



FLORIDA SOLAR ENERGY CENTER
**Large Scale Study of Indoor Air Quality Problems in Schools
and Classrooms and Retrofit Benefits**

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The Challenge

Nearly 55 million people, or 20% of the nation's population, spend their days inside elementary or secondary school buildings. A nationwide survey of schools conducted by the Florida Solar Energy Center found significant and chronic problems in temperature control, humidity, indoor air quality, lighting, noise levels, mold, and odors in school buildings — all of which can detract from learning and potentially create an unhealthy indoor environment.

Technology Demonstration

Comfort conditions audits were conducted at eight elementary schools — 2 in FL; 2 in OR; 1 in MN; 1 in NY; 1 in TX; and 1 in WA. The audits identified significant ventilation problems in all eight schools, high RH levels (60-70%) and low classroom temperatures, conducive to mold problems in the hot-humid climate schools.

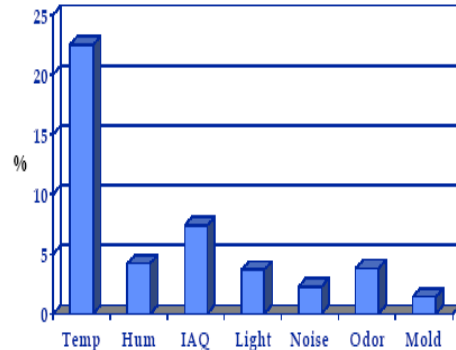
Retrofits were recommended and implemented at four of the eight audited schools including:

- Sealing soffit vents
- Installing ceiling mounted dehumidifiers
- Cleaning and calibrating unit ventilators
- Reconfiguring multizone fan systems to isolate zones by the operation of dampers controlled by CO2 sensors
- Reducing air handler flow rates
- Controlling ventilation based on occupancy
- Adjustment/replacement of dampers, controls and valves

Measured Project Results

- Less energy loss from building envelope
- Relative humidity drop of 20-30%
- Energy cost savings
- Less odors
- Increase in average air flow of 207 cfm
- Decreased energy demand

% of respondents indicating chronic problems by category



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