

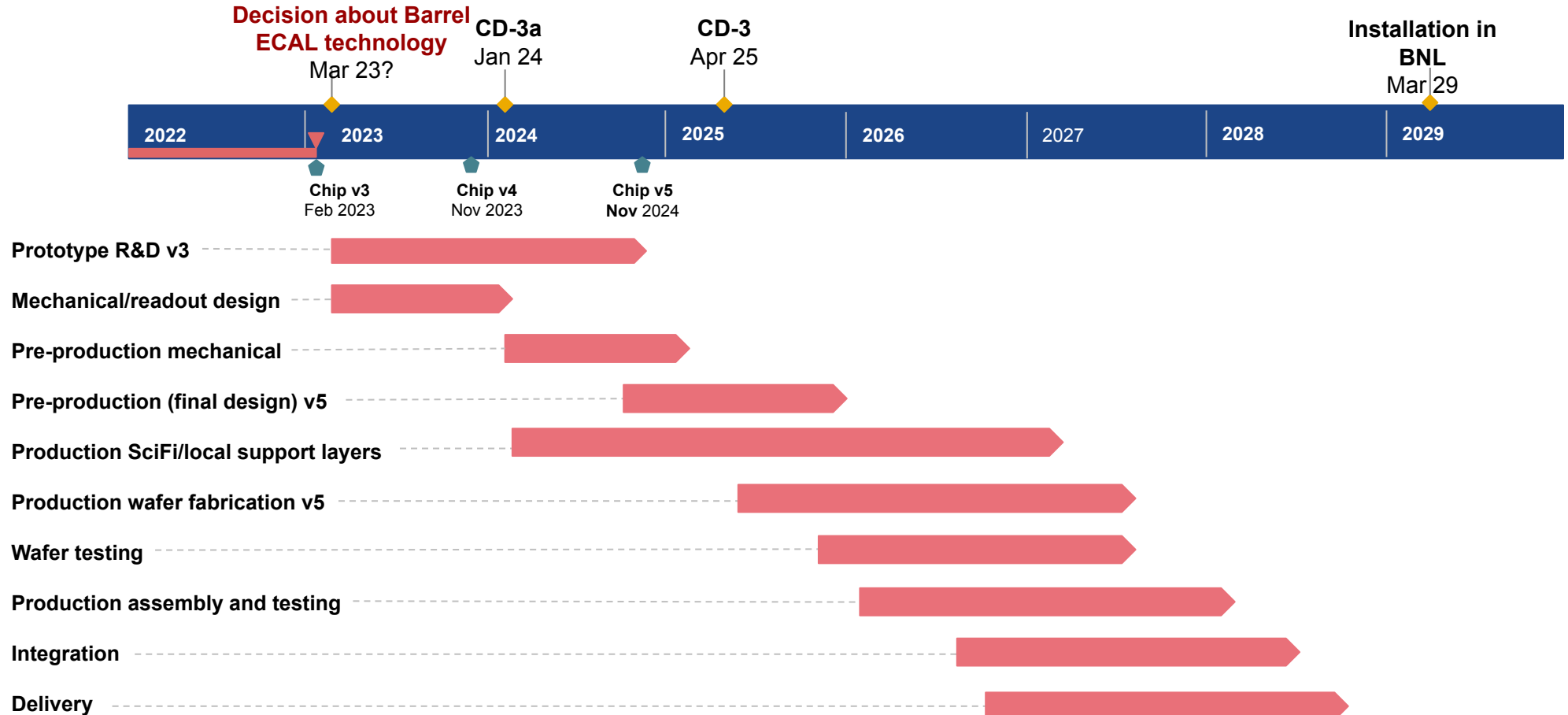
ePIC Barrel ECal Meeting - 06/12-16/23

Schedule, Budget and Tasks Organization

Maria Zurek
Argonne National Laboratory



Schedule (to be adjusted)



High Level Schedule from Sasha

Jul 2023 - Oct 2024: Design

Jan 2024 - Oct 2024: Prototyping/First article (*note any beam tests relate to R&D not to EMCal WBS*)

Oct 2024 - Oct 2025: Production development (*I guess it doesn't need to finish before procurement starts*)

Feb 2025 - Feb 2026: Procurement process

Feb 2026 - May 2029: Contract Award followed by material delivery

May 2026 - Sep 2029: Production for Pb/SciFi and test & assembly for Si, and ship to BNL

Sep 2029 - Dec 2029: Sector assembly at BNL (light guides, SiPM, etc.)

Dec 2029: Deadline to have all sectors and Si staves ready for integration

Dec 2029 - Feb 2030: Sector assembly in a barrel

Feb 2030 - May 2030: Insert/integrate Si staves

Cost Summary of Pb/SciFi Layers - Material

Most up to date budget table: <https://anl.box.com/s/yvc557obm45a5f2skgisk3wjw9tazbzn>

Dominant Materials	cost
Fibers (Quote Saint Gobain, 1.09\$/m)	\$4.91M
Lead sheets	\$0.71M
SiPMs (30720 units)	\$0.53M

- Sci Fibers 4500 km at \$1.09/m = \$4.91M, quote from Saint Gobain
- SiPM 48*480 = 23040 units at \$23 a piece = \$0.53M, quote HPK S13360-6050PE

Materials Total SG (\$1.09)	Materials Total Kuraray (\$1.91)
\$7.4M	\$11M

Tasks and questions:

- Confirm Lead sheets price
- Optical Cookies budgeting
- Carbon Fiber support shelf structure budgeting
- Final quotes from Kuraray and LS

Cost Summary of Pb/SciFi Layers - Labor

Most up to date budget table: <https://anl.box.com/s/yvc557obm45a5f2skgisk3wjw9tazbzn>

Task	Cost
Final Design	\$333,883.00
Reviews	\$51,158.00
Procurement Support	\$28,405.00
Tooling design	\$122,065.00
Prototyping	\$280,018.00
Production Development	\$512,357.00
SciFi/Pb Staves Fabrication and Assembly	\$2,309,525.00
Installation in BNL	\$449,455.00
Initial commissioning	\$23,491.00
FEE Development and Testing	\$253,614.00
SUM:	\$4,363,971.00

Labor Total

\$4.4M

Tasks and questions:

- Break labor to concrete tasks and FTEs
- Compare installation labor costs with AstroPix spreadsheet

Cost Summary of Pb/SciFi Layers - Summary

Most up to date budget table: <https://anl.box.com/s/yvc557obm45a5f2skgisk3wjw9tazbzn>

Initial Budget at the Barrel Review:

Direct Materials Total	Total Labor cost	Total
\$9.3M	\$4.5M	\$13.8M

06/12 Estimates (we will work on finalizing during this workshop + waiting for the final quotes on fiber):

Direct Materials Total	Total Labor cost	Total
\$7.4M (SG quote)	\$4.4M	11.8\$M

Tasks and FTEs detailed breakdown

Started for AstroPix layers: Final Mechanical and Electrical Design + QC Procedures

Spreadsheet without names/institutions:

https://docs.google.com/spreadsheets/d/1vME1LRQjw_CrD3CyzsyyDXMU4srh0fRWSaA-abQB-2k/edit?usp=sharing

Similar tasks breakdown for the design, pre-production, production and installation for ScFi/Pb: working session

Cost of AstroPix Layers - Labor

- Old Budget: Design FTEs ~10K hours (Mechanical Engineer), ~11K hours (Electrical Engineer) (~11 FTE total over 2.5 year of design)

Task	Cost (total \$3.43M)
Mechanical design	\$1.62M
Electrical design	\$1.81M

- Reevaluation of FTEs of labor for the next year with detailed breakdown of the final design tasks
 - Estimate of 9 FTEs total for one year of the final design (electrical and mechanical) with associated names (+ one postdoc hire)

Task	Cost
9.4 FTEs	\$2.6M