Air Combat Command
Energy & Facility Management Policy

Leadership Actions

Installation and subordinate Commanders must take the following actions necessary to achieve buy-in to their energy and facility management program by all Airmen.

L1. Energy Management Steering Group - Establish an Energy Management Steering Group (EMSG) to coordinate all energy matters within the applicable level of command. (Ref: AFPD 23-3)

L2. Energy Conservation Awareness – Develop and implement an awareness program through the EMSG. (Ref: EPAct 2005, and DoDI 4170.11) Publish an installation 'Energy Proclamation' referencing this policy. Publish energy conservation goals and techniques. Relate energy conservation to operational readiness. Create, implement, and sustain a healthy energy conservation awareness program.

L3. Right Sizing – Right size Installations and Ranges to align with the shrinking force structure. Reduce infrastructure 20% by 2020. (Ref: HQ ACC/A7 Installation Campaign Plan)

L4. Reduce Operational Deficits – Minimize overall energy costs and consumption.
(Ref: HQ ACC/A7 Installation Campaign Plan)
- Establish installation policies to promote energy conservation and cost control
- Instill and enforce an energy conservation culture
- Reduce utility costs 2% annually
- Reduce energy consumption 3% and water consumption 2% annually
- Incorporate sustainable design practices into future construction and renovation projects
- Meet published Air Force sustainability goals for LEED-Silver

L5. Personal Computers, Peripherals and Equipment - Institute operating procedures to minimize energy consumption when devices are not in use. Turn off monitors and peripherals at end of duty day, and configure PCs to enter the lowest possible power setting when not in use. Turn off all printers, copiers, scanners, facsimile machines and other office equipment at end of duty day (as warrantees allow), and enable energy saving functions when not in use during the duty day. (Ref: ACC/A6, AFNetOps/CC and SAF/XC memoranda on AF PC Energy Conservation). Where possible, use UL listed power strips to turn off office equipment to eliminate phantom loads.

L6. Lighting – Turn off all unnecessary interior and exterior lighting. Turn off exterior lighting not required for security or base operations between the hours of 2300 and 0500. This includes facilities, equipment yards, parking lots, street lights, and sports fields (tennis courts, running tracks, golf driving range, softball/football fields, etc.). Lights remaining on will only be the minimum necessary to meet safety and security requirements. Control applicable lighting with occupancy/motion sensors or timers.

L7. Ramp Lighting - Control aircraft parking ramp lighting to maintain 3 FC at 1 foot above grade during nighttime operations. (Ref: AFI 31-101) Assure light poles are properly switched/configured to allow individual control.

L8. Space Heaters – Prohibit use of space heaters to supplement climate control, unless required for valid safety or health issues. Facility managers will contact CE Customer Service to address unsatisfactory climate control issues. (Ref: Engineering Technical Letter 98-4)

L9. Water Systems: In other than living facilities, provide hot water to sinks only when required by health standards and building codes.

L10. Landscape Irrigation – Prohibit use of potable water for new landscape irrigation systems. To meet the 2% annual water consumption reduction goal, reduce acreage currently irrigated with potable water, and instead use harvested rainwater, grey-water, or treatment plant effluent. Variations must be approved in writing by ACC/A7. Maximize use of Xeriscape techniques for drought-tolerant landscaping.

L11. Energy Management System – Establish, maintain and maximize use of an Energy Management System (EMCS, SCADA, etc.) to centrally monitor and control utility and building systems.

L12. Work Schedules – Schedule tasks and equipment operation to minimize utility demand costs.

L13. Dress Code - Allow casual attire during cooling season to make higher temperatures more acceptable.

Standards

Installations shall implement the following standard design, operation, and maintenance practices for energy management. Exceptions where they are incompatible with the mission or demonstrated to be life cycle cost ineffective must be submitted in writing to, and approved by, HQ ACC/A7.

Management

S1. Energy & Facility Management Plan – Establish and implement an Energy & Facility Management Plan. (Ref: AFEPPM04-1)

S2. Energy Audits – Conduct energy audits of 10% of facilities annually and develop projects to correct deficiencies. Also, update real property records as needed. (Ref: AFEPPM04-1)

S3. Design Reviews – Energy Managers will review and comment on all applicable facility and utility project designs, as a minimum at the DD Form 1391, customer concept document, preliminary and final design milestones.

S4. Life-Cycle Cost Analysis – Take decisions leading to the lowest life cycle cost not the least first cost.

S5. Metering – Install advanced meters on all new construction and renovation projects exceeding $200K, and connect to base EMCS. (Ref: EPAct 2005 and DoDI 4170.11)

S6. Reimbursable Customers – Ensure all reimbursable customers are charged the correct amount, and that all reimbursable utility costs are charged to the appropriate commodities accounts.

S7. Reporting – Submit Defense Utility Energy Reporting System (DUERS) data by the 15th of each month; six weeks from the end of a reported month (e.g. - end of January data is reported by 15 March)

S8. Utility Contracts - Review annually for compliance and to ensure the installation is on the lowest rate schedule. Ensure CONS, JA, and CE participate. (Ref: FAR Part 41.241, AFI 32-1061 and ACC Sup 1)

S9. Energy Efficient Equipment/Appliances - Procure only ENERGY STAR or FEMP listed products. Listings can be found at www.energystar.gov. Use only front-load washers & dryers (Fitness Centers, Dorms, TLFs & VQs).

Operation & Maintenance

S10. Lighting - Maintain lighting levels at the Illuminating Engineering Society of North America (IESNA) recommended values. De-lamp over-lit rooms to achieve these values. Control applicable lighting with occupancy/motion sensors or timers. Eliminate indoor night-lighting.

S11. Hangar Lighting – When lamps in high-bay lights reach 80% of their useful life replace them by group-relamping to economize equipment and labor costs.

S12. Lights - Replace incandescent lamps with compact fluorescent lamps everywhere practicable.

S13. Domestic Hot Water Temperature – Set and maintain for 120 degrees (do not exceed).

S14. Space Temperature Settings: Maintain facility temperatures in accordance with the table below. This standard applies to occupied portions of ACC facilities, tenant organizations, and reimbursable customers.

Heating Season (max. settings)	Administrative Spaces	Occupied: 69 degrees F Unoccupied: 55 degrees F
	Shop Spaces	Occupied: 65 degrees F Unoccupied: 55 degrees F
	Warehouse Spaces	60 degrees F
Cooling Season (min. settings)	Administrative Spaces	Occupied: 76 degrees F Unoccupied: 84 degrees F
	Shop Spaces (When authorized)*	Occupied: 76 degrees F Unoccupied: 84 degrees F
	Warehouse Spaces	Not cooled unless required for proper storage of perishables

Variations must be approved in writing by ACC/A7. * Ref: UFC 3-410-01FA.

- Although climate control systems for mission and communication equipment are exempt from the above settings, energy efficiency should be key in the equipment operation. Hospitals are covered by their own unique criteria.
- Unoccupied times apply to night and weekend periods when personnel are not required to be present.
- Work schedules should be established to minimize occupied hours while meeting mission requirements. Typically, occupied periods should not exceed 10 hours each workday. Weekend setback should be from COB on Friday until BOB on Monday. Implement temperature setback for Federal holidays and appropriate military/civilian down days.

S15. Programmable Thermostats – Provide programmable thermostats with lockout capability in facilities/areas where EMCS is not available or applicable.

S16. Summer-Winter Changeover - Comply with the following changeover standards in all facilities that require a manual seasonal changeover between the heating and cooling modes:

Heating Season	Heating mode may not begin until outside air temperature drops to 55 degrees F for four consecutive days
Cooling Season	Cooling mode may not begin until outside air temperature reaches 75 degrees F for four consecutive days

Variations must be approved in writing by ACC/A7.

Design & Construction

S17. New Construction – Program new construction and major renovation projects according to the Air Force Sustainable Design and Development (SDD) Policy. (Ref: HQ USAF/A7C Memo, 31 July 2007)

S18. Cool Roofs – For new roofs or major roof replacement projects, meet or exceed the following Solar Reflectance Index (SRI) for a minimum of 75% of the roof surface: SRI $\geq$ 78 for low-slope roofs ($\leq$ 2:12); SRI $\geq$ 29 for high-slope roofs (> 2:12). (Ref: Cool Roof Rating Council; and LEED for New Construction v. 2.2, SS Credit 7.2) Comply with published ACC and base architectural policies regarding roofing. Variations for northern-tier bases, where this may not prove economical, must be approved in writing by ACC/A7.

S19. Energy Management and Control System – Connect facilities ($\geq$10 Tons AC) to basewide EMCS for new construction and major renovations.

S20. Electric Motors – Use premium efficiency units for new and retrofit motors. (Ref: ASHRAE 90.1)

S21. Lighting Systems – Meet or exceed the following minimum efficiencies for new and renovated facilities:

Interior office, administrative, classroom, other (below 20' high ceilings)	Luminaire Efficiency Ratio (LER) > 77 Typically T8 or T5 lamps with electronic ballast
High bay (above 20' high ceilings)	Luminaire Efficiency Ratio (LER) > 50 Typically metal halide or high intensity fluorescent
Exterior Lighting	Efficacy > 100 lumens/watt Upward Efficiency < 10%

S22. Heating, Ventilating, and Air Conditioning (HVAC) Systems – Meet or exceed the following efficiencies for HVAC systems in new or renovated facilities, and when replacing equipment:

Heating Systems	Hydronic Boilers < 2,500,000 BTU/hr	Thermal Efficiency > 85%
	Hydronic Boilers > 2,500,000 BTU/hr	Thermal Efficiency > 82%
	Warm Air Furnaces < 150,000 BTU/hr	Annual Fuel Utilization Efficiency (AFUE) > 90%
	Infrared Heaters (open)	Combustion Efficiency > 92%
	Infrared Heaters (tube)	Combustion Efficiency > 87%
Cooling Systems* (includes air to air heat pumps)	Air Cooled <10 tons	Seasonal Energy Efficiency Ratio (SEER) $\geq$ 14.0
	Air Cooled 10 – 150 tons**	Integrated Part Load Value (IPLV) <.85
	Water Cooled < 150 tons	Integrated Part Load Value (IPLV) <.55
	Water Cooled 150 – 300 tons	Integrated Part Load Value (IPLV) <.50
	Water Cooled > 300 tons	Integrated Part Load Value (IPLV) <.40
Ground Source Heat Pumps	All types	Energy Efficiency Ratio (EER) > 20

* Provide cooling systems according to UFC 3-410-01FA.
** Do not use air-cooled chillers on facilities with cooling loads greater than 100 tons.

Guidelines

Implement the following Air Force and ACC-wide best practices, except where they are incompatible with the mission or demonstrated to be life cycle cost ineffective.

Management

G1. Energy Manager - Designate a full-time dedicated energy manager. Train and qualify that individual as a Certified Energy Manager (CEM).

G2. Facility Managers - Provide basic energy management training for facility managers and alternates.

G3. Lighting - Turn off lights in offices, conference rooms, break rooms, bathrooms, etc. when areas are unoccupied during the day, even for short periods of time. Minimize general area lighting and incorporate task lighting as necessary. Re-evaluate lighting levels at change of facility use. Control lighting with occupancy/motion sensors.

G4. Kitchen Equipment - Minimize use of personal refrigerators, coffee makers and microwaves by consolidating them into common break areas.

Operation & Maintenance

G5. Building Envelope – Caulk and seal cracks. Repair weather-stripping around doors and windows. Replace broken glass. Repair doors and windows to operate properly. Adjust automatic door closers. Seal vertical shafts.

G6. Recurring Work Program (RWP) - Perform preventive maintenance according to equipment manufacturer's recommendations. Validate maintenance action sheet (MAS) items to maximize the impact of available man-hours.

G7. Retro-Commissioning – Retro-commission facilities that are performing below these standards, that have had significant operational changes or renovations, and whose building systems operate inefficiently. (Ref: LEED for Existing Buildings Upgrades, Operations and Maintenance, Energy and Atmosphere Prerequisite 1)

G8. Motor Controls - Provide and properly control variable frequency drives (VFDs) on motors with large variations in load. Provide soft start on all large motors where VFDs are not used.

G9. Hangar Doors – Minimize hangar door open time during heating season and ensure proper hangar door closure limit-switch operation, where climate allows.

G10. Airfield Lighting – Use light emitting diode (LED) lighting where approved/recommended by HQ ACC.

G11. Chilled Water Temperature Reset - Lower chilled water temperatures several degrees prior to peak periods, and allow temperature to rise during peak periods to minimize peak demand.

G12. Seasonal Water Reset – Adjust boiler and chiller water temperature for seasonal requirements. (45-47 degree chilled water set point for summer and 50-52 degree chilled water set point for Spring and Fall). Bases that have a low humidity environment have more flexibility to increase water temperatures.

Design & Construction

G13. Sustainable Design – For major renovations and repairs exceeding $250K, meet U.S. Green Building Council's LEED for New Construction, v. 2.2 Energy and Atmosphere prerequisites; obtain as many credits as practicable.

G14. Project Design Review – Ensure all applicable projects are reviewed by the Energy Manager and other design professionals to ensure all available energy conservation measures are incorporated.

G15. Free Cooling – Provide capability to bypass chiller when outdoor air temperatures are low enough to remove high indoor heat load. (Applicable only to water cooled chillers that serve buildings with high-internal heat load when there are low outdoor air temperatures)

G16. Infrared Heaters – Heat high-bays and hangars with IR systems, unless prohibited by AFOSH safety regulations.