A PERSPECTIVE ON FACILITIES STEWARDSHIP

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MPS Large Facilities in FY 2013

MPS Funding for Facilities
(Dollars in Millions)

	FY 2012	FY 2013
Facilities (Total)	**$260.24**	**$263.01**
Advanced Technology Solar Telescope (ATST)	2.00	2.00
Atacama Large Millimeter Array (ALMA)	28.61	32.92
Cornell High Energy Synchr. Source (CHESS)	19.67	20.00
GEMINI Observatory	22.07	18.15
IceCube Neutrino Observatory (IceCube)	3.45	3.45
Large Hadron Collider (LHC)	18.00	18.00
Laser Interfer. Grav. Wave Observatory (LIGO)	30.40	30.50
Arecibo Observatory	5.50	5.00
Nat'l High Magnetic Field Laborary (NHFML)	25.80	31.75
Nat'l Nanotechnology Infra. Network (NNIN)	2.98	2.58
Nat'l Optical Astronomy Observatory (NOAO)	25.50	25.50
Nat'l Radio Astronomy Observatory (NRAO)	43.14	41.00
National Solar Observatory (NSO)	9.10	8.00
Nat'l Superconducting Cyclotron Lab (NSCL)	21.50	21.50
Other MPS Facilities[1]	2.52	2.66

Totals may not add due to rounding.

Diverse set of management and oversight models used even in single discipline facilities

Dispersed funding model for user facilities[1]

Multiple groups contribute to the total funding pool.

Disadvantage of this approach is that with no entity assuming overall responsibility for core activities, maintaining sufficient support from all groups especially in constrained budget time leads to uncertainty about core facilities operations.

Overall, management of the facility by this approach is also challenging.

[1] Cooperative Stewardship: Managing the Nation's Multidisciplinary User Facilities for Research with Synchrotron Radiation, http://www.nap.edu/catalog/9705.html

Stewardship model[1]

One agency assumes responsibility for management, development and funding of a user facility.

- Responsibility for design, construction, operation, maintenance, and upgrading of each facility core should rest with a single clearly identified federal agency—the steward.
- The steward's budget should contain sufficient funds for design, construction, maintenance, operation, and upgrading of the facility core.
- The steward should support a robust in-house basic scientific research program. This program should be of sufficient magnitude and diversity to ensure that the steward's mission is addressed and that external users have adequate quality and quantity of collaboration and technical support in their fields.
- The steward should support in-house scientific research to advance the science and technology required to produce high-quality photon and neutron beams and high magnetic fields.

NSF is the steward of the National High Magnetic Field Facility with oversight and management being in the Division of Materials Research.

State of Florida support.

Core funding is obtained from Divisions of Materials Research (primary) with Chemistry (< 5%). Division of Chemistry contributes to the oversight mission.

Cooperative Stewardship: Managing the Nation's Multidisciplinary User Facilities for Research with Synchrotron Radiation, http://www.nap.edu/catalog/9705.html

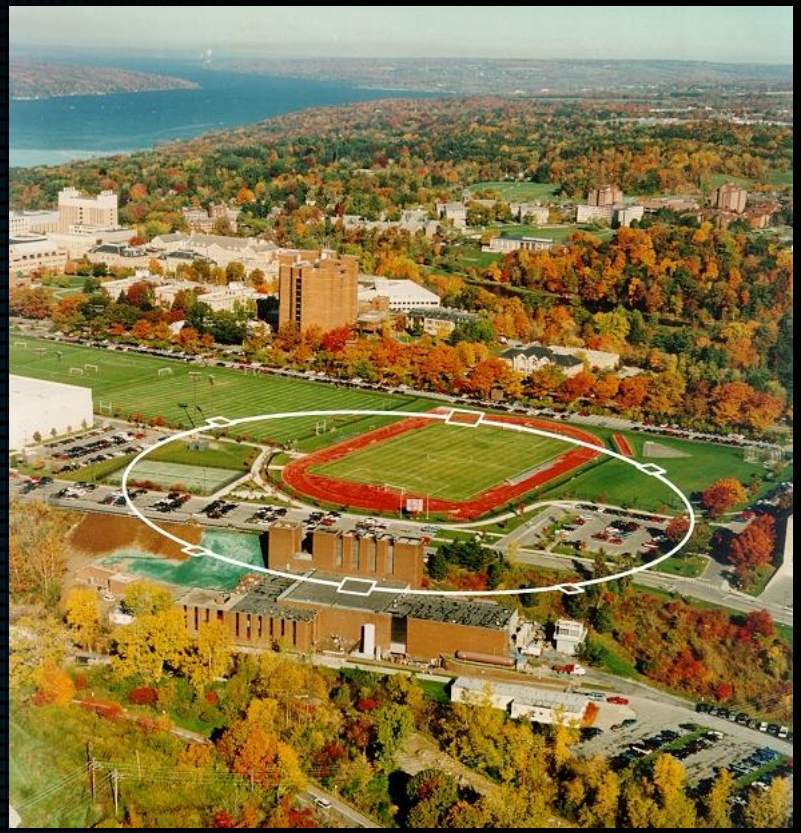
Stewardship-partnership model[1]

In this model, the steward serves the same role as in the simple steward model. The partnership can take multiple forms.

The steward should engage the partners—other agencies, industry, and private institutions—in the planning, design, construction, support, and funding of the experimental stations and other sub-facilities. The steward can also function as a partner in, for example, supporting experimental units or joining with others to form user groups.

NSF through the Division of Materials Research is the steward of the Cornell High Energy Synchrotron Source.

The National Institutes of Health (NIH), through its National Institute of General Medical Sciences (NIGMS), funds MacCHESS for two purposes: core research and support of CHESS users, who perform macromolecular diffraction experiments



[1] Cooperative Stewardship: Managing the Nation's Multidisciplinary User Facilities for Research with Synchrotron Radiation, http://www.nap.edu/catalog/9705.html

Equal Partner Model - **Atacama Large Millimeter Array** ALMA

North America

Europe

Asia

Shared governance

… but within the shared governance model there can be partnerships. NSF through the astronomy division is the “steward” of the North America group with funding from partnering countries being managed by NSF. This partnership has a managing board comprised of the partners and cooperatively the plan and set priorities.

A component of cooperative stewardship[1]

Interagency working group to:

- Review and coordinate support for the facility stewards' core operations and maintenance budget requests to the Office of Management and Budget (OMB) and Congress.
- Review and, if necessary, prioritize agency proposals to upgrade, create, or terminate facilities based on national needs and facility effectiveness.
- Monitor trends in the science, instrumentation, and user demographics at facilities and recommend changes in facility capabilities and funding levels and sources as needed.
- Periodically appraise facility performance in meeting the needs of the scientific user communities.
- Periodically investigate the need to shift stewardship of a facility either within or between agencies.
- Develop guidelines for agency cost sharing based on usage.
- Periodically examine user support and training levels to allow for changes in user demographics.

1 Cooperative Stewardship: Managing the Nation's Multidisciplinary User Facilities for Research with Synchrotron Radiation, http://www.nap.edu/catalog/9705.html

Challenges going forward:

In the case of a facility consisting of distributed sites, how do we maintain a critical mass in order to promote development of new technology and instrumentation to advance the field?

How do we broaden participation in the large facilities in a concerted way; what issues do facilities pose that do not occur in our other projects?

How do we involve our international counterparts in the development of new facilities and instrumentation while at the same time compete with them?

How do we treat the data coming from facilities, considering the demands of ownership and open access?