



Work Breakdown Structure (WBS) **Dictionary**

for the
Core Facility Revitalization (CFR) Project
Brookhaven National Laboratory (BNL)

Project No. 17-SC-73

May 10, 2016

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WBS 1.0 Core Facility Revitalization (CFR)

The objective of the proposed CFR project is to execute design and construction activities which shall provide new computing facilities, enabling BNL researchers and users to continue to accomplish Brookhaven National Laboratory (BNL) missions in Nuclear and High Energy Physics. A mission need exists to provide mid-range computational and data storage support to current and planned particle physics experiments using RHIC and the ATLAS detector at CERN that are funded by NP and HEP, respectively. Capable, reliable and efficient computing facilities will be provided to support experiments that will generate ever greater amounts of data, beyond current capabilities, that must be stored and analyzed.

WBS 1.01 Project Design & Engineering – Scope includes providing the total design and engineering effort required through the preliminary and final design phases of the project. Also includes the pre-construction project management, CM/GC, and Modernization Project Office (MPO) engineering activities in direct support of project design and engineering.

WBS 1.01.01 A/E Preliminary and Final Design – Provide for all A/E preparation of Preliminary design, drawings, specifications, special studies, A/E travel expenses, estimates, and value engineering. Also includes A/E preparation of final design detailed drawings, final specifications, estimates, bid documents, and all reproductions. Work includes all design progress submittals for both project team and independent reviews.

WBS 1.01.02 CM/GC Pre-Construction Services – Scope includes CM/GC support services during the pre-construction phase. Services include constructability reviews, development of independent cost estimates, development of construction schedules, feasibility/value engineering studies, and pre-qualification of potential subcontractors.

WBS 1.01.03 Commissioning Pre-Construction Services – Scope includes Commissioning Agents pre-construction activities and participation including preparation of pre-construction commissioning plan.

WBS 1.01.04 Project Management Pre-Construction Phase – Scope includes the level of effort required by the MPO project manager to manage the project during the pre-construction phase in accordance with the approved Project Execution Plan and DOE Order 413.3B, “Program and Project Management for the Acquisition of Capital Assets”. Activities include project controls, contract management, and management of the A/E, CMGC, and MPO facilities engineering team, review of contract deliverables, preparation for reviews, travel expenses, and preparation of solicitations, bidding, and procurement of services. Also included is the coordination with end users throughout the pre-construction phase.

WBS 1.01.05 BNL/MPO Engineering Support Pre-Construction Phase – This work element represents the BNL support staff (i.e. Fire Protection and ES&H) and MPO facilities engineering support division time and effort throughout the pre-construction phase to provide system data to A/E, review A/E deliverables, and integrate A/E effort with technical and conventional facilities requirements as needed. Also included is BNL staff review of A/E drawings and specifications for compliance with BNL construction safety policy, standards, and procedures.

WBS 1.02 Construction - Scope includes the execution of all construction activities and the required management and support components throughout the projects construction phase in accordance with the requirements outlined in the construction contract documents. Also included is punch-list activities and final project commissioning.

WBS 1.02.01 Site Preparation Activities - Scope includes all work required for the physical preparation of the project work areas. Specific work includes but is not limited to selective hazardous material remediation, Utility isolation and lock out tag out (LOTO) activities, facilities support, and other tasks required to prep the work areas for turn-over to the contractor.

WBS 1.02.02 Building Construction - Scope includes all construction specific activities as required for the execution of the work as defined by the final bid documents and construction contract, including approved changes and modifications executed during the construction phase.

WBS 1.02.03 A/E Construction Administration Services – Provide all A/E construction phase support services, including home office engineering support, shop drawing review, periodic field inspections, and preparation of as-built drawings/documentation.

WBS 1.02.04 Commissioning – Construction Phase - Scope includes the final commissioning effort to validate conformance with the project contract documents. Includes providing the required support of the MPO and BNL operations and maintenance during commissioning activities along with a Commissioning Agent.

WBS 1.02.05 Project Management – Construction Phase – Scope includes the level of effort required by the MPO project manager to manage the project during the construction phase in accordance with the approved Project Execution Plan and DOE Order 413.3B, “Program and Project Management for the Acquisition of Capital Assets”, and includes implementation of the BNL Construction Safety Program.. Construction

phase activities include project controls, contract management, review of deliverables, preparation for reviews, travel expenses, preparation of solicitations, bidding, procurement of services, and change management. Also included are the project managers required commissioning activities and the continued coordination with end users throughout the construction phase.

WBS 1.02.06 Project Support – Construction Phase– Scope consists of MPO construction services and field support during the construction phase of work. Coordinate and assure compliance with BNL construction safety programs. Includes on site construction supervision and coordination, utility interconnect coordination and shut-downs/start-ups, execution of engineering/construction changes, and construction testing, inspections, and reporting as required.

WBS 1.02.06.01 BNL/MPO Engineering Support – Construction Phase – Provide all MPO Engineering support services during the construction phase to assure compliance with BNL construction standards and orderly connection and start-up with existing BNL systems during the construction phase. Includes inspections and reporting on work in place, utility interconnect coordination, review of shop drawings, review of engineering changes, and permit preparation as required.

WBS 1.02.06.02 BNL/MPO Field Support – Construction Phase – Provide all BNL field support and F&O engineering (i.e. fire Protection engineering, ES&H services, and BNL trades) during the construction phase to assure compliance with BNL construction standards and orderly connection and start-up with existing BNL systems during the construction phase. Includes inspections and reporting on work in place, utility interconnect coordination, review of shop drawings, review of engineering changes, and permit preparation as required.

WBS 1.03 Other Project Costs – Scope includes costs that are not identified within the total estimated cost; generally, costs incurred during the initiation and definition phases for planning, conceptual design, research and development, and during the execution phase for startup and operation. Other project costs are always operating funds.

WBS 1.03.01 Conceptual Design – Conceptual planning and preparation of supporting documentation. Scope includes preparation of the CDR. The CDR summarizes preliminary investigations to establish baseline scope, schedule, and cost information specific to the proposed work. The CDR is the basis for the preliminary design.

CFR Preliminary WBS Structure

