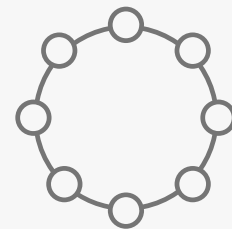


Virtual Power Plants

IRENA session at G-STIC

Paul Kreutzkamp, 23/10/2017



BEING A UTILITY IN A NEW ENERGY WORLD

Liberalisation, Decentralisation, Digitalization

1990



2017

Number of utilities a German household could choose from in 1990

1

Number of Power Plants in Germany

800

LTE connections worldwide

0

Number of utilities a German household could choose from in 2016

≈150

Number of Power Plants in Germany

>1,500,000

LTE connections worldwide

>1 trillion

NEXT KRAFTWERKE

... a Digital Utility in Numbers

Next Kraftwerke operates a large Virtual Power Plant and is certified electricity trader on different markets in Europe (DE, BE, FR, AT etc.).

NEXT KRAFTWERKE

- > Founded in 2009
- > Valorizing flexibility on all markets: reserve power and electricity markets
- > One of the largest VPPs in Europe
- > **> 4200 units connected**
- > **~3 GW in the Next pool**
- > 135 co-workers
- > 10 TWh traded in 2016
- > ~1.5 GW R1/R2/R3

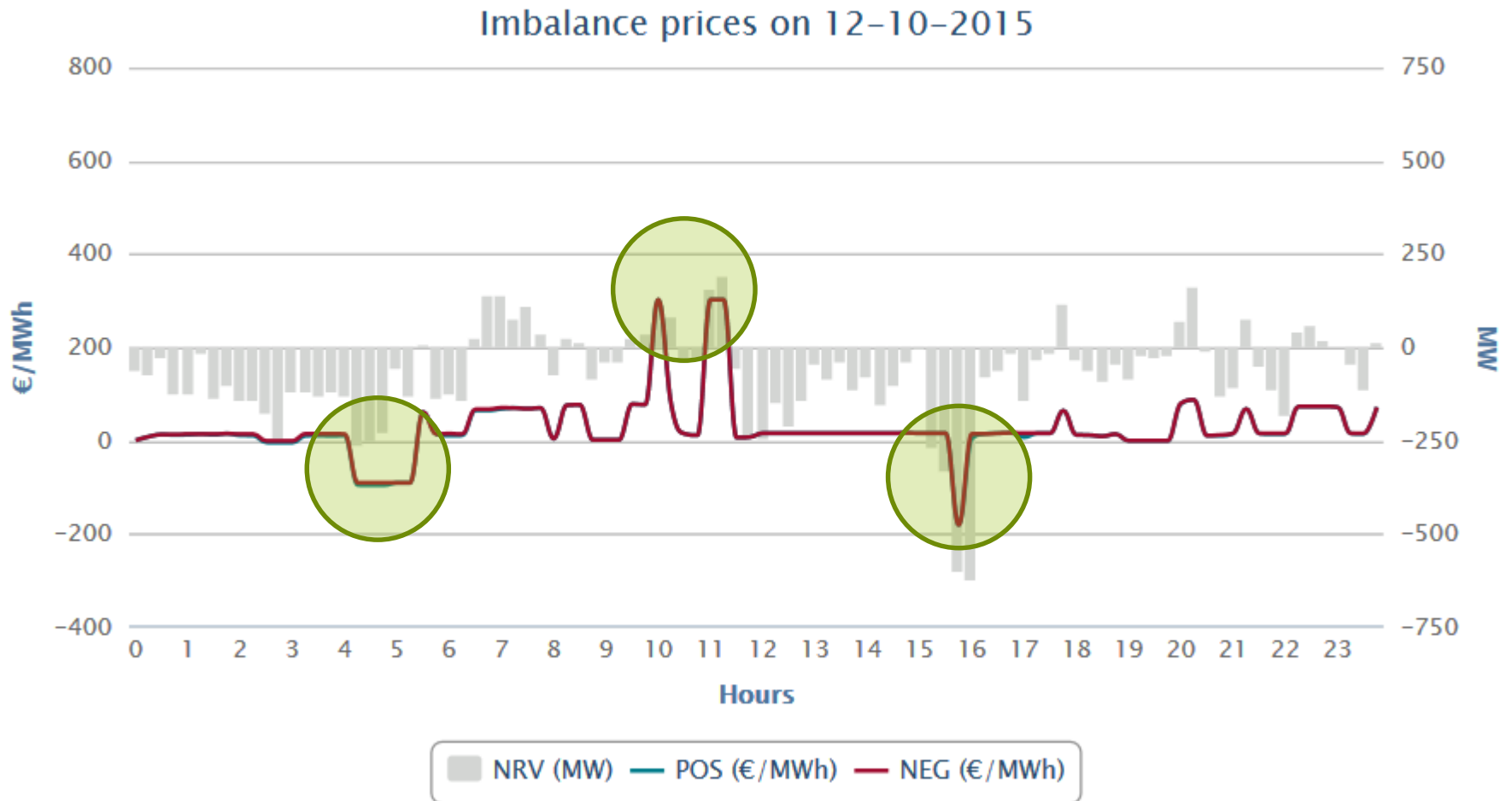
ACTIVE IN THE FOLLOWING COUNTRIES

- > Germany (2009)
- > Austria (2013)
- > Belgium (2014)
- > France (2015)
- > Poland (2016)
- > The Netherlands (2016)
- > Switzerland (2016)
- > Italy (2017)



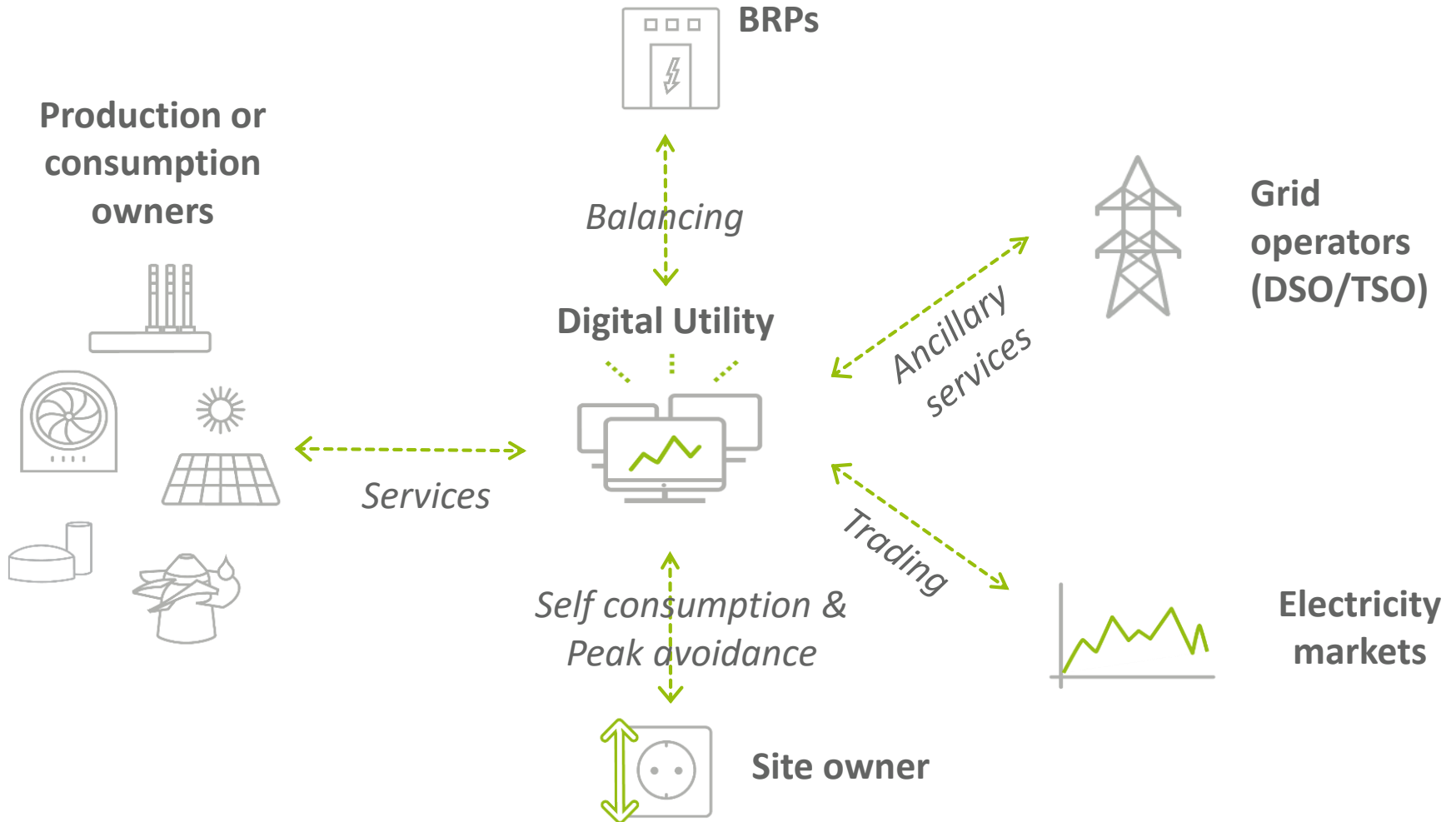
Why has flexibility a value?

Balancing markets



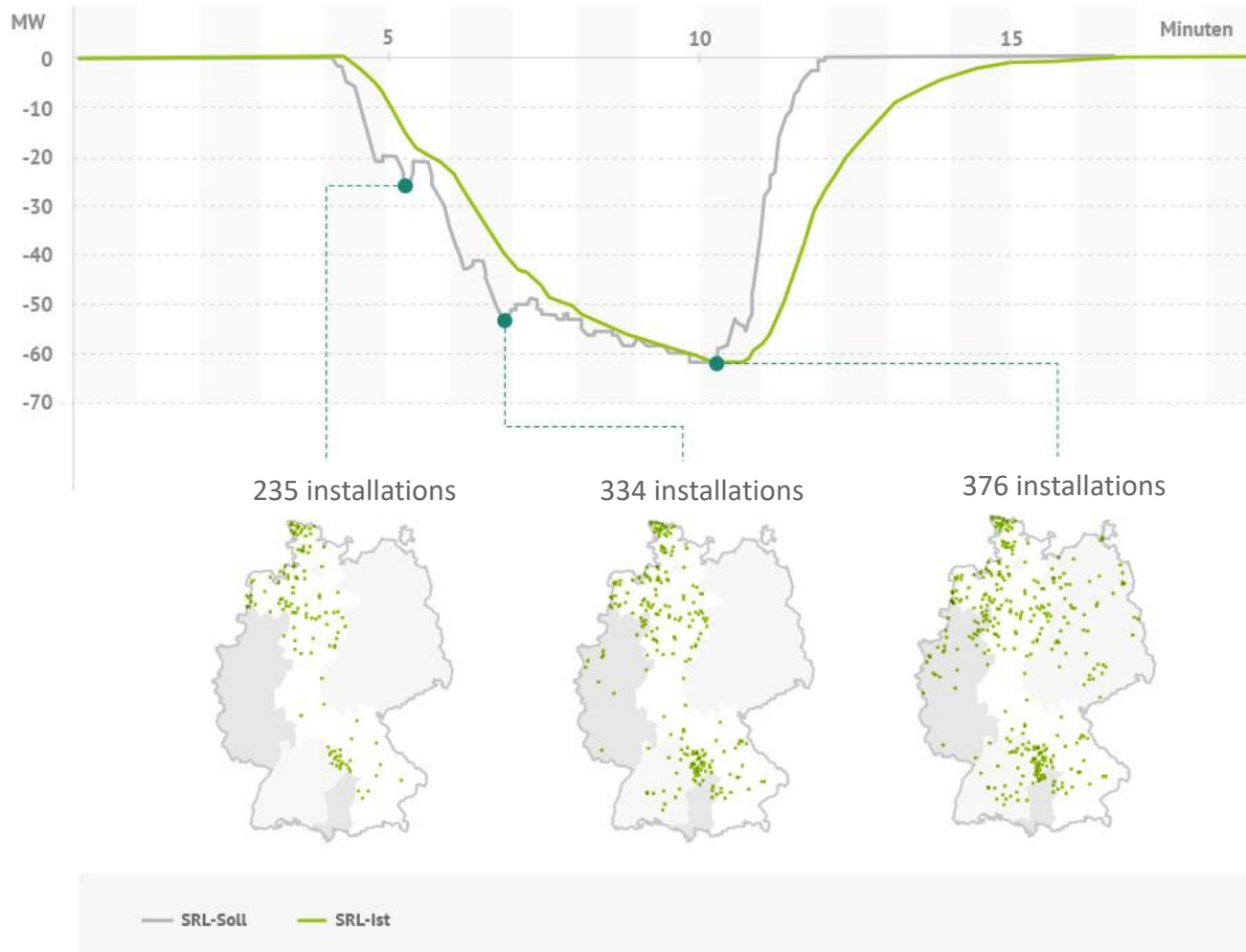
The value of a Virtual Power Plant

Source & Combine Flexibility and Bring it to where it worth most!



Example I: Secondary reserve in Germany

Division of setpoints for an activation of negative reserve power

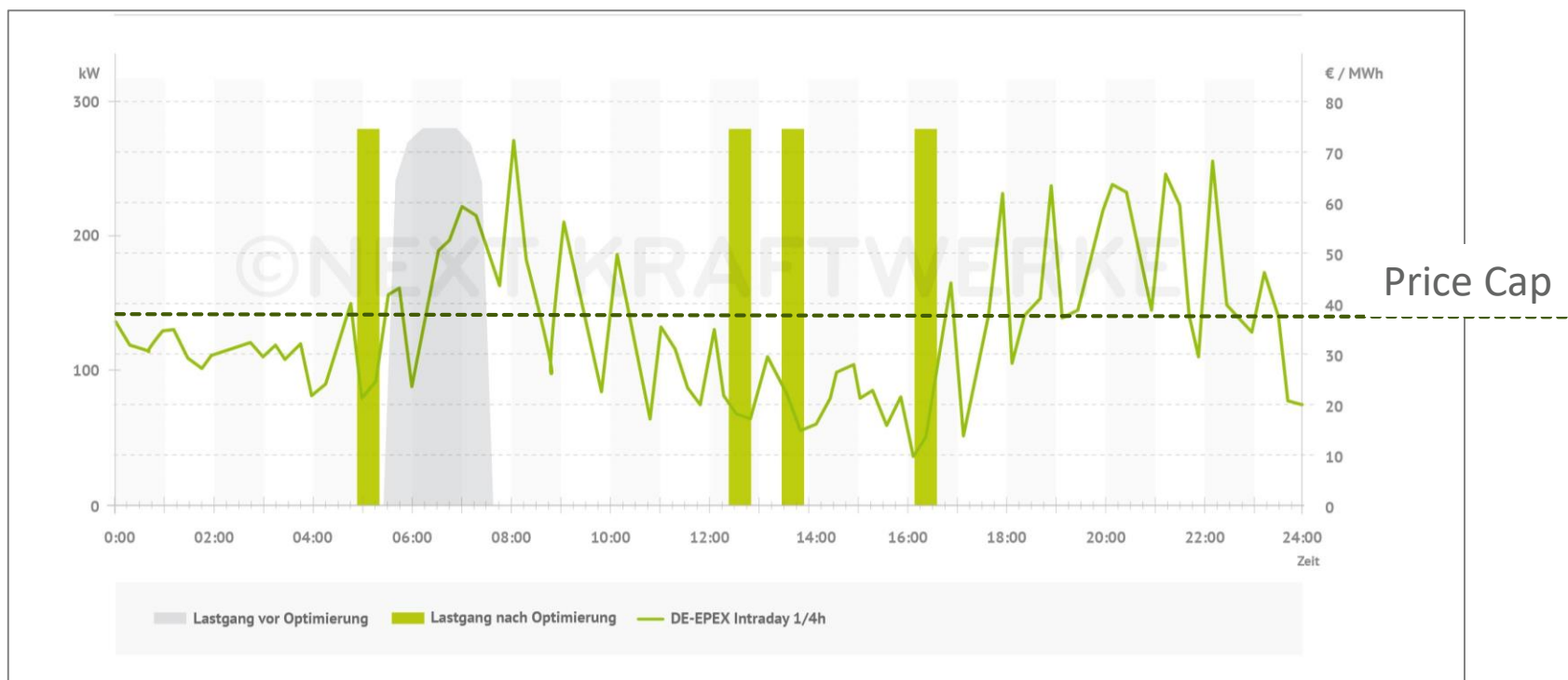


Example BEST OF 96: To pump or not to pump?

Association for coastal management



- > Use pumps to pump the water from the marshes back into the sea
- > Pumps do not run constantly, because a basin collects rain water
- > Capacity of 3 pumps: 576 kW
- > Product: Best of 96: For all 96 quarters of the day Next Kraftwerke pushes price signals. The client decides to pump or not to pump: This is Best of 96



Generation and Demand – Who Leads, Who Follows?



Based on: Henrik Dam, Energy Decarbonisation and Flexibility Needs H2020 REFLEX Workshop, 17/11/2016

ABOUT

- THE GOAL** Making 100% renewable energy possible
- THE PATH** Digital, Flexible, Sustainable
- THE STATUS** One of the largest Digital Utilities in Europe
- THE TEAM** About 135 employees with a broad academic background

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