

MPSAC Subcommittee on MPS Major Facilities

Background

The Mathematical and Physical Sciences Directorate has responsibility for operations and management of a number of large facilities, as well as design and development for future facilities that will enable transformational science. The Directorate also has responsibility for overseeing planning and construction of Major Research Equipment and Facilities within MPS. Such activities account for about \$256.67 million of the FY 2008 MPS budget request of \$1,253 million, plus an additional \$134.82 million of facilities construction in the Major Research Equipment and Facilities Construction account request for FY 2008.

In 2004, in response to a request from Congress, the National Academy of Sciences issued a report¹ regarding NSF's process for identifying, approving, constructing, and managing large-research-facility projects. The report includes a number of recommendations for actions by NSF and recommends that NSF implement a set of well-defined criteria for the selection of large projects for construction. The National Science Foundation (NSF) and the National Science Board (NSB), in a joint report², responded by embracing the spirit of the Report's recommendations and addressed the principles of the primary recommendations, leaving the detailed mechanisms to be addressed in consultation with its communities, the Office of Management and Budget (OMB), and Congress. In particular, the NSB/NSF response states "NSF will also continue to use NSF directorate advisory committees for input to the process, and will continue to involve members of the community in the merit review of MREFC projects." NSF directorate advisory committees have specific responsibilities with respect to facilities under consideration for future construction. The NSF Director has asked that when a Directorate intends to propose a large facility project to move from the "Conceptual Design Stage" to the "Readiness Stage" of the MREFC process³, the Directorate's advisory committee examine and comment on the proposed facility in the context of the ranking criteria found in the Academy's report (Appendix 1):

The primary purpose of the MPSAC Facilities Subcommittee is to carry out the MPSAC responsibilities with respect to new facilities. In order for the subcommittee to accomplish this task, it will need to acquire an understanding of the existing MPS facilities portfolio and the impact on the division and on MPS

¹ *Setting Priorities for Large Research Facility Projects Supported by the National Science Foundation*, The National Academies Press, 2004 (<http://www.nap.edu/books/0309090849/html/R1.html>).

² *Setting Priorities for Large Research Facility Projects Supported by the National Science Foundation* (NSB-05-77) was approved for publication at the NSB meeting on May 26, 2005 (<http://www.nsf.gov/pubs/2005/nsb0577/index.jsp>).

³ The MREFC process is described in NSF's *Large Facilities Manual* (NSF 07-38), <http://www.nsf.gov/pubs/2007/nsf0738/nsf0738.pdf>

concerning resources needed to carry out the proposed project. Because the Subcommittee will be more knowledgeable of the facilities portfolio than the typical MPSAC member, the Assistant Director may also request the Subcommittee to provide advice on other elements of facilities activities.

Charge to the MPSAC Facilities Subcommittee

The MPSAC Facilities Subcommittee is charged with:

- Assessing the potential contribution of new proposed facility projects to the scientific program of MPS, the role of such projects within the existing MPS facilities portfolio, and the impact of such facilities on future plans and budgets of MPS and its divisions; and
- Providing a recommendation to the MPSAC for the MPSAC statement to the MPS Assistant Director concerning an MPS request for entry of an MPS large facility project into the MREFC defined “Readiness stage”⁴.
- Providing advice on elements of the MPS facilities portfolio at the request of the MPS Assistant Director.

In carrying out this charge, the subcommittee should address the criteria described in Appendix I.

Membership

Membership of the subcommittee will consist of MPSAC members representing all of the MPS disciplines plus additional external members as deemed appropriate by the MPS Assistant Director and the MPSAC Chair.

MPS Submission of Requests to the MPSAC

The MPS Assistant Director will submit a request to the Chair of the MPSAC that the MPSAC Facilities Subcommittee begin its examination of a proposed MPS large facility project at least one regularly scheduled meeting in advance of the meeting where the Subcommittee would report its recommendations to the full MPSAC membership.

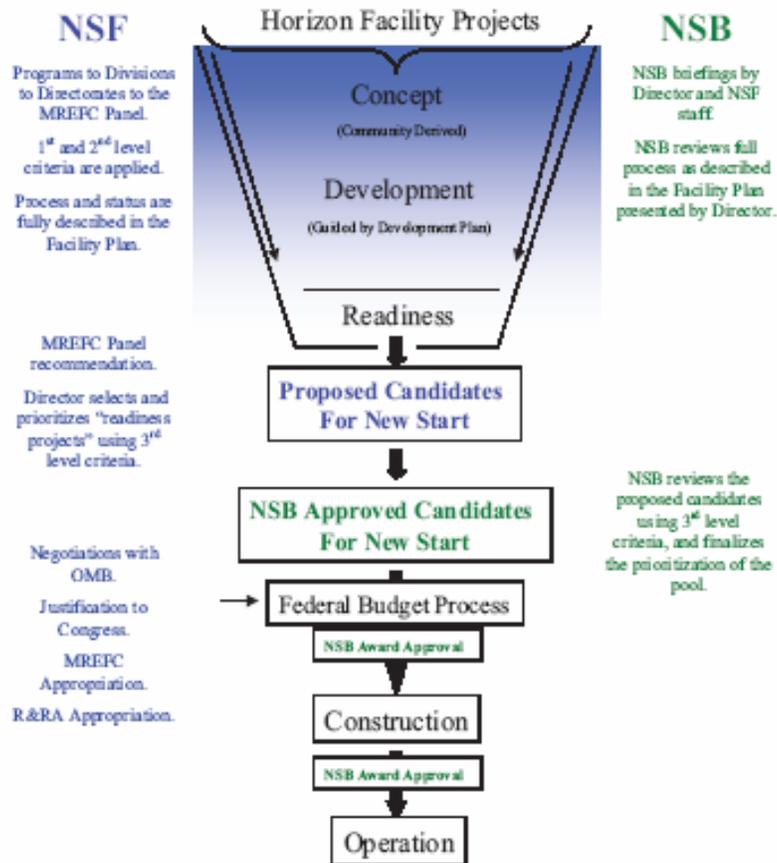
Support

The MPS Directorate will provide appropriate support and documentation to the MPS Facilities Subcommittee in order to enable the Subcommittee to develop its recommendations.

⁴ See page 14, paragraph (3) of NSF’s *Large Facilities Manual (NSF 07-38)*

APPENDIX I

NSF Facility Plan and Process for Selection of MREFC Projects



As can be seen from the diagram, projects developed within NSF programs and divisions, when considered to be at a "Readiness" stage are referred to an NSF MREFC panel for consideration. In order that the project be considered by the MREFC panel, it must have satisfied the the first-and second-level criteria given below:

APPENDIX II: CRITERIA FOR DEVELOPING LARGE FACILITIES ROADMAPS AND BUDGETS

Excerpted from the National Academies' Report: *Setting Priorities for Large Facility Projects Supported by the National Science Foundation*
(<http://www.nap.edu/books/0309090849/html/R1.html>).

First Ranking: Scientific and Technical Criteria Assessed by Researchers in a Field or Interdisciplinary Area

- Which projects have the most scientific merit, potential, and opportunities within a field or interdisciplinary area?
- Which projects are the most technologically ready?
- Are the scientific credentials of the proposers of the highest rank?
- Are the project-management capabilities of the proposal team of the highest quality?

Second Ranking: Agency Strategic Criteria Assessed Across Related Fields by Using the Advice of Directorate Advisory Committees

- Which projects will have the greatest impact on scientific advances in this set of related fields taking into account the importance of balance among fields for NSF's portfolio management in the nation's interest?
- Which projects include opportunities to serve the needs of researchers from multiple disciplines or the ability to facilitate interdisciplinary research?
- Which projects have major commitments from other agencies or countries that should be considered?
- Which projects have the greatest potential for education and workforce development?
- Which projects have the most readiness for further development and construction?