

# Fermilab Accelerator Advisory Committee Meeting

## Charge

December 6-8, 2016

Fermilab's goal is to deliver the highest power neutrino beams in the world. To this end, the number of protons delivered for the production of our neutrino beams must be increased to the NOvA experiment in the near term and to LBNF in the longer term. The current components are the Proton Improvement Plan (PIP) to provide the capability of proton flux up to 700 kW to the NOvA target and PIP-II to deliver proton beams of 1.2 MW to the LBNF target. Additional upgrades to the Booster and Main Injector will be required to realize the 1.2 MW goal. The delivery of multi-MW beams for the future program will require additional upgrades beyond PIP-II.

The Fermilab Accelerator Advisory Committee is asked to assess and provide advice on the following topics with a concentration on the accelerator physics and engineering:

1. Have all the recommendations by AAC 2015 been adequately addressed?

### The Road to Higher Beam Power:

2. What issues, if any, need to be overcome to achieve reliable 700 kW operations to NuMI?
3. Considerations for increased beam power of up to 900 kW to NOvA substantially before PIP-II are being technically evaluated. Assuming that the physics motivation is sound, please comment and provide guidance whether these considerations are worth pursuing.
4. Would the PIP-II R&D strategy, if properly executed, support a construction start around 2020, and are the resources required to support the R&D phase adequate? Are the plans to upgrade the Booster/Recycler/Main Injector to deliver 1.2 MW beam with the PIP-II linac coherent and credible?

Other Topics:

5. (withdrawn by Fermilab)
6. Please, provide comments on the progress of Fermilab's Accelerator and Beam Physics (a part of General Accelerator R&D) Program and whether and how it fits in the strategic plans of the Office of High Energy Physics (the P5 report) and the DOE Office of Science (BESAC and NSAC reports)?
7. Is the Fermilab and the US Magnet Development Program plan sufficient to maintain the US leadership in the Nb<sub>3</sub>Sn Magnet Technology? How well is this plan coordinated with international efforts in this area?

The Fermilab Director would welcome any other comments the AAC has on any of the topics presented, or on other issues beyond the topics presented.

In addition to a verbal closeout with the management of the Accelerator and Technical Divisions on the final day of the meeting, the AAC is requested to submit a written report of their findings, comments, and recommendations to Sergei Nagaitsev by February 1, 2017.

25oct2016

revised 30nov2016