Salt River Project

Section 4

Part A

Medium Voltage Switchgear

Ratings and Design Basis

Revision 1

Delivering water and power®

Revision 1
November 3, 2026

Table of Contents

1 Switchgear Design and Rating Data 3

2 Specific Required Equipment 4

3 Special Requirements 5

4 Specific Conditions 6

5 Tests and Inspection Requirements 7

6 Work Scope 9

7 BABA Bidder/Manufacturer Certification 10

1 Switchgear Design and Rating Data

Parameter	Requirement
Maximum Rated Voltage	5kV
System Operating Voltage	4160V
Rated Insulated Level (U_d):	14kV
Number of Phases	3
Frequency	60 Hz
Impulse Withstand (BIL) (U_p)	
Switchgear:	60kV
Roof Bushings:	95kV
Roof Entrance Bushings:	3000A
Main Bus Ampacity:	3000A continuous
Ground Bus Ampacity:	1000A minimum
Main Breaker Ampacity:	3000A continuous
Feeder Breaker Ampacity:	3000A continuous
Number of Feeder Breakers:	2
Breaker Interrupting Time:	< 3 cycles
Maximum Short Circuit (Sym.):	40kA
Momentary Withstand (Latch):	40kA
Control Voltages	
Breaker Tripping:	48VDC
Breaker Closing:	48VDC
Breaker/Spring Charging:	48VDC
Auxiliary Power	
Heaters:	240VAC
Utility Receptacle:	240VAC
Lights & Convenience Receptacle:	120VAC

Maximum Ambient Temperature	50 °C
24-hour Average Ambient Temperature	40 °C
Minimum Ambient Temperature	-8 °C
Altitude	< 3300 ft
Average Relative Humidity	30%
Solar Irradiance Direction Insolation In a given daylight period In a given year	 1000 W/m^2 (peak) 8526 Wh/m^2 2.1× 10^6 Wh/m^2

2 Specific Required Equipment

2.1 Current Transformer

All current transformers shall be 3000:5 single ratio and have thermal rating factors of 2.0 at 30°C or 1.5 at 55°C or better. Relaying CTs shall be C200 accuracy or better. Metering CTS shall be rated 0.3B1.8 or better.

2.2 Three Phase Voltage Transformer

Three bus connected voltage transformers shall be installed. The transformers shall be rated 2400/120V and shall be protected with primary current limiting fuses. The voltage transformers shall be metering accuracy class 0.3 for burdens W, X, Y, and Z. The metering and protection potentials shall be fused with 10A secondary fuses.

2.3 Circuit Breakers (Main and Feeder)

Vacuum circuit breakers shall consist of one of the following:

- ABB AMVAC
- Powell Power-Vac
- Siemens GM
- Square D VR
- Eaton VCP-W
- Hyundai/Myers HVF

An equivalent circuit breaker may be use, provided that it meets all material, technical, performance, interoperability, safety, reliability, maintenance, and dimensional requirements of this specification.

Listing of a manufacturer or breaker type in this specification constitutes technical acceptability only and shall not be construed as evidence of BABA compliance. The Seller remains responsible for demonstrating BABA compliance for the switchgear and breakers proposed.

2.4 Integral/Remote Racking

Each breaker cubicle shall have an integral power racking mechanism included. In lieu of an integral racking system, a remote racking system can be recommended as an option.

3 Special Requirements

3.1 **Enclosure:** The Switchgear outer enclosure shall be NEMA 4. It shall provide protection to the equipment inside from the ingress of foreign objects (falling dirt and windblown dust) and provide protection from the harmful effects of water ingress (windblown rain, sleet, snow, splashing water, and hose directed water.)

3.2 **Build America, Buy America (BABA) Requirements:** The switchgear and other articles, materials, and supplies furnished for incorporation into the Project shall comply with the applicable Buy America Preference requirements of the Build America, Buy America Act, 2 CFR Part 184, 2 CFR 200.322, and the applicable Federal Award terms and conditions, unless an applicable exemption or Federal agency-approved waiver applies.

The Seller shall identify the applicable BABA classification of the switchgear in the form in which it will be brought to the Project work site. The Seller shall provide documentation sufficient to demonstrate compliance with the domestic production standard applicable to that classification.

If the switchgear is classified as a manufactured product, the Seller shall certify that the switchgear is manufactured in the United States and that the cost of components mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components, unless a different applicable standard meeting or exceeding that requirement governs the Federal Award Component costs shall be determined in accordance with 2 CFR 184.5.

If classified as an iron or steel product, the Seller shall demonstrate compliance with the applicable domestic manufacturing requirements of 2 CFR Part 184.

BABA compliance documentation acceptable to SRP shall be provided before award or other contractual commitment unless otherwise authorized by SRP.

3.3 **Delivery:** The delivery of the switchgear would be to Boggs Substation at coordinates Latitude: 33°30’ 42.14”N, Longitude: 111° 41’,40.18”W. These coordinates are from SRPMO and approximate the location of the Boggs Substation.

3.4 **Route Restriction:** There are restrictions on the route to the substation. The bridge after travelling East from N. Bush Highway on Granite Reef Dam Road has a AASHTO HS20-44 rating.

4 Specific Conditions

4.1 **Responsible Engineer Contact**

Salt River Project

Tad A. Myers, XCT 329
1667 N Priest Dr.
Tempe, AZ 85288
Email: tad.myers@srpnet.com
Phone: 602-236-0433

4.2 **Warehousing Personnel Contact**

Include the warehousing contact in all emails about shipping logistics emails to:

Shawn Beck
Material Handler
Shawn.Beck@srpnet.com
Phone: 602-236-7065

4.3 **Document Coordinator Contact**

Ship drawings, test data, and instruction books, except those designated for shipment with the equipment, to:

Salt River Project
Tracy Quintanilla XCT 329
1667 N Priest Dr.
Tempe, AZ 85288
Phone: 602-236-4739

4.4 **Seismic and Wind Loading Requirements**

4.4.1 All equipment specified herein shall be designed to conform to IEEE 693-2018, moderate qualification level as described in Section 5.7.1 of the Standard.

4.4.2 The design wind loads (forces) shall be per ASCE 7-05 Chapter 6 – Wind Loads, Method 2 – Analytical Procedure, following the 6.5.3 Design Procedure and Section 6.5.15 Design Wind Loads on Other Structures.

4.4.3 The basic wind speed of V = 90 mph (3-second gust wind speed at 33 feet above ground for Expose C category) shall be used. This speed is used to calculate design-level forces with a 50-year mean recurrence interval (MRI) and an annual probability of exceeding the design wind speed of 0.02.

Directionality Factor, Kd – per Table 6-4

Occupancy Category IV (Table 1-1)

Importance Factor, I = 1.15 (Table 6-1)

4.4.4 The Seller shall include the reactions at the center of the equipment base using the Allowable Stress Design for all seismic and wind loaded cases analyzed or for the governing case(s).

5 Tests and Inspection Requirements

5.1 All switchgear units shall include all production tests described in IEEE C37.20.2-2015 Section 6.3 and IEEE C37.100.1-2007 as a minimum.

5.2 Dielectric testing shall be performed in accordance with IEEE C37.20.2 Section 6.3.1 to prove the rated insulation level specified in the electrical ratings.

5.3 Mechanical and Sequence Operation Testing shall be performed to confirm the proper functioning of shutters, interlocks, interchangeability of removeable equipment, and sequential devices operate in the order intended. Five complete racking operations of the integral racking system shall be performed between the DISCONNECT, TEST, and CONNECTED positions at the nominal operating voltage. During each racking operation, the operation of the mechanical interlocks (trip-free, spring discharge) shall be verified.

5.4 Control wiring continuity tests shall be performed by electrical operation of all control devices.

5.5 Control wiring insulation tests shall be performed on all control wiring using 1500VAC at 60Hz to confirm the absence of any circuit grounds.

5.6 Polarity verification tests shall be performed on all instrument transformers to confirm proper polarity and orientation.

5.7 Partial discharge testing shall be performed per IEEE C37.20.2 Annex C on the complete switchgear will all associated components installed. The maximum acceptable limites of partial discharge shall be: 10pC with an extinction voltages of 10.5kV rms. Also, all associated components installed inside the switchgear shall be capable of meeting CSA C22.2 No.31-2014 requirements for partial discharge and corona extinction voltage.

5.8 Electrical corona testing shall additionally be performed on the completely assembled switchgear. The complete switchgear shall be energized using an AC dielectric test set to 110% of nameplate rated voltage and held for 10 minutes. During this time, there shall be no audible electrical discharges anywhere inside or on the switchgear.

5.9 Micro-ohmmeter measurements shall be taken from the roof entrance bushings through the main and feeder breakers to each of the cable termination points in each cell. The measurements shall be repeated for each phase. Micrometer measurements shall not vary by more than 10% between any two cubicles. All measurements shall be made using a minimum direct current of 100A. All micro-ohmmeter measurements shall be tabulated and included in the production test report.

5.10 Rain Test: The manufacturer shall perform and successfully meet the requirements of the Weatherproofing Test for Outdoor Switchgear described in IEEE C37.100.1-2007 Annex F on the exact design proposed for this specification or provide documentation which certifies the enclosure meets or exceeds NEMA 4 standards for weather resistance. Note: the term “significant accumulation of water” shall be defined as a visible puddle that does not drain or evaporate within one hour of the completion of the test.

5.11 A visual inspection shall be conducted upon delivery of the switchgear for external damage, shifting, bent, loosened, or broken equipment. Any missing or mishandled parts shall be noted.

5.12 Prior to authorization for shipment, the Seller shall provide final BABA compliance documentation applicable to the switchgear actually manufactured for this Contract. Documentation shall identify, at a minimum:

- Manufacturer legal name
- Switchgear model/type and configuration
- Final manufacturing facility location
- Applicable BABA product classification
- Certification of compliance with the domestic production standard applicable to that classification.
- For a manufactured product, certification that the applicable domestic component cost requirement has been satisfied
- Any item for which the Seller asserts an applicable exemption or approved waiver.

Changes to the manufacturing location, configuration, or component sourcing that may affect the certified basis for compliance shall be disclosed to SRP prior to shipment.

6 Work Scope

6.1 Switchgear ships with vacuum circuit breakers installed.

6.2 Switchgear offloading is not in the scope of the Seller. The switchgear hauler should provide 24 hours notice, minimum, to the SRP Warehouse or Site Contact before arriving such that a crane can be scheduled to offload the switchgear.

6.3 BABA Flow Down – the Seller shall incorporate applicable BABA requirements into subcontracts and purchase orders to the extent necessary to ensure compliance of articles, materials, and supplies furnished for incorporation into the Project.

6.4 Records – The Seller shall maintain supporting records sufficient to substantiate its BABA certifications and shall provide such documentation to SRP upon request, subject to appropriate protection of confidential commercial information.

6.5 Waivers and changes – The Seller shall not assume that a BABA waiver applies. Any proposed noncompliant item shall be identified to SRP before award or incorporation into the Project. No change to the certified manufacturing location, configuration, or component sourcing that could affect BABA compliance shall be made without prior written notification to SRP.

7 BABA Bidder/Manufacturer Certification

Manufacturer:

Switchgear Model/Type:

Final Manufacturing Facility (City/State):

Country of Final Manufacture:

BABA Classification:

- ☐ Manufactured Product
- ☐ Iron or Steel Product
- ☐ Construction Material
- ☐ Section 70917(c) Material

The undersigned certifies that the equipment proposed for this procurement complies with the domestic production requirements applicable to the classification identified above.

If classified as a Manufactured Product:

- ☐ Product is manufactured in the United States
- ☐ Applicable domestic component cost requirement is satisfied

The undersigned certifies that the information provided regarding the BABA status of the specified equipment is accurate and is supported by records available to substantiate this certification.

Authorized Representative:

Title: **Company:**

Signature: **Date:**

Revision Number	Date	Amendment	Author
0	10/7/26	Original Revision	T. A. Myers
1	10/26/26	Added BABA language to the document	T. A. Myers