Director's Preliminary Cost and Schedule Review of Project X: Introduction and Overview

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Project X Director's Review
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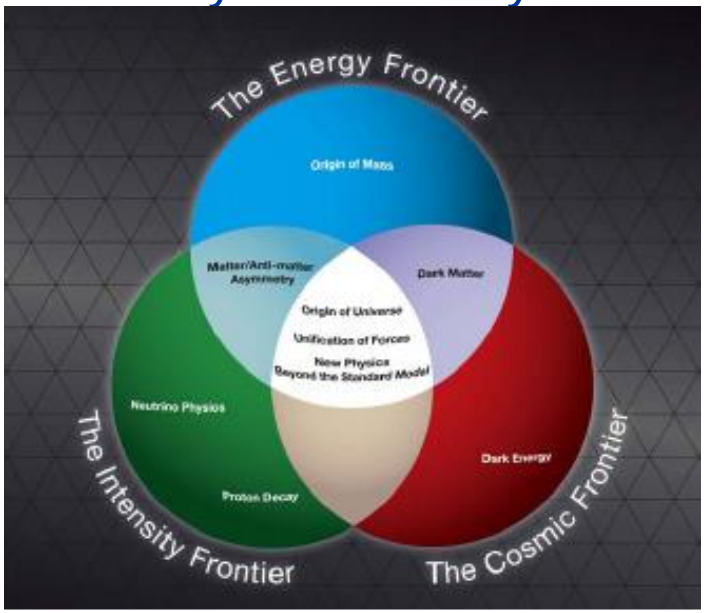
http://www.fnal.gov/directorate/OPMO/Projects/PX/DirRev/2009/03_16/review.htm

Role in Fermilab's Future
Fermilab Long Range Plan

- Fermilab is the sole remaining U.S. laboratory providing facilities in support of accelerator-based Elementary Particle Physics.
- The Fermilab long-term strategy is fully aligned with the HEPAP/P5 plan:
  - Energy and intensity frontiers share strong reliance on accelerators



"The panel recommends an R&D program in the immediate future to design a multi-megawatt proton source at Fermilab and a neutrino beamline to DUSEL… "
(www.science.doe.gov/hep/files/pdfs/P5_Report%2006022008.pdf)

Role in Fermilab's Future
Evolution of the Accelerator Complex

- A multi-MW Proton Source (aka Project X) is the lynchpin of Fermilab's strategy for future development of the accelerator complex:
  - Energy Frontier:
    Tevatron → ILC or Muon Collider as options for the Fermilab site
    - Aligned with ILC technology development;
    - Preserves Fermilab as potential site for ILC or a Muon Collider
  - Intensity Frontier:
    NuMI→ NOνA→ LBν/μ2e→ multi-MW Proton Source → NuFact
    - Steady increase in power and baseline length up to 2 MW @ 1300 km;
    - Several x 100 kW to rare processes experiments;
    - Preserves Fermilab as potential site for a Neutrino Factory

Guidelines for Reviewers

- This is not a technical review.
  - The technical design was looked at by the Accelerator Advisory Committee in February
    - (AAC were told “this is not a cost review”)
  - To first order you should accept that the configuration described will meet the technical goals.
  - To second order we expect to utilize your technical expertise to identify areas of particular risk, either technical or cost, and/or opportunities for reductions.
- This is not a baseline estimate
  - Baseline configuration is not established
  - Level of detail in the basis of estimates is not at baseline level
  - The DOE Order asks for a cost estimate range ⇒ This is a single point in time snapshot, developed very early in the process.

Guidelines for Reviewers

- Review of the schedule is secondary to the cost estimate
  - Estimates are tied to a resource loaded, “technically limited”, schedule
    - CD-0 July 2009
    - CD-1 December 2010
    - CD-2 July 2012
    - CD-3 August 2013
    - CD-4 March 2018

    RD&D: CD-0 through CD-2; PED: CD-1 through CD-3
  - There has been no effort to either optimize or load level the schedule
- Scope of the estimate
  - Hydrogen bottle through extraction kickers (MI and Recycler)
  - CD-0 to CD-4
    - CD-4 = complete hardware checkout

Guidelines for Reviewers

- Discussion of the PED profile should be confined to the Project Management breakout
  - All other breakout sessions should address the adequacy of the RD&D plan as supporting the needs of the construction project
- Breakout sessions speakers will be presenting estimates in FY2009 dollars (M&S) and person-years, with no overheads and no contingency
  - Overheads, escalation, and contingency are applied at the highest level and will be discussed in the Project Management breakout
- The specific role of collaborators is not integrated into the estimate
  - Labor is estimated as if provided by Fermilab staff
    - Fermilab labor rates are used
  - (With a few exceptions within the RD&D estimate)

Review Structure

- Three plenary talks:
  - Description of the initial configuration – Paul D.
  - High level description of systems and interfaces – Sergei N.
  - Description of cost estimating methodology and high level estimate summary – Jim K.
- Seven breakout sessions

– Project Management/Cost/Schedule	Black Hole (WH2NW)
– Cavities & Cryomodules	1 North (WH1NW)
– RF	Theory Conf Rm (WH3NE)
– Main Injector/Recycler/Beam Transfers	Hornets Nest (WH8N)
– Instrumentation and Controls	Req Room (WH4NW)
– Cryogenics	Snake Pit (WH2NE)
– Conventional Facilities	Confessional (WH5NE)

Summary

- The preliminary TPC estimate is $1.49B
- We hope the committee will concur in our view that:
  - The ICD represents a complete, well defined, scope
  - The preliminary estimate is a complete representation of the ICD
  - The methodologies used and the estimated costs are reasonable for this stage of the project
  - The preliminary estimate is sufficiently detailed and based on conservative assumptions
  - Opportunities for reduction of the estimate, while preserving the core mission needs, exist
  - The preliminary estimate is likely to represent the upper range of a subsequent baseline cost