

Healthy Indoor Environments

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HEALTHY INDOOR ENVIRONMENT: ABSENCE OF IAQ PROBLEMS

- ◆ IAQ PROBLEMS ARISE WHEN SOMETHING GOES WRONG!
 - ◆ EITHER INADEQUATE VENTILATION, PRESENCE OF AIR CONTAMINANTS, OR BOTH

HEALTHY INDOOR ENVIRONMENT: ADEQUACY OF VENTILATION

- ◆ IF THE HVAC SYSTEM ISN'T PERFORMING AS INTENDED, YOU COULD BE UNDERVENTILATING IN PARTS OF YOUR BUILDING, AND JEOPARDIZING THE PRODUCTIVITY OF THE WORKERS THERE.

HEALTHY INDOOR ENVIRONMENT: ADEQUACY OF VENTILATION

- ◆ WHAT'S NEEDED IS OPERATIONAL FEEDBACK ON THE AMOUNT OF OUTDOOR AIR FOR VENTILATION ACTUALLY BEING PROVIDED TO THE BUILDING OCCUPANTS

HEALTHY INDOOR ENVIRONMENT:
OPERATIONAL FEEDBACK ON
PERFORMANCE

◆ MONITORING

- ◆ LEED IEQ CREDIT #1:
- ◆ PERMANENT CARBON DIOXIDE (CO₂) MONITORING SYSTEM.

HEALTHY INDOOR ENVIRONMENT:
LEED IEQ CREDIT 1

Intent: Provide capacity for indoor air quality (IAQ) monitoring to help sustain long-term occupant comfort and well-being.

Requirements: Install a permanent carbon dioxide (CO₂) monitoring system that provides operational adjustments.

HEALTHY INDOOR ENVIRONMENT:
OPERATIONAL FEEDBACK ON
PERFORMANCE

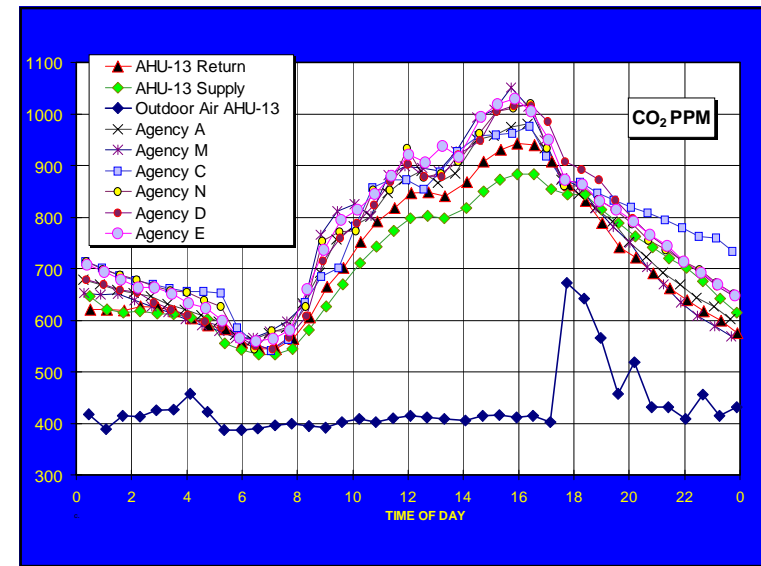
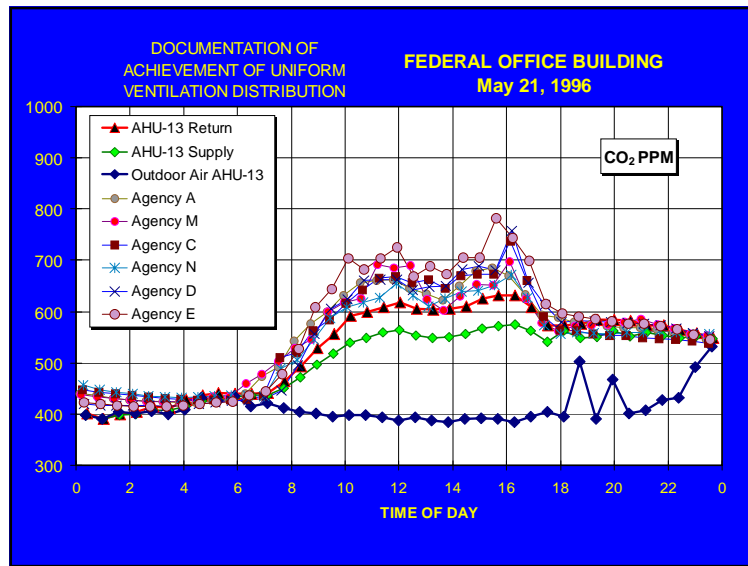
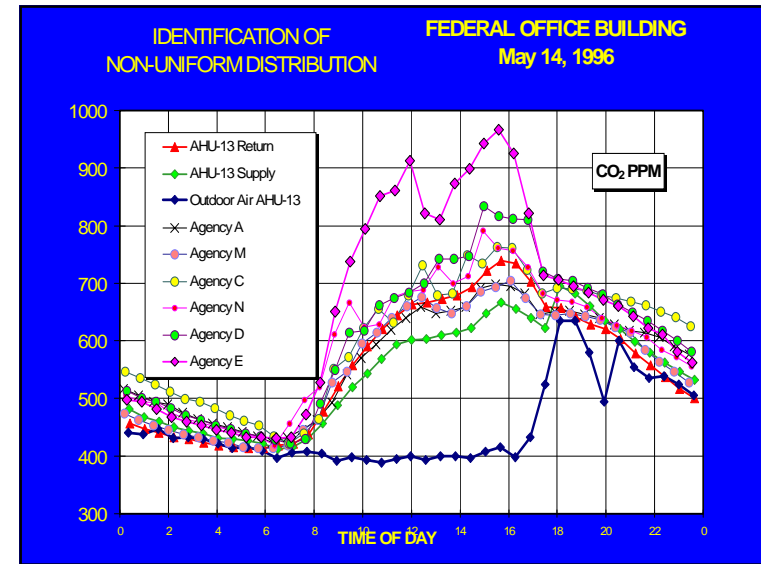
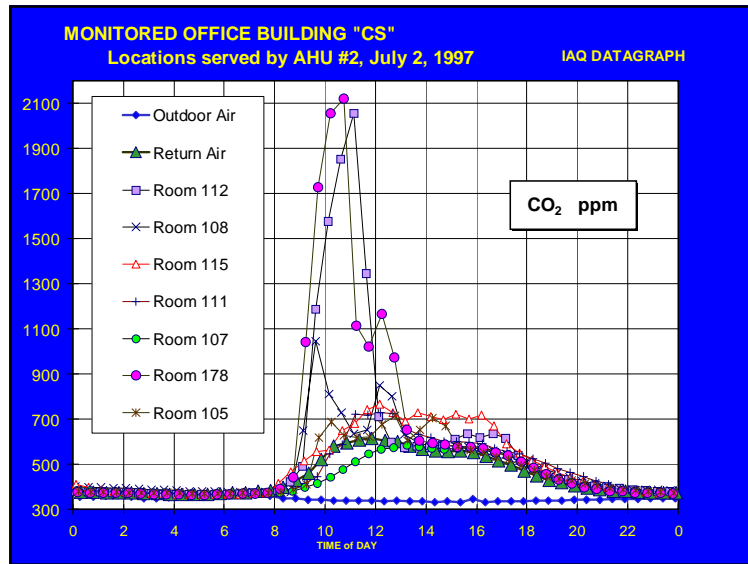
◆ MONITORING

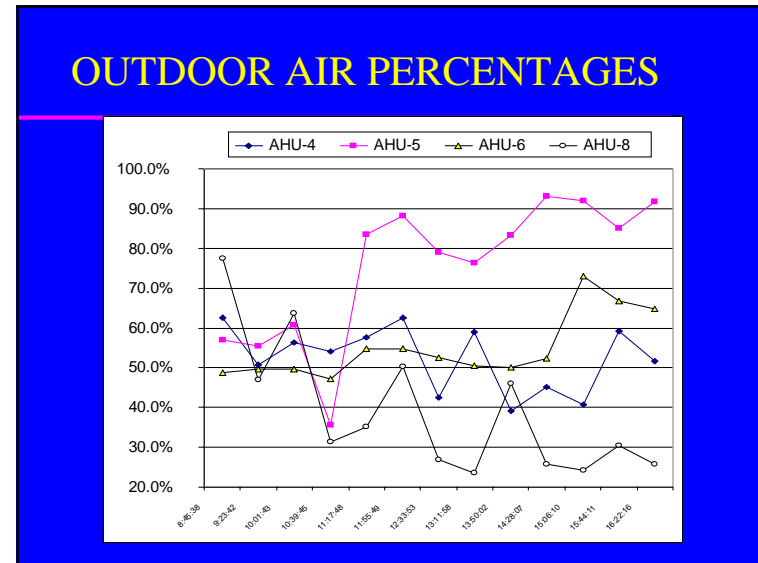
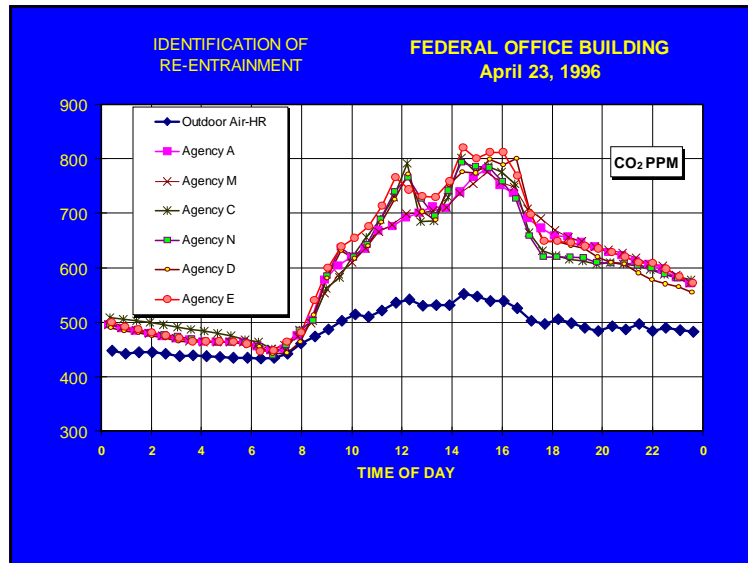
- ◆ ASTM D 6245-98 Standard Guide for Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation

HEALTHY INDOOR ENVIRONMENT:
OPERATIONAL FEEDBACK ON
PERFORMANCE

◆ MONITORING

- ◆ INFORMATION MANAGEMENT APPLIED TO THE OPERATION OF THE BUILDING AND ITS HVAC SYSTEMS.





HEALTHY INDOOR ENVIRONMENT:
 OPERATIONAL FEEDBACK ON
 PERFORMANCE

◆ MONITORING CAN BE
 USED FOR DIAGNOSTICS,
 CONTROL, OR BOTH

HEALTHY INDOOR ENVIRONMENT:
 MONITORING COSTS

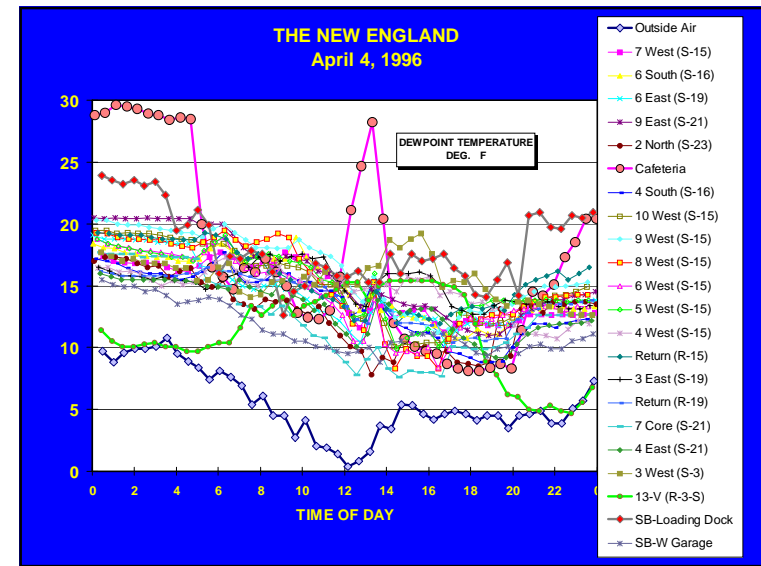
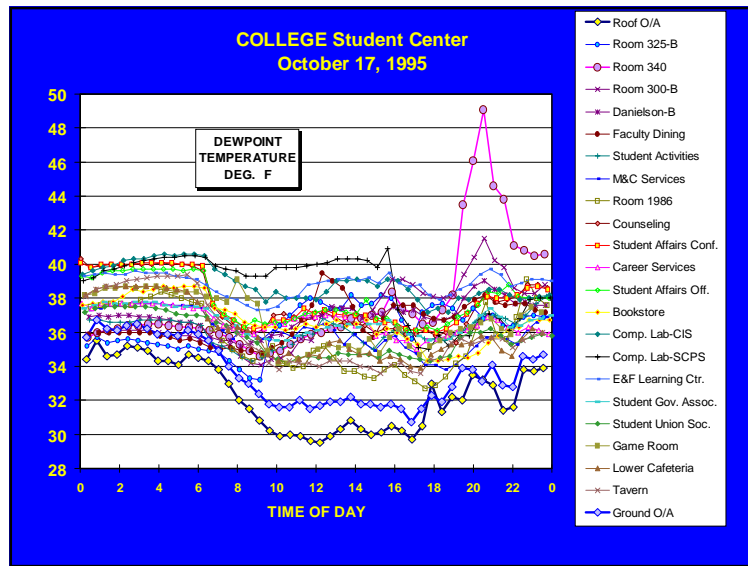
◆ AS MENTIONED BEFORE,
 PRODUCTIVITY GAINS CAN EXCEED
 ENERGY COSTS WITH INCREASED
 VENTILATION. IN ONE
 INSTALLATION, MONITORING COST
 \$0.20/SF IN 250,000 SF BUILDING

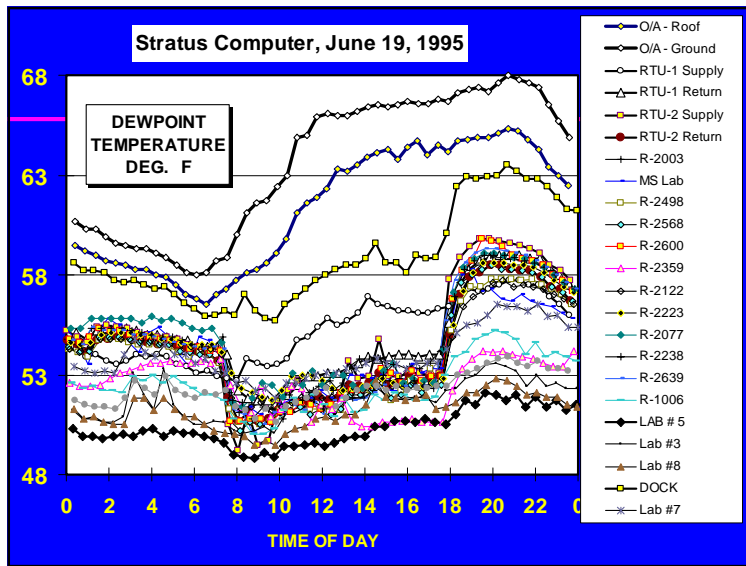
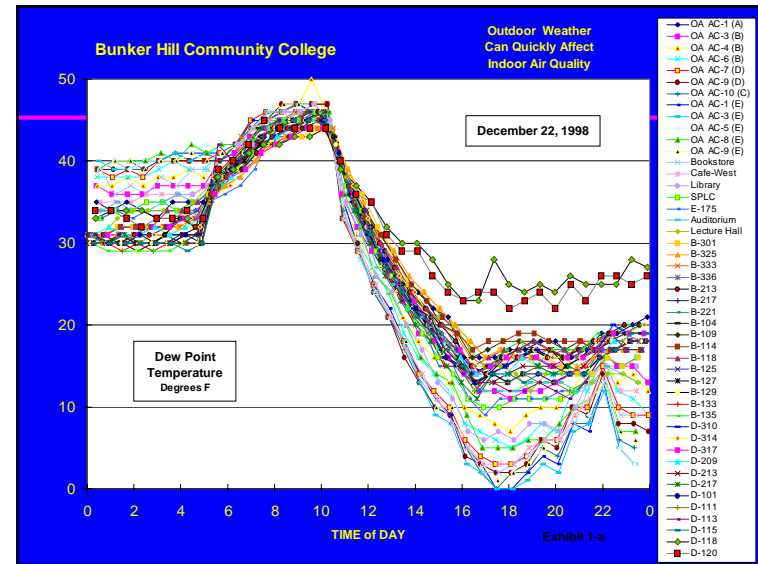
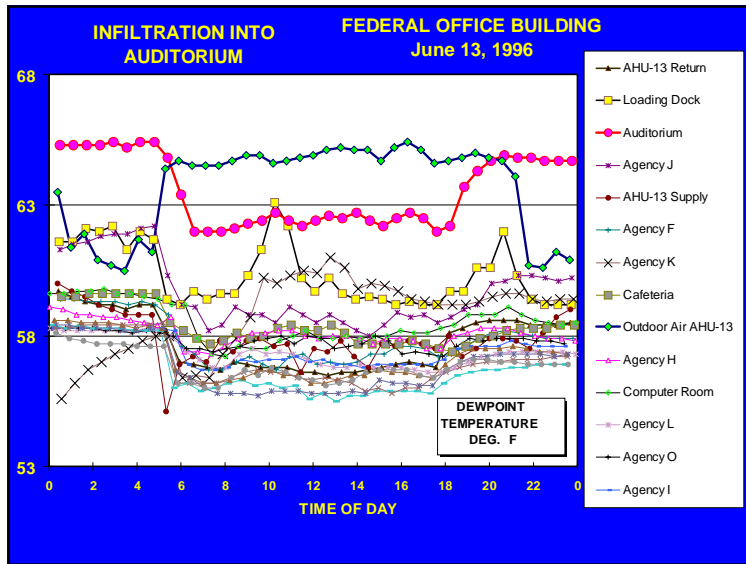
HEALTHY INDOOR ENVIRONMENT: NO AIR CONTAMINANTS PRESENT

- ◆ PARTICULATES
 - ◆ VOCs
- ◆ MOLD (MOISTURE)
- ◆ CARBON MONOXIDE

HEALTHY INDOOR ENVIRONMENT: POTENTIAL FOR MOLDS

- ◆ LIMITING FACTOR IN THE GROWTH OF MOLDS INDOORS IS MOISTURE

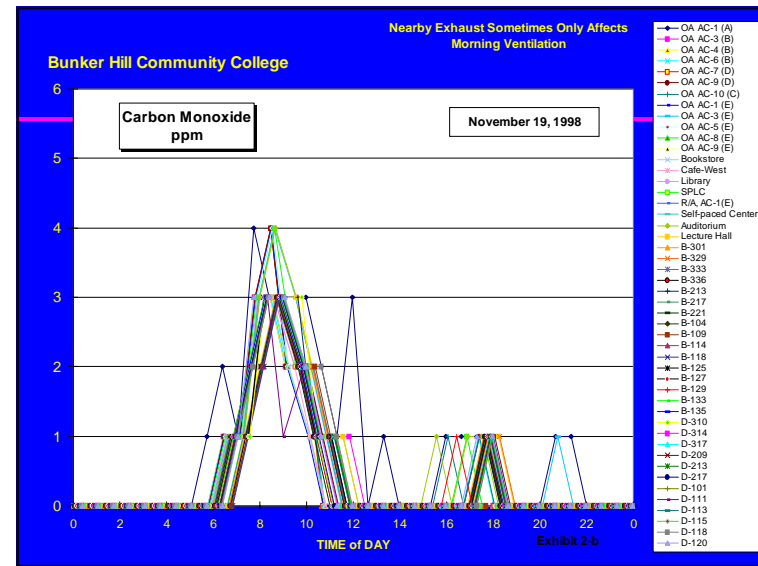
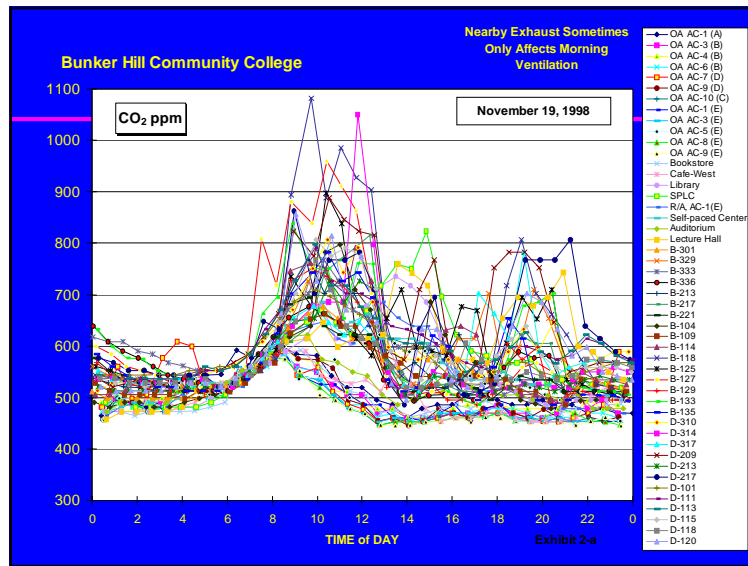
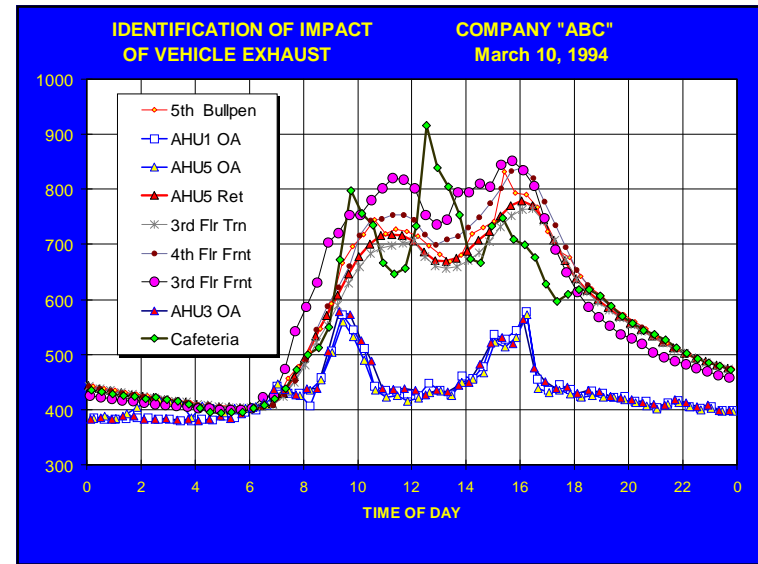
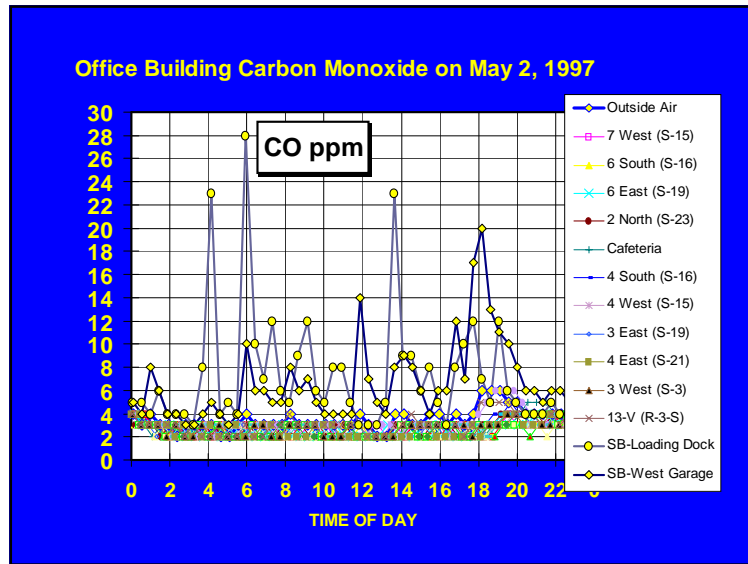




**HEALTHY INDOOR ENVIRONMENT:
 NO AIR CONTAMINANTS PRESENT**

◆ **CARBON MONOXIDE**

**FROM LOWER LEVEL PARKING
 AREAS, LOADING DOCKS,
 OR NEARBY TRAFFIC**



**HEALTHY INDOOR ENVIRONMENT:
ADEQUACY OF VENTILATION**

◆ WHAT'S NEEDED IS
OPERATIONAL FEEDBACK ON
THE AMOUNT OF OUTDOOR AIR
FOR VENTILATION ACTUALLY
BEING PROVIDED TO THE
BUILDING OCCUPANTS

**MONITORING FOR
VENTILATION PERFORMANCE**

- ◆ CAN REDUCE UNCERTAINTY & RISK
IN THE OPERATION OF BUILDINGS
- ◆ CAN IMPROVE DIAGNOSIS AND
MANAGEMENT OF HVAC OPERATION
- ◆ CAN INCREASE ABILITY OF
ACHIEVING MORE OPTIMUM
PERFORMANCE, CONSISTENT WITH
GOALS FOR BOTH MAXIMAL IAQ &
ENERGY EFFICIENCY