



# VI CONGRESO **SMART GRIDS**

Madrid, 12 Diciembre 2019

## ***“FLEXIBILIDAD: RETOS Y OPORTUNIDADES EN LA TRANSICIÓN ENERGÉTICA”***

**Miguel Asensio**

Grid Control and Grid Applications Portfolio

Siemens SA



GRUPOTECMARED

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VI CONGRESO  
**SMART GRIDS**  
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# Optimized energy efficiency and power generation, managed energy trading & demand response

**SIEMENS**  
*Ingenuity for life*



## Sello Shopping Center, Finland

### The smartest shopping center in Europe

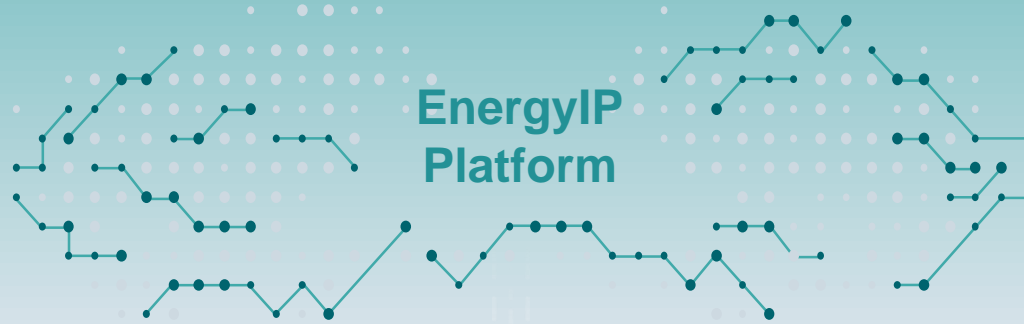
**26,000.000**  
**visitors** per year

**Biggest** shopping  
center in Finland  
with **100.000 m<sup>2</sup>**  
of shopping space

**170 shops**

**Energy efficiency**  
**Demand Response**  
New income from  
reserve markets

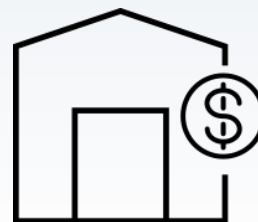
# Siemens approach: A single platform for data valorization



**Energy Efficiency**



**Demand Response**

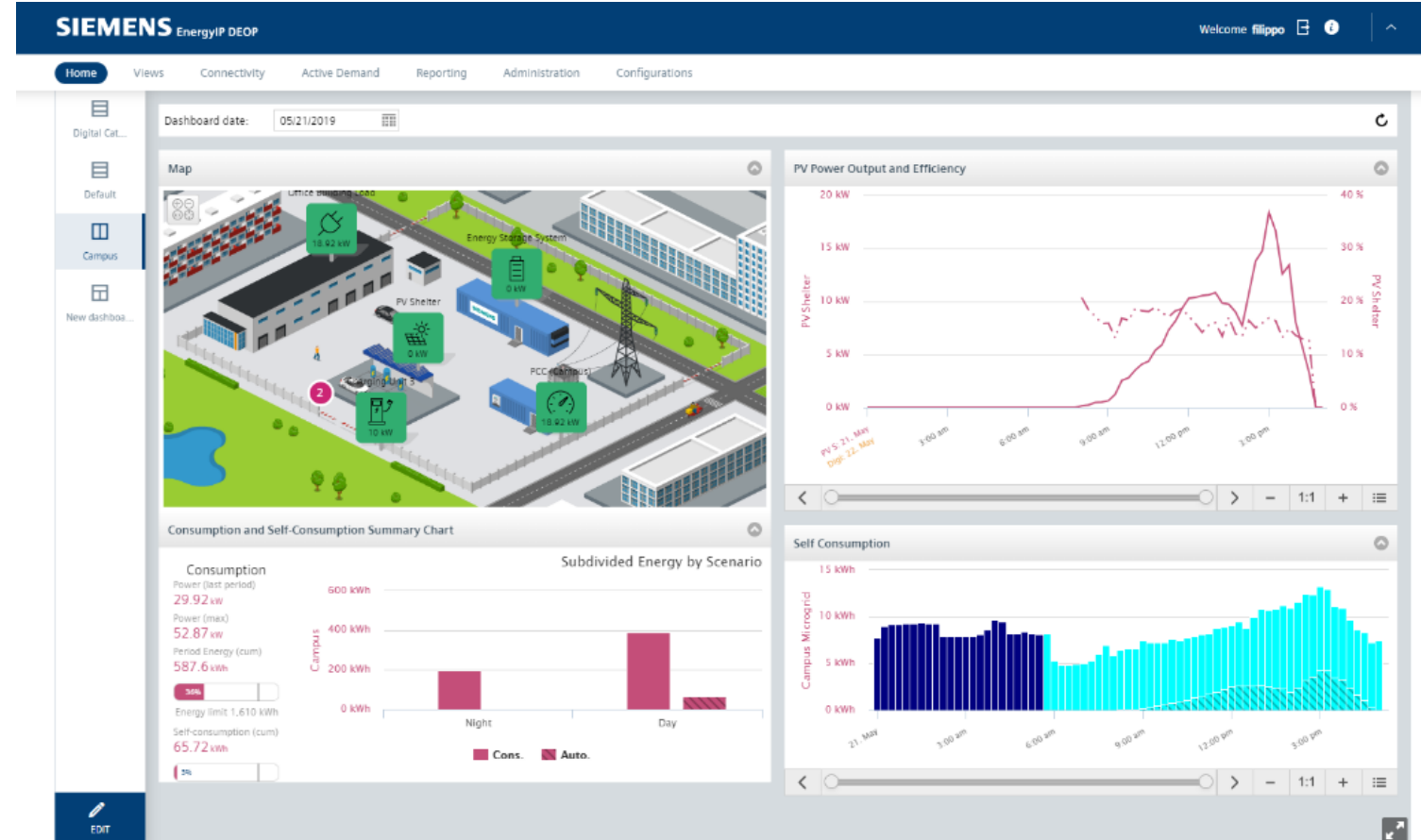


**Flexibility markets and ancillary services**



# Consulting Methodology to define the flexibility of assets

- 1) Site visit / analyzing site measurement data
- 2) Analysis of processes together with process responsible in production
- 3) Definition of Load Shifting / Flexibilities
  - a) „Fix shiftable“
  - b) „not able to schedule, but flexible“
  - c) „able to be scheduled & manual control“
  - d) „able to be scheduled & automation available“
- 4) Load forecast and optimization for production planning
- 5) Data evaluation and continuous improvements

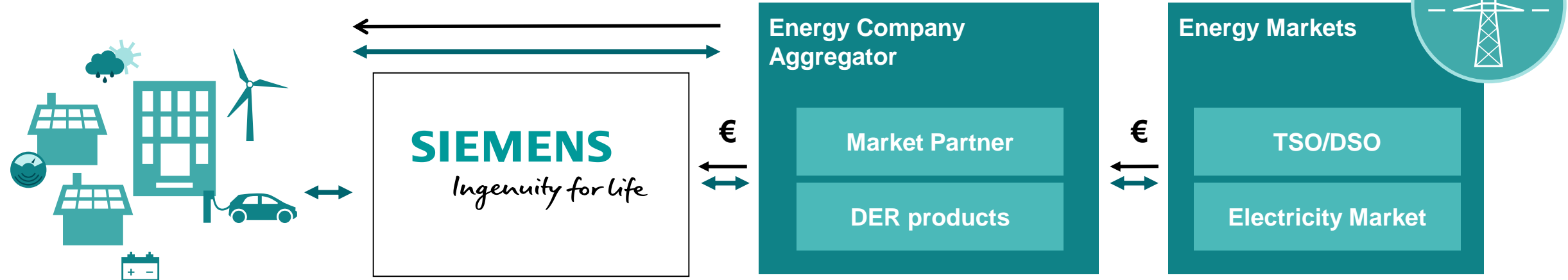




# Demand Response and Virtual Power Plant platform

## Sello Shopping Center, Finland

### Contract partners and cash flows €



#### Customer x with DER

- Gives flexibility
- Makes contract with Utility

#### Siemens

- Offers complete SaaS platform
- Offers complete technical infrastructure for demand response
- Technical partner

#### Energy company

- Offers DER from it's customer base or own production
- Uses Virtual Power plant and aggregates loads
- Makes commercial contracts with it's customers
- Contracts Siemens for technical infrastructure and service

#### TSO/DSO/Markets

- Market operator
- Contract partner for Utility

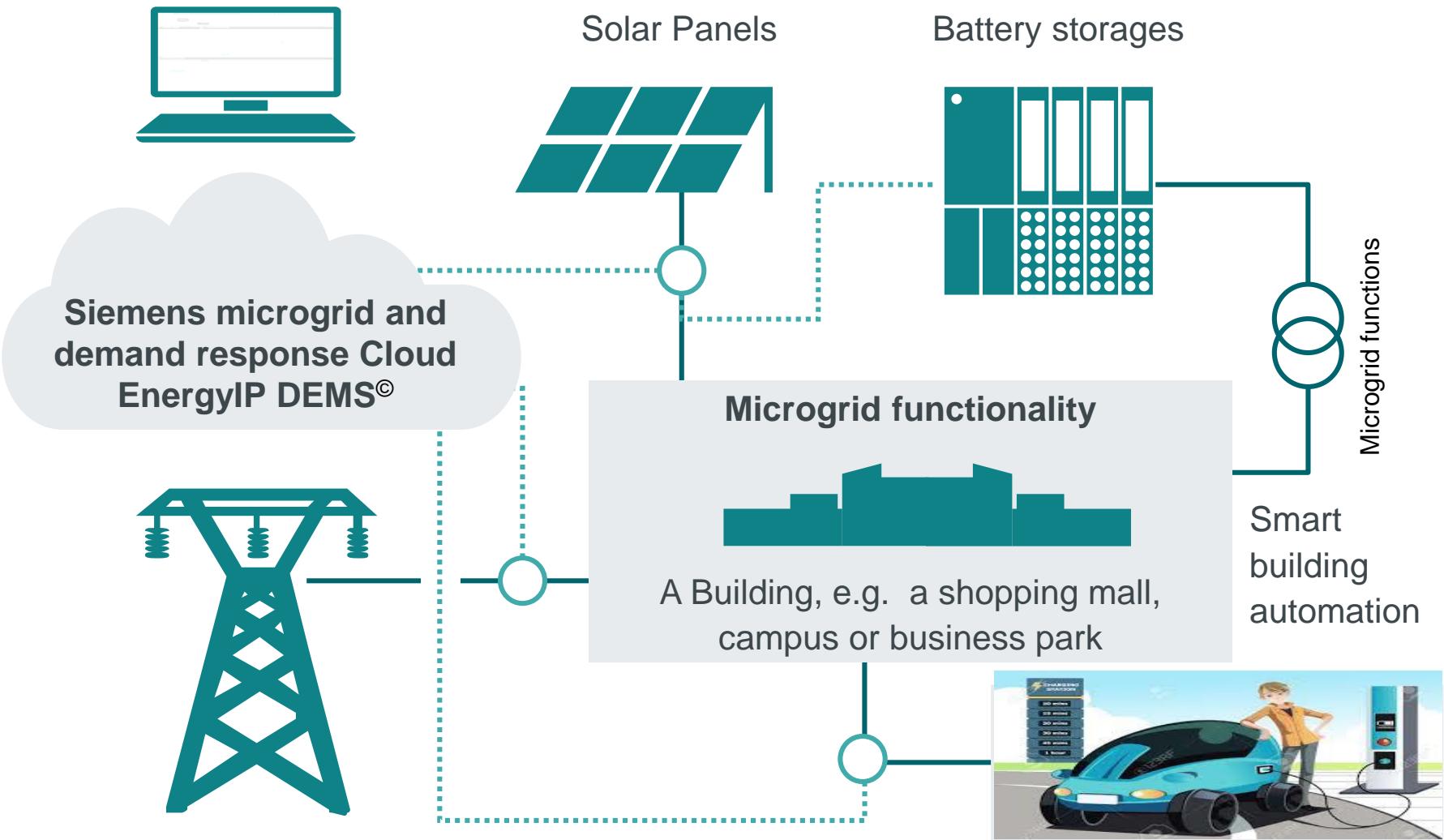
# Siemens smart energy system in the cloud based on EnergyIP DEMS®



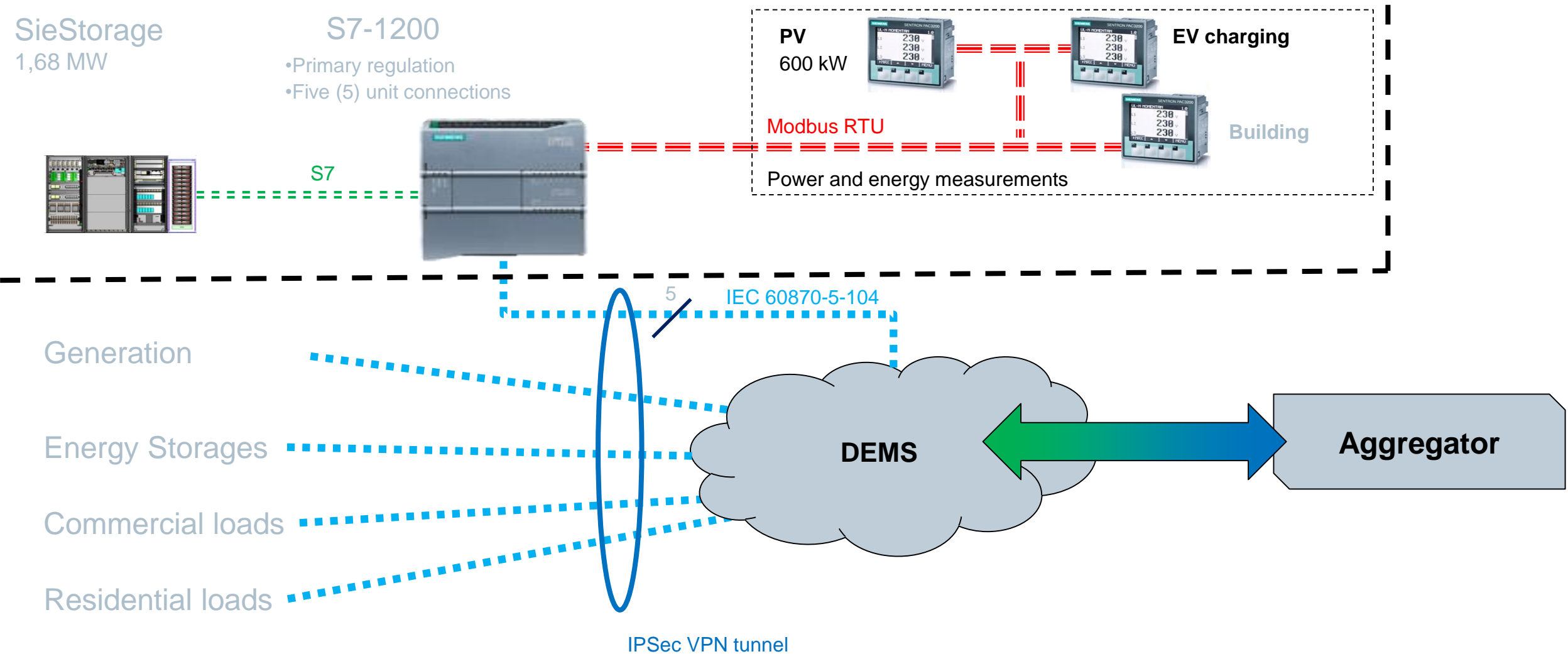
El Spot  
Electricity market



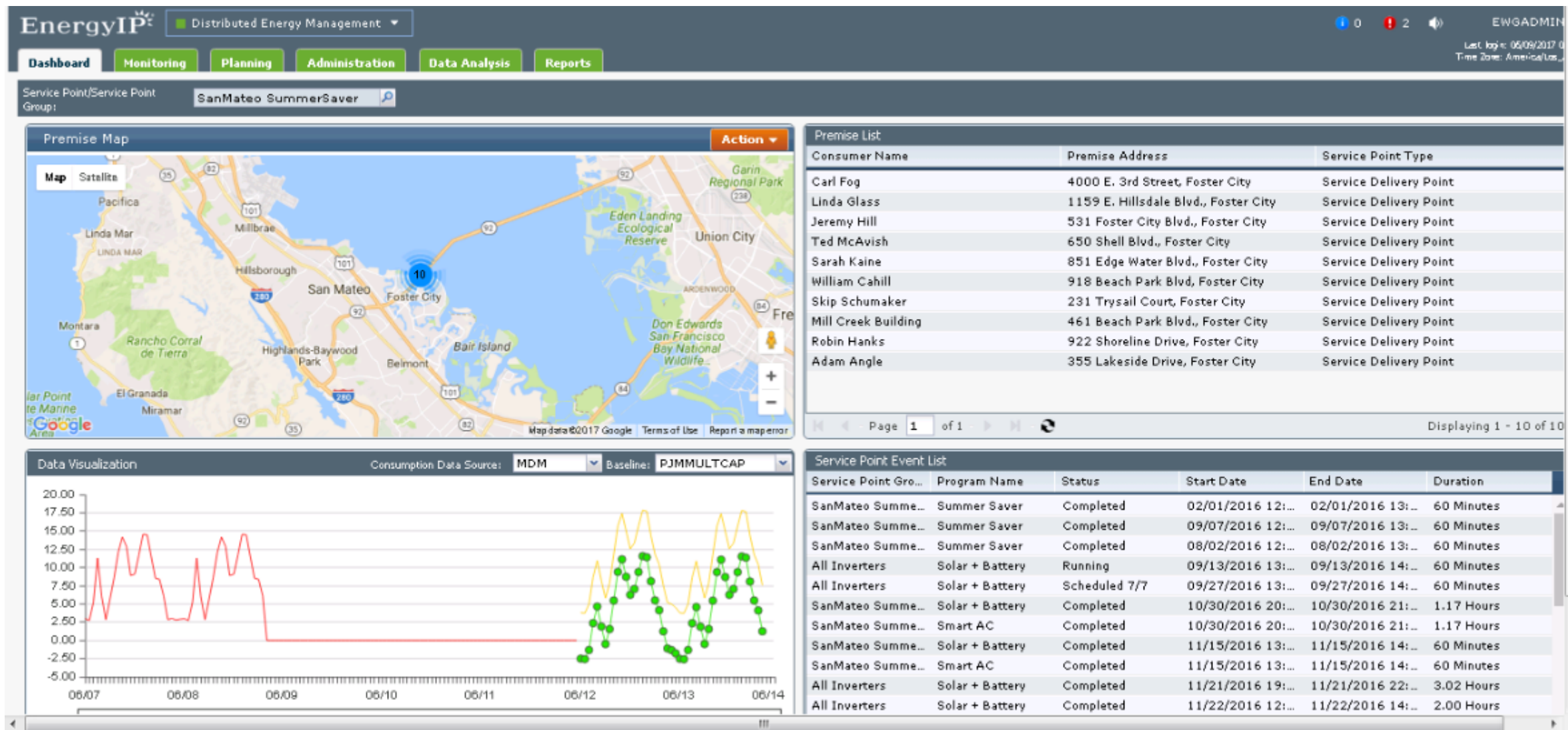
Demand response  
market



# DEMS – External aggregator



# Energy IP DEMS Overview

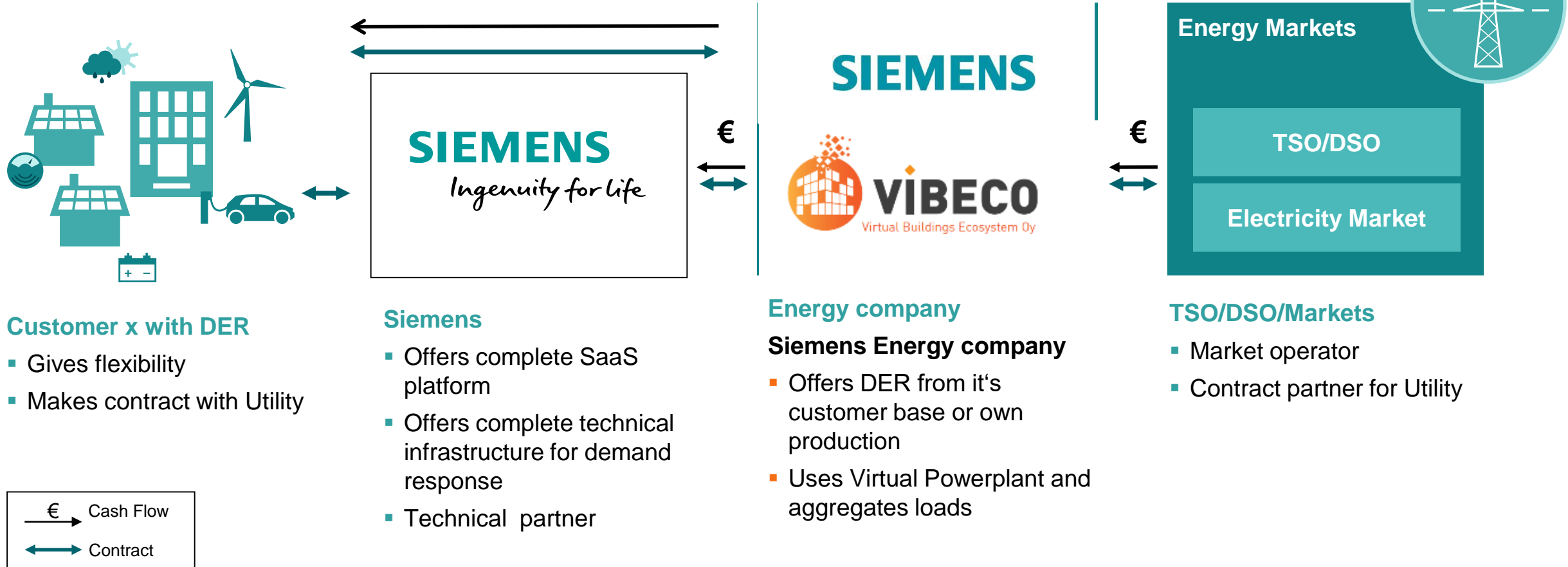




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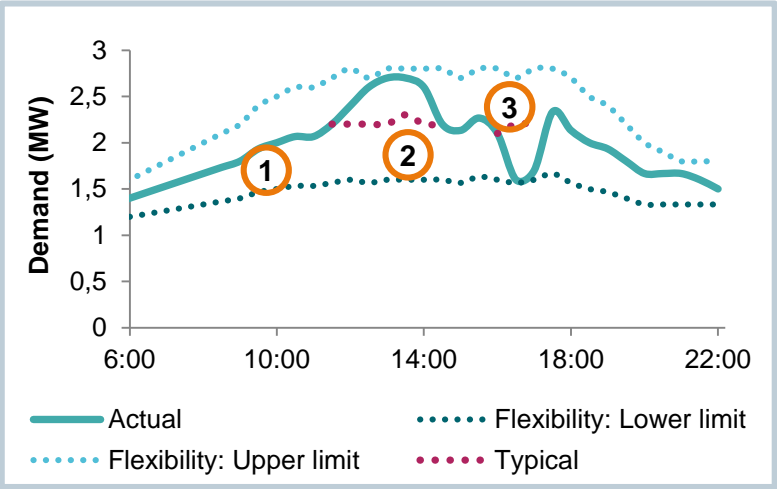
##### Siemens Energy company

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#### TSO/DSO/Markets

- Market operator
- Contract partner for Utility

# Sello shopping center - Management of building loads



EnergyIP DEOP calculates flexibility curves for each hour

	Lights	30 kW
	Parking heating	200 kW
	Ventilation	200 kW

1 TNSP/DNSP: Transmission/Distribution Network Service Provider

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# Optimized energy efficiency and power generation, managed energy trading & demand response

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## Sello Shopping Center, Finland

Connect power generation and storage to the grid to optimize demand and supply in electricity market

**€118,000** p.a.  
savings in energy  
efficiency and  
maintenance

**€483,000** p.a.  
gains in energy  
market

**281 tons** CO<sub>2</sub> p.a.  
emission reduction

**1,68 MW**  
battery storage

**600kW**  
Solar PV



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## **Miguel Asensio**

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