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System Integration of Prosumers

PROSEU-Online-Workshop

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Energy democracy interest is not based on system costs

- Multiple layer interest in prosumerism
- Research shows much higher costs in islanded systems, e.g.
 - 0.41 €/kWh LCOE “Reviewing energy system modelling of decentralized energy autonomy” KIT, DTU (2020)
- System operators are skeptical on approaches, but considering public interest...

“Tell us what you want us to do. Give us flexibility in how we do it. Give us the opportunity to recover the money we need to do it. And tell us how we’ll be measured, when we’ll be measured and then hold us accountable for the results.”

Joseph Viola

HECO’s VP for regulatory affairs

Source: <https://www.hawaiibusiness.com/new-way-for-electricity/>

System integration and benefits

Overarching benefit for fully system interconnected prosumerism

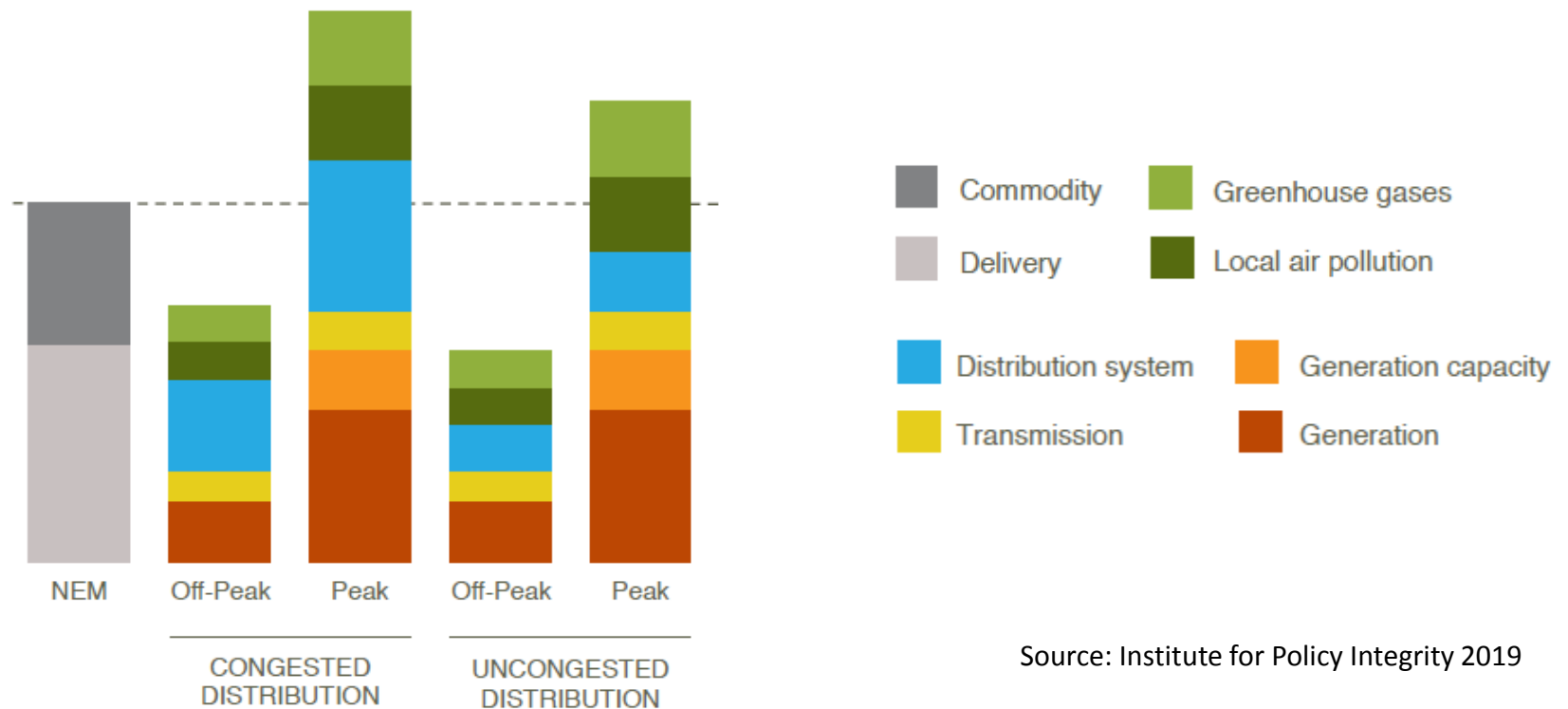
- Keep prosumer costs lower
- Generate RES surplus to power load pockets
- Limit energy transformation costs

⇒ A call to get system cost allocation right

System costs and cost allocation

- System cost allocation and retail tariffs are often outdated, because it is flat (annual prices), created to keep transaction costs low, not considering distributed / demand side solution
- It need to be more aligned with (short and long term) system costs by smart pricing as local and time-varying energy and network costs and system services (market participants responsibility for forecasts, imbalance costs, incl. reserves)

Example: Value of distributed energy resources compare to net energy metering (NEM)



Source: Institute for Policy Integrity 2019

Renumeration of feed-in: Full feed-in vs. feed-in from PV-prosumer



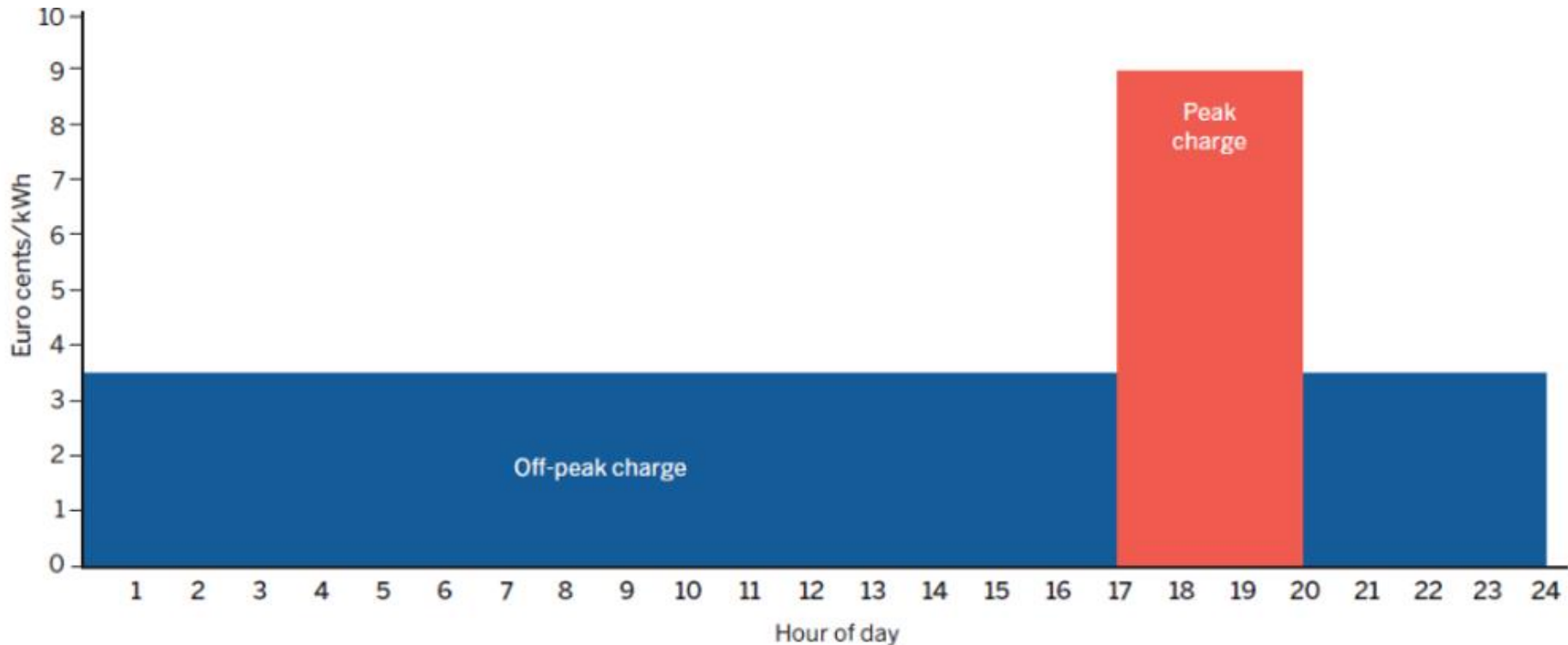
House with PV: 4 KWp
Consumption: 4.000 kWh/a

a. full feedin

b. left-over feed-in

Source: Agora, Eigenversorgung
aus Solaranlagen

Network pricing based on congestion provides incentives to all customers



Source: Denmark ([Radius](#)), TOU network tariff for households (winter season)

About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org



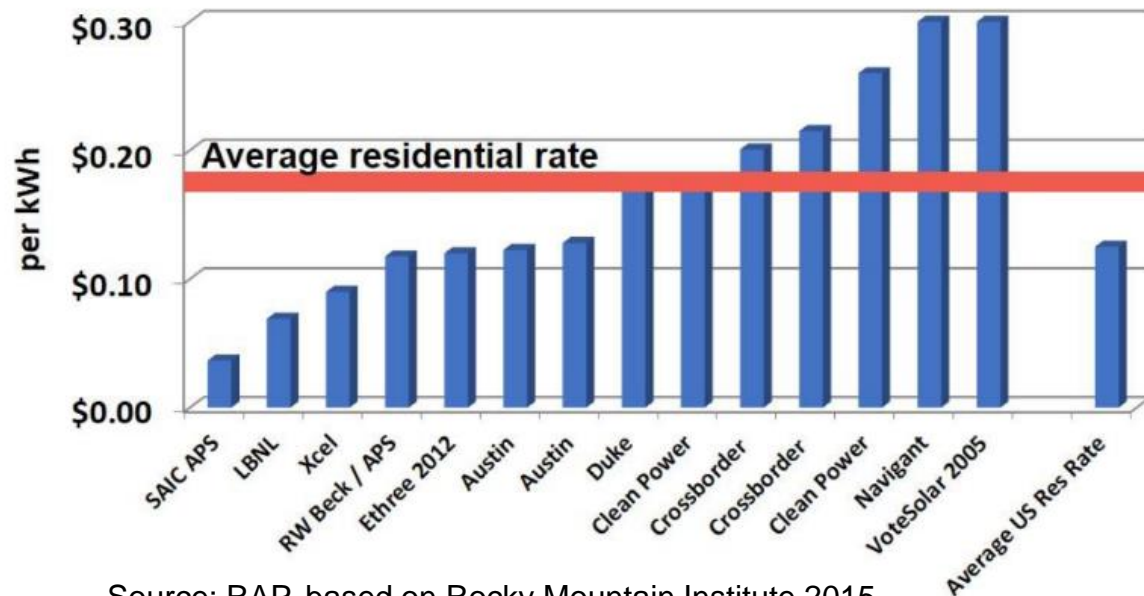
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Renumeration of feed-in

- Market value differs by time and predictability
- Value can be defined along a broad range



Source: RAP, based on Rocky Mountain Institute 2015

⇒ Renumeration should reflect all values, incl. provided services