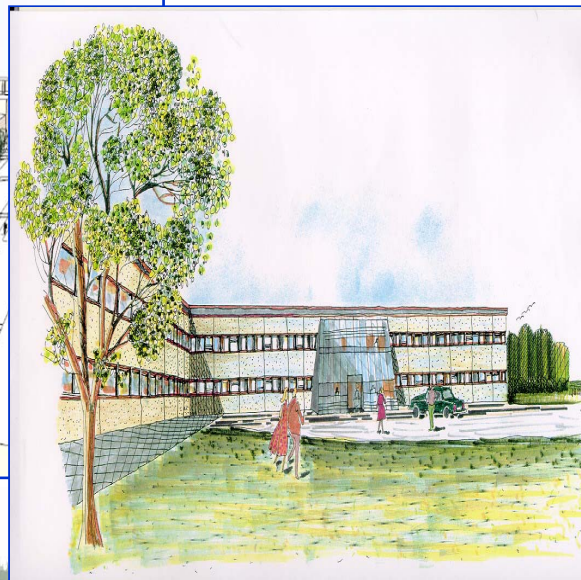
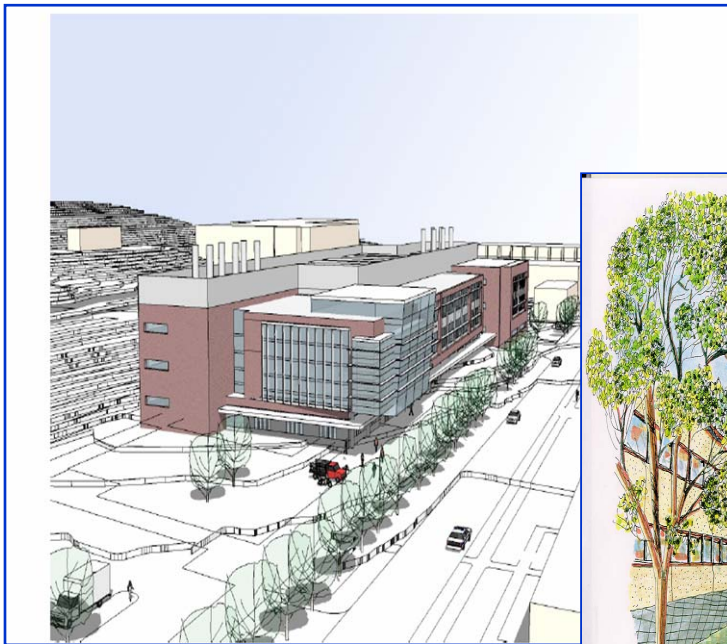


# Office of Science

## Infrastructure Modernization Initiative Program Management Plan



September 2008

**Approvals**

Prepared by:



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9-30-08

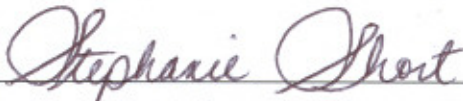
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### Revision Log

<b>Revision Number</b>	<b>Date</b>	<b>Change Description</b>
0	September 2008	Initial issue

## 1 Infrastructure Modernization Initiative Mission and Goals

The Office of Science (SC) mission is to deliver the remarkable discoveries and scientific tools that transform our understanding of energy and matter and advance the national, economic, and energy security of the United States. SC manages ten world-class laboratories that include hundreds of research labs, offices, and specialized scientific facilities distributed over eight states. However, many of the buildings in the SC laboratory system have reached or are near the end of their serviceable lives. Many of our laboratory's facilities and utility systems will not be adequate to support the scientific mission in the future because they lack the requirements of a modern research facility.

In recent years, the Office of Science has increased its focus on addressing the deferred maintenance at our laboratories by setting goals for improving the overall condition of our facilities and holding the laboratories accountable for meeting maintenance and deferred maintenance reduction goals. The laboratories have made improvements in the quality of real property data, and there has been a renewed commitment to facility stewardship. However, it is clear that we cannot assure that our laboratories remain mission ready through maintenance alone. Recapitalization is also necessary.

To more fully address the needs of our laboratories and ensure their continued vitality, the Office of Science is taking an integrated approach to improving the mission readiness of our facilities. This approach includes a significant capital investment program coupled with elimination of excess facilities and a sound maintenance program. The Infrastructure Modernization Initiative encompasses the first two elements of that approach. Under the Initiative, the Office of Science will provide capital investment through the Science Laboratories Infrastructure (SLI) budget to make needed improvements to general infrastructure. These investments will revitalize our ten laboratories over the next ten years. The goals of the Initiative are to –

- Provide the modern laboratory infrastructure needed to deliver the advances in science our Nation requires to remain competitive in the 21<sup>st</sup> century.
- Correct longstanding deficiencies while ensuring laboratory infrastructure provides a safe, quality workplace.

## 2 Approach

The Infrastructure Modernization Initiative will be implemented through increased capital investment. Investments will be selected with a focus on achieving and sustaining mission readiness, and projects will be screened and prioritized using a transparent process.

**Increase Capital Investment** - To ensure the continued vitality of our laboratories, the Infrastructure Initiative will use line item construction projects funded within the SLI budget to replace and renovate existing buildings and associated support infrastructure. The scope of the Initiative will include projects that are generally between \$20M and \$100M. These projects will–

- Renovate or replace space that does not meet research needs,
- Replace facilities that are no longer cost effective to renovate or operate,
- Modernize utility systems to prevent failures and ensure efficiency, and
- Remove excess facilities to allow safe and efficient operations.

Infrastructure Modernization Initiative projects will include demolition of inadequate, obsolete facilities – including facilities both within and outside of the footprint of new construction – as an integral part of their scope. This demolition will meet the Congressional requirement that new construction be balanced with offsetting demolition, and will allow our laboratories to eliminate old, inadequate facilities. Because demolition is an integral part of the scope of the individual projects, and because it is required to meet Congressional space offsetting requirements, projects within the Initiative will include all demolition activities as part of their Total Estimated Cost.

**Increase Use of Institutional General Plant Project Funds** – Under this Initiative, each laboratory will be responsible for providing funds out of their operating budgets to implement general-purpose capital improvements below the General Plant Project (GPP) threshold. (Program funds will still be used for GPP projects at single program laboratories, and for scope that is programmatic in nature.) By relying on this mechanism for making necessary minor upgrades, the laboratories will have greater flexibility to fund emerging infrastructure requirements and prioritize the needs at their laboratory. These laboratory investments in Institutional GPP, along with appropriate maintenance funding, will complement the line item investments in ensuring the overall mission readiness of each laboratory.

**Focus Investments on Achieving and Sustaining Mission Readiness** – The mission readiness of a laboratory’s facilities and infrastructure is the capability of those assets to enable delivery of the scientific mission assigned to the laboratory. In order to assess mission readiness and identify potential gaps, the SC laboratories have begun implementing the Mission Readiness Assessment Process. This process includes:

- Checklists to assess facility and infrastructure capability (now, in five years, and in ten years) to serve scientific business lines,
- Capability improvement action plans (i.e., needed investments),
- Standardized tables that reflect infrastructure gaps and the action plan necessary to address them, and
- Peer reviews coordinated and implemented by the laboratories to provide verification that the process is being appropriately implemented.

In concert with this effort, the Office of Science has implemented an annual planning process that better integrates scientific planning with infrastructure/operational planning in the context of each laboratory’s anticipated contributions to the SC mission. To do this, the laboratories prepare Annual Lab Plans that directly tie proposed investments – including line items funded by scientific programs or SLI, operating investments, General Plant Project funds, and maintenance funds – to the capability gaps identified by the Mission Readiness Assessment Process. As a result, the Mission Readiness Assessment Process in concert with the Annual Lab Plans provide SC management

with a clear picture of the mission readiness of each laboratory, capability gaps, and the action plan to fill those gaps in the form of needed investments. This action plan represents a commitment on the part of both SC and the laboratory to fund the necessary investments that will ensure the future mission readiness of each laboratory. These action plans, specifically the investments proposed for line item SLI funding, form the basis for projects included in the Initiative.

**Use a Transparent Screening and Prioritization Process** – In 2007, all of the SC site offices and laboratories participated in an effort led by the Deputy Director for Field Operations to develop an initial baseline for the Initiative. To guide the process, screening and selection criteria were established (see Attachment 1).

These criteria are also used on an annual basis during budget formulation to evaluate the relative priority of the new projects proposed for the upcoming budget and to make adjustments based on the funding constraints for that year. This annual process is led by the Deputy Director for Field Operations and the Associate Director for Safety, Security and Infrastructure. The process begins with each laboratory submitting their Annual Lab Plans, which describe the action plans that will ensure mission readiness. Input on the proposed SLI-funded portion of those action plans is solicited from Site Office Managers and the laboratory Chief Operating Officers in an annual meeting where project proposals are presented. These presentations include the proposed scope of the project, an estimated cost and schedule, and the laboratory's assessment of how the project meets the screening and selection criteria. Feedback is also solicited from the program Associate Directors and the SC Deputy Director for Science Programs to hear their views on how the proposed projects will impact their missions.

After these discussions have taken place, project selections are made based on the funding targets for that year. These selections are included in the upcoming budget and are documented in the annual update to the Infrastructure Modernization Initiative planning baseline (see Section 4).

### **3 Program Management**

The Infrastructure Modernization Initiative is managed by the Office of Safety, Security and Infrastructure (SSI), which is within the Deputy Director for Field Operations organization (see Figure 1).

**Interface with Other SC Offices** – All line item construction projects in the Initiative are funded via the SLI budget. Projects included in the Initiative will follow the requirements of DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, as well as the Office of Science policies and procedures (e.g., Independent Project Reviews) for project management. The SSI Program Managers will work closely with the Office of Budget and the Office of Project Assessment during project planning and execution.

The Office of Laboratory Policy and Evaluation (LPE) is responsible for the annual laboratory planning process, and SSI works closely with LPE to develop guidance and provide feedback on the Annual Lab Plans. These plans include a section dedicated to

general-purpose infrastructure, which describes proposed infrastructure investments in the context of mission readiness gaps. This section now serves as the SC Ten Year Site Plans, which are required under DOE Order 430.1B, *Real Property Asset Management*.

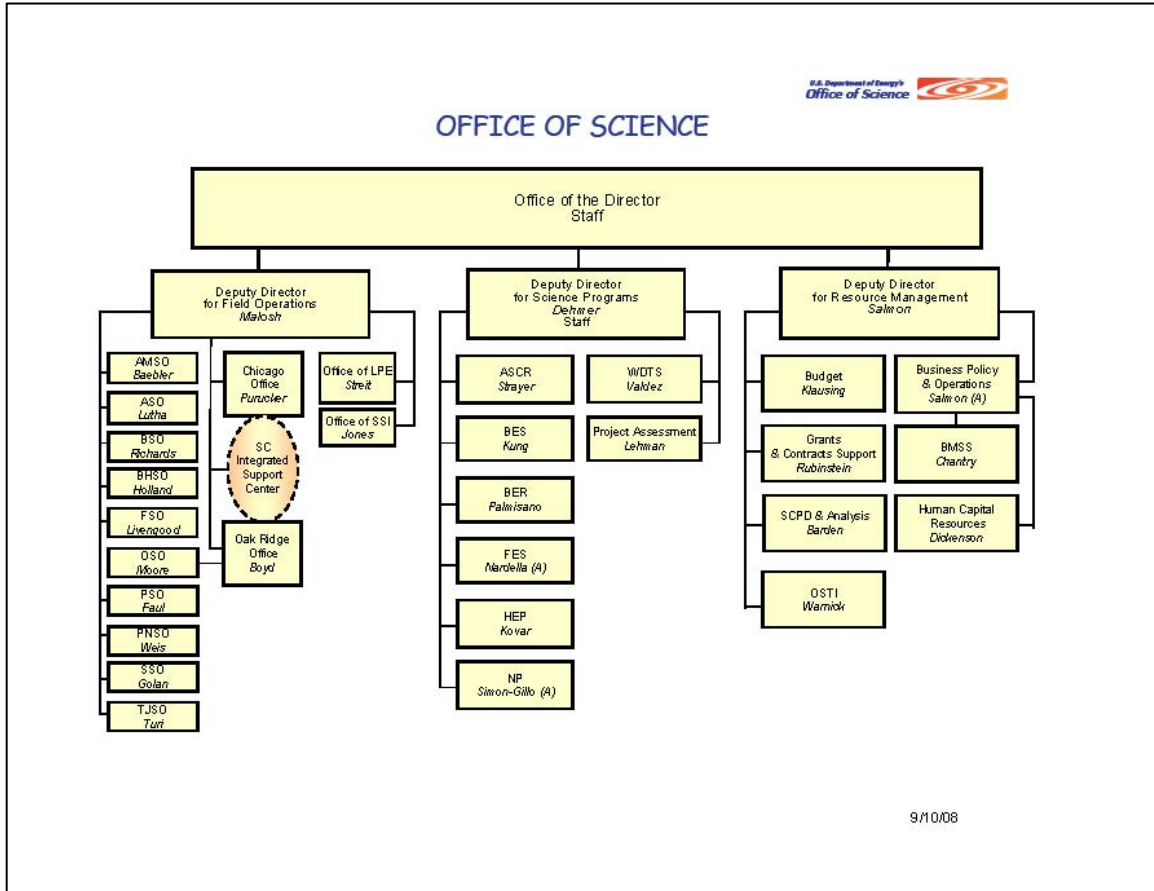


Figure 1. Office of Science Organization

### Roles and Responsibilities

**SSI Associate Director** - The SSI Associate Director (AD) has overall responsibility for planning, budgeting, and implementing the Infrastructure Modernization Initiative. The AD is the approval authority for changes to the overall Infrastructure Modernization Initiative planning baseline. The SSI AD has been delegated authority to serve as the Acquisition Executive for projects in the Initiative with a Total Project Cost less than \$100M, per DOE Order 413.3A.

**SSI Program Managers** – Within SSI, program managers are assigned to manage projects within the Initiative and have the following roles and responsibilities.



- Communicate direction from the Acquisition Executive to the Federal Project Director.
- Oversee development of project scope, schedule and budget.
- Work with the Federal Project Director to define mission requirements and objectives.
- Prepare, defend, and provide the project budget with support from the field and SC Headquarters organizations.
- Review and provide recommendations to the Acquisition Executive on baseline changes and other project documents.
- Function as the primary point of contact at DOE Headquarters for project matters to all parties external to the project team and SC.
- Monitor and evaluate project performance throughout the life cycle of the project.
- Organize reviews as necessary.
- Ensure that Environment, Safety, and Health requirements are implemented by the project.
- Coordinate with other SC offices and the DOE Office of Engineering and Construction Management as needed to execute the project.

Federal Project Director – The Site Office Manager and their staff administer the Management and Operating contracts at our laboratories, which includes providing day-to-day oversight of activities at that laboratory. Execution of the individual Infrastructure Modernization Initiative projects is the responsibility of the assigned Federal Project Director within each Site Office.

A more detailed description of roles and responsibilities for individual projects in the Initiative is documented in the Project Execution Plan for each project.

**Implementation of High Performance and Sustainable Building Principles** – Many of the projects planned for this Initiative will include construction of new facilities and/or major renovations to existing structures. All of these projects will incorporate the Guiding Principles of Executive Order 13423 to the extent practical and life cycle cost effective, consistent with DOE Order 430.2B, *Departmental Energy, Renewable Energy and Transportation Management*. Incorporation of these principles will be documented as appropriate in design documents and other project records (e.g., the Project Execution Plan).

DOE Order 430.2B also established a requirement that all new buildings and major building renovations at Critical Decision (CD)-1 or lower as of October 1, 2008, with a value greater than \$5M must implement the Guiding Principles and must achieve certification at the LEED *Gold* Standard. Under the Infrastructure Modernization Initiative, four projects received CD-1 approval prior to October 1, 2008, and will therefore not be required to meet these requirements. Those projects are the Modernization of Laboratory Facilities project at Oak Ridge National Laboratory; the Seismic Life-Safety, Modernization, and Replacement of General Purpose Buildings Phase 2 project at Lawrence Berkeley National Laboratory; the Interdisciplinary Science

Building Phase 1 project at Brookhaven National Laboratory, and the Technology and Engineering Development Facility project at Thomas Jefferson National Accelerator Facility. These projects will evaluate the cost and benefits of implementing the principles and achieving certification and will pursue the highest level of implementation possible within project constraints. All future projects under this Initiative with new construction or major renovations will achieve LEED certification in accordance with the Order.

#### **4 Planning Baseline Development and Change Control**

In 2007, all of the SC site offices and laboratories participated in an effort led by the Deputy Director for Field Operations to identify and then prioritize the infrastructure needs that fit within the scope of this Initiative using screening and selection criteria (Attachment 1). At the conclusion of this effort, the Infrastructure Modernization Initiative included more than 30 projects totaling more than \$2 billion. These projects, their Total Estimated Cost, and the sequencing agreed upon in these meetings formed the initial planning baseline for the Infrastructure Modernization Initiative.

This planning baseline has been placed under configuration control, with the SSI AD having approval authority for changes. Changes to the planning baseline can be proposed by the site office or laboratories at any time; however, the primary mechanism for proposing a change is via the Annual Lab Plans (described in Section 3). Once proposed, each change is either accepted or rejected by the SSI AD, in consultation with the Deputy Director for Field Operations. These changes are captured in an updated planning baseline, which will be posted to the SSI web site each year at the conclusion of the annual planning cycle.

Performance baseline development and change control for individual projects within the Initiative are described in the Project Execution Plans for each project.

#### **5 Measuring Progress**

As described in Section 1, the goals of the Infrastructure Modernization Initiative are to—

- Provide the modern laboratory infrastructure needed to deliver the advances in science our Nation requires to remain competitive in the 21<sup>st</sup> century.
- Correct longstanding deficiencies while ensuring laboratory infrastructure provides a safe, quality workplace.

These goals will be achieved using increased capital investment, focusing on achieving mission readiness and using a transparent screening and prioritization process.

Each year, the Office of Science will evaluate data that will serve as indicators of the success of the overall Initiative (see Table 1). The baseline condition for each of these indicators will be established as the Mission Readiness Assessment Process is fully implemented in FY 2009. Each subsequent year, analysis of these indicators will take place in conjunction with the annual planning process, and results will be posted on the Infrastructure Modernization Initiative web site.

GOAL	INDICATOR
<p>Provide the modern laboratory infrastructure needed to deliver the advances in science our Nation requires to remain competitive in the 21<sup>st</sup> century.</p>	<p>Mission Readiness – The Mission Readiness Assessment Process allows us to identify the mission readiness of each laboratory now and in the future. As the Infrastructure Modernization Initiative is implemented, we will achieve and sustain mission readiness for the general purpose infrastructure at all of our laboratories. (Significant shifts in the future mission of a laboratory may temporarily result in that laboratory not meeting Mission Readiness goals.)</p>
	<p>Elimination of Excess Facilities – Excess facilities that are no longer cost effective to operate or renovate will be removed to allow safe and efficient operations.</p>
<p>Correct longstanding deficiencies while ensuring laboratory infrastructure provides a safe, quality workplace.</p>	<p>Asset Condition Index – The asset condition index is a measure of the overall condition of laboratory facilities and utilities, based on their level of deferred maintenance. As the initiative progresses, each laboratory’s deferred maintenance backlogs for mission-needed assets will be decreased and asset condition index will improve.</p>
	<p>Energy Costs and Guiding Principles – The replaced or renovated facilities and utilities provided by this Initiative will allow laboratories to improve their long-term stewardship of the assets at that laboratory. Two indicators of that improvement will be an overall decrease in energy consumption per square foot of space and an increase in the number of enduring facilities that are compliant with the Guiding Principles contained in Executive Order 13423.</p>

Table 1. Infrastructure Modernization Initiative Performance Indicators

In addition, the performance of individual projects undertaken by this Initiative will be evaluated using earned value and other methods to ensure successful execution. Project performance against its baseline, once established, will typically be included in each laboratory’s annual Performance Evaluation and Measurement Plan, along with implementation of complementary actions (e.g., maintenance investment, Institutional General Plant Projects) identified in the Annual Lab Plans.

## **Attachment 1**

### **Screening and Prioritization Criteria**

#### Screening Criteria

In order to be included in the Initiative, projects must be directly linked to mission requirements and appropriate for Infrastructure Initiative funding. The following criteria are used to screen proposed projects.

1. The project is dedicated to core site infrastructure needs. If a proposed project is primarily for the benefit of a single program, it should generally be funded by that program and not by the Infrastructure Modernization Initiative.
2. The project should not serve to increase capacity of facilities or utilities to handle new programmatic scope. The focus of the Infrastructure Modernization Initiative is primarily to modernize existing infrastructure rather than position the laboratory for new missions.
3. The project cannot be accomplished using an alternative financing approach. Alternative financing could include construction of new facilities by private developers, or energy improvements performed by Energy Savings Performance Contracts.
4. The project is large in scope and beyond the reach of Institutional General Plant Project funds.
5. The project proposal is sufficiently mature to allow a reasonable estimate of scope, cost, schedule, and risks. This information must be reliable enough to allow informed decision making for the overall initiative portfolio.

#### Prioritization Criteria

Projects that successfully meet the five screening criteria are evaluated against the following prioritization criteria.

1. Mission Relevance – The relevance of the project to DOE's missions, the priority of those missions, and the scale of the mission. Projects that are most closely tied to large, high-priority missions will be prioritized higher than those that are not.

2. Deferred Maintenance – The amount of deferred maintenance the project will eliminate. Projects that eliminate more deferred maintenance than others will be prioritized higher.
3. Elimination of Excess – The amount of excess facilities or other infrastructure that is eliminated by the project scope. Those projects that include elimination of excess infrastructure will be prioritized higher than those that do not.
4. Return on Investment – The project's benefits in relation to the project's cost. This evaluation can be qualitative, and should include operational cost savings, increased productivity, energy savings, ability to impact missions, improvements to environment, safety and health, and other factors considered significant for that project. Projects that have a higher return on investment are prioritized higher than others.
5. Institutional Commitment – The level of commitment to the project exhibited by the laboratory, as measured by the willingness to invest overhead dollars to complement the proposed project. Those projects with high institutional commitment will be prioritized higher.