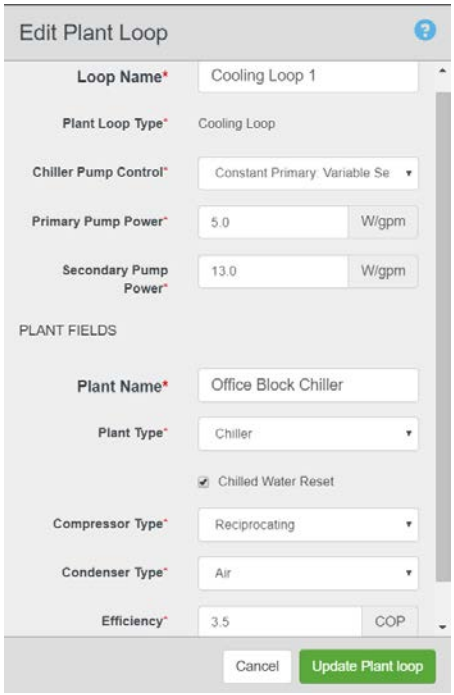
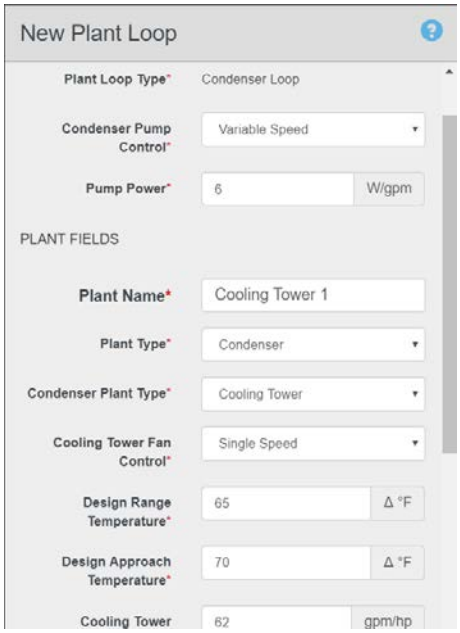
Washington State

TSPR Technical Terms

HVAC Systems

A series of HVAC system parameters required to generate a TSPR are listed alphabetically below, along with definitions and/or input guidance and the data entry screen where they appear in the tool.





Chilled Water Reset – Check box: Should be checked if automatic chilled water supply temperature setpoint controls are installed and in use. The chilled water reset (CHW) works by raising the chilled water temperature during periods of low cooling loads thus improving chiller operational efficiency. (Plant Loops – Cooling*)*

Cooling Tower Design Approach Temperature – This numeric field specifies the tower approach temperature (˚F) at design conditions. It is defined as the outlet water temperature minus the inlet air wet-bulb temperature. (Plant Loops – Condenser*)*

Cooling Tower Design Range Temperature – This numeric field specifies the range temperature (˚F) at design conditions. It is defined as the inlet water temperature minus the outlet water temperature. (Plant Loops – Condenser)*)*

Cooling Tower Efficiency – Efficiency of a cooling tower expressed in gallons per minute (gpm) of condenser water flow per fan motor horsepower (hp). (Plant Loops – Condenser*)*

DOAS Supply Air Temperature – The supply air temperature (SAT) setpoint if the DOAS includes supplemental heating or cooling or if it has an energy recovery ventilation system which includes supply air temperature control. (Air Handlers – Fan Systems)

Demand Control Ventilation – Box should be checked if a demand control ventilation control (DCV) system is installed and in use. Selecting DCV indicates that the air handler or DOAS is capable of varying the amount of outdoor air provided through a system, based on actual number of occupants in spaces. When an AHU with DCV control is assigned to a block, an additional user input is displayed for '% area of block with DCV control'. Through this a user can specify the portion of the block that has DCV control. (Air Handlers – Fan Systems*)*

Energy Recovery Ventilation – Box should be checked if an energy recovery ventilation (ERV) system is installed and in use. Selecting 'ERV' enables a sensible and latent air-to-air heat exchanger for exhaust air heat recovery. If enabled, the heat exchanger efficiency is required to be specified in the sensible and latent effectiveness fields displayed. (Air Handlers – Fan Systems*)*

ERV Sensible Effectiveness – The sensible exchange effectiveness at AHRI 1060 test conditions with balanced supply and exhaust airflow. This input field available when ERV is checked. (Air Handlers – Fan Systems*)*

ERV Economizer Bypass Control – This input denotes whether the heat exchanger unit is locked out (bypassed for plate type heat exchangers) when the airside economizer is operating. This input is used to optimize the use of heat recovery by disabling the heat recovery any time the controller determines that the economizer is active. Select if this control is present and in use. Input field available when ERV is checked. (Air Handlers – Fan Systems*)*

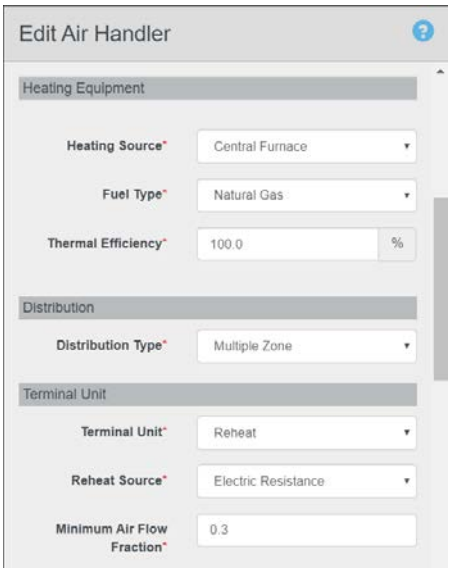
ERV Latent Effectiveness – The latent exchange effectiveness at the AHRI 1060 test conditions with balanced supply and exhaust airflow. This value can be specified as 0.0 if the heat exchanger does not transfer latent energy. Input field available when ERV is checked. (Air Handlers – Fan Systems*)*

Washington State

TSPR Technical Terms

HVAC Systems

ERV Supply Temperature Control – Used to control the discharge temperature of the ERV to avoid overheating by reducing the wheel speed or by bypassing the supply air around the plate to maintain the desired setpoint. Select if this control is present and in use. Checkbox available when ERV is checked. (Air Handlers – Fan Systems*)*

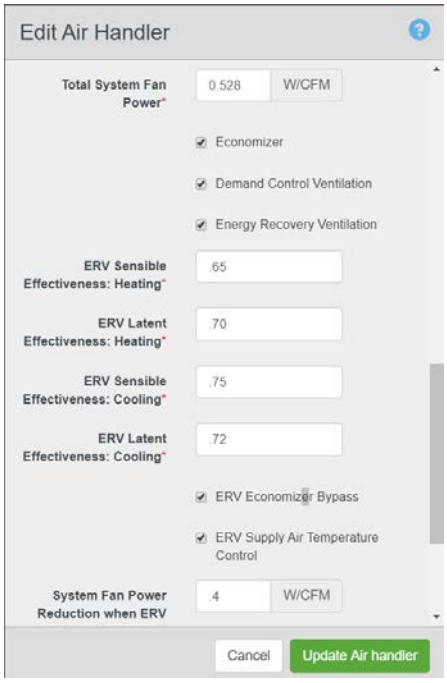


Fan Static Pressure Reset – Check box: Menu item available if the Distribution Type selected is 'Multiple Zone'. Static pressure reset works by changing the static pressure set point whenever possible based on the zone cooling demand; thereby reducing the air flow resistance that the AHU supply fans must overcome and hence reducing the fan energy consumption. Select if systems with static pressure reset controls are installed and in use. (Air Handlers – Fan Systems*)*

Minimum Air Flow Fraction – Menu item available if "multiple zone" is selected as a Distribution Type (except DOAS) and Reheat is selected as the Terminal Unit. Enter the minimum flow rate to the zone while the system is operating, specified as a fraction of the design air flow rate. The minimum zone fraction is normally specified to meet the minimum ventilation requirement for the occupants. (Air Handlers – Distribution*)*

Parallel Powered Induction Units – Terminal Unit menu item available if "multiple zone" is selected as a Distribution Type (except DOAS). Select if parallel powered induction units are installed and in use. These are air system terminal units that mix varying amounts of secondary (recirculated) air and primary (conditioned supply) air to produce a variable total flow of air to a zone. The fan sits in the secondary air stream and runs only when the primary air flow is below a minimum flow fraction (assumed as 0.3 for TSPR). (Air Handlers – Distribution*)*

Pump Power – Specified using the power-per-unit-flow method (W/gpm). This is defined as the electric power of the pump divided by the flow at design conditions. (Plant Loops – Heating, Cooling, Condenser*)*



Series Powered Induction Units – Terminal Unit menu item available if "multiple zone" is selected as a Distribution Type (except DOAS). Select if series powered induction units are installed and in use. These are air system terminal units that mix varying amounts of secondary (recirculated) air and primary (conditioned supply) air to produce a fixed flow of air to a zone. The fan runs at a constant volume flow rate whenever the unit is on (and the fan's availability schedule is on or it is activated by an availability manager). The fan is downstream of the primary and secondary air inlets. (Air Handlers – Distribution*)*

Supply Air Temperature (SAT) Reset – Pull-down menu item available if the Distribution Type selected is 'Multiple Zone'. SAT reset works by automatically changing the supply air temperature setpoint to better meet the zone heating and cooling loads. The setpoint is reset based on either outside air temperature or the cooling demand of the warmest zone. Select OAT (Outside Air Temperature) or Warmest Zone if SAT controls are present or select none if no SAT reset is applied. (Air Handlers – Fan Systems*)*

System Fan Power Reduction when ERV Bypassed – Enter a value in W/CFM to specify the reduction in fan power due to the reduction in pressure when the air bypasses the ERV. Input field available when 'ERV' is checked and when 'ERV Supply Temperature Control' is checked. (Air Handlers – Fan Systems*)*

Total System Fan Power – Enter the value of electric power for all fans (supply, return, relief, exhaust) required to operate at fan system design conditions, divided by the design supply airflow rate (W/CFM). (Air Handlers and Zone Equipment – Fan Systems*)*