

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D. C.
20332-5000

REPLY TO
ATTN OF:

LEEE

22 MAY 1986

SUBJECT: Engineering Technical Letter (ETL) 86-5:
Fuels Use Criteria for Air Force Construction

TO: ALMAJCOM/DEE/DEM AFIT/DET/DEM AFRCE-CR AFRCE-BMS AFRCE-S
USAFA/DET AFRCE-WR AFRCE-ER AFDW/DEE

1. Purpose: This ETL establishes the fuels use criteria at any USAF installation for both new construction and major O&M repair/rehabilitation projects. This ETL is mandatory per AFR 8-7; Engineering Technical Letters (ETL) dated 9 January 1986.
2. Effective Date: This ETL shall apply to all projects now either in design or concept stages. Any project in a design status of less than 35% design complete will be modified to comply; those greater than 35% design complete will be identified to the appropriate OPR for resolution. All MCP projects will be identified to AF/LEEEU, all O&M projects will be identified to AFESC/DEM for concurrence of actions. This ETL does not apply to military family housing projects. Air National Guard and Air Force Reserve projects will follow this procedure to assure compliance with federal laws.
3. Reference Publications: These publications constitute the background for this ETL.
 - a. HQ AF/LEE Ltr, "General Planning/Design Criteria-Energy Source Selection and Applications Criteria for Defense", 4 June 1984
 - b. AFR 91-7, "Heating Systems Policy", 27 July 1983
 - c. AF/LEEEU Msg, "Restriction on Fuel Sources for New Heating Systems", 151830Z Mar 83
 - d. Public Law 97-214, "Military Construction Codification Act", July 12, 1982
 - e. Public Law 95-620, "Powerplant and Industrial Fuel Use Act of 1978", Nov 9, 1978.
4. Requirement/Implementation:
 - a. All possible facilities will be tied into the basewide heat distribution system. Where such a system does not exist, or it is otherwise not feasible based on life cycle costing, the fuel selection criteria listed in paragraph below shall be used discriminately, All Central Plants shall strictly observe the following:

b. Third Party Financing (TPF).

(1) Title 10 United States Code, Section 2394, which was included in the Military Construction Codification Act (P.L. 97-214), permits military departments to enter into long term contracts (up to 30 years) with some third party. They may build and operate, with private venture capital, a plant to furnish energy to a military installation.

(2) The House of Representatives, in its Conference Report on the Military Construction Authorization Act, 1984 stated that - "In fact, as a matter of overall policy, the conferees on behalf of their respective committees, serve notice that in the future all requests for large scale heating and power plants will be closely examined and the military services are expected to aggressively explore and pursue third party financing before any project is authorized (using Military Construction Program Funding)".

(3) Since many potential third party proposals may entail the use of energy sources not allowed by Congress for military construction funded plants, e.g. gas or oil for units over 50 MEGA BTUH, it is the responsibility of the MAJCOM to seek the necessary waivers from AF/LEEE. A waiver of the Fuels Use Act, P.L. 95-620 may also apply, in which case this waiver will be processed through AF/LEEE.

(4) The following categories of projects must be considered for Third Party Financing (TPF):

(a) Any boiler/generator with 50 Million BTUH (MEGA) input or greater.

(b) Any 2 or more such units located on the same site which, in the aggregate, have a design capability input of 100 (MEGA) or greater.

(c) Any major modification and/or repair involving complete replacement of boiler/generators. Segregation of the new equipment from the remaining must allow ready identification of discriminate responsibilities between the government and the contractor.

(5) The following categories may be considered for TPF but do not have to be investigated beyond a written analysis of the inappropriateness for TPF activities.

(a) Projects outside the Continental U.S.

(b) Projects solely designed for emergency, topping, or emergency back-up power or heating requirements.

c. ENERGY SOURCE SELECTION. If TPF does not apply, the following criteria shall be used.

(1) COAL.

(a) Coal is the only energy source with a projected future supply greater than the projected future demand. The design of all large boiler heating and power plants should be based on the use of coal.

(b) NEW PLANTS (OVER 50 MEGA BTUH) As a consequence of specific Congressional direction, all new plants over 50 MEGA BTUH input shall be designed and constructed to burn coal and/or a solid fuel such as refuse derived fuel (RDF) or biomass. Particulate collectors necessary to meet air pollution abatement regulations shall be installed at the time of construction. Adequate consideration also shall be given in the design to provide for the future addition of sulfur removal equipment in the event that high sulfur coal supply becomes economically attractive in the future. In those cases where coal meeting the air pollution regulations for sulfur is not available or other compelling or overwhelming economic considerations exist, the plant may be of coal convertible design. A coal convertible design utilizes boilers increased in size to accommodate future coal combustion but is arranged to burn oil and/or natural gas, and space is provided for future particulate collectors, flue gas sulfur removal equipment and solid fuel and ash handling and storage facilities. Close attention to environmental regulations and air pollution control equipment availability will be required. The Defense Fuel Supply Center should confirm coal availability before the design of a coal burning plant is started. Complete replacement or rehabilitation of existing plants over 50 MEGA BTUH input shall comply with the criteria above.

(c) REPLACEMENT BOILERS OR ADDITIONAL BOILERS for existing plants may continue to burn the present fuel. All boilers 50 MEGA BTUH input and larger, not installed to burn coal, shall be coal convertible. Requests for exception may be granted by the Secretary of the Military Department concerned.

(2) FUEL OIL AND NATURAL GAS.

(a) 0-50 MEGA BTUH INPUT. Fuel oil or natural gas, may be selected based on life cycle cost analysis.

(b) NEW OIL FIRED PLANTS, REPLACEMENTS, OR ADDITIONS (5 MEGA BTUH UP TO 50 MEGA BTUH). All new oil fired plant of 5 MEGA BTUH and up to 20 MEGA BTUH input must be capable of burning all grades of fuel oil through No. 5. All new plants 20 MEGA BTUH through 50 MEGA BTUH shall be capable of burning all grades of fuel oil through NO. 6. This requirement does not apply where oil is the alternate fuel in a dual fuel plant. Replacements and additional boilers shall be capable of burning the widest range of fuels presently provided in the existing facility.

(3) LIQUIFIED PETROLEUM GAS (LPG). Due to uncertain availability in times of fuel shortages, and because designers are

less familiar with the operating and maintenance characteristics of this fuel, its use is not encouraged. Approval is required of AF/LEEE for any major plant application.

(4) ELECTRIC POWER. 0-50 MEGA BTUH INPUT. Select fuel based on life cycle cost analysis. Any use of electricity in a plant will require a life cycle cost analysis, assurances of future availability from the local utility, and approval of AF/LEEE.

(5) FUTURE EXPANSIONS. An analysis of plant capacity to meet future loads will be performed periodically and expansions programmed either as a part of a line item in the appropriate FY MCP or a major O&M project programmed in the proper FY.

d. APPLICATION CRITERIA.

(1) ENERGY STORAGE. In order to prevent mission support disruption by fuel supply problems, defense energy plants shall provide a minimum supply level of no less than 30 days of the maximum continuous expected demand using liquid fuels. All coal fired plants shall be provided with a minimum of 120 days supply. The reference publication is AFR 91-7, Heating Systems Policy.

(2) DUAL FUEL CAPABILITY. Since the primary objective of defense heating and power plants is to provide continuous mission support, all major plants and systems, including those using solid fuels, should be installed with dual fuel capability; i.e. oil backup to solid fuel, gas backup to solid fuel, oil backup to gas, etc. The justification will be via a life cycle cost analysis to validate it as economically feasible. This backup capability will allow the installation commander flexibility to provide mission support during specific fuel supply interruptions and to take advantage of temporary fuel costs savings.

FOR THE CHIEF OF STAFF

1 Atch
ETL Index

JARRELL S. MITCHELL, Colonel, USAF
Chief, Engineering Division
Directorate of Engineering & Services

cc: HQ AFESC/DEM/DEB
DAEN-ECE-E/DAEN-MPE
NAVFAC Code-04T1/04B3
VA Office of Const/
Code-084B