European Utility Week | October 5th 2017

The role of aggregators

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Agenda

- Aggregator’s role
- Aggregation models
- Flexibility cost framework
- Literature
Aggregator’s role

- Helps meet balancing demand of TSO/DSO
- Provides only necessary information to MO
- Enables DERs near-real-time market participation

Diagram:
- TSO grid load
- DSO grid load
- Market Operator
- Aggregator
- DR
- EES
- RES
- DG
Aggregator’s role cont’d

receives the market-clearing price

resources activation

TSO grid load
DSO grid load

Market Operator

Aggregator

DR
EES
RES
DG
Aggregation models

• four distinct aggregation approaches identified
  o **physical**, hybrid, traces and data-driven

• developed five aggregation models

• they draw from the eight DER categories and four flex. cost components, defined in the project

• technology based aggregation
Aggregation models cont’d

1. Atomic Loads
2. CHP Units
3. TCLs
4. EES Units
5. Curtailable Gen./Loads

1. Stationary EES
2. EVs
3. Variable RES
4. Conven. gen.: fossil fuel generators, conven. hydro
5. CHPs
6. TCLs
7. Shiftable Loads
8. Curtailable Loads
Aggregation models cont’d

1. Aggregation
2. Bidding
3. Market Clearing

INDIVIDUAL ASSETS

- Atomic Loads
- CHP Units
- TCLs
- Curtailable Gen./Loads

DERs activation

- Curtailable Gen./Loads
- Curtailable Loads
- Shiftable Loads
- Variable RES
- EVs
- Conven. gen.: fossil fuel generators, conven. hydro
- CHPs
- TCLs
- Stationary EES

MARKET CLEARING

- Equilibrium price

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<td>APR</td>
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<td>Retailer</td>
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1. Atomic Loads
2. CHP Units
3. TCLs
4. EES Units
5. Curtailable Gen./Loads
Flexibility cost framework

- four flex. cost components, defined in WP1 of the project:
  - discomfort cost
  - indirect cost
  - change in operational costs
  - revenue change

- they form a bid cost
Flexibility cost framework cont’d
Flexibility cost framework cont’d
Aggregator’s role cont’d
Literature

- detailed results are described in the deliverable: “Aggregation models: preliminary report”

- available on SmartNet website, even if classified as confidential

- internal review
  - Miguel Marroquin (ONE)
  - Ivana Kockar (UofS)

- final version due end of 2017
SmartNet-Project.eu

This presentation reflects only the author’s view and the Innovation and Networks Executive Agency (INEA) is not responsible for any use that may be made of the information it contains.
Thank You

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