European Commission

Demand side flexibility: compensation to suppliers

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Internal Energy Market

Strict limits to compensation payments

Article 17.4 - Demand response through aggregation

Member States may require ***electricity undertakings or participating final customers to pay financial compensation*** *to other market participants or to the market participants' balance responsible parties, if those market participants or balance responsible parties are* ***directly affected by demand response activation****.*

Such financial compensation ***shall not create a barrier to market entry*** *for market participants engaged in aggregation or a barrier to flexibility.*

*In such cases, the financial compensation shall be **strictly limited to covering the resulting costs** incurred by the **suppliers of participating customers** or the suppliers' balance responsible parties during the activation of demand response.*

***The method for calculating compensation may take account of the benefits** brought about by the independent aggregators to other market participants and, where it does so, **the aggregators or participating customers may be required to contribute** to such compensation but only where and to the extent that the **benefits to all suppliers, customers and their balance responsible parties do not exceed the direct costs** incurred.*

The calculation method shall be subject to approval by the regulatory authority or by another competent national authority.

Implementing the Clean Energy Package for Demand Response

Who would pay, and how, any compensation granted to suppliers/BRPs

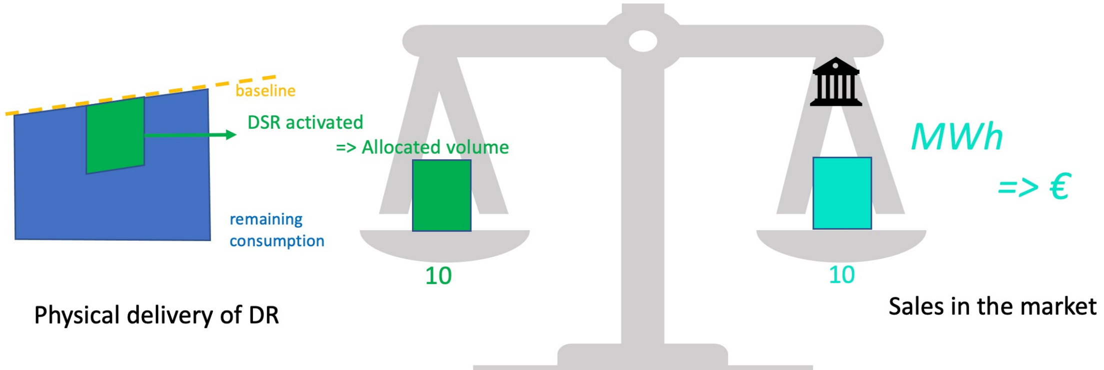
when DR is sold in the wholesale market

Workshop #5

5th July 2021

Takeaways from previous sessions

✓ Balancing resp. of DR aggregators in wholesale market as an alternative to generation, same responsibility: to deliver volumes sold



✓ Impacts on third parties, i.e. suppliers of DR participating consumers

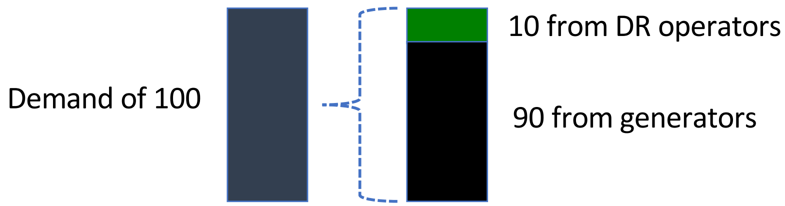
- Balancing resp. of suppliers: models where imbalances are settled or with perimeter correction
- Compensation, if any, must be limited to costs for suppliers/BPRs during DR activation

➢ Today: Who should pay 'compensation' (yet ensure not to create a barrier to DR)

- Next workshop to focus on DR as BSP = on balancing markets

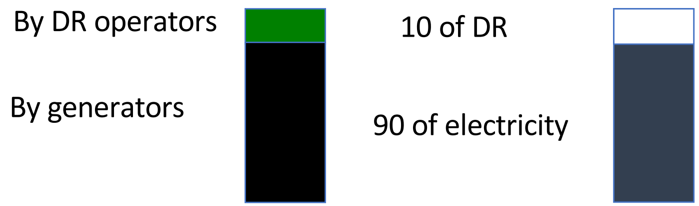
DR ensures physical balance,
economic impacts on suppliers: costs & benefits

Wholesale markets
(in advance, e.g. day ahead)



Via wholesale markets (i.e. in advance)
consumption forecast is balanced by purchases

Physical delivery
(in real time)

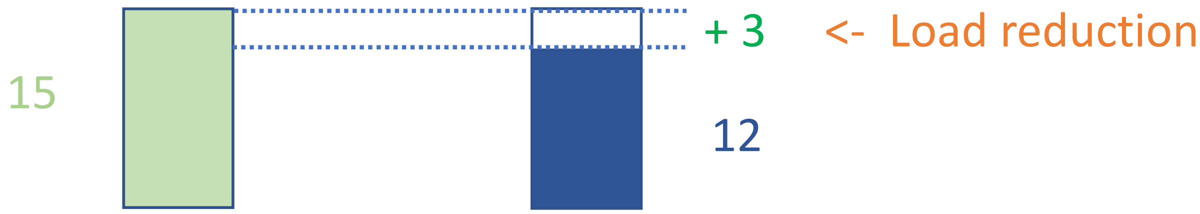


Actual consumption (90) *(as reduced by DR)*
is balanced
by actual electricity generation (90)

- Benefits for suppliers: **reduced sourcing costs** and **reduced volatility** in wholesale market
  - Origin of costs for suppliers: buy 100, sell 90 to consumers: what about the 10?
    - Overall cost of buying DR: 10 @ market price
      - ✓ Market-based way to pay for DR … automation
  - Actual impact on suppliers/BRPs depend on accounting rules: ‘models’
  - Two separate issues, but linked via ‘models’: ”accounting imbalance” and ”revenues/costs”

(1) Model “*where imbalances are settled*”

Accounting for imbalance of a supplier with curtailed consumers



Purchases 15 – Consumption 12 = +3 *positive* imbalance

- Imbalance settlement => supplier (’s BRP) paid for positive imbalance
  - Same as any unforeseen load behaviour, not specific to DR
  - Price depending on national rules, EBGL promotes single price, leading to ~spot ±∂
- No cost for supplier/BRP if price is appropriate
- No basis for any (other) ‘compensation’ <u>to</u> individual suppliers/BRPs: easy to implement
- Where does the cost hide?
  - Embedded in the settlement account within the TSO (/settlement entity)
  - Overall total ”accounting imbalance of +10”
  - Depending on national rules, may be recouped by TSO from all BRPs on a *pro rata* basis (volumes, or imbalances, etc.)

(2) Model “*with perimeter correction*”

discussion on price depending on what is considered as ‘costs’

- No accounting imbalance => perimeter correction deprives BRP of positive imbalance revenue
- Supplier buys 15 and bills 12

➢ DR activation + correction => cost transferred to suppliers of curtailed consumers

➢ Basis for a compensation to such supplier for the corrected volume (+3) … @ which price?

- Art.17.4: compensation to those directly affected, ≤ costs incurred during DR activation
- Avoid overcompensation

Discussion on ***price***

- Various notions mentioned in discussions: direct costs; foregone revenues; opportunity costs => counterfactual scenarios

Overall cost … of buying DR in the market, not bill it to consumers

1. Direct costs of DR, i.e. sold in the market or not: => market price

Yet if DR was not sold in the market … generation would instead, then?

2. Foregone retail revenues: with/without DR => retail price
(but includes margin + confidential + risk of gaming by suppliers)

Without correction, or simply with same level of demand as with DR, no purchase in the market (neither DR nor generation) thus also no correction

Direct costs… of correction / opportunity cost : with/without correction

3. Static => positive imbalance price
4. Dynamic: supplier could resell excess => day ahead or even intraday price

Consistency with option to take into account benefits to the supplier in the calculation methodology of compensation price paid to supplier

➢ If yes, “net cost” hence should reduce price to be used for compensation to suppliers

➢ If not, economic impact considering only cost no benefits = underlying counterfactual is with DR (reducing need for generation, hence price) but not sold in the market, i.e. scenario 1 => market price

Who should pay? subject to the obligation not to create a barrier for DR nor aggregators

- Art.17-4: *Such financial compensation shall not create a barrier to market entry for market participants engaged in aggregation or a barrier to flexibility.*
- In conjunction with Art. 17-1: *foster DR through aggregation. […participate] in all electricity markets.*

➢ Impossible to charge full compensation costs to DR
  - With compensation = market price, no revenue for DR, i.e. most radical barrier
  - With compensation based on retail price, so little revenue for DR, radical barrier, as shown by France

➢ Solution provided by art.17-4: share the burden among *electricity undertakings*

- Echoing recommendation from BEUC during negotiations, backed by EP etc.

BEUC The Europe Consumer Organisatic

ELECTRICITY AGGREGATORS:

STARTING OFF ON THE RIGHT FOOT WITH CONSUMERS

- Consumers should not bear the cost of payments/compensation between suppliers and independent aggregators. If the need for such payments is verified, these should be financed by all market participants benefiting due to the trade of flexibility in the wholesale market.

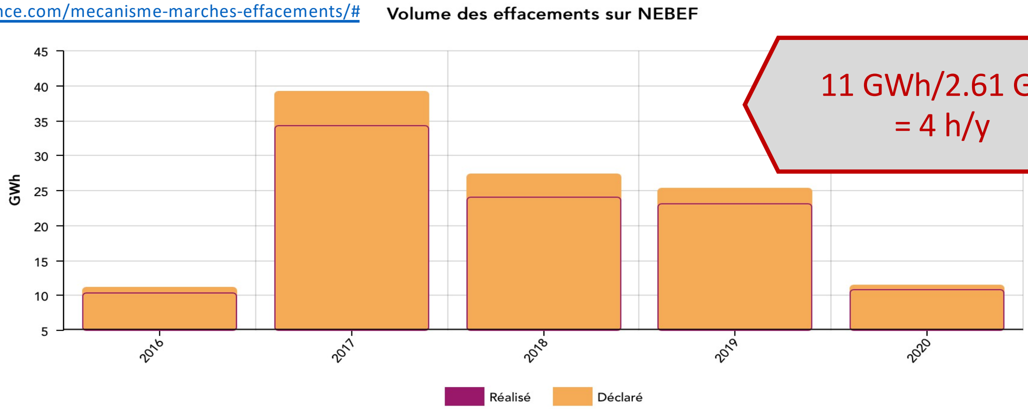
DR4EU view of the French long standing experience reflected by numbers published by TSO:

A dead end for DR in the markets?

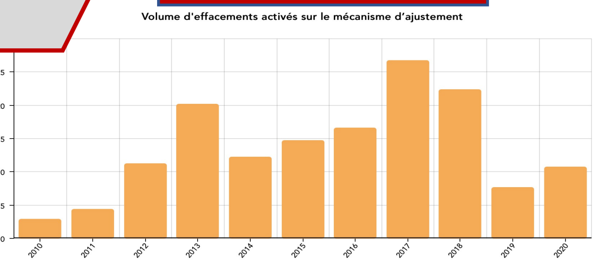
- Everything right or so, … except the ‘compensation’ system
- Markets opened to DR for years, balancing then also wholesale (‘NEBEF rules’, 2014)
- DR potential is there (all sizes, from electrical heating in 7 M homes to large industrial processes)
- DR capacities are there: 2.61 GW certified (official number), paid (only) with state aids:
- After years, volumes delivered in the markets remain insignificant, and decrease

No access to wholesale market

From French TSO: https://bilan-electrique-2020.rte-france.com/mecanisme-marches-effacements/#



11 GWh/2.61 GW
= 4 h/y



No access to electricity markets at all

20-30 GWh * 5-10 €/MWh = 0.2 M€/year all DR volumes

- Number of market players decreased too
  - From over 20, down to 12 (incl. EdF and subsidiaries,…)

Le dispositif NEBEF

A ce jour, 22 opérateurs d’effacement ont contractualisé avec RTE pour participer à ce dispositif, dont 12 disposent de l’agrément technique et sont actifs.

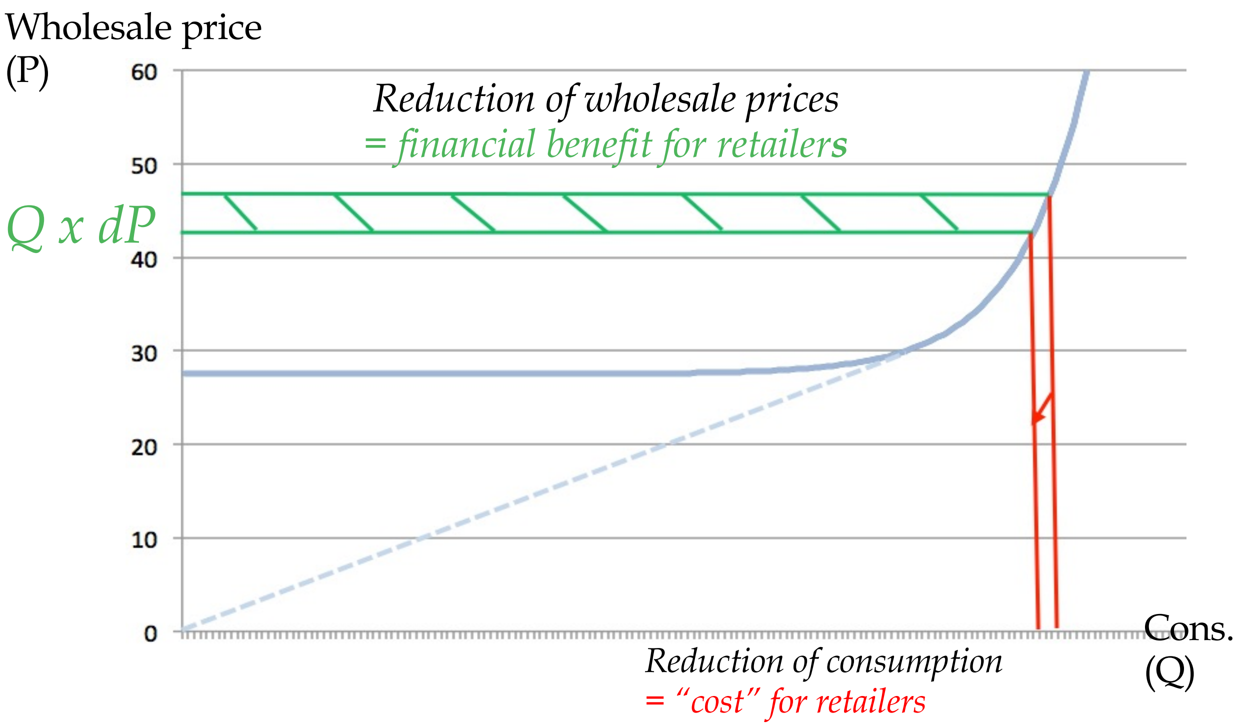
Solution in the CEP
share costs of compensation (if any)

- MS may spread costs among “electricity undertakings”: how?

- Option proposed in CEP: to take into account benefits
  - Spread costs as benefits are, to all suppliers and ultimately all consumers
  - Share benefits – costs = net benefit fairly among all suppliers, thus may be transferred to all consumers
  - DR to contribute only if and to the extent that benefits would not exceed costs
    - DR contribution by aggregators or participating consumers only in that case
    - ➢ Always a net benefit (or 0) for suppliers
    - ➢ No barrier to DR, because no charge, subject to this safeguard
  - ✓ Additional incentive for DR to deliver when prices are high… and thus maximise benefits for all

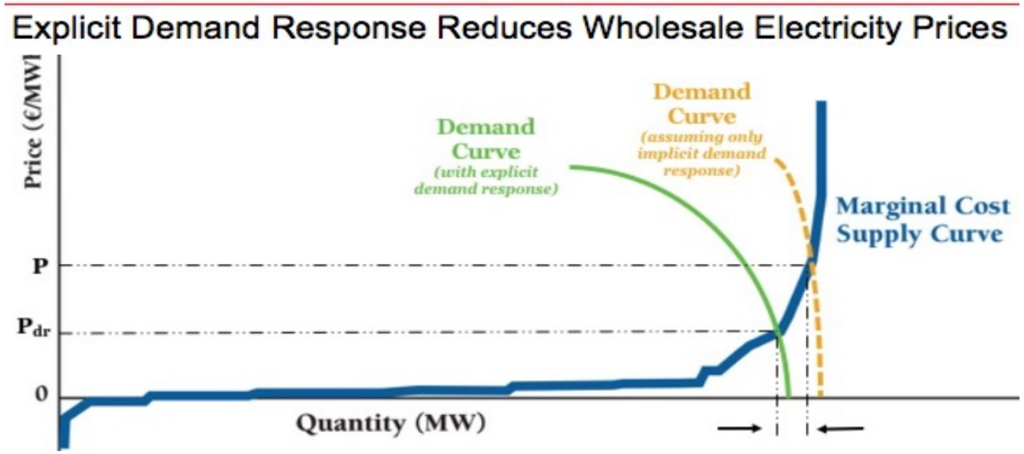
- All good for suppliers, for competition, and ultimately for all consumers
  - ✓ Individual supplier with participating consumers receives compensation
    - ✓ Hence DR is a viable business for the supplier to launch too, and become a DR aggregator (not only IAs)
  - ✓ All suppliers get a net benefit of some consumers providing DR via aggregation

Benefits for suppliers and consumers



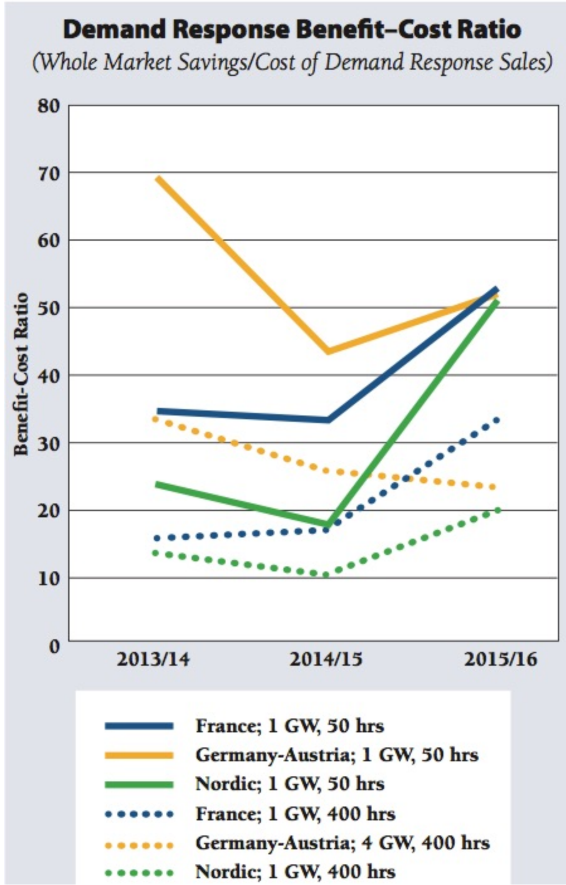
- Reduced sourcing costs + reduced volatility
- US net benefits rule = DR without any compensation when market price ≥ monthly threshold
  - Cf PJM (net benefits test) threshold price around 20-30 $/MWh
- European approached refined, with similar results
- A service to benefit all (better use of infrastructures): precedent of payment of overbooking flights
  - Regulation (EC) 261/2004 of the European Parliament and of the Council of 11 February 2004 establishing common rules on compensation and assistance to passengers in the event of denied boarding (…)

Historical data shared during discussions



Source: The Regulatory Assistance Project

	Market	Year	Average decrease in spot price on application of DR (€/MWh)	Whole market retailer benefit [M€]	Compensation payment to retailers (based on French compensation model) [M€]	DR sales [M€]	Retailer market benefit/ (Cost = DR sales)
400h/1GW	FRA	2013/14	13.01	379.27	28.06	24.68	15.37
		2014/15	11.81	344.57	27.93	20.77	16.59
		2015/16	18.99	515.54	21.42	15.72	32.80
	GER-AUT	2013/14	20	635.83	24.44	19.13	33.24
		2014/15	13.83	458.89	22.66	17.9	25.64
		2015/16	11.29	355.13	18.4	15.58	22.79
	NORDIC	2013/14	7.71	186.32	19.69	14.26	13.07
		2014/15	5.49	135.12	18.08	13.47	10.03
		2015/16	10.21	272.75	14.75	13.98	19.51



Benefits from market-based DR: reduce sourcing costs for retailers

450 GWh/mkt = 1.6 G€/y
benefits for retailers

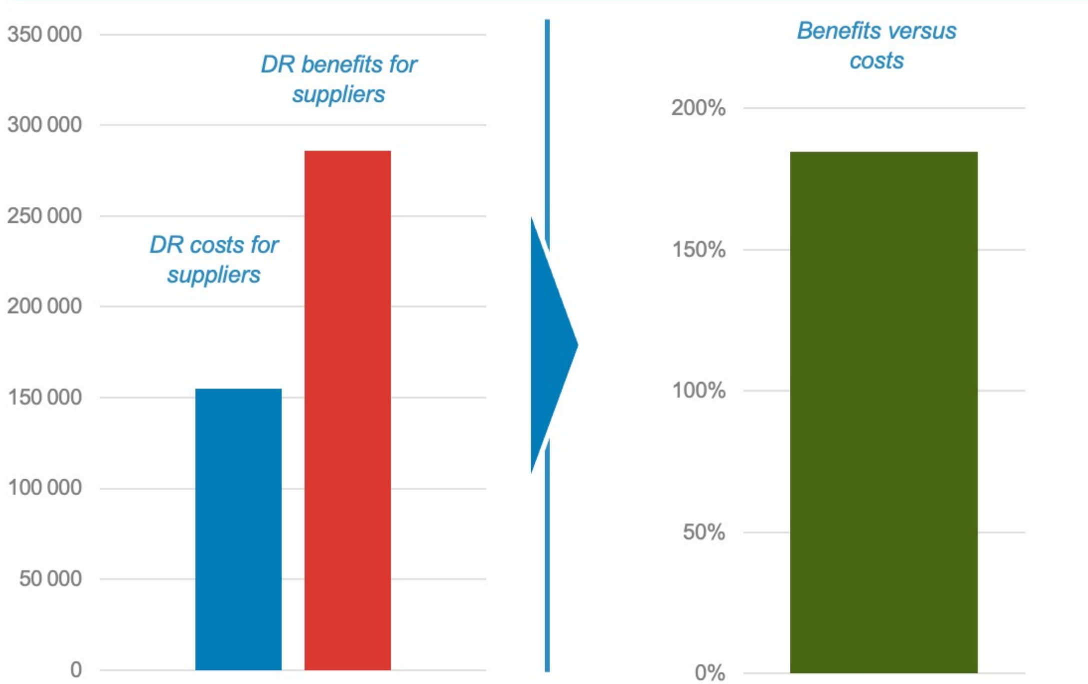
COMPASS LEXECON

DR benefits assessment

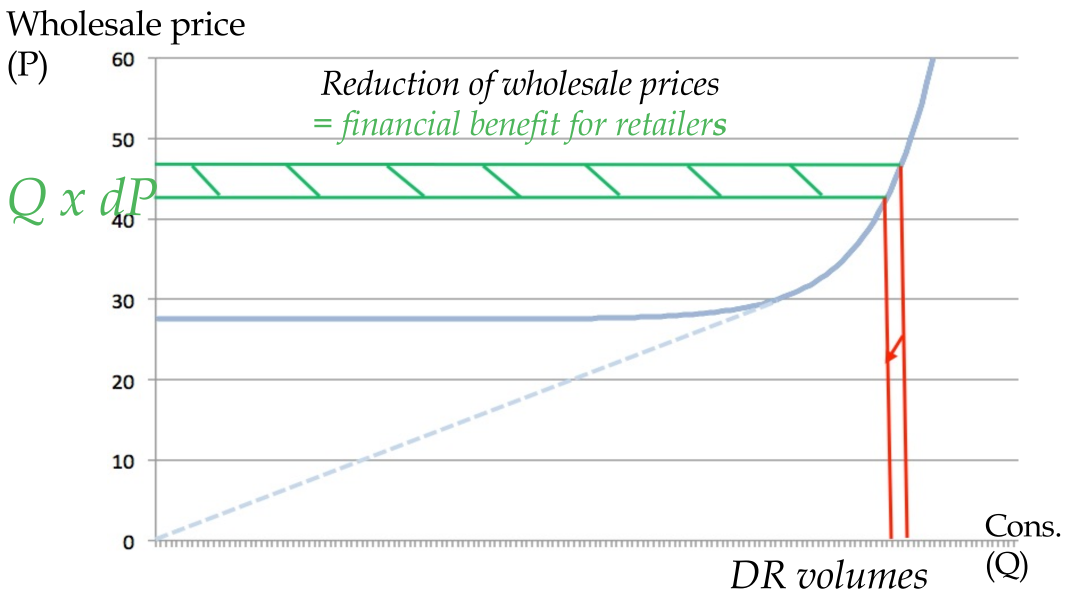
With the 30 GW DR portfolio, market benefits for suppliers in their energy sourcing are 190% of DR market costs for suppliers

- Gross market-wide benefits are defined as the reduction in suppliers' sourcing costs in the wholesale energy market
  - Not taking into account indirect benefits e.g. on capacity markets/mechanisms.
- Suppliers' extra costs related to DR are the market remuneration of DR:
  - DR being offered as "production" on the market it receives the market clearing prices
- **With several assumptions leading to a prudent estimation of market wide gross benefits (i.e. for all suppliers) and maximising the market costs of DR, benefits account for twice the market costs**

Costs of energy sourcing with DR (€) and benefits versus costs analysis for DR portfolio - Central Scenario - EU 2030



Practicalities (1)
How to run the net benefits test in real life



- Use DR volumes known by TSO and market data from NEMO
  - Ask NEMOs to run their market engine a second time to find the counterfactual higher price
  - Increasing bids from demand increased by the DR volumes
  - or deleting cheapest supply bids, same volume
- Confirm benefits exceed costs regularly, e.g. every year or 2-3 years, and publish results
- Alternative: threshold price above which no need to calculate in details, cf USA
- Note: suppliers get benefits even if not calculated: automatic via market prices (reduced by DR)

Practicalities (2)
Safeguards for suppliers/BRPs and aggregators

- Suppliers with participating consumers
  - Fair compensation price: spot (or alternatives)
  - Volumes properly calculated
    - Baseline, data and protection: future workshops
    - ✓ Same volume for correction and compensation, ok
- Suppliers sharing the benefits, but also the cost to compensate some of them
  - Benefits from reduced sourcing prices and reduced volatility
  - Note: suppliers get benefits even if not calculated: automatic via market prices (reduced by DR)
  - Spread costs *pro rata* volumes (e.g. not imbalances)
  - Protect them from risks of consumers overdue? (suggestion)
- Aggregators and participating consumers also need safeguards
  - Could be required to sell only above threshold price, or provide financial guarantees (similar to those for imbalances)
  - Volumes delivered should be properly calculated by TSO/settlement entity
  - Protect commercially sensitive data: cf future workshops
- Central settlement of corrections & compensation payments to suppliers/BRPs and from contributors, similar to settlement/imbalance payments

Who would pay, and how, any compensation granted to suppliers/BRPs

DR operating in the electricity wholesale market (e.g. day ahead)

Other topics coming later = not today

- *DR in the balancing market: next Monday 12th July*
- *Baseline*
- *Data needed*
- *…*

Now Q&As, comments welcome!