

Digitisation: Harnessing citizen empowerment to provide benefits & services to the energy system

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EUFORES - 17th Inter-Parliamentary Meeting on
Renewable Energy and Energy Efficiency
Tallin, Estonia
29 September 2017

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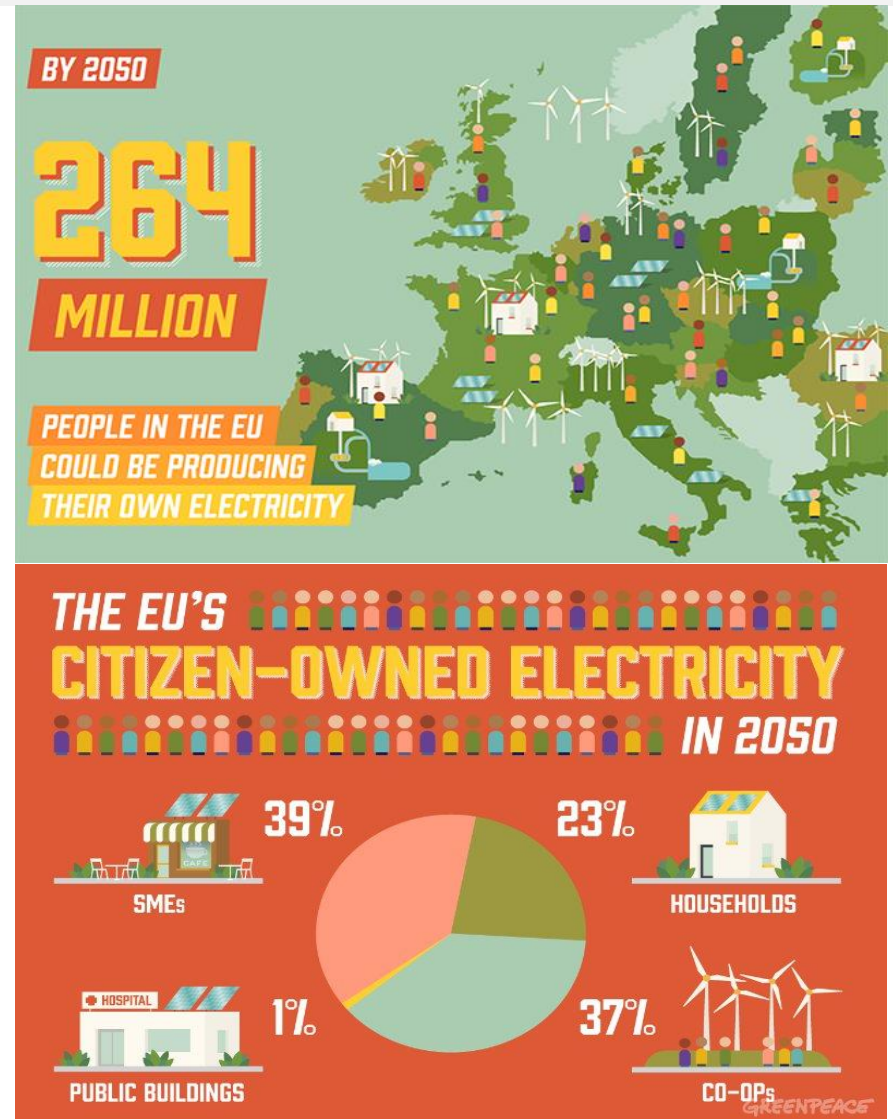


Potential of citizen energy in the EU

By 2050:

≈ **83%** EU households
(113 households)
could contribute to:

- RES production
- Demand response
- Energy storage



wiseGRID

- EnerGent: install PV systems on homes
- Partago: co-operative car sharing with 3 charging stations
- Storage (5 batteries of 7-13 kWh) & EV
- Energie ID: IT-tools & monitoring
- Ecopower: aggregator



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement No 731205.

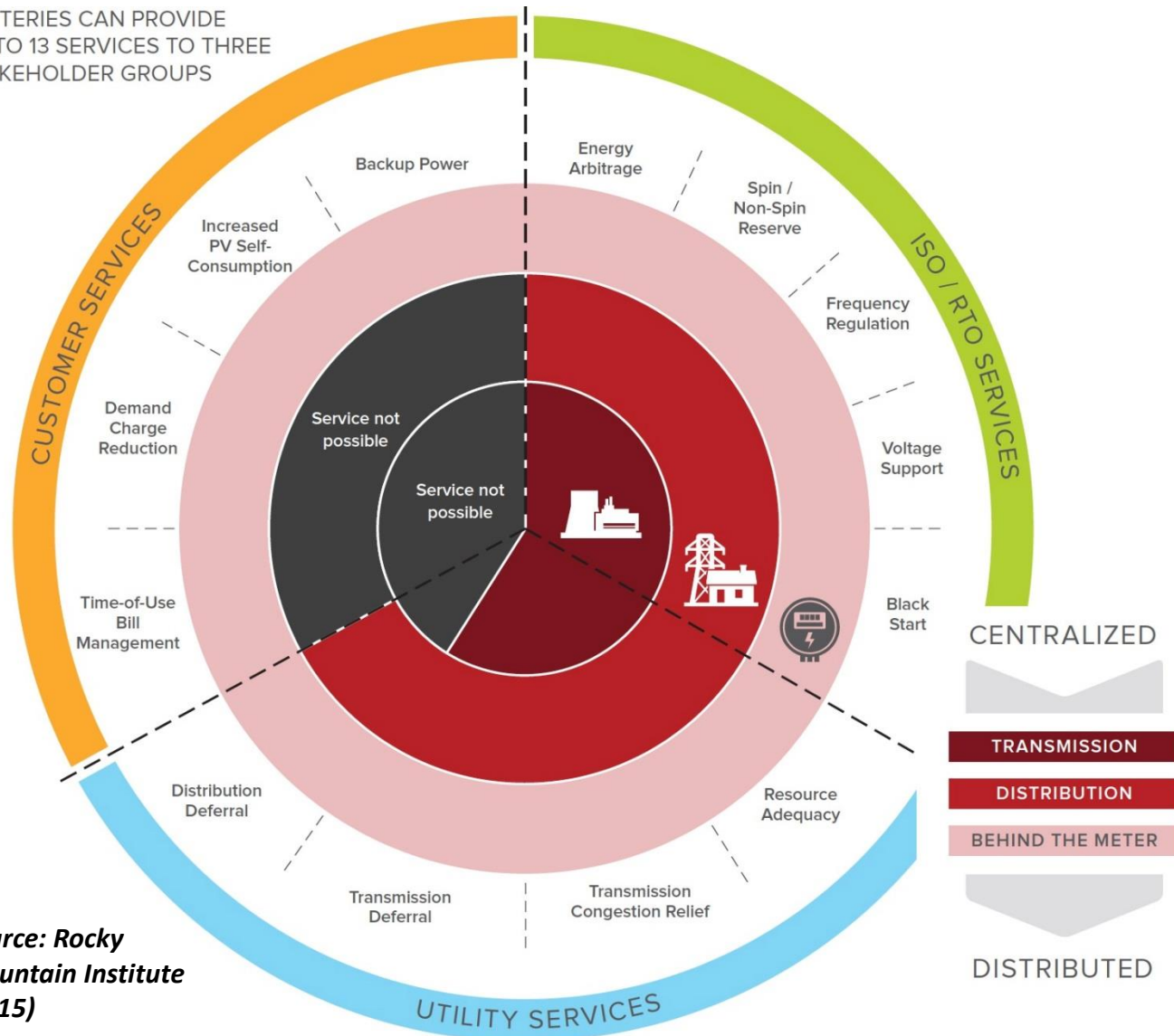
Beyond solar: active customers providing distributed energy resources (DER)

What is 'DER'?

- Distributed renewable energy generation
- Storage (including EVs)
- Demand response
- Energy efficiency
- Micro-grids / virtual power plants

How can empowered citizens benefit the energy system?

BATTERIES CAN PROVIDE UP TO 13 SERVICES TO THREE STAKEHOLDER GROUPS



Source: Rocky Mountain Institute (2015)

Preconditions for active customers to provide services to the grid

1. Smart measurement and communication – ICT technologies
2. Favourable regulatory environment – DSO, grid planning, active customers, third party engagement (e.g. aggregation)
3. Price signal / accurate valuation – precise information to active customer that impacts how and when they buy/use power, and invest in/use DER

Key question: what is the precise value of the DER to the system (the grid, DSO/TSO, consumers as a whole)?

California: valuation of DER in action

Key aim: minimize system costs, maximize consumer benefits from low-carbon energy sources, and advance pricing/incentives to support DER

Main elements:

1. Distribution Resources Plan to ID optimal locations for deployment of DER
2. Definition of 'DER'
3. Evaluation of locational benefits and costs of distributed resources
4. Tariffs, contracts or other mechanisms for DER that satisfies planning objective

Supportive Tools:

- Locational net benefit analysis – model to help understand value deferring/avoiding
- Integration capacity analysis – estimates available capacity for adding more DER



Conclusions

1. Citizens have an essential and growing role to play in the energy transition
2. Policy & regulation need to support investment decisions/energy use by prosumers that provide a value to the grid, environment and society
3. Accurate/precise valuation of solar = huge step in rewarding active customers while ensuring equity, fairness and long-term maintenance of the grid
4. Elements in the EU's clean energy package take only few steps towards proper realization, valuation of DER – more is needed



Thanks for your attention!

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