



MARKET PARTIES PLATFORM

*Linking Energy Markets*

# Input for the discussion on defining flexibility

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# Scope and contents

- “Flexibility” and especially “improving flexibility” is often mentioned as crucial given the growing share of RES
- In particular “demand side flexibility” is often labelled as a panacea for all market design problems
- In this presentation “flexibility” will be defined. It will be shown that there is no need to increase “flexibility” per se.
- Improving the market will ensure that “flexibility” will be delivered at lowest cost.
- Views on flexibility and the function of “independent aggregator”

# Definitions: capacity and flexibility

- **Capacity:** is the ability (or option) to deliver or offtake (sell or buy) electrical energy at a certain time
  - Provided by an asset (generator, storage, DSM)
  - Or group of assets (portfolio), or aggregated for a system
  - Can also be addressed through contractual relations – i.e. asset-like contract (so a market party can provide capacity without owning the asset)

- ***Flexibility: is the ability to use capacity without limitations***

- Flexibility is a characteristic of capacity
- Flexibility has many different time dimensions
  - Example: A battery has short-term flexibility, but no longer term flexibility

# The future “flexibility challenge” in different time frames.

- *Balancing challenge is overrated*
- Increasing share of intermittent (zero marginal cost) generation poses challenges in different time frames:
  - *Balancing*: probably smallest challenge
    - Short-term fluctuations are not extreme. Moreover RES can participate in balancing markets and DSM will play bigger role (but no need for support!)
  - *Ramping*; bigger challenge
    - Especially a well functioning intraday market will give price signals and incentives to invest in flexibility of assets (like low minimum load level, short start-up times, fast ramping)
  - *Base load*: biggest challenge!
    - Longer periods (days/weeks) with low wind, low PV, low reservoirs and high demand seem to be biggest challenge.

# Capacity is “flexible” if there are no constraints to use the capacity

- Constraints can be manifold as they can be imposed by legal, contractual, environmental, commercial and many more conditions.
- Technical constraints can be:
  - Low ramp up and ramp down rates
  - High minimum load levels
  - High minimum up-times and down-times
  - Low maximum up-times and down-times
  - Must-run obligations
- Contractual constraints : e.g. the nomination time in a VPP contract or the minimum off take in a gas supply contract, O&M constraints (number of starts), etc.
- Legal constraints can be: maximum emissions, cooling water restrictions, etc.
- Commercial constraints: e.g. impact of start/stop on life time, etc.

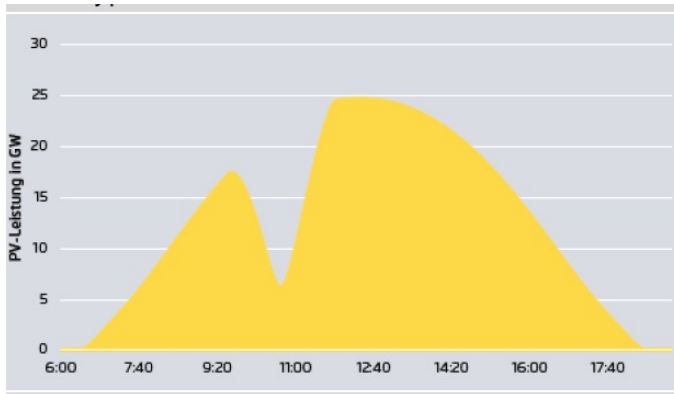


# The role of the market

- Flexibility will be utilized by the market as soon as opportunities arise
- Flexibility is not a standard product as such. There is no “flexibility market”
- The energy market (which includes ancillary services) is the place where “flexible capacity” can make money
  - The energy market can be an EOM or a EM+ CRM
- Energy Products are traded on that market and encompass:
  - standard products: forward products (year/month/day ahead), intraday products and reserve products. (And possibly capacity products, in case of a CRM).
  - Non-standard products: VPPs, PPAs, options , profiles etc
- New products will emerge and be traded if the market has a need for such product
  - OTC market is important as it allows to adapt fast
  - EEX has introduced a weekly option contract (called “cap future”)
- If a market party controls a lot of “flexible capacity” (through assets or contracts), then he can sell different products and switch between products, to make more money

# Partial Eclipse was a stress test for flexibility in wholesale markets

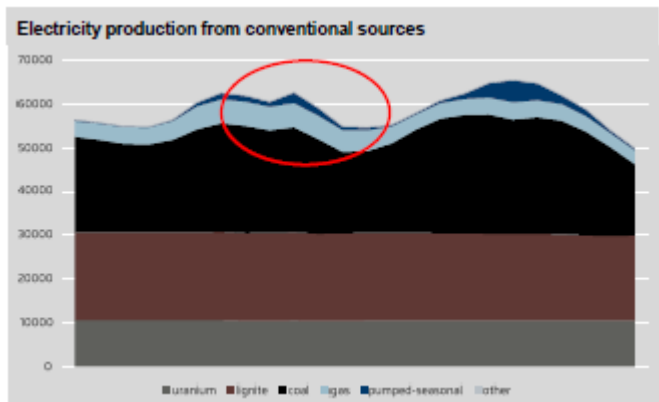
11 GW down– 19 GW up



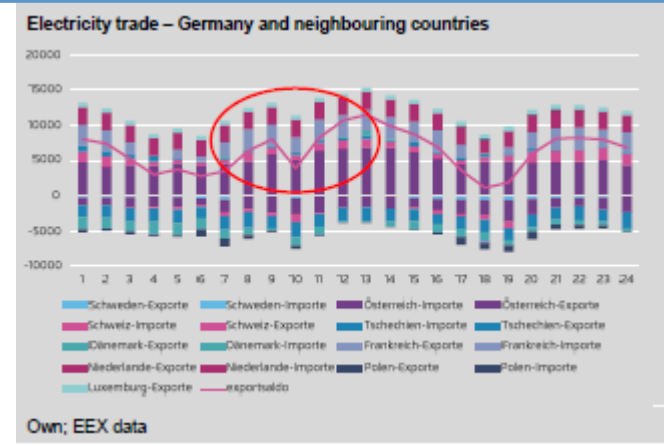
Adjustments in Intraday



Conv. Generation responded



Import/ Export responded

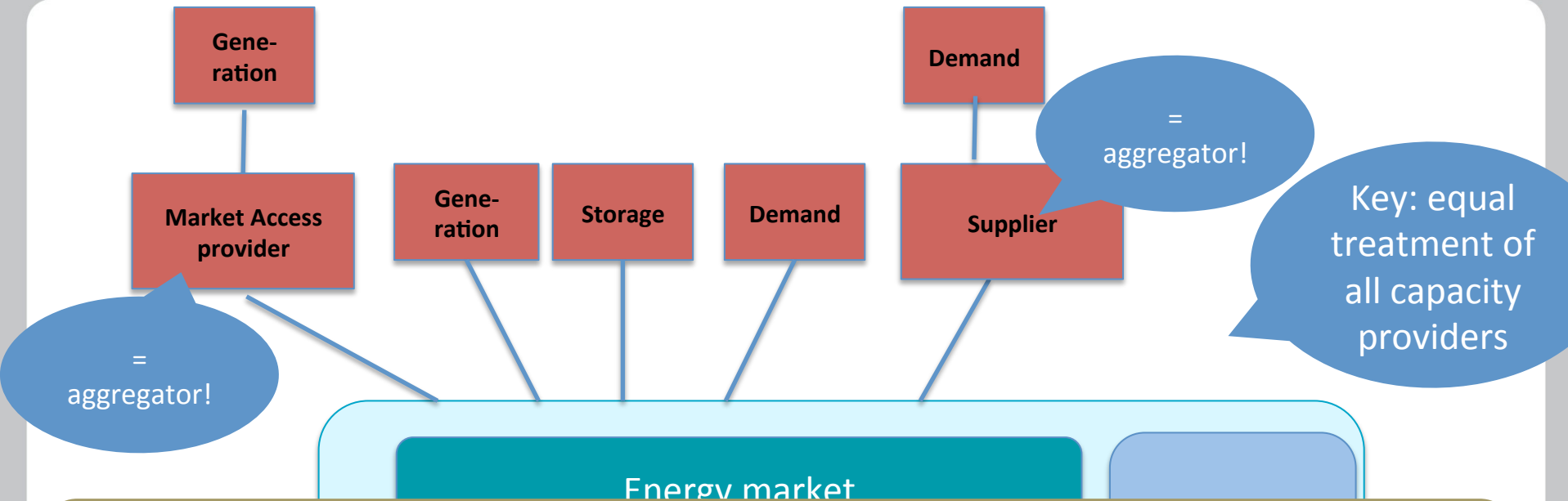


Source: P. Graichen, Agora, 17. Juni 2015

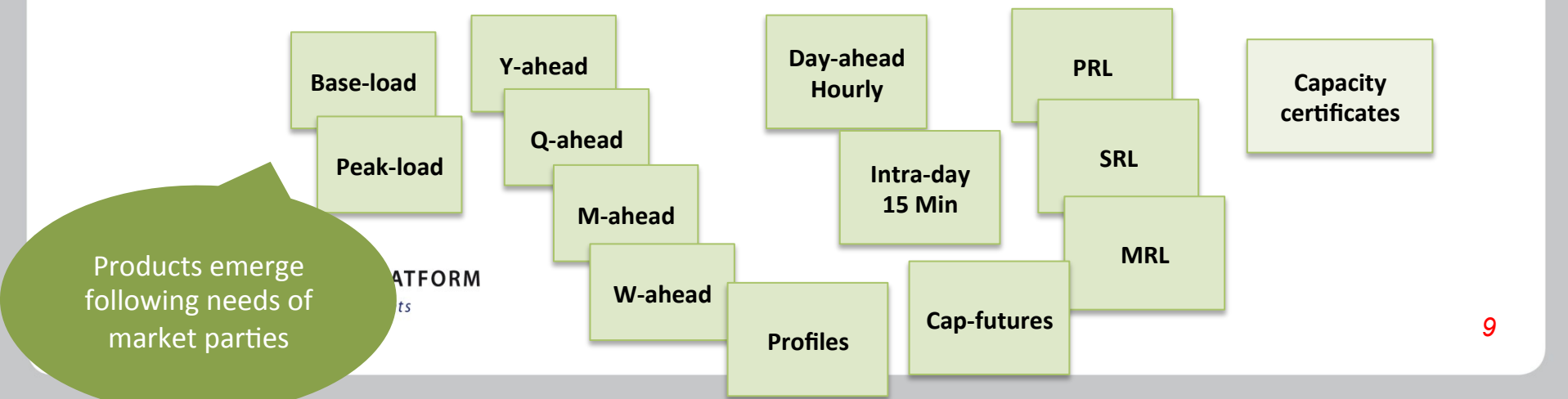
# Increasing flexibility is a market decision

- Increasing flexibility pushes out other flexibility, and doesn't increase flexibility. Examples:
  - Introducing flow-based market coupling: *Good idea*.
    - Better use of existing transmission grid. Flexible capacity can be better used across borders. This will impact power prices (more convergence, less volatility). Value of flexible capacity will reduce. Non-competitive flexibility will be pushed out. But overall efficiency increases.
  - Subsidizing a new battery: *Bad idea*.
    - Installing a new battery will at first increase overall flexibility. This will impact power prices (less volatility). Value of flexible capacity will reduce and competitive flexible capacity will be pushed out. Overall efficiency decreases



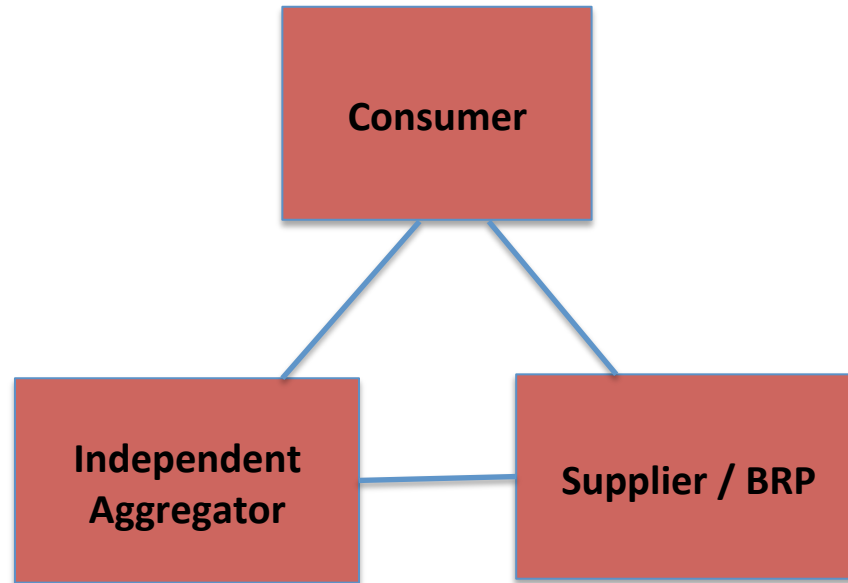


Capacity is used on one market, optimising its flexibility across the different times. One can't carve out a "flexibility market".



# “Independent aggregation”

- “Independent aggregation” means the aggregation of demand side flexibility, where the consumer remains with supplier also for balancing responsibility
- Triangle:



## “Independent aggregation”: not needed

- Either a generator/storage/prosumer acts on the market or he chooses service provider / supplier for market access
- Supplier can exploit demand side flexibility with consumers and *retail competition* is the driver
  - This ensures efficient development of demand side flexibility as soon as business case is there
    - Example: direct marketing has developed rapidly and generated benefits
  - If there is lack of retail competition, then there is a more fundamental problem
- Remember: flexibility is a characteristic of capacity. Capacity is used on the market. The characteristic cannot be sold separately.
- Imagine: an aggregator approaches an IPP (Wind Producer) that has a PPA for market access with the offer to sell their flexibility separately

# “Independent aggregation”: is possible based on voluntary agreements

- “Independent aggregation / triangle” already exists
  - Consumer buys x MW based load and rest of demand (incl. balance responsibility) is managed by supplier
  - need to address rebound effect (in particular with regard to imbalance settlement charges when strategic reserves are activated)
- “Independent aggregation” should be possible, but purely based on voluntary agreements or through a regulated contractual framework where retail competition not mature
  - No obligation for suppliers / market access providers to facilitate independent aggregator in a competitive environment. No need for any mandatory rules in this case
- Development of “industry standard for independent aggregation” would be OK
  - But, not mandatory



# “Independent aggregation”.

## Conclusion

- Voluntary agreements between aggregator – supplier (or market access provider) - consumer (or generator) are fine.
- However no need to regulate this relationship everywhere. As unnecessary market regulations will only result in distortions and thus inefficiencies.

# Conclusions

- Stop talking about flexibility
  - There will always be flexibility, and an efficient market will deliver this flexibility at lowest cost
- So: do not artificially increase flexibility.
  - Like by strengthening (non-market based) price signals for demand side response or relying on specific auctions
- But: improve efficiency of the market
  - Key success factor for an efficient market: Free moving prices that entail a credible risk that scarcity prices can materialise
  - Other ideas like: Better allocation of XB capacity over time frames (intraday)