



iCaros : Integrated Coordination of Assets for Redispatching and Operational Security

Third fine-tuning workshop
24 June 2019



Scheduling Agent

Part 1 – Scheduling
(Part 2 – Redispatching)

Purpose of schedules

Load flow calculations

Calculation of the loading on the elements of the Elia grid based on the schedules information. Application of preventive & curative remedial actions (non-costly and costly) to avoid congestion. Update the Congestion Risk Indicator of the zone.

Calculation of cross-border capacities

In coordination with other TSOs Elia updates the available capacity to the intraday market. Schedules information is an input to the capacity calculation process in day-ahead.

Maintenance planning

Based on the received schedules and on the results of the load flow calculations, Elia confirms or cancels the conditional maintenances of elements on the Elia grid.

Unavailability risk of ancillary services

Elia analyses if the needed volume of ancillary services is reached at all time for the next day

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Scheduling Agent

Who ? Grid User or a Third Party appointed by the GU

- By default, the **Grid User** is the Scheduling Agent
- The Grid User may delegate the task to a **Third Party** under certain conditions*.

**Conditions apply for assets bidding for balancing (with BSP). This will be discussed in the WS about redispatching.*

What ?

- The **task of providing schedules**
- The **task of bidding for redispatching**

Which assets ?

- PGM B/C/D
- Storage B/C/D
- (Demand Facilities)

Responsibilities

SA = contact person for Elia regarding scheduling, activations and settlement
Grid user = coordinator with other providers/agents.

Grid user remains liable



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Processes per type of asset

There are two types of schedules :

- Option 1 : MW schedules
- Option 2 : ON-OFF schedules

	PGM & Energy Storage ≥ 25 MW	PGM & Energy Storage < 25 MW	TSO connected Demand Facilities
Option 1 : MW schedule	Mandatory	Mandatory	Voluntary
Option 2 : ON-OFF schedule		(choice between two options for providing schedules)	

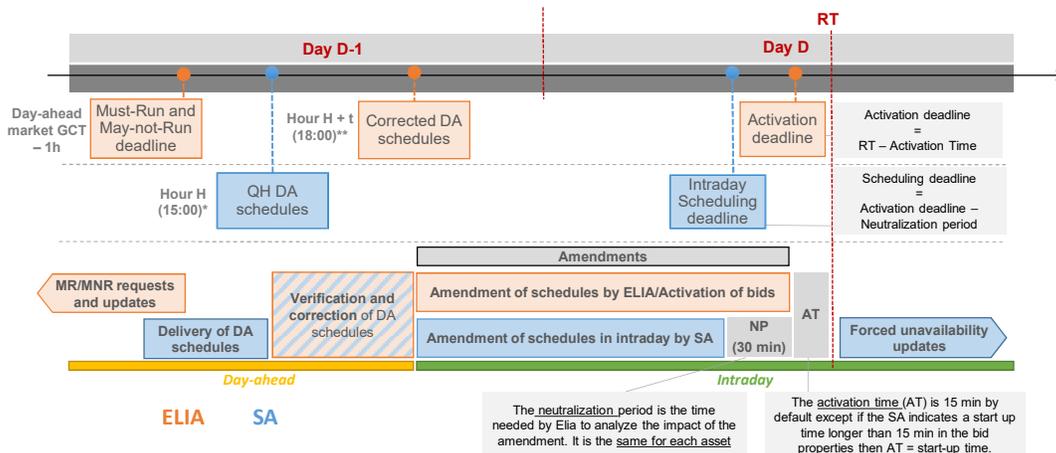
PGM and Energy Storage devices **bigger than 25MW** have to deliver MW schedules.

PGM and Energy Storage devices **smaller than 25MW** have the choice to deliver MW schedules or ON/OFF schedules.

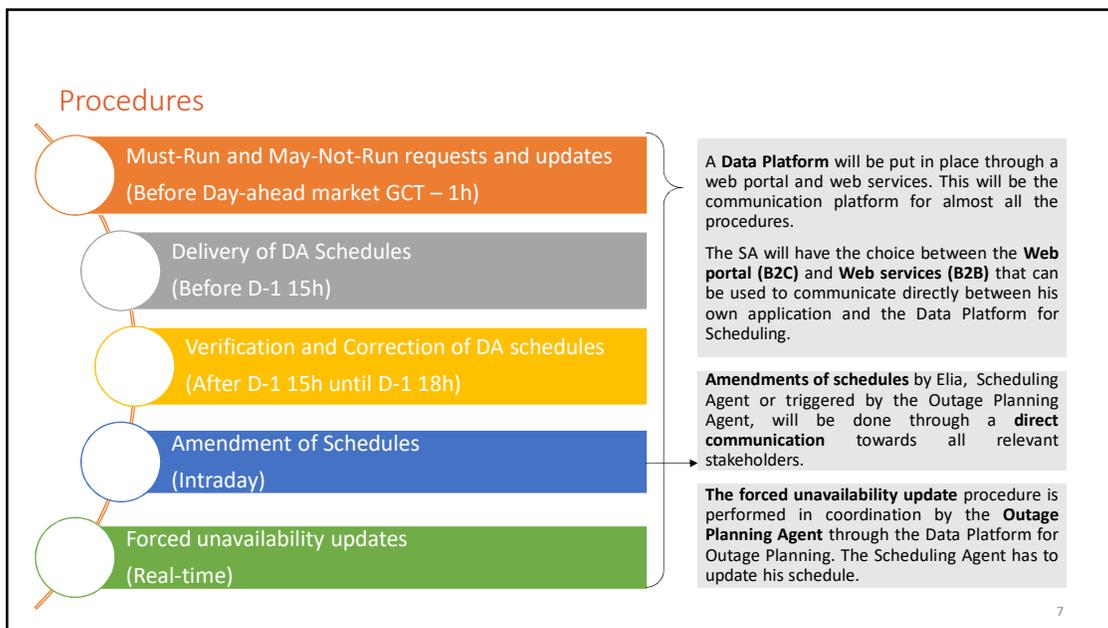
TSO-connected Demand Facilities are not obliged to deliver schedules, except if they voluntary bid for redispatching.

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Scheduling Agent Calendar



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Must-Run/May-Not-Run requests and updates (ELIA → SA)

Who ? ELIA

Who ? PGM and Storage with status "Available"

When ? Before D-1 Day-ahead market GCT – 1h

What ?

- Price offer with possible associated costs

Must-Run	Active power output equal to the minimal power or ON.
Partial May-Not-Run	Active power output limited to a maximum value.
May-Not-Run	Active power output equal to 0MW or OFF, asset shut down.

Granularity ? Quarter-hourly period

Must-Run and May-Not-Run requests do not free from bidding obligation

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Must-Run/May-Not-Run requests and updates

Remuneration

The remuneration is based on a negotiable price offer and may include an agreement for a reusable price methodology. If needed in the future, the remuneration mechanism may be redesigned to avoid contractual overload.

The requested costs have to be :

- Reasonable
- Directly-related to the requested amendment
- Demonstrable

For a **must-run** request, if DA/ID schedule or active power in real-time is above to the minimal power, it is considered as market opportunity and a **cancellation** of the must-run request. The Scheduling Agent has to **reimburse** ELIA for the associated costs.

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Delivery of DA schedules

Who ? Mandatory for PGM & Storage B/C/D

When ? Before D-1 15h

What ?

- Generation MW schedule for PGMs ≥ 25 MW
- Generation and consumption MW schedule for Storages ≥ 25 MW
- Generation ON/OFF schedule for PGMs < 25 MW
- Generation and consumption ON/OFF schedule for Storages < 25 MW

Granularity ? Quarter-hourly

Schedules are delivered **per Power Generating Module** or **per Power Unit**.

MW value	Average generated/consumed power in MW during to concerned QH
ON value	Indicates that the asset is in running mode and able to generate electricity without start-up
OFF value	Indicates that the asset is shut down, not in operation. It has to be started up to generate electricity.

The actual generation of an asset could be 0MW even in case of an ON schedule (ie. solar units).

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Delivery of DA schedules

Overlap with Outage Planning

Available (A)	<ul style="list-style-type: none"> MW schedule between <u>minimum and maximum power capacity</u> ON-OFF schedule
Unavailable (U)	<ul style="list-style-type: none"> <u>0 MW</u> <u>OFF</u>
Testing (T)	<ul style="list-style-type: none"> <u>Schedule of test</u> <u>According to test</u>

OPA	QH1	QH2	QH3	QH4	QH5	QH6	QH7	QH8	QH9	QH10	...
Status	A	A	A	A	U	U	U	U	T	T	...
Capacity	100	100	100	100	0	0	0	0	50	50	...

SA	QH1	QH2	QH3	QH4	QH5	QH6	QH7	QH8	QH9	QH10	...
Schedule	50	50	0	0	0	0	0	0	50	50	...

SA	QH1	QH2	QH3	QH4	QH5	QH6	QH7	QH8	QH9	QH10	...
Schedule	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	...

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Delivery of DA schedules

PGM consisting of different Power Units

Schedules are delivered **per Power Generating Module** or, if the Power Generating Module consists of several power units connected to the ELIA grid via different connection points, then the schedules are delivered **per Power Unit**.

CCGT = 1 PGM

Data exchange: PU level
{2 connection points}

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Verification and correction of DA schedules

(SA ↔ ELIA)



Who ? ELIA

When ? Between D-1 15h and D-1 18h

What ?

- Verify the quality of schedules and contact SA in case of inconsistency

Who ? SA

When ? Between D-1 15h and D-1 18h

What ?

- In case erroneous schedule has been delivered, the SA contacts ELIA
- Submit a corrected schedule

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Amendment of schedules

(SA → ELIA)



Who ? Scheduling agent

When ?

- Between D-1 18h and Scheduling deadline

What ?

- New MW schedule or ON/OFF schedule

Granularity ? Quarter-hourly

Amendments do **not need approval from ELIA** unless if :

- amendment in the opposite direction of an earlier requested activation of flexibility for redispatching
- amendment in violation of a Must-Run or May-Not-Run agreement

In this specific cases, ELIA can :

- Agree
- Agree with associated conditions and/or costs
- Refuse with reasons

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Amendment of schedules

(ELIA → SA)



Who ? ELIA

When ?

- Between D-1 18h and Activation deadline

What ?

- Activation of flexibility
- Update schedule

Granularity ? Quarter-hourly

Who ? Scheduling agent

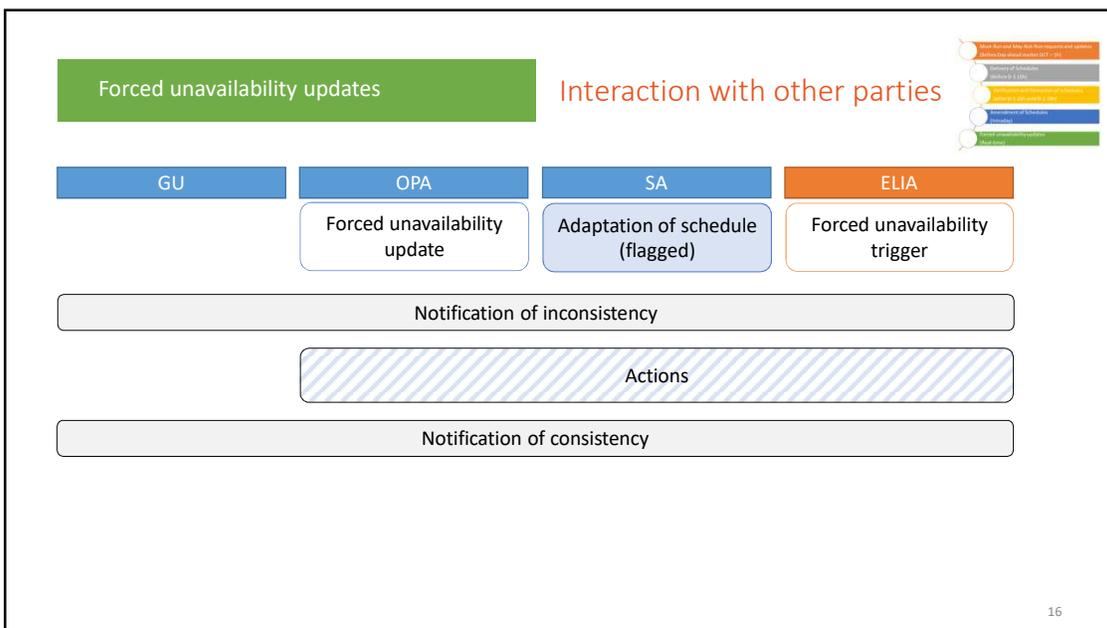
What ?

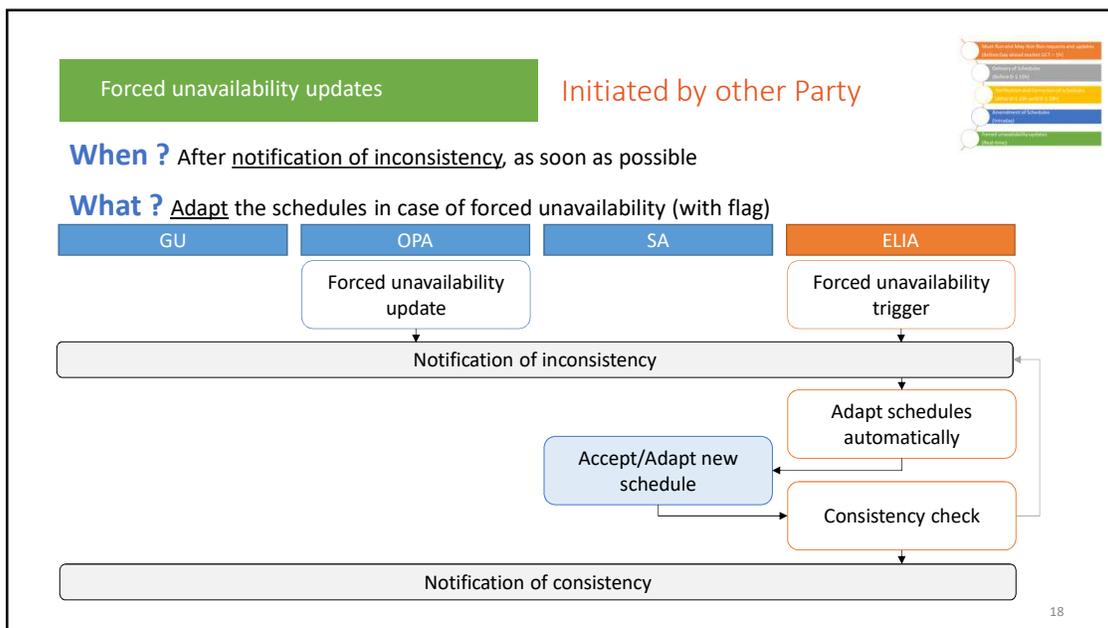
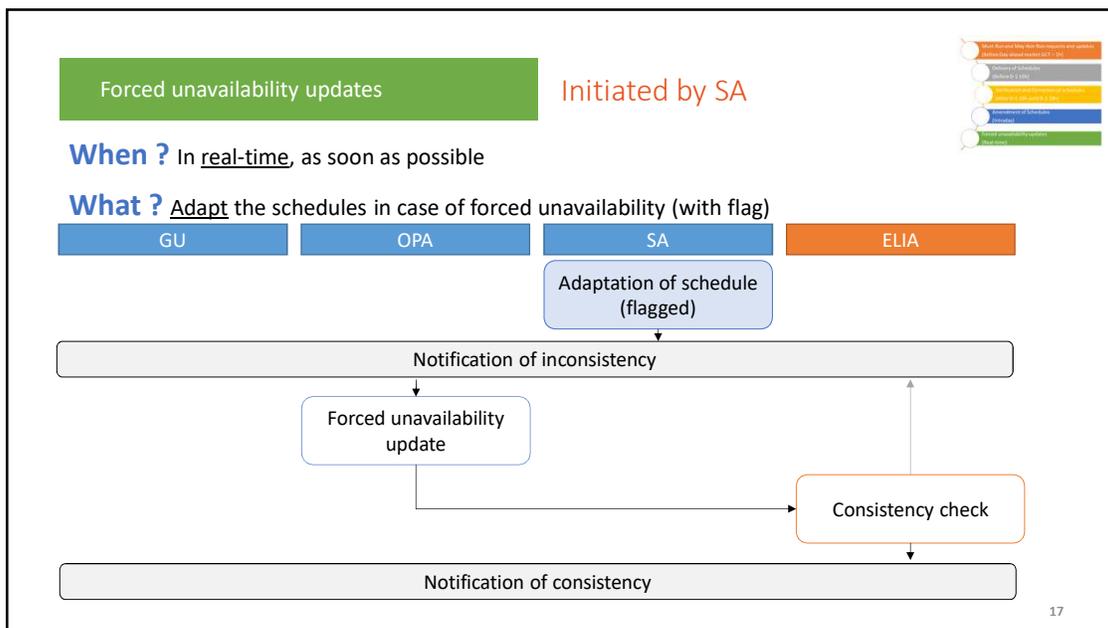
- Adapt real-time generation/consumption to updated schedule

Granularity ? Quarter-hourly

This section will be further discussed in the workshop about redispatching.

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Backup



Remuneration for amendments

The requested cost for amendments has to be

- **Reasonable :**
the remuneration concerns an additional cost or loss of revenue that cannot be recovered elsewhere, based on certain information available at the moment of the request
- **Directly-related to the requested amendment :**
the remuneration must be for a cost directly linked to the requested amendment, a cost that would not be incurred if the amendment was not requested
- **Demonstrable:**
the remuneration must be supported by documents justifying the amount at the moment of the price offer, it can also be demonstrated based on past experiences with similar amendments.

