## Exhaust Fans Interlock

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### Description

Exhaust fans that are not aligned with schedule of operations of the companion supply fan can impact the airflows of central air handlers by decreasing the flow of return air and sometimes increasing the outdoor air flow rate. A common operational practice is to interlock (or align) the operations of any exhaust fans with the companion system used to condition and pressurize a space. This measure examines all Fan:ZoneExhaust objects present in a model and coordinates the availability of the exhaust fan with the system supply fan.

### Modeler Description

For any thermal zones having zone equipment objects of type Fan:ZoneExhaust, this energy efficiency measure (EEM) maps the schedule used to define the availability of the associated Air Loop to the Availability Schedule attribute of the zone exhaust fan object.

### Use Case Types

New Construction, Retrofit, Model Articulation

### Arguments

No arguments

### Initial Condition Message

The initial model contained {X} Fan:ZoneExhaust object for which this measure is applicable.

### Final Condition Message

The Availability schedules for {Y} Fan:ZoneExhaust schedules were altered to match the availabnility schedules of supply fans.

Not Applicable Messages

* If No AirLoops write N/A message
* If No Fan:ZoneExhaust objects then write N/A message

### Warning Messages

### None

### Information Messages

Write info message whenever attributes of an Fan:ZoneExhaust object are altered. The message should include the name, object type, previous and new attribute value(s).

### Error Messages

N/A

### Code Outline

1. Loop through all AirLoops in the model.
   1. Retrieve the OS:AirLoopHVAC Availability schedule object
   2. Loop through all Zone HVAC equipment objects associated with the AirLoop
      1. If object type = Fan:ZoneExhaust then:
         1. Assign the OS:AirLoopHVAC Availability schedule object to the Fan:ZoneExhaust availability schedule
         2. Write info message(s).
2. Write AsNotApplicible message(s)
3. Write initial conditions message
4. Write final conditions message

### Tests

Run this model against applicable prototype buildings and test against each qualified object type. It does not appear that any of the existing prototype models have Fan:ZoneExhaust objects.

**This measure applies to All Prototype Models:**

1. **Medium Office**
2. **Large Office**
3. **Primary School**
4. **Secondary School**
5. **Outpatient Healthcare**
6. **Large Hotel**
7. **Hospital**
8. **Mid Rise Apartment**
9. **High Rise Apartment**
10. **Small Office**
11. **Full Service Restaurant**
12. **Quick Service Restaurant**
13. **Stand Alone Retail**
14. **Strip Mall**
15. **Warehouse (non-refrigerated)**
16. **Small Hotel**