



**Department of Energy
Washington, DC 20585**

September 14, 2017

RECORDS OF CATEGORICAL EXCLUSION DETERMINATION

U.S.-India Partnership to Advance Clean Energy.

UI-ASSIST: US-India collAborative for smart diStribution System wIth Storage

The National Environmental Policy Act (NEPA) requires federal agencies to prepare Environmental Impact Statements (EISs) for major federal actions significantly affecting the quality of the human environment.

The Department of Energy's (DOE's) regulations that implement NEPA (10 C.F.R. Part 1021) require it to determine whether a proposal requires that an EIS, an Environmental Assessment (EA), or a Categorical Exclusion (CX) be prepared. A CX refers to a category of actions that DOE has determined do not individually or cumulatively have a significant effect on the human environment. As such, DOE need not prepare an EA or an EIS for CX actions.

The overall objective of this project is to evolve the future distribution grid that will allow the continuing increase of Distributed Energy Resources (DER) penetration towards a carbon-free electricity system. The research proposed here leads to the fully conceptualized Smart Distribution Grid that optimally utilizes Grid Storage. The development is validated using ten different UI-ASSIST test beds, and pilot field demonstrations at 10 different sites.

The total project value is over US\$39.7M with \$7.5M provided by USDOE; \$7.5M provided by US team members; \$7.5M provided by Government of India (GOI) and \$17.2M provided by Indian team members. Within the US ASSIST team there are nine universities, three research institutes/labs, eight power utilities and 10 power industry manufacturers/vendors. It is estimated that the external funds from the USDOE and GOI will be distributed with 50% for research and development of models, simulations, test cases and system integrations, 20% for test bed validation, 25% for pilot demonstrations and 5% for project collaboration and travel

BACKGROUND: For the U.S. portion of this effort there will be six different phases with multiple objectives. Some of the major outcomes from our research include: 1) Open source test feeders for urban, semi-urban and rural, in India and US; 2) Storage models with advanced analytical techniques for optimal operation; 3) Operational and control algorithms as well as analysis tools to integrate DER control with Advanced Distribution Management System (ADMS) and Microgrid Management System (MEMS); 4) Cyber-Physical Analysis tools and Cyber Security Measures for smart operations with high DER; 5) Lab scale testing and real-world field demonstration; and 6) Recommendations to address socio-political issues for adopting these technologies and the needed workforce development.

The U.S. portion of the effort includes several Piolet projects: US Urban Distribution Pilot 1: Smart city project in Spokane, WA by AVISTA utilities; US Urban Distribution Pilot 2: Philadelphia Navy Yard in Philadelphia, PA with 10 MW of on-site generation and storage; US Semi-Urban Distribution Pilot 1: Microgrid project in Pullman, WA at WSU campus; US Semi-Urban Distribution Pilot 2: Smart building project in College Station, TX at TAMU Campus; US Rural Distribution Pilot: Co-operative electric distribution feeder identified by the National Rural Electric Cooperative Association. These are in addition to lab demonstration project sites at Idaho National Lab and Washington State University.

US Urban Distribution Pilot 1 at Spokane, WA: As a part of this project proposal, Avista will team with WSU research staff to provide real-time data sets for the operational microgrid in Spokane and the energy storage system in Pullman to help validate research initiatives and models.

Both the Spokane and Pullman projects have been significantly instrumented, which will provide real-time data streams every 5 seconds from the building management system (BMS), solar and energy storage site controllers, intelligent meters, and station breakers. As a part of the control architecture, the Wave product, developed by Spirae will be installed to support day-ahead scheduling and forecasting to deliver optimal, operational, and economic dispatch of all building, meter, solar, and energy storage assets. Also, Schweitzer Engineering Laboratories RTU hardware will be deployed to protect and operate services such as load shedding and outage event ride through. Consequently, Avista's microgrid platform will host multiple application program interfaces across this control hierarchy ranging from relays and site controllers at the local level to economic and forecasting algorithms at the dispatch center. As a part of the U-district Microgrid project Avista is deploying Itron AMI Meters with the new Riva platform. The Riva platform includes an integrated circuit board with an embedded Unix operating system and peer-to-peer communications. The resulting distribution system platform will provide flexibility to integrate any type of distributed energy resource for maximum benefit.

US Urban Distribution Pilot 2 at Philadelphia, PA: The Navy Yard is a 1,200-acre waterfront campus, with 7.5 million square feet of real estate in a mix of historic buildings and new high performance construction. The Navy Yard is home to more than 12,000 employees and 152 companies in the office, industrial/manufacturing, and research and development sectors. PIDC, Philadelphia's public-private economic development corporation, is the master developer of The Navy Yard and plays a central role in the campus-wide commitment to smart energy innovation and sustainability. Navy Yard has 10 MW of on-site generation and storage and will be used as demo site for new control and management algorithms.

In addition to the team members within industry and utilities involved, training workshops and short courses are planned for industry, utility, and regulatory personnel. A minimum of three workshops in India, one at the international level, and two within the US are planned as part of this project.

PROPOSED ACTION: The DOE proposed Federal action would be providing the \$7.5M as identified above, for use in the U.S. portion of this project.

CXs TO BE APPLIED: The proposed action identified above fits within the classes listed in Appendix A and Appendix B to Subpart D, of 10 CFR Part 1021-Categorical exclusions applicable to specific agency actions. Specifically: *A1, A9, A11, B1.19, B4.11, B4.12 and B4.13.*

A1 Routine DOE Business Actions

Routine actions necessary to support the normal conduct of DOE business limited to administrative, financial, and personnel actions.

A9 Information Gathering, Analysis, and Dissemination

Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring.

A11 Technical Advice and Assistance to Organizations

Technical advice and planning assistance to international, national, state, and local organizations.

B1.19 Microwave, meteorological, and radio towers

Siting, construction, modification, operation, and removal of microwave, radio communication, and meteorological towers and associated facilities, provided that the towers and associated facilities would not be in a governmentally designated scenic area (see B (4)(iv) of this appendix) unless otherwise authorized by the appropriate governmental entity.

B4.11 Electric power substations and interconnection facilities

Construction or modification of electric power substations or interconnection facilities (including, but not limited to, switching stations and support facilities).

B4.12 Construction of powerlines

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.

B4.13 Upgrading and rebuilding existing powerlines

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.

REGULATORY REQUIREMENT: DOE has determined that the proposed action identified above will not have a significant effect on the human environment. Authorizing the proposed action will not (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health including DOE and/or Executive orders; (2) require siting of new facilities or expansion of existing facilities; (3) disturb hazardous substances, pollutants or contaminants; or (4) adversely affect environmentally sensitive resources.

RATIONALE: The planned activities as outlined above will involve the utilization of existing facilities and infrastructure to accomplish the goal to evolve the future distribution grid that will allow the continuing increase of DER penetration in electricity systems.

DETERMINATION: Based on my review of the above information concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class of actions, other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

Signature: 
Brian Mills
NEPA Compliance Officer
Office of Electricity Delivery
and Energy Reliability

Date: September 14, 2017