

Guidance for Preparing Strategic Facilities Plans for Achieving Laboratories/Facilities of the 21st Century

This memorandum provides further guidance for the development of site Strategic Facilities Plans. Sites may provide more detail or information recognizing that the objective of the plans is to document the infrastructure needs to maintain the ability of each site in accomplishing the Office of Science (SC) and other site program missions, and to support future infrastructure budgets. Program-specific questions are to be directed to the appropriate Headquarters program office. Additionally, Headquarters program offices may issue site-specific programmatic guidance as needed.

A modern, effective, and efficient physical infrastructure is of critical importance to maintaining the capability of SC's laboratories/facilities to continue world-class scientific research into the 21st Century. These laboratories/facilities (hereafter referred to as laboratories) have a strong tradition of providing first-of-a-kind enabling discoveries and technologies that drive national advances and advantages. The SC laboratories explore the farthest reaches of the universe and the smallest subatomic particles. These are dynamic scientific institutions that continuously focus on advancing the knowledge that underpins our economic security and environmental integrity. To better address infrastructure modernization needs in support of the missions of SC and the Department of Energy (DOE) in the 21st Century, SC is requesting each SC laboratory to prepare a Strategic Facilities Plan, referred to as the Plan herein. The Office of Science goal is to accomplish modernization of its laboratories by 2012. The objectives of the modernization effort (or vision) are given below:

- **Mission:** The laboratory's facilities and infrastructure will be adequate to accommodate each laboratory's expected programmatic mission activities and technological changes well into the 21st century. Facilities will be "right-sized" to the type and quality of space and equipment needed to meet mission needs. Activities and organizations that need to be co-located will be. Facilities will be readily adaptable to changing research requirements and technologies. Off-site leased space will be reduced where economically appropriate.
- **Working Environment:** The laboratory will achieve a quality of facilities setting that provides a "preferred" working environment for our researchers that helps attract and retain high quality staff. The laboratory will employ the latest advances in information technology to enhance worker productivity, interactions with other scientists, and the advancement of science. Quality training and conferencing facilities will be available. Visiting scientists will have access to quality accommodations and to research support facilities.
- **Environment, Safety, Health and Security:** The laboratory's facilities and infrastructure will provide a safe, healthy, and secure working environment for laboratory employees and visitors. Retired facilities will be removed and environmental cleanup will be completed. The Laboratory will be viewed as a good community neighbor.
- **Operations and Maintenance:** Facilities and infrastructure will be efficient to operate and maintain.

Each laboratory's Plan will interpret these objectives as they apply to the laboratory's site facilities and infrastructure, and will identify the road map of activities and resources needed to

achieve them. In general, the Plan will address existing and expected infrastructure deficiencies; correct site layout and development problems (including site cleanup, as appropriate); achievement of recognition of the laboratory as a preferred working environment; removal, replacement, and upgrade of nonfunctional buildings and general purpose equipment to modern standards; and anticipated mission needs.

Planning Assumptions and Process: In developing the Plan, it is essential that each laboratory start with outlining its likely mission futures – overall and by program area – (these should be briefly summarized in the Plan. To a large extent, mission and program planning information are available from other documents such as the laboratory’s Institutional Plan. However, it may need to be revised or expanded to reflect the 10-year planning horizon of the Plan.

For this planning effort, it should be assumed that operating funding for each laboratory will grow by no more than inflation during the 10-year planning period, though mission mix may change substantially. If different overall funding is assumed, it should be concurred on by the landlord program. Operating funding assumptions must be provided in the Plan.

Next, the laboratory needs to identify the facilities and infrastructure needed to support the planned research activities. The Plan should focus on existing facilities. Projects for general purpose laboratory facilities with modern capabilities that consolidate cross disciplinary research staff, especially for older inadequate facilities, foster increased scientific productivity, and ensure a rapid response to new emphasis in DOE mission areas and evolving national issues should be included. New programmatic initiatives that require new facilities and site development are not to be included in this planning effort (because of their size and uniqueness, such initiatives are planned in other forums). If in doubt, discuss with landlord program and SC-82.

If the nature of the research is changing at the laboratory in terms of changing programs and/or changing research activities within a program, the trends should be identified and their expected impacts on the laboratory’s facilities and infrastructure should be summarized in the Plan. The detailed analysis need not be in the Plan but the material should be available for review by field staff and program staff, as requested. Examples of the changing nature of research include:

- *Collaborative Research* requires facility modifications in order to accommodate the advancements in science and the way modern research is conducted. Many of the facilities, which were built to accommodate the type of research equipment and collaborations of the 50’s, 60’s, and 70’s do not serve the modern approach to research. This approach requires more collaborative space, different types of equipment, and the user facility concept. Changes in physical size and layout need to accommodate computer equipment for modeling support, as well as bench top and wet chemistry capability to test the modeling theory.
- *Technology Evolution* requires different types of space and more equipment to conduct research. Research today is far more equipment-intensive than in the past and changes in facility structures are required to be more flexible in accommodating equipment configurations with different utility and infrastructure requirements.
- *Technology Zoning* drives facility modifications to enhance the ability to co-locate synergistic research activities and to eliminate conflicting interference among sensitive

technology studies and experiments. Advancements in equipment with higher levels of detection/sensitivity require significant improvements in noise, vibration, temperature and other environmental factors to ensure the accuracy of reported data.

- *The Integrated Workplace* concept relies heavily on "smart" infrastructure and on continuing attention to the relationship of working conditions to productivity. The Integrated Workplace approach helps to develop facilities that support changing business practices by involving all those affected by the workplace, maximizing worker productivity and job satisfaction. This approach to designing smart buildings combines work practice innovations and technology including expanded use of the Internet and advanced computing with skillful management to maximize return on investment and make better use of limited resources--namely, people, space, time, and money.

In addition to the above, the Plan should identify the facilities and infrastructure condition and operational and performance issues that must be addressed to meet the modernization goal and objectives stated above. Institutional Plans generally contain excellent summaries of the extent and condition of existing facilities; these summaries can be incorporated into the Plan as appropriately modified to reflect the above analyses.

In summary, the Plan should briefly describe what is required to meet the modernization objectives.

Summary of Resource Needs

The result of the planning and analysis process should be summarized in the Resource Needs Summary (see attached format). The Summary includes line item construction, general plant projects (GPP) , general purpose equipment (GPE), real property maintenance and operating funding for site clean-up. [Note: programmatic equipment is specifically excluded; allocating program funds between equipment and staff is to be discussed and resolved with funding program offices, as needed.]

Real property maintenance, GPP and GPE levels should be shown by year. While the Federal Facilities Council recommends a goal of at least 1½% of the RPV of active, non-scientific facilities for routine maintenance, repairs and replacements,¹each site should identify the appropriate goal for their site taking the local situation into account.

If GPP/GPE levels are increased, a general explanation of how the additional funds will be used should be provided. New building and building addition projects should be identified.

¹ Full definition is: recurring, annual real property maintenance and repairs funded including maintenance of structures and utilities; roofing, chiller/boiler replacement, electrical/lighting; preventive maintenance; preservative/cyclical maintenance; maintenance to address the deferred maintenance backlog; and service calls. It does not include facilities related operations such as custodial, utilities operation, snow removal, waste collection, pest control, security services, grounds care, parking or fire protection, building managers or ES&H support. Nor, does it include Alternation and Capital Improvements, New Construction or Total Renovation Activities.

Each line item project must be tied to its contribution to the objectives. A short description of all projects should be provided. Also, for all new buildings, building additions and buildings renovations, the “TEC \$/gsf cost” and “Construction \$/gsf” should also be provided, along with a simple payback period using calculation guidance provided at the SC web site:

<http://www.er.doe.gov/production/er-80/er-82/labs21/> Note: Construction cost is the cost of the building construction alone, excluding all other costs such as: Engineering, Design and Inspection (ED&I) costs, contingency costs or, separately identified equipment costs or site work costs.)

Also, the Plan should identify operating funding needed for removal of retired facilities, preparation of facilities for transfer to the Office of Environmental Management, etc. All activities are to be projectized and listed. (Do not include demolition costs for buildings to be replaced by a new building – these costs should be included in the new building project).

Please briefly summarize your process/criteria/procedures for scoring and prioritizing the line item projects identified in the plan.

Summary of Benefits

The results of the investments in the laboratory’s physical infrastructure must be balanced against the benefits that accrue in cost reduction/savings/avoidance, worker productivity, safe and reliable operations, etc. A quantitative summary of the cost/benefit of this modernization initiative should be provided to the extent quantification can be calculated.

Considerations in Developing Plan and Costs for New Construction and Facilities Modifications

As new construction and facility modifications and improvements are developed to meet the vision and modernization objectives identified above, they also should incorporate the following:

- Provide for flexibility, e.g, interior design facilitates the dynamic changes in the scientific programs associated with the site; versatility, e.g, interior space/layout is adaptable, with minimal modification and relocation, for new programs and personnel; durability and longevity, e.g., construction materials and technology used will yield structures with a lifetime greater than 50 years without major renovation.
- Incorporate state-of-the-art sustainable design principles regarding selection of building materials and furnishings, construction techniques, energy and water conservation, habitability features, etc., where economically feasible.
- Ensure that the proposed investments yield what the laboratory considers to be a significant high rate of return (e.g., > than 10 percent) and help reduce operating and maintenance costs.

The Plan should briefly describe how the above considerations will be accomplished as the modernization effort proceeds.

Process for Development of Plan

We expect that a rigorous process will be used to identify the activities and resources needed to accomplish the vision and to develop the road map of activities and resources needed. An example process is given below. Your Plan should briefly summarize the process you use for its development.

- a. Integrate Organization Goals into the Capital Decision Making Process.
 - Conduct a comprehensive assessment of needs to meet results-oriented goals and objectives in DOE Program Plans, other strategic plans, and Institutional Plans.
 - Identify current capabilities, including the use of an inventory of assets and their condition.
 - Determine the gap between the capacity of current assets and needed capabilities.
 - Decide how best to close the gap by identifying and evaluating alternative approaches including non-capital approaches and third-party funding.
- b. Evaluate and Select Capital Assets Using an Investment Approach
 - Establish review and approval framework supported by analysis.
 - Rank and select projects based on established criteria.
 - Assess investments as a portfolio.
 - Use an executive review committee (and decision-support software as appropriate) to make selections.
 - Develop measurable goals and performance metrics.

Performance Metrics and Change Indicators

We will use performance metrics to monitor progress in meeting our modernization goal and objectives. Please identify those 3 to 5 metrics that you plan to use to monitor your progress.

Change indicators will also be developed to show the current situation versus “post” modernization. Possible change indicators include: number of buildings, number of trailers, and laboratory footprint (current versus post modernization in all three cases). Please propose additional change indicators that you intend to monitor as showing the changes modernization will bring.

Format and Content

The final Plan is to be submitted by September 29, 2000, in both written and electronic form (Acrobat readable, Word/PC). We expect the Plan to be short (30 pages or fewer), a readable, stand alone document. The Plan should provide, at a minimum, the specific content items requested in the above sections. Other material can be provided as deemed appropriate by the laboratory, as long as the page limit is adhered to. The Plan should be formatted for 8 ½” x 11” paper, vertical. Once approved, the Plan should be published on the laboratory’s web sites. SC-82 is establishing a website for the SC Laboratory Modernization Initiative that will provide information about the Initiative for those interested and those preparing Plans. Items to be

included are: tasking and guidance memos and document, a listing of the SC Infrastructure Working Group members, the final SC Report, links to each laboratory/facility Plan, background information, etc. The URL is: <http://www.er.doe.gov/production/er-80/er-82/labs21/>.

Schedule

- June 29th - Initial Conference call
- August 4th - Decker issues call memo
- August 17th - Plan Guidance issued by SC-Hqs
- August 21-25: Conference call with each laboratory to discuss planning issues
- September 5th: Laboratories submit planning assumptions to SC Hqs for review
- September 12th : Conference call to review outstanding issues
- September 22nd: Draft Plan submitted
- September 29th: Final Plan submitted

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