

European
Utility Week



3 - 5 October 2017
RAI Amsterdam, The Netherlands

DTU



SmartNet

Smart TSO-DSO interaction schemes, market architectures and ICT
Solutions for the integration of ancillary services from demand side
management and distributed generation

European Utility Week | October 5th 2017

The role of aggregators

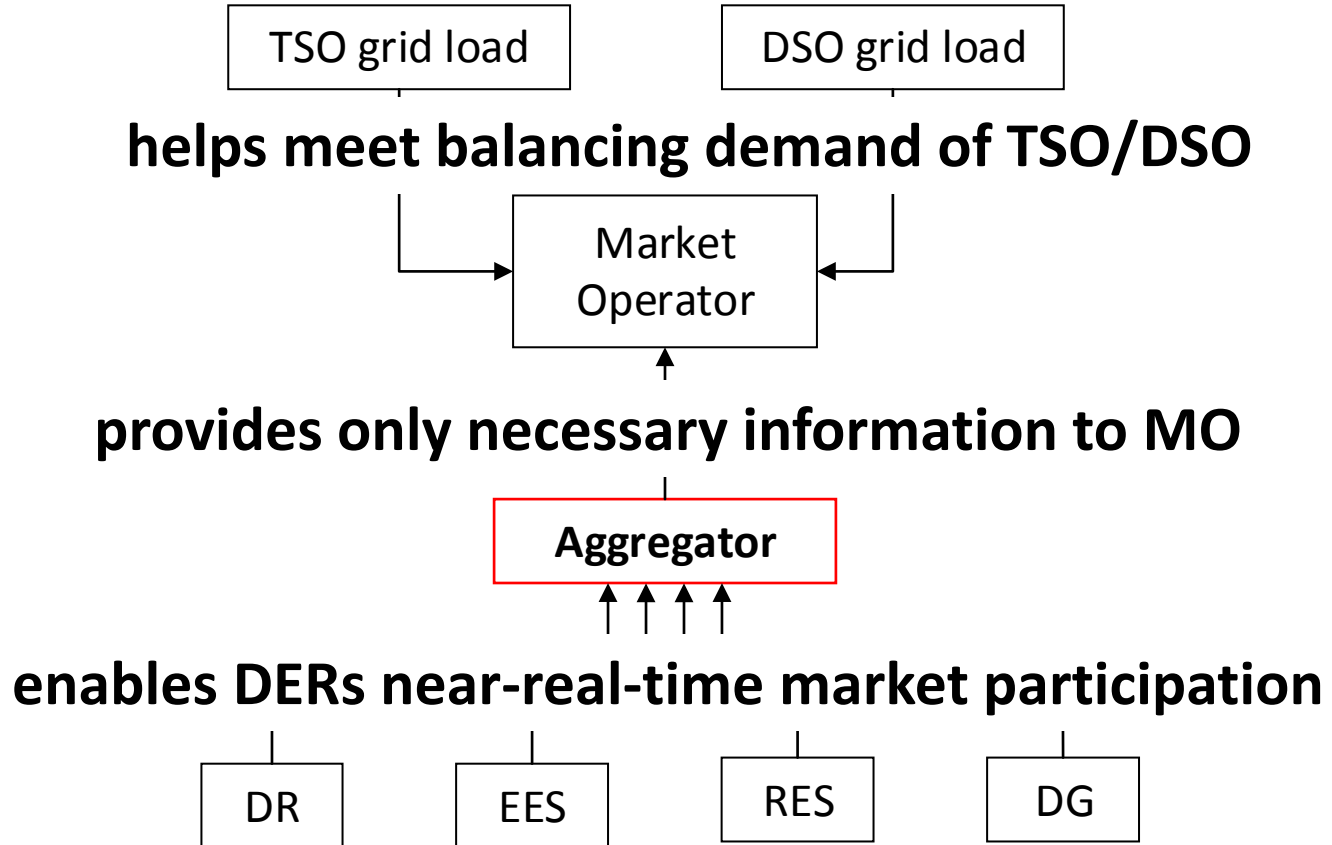


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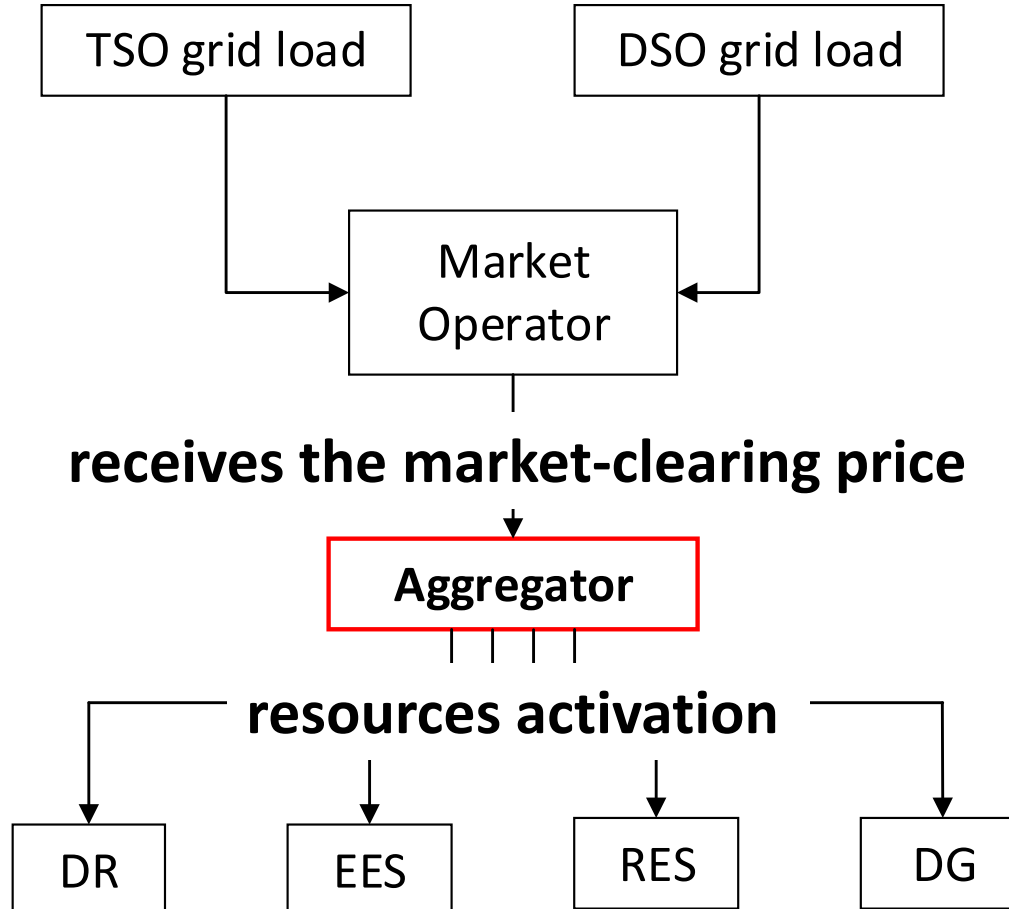
Agenda

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

Aggregator's role



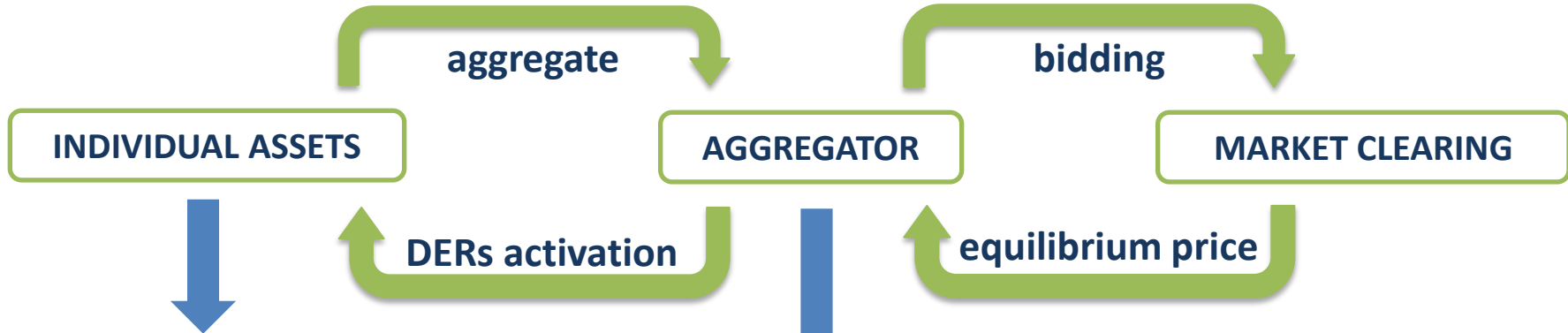
Aggregator's role cont'd



Aggregation models

- four distinct aggregation approaches identified
 - **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

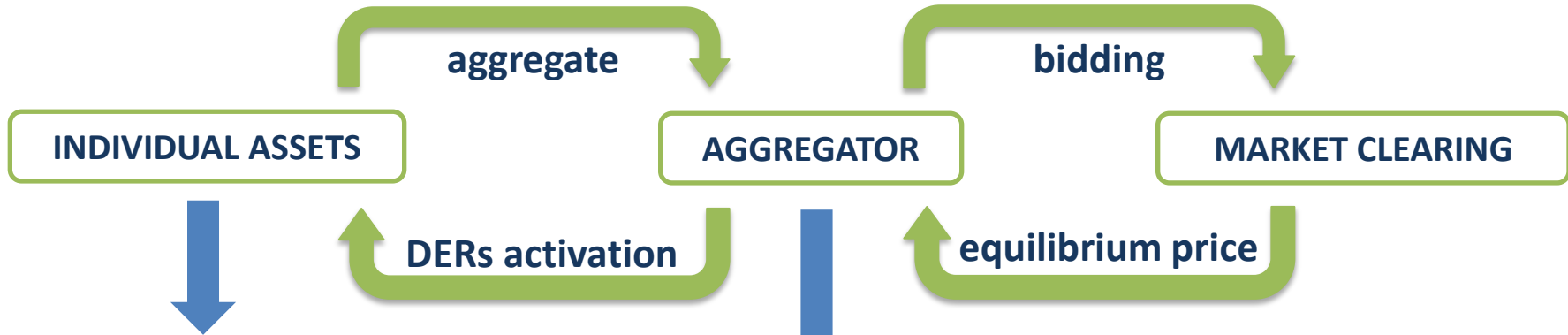
Aggregation models cont'd



1. 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

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

Aggregation models cont'd

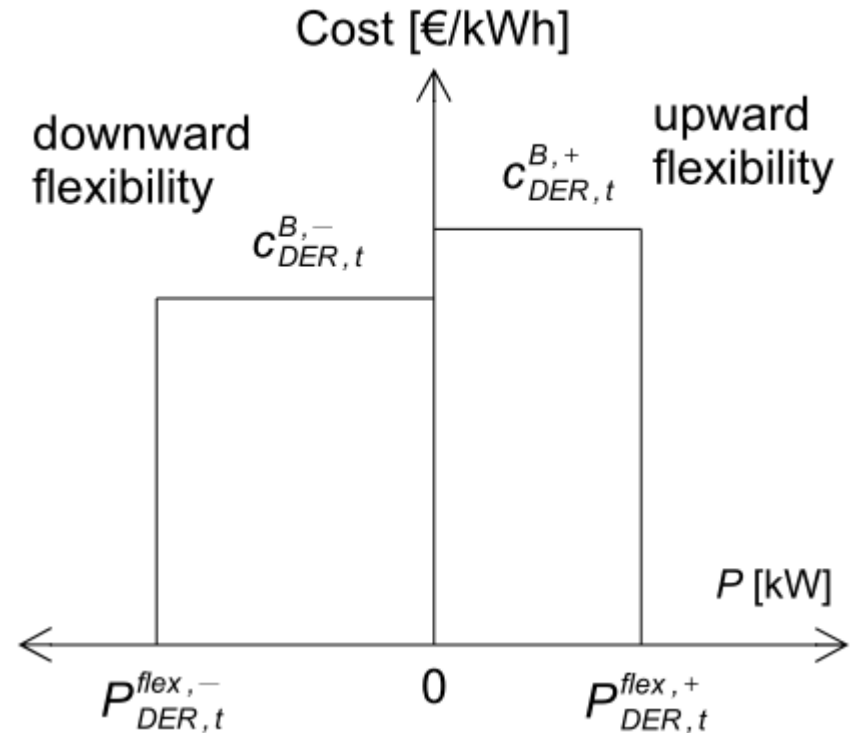


- 1. **Stationary EES**
- 2. **EVs**
- 3. **Variable RES**
- 4. Conven. gen.: fossil fuel generators, conven. hydro
- 5. CHPs
- 6. TCLs
- 7. Shiftable Loads
- 8. Curtailable Loads

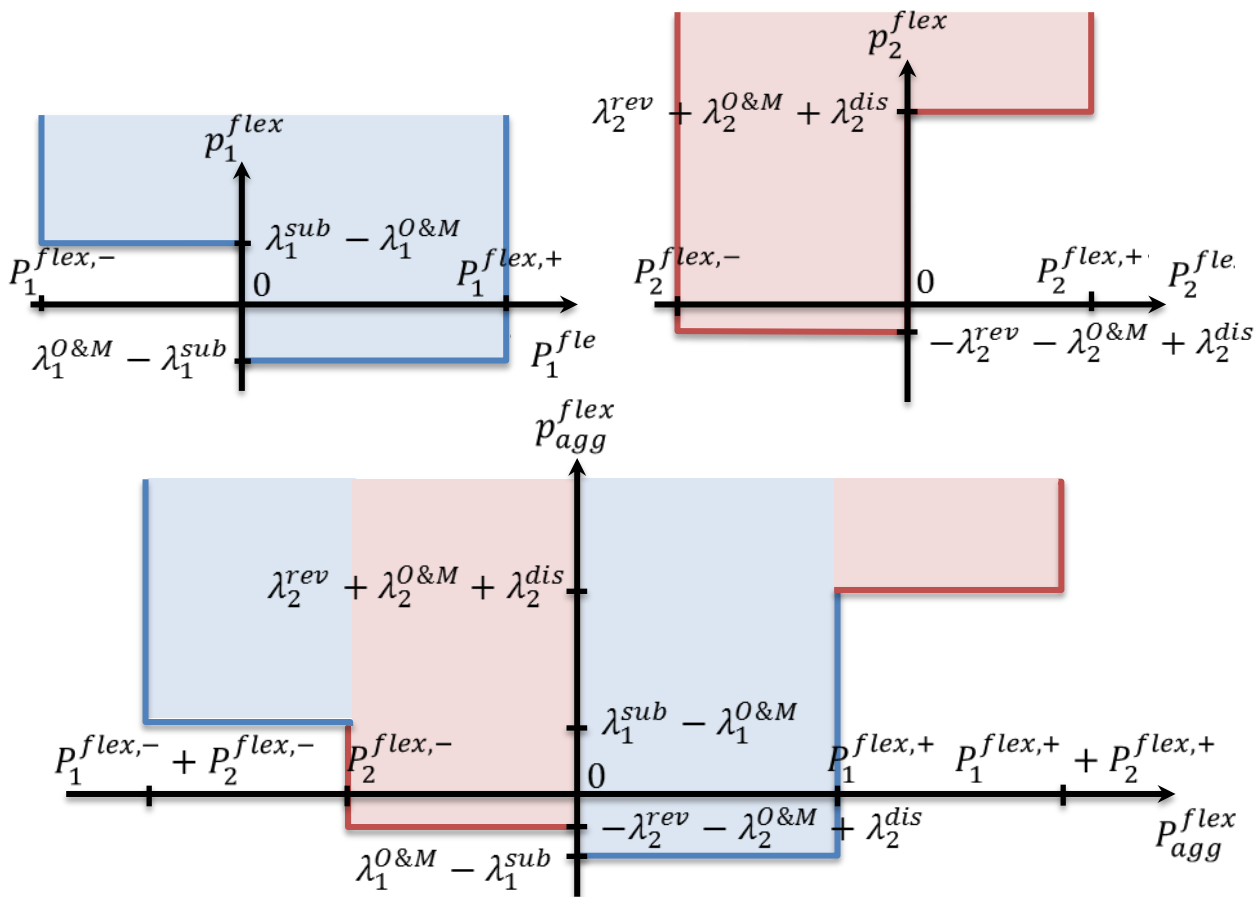
- 1. Atomic Loads
- 2. CHP Units
- 3. TCLs
- 4. **EES Units**
- 5. Curtailable Gen./Loads

Flexibility cost framework

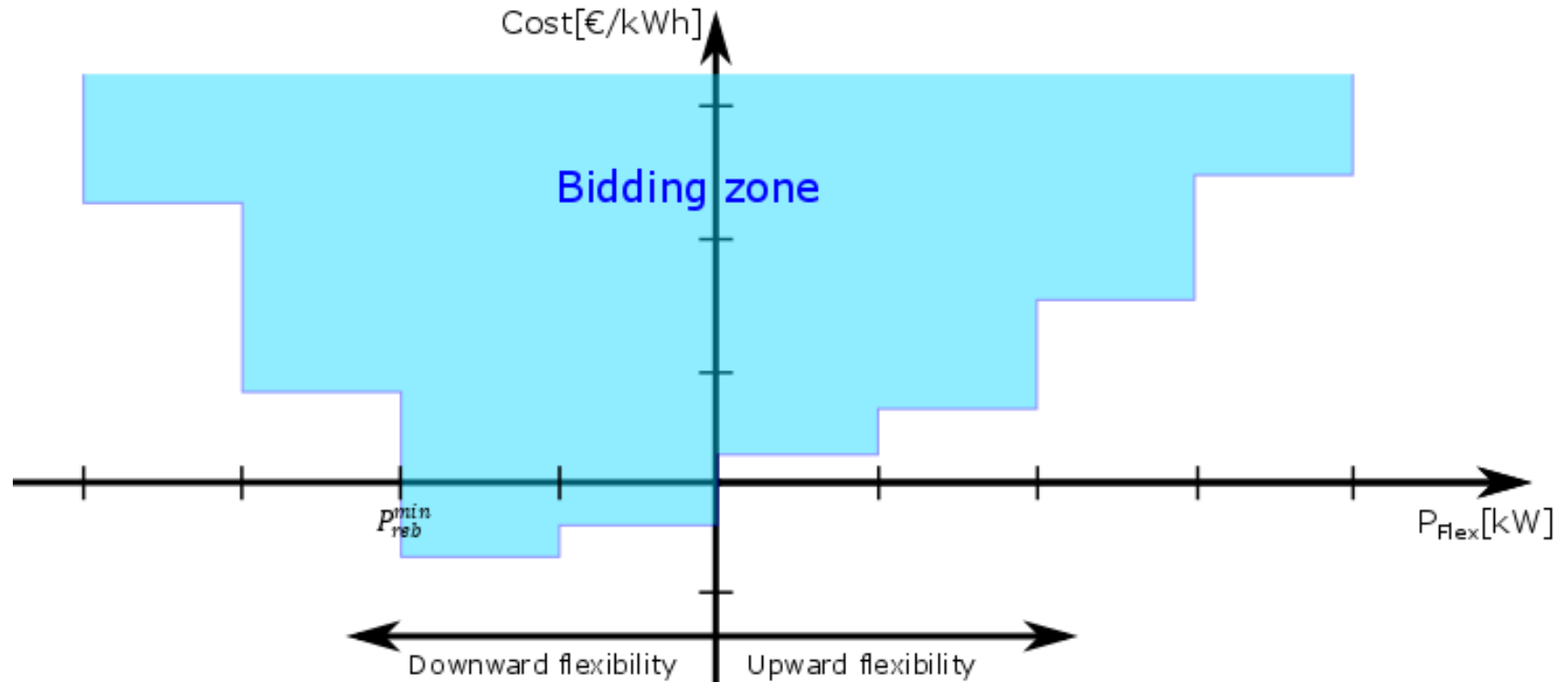
- four flex. cost components, defined in WP1 of the project:
 - discomfort cost
 - indirect cost
 - change in operational costs
 - revenue change
- they form a bid cost



Flexibility cost framework cont'd



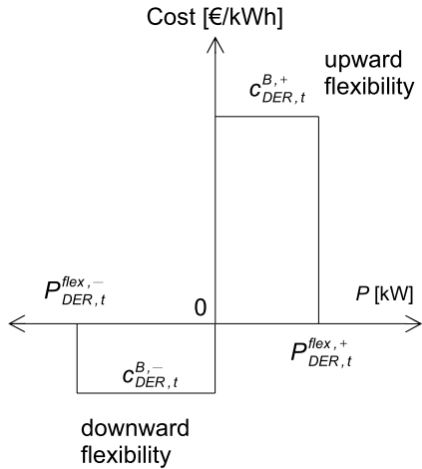
Flexibility cost framework cont'd



Aggregator's role cont'd

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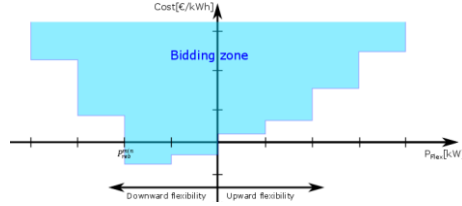
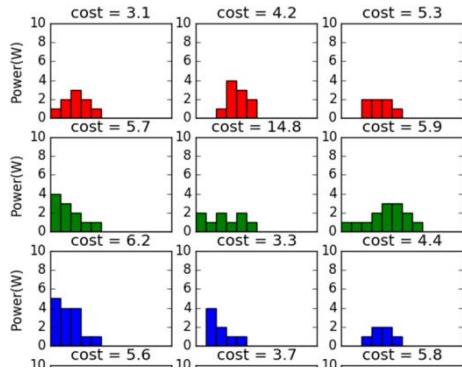
Transmission Level Generation



Aggregator

Atomic

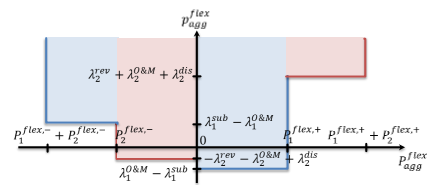
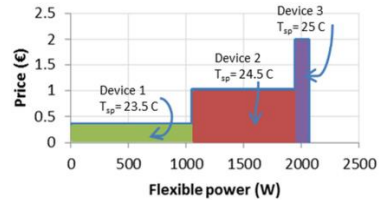
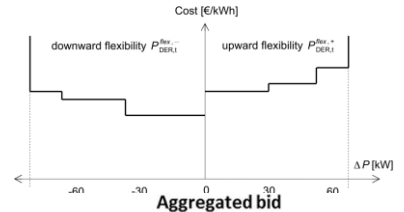
CHP



EES

TCL

Unified



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**



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Aggregation models: preliminary report

D2.3

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Thank You

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