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Subject: Portfolio Prioritization Process (P3): Charge to NSF's FFRDCs for Radio Astronomy (NSF NRAO), Nighttime Optical-Infrared Astronomy (NSF NOIRLab) and Solar Astronomy (NSF NSO)

## Portfolio Prioritization Process

### Purpose and Goals

The aim of the Portfolio Prioritization Process (P3) is to *characterize* the portfolio of services and facilities within each of NSF's three astronomy Federally Funded Research and Development Centers (FFRDCs), and to *prioritize* these facilities, to aid NSF with its future planning, partnership development, and strategic investment. The first phase of the process is to develop a comprehensive strategic plan for each FFRDC over the next 20 years. While this planning phase is to be led by the FFRDC, the community must be part of the process and NSF must be periodically updated. In phase 2, plans will be reviewed by an external panel, and will feed into NSF long-term strategic portfolio development.

Each FFRDC's plan should answer the question: *What should the FFRDC portfolio look like in 2035/in 2040/in 2045?* The plan should describe the changes over time needed at the FFRDC to enable the proposed longer-term goals. Since this is a community exercise, each FFRDC should assume that plans and Panel feedback will be made publicly available. NSF anticipates that this prioritization process will be repeated on a 5-year cadence, so that plans may be updated as the national and international astronomy landscape evolves. The plans submitted to NSF may be used to fulfill requirements in cooperative agreements for a long-range strategic plan.

P3 Plans are not NSF proposals. Meeting NSF requirements for supplement or full proposals is not required. Note also that estimated costs and budgets will not be subject to formal NSF cost analysis processes.

### Charge to each FFRDC

Each FFRDC is tasked with developing a "Plan for the 2030s" (hereafter, "the plan"). The plan should:

1. Provide context by describing the current health and status of the individual telescope/observatory components and centers operated (wholly or in partnership) by the FFRDC.
2. Incorporate anticipated future facilities (e.g., ngVLA, US-ELT, ngGONG).
3. *Prioritize* these current and future facilities and services in the context of the ecosystem that supports the science goals of the community, both the broad fundamental science as well as the priority science described in Astro2020/Heliophysics2024.
4. Present approximate/anticipated maintenance, development and operations costs, including those that go beyond day-to-day expenses (detailed budgets are not required, but ballpark estimates should be listed). Include disposition costs if this is part of the plan in the 2040/2045 timeframe. Include data management and all other costs needed to support operations and the scientific endeavor.
5. Describe risks and opportunities.
6. Be informed by comprehensive engagement with FFRDC staff and with the broader astronomical community.
7. Be sufficiently detailed to be understood and justified, including all assumptions.
8. Include existing, planned, and potential partnerships (including inter-agency opportunities), and assume partnerships can be modified.
9. Assume divestment – either disposition or a new operator – is a possibility. Identify divestment partners as appropriate.
10. Summarize impacts on current and planned Broader Impacts, outreach, and educational programs.

### **Boundary conditions**

The plan should consider three funding scenarios (presented in 2025 dollars):

- i. current-level funding, i.e., the current FFRDC total corrected for inflation (3%/year), stressing losses to the ecosystem;
- ii. accommodation of the operating costs of new and continuing facilities through a mixture of increased FFRDC funding but also major cuts to existing programs/facilities; and
- iii. aspirational though still fiscally responsible funding, i.e. not quite "blue skies" (a doubling of O&M funding is unlikely), with increased funding primarily supporting new facilities paired with appropriate cuts to existing programs while extending selected telescope/instrument missions.

### **Community Engagement**

Engagement with the broader astronomical community is an essential component of P3. The process for putting together the plan must be broad in scope, transparent, and inclusive. Plan developers must seek input from across the FFRDC, and from the broader user community.

Activities may include:

- Community webinars and/or NSF-funded workshops (details to be decided)
- Updates at community meetings, e.g., the January AAS meetings in 2025 and 2026
- A web portal inviting comments and suggestions

The FFRDCs will collectively coordinate and discuss implementation with the NSF.

## Document Preparation

Each FFRDC’s plan should be described in a written document, of order 50 pages in length. The plan developers will also be asked to summarize the plan in slides presented to an external panel (see below).

## Review Process

NSF intends to convene an external panel to review each FFRDC plan. The review is a tool that NSF will use to ensure each plan has been carefully and appropriately developed. The panel will also be a platform for engagement between the FFRDC, NSF, and members of the community, that will allow for a frank discussion of the strengths and weaknesses of the proposed plan.

The panel *will not* rank individual telescopes or directly compare the OIR portfolio against the Radio or Solar portfolios, or vice-versa. However, the panel will review each plan in terms of the global astronomical/heliophysical ecosystem, i.e., by considering opportunities the community has outside of NSF’s portfolio.

The panel will be asked to assess the scientific motivations that drive the plan, but also the associated costs, risks, opportunities, partnerships, and schedule. The panel will look for evidence that the plan was developed with broad community engagement, and that the process addresses the charge questions listed below.

Panel charge questions are appended to this document. These should be used to inform the development of each FFRDC’s plan.

## Timeline

P3 development	Sep-Oct 2024
Launch of P3 – Phase 1	Nov 12, 2024
Submission of Plans to NSF	May 1, 2026 (approx. 18 months later)
Panel Review – Phase 2	July 1, 2026

## P3 Review Panel Charge Questions

1. Is the plan sufficiently well justified **scientifically**?
  - Broadly speaking, is the plan responsive to decadal surveys such as Heliophysics 2024 and Astro2020 and is it looking forward to future needs, e.g. Astro2030, Heliophysics 2034?
  - Does the plan consider the scientific productivity of each facility?
2. Are anticipated approximate **maintenance** and **development** costs factored into the plan?
  - If major repairs/improvements/upgrades are not part of the O&M budget, are they clearly described and costed?
  - Are instrumentation needs fully considered?
3. Are estimated **operations costs** itemized and factored into the plan?
  - Does the plan include appropriate staffing needs (approx. number of FTEs), data management, cybersecurity, and other typical operations activities?
4. If part of the plan, are estimated **decommissioning** and **disposition** costs included?
5. Are **risks** and **opportunities** adequately assessed and described?
  - Does the plan include consideration of external factors, e.g., the broader astronomical landscape, site challenges, etc.?
6. Have existing and proposed new **partnerships** been considered?
  - Does the plan include public and private partnerships, international/interagency involvement, philanthropic investments, etc., as appropriate?
7. Are the impacts of the plan on **Broader Impacts** activities and societal consequences included in the plan?

For each FFRDC, the panel should summarize the major strengths and weaknesses of the proposed plan.