



# APS-U PROJECT UPDATE



**Jim Kerby**  
APS Upgrade Project Manager  
PSC All Hands Meeting  
October 26, 2022



x500



Some of the recently installed temperature monitoring systems



Bunch Lengthening System Assembly



All of the DLM and QMQ chamber supports in storage



\$815M



The CSSI Grand Tube under manufacture in Spain



\$1.5B



U.S. DEPARTMENT OF ENERGY

Argonne National Laboratory is a U.S. Department of Energy laboratory managed by UChicago Argonne, LLC.



# A BUSY FEW MONTHS!

Project / PSC reviews completed and upcoming:

- a. Shutdown Preparation Readiness Review: August 16-18
- b. Experimental Systems Advisory Committee (ESAC): each morning of August 17 and 24
- c. Argonne EVMS Surveillance Review: August 23-25
- d. Beamline Radiological Review: September 12
- e. Accelerator Readiness Review Update: September 21
- f. Director's Review: October 4-6
- g. Machine Advisory Committee (MAC): October 13-15
- h. Accelerator Radiological Review: October 28
- i. OPA Review of the APSU: November 15-18
- j. Scientific Advisory Committee Meeting: November 16-17

Extraordinary lift by staff, with special thanks to our external reviewers on each committee.

Very positive and constructive conversations to help us make the most robust plan possible

going forward to – and beyond -- the upgrade

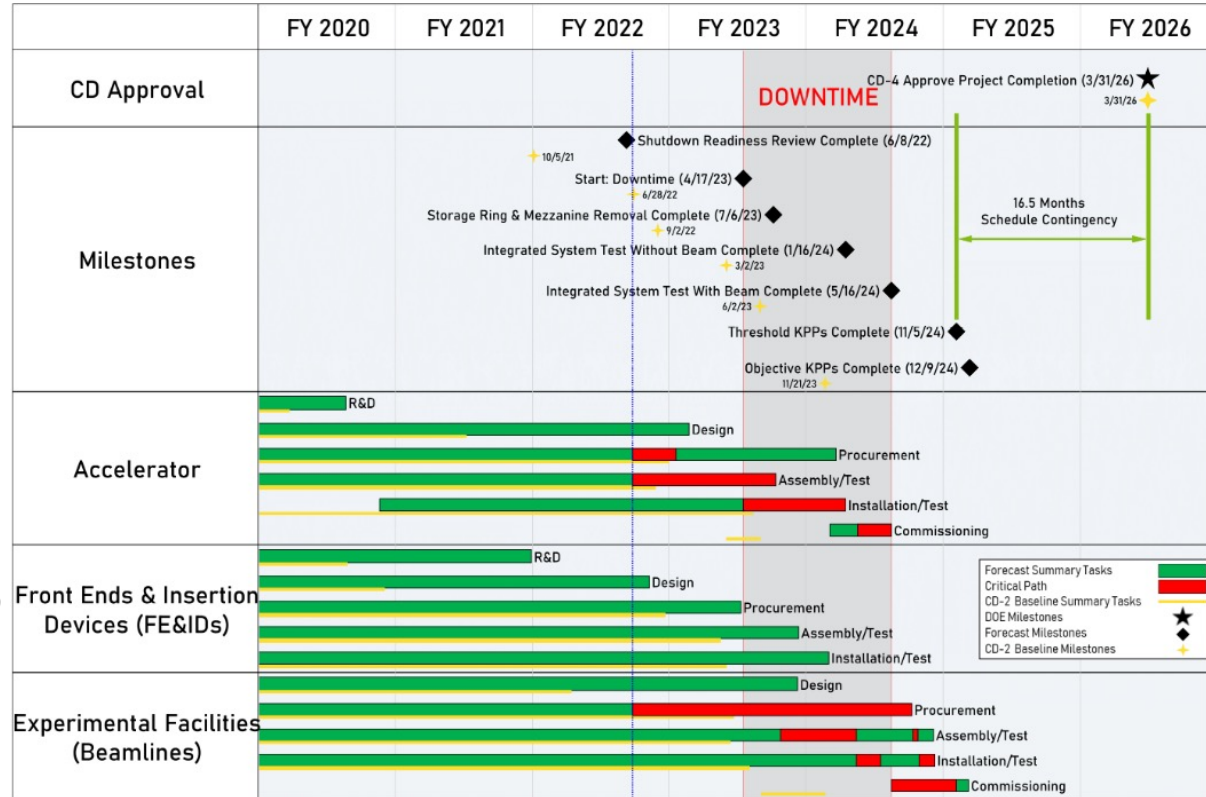
# CURRENT STATUS AND SCHEDULE

User operations scheduled to end April 17, 2023  
 Accelerator shutdown April 24, 2023

- Plans vetted by shutdown preparedness readiness review

Accelerator component delivery, acceptance and assembly drive the shutdown.

Supply chain and inflation impacts continue; close work with vendors to hold schedule, including finding parallel sources for components



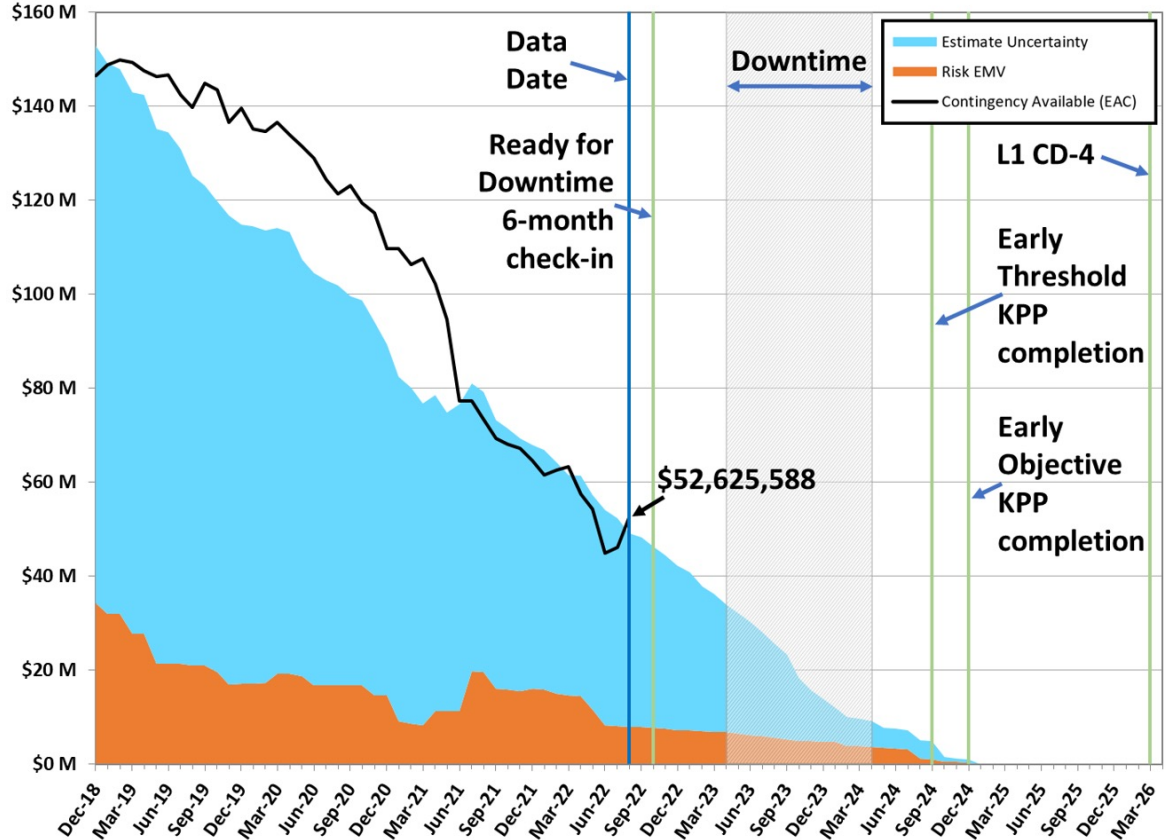
# PROGRESS AND CONTINGENCY

Project exercised scope options to increase cost contingency to adequate level - 24% of work to go - without affecting delivery of Objective KPPs

- “Major Item of Equipment” and other means under development to enable full realization of facility capabilities
- New and future capabilities matrix available on through web page

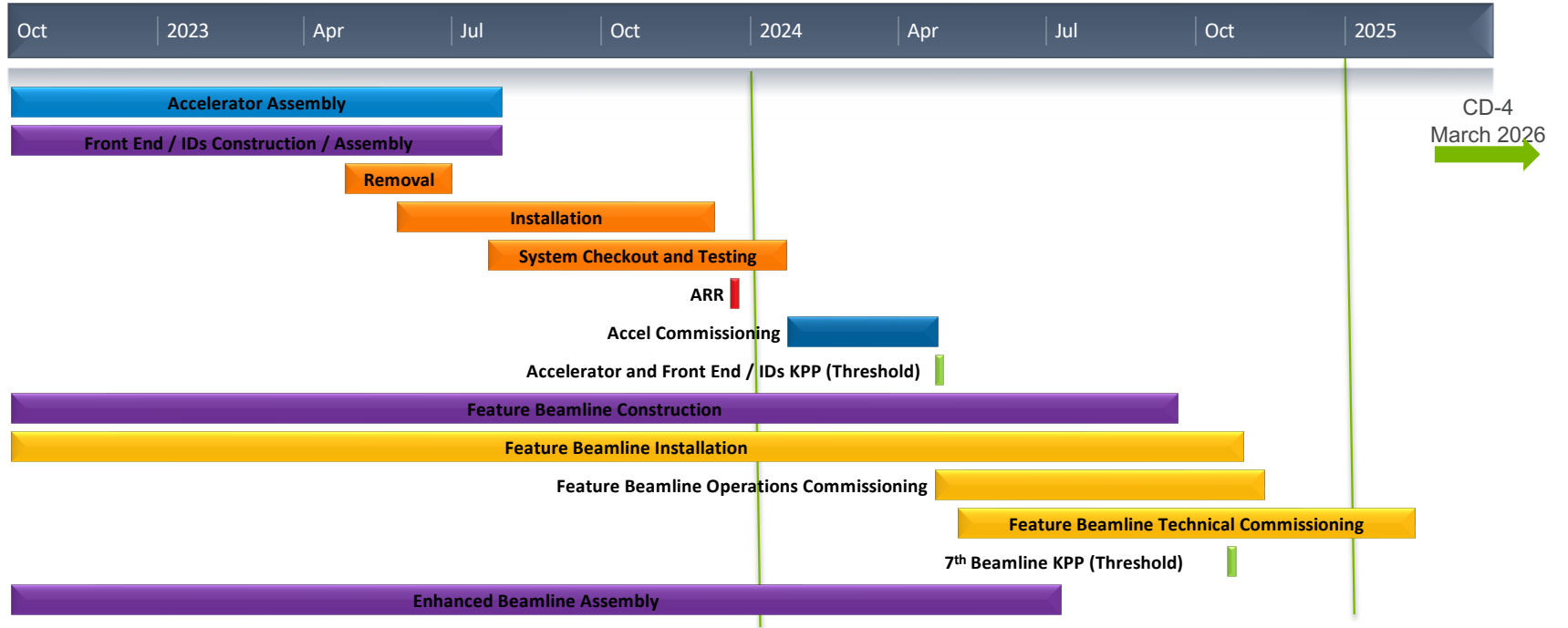
Schedule to the shutdown is the short term priority

Close interactions w/ our industrial partners is critical

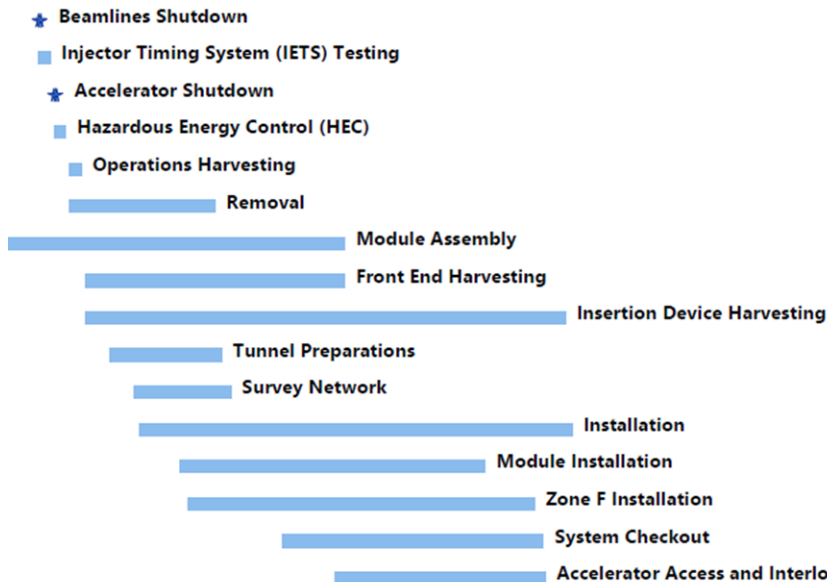


2022

2025



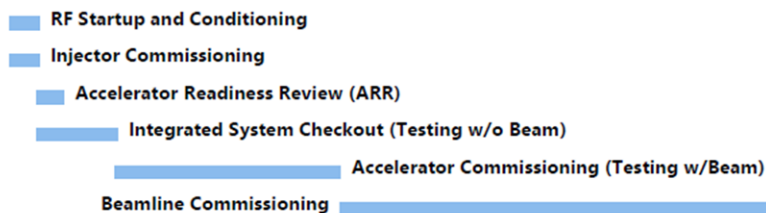
# INSTALLATION SCHEDULES



| Beamline            | FY22 |    |    |    | FY23 |    |    |    | FY24 |    |    |    | FY25 |    |    |    |
|---------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
|                     | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 |
| HEXM (20-ID)        |      |    | ▲  |    |      |    |    |    |      |    |    |    |      |    |    |    |
| ISN (19-ID)         |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| CSSI (9-ID)         |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| XPCS (8-ID)         |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 12-ID               |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 11-ID               |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 3DMN/ATOMIC (34-ID) |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| Polar (4-ID)        |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| 38-AM               |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| CHEX (28-ID)        |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| PychoProbe (33-ID)  |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |

- Sector Site Preparation
- Installation of Shielded Enclosures, SI and Utilities
- Complete Component Installation/Survey/Validation
- Shielding Verification
- Commissioning
- ▲ Access to LBB for Installation
- Installation of 9-ID Flight Path System

- R&I planning has been redone, bottoms up, accounting for parallel work in sectors around the ring



# BEAMLINE COMMISSIONING

Integrated Plan for ALL beamlines in development

Most effective return to User operations across the facility is the overarching goal

Feature Beamlines largely driven by construction / deliveries

Schedule of the remainder of beamlines to be set based on readiness, complexity, ...

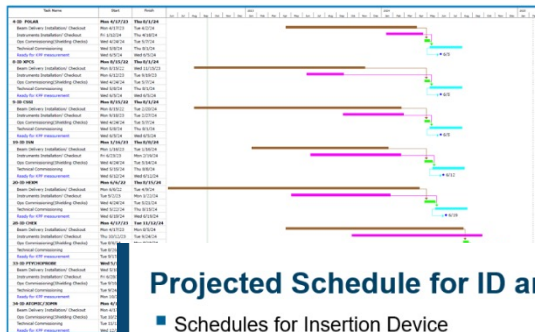
XSD / APSU leading development of planning

- Review of resource needs and leveling

- Integration with accelerator commissioning plan

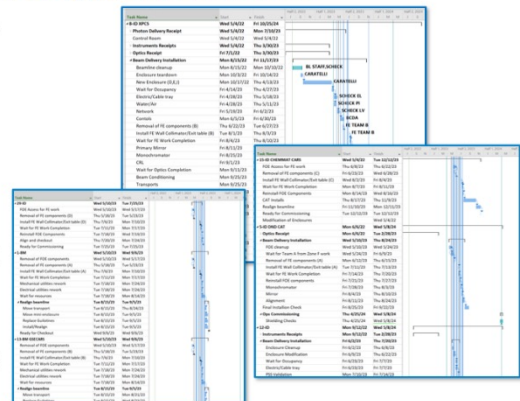
## Beamline Installation Schedule

- Beamlines will be built in series using dedicated technician teams
- Technician teams need to be coordinated (example: installation of RSS components requires multiple tech types working together)



## Projected Schedule for ID and BM Beamlines

- Schedules for Insertion Device (ID) beamline installations designed around shielded enclosure installation (component delivery) dates from vendors
- ID front-end and BM work based on dark time schedule
- APS-U responsible for beamline component technical verifications
- Operations handles beamline commissioning and preparation for user operations



Director's Review of APS-U October 4-6, 2022





# SUMMARY

172 days to go! We will continue to communicate updates on a monthly basis (check the web page!)

The reviews have confirmed and helped our planning to become more robust. The strength of the team is noted by all.

Planning for 'APS after the Upgrade' is under way. More news to come.

## Upcoming Reviews

- Accelerator Radiological Review: October 28
- OPA Review of the APSU: November 15-18
- Scientific Advisory Committee Meeting: November 16-17

Thank you for your continued interest in, support of, and safe work conducted on behalf of the Lab, PSC and the Upgrade

# COMMUNICATIONS

APS Upgrade web page on the APS website

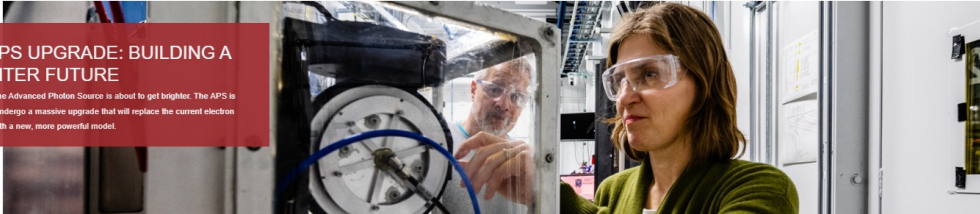

- <https://www.aps.anl.gov/APS-Upgrade>

APS Upgrade web page on the Argonne website

- <https://www.anl.gov/aps-upgrad>

172 days to the shutdown!

The Advanced Photon Source  
a U.S. Department of Energy Office of Science User Facility



**THE APS UPGRADE: BUILDING A BRIGHTER FUTURE**

The future of the Advanced Photon Source is about to get brighter. The APS is scheduled to undergo a massive upgrade that will replace the current electron storage ring with a new, more powerful model.

- APS Upgrade Home
- About the APS Upgrade
- FAQ
- New Storage Ring
- Feature Beamlines
- Videos
- People of the APS Upgrade
- Workshops, Meetings & Town Halls
- Organization Chart
- Sharepoint (Password Required)
- Documents
- Comparable Beamline Options for Users
- Progress in Pictures

**APS USER EXPERIMENTS SCHEDULED TO END APRIL 17, 2023**  
**INSTALLATION PERIOD SCHEDULED TO BEGIN APRIL 24, 2023**

The APS Upgrade Project will require a storage ring installation period, during which the APS will pause operations for one year. User experiments are scheduled to end on April 17, 2023, with the installation period scheduled to begin one week later, on April 24, 2023. Consistent with these dates, the last APS operations run is scheduled to start on Jan. 31, 2023, and end on April 17, 2023. The upgraded APS will return to operations after the 12-month installation and commissioning period, though the initial operations will be at reduced current and availability as the machine is turned up. Regular updates will be provided on this website.

**APS Upgrade News**

- 10.14.2022  
Fleeting IDEA Beamline Will Provide Lasting Value to the Advanced Photon Source
- 10.03.2022  
Deconstruction Site: 8-ID Beamlines Ready for Their Upgrades
- 09.28.2022  
Toasting the Spectroscopy Program at APS Beamline 20-ID