



ST GEORGES CAY POWER COMPANY (SGCPC)

GLOSSARY & DEFINITIONS

Automatic Transfer Switch (ATS): Refer also to Manual Transfer Switch. A mechanical switch that is actuated automatically to connect one of two different sources of electricity to the electrical loads of the premise.

Bi-Directional Converter (BDC): Refer also to “DC”, “AC”, “Rectifier”, and “Inverter”. A device that can convert direct-current (DC) electricity to alternating-current (AC) electricity or AC to DC. Typically, a BDC is part of an ESS.

Customer-Generator: The person or entity accepting responsibility for the electricity account associated with the Small-Scale Renewable Generation (SSRG) system.

Energy: Refer also to “Power”. The capacity to do work. For general understanding, it is equivalent to the odometer of a car and is measured in kilowatts-hours (kWh) or megawatts-hours (MWh). Energy is the application of power over time.

Energy Storage System (ESS): An ESS is a device or assembly capable of converting electrical energy to some other form of energy suitable for storage, typically using batteries such as lithium-ion technology for that storage. The ESS also includes the power electronics necessary to convert AC to DC current (a rectifier) and DC to AC current (an inverter). Any ESS used in the Service Area shall be UL-9540 listed and compliant with NFPA-855 and installed in compliance with the Canadian Electrical Code (CEC).

Flicker: Flicker (voltage) is an unsteady visual sensation associated with changing lighting luminance caused by sudden and repetitive increases or decreases in voltage over a short period of time. It is normally associated with fluctuating loads or motor starting.

Grid: A network for the transmission of electricity throughout a region or service area, where the electricity is an AC voltage source produced by engine-generator sets (generators). Typically, a service-area grid is produced and maintained by a utility company. Compare to a “PV Microgrid”.

Grounding: An electrical connection to the earth or a body that extends from an earth connection for the purposes of safety and voltage reference.

Harmonics: Refer also to Total Harmonic Distortion. Distortions in the voltage or current waveforms that are caused by the overlapping of the fundamental waveform with other waveforms of frequency multiples of the fundamental waveform. Harmonics generally are undesired phenomena that cause heat to build up in circuits and conductors and noise that can interrupt other electrical devices.

Interconnection Application (ICA): The legal document authorizing the interconnection of a privately owned PV System or PV Microgrid to the SGCPC grid.

Inverter: Refer also to “Rectifier” and “Bi-Directional Converter”. A device that converts direct-current (DC) electricity to alternating-current (AC) electricity. Inverters shall comply with the most current year-versions of IEEE-1547 and UL-1741 based on the year of the system installation. The applicable year-version shall be 2018 unless a system owner can prove through written documentation that the system was installed prior to 2018. This definition shall be known to apply to later year-versions of IEE-1547 and UL-1741 as those standards are updated.

Islanding: An operating condition where an energy-generating system (such as a PV System or PV Microgrid) can produce its own voltage waveform and could energize a utility grid when the utility generating assets are not operating. This is a dangerous scenario that puts utility technicians and equipment at risk, and islanding is universally not allowed when connected to a utility grid. Industry safety standards (IEEE-1547 and UL-1741)

require that PV Inverters stop exporting power when they sense a grid failure (lack of grid voltage waveform).

Kilowatt (kW): A measure of electrical power. Refer also to “Energy” and “Power”.

Kilowatt-hour (kWh): A measure of electrical energy. Refer also to “Energy” and “Power”.

Levelized Cost of Energy (LCOE): A fixed cost for electric energy, represented as \$ per kWh (\$/kWh). It is calculated as the total cost of ownership divided by total life-cycle energy production. The cost of ownership includes the first capital cost of generation and storage assets (such as PV and ESS) plus the annual operating cost for each year of the service life (maintenance, repairs, insurance) with each year's expenses discounted to year zero using the applicable Discount Rate.

Manual Transfer Switch (MTS): Refer also to Automatic Transfer Switch. A mechanical switch that is actuated manually to connect either of two different sources of electricity to the electrical loads of the premise.

Photovoltaic (PV) means the physical process of converting sunlight to electricity.

Photovoltaic (PV) Module: Also called a “solar panel”, this is an integrated assembly of PV wafers, or “cells” connected electrically to deliver a specified range of DC voltage and DC amperage at a rated power. The cells are sandwiched between one or two sheet(s) of tempered glass in an engineered frame. Multiple PV Modules are connected in a series to each other like batteries in a flashlight, a Source Circuit, and then connected to an Inverter.

Power (refer also to “Energy”): The rate of doing work. For general understanding, it is equivalent to the speedometer of a car and is measured in kilowatts (kW) or megawatts (MW). There is no factor of time in the measurement of power.

PV Microgrid (compare to “PV System”): The combination of a PV System with an ESS to supply electricity without being connected to a utility grid. The PV Microgrid makes its own voltage source; compared to a PV System that cannot make its own voltage source.

PV System (compare to “PV Microgrid”): An electricity generating system that produces AC electricity, consisting of PV modules (or “solar panels”), PV inverters, and the associated electrical components for safety, interconnection, and monitoring. A PV System cannot make electricity without being connected to a voltage source like the grid or a generator. The PV System also typically includes an engineered racking or mounting system.

Point of Common Coupling (POCC): The point where the output of a PV System is physically connected to the electrical conductors of the utility's distribution system.

Rectifier (compare to “Inverter” and “Bi-Directional Converter”): A device that converts alternating-current (AC) electricity to direct-current (DC) electricity.

Small-Scale Renewable Generation system (SSRG System): PV systems with the ability to generate energy, and that meet the sizing requirements posted in the SGCPC Interconnection Requirements. Refer also to “RESG”.

Renewable Energy Self-Generation system (RESG System): A PV System and ESS, or PV Microgrid, designed and configured to operate in either Transfer-Switch or Off-Grid mode pursuant to the SGCPC Interconnection Requirements. Refer also to “SSRG”.

Total Harmonic Distortion (THD): Refer also to “Harmonics”. This is a summation of all harmonics representing the amount of distortion of a voltage or current electrical waveform.

Voltage protection (over/under): Use of relays or other devices to protect lines or equipment by causing circuits to open based on the degree by which the measured voltage varies from a set value.

Voltage (current) Waveform: The variation of voltage (current) over one cycle indicated by the pattern which results when the instantaneous value of voltage (current) is plotted with respect to time over a cycle. Ideally, AC waveforms are represented by sinusoids and DC waveforms are constant over time.