

# MULTIFAMILY PERFORMANCE PROGRAM

## Technical Topic – Existing Buildings

### Indoor Temperature

**There are two important steps to take when modeling indoor temperature reduction as an energy efficiency measure:**

- 1) Determine a realistic assumption of the existing average indoor temperature.
- 2) Determine a realistic assumption of the new average indoor temperature and whether the technology proposed can achieve that temperature.

#### **Assumed existing temperature (before the improvement)**

If your model assumes an average indoor temperature of 75 F or higher for a majority of heated areas, then it should be supported by a record of indoor temperatures measured from multiple locations in the building. It is usually not realistic to assume 75 F or higher for the entire building based on only 2 or 3 temperature measurements, even if the building management claims that the building is overheated.

#### **Assumed indoor temperatures resulting from the improvement**

The following table illustrates the likely average indoor temperatures in buildings that allow resident controlled temperature, such as installing resident-controlled thermostatic radiator valves (TRVs) or programmable thermostats.

<b>Building Type</b>	<b>Typical Min. Temp.</b>
Master-metered heat	74 F
Tenant-paid heat	72 F

If you recommend an improvement that includes a specific upper-limit to indoor temperatures, such as range-limited thermostats, then the improved indoor temperature should be modeled as no less than the upper limit. Also keep in mind that building managers may increase the upper limits to 72 F or higher for the following reasons: reduce resident complaints, increase marketability, reduce resident turnover, reduce vandalism of range-limiting equipment by residents, reduce usage of electric space heaters by residents.

#### **Summary**

1. If residents are provided unlimited apartment-level control over heat, the seasonal average indoor temperature will rarely be below 74 F in buildings with owner-paid utilities or 72 F in buildings with resident-paid utilities.
2. Buildings that are reportedly overheated are typically overheated only in some sections of the building. The overall average temperature for the entire building is typically not found to be more than 76 F in buildings with owner-paid utilities.
3. Replacement of non-programmable thermostats with programmable thermostats will likely generate zero energy savings, especially if utility bills are not paid by the residents.

This information is provided as a summary to the Technical Topics discussion in March 2008