DOE Independent Project Review of PIP-II (iTrack Review #43607)
June 16-17, 2015

ID	Recommendation	Status	Action Plan	Response/Resolution	Comments
R1	Develop a resource loaded R&D schedule and plan for developing the facilities for doing this work.	Closed	The new Associate Project Manager for Planning will initiate development of the RLS for the R&D phase upon arrival at Fermilab. The goal is to have the R&D phase RLS completed by the end of summer, 2016.	The RLS for the R&D phase is under development with substantial portions complete. This will be available and discussed at the DOE Review in November 2016.	
R2	Provide more realistic estimates of the development costs (defining specs, vendor selection and qualification, reviews, etc.) and schedule.	Closed	Engineers are currently working with the project engineer and associate project manager on establishing revised cost estimates, deliverables, and a refined schedule. The CD-0.5 review is scheduled for 14-16 November 2016 so this work must be completed by the review date.	Project management has decided that we will not develop a revised cost estimate for the CD 0.5 review. We will use the existing cost estimate and develop a more detailed cost estimate for the CD-1 review.	We are integrating updated costing information into the RLS as it is developed.
R3	Estimate the costs (and schedule risks) for providing CW capabilities as well as the additional costs that would be required to eventually run the 800 MeV linac with 2 mA beams.	Closed	Cost and schedule risks will be updated along with the development of alternative analysis, and will be coordinated with Steve Holmes and Luisella Lari, who will be joining the PIP-II team in April	Cost and schedule risks will be reviewed and updated in conjunction with the alternative analysis.	The Analysis of Alternatives documents both a CW-capable and pulsed option for an 800-MeV SC Linac
R4	Give high priority to beam physics verification efforts, in particular, to Booster impedance studies and slip stacking evaluation.	Closed	Action plan includes 3 major items: (1) Effect of beam space charge at injection to Booster, (2) Transition crossing in the Booster, and (3) electron cloud instability in Recycler.	1) Item 1 looks as the mostly understood. First, twice higher injection energy to Booster greatly mitigates the space charge effects. Additionally, performed simulations point out that sensitivity to the space charge will be greatly reduced if Booster lattice will be periodic. To achieve this we need two things: first, optics correction based on optics measurements; second removal of optics perturbation which broke lattice periodicity. The latter can be resolved by zeroing current of extraction dogleg at injection. 2) Transition crossing in Booster is a high priority item. The major complication comes from large longitudinal impedance due to laminated dipoles. Significant progress has been achieved (See: (1) Project X Document 1354, (2) PIP-II Document 25 and (3) Rings Program by Valeri Lebedev in https://indico.fnal.gov/conferenceOtherViews.py?view=standard&confid=10586). However additional time is required to have a final resolution. 3) E-p instability is a serious problem which can limit PIP-II performance. Active studies of the instability have been carried in Recycler in the support of high power beam delivery to NOvA. We also have a PhD student (s. Antipov) working in it.	

R5	Develop a unifying plan to deal with the large number of SC components and vendors as this will be critical for meeting the schedule.	Working with Mike McGee and his engineering review committee in establishing a method in Teamcenter for tracking all travelers and associative documentation for all SC components; specifically SRF cavities in PIP-II. We are developing a serialized part structure so that these items will be easily tracked in Teamcenter under item ED0001224.	The project has developed a plan to monitor and track the SRF components.	This will be developed along with the RLS.
R6	Prior to CD-0 escalate all labor costs from FY13 to FY24 to evaluate the cost differences from FY2013 to FY2020.	As required, escalation rates for labor costs were updated and the impact is reflected in an updated cost plan that can be reached using the URL noted below. http://pip2-docdb.fnal.gov:8080/cgi-bin/ShowDocument?docid=121	Document is created as noted in the action plan description and can be closed	
R7	As part of the Mission Need Statement, the project is required to include a funding profile for the higher end TPC of $695M		Profiles adding up to both $695M and $650M were provided to OHEP for incorporation into the draft Mission Need Statement (7-27-15)	The current working profile sums to $650M and will be presented in the November 2016 review.
R8	Throughout the remaining R&D phase, perform regular reviews on the status of the execution of the R&D plan.		We will continue to perform regular reviews at the annual Collaboration Meetings (most recent: November 2015) and P2MAC (most recent March 2016).	
R9	Once CD-0 is awarded place emphasis on the development of the RLS		Development of the RLS for the R&D phase was initiated with the arrival of the Associate Project Manager for Planning & Reporting in mid-April 2016. Completion of the RLS is governed by Item #92772 (R1)	