



# Oregon Energy Efficiency Specialty Code

## Mechanical Compliance Certificate

### Plant Heating: Hot Water and Steam



Developed with  
COMcheck Software  
Version 3.8.0

#### Department of Consumer and Business Services Building Codes Division

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SECTION 1: PROJECT INFORMATION	
Project type: New construction <input type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> (check only one)	
Project title:	

Construction site					
Address:		City:		State:	OR ZIP:
Permit number:		Permit date:			

Owner/agent					
First and last name:					
Company:					
Address:		City:		State:	ZIP:
Phone number:		E-mail:			

Designer/contractor					
First and last name:					
Company:					
Address:		City:		State:	ZIP:
Phone number:		E-mail:			



**SECTION 2: GENERAL INFORMATION**

Building type: \_\_\_\_\_

Floor area sq. ft.: \_\_\_\_\_

**Plant type**

	Fuel type	Quantity	Capacity kBtu/h	Proposed efficiency	Minimum efficiency	Units
<b>Heating hot water</b>	<b>Gas</b>					
	<b>Oil</b>					
	<b>Residual oil</b>					

**Check one:**  
 Water loop heat pump system   
 Two-pipe changeover system   
 Both of the above

		Quantity	Capacity kBtu/h	Proposed efficiency	Minimum efficiency	Units
<b>Steam</b>	<b>Gas</b>					
	<b>Oil</b>					
	<b>Residual oil</b>					

**Check one:**  
 Water loop heat pump system   
 Two-pipe changeover system   
 Both of the above

See Table 503.2.3(5)

(print additional pages if necessary)

**SECTION 3: REQUIREMENTS CHECKLIST**

**Requirements specific to: Plant 1**

- [503.2.3]** Newly purchased heating equipment meets the heating efficiency requirements.
- [503.4.1]** Supply air economizers are provided on each cooling system and are capable of providing 100 percent outdoor air, even if additional mechanical cooling is required to meet the cooling load of the building.

*Exceptions:*

- o *Systems utilizing water economizers that are capable of cooling supply air by direct or indirect evaporation or both and providing 100 percent of the expected system cooling load at outside air temperatures of 50 degrees F dry bulb/45 degrees F wet bulb and below*
- o *Cooling equipment less than 54,000 Btu/hour total cooling capacity. The total capacity of all such units without economizers shall no exceed 240,000 Btu/hr. per building area serviced by one utility meter or service, or 10 percent of its total installed cooling capacity, whichever is greater*
- o *Ground-coupled heat pumps with cooling capacity of 54,000 Btu/hour or less*
- o *Systems where internal/external zone heat recovery is used*
- o *Systems used to cool any dedicated computer server room, electronic equipment room or telecom switch room having a water economizer system capable of cooling air by direct and/or indirect evaporation and providing 100 percent of the expected systems cooling load at outside air temperatures of 45 degrees F dry bulb and 40 degrees F web bulb and below*
- o *Systems using condenser heat recovery, up to the cooling capacity used to provide condenser heat recovery*

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_

\_\_\_\_\_

- [503.4.2] Variable air volume fan control.** Individual VAV fans with motors of 10 horsepower or greater are driven/controlled in the manner specified by this section.

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- [503.4.3] Hydronic systems controls.** The heating of fluids that have been previously mechanically cooled and the cooling of fluids that have been previously mechanically heated are limited in accordance with Sections 503.4.3.1 through 503.4.3.3.

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- [503.4.3.1] Three-pipe system.** Hydronic systems that use a common return system for both hot water and chilled water are not installed.

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- [503.4.3.2] Two-pipe changeover system.** Systems that use a common distribution system to supply both heated and chilled water are designed to allow a dead band between changeover from one mode to the other; are provided with controls that will allow operation in one mode for at least four hours before changing over to the other mode; and are provided with controls that allow heating and cooling supply temperatures at the changeover point.

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- [503.4.3.3] Hydronic (water loop) heat pump systems.** Hydronic heat pump systems comply with Sections 503.4.3.3.1 through 503.4.3.3.3.

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**[503.4.3.3.1] Temperature dead band.** Hydronic heat pumps connected to a common heat pump water loop with central devices for heat rejection and heat addition have controls that are capable of providing a heat pump water supply temperature dead band of at least 20 degrees F between initiation of heat rejection and heat addition by the central devices.

*Exception:*

- Where a system loop temperature optimization controller is installed and can determine the most efficient operating temperature based on real-time conditions of demand and capacity, dead bands of less than 20 degrees F shall be permitted*

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- ❑ **[503.4.3.6] Heating and cooling water pump control.** Water circulation systems serving heating coil(s) or cooling coil(s) have controls that lock out pump operation when there is no demand. The pumps will shut off based on the outside air lock out temperatures.

*Exception:*

- *Industrial process and humidity control process*

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_

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### Generic requirements:

Must be met by all systems to which the requirement is applicable:

- ❑ **[503.2.3] HVAC equipment performance requirements.** Reported efficiencies have been tested and rated in accordance with the applicable test procedure. The efficiency has been verified through certification under an approved certification program or, if no certification program exists, the equipment efficiency ratings are supported by data furnished by the manufacturer.

- ❑ **[503.2.4.2] Set point overlap restriction.** Where used to control both heating and cooling, zone thermostatic controls provide a temperature range or deadband of at least 5 degrees F (2.8 degrees C) within which the supply of heating and cooling energy to the zone is capable of being shut off or reduced to a minimum.

*Exception:*

- *Thermostats requiring manual change over between heating and cooling modes*

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_

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- ❑ **[503.2.4.3] Optimum start controls.** Each HVAC system has controls that vary the start-up time of the system to just meet the temperature set point at time of occupancy.

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_

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- ❑ **[503.2.4.4] Off-hour controls.** Each zone is provided with thermostatic setback controls that are controlled by either an automatic time clock or programmable control system.

*Exceptions:*

- *Zones that will be operated continuously*
- *Zones with a full HVAC load demand not exceeding 6,800 Btu/hour (2 kW) and having a readily accessible manual shutoff switch*

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_

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- ❑ **[503.2.8] Piping insulation.** All pipes serving space-conditioning systems (hot water piping for heat systems, chilled water, refrigerant, and brine systems, and steam piping) are insulated as specified by this section.

*Exception:*

- *Pipe insulation is not required for runout piping not exceeding four feet in length and one inch in diameter between the control valve and HVAC coil*

- ❑ **[503.2.9.3] Manuals.** The construction documents require that an operating and maintenance manual be provided to the building owner by the mechanical contractor. See long description for specifications.

Location in plans/specs where compliance can be identified (enter NA if not applicable): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

#### SECTION 4: COMPLIANCE STATEMENT

**Compliance statement:** The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the Oregon Energy Efficiency Specialty Code requirements in COMcheck Version 3.8.0 and to comply with the mandatory requirements in the requirements checklist.

\_\_\_\_\_  
Name – Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Project notes:**

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