



U.S. DEPARTMENT OF
ENERGY Office of
Science

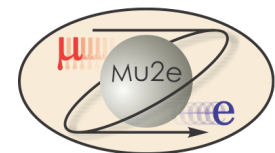
Project Management

Mu2e Independent Cost Estimate

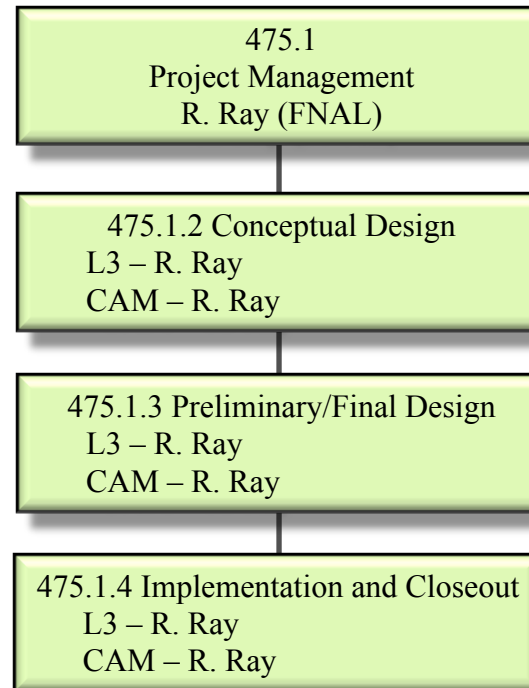
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8/26/2014



Organization of WBS 1

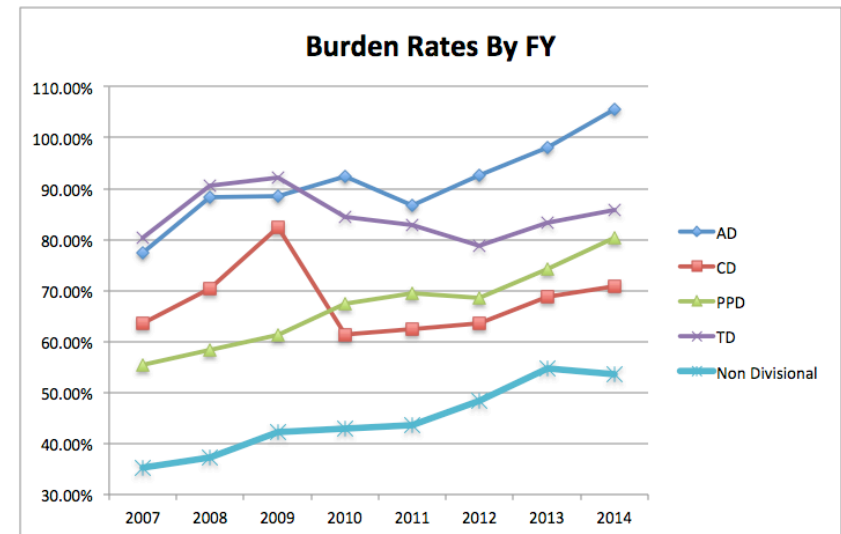


WBS 475.1 Scope

- Provide labor resources for Project Management, Project Engineering, Project Controls, Finance, ES&H and simulations infrastructure. All of the labor is in the form of Level-of-Effort and is based on assigned personnel and estimated effort. Activities are divided up by funding type and fiscal year. Provide funds for support of guest scientists, for Project Office staff travel, training and equipment.
- 475.1.2 Conceptual Design (\$4951k)
- 475.1.3 Preliminary and Final Design (\$4733k)
- 475.1.4 Implementation and Closeout (\$11,016k)

Risks

- PM- 010: Increase in Fermilab Overhead rates.
 - Rates change frequently and retroactively. As base program support goes down, rates go up. Half of Mu2e TPC is Fermilab labor, so we are particularly sensitive to changes in overhead.
 - Estimated impact based on analysis of historical data convoluted with anticipated labor obligations in each Division: \$1.5M
 - Probability: Moderate
 - Mitigation: Try to maintain adequate contingency year-by-year to cover retroactive overhead increases.



Risks

- PM-008: Additional resources required in project Office to manage Project
 - Comparison with NOvA actuals after CD-1 led to addition of 3.4 FTEs to Project office. Still a residual risk that more effort might be required. (see risk form on web page – docdb 3364)
 - Impact: \$500k
 - Probability: 25%
- PM-154: Commodity prices escalate faster than inflation
 - Increase in cost of Steel, aluminum, copper or gold could impact cost of Mu2e.
 - Risk form (docdb 3845) evaluates exposure by L2 subsystem
 - Bids already in hand for Building, Production and Detector Solenoids, superconducting cable, so vendors hold those risks.
 - Impact: \$1.1M
 - Probability: 10%

Risks

- PM-048: Significant Injury or death associated with Mu2e construction
 - Construction activities tend to have greater exposures to hazards, worker injury and property/environmental damage. Installation of large pieces of equipment and work with electrical systems also pose injury risks.
 - Even though the probability is very small because of time-tested administrative and safety procedures, the impact could be very large, so we treat these risks very seriously.
 - Impact: Serious injury or death. Significant schedule delay and associated cost (assume 12 months and ~\$1M).
 - Probability: Very Low.

Cost

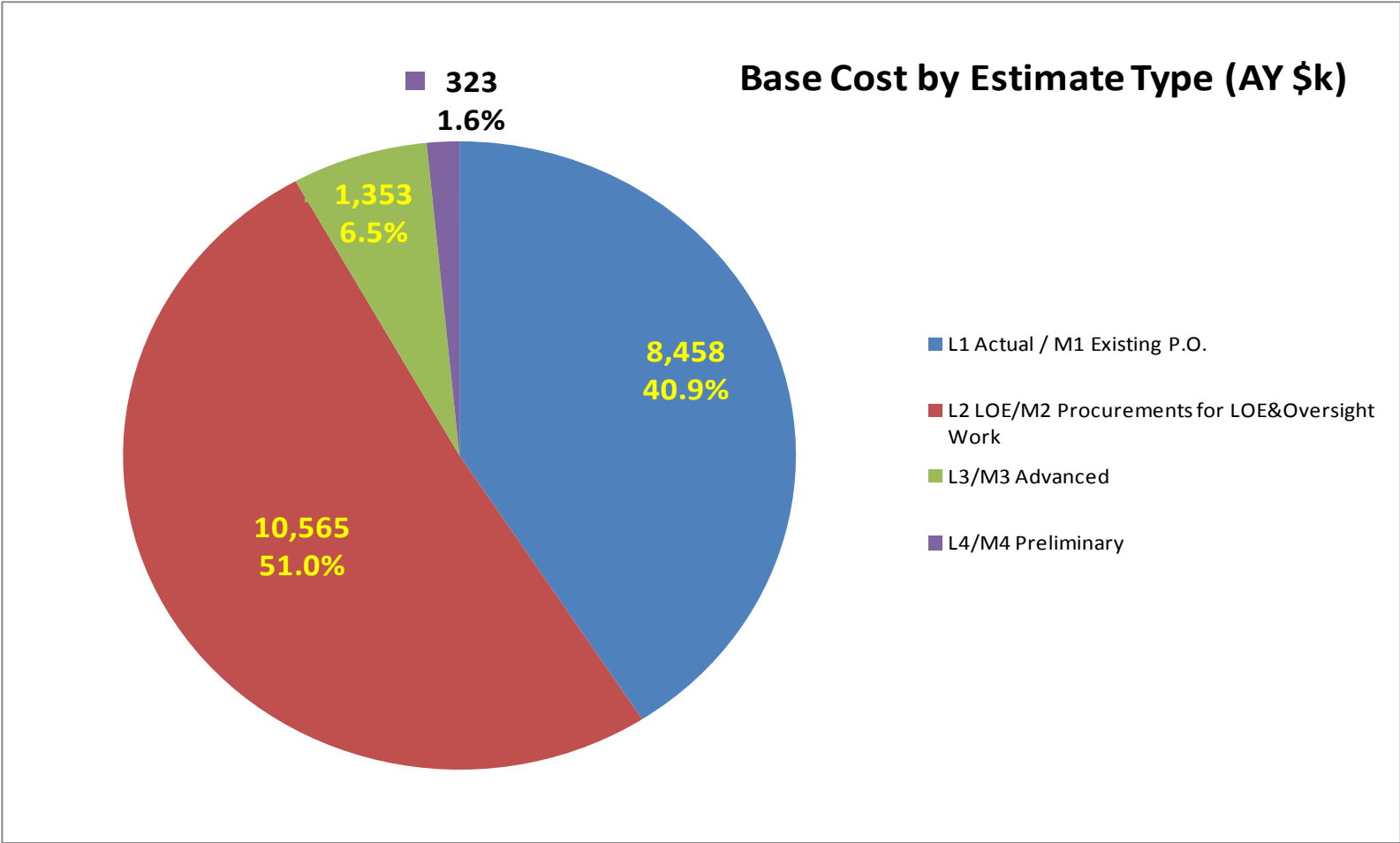
WBS 1 Project Management

Costs are fully burdened in AY

	M&S	Labor	Base Cost	Estimate Uncertainty	% Contingency on ETC	Total
475.01.02 Conceptual Design	1,964	2,986	4,951		0%	4,951
475.01.03 Preliminary & Final Design	774	3,959	4,733	89	9%	4,822
475.01.04 Implementation & Close-out	717	10,299	11,016	773	7%	11,790
Risk Based Contingency				1208		982
Total	3,455	17,245	20,700	2,070	17%	22,770

Quality of Estimate

100% of estimate at or beyond Preliminary Design.



Summary

- Scope of Project Management L2 well defined
- Estimates for Project management are complete
 - Labor is all LOE
 - Estimates based on assigned personnel and comparison with actuals from similarly sized NOvA Project
 - Risk Register includes risk that additional personnel are required in Project Office.
- Risks understood, mitigated where possible. Cost set aside as contingency to cover residual risks.
- Estimates are traceable
 - Comprehensive BOE and comparison to NOvA actuals.