

Development Services

From Concept to Construction

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More Contact Info (<http://www.portlandoregon.gov/bds/article/519984>)



APPEAL SUMMARY

Status: Hold for Additional Information

Appeal ID: 23279	Project Address: 1202 NW Irving St
Hearing Date: 1/8/20	Appellant Name: Ruwan Jayaweera
Case No.: M-003	Appellant Phone: 503-226-2921
Appeal Type: Mechanical	Plans Examiner/Inspector: Preliminary
Project Type: commercial	Stories: 9 Occupancy: R-1 Construction Type: I-B
Building/Business Name:	Fire Sprinklers: Yes - Throughout
Appeal Involves: Erection of a new structure	LUR or Permit Application No.: 19-201292-EA
Plan Submitted Option: mail	Proposed use: Proper Hotel

APPEAL INFORMATION SHEET

Appeal item 1

Code Section 2019 Oregon Zero Energy Ready Commercial Code (ASHRAE 90.1 2016)

Requires 6.4.3.3.5.1 Guest Room Ventilation Control

Within 30 minutes of all occupants leaving the guest room, ventilation and exhaust fans shall automatically be turned off, or isolation devices serving each guest room shall automatically shut off the supply of outdoor air to the guest room and shut off exhaust air from the guest room.

Code Modification or Alternate Requested:

The proposed design (constant central airflow DOAS systems with heat recovery) is more energy efficient than the baseline code minimum system (non-heat recovery ventilation with direct outside air connections for each guest room and separate exhaust fans for each guest room with shut-off for unoccupied guest rooms). Note that we are assuming that a Code system would be a distributed outside air and exhaust system to avoid the added first cost associated with two shutoff dampers at each guest room required to meet Code with a central system. With a distributed system and assuming the hotel rooms are rented 75% of the time and occupied 18 hours per day (4970 hours), heat recovery is not required per Table 6.5.6.1-1 (less than 8000 hours operating).

Code Modification or Alternate Requested

Proposed Design The hotel guest room ventilation system consists of: a) three (3) roof top Dedicated Outdoor Air System (DOAS) air handlers with energy recovery wheels (assumed 60% heat recovery effectiveness for conservative calculations) and VFD controlled fans with premium efficiency motors, b) multiple fully ducted risers and branch ductwork to each guest room for supply air, and c) multiple return shafts connected to guest rooms via sub-ducts at the shafts to eliminate the need for fire/smoke dampers.

The proposed design is to be running during all occupied hours of operation for the building and continuous ventilation air and exhaust air is to be provided for each guest room. The amount of outdoor air and exhaust air from guest rooms is also higher than code minimum to ensure better indoor air quality.

Energy from the exhaust air is exchanged and transferred to the incoming outdoor air supply inside the DOAS units via heat recovery wheels to further increase the overall efficiency of the system over the baseline code minimum system.

Reason for alternative Energy analysis were completed for each system (constant airflow DOAS with heat recovery VS. baseline non-heat recovery with exhaust and ventilation shut-off). A summary of the results is provided below. The constant airflow DOAS system with heat recovery performs better than the baseline system and saves approximately 22% more energy on an annual basis.

(see attached chart)

In addition, the quantity of outdoor air supplied to and exhausted from each guest room is about 25% higher than code minimum (50 vs 40 CFM for a typical sized guest room) providing more air changes per hour and therefore providing higher quality indoor air.

To summarize, the proposed system design saves more energy on an annual basis than the baseline system while simultaneously providing better indoor air quality.

APPEAL DECISION

Use of constant airflow DOAS system in lieu of non-heat recovery system with automatic exhaust and ventilation shut off devices: Hold for additional information. Appellant may contact Thomas Ng (503 823-7434) with questions.

Additional information is submitted as a no fee reconsideration, following the same submittal process and using the same appeals form as the original appeal. Indicate at the beginning of the appeal form that you are filing a reconsideration and include the original assigned Appeal ID number. The reconsideration will receive a new appeal number.

Include the original attachments and appeal language. Provide new text with only that information that is specific to the reconsideration in a separate paragraph(s) clearly identified as "Reconsideration Text" with any new attachments also referenced. No additional fee is required.



APPEALS
City of Portland
Bureau of Development Services
1900 SW 4th Ave., Suite 5000 (5th floor)
Portland, Oregon 97201
(503) 823-7335

Building Code Appeal Form (Appeal Information Sheet)

MEC

To Appellant:

Each item you are appealing requires a separate Appeal Information Sheet to be filled out. All requested information is to be filled out completely with as much detail as possible. **Failure to do so may cause your appeal to be held over until adequate information is received.** For help in filling out these forms, consult with the Plans Examiner assigned to your project or with a Plans Examiner in the Development Services Center.

Any alternative method or modification of a Mechanical Code requirement requires an appeal. A reasonable degree of equivalent health, accessibility, structural capacity, energy conservation, life safety or fire protection **must** be demonstrated before an appeal may be considered.

Code Section being appealed:

2019 Oregon Zero Energy Ready Commercial Code (ASHRAE 90.1 2016)

Regulation Requirement:

6.4.3.3.5.1 Guest Room Ventilation Control

Within 30 minutes of all occupants leaving the guest room, ventilation and exhaust fans shall automatically be turned off, or isolation devices serving each guest room shall automatically shut off the supply of outdoor air to the guest room and shut off exhaust air from the guest room.

Code Modification or Alternate Requested:

Summarize the intent of the appeal, preferably in one sentence.

The proposed design (constant central airflow DOAS systems with heat recovery) is more energy efficient than the baseline code minimum system (non-heat recovery ventilation with direct outside air connections for each guest room and separate exhaust fans for each guest room with shut-off for unoccupied guest rooms). Note that we are assuming that a Code system would be a distributed outside air and exhaust system to avoid the added first cost associated with two shutoff dampers at each guest room required to meet Code with a central system. With a distributed system and assuming the hotel rooms are rented 75% of the time and occupied 18 hours per day (4970 hours), heat recovery is not required per Table 6.5.6.1-1 (less than 8000 hours operating).

Proposed Design: (Describe the alternate methods or materials of construction to be used or that exist. Be as specific as possible)

The hotel guest room ventilation system consists of: a) three (3) roof top Dedicated Outdoor Air System (DOAS) air handlers with energy recovery wheels (assumed 60% heat recovery effectiveness for conservative calculations) and VFD controlled fans with premium efficiency motors, b) multiple fully ducted risers and branch ductwork to each guest room for supply air, and c) multiple return shafts connected to guest rooms via sub-ducts at the shafts to eliminate the need for fire/smoke dampers.

The proposed design is to be running during all occupied hours of operation for the building and continuous ventilation air and exhaust air is to be provided for each guest room. The amount of outdoor air and exhaust air from guest rooms is also higher than code minimum to ensure better indoor air quality.

Energy from the exhaust air is exchanged and transferred to the incoming outdoor air supply inside the DOAS units via heat recovery wheels to further increase the overall efficiency of the system over the baseline code minimum system.

Reason for Alternate: (Describe why the alternate is required and how it will provide equivalent health, accessibility, structural capacity, energy conservation, life safety or fire protection to what the code requires).

Energy analysis were completed for each system (constant airflow DOAS with heat recovery VS. baseline non-heat recovery with exhaust and ventilation shut-off). A summary of the results is provided below. The constant airflow DOAS system with heat recovery performs better than the baseline system and saves approximately 22% more energy on an annual basis.

	PROPOSED DESIGN	CODE DESIGN
FAN ENERGY (KWH)	195,970	19,469
VENTILATION LOADS (KWH)	952,462	759,102
ENERGY RECOVERED (KWH)	(541,600)	-
TOTAL VENTILATION ENERGY (KWH)	606,831	778,571

In addition, the quantity of outdoor air supplied to and exhausted from each guest room is about 25% higher than code minimum (50 vs 40 CFM for a typical sized guest room) providing more air changes per hour and therefore providing higher quality indoor air.

To summarize, the proposed system design saves more energy on an annual basis than the baseline system while simultaneously providing better indoor air quality.

07/01/19

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