

Vermont Regional Test Center

Overview

The Vermont Regional Test Center (RTC) is situated in the town of Williston, Vermont (outside of Burlington), adjacent to IBM's semiconductor facility.

Located on seven acres of flat, open land, the VT RTC adds a unique climate to the RTC portfolio, providing validation studies for photovoltaic (PV) components and systems in a northern location, where harsh winters, abrupt variability in weather, and moderate to high precipitation prevail.

The VT RTC reflects a collaborative effort between Sandia National Laboratories, IBM, and Green Mountain Power:

- Sandia manages the RTC and designs and conducts the validation work being done on site;
- IBM designed and constructed the site and now oversees site operations and maintenance; and
- Green Mountain Power assisted with the grid interconnection.



The IBM RTC site in Williston, Vermont. The wet, humid, and cold climate differentiates this RTC site from all the others.

Site Description

- The VT RTC, which can accommodate 300 kW of installed PV, occupies seven acres, four of which are enclosed by a security fence. The remaining acres are available for future expansion.
- The site is grid-tied, with a 300 kVa pad-mounted transformer, three-phase wiring and installed conduit, and junction boxes to allow for the easy installation of PV systems.
- The VT RTC can accommodate both fixed-array PV systems and tracker systems—and installations ranging from a few kilowatts to several hundred kW.
- Non-UL equipment is permissible per terms of the “Certificate of Public Good” permit issued by the Vermont Public Service Board.
- A building exists onsite to house inverters and monitoring systems, as needed.
- The building roof, which is pitched at 18.4°, can support rooftop PV installations.
- Site has world-class meteorological and monitoring systems.

Meteorological Instrumentation

Like the other RTCs, the VT RTC weather station collects data at one-second intervals on:

- Global horizontal irradiance
- Direct normal irradiance
- Diffuse horizontal irradiance
- Precipitation and wind
- Temperature
- Relative humidity

Monitoring Capabilities

The VT RTC, like the other RTCs, can monitor

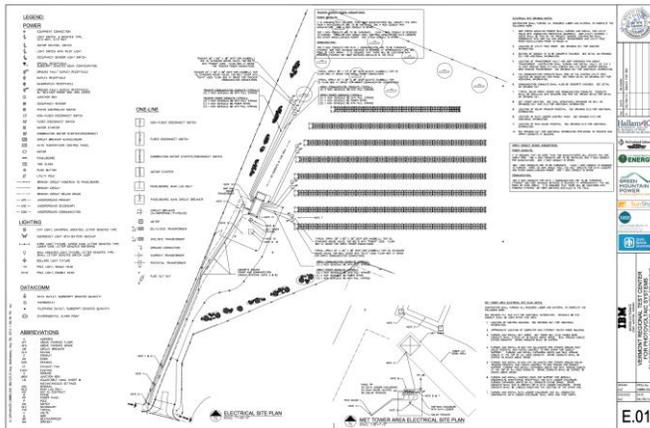
- DC /AC voltage,
- string-level current, and
- module temperatures.

About IBM

IBM is a global company with 40 years of commitment and leadership in environmental problems, including research on solar cells. With a semiconductor facility in Vermont, IBM has played a pivotal role in the success of the VT RTC, providing the land, overseeing the design and construction phases, and providing strategic direction, as needed. IBM brings deep technical expertise to the partnership, both on the facilities/construction side and on the electrical side.



Solar tracking instrumentation at the Vermont RTC.



Schematic of the Vermont RTC depicting electrical conduit and representative installations.



Aerial view of the Vermont RTC site.



The junction boxes and inverter hardware on the side of the building at the Vermont RTC site.