

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

SECTION A. Project Title: Idaho National Laboratory (INL) Smart Grid Test Bed

SECTION B. Project Description and Purpose:

The purpose of this work is to construct and operate a Smart Grid Test Bed (SGTB) at the old Power Burst Facility (PBF), now part of the Critical Infrastructure Test Range Complex (CITRC) at Idaho National Laboratory (INL). The SGTB would allow users (smart grid developers or utilities) to install and interconnect smart grid equipment and systems on distribution electrical power distribution networks that have the capability to selectively operate at various voltages 12.47 kilovolt (kV), 24.9kV, and 34.5kV. Twelve user locations have been identified and would be designated as locations/areas where users can locate and connect their field equipment to both the test and instrumentation power and to the communications network as needed.

Power to the CITRC area facilities is currently supplied by a 3 phase 13.8kV (#2 aluminum conductor steel reinforced [ACSR]) overhead line (OHL) network supplied from the CITRC substation. To avoid having to purchase and install additional transformers to allow the existing CITRC complex facilities to operate at the various test bed voltages, the project plans to leave the 13.8kV distribution system in place and operating at 13.8kV.

The PBF area includes two Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites which remain under Institutional Controls; these are PBF-613, located north of the former PBF-620 reactor, and ORD-03, the Naval Proving Ground impact area. New construction would avoid PBF-613. Institutional Controls for ORD-03 include surveys for unexploded ordnance prior to beginning work. The detailed requirements are outlined in Department of Energy Idaho Operations Office (DOE/ID)-11042, Rev 9, INL Site-Wide Institutional Controls, and Operations and Maintenance Plan for CERCLA Response Actions, Appendix A.

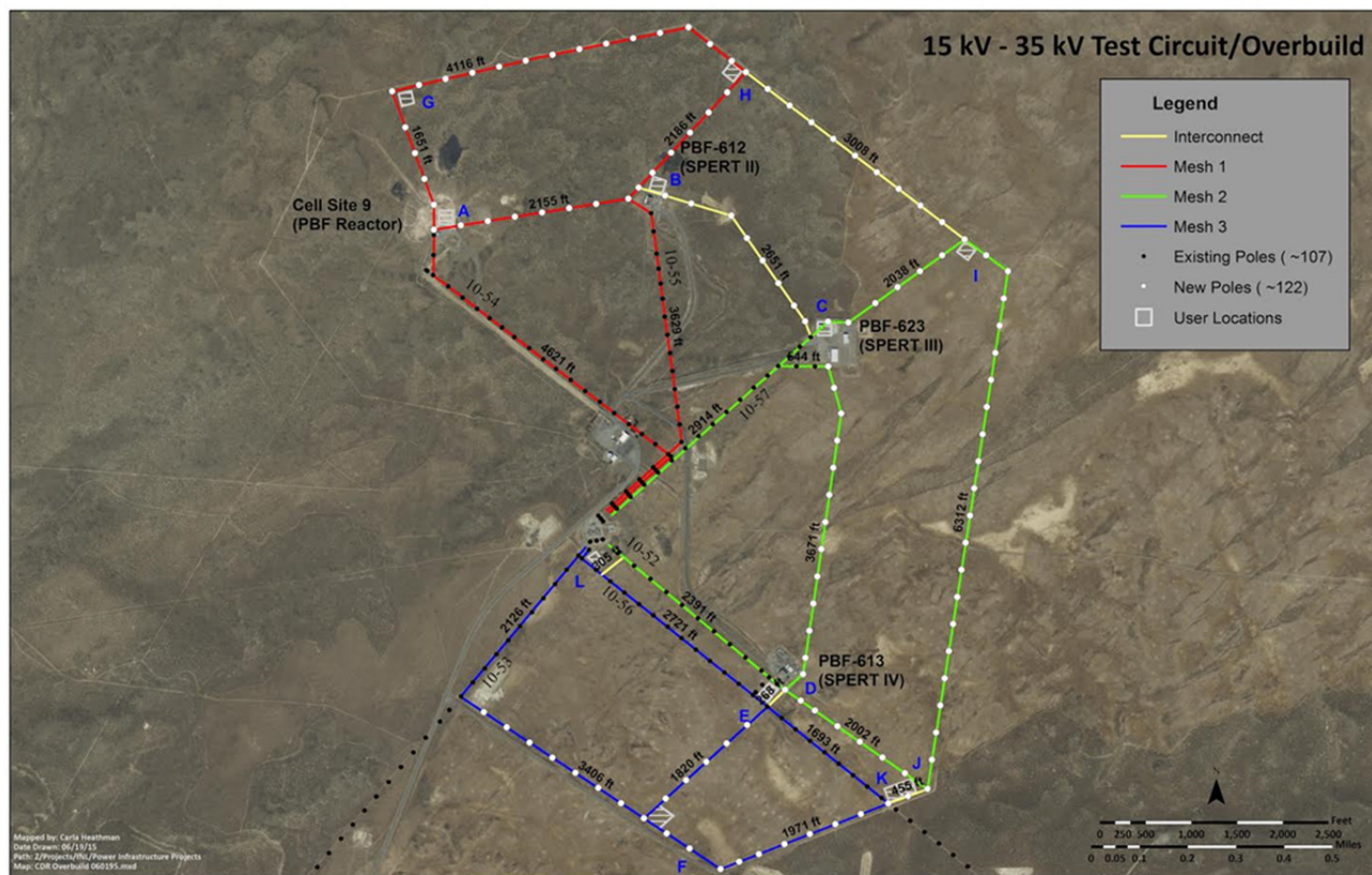
The PBF area also includes several former CERCLA sites that have been declared "No Action" sites under various CERCLA Records of Decision. Construction activities would attempt to avoid these locations. In cases where avoiding those areas is not possible, project personnel would work closely with Battelle Energy Alliance, LLC (BEA) Radiological Control (RadCon) and other organizations.

Additional project activities are detailed below:

Overhead Lines

The project would extend the 13.8kV pole line radials including poles, crossarms, insulators and 3 phase conductors (#2 ACSR) as needed to supply the instrumentation power to the user locations (See Figure 1). The 13.8kV extension would be the lower circuit on the existing and proposed poles where the extension is made to the user locations. The upper circuits throughout the network would be the new test power circuits. The extended 13.8kV OHL would provide a continuous source of power to operate any user required instrumentation or communications and control functions independent of the multi voltage test power circuits/lines. Thus, if faults occur causing power outages in the test power circuits, separate power on the 13.8kV OHL to the user locations for instrumentation or control related power needs would be maintained.

Figure 1.



The 13.8kV circuits would become an under build used to feed normal CITRC facility and area loads and customer loads at test connection points for uninterrupted power during testing. Power lines would be extended along existing two track roads or otherwise disturbed areas as much as possible to minimize disturbing new areas. Extension routes established around buildings would be arranged to avoid road crossings where possible. New pole line routes would require some clearing, grubbing, and grading to support access for installation and maintenance.

User Access Locations

User locations would be established for smart grid equipment developers or utilities for locating and interconnecting user specific equipment to the SGTB test power mesh networks (See Figure 1).

User locations would be designated on existing concrete or asphalt pad areas where possible, [i.e., where the power connections are near facilities (PBF 612, 613 and 623)]. New test bed user locations near the perimeter road would be established in designated 50 × 50 foot cleared, grubbed, and graded areas near key SGTB test power grid and instrumentation power poles. Fire-defensible space may be established around each user location through mowing and weed control.

Three phase pole top fused cutouts would be installed at all user locations to provide connections to both test-power and instrumentation-power service lines. Service drop equipment below the fused cutout, [i.e., risers, conduit and power cable, fuse links (for cut outs)], terminations, etc., would all be user specified and supplied by the SGTB user as part of the specific user's equipment installation (not included as part of the construction contract).

Each user location would be supplied with a local pole mounted fiber optic patch panel for interconnection of user specific to (or through) the test bed communications network. Conduits and fiber interconnection from the patch panels to the user specific equipment would be specified and provided by the SGTB user.

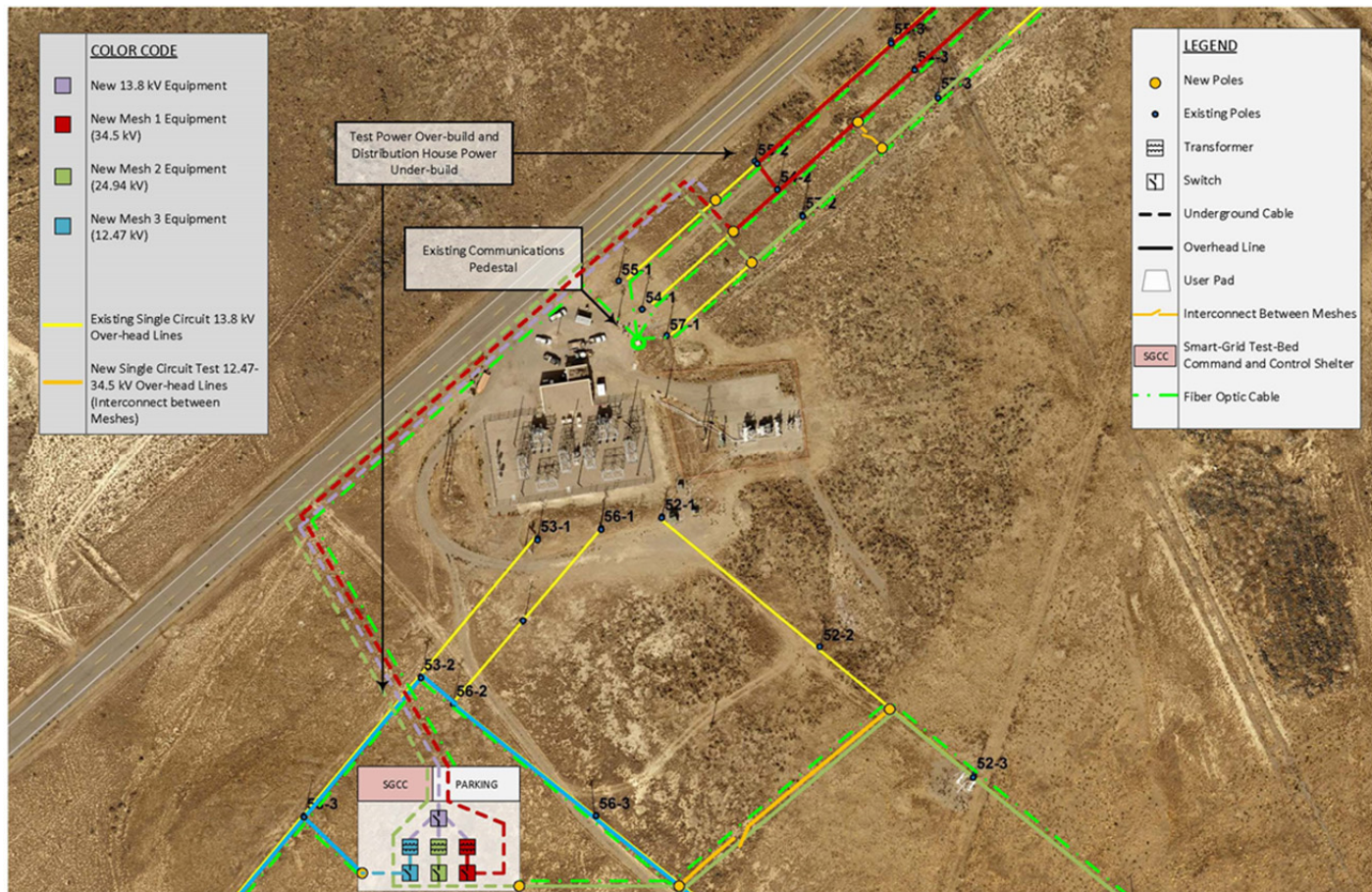
Command and Control Shelter

A prefabricated 10 × 20 foot (minimum) command and control shelter and designated parking area (See Figure 2) would be centrally located near the CITRC substation. The shelter would house the test bed communications patch panels, remote power switching controls, and data collection center. It would also provide environmental shelter for equipment and personnel during test events. The basic shelter electrical power service entrance would be supplied from the instrumentation power distribution (13.8kV) via a 15 kilovolt amps (kVA), 120/240V pole mounted transformer.

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Certain areas will require the test circuit to be run underground (Figure 2). The design team will work closely with the Cultural Resource Management Office (CRMO) to minimize impacts and meet technical requirements. In areas where cultural resources prevent soil disturbance, jersey barriers or other surface solutions would be used.

Figure 2.



Supervisory Control and Data Acquisition (SCADA) System

A test bed SCADA system would be installed in the command and control shelter to allow test bed operators to observe, manage, and manipulate test line configurations, and record test bed operating parameters.

Ancillary Equipment

Installing power system loads, power converters, and fossil-fueled electrical generators are expected and required as part of the SGTB. Future SGTB additions could include test devices and systems such as photovoltaic systems, wind-powered generators, power converters, energy storage systems, etc., as defined and limited by the applicable National Environmental Policy Act (NEPA) Categorical Exclusion. Addition, or use, of fossil-fueled electrical generators would be in compliance with state and Federal air emission regulations.

Site Development

All user areas, user-area access roads, pole-line access roads, and the area around the prefabricated command and control shelter (SGCS) would be grubbed, graded, and backfilled to support construction and user access. Full access road improvements, i.e., designed drainage, road base development, run-off management, culvert repairs, grading for year-round access, etc., and additional user access area improvements would be engineered and installed.

Revegetation

The terrain is typical of upper mountain desert climate. The terrain is largely flat with some elevation changes. The vegetation mainly consists of sage brush, rabbitbrush, prickly pear cactus, and taper tip hawksbeard, with some areas invaded by non-native species such as cheat grass. Any disturbed area of soil, except fire-defensible perimeters, where vegetation has been removed would be graded level and re-seeded as required by a review by Biological Resources personnel. A revegetation plan would be developed and approved by INL project management before any re-seeding occurs. Establishment of noxious and invasive weeds in fire-defensible perimeters would be controlled by spraying.

Cultural Resources

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The PBF area is known to be rich in Cultural Resources. A BEA Cultural Resources representative would be required to be present during all earth-disturbing activities (clearing, grubbing, digging, or drilling). Discovery of significant Cultural Resources may initiate a work stoppage pending investigation, exhumation, or other response.

Test Bed Operations

This Environmental Checklist (EC) focuses on installation/construction of the SGBT and identifies the intent to conduct future testing. Each "project" conducting testing at the SGBT will be reviewed under a separate EC which will be approved under the current CITRC Overarching EC, INL-05-002, or its successor Overarching EC.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

Construction activities have the potential to generate fugitive dust. Fugitive dust must be controlled/minimized. All actions taken to control fugitive dust must be documented in accordance with the INL Title V Air Permit.

Emissions from mobile and portable electrical generators are exempt. Air emissions from stationary generators must comply with state and Federal regulations. Contact the PEL prior to purchasing/procuring any/all stationary fossil-fueled electrical generators. An APAD is required for emergency generators prior to requisition.

Disturbing Cultural or Biological Resources

This work has the potential to disturb both Cultural and Biological Resources.

Cultural Resources - All locations/areas which might be disturbed by traffic or construction activities must be surveyed by BEA Cultural Resources prior to beginning work. Recommendations in Cultural written reports must be implemented during construction/operation. The PBF area is known to be rich in Cultural Resources. A BEA Cultural Resources representative will be required to be present during all earth-disturbing activities (clearing, grubbing, digging, or drilling). Discovery of significant Cultural Resources may initiate a work stoppage pending investigation, exhumation, or other response.

Biological Resources - All locations/areas which might be disturbed by traffic or construction activities must be surveyed by Biological Resources personnel prior to beginning work. Recommendations in Biological written reports must be implemented during construction/operation. Surveys may include breeding bird surveys, plant surveys, and a review of sage brush. Section 10.2.3 of the CCA exempts areas within existing footprints, including CITRC, from sagebrush conservation measures identified in the CCA. Despite the exemption, this project expects to implement some of the Best Management Practices (BMPs). BMPs which will be implemented include: 1) co-locating new infrastructure within existing infrastructure; 2) new double-hung power poles (located at turns and end-poles) will be fitted with perch/nest deterrents; 3) No new power poles will be installed within 1 km of a known lek; and 4) disturbed areas (except fire-defensible perimeters, will be quickly revegetated with approved seed mixes. Re-seeded areas may require routine watering over several summer seasons.

Generating and Managing Waste

Construction activities are expected to generate a variety of Industrial wastes including scrap metal, cleaning materials, wire spools, and common trash. Industrial waste will be recycled to the extent practicable. Operations at the test bed are expected to generate small amounts of common trash and industrial waste. Scrap electronics will be recycled to the extent practicable. Used oil will be recycled. All Solid Waste will be managed by Waste Generator Services (WGS).

Releasing Contaminants

Typical construction chemicals such as lubricants, fuels, adhesives, paints, etc., would be used by the subcontractor. A chemical inventory list with associated Safety Data Sheets (SDS's) will be submitted in the vendor data system by the subcontractor. All chemicals would be entered into the INL Comply Plus Chemical Management System by the Construction Chemical Coordinator.

Using, Reusing, and Conserving Natural Resources

All applicable waste will be diverted from disposal in the landfill when possible. Project personnel will use every opportunity to recycle, reuse, and recover materials and divert waste from the landfill when possible. The project will practice sustainable acquisition, as appropriate and practicable, by procuring construction materials that are energy efficient, water efficient, are bio-based in content, environmentally preferable, non-ozone depleting, have recycled content, or are non-toxic or less-toxic alternatives. New equipment will meet either the Energy Star or Significant New Alternatives Policy (SNAP) requirements as appropriate (see <http://www.sftool.gov/GreenProcurement>).

SECTION D. Determine Recommended Level of Environmental Review, Identify Reference(s), and State Justification: Identify the applicable categorical exclusion from 10 Code of Federal Regulation (CFR) 1021, Appendix B, give the appropriate justification, and the approval date.

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For Categorical Exclusions (CXs), the proposed action must not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources (see 10 CFR 1021). In addition, no extraordinary circumstances related to the proposal exist that would affect the significance of the action. In addition, the action is not "connected" to other action actions (40 CFR 1508.25(a)(1) and is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1608.27(b)(7)).

References: 10 CFR 1021, Appendix B, B4.12 "Construction of powerlines" and B4.13 "Upgrading and rebuilding existing powerline"

Justification: Project activities are consistent with 10 CFR 1021, Appendix B, B4.12 "Construction of electric powerlines approximately 10 miles in length or less, or approximately 20 miles in length or less within previously disturbed or developed powerline or pipeline rights-of-way;" and B4.13 "Upgrading or rebuilding approximately 20 miles in length or less of existing electric powerlines, which may involve minor relocations of small segments of the powerlines."

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on: 8/13/2015