

# Authorization of Increased Total Project Cost- Generator Control Panel Upgrades February 11, 2021



Madison Metropolitan Sewerage District

# Engines at the District

- Engine Blower
  - Provides aeration for the east side of the plant
- Engine Generators 1 and 2
  - Provide up to 10,800 kWh each per day
  - Use ~145,000 cubic feet of biogas each per day
  - Save the district nearly \$1,000 per day each in energy cost
- Produce less GHG emissions than flaring



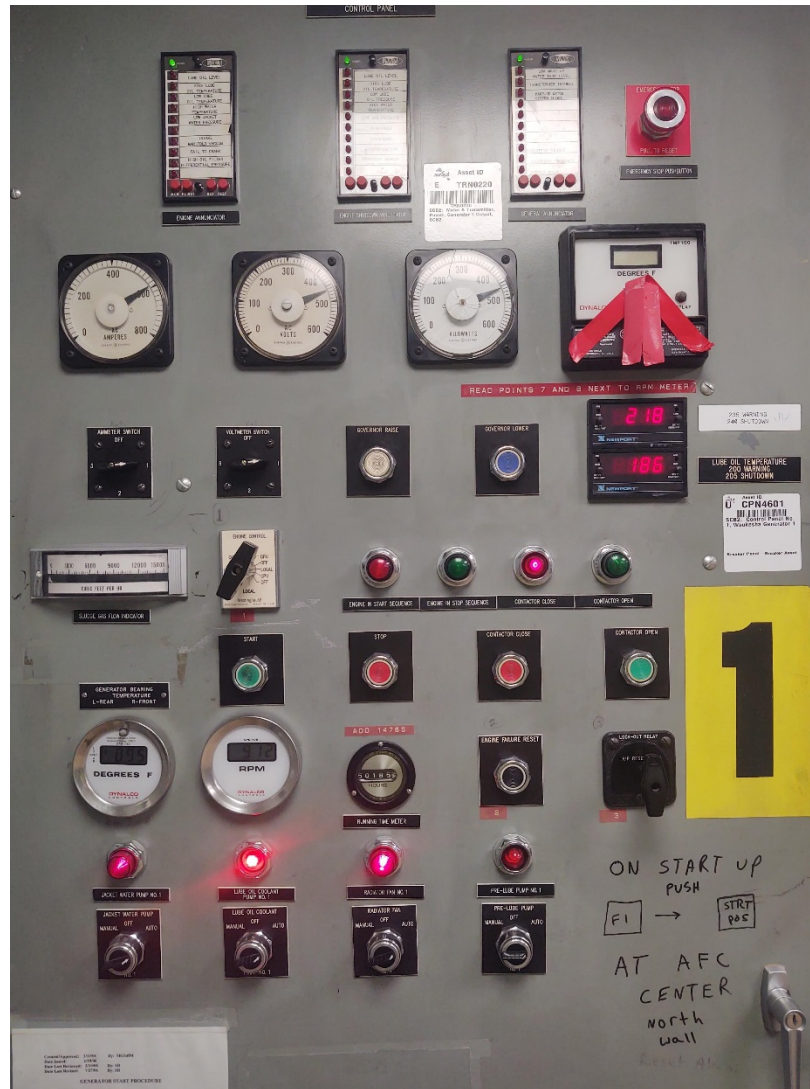
# Current Generator Controls

- Control panels were installed in 1991.
- Relay based system is old technology.
- Safety concerns with high voltage wiring in panel.

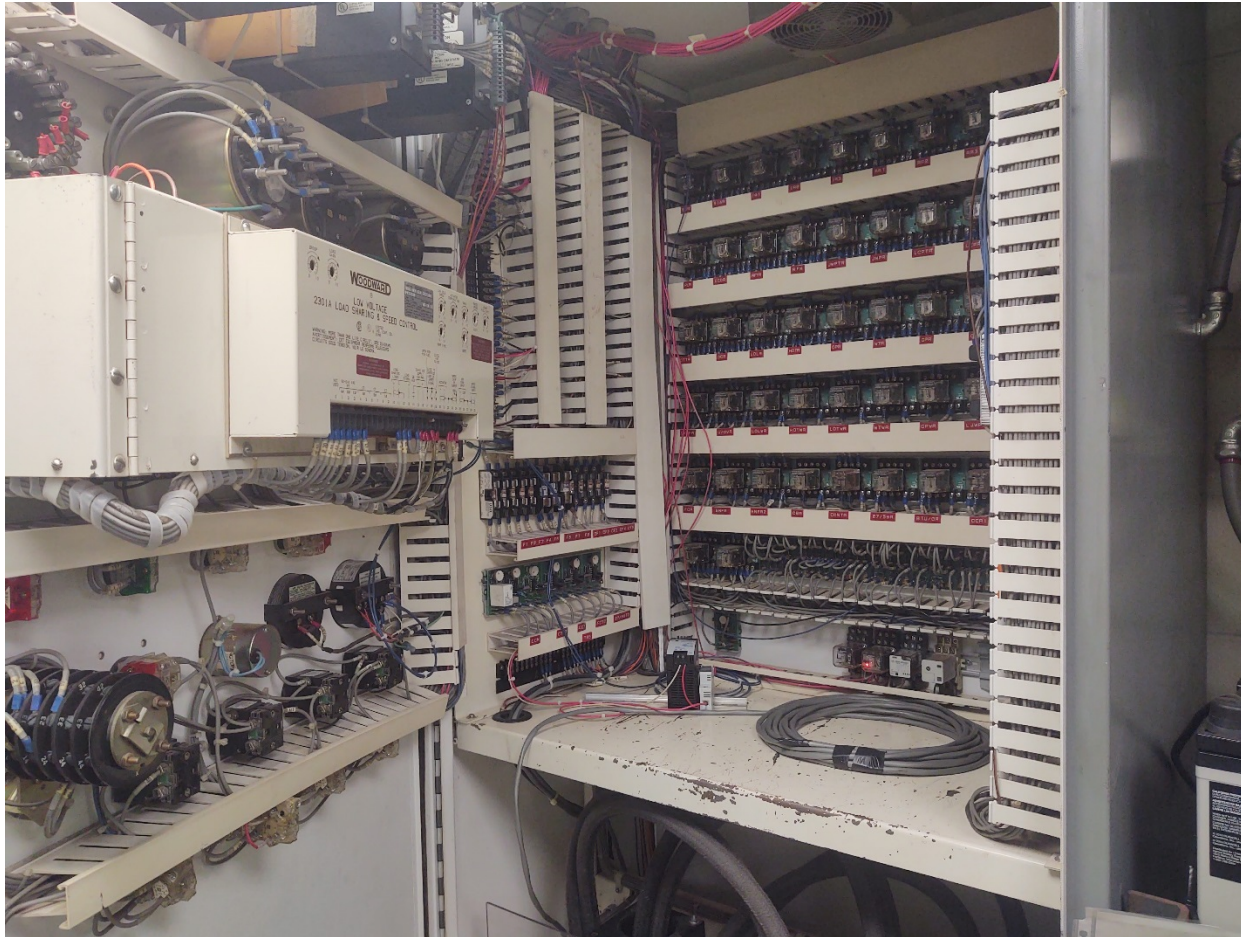




# Current Generator Controls

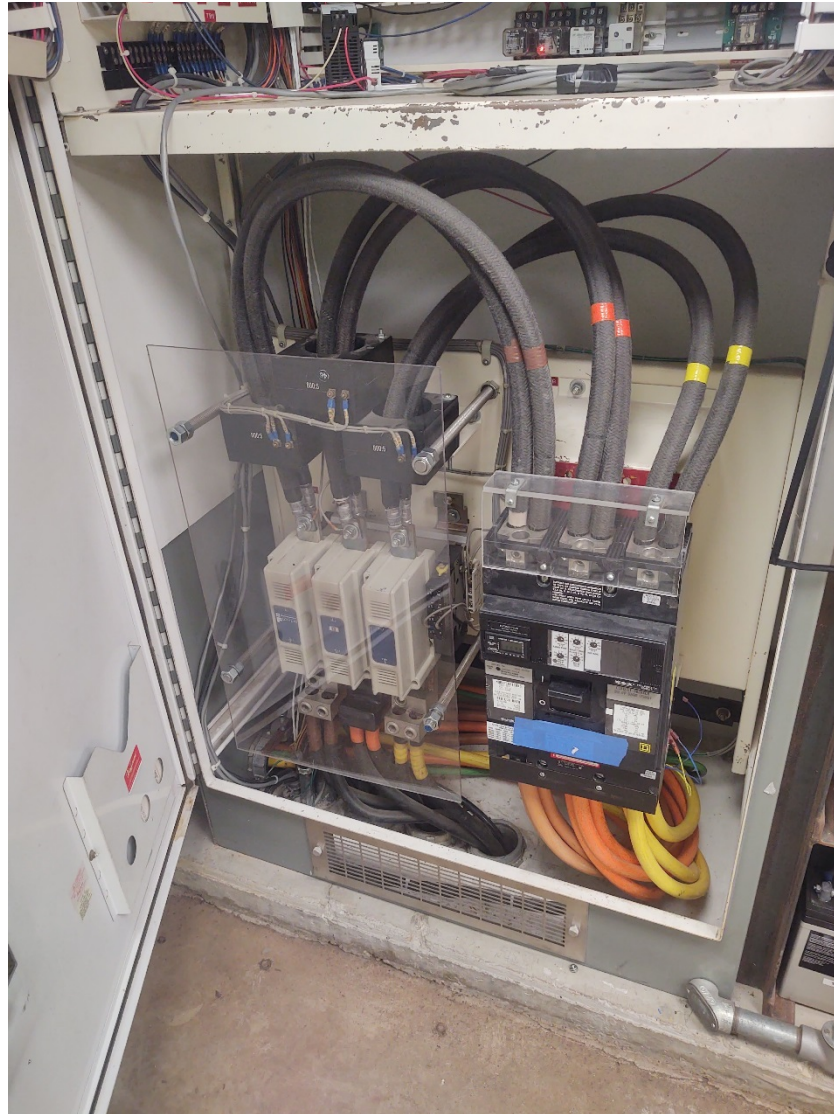


# Current Generator Controls





# Current Generator Controls



# Original Project Scope from CIP

- Replace relay based controls with PLC for three engines.
- Move high voltage wiring and breaker to a dedicated panel.



# Original Project Scope





# Revised Project Scope

- MMSD Staff Recommendations
  - Remove engine blower from project.
- Strand Recommendations (engine generators)
  - Replace control wiring and sensors.
  - Replace engine ignition and governor system
  - Replace air/fuel management system and valves



# Revised Project Scope



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# Revised Project Scope

- Benefits of increase scope
  - Better monitoring, control and diagnostics
  - Increased reliability with new components
  - Increased gas utilization and efficiency
  - Flexibility with future engines





# Cost Comparison

Comparative Summary-Generator Control Panel Upgrades			
Original Business Case	Estimated Cost	Revised Project Scope	Estimated Cost
Control Panel Replacement (3 Engines)	\$ 216,000	Control Panel and Component Replacement (2 Engines)	\$ 482,000
		Wiring Upgrades	\$ 61,000
Engineering and Project Management	\$ 54,000	Contingency (15%)	\$ 81,450
		Engineering and Project Management	\$ 52,500
Total	\$ 270,000	Total	\$ 676,950
Total Cost Per Engine	\$ 90,000	Total Cost Per Engine	\$ 338,475



# Recommendation and Next Steps

- Approve resolution 2021-02-11-R3 to increase the total project cost to \$677,000.
- Upon approval, staff will bid the project.



# Questions?



Madison Metropolitan Sewerage District mmst





Thank you!