Open Database of Photovoltaic power generation for energy management

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A large amount of photovoltaics (PV) power systems (approximately 52 GW as of September 2019) have been connected to a power grid in Japan. Recently, electric power supply with PV power generation exceed electric power demand in a power grid (e.g., Kyusyu area). For safety control of an energy manage system (EMS) with renewable power generation, optimal use of other power plants (thermal power plants etc) and battery systems (include electric vehicles in future) will be required in a future energy network.

In our research group (referred as a HARPS in a JST CREST project), we developed an open database between meteorology and EMS research fields in the last fiscal year. PV power estimation using geostationary-satellite Himawari8/9 (quasi-real time data) and forecasts from numerical weather prediction model has been provided through the open data web site (HARPS OPEN DATABASE; https://harps.ee.kagu.tus.ac.jp/login.php) for various energy management users. Impacts of meteorological data have been also investigated in an EMS under large amount of PV installations. In this presentation, we will introduce PV open data provided from our EMS project and research topic of meteorological data in the EMS field. In addition, a review of PV power generation scenarios in future (after 2050-) from climate model products will be shown in this talk.

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