

## Trending Requirements for Re-Tuning Project

Battelle will provide guidance and technical support over the phone in establishing the trends for both the training building as well as the other buildings the service providers re-tune on their own. Although trending requirements will be based on the type of the HVAC systems installed in the building, in the following section we provide guidance for some specific HVAC systems that are commonly found in large commercial buildings in the Pacific Northwest.

The following guidance is for buildings with variable air volume (VAV) systems and a central plant with chiller/boiler.

**For the VAV system, the following data points must be trended at 30-minute intervals for a two week period for each of the air-handling unit (AHU):**

1. Outside air temperature
2. Mixed air temperature
3. Return air temperature
4. Discharge air temperature
5. Discharge static pressure
6. Mixed air damper position
7. Fan status
8. Fan speed or vortex damper position
9. Cooling coil valve position
10. Heating coil valve position
11. Occupancy mode of the AHU

Following are the guidelines for trending VAV systems:

1. If there are fewer than 6 AHUs in the building, we recommend that all AHUs be trended.
2. If the building is less than 4-stories tall, pick at least one AHU from each floor.
3. If the building is 20-story tall, trend all AHUs if there are few than 6. If there are more than 6 AHUs, trend one AHU on every other floor (maximum of 10 AHUs trended).
4. Our recommendation is not to pick the AHU that is operating the “best.” We recommended that the AHU be picked randomly for monitoring.

**Trend the following points in the zone:**

1. Zone temperature
2. VAV box damper position
3. Reheat valve position (if supply air is reheated at the zone)
4. Occupancy mode (occupied/unoccupied)

Following are the guidelines for trending zone VAV boxes:

1. If there are fewer than 8 zones per floor trend all zones on the floor.

2. For each floor, trend at least one zone on each of the four directions (north, south, east and west) and at least four zones in core. So, we will need at least 8 VAV boxes trended per floor.
3. If the building is less than 4-stories tall, trend 8 zones on every floor.
4. If the building is 20-story tall, trend all 8 zones on every other floor (maximum of 80 VAV boxes to trend).

**For the physical plant, trend the following points at 30-minute intervals for a 2-week period:**

1. Chilled-water supply temperature
2. Chilled-water return temperature
3. Hot-water supply temperature
4. Hot-water return temperature
5. Condenser supply temperature
6. Condenser return temperature
7. Each chiller load (current)
8. Each pump status (if there are multiple pumps record all of them)
9. Each chiller status (if chiller load is recorded this point may not be needed)

**If whole building electric consumption is monitored using the energy management and control system, trend the consumption at 5-minute intervals for a two-week period:**

1. Whole building electrical consumption (either average kW or kWh).