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| Rev # | Revision Description | Approved By | Effective Date |
| 0 | Reformatted for Playbook. Includes Kaizen updates and replaces M003 dated 19Dec16. | Sean Harrington | 7/17/17 |
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## GENERAL REQUIREMENTS

* 1. Base Scope
     1. The Supplier shall design, manufacture, test, and deliver each voltage transformer (VT) or capacitor voltage transformer (CVT) specified in the Technical Attachment A. All material shall be new and suitable for the intended service. Delivery shall be by flatbed or open-air truck.
     2. The VTs/CVTs as described in the following Scope of Work are intended for monitoring the status of the system and equipment, the protection of equipment and circuits, and the metering of power consumption.
     3. Each VT/CVT shall be a completely self-supporting design for base mounting installation with all required accessories as specified herein.
     4. Any equipment or material not specified herein that is required for proper installation and operation of the VTs/CVTs shall be identified and provided by the Supplier unless specifically identified herein as being provided by the Purchaser.
  2. Required with Bid Submittal
     1. VT/CVT outline showing overall dimensions, weights, locations of transformer center of gravity, conduit entry, etc.
     2. Base detail, showing details for mounting VT/CVT to support steel.
     3. Specific support stand design requirements.
  3. The terminal points of the Supplier’s equipment scope of supply are as follows:
     1. VT/CVT terminals.
     2. Grounding provisions.
     3. VT/CVT base, including mounting bolts.
  4. Consumable Parts
     1. The Supplier shall furnish all consumable parts that need to be replaced by the Purchaser after installation, testing, and startup and prior to placing the equipment into active service.
  5. Work by Others
     1. The Purchaser will furnish all labor, supervision, materials, and equipment necessary for unloading, storing, installing, erecting, and commissioning the specified equipment including:
        1. Main ground grid and connection to Supplier's equipment
        2. Foundation, embedments, and support structure to accommodate Supplier’s attachment points and hardware.

## CONSTRUCTION REQUIREMENTS

* 1. Connections
     1. Each VT/CVT shall be provided with a terminal capable of terminating a #4/0 conductor on the primary voltage terminal for medium voltage installations or a NEMA 4-hole pad for high voltage installations. Stud connectors shall be tinned and shall be suitable for connection to copper or aluminum.
  2. Base Housing (69kV and above)
     1. The VT/CVT base housing shall be corrosion resistant, and shall be furnished with the following:
     2. One (1) threaded and capped conduit entrance bushing
     3. One (1) NEMA 2-hole pad shall be provided for connection of grounding conductor lugs.
  3. Assembly
     1. The transformer manufacturer shall assemble each transformer in their shop to a degree that will ensure each transformer is in perfect mechanical operating condition.
  4. Nameplates
     1. Nameplates shall be furnished in accordance with IEEE C57.12.10 for VTs and IEEE C93.1 for CVTs.
  5. Shipping
     1. The transformers shall be designed to withstand the mechanical stresses that may be encountered during truck transport to the Purchaser’s site. The equipment shall be packed and braced to protect it from damage in handling and during shipment.
     2. The contents, Contract Number, and Purchase Order Number shall be clearly marked on the exterior of each packing unit.
     3. Supplier shall list all items that are shipped detached.

## QUALITY ASSURANCE AND TESTS

* 1. Shop Test (FAT) Procedures
     1. Supplier shall provide to the Purchaser, the procedures to be used to perform shop inspection, examination, and testing of materials, equipment, and components.
  2. Shop Test (FAT) Results
     1. Supplier shall provide to the Purchaser, records and reports of all inspections, examinations and tests performed by or for the Supplier, including material test reports and results of nondestructive examinations (NDE).

## APPROVAL SUBMITTALS

* 1. General
     1. Supplier shall electronically submit the drawings and information specified below to Purchaser in accordance with the agreed-upon schedule. Supplier’s drawing file format shall be compatible and able to be manipulated with AutoCAD. All other information shall be in PDF format.
     2. The Purchaser will review all submittals for conformity with the contract documents. All submittals will be marked with one of the following responses to indicate result of Engineer’s review:
        1. **Reviewed without Comments**: Drawings marked “Reviewed without Comments” by the Engineer may be released for fabrication and/or installation by the Supplier.
        2. **Reviewed with Comments**: For drawings marked “Reviewed with Comments”, Supplier shall review Engineer’s comments and incorporate any necessary design changes into the shop drawings or design before proceeding with fabrication or drawing distribution.
        3. **Revise and Resubmit**: For drawings marked “Revise and Resubmit”, Supplier shall revise approval drawings to address Engineer’s comments and resubmit to Purchaser for re-review. Any fabrication or assembly shall be at Supplier’s risk until Engineer’s re-review is completed.
  2. Drawings
     1. General Arrangement Drawings
        1. Supplier shall submit drawings showing the general arrangement and certified principal dimensions of each piece of equipment furnished by Supplier. The drawings shall show disassembly clearances and other dimensions pertinent to installation, including location and size of all terminal connections for Purchaser-supplied piping and electrical wiring. In addition, the general arrangement drawings shall include identification of all equipment parts and accessories.
     2. Nameplate Drawing
        1. Nameplate drawing shall include nameplate requirements in accordance with IEEE Standard C37.04.
     3. Bills of Material
        1. The Supplier shall furnish a complete bill of material (BOM) of all components and parts, including all special appurtenances furnished with equipment and OEM part numbers.
     4. Installation and Erection Details
        1. Supplier shall submit drawings, diagrams, instructions, etc., required for the successful installation and erection of equipment and components furnished by the Supplier.
  3. Operation and Maintenance Data
     1. General
        1. Operating and maintenance data shall be submitted in an electronic format that is compatible for importing into Purchaser's operation, maintenance, and inventory management systems.
     2. Operation and Maintenance Manuals
        1. Two weeks prior to shipment, the Supplier shall submit one complete O&M Instruction Manual to the Purchaser for review and approval. The manual’s cover shall identify the Owner’s Name; NextEra Energy Resources, the Project Name; and Location.
        2. All information included in the instruction manual shall contain final "as-built" information and data. Data that is not applicable to the equipment, but included as part of suppliers or sub-suppliers standard literature, shall be deleted or suitably identified.
        3. The O&M information shall be arranged in logical groupings and include manufacturers' instruction books, leaflets, and other documents needed for maintenance and operation of the equipment, such as complete information for ordering spare parts and dismantling the equipment. Individual submittals of various manufacturers' instruction books, etc., will not be acceptable.
        4. An index or table of contents that provides a complete listing of all O&M data items shall be included. Content to include, but not limited to:
           1. Final versions of general arrangement drawings, guaranteed performance data, design and performance data, and test results for all equipment. Electronic format, only.
           2. Final versions of Schematic and Wiring Drawings. Electronic format, only.
           3. Operator instructions for startup and operation of the equipment
           4. Complete operation, troubleshooting and maintenance instructions for each piece of equipment.
           5. Complete information for setting and calibrating instruments and sensors.
           6. Complete parts lists with parts identified by the original manufacturers' complete part number as well as by Supplier's identification number.

## CONSTRUCTION DRAWINGS

* 1. Submit to Purchaser a final construction drawing package that includes an electronic set (.pdf and .dwg) reflecting any and all revision to shop drawings and a .pdf set stamped and certified “For Construction”. All drawings shall be submitted in accordance with date guaranteed by Supplier.

## AS-BUILT DOCUMENTATION

* 1. Submit to the Purchaser for distribution all as-built drawings and final instruction manuals. All as-built documentation shall be transmitted to Purchaser electronically using Purchaser’s document management system. All drawings shall be submitted in both native CAD format and PDF. Additionally, the equipment shall ship with two hard copies of all drawings and bound manuals and two flash drives with all documents in PDF format.

## CODES AND STANDARDS

* 1. The Equipment provided under these specifications shall conform to all applicable standards of ANSI, NEMA, NESC, and IEEE, most notably IEEE C57, and shall be in accordance with all applicable requirements of local, state, and federal codes and regulations.
  2. In the event of a conflict between the applicable standards, Purchaser's drawings, and this Specification, the Supplier shall notify the Purchaser and secure a written clarification as to what is acceptable before proceeding with the work.

END OF SPECIFICATION