

# Accept: 2020 Energy Management Master Plan

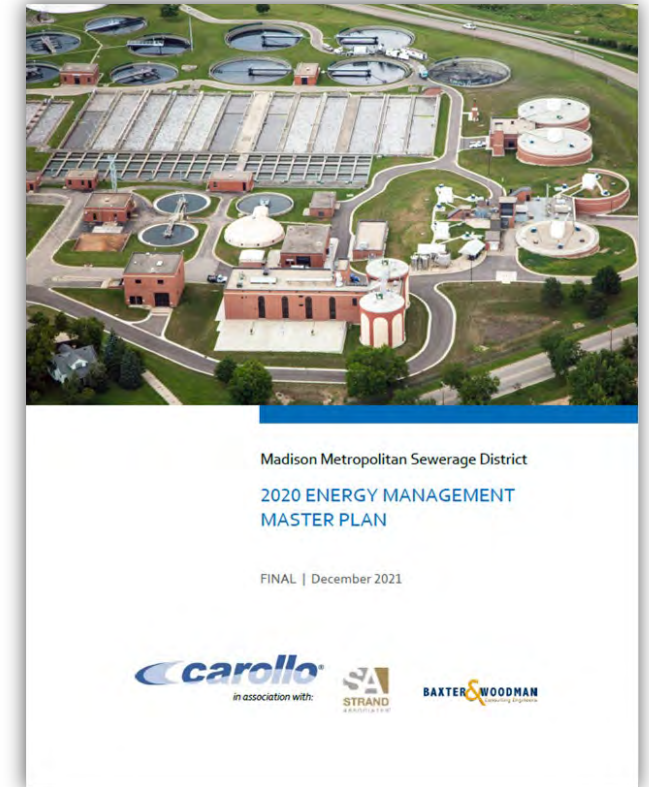
Commission Meeting  
February 10, 2022

Madison Metropolitan Sewerage District



# Accept: 2020 Energy Management Master Plan

- Purpose
  - Accept the 2020 Energy Management Master Plan to formally finish the project
- Agenda
  - Background: 2014 Roadmap Study
  - Review: 2020 Energy Management Master Plan
  - Next steps



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# 2014 Energy Baseline and Optimization Roadmap Study

- Energy independence high level focus
- Intended to integrate with necessary changes / upgrades to facilities
- Findings:
  - Little “low hanging fruit”
  - ~ 30% to 35% total energy offset at NSWWTF
  - Further assessment & implementation via CIP



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# 2014 Study Items of Interest

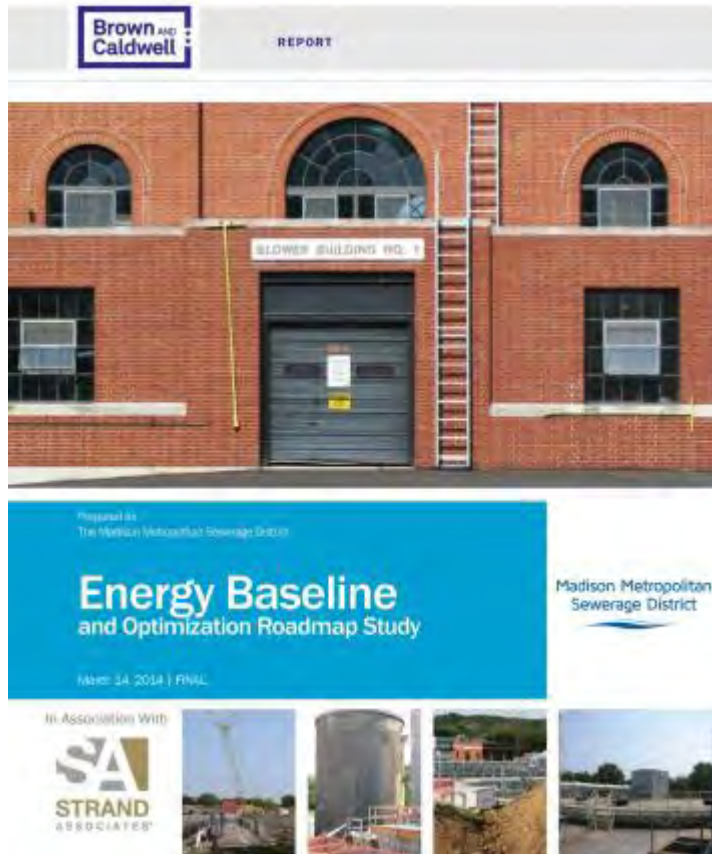
- Aeration – blowers and diffusers
- Biogas and Heat
- Variable Frequency Drives (VFDs)
- Infiltration / Inflow (I/I ) reduction
- Lighting



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# 2014 Study Takeaways and Next Steps



- Principles to guide us
  - Protect public health and the environment
  - Reduce costs
  - Reduce District contribution to climate change
  - Reduce exposure to utility rate increases
- Strategies to explore
  - Maximize efficiency, minimize consumption and demand
  - Maximize biogas derived energy
  - Incorporation of additional clean energy sources

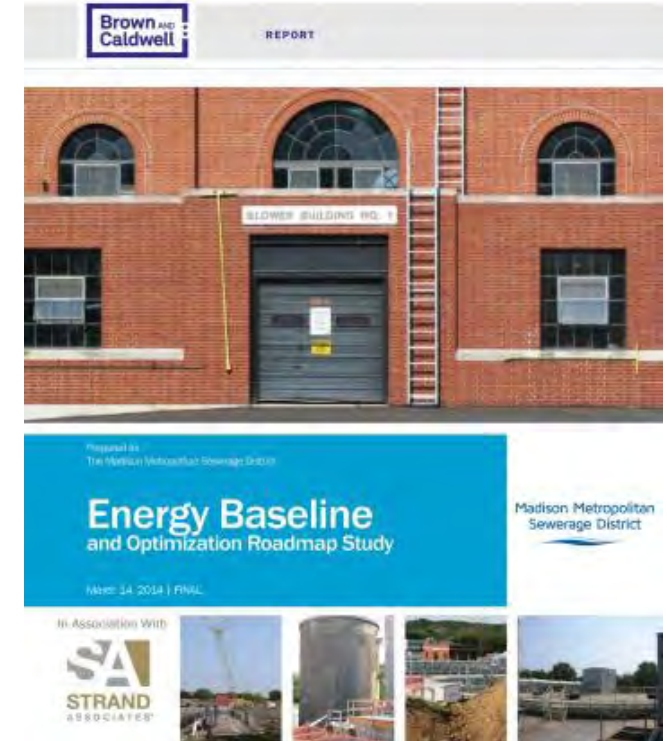
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# Looking back to the 2014 roadmap route plan

- Current Commission policy application is clear to staff
- GHG reduction progress takes time
- Each decision requires careful consideration
- Maintain flexibility to respond to changing conditions



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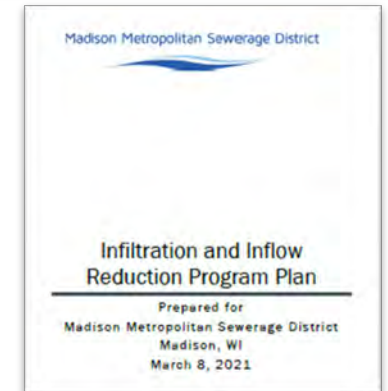
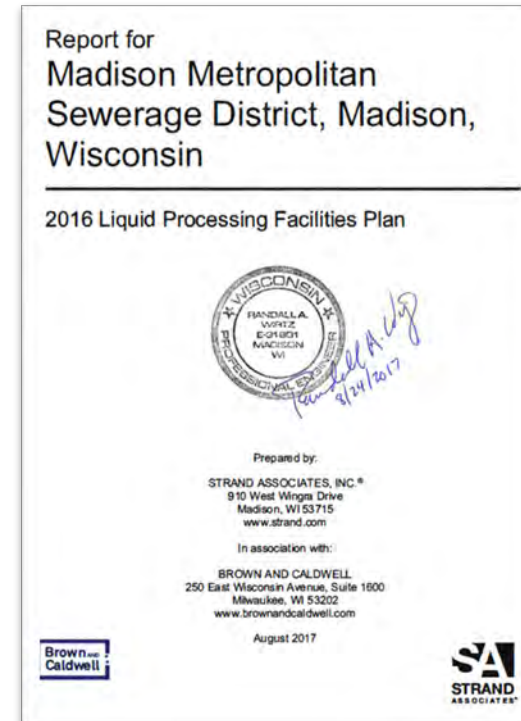
# Since the 2014 Roadmap

The 2014 Roadmap has influenced major efforts such as:

- Liquid facilities upgrades
- Badger Mill Creek phosphorus compliance
- Chloride reduction strategies
- LEED Platinum Maintenance Facility construction
- Green vehicle fleet plan
- Inflow and Infiltration reduction program
- Co-digestion and hauled waste investigations
- Low dissolved oxygen activated sludge research

Strategic planning:

- In 2019 the Commission indicated that infrastructure reliability and resilience were the top priority



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# 2020 Energy Management Master Plan



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## 2020 ENERGY MANAGEMENT MASTER PLAN

FINAL | December 2021

**carollo**  
in association with:

**SA  
STRAND**  
a subsidiary of

**BAXTER & WOODMAN**  
Engineering & Construction

- Continuation of the 2014 study
- Focused on improving operational reliability and resilience of energy use and generation
- Provides a recommended timeline and estimated costs for major asset replacement/upgrades

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# 2020 Plan Takeaways

- More than one pathway for the District to consider in the future
- All pathways deliver benefits and value to the District
- All pathways are focused on addressing aging infrastructure needs
  - Costs are to address needs, not wants
- Staff held an owner community meeting at the Commission's direction

		Scenario			
		Enhanced Baseline	Maximize Renewable Energy Production	Energy Grid Resilience	Reduce Infrastructure Complexity
Comparison Criteria	Reliability Improved	Yes	Yes	Yes	Yes
	Renewable Energy Generation	More	More	More	More
	GHG Emissions	Reduced	Reduced	Reduced	Reduced
	Infrastructure Impact	Similar	More	Similar	Less
	20 Year Life Cycle Cost	\$ 83-93 M	\$ 119-134 M	\$ 90-103 M	\$ 67-87 M
	Electricity Provider	MMSD & Utility	MMSD & Utility	MMSD	Utility
Recommended for further evaluation		Yes	No	No	Yes

Notes:

(1)  Benefit relative to baseline condition.

(2)  Drawback relative to baseline condition.



# 2020 Plan Next Steps

- Continue to utilize principles from the 2014 Roadmap during the normal course of business
- Conduct facility planning to further evaluate recommended pathways
- Select path forward and then initiate design and construction projects
- The Commission will be involved in major milestones



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# Action: Accept the 2020 Energy Management Master Plan

- Allows project to be formally completed
- Acceptance does not commit the District to a particular strategy, set of outcomes, or policy



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# Questions?

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