Other Topics

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Hideo Ishii, Ph.D.

Professor
Advanced Collaborative Research Organization for Smart Society (ACROSS)
Waseda University
&
Energy Resource Aggregation Business Forum
&
Chief Director, ADR Japan
Standardization of Communication Interface for DR (2013- )

Utility
- USER Data Base

ADR Server (Aggregator)

Smart Houses
- HEMS
  - Communication standard: ECHONET-Lite

Smart Buildings
- BEMS
  - Communication standard: BACnet etc.

OpenADR

Competitive area
- (Proprietary, OpenADR, ECHONET-Lite, etc.)
# Categories and requirements in Japanese Balancing Market

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td>FCR</td>
<td>S-FRR</td>
<td>FRR</td>
<td>RR</td>
<td>RR-FIT</td>
</tr>
<tr>
<td><strong>Order/Control</strong></td>
<td>—</td>
<td>Order/Control</td>
<td>Order/Control</td>
<td>Order/Control</td>
<td>Order</td>
</tr>
<tr>
<td><strong>Comm. Line</strong></td>
<td>—</td>
<td>Private NW, etc.</td>
<td>Private NW, etc.</td>
<td>Private NW, etc.</td>
<td>Dispatch system</td>
</tr>
<tr>
<td><strong>Monitor</strong></td>
<td>on line</td>
<td>on line</td>
<td>on line</td>
<td>on line</td>
<td>on line</td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td>&lt; 10 sec</td>
<td>&lt; 5 min</td>
<td>&lt; 5 min</td>
<td>&lt; 15 min</td>
<td>&lt; 45 min</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>&gt; 5 min</td>
<td>&gt; 30 min</td>
<td>&gt; 30 min</td>
<td>3 hr</td>
<td>3 hr</td>
</tr>
<tr>
<td><strong>Max. bidding</strong></td>
<td>As much as possible</td>
<td>As much as possible</td>
<td>As much as possible</td>
<td>As much as possible</td>
<td>As much as possible</td>
</tr>
<tr>
<td><strong>Min. bidding</strong></td>
<td>5MW</td>
<td>5MW</td>
<td>5MW</td>
<td>5MW</td>
<td>1MW</td>
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<tr>
<td><strong>Order period</strong></td>
<td>autonomous</td>
<td>0.5~10sec</td>
<td>1~a few min</td>
<td>1~a few min</td>
<td>30 min</td>
</tr>
<tr>
<td><strong>Monitor period</strong></td>
<td>1~a few sec</td>
<td>1~5 sec</td>
<td>1~5 sec</td>
<td>1~5 sec</td>
<td>TBD</td>
</tr>
<tr>
<td><strong>Bidding unit</strong></td>
<td>1kW</td>
<td>1kW</td>
<td>1kW</td>
<td>1kW</td>
<td>1kW</td>
</tr>
<tr>
<td><strong>Category</strong></td>
<td>up / down</td>
<td>up / down</td>
<td>up / down</td>
<td>up / down</td>
<td>up / down</td>
</tr>
</tbody>
</table>
Operation in Balancing Market using OpenADR

- BM/Tertiary-2 (RR-FIT) opened in April 2021
- Preparation for BM/Tertiary-1 (RR, starts in 2022)
- **Baseline pre-declaration** is reported to Market Management System.

In practice, the baseline value is set every 30-minute.

Image of tertiary-2:

- **Baseline (Kijunchi)**
- Control target
- **Updated delta order**
- **9:15 Update event**
- **8:15 Send event**

MMS

- Bidding
- Pre-declare
- Baseline

VTN

- Report
- Event
- OpenADR

VEN

- Aggregation Coordinator

TSOs

Report Event
Future Value Report Using OpenADR2.0b

- The baseline (future value) pre-declaration transmission is not utilizing OpenADR in BM/Tertiary-2.

- As future needs;
  - Reporting “remaining flexibility range” to TSO (other market products may use this in the future)
  - Reporting Aggregation of RA’s availability

We have obtained many opinions that we should organize how the future value report is implemented in OpenADR2.0b in Japan.
Education Program under Planning (Start Dec. 2021)

- **Area**: Distributed Energy Management System
  - ✓ World Energy Trend & Energy Policies
  - ✓ Necessity of Aggregation and Control of DERs
  - ✓ Architecture for aggregating DERs
  - ✓ Communication Standards

- **Target**: Government Officials, Electrical Engineers, etc.

- **Discussion**

- **Preliminary Trial in 2019**
  - ✓ Energy Trend & Energy Policies in your country
  - ✓ Distributed Energy Management: DR, VPP
Thank You

hideishii@aoni.waseda.jp