iCAROS phase 1 – Outage Planning

Implementation guide

03/10/2022 – Training OPA

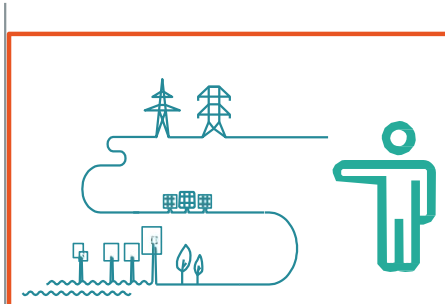
Agenda

1. General presentation
2. Demo
3. Questions

iCAROS = Integrated Coordination of Assets for Redispatching and Operational Security

Business Scope

Exchange of operational data [from LT to real-time]



1
Outage Planning

2
DA & ID scheduling

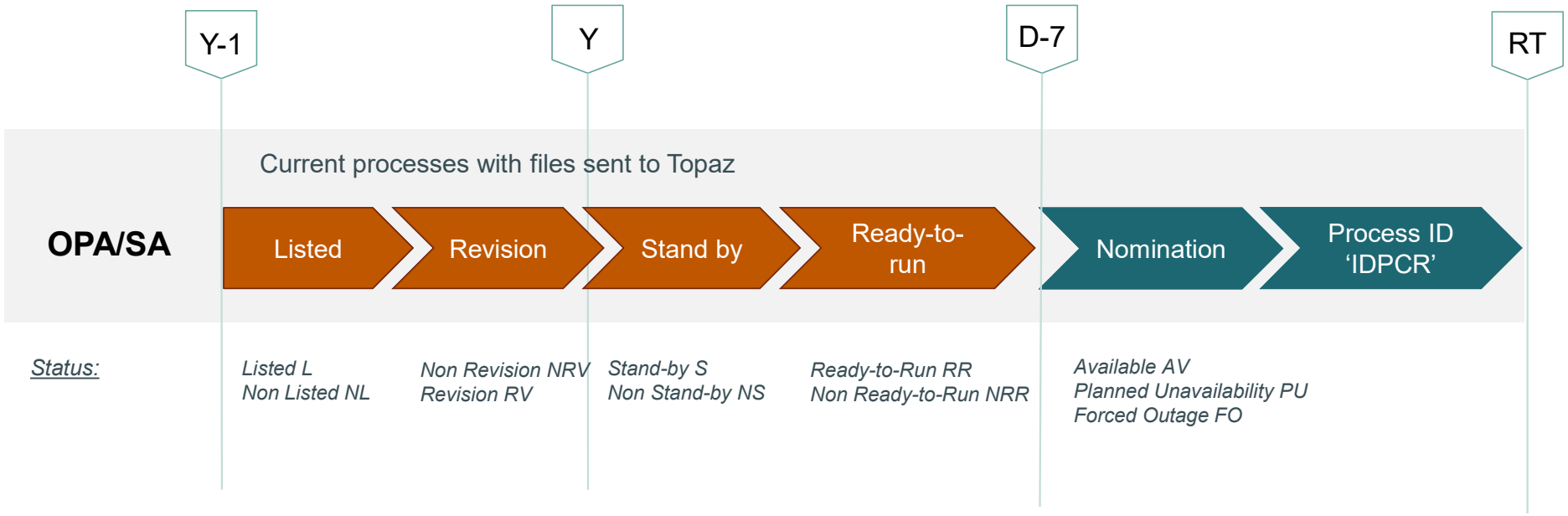
3
Congestion management

Pragmatic approach for iCAROS Phase 1

- **<u>Technical Facility >= 25 MW:</u>** Mandatory signature of OPA contract
- **<u>1 MW =< Technical Facility < 25 MW:</u>** Voluntary participation to Outage Planning

OUTAGE PLANNING

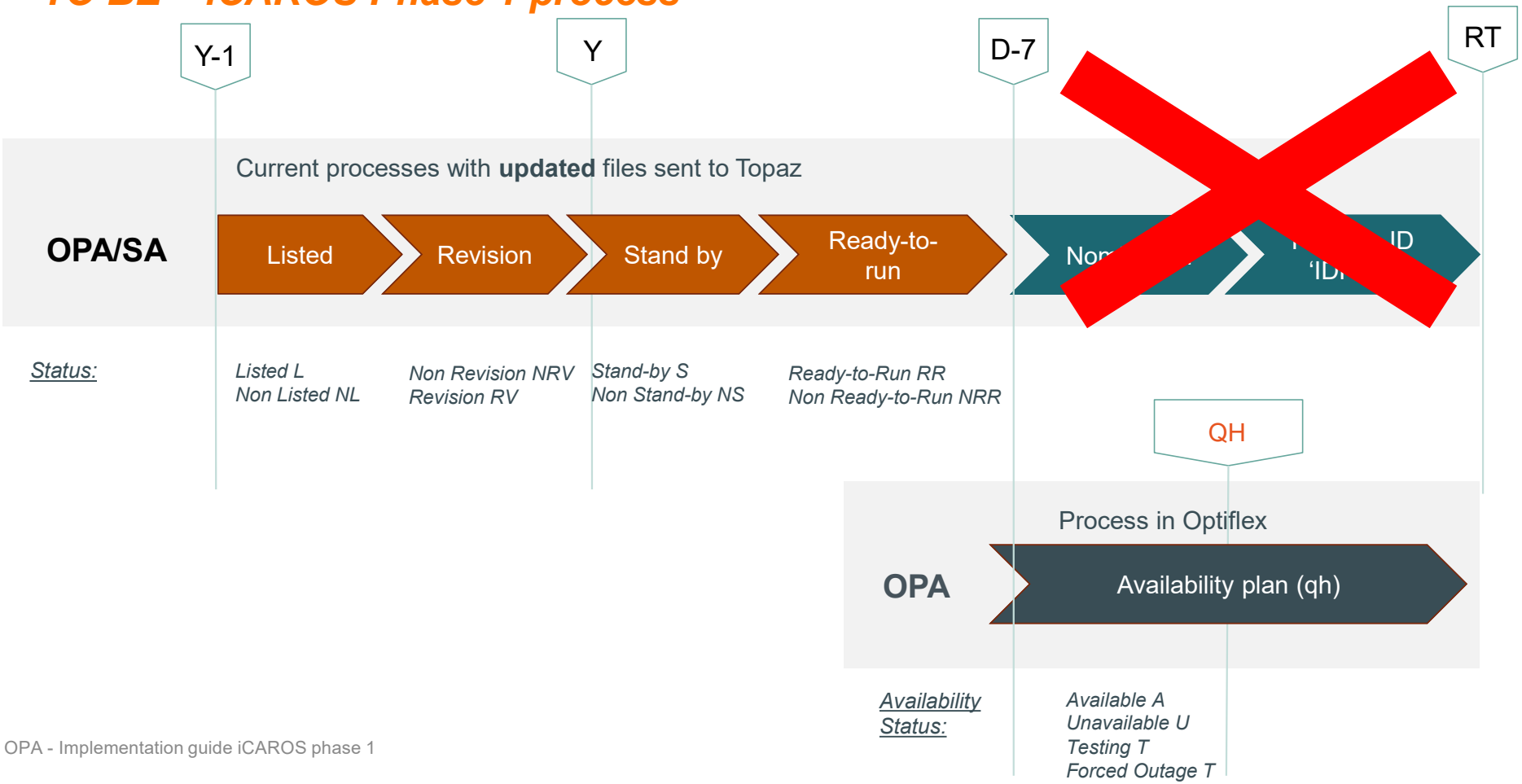
AS IS process to be replaced in iCAROS phase 1



VA1

OUTAGE PLANNING

TO BE – iCAROS Phase 1 process



Slide 5

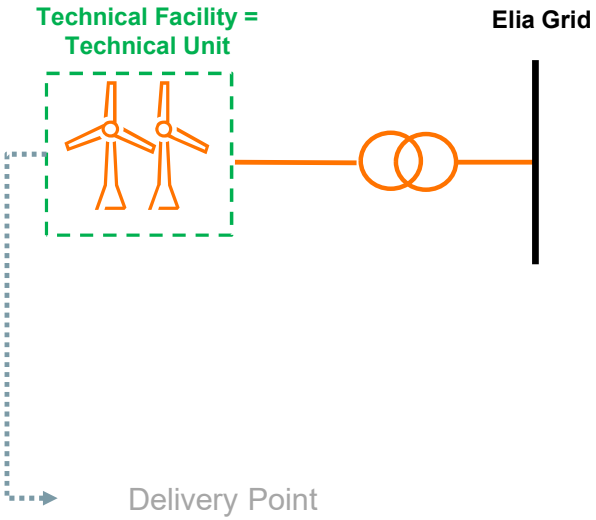
VA1 Note this is derived from Unavailability events

Van Bruwaene Arnout; 28/09/2022

OUTAGE PLANNING

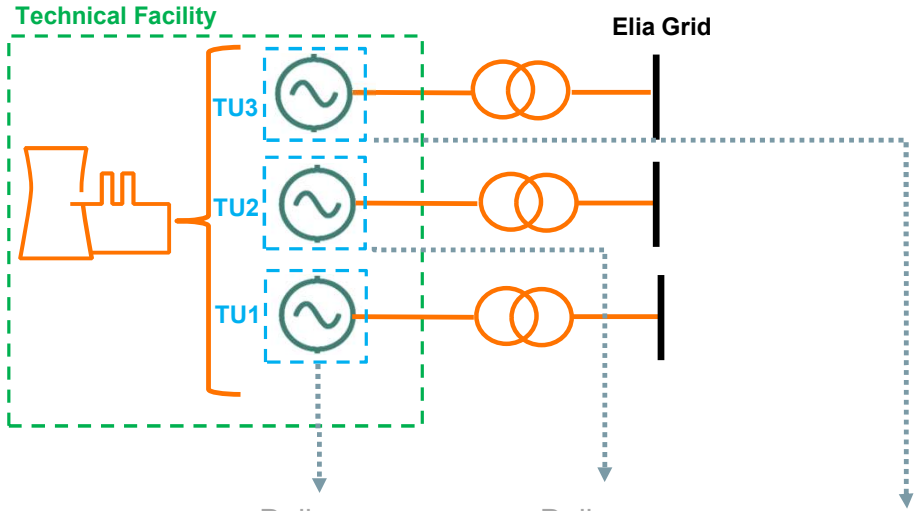
As OPA, I have in my portfolio:

A **wind park A** which is a Power Park Module (PPM) whose primary energy source is wind



06/10/2022	00:00	00:15
Status	A	A

A **CCGT B** which is a synchronous Power Generating Module composed of three Technical Units (TU): two gas turbines and one steam turbine



06/10/2022	00:00	00:15
Status	A	A

06/10/2022	00:00	00:15
Status	A	A

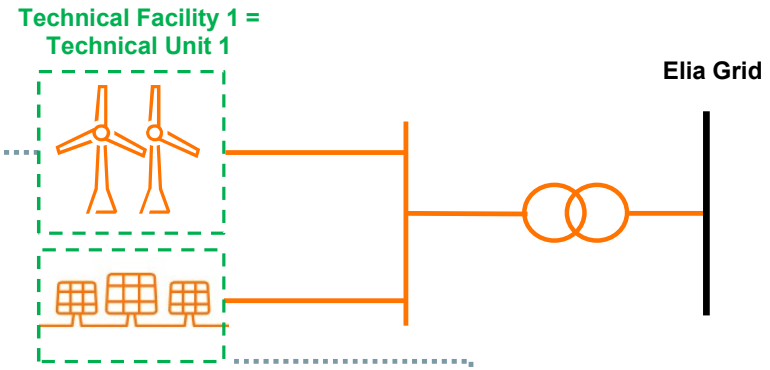
06/10/2022	00:00	00:15
Status	A	A

OPA needs to provide the information at Delivery Point (DP) level

OUTAGE PLANNING

As OPA, I have in my portfolio:

A **wind park** which is a Power Park Module (PPM) whose primary energy source is wind and a **solar park** which is a PPM whose primary energy source is sun connected behind the same access point to Elia Grid



Delivery Point 1

06/10/2022	00:00	00:15
Status	A	A

Delivery Point 2

06/10/2022	00:00	00:15
Status	A	A

OPA needs to provide the information at Delivery Point (DP) level

OUTAGE PLANNING

Timing

OUTAGE PLANNING

Listed

Deadline Remains: **Tuesday Week W28 Year Y-1**

1. **Name changes** in the header, yet same information needs to be filled in, since ARP = OPA

Before iCAROS

Procedure :	LISTED
Period of execution :	YEAR
ARP :	
File Type :	PREVISION
ARP Version :	1
TSO :	ELIA
TSO Version :	1

VS

iCAROS

Procedure :	LISTED
Period of execution :	YYYY
OPA: [contractual name]	
File Type :	PREVISION
OPA Version :	1
TSO :	ELIA
TSO Version :	1

2. **Change in EAN:** Topaz EAN (37 Digits) → Delivery Point EAN (18 Digits)
3. Year replaced by **L/NL**, no need to fill the year anymore

CODE	FRIENDLY NAME	YEAR

VS

EAN CODE DELIVERY POINT	FRIENDLY NAME	L/NL

OUTAGE PLANNING

Listed

Deadline Remains: **Tuesday Week W28 Year Y-1**

Procedure :		LISTED
Period of execution :		2022
OPA:	[contractual name]	OPA_NAME
File Type :		PREVISION
OPA Version :		1
TSO :		
TSO Version :		

EAN CODE DELIVERY POINT	FRIENDLY NAME	L/NL
18Digit_EAN_Wind Park A	Wind Park A	L
18Digit_EAN_CCGT B GT1	CCGT B GT1	L
18Digit_EAN_CCGT B GT2	CCGT B GT2	NL
18Digit_EAN_CCGT B ST1	CCGT B ST1	L

OUTAGE PLANNING

Revision

Deadline Remains: Tuesday Week W31 Year Y-1

1. **Name changes** in the header, yet same information needs to be filled in, since ARP = OPA

Before iCAROS

Procedure :		REVISION
Period of execution :		YYYY
File Type :		PREVISION
Sender :		<ARP>
Receiver :		ELIA
Send Date :		yyyymmdd_hhmm

VS

iCAROS

Procedure :		REVISION
Period of execution :		YYYY
File Type :		PREVISION
OPA :	[contractual name]	
TSO :		ELIA
Send Date :		YYYYMMDD_hhmm

2. **Change in EAN:** Topaz EAN (37 Digits) → Delivery Point EAN (18 Digits)
3. **Name changes** in the header, yet same information needs to be filled in, since ARP = OPA

CODE	FRIENDLY NAME	ARP Status Y-1 TSO Status Y-1
		ARP Status Y-1

VS

EAN CODE DELIVERY POINT	FRIENDLY NAME	OPA Status Y-1 TSO Status Y-1
		OPA Status Y-1

OUTAGE PLANNING

Revision

Deadline Remains: **Tuesday Week W31 Year Y-1**

Procedure :		REVISION
Period of execution :		2022
File Type :		PREVISION
OPA :	[contractual name]	OPA_NAME
TSO :		ELIA
Send Date :		20220927_0850

EAN CODE DELIVERY POINT	FRIENDLY NAME	OPA Status Y-1 TSO Status Y-1	1	2	3	4	5
18Digit_EAN_Wind Park A	Wind Park A	OPA Status Y-1	RV	RV	RV	RV	RV
18Digit_EAN_CCGT B GT1	CCGT B GT1	OPA Status Y-1	RV	RV	RV	RV	RV
18Digit_EAN_CCGT B GT2	CCGT B GT2	OPA Status Y-1	NRV	NRV	NRV	NRV	NRV
18Digit_EAN_CCGT B ST1	CCGT B ST1	OPA Status Y-1	RV	RV	RV	RV	RV

OUTAGE PLANNING

Stand by (Prevision)

Deadline Remains: Tuesday 16h00 of Week W-5

1. **Name changes** in the header, yet same information needs to be filled in, since ARP = OPA

Before iCAROS

Procedure :	STAND-BY
Period of execution :	YYYYWww
ARP :	<ARP>
File Type :	PREVISION
ARP Version :	X
TSO :	
TSO Version :	

VS

iCAROS

Procedure :		STAND-BY
Period of execution :	**[format example: 2021W50]**	YYYYWWW
OPA :	**[contractual name]**	
File Type :		PREVISION
OPA Version :		1
TSO :		
TSO Version :		

2. **Change in EAN:** Topaz EAN (37 Digits) → Delivery Point EAN (18 Digits)
3. **Name changes** in the header, yet same information needs to be filled in
4. **Injection** changes to **negative** values and **Offtake** changes to **positive** values

DAY		MO	DD/MM/YYY
Peak Forecast Load			
CODE	FRIENDLY NAME	ARP: status W-10	ARP: peak generated power [MW]

VS

DAY		MO	DD/MM/YYY
Peak Forecast Load [MW]:			
EAN CODE DELIVERY POINT	FRIENDLY NAME	OPA: Availability Status W-5	OPA: peak Injection/ Offtake [MW]

OUTAGE PLANNING

Stand by (Prevision)

Deadline Remains: Tuesday 16h00 of Week W-5

Procedure :		STAND-BY
Period of execution :	**[format example: 2021W50]**	2022W39
OPA :	**[contractual name]**	OPA_NAME
File Type :		PREVISION
OPA Version :		1
TSO :		
TSO Version :		

DAY		**MO**	26/09/2022	
Peak Forecast Load [MW]:				
		OPA		**TSO**
EAN CODE DELIVERY POINT	**FRIENDLY NAME**	Availability Status W-5	peak Injection/ Offtake [MW]	Availability Status W-4
18Digit_EAN_Wind Park A	Wind Park A	S	50	
18Digit_EAN_CCGT B GT1	CCGT B GT1	S	75	
18Digit_EAN_CCGT B GT2	CCGT B GT2	NS	75	
18Digit_EAN_CCGT B ST1	CCGT B ST1	S	50	

OUTAGE PLANNING

Stand by (Technical Data)

Deadline Remains: Tuesday 16h00 of Week W-5

1. **Name changes** in the header, yet same information needs to be filled in, since ARP = OPA

Before iCAROS

Procedure :	STAND-BY
Period of execution :	YYYYWww
ARP :	<ARP>
File Type :	TECHNICAL DATA
ARP Version :	X
TSO :	
TSO Version :	

VS

iCAROS

Procedure :		STAND-BY
Period of execution :	[format example: 2021W50]	YYYWWW
OPA :	[contractual name]	
File Type :		TECHNICAL DATA
OPA Version :		1
TSO :		
TSO Version :		

2. **Change in EAN:** Topaz EAN (37 Digits) → Delivery Point EAN (18 Digits)
3. Updates of **Unit Type** & **Fuel Type** (New names & more types)
4. Pmin/Pmax Available only **absolute values**

Technical Data							
CODE	FRIENDLY NAME	ZONE	UNIT TYPE	FUEL TYPE	RAMPING RATE	Pmin Avail.	Pmax Avail.
					MW/min	MW	MW

VS

Technical Data							
EAN CODE DELIVERY POINT	FRIENDLY NAME	ZONE	UNIT TYPE	FUEL TYPE	RAMPING RATE	Pmin Avail.	Pmax Avail.
					MW/min	MW	MW

OUTAGE PLANNING

Stand by (Technical Data)

Deadline Remains: Tuesday 16h00 of Week W-5

Procedure :		STAND-BY
Period of execution :	**[format example: 2021W50]**	2022W39
OPA :	**[contractual name]**	OPA_NAME
File Type :		TECHNICAL DATA
OPA Version :		1
TSO :		
TSO Version :		

Technical Data							
EAN CODE DELIVERY POINT	**FRIENDLY NAME**	**ZONE**	**UNIT TYPE**	**FUEL TYPE**	**RAMPING RATE**	**Pmin Avail.**	**Pmax Avail.**
					MW/min	MW	MW
18Digit_EAN_Wind Park A	Wind Park A	MK	WOF	WI	5,0	15	50
18Digit_EAN_CCGT B GT1	CCGT B GT1	MK	GT	NG	5,0	25	75
18Digit_EAN_CCGT B GT2	CCGT B GT2	MK	GT	NG	5,0	25	75
18Digit_EAN_CCGT B ST1	CCGT B ST1	MK	ST	NG	5,0	15	50

OUTAGE PLANNING

Ready-to-Run (Prevision)

Deadline Remains: Tuesday 16h00 Week W-1

1. **Name changes** in the header, yet same information needs to be filled in, since ARP = OPA

Before iCAROS

Procedure :	READY-TO-RUN
Period of execution :	YYYYWww
ARP :	<ARP>
File Type :	PREVISION
ARP Version :	X
TSO :	
TSO Version :	

VS

iCAROS

Procedure :		READY-TO-RUN
Period of execution :	[format example: 2021W50]	YYYYWWW
OPA :	[contractual name]	
File Type :		PREVISION
OPA Version :		1
TSO :		
TSO Version :		

2. **Change in EAN:** Topaz EAN (37 Digits) → Delivery Point EAN (18 Digits)
3. **Injection** changes to **negative** values and **Offtake** changes to **positive** values

Monday	26/11/2018	Off-Peak Forecast Load				
		00:00 - 01:00				
		ARP		TSO		
CODE	FRIENDLY NAME	Status W-1	Power generated power [MW]	Status W-1	Pmin generated power [MW]	Pmax generated power [MW]

VS

Monday	DD/MM/YYYY	Off-Peak Forecast Load [MW]:				
		00:00 - 01:00				
		OPA		TSO		
EAN CODE DELIVERY POINT	FRIENDLY NAME	Status W-1	Power Injection/ Offtake [MW]	Status W-1	Pmin Injection/ Offtake [MW]	Pmax Injection/ Offtake [MW]

OUTAGE PLANNING

Ready-to-Run (Prevision)

Deadline Remains: Tuesday 16h00 Week W-1

Procedure :	READY-TO-RUN
Period of execution : [format example: 2021W50]	2022W39
OPA : [contractual name]	OPA_NAME
File Type :	PREVISION
OPA Version :	1
TSO :	
TSO Version :	

Monday	**DD/MM/YYYY**	Off-Peak Forecast Load [MW]: 100,00				
		00:00 - 01:00				
		OPA		TSO		
EAN CODE DELIVERY POINT	**FRIENDLY NAME**	Status W-1	Power Injection/ Offtake [MW]	Status W-1	Pmin Injection/ Offtake [MW]	Pmax Injection/ Offtake [MW]
18Digit_EAN_Wind Park A	Wind Park A	RR	50,0			
18Digit_EAN_CCGT B GT1	CCGT B GT1	RR	75,0			
18Digit_EAN_CCGT B GT2	CCGT B GT2	NRR	75,0			
18Digit_EAN_CCGT B ST1	CCGT B ST1	RR	50,0			

OUTAGE PLANNING

Ready-to-Run (Prices)

Deadline Remains: Tuesday 16h00 Week W-1

1. **Name changes** in the header, yet same information needs to be filled in, since ARP = OPA

Before iCAROS

Procedure :	READY-TO-RUN
Period of execution :	YYYYWww
ARP :	<ARP>
File Type :	PRICES
ARP Version :	X
TSO :	
TSO Version :	

VS

iCAROS

Procedure :		READY-TO-RUN
Period of execution :	[format example: 2021W50]	
OPA :	[contractual name]	
File Type :		PRICES
OPA Version :		1
TSO :		
TSO Version :		

2. **Change in EAN:** Topaz EAN (37 Digits) → Delivery Point EAN (18 Digits)
3. Only **one** column with prices to fill in

PRICES				
CODE	FRIENDLY NAME	START PRICE W-1	I BID W-1	D BID W-1
		€	€/MWh	€/MWh

VS

PRICES		
EAN CODE DELIVERY POINT	FRIENDLY NAME	START PRICE W-1
		€

OUTAGE PLANNING

Ready-to-Run (Prices)

Deadline Remains: Tuesday 16h00 Week W-1

Procedure :		READY-TO-RUN
Period of execution :	[format example: 2021W50]	2022W39
OPA :	[contractual name]	OPA_NAME
File Type :		PRICES
OPA Version :		1
TSO :		
TSO Version :		

PRICES		
EAN CODE DELIVERY POINT	**FRIENDLY NAME**	**START PRICE W-1**
		€
18Digit_EAN_Wind Park A	Wind Park A	1000,00
18Digit_EAN_CCGT B GT1	CCGT B GT1	1000,00
18Digit_EAN_CCGT B GT2	CCGT B GT2	1000,00
18Digit_EAN_CCGT B ST1	CCGT B ST1	1000,00

OUTAGE PLANNING

Ready-to-Run (Technical Data)

Deadline Remains: Tuesday 16h00 Week W-1

1. **Name changes** in the header, yet same information needs to be filled in, since ARP = OPA

Before iCAROS

Procedure :	READY-TO-RUN
Period of execution :	YYYYWww
ARP :	<ARP>
File Type :	TECHNICAL DATA
ARP Version :	X
TSO :	
TSO Version :	

VS

iCAROS

Procedure :		READY-TO-RUN
Period of execution :	[format example: 2021W50]	
OPA :	[contractual name]	
File Type :		TECHNICAL DATA
OPA Version :		1
TSO :		
TSO Version :		

2. **Change in EAN:** Topaz EAN (37 Digits) → Delivery Point EAN (18 Digits)
3. Updates of **Unit Type** & **Fuel Type** & **Start Fuel** (New names & more types)
4. Pmin/Pmax Available only **absolut values**
5. **Name change** in **S** → **Average Output**, yet same information needs to be filled in

Technical Data									
CODE	FRIENDLY NAME	ZONE	UNIT TYPE	FUEL TYPE	RAMPING RATE	Pmin Avail.	Pmax Avail.	START FUEL	S
					MW/min	MW	MW		GJ/MWh

VS

Technical Data									
EAN CODE DELIVEY POINT	FRIENDLY NAME	ZONE	UNIT TYPE	FUEL TYPE	RAMPING RATE	Pmin Avail.	Pmax Avail.	START FUEL	Average Output
					MW/min	MW	MW		GJ/MWh

OUTAGE PLANNING

Ready-to-Run (Technical Data)

Deadline Remains: Tuesday 16h00 Week W-1

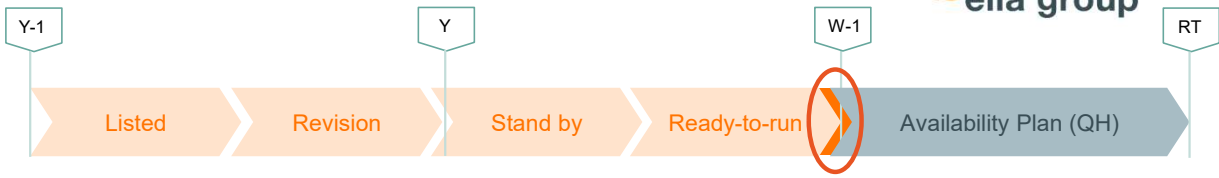
Procedure :		READY-TO-RUN
Period of execution :	[format example: 2021W50]	2022W39
OPA :	[contractual name]	OPA_NAME
File Type :		TECHNICAL DATA
OPA Version :		1
TSO :		
TSO Version :		

Technical Data

EAN CODE DELIVEY POINT	FRIENDLY NAME	ZONE	UNIT TYPE	FUEL TYPE	RAMPING RATE	Pmin Avail.	Pmax Avail.	START FUEL	Average Output
					MW/min	MW	MW		GJ/MWh
18Digit_EAN_Wind Park A	Wind Park A	MK	WOF	WI	5,0	15,0	50,0	WI	2,0
18Digit_EAN_CCGT B GT1	CCGT B GT1	MK	GT	NG	5,0	25,0	75,0	NG	2,0
18Digit_EAN_CCGT B GT2	CCGT B GT2	MK	GT	NG	5,0	25,0	75,0	NG	2,0
18Digit_EAN_CCGT B ST1	CCGT B ST1	MK	ST	NG	5,0	15,0	50,0	NG	2,0

OUTAGE PLANNING

Transition from Ready to Run to Availability Plan



On Thursday W-1, at the end of the Ready-to-Run, an automatic translation is realized to translate status from Topaz to Optiflex according to the table:

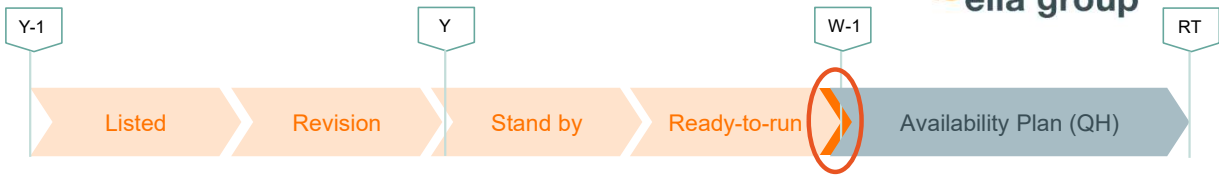
Automatic translation

Ready-To-Run Status in Topaz	Availability plan status in Optiflex
NRR - Not Ready to Run	U- Unavailable
RR - Ready to Run	A – Available
FO – Forced Outage	FO - Forced outage

No validation are required from OPA

OUTAGE PLANNING

Transition between Ready to Run and Availability Plan - Example



Automatic translation

Procedure :		READY-TO-RUN
Period of execution :	[format example: 2021W50]	2022W39
OPA :	[contractual name]	OPA_NAME
File Type :		PREVISION
OPA Version :		1
TSO :		
TSO Version :		

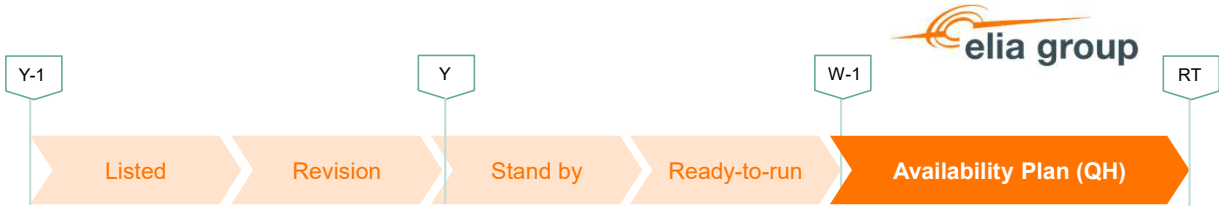
Monday	**DD/MM/YYYY**	Off-Peak Forecast Load [MW]: 100,00				
		00:00 - 01:00				
		OPA		TSO		
EAN CODE DELIVERY POINT	**FRIENDLY NAME**	Status W-1	Power Injection/ Offtake [MW]	Status W-1	Pmin Injection/ Offtake [MW]	Pmax Injection/ Offtake [MW]
18Digit_EAN_Wind Park A	Wind Park A	RR	50,0			
18Digit_EAN_CCGT B GT1	CCGT B GT1	RR	75,0			
18Digit_EAN_CCGT B GT2	CCGT B GT2	NRR	75,0			
18Digit_EAN_CCGT B ST1	CCGT B ST1	RR	50,0			

06/10/2022		00:00	00:15	00:30	00:45	01:00
Wind Park A	Status	A	A	A	A	A
	$P_{max,\,avail}$	75	75	75	75	75
CCGT B GT1	Status	A	A	A	A	A
	$P_{max,\,avail}$	85	85	85	85	85
CCGT B GT2	Status	U	U	U	U	U
	$P_{max,\,avail}$	0	0	0	0	0
CCGT B ST	Status	A	A	A	A	A
	$P_{max,\,avail}$	55	55	55	55	55

$P_{tech,max}$ from contractual data

OUTAGE PLANNING

Update of the Availability Plan after W-1



From W-1 Thursday 18h, after confirmation of Ready-to-Run status, all updates will be realized via the new process based on **unavailability events**. An unavailability event has the following attributes:

- **A Status**:
  - Planned Unavailability
  - Forced Outage
  - Testing
- **The Delivery Point**
- **Start and End Date/Time**
- **Available Pmax:** The maximum power that the Delivery Point can inject into (or take off) the ELIA Grid taking into account all planned restrictions in power known at the time of notification:

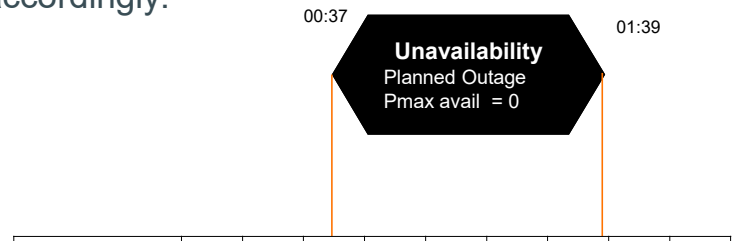
$$0\ \text{MW} \leq \boldsymbol{P_{max,\,avail}} \leq P_{max,,tech\ inj}\ (\ or\ P_{max,,tech\ \ off}\ )$$

OUTAGE PLANNING

Update of the Availability Plan after W-1

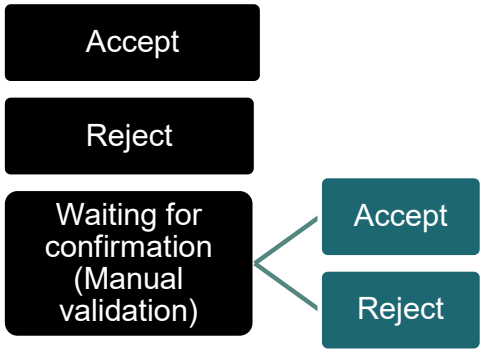
The unavailability event get a 1st reply according to **validation rules** described in the Technical Guide and a second reply if it requires a **manual validation** from Elia.

Once validated the availability event will update the availability plan accordingly:



Availability plan	00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00
Availability status	A	A	U	U	U	U	U	A	A
Pmax available	100	100	0	0	0	0	0	100	100

1St reply **2nd reply**



OUTAGE PLANNING

Update of the Availability Plan after W-1

1) Update of an existing outage in Ready-to-Run

Thursday 06/10/2022		00:00	00:15	00:30	00:45	01:00	07:15	07:30	07:45	08:00	16:15	16:30	16:45	17:00	17:15	23:15	23:30	23:45
CCGT B GT2	Status	A	A	A	A	A	A	U	U	U	U	U	A	A	A	A	A	A
	$P_{max,\,av}$							0	0	0	0	0						

07:30 — **Unavailability** — 17:30

Planned Outage — Version 1

Pmax avail = 0

Thursday 06/10/2022		00:00	00:15	00:30	00:45	01:00	07:15	07:30	07:45	08:00	16:15	16:30	16:45	17:00	17:15	23:15	23:30	23:45
CCGT B GT2	Status	A	A	A	A	A	A	U	U	U	U	U	U	U	U	A	A	A
	$P_{max,\,av}$							0	0	0	0	0	0	0	0			

Initial availability Plan with a Planned Unavailability from 7.30 to 16.45 communicated in the Ready-to-Run and automatically translated.

After W-1, the Planned Unavailability needs to be updated. OPA will use an availability event from 7.30 to 17.30.

The Availability Plan is accordingly updated when validated by Elia.

OUTAGE PLANNING

Update of the Availability Plan after W-1

2) Withdraw of an unavailibility

Thursday 06/10/2022		00:00	00:15	00:30	00:45	01:00	...	07:15	07:30	07:45	08:00	...	16:15	16:30	16:45	17:00	17:15	...	23:15	23:30	23:45
CCGT B GT2	Status	A	A	A	A	A	...	A	U	U	U	...	U	U	A	A	A	...	A	A	A
	$P_{max,\,av}$								0	0	0		0	0							

Unavailability

Withdrawal Version 1

Thursday 06/10/2022		00:00	00:15	00:30	00:45	01:00	...	07:15	07:30	07:45	08:00	...	16:15	16:30	16:45	17:00	17:15	...	23:15	23:30	23:45
CCGT B GT2	Status	A	A	A	A	A	...	A	A	A	A	...	A	A	A	A	A	...	A	A	A
	$P_{max,\,av}$																				

Availability Plan with a Planned Unavailability from 7.30 to 16.45 communicated in the Ready-to-Run and automatically translated.

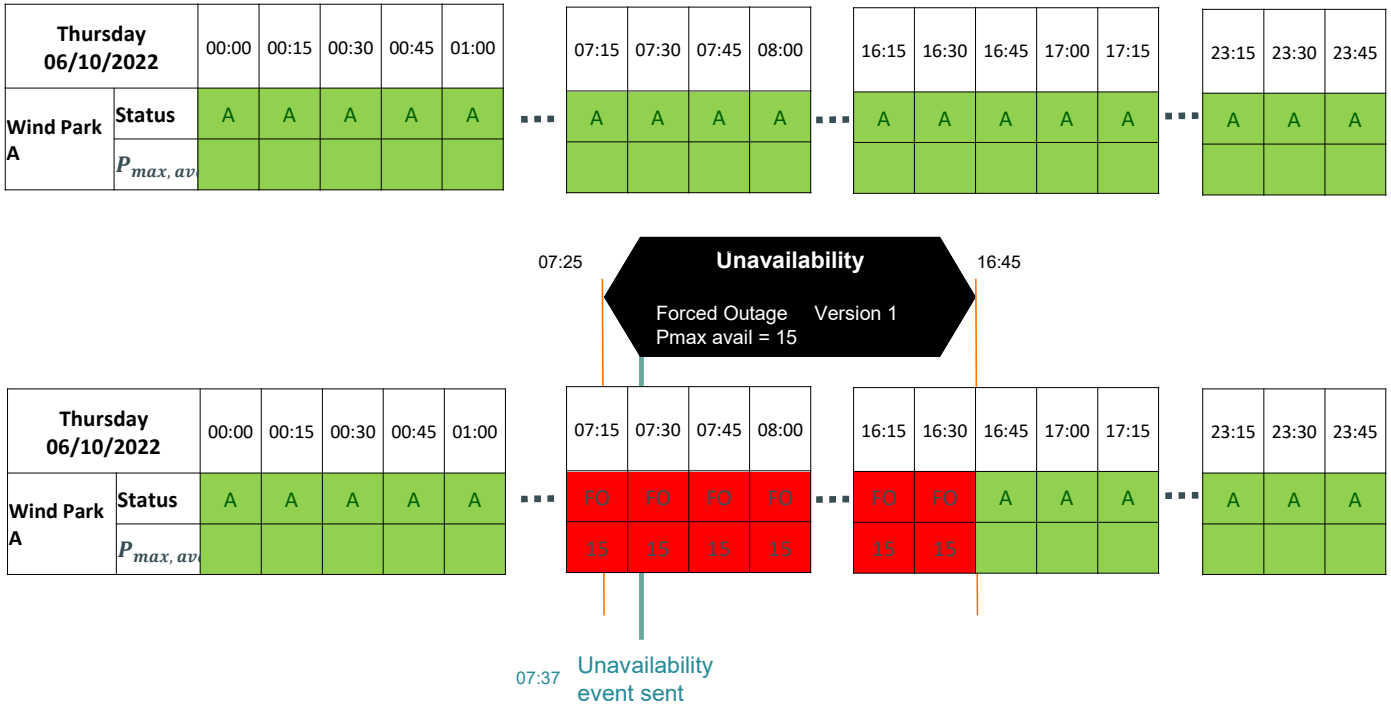
Later, the Planned Unavailability needs to be withdrawn.

The Availability Plan is accordingly updated when validated by Elia.

OUTAGE PLANNING

Update of the Availability Plan after W-1

3) Forced Outage



Availability Plan without unavailability was communicated in the Ready-to-Run and is automatically translated.

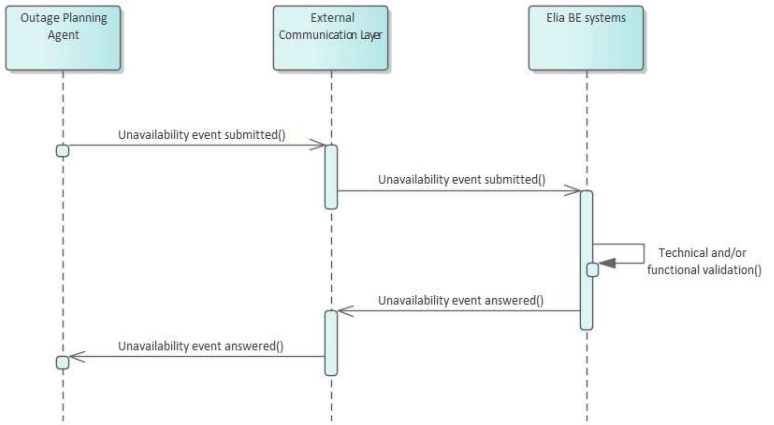
During the concerned day, a Forced Outage (FO) happens. The Pmax available is reduced to 15 MW. OPA needs to communicate this update asap via an unavailability event.

The Availability Plan is accordingly updated and no confirmation is needed by Elia.

SUBMITTING AVAILABILITY PLANS
B2B & B2C possibilities

Unavailibilities event can be sent through two channels :

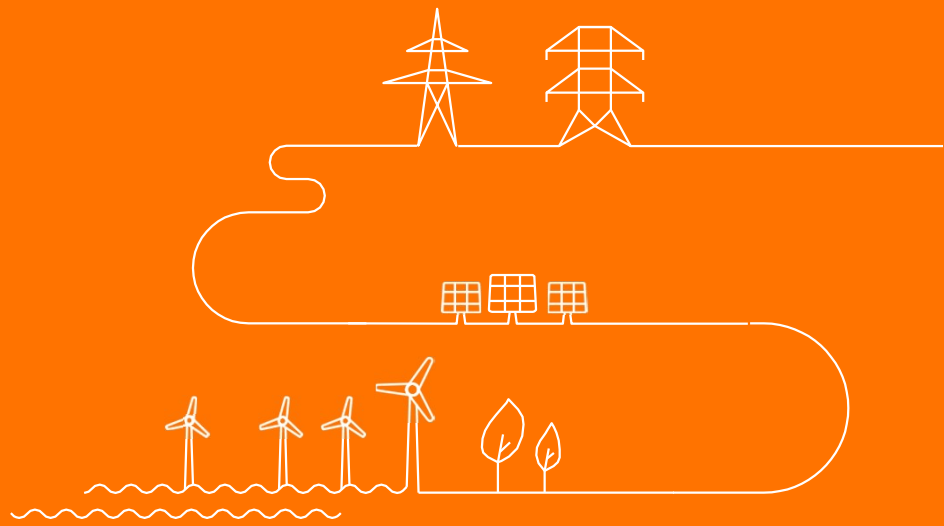
- exchanges of json messages via the **External Communication layer**. Information related to the external communication layer and the json messages can be found in the Technical Guide.



- sending of an excel file via the **OPTIFLEX web interface**. Information related to the OPTIFLEX web interface can be found in the OPTIFLEX user manual.

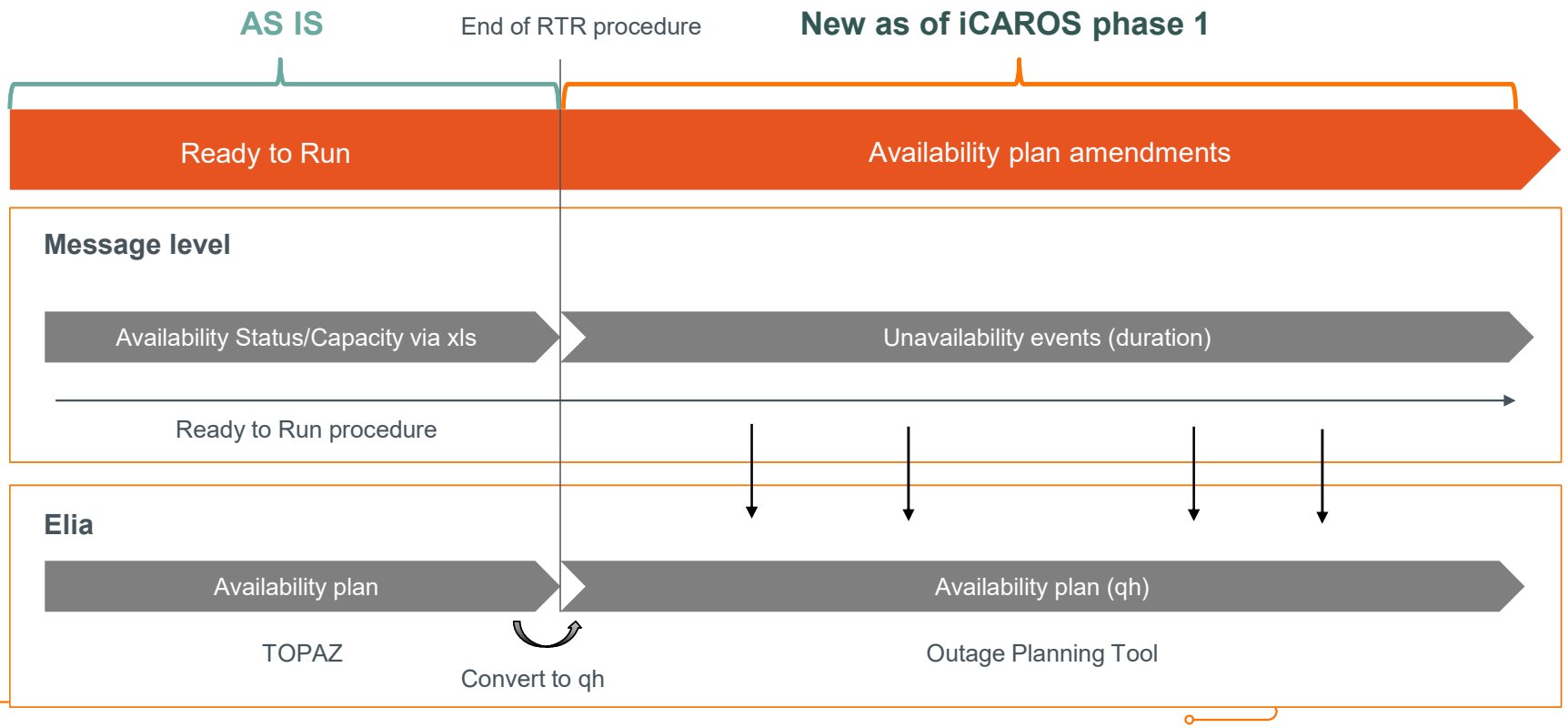
Optiflex

DEMO



Availability planning process – iCAROS phase 1

- No obligation to send in availability plans via new interface, only updates (ex. FO) are required



Principles

- **Week Ahead (Ready-to-run) and earlier outage planning** will be covered by existing CIPU procedures
- The information exchange is based on the same protocol (xls - Topaz) as today

- The **DA and ID outage planning** will be covered by the new exchange described in the Technical Guide
- The new exchange allows to manage
  - Forced Outage and their full lifecycle
  - Changes to RTR statuses (ex. shorten a planned outage) that needs to be communicated in between two RTR phases
  - Exceptional new planned outages

In some scenario's, there are overlapping periods where information in both exchanges overlap

Contact persons

- For further question, please contact your KAM Energy:

Name	E-mail
Amandine Leroux	Amandine.leroux@elia.be
Arno Motté	Arno.motte@elia.be

Thank you