

# Demand and flexibility options

Lessons from Germany

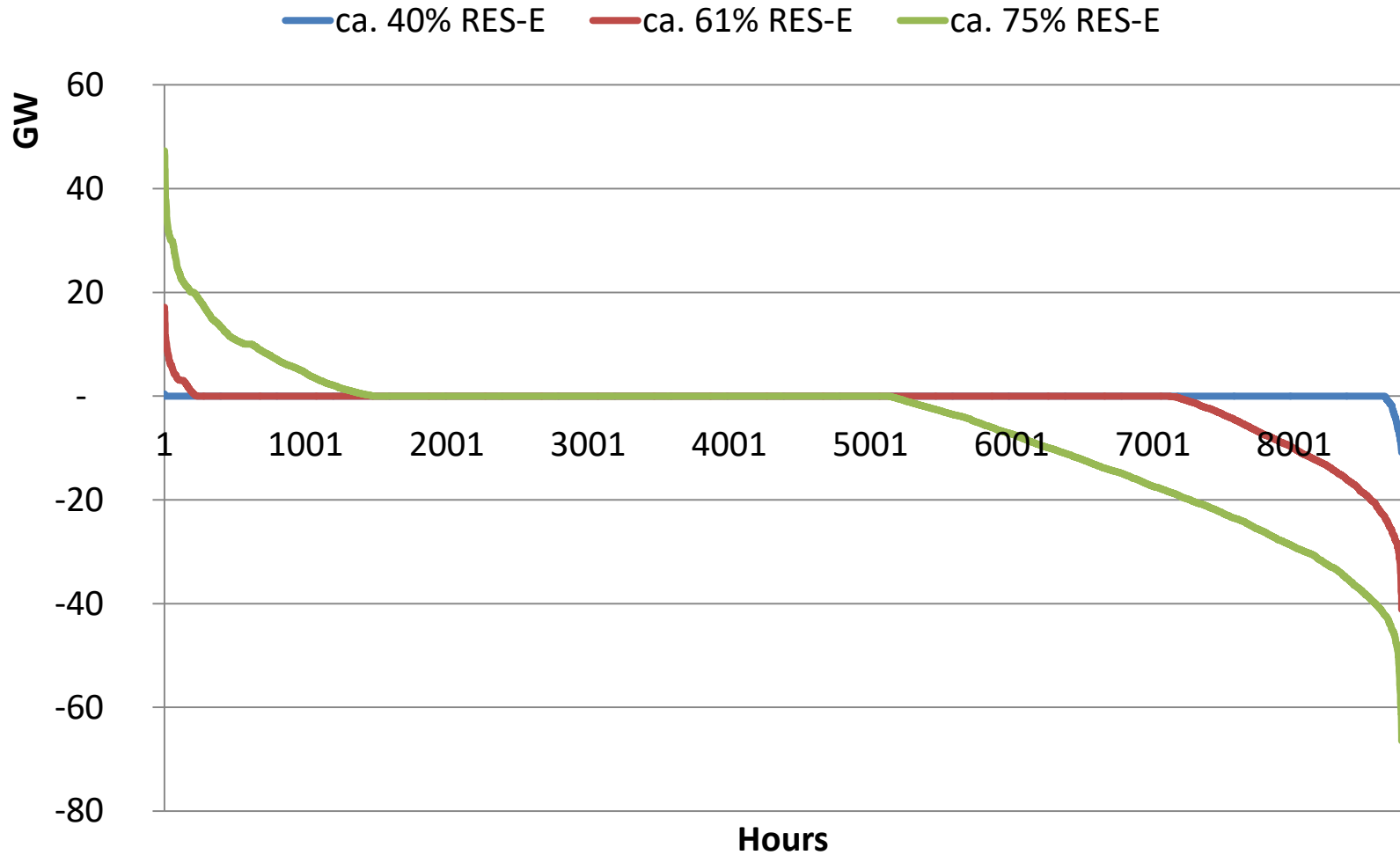
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Workshop variable generation, flexible demand

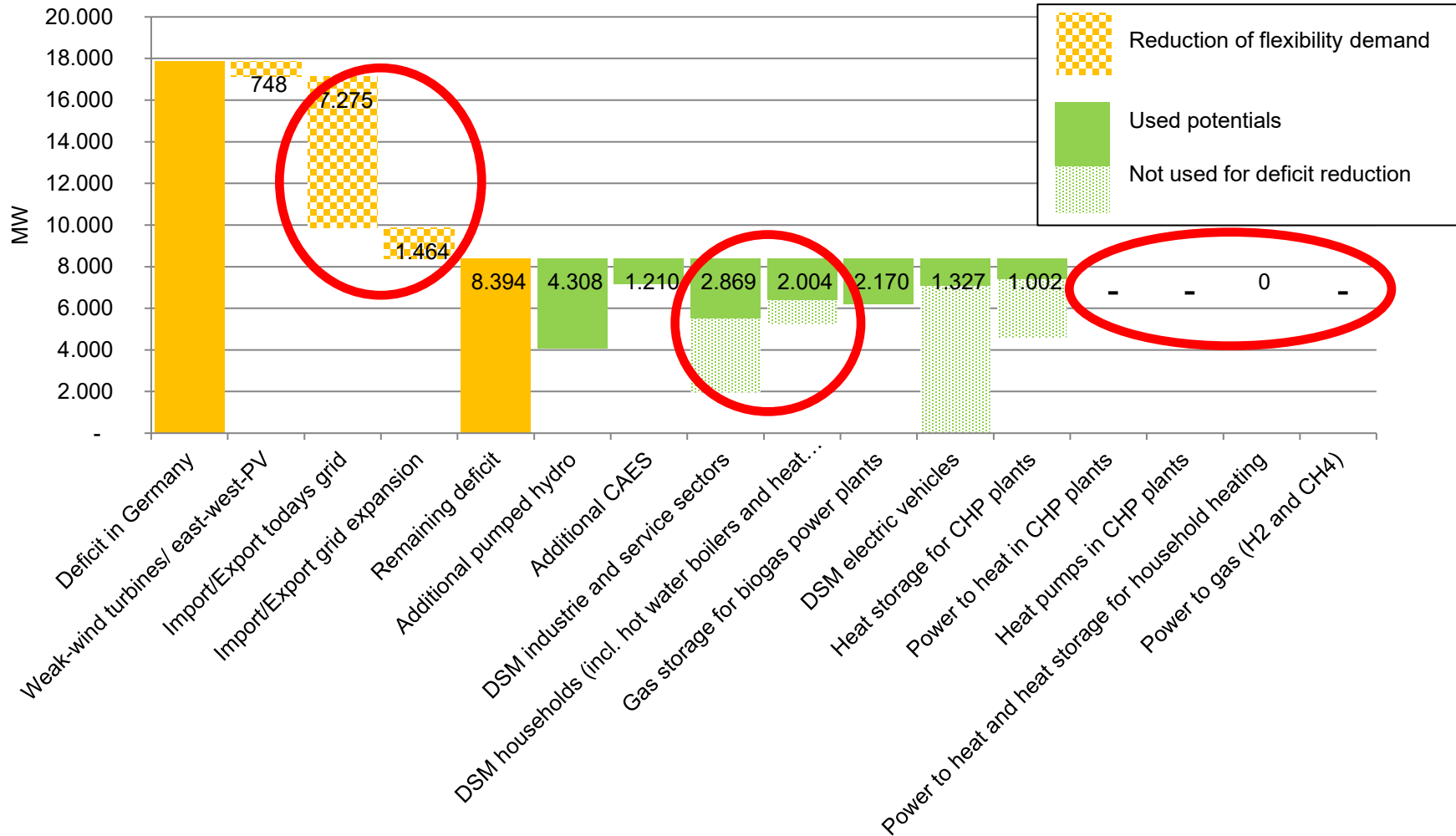
Florence, 19 February 2020

# Development of flexibility demand in Germany

## Deficit and surplus



# Scenario 2030 for Germany, ca. 60% RES-E



# Pros and Cons of demand flexibility

Pros	Cons
<p>Consumers can become active participants in power markets</p>	<p>How many consumers consider this as an advantage / would rather prefer to continue inflexible consumption?            → Focus on automated process (e.g. heat pumps)</p>
<p>Flexibility of existing hardware instead of new hardware            → Investment mainly in „control“            → Less resources needed, e.g. compared to storage</p>	<p>Competition with the process that needs power            → Opportunity costs</p>
<p>Flexible capacity without power generation of spinning reserve</p> <p>Relatively high efficiency of flexibility, no energy storage or conversion</p>	<p>Low „storage volume“            → short-term flexibility            &gt;80% RES long-term storage needed (hydrogen)</p> <p>but may be built up earlier</p>

## New flexibility from new demand?

New demand (E-Mobility, Power-to-gas, Power-to-heat, etc.) is often seen as a way to provide flexibility to the electricity sector.

However, it is mainly a way to use renewables in other sectors.

- This needs to be done in a flexible way.

Linking sectors can also lead to additional inflexibility, e.g. limited flexibility of heat demand profile.

If additional consumers are introduced too early, there is a danger of increasing conventional power generation

# Demand-Side Flexibility and Efficiency

Key issue on the demand side is demand reduction.

There can be a trade-off between demand-side flexibility and demand reduction.

- On the level of individual appliances:
  - Higher efficiency tends to reduce the flexibility
- On the level of individual consumers:
  - Should people invest in flexibility or rather in demand reduction?
- On the system level:
  - Lower demand means less renewable capacity to reach a certain RES share.
  - This reduces the need for flexibility.

## Flexibility for grid management

Demand for flexibility may increase earlier for grid management

Especially for the DSO small-scale flexible demand can play an important role

- DSO: Option value of flexibility

But also for TSOs,

- if TSO-DSO cooperation improves
- Low acceptance of grid expansion

EU calls for market-based procurement of flexibility

- Especially for demand flexibility, regulated redispatch is difficult, as costs are mainly opportunity costs

# Why hasn't it happened yet?

So far, little demand for flexibility due to conventional large-scale flexibility (power plants)

Structure of network tariffs geared towards incentivising flat demand curves → flexibility can increase costs

Processes and incentives to use demand flexibility for grid management (instead of grid expansion) not in place

Role of aggregators: How to organise the relationship between flexibility aggregators and power suppliers?



# Thank you very much for your interest!

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