

# Proposed Solar Generator Data Requirements



## **Introduction**

Meteorological and operational data from solar facilities plays an important role in determining the forecast performance that can be achieved for a specific facility.

The IESO proposes that solar facilities would be responsible for collecting and submitting site specific weather and plant data to the IESO for the purpose of centralized solar forecasting and facility visibility.

This information would be maintained within a confidential database at the IESO. Solar forecast service provider(s) would be provided access to this information in order for them to provide the IESO with solar generation forecasts.

## **Purpose**

The document outlines the IESO's proposed static and dynamic data requirements for solar generators and would form the basis for future market rules and manuals.

## **Generator Applicability**

The requirements outlined in this document are proposed to apply to all existing and any future solar generators:

- Directly connected to the IESO controlled grid; or,
- Participating in the IESO administered markets; or,
- Embedded within a distribution network with an installed capacity greater than or equal to 5 MW<sup>1</sup>.

---

<sup>1</sup> AC rated value

## 1. Static Data

The following static plant data describing the physical layout of the facility and details of the solar arrays will be required at the time of a connection assessment/registration application.

#	Static Plant Information	Description
1	Solar facility location (latitude and longitude)	Physical location (GPS coordinates) of each solar array.
2	Meteorological data collection device location and elevation (latitude and longitude)	Physical location (GPS coordinates) of each met data collection device, its elevation and height of measurement.
3	Elevation and orientation angles of arrays	Height from ground level and angle of each solar array
4	Manufacturer's power curve	A power curve maps expected output for an array at varying solar irradiance levels.
5	Generation capacity of the generating facility and each generating unit	The name plate capacity of the entire facility with a breakdown for each array within the system.

## 2. Dynamic Data

The following table proposes dynamic plant data requirements that would be required at the time of a connection assessment/registration application.

#	Measurement Type	Definition	Unit of Measure	Precision
1	Plane-of-Array Irradiance (POA)	Measurements perpendicular to the solar receiver	Watts/ Square Meter	+/- 25W/m <sup>2</sup>
2	Global Horizontal Irradiance (GHI)	The solar resource available to a flat-plate collector oriented horizontal to the earth's surface	Watts/ Square Meter	+/- 25W/m <sup>2</sup>
3	Global Diffused (GDIFD)	Solar radiation that has been scattered out of the direct beam is called Diffuse Solar Radiation	Watts/ Square Meter	+/- 25W/m <sup>2</sup>
4	Direct Irradiance (DNI)	The amount of solar radiation received per unit area by a surface that is always held perpendicular (or normal) to the rays that come in a straight line from the direction of the sun at its current position in the sky.	Watts/ Square Meter	+/- 25W/m <sup>2</sup>
5	Ambient temperature at the array average height	Ambient temperature at the array average height	Degrees Celsius (°C)	1 °C
6	Barometric pressure	Barometric Temp	Pascals (Pa)	60 Pa
7	Wind speed and direction at the average array height	Anemometer, wind vane or wind mast readings	Meters/Second (m/s)	1 m/s
8	MW output (per facility)	Megawatt (MW)	Megawatt (MW)	0.1 MW
9	Available Megawatts	What the facility can produce after deducting outages	Megawatt (MW)	0.1 MW
10	Ice Conditions	Flagged when present	Pannel level	Flaged

### **3. Dynamic Data Collection**

The IESO proposes that dynamic data elements numbered 1 through 7 inclusive in the table above would be collected from a meteorological data collection point. All solar arrays would be within 12km of a meteorological data collection point.

The IESO proposes that all meteorological sensors should have an independent secondary source of power to maintain continued operation should its primary source of power fail.

Meteorological equipment would be tested, maintained, and calibrated:

- As per manufacturer specifications; or,
- When anomalous measurements are suspected; or,
- Maintenance has been performed that may have interrupted or otherwise adversely impacted the accuracy of operational data.

Equipment not meeting the accuracy specified by the manufacturer's standards should be repaired or replaced.

### **4. Dynamic Data communication**

All dynamic data shall be communicated to the IESO at a frequency and by a means per IESO approved methodologies.