

# 2021 City of Helena Sustainability Report

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In 2017, the City Commission adopted Resolution 20347, requiring the preparation of an annual report to document specific activities implemented by the City, track greenhouse gasses, energy usage, and other resources such as water and recommend future sustainability measures for the City of Helena. In 2021, City of Helena continued to make energy efficiency and sustainability upgrades to buildings, parks, and practices. The information below outlines the upgrades and efficiencies for the calendar year as well as purposed projects for the future. Where applicable, the activity references the corresponding recommendation from the 2009 Climate Action Plan.

## [Energy Efficiency & Municipal Operations](#)

**Lighting Upgrades at Tenmile Water Treatment Plant (NRG-1):** Upgrades to the lighting at the Tenmile Water Treatment Plant have continued. The initial incandescent lighting was replaced with F32T8 fluorescent troffers. The fluorescent lighting has now been replaced with variable output LED troffer panels and strips that are set to the lowest wattage available.

**Water-Source Heat Pump at Tenmile Water Treatment Plant (NRG-2):** The Electric-resistance heat pump at the Tenmile Water Treatment Plant was updated to a water source heat pump.

**Efficiency Upgrades at Wastewater Treatment Plant (NRG-4):** Updates to the aeration, heat recovery, and control systems continue to improve optimization and efficiency at the Wastewater Treatment Plant.

**Improve Lighting Efficiency of City Buildings (NRG-8):** Energy efficient LED lights have become the standard during replacement and installation in all City buildings.

**Streetlights, Traffic Lights, & Fire Tower (NRG-14):** Energy efficient LED lights have become the standard during replacement and installation.

**City Facilities Energy Projects (NRG-6):** The City of Helena has made energy efficient updates to over ten buildings over the last 3 years reducing its energy use by 37%.

Electricity usage from 2020 compared to 2021:

- Water Treatment Plants used 29,690 **more** kW in 2021. (Likely due to treatment of an additional 147.8 million gallons of water than in 2020).
- The Wastewater Treatment Plant used 346,260 **less** kW in 2021.
- Transfer Station used 8,410 **less** kW in 2021.
- Street, parking, and miscellaneous lighting used 60,442 **less** kW in 2021.
- City/County Building used 17,704 **more** kW in 2021. (This may have been caused by employees returning to the office after COVID).
- Vehicle Maintenance Building used 10,393 **less** kW in 2021.

**Total electricity consumption was reduced by 10.03 %.**

**Total natural gas consumption was reduced by 15.49 %.**

**Install Renewable Energy Systems (NRG-11):** One renewable energy project, a 50-kW solar project at the City Transportation Shop, was purposed and funded with a projected completion date of 2023. The installation of two publicly available Electric Vehicle Charging Stations was purposed and funded with a project completion date of 2023.

**Adopt Energy Efficient Standards for City-Owned Buildings (NRG-7):** City-Owned buildings have made updates to improve their energy efficiencies. This has created a downward trend in energy usage. This was successfully completed without any formal policy or standards having been necessary for implementation.

### Water Supply, Treatment, & Delivery (WTR)

**Develop an Education and Outreach Program on Water Conservation (WTR-5):**

The City provides conservation tips and resources through utility bill inserts and the public works website. In July of 2021, a Water Wise Helena booklet was launched which gave citizens extensive information on how to conserve water.

- In 2021, the population of Helena grew by 1029 people.
- The average water use per person per day was 178.87 gallons.
  - This number includes all residential and commercial properties, including gallons used for irrigation, water main breaks, etc.
- The average base use per person per day was 100 gallons.
  - The City believes this number is a better representation of actual day to day water usage for each resident.

**Adopt "Lush and Lean" Landscaping Practices (WTR-3):** Converting City parks from irrigating with treated drinking water to well water and irrigating during the early morning hours. The City currently uses water pumped from methane intercept wells under the

former City of Helena landfill to irrigate Bill Roberts Gold Course. This has a dual effect of providing water to the golf course and providing treatment for the well water.

- In 2021, the City of Helena experienced the highest average yearly temperatures and the lowest total precipitation in three years. Due to this both City's water treatment plants and the Eureka Well saw increased usage from the previous year:
  - Tenmile Water Treatment Plant: +7 million gallons
  - Missouri River Water Treatment Plant: +49 million gallons
  - Eureka Well: +92 million gallons.

**Study and Develop Community Water Conservation Incentives (WTR-4):** The City of Helena implemented a tiered water rate system in 2017 to incentivize residents to consume less water.

#### Transportation, Waste, Recycling, and Public-Private Partnerships (TWRPP)

**Adopt a Solid Waste Reduction Goal (TWRPP-4):** In February of 2021, the Helena City Commission passed Resolution 20643, establishing a solid waste reduction goal of 50% diversion by 2040, with an interim goal of 35% by 2030. Numerous steps have been taken to move the "35% Waste Reduction by 2030" goal forward. In 2021, the City of Helena diverted:

- 8,294 total tons diverted.
  - 2,326 tons from recycling:
    - 402 tons of aluminum, tin, glass, and plastic
    - 175 tons of paper
    - 8 tons of e-waste
    - 621 tons of household appliances
    - 923 tons of cardboard
    - 177 tons of tires, batteries, oil, and antifreeze
    - 17 tons of scrap metal
  - 5,969 tons to compost.

Self-haul recycling and curbside recycling collection comparison:

- Curbside Recycling: averaged 32 tons per month at a cost of \$541.78\* per ton.
- Drop-Off Sites and the Transfer Station: averaged 193 tons per month at a cost of \$78.90\* per ton.

\* Cost to the City of Helena.

#### Energy Use and Green House Gas Assessment

Total Electricity Consumption: 9,398,567 kW

CO<sub>2</sub> Emissions: Electricity

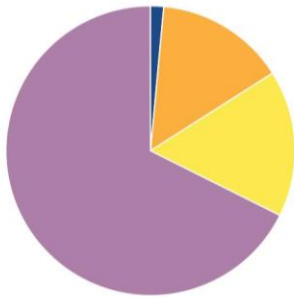
- Water & Wastewater: 1,740 metric tons
- Buildings & Facilities: 423 metric tons
- Streetlights & Traffic Signals: 376 metric tons
- Solid Waste Facilities: 38 metric tons \*Transfer Station only

Total Natural Gas Consumption: 174,275 therms.

CO<sub>2</sub> Emissions: Natural Gas

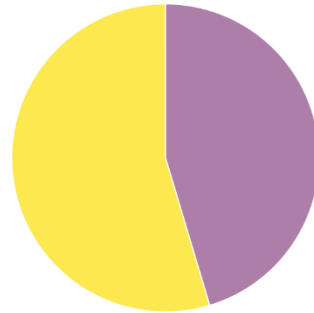
- Water & Wastewater: 407 metric tons
- All other Buildings & Facilities: 539 metric tons

CO<sub>2</sub> Emissions from Electricity



- Solid Waste Facilities
- Street Lights & Traffic Signals
- Buildings & Facilities
- Water & Wastewater Treatment Facilities

CO<sub>2</sub> Emissions from Natural Gas



- Water & Wastewater Treatment Facilities
- Buildings & Facilities

Compared to 2020

ENERGY SOURCE	AMOUNT	MMBTU	COST	AVG PRICE	CO2e (U.S. Tons)
ELECTRICITY	10,048,206 kWh	34,294	\$1,105,675	\$0.11/kWh	3,232
NATURAL GAS	247,333 therm	24,733	\$167,580	\$0.68/therm	1,449
GASOLINE	80,930 gal	10,112	\$198,860	\$2.46/gal	783
DIESEL	123,939 gal	17,109	\$330,363	\$2.67/gal	1,395
COMMUTE	NA	NA	NA	NA	502
WASTE	NA	NA	NA	NA	138
<b>2019 TOTAL</b>		<b>86,248</b>	<b>\$1,802,478</b>	<b>\$20.90/mmBtu</b>	<b>7,497</b>
<b>2007 TOTAL</b>		<b>89,856</b>	<b>\$1,990,059</b>	<b>\$22.15/mmBtu</b>	<b>10,397</b>
<b>2001 TOTAL</b>		<b>115,341</b>	<b>\$1,233,607</b>	<b>\$10.70/mmBtu</b>	<b>12,691</b>

\*All electricity and gas consumption data for the month of November 2021 was missing, November 2020 data was used in its place.

Looking Forward: Plans for 2022

Transportations Shop Solar Panel Project:

- Request for bid was put out for a 50kW solar project to be installed at the City of Helena’s Transportation Shop. The goal of this project is to reduce greenhouse

gas emissions of 30 metric tons per year of CO<sub>2</sub> and help the City transition toward its goal of clean electricity.

- This solar project will be the City's first large-scale renewable energy project.

#### Electric Vehicle Charging Station

- Two electric vehicle charging stations are to be installed, one at Jackson Street Parking Garage and the other at Bill Roberts Golf Course.
- Improve access to electric vehicle charging stations to reduce greenhouse gases and vehicle emissions.

Work with private companies on agreements for residential and commercial curbside composting.

Completion and adoption of the City of Helena's Strategic Plan for Waste Reduction.

Initiation of an Integrated Solid Waste Master Plan.

Installation of Native Landscape Garden at the Law and Justice Center.

#### [Incomplete 2009 Climate Action Plan Recommendations](#)

**Municipal Green Team (IMP 2):** Due to vacancies in several key positions, the City has postponed this initiative until vacancies are filled.

**Increase Local Food Production and Consumption (TWRPP-8):** The City promotes community and home gardens where possible.

**Establish a "Pay-As-You-Throw" (PAYT) Solid Waste Program (TWRPP-3):** The City is currently waiting for the results of the Integrated Solid Waste Master Plan to see if this initiative will be enacted.

**Institute a Per-Bag Fee for Disposable Shopping Bags (TWRPP-5):** 7-1-111(21), MCA, prevents local government from "affecting, applying to, or regulating the use, disposition, sale, prohibitions, fees, charges, or taxes on auxiliary containers. See also 7-1-121, MCA.

## Methodology

Electricity usage data collected by DEQ.

Electricity Consumption													
2020	835688	921705	762636	744035	711766	819092	947079	1475887	1049089	731910	637547	693273	10329707
2021	860684	666532	541105	694472	622688	693828	1155865	1141600	933782	842696	637547	652021	9442820
	-24996	255173	221531	49563	89078	125264	-208786	334287	115307	-110786	0	41252	91.41%

Electric	2020	2021	Difference KW
WATER	3146454	3176144	-29690
WASTE	3556360	3210100	346260
GOLF COURSE	205544	196983	8561
TRANSFER STATION	148411	140001	8410
LIGHTS	263365	202923	60442
VEHICLE MAINT.	201577	191184	10393
CITY COUNTY BUILDING	494100	511804	-17704
<b>TOTAL</b>	<b>10329707</b>	<b>9442820</b>	<b>886887</b>
Gas	2020	2021	Difference Therms
WASTE	77704	50711	26993
WATER	26886	18344	8542

Data then inputted into ClearPath under “City Government Analysis” to calculate Greenhouse Gas Emissions.

- multiply kWh by 0.003412.
- multiply THERM by 0.1
- electricity factor set: WECC NWPP eGrid 2021.

Water usage data collected by Ten Mile Water Treatment Plant Superintendent.

Month	Average Per Day					Average
	2022	2021	2020	2019	2018	
January	3.54	3.33	3.11	3.42	3.17	3.31
February	3.53	3.64	3.13	3.43	3.17	3.38
March	3.61	3.82	3.16	3.68	3.46	3.55
April	3.72	3.77	3.14	3.62	3.47	3.54
May	6.02	5.77	5.22	4.41	4.70	5.22
June	8.44	10.96	7.32	8.01	6.47	8.24
July	10.59	11.67	10.19	9.03	11.13	10.52
August	11.92	9.39	12.07	9.46	11.04	13.47
September	8.27	8.01	8.29	6.32	7.13	9.51
October	3.97	4.00	3.98	3.47	3.65	4.77
November	3.35	3.32	3.10	3.02	3.28	4.02
December	3.46	3.27	3.18	2.99	3.36	4.06
<b>Totals to Date:</b>	<b>5.63</b>	<b>5.91</b>	<b>5.49</b>	<b>5.07</b>	<b>5.30</b>	
Pop of Helena	34007.52	33120	32091	32024	31212	<a href="https://www.cer">https://www.cer</a>
Av. Daily/Person	173.06	178.87	171.98	158.76	171.63	
Average Base (Jan) Per Person Per Day	103.96	100.42	96.95	106.83	101.56	

Recycling/Diversion tonnage data collected at City of Helena Transfer Station.

DIVERSION BY FISCAL YEAR													
	CONTAINER	PAPER	EWASTE	TEXTILES	WHT GOODS	*LF/MV WHT GOODS	CRDBOARD	AUTO	VAL. SCRAP	RECYCLING TOTAL	COMPOST	*LF COMPOST	TOTAL
FY21	402.4	175.70	8.0	N/A	604.5	17.4	923.3	177.2	0.0	2,325.9	5,373.8	594.1	8,293.8
FY20	381.7	233.50	21.4	n/a	610.4	13.15	769.7	174.7	0.0	2,204.6	4,903.1	544.99	7,652.7

Curbside Recycling data was collected through monthly reports and invoices submitted to City of Helena.

FISCAL YEAR	CURBSIDE RECYCLING DIVERTED TONS			RECYCLING DROP-OFF SITES - DIVERTED TONS		
	AVERAGE TONS PER MONTH	AVERAGE SERVICE COST TO SUBSCRIBER & SUBSIDY	COST PER TON	AVERAGE TONS PER MONTH	AVERAGE SERVICE COST PER MONTH	COST PER TON
FY20	29.77	\$15,263.00	\$512.64	183.72	\$12,596	\$68.56
FY21	32.32	\$17,508.07	\$541.78	193.83	\$15,293	\$78.90