Proton Plan 2 Task Types

- MIE tasks: procurement, fabrication, and installation of new & refurbished equipment for the accelerator & NuMI upgrades required for the NOvA Project.
- R&D tasks: prototyping or design of the equipment on the MIE
- Operating tasks: non-design and construction activities that don't produce expendable equipment, but are required for the MIE to be successful. These include items such as:
  - Removal of existing equipment in the accelerator that is no longer required
  - Relocation of existing equipment that will not be refurbished
  - Shielding assessments
- Off project tasks: those undertaken to provide more reliable, safe, or improved performance of the neutrino program at Fermilab, even if the NOvA Project didn't exist and expendable equipment that would replace existing expendable equipment. These include:
  - Radioactive component handling and work cell upgrades
  - Horns (expendable) and all spares
  - Civil construction

Proton Plan 2 Rough Costs

- CD-1 MIE Cost Range: $40M-$45M (fully burdened with contingency)
  - « Presently the MIE is ~$40M, expect it to go up when BOEs are completed
  - « Mostly small, well-defined tasks - should no go up by more than 10%
  - « NuMI upgrades are more conceptual and will go up overall with BOEs
- CD-1 R&D plus Operating range: $14M-$17M (fully burdened with contingency)
  - « Mostly small, well-defined tasks - should no go up by more than 20%
  - « Operating tasks tend to be have larger contingency due to their interaction with the existing accelerator complex and thus the range is slightly larger than for the MIE portion
- CD-1 TPC range: $54M-$62M (fully burdened with contingency)
- Present snapshot ($ amounts include all overheads and contingency):
  - * MIE: $39.7M (27% contingency included)
  - * R&D: $10.8M (26% contingency included)
  - * OP: $2.7M (41% contingency included)
  - * Total: $53.2M (28% contingency included)

Status of CD-1 Documentation

- PP2 CDR – nearly done for CD-1
  - « Updates to Cost & Schedule section complete. Waiting for feedback from Pepin on them – should update the R&D/Operating portion cost range based on the most recent feedback on what is on and off-project
  - « Cleaning up formatting
- PPEP – Updated and nearly done – needs "final" cost numbers and some minor fixes
- Acquisition Strategy – first pass of putting in PP2 complete (Elaine), starting second pass (Nancy)

- PMP – really for CD-2, but works best to work on it at the same time as the PPEP for consistency
  - « Second pass changes from PP2 nearly complete
  - « Need to pass initial cost tables by Pepin
  - « Starting work on Milestone tables for PMP

Other immediate issues: Decision Tree Milestones

- A point in the path of work where several options are possible.
  - « We put in a decision MS and proceeded to cost what we thought is the most likely scenario
  - « R&D or operating work before this MS would make clear the appropriate path to take at that point.
  - « These will be addressed in our Risk Management plan
  - « Very few in the MIE portion – remove those in MIE portion
    - * But costs propagate from the R&D into the MIE if we need to do something different
    - * Leave those in R&D and Operating portion
    - * R&D & operating MS's owned by project

  - « How address $ that might be needed if we chose the wrong option (based on what we know now, not what we will know after we do more R&D)?

Other immediate issues: Decision Tree Milestones

- Two types of Decision Tree Milestones in the Campaign:
  - « Those that assume all is OK and we don't need extra work
    - * "Determine if Recycler Cooling Capacity is Sufficient" or "Determine Need for Magnetic Shielding of IL Beam Pipe"
    - * No task to add a larger contingency to if we are wrong.
    - * We would seriously consider adding tasks (NOW) with contingency if the likelihood of work needing to be done is non-negligible (includes adding contingency to subsequent tasks in the MIE portion).
  - « Those that assume we need extra work – but is not worst case scenario
    - * "Determine Level of Modifications Needed for Horn 1 Module"
      - – First task: "Des new module components w/additl water cooling features & therm expansion compensation"
    - * Add a reasonable contingency to cover additional work, but not a whole new item – propagate this higher level of contingency through-out the task chain (to MIE)