

# NOVA SCOTIA

## RATE BASE PROCUREMENT

### REQUEST FOR PROPOSALS

#### Erratum 1: Corrections to Section 6.2.1 Resource Assessment

The Procurement Administrator is issuing the following Erratum to the Section 6.2.1 Resource Assessment of the Rate Base Procurement Request for Proposals (RFP). The corrected version of the RFP that contains the corrections outlined in this Erratum has been uploaded to the RFP tab of the RBP website, and the original version has been removed. Below, the Procurement Administrator has included the corrected section, as well as a redline outlining the changes made.

#### Corrected Section:

##### 6.2.1 RESOURCE ASSESSMENT

Proponents must demonstrate a strong quantitative case that the Proposal's expected annual and lifetime Project output will perform as projected. The more rigorous the resource assessment and the more Onsite Wind Data or Onsite Solar Data (as each of those terms are defined below) that has been collected, the more confidence the PA will have that the Renewable Low-Impact Electricity resource assessment is accurate. All Proposals must provide:

- a. a current resource assessment, as specified in Section 6.2.1.1 for Wind Projects and Section 6.2.1.2 for Solar Projects; and
- b. a resume or short biography of the Qualified Meteorologist that has authored the resource assessment.

For the purposes of this RFP, "**Onsite Wind Data**" means data that is collected from a Meteorological Tower that is:

- a. located within the Project Boundary;
- b. within 5 km of the proposed Site in simple terrain;
- c. between 1 to 2 km of the proposed Site in moderate to complex terrain, if evidence of correlation is included in the resource assessment report; or
- d. if using operational turbine SCADA data, located within 2 to 3 km of the proposed Site; and
- e. meets one of the following criteria for height (meters) and devices to characterize the wind speed and wind flow:
  - i. 30 meters or higher and that has been co-located with remote sensing equipment (LIDAR or SODAR), for which the equipment has been calibrated. Evidence of equipment calibration must be included in the Resource Assessment report;
  - ii. 50 meters or higher that has been co-located with remote sensing equipment (LIDAR or SODAR), for which the equipment has not yet been calibrated. Must include a minimum of two wind speed measurement heights, separated by at least 15 meters;

- iii. A minimum height coincident with or higher than the lowest measurement level of a vertically measuring co-located remote sensing equipment (LIDAR or SODAR) used in the acquisition of wind speed and wind direction at multiple levels, for which the equipment has been calibrated. Evidence of equipment calibration must be included in the Resource Assessment report; or
- iv. 50 meters or higher, a minimum of two wind speed measurement levels separated by at least 15 meters, and a minimum of a single wind vane (unless other meteorological towers on the Site have valid wind vane measurements).

For the purposes of this RFP, “**Onsite Solar Data**” means data that is collected from a Solar Meteorological Tower that is:

- a. located within the Project Boundary or within 1 km of the proposed Site in terrain that is similar to the buildable area and not impacted by existing objects (trees, near-by hills, existing structures, etc.);
- b. meets one of the following criteria for devices to characterize the solar irradiance and other meteorological characteristics:
  - i. at minimum a pyranometer instrument (of Class A standard) is measuring global horizontal irradiance between one-two meters height and has been co-located with a redundant (and similar) sensor for redundancy, for which the equipment has been calibrated. Evidence of equipment calibration must be included in the resource assessment report;
  - ii. if bifacial modules are contemplated an albedometer around 1.5 meter height (unobstructed) informs of albedo (ratio of upwards facing and downwards facing irradiance);
  - iii. includes the following additional equipment: thermometers (to measure the ambient temperature), anemometer (around 1.5-meter height), wind vane, humidity sensor, pressure sensor, and rain gauge; and
  - iv. the data must be transmitted through a quality data logger where it is monitored for outages and instrument data recovery rates.

### 6.2.1.1 Wind Projects

To succeed in the *Resource Assessment* scoring category, Proponents that are submitting Proposals for wind Projects must include a wind energy resource assessment report (also known as an energy yield analysis) produced by a third-party or Proponent personnel, which must contain the following information:

- a. metadata consisting of:
  - i. coordinates and metadata regarding Onsite Wind Data and reference measurement locations;
  - ii. confirmation of the availability of raw measurement data from each measurement location and reference data (which must be produced upon the PA’s request);
  - iii. description of type of data (i.e., if long-term reference data such as from climatic weather stations or re-analyses such as MERRA-2, or ERA5 or Meteorological Tower); and
    - 1. if long-term reference data, correlation between reference stations and Onsite Wind Data, and percent data recovery; or
    - 2. if a Wind Meteorological Tower, height, sensor type, height of sensors, length of data record, start and stop (or most recent) dates of collection; and
  - iv. geographic coordinates and technical specification documents for wind turbines, including turbine make and model and hub height for each turbine site (noting if more than one model is used in the same Project), and associated Meteorological Tower for each turbine (if applicable);
- b. data analysis consisting of:
  - i. description of long-term mean annual hub-height wind speed prediction methodology including reference station selection, long-term adjustment of Onsite Wind Data, derivation, method and selection

- of wind shear exponent for extrapolation to hub height, and estimation of displacement height (if applicable);
  - ii. climate statistics including average air temperature and surface pressure, description of the derivation of average hub height air density, minimum and maximum observed air temperature, and turbulence intensity at mast height and/or hub height;
  - iii. wind rose at measurement locations including graphical representation and table of occurrences or frequency in discrete wind speed and wind direction bins;
  - iv. hub-height wind speed frequency distribution (“**WSFD**”) table for each measurement site and turbine position (if the same WSFD is used for multiple turbines report which turbines use which WSFD);
  - v. estimated long-term mean annual hub-height air density and wind speed at each turbine location; and
  - vi. description of wind flow modeling methodology (e.g., linear flow model, CFD, mesoscale model) and software or other method employed to spatially predict the Project wind field;
- c. energy analysis consisting of:
- i. estimated gross energy production and gross capacity factor at each turbine location;
  - ii. gross-to-net losses including turbine availability (contractual and non-contractual), balance of plant, turbine performance (e.g., high-wind hysteresis, high/low temperature shutdowns, site access/force majeure, power curve inaccuracy), environmental (e.g., icing, blade soiling and degradation), electrical line losses (e.g., internal collection system, gen-tie losses), curtailment (e.g., wind sector management, off-taker, avian or bat, or other environmental), and wake losses (internal and external wake and/or blockage or wind farm-atmosphere interaction losses);
  - iii. estimated long-term mean annual net energy production and net capacity factor at each turbine position; and
  - iv. table of monthly and diurnal average (12x24) Project net energy production and net capacity factor; and
- d. uncertainty analysis consisting of:
- i. itemization of individual wind speed and energy uncertainty quantities including uncertainties of measurements, reference data, climate variation, vertical extrapolation, wind flow modeling, wind speed frequency distribution, and gross-to-net losses; and
  - ii. energy output for one-year and ten-years for 90% and 99% probability of exceedance.

## **Redline Between Corrected Section and Original Section:**

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  - x. hub-height wind speed frequency distribution ("**WSFD**") table for each measurement site and turbine position (if the same WSFD is used for multiple turbines report which turbines use which WSFD);
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