	ORGANIZATIONAL POLICY & PROCEDURE:	**Operation & Interconnection of Open and Closed Transition Standby Generators**		
	Corporate Policy Ref:			
	Version Effective Date:	April 22, 2020	**Version:**	5.0

PURPOSE:

It is the policy of JEA to support programs which enhance the quality of life, protect the environment, and provide significant value to the City of Jacksonville and the communities we serve. This will establish clearly defined technical and safety standards necessary for a customer's Standby Generator system to interconnect with JEA. All interconnections are to comply with the applicable statutes, ordinances, codes, rules, and regulations of all governmental units, bodies, and agencies.

SCOPE:

This procedure includes the minimum engineering, operating, and protective requirements for safe and reliable operation of both JEA's system and the customer's system. These standards provide a uniform policy to be used, but JEA reserves the right to review each interconnection separately for specific needs according to the particular set of conditions and the circumstances in each case.

RESPONSIBILITY:

The Vice President of Energy Planning, through his/her designee, the Director of Energy Planning, is responsible for the creation and maintenance of this procedure. It is the responsibility of the customer requesting the interconnection to provide for the design and installation of an adequate protection and control system to meet the following items:

- The requirements of this procedure
- JEA Electric Service Rules and Regulations
- All applicable electrical and safety standards and codes
- The criteria of all licensing authorities

DEFINITIONS AND ACRONYMS:

- **Standby Generator** – The electric system intended to supply electrical power to designated equipment if the normal supply of electricity is interrupted.
- **Open Transition TRANSFER SWITCH** – Break-before-make, ensures that the customer load is fed from only one source at a time.
- **Closed Transition TRANSFER SWITCH** – Make-before-break, resulting in temporary parallel operation of the two power sources.
- **Visible Break Disconnect Switch** – A lockable switch where the electrical contacts of the blades are readily visible (air gap) in the “off” position. Turning the handle of a disconnect switch to the “off” position does not ensure safety. An internal linkage might be broken, leaving one or more contacts engaged. When working on JEA equipment, JEA crews must be able to readily locate the

switch, open the door of this disconnect (without defeating switch safeties), verify the visible break, then be able to close the door and lock the handle.

- **POWER QUALITY** – The measurement and characteristics of voltage and current with respect to instantaneous and steady state values or fluctuations thereof.

- **RELIABILITY** – The availability of electrical service.

PROCEDURE:

I. Requirements

A. These standards include such items as follow:

1. Personnel safety
2. Protection and Operation of standby generators
3. Power Quality
4. Cost Responsibility associated with customer standby generators
5. Implementation
6. Terms of Service

B. If an installation fails to meet any requirements herein specified, JEA may disconnect or refuse to connect the installation. JEA reserves the right to alter the requirements herein specified by special agreement if conditions change and a subsequent technical study indicates that the safe and acceptable operation of its distribution system and service to other customers may be compromised.

C. A customer shall not operate electrical generating equipment in parallel with JEA's electric system without the prior written consent of JEA and without full compliance with this procedure.

II. Personnel Safety

A. **General** - The foremost concern is safety. It must be recognized that JEA's electrical system and the customer's electrical system will interact through interconnection of the customer's open or closed transition standby generator.

1. Adequate protection and safe operational procedures must be achieved by the joint interconnection system. The customer shall be required to furnish, install, repair, operate, and maintain in good order, and be solely responsible for the safe operation of the generation and associated interconnection systems to be operated in parallel with JEA's electrical system.

2. The customer shall permit JEA's employees to enter upon its property at any reasonable time for the purpose of inspecting and/or testing the customer's equipment, facilities, or apparatus. Such inspections shall not relieve the customer from the obligation to maintain the equipment in safe and satisfactory operating condition.

3. JEA's approval of the isolating device used by the customer will be required in order to ensure that such devices will comply with JEA's switching and tagging procedure for safe working conditions.

B. JEA Isolation point – A device shall be required to provide a separation point between the customer's open or closed transition standby generator and JEA's electrical system, thus providing a JEA Isolation Point. This device will be furnished and permanently installed by the customer, in a visible location accessible to JEA personnel at all times. The device will be installed as close to the meter as practical and be capable of being locked in the open position with a JEA padlock. The device shall meet all applicable local and national electrical codes for the installed standby generator system.

The type of isolation device used shall be a manual disconnect switch of the visible break type. Exceptions:

- Self-Contained meters (residential 200A and below, non-CT metered) may be used as the JEA required isolation device (Note - Only JEA authorized personnel are allowed to install or remove JEA meters).
- Meter Socket Type Automatic Transfer Switching Device
  for Portable or Standby Generators that have been approved by JEA. This device is limited to single phase 120/240V 3 wire services with the service size up to and including 200 A. It must be a commercially available UL listed break-before-make device. The installation, repair and removal of the device must be permitted and performed by a licensed contractor. The customer must supply a JEA approved sealing ring. The device becomes part of the meter enclosure and therefore the customer owns it and is responsible for the maintenance of the device. JEA will not be responsible and held harmless of any damage that is caused by the malfunctioning of this device in an emergency when this device must be operated or removed by JEA. If JEA has to remove this device, the customer must provide approval for the JEA crew to reinstall the device and acknowledge JEA is held harmless for any damage to the device in an emergency situation.
- Circuit breakers with a door/cover capable of being locked with a JEA padlock may be used as the JEA required isolation device (hold cards by themselves are not acceptable).
- Manual transfer switches capable of being locked in the open position with a JEA padlock may be used as the JEA required isolation device
- Automatic transfer switches, including Service Entrance Rated transfer switches, if used, must have one of the above approved isolation devices between the JEA transformer and the customer's generation system(s). ATS systems that are electronically controlled must provide detailed one lines and data sheets illustrating the system can be safely locked out by JEA personnel and the system is isolated from the JEA system.

If for any reason the customer's generator installation is not in compliance with this section, JEA will reschedule the work for a time when the customer will turn the generator off, disable the start circuit and allow JEA to put a lock on the generator control box to prevent starting the generator.

Signage – The device used as the JEA Isolation point shall be permanently labeled clearly stating "JEA Responder - JEA Generator Isolation point." Sign size shall be a 6 in. by 4 in. with a minimum 3/8 in. lettering or sized appropriately for the mounting location and use the largest size lettering as possible. Sign shall be red (plastic, metal, or weather proof vinyl) with white

lettering. If the isolation device is mounted out of sight of the meter, additional signage must be posted at the meter clearly stating the location of the isolation device. This required sign will meet the aforementioned size, color, material requirements and the verbiage will be provided by JEA to the contractor/customer when the standby generator application is approved.

Exception: Primary Customers and customers with service voltages above 600 Volts – The customer shall coordinate with JEA to accomplish the procurement and installation of the disconnect switch. The customer is required to bear all JEA related labor and equipment costs associated with the disconnect and associated equipment and devices beyond that which would be required to provide normal service to the customer if no interconnection of the customer's generator were involved. The costs shall be paid in advance by the customer to JEA for all material and labor that is required. JEA shall supply the customer with a written cost estimate of all its required materials and labor prior to any work being done. JEA shall also provide project timing and feasibility information to the customer in a reasonably agreed upon time frame between JEA and the customer.

Emergencies – In the event of a system emergency JEA reserves the right to open the switch thereby isolating the customer's electrical system without prior notice to the customer. Any of the following conditions shall be cause for ***disconnection:***

1. JEA's system emergencies and/or maintenance requirements
2. Hazardous conditions existing on the customer's generating or protective equipment, as determined by JEA
3. Adverse effects of customer's generation to JEA's other electric customers and/or system, as determined by JEA
4. Failure of customer to comply with any existing or future regulations, rules, order, or decisions of any governmental or regulatory authority having jurisdiction over the customer's electric generating equipment or the operation of such equipment.

C. Responsibility and Liability - JEA shall be responsible for JEA owned facilities. The customer shall likewise be responsible for the customer's entire system, ensuring adequate safeguards for; other customers, JEA personnel, JEA equipment and for the protection of its own generating system.

The customer shall indemnify and hold JEA harmless from any and all claims, demands, costs, or expenses for loss, damage, or injury to persons or property (including the customer's standby generator system) caused by, arising out of, or resulting from:

1. Any act or omission by the customer, or customer's contractors, agents, servants, and employees in connection with the installation or operation of the customer's standby generator or the operation thereof in connection with JEA's system
2. Any defect in, failure of, or fault related to the customer's standby generator and its associated equipment and devices
3. Customer's negligence or negligence of customer's contractors, agents, servants, and employees
4. Any other event or act that is the result of, or caused by the customer or the customer's facilities

III. Protection and Operation of Closed Transition Standby Generators

A. **General** - The protection and operation of the interconnection between the customer's standby generator and JEA's distribution system depends on the size, type, and location of the facility within JEA's system. It will be the responsibility of the customer to provide all devices necessary to protect the customer's equipment from damage by any abnormal conditions and operations which occur on JEA's system that result in interruptions and restorations of service by JEA's equipment and personnel.

It is the customers' responsibility to protect the standby generator and associated equipment from the following conditions and events:

1. Overvoltage or undervoltage
2. Overfrequency or underfrequency
3. Overload
4. Short circuits (including ground fault)
5. Open circuits
6. Phase unbalance and reversal
7. Reverse power flow conditions
8. Reclose attempt by JEA
9. Any attempt by the Customer to synchronize with JEA's system
10. Any other injurious electrical conditions that may arise on JEA's system

JEA reserves the right to perform such tests as it deems necessary to ensure safe and efficient protection and operation of the customer's facilities.

B. **Coordination and Synchronization** - The customer shall be responsible for coordination and synchronization of the customer's equipment with JEA's electrical system, and assumes all responsibility for damage that may occur from improper coordination or synchronization of the standby generator with JEA's system. The interconnection (i.e. the actual time that JEA source and the customer's generation are in parallel) shall not exceed 100 milliseconds (ms) under any conditions. The customer shall provide a timing relay that will time the duration of the interconnection and trip the generator breaker after 100 milliseconds, thus breaking the interconnection. Any system requesting to parallel longer than 100 ms is not considered Standby and must comply with the JEA procedure ES 20202 902 DER Facilities and IEEE 1547 interconnection requirements.

C. **Electrical Characteristics** – JEA reserves the right to require a separate transformation and/or service for a customer's standby generator, at the customer's expense. The customer shall bond the neutral(s) of the standby generator system to the main service panel neutral, and shall install a separate driven ground to 25 ohms or less and bond this ground to the ground located in the main service panel.

D. **Exceptions** – Standby generator having capacity ratings that can perform as follows will require more complex interconnection facilities as deemed necessary by JEA:

1. Produce power in excess of 1/2 of the customer's minimum electrical load

2. Produce power flows approaching or exceeding the thermal capacity of the connected JEA distribution line or transformers
3. Adversely affect the operation of JEA or other customer's voltage, frequency or overcurrent control and protection devices
4. Adversely affect the reliability or power quality of electric service to other customers

IV. Power Quality

A. General - It is the policy of JEA to allow only those interconnections which can be achieved without reducing the power quality and reliability of service to other customers and to disconnect such interconnections should unforeseen difficulties arise which impair the power quality or reliability.

B. The customer's standby generator must be of sound engineering design and quality workmanship, shall have safe and reliable operating characteristics, shall meet all applicable codes, and shall be approved by all Governmental authorities having jurisdiction. JEA reserves the right to perform such tests as it deems necessary to ensure the quality of the customer's standby generator service.

C. The characteristics of the customer's standby generator are the customer's responsibility and all closed transition standby generator systems must meet the following requirements, but not limited to:

1. Operate at a power factor > .9 lagging when output is > l0% of rating and is not permitted to generate and inject reactive power into the JEA system without JEA approval.

2. Operate in the frequency range of 59.5 - 60.1 Hz.

3. At rated output of the system, the generation system shall not exceed the IEEE 519 standards. Total Rated Current Distortion (TRD) shall not exceed 4% for odd harmonics up to the 11^{th} harmonic.

V. Cost Responsibility

The customer is required to bear all JEA related labor and equipment costs associated with the protective devices, transformers, lines, services, switches, and associated equipment and devices beyond that which would be required to provide normal service to the customer if no interconnection of the customer's standby generator were involved. The costs shall be paid in advance by the customer to JEA for all material and labor that is required. JEA shall supply the customer with a written cost estimate of all its required materials and labor prior to any work being done. JEA shall also provide project timing and feasibility information to the customer in a reasonably agreed upon time frame between JEA and the customer.

VI. Implementation

A. **Application for Standby Generators** - Formal application shall be made using the electronic Standby Generator application at JEA.com by the customer or their representative prior to the installation of any generating related equipment.

For residential services greater than 200A, the following information is required:

1. Electrical system interface drawing to include a one line diagram of the JEA/customer interface serving the facility, including customer generator, main panel, sub panels, JEA meter, utility isolation device, ATS/MTS and all associated generation equipment.

   Additional items may be required from the customer for approval to include, but not limited to:

2. Physical layout drawings, including dimensions showing the locations of JEA transformers and metering equipment along with customer disconnect switch, main panel, sub panels, transfer switch and generator with a description of the access to be provided to JEA during all hours of the year.
3. Disconnect switch, transfer switch and generator equipment ratings, specifications and characteristics.
4. Synchronizing method and operating instructions for paralleling the customer's electrical system with JEA.
5. Protection one lines illustrating all protective devices. Protection settings may be required for approval.

Any subsequent change in the system must also be submitted to JEA for review and written approval prior to actual modification. The above mentioned review, recommendations and approval by JEA do not relieve the customer from the complete responsibility for the adequate engineering design, construction, and operation of the customer's equipment and for any liability for injuries to property or persons associated with any failure to perform in a proper and safe manner for any reason.

B. **Initial Interconnection** - The customer shall give JEA forty-eight hours' notice to provide JEA an opportunity to witness the initial interconnection of any closed transition standby generator with JEA's system. At the first opportunity to JEA, the Customer shall demonstrate the operation of the generation system, the interconnecting equipment and it's protective and control schemes. Open transition standby generators do not require such notice.

VII. Terms of Service

Generation Capability - It shall be the customer's responsibility to inform JEA of any change in their electric generating capability in a timely manner. JEA requires a written notice for any generation system changes that may adversely impact the safety or reliability of the JEA system. JEA requires at a minimum 30 days to review any changes proposed by the customer. Failure to notify JEA of these changes shall result in disconnection of the generation system until the issues are resolved.

REVISION TABLE

REVISED BY:	*REVISED DATE:*
TML	4/22/2020
TML	12/26/2018
TML	6/1/2018
	5/1/2013
	3/19/2010

Approved By: John Coarsey

Original Effective Date: May 29, 2002

KEYWORDS: Standby, Generator, Open Transition, Closed Transition