**Charge for the PIP-II Machine Advisory Committee (P2MAC)**

March 15-17, 2016

Fermilab

The Proton Improvement Plan-II (PIP-II) represents a significant initial step in upgrading the Fermilab accelerator complex to support a world-leading particle physics research program based on intense beams. The goal of PIP-II is to provide, by the middle of the next decade, 1.2 MW of beam power from the Main Injector for the long baseline neutrino experimental program, while establishing a flexible platform for subsequent development of the accelerator complex. A concept, based on an 800-MeV pulsed superconducting linear accelerator (SCL) to replace the existing 400 MeV linac and accompanied by improvements to the existing Booster, Recycler, and Main Injector, has been documented in a Reference Design Report.

PIP-II has received CD-0 from the Department of Energy and is now formally in the “project definition” phase. Activities during this phase are centered on conceptual design development, evaluation of alternatives, and continuing R&D. R&D activities are concentrated on the front-end and superconducting cryomodules and their RF systems, and are undertaken in close collaboration with Indian and U.S. national laboratories.

The P2MAC is asked to review the plans for PIP-II including R&D activities and development of the conceptual design. Advice and/or recommendations are sought relative to the challenges of the current design concept, the evaluation of alternatives, and the appropriateness of the accompanying R&D program. In particular we would like specific advice, recommendations, and/or commentary on:

1. **Conceptual Design Development:** a) Are the plans for developing the PIP-II conceptual design, with the Reference Design as a starting point, likely to yield a design meeting the enumerated performance goals? b) What alternatives to the approach outlined in the Reference Design might be considered?

2. **R&D Program:** a) Is the R&D plan properly directed at addressing the primary technical and cost risks in an effective manner? b) Are the risks appropriately prioritized and will the completion of the R&D plan provide a basis for proceeding to the construction phase with confidence that performance goals can be met? c) Is the R&D program proceeding satisfactorily toward a construction start near the end of the current decade?

3. **India Collaboration:** Is the program, and division of responsibilities, outlined in the Joint R&D Project document well aligned with the needs of PIP-II, and will it support a construction start encompassing both U.S. and Indian deliverables?

The P2MAC is not limited by these specific charge areas and may delve into other related areas, and offer advice, comment, or recommendations, as it deems appropriate under the general guidance of this charge. We request an oral closeout presentation by the P2MAC with Fermilab and PIP-II management, and DOE observer(s), at the end of the meeting. A written report is requested to be submitted to the Fermilab Chief Accelerator Officer by April 15, 2016.