



# Evolving NSF Requirement for Facilities Condition Assessments (FCA)

Presented at NSF Research Infrastructure Workshop,  
Boulder CO, Sept 13<sup>th</sup>, 2022

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# Overview of Facilities and Operations track this afternoon

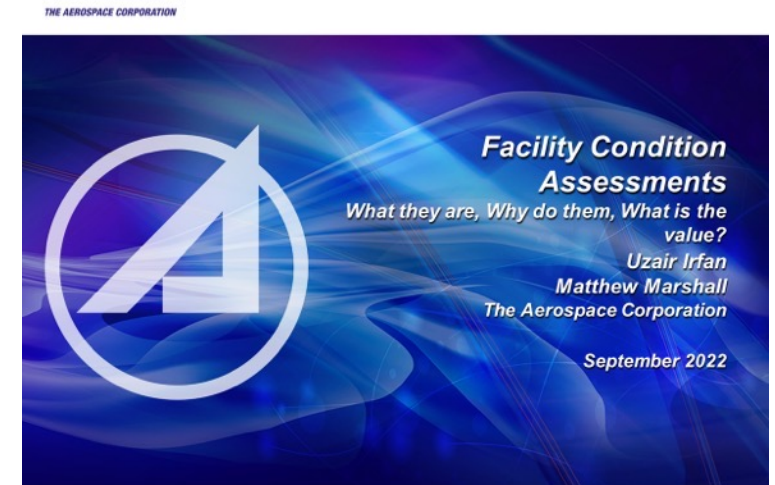


	<b>Facilities and Operations Track</b>
<b>1:35 pm</b> MDT	<b>Evolving NSF Requirement for Facilities Condition Assessments (FCA)</b> <i>Richard Oram, Research Infrastructure Advisor, Large Facilities Office, NSF [20 mins]</i> <b>Facility Condition Assessments: What they are, Why do them, What is the value?</b> <i>Uzair Irfan, Senior Project Engineer, Matthew Marshall, Systems Director, The Aerospace Corporation</i>
<b>2:35 pm</b>	Break
<b>2:45 pm</b>	<b>NCAR's experience with FCA and developing Capital Life Cycle Maintenance Plans</b> <i>Rob Reid, Facility Management &amp; SAS Director, NCAR (20mins)</i> <b>Facility assessments in the context of the national security space enterprise</b> <i>Denise Castro- Bran, Director Systems &amp; Operations Assurance Dept, The Aerospace Corporation [20 mins]</i> <b>Facility assessments in the context of NASA space environment test facilities</b> <i>Wei Hu, Space Environmental Test Management Office NASA/HQ [20mins]</i>
<b>3:45 pm</b>	Refreshment Break
<b>4:05 pm</b>	<b>Dialog on Recapitalization opportunities and challenges.</b> <i>Matthew Hawkins, Head, Large Facilities Office, NSF</i> <i>Linnea Avallone, Chief Officer for Research Facilities, NSF</i> <i>Stella Osifo, Research Infrastructure Advisor, Large Facilities Office, NSF</i>
<b>5:05 pm</b>	Break and Travel/ Welcome Reception @ NCAR's MESA LAB



# Outline for this session

- 1) Discuss what NSF is considering related to FCAs
- 2) Facility Condition Assessments:  
**What they are, why do them, what is the value?**
- 3) NSF would like to hear from the RI community offering their perspective on FCAs





# Facility Condition Assessment in the Research Infrastructure Guide

The *Research Infrastructure Guide* (RIG) currently includes a provision for an FCA to be requested by the Program Officer during the Operations Stage;

**2.5.1 Operations Management and Oversight : A Program Officer (PO) may also request a periodic formal **Condition Assessment** report (an evaluation of capital assets requiring significant expenditures for periodic replacement or refurbishment and having a lifetime longer than the usual five-year award cycle), accompanied by an Asset Management Plan (a strategic plan for dealing with these issues), to inform NSF and the facility management of anticipated major and infrequent maintenance expenses that cause a significant departure from the routine funding profile.**





# Facility Condition Assessment Where NSF is heading



- NSF is implementing new **internal** guidance requiring that facility condition be routinely assessed as part of agency review processes:
  - Inform need for future investment
  - Inform competition, renewal and disposition recommendations
- Inclusion of an FCA in the award T&Cs is consistent with expectations on “substantial involvement” by NSF
- Several Recipients have FCA requirements in their award T&Cs
- **Given the unique nature of NSF Major Facilities, how do we require FCAs such that they are conducted in a meaningful way?**



# FCAs – Other Agencies

- The Department of Defense (DoD) requires a standardized process for facility condition assessments to ensure consistent and reliable data necessary for sound strategic investment decisions in managing the Department's built environment.
- DOE Order 430.1C, Real Property Asset Management, (d.8-19-2016) requires establishment of a condition assessment system and that the status of infrastructure to be managed using the DOE-funded Condition Assessment Information System (CAIS).
- NASA manages its aging facilities and infrastructure by performing annual assessments of their condition and deferred maintenance that are used to help guide future spending.
  - The assessments involve visual inspections of assets and systems such as electrical, plumbing, and roofs by teams of independent assessors that includes architects, engineers, and facility specialists. The assessment teams rate each asset and system, considering input from facilities management staff and building managers.



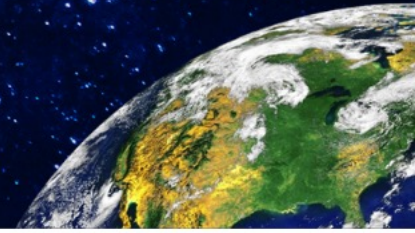
# Facility Condition Assessments A Definition



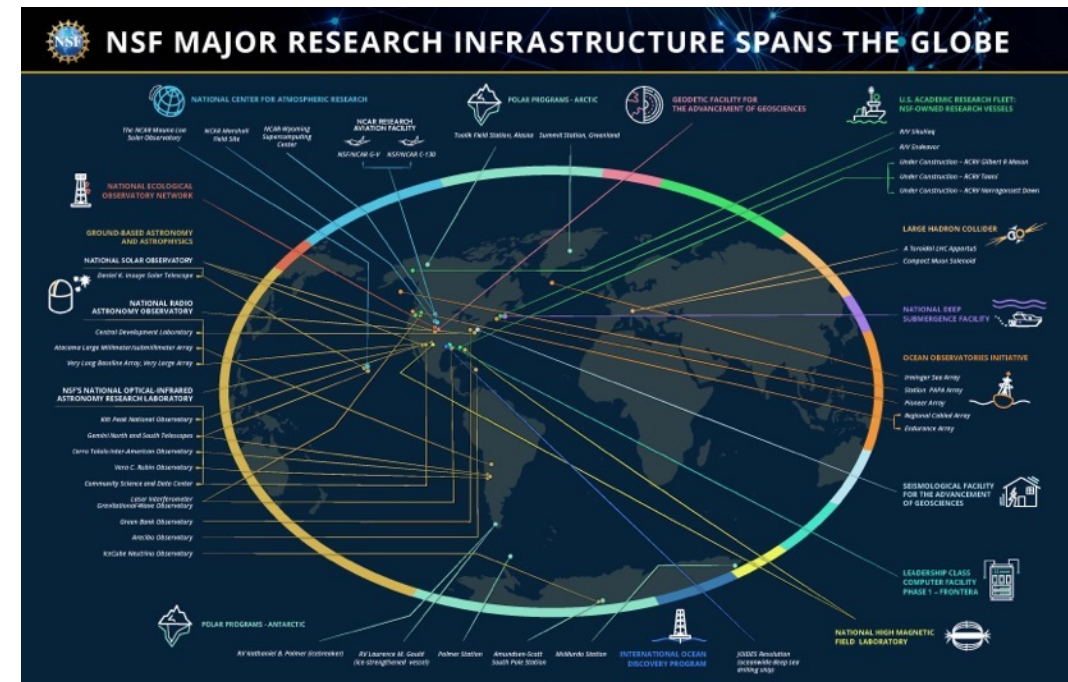
- A Facility Condition Assessment (FCA) is a detailed inspection of a facility to collect condition data on all capital assets to include design, methods of construction, shell, systems and equipment.
- Identify capital assets requiring significant investments for periodic replacement or refurbishment that have a lifetime longer than the usual five-year award cycle.
- If the research and experimental equipment is not otherwise reviewed by NSF, it should be considered as part of the FCA.
- The FCA prioritizes items for repair or renewal and performance of preventive maintenance wherever necessary and informs plans for upcoming expenditures, including resilience to climate change.



# Climate Risks



- Climate change poses new risks to all government-funded infrastructure, including research infrastructure
- This risk is independent of measures to decrease the carbon footprint of Major Facilities
- Including climate change adaptation as part of FCAs improves transparency on budgetary needs to improve resilience







# Considerations

- The assessment should have some degree of consistency across the Major Facility portfolio
- Major Facilities are diverse and there won't likely be a single 'cookie-cutter' approach to conducting an FCA
- Sharing best practices and lessons learned will allow for adopting consistent requirements and outputs without being too prescriptive



[R/V Sikuliaq](#)



# Further Considerations

- Unless otherwise conducted by NSF, the responsibility for FCAs should be the responsibility of the Recipient
- Any new T&C should not be overly prescriptive and allow for tailoring of the FCA to suit the particulars of the facility
- Industry standards used where appropriate
- Condition of scientific components need to be addressed in some way
- There should be a common format (minimum output?) that clearly articulates associated costs



# What are your thoughts?

NSF would like to hear from the RI community offering their perspective on FCAs

## A few ways to communicate

In Person- Poster Session this week

Message Richard Oram on the Whova app

[COI Portal - NSF Research Infrastructure Outreach](#)

Email [rjoram@nsf.gov](mailto:rjoram@nsf.gov)

**Research Infrastructure Community and Outreach - Working Group (RICO-WG)**  
Presented at NSF Research Infrastructure Workshop, Sept 2022 by Richard J Oram

**Objectives**

- 1. Assess the progress of the working group in providing a platform for the research infrastructure community and outreach activities.
- 2. Identify key research infrastructure communities and outreach activities to be supported by the working group.
- 3. Develop a research infrastructure outreach strategy.
- 4. Develop a research infrastructure outreach plan.
- 5. Develop a research infrastructure outreach budget.
- 6. Develop a research infrastructure outreach timeline.
- 7. Develop a research infrastructure outreach communication plan.
- 8. Develop a research infrastructure outreach evaluation plan.

**Desired Outcomes**

- 1. A research infrastructure outreach strategy.
- 2. A research infrastructure outreach plan.
- 3. A research infrastructure outreach budget.
- 4. A research infrastructure outreach timeline.
- 5. A research infrastructure outreach communication plan.
- 6. A research infrastructure outreach evaluation plan.

**Whova** - Whova Guides - Organizing your own event? - About Whova

**2022 Research Infrastructure Workshop**  
Boulder, CO (View map) Sep 12 - 16, 2022 | Displaying in the event's time: 5:02 PM (MDT) | Switch to local time

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**2022 RESEARCH INFRASTRUCTURE WORKSHOP**  
SEPTEMBER 13 - 16, 2022 • BOULDER, CO

Welcome to the 2022 Research Infrastructure Workshop. We hope that you find the workshop to be both useful and productive. The National Center for Atmospheric Research (NCAR), the Geodesic Facility for the Advancement of Geoscience (GAGE), the National Ecological Observatory Network (NEON), and the National Solar Observatory (NSO) are joint co-hosts for the event.

The Research Infrastructure Workshop is a collaborative forum for all the National Science Foundation's Research Infrastructure Projects. We strive to support NSF's mission and promote the scientific endeavor with the following desired outcomes:

Meeting Objectives: The RICO-WG will set up a meeting at least once per month, but meetings may be held frequently as needed.

**Research Infrastructure Communities of Interest** - New Research Infrastructure "Communities of Interest" Portal

Portal Access

NSF's Large Facilities Office (LFO) is facilitating a Communities of Interest platform is a cloud-based community forum for business, nonprofit and government entities to share knowledge and facilitate a connection with the NSF-supported Research Infrastructure Community.

No software is needed in order to participate.

- CHAT FORUMS FOR Q&As
- FEEDBACK DISCUSSION
- DOCUMENT SHARING
- VOTING

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# BACKUP SLIDES



# ASTM Standard E2018-15, Standard Guide for Property Condition Assessments:

- ASTM standard (E2018-15) Uniformat II Classification for Building Elements- classifying building specifications, cost estimating, and cost analysis. The elements are major components common to most buildings.
- Uniformat estimating applies unit-cost data to building-system and component site elements. This “systems” approach uses a hierarchical structure of cost elements, beginning at Level 1 with basic systems, such as Substructure, Exterior Enclosure, and Interior Construction, and proceeding to successively more detailed subdivisions of these systems at Levels 2-5. See [GSA.gov.-  
Uniformat.](https://www.gsa.gov/uniformat)



# The Facility Condition Index (FCI)

- The Facility Condition Index (FCI), a standard used to indicate the condition of an asset or assets, is the ratio of the cost of requirements divided by the current replacement value (CRV) of the asset. The CRV is the total value of all systems that make up a particular asset. The lower the FCI value the better the condition of the building or asset.

- The FCI is calculated as:

$$\text{FCI} = \frac{\text{Total FCI Requirements}}{\text{Current Replacement Value}}$$

- FCI calculations result in the determination that each asset or assets fall into the qualitative description of excellent, good, fair or poor. The lower the FCI value the better the condition of the building.

