vehicles. Maximum award per replacement is 75% of eligible project costs, including the cost for an accompanying charging station. This applies to forklifts and port cargo handling equipment. This report has estimates for greenhouse gas reductions and costs savings that can be used to apply for these grants. More information can be found at this link: <https://www.pca.state.mn.us/air-water-land-climate/cleaner-heavy-duty-vehicles>

The U.S. Department of Transportation has Port Infrastructure Development Grants for projects that improve the safety, efficiency, or reliability of the movement of goods into, out of, around, or within a port. The bipartisan infrastructure law appropriated \$450 million to the 2023 fiscal year for the Port Infrastructure Development Grants. This program would be a great fit to help fund conversion to electric forklifts and installing solar panels. More information can be found at this link: <https://www.maritime.dot.gov/PIDPgrants>

Infrastructure Needs

Utilizing electric heat pump heating to supplement the administration building hot water heating system can contribute to reduced greenhouse gas emissions as well and annual cost savings. Key to achieving maximal cost savings would be to work with Minnesota Power for new interruptible service to get the best rate and benefit from redundant heating systems from both gas and electric utilities.

Glossary

The following are definitions of terms used throughout this report.

Actual Demand is the highest average electric usage during a “demand interval” (typically 15 or 30 minutes) over a billing period.

Billed Demand is the adjusted demand used for billing. An adjustment is typically due to either:

- a “demand ratchet” (a minimum demand level established during the preceding year or peak season);
- or
- for power factor below or above a standard level established by that utility (typically .90 or .85).

GPM is gallons per minute, a common unit to describe liquid flow rate.

EU is the energy utilization index represented as kBTU/Sq Ft.

Load Factor is a measure of efficiency. Load factor is the ratio of average load in kilowatt supplied during a designated period to the peak load occurring that period.

Dekatherm is a unit of energy equivalent to 1,000,000 BTU (also referred to as 1 MMBtu).

Therm is a unit of energy equivalent to 100,000 BTU

PSI is pounds per square inch.

CCF is 100 cubic feet.

- For water and sewer volumes, 1 CCF = 748 gallons

kBTU is a unit of energy equivalent to 1,000 BTU

BTU is the British Thermal Unit, a base unit of energy.

Appendix A: Spreadsheets

The following pages are the detailed calculations for each of the ECM recommendations.

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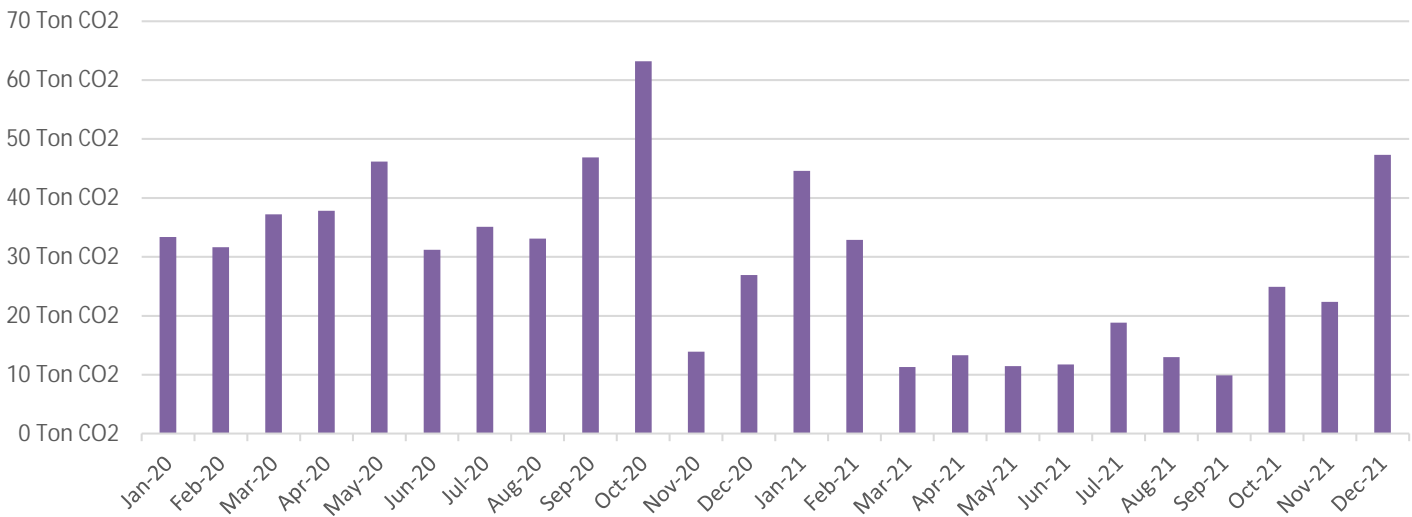
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DELIVERED FUEL USAGE SUMMARY - Como Oil

Customer: Delivered Fuel - Como Oil
 Address: 802 Garfield Ave, Duluth, MN 55802
 PERIOD: Jan-20 through Dec-21

Month	Billing Days	Propane Gallons	Propane Estimated Cost	Propane CO2 Emission	#1 Fuel Oil (Winter Blend) Gallons	#2 Fuel Oil (Summer Blend) Gallons	Fuel Oil Estimated Cost	Fuel Oil CO2 Emissions
Jan-20	31	3,742	\$9,729.72	21.2	1,191	0	\$5,480.76	12.2
Feb-20	29	3,440	\$8,943.48	19.4	1,192	0	\$5,482.56	12.2
Mar-20	31	2,919	\$7,588.10	16.5	786	1,248	\$9,353.23	20.7
Apr-20	30	2,591	\$6,737.38	14.6	609	1,663	\$10,450.69	23.2
May-20	31	2,861	\$7,438.60	16.2	504	2,439	\$13,536.37	30.0
Jun-20	30	2,090	\$5,433.22	11.8	458	1,444	\$8,750.44	19.4
Jul-20	31	2,666	\$6,931.34	15.1	284	1,680	\$9,036.15	20.0
Aug-20	31	1,669	\$4,338.36	9.4	184	2,142	\$10,696.15	23.7
Sep-20	30	1,893	\$4,922.32	10.7	241	3,311	\$16,337.13	36.2
Oct-20	31	2,317	\$6,023.16	13.1	275	4,645	\$22,630.57	50.1
Nov-20	30	1,402	\$3,645.98	7.9	361	224	\$2,688.56	6.0
Dec-20	31	2,957	\$7,689.24	16.7	807	193	\$4,595.45	10.2
2020 TOTAL	366	30,547	\$79,420.90	172.7	6,890	18,987	\$119,038.06	263.8
AVERAGE	31	2,546	\$6,618.41	14.4	574	1,582	\$9,919.84	22.0
Jan-21	31	2,677	\$6,960.20	15.1	2,568	314	\$13,257.20	29.5
Feb-21	28	2,199	\$5,717.40	12.4	1,592	410	\$9,209.20	20.5
Mar-21	31	1,683	\$4,375.80	9.5	0	174	\$800.40	1.8
Apr-21	30	1,983	\$5,155.80	11.2	0	208	\$956.80	2.1
May-21	31	1,740	\$4,524.00	9.8	0	160	\$736.00	1.6
Jun-21	30	1,820	\$4,732.00	10.3	0	142	\$653.20	1.4
Jul-21	31	2,903	\$7,547.80	16.4	0	238	\$1,094.80	2.4
Aug-21	31	2,294	\$5,964.40	13.0	0	0	\$0.00	0.0
Sep-21	30	1,747	\$4,542.20	9.9	0	0	\$0.00	0.0
Oct-21	31	2,672	\$6,947.20	15.1	0	961	\$4,420.60	9.8
Nov-21	30	1,684	\$4,378.40	9.5	1,111	145	\$5,777.60	12.8
Dec-21	31	3,338	\$8,678.80	18.9	2,782	0	\$12,797.20	28.5
2021 TOTAL	365	26,740	\$69,524.00	151.2	8,053	2,752	\$49,703.00	110.4
AVERAGE	30	2,228	\$5,793.67	12.6	671	229	\$4,141.92	9.2

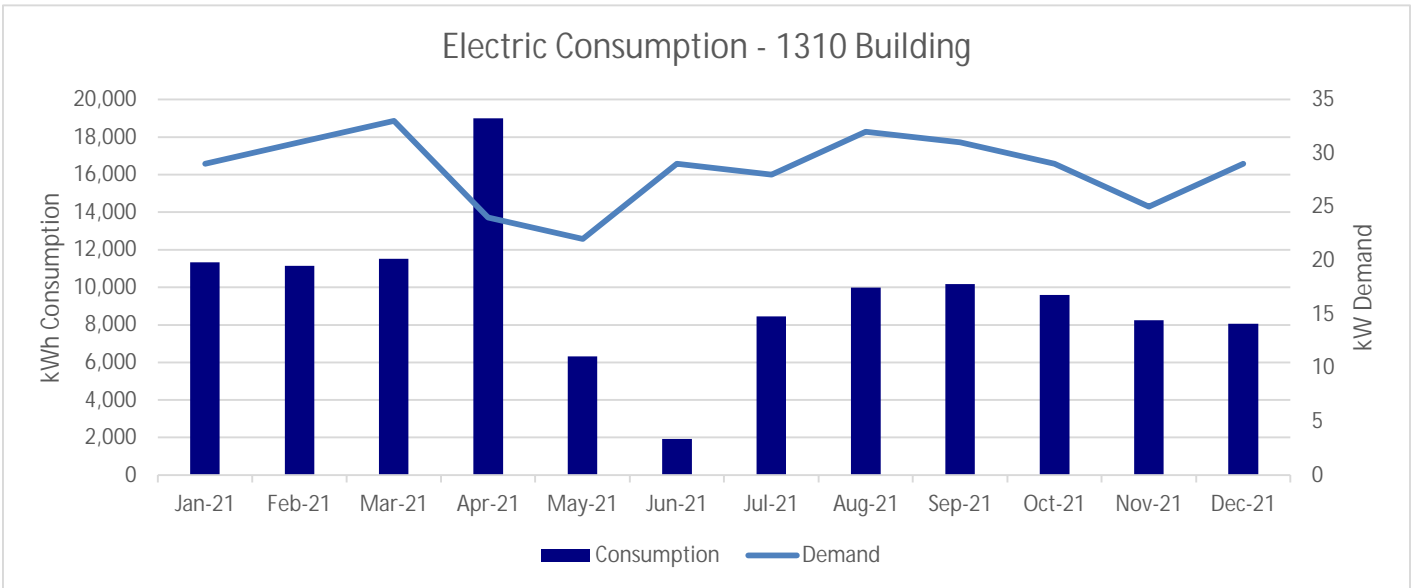
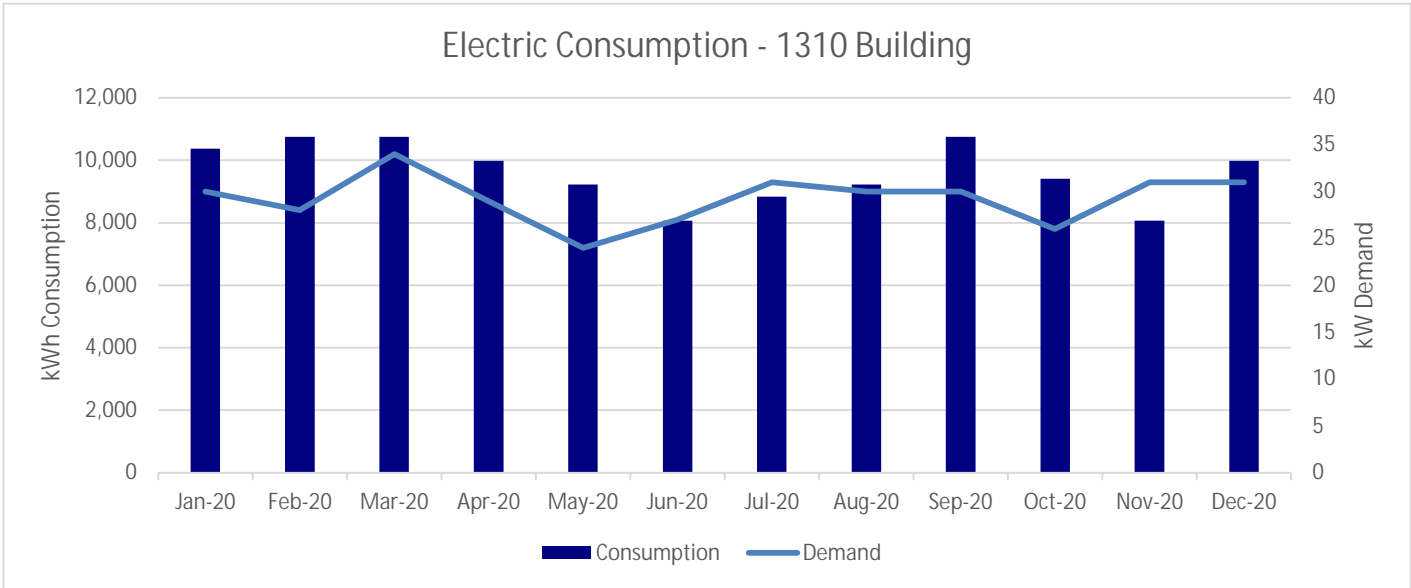
Como Oil Usage



ELECTRIC USAGE SUMMARY - 1310 Building

Customer:	LSW 1310 Building			
Address:	1310 Port Terminal Rd, Duluth, MN 55802			
MP METER #:	574342			
PERIOD:	Jan-20	through	Dec-21	

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	30	10,368	\$822.68	4.5
Feb-20	29	28	10,752	\$832.93	4.7
Mar-20	31	34	10,752	\$871.93	4.7
Apr-20	30	29	9,984	\$792.93	4.3
May-20	31	24	9,216	\$713.94	4.0
Jun-20	30	27	8,064	\$663.69	3.5
Jul-20	31	31	8,832	\$736.19	3.8
Aug-20	31	30	9,216	\$752.94	4.0
Sep-20	30	30	10,752	\$845.93	4.7
Oct-20	31	26	9,408	\$738.56	4.1
Nov-20	30	31	8,064	\$689.69	3.5
Dec-20	31	31	9,984	\$805.93	4.3
2020 TOTAL	366	34	115,392	\$9,267.33	50.0
AVERAGE	31	29	9,616	\$772.28	4.2
Jan-21	31	29	11,328	\$874.30	4.9
Feb-21	28	31	11,136	\$875.67	4.8
Mar-21	31	33	11,520	\$911.92	5.0
Apr-21	30	24	19,008	\$1,306.74	8.2
May-21	31	22	6,336	\$526.58	2.7
Jun-21	30	29	1,920	\$304.74	0.8
Jul-21	31	28	8,448	\$693.44	3.7
Aug-21	31	32	9,984	\$812.43	4.3
Sep-21	30	31	10,176	\$817.56	4.4
Oct-21	31	29	9,600	\$769.68	4.2
Nov-21	30	25	8,256	\$662.32	3.6
Dec-21	31	29	8,064	\$676.69	3.5
2021 TOTAL	365	33	115,776	\$9,232.08	50.1
AVERAGE	30	29	9,648	\$769.34	4.2



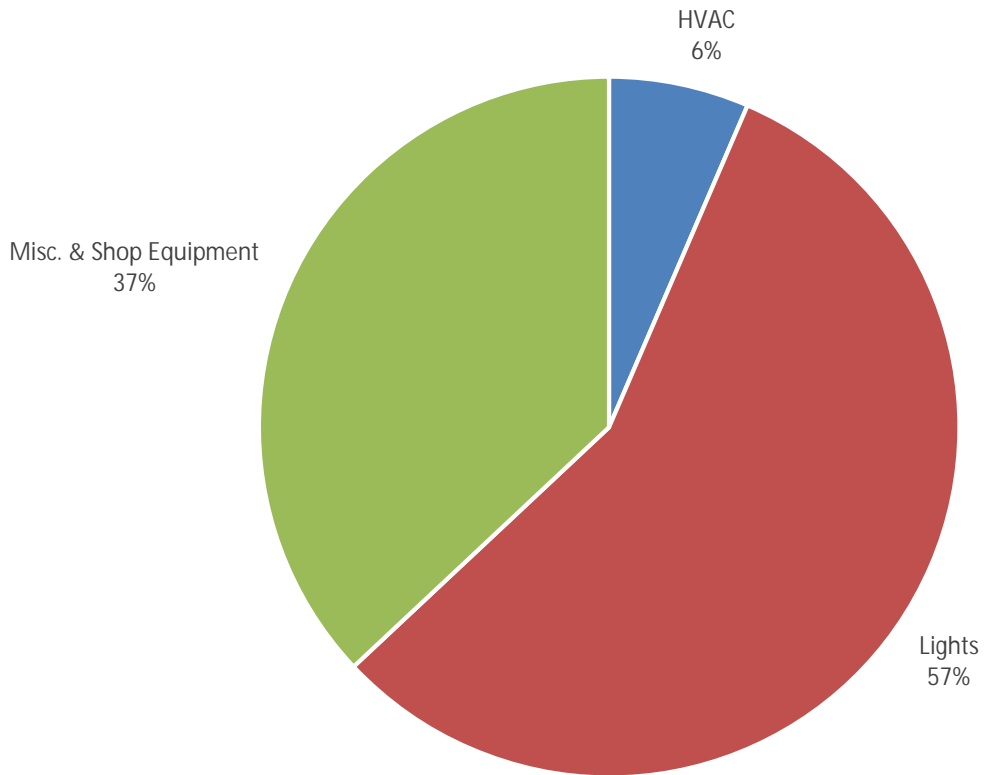
ELECTRIC END-USE BALANCE - 1310 Building

CUSTOMER: LSW 1310 Building BS = Building Systems Misc. = Miscellaneous Equipment
 ADDRESS: 1310 Port Terminal Rd, Duluth, MN 55802 HVAC = Heating, Ventilation, Air Conditioning Refrig. = Refrigeration
 Lights= Lighting

#	Equip Code	Location	DESCRIPTION	Qty	Lamps/ HP	Volts	Amps	Phase	Watts/ ea.	Total kW	% Full Load	Hours/ Year	Annual kWh	Peak kW
1	HVAC	Bathroom	Exhaust Fan	1	0.08				89	0.09	75%	730	49	0.07
2	HVAC	Mezzanine	Furnace Fan	1	0.25				266	0.27	75%	2,500	499	0.20
3	HVAC	Metal Shop (Server Room)	1 Ton ASHP Unit (Heating)	1					1,465	1.46	75%	200	220	1.10
4	HVAC	Metal Shop (Server Room)	1 Ton ASHP Unit (Cooling)	1					1,200	1.20	65%	2,500	1,950	0.78
5	HVAC	Shop	Unit Heater Fan	4	0.5				533	2.13	75%	2,500	3,995	1.60
6	HVAC	Forklift Shop Office	Air Conditioner (.5 Ton)	1					600	0.60	65%	662	258	0.39
7	HVAC	Storage	Furnace Fan	1	0.25				266	0.27	75%	2,500	499	0.20
Sub Total													7,470	4.33
Diversity Factor													100%	73%
Total HVAC													7,470	3.16
8	Lights	Entry	2x4 Troffer	2	1				35	0.07	100%	8,760	613	0.07
9	Lights	Server Room	60W Inc	1	1				60	0.06	100%	365	22	0.06
10	Lights	Reception	2x4 Troffer	3	1				35	0.11	100%	3,650	383	0.11
11	Lights	Office 1	2x4 Troffer	4	1				35	0.14	100%	3,650	511	0.14
12	Lights	Office 1	2x2 Troffer	1	1				30	0.03	100%	3,650	110	0.03
13	Lights	Office 2	2x4 Troffer	4	1				35	0.14	100%	3,650	511	0.14
14	Lights	Hallway	2x4 Troffer	5	1				35	0.18	100%	3,650	639	0.18
15	Lights	Hallway	2x2 Troffer	1	1				30	0.03	100%	3,650	110	0.03
16	Lights	Restroom	Vanity 50W Halogen	1	1				50	0.05	100%	730	37	0.05
17	Lights	Confrence Room	LED Can	18	1				12	0.22	100%	730	158	0.22
18	Lights	Confrence Room	2x4 Troffer	4	1				35	0.14	100%	730	102	0.14
19	Lights	Break Room	2x4 Troffer	21	1				35	0.74	100%	2,920	2,146	0.74
20	Lights	Office	2x4 Troffer	4	1				35	0.14	100%	2,920	409	0.14
21	Lights	Office	2x4 Troffer	3	1				35	0.11	100%	2,920	307	0.11
22	Lights	Office	2x4 Troffer	3	1				35	0.11	100%	2,920	307	0.11
23	Lights	Office	2x4 Troffer	2	1				35	0.07	100%	2,920	204	0.07
24	Lights	Small Confrence Room	LED Can	12	1				12	0.14	100%	1,095	158	0.14
25	Lights	Small Confrence Room	2x4 Troffer	2	1				35	0.07	100%	1,095	77	0.07
26	Lights	Bathroom	2LT8 2x4 Troffer	2	2				32	0.11	100%	730	82	0.11
27	Lights	Storage	2LT8 2x4 Troffer	1	2				32	0.06	100%	365	21	0.06
28	Lights	Locker Room	2x4 Panel	1	1				35	0.04	100%	7,578	265	0.04
29	Lights	Locker Room	2LT8 2x4 Troffer	1	2				32	0.06	100%	7,578	427	0.06
30	Lights	Locker Room	2x4 Troffer	1	1				35	0.04	100%	7,578	265	0.04
31	Lights	Locker Room	4' Linear Strip	12	1				25	0.30	100%	7,578	2,273	0.30
32	Lights	Metal Shop	LED Highbay	6	1				150	0.90	100%	7,578	6,820	0.90
33	Lights	Open Shop	6LT8 Highbay	23	6				32	3.89	100%	7,578	29,448	3.89
34	Lights	Forklift Shop	6LT8 Highbay	5	6				32	0.84	100%	7,578	6,402	0.84
35	Lights	Forklift Shop	LED Highbay	3	1				150	0.45	100%	7,578	3,410	0.45
36	Lights	Forklift Shop Storage	2LT8 Wrap	2	2				32	0.11	100%	7,578	854	0.11
37	Lights	Shop Entry	6LT8 Highbay	2	6				32	0.34	100%	7,578	2,561	0.34
38	Lights	Shop Entry	LED Highbay	1	1				150	0.15	100%	7,578	1,137	0.15
39	Lights	Break Room	4' Linear Strip	15	1				25	0.38	100%	7,578	2,842	0.38
40	Lights	Office	4' Linear Strip	2	1				25	0.05	100%	7,578	379	0.05
41	Lights	Server Room	2LT12 2x4 Troffer	2	2				40	0.18	100%	365	65	0.18
42	Lights	Storage	2LT12 Strip	2	2				40	0.18	100%	365	65	0.18
43	Lights	Hallway	2LT8 Troffer	3	2				32	0.17	100%	2,920	493	0.17
44	Lights	Hallway	2LT8 Wrap	2	2				32	0.11	100%	2,920	329	0.11
45	Lights	Exterior	LED Wallpack	2	1				50	0.10	100%	4,380	438	0.10
Sub Total													65,378	10.97
Diversity Factor													100%	90%
Total Lights													65,378	9.87
46	Misc.	Warehouse Office	TV	1					150	0.15	50%	2,920	219	0.08
47	Misc.	Locker Room	Water Heater	1					2,500	2.50	100%	521	1,304	2.50
48	Misc.	Offices x 6	Screens	12					150	1.80	50%	2,920	2,628	0.90

49	Misc.	Offices x 6	Desk Phone	6					40	0.24	30%	365	26	0.07
50	Misc.	Offices x 6	Printer	6					200	1.20	50%	183	110	0.60
51	Misc.	Conference Room	Large TV	1					250	0.25	50%	365	46	0.13
52	Misc.	Break Room	Water Cooler	1		115	3	1	368	0.37	65%	4,225	1,011	0.24
53	Misc.	Break Room	Coffee Maker	2					1,500	3.00	95%	365	1,040	2.85
54	Misc.	Break Room	TV	1					150	0.15	50%	2,920	219	0.08
55	Misc.	Break Room	Microwave	1					1,000	1.00	95%	183	173	0.95
56	Misc.	Break Room	Dishwasher	1					1,500	1.50	75%	209	235	1.13
57	Misc.	Break Room	Fridge	2		115	6	1	690	1.38	65%	4,225	3,790	0.90
58	Misc.	Forklift Shop	Fridge	1		115	6	1	690	0.69	65%	4,225	1,895	0.45
59	Misc.	Break Room	Fridge	1		115	7	1	805	0.81	65%	4,225	2,211	0.52
60	Misc.	Conference Room	TVs	3					150	0.45	50%	730	164	0.23
61	Misc.	Conference Room	Large Printer	1					500	0.50	50%	365	91	0.25
62	Misc.	Conference Room	Screens	2					150	0.30	50%	2,920	438	0.15
63	Misc.	Locker Room	Clothes Washer	1					3,600	3.60	75%	209	563	2.70
64	Misc.	Locker Room	Clothes Dryer	2					4,500	9.00	75%	104	704	6.75
65	Misc.	Metal Shop	Air Compressor	1	7.8				6,843	6.84	75%	1,460	7,493	5.13
66	Misc.	Metal Shop	Extractor Fume	1		115	8	1	897	0.90	75%	730	491	0.67
67	Misc.	Metal Shop	Miller Welder	1		115	25	1	2,875	2.88	75%	730	1,574	2.16
68	Misc.	Metal Shop	2 Ton Crane	3	1				944	2.83	75%	52	111	2.12
69	Misc.	Metal Shop	25 Ton Crane	2	5				4,492	8.98	75%	26	176	6.74
70	Misc.	Metal Shop	Chop Saw	1		120	10	1	1,170	1.17	75%	183	160	0.88
71	Misc.	Metal Shop	Bench Grinder	1		120	3.6	1	432	0.43	75%	183	59	0.32
72	Misc.	Metal Shop	Drill Press	1	1.5				1,398	1.40	75%	183	191	1.05
73	Misc.	Metal Shop	Band Saw	1	1				932	0.93	75%	183	128	0.70
74	Misc.	Metal Shop	Grinders	2		120	10	1	1,170	2.34	75%	183	320	1.76
75	Misc.	Metal Shop	Small Grinders	2		120	7	1	780	1.56	75%	183	214	1.17
76	Misc.	Metal Shop	Welder	1		200	48	1	9,600	9.60	75%	730	5,256	7.20
77	Misc.	Metal Shop	Dewalt Battery Charger	1		120	3	1	360	0.36	100%	1,460	526	0.36
78	Misc.	Metal Shop	Plasma Cutter	1		208	50	1	10,400	10.40	75%	365	2,847	7.80
79	Misc.	Wood Shop	Chop Saw	1		120	10	1	1,170	1.17	75%	183	160	0.88
80	Misc.	Wood Shop	Power Sander	1		120	8.3	1	998	1.00	75%	183	137	0.75
81	Misc.	Wood Shop	Dewalt Battery Charger	1		120	3	1	360	0.36	100%	1,460	526	0.36
82	Misc.	Wood Shop	Shop Vac	1	6.5				5,702	5.70	75%	183	781	4.28
83	Misc.	Wood Shop	Table Saw	2	2				1,864	3.73	75%	183	510	2.80
84	Misc.	Open Shop	Door Motor	1	0.5				533	0.53	75%	91	36	0.40
85	Misc.	Forklift Shop	Car Lift	1	2				1,864	1.86	75%	183	255	1.40
86	Misc.	Forklift Shop	2 Ton Crane	1	1				994	0.99	75%	52	39	0.75
87	Misc.	Forklift Shop Office	Computer	1					400	0.40	50%	2,190	438	0.20
88	Misc.	Forklift Shop Office	Screen	1					150	0.15	50%	2,190	164	0.08
89	Misc.	Forklift Shop Office	Phone	1					40	0.04	30%	365	4	0.01
90	Misc.	Forklift Shop Office	Microwave	1					1,000	1.00	95%	91	87	0.95
91	Misc.	Break Room	TV	1					150	0.15	50%	2,920	219	0.08
92	Misc.	Break Room	Microwave	1					1,000	1.00	95%	183	173	0.95
93	Misc.	Break Room	Ice Maker	1					650	0.65	65%	4,225	1,785	0.42
94	Misc.	Break Room	Water Cooler	1		115	3	1	368	0.37	65%	4,225	1,011	0.24
												Sub Total	42,736	74.04
												Diversity Factor	100%	23%
												Total Misc.	42,736	17.25
Total													115,584	30.28

1310 Building Electric



ENERGY EFFICIENT LIGHTING MEASURES 1310 Building

RECOMMENDATION: Consider replacing the lighting throughout the warehouse with LED fixtures. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

Demand: \$6.50 per kW Rebate: \$200 per kW Analysis Type: **Rebate Estimate**
 Energy: \$0.06054 per kWh \$0.035 per kWh Rebate Type: kWh & kW-based

AREA DESCRIPTION:	Construction Type	Existing System						Proposed System						Energy Savings						
		Lighting Type	Lighting Size	# of Fixtures	Lamps/ Fixture	Watts/ Lamp	Fixture Watt	Lighting Type	Lighting Size	# of Fixtures	Lamps/ Fixture	Watts/ Lamp	Fixture Watt	Hours of Operation /yr.	Peak kW Reduced	Annual kWh Reduced	Annual Energy Savings	Rebate	Cost	Payback (years)
Open Shop	Retrofit without Ballast	T8_Lighting	F32T8 4' 32W/HO	23	6	32	221	LED	Highbay	23	1	150	150	7,578	1.63	12,340	\$874.07	\$1,840.00	\$5,750	
Forklift Shop	Retrofit without Ballast	T8_Lighting	F32T8 4' 32W/HO	5	6	32	221	LED	Highbay	5	1	150	150	7,578	0.35	2,683	\$190.01	\$400.00	\$1,250	
Forklift Shop Storage	Retrofit without Ballast	T8_Lighting	F32T8 4' 32W	2	2	32	56	LED	15WLED Tubes	2	2	15	30	7,578	0.05	399	\$28.26	\$13.96	\$40	
Shop Entry	Retrofit without Ballast	T8_Lighting	F32T8 4' 32W/HO	2	6	32	221	LED	Highbay	2	1	150	150	7,578	0.14	1,073	\$76.01	\$160.00	\$500	
Server Room	Retrofit without Ballast	T12_Lighting	F40T12 4' 40W	2	2	40	97	LED	15WLED Tubes	2	2	15	30	365	0.13	49	\$13.41	\$26.80	\$40	
Storage	Retrofit without Ballast	T12_Lighting	F40T12 4' 40W	2	2	40	97	LED	15WLED Tubes	2	2	15	30	365	0.13	49	\$13.41	\$26.80	\$40	
Halway	Retrofit without Ballast	T8_Lighting	F32T8 4' 32W	3	2	32	56	LED	15WLED Tubes	3	2	15	30	2,920	0.08	231	\$20.12	\$15.79	\$60	
Halway	Retrofit without Ballast	T8_Lighting	F32T8 4' 32W	2	2	32	56	LED	15WLED Tubes	2	2	15	30	2,920	0.05	154	\$13.41	\$10.53	\$40	
															2.58	16,976	\$1,228.70	\$2,493.88	\$7,720.00	4.25

Disclaimer: All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

Please contact us at (218) 355-2217.

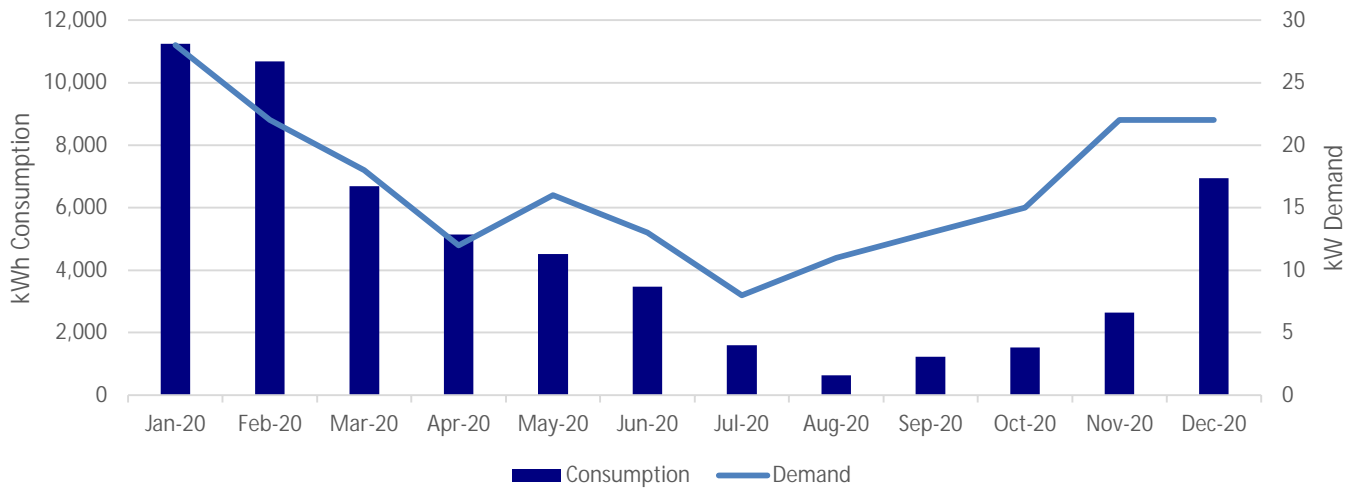


ELECTRIC USAGE SUMMARY - Backup Warehouse

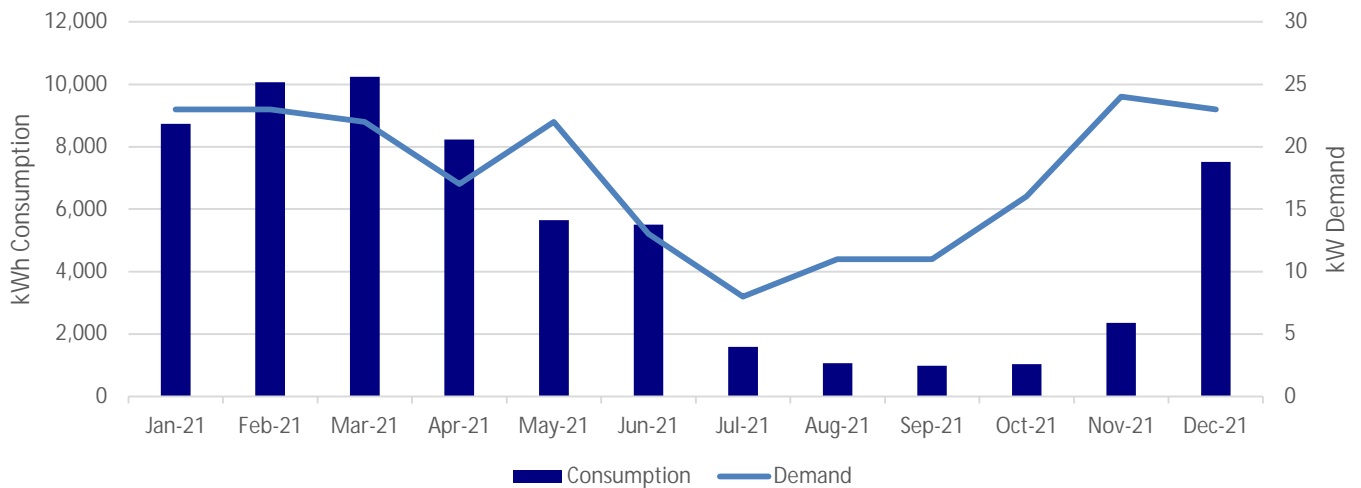
Customer: LSW - Backup Warehouse
Address: 1240 Port Terminal Dr, Duluth, MN 55802
MP METER #: 573070
PERIOD: Jan-20 through Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	28	11,240	\$1,191.47	4.9
Feb-20	29	22	10,684	\$1,191.86	4.6
Mar-20	31	18	6,694	\$785.61	2.9
Apr-20	30	12	5,150	\$609.19	2.2
May-20	31	16	4,509	\$503.69	2.0
Jun-20	30	13	3,475	\$458.37	1.5
Jul-20	31	8	1,598	\$283.98	0.7
Aug-20	31	11	629	\$183.75	0.3
Sep-20	30	13	1,232	\$240.65	0.5
Oct-20	31	15	1,532	\$274.69	0.7
Nov-20	30	22	2,649	\$360.67	1.1
Dec-20	31	22	6,945	\$806.51	3.0
2020 TOTAL	366	28	56,337	\$6,890.44	24.4
AVERAGE	31	17	4,695	\$574.20	2.0
Jan-21	31	23	8,731	\$1,014.11	3.8
Feb-21	28	23	10,069	\$1,198.45	4.4
Mar-21	31	22	10,238	\$1,215.57	4.4
Apr-21	30	17	8,232	\$997.83	3.6
May-21	31	22	5,655	\$702.51	2.4
Jun-21	30	13	5,506	\$730.30	2.4
Jul-21	31	8	1,593	\$300.09	0.7
Aug-21	31	11	1,068	\$219.59	0.5
Sep-21	30	11	991	\$241.05	0.4
Oct-21	31	16	1,031	\$244.93	0.4
Nov-21	30	24	2,364	\$390.20	1.0
Dec-21	31	23	7,509	\$995.43	3.3
2021 TOTAL	365	24	62,987	\$8,250.06	27.3
AVERAGE	30	18	5,249	\$687.51	2.3

Electric Consumption - Backup Warehouse



Electric Consumption - Backup Warehouse

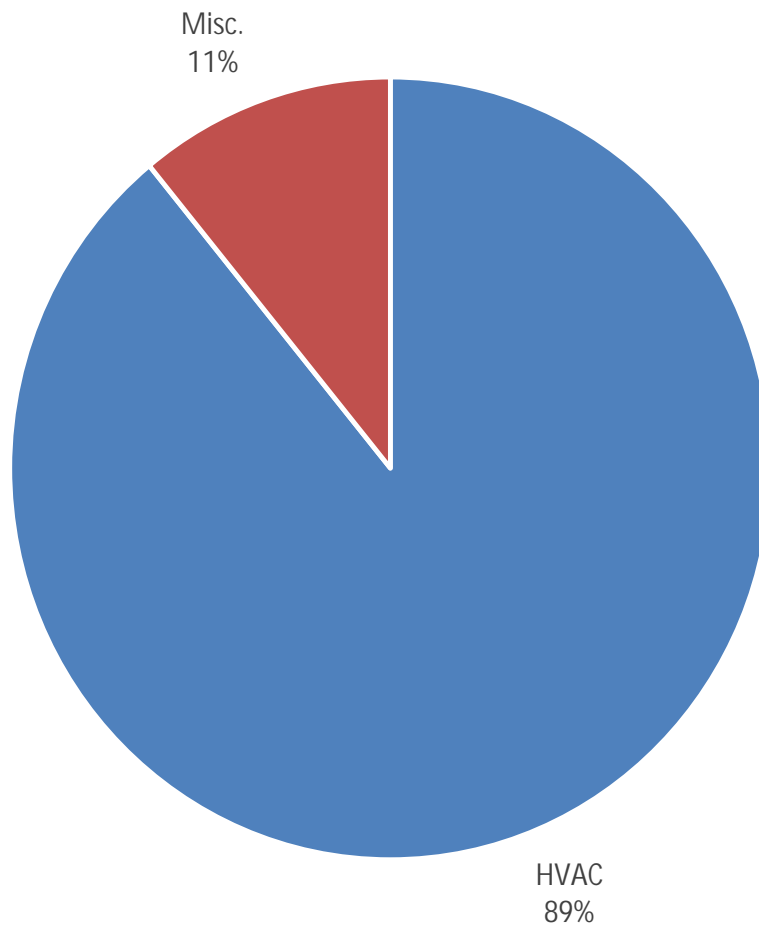


ELECTRIC END-USE BALANCE - Backup Warehouse

CUSTOMER: LSW - Backup Warehouse	BS = Building Systems	Misc.= Miscellaneous Equipment
ADDRESS: 1240 Port Terminal Dr, Duluth, MN 55802	HVAC = Heating, Ventilation, Air Conditioning	Refrig. = Refrigeration
	Lights= Lighting	

#	Equip Code	Location	DESCRIPTION	Qty	Lamps/ HP	Volts	Amps	Phase	Watts/ ea.	Total kW	% Full Load	Hours/ Year	Annual kWh	Peak kW
1	HVAC	Warehouse	Destratification Fans	14	0.25				266	3.73	75%	1,500	4,195	2.80
2	HVAC	Warehouse	AHU 1 Supply Fan	1	10				8,773	8.77	75%	1,679	11,049	6.58
3	HVAC	Sprinkler Room 1	Unit Heater	1					5,000	5.00	50%	793	1,983	2.50
4	HVAC	Meter Room	Unit Heater	1					5,000	5.00	50%	1,500	3,750	2.50
5	HVAC	Sprinkler Room 2	Unit Heater	2					5,000	10.00	50%	792	3,960	5.00
6	HVAC	Warehouse West Half	AHU 2 Supply Fan	1	10				8,773	8.77	75%	1,679	11,049	6.58
7	HVAC	Exterior	5 Ton Condensing Unit	1					5,455	5.45	78%	662	2,831	4.28
8	HVAC	Vestibule	Electric heater	1					2,500	2.50	100%	1,956	4,890	2.50
9	HVAC	Restroom	Exhaust Fan	1	0.08				89	0.09	75%	500	33	0.07
10	HVAC	Office	Electric Space Heater	2					2,000	4.00	100%	200	800	4.00
11	HVAC	Break Room	Electric Baseboard 6'	2					1,500	3.00	100%	2,618	7,854	3.00
12	HVAC	Storage	Electric Heater	1					1,000	1.00	100%	750	750	1.00
Sub Total													53,144	40.80
Diversity Factor													100%	50%
Total HVAC													53,144	20.34
13	Misc.	Sprinkler Room	Compressor	1	3				2,728	2.73	75%	100	205	2.05
14	Misc.	Offices	Computer	3					400	1.20	50%	1,564	939	0.60
15	Misc.	Offices	Screens	3					150	0.45	50%	1,564	352	0.23
16	Misc.	Office	Water Cooler	1					600	0.60	50%	3,455	1,037	0.30
17	Misc.	Office	Printer	1					100	0.10	50%	261	13	0.05
18	Misc.	Storage	Water Heater	1					1,000	1.00	100%	521	521	1.00
19	Misc.	Break Room	Refrigerated Vending Machine	1		115	6	1	690	0.69	65%	4,225	1,895	0.45
20	Misc.	Break Room	Vending Machine	1		115	3	1	345	0.35	50%	130	22	0.17
21	Misc.	Warehouse West Half	Cranes	10	1.5				1,364	13.64	75%	150	1,535	10.23
Sub Total													6,518	15.07
Diversity Factor													100%	15%
Total Misc.													6,518	2.26
Total													59,662	22.60

Backup Warehouse Electric



VARIABLE FREQUENCY DRIVE - Backup Warehouse

PROJECT DETAILS:

Consider installing VFDs on the AHU supply fans that serve the warehouse. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

Motor Size:	10.00	HP	Proposed Control Type:	VFD	
Number of Motors:	2	# Proposed			VFD Efficiency = 96%
Total Motor Size:	20.00	HP	Motor Efficiency:	91.7%	
Current Motor Type:	New Premium Eff.		Electric Demand Rate:	\$6.50	kW
Existing Control:	None - Fan		Electricity Rate:	\$0.06054	kWh
Load Profile:	Standard		Motor Loading:	75%	
					Hours of Operation = 1,679
					Operating Months = 12

System Rated Flow	Operating	Percent of Full Input Power		Full-Load Power kW	Existing Motor Input Power	Proposed Motor Input Power	kW Power Savings	Hours Per Year	kWh/Yr. Energy Savings
		Existing	Proposed VFD						
0%	0%	100%	6%	0.0	0.0	0.0	0.0	0	0
20%	0%	100%	5%	16.3	12.2	0.7	11.5	0	0
25%	0%	100%	6%	16.3	12.2	0.8	11.4	0	0
30%	0%	100%	8%	16.3	12.2	1.0	11.2	0	0
35%	0%	100%	10%	16.3	12.2	1.3	10.9	0	0
40%	0%	100%	13%	16.3	12.2	1.6	10.6	0	0
45%	0%	100%	16%	16.3	12.2	2.1	10.1	0	0
50%	0%	100%	20%	16.3	12.2	2.6	9.6	0	0
55%	0%	100%	25%	16.3	12.2	3.2	9.0	0	0
60%	20%	100%	30%	16.3	12.2	3.9	8.3	336	2,802
65%	20%	100%	37%	16.3	12.2	4.6	7.6	336	2,539
70%	20%	100%	43%	16.3	12.2	5.5	6.7	336	2,243
75%	20%	100%	51%	16.3	12.2	6.5	5.7	336	1,913
80%	20%	100%	60%	16.3	12.2	7.6	4.6	336	1,547
85%	0%	100%	69%	16.3	12.2	8.8	3.4	0	0
90%	0%	100%	79%	16.3	12.2	10.1	2.1	0	0
95%	0%	100%	91%	16.3	12.2	11.5	0.7	0	0
100%	0%	100%	103%	16.3	12.2	13.1	(0.9)	0	0

SAVINGS:					
Implementation Cost =	\$3,796	O&M Savings:	\$500		Total 11,044
kWh Saved =	11,044				
kW Saved =	-				
Annual Cost Savings =	\$668.60			Rebate Rate	
Rebate =	\$386.54	kWh saved X 0.035	\$200	/kW	
Payback Before Rebate =	5.7	Years			
Payback After Rebate =	5.1	Years			



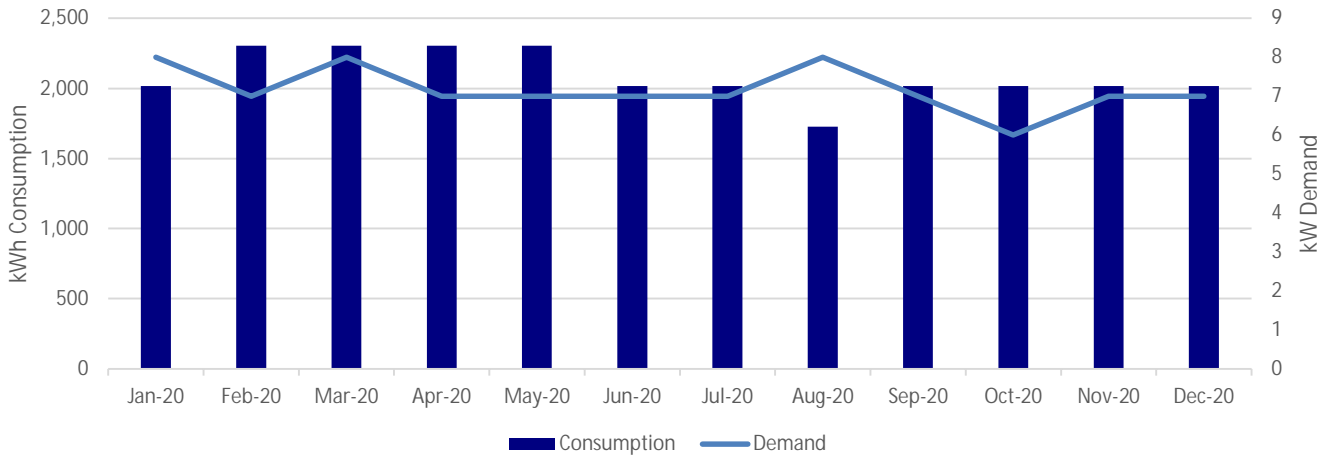
Disclaimer: All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued. Please contact us at (218) 355-2217.

ELECTRIC USAGE SUMMARY - Backup Warehouse Lighting

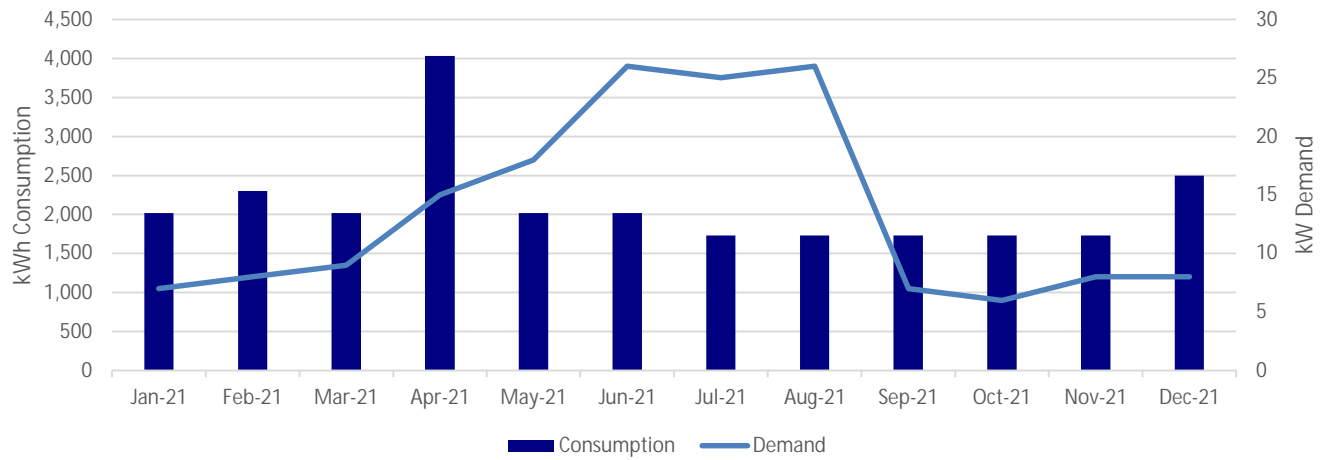
Customer:	LSW - Backup Warehouse Lighting			
Address:	1222 Port Terminal Dr, Duluth, MN 55802			
MP METER #:	573653			
PERIOD:	Jan-20	through	Dec-21	

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	8	2,016	\$282.95	0.9
Feb-20	29	7	2,304	\$292.81	1.0
Mar-20	31	8	2,304	\$289.68	1.0
Apr-20	30	7	2,304	\$288.10	1.0
May-20	31	7	2,304	\$265.55	1.0
Jun-20	30	7	2,016	\$263.27	0.9
Jul-20	31	7	2,016	\$229.71	0.9
Aug-20	31	8	1,728	\$253.81	0.7
Sep-20	30	7	2,016	\$253.70	0.9
Oct-20	31	6	2,016	\$253.66	0.9
Nov-20	30	7	2,016	\$256.45	0.9
Dec-20	31	7	2,016	\$266.78	0.9
2020 TOTAL	366	8	25,056	\$3,196.47	10.8
AVERAGE	31	7	2,088	\$266.37	0.9
Jan-21	31	7	2,016	\$266.78	0.9
Feb-21	28	8	2,304	\$306.17	1.0
Mar-21	31	9	2,016	\$276.44	0.9
Apr-21	30	15	4,032	\$548.13	1.7
May-21	31	18	2,016	\$277.49	0.9
Jun-21	30	26	2,016	\$285.97	0.9
Jul-21	31	25	1,728	\$244.36	0.7
Aug-21	31	26	1,728	\$245.74	0.7
Sep-21	30	7	1,728	\$245.20	0.7
Oct-21	31	6	1,728	\$249.40	0.7
Nov-21	30	8	1,728	\$250.32	0.7
Dec-21	31	8	2,497	\$352.02	1.1
2021 TOTAL	365	26	25,537	\$3,548.02	11.1
AVERAGE	30	14	2,128	\$295.67	0.9

Electric Consumption - LSW Backup Warehouse Lighting



Electric Consumption - LSW Backup Warehouse Lighting



ELECTRIC END-USE BALANCE - Backup Warehouse Lighting

CUSTOMER: Lake Superior Warehouse - DSPA - Backup Warehouse Lighting	BS = Building Systems	Misc. = Miscellaneous Equipment
ADDRESS: 1222 Port Terminal Dr, Duluth, MN 55802	HVAC = Heating, Ventilation, Air Conditioning	Refrig. = Refrigeration
	Lights= Lighting	

#	Equip Code	Location	DESCRIPTION	Qty	Lamps/ HP	Volts	Amps	Phase	Watts/ ea.	Total kW	% Full Load	Hours/ Year	Annual kWh	Peak kW
1	Lights	Warehouse	1LT12 8' Strip	47	1				75	3.95	100%	1,407	5,554	3.95
2	Lights	Warehouse	6LT8 Highbay	4	6				32	0.68	100%	1,407	951	0.68
3	Lights	Warehouse	LED Highbay	2	1				150	0.30	100%	1,407	422	0.30
4	Lights	Warehouse West Half	400W MH Highbay	10	1				400	4.54	100%	1,407	6,387	4.54
5	Lights	Warehouse West Half	LED Highbay	4	1				150	0.67	100%	1,407	945	0.67
6	Lights	Warehouse West Half	1LT12 8' Strip	64	1				75	5.38	100%	1,407	7,563	5.38
7	Lights	Storage	2LT12 Wrap	16	2				40	1.43	100%	130	187	1.43
8	Lights	Storage	60W Inc	2	1				60	0.12	100%	130	16	0.12
9	Lights	Sprinkler Room 1	60W Inc	1	1				60	0.06	100%	130	8	0.06
10	Lights	Meter Room	60W Inc	1	1				60	0.06	100%	150	9	0.06
11	Lights	Sprinkler Room 2	60W Inc	1	1				60	0.06	100%	130	8	0.06
12	Lights	Exterior	LED Wallpack	4	1				50	0.20	100%	4,380	876	0.20
13	Lights	Entry	LED 2x2 Troffer	1	1				30	0.03	100%	2,607	78	0.03
14	Lights	Reception	LED 2x2 Troffer	11	1				30	0.33	100%	2,607	860	0.33
15	Lights	Office	LED 2x2 Troffer	2	1				30	0.06	100%	2,607	156	0.06
16	Lights	Break Room	1LT8 Wrap	5	1				32	0.14	100%	2,607	367	0.14
17	Lights	Storage	1LT8 Wrap	1	1				32	0.03	100%	261	8	0.03
18	Lights	Storage	LED 2x2 Troffer	1	1				30	0.03	100%	261	8	0.03
19	Lights	Restroom	LED 2x2 Troffer	1	1				30	0.03	100%	521	16	0.03
20	Lights	Exterior	LED Wallpack	4	1				50	0.20	100%	4,380	876	0.20
Sub Total													25,297	18.30
Diversity Factor													100%	100%
Total Lights													25,297	18.30
Total													25,297	18.30

ENERGY EFFICIENT LIGHTING MEASURES - Backup Warehouse Lighting

RECOMMENDATION: Consider replacing the lighting throughout the warehouse with LED fixtures. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

Demand: \$6.50 per kW Rebate: \$200 per kW Analysis Type: **Rebate Estimate**
 Energy: \$0.06054 per kWh \$0.035 per kWh Rebate Type: kWh & kW-based

AREA DESCRIPTION:	Construction Type	Existing System						Proposed System						Energy Savings						
		Lighting Type	Lighting Size	# of Fixtures	Lamps/ Fixture	Watts/ Lamp	Fixture Watt	Lighting Type	Lighting Size	# of Fixtures	Lamps / Fixture	Watts/ Lamp	Fixture Watt	Hours of Operation /yr.	Peak kW Reduced	Annual kWh Reduced	Annual Energy Savings	Rebate	Cost	Payback (years)
Warehouse	Retrofit without Ballast	T12 Lighting	F96T12 8' 75W	47	1	75	94	LED	4' Tube 15W	47	2	15	30	1,407	3.01	4,239	\$491.59	\$602.54	\$1,410	
Warehouse	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W/WHO	4	6	32	221	LED	Highbay	4	1	140	140	1,407	0.32	455	\$52.74	\$320.00	\$1,000	
Warehouse West Half	Retrofit without Ballast	Metal Halide	MH400	10	1	400	454	LED	Highbay	10	1	140	140	1,407	3.14	4,418	\$512.36	\$800.00	\$2,500	
Warehouse West Half	Retrofit without Ballast	T12 Lighting	F96T12 8' 75W	64	1	75	94	LED	4' Tube 15W	64	1	60	60	1,407	2.18	3,070	\$356.11	\$436.48	\$960	
Storage	Retrofit without Ballast	T12 Lighting	F40T12 4' 40W	16	2	40	97	LED	4' Tube 15W	16	1	30	30	130	1.07	140	\$92.08	\$214.40	\$240	
Storage	Retrofit without Ballast	Incandescent	I60	2	1	60	60	LED	A19 Bulb	2	1	9	9	130	0.10	13	\$8.76	\$20.40	\$20	
Sprinkler Room 1	Retrofit without Ballast	Incandescent	I60	1	1	60	60	LED	A19 Bulb	1	1	9	9	130	0.05	7	\$4.38	\$10.20	\$10	
Meter Room	Retrofit without Ballast	Incandescent	I60	1	1	60	60	LED	A19 Bulb	1	1	9	9	150	0.05	8	\$4.44	\$10.20	\$10	
Sprinkler Room 2	Retrofit without Ballast	Incandescent	I60	1	1	60	60	LED	A19 Bulb	1	1	9	9	130	0.05	7	\$4.38	\$10.20	\$10	
Break Room	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W	5	1	32	28	LED	4' Tube 15W	5	1	15	15	2,607	0.07	172	\$15.52	\$13.16	\$75	
Storage	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W	1	1	32	28	LED	4' Tube 15W	1	1	15	15	261	0.01	3	\$1.23	\$2.63	\$15	
														10.06	12,530	\$1,543.60	\$2,440.21	\$6,250.00	2.47	

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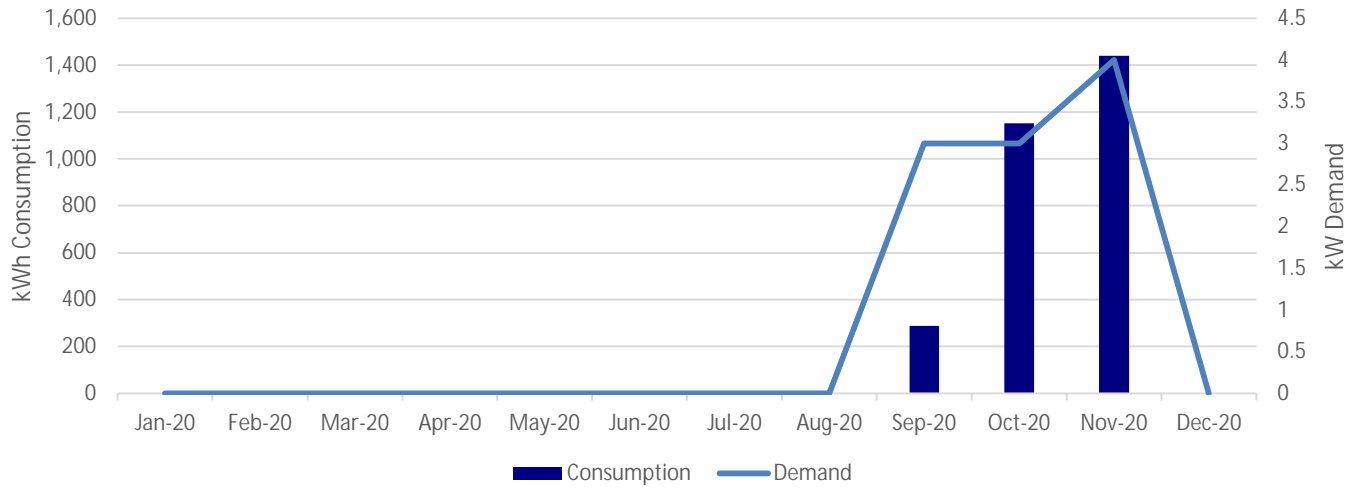


ELECTRIC USAGE SUMMARY - Berth 11

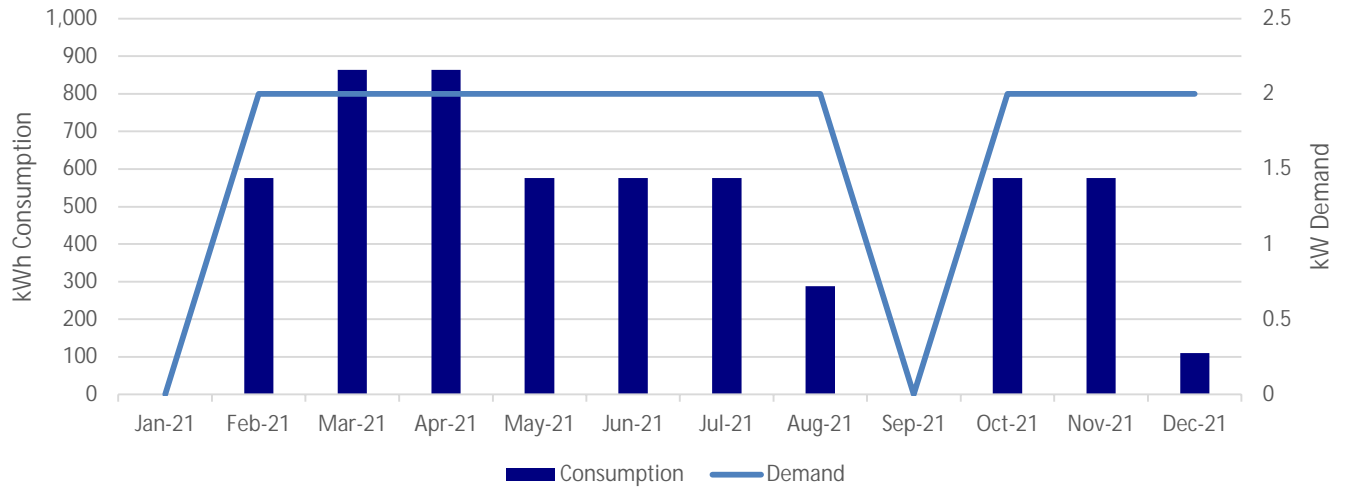
Customer: DSPA - Berth 11
Address: 802 Helberg Dr, Duluth, MN 55802
MP METER #: 514294
PERIOD: Jan-20 through Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	0	0	\$0.00	0.00
Feb-20	29	0	0	\$0.00	0.00
Mar-20	31	0	0	\$0.00	0.00
Apr-20	30	0	0	\$0.00	0.00
May-20	31	0	0	\$0.00	0.00
Jun-20	30	0	0	\$0.00	0.00
Jul-20	31	0	0	\$0.00	0.00
Aug-20	31	0	0	\$0.00	0.00
Sep-20	30	3	288	\$36.94	0.12
Oct-20	31	3	1,152	\$89.24	0.50
Nov-20	30	4	1,440	\$113.18	0.62
Dec-20	31	0	0	\$0.00	0.00
2020 TOTAL	366	4	2,880	\$239.36	1.25
AVERAGE	31	1	240	\$19.95	0.10
Jan-21	31	0	0	\$0.00	0.00
Feb-21	28	2	576	\$47.87	0.25
Mar-21	31	2	864	\$65.31	0.37
Apr-21	30	2	864	\$65.31	0.37
May-21	31	2	576	\$47.87	0.25
Jun-21	30	2	576	\$47.87	0.25
Jul-21	31	2	576	\$47.87	0.25
Aug-21	31	2	288	\$30.44	0.12
Sep-21	30	0	0	\$0.00	0.00
Oct-21	31	2	576	\$47.87	0.25
Nov-21	30	2	576	\$47.87	0.25
Dec-21	31	2	110	\$19.66	0.05
2021 TOTAL	365	2	5,582	\$467.93	2.42
AVERAGE	30	2	465	\$38.99	0.20

Electric Consumption - Berth 11



Electric Consumption - Berth 11

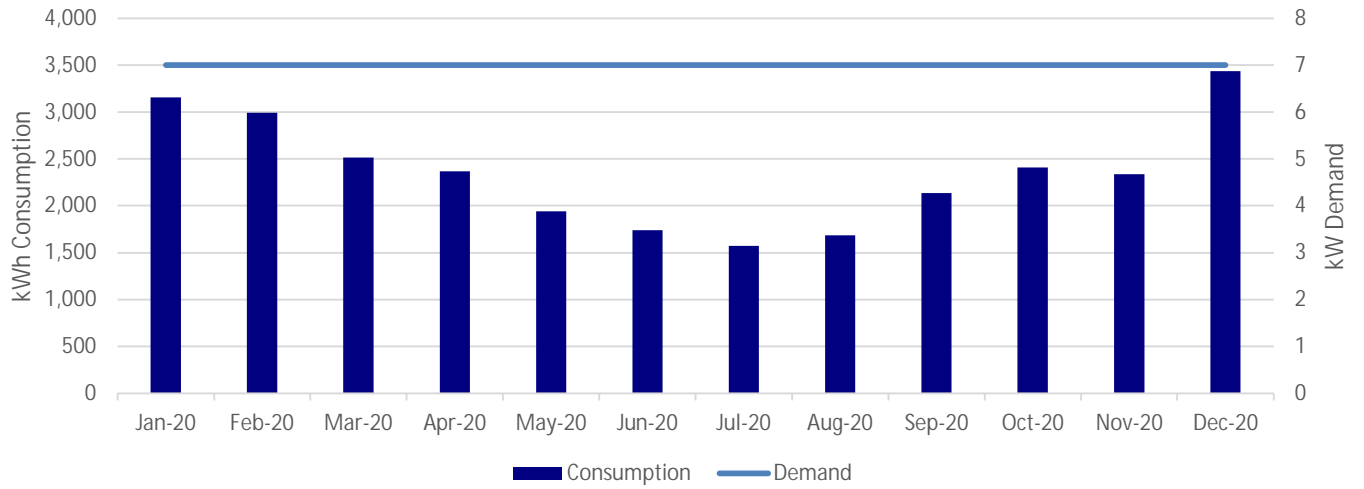


ENERGY SUMMARY - Berth 6 LED Expansion

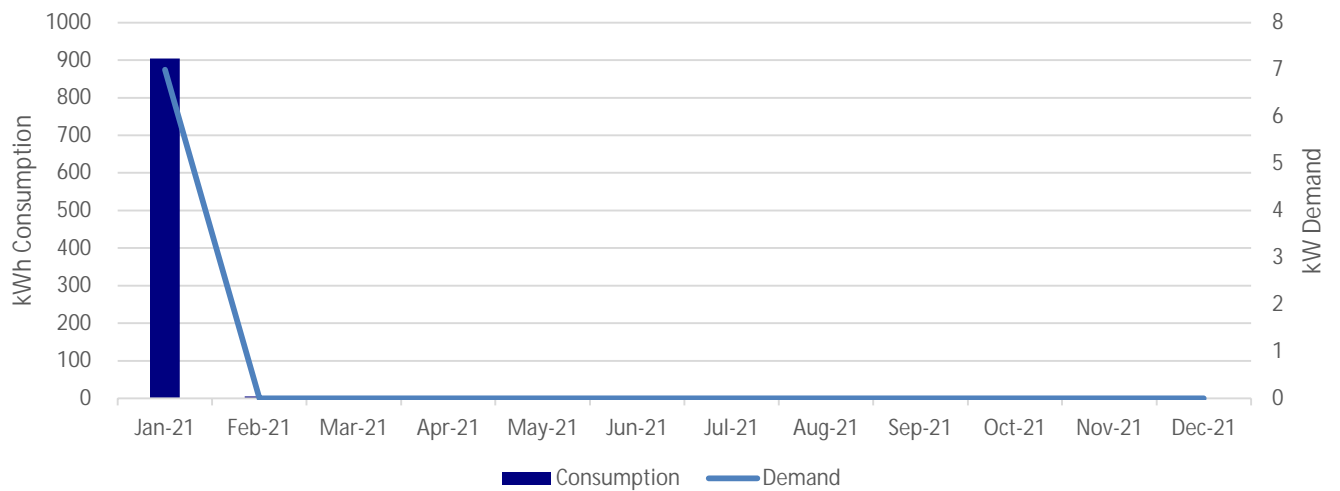
Customer:	DSPA - Berth 6 LED Expansion		
Address:	Berth 6 LED South Pier Expansion		
MP METER #:	557504		
PERIOD:	Jan-20	through	Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	7	3,155	\$236.50	1.4
Feb-20	29	7	2,993	\$226.70	1.3
Mar-20	31	7	2,513	\$197.64	1.1
Apr-20	30	7	2,369	\$188.92	1.0
May-20	31	7	1,941	\$163.01	0.8
Jun-20	30	7	1,738	\$150.72	0.8
Jul-20	31	7	1,572	\$140.67	0.7
Aug-20	31	7	1,685	\$147.51	0.7
Sep-20	30	7	2,135	\$174.75	0.9
Oct-20	31	7	2,411	\$191.46	1.0
Nov-20	30	7	2,340	\$187.16	1.0
Dec-20	31	7	3,433	\$253.33	1.5
2020 TOTAL	366	7	28,285	\$2,258.37	12.2
AVERAGE	31	7	2,357	\$188.20	1.0
Jan-21	31	7	904	\$100.23	0.4
Feb-21	28	0	5	\$0.30	0.0
Mar-21	31	0	3	\$0.18	0.0
Apr-21	30	0	0	\$0.00	0.0
May-21	31	0	1	\$0.06	0.0
Jun-21	30	0	0	\$0.00	0.0
Jul-21	31	0	1	\$0.06	0.0
Aug-21	31	0	0	\$0.00	0.0
Sep-21	30	0	1	\$0.06	0.0
Oct-21	31	0	0	\$0.00	0.0
Nov-21	30	0	1	\$0.06	0.0
Dec-21	31	0	0	\$0.00	0.0
2021 TOTAL	365	7	916	\$100.95	0.4
AVERAGE	30	1	76	\$8.41	0.0

Electric Consumption - Berth 6 LED Expansion



Electric Consumption - Berth 6 LED Expansion

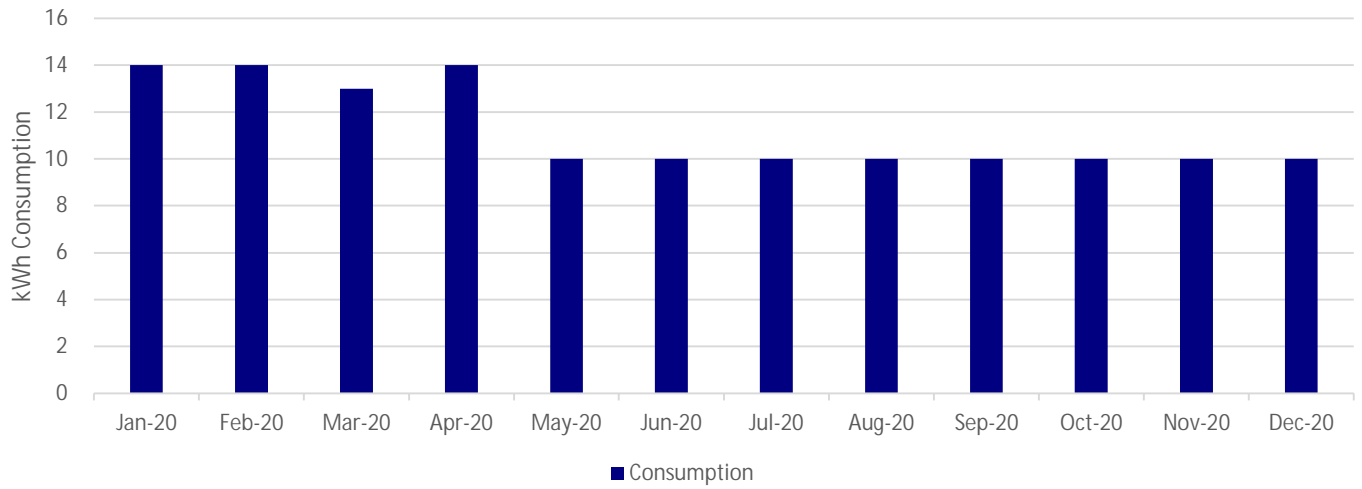


ENERGY SUMMARY - Berth 6 Ship Lighting

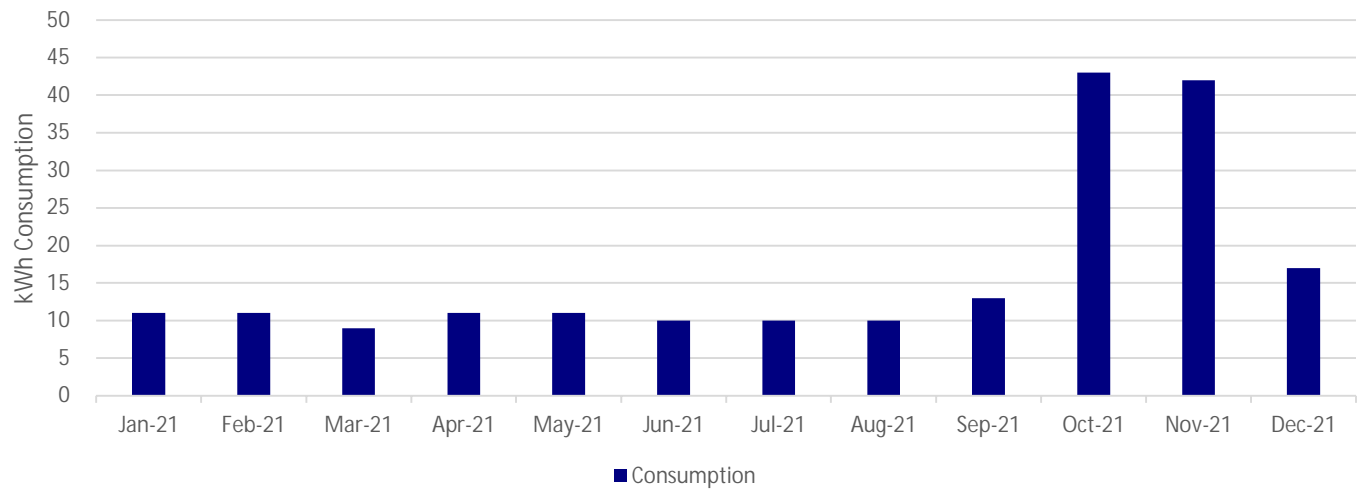
Customer: DSPA - Berth 6 Metered Lighting
Address: Berth 6 Ship Power Metered Lighting
MP METER #: 576180
PERIOD: Jan-20 through Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	0	14	\$12.85	0.0
Feb-20	29	0	14	\$12.85	0.0
Mar-20	31	0	13	\$12.79	0.0
Apr-20	30	0	14	\$12.85	0.0
May-20	31	0	10	\$12.61	0.0
Jun-20	30	0	10	\$12.61	0.0
Jul-20	31	0	10	\$12.61	0.0
Aug-20	31	0	10	\$12.61	0.0
Sep-20	30	0	10	\$12.61	0.0
Oct-20	31	0	10	\$12.61	0.0
Nov-20	30	0	10	\$12.61	0.0
Dec-20	31	0	10	\$12.61	0.0
2020 TOTAL	366	0	135	\$152.17	0.1
AVERAGE	31	0	11	\$23.41	0.0
Jan-21	31	0	11	\$12.67	0.0
Feb-21	28	0	11	\$12.67	0.0
Mar-21	31	0	9	\$12.54	0.0
Apr-21	30	0	11	\$12.67	0.0
May-21	31	0	11	\$12.67	0.0
Jun-21	30	0	10	\$12.61	0.0
Jul-21	31	0	10	\$12.61	0.0
Aug-21	31	0	10	\$12.61	0.0
Sep-21	30	0	13	\$12.79	0.0
Oct-21	31	0	43	\$14.60	0.0
Nov-21	30	0	42	\$14.54	0.0
Dec-21	31	0	17	\$13.03	0.0
2021 TOTAL	365	0	198	\$155.99	0.1
AVERAGE	30	0	17	\$24.00	0.0

Electric Consumption - Berth 6 Lighting



Electric Consumption - Berth 6 Lighting

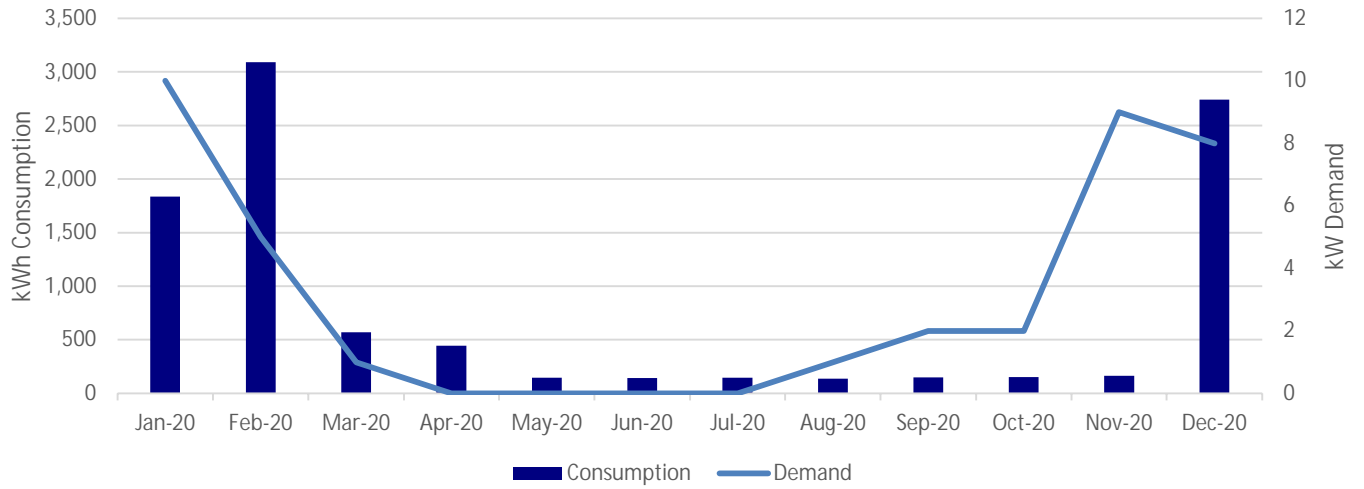


ELECTRIC USAGE SUMMARY - Clure Terminal Expansion

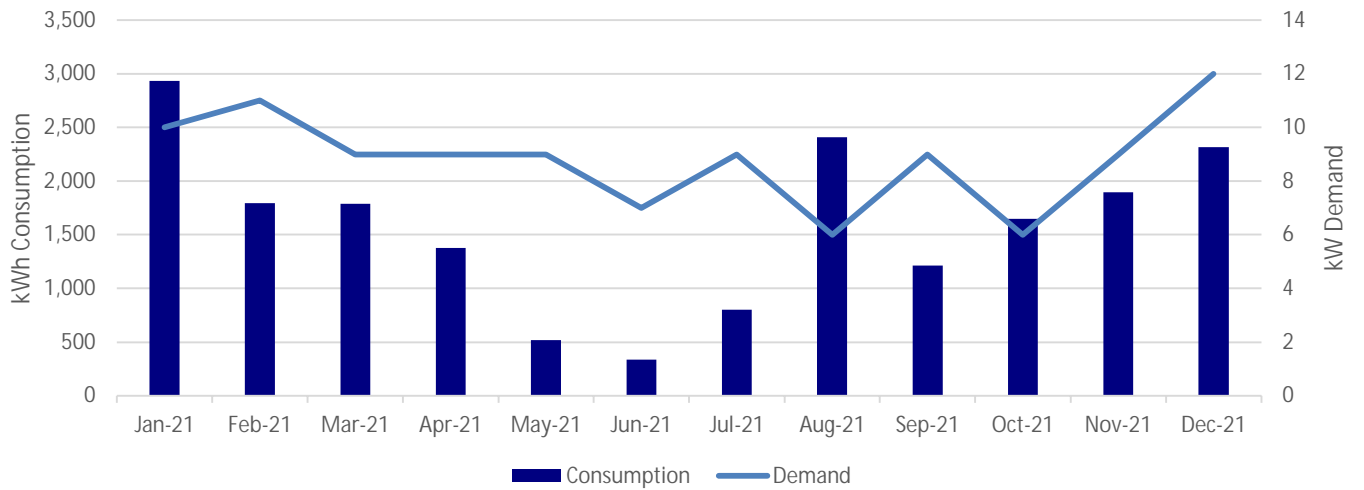
Customer:	LSW - Clure Terminal Expansion		
Address:	802 Helberg Dr, Duluth, MN 55802		
MP METER #:	514305		
PERIOD:	Jan-20	through	Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	10	1,836	\$224.75	0.8
Feb-20	29	5	3,089	\$374.36	1.3
Mar-20	31	1	572	\$84.55	0.2
Apr-20	30	0	444	\$68.54	0.2
May-20	31	0	147	\$33.14	0.1
Jun-20	30	0	142	\$33.29	0.1
Jul-20	31	0	145	\$33.34	0.1
Aug-20	31	1	138	\$32.47	0.1
Sep-20	30	2	149	\$32.64	0.1
Oct-20	31	2	152	\$32.98	0.1
Nov-20	30	9	164	\$34.41	0.1
Dec-20	31	8	2,742	\$343.42	1.2
2020 TOTAL	366	10	9,720	\$1,327.89	4.2
AVERAGE	31	3	810	\$110.66	0.4
Jan-21	31	10	2,933	\$381.29	1.3
Feb-21	28	11	1,793	\$241.58	0.8
Mar-21	31	9	1,787	\$246.73	0.8
Apr-21	30	9	1,376	\$206.17	0.6
May-21	31	9	518	\$81.57	0.2
Jun-21	30	7	336	\$46.61	0.1
Jul-21	31	9	803	\$122.90	0.3
Aug-21	31	6	2,407	\$334.45	1.0
Sep-21	30	9	1,212	\$176.82	0.5
Oct-21	31	6	1,648	\$234.50	0.7
Nov-21	30	9	1,896	\$272.19	0.8
Dec-21	31	12	2,317	\$330.51	1.0
2021 TOTAL	365	12	19,026	\$2,675.32	8.2
AVERAGE	30	9	1,586	\$222.94	0.7

Electric Consumption - Clure Terminal



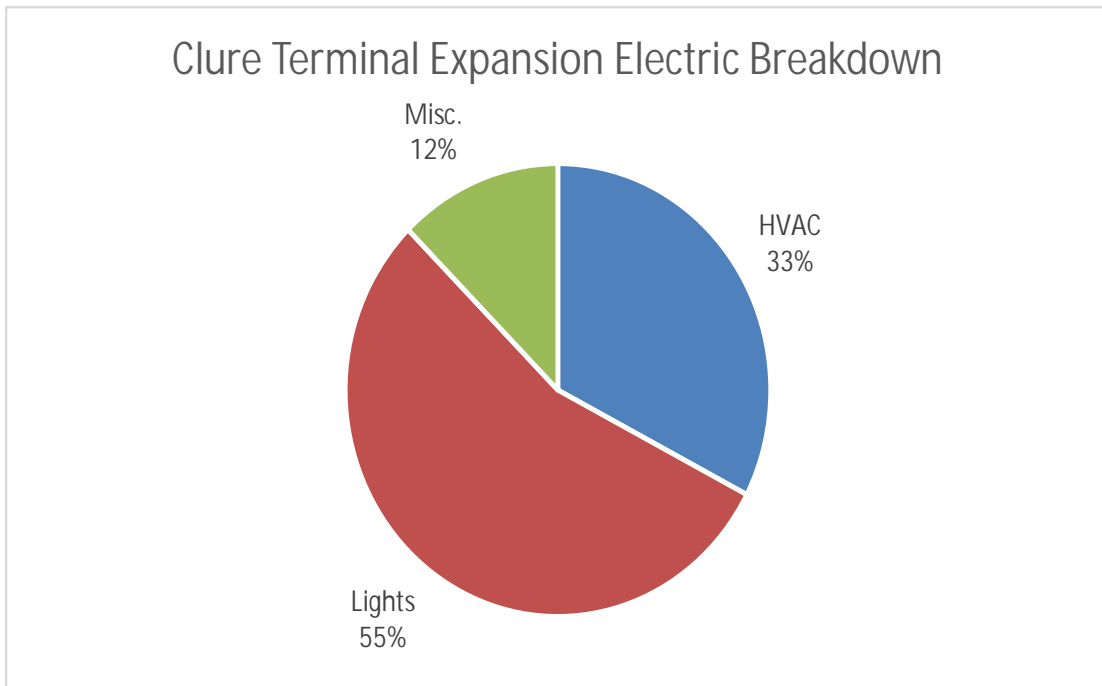
Electric Consumption - Clure Terminal



ELECTRIC END-USE BALANCE - Clure Terminal Expansion

CUSTOMER: LSW - Clure Terminal Expansion	BS = Building Systems	Misc. = Miscellaneous Equipment
ADDRESS: 802 Helberg Dr, Duluth, MN 55802	HVAC = Heating, Ventilation, Air Conditioning	Refrig. = Refrigeration
	Lights = Lighting	

#	Equip Code	Location	DESCRIPTION	Qty	Lamps/HP	Volts	Amps	Phase	Watts/ea.	Total kW	% Full Load	Hours/Year	Annual kWh	Peak kW
1	HVAC	Guard Shack	Electric Resistance Heater	1					2,500	2.50	100%	1,015	2,537	2.50
2	HVAC	Guard Shack	Combined Unit (Heating)	1					1,800	1.80	100%	1,015	1,826	1.80
3	HVAC	Guard Shack	Combined Unit (Cooling)	1					1,924	1.92	100%	170	327	1.92
Sub Total													4,690	6.22
Diversity Factor													100%	69%
Total HVAC													4,690	4.30
4	Lights	Guard Shack Interior	2LT8 Wrap	1	2				32	0.06	100%	8,760	493	0.06
5	Lights	Guard Shack Exterior	LED Wallpack	3	1				30	0.09	100%	4,380	394	0.09
6	Lights	Street Lighting	1L Exterior Pole Light	4	1				200	0.80	100%	4,380	3,504	0.80
7	Lights	Street Lighting	2L Exterior Light	2	2				200	0.80	100%	4,380	3,504	0.80
Sub Total													7,896	1.75
Diversity Factor													100%	100%
Total Lights													7,896	1.75
8	Misc.	Dock Power	Dock Power Consumption	1					6,500	6.50	100%	275	1,788	6.50
Sub Total													1,788	6.50
Diversity Factor													100%	93%
Total Lights													1,788	6.01
Total													14,373	12.06



HEAT PUMP - HEATING & COOLING - Clure Terminal Expansion

PROJECT DETAILS:

Please consider replacing the current heating and cooling system in the guard shack with an Air Source Heat Pump. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

ENERGY COSTS:

Demand = \$6.50 /kW
 On Peak = \$0.06054 /kWh

Is There a Current Unit: Yes

Unit Type: Split ASHP

Existing Unit: Number of Units this Type: 1
 Proposed Unit: Number of Units this Type: 1

Standard Unit Cooling Hours: 170 Standard Unit Heating Hours: 1,015
 New Unit Cooling Hours: 170 New Unit Heating Hours: 1,015

Estimated Capacity of Current Equipment :

	Cooling			Heating
Capacity =	1.1	tons		14.5
EER =	6.0	Btuh/watt	COP =	1.0
SEER =	6.9	Btuh/watt		

New Equipment Capacity:

Capacity =	0.8	tons		
EER =	12.6	Btuh/watt		12.0
SEER =	19.7	Btuh/watt	COP =	3.9

DEMAND SAVINGS:

Cooling	Standard Demand =	2.25 kW
	New Demand =	0.71 kW
	Demand Saved =	1.54 kW
Heating	Standard Demand =	4.26 kW
	New Demand =	0.90 kW
	Demand Saved =	3.36 kW

ENERGY SAVINGS:

Cooling Savings =	257
Heating Savings =	3,409
	3,666 kWh/Year

COST SAVINGS:

Cooling Cost Saved =	\$55.60 /Year
Heating Cost Saved =	\$381.09
Total Saved =	\$437.00 /Year

OTHER SAVINGS:

O&M Savings = \$150.00

INCENTIVE:

Heat Pump Incentive = \$1,000.00
 Total Incentive = \$1,000.00

FULL INSTALL COST:

Equipment Cost = \$1,297.50
 Labor Cost = \$1,297.50
 Full Install Cost = \$2,595.00
 After Incentive = \$1,595.00

SIMPLE PAYBACK:

Before Incentive = 5.9 Years
 After Incentive = 3.6 Years

v1.2

Disclaimer: All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

Please contact us at (218) 355-2217.



ENERGY EFFICIENT LIGHTING MEASURES - Clure Terminal Expansion

RECOMMENDATION: Please consider replacing the T8 fluorescent tubes with LED tubes. Consider removing the ballast and installing direct wired tubes. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

Demand: \$6.50 per kW Rebate: \$200 per kW Analysis Type: **Rebate Estimate**
 Energy: \$0.06054 per kWh \$0.035 per kWh Rebate Type: kWh-based

AREA DESCRIPTION:	Construction Type	Existing System						Proposed System						Energy Savings						
		Lighting Type	Lighting Size	# of Fixtures	Lamps/ Fixture	Watts/ Lamp	Fixture Watt	Lighting Type	Lighting Size	# of Fixtures	Lamps/ Fixture	Watts/ Lamp	Fixture Watt	Hours of Operation /yr.	Peak kW Reduced	Annual kWh Reduced	Annual Energy Savings	Rebate	Cost	Payback (years)
Guard Shack Interior	Retrofit without Ballast	T8 Lighting	F32T8 4'32W	1	2	32	56	LED	LED Tubes	1	2	15	30	8,760	0.02	231	\$15.60	\$8.07	\$30	
														0.02	231	\$15.60	\$8.07	\$30	1.41	

Disclaimer: All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

Please contact us at (218) 355-2217.



ELECTRIC & GAS USAGE SUMMARY - DSPA Administration

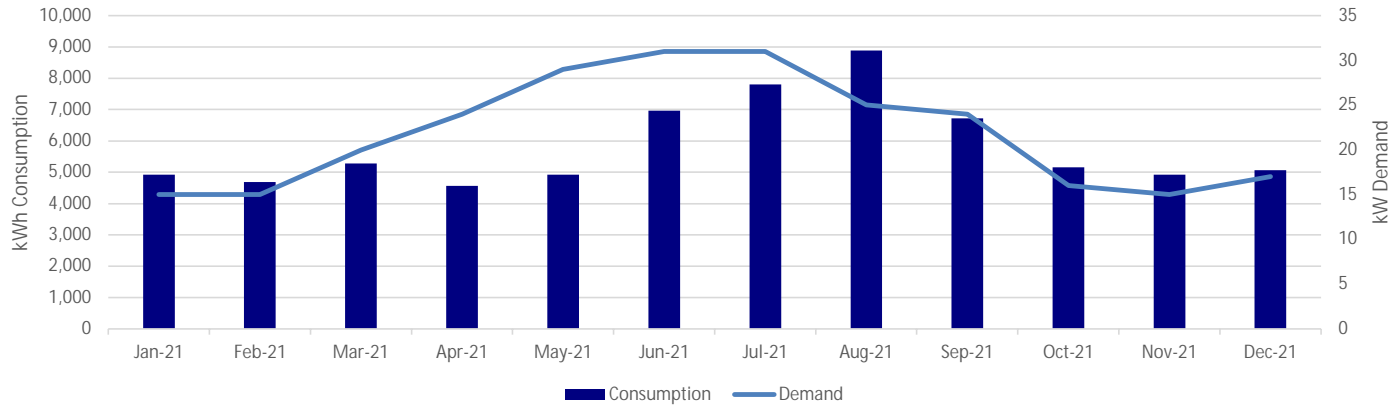
Customer:	DSPA Administration		
Address:	802 Garfield Ave, Duluth, MN 55802		
MP METER #:	577621	CS Account #:	230529420-003
PERIOD:	Jan-20	through	Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2	Nat. Gas CCF	Nat Gas Cost	Natural Gas Tons CO2
Jan-20	31	65	10,944 ¹	\$1,337.83 ²	4.7	410 ¹	\$271.59 ²	2.2
Feb-20	29	71	12,864 ¹	\$1,572.53 ²	5.6	635 ¹	\$420.63 ²	3.4
Mar-20	31	66	12,096 ¹	\$1,478.65 ²	5.2	788 ¹	\$521.98 ²	4.2
Apr-20	30	48	0 ¹	\$0.00 ²	0.0	821 ¹	\$543.84 ²	4.4
May-20	31	46	10,560 ¹	\$1,290.89 ²	4.6	463 ¹	\$306.69 ²	2.5
Jun-20	30	25	10,368 ¹	\$1,267.42 ²	4.5	286 ¹	\$189.45 ²	1.5
Jul-20	31	11	8,064 ¹	\$985.77 ²	3.5	18 ¹	\$11.92 ²	0.1
Aug-20	31	46	6,912 ¹	\$844.94 ²	3.0	4 ¹	\$2.65 ²	0.0
Sep-20	30	25	6,912 ¹	\$844.94 ²	3.0	4 ¹	\$2.65 ²	0.0
Oct-20	31	11	8,064 ¹	\$985.77 ²	3.5	3 ¹	\$1.99 ²	0.0
Nov-20	30	19	8,064 ¹	\$985.77 ²	3.5	155 ¹	\$102.67 ²	0.8
Dec-20	31	18	4,680 ¹	\$550.63 ²	2.0	165 ¹	\$109.30 ²	0.9
2020 TOTAL	366	71	99,528	\$12,145.13	43.1	3,752	\$2,485.35	19.9
AVERAGE	31	38	8,294	\$1,012.09	3.6	313	\$207.11	1.7
Jan-21	31	15	4,920	\$589.48	2.1	966	\$583.10	5.1
Feb-21	28	15	4,680	\$547.40	2.0	884	\$550.76	4.7
Mar-21	31	20	5,280	\$598.65	2.3	963	\$670.99	5.1
Apr-21	30	24	4,560	\$564.45	2.0	607	\$412.63	3.2
May-21	31	29	4,920	\$629.48	2.1	443	\$314.01	2.3
Jun-21	30	31	6,960	\$887.50	3.0	226	\$182.05	1.2
Jul-21	31	31	7,800	\$964.49	3.4	72	\$89.85	0.4
Aug-21	31	25	8,880	\$1,074.32	3.8	54	\$79.37	0.3
Sep-21	30	24	6,720	\$824.60	2.9	216	\$181.43	1.1
Oct-21	31	16	5,160	\$679.58	2.2	226	\$201.04	1.2
Nov-21	30	15	4,923	\$605.97	2.1	440	\$344.76	2.3
Dec-21	31	17	5,065	\$607.64	2.2	788	\$715.01	4.2
2021 TOTAL	365	31	69,868	\$8,573.56	30.3	5,885	\$4,325.00	31.2
AVERAGE	30	22	5,822	\$714.46	2.5	490	\$360.42	2.6

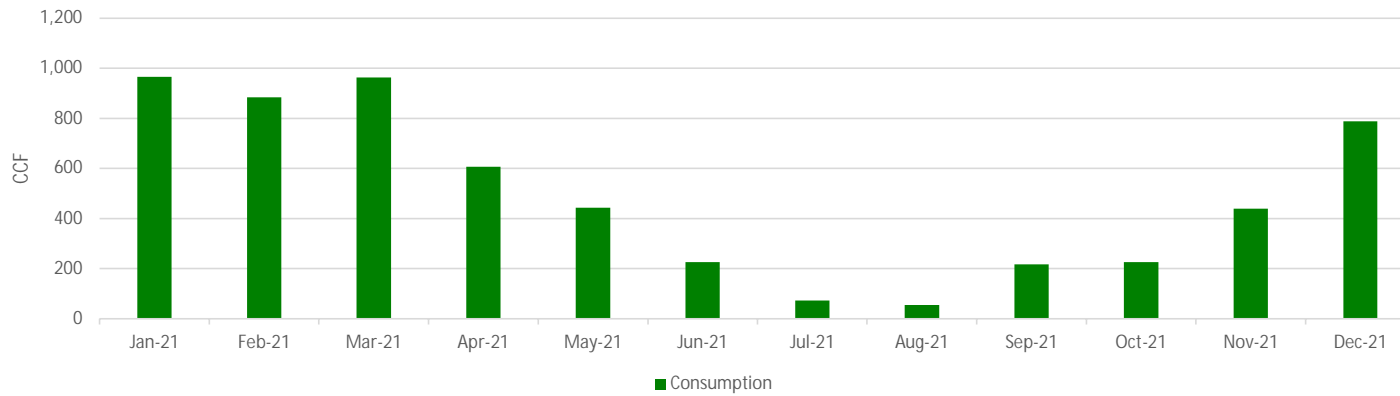
¹ Based on 2017 data from Clure GHG calculator spreadsheet.

² Monthly cost based on average rate.

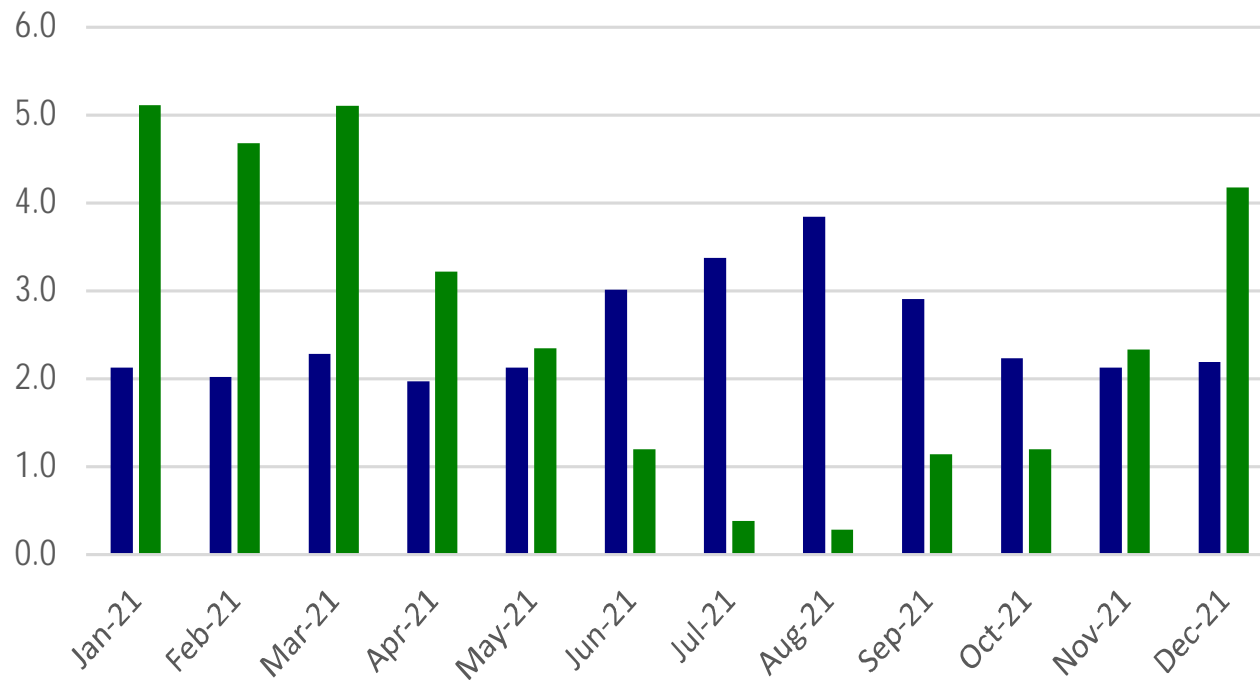
Electric Consumption - DSPA Administration



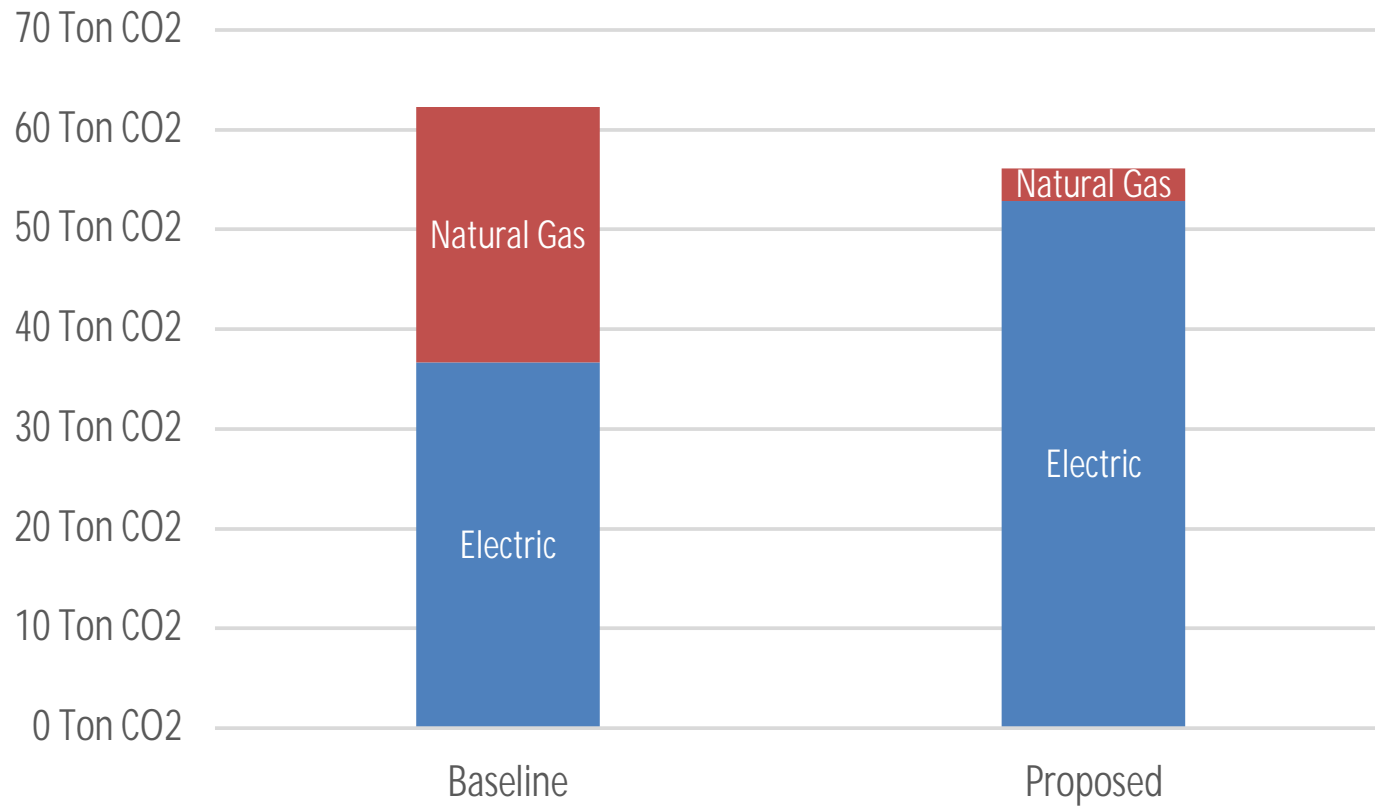
Natural Gas Consumption - DSPA Administration



Monthly Tons of CO2 - DSPA Administration



CO2 Emissions - DSPA Administration Building



ELECTRIC END-USE BALANCE - DSPA Administration

CUSTOMER: Duluth Seaway Port Authority - Admin Building
 ADDRESS: 802 Garfield Ave, Duluth, MN 55802
 MP Meter #: 577621

BS = Building Systems
 HVAC = Heating, Ventilation, Air Conditioning
 Lights= Lighting

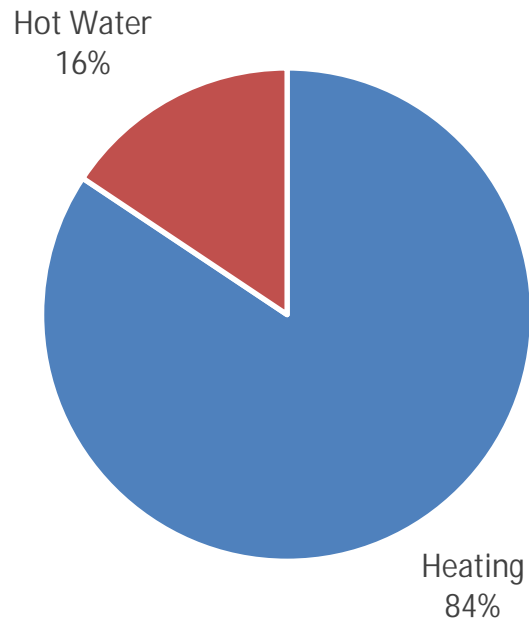
Misc. = Miscellaneous Equipment
 Refrig. = Refrigeration

#	Equip Code	Location	DESCRIPTION	Qty	Lamps/ HP	Volts	Amps	Phase	Watts/ ea.	Total kW	% Full Load	Hours/ Year	Annual kWh	Peak kW
1	HVAC	Housekeeping	Exhaust Fan	1	0.08				89	0.09	75%	1,000	67	0.07
2	HVAC	Restroom	Exhaust Fan	1	0.13				133	0.13	75%	3,000	300	0.10
3	HVAC	Boiler Room	Boilers	2		120	8.4	1	1,008	2.02	50%	3,500	3,528	1.01
4	HVAC	Boiler Room	Domestic Hot Water Circ Pumps	2	0.17				178	0.36	50%	8,760	1,555	0.18
5	HVAC	Boiler Room	Boiler Circ Pumps	2	1				1,065	2.13	50%	5,110	5,444	1.07
6	HVAC	Interior	Electric Heater 1KW	1					1,000	1.00	100%	500	500	1.00
7	HVAC	Rooms	Cabinet Unit Heaters	4	0.07				71	0.28	65%	3,500	646	0.18
8	HVAC	Roof	AHU-1 Supply Fan	1	7.5				7,990	7.99	65%	3,962	20,574	5.19
9	HVAC	Roof	AHU-1 Exhaust Fan	1	6				6,392	6.39	65%	3,962	16,460	4.15
10	HVAC	Roof	20 Ton Condensing Unit	1		208	28.3	3	19,200	19.20	100%	496	9,523	19.20
11	HVAC	Boiler Room	Fan Coil Unit #1	1	0.50				466	0.47	75%	3,962	1,385	0.35
12	HVAC	Exterior	3 Ton Condensing Unit	1					2,571	2.57	100%	496	1,275	2.57
13	HVAC	Exterior	Server Room 1.5 Ton ASHP	1					1,125	1.13	100%	1,986	2,234	1.13
Sub Total													63,491	36.20
Diversity Factor													100%	50%
Total HVAC													63,491	18.10
14	Lights	Entryway	LED Can	2	1				25	0.05	100%	2,346	117	0.05
15	Lights	Entry	LED Can	4	1				25	0.10	100%	2,346	235	0.10
16	Lights	Break Room	LED Can	9	1				25	0.23	100%	2,346	528	0.23
17	Lights	Break Room	LED Pendant	3	1				6	0.02	100%	2,346	42	0.02
18	Lights	Break Room	4' Undercabinet	2	1				10	0.02	100%	2,346	47	0.02
19	Lights	Hallways	LED Can	9	1				25	0.23	100%	2,346	528	0.23
20	Lights	Hallways	Downlight Strip	2	1				22	0.04	100%	2,346	101	0.04
21	Lights	Storage Entry	LED Can	2	1				25	0.05	100%	2,346	117	0.05
22	Lights	Server Room	4' Strip	1	1				31	0.03	100%	261	8	0.03
23	Lights	Housekeeping	4' Strip	1	1				25	0.03	100%	261	7	0.03
24	Lights	Mens Restroom	LED Can	4	1				25	0.10	100%	2,346	235	0.10
25	Lights	Mens Restroom	8' Vanity Strip	1	1				88	0.09	100%	2,346	206	0.09
26	Lights	Womens Restroom	LED Can	4	1				25	0.10	100%	2,346	235	0.10
27	Lights	Womens Restroom	8' Vanity Strip	1	1				88	0.09	100%	2,346	206	0.09
28	Lights	Tennant Offices (5)	4' Strip	15	1				31	0.47	100%	2,346	1,091	0.47
29	Lights	Conference Room	8' Linear Strip	7	1				38	0.27	100%	782	208	0.27
30	Lights	Conference Room	Small Spot Lamps	13	1				13	0.17	100%	782	132	0.17
31	Lights	Conference Room	LED Can Light	4	1				25	0.10	100%	782	78	0.10
32	Lights	Boiler Room	4' Strip	6	1				31	0.19	100%	261	48	0.19
33	Lights	Fitness Room	2x4 Panel	6	1				40	0.24	100%	521	125	0.24
34	Lights	Fitness Room RR	LED Can	2	1				24	0.05	100%	261	13	0.05
35	Lights	Fitness Room RR	4' Strip	1	1				60	0.06	100%	261	16	0.06
36	Lights	2nd Floor Lobby	Pendant A19	3	1				10	0.03	100%	2,346	70	0.03
37	Lights	2nd Floor MRR	LED Can	1	1				25	0.03	100%	782	20	0.03
38	Lights	2nd Floor MRR	4' Strip	1	1				30	0.03	100%	782	23	0.03
39	Lights	2nd Floor WRR	LED Can	1	1				25	0.03	100%	782	20	0.03
40	Lights	2nd Floor WRR	4' Strip	1	1				30	0.03	100%	782	23	0.03
41	Lights	Stairway	LED Can	8	1				47	0.38	100%	2,346	882	0.38
42	Lights	Elevator Lobby	LED Can	2	1				25	0.05	100%	2,346	117	0.05
43	Lights	2nd Floor Reception	LED Can	10	3				25	0.75	100%	2,346	1,760	0.75
44	Lights	2nd Floor Reception	Pendant A19	3	1				10	0.03	100%	2,346	70	0.03
45	Lights	Library	LED Can	10	1				25	0.25	100%	2,346	587	0.25
46	Lights	Hallways	LED Can	18	1				25	0.45	100%	2,346	1,056	0.45
47	Lights	Office 207	2x2 Panel	4	1				37	0.15	100%	1,564	232	0.15
48	Lights	Office 207	LED Desk Lamp	1	1				5	0.01	100%	1,564	8	0.01
49	Lights	Office 208	2x2 Panel	4	1				37	0.15	100%	1,564	232	0.15
50	Lights	Office 209	2x2 Panel	6	1				37	0.22	100%	1,564	347	0.22
51	Lights	Work Room	2x4 Panel	2	1				40	0.08	100%	1,564	125	0.08
52	Lights	Work Room	3' Undercabinet	5	1				10	0.05	100%	1,564	78	0.05

53	Lights	Office 210	2x2 Panel	6	1				37	0.22	100%	1,564	347	0.22
54	Lights	Meeting Room	LED Can	8	1				35	0.28	100%	1,043	292	0.28
55	Lights	Meeting Room	4' Horizontal Pendant	3	1				35	0.11	100%	1,043	110	0.11
56	Lights	Office 213	LED Can	7	1				35	0.25	100%	1,564	383	0.25
57	Lights	Conference Room	LED Can	6	1				35	0.21	100%	782	164	0.21
58	Lights	Conference Room	4' Horizontal Pendant	3	1				35	0.11	100%	782	82	0.11
59	Lights	Office 220	2x2 Panel	4	1				37	0.15	100%	1,564	232	0.15
60	Lights	Office 221	2x2 Panel	4	1				37	0.15	100%	1,564	232	0.15
61	Lights	Office 222	2x2 Panel	4	1				37	0.15	100%	1,564	232	0.15
62	Lights	Office 223	2x2 Panel	4	1				37	0.15	100%	1,564	232	0.15
63	Lights	Copy Area	2x2 Panel	6	1				37	0.22	100%	2,346	521	0.22
64	Lights	Office 224	2x2 Panel	4	1				37	0.15	100%	1,564	232	0.15
65	Lights	Roof Access	4' Strip	2	1				31	0.06	100%	52	3	0.06
66	Lights	Elevator	Small Can	4	1				6	0.02	100%	8,760	210	0.02
67	Lights	Throughout	Exit Signs	6	1				4	0.02	100%	8,760	210	0.02
68	Lights	Exterior	Flag Light	1	1				15	0.02	100%	4,380	66	0.02
69	Lights	Exterior	Wall Pack	4	1				18	0.07	100%	4,380	315	0.07
70	Lights	Parking Lot Light	Area Light	2	1				75	0.15	100%	4,380	657	0.15
												Sub Total	14,493	7.87
												Diversity Factor	100%	75%
												Total Lights	14,493	5.90
71	Misc.	Break Room	Microwave	2					1,000	2.00	95%	26	50	1.90
72	Misc.	Break Room	Toaster	1					750	0.75	100%	26	20	0.75
73	Misc.	Break Room	Toaster Oven	1					1,500	1.50	95%	52	74	1.43
74	Misc.	Break Room	Dishwasher	1		120	10	1	1,200	1.20	75%	261	235	0.90
75	Misc.	Break Room	Coffee Pot	1					1,800	1.80	100%	261	469	1.80
76	Misc.	Break Room	60" TV	1					250	0.25	30%	261	20	0.08
77	Misc.	Break Room	Refrigerator	1		115	3.3	1	380	0.38	65%	4,225	1,042	0.25
78	Misc.	Hallways	55" TV	1					220	0.22	30%	2,346	155	0.07
79	Misc.	Hallways	Drinking Fountain	2		115	3.9	1	449	0.90	65%	52	30	0.58
80	Misc.	Server Room	IT Equipment	1		115	2	1	230	0.23	30%	8,760	604	0.07
81	Misc.	2nd Floor Hallways	Water Bottle Filler	1		115	1	1	75	0.07	65%	52	3	0.05
82	Misc.	Conference Room	60" TV	1					250	0.25	30%	261	20	0.08
83	Misc.	Conference Room	Large Printer	1					1,150	1.15	40%	52	24	0.46
84	Misc.	Conference Room	60" TV	1					250	0.25	30%	261	20	0.08
85	Misc.	Tennant Offices (5)	Laptops	5					150	0.75	40%	1,304	391	0.30
86	Misc.	Tennant Offices (5)	Screen	5					150	0.75	30%	1,304	293	0.23
87	Misc.	Fitness Room	32" TV	1					150	0.15	30%	261	12	0.05
88	Misc.	Elevator Room	Elevator	1	25				20,714	20.71	75%	26	405	15.54
89	Misc.	2nd Floor Lobby	Coffee Maker	2					1,500	3.00	100%	52	156	3.00
90	Misc.	2nd Floor Lobby	Phone	2					50	0.10	30%	261	8	0.03
91	Misc.	2nd Floor Lobby	Laptops	2					400	0.80	40%	1,564	501	0.32
92	Misc.	2nd Floor Lobby	Screen	2					150	0.30	30%	1,564	141	0.09
93	Misc.	2nd Floor Lobby	Printer	1					850	0.85	40%	52	18	0.34
94	Misc.	2nd Floor Lobby	32" TV	1					150	0.15	30%	1,564	70	0.05
95	Misc.	Offices x 10	Laptops	10					150	1.50	40%	1,564	939	0.60
96	Misc.	Offices x 10	Screen	10					150	1.50	30%	1,564	704	0.45
97	Misc.	Work Room	Large Printer	1					1,150	1.15	40%	52	24	0.46
98	Misc.	Work Room	Label Maker	1					200	0.20	40%	52	4	0.08
99	Misc.	Meeting Room	60" TV	1					250	0.25	30%	261	20	0.08
100	Misc.	Meeting Room	Phone	1					50	0.05	30%	261	4	0.02
101	Misc.	Conference Room	60" TV	1					250	0.25	30%	261	20	0.08
102	Misc.	Conference Room	Phone	1					50	0.05	30%	261	4	0.02
103	Misc.	Open Area	60" TV	1					250	0.25	30%	1,564	117	0.08
104	Misc.	Open Area	Large Printer	1					1,150	1.15	40%	261	120	0.46
												Sub Total	6,714	30.71
												Diversity Factor	100%	30%
												Total Misc.	6,714	9.21
Total													84,698	33.21

NATURAL GAS END-USE BALANCE								
#	Location	Equipment Description	Qty	BTU/ Hour	Efficiency	Hours/ Year	Load Factor	CCF/ Year
1	Boiler Room	Lochinvar Boiler	2	399,000	90%	1,056	50%	4,063
2	Boiler Room	Bradford White Water Heater	1	150,000	95%	523	100%	756
<i>Total</i>				948,000		Total CCF:		4,819

DSPA Administration Natural Gas



Interruptible Electric Heat Pump Heating

Project Details: Recommend adding an electric air to water heat pump, on an interruptible meter, to utilize a more efficient and affordable heating source for the existing heating hot water loop when ambient temperatures are sufficient. Breakeven COP is the COP rating to switch to gas heating, based on the unit's COP at outdoor temperature. When a heat pump is below 2.23 COP, there is a negative CO2 emission impact, and below 1.98 COP the current gas rates are more cost effective. Example: Trane AXM 30T Air-Water Heat Pump has a COP of 2.03 at 0°F and 2.62 at 25°F. Based on historical weather data, approximately 85% of the annual heating load is above the breakeven COP rating of 2, at around 0°F for this particular example. The calculations assume the average COP will be 3.0 when operating above the breakeven COP, and switched to gas boiler operation when operating below the breakeven COP.

MP Interruptible Rate	\$0.05888 /kWh	<u>25D Firm Rate</u> \$6.50 /kW \$0.06054 /kWh \$3,239 /year HP cost -\$304 /year savings
MP Monthly Charge	\$12.00 /month	
Gas Rate	\$0.85 /CCF	
Existing Boiler Usage	4,063 CCF	
Existing Boiler CO2 Emissions	21.5 Tons CO2/year	
Existing Boiler Cost	\$3,453 /year	
Boiler Efficiency	0.90 COP	
MMBTU Output Required	379 MMBTU delivered	
Proposed Gas Output	57 MMBTU delivered	
Proposed Heat Pump Output	322 MMBTU delivered	
Gas Usage	609 CCF	
Gas CO2 Emissions	3.2 Tons CO2/year	
Gas Boiler Cost	\$518 /year	Breakeven COP 2.234 COP _{CO2} 1.977 COP _s
Electric Heat Pump Efficiency	3.0 COP	
Electric Heat Pump Usage	31,475 kWh	
Electric CO2 Emissions	13.6 Tons CO2	
Electric Heat Pump kW	39 kW	
kW Coincidence Factor	75%	
Operating Months	7 months per year	
Electric Cost	\$1,997 /year	
Annual Savings	\$938 /year	
Annual CO2 Reduction	4.67 Tons CO2/year	
Project Cost	\$20,000	
MN Power Rebate		
Payback	21.3 years	

Electric Heat Pump Water Heater

Project Details: Recommend replacing the natural gas hot water heater with an equivalent electric heat pump water heater with a COP of 3.5.

MP 25D Demand Rate	\$6.50000 /kW
MP 25D Usage Rate	\$0.06 /kWh
Gas Rate	\$0.85 /CCF
Existing Water Heater Usage	756 CCF
Existing Water Heater Cost	\$643 /year
Existing Water Heater CO2 Emissions	4.0 Tons CO2/year
Existing Water Heater Efficiency	0.95 COP
MMBTU Output Required	74 MMBTU delivered
Electric Heat Pump Efficiency	3.5 COP
Electric Heat Pump Usage	6,236 kWh
Electric CO2 Emissions	2.7 Tons CO2
Electric Heat Pump kW	13 kW
kW Coincidence Factor	25%
Operating Months	12 months per year
Electric Cost	\$622 /year
Annual Savings	\$20 /year
Annual CO2 Reduction	1.3 Tons CO2
Project Cost	\$5,000
MN Power Rebate	
Payback	248.4 years

DOMESTIC HOT WATER CIRCULATION PUMP TIMER

PROJECT DETAILS:		Program the domestic hot water circulators to turn off after hours.	
ENERGY COSTS:	Demand = \$6.50 /kW	Is There a Current Unit: Yes	
	On Peak = \$0.06054 /kWh	Operational Months: 12	
Standard Unit Full Load Hours:	8,760	Existing Unit: Number of Units this Type:	1
New Unit Full Load Hours:	5,840	Proposed Unit: Number of Units this Type:	1
DEMAND SAVINGS:			
Standard Demand =	0.18 kW	Load/Diversity Factor	65%
New Demand =	0.18 kW	Load/Diversity Factor	65%
Demand Saved =	0.00 kW		
ENERGY SAVINGS:	Savings =	<u>338 kWh/Year</u>	<u>0.15 Ton CO2/Year</u>
COST SAVINGS:	Cost Saved =	<u>\$20.45 /Year</u>	
	Total Saved =	<u>\$20.45 /Year</u>	
OTHER SAVINGS:	O&M Savings =	\$150	
INCENTIVE:	Incentive =	\$11.82	
	Total Incentive =	\$11.82	
FULL INSTALL COST:		SIMPLE PAYBACK:	
Equipment Cost =	\$50.00	Before Incentive =	2.4 Years
Labor Cost =		After Incentive =	1.9 Years
Full Install Cost =	\$50.00		
After Incentive =	\$38.18		

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Disclaimer: All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

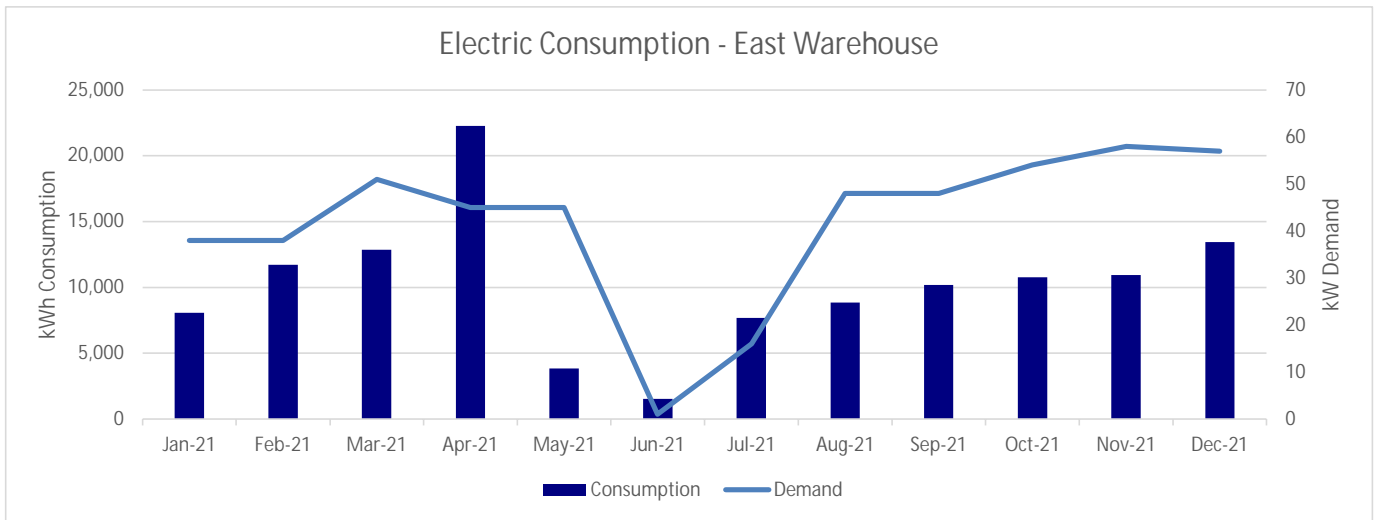
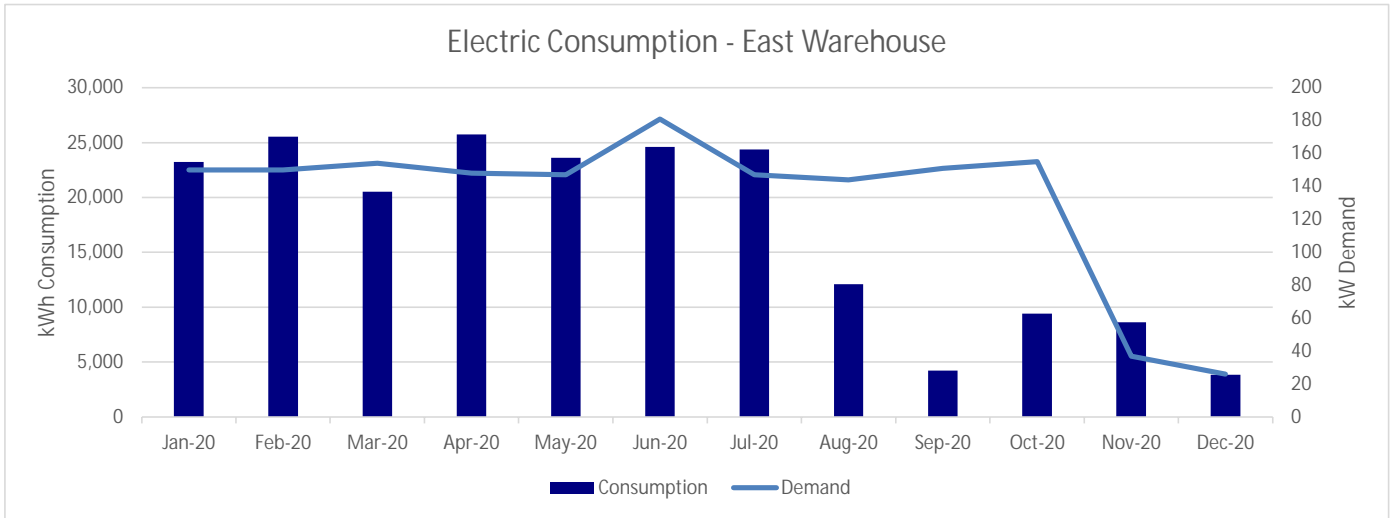
Please contact us at (218) 355-2217.



ELECTRIC & GAS ENERGY SUMMARY - East Warehouse

Customer:	LSW - East Warehouse		
Address:	1130 Port Terminal Dr, Duluth, MN 55802		
MP METER #:	574241	CS Account #:	230523966-001
PERIOD:	Jan-20	through	Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2	Nat. Gas CCF	Nat Gas Cost	Natural Gas Tons CO2
Jan-20	31	150	23,232	\$3,381.28	10.1	1,877	\$1,415.30	9.9
Feb-20	29	150	25,536	\$3,643.03	11.1	1,573	\$1,186.08	8.3
Mar-20	31	154	20,544	\$3,392.19	8.9	1,517	\$1,143.86	8.0
Apr-20	30	148	25,728	\$3,770.80	11.1	1,496	\$1,128.02	7.9
May-20	31	147	23,616	\$3,567.30	10.2	564	\$425.27	3.0
Jun-20	30	181	24,592	\$3,062.80	10.6	1,090	\$821.89	5.8
Jul-20	31	147	24,384	\$4,080.93	10.6	487	\$367.21	2.6
Aug-20	31	144	12,096	\$2,739.35	5.2	39	\$29.41	0.2
Sep-20	30	151	4,224	\$2,454.86	1.8	107	\$80.68	0.6
Oct-20	31	155	9,408	\$2,769.76	4.1	131	\$122.77	0.7
Nov-20	30	37	8,640	\$2,693.48	3.7	374	\$259.93	2.0
Dec-20	31	26	3,840	\$896.48	1.7	634	\$397.24	3.4
2020 TOTAL	366	181	205,840	\$36,452.26	89.1	9,889	\$7,377.66	52.4
AVERAGE	31	133	17,153	\$3,037.69	7.4	824	\$614.80	4.4
Jan-21	31	38	8,064	\$1,050.32	3.5	826	\$505.26	4.4
Feb-21	28	38	11,712	\$1,469.42	5.1	873	\$544.48	4.6
Mar-21	31	51	12,864	\$1,610.36	5.6	933	\$651.52	4.9
Apr-21	30	45	22,272	\$3,065.75	9.6	674	\$453.10	3.6
May-21	31	45	3,840	\$832.40	1.7	358	\$262.59	1.9
Jun-21	30	1	1,536	\$266.18	0.7	111	\$112.82	0.6
Jul-21	31	16	7,680	\$1,280.30	3.3	0	\$46.00	0.0
Aug-21	31	48	8,832	\$1,380.12	3.8	0	\$46.00	0.0
Sep-21	30	48	10,176	\$1,506.69	4.4	0	\$46.00	0.0
Oct-21	31	54	10,752	\$1,571.00	4.7	0	\$46.00	0.0
Nov-21	30	58	10,944	\$1,660.82	4.7	106	\$117.97	0.6
Dec-21	31	57	13,440	\$1,935.29	5.8	512	\$480.69	2.7
2021 TOTAL	365	58	122,112	\$17,628.65	52.9	4,393	\$3,312.43	23.3
AVERAGE	30	42	10,176	\$1,469.05	4.4	366	\$276.04	1.9



ELECTRIC END-USE BALANCE - East Warehouse

CUSTOMER: Lake Superior Warehouse - DSPA - East Warehouse BS = Building Systems Misc. = Miscellaneous Equipment
 ADDRESS: 1210 Port Terminal Dr, Duluth, MN 55802 HVAC = Heating, Ventilation, Air Conditioning Refrig. = Refrigeration
 Lights= Lighting

#	Equip Code	Location	DESCRIPTION	Qty	Lamps/HP	Volts	Amps	Phase	Watts/ea.	Total kW	% Full Load	Hours/Year	Annual kWh	Peak kW
1	HVAC	Guard Shack	Wall AC	1					600	0.60	65%	662	258	0.39
2	HVAC	Guard Shack	Electric Heater	1					2,500	2.50	100%	2,500	6,250	2.50
3	HVAC	Break Room	Unit Heater Fan	1	0.25				266	0.27	75%	2,500	499	0.20
4	HVAC	Break Room	Wall AC	1					1,200	1.20	65%	662	516	0.78
5	HVAC	Break Room	Space Heater	1					2,000	2.00	100%	2,500	5,000	2.00
6	HVAC	Warehouse	Destratification Fans	5	0.25				266	1.33	75%	4,380	4,374	1.00
7	HVAC	Warehouse	Unit Heater Fan	2	0.25				266	0.27	75%	2,500	499	0.20
8	HVAC	Lab	Wall AC	1					1,200	1.20	65%	662	516	0.78
9	HVAC	Lab	Baseboard Heater	1					6,000	6.00	100%	2,500	15,000	6.00
Sub Total													32,914	13.85
Diversity Factor													100%	91%
Total HVAC													32,914	12.62
10	Lights	Guard Shack	60W Inc Floods	2	1				60	0.13	100%	4,380	589	0.13
11	Lights	Guard Shack	LED A19	1	1				9	0.01	100%	3,129	28	0.01
12	Lights	Break Room	2LT12 Wrap	14	2				40	1.25	100%	2,607	3,270	1.25
13	Lights	Warehouse	LED Highbay	4	1				150	0.60	100%	4,380	2,628	0.60
14	Lights	Warehouse	Wallpack	1	1				30	0.03	100%	4,380	131	0.03
15	Lights	Warehouse	6LT8 Highbay	8	6				32	1.35	100%	3,374	4,561	1.35
16	Lights	Lab	LED 2x4 Panel	4	1				30	0.12	100%	2,607	313	0.12
17	Lights	Lab	2LT8 Troffer	3	2				32	0.17	100%	2,607	441	0.17
18	Lights	Warehouse	6LT8 Highbay	56	6				32	9.46	100%	3,374	31,924	9.46
19	Lights	Warehouse	LED 1x4 Panel	2	1				25	0.05	100%	3,650	183	0.05
20	Lights	Restroom	2LT12 Troffer	1	2				40	0.10	100%	782	76	0.10
21	Lights	Warehouse	Large Flood Light	2	1				150	0.37	100%	4,380	1,603	0.37
22	Lights	Warehouse	Small Flood Light	1	1				75	0.09	100%	4,380	401	0.09
Sub Total													46,147	13.74
Diversity Factor													100%	100%
Total Lights													46,147	13.74
23	Misc.	Break Room	Microwave	1					1,000	1.00	95%	130	124	0.95
24	Misc.	Break Room	Pizza Oven	1					1,500	1.50	100%	65	98	1.50
25	Misc.	Break Room	Toaster Oven	1					1,500	1.50	100%	65	98	1.50
26	Misc.	Break Room	Kurig	1					1,500	1.50	100%	65	98	1.50
27	Misc.	Break Room	Large TV	1					250	0.25	75%	2,086	391	0.19
28	Misc.	Break Room	DVD Player	1					40	0.04	30%	209	3	0.01
29	Misc.	Break Room	Fridge	1		115	5	1	575	0.58	65%	4,225	1,579	0.37
30	Misc.	Lab	Mini Fridge	1		115	3.2	1	368	0.37	65%	4,225	1,011	0.24
31	Misc.	Restroom	Water Heater	1					2,000	2.00	100%	1,095	2,190	2.00
32	Misc.	Lab	Computers	2					400	0.80	50%	2,086	834	0.40
33	Misc.	Lab	Screen	2					150	0.30	30%	2,086	188	0.09
34	Misc.	Lab	Small Printer	1					250	0.25	50%	136	17	0.13
35	Misc.	Lab	Pizza Oven	1					1,500	1.50	100%	65	98	1.50
36	Misc.	Warehouse	Dust Collector Motor	1	5				4,547	4.55	75%	3,129	10,669	3.41
37	Misc.	Warehouse	Dust Collector Motor	1	25				21,932	21.93	75%	3,129	51,463	16.45
38	Misc.	Warehouse	Air Compressor	1	7.8				6,843	6.84	75%	3,129	16,056	5.13
Sub Total													84,915	35.37
Diversity Factor													100%	84%
Total Misc.													84,915	29.76
Total													163,976	56.11

NATURAL GAS END-USE BALANCE - East Warehouse

#	Location	Equipment Description	Qty	BTU/ Hour	Efficiency	Hours/ Year	Load Factor	CCF/ Year
1	Warehouse	Reznor Unit Heaters	2	400,000	80%	926	100%	7,141
<i>Total</i>				800,000		Total CCF:		7,141

ENERGY EFFICIENT LIGHTING MEASURES

RECOMMENDATION: Consider replacing the lighting throughout the warehouse with LED fixtures. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued. The current MN Power promotion offers an \$80 rebate for LED highbay fixtures.

Demand: \$6.50 per kW Rebate: \$200 per kW Analysis Type: **Rebate Estimate**
 Energy: \$0.06054 per kWh \$0.035 per kWh Rebate Type: kWh & kW-based

AREA DESCRIPTION:	Construction Type	Existing System						Proposed System						Energy Savings						
		Lighting Type	Lighting Size	# of Fixtures	Lamps/ Fixture	Watts/ Lamp	Fixture Watt	Lighting Type	Lighting Size	# of Fixtures	Lamps / Fixture	Watts/ Lamp	Fixture Watt	Hours of Operation /yr.	Peak kW Reduced	Annual kWh Reduced	Annual Energy Savings	Rebate	Cost	Payback (years)
Guard Shack	Retrofit without Ballast	Incandescent	I60	2	1	60	60	LED	9WA19	2	1	9	9	4,380	0.10	447	\$35.00	\$20.40	\$30	
Break Room	Retrofit without Ballast	T12_Lighting	F40T12'4'40W	14	2	40	97	LED	4'Tube 15W	14	2	15	30	2,607	0.94	2,446	\$221.21	\$187.60	\$420	
Warehouse	Retrofit without Ballast	T8_Lighting	F32T8'4'32WHO	8	6	32	221	LED	Highbay	8	1	150	150	3,698	0.57	2,094	\$170.97	\$640.00	\$2,000	
Lab	Retrofit without Ballast	T8_Lighting	F32T8'4'32W	3	2	32	56	LED	4'Tube 15W	3	2	15	30	2,607	0.08	206	\$18.62	\$15.79	\$90	
Warehouse	Retrofit without Ballast	T8_Lighting	F32T8'4'32WHO	56	6	32	221	LED	Highbay	56	1	150	150	3,698	3.96	14,660	\$1,196.78	\$4,480.00	\$14,000	
Restroom	Retrofit without Ballast	T12_Lighting	F40T12'4'40W	1	2	40	97	LED	4'Tube 15W	1	2	15	30	782	0.07	52	\$8.40	\$13.40	\$10	
														5.72	19,905	\$1,650.99	\$5,357.19	\$16,550.00	6.78	

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Please contact us at (218) 355-2217.

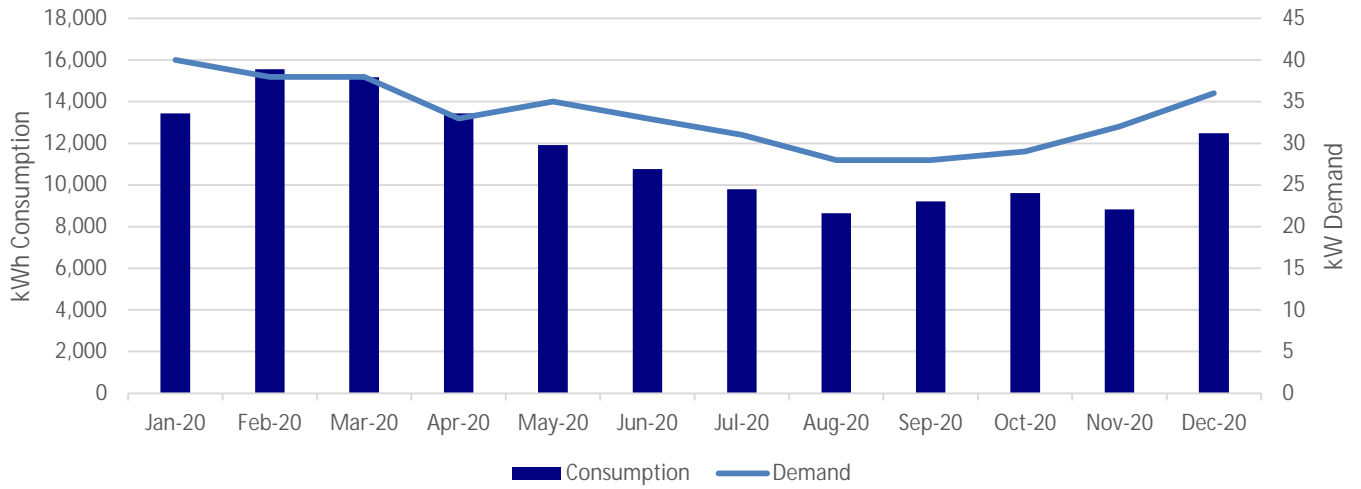


ELECTRIC USAGE SUMMARY - East Warehouse Annex

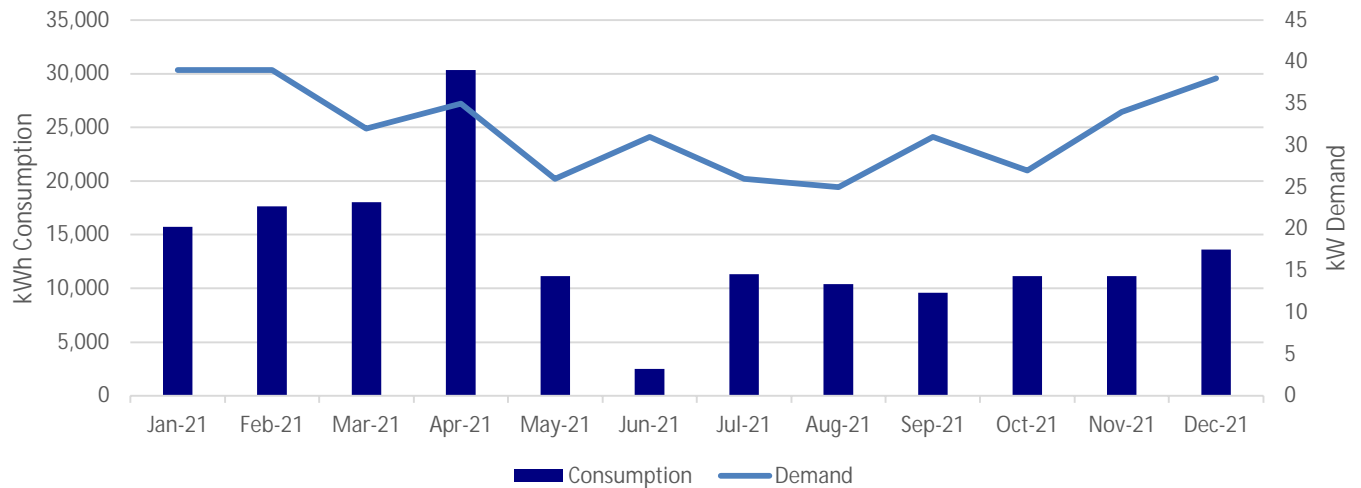
Customer:	LSW - East Warehouse Annex			
Address:	1120 Port Terminal Dr, Duluth, MN 55802			
MP METER #:	571976			
PERIOD:	Jan-20	through	Dec-21	

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	40	13,440	\$1,321.31	5.8
Feb-20	29	38	15,552	\$1,538.12	6.7
Mar-20	31	38	15,168	\$1,541.70	6.6
Apr-20	30	33	13,440	\$1,381.19	5.8
May-20	31	35	11,904	\$1,212.85	5.2
Jun-20	30	33	10,752	\$1,190.49	4.7
Jul-20	31	31	9,792	\$1,084.18	4.2
Aug-20	31	28	8,640	\$980.72	3.7
Sep-20	30	28	9,216	\$964.30	4.0
Oct-20	31	29	9,600	\$995.69	4.2
Nov-20	30	32	8,832	\$938.51	3.8
Dec-20	31	36	12,480	\$1,276.88	5.4
2020 TOTAL	366	40	138,816	\$14,425.94	60.1
AVERAGE	31	33	11,568	\$1,202.16	5.0
Jan-21	31	39	15,744	\$1,652.57	6.8
Feb-21	28	39	17,644	\$1,867.41	7.6
Mar-21	31	32	18,048	\$1,957.19	7.8
Apr-21	30	35	30,336	\$3,242.81	13.1
May-21	31	26	11,136	\$1,273.67	4.8
Jun-21	30	31	2,496	\$270.48	1.1
Jul-21	31	26	11,328	\$1,326.30	4.9
Aug-21	31	25	10,386	\$1,183.15	4.5
Sep-21	30	31	9,600	\$1,109.71	4.2
Oct-21	31	27	11,136	\$1,295.11	4.8
Nov-21	30	34	11,136	\$1,293.65	4.8
Dec-21	31	38	13,632	\$1,593.48	5.9
2021 TOTAL	365	39	162,622	\$18,065.53	70.4
AVERAGE	30	32	13,552	\$1,505.46	5.9

Electric Consumption - East Warehouse Annex



Electric Consumption - East Warehouse Annex



ELECTRIC END-USE BALANCE - East Warehouse Annex

CUSTOMER: Lake Superior Warehouse - DSPA - EW Annex BS = Building Systems Misc.= Miscellaneous Equipment
 ADDRESS: 1200 Port Terminal Dr, Duluth, MN 55802 HVAC = Heating, Ventilation, Air Conditioning Refrig. = Refrigeration
 Lights= Lighting

#	Equip Code	Location	DESCRIPTION	Qty	Lamps/HP	Volts	Amps	Phase	Watts/ea.	Total kW	% Full Load	Hours/Year	Annual kWh	Peak kW
1	HVAC	Customs and Boarder Patrol	2.5 Ton ASHP Cooling	1					2,270	2.27	100%	443	1,006	2.27
2	HVAC	Customs and Boarder Patrol	2.5 Ton ASHP Heating	1					2,100	2.10	100%	2,218	4,658	2.10
3	HVAC	Customs and Boarder Patrol	Unit Heater	1					1,000	1.00	100%	2,218	2,218	1.00
4	HVAC	Customs and Boarder Patrol	Unit Heater	1					3,000	3.00	100%	2,218	6,655	3.00
5	HVAC	Customs and Boarder Patrol	EER	1	0.2				213	0.21	75%	6,500	1,039	0.16
6	HVAC	Sprinkler Room 1	Unit Heater	1					2,000	2.00	100%	2,218	4,437	2.00
7	HVAC	Sprinkler Room 2	Unit Heater	1					2,000	2.00	100%	2,218	4,437	2.00
8	HVAC	Break Room	Unit Heater	1					2,000	2.00	100%	2,218	4,437	2.00
9	HVAC	Break Room	PTAC Unit Cooling	1					1,500	1.50	100%	443	665	1.50
10	HVAC	Break Room	PTAC Unit Heating	1					3,516	3.52	100%	2,218	7,799	3.52
11	HVAC	Warehouse	Exhaust Fan	2	3				2,632	5.26	75%	6,389	25,223	3.95
Sub Total													62,572	23.49
Diversity Factor													100%	75%
Total HVAC													62,572	17.62
12	Lights	Exterior	400W MH Wallpack	6	1				400	2.73	100%	4,380	11,973	2.73
13	Lights	Office	2LT8 Wrap	4	2				32	0.23	100%	3,129	705	0.23
14	Lights	Mens Restroom	2LT8 Wrap	2	2				32	0.11	100%	3,129	352	0.11
15	Lights	Womens Restroom	2LT8 Wrap	2	2				32	0.11	100%	3,129	352	0.11
16	Lights	Break Room	2LT8 Wrap	6	2				32	0.34	100%	3,129	1,057	0.34
17	Lights	Warehouse	6LT8 Highbay	88	6				32	14.87	100%	3,129	46,517	14.87
18	Lights	Loading Dock	6LT8 Highbay	6	6				32	1.01	100%	3,129	3,172	1.01
19	Lights	Loading Dock	250W MH Wallpack	16	1				250	4.56	100%	4,380	19,955	4.56
20	Lights	Sprinkler Room 1	2LT8 Wrap	1	2				32	0.06	100%	521	29	0.06
21	Lights	Sprinkler Room 2	2LT8 Wrap	1	2				32	0.06	100%	521	29	0.06
22	Lights	CBP - 102 - Files	A - 2x4 Panel	1	1				41	0.04	100%	521	22	0.04
23	Lights	CBP - 101 - Office	A - 2x4 Panel	3	1				41	0.12	100%	521	65	0.12
24	Lights	CBP - 103 - Lan	A - 2x4 Panel	1	1				41	0.04	100%	521	22	0.04
25	Lights	CBP - 104 - Tool Room	A - 2x4 Panel	1	1				41	0.04	100%	521	22	0.04
26	Lights	CBP - 105 - Break Room	A - 2x4 Panel	4	1				41	0.17	100%	521	86	0.17
27	Lights	CBP - 106 - Mech	C - Can	1	1				14	0.01	100%	521	7	0.01
28	Lights	CBP - 108 - Sink/Lockers	B - 1x4 Panel	1	1				39	0.04	100%	521	20	0.04
29	Lights	CBP - 107 - Toilet/Shower	C - Can	1	1				14	0.01	100%	521	7	0.01
30	Lights	Portable Office	2LT12 Wrap	1	2				40	0.09	100%	521	47	0.09
31	Lights	Dock Lights	250W MH Wallpack	2	1				250	0.57	100%	521	297	0.57
Sub Total													84,737	25.21
Diversity Factor													100%	60%
Total Lights													84,737	15.17
32	Misc.	Sprinkler Room 1	Air Compressor	1	3				2,796	2.80	75%	183	383	2.10
33	Misc.	Sprinkler Room 2	Air Compressor	1	3				2,796	2.80	75%	183	383	2.10
34	Misc.	Customs and Boarder Patrol	Sewage Pump	1	1				994	0.99	75%	365	272	0.75
35	Misc.	Sprinkler Room 1	Water Heater	1					2,000	2.00	100%	365	730	2.00
36	Misc.	Customs and Boarder Patrol	Water Heater	1					4,500	4.50	100%	365	1,643	4.50
37	Misc.	Loading Dock	Dock Doors	2	0.5				497	0.99	75%		-	0.75
Sub Total													3,410	12.19
Diversity Factor													100%	30%
Total Misc.													3,410	3.66
Total													150,719	36.45

ENERGY EFFICIENT LIGHTING MEASURES

RECOMMENDATION: Consider replacing the lighting throughout the warehouse with LED fixtures. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued. The current MN Power promotion offers an \$80 rebate for LED highbay fixtures.

Demand: \$6.50 per kW
Energy: \$0.06054 per kWh

Rebate: \$200 per kW
\$0.035 per kWh

Analysis Type: **Rebate Estimate**
Rebate Type: kWh & kW-based

AREA DESCRIPTION:	Construction Type	Existing System							Proposed System							Energy Savings					
		Lighting Type	Lighting Size	Ballast Factor	# of Fixtures	Lamps / Fixture	Watts/ Lamp	Fixture Watt	Lighting Type	Lighting Size	Ballast Factor	# of Fixtures	Lamps / Fixture	Watts/ Lamp	Fixture Watt	Hours of Operation/yr.	Peak kW Reduced	Annual kWh Reduced	Annual Energy Savings	Rebate	Cost
Exterior	Retrofit without Ballast	Metal Halide	MH400		6	1	400	454	LED	9WA19	1.00	6	1	9	9	4,380	2.67	11,695	\$916.25	\$534.00	\$60
Office	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		4	2	32	56	LED	4'Tube 15W	1.00	4	2	15	30	3,129	0.11	329	\$28.15	\$21.06	\$120
Mens Restroom	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		2	2	32	56	LED	4'Tube 15W	1.00	2	2	15	30	3,129	0.05	165	\$14.08	\$10.53	\$60
Womens Restroom	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		2	2	32	56	LED	4'Tube 15W	1.00	2	2	15	30	3,129	0.05	165	\$14.08	\$10.53	\$60
Break Room	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		6	2	32	56	LED	4'Tube 15W	1.00	6	2	15	30	3,129	0.16	494	\$42.23	\$31.58	\$180
Warehouse	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W/HO		88	6	32	221	LED	Highbay	1.00	88	1	150	150	3,129	6.23	19,492	\$1,666.03	\$7,040.00	\$22,000
Loading Dock	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W/HO		6	6	32	221	LED	Highbay	1.00	6	1	150	150	3,129	0.42	1,329	\$113.59	\$480.00	\$1,500
Loading Dock	Retrofit without Ballast	Metal Halide	MH250		16	1	250	295	LED	Wallpack Fixture	1.00	16	1	80	80	4,380	3.44	15,067	\$1,180.49	\$688.00	\$3,200
																13.13	48,736	\$3,974.90	\$8,815.70	\$27,180.00	4.62

Disclaimer: All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

Please contact us at (218) 355-2217.

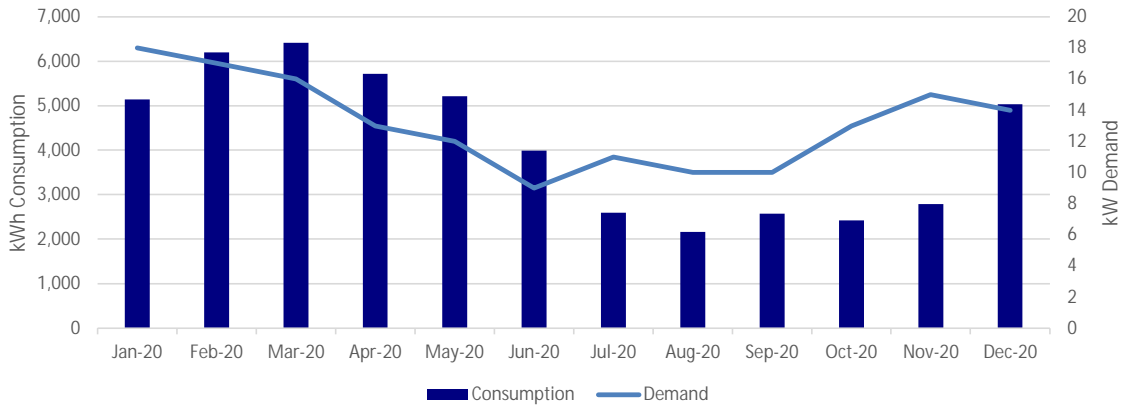


ELECTRIC & GAS USAGE SUMMARY - Foreign Trade Zone 51

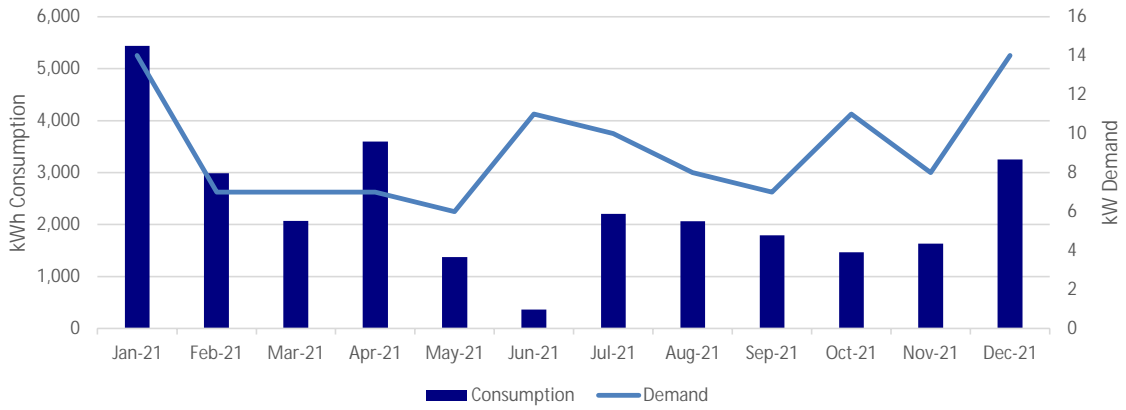
Customer:	LSW - Foreign Trade Zone 51		
Address:	940 Helberg Dr, Bldg 51, Duluth, MN 55802		
MP METER #:	518400	CS Account #:	230523968-002
PERIOD:	Jan-20	through	Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2	Nat. Gas CCF	Nat Gas Cost	Natural Gas Tons CO2
Jan-20	31	18	5,147	\$572.70	2.2	1,833	\$1,120.14	9.7
Feb-20	29	17	6,195	\$702.27	2.7	1,673	\$1,026.38	8.9
Mar-20	31	16	6,414	\$737.62	2.8	1,554	\$956.64	8.2
Apr-20	30	13	5,718	\$651.99	2.5	1,096	\$688.26	5.8
May-20	31	12	5,216	\$596.29	2.3	640	\$421.04	3.4
Jun-20	30	9	3,992	\$511.39	1.7	94	\$101.08	0.5
Jul-20	31	11	2,595	\$369.42	1.1	0	\$46.00	0.0
Aug-20	31	10	2,159	\$389.50	0.9	0	\$46.00	0.0
Sep-20	30	10	2,578	\$376.01	1.1	0	\$46.00	0.0
Oct-20	31	13	2,424	\$369.21	1.0	80	\$92.88	0.4
Nov-20	30	15	2,790	\$409.24	1.2	1,560	\$938.32	8.3
Dec-20	31	14	5,038	\$603.82	2.2	1,606	\$935.72	8.5
2020 TOTAL	366	18	50,266	\$6,289.46	21.8	10,136	\$6,418.46	53.7
AVERAGE	31	13	4,189	\$524.12	1.8	845	\$534.87	4.5
Jan-21	31	14	5,440	\$661.16	2.4	2,201	\$1,269.76	11.7
Feb-21	28	7	2,988	\$472.42	1.3	1,942	\$1,154.88	10.3
Mar-21	31	7	2,070	\$332.02	0.9	2,310	\$1,545.19	12.2
Apr-21	30	7	3,602	\$584.22	1.6	1,794	\$1,129.58	9.5
May-21	31	6	1,375	\$224.15	0.6	1,392	\$888.16	7.4
Jun-21	30	11	367	\$59.06	0.2	531	\$365.66	2.8
Jul-21	31	10	2,203	\$406.16	1.0	33	\$66.10	0.2
Aug-21	31	8	2,062	\$366.20	0.9	3	\$47.85	0.0
Sep-21	30	7	1,791	\$317.86	0.8	2	\$47.25	0.0
Oct-21	31	11	1,471	\$276.62	0.6	41	\$74.13	0.2
Nov-21	30	8	1,628	\$354.44	0.7	596	\$450.68	3.2
Dec-21	31	14	3,251	\$451.04	1.4	1,413	\$1,245.64	7.5
2021 TOTAL	365	14	28,248	\$4,505.35	12.2	12,258	\$8,284.88	65.0
AVERAGE	30	9	2,354	\$375.45	1.0	1,022	\$690.41	5.4

Electric Consumption and Demand



Electric Consumption and Demand



ELECTRIC END-USE BALANCE - Foreign Trade Zone 51

CUSTOMER: LSW - Bldg 51	BS = Building Systems	Misc.= Miscellaneous Equipment
ADDRESS: 940 Helberg Dr, Bldg 51, Duluth, MN 55802	HVAC = Heating, Ventilation, Air Conditioning	Refrig. = Refrigeration
	Lights= Lighting	

#	Equip Code	Location	DESCRIPTION	Qty	Lamps/ HP	Volts	Amps	Phase	Watts/ ea.	Total kW	% Full Load	Hours/ Year	Annual kWh	Peak kW
1	HVAC	Building 51	Destratification Fans	8	0.25				266	2.13	75%	4,380	6,999	1.60
Sub Total													6,999	1.60
Diversity Factor													100%	100%
Total HVAC													6,999	1.60
2	Lights	Building 51	6L T8 Highbay	20					221	4.42	100%	7,298	32,258	4.42
Sub Total													32,258	4.42
Diversity Factor													100%	100%
Total Lights													32,258	4.42
Total													39,257	6.0

NATURAL GAS END-USE BALANCE

#	Location	Equipment Description	Qty	BTU/ Hour	Efficiency	Hours/ Year	Load Factor	CCF/ Year
1	Warehouse	Reznor Unit Heaters	4	400,000	80%	726	100%	11,197
<i>Total</i>				1,600,000		Total CCF:		11,197

ENERGY EFFICIENT LIGHTING MEASURES - Foreign Trade Zone 51

RECOMMENDATION: Consider replacing the lighting throughout the warehouse with LED fixtures. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued. The current MN Power promotion offers an \$80 rebate for LED highbay fixtures.

Demand: \$6.50 per kW Rebate: \$200 per kW Analysis Type: **Rebate Estimate**
 Energy: \$0.06054 per kWh \$0.035 per kWh Rebate Type: kWh & kW-based

AREA DESCRIPTION:	Construction Type	Existing System							Proposed System							Energy Savings					
		Lighting Type	Lighting Size	Ballast Factor	# of Fixtures	Lamps / Fixture	Watts/Lamp	Fixture Watt	Lighting Type	Lighting Size	# of Fixtures	Lamps / Fixture	Watts/Lamp	Fixture Watt	Hours of Operation/vr.	Peak kW Reduced	Annual kWh Reduced	Annual Energy Savings	Rebate	Cost	Payback (years)
Foreign Trade Zone	Retrofit without Ballast	T8 Lighting	F32T8 4'32WHO		20	6	32	221	LED	Highbay	20	1	150	150	2,190	1.42	3,101	\$298.18	\$1,600.00	\$5,000	
															1.42	3,101	\$298.18	\$1,600.00	\$5,000	11.40	

Disclaimer: All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued.

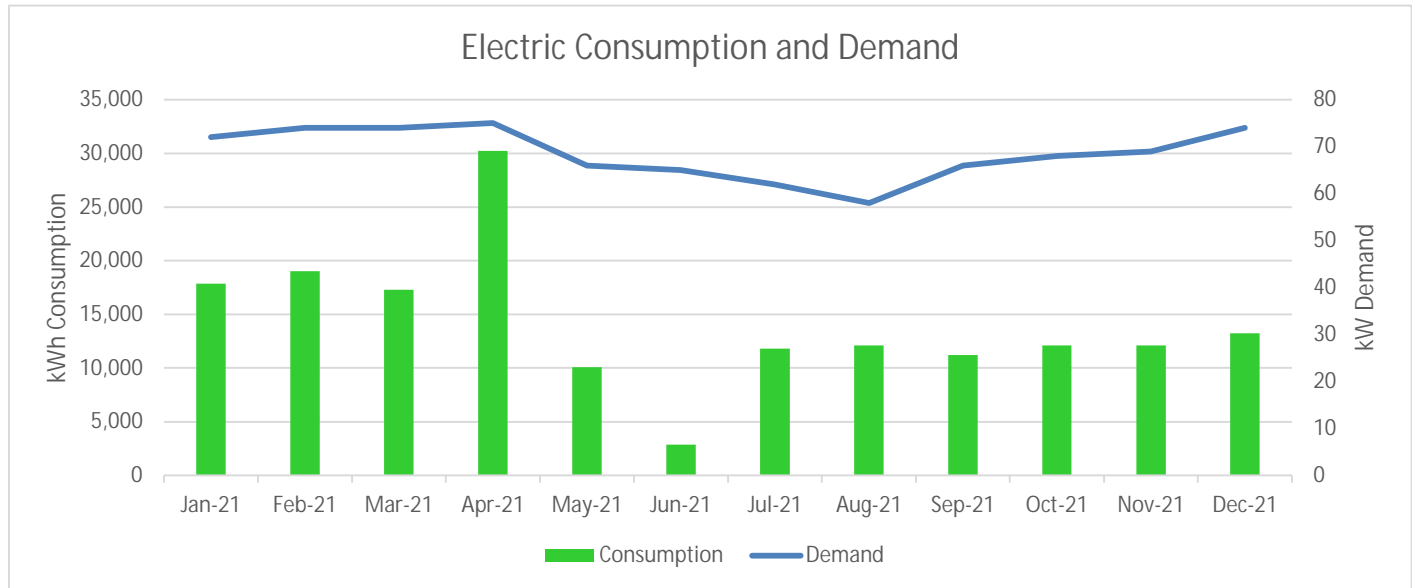
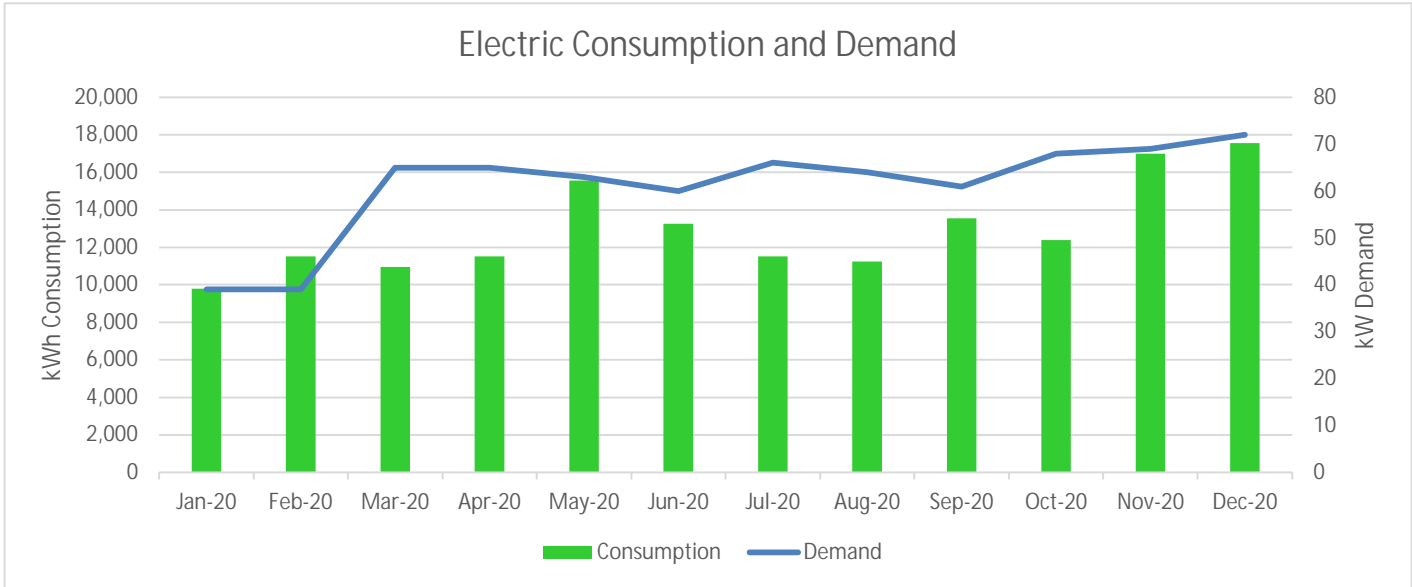
Please contact us at (218) 355-2217.



ENERGY SUMMARY - Transit Shed

Customer:	DSPA - Transit Shed			
Address:	1210 Port Terminal Dr, Duluth, MN 55802			
MP METER #:	570746			
PERIOD:	Jan-20	through	Dec-21	

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	39	9,792	\$1,152.74	4.2
Feb-20	29	39	11,520	\$1,306.58	5.0
Mar-20	31	65	10,944	\$1,297.42	4.7
Apr-20	30	65	11,520	\$1,531.05	5.0
May-20	31	63	15,552	\$1,877.99	6.7
Jun-20	30	60	13,248	\$1,735.60	5.7
Jul-20	31	66	11,520	\$1,537.29	5.0
Aug-20	31	64	11,232	\$1,573.47	4.9
Sep-20	30	61	13,536	\$1,698.70	5.9
Oct-20	31	68	12,384	\$1,580.05	5.4
Nov-20	30	69	16,992	\$2,037.02	7.4
Dec-20	31	72	17,568	\$2,113.06	7.6
2020 TOTAL	366	72	155,808	\$19,440.97	67.5
AVERAGE	31	61	12,984	\$1,620.08	5.6
Jan-21	31	72	17,856	\$2,252.16	7.7
Feb-21	28	74	19,008	\$2,391.38	8.2
Mar-21	31	74	17,280	\$2,293.82	7.5
Apr-21	30	75	30,240	\$4,086.28	13.1
May-21	31	66	10,080	\$1,462.14	4.4
Jun-21	30	65	2,880	\$410.65	1.2
Jul-21	31	62	11,808	\$1,746.05	5.1
Aug-21	31	58	12,096	\$1,734.53	5.2
Sep-21	30	66	11,232	\$1,624.70	4.9
Oct-21	31	68	12,096	\$1,761.94	5.2
Nov-21	30	69	12,096	\$1,805.76	5.2
Dec-21	31	74	13,248	\$1,950.52	5.7
2021 TOTAL	365	75	169,920	\$23,519.93	73.6
AVERAGE	30	69	14,160	\$1,959.99	6.1



ELECTRIC END-USE BALANCE - Transit Shed

CUSTOMER: Lake Superior Warehouse - DSPA - Transit Shed
 ADDRESS: 1210 Port Terminal Dr, Duluth, MN 55802

BS = Building Systems
 HVAC = Heating, Ventilation, Air Conditioning
 Lights= Lighting

Misc.= Miscellaneous Equipment
 Refrig. = Refrigeration

#	Equip Code	Location	DESCRIPTION	Qty	Lamps/HP	Volts	Amps	Phase	Watts/ea.	Total kW	% Full Load	Hours/Year	Annual kWh	Peak kW
3	HVAC	Sprinkler Room 1	Unit Heater	1					5,000	5.00	50%	1,872	4,680	2.50
4	HVAC	Sprinkler Room 2	Unit Heater	1					5,000	5.00	50%	1,872	4,680	2.50
5	HVAC	Sprinkler Room 3	Unit Heater	1					5,000	5.00	50%	1,872	4,680	2.50
6	HVAC	Sprinkler Room 4	Unit Heater	1					5,000	5.00	50%	1,872	4,680	2.50
7	HVAC	Restroom	Unit Heater	1					5,000	5.00	50%	1,872	4,680	2.50
8	HVAC	Restroom	Unit Heater	1					5,000	5.00	50%	1,872	4,680	2.50
Sub Total													28,080	15.00
Diversity Factor													100%	90%
Total HVAC													28,080	13.50
9	Lights	Transit Shed North Side	LED Wallpack	10	1				50	0.50	100%	4,380	2,190	0.50
10	Lights	1 House	4LT8 Highbay (OC)	70	4				32	7.88	100%	2,190	17,268	7.88
11	Lights	2 House	4LT8 Highbay (OC)	70	4				32	7.88	100%	2,190	17,268	7.88
12	Lights	3 House	4LT8 Highbay (OC)	70	4				32	7.88	100%	2,190	17,268	7.88
13	Lights	4 House	4LT8 Highbay (OC)	70	4				32	7.88	100%	2,190	17,268	7.88
14	Lights	Sprinkler Room 1	2LT8 Strip	1	2				32	0.06	100%	130	7	0.06
15	Lights	Sprinkler Room 2	2LT8 Strip	1	2				32	0.06	100%	130	7	0.06
16	Lights	Sprinkler Room 3	2LT8 Strip	1	2				32	0.06	100%	130	7	0.06
17	Lights	Sprinkler Room 4	2LT8 Strip	1	2				32	0.06	100%	130	7	0.06
18	Lights	Restroom	2LT8 Strip	1	2				32	0.06	100%	1,043	59	0.06
19	Lights	Restroom	2LT8 2x4 Troffer	2	2				32	0.11	100%	1,043	117	0.11
Sub Total													71,466	32.43
Diversity Factor													100%	96%
Total Lights													71,466	30.97
20	Misc.	Sprinkler Room 1	Air Compressor	1	3				2,796	2.80	75%	365	766	2.10
21	Misc.	Sprinkler Room 2	Air Compressor	1	3				2,796	2.80	75%	365	766	2.10
22	Misc.	Sprinkler Room 3	Air Compressor	1	3				2,796	2.80	75%	365	766	2.10
23	Misc.	Sprinkler Room 4	Air Compressor	1	3				2,796	2.80	75%	365	766	2.10
1	Misc.	Restroom	Water Heater	1					1,000	1.00	100%	1,043	1,043	1.00
2	Misc.	Restroom	Water Heater	1					1,000	1.00	100%	1,043	1,043	1.00
24	Misc.	Dust Collection Area	Air Compressor	1	7.8				7,271	7.27	75%	2,201	12,003	5.45
25	Misc.	Dust Collection Area	Dust Collector Motor	1	5				4,661	4.66	75%	2,201	7,694	3.50
26	Misc.	Dust Collection Area	Dust Collector Motor	1	25				23,303	23.30	75%	2,201	38,472	17.48
Sub Total													63,318	36.81
Diversity Factor													100%	77%
Total Misc.													63,318	28.52
Total													162,864	73.00

ENERGY EFFICIENT LIGHTING MEASURES

RECOMMENDATION: Consider replacing the lighting throughout the warehouse with LED fixtures. All values are estimates based on information provided at the time. These values are not to be taken as fact and proof of installation is needed for rebates to be issued. The current MN Power promotion offers an \$80 rebate for LED highbay fixtures.

Demand: \$6.50 per kW
Energy: \$0.06054 per kWh

Rebate: \$200 per kW
\$0.035 per kWh

Analysis Type: **Rebate Estimate**
Rebate Type: kWh & kW-based

AREA DESCRIPTION:	Construction Type	Existing System							Proposed System							Energy Savings					
		Lighting Type	Lighting Size	Ballast Factor	# of Fixtures	Lamps / Fixture	Watts/ Lamp	Fixture Watt	Lighting Type	Lighting Size	# of Fixtures	Lamps / Fixture	Watts/ Lamp	Fixture Watt	Hours of Operation/yr.	Peak kW Reduced	Annual kWh Reduced	Annual Energy Savings	Rebate	Cost	Payback (years)
1 House	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		70	4	32	147	LED	Highbay	70	1	80	80	2,190	4.70	10,302	\$990.58	\$2,800.00	\$10,500	
2 House	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		70	4	32	147	LED	Highbay	70	1	80	80	2,190	4.70	10,302	\$990.58	\$2,800.00	\$10,500	
3 House	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		70	4	32	147	LED	Highbay	70	1	80	80	2,190	4.70	10,302	\$990.58	\$2,800.00	\$10,500	
4 House	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		70	4	32	147	LED	Highbay	70	1	80	80	2,190	4.70	10,302	\$990.58	\$2,800.00	\$10,500	
Sprinkler Room 1	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		1	2	32	56	LED	4' Tube 15W	1	2	15	30	130	0.03	3	\$2.26	\$5.26	\$30	
Sprinkler Room 2	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		1	2	32	56	LED	4' Tube 15W	1	2	15	30	130	0.03	3	\$2.26	\$5.26	\$30	
Sprinkler Room 3	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		1	2	32	56	LED	4' Tube 15W	1	2	15	30	130	0.03	3	\$2.26	\$5.26	\$30	
Sprinkler Room 4	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		1	2	32	56	LED	4' Tube 15W	1	2	15	30	130	0.03	3	\$2.26	\$5.26	\$30	
Restroom	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		1	2	32	56	LED	4' Tube 15W	1	2	15	30	1,043	0.03	27	\$3.71	\$5.26	\$30	
Restroom	Retrofit without Ballast	T8 Lighting	F32T8 4' 32W		2	2	32	56	LED	4' Tube 15W	2	2	15	30	1,043	0.05	55	\$7.43	\$10.53	\$60	
																19.00	41,303	\$3,982.51	\$11,236.85	\$42,210	7.78

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Please contact us at (218) 355-2217.

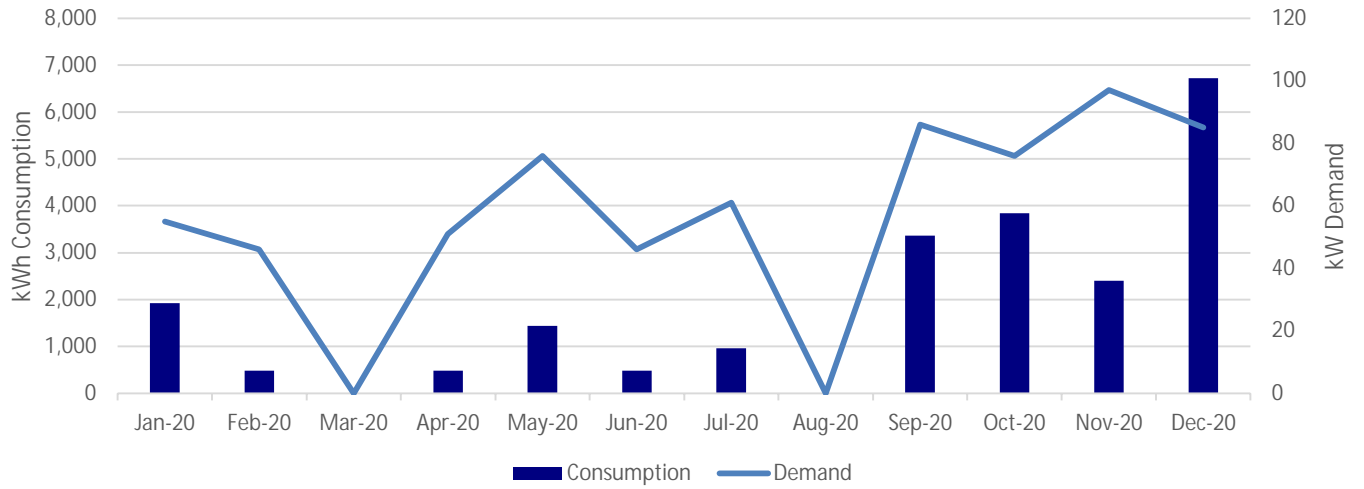


ELECTRIC & GAS ENERGY SUMMARY - GANTRY CRANE

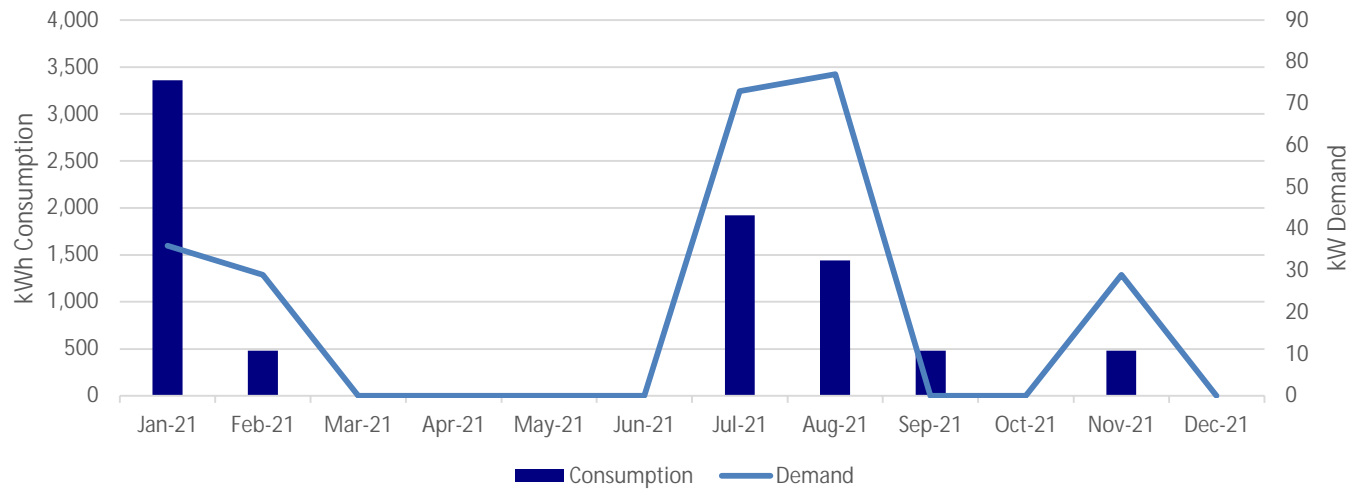
Customer: Gantry Crane
Address: 1210 Port Terminal Rd, Duluth, MN 55802
MP METER #: 574232
PERIOD: Jan-20 through Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	55	1,920	\$904.39	0.8
Feb-20	29	46	480	\$408.68	0.2
Mar-20	31	0	0	\$46.00	0.0
Apr-20	30	51	480	\$635.50	0.2
May-20	31	76	1,440	\$529.77	0.6
Jun-20	30	46	480	\$634.84	0.2
Jul-20	31	61	960	\$1,260.38	0.4
Aug-20	31	0	0	\$46.00	0.0
Sep-20	30	86	3,360	\$941.59	1.5
Oct-20	31	76	3,840	\$1,056.31	1.7
Nov-20	30	97	2,400	\$804.87	1.0
Dec-20	31	85	6,720	\$1,353.06	2.9
2020 TOTAL	366	97	22,080	\$8,621.39	9.6
AVERAGE	31	57	1,840	\$718.45	0.8
Jan-21	31	36	3,360	\$948.82	1.5
Feb-21	28	29	480	\$392.14	0.2
Mar-21	31	0	0	\$223.14	0.0
Apr-21	30	0	0	\$362.04	0.0
May-21	31	0	0	\$345.18	0.0
Jun-21	30	0	0	\$77.65	0.0
Jul-21	31	73	1,920	\$756.60	0.8
Aug-21	31	77	1,440	\$688.99	0.6
Sep-21	30	0	480	\$1,170.79	0.2
Oct-21	31	0	0	\$29.58	0.0
Nov-21	30	29	480	\$410.94	0.2
Dec-21	31	0	0	\$223.14	0.0
2021 TOTAL	365	77	8,160	\$5,629.01	3.5
AVERAGE	30	20	680	\$469.08	0.3

Electric Consumption - Gantry Crane



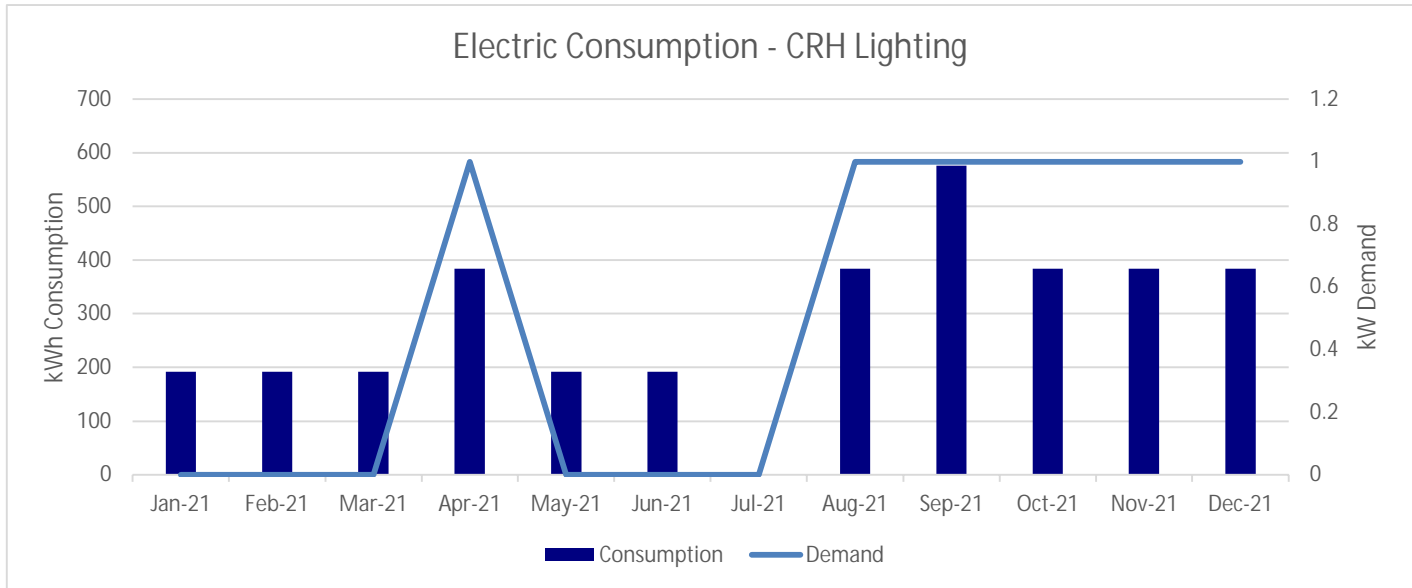
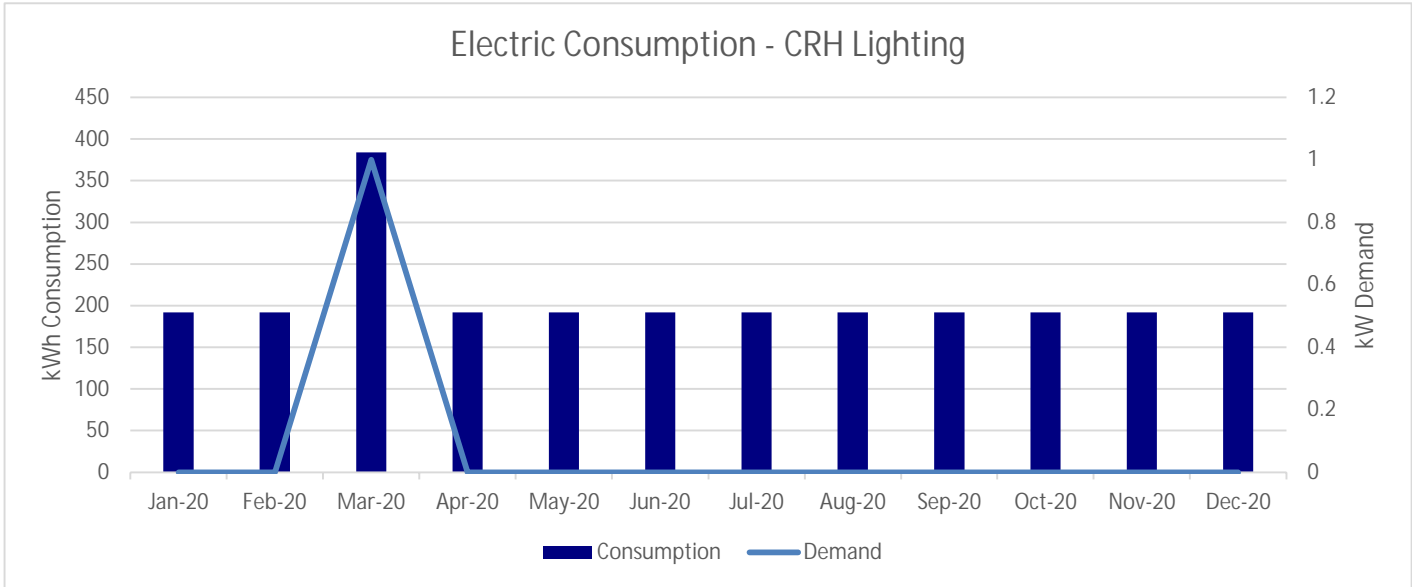
Electric Consumption - Gantry Crane



ELECTRIC USAGE SUMMARY - CRH Lighting

Customer:	Lake Superior Warehouse - DSPA - Lighting (CRH)		
Address:	1110 Port Terminal Rd, Duluth, MN 55802		
MP METER #:	574356		
PERIOD:	Jan-20	through	Dec-21

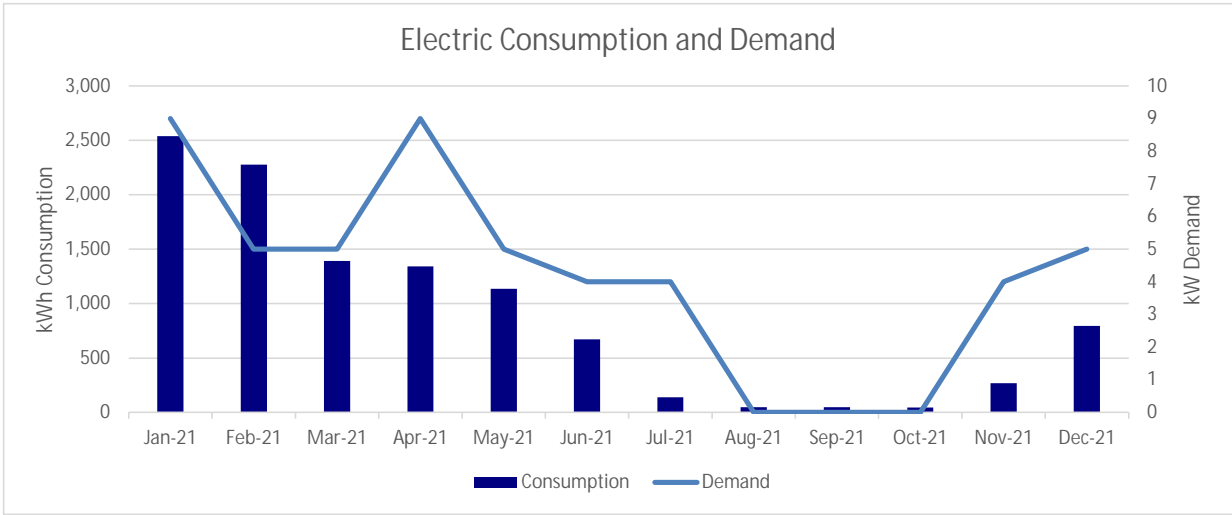
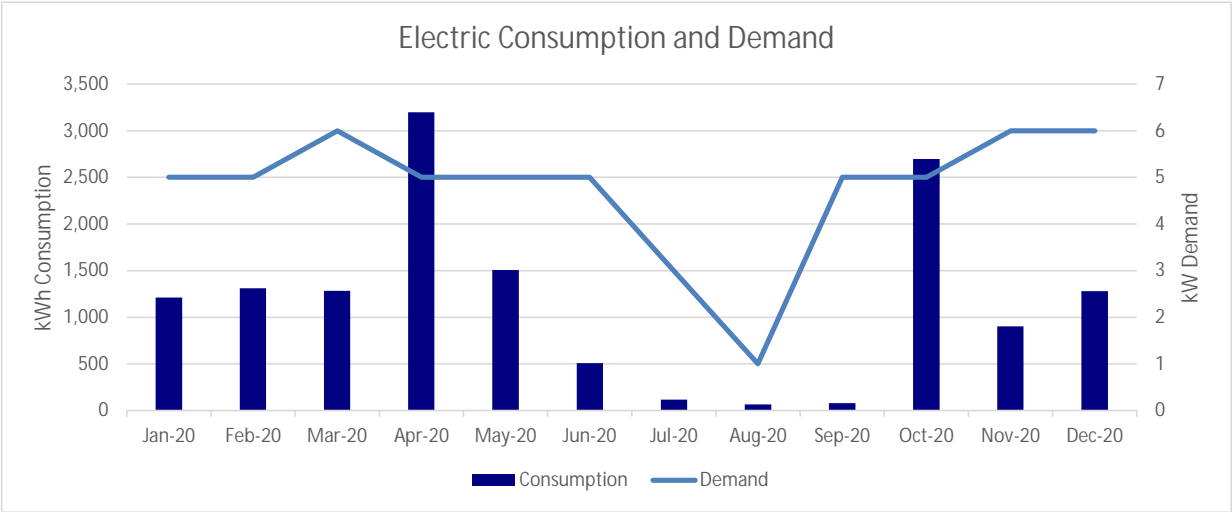
Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	0	192	\$36.03	0.1
Feb-20	29	0	192	\$36.92	0.1
Mar-20	31	1	384	\$61.92	0.2
Apr-20	30	0	192	\$38.60	0.1
May-20	31	0	192	\$38.47	0.1
Jun-20	30	0	192	\$39.49	0.1
Jul-20	31	0	192	\$39.14	0.1
Aug-20	31	0	192	\$39.17	0.1
Sep-20	30	0	192	\$37.74	0.1
Oct-20	31	0	192	\$37.73	0.1
Nov-20	30	0	192	\$37.73	0.1
Dec-20	31	0	192	\$38.00	0.1
2020 TOTAL	366	1	2,496	\$480.94	1.1
AVERAGE	31	0	208	\$73.99	0.1
Jan-21	31	0	192	\$38.98	0.1
Feb-21	28	0	192	\$39.26	0.1
Mar-21	31	0	192	\$39.89	0.1
Apr-21	30	1	384	\$78.42	0.2
May-21	31	0	192	\$39.68	0.1
Jun-21	30	0	192	\$27.42	0.1
Jul-21	31	0	0	\$29.58	0.0
Aug-21	31	1	384	\$65.95	0.2
Sep-21	30	1	576	\$91.89	0.2
Oct-21	31	1	384	\$66.13	0.2
Nov-21	30	1	384	\$67.07	0.2
Dec-21	31	1	384	\$67.27	0.2
2021 TOTAL	365	1	3,456	\$651.54	1.5
AVERAGE	30	1	288	\$54.30	0.1



ELECTRIC USAGE SUMMARY - Meter House

Customer: Duluth Seaway Port Authority - Meter House
Address: 900 Helburg Ave, Duluth, MN 55800
MP METER #: 500012 **CS Account #:** 270762050-002
PERIOD: Jan-20 through Dec-21

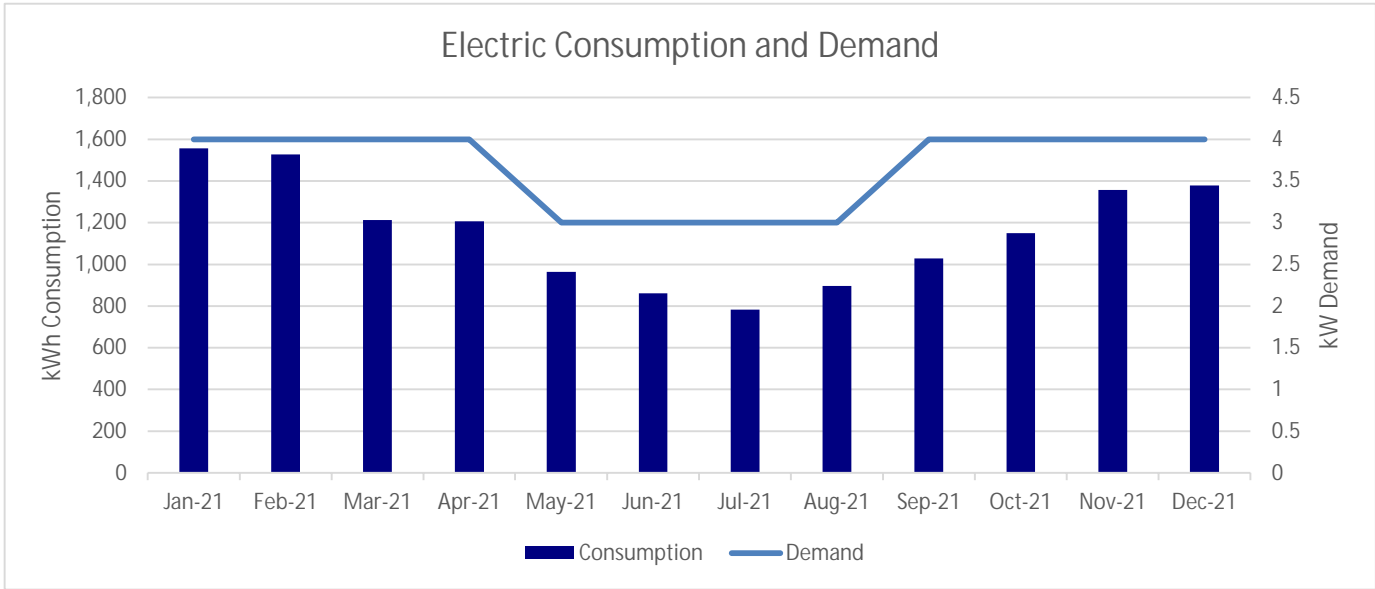
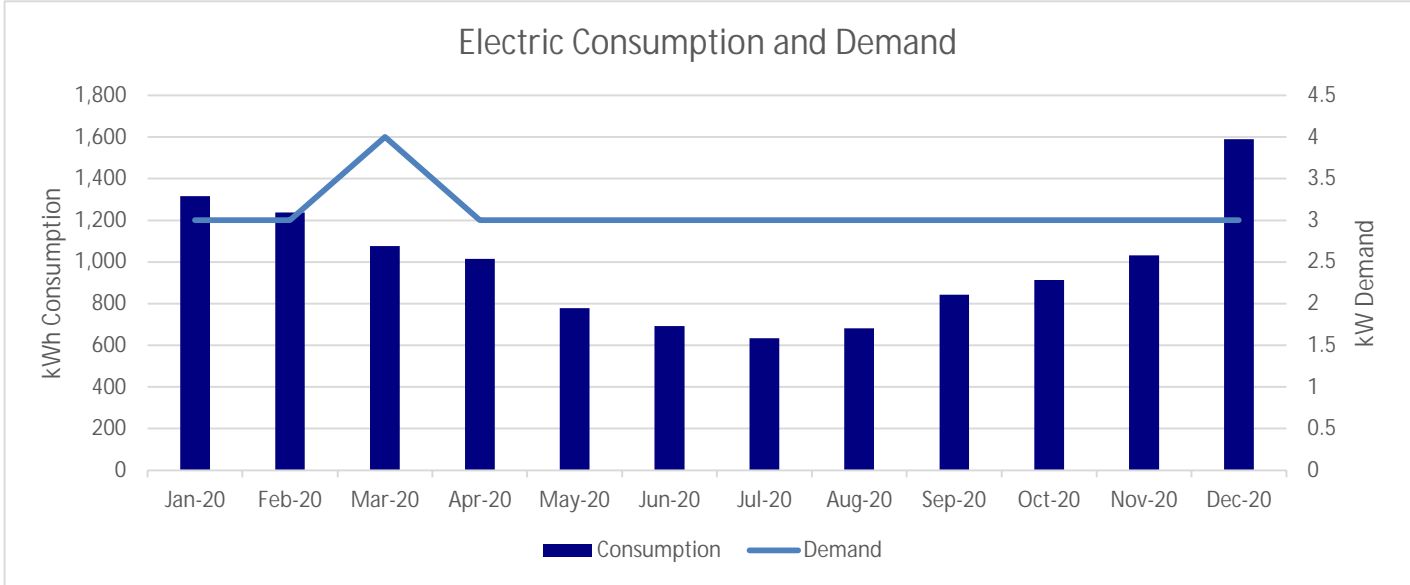
Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2	Nat. Gas CCF	Nat Gas Cost	Natural Gas Tons CO2
Jan-20	31	5	1,213	143	0.5	2,569	\$2,183.65	\$13.62
Feb-20	29	5	1,308	160	0.6	2,411	\$2,049.35	\$12.78
Mar-20	31	6	1,284	156	0.6	2,097	\$1,782.45	\$11.11
Apr-20	30	5	3,200	364	1.4	1,557	\$1,323.45	\$8.25
May-20	31	5	1,505	177	0.7	827	\$702.95	\$4.38
Jun-20	30	5	509	72	0.2	830	\$705.50	\$4.40
Jul-20	31	3	115	27	0.0	106	\$90.10	\$0.56
Aug-20	31	1	65	20	0.0	0	\$0.00	\$0.00
Sep-20	30	5	77	22	0.0	0	\$0.00	\$0.00
Oct-20	31	5	2,696	307	1.2	615	\$522.75	\$3.26
Nov-20	30	6	901	112	0.4	1,445	\$1,228.25	\$7.66
Dec-20	31	6	1,277	154	0.6	1,611	\$1,369.35	\$8.54
2020 TOTAL	366	6	14,150	1,714	6.1	14,068	\$11,957.80	\$74.56
AVERAGE	31	5	1,179	143	0.5	1,172	\$996.48	\$6.21
Jan-21	31	9	2,538	309	1.1	2,112	\$1,795.20	\$11.19
Feb-21	28	5	2,277	286	1.0	1,809	\$1,537.65	\$9.59
Mar-21	31	5	1,391	179	0.6	2,195	\$1,865.75	\$11.63
Apr-21	30	9	1,342	172	0.6	1,148	\$975.80	\$6.08
May-21	31	5	1,135	148	0.5	747	\$634.95	\$3.96
Jun-21	30	4	672	94	0.3	383	\$325.55	\$2.03
Jul-21	31	4	137	31	0.1	84	\$71.40	\$0.45
Aug-21	31	0	48	20	0.0	11	\$9.35	\$0.06
Sep-21	30	0	49	20	0.0	0	\$0.00	\$0.00
Oct-21	31	0	46	20	0.0	7	\$5.95	\$0.04
Nov-21	30	4	269	47	0.1	683	\$580.55	\$3.62
Dec-21	31	5	794	113	0.3	1,500	\$1,275.00	\$7.95
2021 TOTAL	365	9	10,698	1,439	4.6	10,679	\$9,077.15	\$56.60
AVERAGE	30	4	892	120	0.4	890	\$756.43	\$4.72



ENERGY SUMMARY - Street Lights

Customer:	DSPA - Street Lights		
Address:	Port Terminal & Pine Rd		
MP ACCOUNT #:	613361		
PERIOD:	Jan-20	through	Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	3	1,317	\$101.14	0.6
Feb-20	29	3	1,238	\$98.66	0.5
Mar-20	31	4	1,076	\$85.48	0.5
Apr-20	30	3	1,014	\$79.64	0.4
May-20	31	3	778	\$60.90	0.3
Jun-20	30	3	692	\$57.04	0.3
Jul-20	31	3	633	\$53.35	0.3
Aug-20	31	3	682	\$59.75	0.3
Sep-20	30	3	843	\$68.18	0.4
Oct-20	31	3	914	\$74.09	0.4
Nov-20	30	3	1,032	\$83.23	0.4
Dec-20	31	3	1,589	\$127.95	0.7
2020 TOTAL	366	4	11,808	\$949.41	5.1
AVERAGE	31	3	984	\$79.12	0.4
Jan-21	31	4	1,557	\$133.64	0.7
Feb-21	28	4	1,527	\$136.43	0.7
Mar-21	31	4	1,212	\$108.50	0.5
Apr-21	30	4	1,206	\$107.15	0.5
May-21	31	3	965	\$86.26	0.4
Jun-21	30	3	861	\$78.54	0.4
Jul-21	31	3	783	\$75.19	0.3
Aug-21	31	3	896	\$83.65	0.4
Sep-21	30	4	1,028	\$96.06	0.4
Oct-21	31	4	1,150	\$110.20	0.5
Nov-21	30	4	1,356	\$128.54	0.6
Dec-21	31	4	1,378	\$131.11	0.6
2021 TOTAL	365	4	13,919	\$1,275.27	6.0
AVERAGE	30	4	1,160	\$106.27	0.5

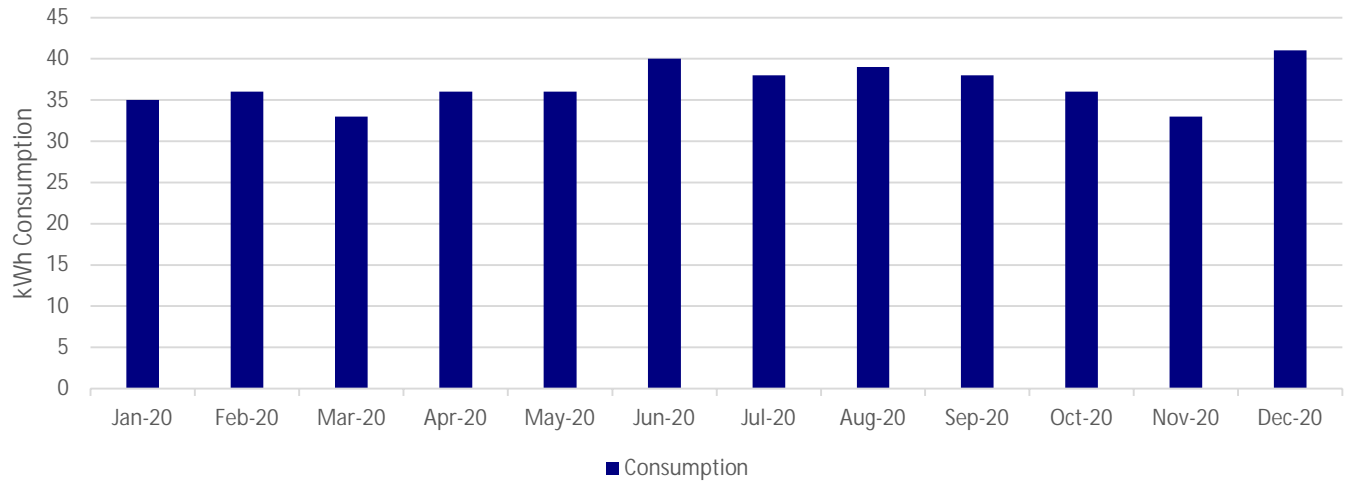


ENERGY SUMMARY - Trackside Readers

Customer:	DSPA - Trackside Readers		
Address:	Port Terminal Rd Trackside Readers		
MP METER #:	629227		
PERIOD:	Jan-20	through	Dec-21

Month	Billing Days	Electric kW	Electric kWh	Electric Cost	Electric Tons CO2
Jan-20	31	0	35	\$2.12	0.12
Feb-20	29	0	36	\$2.18	0.12
Mar-20	31	0	33	\$2.00	0.11
Apr-20	30	0	36	\$2.18	0.12
May-20	31	0	36	\$2.18	0.12
Jun-20	30	0	40	\$2.42	0.14
Jul-20	31	0	38	\$2.30	0.13
Aug-20	31	0	39	\$2.36	0.13
Sep-20	30	0	38	\$2.30	0.13
Oct-20	31	0	36	\$2.18	0.12
Nov-20	30	0	33	\$2.00	0.11
Dec-20	31	0	41	\$2.48	0.14
2020 TOTAL	366	0	441	\$26.70	1.50
AVERAGE	31	0	37	\$2.22	0.13
Jan-21	31	0	37	\$2.24	0.13
Feb-21	28	0	36	\$2.18	0.12
Mar-21	31	0	33	\$2.00	0.11
Apr-21	30	0	33	\$2.00	0.11
May-21	31	0	32	\$1.94	0.11
Jun-21	30	0	34	\$2.06	0.12
Jul-21	31	0	33	\$2.00	0.11
Aug-21	31	0	36	\$2.18	0.12
Sep-21	30	0	37	\$2.24	0.13
Oct-21	31	0	35	\$2.12	0.12
Nov-21	30	0	33	\$2.00	0.11
Dec-21	31	0	33	\$2.00	0.11
2021 TOTAL	365	0	412	\$24.94	1.41
AVERAGE	30	0	34	\$2.08	0.12

Electric Consumption - Trackside Readers



Electric Consumption - Trackside Readers

