

**Guidelines:  
Executive Order 13123, Section 203 Performance Goals  
for Industrial, Laboratory, Research, and Other Energy-Intensive Facilities  
December 2, 1999**

*Overview of Requirements*

Section 203 of Executive Order 13123, Industrial and Laboratory Facilities, requires that “through life-cycle cost-effective measures, each agency shall reduce energy consumption per square foot, per unit of production, or per other unit as applicable by 20 percent by 2005 and 25 percent by 2010 relative to 1990. No facilities will be exempt from these goals unless they meet new criteria for exemptions, as issued by DOE.” These guidelines will be incorporated into the annual DOE Reporting Guidance for the *Annual Report to Congress on Federal Government Energy Management* for FY 2000. In subsequent years these guidelines will be subject to change as implementation issues arise and are addressed.

This requirement builds upon goals previously created under Executive Order 12902 for industrial facilities by mandating a further reduction target for 2010, establishing a framework for measuring performance, and expanding the types of facilities covered to include laboratories, research and other energy-intensive facilities. Exemptions from performance goals under Executive Order 13123 are also more strict than those under the previous Executive Order and the National Energy Conservation Policy Act (NECPA) as amended by the Energy Policy Act of 1992. These exemption criteria are addressed separately in the Department of Energy’s guidance to agencies required under Section 502(b) of Executive Order 13123.

These Guidelines fulfill two requirements under Executive Order 13123. These are that the Secretary of Energy, in collaboration with other agency heads, shall:

- Issue guidelines to assist agencies in measuring energy per square foot, per unit of production, or other applicable unit in industrial, laboratory, research, and other energy-intensive facilities (Section 502(a)); and
- Develop guidance to assist agencies in calculating appropriate energy baselines for previously exempt facilities and facilities occupied after 1990 in order to measure progress toward goals (Section 502(c)).

**Measuring Performance Toward the Goals for Industrial/Laboratory/Research/Other Energy-Intensive Facilities**

*Three Options for Measuring Performance*

Under the framework established by the Executive Order, agencies should select from three main options for measuring progress toward the 20 percent and 25 percent goals for industrial/laboratory/research/other energy-intensive facilities. The options are:

- 1) Use a rate-based measure of annual energy consumed per number of production units produced in that same year (**Btu/production unit**). This approach offers the best

measure of energy efficiency performance for industrial facilities in that energy consumption is normalized to reflect actual output.

- 2) Use a rate-based measure of annual energy consumed per number of other applicable units for that same year (**Btu/performance unit**). This option may be more useful for measuring performance of laboratory, research, and other energy-intensive facilities. Applicable units having a valid correlation with the energy-intensive process being measured might include:
  - the number of experiments performed (**Btu/experiment**)
  - the weight of product produced (**Btu/ton**)
  - the number of customers served (**Btu/customers served**)
  - the cash value of the product produced (**Btu/\$**)
  - manpower associated with the process (**Btu/labor hours expended**)
- 3) Use **Btu-per-gross-square-foot (Btu/GSF)** as a broad indicator of energy efficiency in industrial/laboratory/research/other energy-intensive buildings. This approach has shortcomings as a measure of performance where production levels fluctuate from year to year, but, it offers the advantage of allowing numerous facilities with varying functions to be easily aggregated into an agency-wide performance measure. If this approach is used, supporting documentation (and savings estimates) of energy efficiency measures, including projects undertaken may be provided to demonstrate compliance with the Order.

#### *Aggregating Data to Determine Agency-Wide Performance*

Agencies can apply any one of these options at the facility level, provided the square footage, production, or performance data is available for the appropriate reporting period. The difficulty arises, however, when attempting to aggregate the output-based measures used under Options 1 and 2 in order to determine agency-wide performance. Many agencies undertake many different types of operations and the range of energy consumed to produce one unit of output can vary widely depending on the operation. **In cases where operations vary so widely in energy intensity that production units or performance units are not appropriate measures, or in cases when this output data is unavailable, the Btu/GSF measure under Option 3 will have to be used by default. In these cases, an agency may wish to establish separate performance indicators for each process operation and report these separately to DOE along with the aggregated Btu/GSF. In this way, the agency can be credited with progress in individual operations which may not be reflected in the overall Btu/GSF progress.**

#### *Selecting Which Option to Use*

If an entire agency has only one type of industrial operation manufacturing a sole product, production units are definitely the most appropriate measure of output and Option 1 should be used. Multiple operations within an agency can be combined under Option 1 into an agency-wide measure by summing the production units for all operations and dividing the total into the combined energy consumption of all operations. Agencies should exercise caution, however, if the range of energy consumed to produce one unit of output varies widely from one operation to another. In these instances, fluctuation in production levels of the more energy-intensive operations will skew the overall performance measure.

In cases where the number of production units produced vary widely between different operations at an agency, output might best be measured with an Option 2 performance unit, such as tons, in order to accommodate the different types of goods or hardware produced.

A key consideration when choosing a measure of output is availability of data. Under Options 1 and 2, information on product output should be available for the FY 1990 reporting period coinciding with the energy consumed in order to establish a meaningful baseline. This is discussed in more detail in the next section.

### **Calculating Appropriate Energy Baselines for Previously Exempt Buildings and Facilities**

#### *Baseline Development for Agencies with Available Consumption Data*

Some agencies have already reported to DOE energy consumption for industrial, laboratory, research and other energy-intensive facilities that were formerly considered “Excluded Buildings.” (“Excluded Buildings” in this case refers to exclusion from the 30- and 35-percent Btu/GSF reduction goal for ordinary buildings and facilities.) In these cases, the Btu side of the performance measure ratio is already known. DOE’s database contains consumption data for the following agencies for the FY 1990 base year under the former “Excluded Buildings” category:

<u>Agency</u>	<u>Billion Btu</u>
Defense	39,209.1
Energy	11,649.9
NASA	7,135.0
Transportation	3,064.0
Agriculture	2,204.2
U.S. Information Agency	1,406.9
General Services Admin.	160.6

For these agencies, all that is needed to establish a baseline is a statement on the type of performance measure that will be used and the gross square footage, production unit, or performance unit associated with the consumption for that period. This number is then divided into the consumption figure to calculate the baseline Btu/GSF, Btu/production unit, or Btu/other performance unit ratio.

#### *Output/Performance Data Unavailable for FY 1990 Base Year*

If output or performance data comports with energy consumption is not available for any year, the agency should consider by default the Btu/GSF performance measure. If output or performance data is available for later years but not for the FY 1990 base year, then an agency should estimate output or performance for FY 1990. This can be done by taking the performance ratio (Btu/output or performance) from the earliest available year after 1990 and applying it to the known energy consumption for FY 1990. For example, in 1992, an agency’s performance ratio for energy-intensive facilities was 1,250,000 Btu/production unit. In 1990, the agency’s energy-intensive facilities used 50 billion Btu, but the number of production units was unknown. Production units are estimated for FY 1990 as follows:

$$50,000,000,000 \text{ Btu} \div 1,250,000 \text{ Btu/prod. unit} = 40,000 \text{ production units}$$

This approach essentially calculates a baseline based on the performance ratio from the year closest to FY 1990. Thus, in the absence of FY 1990 data elements, agencies may use known data from later years to establish their baseline. Any procedure used to estimate an agency's baseline must be fully justified and documented the agency's report to DOE.

*Non-Energy-Intensive Buildings Previously Reported as "Excluded Buildings"*

It is possible that some buildings were improperly excluded from the ordinary building energy baseline. In addition, under the stricter exemption criteria of the new Executive Order, previously exempt buildings need to be re-examined. If a building that was previously excluded is now added to the ordinary building inventory, the baseline needs to be adjusted to reflect this. Returning non-energy-intensive facilities to the ordinary building inventory involves re-submitting Annual Energy Management Data Reports to DOE (including consumption by fuel type in specified reporting units, costs by fuel type, and gross square footage). These reports should be re-submitted for all prior years back to the FY 1985 base year, adding the fuel-specific data for the formerly-excluded buildings to the existing data under the ordinary Buildings/Facilities category. DOE's Federal Energy Management Program office can provide assistance with this data reallocation.

*1985 Base Year Adjustments for Industrial/Laboratory/Research/Other Energy-Intensive Facilities*

Agencies should ensure that the energy consumption, costs, and GSF data for Industrial/Laboratory/Research/Other Energy-Intensive Facilities are, in fact, excluded from the ordinary building baseline. This is to ensure that the data used to measure progress toward the 30- and 35-percent reduction goals are not skewed. In other words, to avoid double counting and incorrect measurement of performance, agencies must recalculate their 1985 baseline to only include ordinary buildings (i.e., office buildings, residences, etc.). Likewise, energy and square footage data for all subsequent years must be separated into either the industrial/laboratory/research/other energy-intensive facilities category or the ordinary buildings category. In the very least, the energy-intensive facility data needs to be isolated and removed from ordinary buildings data for FY 1985 to ensure consistent reporting for the ordinary building goals.

*Contact for Further Information*

For more information, contact the DOE Federal Energy Management Program at 202-586-5772.