



Greater efficiency supports patient care.

Set thermostats to balance efficiency and comfort.

All ECM content was independently developed and reviewed to be vendor-, product-, and service provider-neutral.

Description

Increase baseline thermostat settings during summer months and decrease during winter months to balance energy efficiency and thermal comfort.

Project Talking Points

Both energy efficiency and thermal comfort goals are benefitted by modulating the baseline thermostat settings to align with seasonal and daily fluctuations in outdoor air temperature.

Triple Bottom Line Benefits

- Cost benefits: Choosing appropriate temperature ranges and settings results in energy savings and cost savings.
- Environmental benefits: Reducing energy always reduces emissions and environmental impact.
- Health and safety benefits: Depending on the improvements made, temperature controllability and thermal comfort should be improved, which enhances patient and staff experience. Cost savings can be used to fund the hospital's overall mission and decrease healthcare costs.

Commissioning Connections

While thermostat settings can be accomplished in conjunction with retro commissioning, commissioning is not necessary to accomplish this measure. The ASHE [Health Facility Commissioning Guidelines](#) and accompanying [Health Facility Commissioning Handbook](#) are good information sources for undertaking this performance improvement measure.

Purchasing Considerations

- For facilities with partially BAS integrated systems, consider requirements for integration with the BAS (if desired)
 - For example, pneumatic controls will require a converter
- If BAS integration is not possible, consider thermostat guards to prevent unauthorized temperature changes

How-To

For Facilities without BAS Integrated Thermostats:

1. Understand your stakeholders and who is on the project team: Facility manager, building engineer, building automation system (BAS) manager, building occupants.
2. Using ANSI/ASHRAE Standard 55: Thermal Environmental Conditions for Human Occupancy and ANSI/ASHRAE/ASHE Standard 170: Ventilation of Health Care Facilities, determine the upper and lower limits of thermal comfort in your facility, taking space function and type into account.
3. Implement the appropriate temperature settings for each zone/ space.
4. Where possible, use thermostat guards to prevent unauthorized temperature changes.
5. If thermostat guards cannot be used, consider a monitoring plan to regularly check thermostat settings throughout your facility.

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3. Use BAS system to begin trending space conditions
 - Trends provide critical feedback on space conditions and energy usage, making it easier to diagnose control problems and identify energy waste or changes in critical pressure.
4. Use monthly average temperature for your area and the results of the thermostat trends gathered through the BAS to develop a schedule for occupied and unoccupied hours. Once again, space function and type are important considerations for this process.
5. If possible, via the BAS, configure alarms to alert maintenance staff of spaces operation outside of their acceptable temperature range.
6. Via trending, monitor new default thermostat settings, and adjust as necessary.
7. Other thermostat considerations include:
 - Resetting the air handling unit (AHU) supply air temperature (SAT) to save energy while maintaining thermal comfort.
 - Thermostat lockout beyond a pre-set “dead-band” range (i.e. thermostat can only be manually adjusted between 68-72 degrees)
 - Increasing temperature “dead-bands” in non-critical areas.
 - Resetting zone air supply, chilled water temperatures, and heating water temperatures based on actual zone temperature feedback.

Regulations, Codes and Standards, Policies

- American Society for Healthcare Engineering (www.ashe.org)
 - [Health Facility Commissioning Guidelines](#)
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (www.ashrae.org)
 - [Standard 55: Thermal Environmental Conditions for Human Occupancy](#)

- [Standard 62.1: Ventilation for Acceptable Indoor Air Quality](#)
- [Standard 170: Ventilation of Health Care Facilities](#)

Cross References

- [LEED for Existing Buildings: Operations + Maintenance](#)
- [LEED for Healthcare: New Construction and Major Renovations](#)
 - Energy & Atmosphere Prerequisite: Fundamental Commissioning and Verification
 - Energy & Atmosphere Prerequisite: Minimum Energy Performance
 - Energy & Atmosphere Prerequisite: Building-Level Energy Metering
 - Energy & Atmosphere Credit: Optimize Energy Performance
 - Energy & Atmosphere Credit: Enhanced Commissioning
 - Energy & Atmosphere Credit: Advanced Energy Metering

ECM Synergies

[Establish baseline for current energy consumption.](#)

[Retrocommission HVAC controls.](#)

[Evaluate setback of temperature and airflow settings at night.](#)

[Reevaluate HVAC equipment scheduling](#)

Resources

Educational Resources

- Pacific Northwest National Lab, [Building Retuning Training](#)
 - Free interactive course to help you improve your building's energy performance and comfort of the building's occupants.

Case Studies

[Bon Secours St. Francis Health System](#)

- Key Point
 - Changing thermostat setpoints has helped reduce chiller usage and assure that HVAC systems do not simultaneously heat and cool spaces.

Other Resources

- U.S. Environmental Protection Agency- [ENERGY STAR Building Upgrade Manual](#)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (www.ashrae.org)
- Lawrence Berkeley National Laboratory

- [High Performance Healthcare Buildings: A Roadmap to Improved Energy Efficiency](#)
- Pacific Northwest National Laboratory *Building Re-Tuning Training Guide*
 - [Occupancy Scheduling: Night and Weekend Temperature Setback and Supply Fan Cycling during Unoccupied Hours](#)
- U.S. Department of Energy, Energy Efficiency & Renewable Energy Building Technologies Program
 - [Energy Smart Hospitals: Retrofitting Existing Facilities](#) (March 2009)
 - [Hospitals Realize Fast Paybacks from Retrofits and O&M Solutions](#) (2011)
 - [Hospitals Save Energy and Money by Optimizing HVAC Performance](#) (2011)

Category List:

- Controls

ECM Attributes:

- Optimize Operations
- Repair or Optimize Existing Systems (fix what you have)

Improvement Type:

- Commission/Retro-Commission
- Retrofit/Renovations
- New Buildings
- Operations and Maintenance

Department:

- Engineering/Facilities Management

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