iCAROS phase 1 Complex RD Energy Bid submission

Implementation guide

09/03/2023 | Training SA
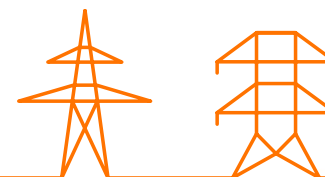
Agenda for today

Recap of last session

Specificities for RD bids

Complex bidding for RD Energy bid submission:

- How to link bids within a same QH: Exclusive groups
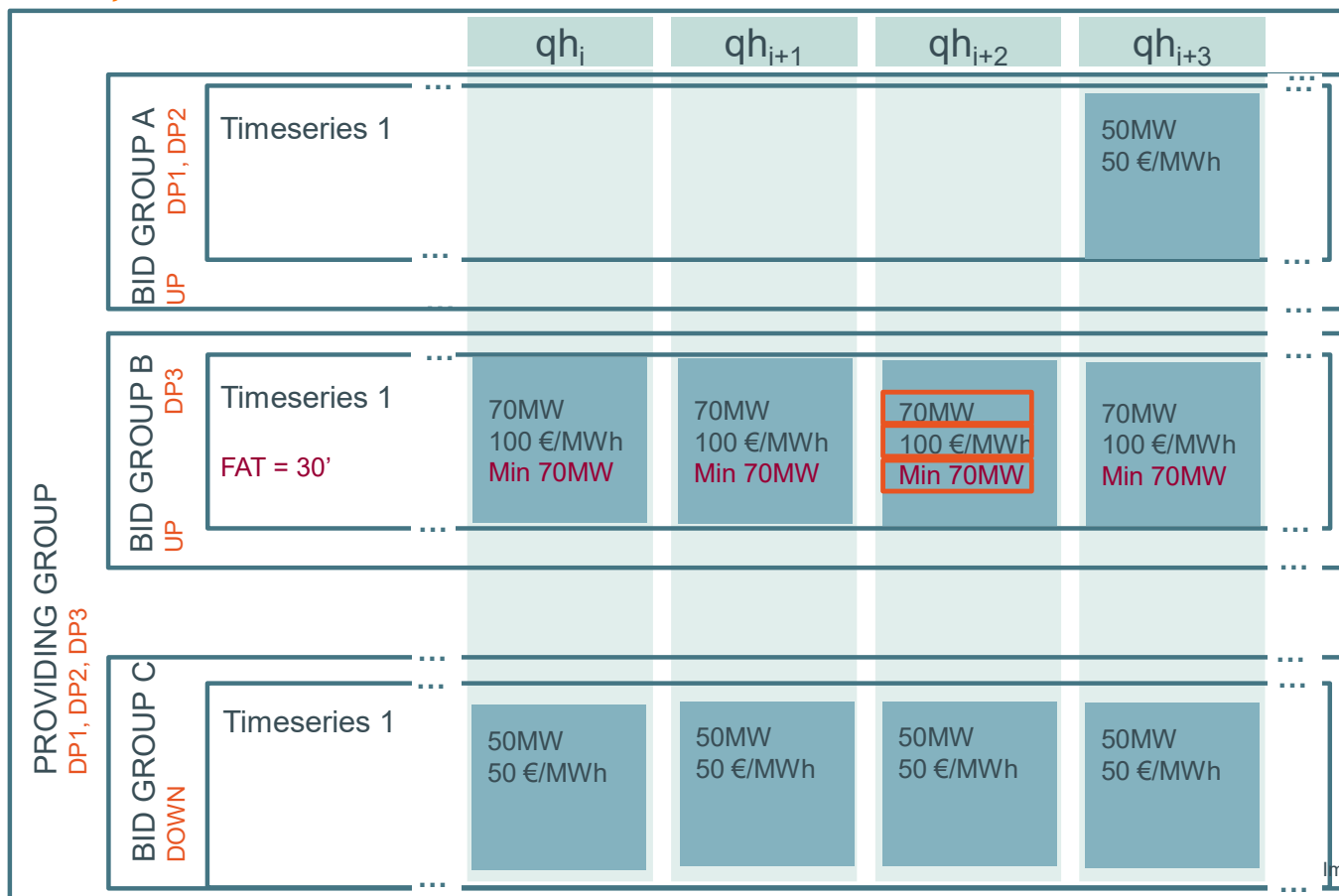- How to link bids across QH: Conditional linking

Examples:

- Complex biddings
- Full Activation Time
- Minimum Activation Time

BIDDING STRUCTURE
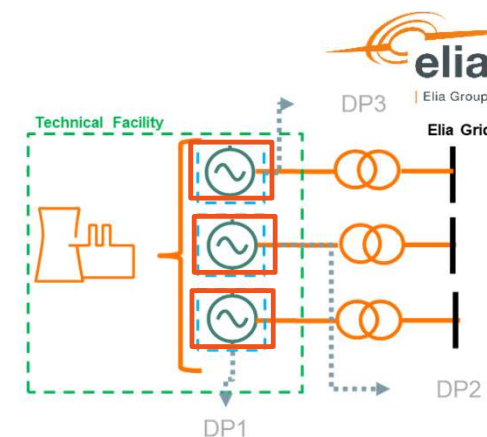## *Price, volume and minimum volume are defined at bid level*

	qh$_i$	qh$_{i+1}$	qh$_{i+2}$	qh$_{i+3}$

PROVIDING GROUP — DP1, DP2, DP3

BID GROUP A — DP1, DP2 — UP — Timeseries 1: 50MW 50 €/MWh (qh$_{i+3}$)

BID GROUP B — DP3 — UP — Timeseries 1, FAT = 30':
- qh$_i$: 70MW / 100 €/MWh / Min 70MW
- qh$_{i+1}$: 70MW / 100 €/MWh / Min 70MW
- qh$_{i+2}$: 70MW / 100 €/MWh / Min 70MW
- qh$_{i+3}$: 70MW / 100 €/MWh / Min 70MW

BID GROUP C — DP1, DP2, DP3 — DOWN — Timeseries 1:
- qh$_i$: 50MW / 50 €/MWh
- qh$_{i+1}$: 50MW / 50 €/MWh
- qh$_{i+2}$: 50MW / 50 €/MWh
- qh$_{i+3}$: 50MW / 50 €/MWh

	Energy bid characteristics
Local design	ID
	List of Delivery points
	Direction
	Bid price
	Bid volume
	Minimum bid volume
	Maximum activation time
Complexe Bidding	*Quarter-hour linking (conditional links)*
	Part of exclusive group
	Part of parent/child relation
Redispatching only	Full activation time
	Minimum activation time

BIDDING STRUCTURE
Delivery Points can be defined at multiple levels

PROVIDING GROUP — DP1, DP2, DP3

	qh$_i$	qh$_{i+1}$	qh$_{i+2}$
BID GROUP A — DP1, DP2 — UP — Timeseries 1			50MW 50 €/MWh
BID GROUP B — UP — Timeseries 1 — FAT = 30'	70MW 100 €/MWh Min 70MW DP3	70MW 100 €/MWh Min 70MW DP3	70MW 100 €/MWh Min 70MW DP3
BID GROUP C — DOWN — Timeseries 1	50MW 50 €/MWh	50MW 50 €/MWh	50MW 50 €/MWh

Technical_Facility

DP3 — Elia Grid — Elia Group — elia

DP2

DP1

- Providing group = Technical Facility
- Bid group = Operating mode

BIDDING STRUCTURE
Direction is defined at bid group level

	Energy bid characteristics
	ID
	List of Delivery points
Local design	Direction
	Bid price
	Bid volume
	Minimum bid volume
	Maximum activation time
Complexe Bidding	*Quarter-hour linking (conditional links)*
	Part of exclusive group
	Part of parent/child relation
Redispatching only	Full activation time
	Minimum activation time

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BIDDING STRUCTURE
FAT, MAT and MIT are defined at Timeseries level*

	Energy bid characteristics
Local design	ID
	List of Delivery points
	Direction
	Bid price
	Bid volume
	Minimum bid volume
	Maximum activation time
	Quarter-hour linking (conditional links)
Complexe Bidding	*Part of exclusive group*
	Part of parent/child relation
Redispatching only	Full activation time
	Minimum activation time

PROVIDING GROUP
DP1, DP2, DP3

BID GROUP A — DP1, DP2 — UP

Timeseries 1

MIT = 240'

50MW
50 €/MWh

BID GROUP B — DP3 — UP

Timeseries 1

FAT = 30'

qh_i	qh_{i+1}	qh_{i+2}	qh_{i+3}
70MW 100 €/MWh Min 70MW	70MW 100 €/MWh Min 70MW	70MW 100 €/MWh Min 70MW	70MW 100 €/MWh Min 70MW

BID GROUP C — DP1, DP2, DP3 — DOWN

Timeseries 1

MAT = 120'

| 50MW 50 €/MWh | 50MW 50 €/MWh | 50MW 50 €/MWh | 50MW 50 €/MWh |

* MAT design fine-tuning is part of BSP facilitation and bid structure could be updated based on it.

GOAL OF THIS SESSION

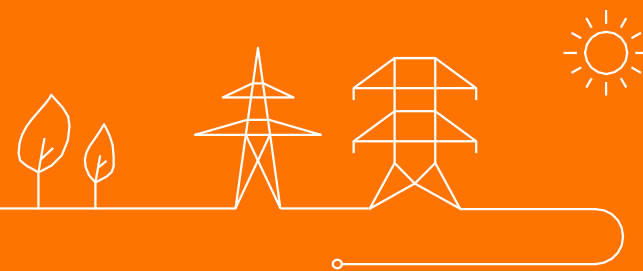|	**Energy bid characteristics**
Local design	ID
	List of Delivery points
	Direction
	Bid price
	Bid volume
	Minimum bid volume
	Maximum activation time
Complexe Bidding	**Quarter-hour linking (conditional links)**
	Part of exclusive group
	Part of parent/child relation
Redispatching only	Full activation time
	Minimum activation time

To explain the usage of complex bidding (conditional links, exclusive groups and combination…) to offer flexibility of DPs in different operating modes for RD
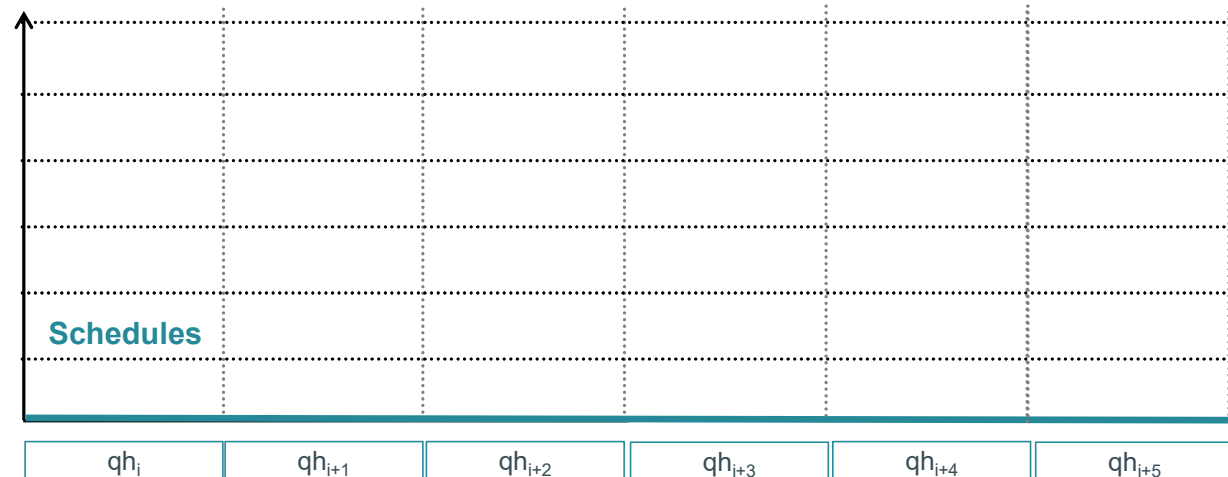
SPECIFICITIES FOR RD BIDS

FAT

FULL ACTIVATION TIME
Example – initial situation

	qh_i	qh_{i+1}	qh_{i+2}	qh_{i+3}	qh_{i+4}	qh_{i+5}

PROVIDING GROUP DP1

BID GROUP A UP

Timeseries 1

FAT = 45'

| 100MW 100 €/MWh Min 70MW | 100MW 100 €/MWh Min 70MW | 100MW 100 €/MWh Min 70MW | 100MW 100 €/MWh Min 70MW | 100MW 100 €/MWh Min 70MW | 100MW 100 €/MWh Min 70MW |

Initial situation (before activation)

- 1 Bid Groups with
  - DP1 initially not running (schedule = 0 MW)
  - FAT = 45 min
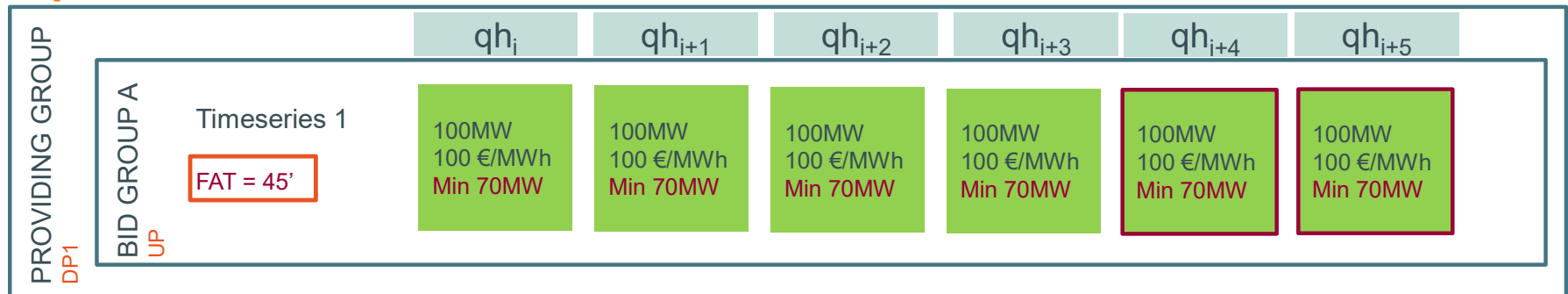- All bids in these Bid Groups are available

Schedules

| qh_i | qh_{i+1} | qh_{i+2} | qh_{i+3} | qh_{i+4} | qh_{i+5} |

Legend:

| Bid **available** for selection and activation | Bid **selected / activated** | Bid **unavailable** for selection and activation |

FULL ACTIVATION TIME
Example – initial situation

		qh$_i$	qh$_{i+1}$	qh$_{i+2}$	qh$_{i+3}$	qh$_{i+4}$	qh$_{i+5}$

PROVIDING GROUP DP1

BID GROUP A UP

Timeseries 1

FAT = 45'

qh$_i$	qh$_{i+1}$	qh$_{i+2}$	qh$_{i+3}$	qh$_{i+4}$	qh$_{i+5}$
100MW 100 €/MWh Min 70MW	100MW 100 €/MWh Min 70MW	100MW 100 €/MWh Min 70MW	100MW 100 €/MWh Min 70MW	100MW 100 €/MWh Min 70MW	100MW 100 €/MWh Min 70MW

Final situation (at activation)

→ Elia activates 100 MW from qh$_{i+4}$ to qh$_{i+10}$

→ Ramp-up start 45' (=FAT) before qh$_{i+10}$

→ 100 MW are reached in qh$_{i+10}$

Legend:

Bid **available** for selection and activation

Bid **selected / activated**

Bid **unavailable** for selection and activation

Activation
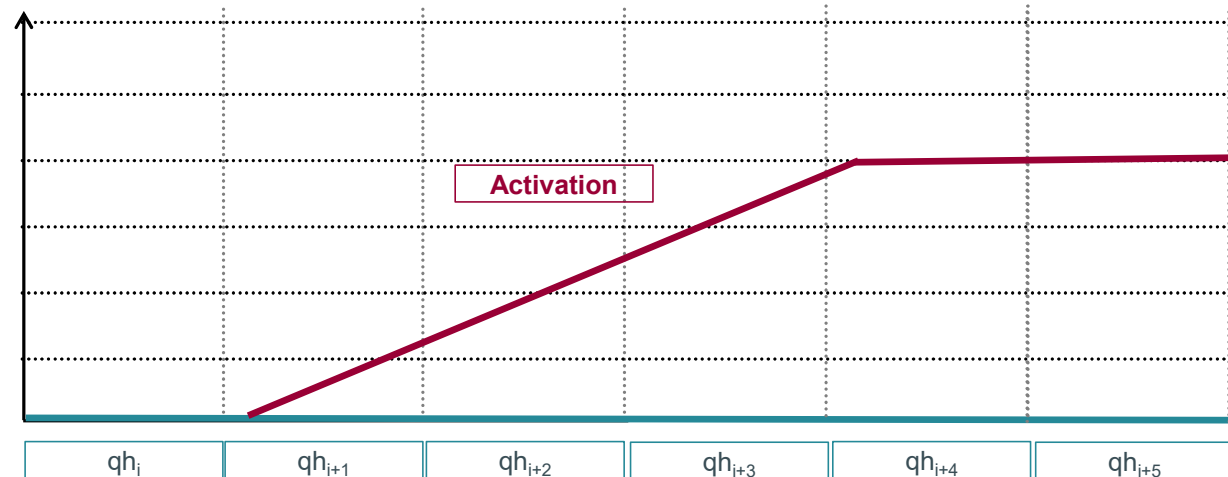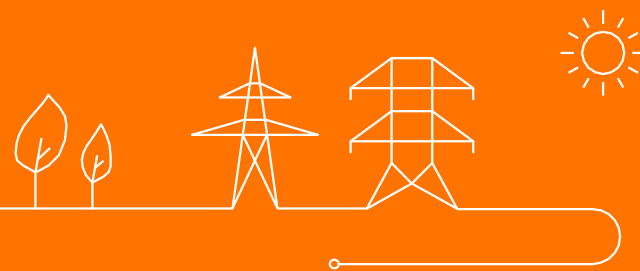
qh$_i$	qh$_{i+1}$	qh$_{i+2}$	qh$_{i+3}$	qh$_{i+4}$	qh$_{i+5}$

HOW TO LINK BIDS WITHIN THE SAME QH

Exclusive groups & Parent-child relations

HOW TO LINK BIDS WITHIN THE SAME QH
Exclusive groups & Parent-child relation

Simple bid

Simple bids can be linked **within the same quarter hour** to form **complex bids**

- Exclusive Group (=EG)

  Only one or none of the bids in an exclusive group can be activated simultaneously

- Parent-child relation

  The child cannot be activated if the parent has not been activated first

Bids cannot have both an exclusive bid identification and a parent-child identification

QH_{i-2}	QH_{i-1}	QH_i	Qh_{i+1}
BID_A	BID_B	BID_C	BID_D
BID_E	BID_F	BID_G	BID_H

QH_{i-2}	QH_{i-1}	QH_i	Qh_{i+1}
BID_A	BID_B	BID_C	BID_D
BID_E	BID_F	BID_G	BID_H

Exclusive group A

EXCLUSIVE GROUPS
Example 1/2

Initial situation (before activation)
- 3 Bid Groups with
  - same DP1
  - different MAT
  - Same Exclusive Group
- All bids in these Bid Groups are available

Only 1 bid per qh in this Exclusive Group can be activated

Legend:

Bid **available** for selection and activation	Bid **unavailable** for selection and activation

		qh_i	qh_{i+1}		qh_{i+5}	qh_{i+6}	
BID GROUP A UP	Timeseries 1 MAT = 60' Exclusive Group DP1	200MW 50 €/MWh	50MW 50 €/MWh		50MW 50 €/MWh	50MW 50 €/MWh	...
BID GROUP B UP	Timeseries 1 MAT = 120' Exclusive Group DP1	100MW 150 €/MWh	100MW 150 €/MWh		100MW 150 €/MWh	100MW 150 €/MWh	...
BID GROUP C UP	Timeseries 1 MAT = 240' Exclusive Group DP1	50MW 250 €/MWh	50MW 250 €/MWh		50MW 250 €/MWh	50MW 250 €/MWh	...

PROVIDING GROUP DP1

Implementation guide - complex RD bids submission
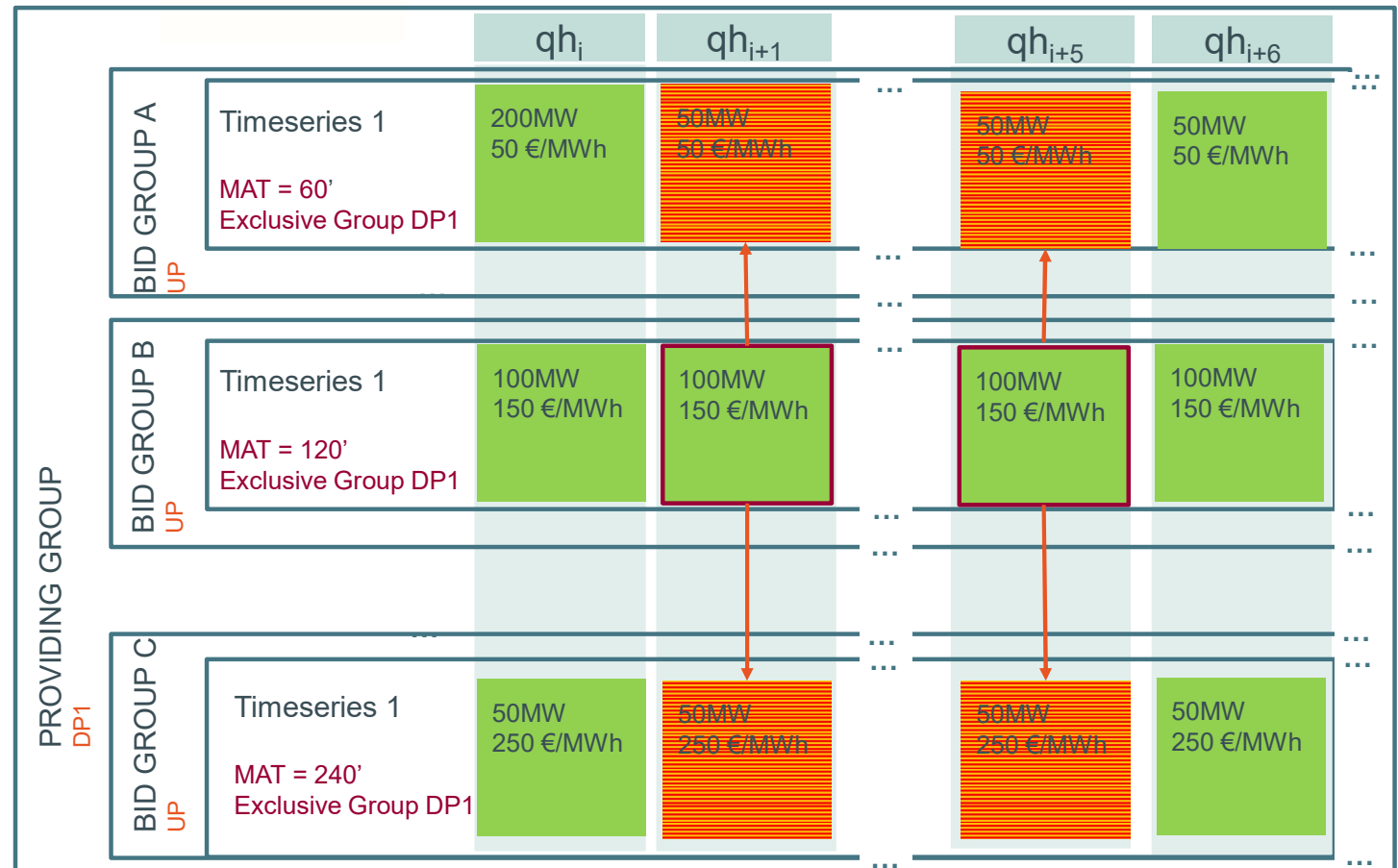
EXCLUSIVE GROUPS
Example 2/2

Final situation (at activation)

➔ Bid Groups B is selected from qh_{i+1} to qh_{i+5}

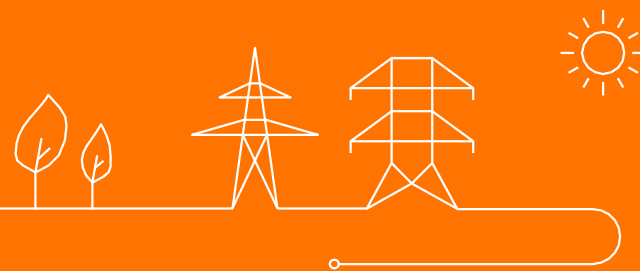➔ During this period all other bids in the Bid Groups of the Exclusive Group cannot be selected

Legend:

Bid **available** for selection and activation	Bid **unavailable** for selection and activation

	qh_i	qh_{i+1}		qh_{i+5}	qh_{i+6}
BID GROUP A UP — Timeseries 1 — MAT = 60' Exclusive Group DP1	200MW 50 €/MWh	50MW 50 €/MWh		50MW 50 €/MWh	50MW 50 €/MWh
BID GROUP B UP — Timeseries 1 — MAT = 120' Exclusive Group DP1	100MW 150 €/MWh	100MW 150 €/MWh		100MW 150 €/MWh	100MW 150 €/MWh
BID GROUP C UP — Timeseries 1 — MAT = 240' Exclusive Group DP1	50MW 250 €/MWh	50MW 250 €/MWh		50MW 250 €/MWh	50MW 250 €/MWh

PROVIDING GROUP DP1

Implementation guide - complex RD bids submission

HOW TO LINK BIDS ACROSS QH

Conditional linking

HOW TO LINK BIDS ACROSS QH
*Conditional linking**

Simple bid

Simple bids can be linked **through different quarter hour** to form **conditionally linked bids**
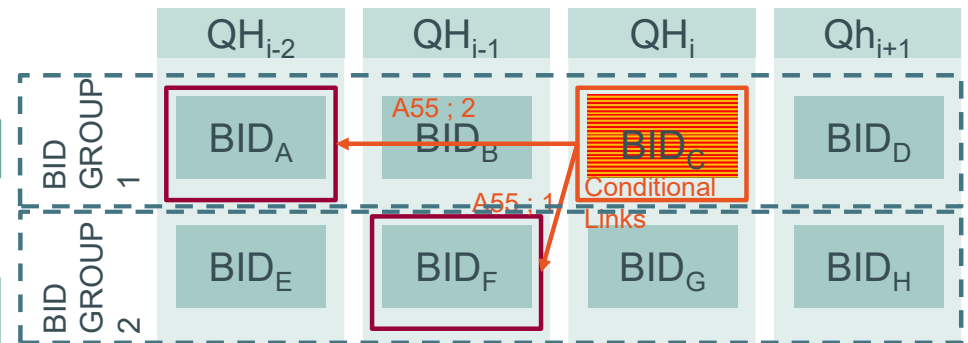
Maximum 6 links maximum 3 in QH-1 and 3 links in QH-2

Different type of links:

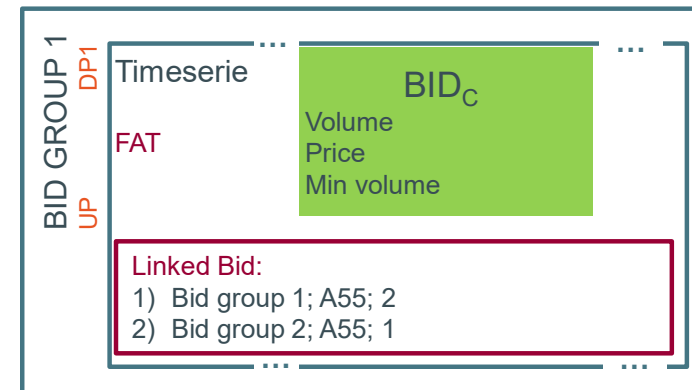**A55 link:** Bid initially available, becomes unavailable if linked bid activated

A67 link: Bid initially unavailable, becomes available if linked bid activated

A56 link : Bid initially available, becomes unavailable if linked bid not activated

A68 link: Bid initially unavailable, becomes available if linked bid not activated

Ex: Bid C is initially available and becomes unavailable
→ if Bid Group 1 is activated in QH-2
→ or if Bid Group 2 is activated in QH-1

BID GROUP 1

DP1

FAT

UP

Timeserie

BID$_C$
Volume
Price
Min volume

Linked Bid:
1) Bid group 1; A55; 2
2) Bid group 2; A55; 1
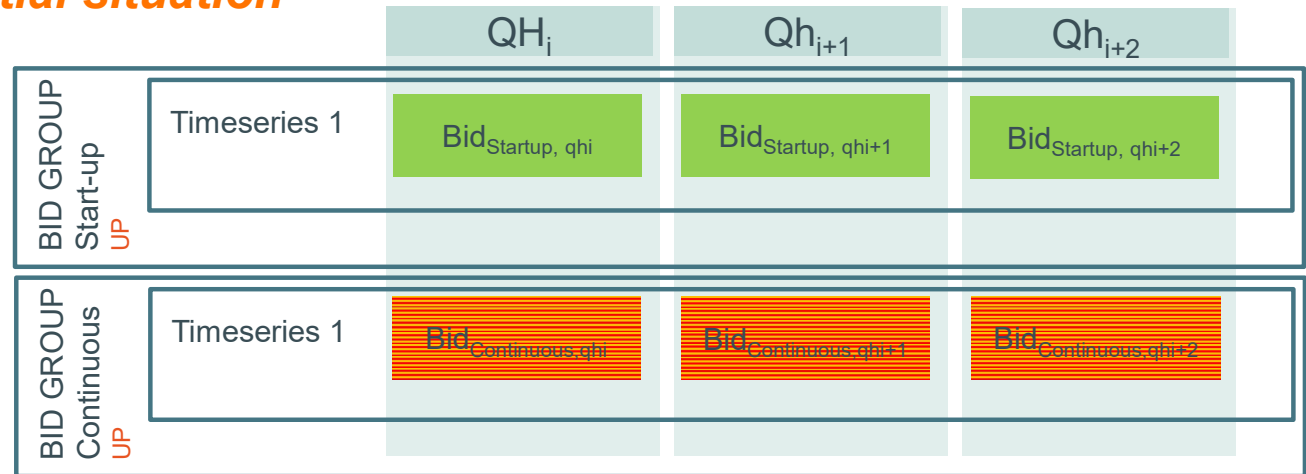
* Also called quarter-hour linking

CONDITIONAL LINKING
Example of a start-up – initial situation

DP is not running
2 Bid Groups to reflect start-ups:
- **Start-up** bids
  - Must be activated during 1 qh before one Continuous bid becomes available
  - Includes the start-up time in FAT, start-up price…
  - Is initially available
- **Continuous** bid
  - Includes all properties of a running DP (FAT, price…)
  - Is initially unavailable

		QH_i	Qh_{i+1}	Qh_{i+2}
BID GROUP Start-up UP	Timeseries 1	$Bid_{Startup,\ qhi}$	$Bid_{Startup,\ qhi+1}$	$Bid_{Startup,\ qhi+2}$
BID GROUP Continuous UP	Timeseries 1	$Bid_{Continuous,qhi}$	$Bid_{Continuous,qhi+1}$	$Bid_{Continuous,qhi+2}$

Legend:

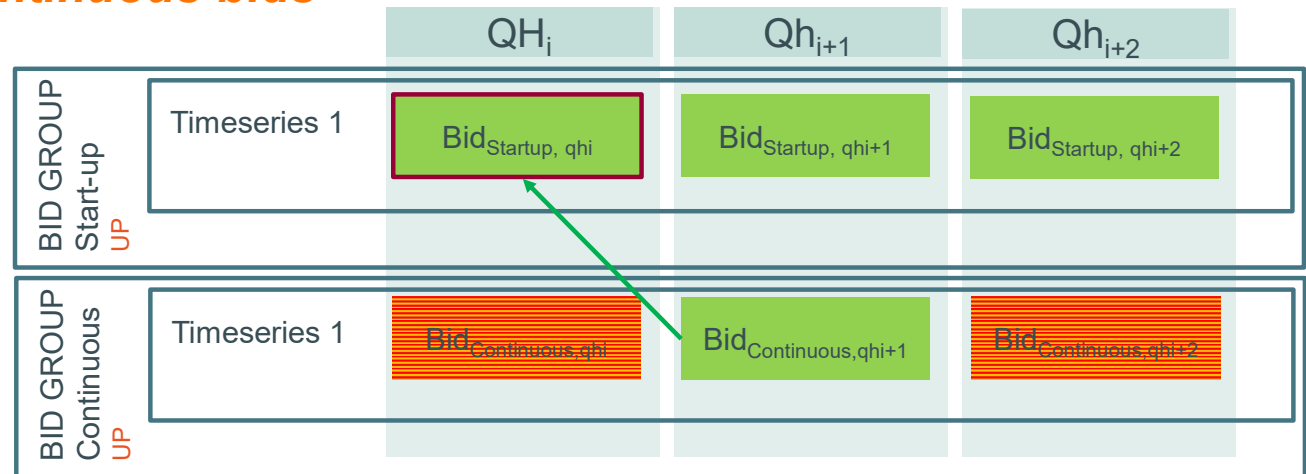| Bid **available** for selection and activation	Bid **selected / activated**	Bid **unavailable** for selection and activation

CONDITIONAL LINKING
Example of a start-up – continuous bids

DP is not running
2 Bid Groups to reflect start-ups:
- Start-up bids
  - initially available
- **Continuous** bid is
  - initially unavailable
  - Becomes available if $Bid_{Startup,\ qh-1}$ is activated: **A67 link**

	QH$_i$	Qh$_{i+1}$	Qh$_{i+2}$
BID GROUP Start-up UP — Timeseries 1	$Bid_{Startup,\ qhi}$	$Bid_{Startup,\ qhi+1}$	$Bid_{Startup,\ qhi+2}$
BID GROUP Continuous UP — Timeseries 1	$Bid_{Continuous,qhi}$	$Bid_{Continuous,qhi+1}$	$Bid_{Continuous,qhi+2}$

Legend:

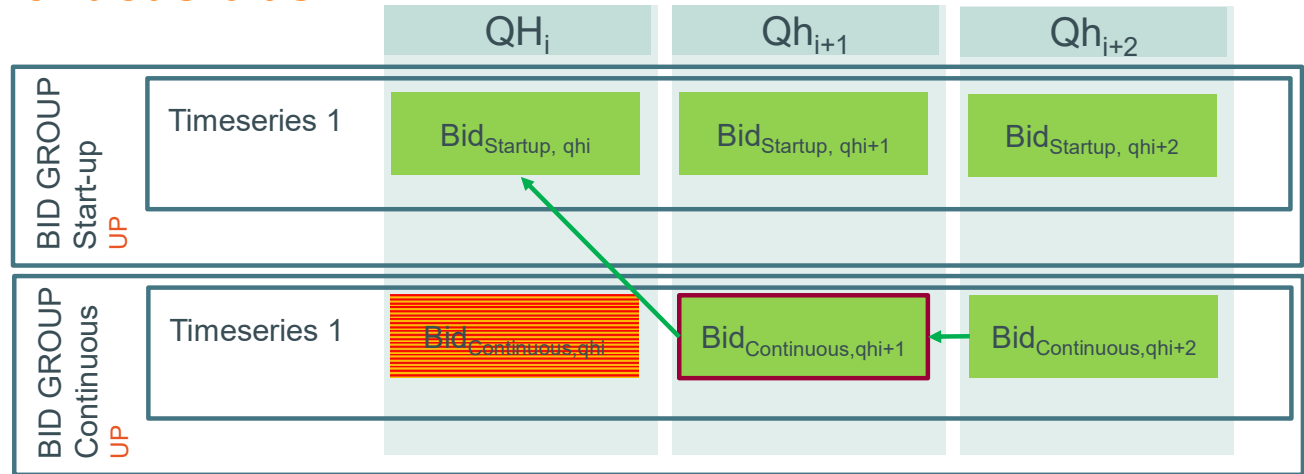| Bid **available** for selection and activation	Bid **selected / activated**	Bid **unavailable** for selection and activation

CONDITIONAL LINKING
Example of a start-up – continuous bids

DP is not running
2 Bid Groups to reflect start-ups:
- Start-up bids
  - initially available
- **Continuous** bid is
  - initially unavailable
  - Becomes available if $Bid_{Startup, qh-1}$ is activated: **A67 link**
  - Or Becomes available if $Bid_{Continuous, qh-1}$ is activated: **A67 link**

		QH_i	Qh_{i+1}	Qh_{i+2}
BID GROUP Start-up UP	Timeseries 1	$Bid_{Startup, qhi}$	$Bid_{Startup, qhi+1}$	$Bid_{Startup, qhi+2}$
BID GROUP Continuous UP	Timeseries 1	$Bid_{Continuous,qhi}$	$Bid_{Continuous,qhi+1}$	$Bid_{Continuous,qhi+2}$

Legend:

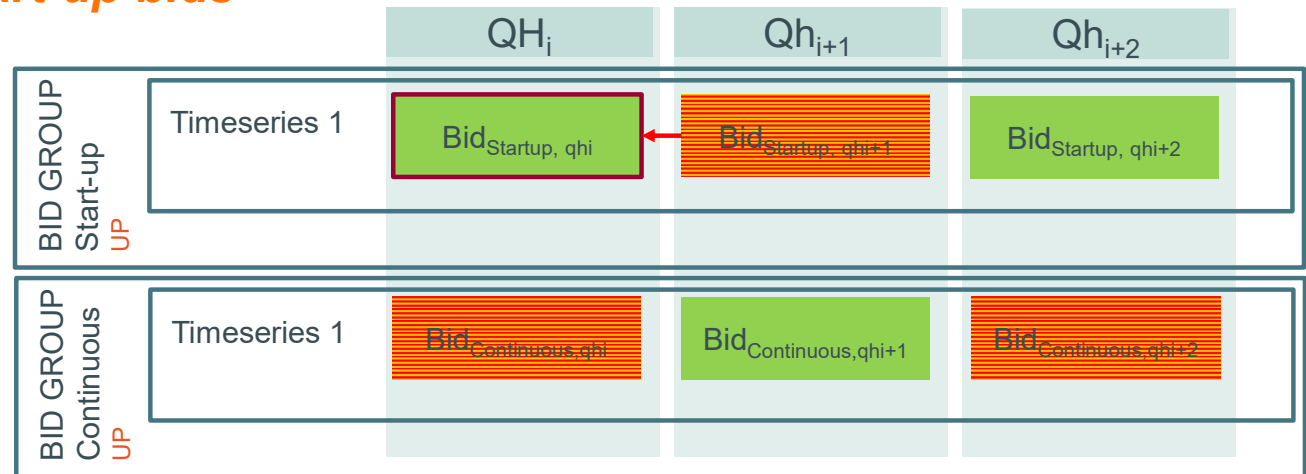| Bid **available** for selection and activation	Bid **selected / activated**	Bid **unavailable** for selection and activation

CONDITIONAL LINKING
Example of a start-up – start-up bids

DP is not running

2 Bid Groups to reflect start-ups:

- **Start-up** bids
  - initially available
  - Becomes unavailable if $Bid_{Startup, qh-1}$ is activated: **A55 link**

- Continuous bid is
  - initially unavailable

		QH_i	Qh_{i+1}	Qh_{i+2}
BID GROUP Start-up UP	Timeseries 1	$Bid_{Startup,\ qhi}$	$Bid_{Startup,\ qhi+1}$	$Bid_{Startup,\ qhi+2}$
BID GROUP Continuous UP	Timeseries 1	$Bid_{Continuous,qhi}$	$Bid_{Continuous,qhi+1}$	$Bid_{Continuous,qhi+2}$

Legend:

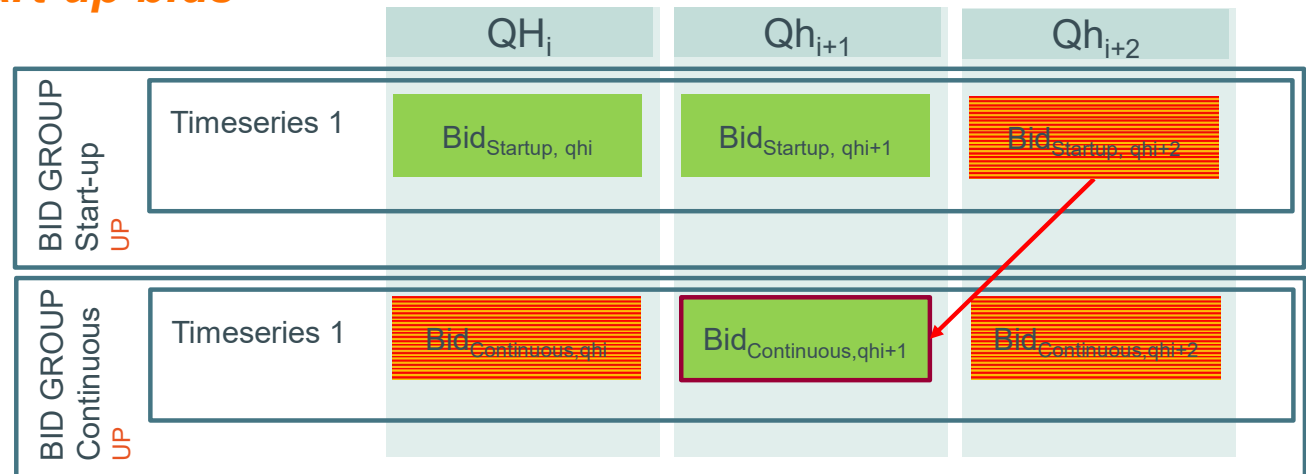| Bid **available** for selection and activation	Bid **selected / activated**	Bid **unavailable** for selection and activation

CONDITIONAL LINKING
Example of a start-up – start-up bids

DP is not running

2 Bid Groups to reflect start-ups:

- **Start-up** bids
  - initially available
  - Becomes unavailable if $Bid_{Startup, qh-1}$ is activated: **A55 link**
  - Becomes unavailable if $Bid_{Continous, qh-1}$ is activated: **A55 link**

- **Continuous** bid is
  - initially unavailable

		QH$_i$	Qh$_{i+1}$	Qh$_{i+2}$
BID GROUP Start-up UP	Timeseries 1	$Bid_{Startup, qhi}$	$Bid_{Startup, qhi+1}$	$Bid_{Startup, qhi+2}$
BID GROUP Continuous UP	Timeseries 1	$Bid_{Continuous,qhi}$	$Bid_{Continuous,qhi+1}$	$Bid_{Continuous,qhi+2}$

Legend:

Bid **available** for selection and activation	Bid **selected / activated**	Bid **unavailable** for selection and activation

CONDITIONAL LINKING
Example of a start-up – initial situation

DP is not running

2 Bid Groups to reflect start-ups:

- **Start-up** bids
  - initially available
  - Becomes unavailable if $Bid_{Startup, qh-1}$ is activated: **A55 link**
  - Becomes unavailable if $Bid_{Continous, qh-1}$ is activated: **A55 link**
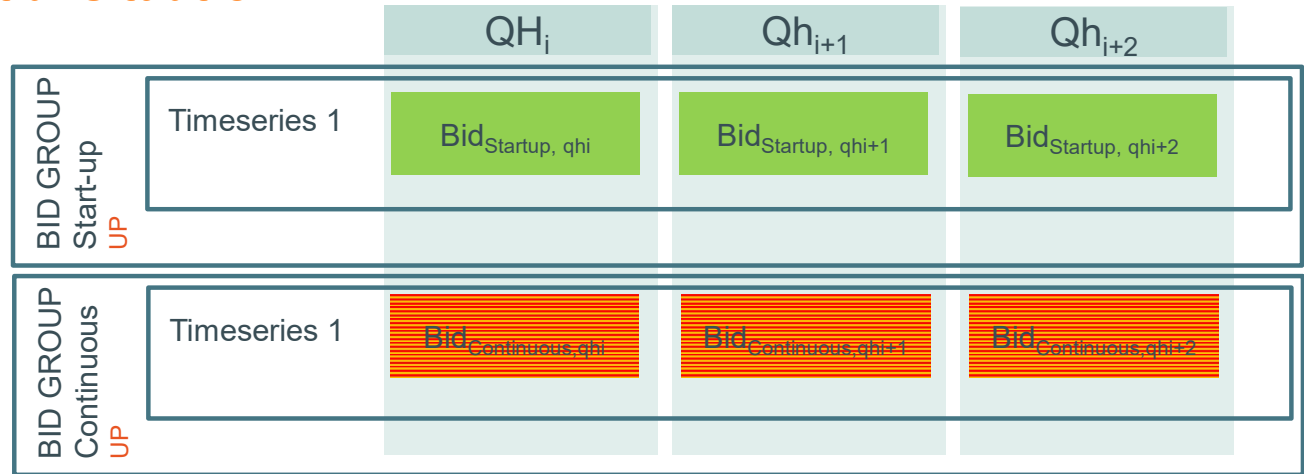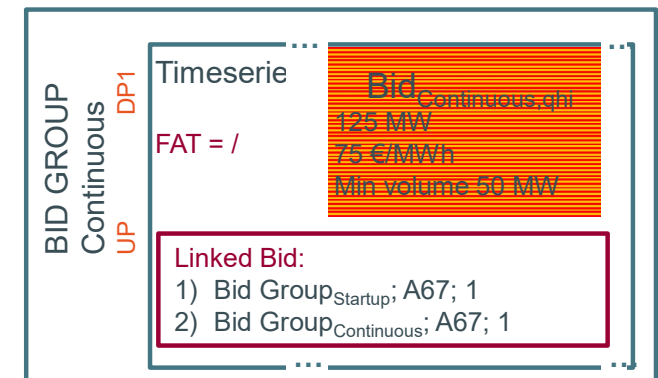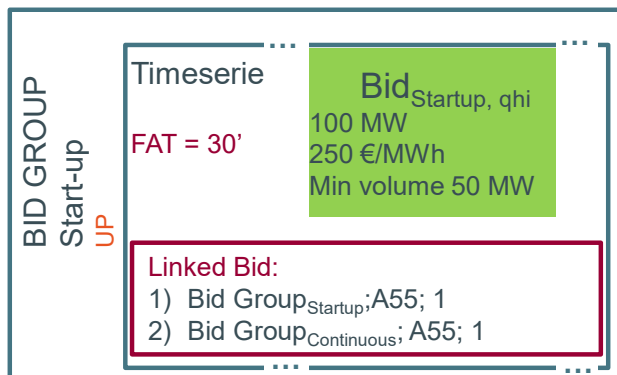
- **Continuous** bid
  - is initially unavailable
  - Becomes available if $Bid_{Startup, qh-1}$ is activated: **A67 link**
  - Or Becomes available if $Bid_{Continuous, qh-1}$ is activated: **A67 link**

Legend:

Bid **available** for selection and activation	Bid **selected / activated**	Bid **unavailable** for selection and activation

	QH$_i$	Qh$_{i+1}$	Qh$_{i+2}$
BID GROUP Start-up UP — Timeseries 1	$Bid_{Startup, qhi}$	$Bid_{Startup, qhi+1}$	$Bid_{Startup, qhi+2}$
BID GROUP Continuous UP — Timeseries 1	$Bid_{Continuous,qhi}$	$Bid_{Continuous,qhi+1}$	$Bid_{Continuous,qhi+2}$

BID GROUP Start-up UP

Timeserie

FAT = 30'

$Bid_{Startup, qhi}$
100 MW
250 €/MWh
Min volume 50 MW

Linked Bid:
1) Bid Group$_{Startup}$; A55; 1
2) Bid Group$_{Continuous}$; A55; 1

BID GROUP Continuous UP DP1

Timeserie

FAT = /

$Bid_{Continuous,qhi}$
125 MW
75 €/MWh
Min volume 50 MW

Linked Bid:
1) Bid Group$_{Startup}$; A67; 1
2) Bid Group$_{Continuous}$; A67; 1

CONDITIONAL LINKING
Example of a start-up – at selection/activation

DP is not running
2 Bid Groups to reflect start-ups:
- **Start-up** bids
  - initially available
  - FAT is used to reflect start-up time
  - Becomes unavailable if $Bid_{Startup, qh-1}$ is activated: **A55 link**
  - Becomes unavailable if $Bid_{Continous, qh-1}$ is activated: **A55 link**
- **Continuous** bid
  - is initially unavailable
  - Becomes available if $Bid_{Startup, qh-1}$ is activated: **A67 link**
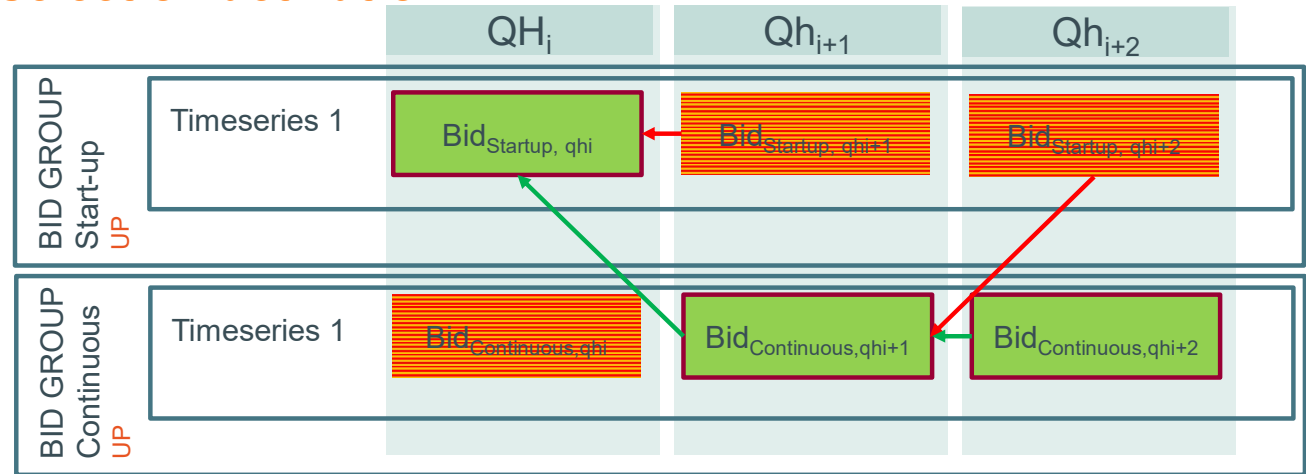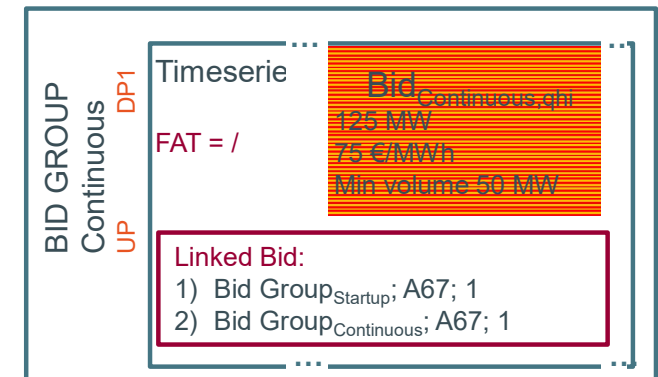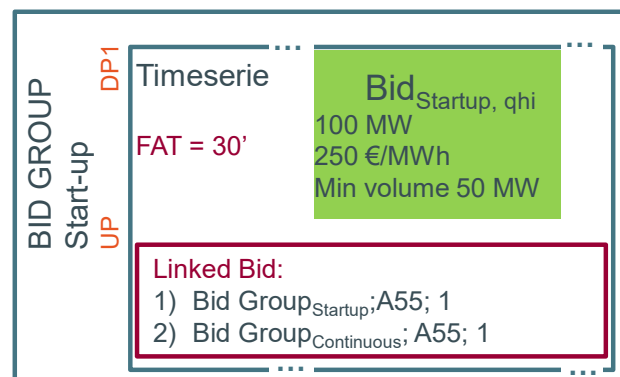 - Or Becomes available if $Bid_{Continuous, qh-1}$ is activated: **A67 link**

Legend:

Bid **available** for selection and activation	Bid **selected / activated**	Bid **unavailable** for selection and activation

CONDITIONAL LINKING
Example of a start-up with Minimum Activation Time (MIT)

DP is not running

2 Bid Groups to reflect start-ups:

- **Start-up** bids
  - initially available
  - Becomes unavailable if $Bid_{Startup, qh-1}$ is activated: **A55 link**
  - Becomes unavailable if $Bid_{Continous, qh-1}$ is activated: **A55 link**

- **Continuous** bid
  - is initially unavailable
  - **Has a MIT**
  - Becomes available if $Bid_{Startup, qh-1}$ is activated: **A67 link**
  - Or Becomes available if $Bid_{Continuous, qh-1}$ is activated: **A67 link**
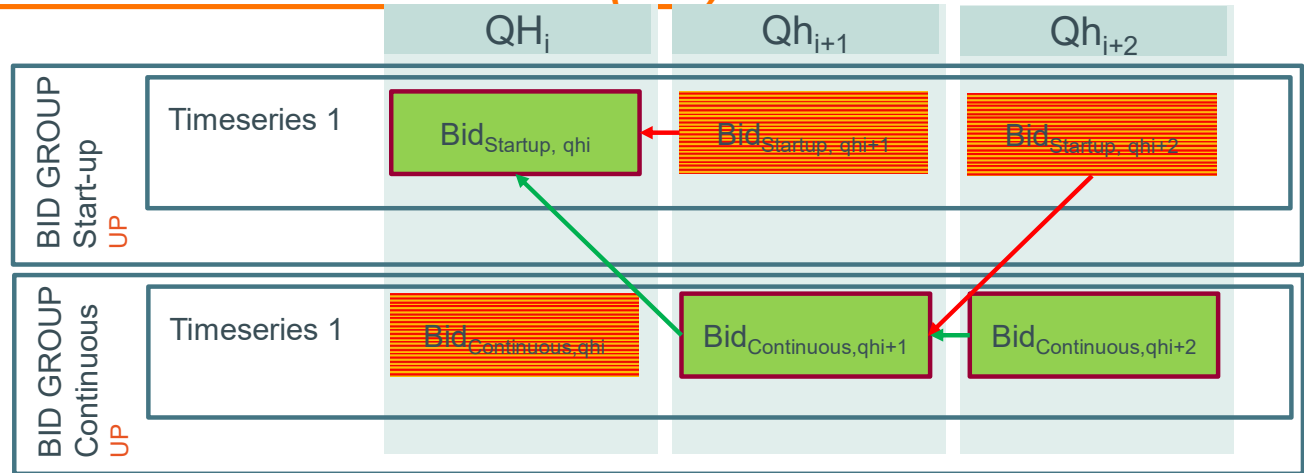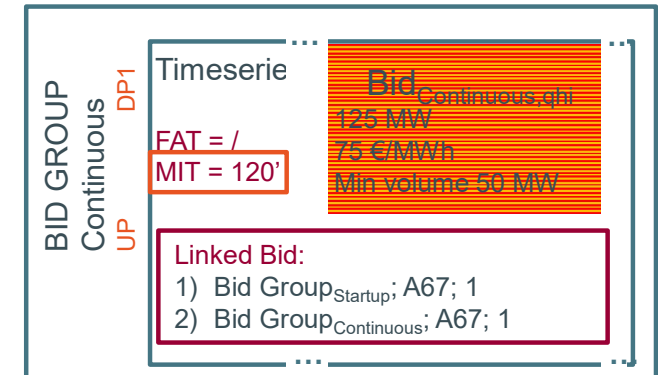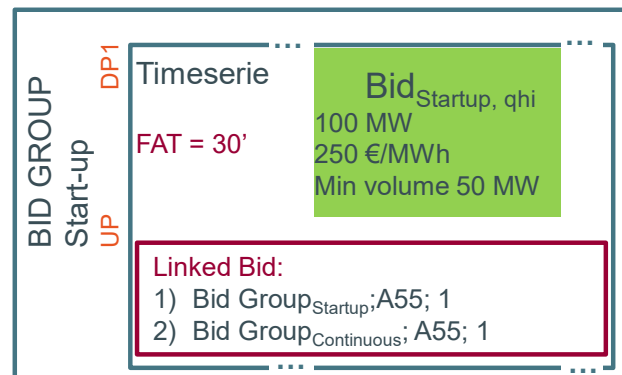

| | QH_i | Qh_{i+1} | Qh_{i+2} |

BID GROUP Start-up UP — Timeseries 1 — $Bid_{Startup, qhi}$ ← $Bid_{Startup, qhi+1}$ — $Bid_{Startup, qhi+2}$

BID GROUP Continuous UP — Timeseries 1 — $Bid_{Continuous,qhi}$ — $Bid_{Continuous,qhi+1}$ ← $Bid_{Continuous,qhi+2}$

Legend:

- Bid **available** for selection and activation
- Bid **selected / activated**
- Bid **unavailable** for selection and activation

BID GROUP Start-up UP — DP1

Timeserie

$Bid_{Startup, qhi}$
100 MW
250 €/MWh
Min volume 50 MW

FAT = 30'

Linked Bid:
1) Bid Group$_{Startup}$;A55; 1
2) Bid Group$_{Continuous}$; A55; 1

BID GROUP Continuous UP — DP1

Timeserie

$Bid_{Continuous,qhi}$
125 MW
75 €/MWh
Min volume 50 MW

FAT = /
MIT = 120'

Linked Bid:
1) Bid Group$_{Startup}$; A67; 1
2) Bid Group$_{Continuous}$; A67; 1

Example of complex biddings

EXAMPLE OF COMPLEX BIDDING
*Combination of Conditional links & Exclusive Groups to reflect Operating modes**

Hypothesis:

- A CCGT with 3 DPs: GT1, GT2 & ST
- This CCGT can technically be operated in multiple Operating modes:

GT1	GT1+ST
GT2	GT2+ST
GT1+GT2	GT1+GT2+ST

- Current operating mode is (GT1+ST)
- By using the combination of Conditional links and Exclusive Groups, the flexibility of the running operating mode and the all other operating mode can be submitted.

	Pmax	Pmin	Schedule
GT1	150 MW	30 MW	100 MW
GT2	150 MW	30 MW	0 MW
ST	100 MW	20 MW	50 MW

*Only for RD Energy Bids
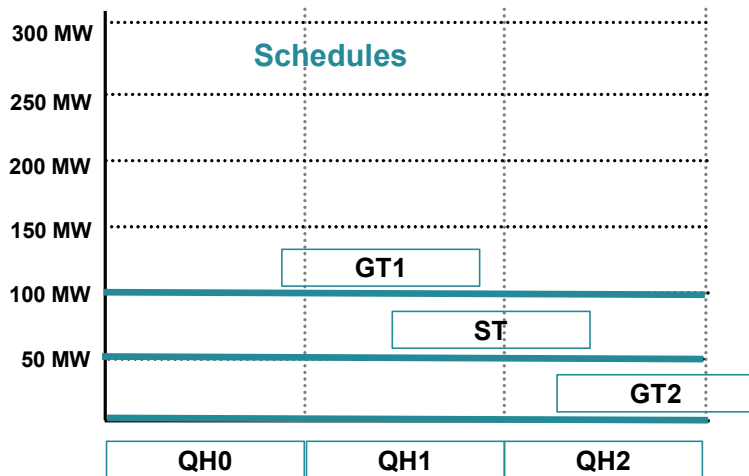
EXAMPLE OF COMPLEX BIDDING
Combination of Conditional links & Exclusive Groups to reflect Operating modes

Current operating mode:

GT1+ST

	Pmax	Pmin	Schedule
GT1	150 MW	30 MW	100 MW
GT2	150 MW	30 MW	0 MW
ST	100 MW	20 MW	20 MW

Schedules

300 MW

250 MW

200 MW

150 MW

RD volume UP in GT1+ST

GT1 + ST

100 MW

50 MW

QH0	QH1	QH2

BID GROUP
Continuous up GT1 ST
GT1; ST
UP

Timeserie

FAT = /
EG: GT1

Bid$_{qh0}$
80 MW
150 €/MWh

...

Bid$_{qh96}$
80 MW
150 €/MWh

...

Linked Bid:
/

...   ...

EXAMPLE OF COMPLEX BIDDING
Combination of Conditional links & Exclusive Groups to reflect Operating modes

Current operating mode:

GT1+ST

Bid Group		Status				
Bid Group Id	GT1_ST_continous					
TimeSeries Id	GT1_ST_continous-UP-	**Active**				
Direction	UP					
Contracted/Non Contracted						
Parent Child Id						
Exclusive Group Ids	GT1			**00:00**	**00:15**	**00:30**
Linked Bid Group Id		Volume		80	80	80
Linked Bid Status		Price		150	150	150
Linked Bid Level		Minimum Volume				
Full Activation Time		Activation Type				
Maximum Activation Time		Reason				
Delivery Points	EAN	GT1		TRUE	TRUE	TRUE
	EAN	GT2		TRUE	TRUE	TRUE

EXAMPLE OF COMPLEX BIDDING
Combination of Conditional links & Exclusive Groups to reflect Operating modes
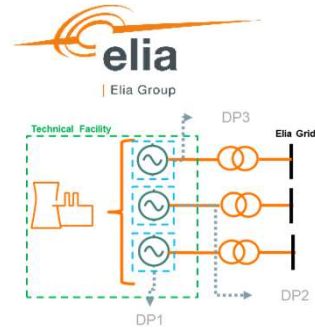
Start-up of other operating mode:

GT2

	Pmax	Pmin	Schedule
GT1	150 MW	30 MW	100 MW
GT2	150 MW	30 MW	0 MW
ST	100 MW	20 MW	20 MW

Schedules

300 MW

250 MW

200 MW

150 MW

100 MW

RD volume UP in GT2

50 MW

GT2

| QH0 | QH1 | QH2 |

BID GROUP *Start-up up GT2* UP GT2

Timeserie

FAT = 60'
EG: GT2

Bid_{qh0}
150 MW
250 €/MWh
Min Volume: 30 MW

Bid_{qh1}
150 MW
250 €/MWh
Min Volume: 30 MW

Bid_{qh96}
150 MW
250 €/MWh
Min Volume: 30 MW

Linked Bid:
1) *Start-up up GT2*; A55; 1
2) *Continuous up GT2*; A55; 1

BID GROUP *Continuous up GT2* UP GT2

Timeserie

FAT = /
EG: GT2

Bid_{qh0}
150 MW
150 €/MWh
Min Volume: 30 MW

Bid_{qh1}
150 MW
150 €/MWh
Min Volume: 30 MW

Bid_{qh96}
150 MW
150 €/MWh
Min Volume: 30 MW

Linked Bid:
1) *Start-up up GT2*; A67; 1
2) *Continuous up GT2*; A67; 1

EXAMPLE OF COMPLEX BIDDING
Combination of Conditional links & Exclusive Groups to reflect Operating modes

Start-up of other operating mode:

GT2

Bid Group		Status					
Bid Group Id	GT2_startup		**Active**				
TimeSeries Id	GT2_startup-UP-						
Direction	UP						
Contracted/Non Contracted							
Parent Child Id							
Exclusive Group Ids	GT2			00:00	00:15	00:30	00:45
Linked Bid Group Id	GT2_startup;GT2_continous		Volume	150	150	150	150
Linked Bid Status	A55;A55		Price	250	250	250	250
Linked Bid Level	1;1		Minimum Volume	30	30	30	30
Full Activation Time	30		Activation Type				
Maximum Activation Time			Reason				
Delivery Points	EAN	GT2		TRUE	TRUE	TRUE	TRUE

Bid Group		Status					
Bid Group Id	GT2_continous		**Active**				
TimeSeries Id	GT2_continous-UP-						
Direction	UP						
Contracted/Non Contracted							
Parent Child Id							
Exclusive Group Ids	GT2			00:00	00:15	00:30	00:45
Linked Bid Group Id	GT2_startup;GT2_continous		Volume	150	150	150	150
Linked Bid Status	A67;A67		Price	150	150	150	150
Linked Bid Level	1;1		Minimum Volume	30	30	30	30
Full Activation Time			Activation Type				
Maximum Activation Time			Reason				
Delivery Points	EAN	GT2		TRUE	TRUE	TRUE	TRUE

EXAMPLE OF COMPLEX BIDDING
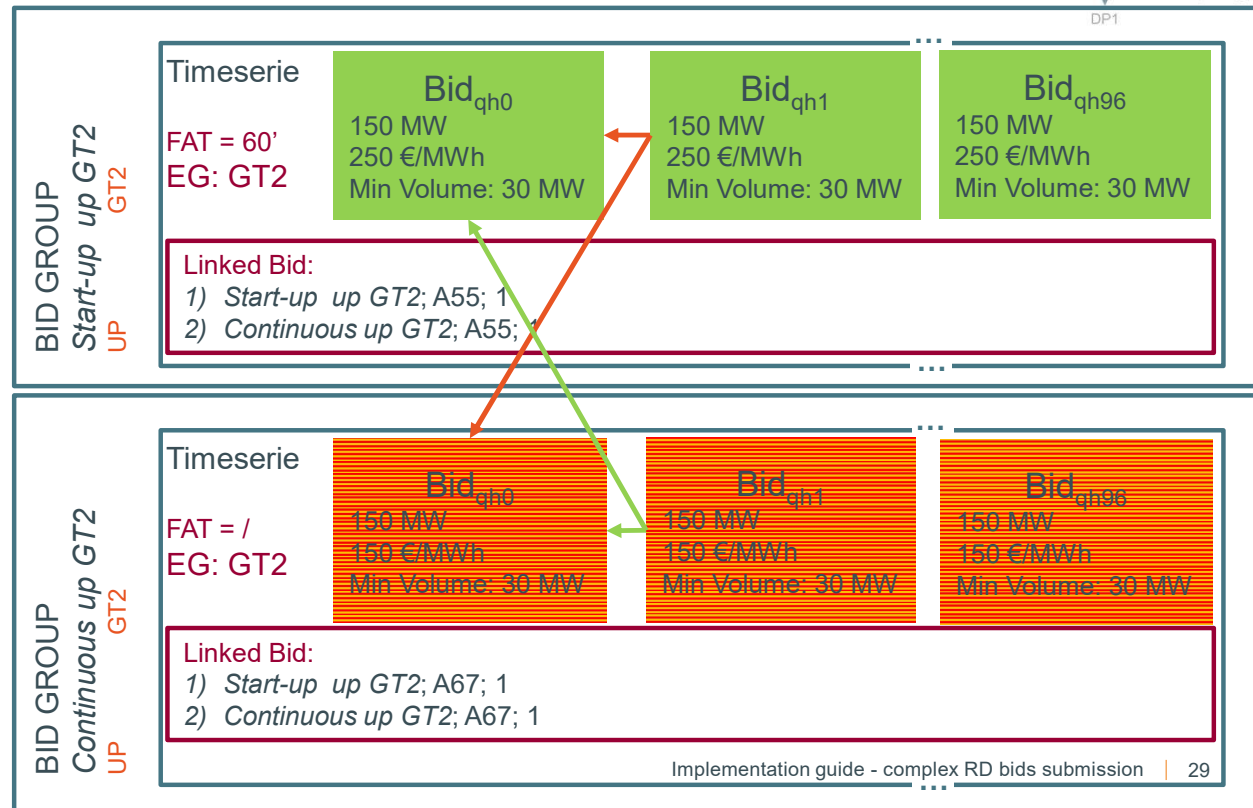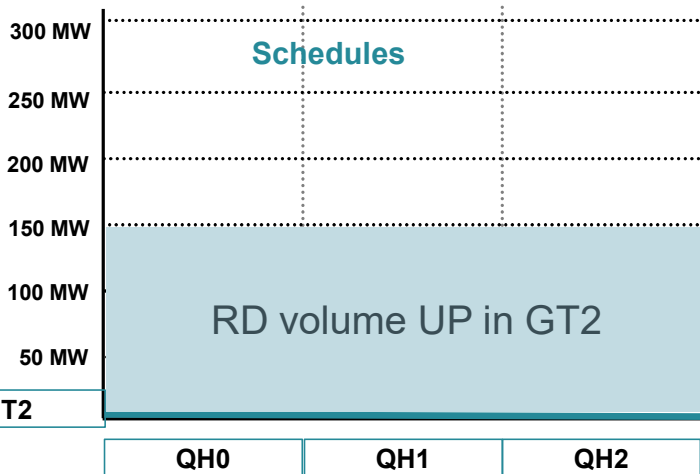## *Combination of Conditional links & Exclusive Groups to reflect Operating modes*
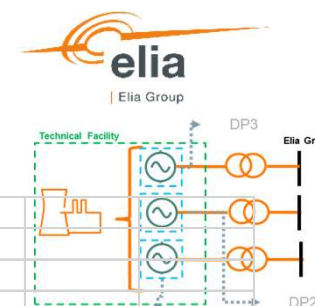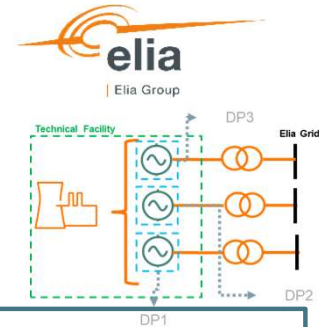
Start-up of other operating mode:

GT2 + ST

	Pmax	Pmin	Schedule
GT1	150 MW	30 MW	100 MW
GT2	150 MW	30 MW	0 MW
ST	100 MW	20 MW	20 MW

Schedules

300 MW

250 MW

200 MW

150 MW

100 MW   RD volume UP in GT2 +ST

50 MW

GT2 + ST

QH0	QH1	QH2

BID GROUP *Start-up up GT2+ST* GT2;ST UP

Timeserie

FAT = 60'
EG: GT2

Bid$_{qh0}$	Bid$_{qh1}$	Bid$_{qh96}$
175 MW	175 MW	175 MW
250 €/MWh	250 €/MWh	250 €/MWh
Min Volume: 50 MW	Min Volume: 50 MW	Min Volume: 50 MW

Linked Bid:
1) *Start-up up GT2+ST*; A55; 1
2) *Continuous up GT2+ST*; A55; 1

BID GROUP *Continuous up GT2+ST* GT2;ST UP

Timeserie

FAT = /
EG: GT2

Bid$_{qh0}$	Bid$_{qh1}$	Bid$_{qh96}$
175 MW	175 MW	175 MW
150 €/MWh	150 €/MWh	150 €/MWh
Min Volume: 50 MW	Min Volume: 50 MW	Min Volume: 50 MW

Linked Bid:
1) *Start-up up GT2+ST*; A67; 1
2) *Continuous up GT2+ST*; A67; 1

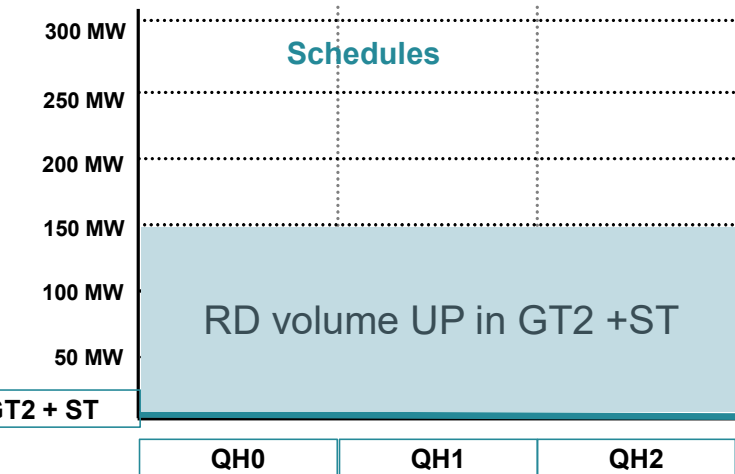Implementation guide - complex RD bids submission | 31
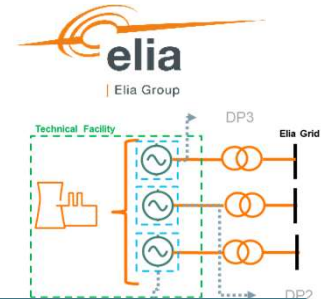
EXAMPLE OF COMPLEX BIDDING
Combination of Conditional links & Exclusive Groups to reflect Operating modes

Start-up of other operating mode:

GT2 + ST

Bid Group		Status					
Bid Group Id	GT2_ST_startup						
TimeSeries Id	GT2_ST_startup-UP-						
Direction	UP	**Active**					
Contracted/Non Contracted							
Parent Child Id							
Exclusive Group Ids	GT2		**00:00**	**00:15**	**00:30**	**00:45**	
Linked Bid Group Id	GT2_ST_startup;GT2_ST_continous	Volume	175	175	175	175	
Linked Bid Status	A55;A55	Price	250	250	250	250	
Linked Bid Level	1;1	Minimum Volume	50	50	50	50	
Full Activation Time	60	Activation Type					
Maximum Activation Time		Reason					
Delivery Points	EAN	GT2	TRUE	TRUE	TRUE	TRUE	
	EAN	ST	TRUE	TRUE	TRUE	TRUE	

Bid Group		Status					
Bid Group Id	GT2_ST_continous						
TimeSeries Id	GT2_ST_continous-UP-						
Direction	UP	**Active**					
Contracted/Non Contracted							
Parent Child Id							
Exclusive Group Ids	GT2		**00:00**	**00:15**	**00:30**	**00:45**	
Linked Bid Group Id	GT2_ST_startup;GT2_ST_continous	Volume	175	175	175	175	
Linked Bid Status	A67;A67	Price	150	150	150	150	
Linked Bid Level	1;1	Minimum Volume	50	50	50	50	
Full Activation Time		Activation Type					
Maximum Activation Time		Reason					
Delivery Points	EAN	GT2	TRUE	TRUE	TRUE	TRUE	
	EAN	ST	TRUE	TRUE	TRUE	TRUE	

EXAMPLE OF COMPLEX BIDDING
Combination of Conditional links & Exclusive Groups to reflect Operating modes

Current operating mode: ➔ special case of shut down

GT1+ST

	Pmax	Pmin	Schedule
GT1	150 MW	30 MW	100 MW
GT2	150 MW	30 MW	0 MW
ST	100 MW	20 MW	20 MW

Schedules

- 300 MW
- 250 MW
- 200 MW
- 150 MW
- GT1 + ST
- 100 MW

RD volume DOWN in GT1+ST

- 50 MW

Shut Down volume

| QH0 | QH1 | QH2 |

BID GROUP — GT1; ST — DOWN

Timeserie

FAT = /
EG: GT1

Bid$_{qh0}$
70 MW
150 €/MWh

Bid$_{qh2}$
70 MW
150 €/MWh

Linked Bid:
Shut down GT1 ST; A55; 1

BID GROUP — *Shut down GT1 ST* — GT1; ST — DOWN

Timeserie

FAT = 45'
EG: GT1

Bid$_{qh0}$
120 MW
250 €/MWh
Min Volume: 120 MW

Bid$_{qh1}$
120 MW
250 €/MWh
MinVolume: 120 MW

Bid$_{qh96}$
120 MW
250 €/MWh
MinVolume: 120 MW

Linked Bid:
1) *Continuous down GT1 ST*; A67; 1
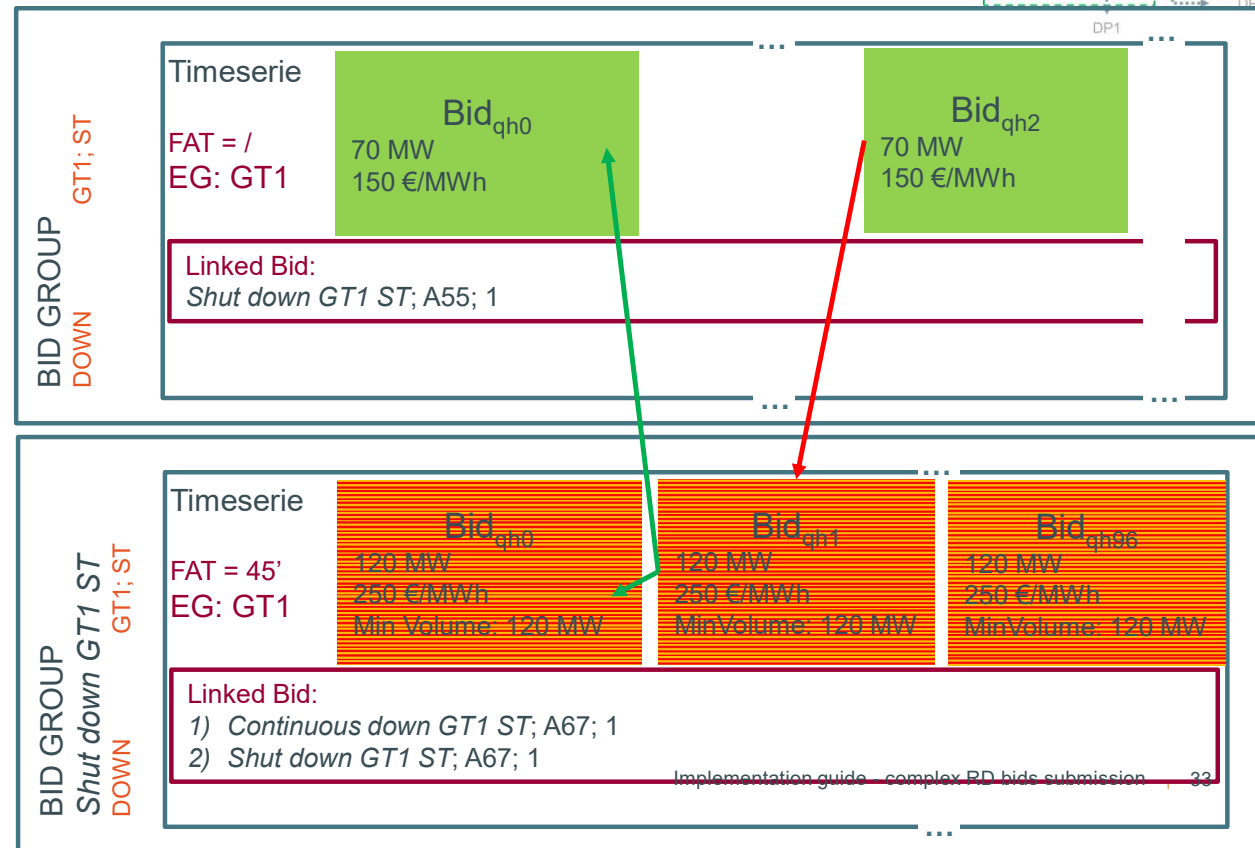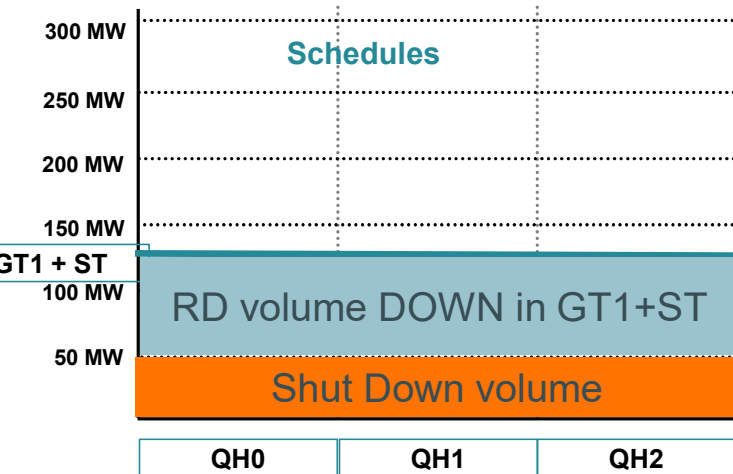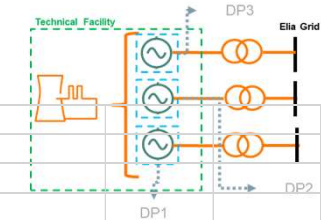2) *Shut down GT1 ST*; A67; 1
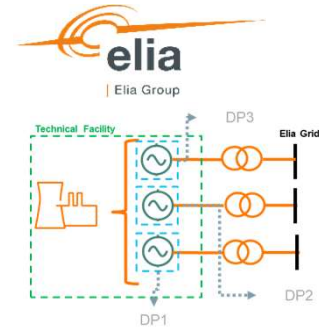
EXAMPLE OF COMPLEX BIDDING
Combination of Conditional links & Exclusive Groups to reflect Operating modes

Current operating mode: ➜ special case of shut down

GT1+ST

Bid Group		Status				
Bid Group Id	GT1_ST_continous_down					
TimeSeries Id	GT1_ST_continous_down-DOWN-	**Active**				
Direction	DOWN					
Contracted/Non Contracted						
Parent Child Id						
Exclusive Group Ids	GT1		**00:00**	**00:15**	**00:30**	**00:45**
Linked Bid Group Id	GT1_ST_shut_down	Volume	70	70	70	70
Linked Bid Status	A55	Price	150	150	150	150
Linked Bid Level	1	Minimum Volume				
Full Activation Time		Activation Type				
Maximum Activation Time		Reason				
Delivery Points	EAN	GT1	TRUE	TRUE	TRUE	TRUE
	EAN	ST	TRUE	TRUE	TRUE	TRUE

Bid Group		Status				
Bid Group Id	GT1_ST_shut_down					
TimeSeries Id	GT1_ST_shut_down-DOWN-	**Active**				
Direction	DOWN					
Contracted/Non Contracted						
Parent Child Id						
Exclusive Group Ids	GT1		**00:00**	**00:15**	**00:30**	**00:45**
Linked Bid Group Id	GT1_ST_continous_down;GT1_ST_shut_down	Volume	120	120	120	120
Linked Bid Status	A67;A67	Price	250	250	250	250
Linked Bid Level	1;1	Minimum Volume	120	120	120	120
Full Activation Time	60	Activation Type				
Maximum Activation Time		Reason				
Delivery Points	EAN	GT1	TRUE	TRUE	TRUE	TRUE
	EAN	ST	TRUE	TRUE	TRUE	TRUE

EXAMPLE OF COMPLEX BIDDING
Combination of Conditional links & Exclusive Groups to reflect Operating modes

Summary

BID GROUP — Continuous up GT1 ST — UP; GT1; ST

Timeserie
FAT = /
EG: GT1
Bid_qhi
80 MW
150 €/MWh

Linked Bid:
/

BID GROUP — Start-up up GT2 — UP; GT2

Timeserie
FAT = 60'
EG: GT2
Bid_qhi
150 MW
250 €/MWh
Min Volume: 30 MW

Linked Bid:
1) Start-up up GT2; A55; 1
2) Continuous up GT2; A55; 1

BID GROUP — DOWN; GT1; ST

Timeserie
FAT = /
EG: GT1
Bid_qhi
70 MW
150 €/MWh

Linked Bid:
Shut down GT1 ST; A55; 1

BID GROUP — Continuous up GT2 — UP; GT2

Timeserie
FAT = /
EG: GT2
Bid_qhi
150 MW
150 €/MWh
Min Volume: 30 MW

Linked Bid:
1) Start-up up GT2; A67; 1
2) Continuous up GT2; A67; 1

BID GROUP — Shut down GT1 ST — DOWN; GT1; ST

Timeserie
FAT = 45'
EG: GT1
Bid_qhi
120 MW
250 €/MWh
Min Volume: 120 MW

Linked Bid:
1) Continuous down GT1 ST; A67; 1
2) Shut down GT1 ST; A67; 1

BID GROUP — Start-up up GT2+ST — UP; GT2;ST

Timeserie
FAT = 60'
EG: GT2
Bid_qhi
175 MW
250 €/MWh
Min Volume: 50 MW

Linked Bid:
1) Start-up up GT2+ST; A55; 1
2) Continuous up GT2+ST; A55; 1

BID GROUP — Continuous up GT2+ST — UP; GT2;ST

Timeserie
FAT = /
EG: GT2
Bid_qhi
175 MW
150 €/MWh
Min Volume: 50 MW

Linked Bid:
1) Start-up up GT2+ST; A67; 1
2) Continuous up GT2+ST; A67; 1

EXAMPLE OF START-UP
Combination of Conditional links & FAT to reflect slow start-ups

BID GROUP *Start-up* UP DP1

Timeserie

FAT = 60'
EG: /

Bid_{qh0}	...	Bid_{qh96}
50 MW		50 MW
250 €/MWh		250 €/MWh
Min Volume: 50 MW		Min Volume: 50 MW

Linked Bid:
1) *Start-up up*; A55; 1
2) *Continuous up*; A55; 1

BID GROUP *Continuous up* UP DP1

Timeserie

FAT = /
EG: /

Bid_{qh0}	...	Bid_{qh96}
150 MW		150 MW
150 €/MWh		150 €/MWh
Min Volume: 30 MW		Min Volume: 30 MW

Linked Bid:
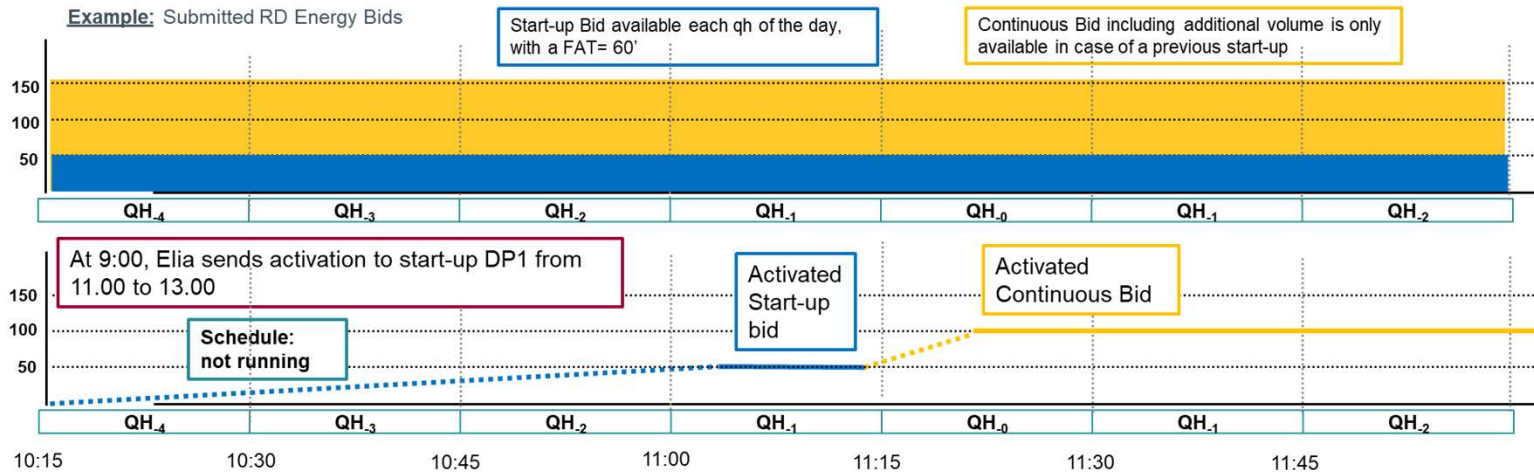1) *Start-up up*; A67; 1
2) *Continuous up*; A67; 1

Hypothesis:
- 1 DP not running for the full day
- 2 Bid groups submitted
  - **Start-up** bids
    - initially available
    - Becomes unavailable if $Bid_{Startup, qh-1}$ or if $Bid_{Continuous, qh-1}$ is activated: **A55 link**
    - Includes a **FAT reflecting the ramp-up** of the start-up until Pmin (50 MW). FAT = 60'

  - **Continuous** bid
    - is initially unavailable
    - Becomes available if $Bid_{Startup, qh-1}$ or if $Bid_{Continuous, qh-1}$ **A55 link**
    - **FAT = 12,5'**

EXAMPLE OF START-UP
Combination of Conditional links & FAT to reflect slow start-ups

Example: Submitted RD Energy Bids

Start-up Bid available each qh of the day, with a FAT= 60'

Continuous Bid including additional volume is only available in case of a previous start-up

At 9:00, Elia sends activation to start-up DP1 from 11.00 to 13.00

Schedule: not running

Activated Start-up bid

Activated Continuous Bid

QH_{-4} QH_{-3} QH_{-2} QH_{-1} QH_{-0} QH_{-1} QH_{-2}

10:15   10:30   10:45   11:00   11:15   11:30   11:45

BID GROUP Start-up — DP1 — UP

Timeserie
FAT = 60'
EG: /

| Bid$_{qh-3}$ 50 MW 250 €/MWh Min Vol: 50 MW | Bid$_{qh-2}$ 50 MW 250 €/MWh Min Vol: 50 MW | Bid$_{qh-1}$ 50 MW 250 €/MWh Min Vol: 50 MW | Bid$_{qh0}$ 50 MW 250 €/MWh Min Vol: 50 MW | Bid$_{qh1}$ 50 MW 250 €/MWh Min Vol: 50 MW | Bid$_{qh2}$ 50 MW 250 €/MWh Min Vol: 50 MW |

Linked Bid:
1) *Start-up up*; A55; 1 & 2)*Continuous up*; A55; 1

BID GROUP Continuous up — DP1 — UP

Timeserie
FAT = /
EG: /

| Bid$_{qh-3}$ 150 MW 150 €/MWh Min Vol: 50 MW | Bid$_{qh-2}$ 150 MW 150 €/MWh Min Vol: 50 MW | Bid$_{qh-1}$ 150 MW 150 €/MWh Min Vol: 50 MW | Bid$_{qh-0}$ 150 MW 150 €/MWh Min Vol: 50 MW | Bid$_{qh1}$ 150 MW 150 €/MWh Min Vol: 50 MW | Bid$_{qh2}$ 150 MW 150 €/MWh Min Vol: 50 MW |

Linked Bid:
1) *Start-up up*; A67; 1 & 2)*Continuous up*; A67; 1

Activation:
- At 9.00, Elia sends activation to start-up DP1 from 11:00 to 13:00

- Activated bids:
  - Start-up bid of qh$_{-1}$ (11:00 to 11:15)
  - Continuous bids from qh$_0$ to qh$_7$ (11:15 to 13:00)

- DP1 must reached 50 MW in qh$_{-1}$ and 100 MW in qh$_0$

COMPLEMENTARY INFORMATION

❑ [Link](#) to the Manual on Energy Bidding

❑ Bilateral implementation or testing session can be organized.

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Thank you.