

Flexibility markets and TSO-DSO Cooperation

Session 1: What are the products in your market?

Brussels, 13 February 2020

Session 1: Products

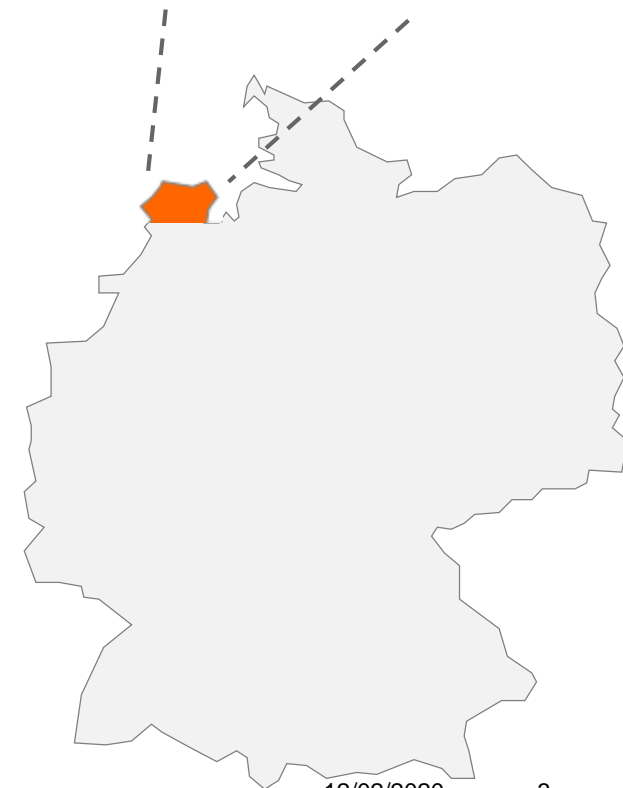
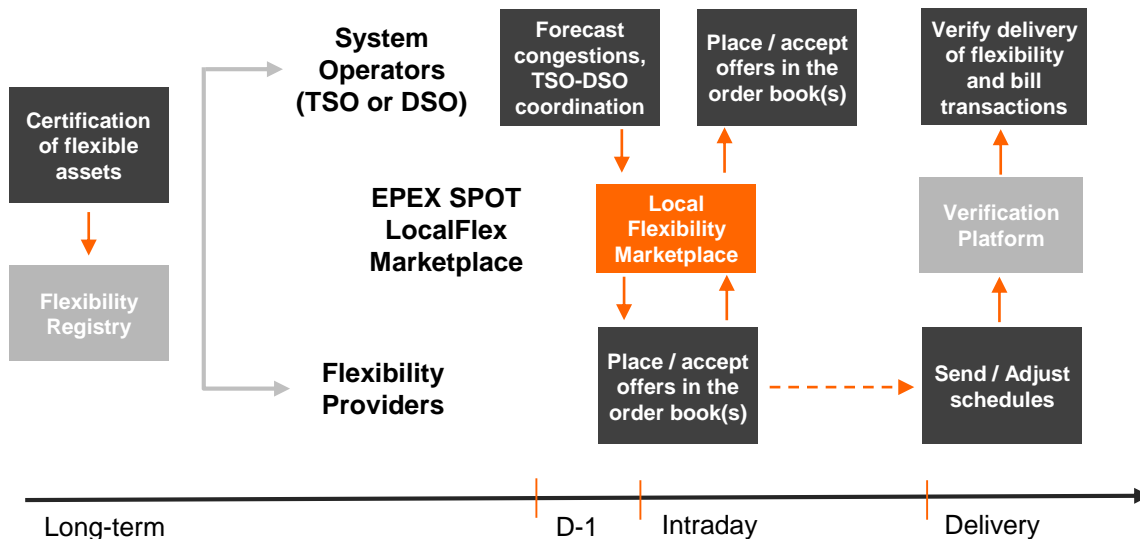
- 1) How do you define the flexibility you procure? (e.g. do you define a set of product requirements, or a set of key parameters, or asset-specific products)?
- 2) Are the defined services/products/parameters used in your project adapted to the specific characteristics of your network or can they be universally used?
- 3) Do you use a contract for consumers/assets/appliances to participate in the flexibility market? (Is it a standardised contract? Do you pay for the capacity and/or the actual use of the flexibility? Do you allow free bids (without availability contract)?)
- 4) Is grid and/or product prequalification organised? If so, how? (Do you require a type of certification of a consumer appliance or asset before participation in the flexibility market is possible? If yes, what and why?)
- 5) Do you combine several products/services in one common flexibility market (joint procurement)? If so, which services/products can be combined

The enera flexibility market process enables an efficient and proactive flexibility usage for CM

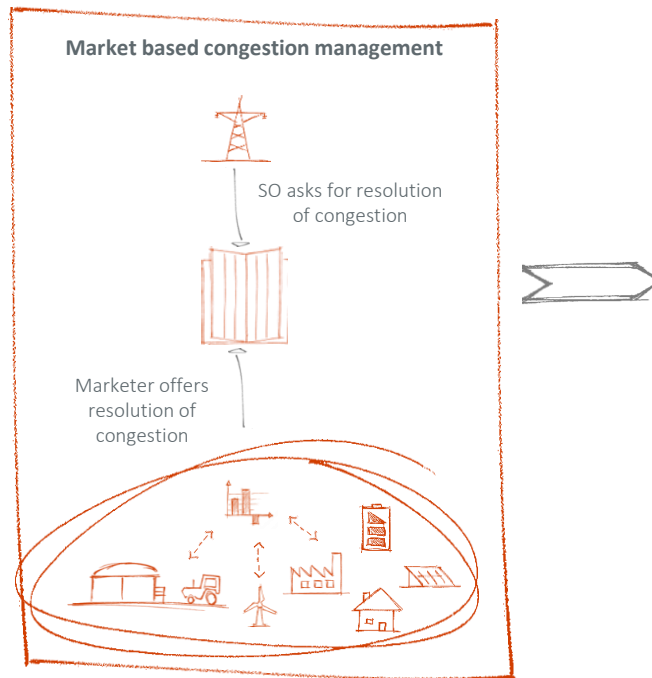
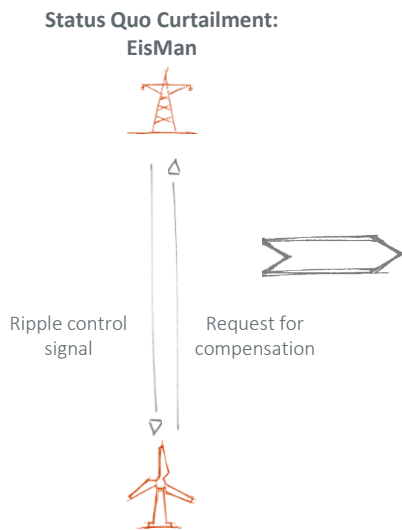
Implementation of market process to:

- **Efficiently centralize** localized physical flexibility potentials **where and when needed**
- Facilitate grid-oriented **TSO-DSO coordination and optimization** of flexibility activations
- Foster the **development of new decentralized flexibility sources** through **digital and transparent processes**

Local		Bid		Ask	
Product	Qty	Price	Price	Qty	Qty
				3	25
				5	1
				8	4
				25	9
				1	4
				5	1
				25	4
DE 03.00 Local 1	10	42	43	25	4
DE 03.00 Local 1	3	30	50	5	
DE 03.00 Local 1	8	27	55	1	
DE 03.00 Local 1	7	21	58	4	



In the target model all plants communicate via a standardized product



CONTRACT SPECIFICATIONS

Attribute	Description
Market Area	23 local market areas defined by the system operators
Trading procedure	Continuous trading
Trading period	24/7
Tradable products	1-hour and 15-min RES & Non-RES contracts
Gate opening	T-1 at 15:00
Gate closing	5 minutes before delivery start
Minimum price increment	0.1 €/MWh
Minimum price	RES products: - 9999.9 €/MWh Non_RES products: - 50.0 €/MWh
Maximum price	RES products: + 9999.9 €/MWh Non_RES products: + 9999.9 €/MWh
Minimum volume increment	0.1 MW

A diversity of flexibility providers and resources

- **Admitted**
- **6 CFPs:**
 - ▶ Alpiq
 - ▶ Baywa re
 - ▶ EWE Trading
 - ▶ Quadra Energy
 - ▶ Statkraft
 - ▶ Volkswagen
- **2 DSOs:**
 - ▶ Avacon
 - ▶ EWE Netz
- **1 TSO:**
 - ▶ Tennet



- Different technologies of assets certified as part of the project:
 - Wind parks
 - Biomass plants
 - Batteries
 - Power-to-gas
 - Flexible industrial loads

	Biomass	PV	Other	Storage	Wind	Flexible load	Total
Capacity (MW)	51	3	6	12	222	20	314
# of plants	107	2	1	1	117	1	229

Products for the SO Procurement of flexibility for Congestion Management

- Flexibility : deviation from a submitted baseline (injection/withdrawal).
- Flexibility procured by SOs for predetermined “standard” products (15mn/60mn energy injection/withdrawal of green/conventional energy in area/portion of the 20kV grid)
- Certification process for MPs (producer/consumer/aggregator) with the contracting SOs (and verification platform)
- Re-balancing BRP of market participants is not implicit (portfolio or IDM)
- Aggregators play key role for RES/decentralized assets/DSM : battery, P2G, paper mill and aggregation of residential consumers;
- In enera 1.0 grid (available capacities) not modelled explicitly into the market model. Load flow calculations / congestion cases defined by each TSO/DSO. Multilateral coordination between SOs. Only congestion management, but joint procurement possible.
- Standardised contract with “connecting” and “contracting” system operator(s) and with the exchange (no clearing-house involved in this demonstration case: no penalties)
- In enera, SOs pay for the actual use of the flexibility (activation), not the capacity/availability (reservation): no real incentives
- Free bids are the only option in a post-NABEG world: cost-based congestion management extended to all resources >100kW

Thank you!

The enera LocalFlex Market Platform

Market Overview

General Profile Layout Connection Help

My orders: Cancel quotes Cancel all Deactivate all Activate all

Market Overview X Own Overview +

Order Book Details

SOET1 19Q1_RES (CET) Hi/Low: -/- Last: -@- ClosingPx: -

WVAP	Acc	Qty	Bid	Ask	Qty	Acc	WVAP
-24.00	10.0	10.0	-24.00				
-27.00	20.0	10.0	-30.00				
-30.67	30.0	10.0	-38.00				

Market Overview (Predefined products)

R	Area	Ctrct	Cur	Phas	State	BAcc	OIBid	BIQty	OBid	BQty	BVWA	Bid	Ask	AVWA	AQty	OAsk	AIQty	OAsk	AAcc	LQty	LPrc	TQty	TOBQty	TOSQ
+	SOET1	17Q4_NRES	EUR	BALA	ACTI	10.0				10.0	-35.00	-35.00												
+	AURUW	17Q4_RES	EUR	BALA	ACTI																			
+	SOET1	18-19_NRES	EUR	BALA	ACTI	10.0				10.0	-35.00	-35.00												
+	SOET1	18-19_RES	EUR	BALA	ACTI	10.0				10.0	-24.00	-24.00												
+	SOET1	18Q1_NRES	EUR	BALA	ACTI	10.0				10.0	-35.00	-35.00												
+	SOET1	18Q1_RES	EUR	BALA	ACTI	10.0				10.0	-24.00	-24.00												
+	SOET1	18Q2_NRES	EUR	BALA	ACTI	10.0				10.0	-35.00	-35.00												
+	SOET1	18Q2_RES	EUR	BALA	ACTI	10.0				10.0	-24.00	-24.00												
+	SOET1	18Q3_NRES	EUR	BALA	ACTI	10.0				10.0	-35.00	-35.00												
+	SOET1	18Q3_RES	EUR	BALA	ACTI	10.0				10.0	-24.00	-24.00												
+	SOET1	18Q4_NRES	EUR	BALA	ACTI	10.0				10.0	-35.00	-35.00												
+	SOET1	18Q4_RES	EUR	BALA	ACTI	10.0				10.0	-24.00	-24.00												
+	BURUW	19-20_NRES	EUR	BALA	ACTI																			
+	SOET1	19-20_RES	EUR	BALA	ACTI	10.0				10.0	-24.00	-24.00												
+	SOET1	19Q1_NRES	EUR	BALA	ACTI	10.0				10.0	-35.00	-35.00												

Expand all Collapse all 5 Status Today Area All Aggregate

Quote Request

Side	Contract	Quantity	Price	Type	Val. Restr.	Date & Time	Area	Message
Contract				BAL	GFS		SOET1	
Text								
Recv BG								
Accnt								
O/C								
Balancing Group								
Exe. Restr.				NON				
State				ACTI				

WVAP: N/A

Basket Buy ! Reset

Market	Time	Priority	Type	Text
EPEX	31.01.2019 17:30:00	LOW	PUB	Contract 17Q3_RES closed -
EPEX	31.01.2019 17:30:00	LOW	PUB	Contract 17Q3_NRES closed
EPEX	31.01.2019 17:25:00	HIGH	PUB	Contract 17Q3_RES set to H

Market: ACTI EPEX: 31.01.2019 17:36:11 CET (TEST6 / TRD002) Trading Limit: 0.00 EUR 597MB / 3556MB

Enera 1.0

which contracts and products ?

Attribute	Description		
Trading procedure	Continuous trading		
Trading period	24/7		
Tradable products	Product Name	Delivery Period	Comment
	RES_Hour_Power	One hour	Flexibility from Renewable Energy Source
	RES_Quarter_Hour_Power	15 minutes	Flexibility from Renewable Energy Source
	Non_RES_Hour_Power	One Hour	Flexibility not from a Renewable Energy Source
	Non_RES_Quarter_Hour_Power	15 minutes	Flexibility not from a Renewable Energy Source
Gate opening	Trading will open on the day before delivery at 15:00		
Gate closing	5 minutes before delivery start		
Minimum price increment	0.1 €/MWh		
Minimum price	RES products: - 9999.9 €/MWh Non_RES products: -50 €/MWh		
Maximum price	RES products: + 9999.9 €/MWh Non_RES products: + 9999.9 €/MWh		
Minimum volume increment	0.1 MW		
Trading phase	During trading the market will be in Balancing Trading phase. During this phase regular orders can only match with balancing orders.		
Available order types	Limit orders & iceberg orders Balancing orders.		
Available execution conditions	None, IOC (Immediate-or-cancel), FOK (Fill-or-kill)		
Available validity restrictions	Good for session, Good till date		