

**Associate Laboratory Director's Status Review  
of the C-Beta Project  
July 27, 2016  
Charge to the Review Committee**

The C-Beta Project, currently under development by Brookhaven National Laboratory and Cornell University, is being proposed to the New York State Energy and Research Authority (NYSERDA) for funding beginning in October 2016. Its principal goal is the construction of a multi-turn Energy Recovery Linac (ERL) with a Fixed-Field Alternating Gradient (FFAG) return loop, which will serve as a prototype for the potential ERL at eRHIC, a future electron-ion collider under design at BNL. The C-Beta accelerator is being jointly designed by Cornell and BNL, and deployed and operated at the Wilson Laboratory on the Cornell Campus.

The project plan is expected to adhere to the guidelines and requirements established by DOE Order 413.3B and its associated Critical Decision (CD) process. It is anticipated that the project will need to demonstrate readiness for construction – i.e., present a plan of sufficient maturity to satisfy the 413.3B requirements for approval of a baseline and construction start (CD-2/3), or for long lead procurements (CD-3a) – by October 2016. The committee is being asked to evaluate the project's current status, and the path they present for successfully finalizing and defending such a plan on this time scale. It is also requested that the committee identify any elements on which the team should focus in order to develop a fully fleshed out and viable project plan on this time frame. To set the scale, we note that the available funding for the project is \$25M.

It is requested that the review committee evaluate the following specific items:

1. Technical Design: Is the overall technical design conceptually sound and likely to meet the project's technical performance requirements? Does the project's planning include a viable path to arriving at a detailed technical plan on the necessary time frame?
2. Project Scope: Is a plan in place to establish the project's scope and specifications sufficiently well to support detailed cost and schedule estimates? Are the scope apportionment and deliverables that are split between BNL and Cornell clearly established and well defined?
3. Cost and Schedule: Are the cost and schedule estimates credible and realistic for this stage of the project? Is a realistic plan in place to develop detailed estimates on the required time scale?
4. Management and ES&H: Is the project being appropriately managed at this stage? Will the management model properly support the project goals? Have the anticipated roles and responsibilities of both the institutions and the project principals been adequately defined and understood by all parties? Are plans in place to populate a full project team to the necessary WBS level? Is there sufficient Laboratory and University support to produce a credible technical, cost and


schedule baseline on the needed time scales? Is a plan in place to develop a risk analysis and mitigation strategies? Are the plans for establishing ES&H aspects of the project sufficient given the project's current stage of development?

5. Documentation: Are plans in place to produce the needed documentation in time for approval of a construction start in October 2016?

The review will take place on Wednesday, July 27, 2016 at BNL. A closeout will be presented to the C-Beta project team and the Laboratory and Cornell prior to adjourning. This closeout will contain all relevant committee evaluations, and will constitute the final report.

I very much appreciate your willingness to lend your time and expertise to this important step in the C-Beta review process, and look forward to receiving your assessment.

Sincerely,



Berndt Mueller  
Associate Laboratory Director for Nuclear and Particle Physics  
Brookhaven National Laboratory