Thematic Grouping of T&D Projects

February 2017

A) Condition Monitoring
T-1: Assessing Deterioration of ADSS Fiber Optic Cables Due to Corona Discharge
T-2: Development of a Graphic User Interface for an Overhead Conductor Sag Instrument
T-3: Simulation of Top-Oil Temperature for Transformers
T-4: Electric Transmission Line Insulator Flashover Prediction System
T-5: Intelligent Transformer Monitoring System Utilizing Neuro-Fuzzy Technique Approach
T-6: Condition Monitoring and Maintenance Strategies for In-Service Nonceramic Insulators (NCI), Underground Cables and Transformers
T-19: Automated Circuit Breaker Monitoring
T-20: Intelligent Transformer Monitoring System Utilizing Neuro-Fuzzy Technique Approach
T-26G: Prediction of Flashover Voltage of Insulators Using Low Voltage Surface Resistance Measurement

B) Transmission and Distribution Assets
T-14: Evaluation of Critical Components of Nonceramic Insulators (NCI) In-Service: Role of Defective Interfaces
T-23: A Novel Approach for Prioritizing Maintenance of Underground Cables
T-25: Transformer Overloading and Assessment of Loss-of-Life for Liquid-Filled Transformers
T-33: Characterization of Composite Cores for High Temperature-Low Sag (HTLS) Conductors
T-42: Evaluation of Epoxy Nanocomposites for High Voltage Insulation
T-46G: Evaluation of Station Post Porcelain Insulators with Room Temperature Vulcanized (RTV) Silicone Rubber Coatings
T-47: Making the Economic Case for Innovative HTLS Overhead Conductors

C) Asset Management, Fault and Outage Detection and Reliability Centered Maintenance
T-10: Accurate Fault Location in Transmission Networks Using Modeling, Simulation and Limited Field Recorded Data
T-11: Wireless Communications in Substations (Part I)
T-11: Mobile Agent Applications for Power Apparatus Monitoring and Maintenance (Part II)
T-24: Risk-Based Maintenance Allocation and Scheduling for Bulk Transmission System Equipment
T-27: Reliability Based Vegetation Management Through Intelligent System Monitoring
T-28: Satellite Imagery for the Identification of Interference with Overhead Power Lines
T-32: Optimized Fault Location
T-36: Integration of Asset and Outage Management Tasks for Distribution Application
T-41, Part 3: Restoration, State Estimation and Reliability Enhancement
T-58: Power Electronics to Improve the Performance of Modern Power Systems: Case Study on Partially Rated Solid-State Transformers

D) Power Quality
T-7: Analysis and Design of Power Acceptability Curves for Industrial Loads
T-12: Distribution System Electromagnetic Modeling and Design for Enhanced Power Quality
T-16: Voltage Dip Effect on Loads in Electric Power System

E) Protection
T-29: Digital Protection System Using Optical Instrument Transformers and Digital Relays Interconnected by an IEC 61850-9-2 Digital Process Bus
T-30: Transient Testing of Protective Relays: Study of Benefits and Methodology
T-49G: Setting-less Protection
T-52G: Setting-less Protection: Laboratory Testing
T-59G: RTE DSE-Protection Demonstration

F) Renewable Resources, Electrical Vehicles, and Storage
T-8: Investigation of Fuel Cell System Performance and Operation: A Fuel Cell as a Practical Distributed Generator
T-21: Evaluation of Distributed Electric Energy Storage and Generation
T-34: Power System Level Impacts of Plug-In Hybrid Vehicles
T-40: PHEVs as Dynamically Configurable Dispersed Energy Storage
T-41, Part 2: Impact of Plug-In Hybrid Electric Vehicles on Distribution System Demand Response
T-44: Distribution System Analysis Tools for Studying High Penetration of PV with Grid Support Features
T-48: The Economic Case for Bulk Energy Storage in Transmission Systems with High Percentages of Renewable Resources
T-60: Framework to Analyze Interactions between Transmission and Distribution (T&D) Systems with High Distributed Energy Resource (DER) Penetrations

**G) Sensors**
T-20: Optical Sensor for Transformer Monitoring
T-31: Massively Deployed Sensors
T-35: Comparative Characterization of Parallel Distribution Sensors Under Field Conditions
T-43: Verifying Interoperability and Application Performance of PMUs and PMU-enabled IEDs at the Device and System Level

**H) Substation Design**
T-37: The 21st Century Substation Design
T-38: Substation of the Future: A Feasibility Study
T-39: Communication Requirements and Integration Options for Smart Grid Deployment
T-41, Part 4: Implications of the Smart Grid Initiative on Distribution Engineering
T-41, Part 1: Characteristics of a Smart Distribution System and Design of Islanded Distributed Resources

**I) Microgrids**
T-18: Control and Design of Microgrid Components

**J) Energy Management Systems**
T-45: The Next Generation Energy Management System Design
T-51: Systematic Integration of Large Data Sets for Improved Decision-Making
T-54G: Establishing a Software-Based Real-Time Simulation Platform for a Controls Laboratory for Training, Research and Development, and Experimentation

**K) Interdependent Infrastructure Systems**
T-50G: The Electricity and Transportation Infrastructure Convergence Infrastructure Convergence
T-53: Reliability Assessment and Modeling of Cyber Enabled Power Systems with Renewable Sources and Energy Storage