



Enterprise Sustainability

House Capital Investment Committee

February 4, 2020

Office of Enterprise Sustainability Background

- Team of three established in 2017 and reaffirmed by Executive Order (19-27) in 2019
- The Order directs State Government to conserve energy and water, and reduce waste to save money
- The Order establishes Sustainability Steering Team to guide work
- The Order directs State agencies to participate in Enterprise Sustainability effort and outlines agency responsibilities

STATE OF MINNESOTA Executive Department



Governor Tim Walz

Executive Order 19-27: Rescinding Executive Orders 18-01 and 17-12

Directing State Government to Conserve Energy and Water, and Reduce Waste to Save Money

I, Tim Walz, Governor of the State of Minnesota, by the authority vested in me by the Constitution and applicable statutes, issue the following Executive Order:

As with any large organization, operating Minnesota's government generates pollution, consumes energy and natural resources, and contributes to climate change. Sustainable practices by our government can positively impact the environment, human health, and the economy by preventing pollution, reducing energy and natural resource consumption, and minimizing climate impacts. Minnesota has made progress to make its government operations more sustainable. We must continue to lead by example, ensuring that we maintain our efforts so that our sustainability goals are met.

To meet the State's goals, we must make efficient use of water and energy, reduce greenhouse gas emissions, and ensure that goods and services procured by the government are sustainable. We will make quicker progress toward our goals by encouraging collaboration across our government.

Continuing the effort to run our government in more sustainable ways helps Minnesotans by improving the environment, controlling unnecessary waste of natural resources and public funds, and spurring innovation. These measures save taxpayer dollars through avoided costs, increased efficiencies, more resilient facilities, and a stronger economy.

For these reasons, I order that we undertake the following actions to protect and enhance Minnesota's environment, economy, and health for current and future generations:

1. **Sustainability Goals.** Cabinet Agencies will improve their operational practices to achieve the following Sustainability Goals:
 - a. **Reduced Fleet Fossil Fuel Consumption:** 30% reduction of state fleet consumption of fossil fuels by 2027 relative to a 2017 adjusted baseline

Sustainability Goals

Fleet



Fleet: 30% reduction of fossil fuel use by vehicles and equipment by 2027.

Solid Waste



Solid Waste: 75% of solid waste is recycled or composted by 2030.

Energy



Energy: 30% Reduction in consumption of energy per square foot by 2027.

Procurement



Procurement: 25% of total spending on priority contract is sustainably purchased by 2025.

Water



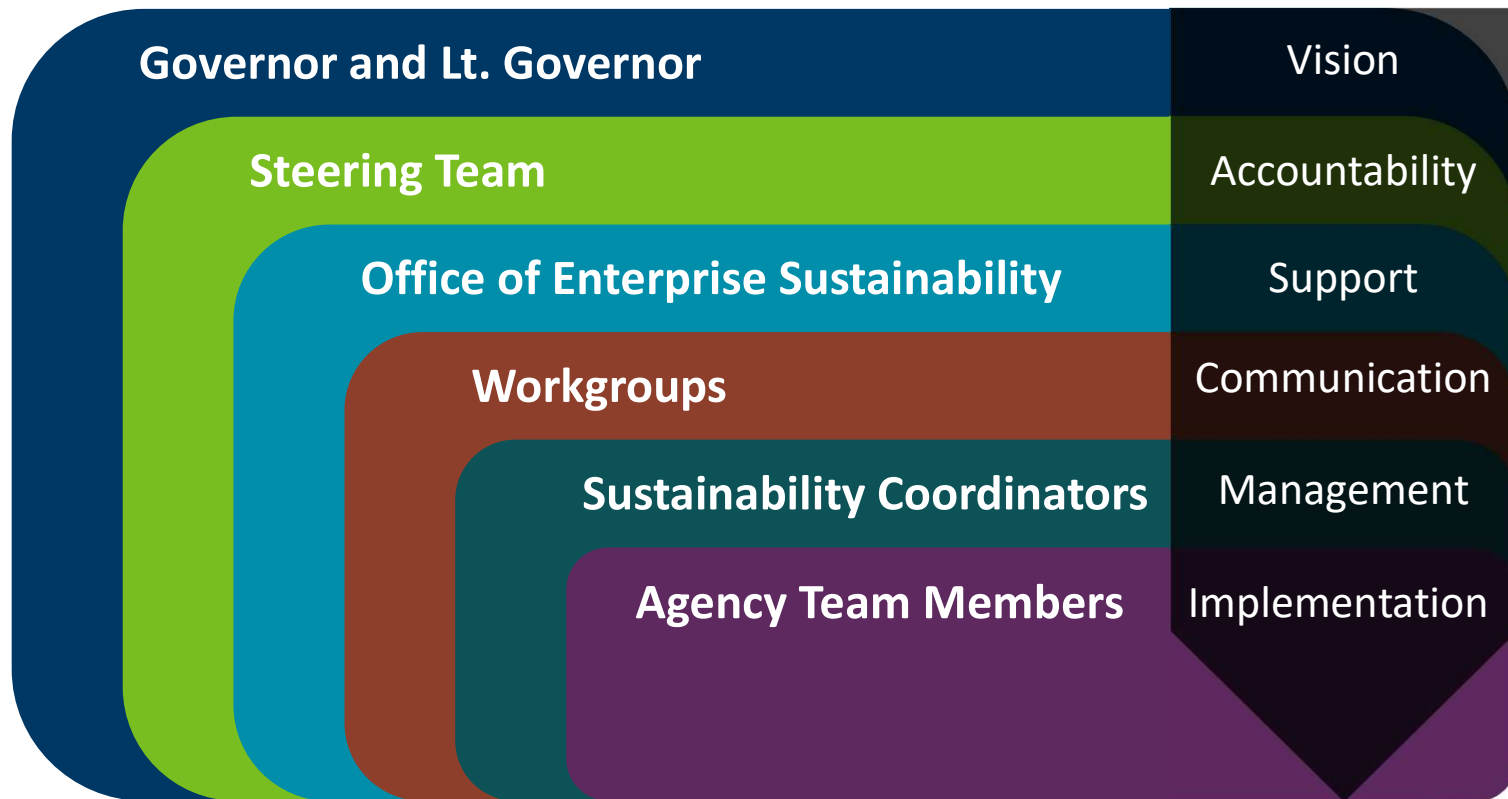
Water: 15% reduction in water use by 2025.

Greenhouse Gas



Greenhouse Gas: 30% reduction of greenhouse gas emissions by 2025.

Innovative Governance Model



Assistance to Agencies

- Manage reporting process, software, and publication
- Facilitate workgroups, sub-teams, and Steering Team
- Spread best practices
- Provide technical assistance:
 - Contracting,
 - Strategic Planning,
- Champion sustainability in funding discussions

Master Contracts for State Agencies and CPV

Members:

- Electric Vehicle Supply Equipment
- RetroCommissioning (building energy evaluation) (with T/A)
- Solar design-build (with T/A)
- Solid waste assessments (in progress)

Green Lease Technical Assistance

Sustainability Planning Technical Assistance

Electric Vehicle Charging Equipment

Measuring the sustainability of Minnesota state government operations

Fleet

Energy

Water

Solid Waste

Procurement

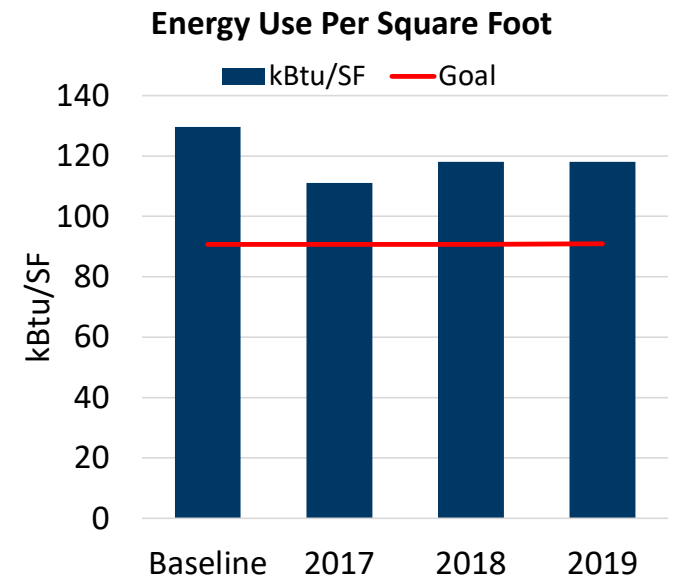
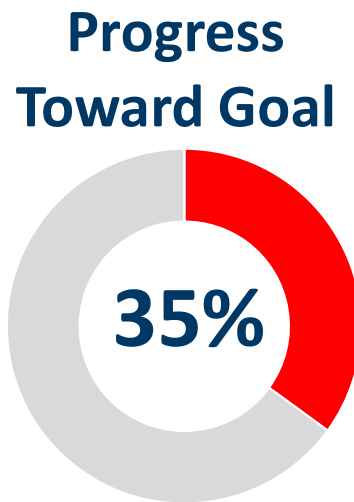
Greenhouse Gas

Avoided Costs Due To Conservation Measures (2005 - Present)

\$45,152,940



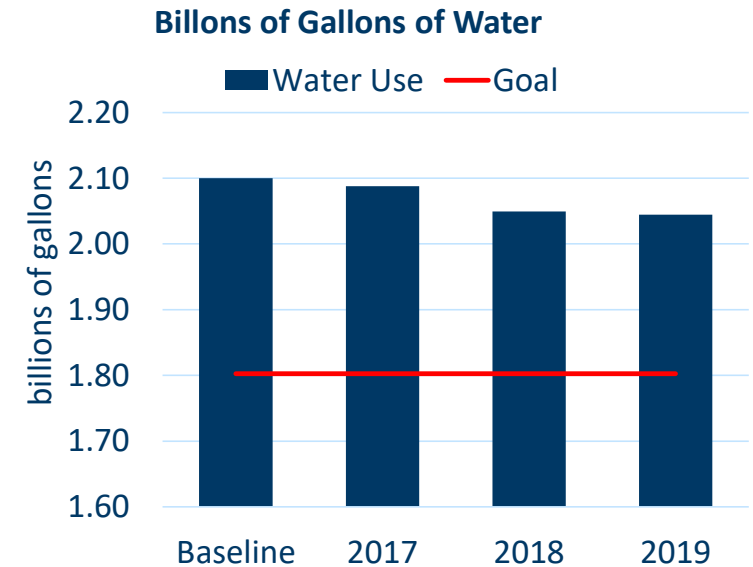
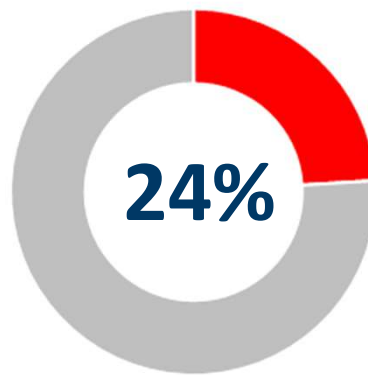
Goal: Reduce energy use per square foot 30% by 2027.



Energy

Goal: Reduce water use by 15% by 2025.

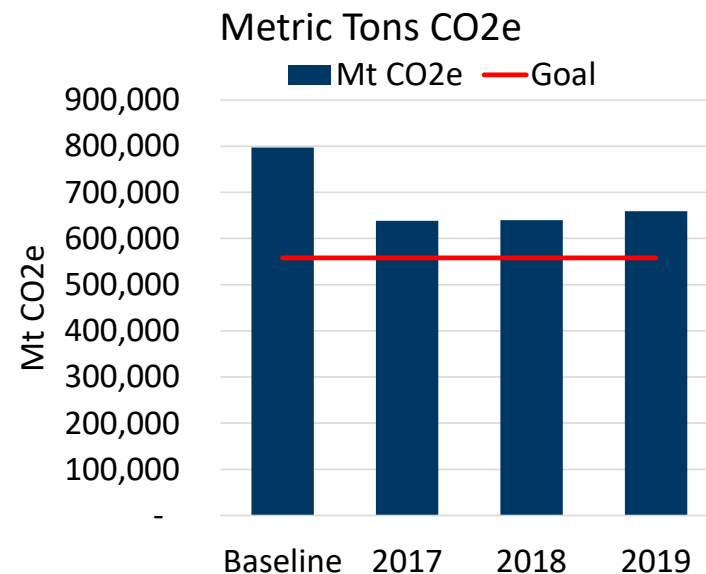
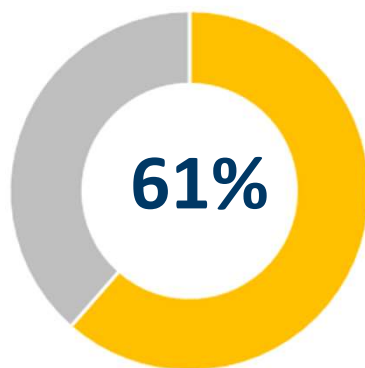
Progress Toward Goal



Water

Goal: Reduce
GHG
emissions by
30% by
2025.

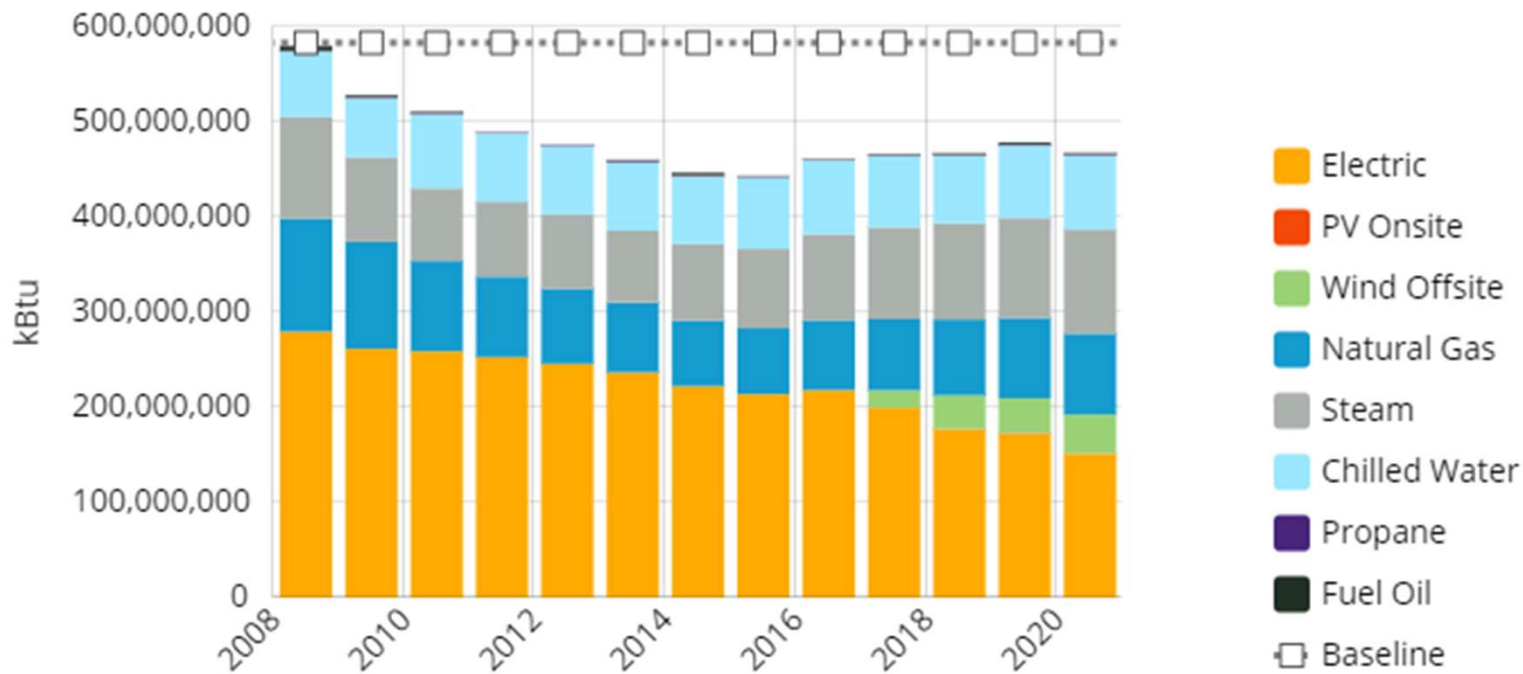
Progress
Toward Goal



Greenhouse Gas Emissions

Capital Complex Annual Energy Usage

Energy Annual Usage (kBtu)
2008-2020, Actual Weather Normalized



- 19% reduction in energy use from 2008-2019
- 50% reduction in GHG emissions

Major Initiatives - Transportation Building

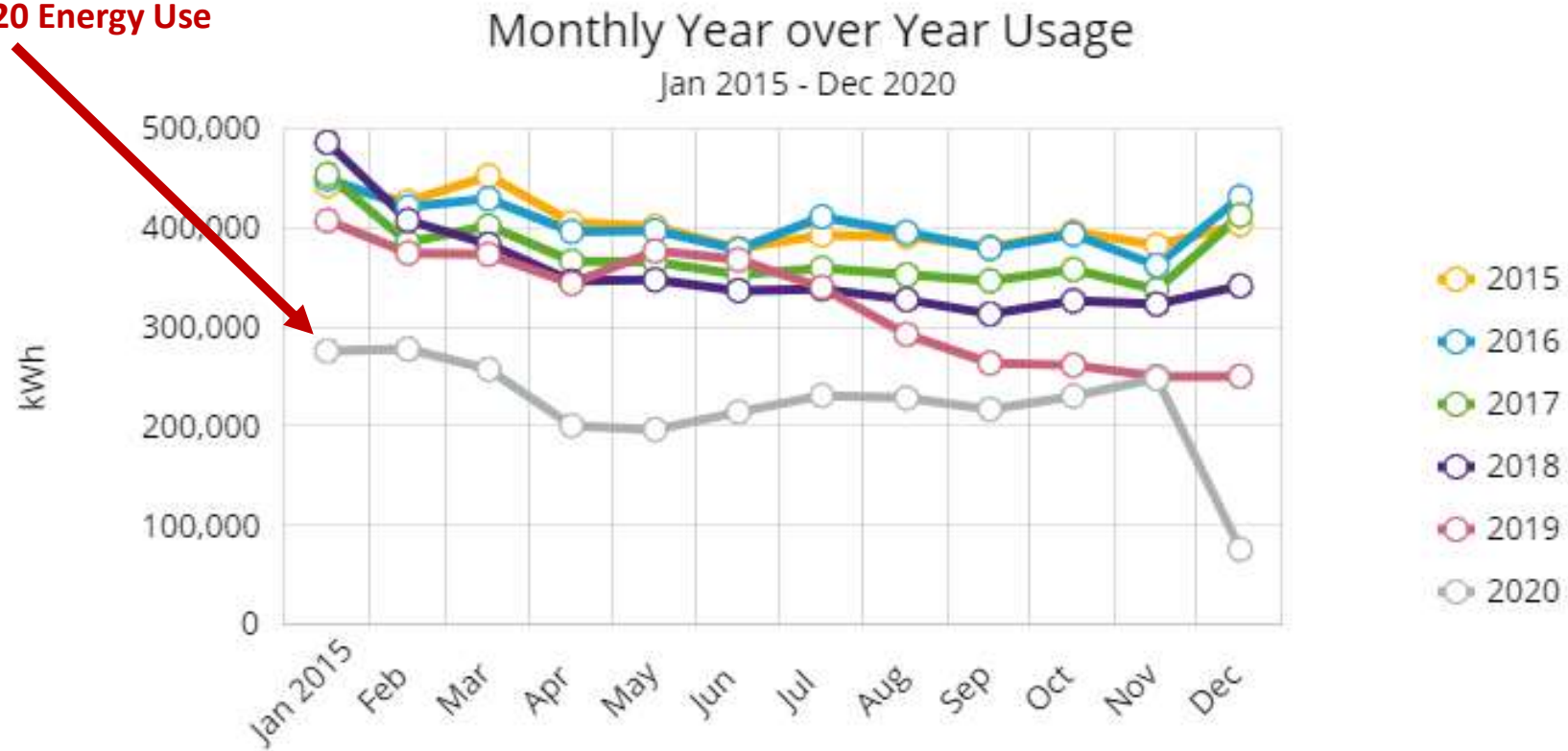
- Initiated a Guaranteed Energy Savings Project
- Completed Investment Grade Audit
- 4 energy conservation measures (direct digital controls, low flow fixtures, irrigation deduct meter and LED lights)
- 2 energy conservation measures (432 variable air volume boxes and replacement of 2 air handling units with wall fans)



Transportation Building completed project in 2019

Transportation Electric Data

2020 Energy Use



Capital Complex 2020 LED Light Bulb Replacements

	Project Cost	Estimated Saving kWh/year	Estimated Savings/year	Simple Payback
State Office Building	\$59,000	340,000	\$31,000	1.9 years
Retirement	\$23,872	109,000	\$10,000	1.9 years
Admin	\$5,455	65,000	\$6,000	0.9 year
Veterans	\$9,271	65,000	\$6,000	1.5 years
691 Robert St	\$4,900	43,000	\$4,000	1.2 years

Capitol Complex Solar



2/3/2021

Minnesota Department of Administration | mn.gov/admin



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Energy B3 Benchmark Potential

Benchmark

- Predicts energy use if site were built to today's energy code.
- Useful for prioritizing energy efficiency and conservation efforts
- Appropriate assessments are still necessary
- Other considerations apply (e.g. age of building)

Potential Avoided Energy Costs by Agency

Agency	Potential Savings kBtu/yr	% kBtu/yr Saved	Potential Avoided Cost (\$/yr)
DOC	234,392,000	30.3	1,910,000
DHS	62,612,000	21.3	911,000
DMA	34,033,000	10.2	345,000
MDVA	30,465,000	17.8	318,000
ADMIN	21,390,000	4.3	241,000
DOT	28,851,000	11.4	232,000
DPS	4,630,000	24.2	147,000
IRR	6,741,000	37.8	106,000
DNR	1,895,000	2.6	20,000
DEED	1,335,000	5.2	17,000
Total	426,344,000	17.4	4,247,000

* Differs from the enterprise values because Met Council is excluded. This is cabinet level agencies only.

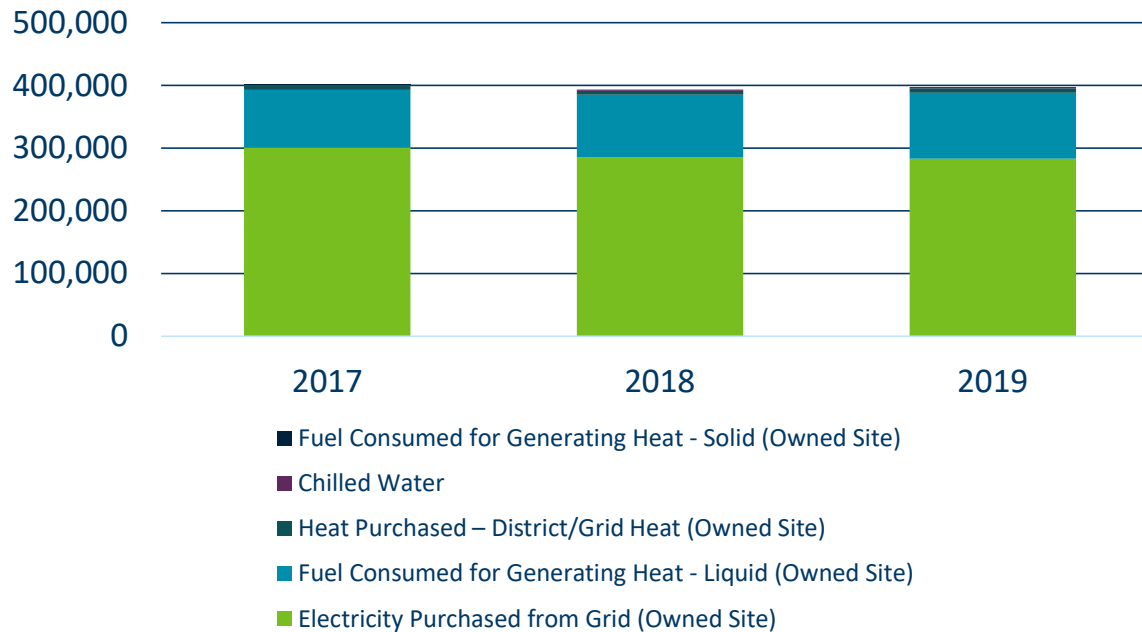
Revolving Loan Eligible Projects



- Exterior and interior LED lighting
- Digital controls for heating and cooling
- Variable-frequency speed fans and motors
- Ground and air source heat pumps
- Low flow fixtures and toilets
- Faucet aerators and washing equipment sprayer heads
- Water irrigation sensors, controls
- Retro-commissioning

Enterprise Building Green House Gas Emissions

Enterprise Building GHG Emissions MtCO2e



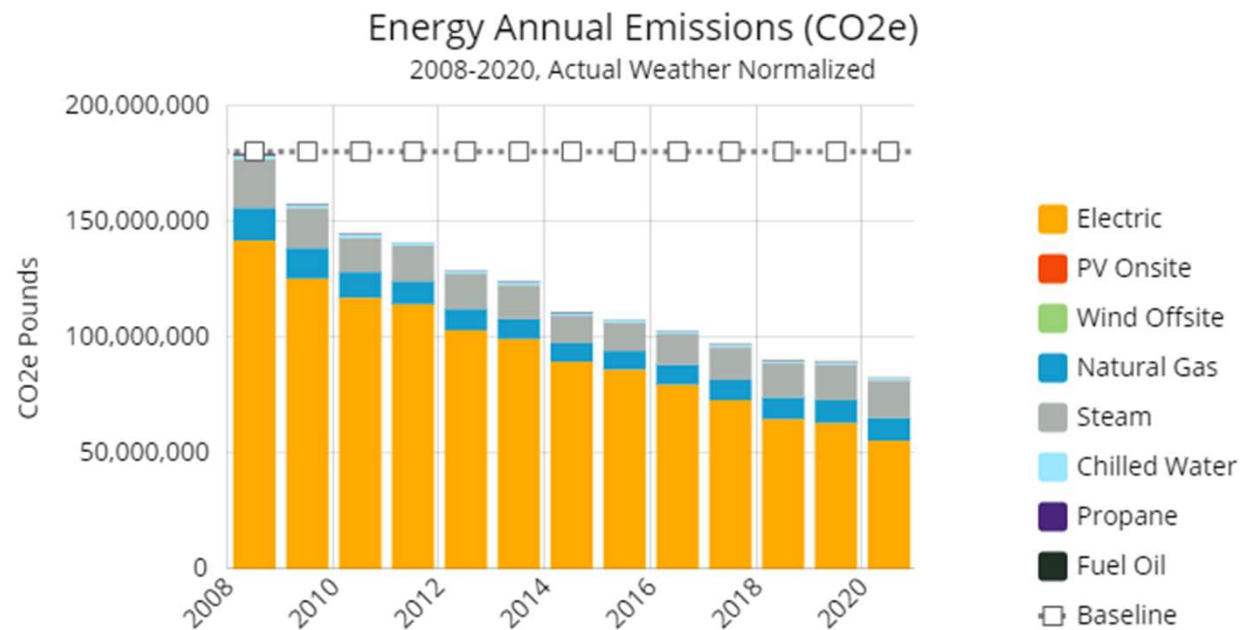
Building GHGs come from

- 73% purchased energy (Electricity, District Heat and Cool)
- 27% on-site combustion

Potential Green House Gas Reduction from Buildings

- An area for additional research and modeling
- GHG Reduction will come from:
 - Efficiency and Conservation
 - De-carbonizing electricity
 - Utility Improvements
 - On-site Renewables
 - Switching from on-site combustion to electric technologies for space conditioning
 - e.g. cold-weather air source heat pumps

Dept of Admin, Baseline GHG Building Emissions and Reductions, 2008-2019



Thank you!

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