Paris Session 2022

Improvement of PV Generation Forecast Utilizing Satellite Imagery Estimation and Smart Meter Data

SC6 and Question 2.10

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Group Discussion Meeting

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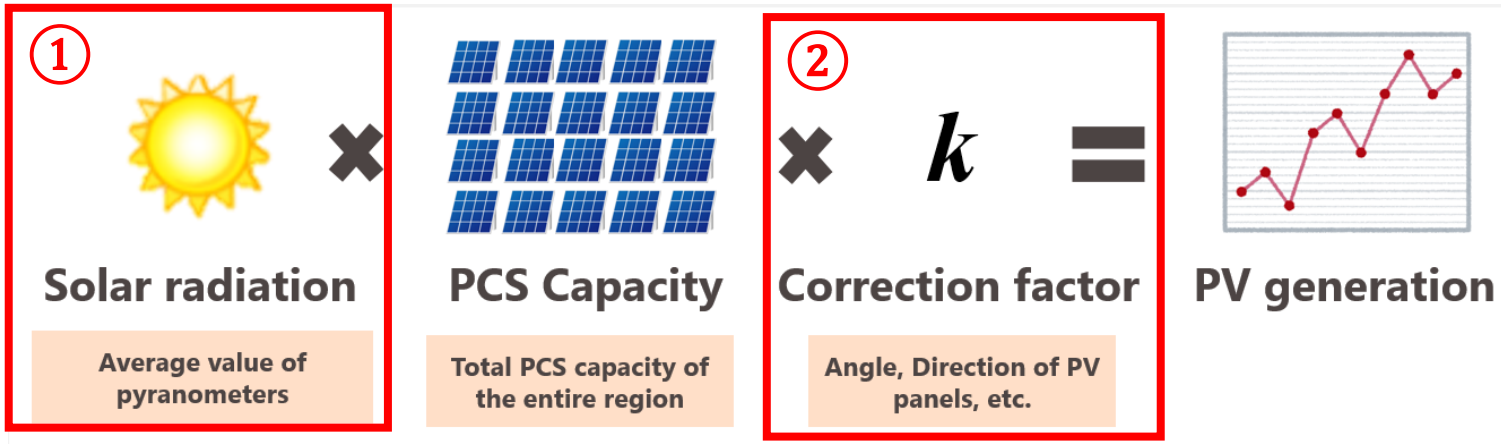
Background

Problems

■Previous method of PV generation forecast



- Increasing forecast errors due to large installations of PV panels
- Negative effects on supply and demand adjustment operations

Solutions

①Solar radiation forecast utilizing satellite imagery estimation
②Forecast correction by utilizing smart meter data

Soluition #1 - Solar radiation forecast utilizing satellite imagery estimation-

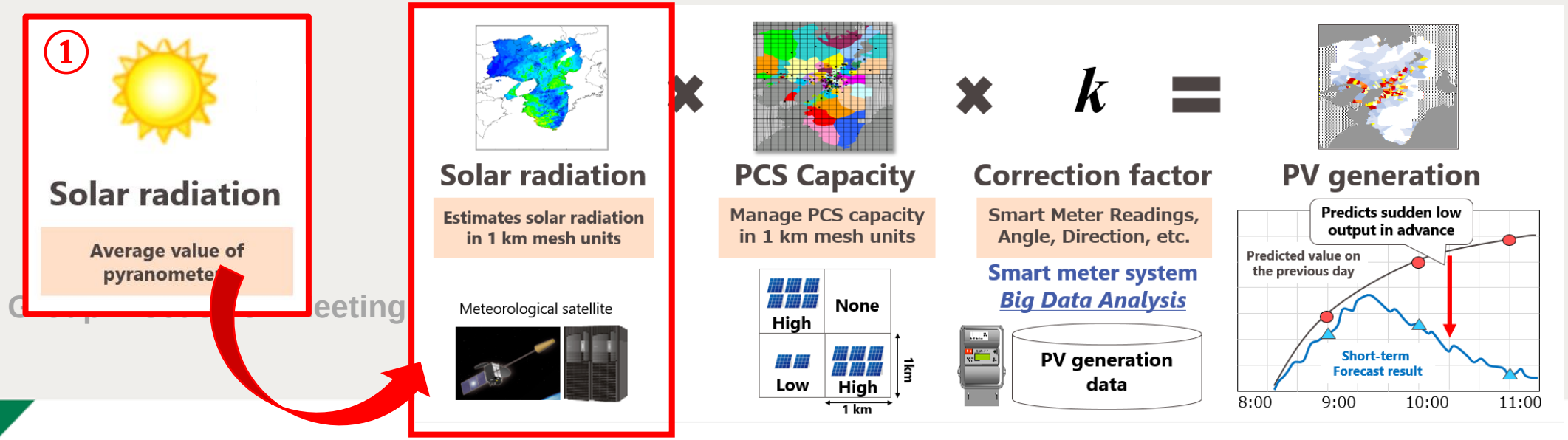
■Previous estimation

- Public forecast data (weather maps or pyranometers)
- Lower resolution (entire the region as a whole)

■Satellite imagery estimation

- Meteorological satellite images
- Higher resolution (1km mesh units)

→ **More accurate forecast of solar radiation of each point in our area was obtained.**



Soluition #2 - Forecast correction by utilizing smart meter data -

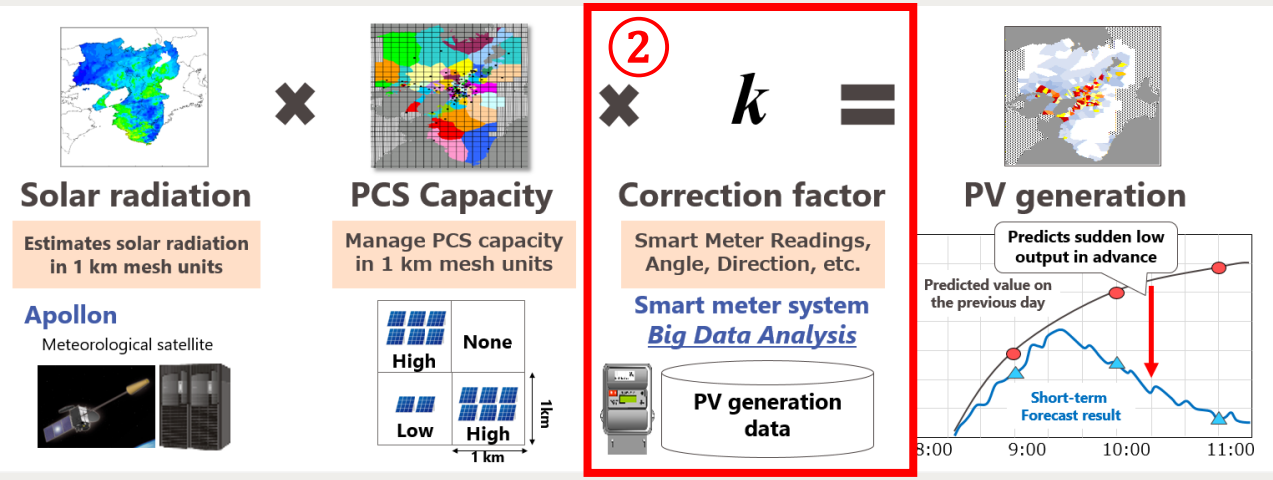
■Previous correction

- Geographical factors (e.g. angle and orientation of PV panels)

■Utilizing smart meter data

- Actual PV generation vs calculated PV generation
- Analyze the differences and feedback to the calculation

→ **Calculation errors were reduced.**



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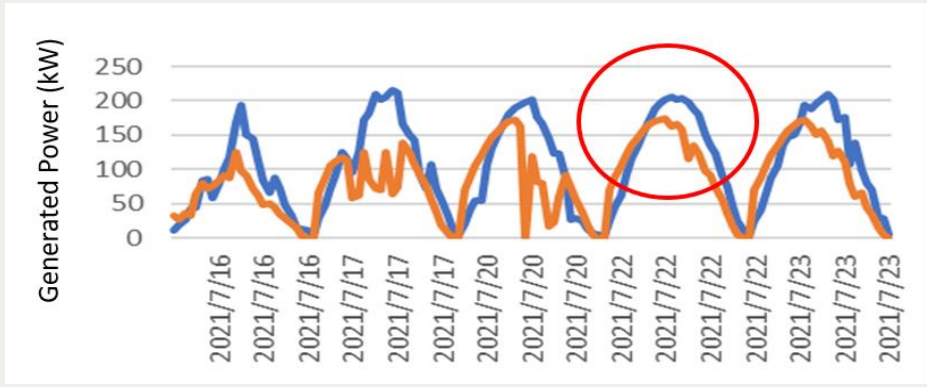
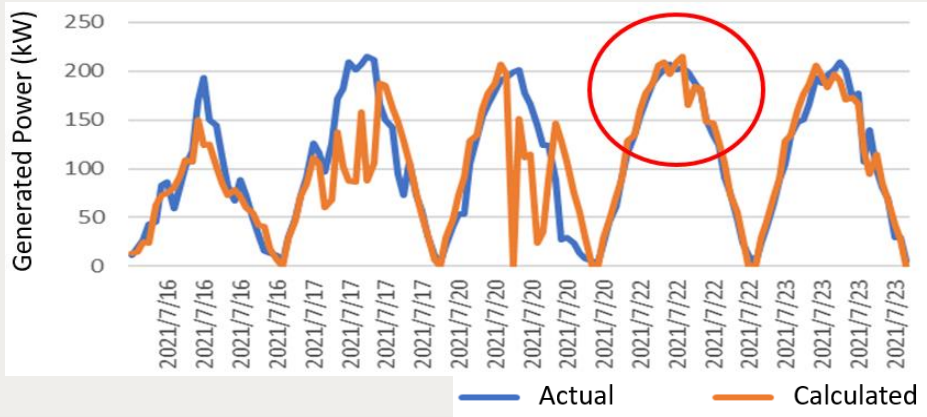
WITHOUT feedback of SM data



WITH feedback of SM data