

Thomas Jefferson National Accelerator Facility (Jefferson Lab)

12000 Jefferson Avenue, Newport News, VA 23606

Thomas Jefferson National Accelerator Facility in Newport News, Virginia, one of ten Office of Science national laboratories in the Department of Energy, is nearing completion of the federally funded \$338M 12 GeV Upgrade Project that will maintain Jefferson Lab's and our nation's world leadership position in the field of Nuclear Physics. Funding is critical to support operation of this new facility as we commission the facilities and equipment and transition to 12 GeV Operations and to realizing the discovery-caliber science program it was built for.

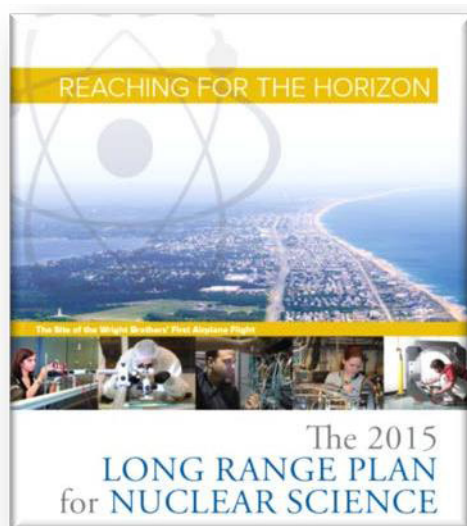
2015 NSAC Long Range Plan

The Nuclear Science Advisory Committee (NSAC) issued its 2015 Long Range Plan for Nuclear Science, "Reaching for the Horizon", in October 2015. This document identifies the priorities necessary for a world-leading program in Nuclear Science for the next decade.

The major features of this plan include the following:

- Building upon the priorities identified in the 2007 Long Range Plan to capitalize on the investments made in response to that plan
- Identification of new opportunities for investment beyond the 2007 plan
- A proposed responsible funding scenario that involves modest growth at a level consistent with that realized in the last decade

The first recommendation in the 2015 Long Range Plan reads:



"The progress achieved under the guidance of the 2007 Long Range Plan has reinforced U.S. world leadership in nuclear science. The highest priority in this 2015 Plan is to capitalize on the investments made."

The first priority listed under this recommendation relates to realizing the scientific potential of Jefferson Lab's Continuous Electron Beam Accelerator Facility (CEBAF):

"With the imminent completion of the CEBAF 12-GeV Upgrade, its forefront program of using electrons to unfold the quark and gluon structure of hadrons and nuclei and to probe the Standard Model must be realized."



Aerial view of Accelerator Site



Indeed the 12 GeV CEBAF upgrade provides capabilities unique in the world, poised to begin discovery caliber experiments to answer fundamental questions such as why quarks are never found alone.



New Experimental Hall D is preparing for beam

Requested Action

An FY17 budget for DOE Nuclear Physics consistent with the “modest growth” scenario detailed in the NSAC Long Range Plan, within the President’s Request for the DOE Office of Science, would address the needs identified in this Long Range Plan for maintaining the US world-leading position in this field. This level of funding would enable the required operational level of CEBAF to address the top recommendation in the Plan.

Emerging Initiatives

Another important NSAC recommendation that relates to Jefferson Lab is the Electron Ion Collider (EIC), an exciting potential future opportunity:

“We recommend a high-energy high-luminosity polarized EIC as the highest priority for new facility construction following the completion of FRIB.”

The Plan recommends additional R&D to further the design of an EIC. Jefferson Lab is one of two labs positioned to develop the design for and construct this future \$1B+ facility.

Conclusion

The 2015 NSAC Long Range Plan is the response to the charge from DOE and NSF associated with a budget projection based on the FY16 President’s request. It is a balanced and prudent approach to the charge request to “indicate what resources and funding levels would be required (including construction of new facilities, mid-scale instrumentation, and Major Items of Equipment) to maintain a world-leadership position in nuclear physics research”.