



# California Energy Commission PIER Buildings Program

**Under Floor Air Distribution Systems  
Displacement Ventilation Systems  
October 25, 2005**

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<b>DOCKET</b>
07-BSTD-1
DATE <u>OCT 25 2005</u>
RECD. <u>APR 29 2008</u>



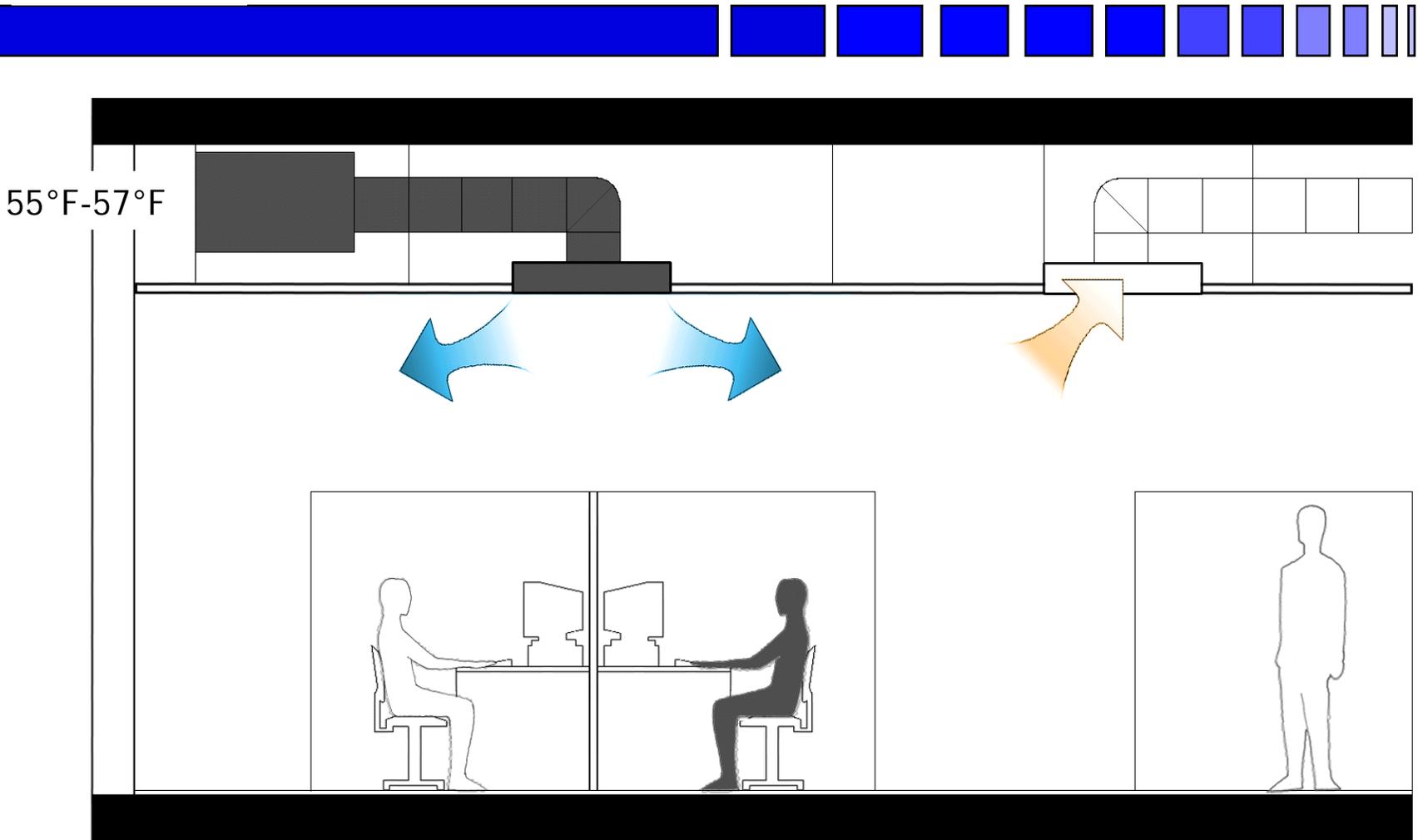
# UFAD & DV Systems for 2008 Nonresidential Standards



- Significant amount of research on UFAD and thermal displacement ventilation in the last four years.
- Results indicate significant potential for energy savings and improved ventilation effectiveness.
- Currently considering options for either a compliance credit or a requirement for these systems in appropriate situations (with relevant ACM manual revisions)

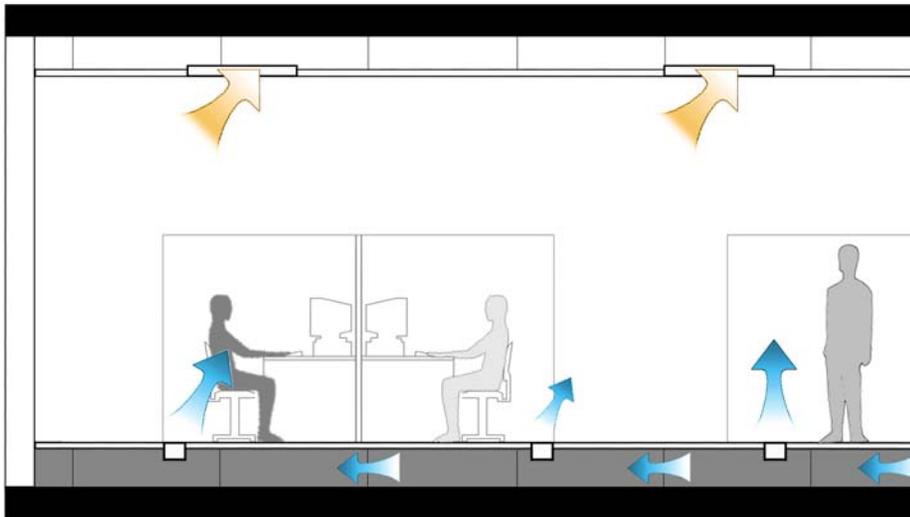


# Overhead Mixing System



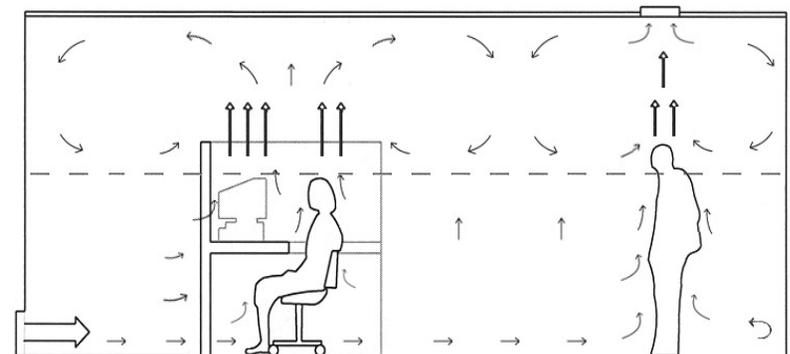


# Underfloor Air Distribution System (UFAD) Displacement Ventilation (DV)



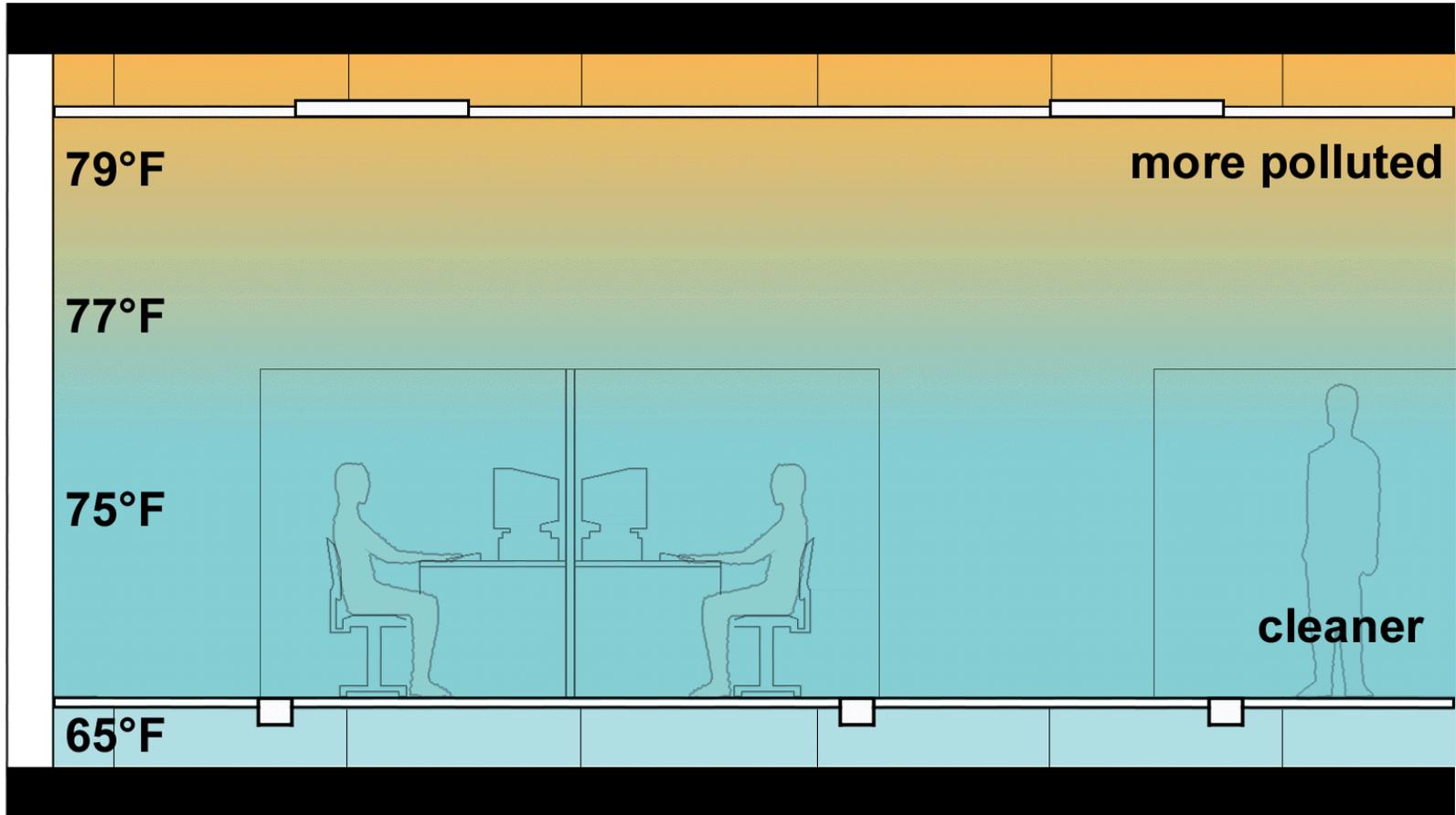
61°F-65°F

63°F-66°F





# Room Air Stratification (cooling operation)

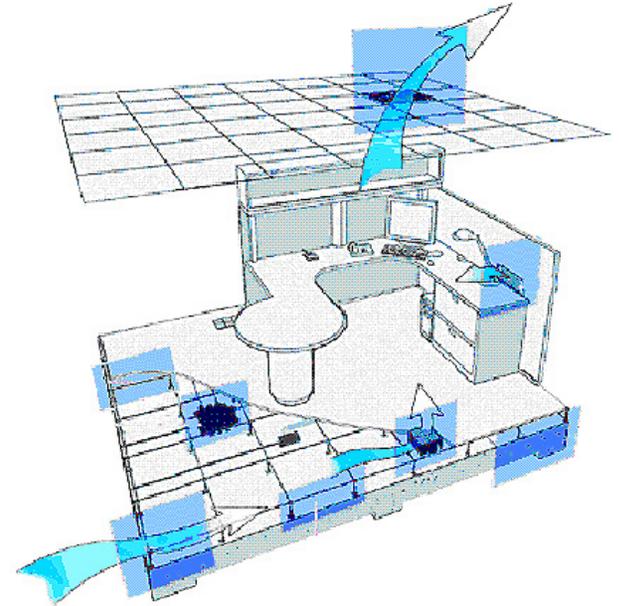




# Potential UFAD Benefits

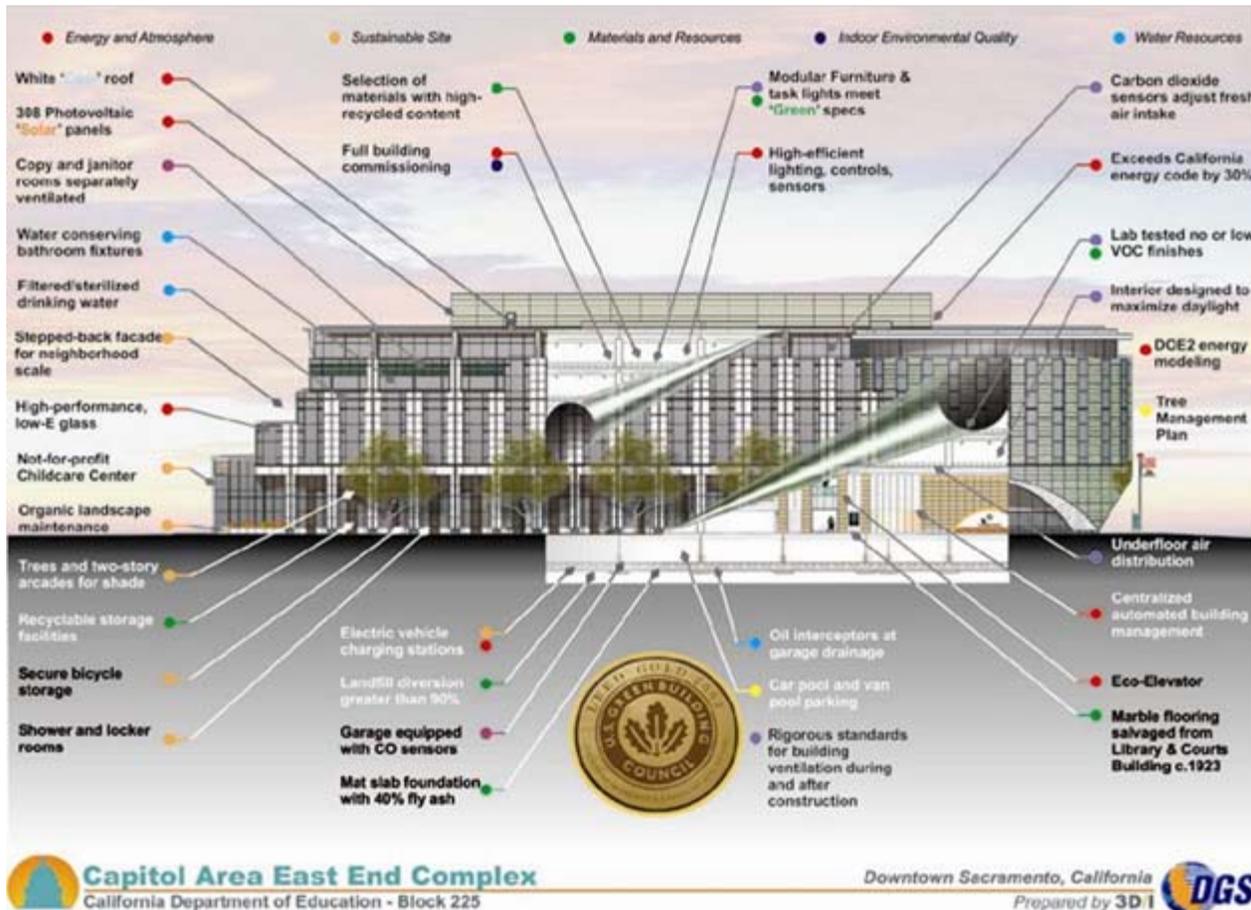


- Reduced energy use
- Improved ventilation efficiency and indoor air quality
- Improved occupant comfort, productivity and health
- Reduced life-cycle building costs
- Improved flexibility for building services
- Reduced floor-to-floor height in new construction



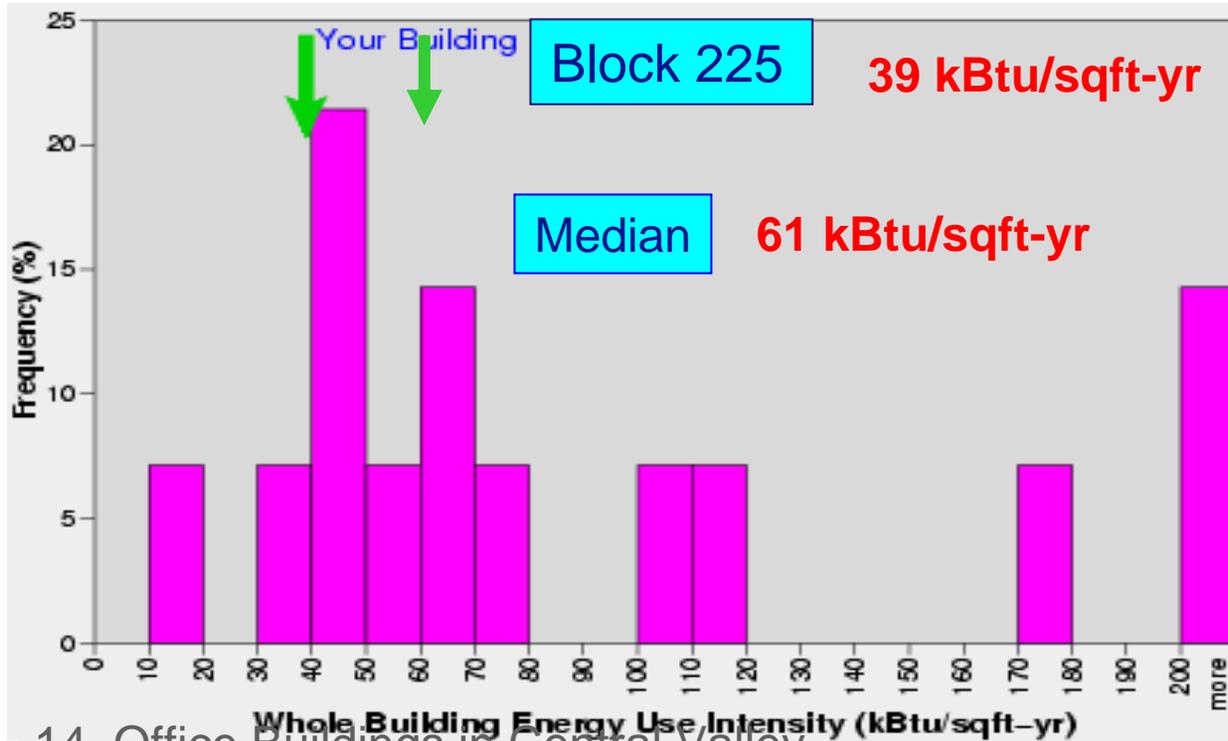


# Field study Block 225, CAEEC





# Block 225 energy use data Comparison to 14 California buildings (2004) - UFAD



N = 14, Office Buildings in Central Valley

<http://poet.lbl.gov/cal-arch/>

