

SYSTEMS - GENERAL**Part 1 of 6****Applicability**

Discussion of qualifying exceptions on page 4-25

Plans/Specs

Show compliance by including a drawing sheet, detail number, specification section and subparagraph.

1. Applicability (Section 1317)

Is this form required?

- Form Required.** Complete form if a new HVAC system is being installed, or components of an existing HVAC system are being replaced (i.e., equipment, controls, ductwork, and insulation.)

- Exception.** The building or part of the building qualifies for an exception from HVAC code requirements. Applicable code exception is Section 1317.1. Portions of the building that qualify:

Area: Exception -1 -2 -3

Area: Exception -1 -2 -3

Area: Exception -1 -2 -3

- Form Not Required.** This project does not contain work required to comply with code.

2. Simple or Complex Systems (Section 1317.9 or 1317.10)

- Simple System.** Building contains only Simple HVAC System(s). Complete this form (4a) and equipment efficiency worksheets as required. Form 4b is not required.
- Complex System.** Project includes a Complex System. Complete this form (4a), form 4b and equipment efficiency worksheets as required.

3. Equipment Performance (Section 1317.5)

- No New HVAC Equipment.** The building plans do not call for new electrical HVAC equipment, combustion heating equipment, or heat-operated cooling equipment.
- Complies.** All new HVAC equipment have efficiencies not less than those required by code. The following equipment efficiency worksheets are attached:
- 4a -4b -4c -4d -4e -4f -4g -4h -4i -4j

4. Duct Insulation and Sealing (Sections 1317.7 & 1317.8)

- No Ducts.** The building plans and specifications do not call for new HVAC ducts or plenums.
- Complies.** The plans and specifications call for all air-handling ducts and plenums to be insulated and sealed as required by Sections 1317.7 & 1317.8.

5. Distribution Transformers (Section 1316.1)

- No Distribution Transformers.** The plans/specs do not call for new distribution transformers.
- Complies.** All new distribution transformers comply with efficiency, testing, and labeling requirements of Section 1316.1.1.
- Exception.** The project qualifies for an exception per Section 1316.1.1, Exception:

-1 -2 -3 -4 -5 -6 -7 -8 -9 -10 -11 -12 -13 -14

Attach relevant documentation for appropriate exception. The plans/specs show compliance in the following locations:



SYSTEMS - GENERAL

Part 2 of 6

6. HVAC Controls (Section 1317.4)

6.1 System Thermostat/Zone Controls (Section 1317.4.1)

- Complies.** All new HVAC systems include at least one temperature control device responding to temperatures within the zones.
- Exception.** HVAC system qualifies for an exception from zone control requirements.
The applicable code exception is Section 1317.4.2, Exception -1 -2

Portions of the building that qualify:

The plans/specs show compliance in the following locations:

6.2 Off-hour Controls - Auto Setback or Shutdown (Section 1317.4.3)

- Complies.** Systems must have at least one of the following features:
- Control Setback Complies.** Each system is equipped with automatic control capable of reducing energy through control setback during periods of non-use or alternate use of spaces
- Equipment Shutdown Complies.** Each system is equipped with controls capable of reducing energy use through automatic shutdown during periods of non-use or alternate use of spaces.
 - HVAC systems with equipment shutdown are equipped with at least one of the following:
 - Programmable controls (1317.4.3.1 (1))
 - Occupant sensor (1317.4.3.1 (2))
 - Interlocked to a security system (1317.4.3.1 (3))
 - Manually activated timers with 2-hour operation max (1317.4.3.1 (4))
- Exception.** The building qualifies for an exception to the requirement for automatic setback or shutdown controls. The applicable code exception is Section 1317.4.3 Exception -1 -2

The plans/specs show compliance in the following locations:

6.3 Control Capabilities (Sec. 1317.4.2.1)

- Complies.** Zone thermostats are capable of being set to the temperatures described in Sec. 1317.4.2.1. Where used to control both heating and cooling, zone controls shall be capable of providing a temperature range or deadband of at least 5 degrees F within which the supply of heating and cooling energy to the zone is shut off or reduced to a minimum.
- Exception.** The building qualifies for an exception to the deadband requirements.
The applicable code exception is Section 1317.4.2.1 Exception -1 -2

Portions of the building that qualify:

The plans/specs show compliance in the following locations:

6.4 Optimum Start Controls (Section 1317.4.3.2)

- Complies.** Separate HVAC systems have controls capable of varying start-up time of system to just meet temperature set point at time of occupancy.
- Exception.** HVAC systems have a design supply air capacity not exceeding 10,000 cfm.
The plans/specs show compliance in the following locations:

6.5 Heat Pump Controls (Section 1317.4.4)

- No Heat Pump.** The plans/specs do not call for a new heat pump
- Complies.** All new heat pumps equipped with supplementary heaters are controlled to minimize the use of supplemental heat as defined in Section 1317.4.4.
The plans/specs show compliance in the following locations:



SYSTEMS - GENERAL

Part 3 of 6

7. Economizer Cooling (Section 1317.3)

- No Cooling.** The building plans do not call for a new fan system with mechanical cooling.
- Complies.** Each new fan system has an air economizer capable of modulating outside-air and return-air dampers to provide up to 100 percent of the design supply air as outside air.
- Exception** At least one new fan system qualifies for an exception. The applicable code exception is Section 1317.3, Exception -1 -2 -3 -4 -5 -6 -7

If Exception 3 is selected complete the following:

(a) Total cooling capacity of exempt units (Btu/hr)

(b) Total installed building cooling capacity (Btu/hr)

- Complies.** Sum of exempt units rated at less than 54,000 Btu/hr is <240,000 or a/b < 0.10 (10% of total building cooling capacity).

Unit Identifier of exempt units:

The plans/specs show compliance in the following locations:

8. Economizer Pressure Relief & Integration (Section 1317.3.1 and 1317.3.2)

- No Economizers Required.** Project does not contain a new fan system requiring economizers.
- Overpressurization Complies.** The drawings specifically identify a pressure relief mechanism for each fan system that will relieve the extra air introduced by the economizer.
- Integration Complies.** Economizer is capable of providing partial cooling even when additional mechanical cooling is required to meet the remainder of the cooling load.
- Exception.** The applicable exception is Section 1317.3.2, Exception -1 -2

The plans/specs show compliance in the following locations:

9. Hot Gas Bypass (Section 1317.5)

- No Hot Gas Bypass**
- Complies.** See allowable amount of hot gas bypass as a percentage of total cooling capacity in table below.

Unit ID	Rated Cooling Capacity	Hot Gas Bypass Capacity



Allowable Hot Gas Bypass	
Rated Cooling Capacity	Max Hot Gas Bypass
≤240,000 Btu/hr	50%
>240,000 Btu/hr	25%

- Exception.** Unitary packaged system with cooling capacity no greater than 90,000 Btu/h

SYSTEMS - GENERAL

Part 4 of 6

10. Shutoff Dampers (1317.4.3.3)

- Not Required.** Shutoff dampers are not required on this project.
- Complies.** Each outdoor air supply & exhaust system shall be equipped with motorized dampers
- Exception.** The building qualifies for an exception to the motorized damper requirement. The applicable code exception is Section 1317.4.3.3 Exception -1 -2 -3 -4 -5

The plans/specs show compliance in the following locations:

10.1. Shutoff Damper Controls (Section 1317.4.3.3.1)

- Complies.** Outdoor air supply and exhaust systems shall be provided dampers that automatically shut when systems or spaces served are not in use or during building warm-up, cooldown, or setback.
- Complies.** Stair and shaft vents are capable of being automatically closed during normal building operation and interlocked to open as required by fire and smoke detection systems.

The plans/specs show compliance in the following locations:

10.2. Motorized Damper Leakage (1317.4.3.3.2)

- Complies.** Motorized outdoor air supply and exhaust air dampers have a maximum leakage rate of 4 cfm/ft² at 1.0 in w.g. when tested in accordance with AMCA Standard 500-1998.
- Exception.** Packaged HVAC equipment may have maximum leakage rate of 20 cfm/ft² at 1.0 in w.g. when tested in accordance with AMCA Standard 500-1998.

The plans/specs show compliance in the following locations:

11. Piping Insulation (Section 1314)

- No New Piping.** The building plans and specifications do not call for new piping serving a heating or cooling system or part of a circulating service water heating system.
- Complies.** All new piping serving a heating or cooling system or part of a circulating service water heating system complies with the requirements of the Code, Section 1314.1.
- Exception.** New piping qualifies for exception: Section 1314.1, Exception -1 -2



12. Occupancy Ventilation

- Complies.** Mechanical ventilation systems provide the required amount of ventilation specified in Chapter 4 of the Oregon Mechanical Specialty Code.
- Complies.** Natural ventilation systems provide required amount of ventilation as certified by a registered architect or engineer as specified by Section 1203.4.1, Exception. Attach worksheet

The plans/specs show compliance in the following locations:

The plans/specs show compliance on the following pages:

SYSTEMS - GENERAL

Part 5 of 6

13. High Occupancy Ventilation (Section 1317.2.2)

- Complies.** HVAC systems with ventilation air capacities of 1,500 CFM or greater that serve areas having an average occupant load of 20 square feet per person or less from Table 1004.1.2 have a means to automatically reduce outside air intake.

Identify applicable systems:

Plans/specs indicate where equipment (i.e. carbon dioxide sensor) and sequence is specified:

- Exception.** HVAC systems are equipped with an energy recovery device with at least 50% recovery effectiveness.
- No High Occupancy Systems.** Project does not contain an HVAC system as described above.

14. Exhaust Air Heat Recovery (Section 1318.3)

- Not Regulated.** HVAC system does not have: 1) design supply air cap. of $\geq 10,000$ cfm, **and** 2) min. outside air supply $\geq 70\%$, **and** 3) at least 1 exhaust fan rated at 75% of min outside air
- Complies.** Heat recovery system increases outside air temperature by 20°F (Climate Zone 1) or 30°F (Zone 2) and has provision to provide bypass during air economizer mode.
- Exception.** An HVAC system qualifies for an exception to this requirement. Applicable exception from Section 1318.3 Exception -1 -2 -3 -4 -5 -6 -7
The plans/specs show compliance in the following locations:

15. Large Volume Fan Systems (Section 1318.4.2.4)

- Not Regulated.** The building plans or specifications do not call for fan systems over 15,000 CFM that serve a single zone and function for the purpose of temperature control.
- Complies.** Fan systems are equipped with variable frequency drive or two speed motor to reduce airflow as required by Section 1318.4.2.3.
The plans/specs show compliance in the following locations:

16. Variable Speed Drives (Section 1317.10.3.1)

- Not Regulated.** The building plans or specifications do not call for fan and pump motors 10 horsepower and greater that serve variable-flow air or liquid systems.
- Complies.** All fan and pump motors 10 hp and greater which serve variable-flow air or liquid systems are controlled by a variable-speed drive.
- Exception.** The building qualifies for an exception to the variable-speed drive requirement.

Portions of the building that qualify:

Applicable code exception is Section 1317.10.3.1, Exception

The plans/specs show compliance in the following locations:

17. Service Water Heating (Sec. 1315)

- No New Water Heating.** The building plans and specifications do not call for new water heaters, hot water storage tanks or service hot water distribution systems.
- Complies.** All new water heaters, hot water storage tanks or service hot water distribution systems comply with the requirements of the Section 1315.
- Exception.** The applicable code exception is Section: Exception:

Portions of the building that qualify:

The plans/specs show compliance in the following locations:



SYSTEMS - GENERAL**Part 6 of 6****18. Swimming Pools, Spas and Hot Tubs (Section 1315.5)**

- No New Pools.** The building plans and specifications do not call for new, swimming pools, spas or hot tubs.
- On/Off Controls Complies.** Spa and hot tub heaters are equipped with a readily accessible ON/OFF switch as required by Section 1315.5.1.
- Ventilation Controls Complies.** Pool ventilation system is controlled based on humidity.
- Cover Complies.** All heated pools, hot tubs and spas are equipped with a cover.
- Heat Recovery Complies.** Pools, Spas, and hot tubs, over 200 ft² utilize recovered heat as required by Section 1315.5.3.
- Exception.** Heat recovery is not necessary as pool is heated by renewable energy or waste heat recovery sources capable of providing at least 70 percent of the heating energy required over an operating season.

19. Fume Hoods (Section 1317.2.1.)

- No Fume Hoods.** The building plans do not call for fume hood systems that have a total exhaust rate greater than 15,000 cfm.
- Complies.** Fume hood systems have **at least one** of the following features:
- Variable air volume hood exhaust and room supply systems capable of reducing exhaust and makeup air volume to 50% or less of design values.
 - Direct makeup (auxiliary) air supply equal to at least 75% of the exhaust rate, heated no warmer than 2° F below room set point, cooled no cooler than 3° F above room set point, no humidification added, and no simultaneous heating and cooling used for dehumidification control.
 - Heat recovery systems to precondition makeup air from fume hood exhaust in accordance with 1318.3 - Exhaust Air Energy Recovery, without using any exception.

The plans/specs show compliance in the following locations:

20. Parking Garage Ventilation (Section 1317.2.3)

- No Enclosed Garages.** The building plans and specifications do not call for enclosed Group S-2 parking garages with a ventilation exhaust rate greater than 30,000 CFM.
- Complies.** The plans and specifications call for carbon monoxide sensing devices as required by Section 1317.2.3.
- Exception.** Open parking garages.

21. Kitchen Hoods (Section 1317.11)

- Not Regulated.** The plans/specs do not call for any new kitchen hoods with exhaust capacity greater than 5,000 cfm each.
- Complies.** All new kitchen hoods with a total exhaust capacity greater than 5,000 cfm have at least 50 percent of the required makeup air; (a) unheated or heated to no more than 60°F; and (b) uncooled or evaporatively cooled.

The plans/specs show compliance in the following locations:

22. Outside Heating Systems (Section 1317.12)

- No Outside Heating Systems.** The plans/specs do not call for new permanently installed heating systems outside the building.
- Complies.** All new permanently installed outside heating systems are radiant gas fired systems controlled by an occupancy sensor or timer switch as required by Section 1317.12.



COMPLEX HVAC SYSTEMS

Part 1 of 3

Applicability

Discussion of qualifying exceptions in instructions section.

Fan Motor

Energy

See Section 1318.4.2 for maximum horsepower allowed.

1. Simple or Complex Systems (Section 1317.9, 1317.10 and 1318)

Note: This form is required for complex systems only. If your plans qualify as a simple system as defined by the code, this form is not required.

2. Air Transport Energy (Section 1318.4.2)

- Not Regulated.** Each HVAC system does not have total fan nameplate horsepower of 7.5 HP or greater (include sum of all supply, return, & exhaust fans operating at design conditions).
- Brake Horsepower Complies.** The energy demand of all HVAC fan systems meets code requirements. Complete and attach Worksheet 4l.
- Nameplate Horsepower Complies.** Selected fan motors have nameplate ratings no larger than is allowed by Section 1318.4.2.3. (Complete Worksheet 4L.)
- Exception.** Section 1318.4.2, Exception -1 -2 -3 -4

Portions of the building that qualify:

The plans/specs show compliance in the following locations:

Cooling Tower Fans

3. Cooling Tower Fans (Section 1317.5.4.1)

- No Cooling Tower** There is no cooling tower in this project.
- Complies.** Cooling tower fans have control devices that vary flow by controlling leaving fluid temperature or condenser temperature/pressure of the heat rejection device.

The plans/specs show compliance in the following locations:

4. Simultaneous Heating and Cooling (Section 1318.2.1)

- No Cooling.** The building HVAC system has no cooling.
- Complies.** Controls prevent reheating, recooling or mixing of mechanically heated and mechanically cooled air.
- Exception.** Code exception is Section 1318.2.1, Exception -1 -2 -3 -4 -5
If exception 1 is used, complete and attach Worksheet 4k

Portions of the building that qualify:

The plans/specs show compliance in the following locations:

5. Electric Motor Efficiency (Section 1317.10.3 & Table 13-T)

- Not Regulated.** There are no NEMA Design A&B squirrel cage, T-frame induction, permanently wired polyphase motors of one horsepower or more which serve built up HVAC
- Complies.** The efficiency of all regulated motors meets code requirements.
- Exception.** Section 1317.10.3, Exception -1 -2

Portions of the building that qualify:

The plans/specs show compliance in the following locations:

Exceptions

Discussion of qualifying exceptions in instructions

6. VAV System Static Pressure Reset Controls (Section 1318.2.3)

- Not Regulated.** The building plans or specifications do not call for a VAV system controlled by a static pressure sensor or direct digital control of individual zone boxes.
- Complies.** The system static pressure set point automatically resets to the lowest point possible while still providing the required air flow to the zones with the greatest demand.
- Exception.** Section 1318.2.3, Exception

The plans/specs show compliance in the following locations:



COMPLEX HVAC SYSTEMS**Part 2 of 3****7. VAV Terminal Units (Section 1317.4.2.1)**

- Not Regulated.** Project does not contain VAV terminal units.
- Complies.** VAV terminal units are programmed to operate at the minimum airflow setting without addition of reheat when the zone temperature is within the set deadband. Complete Worksheet 4k.
- Exception.** Section 1317.4.2.1, Exception -1 -2
The plans/specs show compliance in the following locations:

8. Supply-Air Temperature Reset Controls (Section 1318.2.5)

- Not Regulated.** The building plans or specifications do not call for multiple zone HVAC systems.
- Complies.** Multiple zone HVAC systems include controls that automatically reset the supply-air temperatures in response to building loads or outside air temperature.
- Exception.** The building qualifies for an exception to the supply-air reset controls requirement. Applicable code exception is Section 1318.2.5, Exception -1 -2 -3

Portions of the building that qualify: The plans/specs show compliance in the following locations: **9. Chilled and Hot Water Temperature Reset Controls (Section 1318.2.4)**

- Not Regulated.** The building plans or specifications do not call for chilled or hot water systems with a design capacity exceeding 300,000 Btu/hr.
- Complies.** Chilled and hot water systems include controls that automatically reset supply water temperatures by representative building loads or by outside air temperature.
- Exception.** Section 1318.2.4, Exception -1 -2

Portions of the building that qualify: The plans/specs show compliance in the following locations: **10. Separate Air Distribution Systems (Section 1318.2.7)**

- Not Regulated.** The building plans or specifications do not call for zones with special process temperature or humidity requirements.
- Complies.** Separate air distribution systems serve zones with special process temperature or humidity requirements from those zones serving only comfort conditions, or supplementary control provisions are included so primary systems are specifically controlled for comfort purposes only.
- Exception.** Section 1318.2.7, Exception -1 -2

Identify zones with special process requirements: The plans/specs show compliance in the following locations: **11. Zone Isolation Controls (Section 1318.2.6)**

- Not Regulated.** Building plans or specifications do not call for HVAC systems serving multiple occupancies or floors with $\geq 240,000$ Btu/hr cooling capacity, or $\geq 300,000$ Btu/hr heating capacity.
- Complies.** HVAC systems serving multiple occupancies or floors with $> 240,000$ Btu/hr cooling capacity, or $> 300,000$ Btu/hr heating capacity are equipped with isolation devices capable of automatically shutting off supply air to and from each isolated area. Each isolated area is controlled independently and satisfies temperature setback (Section 1317.4.2) and optimum start control requirements. Central fan system air volume is reduced through fan speed reduction.

The plans/specs show compliance in the following locations: 

COMPLEX HVAC SYSTEMS**Part 3 of 3****12. Humidity Controls (Section 1318.2.2)**

- No Moisture Added to Building.** The building plans do not call for means to add moisture to maintain specific humidity levels.
- Complies.** All new humidity control systems equipped with a humidistat when required. All humidifier preheating devices have an automatic value to shut off preheat when humidification. The plans/specs show compliance in the following locations:

13. Hydronic System Controls (Section 1318.2.8)

- No Hydronic System.** The building plans or specifications do not call for a new hydronic system.
- Complies.** The hydronic system complies as follows:

13.1 Variable Flow Controls (Section 1318.2.8.4)

- System does not have a 10 hp or greater motor
- Complies. System has controls capable of varying pump flow

The plans/specs show compliance in the following locations:

13.2 Three-Pipe System (Section 1318.2.8.1)

- System does not have a common return system (a three-pipe system) for both hot water and chilled water.

13.3 Two-Pipe Changeover System (Section 1318.2.8.2)

- System is not a Two-Pipe Changeover System
- Complies. System is:
- Designed to allow a deadband between changeover from one mode to the other of at least 15°F outside air temperature.
 - Designed to operate and provided with controls that will allow operation in one mode for at least four hours before changing over to the other mode.
 - Provided with reset controls that allow heating and cooling supply temperatures at the changeover point to be no more than 30°F apart.

The plans/specs show compliance in the following locations:

13.4 Hydronic (Water Loop) Heat Pump System (Section 1318.2.8.3)

- System is not a Hydronic (Water Loop) Heat Pump System
- Complies. Hydronic heat pumps connected to a common heat pump water loop with central devices for heat rejection (e.g., cooling tower) and heat addition (e.g., boiler) have the following:
- Controls installed capable of providing a heat pump water supply temperature deadband of at least 20°F between initiation of heat rejection and heat addition by the central devices (e.g., tower and boiler).
 - Closed-circuit tower (fluid cooler) has either an automatic valve installed to bypass all but a minimal flow of water around the tower (for freeze protection), or low-leakage positive closure dampers.
 - Open-circuit tower installed directly in the heat pump loop has an automatic valve installed to bypass all heat pump water flow around the tower. Open-circuit towers used in conjunction with a separate heat exchanger to isolate the tower from the heat pump loop are controlled by shutting down the circulation pump on the cooling tower loop.
 - A two-position valve at each hydronic heat pump for hydronic systems having a total pump system power exceeding 10 hp.

The plans/specs show compliance in the following locations:



UNITARY AIR CONDITIONER - AIR COOLED

Equipment

Discussion of equipment ratings and equipment definitions on page 4-19.

(a) Equip. ID	(b) Model Designation	(c) Capacity (Btu/h)	(d)		(e)	(f)
			Steady State	Seasonal or Part Load	Compliance Schedule (A-E)	New or Replacemnt? *

Required Documentation

Indicate source of information

- ARI Unitary Directory, Section AC, page:
- ARI Applied Products directory, Section ULE, page:
- Product data (Attach data furnished by the equipment supplier, I.e., "cut sheets")

Code Required Efficiencies

This schedule of equipment efficiencies was reformatted from code, Table 13-L.

Compliance Schedule	Equipment Type		Cooling Capacity (btu/hr)		Minimum Rating	
			Over	But not over -	Steady State	Seasonal or Part Load
A	Single Package Without a Heating Section or With Electric Resistance Heat	New * Replacement *	0	65,000	na	13 SEER
		All	0	65,000	na	9.7 SEER
			65,000	135,000	10.3 EER	n/a
			135,000	240,000	9.7 EER	n/a
			240,000	760,000	9.5 EER	9.7 IPLV
760,000	-	9.2 EER	9.4 IPLV			
B	Split System Without a Heating Section or With Electric Resistance Heat	New * Replacement *	0	65,000	na	13 SEER
		All	0	65,000	na	10 SEER
			65,000	135,000	10.3 EER	n/a
			135,000	240,000	9.7 EER	n/a
			240,000	760,000	9.5 EER	9.5 IPLV
760,000	-	9.2 EER	9.2 IPLV			
C	Single Package With a Heating Section Other Than Electric Resistance	New * Replacement *	0	65,000	na	13 SEER
		All	0	65,000	na	9.7 SEER
			65,000	135,000	10.1 EER	n/a
			135,000	240,000	9.5 EER	n/a
			240,000	760,000	9.3 EER	9.5 IPLV
760,000	-	9.0 EER	9.2 IPLV			
D	Split System With a Heating Section Other Than Electric Resistance	New * Replacement *	0	65,000	na	13 SEER
		All	0	65,000	na	10 SEER
			65,000	135,000	10.1 EER	n/a
			135,000	240,000	9.5 EER	n/a
			240,000	760,000	9.3 EER	9.7 IPLV
760,000	-	9.0 EER	9.4 IPLV			
E	Condensing Unit Only	All	135,000	-	10.1 EER	11.2 IPLV

* Equipment is a new installation or replaces existing equipment



UNITARY AIR COND. - WATER & EVAPORATIVELY COOLED

Equipment

Discussion of equipment ratings and equipment definitions on page 4-19.

(a) Equip. ID	(b) Model Designation	Cooling Capacity (Btu/h)	(d) Proposed Performance		(e) Compliance Schedule (A-E)
			Steady State	Seasonal or Part Load	

Required Documentation

Indicate source of information

- ARI Unitary Directory, Section AC, page: _____
- ARI Applied Products directory, Section ULE, Page: _____
- Product data (Attach data furnished by the equipment supplier, i.e., "cut sheets")

Code Required Efficiencies

This equipment efficiencies schedule was reformatted from code, Table 13-L.



Compliance Schedule	Equipment Type	Cooling Capacity (btu/hr)		Minimum Rating	
		Over	But not over -	Steady State	Seasonal or Part Load
A	Single Packaged and Split AC Without a Heating Section or With Electric Resistance Heat	0	65,000	12.1 EER	n/a
		65,000	135,000	11.5 EER	na
		135,000	240,000	11.0 EER	n/a
		240,000	-	11.0 EER	10.3 IPLV
B	Single Packaged and Split AC With a Heating Section Other Than Electric Resistance	0	65,000	12.1 EER	n/a
		65,000	135,000	11.3 EER	na
		135,000	240,000	10.8 EER	n/a
		240,000	-	10.8 EER	10.1 IPLV
C	Condensing Units	135,000	-	13.1 EER	13.1 IPLV

UNITARY HEAT PUMP - AIR COOLED

Equipment

Discussion of equipment ratings and equipment definitions on page 4-19.

(a) Equip. ID	(b) Model Designation	(c) Cooling Capacity (Btu/h)	(d) Proposed Rating		(e) Proposed Heating Rating		(f) Compliance Schedule (A-E)	(g) New or Replacmnt*
			SEER	EER	HSPF	COP (47°F)		

Required Documentation

Indicate source of information

- ARI Unitary Directory, Section AC, page:
- ARI Applied Products directory, Section ULE, Page:
- Product data (Attach data furnished by the equipment supplier, i.e., "cut sheets")

Code Required Efficiencies

This schedule of equipment efficiencies was reformat- ted from the code, Table 13-M.



Compliance Schedule	Equipment Type		Cooling Capacity (btu/hr)		Minimum Cooling Rating		Minimum Heating Rating		
			Over	But not over	EER	or Part Load	HSPF	COP (@ 47°F)	COP (@ 17°F)
A	Single Package Without a Heating Section or With Electric Resistance Heat	New *	0	65,000	-	13 SEER	7.7	-	-
		Replcmt *	0	65,000	-	9.7 SEER	6.6	-	-
		All	65,000	135,000	10.1	n/a	-	3.2	2.2
			135,000	240,000	9.3	n/a	-	3.1	2.0
B	Split System Without a Heating Section or With Electric Resistance Heat	New *	0	65,000	-	13 SEER	7.7	-	-
		Replcmt *	0	65,000	-	10 SEER	6.8	-	-
		All	65,000	135,000	10.1	n/a	-	3.2	2.2
			135,000	240,000	9.3	n/a	-	3.1	2.0
C	Single Package With a Heating Section Other Than Electric Resistance	New *	0	65,000	-	13 SEER	7.7	-	-
		Replcmt *	0	65,000	-	9.7 SEER	6.6	-	-
		All	65,000	135,000	9.9	n/a	-	3.2	2.2
			135,000	240,000	9.1	n/a	-	3.1	2.0
D	Split System With a Heating Section Other Than Electric Resistance	New *	0	65,000	-	13 SEER	7.7	-	-
		Replcmt *	0	65,000	-	10 SEER	6.8	-	-
		All	65,000	135,000	9.9	n/a	-	3.2	2.2
			135,000	240,000	9.1	n/a	-	3.1	2.0
			240,000	-	8.8	9.0 IPLV	-	3.1	2.0

* Equipment is new installation or replaces existing equipment

UNITARY HEAT PUMP - WATER COOLED

Equipment

Discussion of equipment ratings and equipment definitions on page 4-19.

(a) Equip. ID	(b) Model Designation	(c) Cooling Capacity (Btu/hr)	(d) Entering Water Temp. EWT (°F)	(e) Proposed EER	(f) Proposed COP	(g) Compliance Schedule (A, B, or C)



Required Documentation

Indicate source of information

- ARI Unitary Directory, Section AC, page: _____
- ARI Applied Products directory, Section ULE, Page: _____
- Product data (Attach data furnished by the equipment supplier, i.e., "cut sheets")

Code Required Efficiencies

This schedule of equipment efficiencies was reformatted from the code, Table 13-M.

Compliance Schedule	Equipment Type	Cooling Capacity (btu/hr)		Minimum Cooling Rating		Minimum Heating Rating	
		Over	But not over	EER	@EWT	COP	@ EWT
A	Water Source	0	17,000	11.2	86°F	4.2	68°F
		17,000	65,000	12.0	86°F	4.2	68°F
		65,000	135,000	12.0	86°F	4.2	68°F
B	Ground Water Source	0	135,000	16.2	59°F	3.6	50°F
C	Ground Source	0	135,000	13.4	77°F	3.1	32°F

PACKAGED TERMINAL A.C. - AIR COOLED

Equipment

Enter the cooling capacity in column (c). If capacity is less than 7,000 Btu/hr, use 7,000. If above 15,000, use 15,000.

Discussion of equipment ratings and equipment definitions on page 4-19.

Type of Equipment	(a)	(b)	(c)	(d)	(e)
	Equip. ID	Model Designation	Cooling Capacity (Btu/hr)	Proposed EER (95°F db)	Code Minimum EER (95°F db)
Units Installed in New Construction					
Replacement of Existing Units (installed prior to 10/01/03)					



Required Documentation

Indicate source of information

- ARI Unitary Directory, Section AC, page: _____
- ARI Applied Products directory, Section ULE, Page: _____
- Product data (Attach data furnished by the equipment supplier, I.e., "cut sheets")

Code Required Efficiencies

Calculate the code minimum EERs from the formulas below using the cooling capacity in column (c).
 Enter the results in column (e).
 New Construction: EER @ 95F Test Conditions = 12.5-(0.213x Cap/1000)
 Replacement Units : EER @ 95F Test Conditions = 10.9-(0.213x Cap/1000)

PACKAGED TERMINAL HEAT PUMP - AIR COOLED

Equipment

Enter the cooling capacity in column (c). If capacity is less than 7,000 Btu/hr, use 7,000. If above 15,000, use 15,000.

Calculate the code minimum EER's from formulas below using cooling capacity in the column (c). Enter results in column (e).

Discussion of equipment ratings and equipment definitions on page 4-19.

Type of Equipment	(a) Equip. ID	(b) Model Designation	(c) Cooling Capacity (Btu/hr)	(d) Proposed		(e) Code Minimum	
				Cooling Rating	Heating	Cooling Rating	Heating
				EER (95°F db)		EER (95°F db)	
Units Installed in New Construction							
Replacement of Existing Units (installed prior to 10/01/03)							

Required Documentation

Indicate source of information

- ARI Unitary Directory, Section AC, page: _____
- ARI Applied Products directory, Section ULE, Page: _____
- Product data (Attach data furnished by the equipment supplier, i.e., "cut sheets")

Code Required Efficiencies

Calculate the code minimum EERs and COP's from the formulas below using the cooling capacity in column (c).

Enter the results in column (e).

New Construction EER: $EER @ 95F \text{ Test Conditions} = 12.3 - (0.213 \times \text{Cap}/1000)$

New Construction COP: $COP = 3.2 - (0.026 \times \text{Cap}/1000)$

Replacement Units EER: $EER @ 95F \text{ Test Conditions} = 10.8 - (0.213 \times \text{Cap}/1000)$

Replacement Units COP: $COP = 2.9 - (0.026 \times \text{Cap}/1000)$



WATER CHILLING PKGS. - WATER & AIR COOLED

Equipment

Discussion of equipment ratings and equipment definitions on page 4-19.

(a)	(b)	(c)	(d)	(e)	(f)
Equip. ID	Model Designation	Cooling Capacity (Btu/hr)	Proposed Steady State COP	Proposed Part Load IPLV	Compliance Schedule (A - I)

Required Documentation

Indicate source of information

- ARI Unitary Directory, Section AC, page:
- ARI Applied Products directory, Section ULE, Page:
- Product data (Attach data furnished by the equipment supplier, i.e., "cut sheets")

Code Required Efficiencies

This schedule of equipment efficiencies was reformatted from code, Table 13-O.

Compliance Schedule	Equipment Type	Cooling Capacity (Tons)	Minimum Rating	
			COP	IPLV
A	Air Cooled, With Condenser, Electrically Operated	All Capacities	2.80	2.80
B	Air Cooled, Without Condenser, Electrically Operated	All Capacities	3.10	3.10
C	Water Cooled, Electrically Operated, Positive Displacement (Reciprocating)	All Capacities	4.20	4.65
D	Water Cooled, Electrically Operated, Positive Displacement (Rotary, Screw and Scroll)	< 150 tons	4.45	4.50
		≥150, <300 tons	4.90	4.95
		≥300 tons	5.50	5.60
E	Water Cooled, Electrically Operated, Centrifugal	< 150 tons	5.00	5.00
		≥150, <300 tons	5.50	5.50
		≥300 tons	6.10	6.10
F	Air Cooled Absorption, Single Effect	All Capacities	0.60	--
G	Water Cooled Absorption, Single Effect	All Capacities	0.70	--
H	Absorption Double Effect, Indirect Fired	All Capacities	1.00	1.05
I	Absorption Double Effect, Direct Fired	All Capacities	1.00	1.00



HEAT REJECT. EQUIPMT. - COOLING TOWERS & AIR COOLED CONDENSERS

Equipment-Cooling Towers

Discussion of equipment ratings and equipment definitions on page 4-19.

Cooling Tower - Equip. ID		Design Entering Water Temperature (EWT)					
Compliance Schedule		Design Leaving Water Temperature (LWT)				Fan Type	
		Design Wet Bulb Temperature (WB)					
Location of Equipment Schedule for EWT, LWT and WB							
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Model Designation	Tower Pump GPM at Design Conditions	Tower Fan HP at Design Conditions	GPM/HP ((b)/(c)) at Design Conditions	Tower Pump GPM at CTI Rated Conditions	Tower Fan HP at CTI Rated Conditions	GPM/HP ((e)/(f)) at CTI Rated Conditions	Complies ¹

¹ Column (g) is less than value stated in table below

Cooling Tower - Equip. ID		Design Entering Water Temperature (EWT)					
Compliance Schedule		Design Leaving Water Temperature (LWT)				Fan Type	
		Design Wet Bulb Temperature (WB)					
Location of Equipment Schedule for EWT, LWT and WB							
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Model Designation	Tower Pump GPM at Design Conditions	Tower Fan HP at Design Conditions	GPM/HP ((b)/(c)) at Design Conditions	Tower Pump GPM at CTI Rated Conditions	Tower Fan HP at CTI Rated Conditions	GPM/HP ((e)/(f)) at CTI Rated Conditions	Complies ¹

¹ Column (g) is less than value stated in table below

Equipment-Air Cooled Condensers

Discussion of equipment ratings and equipment definitions on page 4-19.

Air-Cooled Condenser-Equip. ID		Condenser Temperature (CT)					
Compliance Schedule		Air Temp. Entering Condenser (ATEC)					
Location of CT & ATEC Schedule							
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Model Designation	Heat Rejected (Btu/h) at Design Conditions	Condenser Fan HP at Design Conditions	Btu/h-HP ((b)/(c)) at Design Conditions	Heat Rejected (Btu/h) at ARI Rated Conditions	Condenser Fan HP at ARI Rated Conditions	Btu/h-HP ((e)/(f)) at ARI Rated Conditions	Complies ¹

¹ Column (g) is greater than value stated in table below

Air-Cooled Condenser-Equip. ID		Condenser Temperature (CT)					
Compliance Schedule		Air Temp. Entering Condenser (ATEC)					
Location of CT & ATEC Schedule							
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Model Designation	Heat Rejected (Btu/h) at Design Conditions	Condenser Fan HP at Design Conditions	Btu/h-HP ((b)/(c)) at Design Conditions	Heat Rejected (Btu/h) at ARI Rated Conditions	Condenser Fan HP at ARI Rated Conditions	Btu/h-HP ((e)/(f)) at ARI Rated Conditions	Complies ¹

¹ Column (g) is greater than value stated in table below



Required Documentation

Indicate source of information ARI Directory, Section, Page (for air cooled condensers only) _____
 Product data (Attach data furnished by the equipment supplier: I.e., "cut sheets")

Code Required Efficiencies

This schedule of equipment efficiencies was reformatted from code, Table 13-R.

Compliance Schedule	Equipment Type	Total System Heat Rejection Capacity at Rated Conditions	Subcategory or Rating Conditions	Performance Required ^{2,3}	
				gpm/hp	Btu/h-hp
A	Propeller or Axial Fan Cooling Towers	All	95°F Entering Water 85°F Leaving Water 75°F wb Outdoor Air	>38.2	
B	Centrifugal Fan Cooling Towers	All	95°F Entering Water 85°F Leaving Water 75°F wb Outdoor Air	>20.0	
C	Air Cooled Condensers	All	125°F Condenser Temp. R-22 Test Fluid 190°F Entering Gas Temperature 15°F Subcooling 95°F Entering db		>176,000

² For purposes of this table, cooling tower performance is defined as maximum flow rating of tower divided by the fan nameplate rated motor horsepower

³ For purposes of this table, air-cooled condenser performance is defined as heat rejected from refrigerant divided by the fan nameplate rated motor horsepower

BOILER - GAS-FIRED & OIL-FIRED

Equipment

Discussion of equipment ratings and equipment definitions on page 4-19.

(a) Equip. ID	(b) Model Designation	(c) Heating Capacity (Btu/hr)	(d) Proposed Minimum AFUE (%)	(e) Proposed Minimum E _c or E _T (%)	(f) Compliance Schedule (A-D)

Required Documentation

Indicate source of information

- GAMA Consumer Directory, page(s):
- Product data (Attach data furnished by the equipment supplier, i.e., "cut sheets").

Code Required Efficiencies

This schedule of equipment efficiencies was reformatted from code, Table 13-Q.



Compliance Schedule	Equipment Type	Heating Capacity (Btu/hr)			Minimum Efficiency
		Over	But not over		
A	Gas Fired Hot Water	0	300,000	80% AFUE	
		300,000	2,500,000	75% E _T	
		2,500,000	-	80% E _c	
B	Gas Fired Steam	0	300,000	75% AFUE	
		300,000	2,500,000	75% E _T	
		2,500,000	-	80% E _c	
C	Oil Fired Hot Water, Steam	0	300,000	80% AFUE	
		300,000	2,500,000	78% E _T	
		2,500,000	-	83% E _c	
D	Oil Fired Residual Hot Water Steam	All	300,000	78% E _T	
		2,500,000	-	83% E _c	
		2,500,000	-	83% E _c	

[Empty text box for Project Name]

FURNACE & UNIT HEATERS - GAS & OIL-FIRED

Equipment

Discussion of equipment ratings and equipment definitions on page 4-19.

(a) Equip. ID	(b) Model Designation	(c) Heating Capacity (Btu/hr)	(d) Proposed			(e) Compliance Schedule (A-E)
			Minimum E _c (%)	Minimum E _T (%)	Minimum AFUE (%)	

Required Documentation

Indicate source of information

GAMA Consumer Directory, page(s):

[Empty text box for GAMA Consumer Directory page(s)]

Product data (Attach data furnished by the equipment supplier, i.e., "cut sheets").

Code Required Efficiencies

This schedule of equipment efficiencies was reformatted from code, Table 13-P.



Compliance Schedule	Equipment Type	Capacity (Btu/hr)		
		Over	But not over	Minimum Efficiency
A	Gas Fired Warm-Air Furnaces & Combustion Furnace/AC	0	225,000	78% AFUE or 80% E _c
		225,000	-	80% E _c
B	Oil-Fired Warm-Air Furnaces & Combustion Furnace/AC	0	225,000	78% AFUE or 80% E _c
		225,000	-	81% E _t
C	Gas Fired Duct Furnaces	ALL		80% E _c
D	Gas Fired Unit Heaters	ALL		80% E _c
E	Oil-Fired Unit Heaters	ALL		80% E _c

Simultaneous Heating and Cooling

than there are lines in this form. If needed use Add New Worksheet button at bottom

Complete this form for all terminal units with reheat to verify compliance with Section 1318.2.1 exception 1.

Terminal Unit (Variable Air Volume (VAV) Box) CFM Design Conditions								
Required Information					Comply			
Terminal Unit ID or Description/Location	Sq. ft Area Served	Max. Cooling Airflow-CFM	Max. Heating Airflow-CFM	Occupancy Ventilation-CFM	Ht CFM < or = to 30% of Max	Ht. CFM < or = to 0.4 CFM per sq. ft	Ht. CFM < or = to Occupancy Ventilation	Maximum Airflow is < or = to 300 CFM

AIR TRANSPORT ENERGY

Complete one worksheet for each fan system > 7.5 horsepower. Fan system horsepower is the sum of motor brake horsepower of all supply, return, and exhaust fans (including series fan-powered terminal units) that operate during design conditions.

Fan System ID: _____ Areas Served: _____

System serves hospital or laboratory and include flow control device for maintaining precise pressure control.

Fan Identifier (Tag)	Fan Type (Supply, Return, Exhaust, Series VAV)	CFM	Constant Volume or VAV	Motor Brake HP	Nameplate Motor HP	Maximum Nameplate Motor HP Allowed

The Plans/Specs show brake hp, nameplate hp, and CFM in the following locations:

Total System Supply Fan CFM	Constant Volume, VAV, or Hospital/Lab	Total System Brake HP	Total System Max Brake HP Allowed	Brake HP Complies	Nameplate HP Complies

Additional Pressure Drop Credit (all systems). Complete the section below if system contains filtration with a pressure drop at design flow in excess of 1" w.c. (when filters are clean), heat recovery, or direct evaporative humidifier/cooler.

Additional Pressure Drop Credit for Hospitals and Laboratories. Complete the section below if system serves a hospital or laboratory and contains rully ducted return/exhaust, return/exhaust air flow control devices, or individual filter system efficiencie

All Systems	Additional Pressure Drop Credits	Pressure Drop, Inches, W.C.
	<input type="checkbox"/> Filtration Pressure Drop >1" w.c. <input type="checkbox"/> Heat Recovery <input type="checkbox"/> Direct Evaporative Humidifier/Cooler	
Hospital and Laboratory Systems Only	<input type="checkbox"/> Fully Ducted Return/Exhaust (0.5" credit)	
	<input type="checkbox"/> Return/Exhaust Flow Control Device (0.5" credit)	
	<input type="checkbox"/> Individual Filter Efficiency > or = 85% (0.5" credit)	
Total Additional Pressure Drop Credit:		

Manufacturer's product data sheet(s) is attached and design values are shown in plans/specs in the following locations

Supply CFM	Constant Volume or VAV (Use VAV for Hospital or Lab Systems)	Total Additional Pressure Drop	Adjusted Max Allowed Brake HP	Total Brake HP (from above)	Adjusted Brake HP Complies

NATURAL VENTILATION

1. Fill in worksheet for all spaces that will be provided with natural ventilation.

(a) Space (Room # or name from plans)	(b) Room Area (sqft)	(c) Estimated Max Occupant Load from OMSC Table 403.3 (persons/1000sqft.	(d) Check if Smoking Area <input type="checkbox"/>	(e) Actual Max Load used to determine ventilation requirements (persons/1000sqft.	(f) Required CFM/person (from Table 403.3)	(g) Required CFM/Sqft (from Table 403.3) ¹	(h) Required Ventilation CFM	(i) Net Free Area of Outside Air Openings	(j) Opening Area / Floor Area	(k) Calculated Natural Ventilation to Space (design conditions) ²
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¹ Use this column when ventilation requirement is based on CFM/sq ft per OMSC Table 4.3.3.

² Complete this column if net free opening is less than 5% of floor area or 20% of floor area for smoking areas, otherwise enter N/A. Attach calculations.

Number of Additional Worksheets 4m:

2. Describe calculation method used to determine ventilation delivered. Attach additional sheets as necessary

3. Attach manual calculations, spreadsheets, computer model input and outputs, and other technical documentation that verifies required ventilation will be provided to each space.

4. I certify that to the best of my knowledge, the natural ventilation calculations provided are correct.

This line to be signed and stamped by Architect or Engineer Registered in the State of Oregon.

NATURAL VENTILATION

1. Fill in worksheet for all spaces that will be provided with natural ventilation.

(a) Space (Room # or name from plans)	(b) Room Area (sqft)	(c) Estimated Max Occupant Load from OMSC Table 403.3 (persons/1000sqft.)	(d) Check if Smoking Area <input type="checkbox"/>	(e) Actual Max Load used to determine ventilation requirements (sqft/person)	(f) Required CFM/person (from Table 403.3)	(g) Required CFM/Sqft (from Table 403.3) ¹	(h) Required Ventilation CFM	(i) Net Free Area of Outside Air Openings	(j) Opening Area / Floor Area	(k) Calculated Natural Ventilation to Space (design conditions) ²
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1 Use this column when ventilation requirement is based on CFM/sq ft per OMSC Table 4.3.3.
2. Complete this column if net free opening is less than 5% of floor area or 20% of floor area for smoking areas, otherwise enter N/A. Attach calculations.