## Demand Control Ventilation

### Author

* Andrew Parker, NREL

### Description

This measure dynamically reduces the amount of outdoor air intake below the design minimum values based on the actual occupancy of the building at each hour. This reduces the energy needed to heat and cool this outdoor air.

### Modeler Description

For each AirLoop, check if it is a VAV system, and if DCV is not already enabled, enable it via the Controller:MechanicalVentilation object and also reduce the minimum OA flow rate to zero to enable maximum OA turndown.

### Use Case Types

Retrofit, New Construction

### Arguments

No arguments

### Initial Condition Message

The model has X airloops, Y of which already have DCV enabled.

### Final Condition Message

Z airloops had DCV enabled.

### Not Applicable Messages

Not applicable if no airloops are found, if all airloops already have DCV, or if DCV is not applicable to any of the airloops.

### Warning Messages

### Information Messages

Initial and final COPs for each coil

### Error Messages

### Code Outline

* Find all AirLoopHVACs
  + Check the controller mechanical ventilation to see if DCV already enabled
  + Check if it is a VAV system by looking for a Fan:VariableVolume
  + Enable DCV in the controller mechanical ventilation
  + Set the minimum OA to zero in the controller outdoor air

### Tests

**This measure applies to:**

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