# Comfort and Climate

# Weatherization Energy Auditor Single Family

Learning Objectives

By attending this session, participants will be able to:

* List the basic principles of human thermal comfort.
* Describe relative humidity.
* Demonstrate how to use a psychrometric chart.

Key Terminology

Dew point

Dry bulb

Mean radiant temperature (MRT)

Psychrometric chart

Relative humidity (RH)

Sling psychrometer

Wet bulb

Supplemental Materials

Handouts & Resources

Arizona State University. “Visualizing Thermal Comfort.” <www.design.asu.edu>.

Comfort and Climate Quiz.

Comfort and Climate Quiz Answer Key.

Psychrometric Chart.

Classroom Props & Activities

Sling psychrometer and chart

**Practice use of psychrometric chart**: Let a student use the sling psychrometer to take dry bulb and wet bulb readings in the classroom. Record the readings on the board and have students use the psychrometric chart to determine the RH in the room. Repeat this exercise outdoors. Discuss the difference in measured RH (if any) and possible causes (i.e., air conditioning, number of people in classroom).

Class Overview

* Use the presentation and in-class discussion to teach students how humans perceive their thermal surroundings.
* Explain that cold drafts by the assumed leaky window are more likely the result of chilled air “falling” down the glass, creating air currents in the room.
* Explain why sedentary people are more affected than active ones and discuss how this relates to weatherization. (Example: Moving Granny’s chair away from the window may make her more comfortable than any amount of caulk.)
* Click through the psychrometric chart slides to add lines sequentially, explaining the significance of each. Discuss how RH applies to human comfort and weatherization, (i.e., how air sealing homes can increase interior RH).

Anecdote: In Victorian times, wooden furniture had to be re-glued every spring. Why? Homes were typically balloon-framed and extremely leaky. The low humidity exterior air blowing through the house all winter dried the moisture out of the glue, causing it to fail.