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Data on Present Facilities:

The first step of a Comprehensive Energy Analysis (CEA) is to survey and document the myriad of electricity and natural gas uses throughout the District. CMS Viron spent months surveying each campus to prepare a comprehensive inventory of the existing equipment, lighting systems, and plug loads. Additionally, the condition and operating characteristics of each component is noted to aid in the evaluation and recommendation of Energy Conservation Measures (ECM's).

This section of the CEA report contains the following information:

- Survey Notes & Photos
- Existing Operational Schedules & Setpoints
- Mechanical Equipment Inventory
- Lighting Fixture Inventory
- Plug Load Inventory
- Current Floor Plans
- Occupancy Schedules

Survey Notes & Photos

College of San Mateo

A central electronic Energy Management System (EMS) exists to provide a single start/stop signal to each of the buildings. The survey found, however, that this signal is overridden at most buildings through the use of a manual Hand-Off-Auto switch left in the Hand position. This causes the equipment to run continuously regardless of the schedule or the time of day. The pneumatic EMS within the buildings provides zone level control with user-adjustable setpoints. There were no identifiable control strategies employed to reset supply air temperature setpoints or the heating hot water loop temperature. The lighting systems operate manually with many unoccupied spaces brightly lit at all times.

Many pieces of air handling equipment were found to have disconnected damper actuators as well as non-functional control valves. Some of the air handling equipment had missing or frayed belts, dirty filters, dirty coils, and bad bearings. The heating hot water pumps show signs of leaking seals and damaged bearings. Many of the wall-mounted unit ventilators were acting as uncontrolled radiators with non-functional control valves and broken fans.

Cañada College

The EMS system at the Cañada College is similar to the one found at CSM but does not incorporate the use of the Hand-Off-Auto switches. The most unusual aspect of the control system is that the air handling systems operate only 30 minutes of every hour, which is a direct violation of the Uniform Building Code for spaces without natural ventilation (i.e., windows). The only identifiable control strategy was an outside air lockout sensor recently installed by CMS Viron on the Building 3 chiller. Just as with CSM, the lighting systems are manually controlled.

The air handling units, pumps, and unit ventilators at Cañada suffer from many of the same maladies of their counterparts at CSM.

Skyline College

The EMS in most buildings is a hybrid of electronic and pneumatic controls providing start/stop control of the major equipment. Building 5 and part of Building 2 are controlled by a new Invensys Direct Digital Control (DDC) system. As with the other two campuses, the only lighting controls are manual wall switches and electrical panel breakers.

The same mix of air handling units, heating hot water pumps, and unit ventilators exist at Skyline as with the other two campuses; but their condition is somewhat worse. Many of the outside air dampers are broken causing large volumes of outside air to be heated and supplied to the buildings despite very cold ambient conditions.

District Headquarters

A pneumatic EMS exists to provide start/stop control of the central equipment. The building is equipped with its own boilers and chillers and is not connected to the central utilities loop at CSM. The cooling tower was recently replaced, but the remainder of the equipment is original to the building.

Survey Photos



Typical College of San Mateo Control Panel



Typical Heating Hot Water Pump



Typical Temporary Duct Repairs



Heat/Vent Unit Without Fan Belts

Existing Operational Schedules & Setpoints

College of San Mateo

Due to the fact that the Hand-Off-Auto switches are currently left in the Hand position, most of the equipment at CSM operates 24 hours a day, seven days a week. CMS Viron's survey team found the user-adjustable thermostats to be set between 64 degrees and 82 degrees. There are no automatic lighting controls.

Cañada College

The central Simplex electronic EMS timeclock allows the equipment to be operated from 6:00 am to 11:00 pm, Monday through Saturday. The central boiler plant operates 24 hours a day, seven days a week. The user-adjustable thermostats were found to be set from 58 degrees to 80 degrees. There are no automatic lighting controls.

Skyline College

The central Honeywell electronic EMS timeclock allows the equipment to be operated from 6:00 am to 11:00 pm, Monday through Saturday. The central boiler plant operates 24 hours a day, seven days a week. The user-adjustable thermostats were found to be set from 61 degrees to 83 degrees. There are no automatic lighting controls.

District Headquarters

The local timeclock control allows the mechanical equipment to operate from 6:00 am to 7:00 pm, Monday through Friday. The user-adjustable thermostat setpoints ranged from 57 degrees to 77 degrees. There are no automatic lighting controls.

Inventory Data & Plans

The following pages contain the Mechanical Equipment Inventory, the Lighting Fixture Inventory, the Plug Load Inventory, and the current Floor Plans.