



# CMB-S4 Update

European CMB Coordinators

October 8, 2021

John Corlett – Interim Project Director

# Outline

- Project Structure
  - Stakeholders
  - DOE Expectations from the Collaboration
  - Organization Chart
- Project Maturity
  - Preliminary Baseline Design Report
  - Cost & Schedule Development
  - Project Timeline
  - MOUs and LOIs
  - Near-term Reviews
- Conclusions

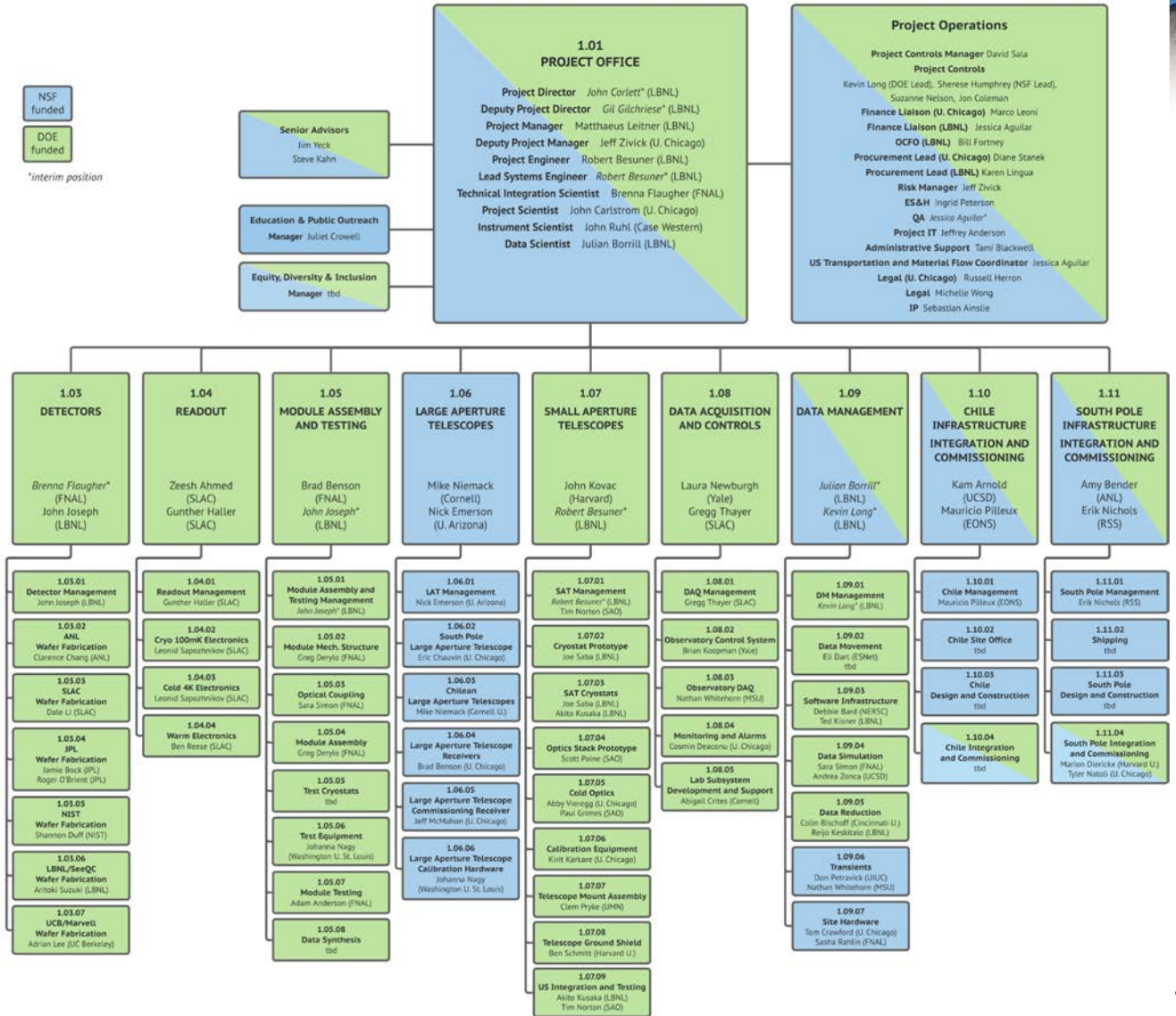
# Project Structure

- CMB-S4 is structured as a joint Department of Energy (DOE) and National Science Foundation (NSF) project
- LBNL was appointed by DOE as the Lead Laboratory, in August 2020
- U. Chicago is the lead institution for the NSF
- The project is organized as a single entity with an Integrated Project Office having DOE, NSF, and participating institutions represented in leadership roles
- The US funding agencies expect all collaborators in CMB-S4 to provide support to the Project
  - Including contributions to the Project from non-US collaborators
    - Financial support, or in-kind contributions
    - Typical for recent projects including DESI, LSST, LZ

# Organization Chart



\*interim position



# Preliminary Baseline Design

- The Preliminary Baseline Design Report (PBDR) captures the science goals and technical requirements that lead to the scope and design for the experiment
- Required for NSF and DOE Preliminary/Conceptual Design Reviews
- Draft posted May 2021 [CMBS4-doc-716](#)
  1. Science Case
  2. Science and Measurement Requirements
  3. Preliminary Baseline Design
  4. Science Analysis
  5. Project Overview
  6. Appendices
- Working with the Science Council and L2s on revisions to improve presentation of the flowdown, and to update the technical design where necessary
- Update to be provided to the LBNL Director's Review committee, November 16-19
- Goal of published version by early CY2022

# Cost Estimate in Progress

**Cost Estimating Form**

Project: CMB-S4 | WBS: 1.01.01.02 Project Office - DOE | Work Package: DOE-PMO-MGT-1000 Project Management Project Office - DOE

Last Updated: 6/30/2021 7:23:30 PM - By Kevin Long | Start Date: 07/01/2019 | End Date: 03/31/2030

**Details**

CAM: Matthaeus Leitner | Earned Value Technique (EVT): Level of Effort

**WP Statement of Work**

Manage the CMB-S4 schedules, budgets, plans, organization, procedures, policies, partnering, and resources. Maintain offices for Director, Project Manager, and all key staff in the Organization. Covers all Recruiting and staff relocation. Manage the Headquarters physical assets (hardware, software, facilities, documents) during the Construction Phase, as well as preparing for the same activities during the Operations Phase. This includes:

1. Managing software and document repositories
2. Procuring, configuring, administering, and maintaining computing, communications and storage infrastructure documentation library (developmental and production configurations)
3. Configuration control and asset management for all physical assets.
4. Infrastructure for PMCS and EVMS systems.
5. Domestic and international travel expenses for all key staff not covered in focused activities.
6. Office equipment, including enterprise computing equipment and personal computing for the PMO staff.
7. Communications service for Project Management office.

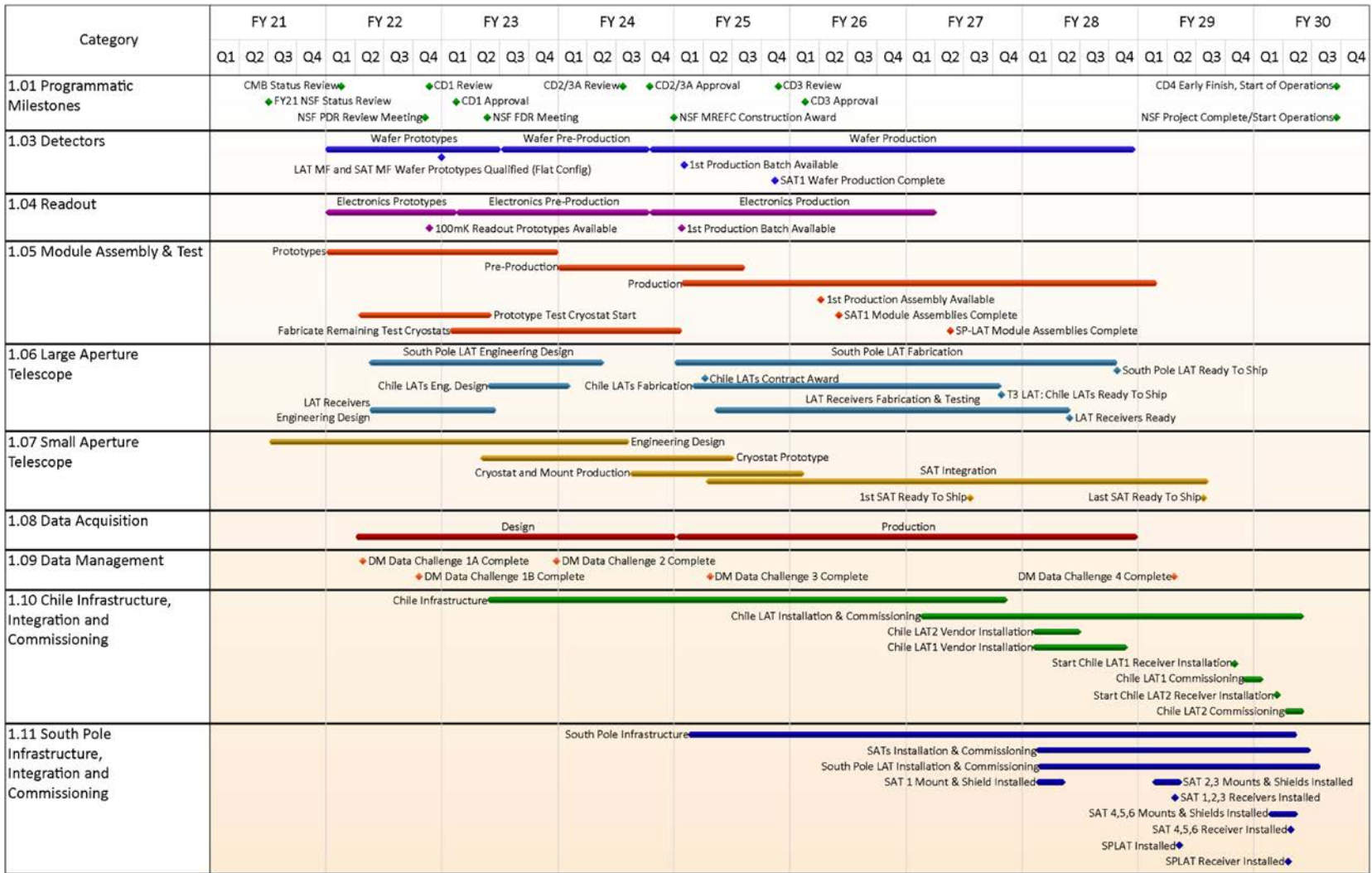
OBS: LBNL - Lawrence Berkeley National Lab

**Labor Estimate**

ID	Resource ID	Description	Start	Finish	Hours	Cost	Basis Code	Comments / Assumptions	Supporting Docs
29322-Budget	A40.3 - LBNL Administrator - Sr	PM_3400 Management - CD0103A to FY23 - DOE	04/01/2021	09/30/2022	Hours: 9,041.00	\$ 962,847.09			
29323-Budget	A40.3 - LBNL Administrator - Sr	PM_3500 Project Controls - CD0103A and beyond	04/01/2021	10/31/2028	Hours: 45,384.00	\$ 5,481,164.38	null		
29324-Budget	A40.3 - LBNL Administrator - Sr	PM_4100 QA/Safety Support - DOE	10/01/2022	03/31/2030	Hours: 7,564.00	\$ 965,154.55	null		
29325-Budget	A40.3 - LBNL Administrator - Sr	PM_4200 Management - FY23 and beyond - DOE	10/01/2022	11/30/2028	Hours: 18,168.00	\$ 2,262,026.23	null		
29326-Budget	513.4 - LBNL Sci/Eng - Physicist Staff	PM_3400 Management - CD0103A to FY23 - DOE	04/01/2021	09/30/2022	Hours: 3,014.00	\$ 533,056.68	null		
29327-Budget	513.4 - LBNL Sci/Eng - Physicist Staff	PM_4200 Management - FY23 and beyond - DOE	10/01/2022	11/30/2028	Hours: 3,028.00	\$ 626,088.43	null		

- **Cost and BoE Updates Being Collected**
  - Basis of Estimate
  - Estimate Uncertainty Factors
  - WBS Dictionary
- **First Risk workshop held**
- **Integrated Project Schedule Captures Scope, Forms Basis For Cost Development**

# CMB-S4 Summary Schedule



# MOUs and LOIs

MOU: Memorandum of Understanding  
LOI: Letter of Interest

- MOUs in place
  - Legal framework for work in Chile. U of Chicago
  - Framework for potential in-kind contributions to CMB-S4
    - Harvard-Smithsonian
    - CCAT Prime Observatory, Inc. and U. Chicago
    - Simons Observatory and U. Chicago
- LOIs (international partners)
  - IN2P3 interest in contributing to Data Management and collaboration analysis working groups
  - Potential framework: existing: iCRADA (international Cooperative Research and Development Agreement with LBNL)



# Recent and Near-Term Reviews

- MSRI-1 status review held May 18-19, charged to assess path to Preliminary Design Review for NSF scope
  - “... team is excellent and includes many leaders in this scientific field...”
  - “... team is on a credible path to deliver a draft Preliminary Project Execution Plan and proposal for review...”
- LBNL Director’s Status Review
  - November 16-19, 2021
- DOE Project Status review by the Office of Science, Office of Project Assessment
  - February 15-19, 2022
- NSF review of the Preliminary Design
  - August 2022 provisional timing, will be initiated by the NSF after ASTRO 2020 report is released
- DOE Critical Decision-1 (CD-1) review “Approve Alternative Selection and Cost Range”
  - August 2022

# Conclusions

- CMB-S4 Project organization and infrastructure is in place and is being used to develop the project maturity, perform R&D, and prepare for phase-gate reviews
- One agency status review is completed, status and and gate reviews are planned for the coming year
- Preparations for agency gate reviews (NSF–PDR, DOE–CD-1) are well under way:
  - R&D in critical areas (detectors, readout, modules and test) is under way to retire risk and reduce cost
  - All major elements have undergone formal technical design reviews
  - Cost and schedule are being updated and will be ready for the LBNL Director’s Review in November
  - The Preliminary Baseline Design Report has been drafted and revisions are underway
- The Project is ready to discuss contributions from collaborators, that will enable access to the science data
  - The Project Director is the point of contact to initiate discussions