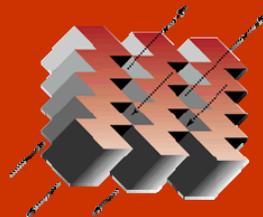
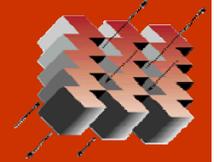


What's Up with ASHRAE 90.1 and California (the mechanical side of things)



Presented by
Charles Eley FAIA, PE
Vice President
Architectural Energy Corporation
Member ASHRAE

Fan Power



● Option 1: Nameplate horsepower of motor

- Simple option, but no consideration of special requirements

● Option 2: Brake horsepower at fan shaft

Considers the following

- Fully ducted returns
- Return or exhaust airflow devices
- Exhaust filters, scrubbers or other exhaust treatment
- MERV 9 or greater filters
- Carbon or gas phase air cleaning
- Heat recovery devices
- Humidifiers
- Fume hood exhaust

**What's new
with ASHRAE**

Off-Hour Controls



- Requirements extended to hotel guest rooms.

**What's new
with ASHRAE**

Demand Control Ventilation



- Required for capacity 3,000 cfm or greater in areas larger than 500 ft² with an occupant density greater than 40 occupants per 1,000 ft².

**What's new
with ASHRAE**

Data Processing



- Humidity control exception eliminated
- Temperature band exception eliminated

**What's new
with ASHRAE**

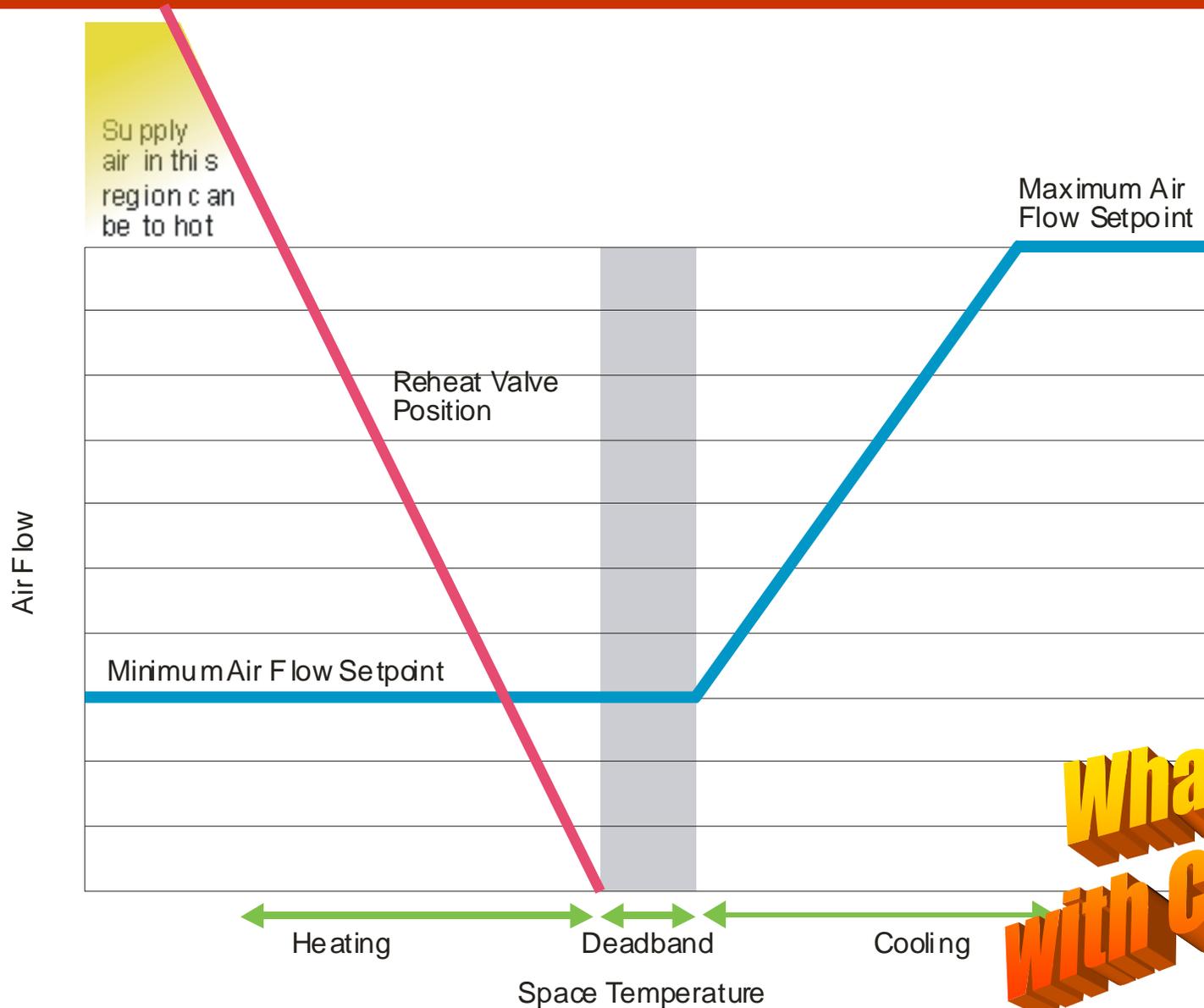
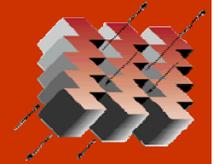
VAV Zone Minimums



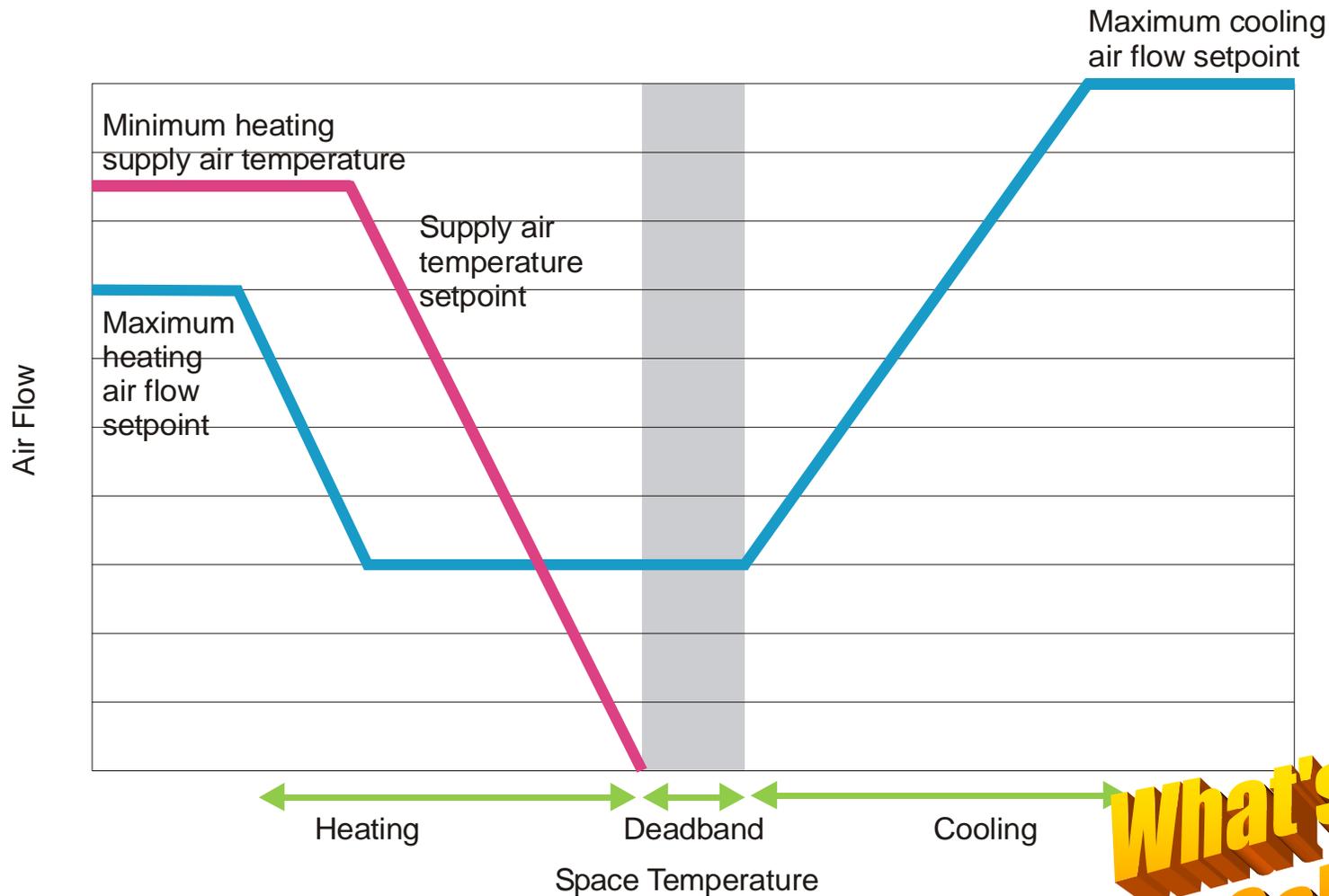
- Allows for “dual maximum” control of VAV boxes.
- Applies for direct digital control at the zone level.

**What's new
with California**

VAV Zone Minimums (current)



VAV Zone Minimums (as modified)



**What's new
with California**

Global Temperature Adjustment



- Requires that controls have the capability to automatically reset the temperature setpoints of all non-critical zones by 1 to 4°F from a single central command in the building energy management and control system (EMCS).
- Limited to buildings that have direct digital control (DDC) at the zone level.

**What's new
with California**

Hydronic Pressure Reset



- Requires demand based reset of the pressure setpoint for pumps serving variable flow systems based on valve demand.
- This measure is the hydronic analog of the existing prescriptive measure for supply air pressure reset.

**What's new
with California**

Demand Control Ventilation



- Extends the requirement for demand control ventilation to high occupant density zones served by multiple zone systems.
- Limited to buildings that have direct digital control (DDC) at the zone level.

**What's new
with California**

Supply Air Temperature (SAT) Reset



- Clarifies the requirement for demand based supply air temperature reset for variable air volume (VAV) systems that operate when the system is on 100% free cooling from the air-side economizer.

**What's new
with California**

Single Zone VAV



- Requires variable speed drive or two-speed fan control for single zone packaged equipment with a cooling capacity of 110,000 Btu/h or greater.
- To take effect 1/1/2012.

**What's new
with California**

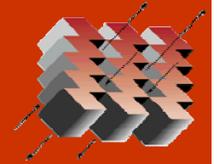
Refrigerated Warehouses



- Extends the Standard for refrigerated warehouses with a cold storage and frozen storage area exceeding 3,000 square feet.
- Requirements cover insulation and mechanical equipment (evaporators, condensers and compressors).

**What's new
with California**

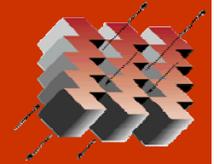
Programmable Communicating Thermostats



- Requires programmable communicating thermostats (PCTs) that can respond to signals from the utility to setback thermostat setpoints in response to price and events.
- Applies only to single zone packaged systems

**What's new
with California**

Compliance Credit (California)



- **Fault detection diagnostics**
- **Underfloor air distribution**
- **Displacement ventilation**
- **Ice storage air conditioning**

**What's new
with California**