RES Market participation rules

Yannis Vougiouklakis

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Situation _ framework

PAST: the model for the RES producers was of the "invest and forget" type.

- No market obligations

- No requirements for production forecasting

- No link of their revenues to the quality and accuracy of the market representation of their plants

Now & Tomorrow: RES producers are obliged to represent their plants in the electricity market and to uptake the pro and cons under this representation.

- **Provide hourly priced injection offers in the day-ahead market (hourly projections for the next 12-36hr)**

- **Adjust and correct their day-ahead offers during the intraday sessions or the intraday continuous trading**

- **Uptake balancing obligations that reflect to payments towards the TSO**

- **Confront the charges of non-compliance due to poor market participation performance**

categories of contracts for RES plants

- **PPA contracts under l.3468/2006 (Feed In Tariff)**

- **Contract with Reference Value (ΣΕΣΤ)**

- **Contract with sliding premium –CfD (ΣΕΔΠ)**

  ➢ **Plants with direct market participation**

  ➢ **Plants represented by a RES aggregator**

  ➢ **Plants represented by the last resort RES aggregator**

Market participation obligations : Applicable RES Plants

- **RES plants with CfD - FiP**

- **RES plants that choose to change their PPA (FiT → FiP)**

- **RES plants with an expired PPA , which continue to operate**

- **RES plants without any operating aid contract**

Reference Market Price-RMP : structure

- Monthly index per RES technology

- Calculation on the basis of the hourly RES technology generation

- All the production per RES technology is considered, independently of the type of contract (production at LV is not considered)

- *Consideration of other wholesale market mechanisms (under the new electricity market model the impact of these mechanisms has to be abolished)*

- The monthly value of RMP per RES technology allows the calculation of the sliding premium that is to be settled with the RES producers under the CfD two-way contracts. This methodology ensures for RES plants with an administrative RV to receive the same amount of state-aid. For RES plants selected after a RES auction process, the premium is calculated on a project basis.

Main principle:

- **Any parameter that is considered for the calculation of the RMP, must also be accounted to the RES producer/aggregator on the grounds of the plant's market participation obligations**

- **The result of the RMP should not integrate bonus/penalties of the imbalances performance of the plants, but only to integrate the market value of the produced energy (thus to reveal any advantages/disadvantages of plants generation versus the mean monthly value of the technology)**

- **The performance of the plant in terms of forecasting and resulting imbalances is assessed under the forecasting accuracy mechanism (ΜΒΑΠ) and upon a satisfactory level of liquidity of the IDM with the position and clearance in the balancing market.**

RES with CfD

- **Obligation for registration in the RES PLANTS REGISTRY (ΔΑΠΕΕΠ code).**

- **PARTICIPANTS REGISTRY. Either by themselves or through the RES aggregator**

RES plants with market obligations

- **Credit DAS, with forecasted generation**

- **Cleared Participation with real generation and settlement of imbalances, (MXA1)**

- **Credit MXA2**

- **Credit ΠΑΕΣΑ-fixed premium (**relevant to RES plants selected outside auctions**)**

- **Balancing credit/charge sliding premium (** difference of RV with monthly RMPtechnology _ETA)

- **Charge ΜΒΑΠ- Mechanism for accurate forecasting**

MXA1=wholesale market mechanism related to imbalances (to be removed?)

MXA2=wholesale market mechanism related to suppliers charge (ΠΧΕΦΕΛ, removed as of jan'19)

RES plants with obligation and represented by RES aggregator

RES PLANT / RES AGGREGATOR

- **CREDITS: DAS, from ENEX (attention currently energy that participates in the DAS. Under target-model no clarified how this is to be allocated)**

- **Imbalances clearance : ΑΔΜΗΕ- TSO**

- **Charges: ΜΒΑΠ, ΔΑΠΕΕΠ (RES managing body)**
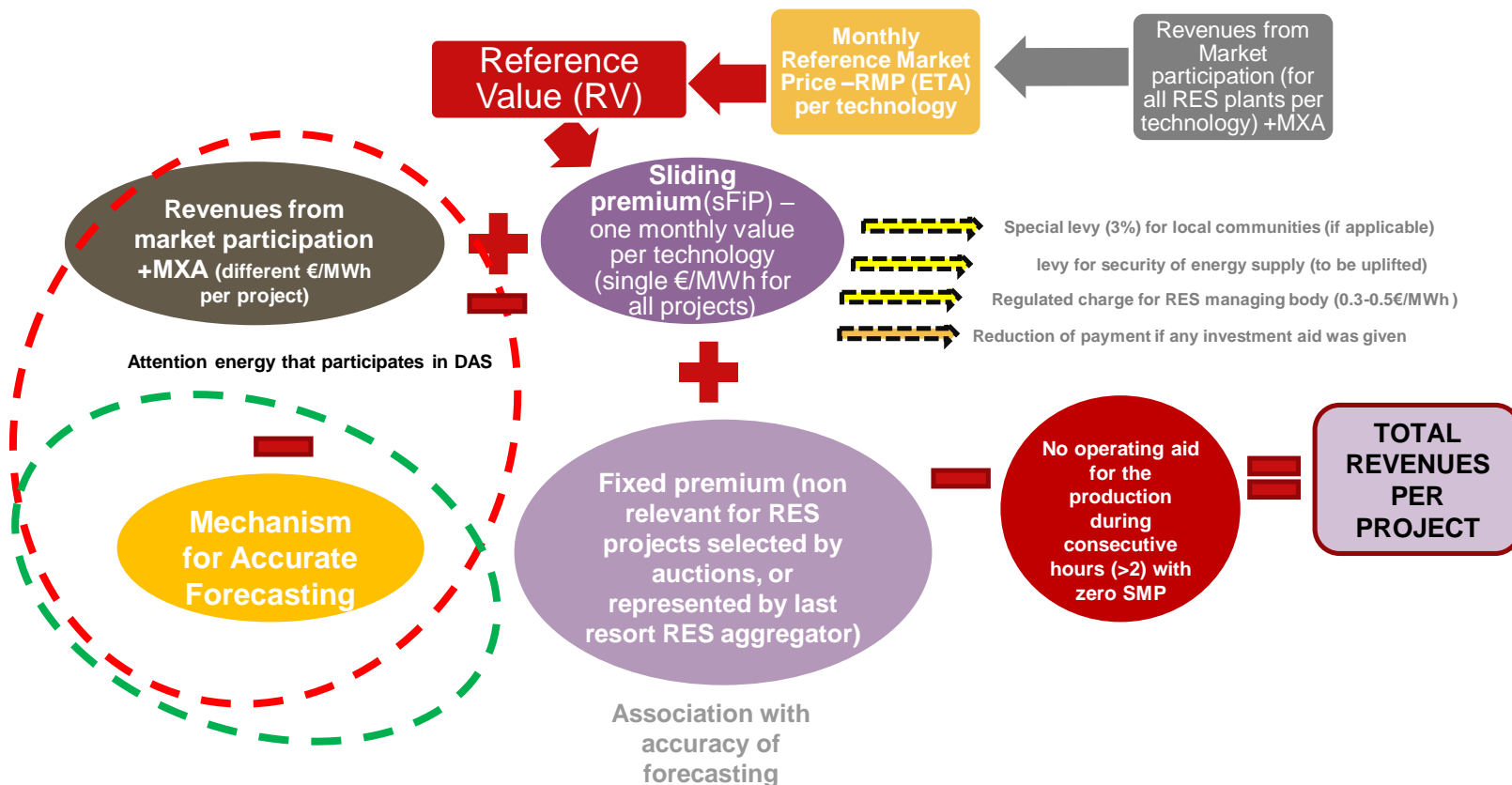
RES plants

- **Balancing credit/charge sliding premium (TWO WAY CfDs) ΔΑΠΕΕΠ (attention: rule for consecutive hours with zero SMP)**

- **credits (if any) for ΠΑΕΣΑ-fixed premium , Charges for local communities (if any), administrative fee (new), levy for security of energy supply (for the moment) , reduction on the ground of investment aid ΔΑΠΕΕΠ**

Monthly flow of transactions for res plants with FiP
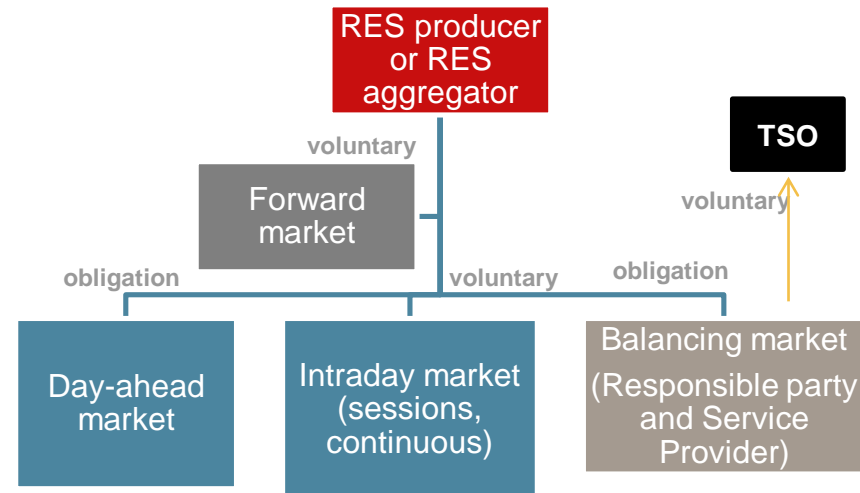
(under existing electricity market model)

Revenues from Market participation (for all RES plants per technology) +MXA

Monthly Reference Market Price –RMP (ETA) per technology

Reference Value (RV)

Revenues from market participation +MXA (different €/MWh per project)

Sliding premium (sFiP) – one monthly value per technology (single €/MWh for all projects)

Special levy (3%) for local communities (if applicable)

levy for security of energy supply (to be uplifted)

Regulated charge for RES managing body (0.3-0.5€/MWh)

Reduction of payment if any investment aid was given

Attention energy that participates in DAS

Mechanism for Accurate Forecasting

Fixed premium (non relevant for RES projects selected by auctions, or represented by last resort RES aggregator)

No operating aid for the production during consecutive hours (>2) with zero SMP

TOTAL REVENUES PER PROJECT

Association with accuracy of forecasting

How is going to work

RES market revenues: more than 80-90% of the total revenues (only 10-20% coming from state aid under 20yr contracts) (ref to new wind and PV plants)

Payment of state aid linked with reference performance not the individual of the plant (if you are worst in terms of market participation from the baseline your 20% is not sufficient to meet your LCOE but if you are better you end up with higher returns.
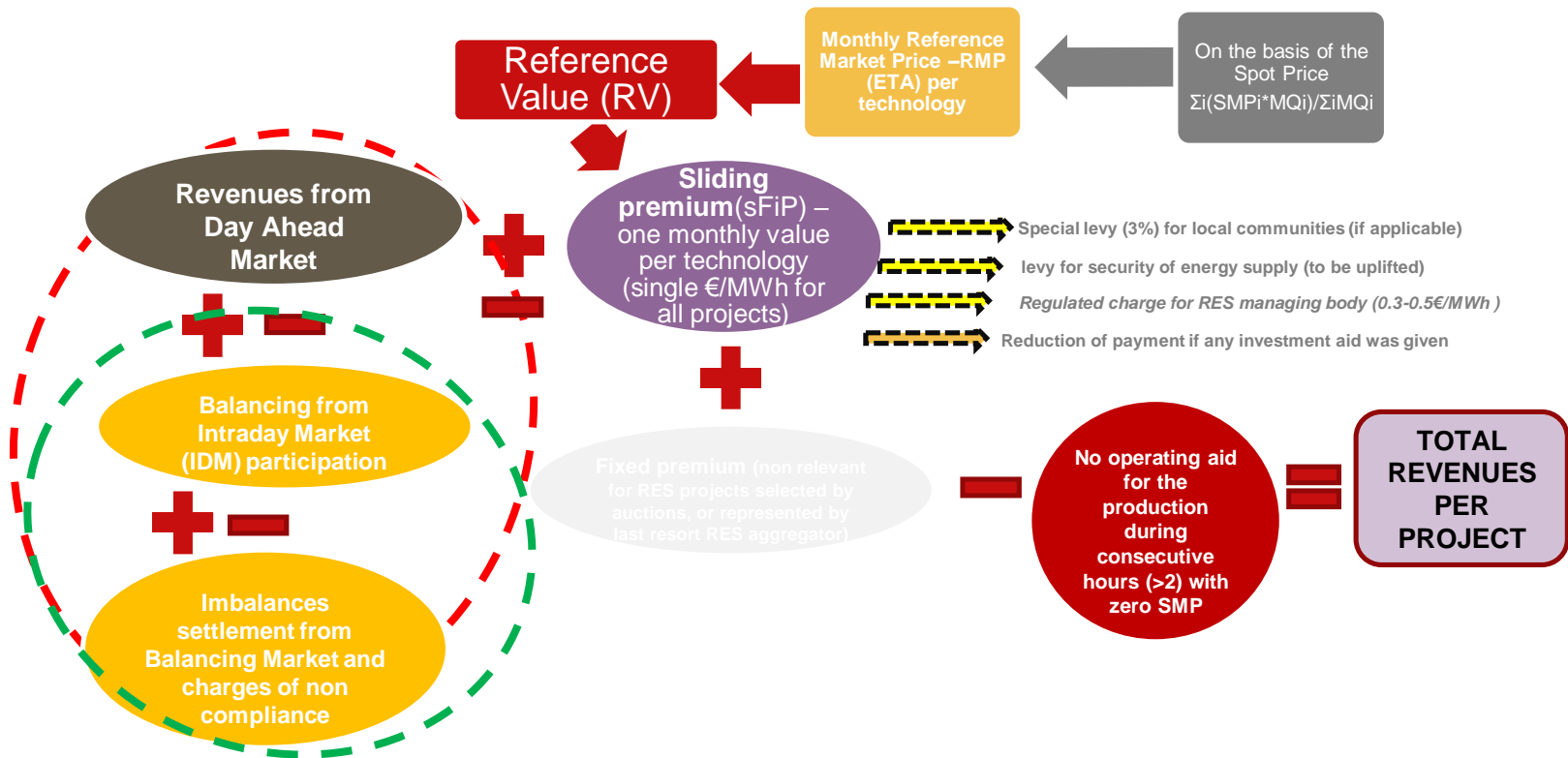
RES market revenues are affected by the accuracy of the day-ahead projections and price/volume of intraday adjustments (intraday price > day-ahead price)

Payment of the induced imbalances from the representation of the plant in the market (result of day-ahead and intraday position) on the basis of the imbalance marginal price

Monthly flow of transactions for res plants with FiP
(under target model and with iDM liquidity)

Reference Value (RV)

Monthly Reference Market Price –RMP (ETA) per technology

On the basis of the Spot Price $\Sigma i(SMPi*MQi)/\Sigma iMQi$

Revenues from Day Ahead Market

Sliding premium (sFiP) – one monthly value per technology (single €/MWh for all projects)

Special levy (3%) for local communities (if applicable)

levy for security of energy supply (to be uplifted)

Regulated charge for RES managing body (0.3-0.5€/MWh)

Reduction of payment if any investment aid was given

Balancing from Intraday Market (IDM) participation

Imbalances settlement from Balancing Market and charges of non compliance

Fixed premium (non relevant for RES projects selected by auctions, or represented by last resort RES aggregator)

No operating aid for the production during consecutive hours (>2) with zero SMP

TOTAL REVENUES PER PROJECT

REVENUES FROM PARTICIPATION IN DAS

$$DAER_{p,u,t} = DASMP_t \times DAIQ_{u,p,t}$$

$DAER_{p,u,t}$ ➤   hourly revenues

$DASMP_t$ ➤   System Marginal Price

$DAIQ_{u,p,t}$ ➤   energy quantity that participates in DAS (forecasted energy)

Clearance of market participation

$$M\_DEV\_QM_{i,t(\mu)} = M\_DEV\_A\_QM_{i,t(\mu)} + M\_DEV\_B\_QM_{i,t(\mu)}$$

Where:

$$M\_DEV\_A\_QM_{i,t(\mu)} = \left(SMP_{t(\mu)}\right) \times \sum_{rn=1}^{RN_i} \left(MQ_{rn,t(\mu)} - DASQ_{rn,t(\mu)}\right)$$

$$M\_DEV\_B\_QM_{i,t(\mu)} = \left(OTA_{t(\mu)} - SMP_{t(\mu)}\right) \times \sum_{rn=1}^{RN_i} \left(MQ_{rn,t(\mu)} - DASQ_{rn,t(\mu)}\right)$$

Proposal to be removed from RMP methodology in order also to be removed from the plant's transactions

Methodology for the calculation of RMP (ETA)

$$\text{ETA}_{\substack{\text{ΤΕΧΝΟΛΟΓΙΑΣ} \\ \text{ΣΤΑΘΜΩΝ ΑΠΕ} \\ \text{ΜΗ ΕΛΕΓΧ.ΠΑΡΑΓΩΓΗΣ}}} = \frac{\sum_{h=1}^{n} \text{AHXA}_h \times Q_{\text{ΑΠΟΡΡΟΦΟΜΕΝΗ,ΤΕΧΝ ΑΠΕ},h}}{\sum_{h=1}^{n} Q_{\text{ΑΠΟΡΡΟΦΟΜΕΝΗ,ΤΕΧΝ ΑΠΕ},h}}$$

$$\text{AHXA}_{\text{τεχνολογίας ΑΠΕ}, h} = \text{ΟΤΣ}_h \boldsymbol{+ MXA_h}$$

$$\text{ETA}_{\substack{\text{ΣΤΑΘΜΩΝ ΑΠΕ / ΣΗΘΥΑ} \\ \text{ΕΛΕΓΧ.ΠΑΡΑΓΩΓΗΣ}}} = \frac{\sum_{h=1}^{n} \text{AHXA}_h \times Q_{\text{ΦΟΡΤΙΟ ΣΥΣΤΗΜΑΤΟΣ},h}}{\sum_{h=1}^{n} Q_{\text{ΦΟΡΤΙΟ ΣΥΣΤΗΜΑΤΟΣ},h}}$$
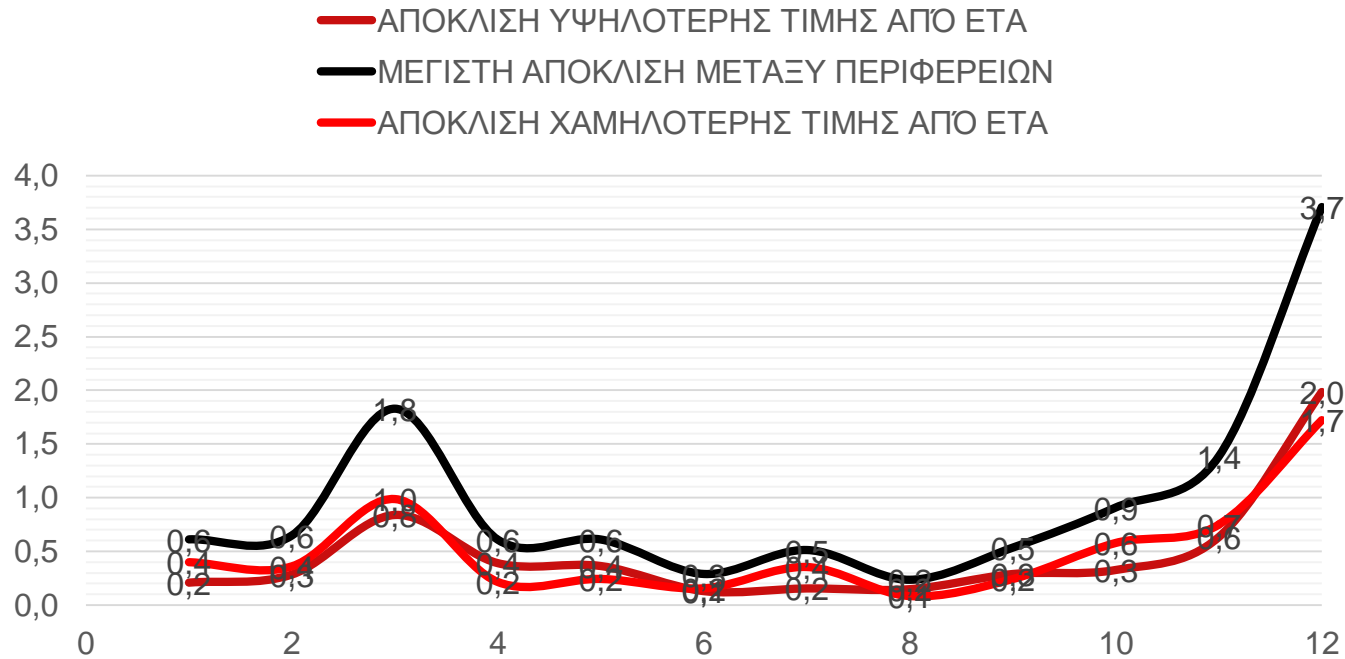
STATISTICAL INDICATIVE DEVIATIONS FROM RMP PER REGION (WIND case)
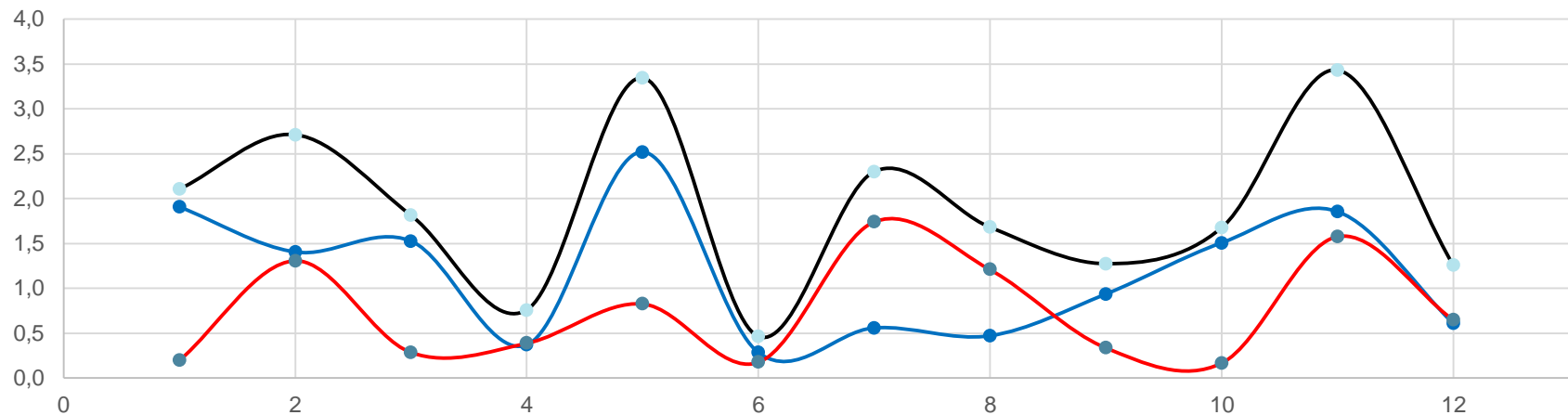
διαφορά μεγαλύτερης τιμής από ΕΤΑ
διαφορά ελάχιστης τιμής από ΕΤΑ
μεγιστη διαφορα μεταξύ περιοχών

STATISTICAL INDICATIVE DEVIATIONS FROM RMP PER REGION (PV case)

Two-way CfD contracts

❖ fair – transparent rules for the beneficiaries of 20yr operating aid contracts

❖ security / bankability of projects

❖ no extra revenues on the basis of the reference value of the technology in the market

❖ allowing extra revenues but also losses on the basis of the plant value compared to the reference value (stochastic performance- site specific , technological incentives to be on the "plus" side). No one controls/checks the plant's direct market revenues for setting the level of the sliding premium

❖ indirect incentive to think/leave the operating aid contract if RMP (and plant's) market revenues constantly above RV. (clear rules for such process, with no fallback option : not yet defined)

Operation of RES plants under target model

Participation in all relevant markets

Market participants Registry / Plant's Registy

Possibility for representation by RES aggregators or even last resort RES aggregator

Forecasting adjustment during IDM

Imbalances settlement at the level of the balancing market with the final position after IDM

Provision for charges of non-compliance (strategic bidding) similar to the charges and methodology that are applicable to all market participants

RES_CfDs under last resort RES aggregator

- CREDITS ON THE BASIS OF A %REDUCED RMP (RE-ADJUSTMENT ON THE BASIS OF LIGUID IDM IN ORDER TO ACT AS DISINCENTIVE FOR PERMANENT REPRESENTATION)

- MANAGING FEE. CHARGES IN FAVOUR OF ΦοΣΕΤεΚ

- PLANTS RECEIVE SLIDING PREMIUM AND OTHER CREDITS AND CHARGES IN THE CONTEXT OF THEIR CONTRACT

APPOINTMENT AND LAUNCH OF ΦοΣΕΤεΚ : ΔΑΠΕΕΠ , start of representation: most likely 1ST July 2019 (MD to be issued). prior actions needed by the RES producers if to be represented by the last resort RES aggregator

- *TEMPORARY REGIME DURING 2019 (ONLY MANAGING FEE. A SMALL % OF THE RMP with max value in €/MWh)*

- *CLEARANCE OF THE PARTICIPATION OF THE ALREADY OPERATING RES PLANTS WITH CfDs*

Other structural elements that are currently under assessment / revision

❖ Associate BAL_TOR_RES with ΠΑΕΣΑ value (BAL_TOR_RES> ΠΑΕΣΑ)

❖ Adjust BAL_TOR_RES methodology

on the basis of the (hourly)(absolute hourly)(mean) difference of IMP-SMP (50% 2019, X%2020, Y%2021), with expected operation of the electricity market upon gradual maturity of the RES aggregator market and the charges of the last resort RES aggregator

❖ Allow technology neutral RES aggregator

❖ Adjust clearance of ΜΒΑΠ for technology neutral RES aggregator

❖ clear rules for the RES plants without operating aid contracts (also for voluntary shifting from the contract regime do the no-contract regime)

Timeline for market obligations

Start date : 1/7/19 ?

Timeline	2019	2020	2021	2022-
Mechanism for accurate forecasting & fixed premium ΠΑΕΣΑ	√	√	√	**#/X**
Non-compliance charges	X	#	#	#/√
Deviation from RMP	√	√	√	√
Obligations from balancing market	X	X	X	**#/√**