

# Baseline Indoor Air Quality Field Study in Occupied New U.S. Homes: Hot-Humid and Mixed Humid Climates

University of Central Florida / Florida Solar Energy Center

Eric Martin, Program Director

321-638-1450 / [martin@fsec.ucf.edu](mailto:martin@fsec.ucf.edu)



# Baseline IAQ Field Study in Occupied New US Homes: Hot-Humid and Mixed-Humid Climates

## Team

- Eric Martin, Chuck Withers, Dave Chasar, and Jeff Sonne.
- Extensive field testing and monitoring experience.
- Conducted several prior studies investigating failure rates, energy impacts, and moisture impacts of mechanical ventilation systems.
- *Recruit homes and collect field data.*
- *Design core field study procedures.*
- *Create central database.*
- *Leading data collection effort in California.*
- *Collect field data in marine and cold climates.*



**BERKELEY LAB**

LAWRENCE BERKELEY NATIONAL LABORATORY

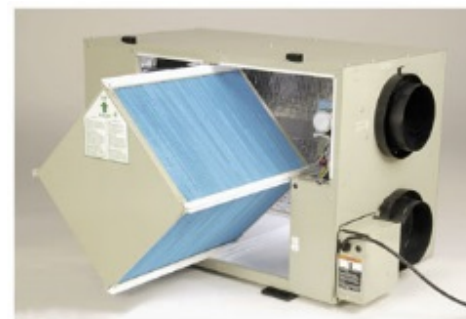


**Pacific Northwest**  
NATIONAL LABORATORY

# Baseline IAQ Field Study in Occupied New US Homes: Hot-Humid and Mixed-Humid Climates

## The Problem (The Need/Challenge)

- In new construction, IAQ and associated energy use are particularly influenced by selection of building materials, ventilation system design, use and installation.
- New data on IAQ, building and ventilation system characteristics are needed to enable progress on improving IAQ and related energy issues in new homes.
- There is a need for information on the design, operation, and installed performance of mechanical ventilation equipment that is required in many high performance home standards and some energy codes to maintain acceptable IAQ.



# Baseline IAQ Field Study in Occupied New US Homes: Hot-Humid and Mixed-Humid Climates

## The Solution – Get out there and measure!

- Collect indoor air pollutant, airflow, building and HVAC system characteristics in occupied new homes (2013 or later).
  - Measure indoor air pollutants.
  - Characterize performance of ventilation equipment and monitor use.
  - Track occupant activities impacting pollutant emission and removal.
- Internal Moisture Generation Enhancement
  - Adds condensate collection and tracer gas testing to a sub-sample of homes.
  - Enables completion of moisture balance to estimate internal moisture generation rates.





# Baseline IAQ Field Study in Occupied New US Homes: Hot-Humid and Mixed-Humid Climates

## Advantage, Differentiation, and Impact

- Collect data in a broad range of homes and climates (32 homes per climate zone).
- Investigate associations of indoor humidity and air pollutant concentrations with control measures including: ASHRAE-62.2 compliant ventilation, envelope air tightness.
- Assess the impacts of current building practices, codes, and standards on IAQ.
- Inform future standards and technology development needed to ensure acceptable IAQ in new homes.



**ANSI/ASHRAE Standard 62.2-2016**  
(Supersedes ANSI/ASHRAE Standard 62.2-2013)  
Includes ANSI/ASHRAE addenda listed in Appendix D

**Ventilation and  
Acceptable  
Indoor Air Quality in  
Residential Buildings**

---

# Thank You

University of Central Florida / Florida Solar Energy Center

Eric Martin, Program Director

321-638-1450 / [martin@fsec.ucf.edu](mailto:martin@fsec.ucf.edu)