Sunflower Electric Power Corporation

FACILITY CONNECTION REQUIREMENTS

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1. INTRODUCTION

Organized in 1957, Sunflower Electric Power Corporation (Sunflower) is a consumer-owned Generation and Transmission (G&T), nonprofit Kansas corporation operated cooperatively by six rural electric distribution cooperatives that serve customers located in 34 western Kansas counties. Sunflower is a public utility regulated as to transmission by the Kansas Corporation Commission. Sunflower provides wholesale power generated by their power plants to their Member cooperatives. That power is delivered across high voltage transmission networks consisting of 69 kV, 115 kV, 138 kV, 230 kV, and 345 kV transmission lines and substations.

The Sunflower transmission system is operated as a part of the Eastern Interconnected electrical network and is located on the western end of the Eastern Interconnection. The Eastern Interconnection spans a large portion of the Midwest and the entire eastern portions of the United States and is the largest interconnected grid in North America. Sunflower is a member of the Southwest Power Pool (SPP) Regional Transmission Organization (RTO), which is, among other things, Sunflower's Planning Authority. The SPP Regional Entity is Sunflower's Regional Reliability Organization (RRO).

This document has been prepared to identify the technical, legal and Sunflower standard requirements for entities connecting new or substantially modified Facilities (generation, transmission or end-user) to the Sunflower transmission system (the "Interconnecting Facility Owner"). It applies to new interconnections or substantial modifications of existing generation Facilities or transmission interconnections as well as existing and new end-user delivery points. Rather than give detailed technical specifications, this document provides a general overview of the functional objectives and requirements to be met in the design of Facility connections. These requirements are written to establish a basis for maintaining reliability, power quality, and a safe environment for the general public, power consumers, maintenance personnel and the equipment, and to meet the technical and legal requirements of Sunflower. The requirements and guidelines found in this document are consistent with those used by Sunflower when installing Facilities or modifying existing Facilities. This document is also written to comply with NERC Reliability Standard FAC-001-1, which requires entities responsible for the reliability of the interconnected transmission systems maintain and make available a Facility Connection Requirements (FCR) document to ensure compliance with NERC Reliability Standards and applicable Regional Reliability Organization and individual Transmission Owner (TO) planning criteria and Facility connection requirements. This NERC Standard also requires those Facility owners to comply with this FCR document. The NERC Planning Standards are posted on NERC's web site (https://standards.nerc.net/). This FCR document is revised from time to time to reflect changes or clarifications in planning, operating, or interconnection policies.

Nothing in this document is intended to supersede SPP Generator Interconnection Procedures (GIP) or Agreement (GIA) or Sunflower Small Generator Interconnection Procedures (SGIP) or Agreement (SGIA); and, if there is a conflict, SPP's GIP and GIA or Sunflower's SGIP or SGIA as applicable, will control.

2. COMMON REQUIREMENTS

This section addresses the technical requirements that are common to the connection of generation, transmission, and delivery point (end-user) Facilities to the Sunflower transmission system. General overviews of functional requirements are given in this section. This document is not intended to be a design specification. Final design of Facility connections to the Sunflower transmission system will be subject to Sunflower review and approval on a case-by-case basis and must adhere to all applicable laws, rules, and regulations, including but not limited to, National Electric Safety Code, Rural Utility Service (RUS) and NERC and SPP Regional Entity Standard requirements; and the SPP RTO tariff and criteria.

2.1 Responsibilities

It is the responsibility of the Interconnecting Facility Owner to provide all devices necessary to protect the Interconnecting Facility Owner's equipment from damage by abnormal conditions and operations that might occur on the interconnected transmission system. The Interconnecting Facility Owner shall protect its equipment from overvoltage, under-voltage, overload, short circuits (including ground fault conditions), open circuits, phase unbalance, phase reversal, surges from switching and lightning, over and under frequency conditions, and other injurious electrical conditions that may arise on the interconnected transmission system. Interconnecting Facility Owner's shall implement over-frequency, under-frequency, over-voltage, and under-voltage relay set points as required by the SPP RTO and SPP Regional Entity (SPP RE) to prevent further aggravation of an abnormal frequency or voltage condition. See Section 3.5 for generation specific requirements.

It is the responsibility of the Interconnecting Facility Owner to provide for the orderly re-energization and synchronizing of its high voltage equipment to other parts of the electric system. Appropriate operating procedures and equipment designs are needed to guard against out of synch closure or uncontrolled energization. Each Interconnecting Facility Owner is responsible to know and follow all applicable laws, rules and regulations, including but not limited to, National Electric Safety Code (NESC), Rural Utility Service (RUS) and North American Electric Reliability Corporation (NERC) and SPP RE standards and requirements, as well as the SPP RTO tariff and criteria, industry guidelines, safety requirements, and accepted practice for the design, construction, operation and maintenance of its Facility.

2.2 Process

The connection of non-Sunflower owned generation, transmission, or Delivery Point (End-user) Facilities to the Sunflower transmission system should follow the Facilities Connection Process outlined in Figure 1. Either Sunflower or both Sunflower and the Interconnecting Facility Owner jointly, will conduct or review a

SPP RTO System Impact Study and any other studies required by the NERC Standards or SPP Criteria to determine the effect of the proposed connection on the Sunflower transmission system. The results of the studies will be discussed and shared with Sunflower, the Interconnecting Facility Owner, SPP, and any party requiring the information. A Facilities Study will be initiated to determine the cost of the connection and all Sunflower Facility upgrades needed to accommodate the new connection. The Facilities Study is shared with the Interconnecting Facility Owner, SPP and any party requiring the information. Sunflower and the Interconnecting Facility Owner then begin to negotiate a draft Interconnection Agreement.

The Interconnection Agreement shall contain a requirement that the Facilities to be engineered, designed, constructed, operated and maintained shall adhere to all applicable laws, rules, regulations, tariffs and criteria, and all applicable standards and requirements of Sunflower, including this FCR document. Without limiting the generality of the foregoing, if the Facilities to be interconnected with the Sunflower transmission system will be engineered, designed, installed and constructed by the Interconnecting Facility Owner but will be ultimately transferred to Sunflower for ownership, operation and/or maintenance, then the Interconnection Agreement shall require (unless otherwise provided for in a separate agreement between Sunflower and Interconnecting Facility Owner) that the Interconnecting Facility Owner engineer, design, install, construct, and transfer the interconnecting Facilities as follows:

- The Facility owner will ensure the engineering, design, installation, and construction of the interconnecting Facilities follow or are in accordance with all applicable NERC Standard requirements, set forth in Sunflower's NERC policies and procedures, including, but not limited to, all Critical Infrastructure Protection (CIP), Communications (COM), Facilities, Design, Connections and Maintenance (FAC), Protection and Control (PRC), and Voltage and Reactive (VAR) Standard requirements.
- Only Sunflower approved material will be used.
- The Facility owner will ensure the engineering, design, installation, and construction of the interconnecting Facilities are in accordance with Sunflower's physical security requirements.
- Real Property Requirements:
  - The Interconnecting Facility Owner will ensure that any real property to be acquired by the Interconnecting Facility Owner for subsequent transfer to Sunflower, necessary for the construction, ownership, operation and maintenance of new interconnecting transmission substations and associated Facilities, will be acquired in accordance with Sunflower established policies and procedures. Such real property acquired by Interconnecting Facility Owner shall be in fee simple, and shall be

transferred to Sunflower free and clear of any encumbrances, liens, or security interests, except for any permitted liens or encumbrances that are reasonably agreed to by Sunflower.

- The Interconnecting Facility Owner will ensure that any right-of-way easements to be acquired by the Facility owner on behalf of Sunflower (or for subsequent assignment to Sunflower), necessary for the construction, ownership, operation, and maintenance of new interconnecting transmission lines, will be acquired in accordance with Sunflower established policies and procedures. The Interconnecting Facility Owner will effectuate the acquisition of the right-of-way easements on a form customarily used by Sunflower when acquiring easement interests for the ownership, operation, and maintenance of its transmission Facilities, duly executed by the fee simple title holders of the affected real property, for the purposes of constructing, reconstructing, operating maintaining, erecting, installing, improving, replacing, using, and modifying a transmission line and all associated Facilities. The easements shall be duly executed by the fee simple title holder and delivered to Sunflower for full execution and filing (or otherwise assigned to Sunflower pursuant to a separate instrument of conveyance) prior to the energization of the interconnecting Facilities. The real property subject to the right-of-way easements shall be free and clear of any encumbrances, liens, or security interests, except for any permitted liens or encumbrances that are reasonably agreed to by Sunflower.

- The transfer of ownership of the interconnecting Facilities (real and personal) are subject to the satisfaction or waiver by Sunflower on or before such transfer, of each of the following conditions precedent:

  - Construction of the interconnecting Facilities shall have been completed and Sunflower shall have reasonable time to approve the design, engineering, and construction of the substation in accordance with the requirements outlined in this FCR document, the specifications and all other applicable laws, rules, regulations, tariffs, and criteria.

  - Evidence reasonable satisfactory to Sunflower that the Interconnecting Facility Owner has secured the discharge and full release of any encumbrances, liens, and security interests, burdening or otherwise affecting the interconnecting Facilities, to be released at or prior to the transfer of ownership of the interconnecting Facilities, except for any permitted liens or encumbrances that are agreed to by Sunflower.

- The Interconnecting Facility Owner shall deliver to Sunflower all of the following at or before the transfer of ownership of the interconnecting Facilities (real and personal property) (the “Transfer Date”):

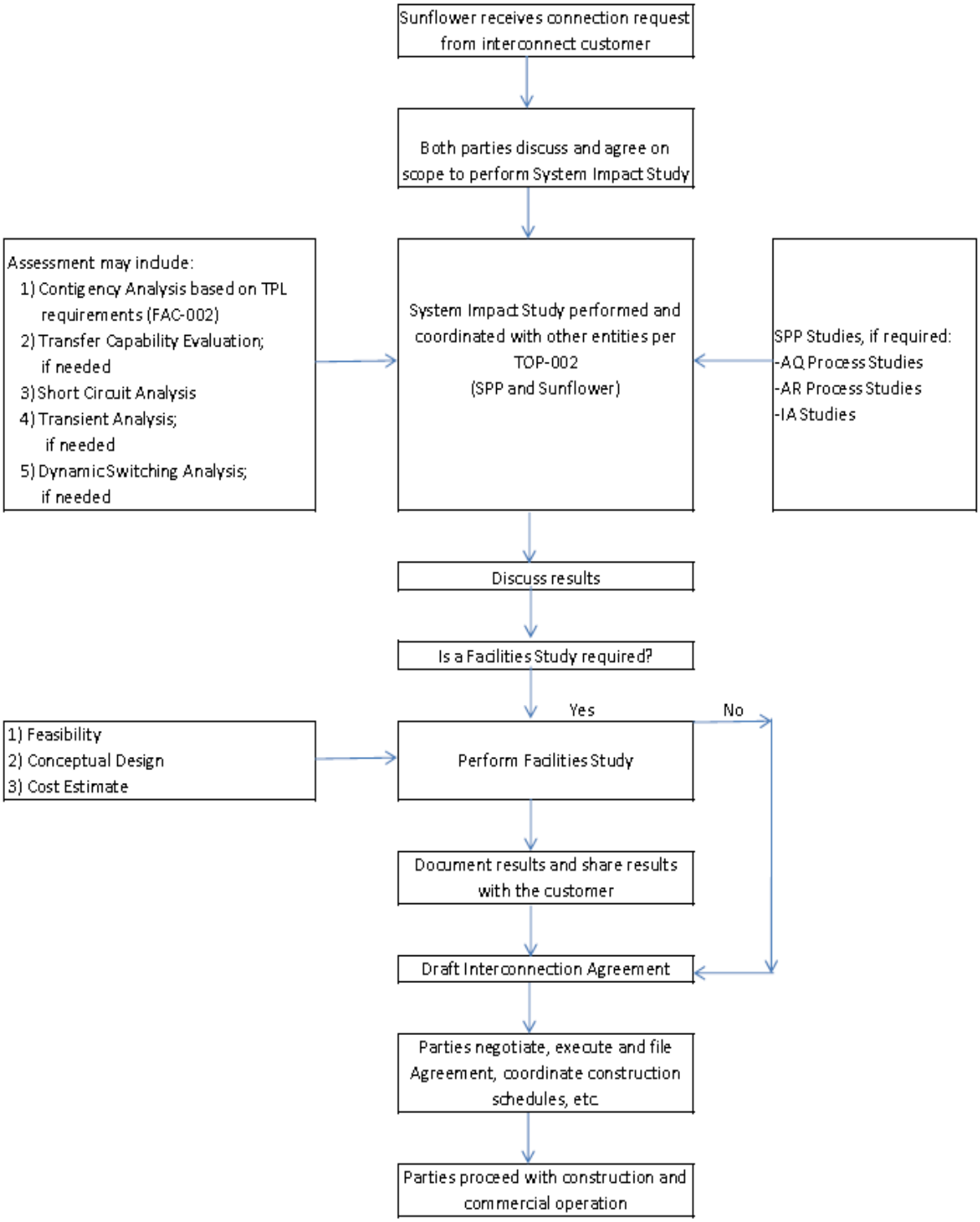
- Certificate of good standing of Interconnecting Facility Owner as of a recent date by the applicable state.
- Copies of the Articles of Incorporation (or Organization) of Interconnecting Facility Owner certified as of a recent date by the applicable state.
- Certificate of an authorized representative of Interconnecting Facility Owner, dated as of the Transfer Date, as to (i) the organization documents of Interconnecting Facility Owner in effect as of the Transfer Date; and (ii) incumbency and signatures of the authorized representatives of Interconnecting Facility Owner.
- Duly executed Warranty Deed in a form reasonably acceptable to Sunflower (if transferring fee title to interconnecting substation Facilities).
- Duly executed Right-of-Way easements, or assignment thereof in a form reasonable acceptable to Sunflower (if transferring or delivering Right-of-Way easements for interconnecting transmission line Facilities).
- Duly executed Bill of Sale conveying all right, title, and interest in and to the interconnecting transmission Facilities and all warranties, permits, certifications, licenses, approvals and consents, all claims, causes of action, and potential causes of action of Interconnecting Facility Owner against third parties relating to the interconnecting Facilities, and all contractors for the design, engineering, procurement, installation, and construction of the interconnecting Facilities, held by the Interconnecting Facility Owner and necessary for the ownership, operation, and maintenance of the interconnecting Facilities. The Bill of Sale shall be in a form reasonably agreed to by Sunflower, and shall include a warranty by the Interconnecting Facility Owner that the interconnecting Facilities are designed and constructed in accordance with reasonable skill, care and diligence in accordance with customary and accepted standards within the industry and when complete, the interconnecting Facilities, but excluding all materials and equipment covered by any third-party warranties, shall be new and in conformance with approved plans and specifications.
- To the extent permitted or transferable, and in acceptable format, any materials or documents prepared or developed by the Interconnecting Facility Owner or its employees, representatives, or contractors in connection with the interconnecting Facilities, including any drawings, plans, specifications, data, designs, manuals, and reports including equipment and protective relaying tests that comply with Sunflower NERC compliance documentation.
- A PE stamped as-built drawing executed by the engineer responsible for the design and engineering of the interconnecting Facilities.

- Evidence reasonably satisfactory to Sunflower that the Interconnecting Facility Owner has secured the discharge and full release of any encumbrances, liens, and security interests, burdening or otherwise affecting the interconnecting Facilities (real and personal) to be released at or prior to the Transfer Date, except for any permitted encumbrances, as agreed to by Sunflower.

- Any instrument of assignment or conveyance duly executed by Interconnecting Facility Owner to effect the transfer to Sunflower of all the Interconnecting Facility Owner's rights and interests in the interconnecting Facilities (real and personal), including instruments and notices of assignment or partial assignment, as applicable, to Sunflower of all contracts, permits, and claims related to the interconnecting Facilities.

Upon completion of negotiation of the Interconnection Agreement, both parties will duly execute and file (if required) the Interconnection Agreement. Construction and commercial operation of the interconnection Facilities follows accordingly in accordance with the requirements of this FCR document, the Interconnection Agreement, the specifications, and any other applicable agreements or laws, rules, regulations, tariffs or criteria. If applicable, ownership of the interconnecting Facilities shall be transferred to Sunflower in accordance with the requirements outlined above, after completion of construction but prior to energization of the interconnection Facilities.

FIGURE 1- Transmission Facility Connection Process



2.3 Site Access

There are situations where some equipment that is owned by Sunflower is located within the customer's Facility. This is often required for data acquisition or metering. In these cases, installed equipment owned by Sunflower will be clearly identified as such on the appropriate station drawings, on the reference documents and at the site. Unrestricted site access is to be provided to Sunflower employees, pursuant to the Interconnection Agreement or by separate agreement, where Sunflower equipment is located within the Customer's existing or new Facility for installation, maintenance and inspections. Additionally, Sunflower employees shall have access to the customer's Facility as necessary to reasonably review maintenance activities on Customer's protection system devices.

2.4 Safety

Safety is of utmost importance. Strict adherence to established switching, tagging and grounding procedures is required at all times for the safety of personnel. Any work carried out within a Facility shall be performed in accordance with all applicable laws, rules, and regulations and in compliance with Occupational Safety and Health Administration (OSHA), National Electric Safety Code (NESC) and good utility practice. Automatic and manual disconnect devices are to be provided as a means of removing all sources of current to any particular element of the power system. Only trained operators are to perform switching functions within a Facility under the direction of the responsible dispatcher or designated person as outlined in the National Electric Safety Code. Only properly trained Sunflower employees are to perform switching functions on Sunflower owned equipment.

2.5 Operations

Operational procedures are established in accordance with NESC, OSHA, SPP and NERC requirements. Each party shall designate operating representatives to address lines of communications, maintenance coordination, actions to be taken after de-energization of interconnected Facilities, and other required operating policies. All parties are to be provided with current station operating diagrams. Common nomenclature is to be used for naming stations, lines and switches, which shall be determined by Sunflower in its sole discretion. Updated diagrams are to be provided when changes occur to interconnected Facilities.

The operator of Facilities interconnecting to the Sunflower transmission system (the "Interconnected Facility Operator(s)") must not perform any switching that energizes or de-energizes portions of the Sunflower transmission system or that may adversely affect the Sunflower transmission system without prior approval of the Sunflower System Operator. Interconnected Facility Operators must notify the Sunflower System Operator before performing any switching that would

significantly affect voltages, power flows or reliability in the Sunflower transmission system.

2.6 Balancing Authority Areas

Interconnecting Facility Owners shall follow good utility practice to avoid creating oversupply imbalances or undersupply imbalances. The Interconnecting Facility Owner shall contract for or have available to it resources within its Balancing Authority Area that are capable of supplying in real time any deviations between power schedules and the actual power interchange with the Sunflower transmission system by the Facility.

2.7 Responsibilities during Emergency Conditions

All Balancing Authority Areas within the SPP region are responsible for maintaining voltage and frequencies within agreed ranges and limits. All operators of Facilities interconnected to the transmission systems in the SPP Region are required to communicate and coordinate with their Balancing Authority. During emergency conditions, the Facility operator shall raise or lower generation, adjust reactive power, switch Facilities in or out, or reduce end-user load as directed by the balancing/control area operator. The SPP Reliability Coordinator (RC) has overall responsibility for the secure operation of the interconnected transmission systems. All Balancing Authorities and Transmission Operators must communicate and coordinate with and follow the directives and directions of the SPP RC.

2.8 Inspection Requirements

The inspection of Facilities in accordance to good utility practice and regulatory requirements is the responsibility of the owner of those Facilities. Sunflower shall have the right to perform routine inspection of new and existing interconnecting Facilities. Sunflower also shall have the right to inspect the equipment and testing of equipment whose performance may reasonably be expected to affect the reliability of the interconnecting Facility or Sunflower's Facility.

2.9 Maintenance of Facilities

The maintenance of Facilities is the responsibility of the owner of those Facilities. Adjoining Facilities on the interconnected power system are to be maintained in accordance with accepted industry practices and procedures. Each Facility owner is to have a documented maintenance program ensuring the proper operation of equipment. Sunflower will have the right to review maintenance reports and calibration records of equipment that could impact the Sunflower system if not properly maintained. Sunflower is to be notified as soon as practicable about any out of service equipment that might affect the protection, monitoring, or operation of interconnected Facilities.

Maintenance of Facilities interconnected to the Sunflower transmission system shall be done in a manner that does not place the reliability and capability of the Sunflower transmission system at risk. Planned maintenance must be coordinated and scheduled with the Sunflower System Operator and, if required, with the SPP RC.

2.10 Point of Interconnection

The point of interconnection is to be clearly described. Usually the change of Facility ownership and the point of interconnection are the same point.

An interconnection junction box may be required to connect control circuits and signals between the parties at a point of demarcation. Fiber optics is the preferred means of interconnection of control circuits. Metallic control cables will present problems if the distances are great; ground potential rise during faults can cause failures when these signals are needed the most. Long cable voltage drops can make control systems unreliable or produce inaccurate signal levels and therefore are to be avoided.

Metering equipment should be provided as close to the interconnection point as practicable. The interconnecting Facility must be connected to the Sunflower system through a primary interrupting device.

Facilities interconnecting to the Sunflower transmission system that are not solely operated and controlled by the Sunflower System Operator must have an isolating device installed at the point of interconnection. This isolating device, typically a disconnect switch, must be capable of physically and visibly isolating the Facilities from the Sunflower transmission system. This isolating device must be lockable in the open position by Sunflower and must be under the ultimate control of the Sunflower System Operator. Series Compensation Facility: Has the meaning set forth in Section 4.3 of this document.

2.11 Voltage Level and MW and MVAr Capacity or Demand

After the customer supplies Sunflower with the approximate geographic location of point of interconnection and desired megawatt (MW) and megavar (MVAr) capacities or demand, Sunflower will exercise engineering judgment and the results of any engineering studies to determine the most practical projects specific voltage level at the interconnection point due to system capabilities at the point of interconnection.

2.12 Power Quality

Generation of harmonics should be limited to values prescribed by IEEE Standard 519 when measured at the interconnection point of ownership. Additionally, the Sunflower transmission system should not be subjected to harmonic currents in excess of 5% of a transformer's rated current as stated in ANSI/IEEE Standard C57.12.00.

2.13 Transmission Line Configurations

Three source terminal interconnection configurations are to be avoided within the Sunflower transmission system. This is due to problems associated with protective relay coverage from in-feed, sequential fault clearing, out-feed or weak source conditions; i.e., reduced load flow and automatic reclosing complications. Extensive studies are necessary to evaluate all possible implications when considering three terminal line applications.

Some new interconnections to the Sunflower transmission system may require one or more Sunflower transmission circuits to be looped through the new interconnecting Facility. The design and ratings of the new interconnecting Facilities and the transmission loop into them shall not restrict the capability of the transmission circuits or impair Sunflower contractual transmission service obligations.

Long taps to feed connected load directly tied to a transmission line are to be avoided. This presents coverage problems to the protective relay system due to in-feed. Power line carrier signals can also be lost due to odd quarter wavelength sections.

Any new Facility interconnection configuration should not restrain or restrict Sunflower's ability from taking a transmission element out of service for just cause. Sunflower shall not be forced to open a transmission line for an adjacent interconnected generator or transmission line to obtain an outage. Manual switching or the clearing of electrical faults within the non-Sunflower Facility shall not curtail the ability of Sunflower to transmit power or serve its customers.

Reliable station and breaker arrangements will be used when there are new or substantial modifications to existing Sunflower switching stations affecting transmission lines rated at or above 69 kV. In general, Sunflower transmission switching stations are configured such that line, transformer, bus, and circuit breaker maintenance can be performed without degrading transmission connectivity. This generally implies a breaker by-pass, ring bus, breaker, and a half or double breaker, double bus configuration. A ring bus may be used when a limited number of transmission lines are involved.

2.14 Grounding

Each interconnection substation must have a ground grid that solidly grounds all metallic structures and other non-energized metallic equipment. This grid and grounding system shall be designed to meet the requirements of ANSI/IEEE 80, IEEE Guide for Safety in AC Substation Grounding and ANSI/IEEE C2, National Electrical Safety Code. The transmission line overhead ground wire (OHGW) shall be connected to the substation ground grid.

If the interconnection substation is close to another substation, the two grids may be isolated or connected. Connected grids are preferred, since they are easier to connect than to isolate. If the ground grids are to be isolated, there may be no metallic ground connections between the two substation ground grids. There must also be sufficient physical separation to limit soil conduction. If the ground grids are to be interconnected, the interconnecting cables must have sufficient capacity to handle the fault currents, duration, and duty. Sunflower must approve any connection to a Sunflower substation ground grid.

All transmission line structures must be adequately bonded and grounded to control step and touch potential in compliance with the NESC, and to provide adequate lightning performance. All transmission lines should have a continuous ground wire, not relying on earth as the primary conductor, to transfer fault current between structures and to substations and plant switchyards. Any exceptions to a continuous ground wire shall be verified with a system study. All ground wires and bond wires must be adequately sized to handle anticipated maximum fault currents and duty without damage.

Transmission interconnections may substantially increase fault current levels at nearby substations and transmission lines. Modifications to the ground grids of existing substations and OHGWs of existing lines may be necessary. The interconnection studies will determine if modifications are required and the scope and cost of the modifications.

2.15 Insulation, Insulation Coordination, and Surge Protection

Insulation coordination is the selection of insulation strength. Insulation coordination must be done properly to ensure electrical system reliability and personnel safety. Basic surge levels (BSL), surge arrester, conductor spacing, and gap application, substation and transmission line insulation strength, protection, and shielding shall be documented and submitted for evaluation as part of the interconnection process.

Sunflower's standard is to shield substations and transmission lines from direct lightning strokes and to provide adequate surge protection. Surge arrestors are applied at transmission line terminal entrances and at major components and systems.

Interconnection Facilities to be constructed in areas with contamination shall be properly designed to meet or exceed the performance of Facilities not in a contamination area with regard to contamination caused outages.

2.16 Structures

Transmission and substation structures for Facilities connected to the Sunflower transmission system shall be designed to meet the more stringent of National Electrical Safety Code (NESC), American Society of Civil Engineers (ASCE), or

RUS requirements. Substation bus systems shall be designed to comply with ANSI/IEEE Standard 605, IEEE Guide for the Design of Substation Rigid-Bus Structures, and RUS requirements.

2.17 Ratings

Facility and Equipment Ratings shall be coordinated between Sunflower and the Interconnecting Customer on jointly owned interconnect Facilities to ensure the accuracy of the Facility Rating. Sunflower shall have the ability to review equipment ratings on assets that will be owned, operated by, or interconnected to Sunflower.

For information on how Sunflower establishes Facility Ratings, reference the current Sunflower Electric Power Corporation FAC-008 Generation Facility Rating Methodology and FAC-008 Transmission Facility Rating Methodology.

2.18 Breaker Duty

All circuit breakers and other fault interrupting devices shall be capable of safely interrupting fault currents for any fault they may be required to interrupt. Application of circuit breaker duty rating shall be in accordance with ANSI/IEEE C37 standards.

2.19 Reliability and System Security

Sunflower designs and operates its transmission system to meet SPP Criteria and NERC Standards. The planned transmission system with its expected loads and transfers must be stable under both normal and contingency conditions in accordance with NERC Reliability Standards TPL-001-0.1, TPL-002-0b, and TPL-003-0b.

System and generator stability is to be maintained for normal clearing of all three phase faults. A normally cleared fault is assumed to last no longer than six cycles (0.1 seconds) for circuit elements protected by three cycle breakers. This provides approximately one cycle margin for slower than expected fault clearing. The power system must be stable for single line to ground faults with the failure of a protection system component to operate.

2.20 System Protection and Coordination

Utility grade, transmission level protective relays and fault clearing systems are to be provided on the interconnected power system. All protective relays should meet or exceed ANSI/IEEE Standard C37.90. Adjoining power systems may share a common zone of protection between two parties. Compatible relaying equipment must be used on each side of the point of ownership within a given zone of protection. The design must provide coordination for speed and sensitivity in order to maintain power system security and reliability.

All bulk transmission power systems are to have primary protective relaying that operates with no intentional time delay for 100% of the specified zone of coverage. On transmission circuits, this is accomplished through the use of a communication channel. A second high-speed protection system may be required on a line or bus.

Backup protective systems should provide additional coverage for breaker and relay failure outside the primary zone. Specific breaker failure protection schemes must always be applied at the bulk transmission level. Specific relay failure backup must also be provided. Backup systems should operate for failures on either side of an interconnection point. Time and sensitivity coordination must be maintained to prevent misoperations.

A power source for tripping and control must be provided at substations by a DC storage battery. The battery is to be sized with enough capacity to operate all tripping devices after eight hours without a charger. An under-voltage alarm must be provided for remote monitoring by the Facilities owners who shall take immediate action to restore power to the protective equipment.

Mechanical and electrical logic and interlocking mechanisms maybe required between interconnected Facilities to ensure safe and reliable operation. These include, but are not limited to, breaker and switch auxiliary contacts, under-voltage and synch-check relays, and physical locking devices.

Interconnecting Facility Owners shall investigate and keep a log of all protective relay actions, Misoperations, and associated corrective actions as may be required by the SPP RTO, NERC, or the SPP RE in compliance with NERC Reliability Standards.

Interconnected Facility Owners must have a documented maintenance and testing program for their owned Protection Systems. Documentation of the Protection System maintenance and testing program shall be supplied to Sunflower, on request. Test reports as outlined in the maintenance and testing program are to be made available for review by Sunflower. At intervals described in the documented Protection System maintenance and testing program and following any apparent malfunction of the protection equipment, the entity shall perform both calibration and functional trip tests of its Protection Systems.

2.21 Synchronizing of Facilities

Sync-check relaying, or appropriate interlock scheme, is required in the control of all breakers between the interconnecting Facility and Sunflower's transmission system to ensure proper synchronizing of Facilities.

2.22 Transmission Reclosing

It is Sunflower's practice to automatically and manually test its transmission Facilities following breaker operations for system faults. This is required to

minimize customer outage time and maintain system stability. On 230 kV lines and below, automatic reclosing occurs after fault clearing. A second automatic reclose may be initiated at some locations within a designated period after fault clearing. Manual reclosing and sectionalizing may also occur. Interconnected Facilities must not interfere with Sunflower's ability to quickly restore transmission lines following temporary or permanent system faults.

Automatic reclosing on lines originating at Sunflower generation sites is usually accomplished by hot line synch-check permissive logic. The remote end of the line from a Sunflower generator should be equipped with a dead line permissive for automatic reclosing. Any party wishing to interconnect with Sunflower must consider the implications of automatic reclosing in their design.

2.23 Metering

Each installation needs to be evaluated separately for metering requirements because of the many possible contractual agreements and interconnection configurations. In general, however, the following quantities are to be provided for each supply point: megawatt-hours received, megawatt-hours delivered, megavar-hours received, megavar-hours delivered, three phase voltage, three phase current, +/- megawatts, and +/- megavars. These quantities may need to be provided to various parties through various information/communication systems. Specific designs will be developed to meet those requirements. All metering devices are to be pre-approved by Sunflower prior to installation. Revenue meters are to have an accuracy class of 0.2% or better. Transducers are to be accurate to +/- 0.2% of full scale. Three element meters are to be used on all effectively grounded power systems. Both primary and backup revenue meters are to be provided. Backup current transformers (CTs) and potential transformers (PTs) are not required.

Instrument transformers are to have an accuracy class of 0.3% or better with 0.15% being preferred. Metering accuracy CTs and PTs are to be installed as close to the delivery point as practical. CT ratios are to be selected just above the expected full load. Metering CTs and PTs should not be used to feed non-metering equipment such as protective relays. Metering CTs are not to be connected in parallel. Auxiliary CTs are not to be used in metering circuits. When more than one point is to be monitored, individual metering is to be used. The impedance of the CT and PT cable leads is to be kept low and not impose burdens above that of the instrument transformer rating.

At locations where ferroresonance can be a problem, alternate design configurations must be considered. Designs that use ferroresonance dampening resistors connected to metering PT secondary circuits are not allowed.

When the metering location is different from the delivery point, compensation for losses is required for transformer losses and transmission line losses. Compensation should be performed internally by the installed metering

equipment rather than by after-the-fact calculations. Transmission Line data and transformer factory test sheets and nameplate data shall be submitted so accurate loss data parameters can be applied to the metering equipment.

Revenue meters are to remain sealed during operation and following maintenance or calibration testing. All parties are to be notified prior to removing seals. Calibration testing is to be performed annually and is to include all associated parties. Test equipment must be certified and traceable to the National Bureau of Standards.

All new substations will have the revenue meter connected to Supervisory Control and Data Acquisition (SCADA), so the SCADA meter values match the MV-90 billing data. Interconnected Facility Owners shall be responsible for the cost of the applicable communications equipment.

Dedicated 120VAC station service power and 125VDC shall be provided for the metering equipment.

2.24 Supervisory Control and Data Acquisition

Each installation needs to be evaluated separately for SCADA requirements because of the many possible contractual agreements and interconnection configurations. Generally, the following quantities are to be provided: megawatt-hours received, megawatt-hours delivered, voltage, current, +/- megawatts, and +/- megavars, breaker and switch positions, and equipment trouble alarms. These quantities may need to be provided to various parties through various information/communication systems. Specific designs will be developed to meet those requirements. Dual ported remote terminal units (RTUs) accessed by both parties may be used, provided the appropriate security levels are implemented. Equipment control of breakers, switches, and other devices via SCADA is to be provided to only one responsible party.

Power for SCADA or metering communication equipment, if needed, is to be provided by the station battery. Office power systems and switching networks are not acceptable.

2.25 Ferroresonance

Ferroresonance occurs on the power system under certain system configurations that may damage high voltage equipment. This phenomenon is usually caused when PTs are tied to a bus or line stub that may be energized through breakers having capacitors in parallel with the main contacts. Since interconnection Facilities may contain shared equipment, such as metering PTs and high voltage breakers, care should be used to avoid configurations that could cause ferroresonance. A study will be required if this phenomena is anticipated to be a problem.

2.26 Voltage, Reactive Power, and Power Factor Control

See Sections 3.6 and 3.8 for generation specific voltage and power factor information, Section 4.8 for additional transmission reactive power information, and Section 5.1 for additional end-user power factor information.

2.27 New Facilities or Future Modifications

Those entities seeking to integrate Facilities shall notify the TO as soon as feasible and the TO shall review and respond as soon as feasible; in some cases the SPP (transmission provider) may need to be notified and review proposed modifications. Any changes that affect an interconnection of generation, transmission, or delivery point (end-user) Facilities must be reviewed in advance. These include modifications to the metering or protection scheme as well as associated settings after the interconnection project has been completed. Information about expected increased load flows or higher fault currents levels due to system changes must be provided in a timely manner.

The procedure for notification of new or modified Facilities to others (those responsible for the reliability of the interconnected transmission systems) is as follows:

1) Either transmission customers or the TO may undertake modifications to its Facilities. If a party plans to undertake a modification that reasonably may be expected to affect the other party's Facilities, that party shall provide to the other party sufficient information regarding such modification so that the other party may evaluate the potential impact of such modification prior to commencement of the work. Such information shall be deemed to be confidential hereunder and shall include information concerning the timing of such modifications and whether such modifications are expected to interrupt the flow of electricity from the Facility.

2) The party desiring to perform such work shall provide the relevant drawings, plans, and specifications to the other party at least ninety (90) Calendar Days in advance of the commencement of the work or such shorter period upon which the parties may agree, which agreement shall not unreasonably be withheld, conditioned or delayed. Any additions, modifications, or replacements made to a party's Facilities shall be designed, constructed, and operated in accordance with Good Utility Practice. Also see LGIA, Section 5.19.

3) Notification of new and modified Facilities to SPP: Notification of new and modified Facilities is affected through the SPP Transmission Expansion Plan and SPP Attachment O Planning Process contained within the SPP Open Access Transmission Tariff (OATT) which is available on the SPP public website. The SPP Transmission Expansion Plan, which is approved by the SPP Board, and subsequent posting on the SPP public website, which includes all new and

modified Facilities, provides notification and communication of this information to those responsible for the reliability of the interconnected transmission systems.

3. GENERATION INTERCONNECTION

This section addresses the technical requirements for connecting new generation to the Sunflower transmission system or substantially modifying existing generating Facilities connected to the Sunflower transmission system. For generators 2 MW and larger connecting to the Sunflower transmission system, the SPP GIP and GIA found in the SPP OATT shall be followed and will generally govern the process. For generators smaller than 2 MW connecting to the Sunflower transmission, the SPP SGIA will be followed. The general overviews of functional requirements described in this section will also provide guidance for the interconnection of generation to the Sunflower system. Detailed, project specific requirements will be developed as part of an Interconnection Feasibility Study and other documents, including but not limited to, the NERC Reliability Standards, the SPP OATT and criteria, Kansas Corporation Commission rules and regulations, RUS requirements and the National Electrical Safety Code.

3.1 Applicability

This section applies to all interconnections with the Sunflower system where generation is installed behind the interconnection point and is capable of operating in continuous parallel with the Sunflower transmission system. It also applies to incremental additions of generation intended to serve Sunflower native load. Sunflower generators, co-generators, qualifying Facilities, merchant plants, and non-utility generators are covered under this section. This section also covers utility-to-utility interconnections as specifically noted in Section 4.

3.2 Configuration

Generating plants connected to the Sunflower transmission system are designed to minimize the impacts of the maintenance or unplanned outages of a generator, line, transformer, circuit breaker, or bus. The potential adverse effects of maintenance and equipment outages must be considered in the design of the generating plant and its connection to the Sunflower transmission system.

3.3 Operations and Safety

Operators of generating Facilities must notify the Sunflower System Operator and obtain approval before synchronizing the Facility to or disconnecting the Facility from the Sunflower transmission system. Disconnection without prior approval is permitted only when necessary to prevent injury to personnel or damage to equipment. Generators must not energize a de-energized Sunflower transmission circuit unless such actions are directed by the Sunflower System Operator or are provided for in the Interconnection Agreement.

Each generating Facility shall provide a point of contact to the Sunflower System Operator. This contact person shall have the authority and capability to operate the Facility according to the instructions of the Sunflower System Operator to ensure that the reliability of the transmission system is maintained. A point of contact shall be reachable and available through telephone or other agreed upon means of communication at all times when the Facility is energized or in operation.

In order to maintain the reliability of the Sunflower and SPP transmission system, planned outages of plant and transmission equipment must be coordinated. Notification of preliminary plans for overhauls and maintenance outages of generators must be submitted to the SPP RC for coordination. The plans must specify the start date of the outage, the return to service date of the unit, and the generation capacity affected. For forced outages the length of time of the outage and the expected return to service date shall be reported as soon as the information is known. Changes in schedules either accelerating or delaying the forecasted return to service date of generation shall be reported as soon as they are known. Permission to synchronize to the interconnected system must be requested of Sunflower system operator following any overhaul, unit trip, or islanding.

When restoring interconnected generation Facilities, it is Sunflower's practice to energize in the direction from the Sunflower system toward the de-energized generation Facility, except as designated for black start units. Synchronization of a generator to the energized Sunflower system is accomplished within the generation Facility using the appropriate synch breaker. The design at generation sites must consider the speed at which the Sunflower transmission system is restored through auto-restoration following system faults. The generation Facility owner must protect their generators from out of synch closures under such conditions.

3.4 Islanding

It is the responsibility of the electric power system owner to ensure safety and quality of service within its boundaries. Sunflower ensures this through equipment design, operating procedures, protective relay settings, and a variety of automatic and manual processes. Under an island condition, a portion of load becomes separated from the rest of the Sunflower or SPP transmission systems and is served by a local area generation site. It is the responsibility of Sunflower to ensure that even under an island condition; power quality is maintained to its customers. Therefore, Sunflower does not allow generation to island with Sunflower load where Sunflower does not have control over the generator voltage, frequency, protective relays, and operating procedures. Thus, when an island situation occurs, the generation must be separated from the Sunflower load except under temporary and controlled conditions. This ensures the quality of service and orderly restoration to Sunflower customers. Without such

provisions the resynchronization between two separated power systems becomes uncontrolled.

The tap connection of generators to the Sunflower transmission system at locations where the capacitive susceptance (line charging) of the circuit is greater than the MVA rating of the generator is to be avoided. These types of connections may be subject to overvoltage and require special study.

3.5 Generator Protection Requirements

Generators connecting to the Sunflower transmission system are responsible for protecting those Facilities from electrical faults and other hazardous conditions. Generator interconnections must be equipped with circuit breakers or other appropriate interrupting devices to protect those Facilities. The generator owner must provide and own the primary circuit breaker or other interrupting device that protects the Facility and disconnects it from the Sunflower transmission system. The primary purpose of this interrupting device is to protect the generating plant Facility.

Generating Facilities must be designed to remain on-line following the normal clearing of system faults within the close proximity to the plant switchyard. Voltage may approach zero at the switchyard bus for six cycles for some types of faults (low voltage ride through). Control systems, contactors, motors, and auxiliary loads that might otherwise cause a generator trip if lost must not drop out under these conditions. Critical contactors must be provided with ride-through capability where required. Additionally, generator protection systems such as the Load Drop Anticipator, Early Valve Actuator, or Power Load Unbalance should not be designed to trip a generator for normal clearing external faults or stable swings.

Generating Facilities must implement under-frequency, over-frequency, under-voltage, and overvoltage relay set points as required by the SPP to ensure "ride through" capability of the Transmission System. Generating Facility response to frequency and voltage deviations of pre-determined magnitude shall be studied and coordinated with Sunflower in accordance with Good Utility Practice. The term "ride through" as used herein shall mean the ability of a generating Facility to stay connected to and synchronized with the Transmission System during system disturbances within a range of under-frequency, over-frequency, under-voltage, and overvoltage conditions, in accordance with Good Utility Practice.

3.6 Support of the Grid

3.6.1. All synchronous and non-synchronous generators connected to the Sunflower transmission system are to be equipped with automatic voltage regulators (AVR). Generators must operate with their excitation system in the automatic voltage control mode unless otherwise approved by the Sunflower System Operator. Generating equipment owners shall

maintain a log which records the date, time, duration, and reason for not being in the automatic voltage control mode when operating in parallel with the Sunflower system. Generating equipment owners shall make this log available to Sunflower on request.

3.6.2. All synchronous and non-synchronous generators connected to the Sunflower transmission system must maintain a network voltage or reactive power output as specified by the Sunflower system operator within the reactive power required in LGIA and SGIA. Generating equipment owners shall maintain a log which records the date, time, duration, and reason for not meeting the network voltage schedule or desired reactive power output when operating in parallel with the Sunflower system. Generating equipment owners shall make this log available to Sunflower on request.

3.6.3. The generator step-up and auxiliary transformer tap settings shall be coordinated with Sunflower transmission systems voltage requirements. Generating equipment owners shall provide Sunflower with generator step-up and auxiliary transformer tap settings and available ranges.

3.6.4. The AVRs control and limiting functions must coordinate with the generator's short time capabilities and protective relay settings. The generating equipment owner shall provide Sunflower with the AVRs control and limiter settings as well as the protection settings which coordinate with AVR control and limiting functions.

3.6.5. Technical evaluations of oscillatory stability will be conducted for the interconnection of new generating plants. New generators that cause a decrease in the damping of an existing mode of oscillation or cause a poorly damped mode of oscillation will be required to operate with the power system stabilizer in service. The determination of the power system stabilizer’s control settings will be coordinated with Sunflower. Typically this coordination would be to provide Sunflower with preliminary power system stabilizer settings prior to the stabilizer’s field commissioning tests with the final settings provided after the field commissioning tests.

3.6.6. Where stabilizing equipment is installed on generating equipment for the purpose of maintaining generator or transmission system stability, the generating equipment owner is responsible for maintaining the stabilizing equipment in good working order and promptly reporting to the Sunflower System Operator any problems interfering with its proper operation.

3.7 Generator Testing

3.7.1. Prior to commercial operation, the generating equipment owner shall provide Sunflower with open circuit, step-in voltage test results. Recording of generator terminal voltage and field voltages shall be clearly labeled so that initial and final values can be identified in physical units.

3.7.2. Generating equipment owners shall test the gross and net dependable capability of their units in accordance with the SPP Criteria 12. These test results shall be provided to SPP and Sunflower.

3.7.3. Generating equipment owners shall test the gross and net reactive capability of their units at least every five years or as required by SPP Criteria. These capability test results shall be provided to SPP and Sunflower.

Generating equipment owners shall test the AVR control and limit functions of their units at least every five years. An initial test result shall be provided to Sunflower prior to commercial operation and every five years thereafter. The initial test results shall include documentation of the settings AVR control and limit functions. Typical AVR limit functions are; maximum and minimum excitation limiters and volts per hertz limiters. Documentation of the generator protection that coordinates with these limit functions shall also be provided. Typical generator protection of this type includes over excitation protection, loss of field protection.

3.8 Power Factor

Power factor requirement will be consistent with the provisions of the SPP LGIA for generation 2 MW and above and SGIA for generation below 2 MW.

3.9 Interrupting Ratings

AC high voltage circuit breakers are specified by operating voltage, continuous current, interrupting current, and operating time in accordance with ANSI/IEEE Standards C37 series, “Symmetrical Current Basis.” These ratings are displayed on the individual Circuit Breaker nameplate. Breakers are scheduled for replacement when they exceed 100% of ANSI C37 Guidelines.

There may be cases where adding generation will increase the available fault current above the present interrupting ratings of the existing breakers at a substation or stations. When this occurs, breaker upgrades are to be considered as part of the interconnection project. Similarly, the connection of new generators to the transmission system may increase fault current to a level which exceeds the short time rating of overhead ground wires. If equipment ratings will be exceeded, the appropriate modifications must be performed prior to the new generation coming on-line.

3.10 Source System Grounding

When various switching devices are opened on an energized circuit, its ground reference may be lost if all sources are not effectively grounded. This situation may cause overvoltages that can affect personnel safety and damage equipment. This is especially true when one phase becomes short circuited to ground. Therefore, the interconnected transmission power system is to be effectively grounded from all sources. This is defined as X0/X1< 3 and R0/X1< 1. Interconnected generators should provide for effective system grounding of the high side transmission equipment by means of a grounded high voltage transformer.

An alternative design only for sites with less than 10 MW is available in some limited cases but requires a special Electromagnetic Transients Program (EMTP) system study to determine applicability. Under this non-preferred option the system is not grounded at the source. However, the transmission system equipment insulation level in the area must be rated to withstand the amplitude and duration of all over-voltages caused by neutral displacement. Also the source must be removed rapidly when any overvoltage condition occurs. This includes isolation of the ungrounded source for system faults simultaneously with other relaying systems within the protected zone. Since the source provides no ground fault current, relay protection devices must operate for zero current. Some switching operations may cause the loss of all remote ground sources by islanding a part of the system even under non-fault conditions. The protection scheme must also be able to quickly remove the generation under this situation before any adverse effects occur. Some form of communication with remote transmission stations is usually required in order to accomplish this.

3.11 Generator Telemetry

All generating plants connected to the Sunflower transmission system must provide real time telemetered data for individual generators to the Sunflower system control center. The required data includes generator MW, MVAr, terminal voltage, and switchyard high side voltages. MW and MVAr data should be Net output values as measured at the low side of the generator step up transformer less any auxiliary load directly fed from the generator. These generator output quantities shall be telemetered at a two second scan rate. In addition, the status of individual generator circuit breakers and the status of the generators' automatic voltage regulator must be made available to the Sunflower control center.

4. TRANSMISSION INTERCONNECTIONS

This section addresses the technical requirements for interconnecting new or modified transmission lines to the Sunflower transmission system. The Sunflower planning

process is designed to ensure the reliability of the system under normal and first contingency conditions in accordance with the NERC Standards and the SPP Criteria.

4.1 Applicability

This section applies to all new or modified transmission interconnections on the Sunflower transmission system. Detailed, project specific requirements will be developed as part of a System Impact Study, a Facilities Study, or are referenced in other documents such as the NERC Reliability Standards or the National Electrical Safety Code.

4.2 Configuration

The interconnection point between utilities is typically through a transmission line or lines. The change of ownership is usually at a transmission line structure. The neighboring utility must have an effectively grounded transmission system. Three terminal lines are to be avoided for interconnections due to problems discussed in Section 2.

4.3 Operations and Safety

Interconnections between Sunflower's transmission system and other transmission systems are normally operated in parallel unless otherwise agreed. However, if any operating condition or circumstance creates an undue burden on the Sunflower transmission system, Sunflower shall have the right to open the interconnection(s) to relieve its system of the burden imposed upon it. Prior notice will be given to the extent practical. Each party shall maintain its system and Facilities so as to avoid or minimize the likelihood of disturbances that might impair or interrupt service to the customers of the other party.

The Sunflower System Operator shall be notified prior to any maintenance work on a transmission interconnection. Sunflower switching and safety procedures shall be strictly adhered to when maintenance is being performed on an interconnection

4.4 Metering

Metering equipment may be located at either end of the transmission line but should be installed at the station closest to the change of ownership.

If the neighboring utility is within and under the Sunflower control area, Sunflower is to own, operate, and maintain the metering installation equipment, including the instrument transformers, secondary conductors, cables, meters, and transducers. If the interconnection Facilities are owned by the neighboring utility, and that utility does not own the instrument transformers or meters, a structure and a location for mounting metering transformers, SCADA, communications equipment, and recording devices is to be provided by the Facility owner. The neighboring utility may not connect additional devices such as relays or meters

directly to potential or current transformer secondary used for revenue metering. Dedicated 120VAC station service power and 125VDC shall be provided for the metering, communications, and SCADA equipment. Access to the equipment shall be provided to allow routine maintenance activities and annual meter testing.

4.5 Protection

The relay protection criteria under Section 2 are to be adhered to for utility-to-utility interconnections. When tap load stations are connected to the transmission line, special consideration must be applied.

When ground distance relaying is used on short lines, the quadrilateral characteristic is to be used to provide adequate coverage for fault resistance.

Directional ground overcurrent should be avoided on lines that have considerable mutual coupling with other circuits. Directional ground overcurrent relays can also cause false operation on circuits with distribution tap load stations due to switch pole asynchronism.

4.6 Separations

Connections to the Sunflower transmission system which introduce the possibility of Sunflower load being isolated with non-Sunflower generation must be evaluated to assure safety and quality of service. When there is a potential for Sunflower load to become islanded with non-Sunflower generation, a special protective isolation scheme may be required.

4.7 Transmission Reclosing

Automatic reclosing on interconnected transmission lines between utilities is handled on a case-by-case basis. Automatic reclosing at 345 kV is also handled on a case-by-case basis. Transmission interconnections between utilities may be restored from either direction depending upon a reclosing practice agreed to by the utilities involved.

4.8 Reactive Power Control

Entities interconnecting their transmission system with Sunflower's transmission system shall endeavor to supply the reactive power required on their own system, except as otherwise mutually agreed. Sunflower shall not be obligated to supply or absorb reactive power for the other party when it interferes with operation of the Sunflower transmission system, limits the use of Sunflower interconnections, or requires the use of generating equipment that would not otherwise be required.

4.9 Unbalanced Phases

Unbalance currents and voltage are to be controlled by each party on their respective side of the interconnection. However, it should be realized that switching devices, such as breakers and switches, are three phase devices and can fail with only one or two poles closed. It is the responsibility of the Facility owner to protect their own equipment such as generators or transformers from damaging negative sequence currents or voltage.

5. DELIVERY POINT (END-USER) INTERCONNECTIONS

This section addresses the technical requirements for new or modified delivery points**.** A "delivery point" is a point of connection between Sunflower's transmission system and another entity's system or Facilities which ultimately delivers the power to individual customers' loads. Two characteristics may be generally used to distinguish delivery points from interconnections: i) the protective schemes of the integrated transmission system are designed to either entirely or partially suspend service to a delivery point by disconnecting a transmission Facility that serves such delivery point from the transmission system; and ii) power normally flows only in one direction across the delivery point (i.e., from the transmission system to the delivery point), and thus the protective schemes at the delivery point may be designed taking into account this characteristic.

The Sunflower planning process is designed to ensure that Sunflower's transmission system will have sufficient capability for Sunflower to meet the expected loads at distribution substations/delivery points, and to fulfill Sunflower contractual obligations with other entities to receive and deliver power.

5.1 Delivery Point (End-User) Power Factor

An essential element in the reliability of the Sunflower transmission system is the installation of power factor correction capacitor banks that compensate for the reactive power demands of customer loads. Sunflower and Sunflower's Members target their designs and operations for load connections so that the load power factor measured at the point where the load connection exits the Sunflower integrated transmission system is between 95% lagging and 95% leading. Delivery point connections to the Sunflower transmission system shall meet the power factor requirements listed above.

In order to assess power factor, the delivery point real (kW) and reactive demands (kVar) shall be recorded at the time of Sunflower's transmission system summer peak load (June, July, August, or September) and at the minimum load (April or May).

5.2 Delivery Point (End-User) Metering

Sunflower is to own, operate, and maintain the metering installation equipment, including the instrument transformers, secondary conductors, cables, meters, and transducers. If the interconnection Facilities are owned by the end-user, and that party does not own the instrument transformers or meters, then a structure and a location for mounting metering transformers, SCADA, communications equipment, and recording devices are to be provided by the Facility owner. End-user devices are not to be connected directly to potential or current transformer secondary used for revenue metering. Dedicated 120VAC station service power and 125VDC shall be provided for the metering, communications, and SCADA equipment. Access to the equipment shall be provided to allow routine maintenance activities and annual meter testing.

5.3 Delivery Point (End-User) Auto-Restoration

End-user Facilities are energized in the direction from Sunflower to the load. Owners of interconnected load Facilities are to be aware of Sunflower automatic reclosing practices as stated in Section 2. Sunflower's standard reclosing after fault clearing should be taken into account by end-users with sensitive control systems or large motors. Ride-through capability and heavy motor inrush currents should be assessed in the design stages of the Facility.

5.4 Delivery Point (End-User) Load Shedding Programs

Entities responsible for load serving delivery points shall implement and maintain an underfrequency load shedding program designed and coordinated with Sunflower and the SPP in accordance with NERC Reliability Standard requirements. Sunflower has installed automatic emergency load shedding schemes at several locations in the Sunflower transmission system to minimize the potential for instability following severe contingencies. Sunflower has the right to require entities responsible for load serving delivery points to implement an emergency manual load shedding program to the extent that such a program is required and utilized by Sunflower to assure transmission integrity under adverse conditions. The amount of load to be interrupted by emergency manual load shedding programs will be distributed comparably among Sunflower and other entities' customers in the Sunflower Balancing Authority Area.

5.5 Delivery Point (End-User) Generation

Delivery point connections usually do not have generating Facilities that operate in parallel with the Sunflower transmission system or Sunflower Member systems. Customers wishing to install generating Facilities to be operated in parallel with Sunflower and/or a Sunflower Member must notify Sunflower and/or the Member in writing prior to the commencement of any work. The technical requirement for the connection of generation outlined in Section 3 of this document must be followed along with the applicable requirements

(Interconnection Agreement, Kansas parallel generation statue, Sunflower/Member parallel generation interconnection requirements). No generation shall be operated in parallel with the Sunflower transmission system without prior written approval of Sunflower.

5.6 Delivery Point (End-User) Parallel Operation

The distribution and transmission Facilities behind the designated delivery point with Sunflower's transmission system shall be operated as a radial system only. Operation in a mode which would tie two or more delivery points together in a manner which would cause the system behind the delivery points to be operated as a parallel network to the Sunflower transmission system is prohibited without the express written permission of Sunflower. The installation of such protective equipment may be required by Sunflower to ensure that parallel operation is automatically interrupted within the time frame allowed by Sunflower's standard.

5.7 Delivery Point (End-User) Protection

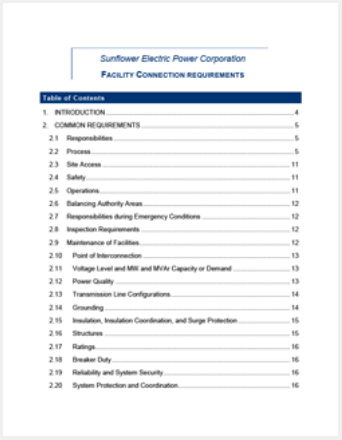
When tap load Delivery Point (End-User) stations are connected to the transmission line, special consideration must be applied. Permissive overreaching transfer trip (POTT) type schemes are not to be used without communications from all distribution tap substations. This is required to ensure high-speed fault clearing when the line is open at a tap station between the transmission terminals

6. TECHNICAL REVIEW APPROVAL

Activity	Name	Signature
Author	Derek Vonada	Derek Vonada Derek Vonada (Jan 6, 2015)
Approved by Compliance Department	Luis Zaragoza	Luis A Zaragoza Luis A Zaragoza (Jan 6, 2015)
Executive Owner	Clarence Suppes	Clarence D. Suppes Clarence D. Suppes (Jan 6, 2015)

7. REVISION HISTORY

REVISION OR CHANGE NUMBER	EFFECTIVE DATE	DESCRIPTION OF REVISION/CHANGE	INDIVIDUAL(S) MAKING EDITS
	1/4/2009	Date of Issue	NLW
	1/2009	Effective Date	NLW
1	1/4/2009	Update and Annual Review	NLW
2	11/10/2010	Update and Annual Review	CDS
3	12/14/2011	Update and Annual Review : Correct formatting errors Correct miscellaneous typos Clarify structure requirements Clarify synch-check requirements Update contingency conditions in section 2.18 Update metering requirements	DLV/CDS/AT/DJK
4	1/23/2012	Update and Annual Review	DLV
5	1/23/2013	Update Sunflower's processes and Annual Review	DLV/CDS/AT/LAS/MAW/DJK/MAH
6	3/7/2014	Incorporated into new format. Updated headings and subject matter. Added Technical Review Approval Section. Removed Appendices and Completed Annual Review.	DLV/CDS/DJR/AT/NLW
7	1/6/2015	Technical Review Approval table. Removed references to Mid-Kansas. Completed review.	DLV



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