

Distributed Control Systems Upgrades (Emerson Contract)

Metro TAC

February 19, 2020

Public Utilities Department

WWTD - Distributed Control System Upgrades

General Information

- PUD employs control systems for Wastewater Treatment and Disposal (WWTD) Division's facilities' operation
- The control systems for the WWTD uses a so-called DCS (Distributed Control System) technology. DCS is a computerized control system, typically in industrial settings, where many autonomous controllers are distributed throughout the system to see operational information, open/close valves, turn on/off equipment, etc.
- The DCS was commissioned over twenty (20) years ago and currently is in varying stages of needed upgrades. WWTD has identified a list of priorities for these needed upgrades

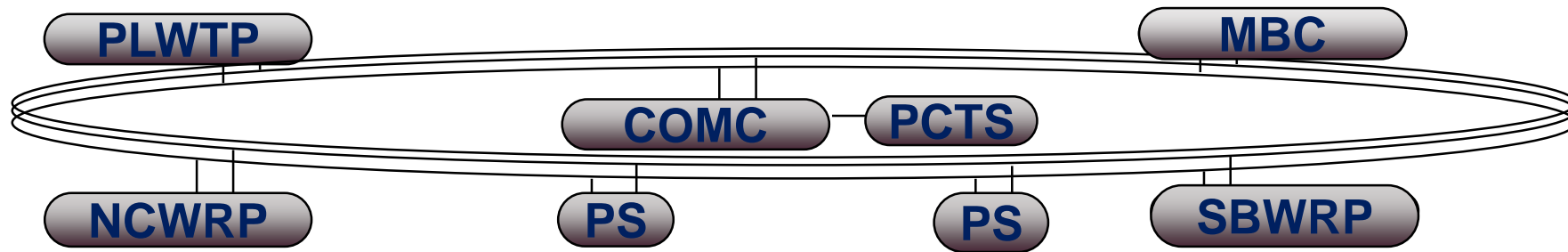
WWTD - Distributed Control System Upgrades

COMNET

- The initial DCS (also referred to as COMNET, for Cleanwater Operations Management Network) was designed, installed and commissioned by Emerson Process Management (formerly Westinghouse Process Control) in the late 1990's as a part of Clean Water Program. This is a proprietary system
- Original implementation and commissioning was approximately for \$120M
- Additional investments made on new facilities, system expansion and upgrades since, bringing the total to date at over \$200M

WWTD - Distributed Control System Upgrades

COMNET



- 4 Wastewater Treatment Facilities
- 8 WWTD Major ("Metro"/"Muni") Pumping Stations
- 45 miles Fiber Optic Cable
- 90 WWCD ("Muni") Pumping Stations Using Spread Spectrum Radios

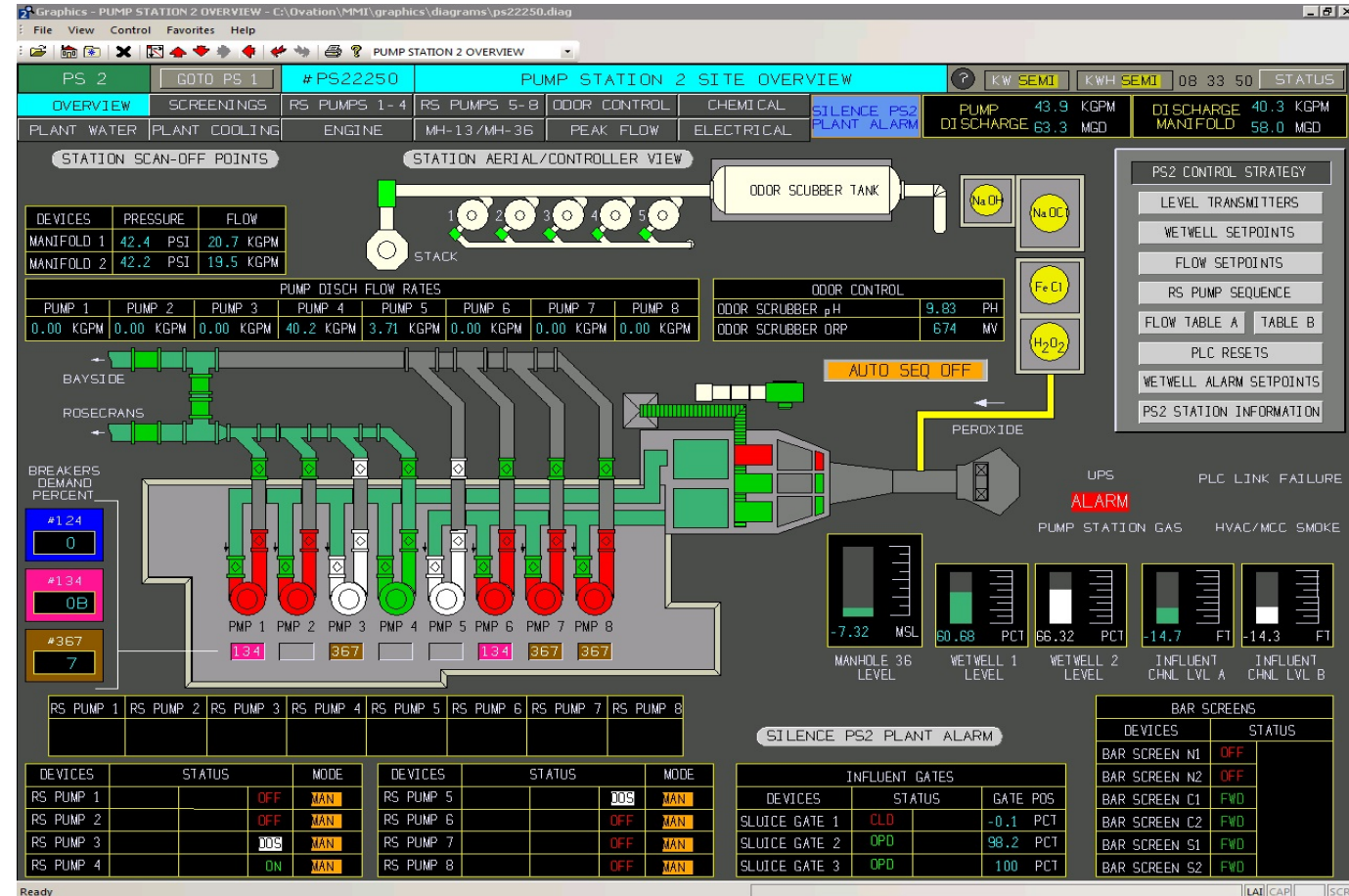
WWTD - Distributed Control System Upgrades

Central Operations Management Center (COMC)



WWTD - Distributed Control System Upgrades

Graphics (Pump Station 2)



WWTD - Distributed Control System Upgrades

- The system is currently in urgent need of upgrades as component failures are occurring at an increasingly alarming rate
- The DCS System Upgrade projects are identified and planned to be implemented by the original DCS manufacturer, Emerson Process Management, as the prime contractor, on a sole source basis, which has already been approved (June 2019)
- A \$30M budget for the next 10 years has been allocated to this endeavor
- This presentation is a part of the 1472 Docket seeking Council's approval for the Emerson contract to initiate the DCS System Upgrade work

WWTD - Distributed Control System Upgrades

- System wide upgrades – wastewater plants and pump stations
- Features to strengthen the DCS physical and cyber security aspects, including intrusion detection capability – all in accordance to recommendations made by the City Auditor
- Improve the 20+year Input/Output and Communications modules
- Upgrades to the network switches and routers
- Improved main servers, controllers and Operator workstations
- Carry out recommended actions from the completed Disaster Recovery Plan

WWTD - Distributed Control System Upgrades

Thank you for your attention!



Questions?

