MOYLE INTERCONNECTOR COMMERCIAL ARRANGEMENTS

Examples of how dispatch instructions and hence energy allocations are produced from nominations based on the commercial model of the interconnector.

Ramping and Allocating Energy to the Priority Contract and other Multiple Contracts

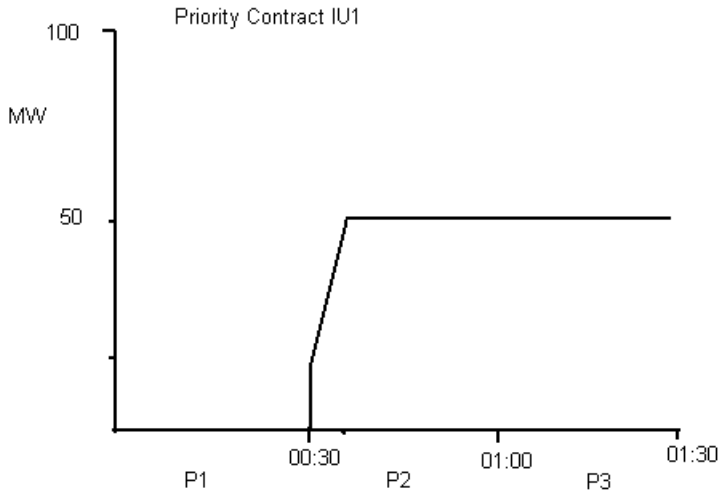
The priority contracts are ramped on first to their MW targets, prior to the ramping up of any of the other contracts which are ramping up. The ramping of the priority contracts down is initiated only after the other contracts which are ramping down have reached their MW targets. The restriction of not permitting a MW powerflow to exceed nomination at any time still holds.

Example 1.

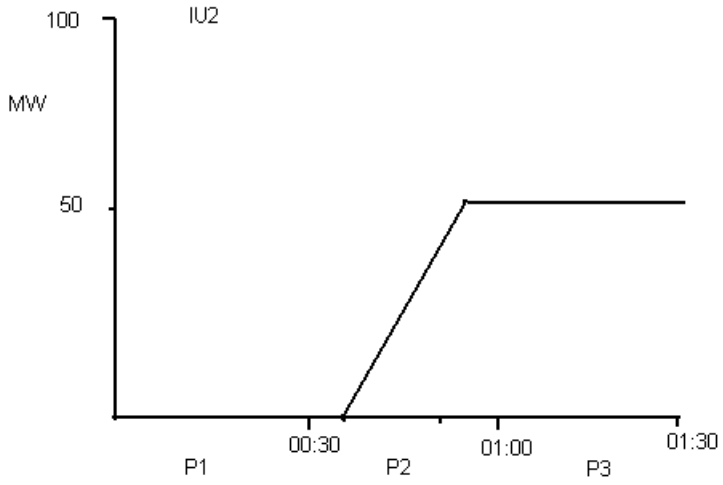
Nominations

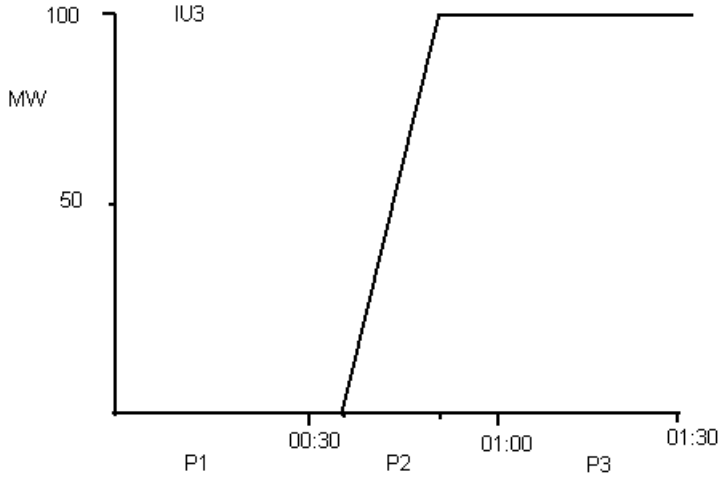
	P1	P2	P3
IU1 {Priority Contract}	0	50	50
IU2	0	50	50
IU3	0	100	100

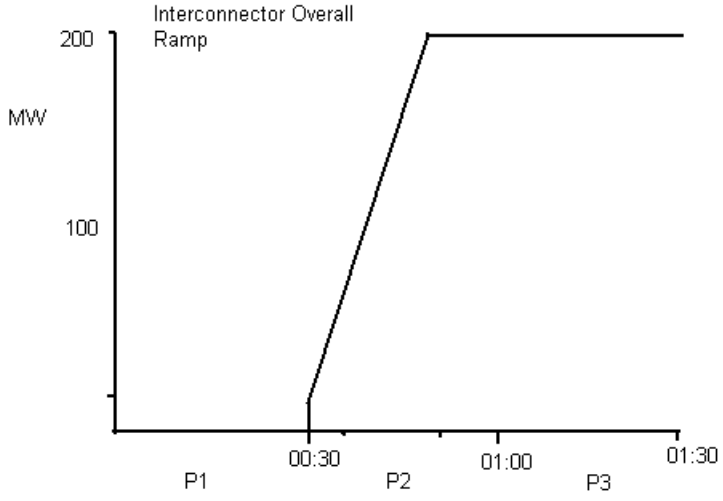
Ramp rate of the interconnector – assume 10MW/min but 0MW to 15MW is instantaneous.



Note the ramp from 0MW to 15MW is instantaneous.


IU2
100
MW
50
00:30
01:00
01:30
P1
P2
P3


IU3
100
MW
50
00:30
01:00
01:30
P1
P2
P3


Interconnector Overall
Ramp
200
MW
100
00:30
01:00
01:30
P1
P2
P3

Energy Allocations

IU1

(3.5/30*15) + ((3.5/30 * 35) / 2) + (26.5/30 * 50) = 47.958
{note the first 2 terms account for the 0MW to 15MW instantaneous ramp}

IU2

(3.5/30 * 0) + ((15/30 * 50) / 2) + (11.5/30 * 50) = 31.667

IU3

(3.5/30 * 0) + ((15/30 * 100) / 2) + (11.5/30 * 100) = 63.333

	P1	P2	P3
IU1 {Priority Contract}	0	47.958	50
IU2	0	31.667	50
IU3	0	63.333	100

Dispatch Instructions

Contract	Start Time	From MW	To MW	Ramp Rate	End Time
IU1	00:30	0	15	Instantaneous	00:30
IU1	00:30	15	50	10MW/min	00:33.5
IU2	00:33.5	0	50	3.333MW/min	00:48.5
IU3	00:33.5	0	100	6.667MW/min	00:48.5
Whole Interconnector					
IC	00:30	0	15	Instantaneous	00:30
IC	00:30	15	200	10MW/min	00:48.5

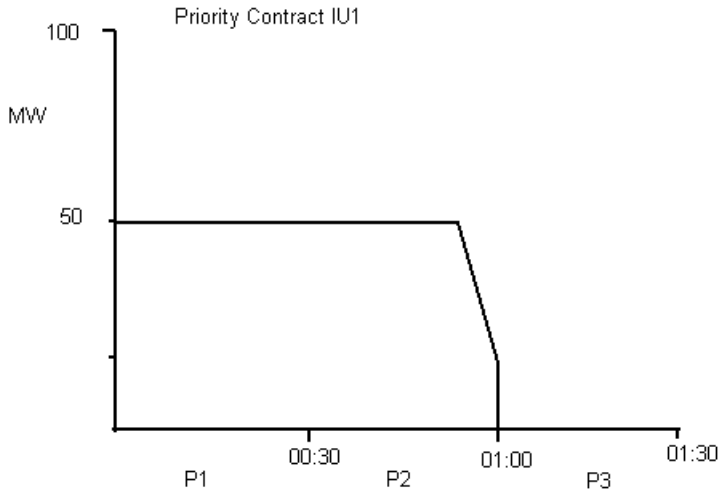
Note : Times will be rounded to the nearest minute for actual dispatch purposes.

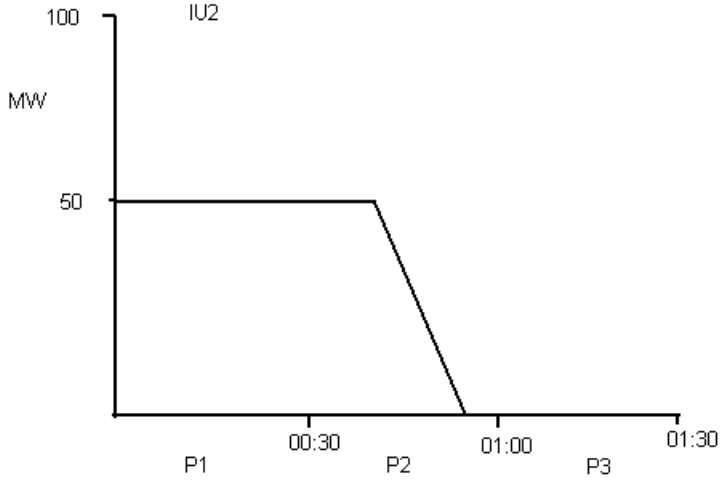
<u>Example 2.</u>

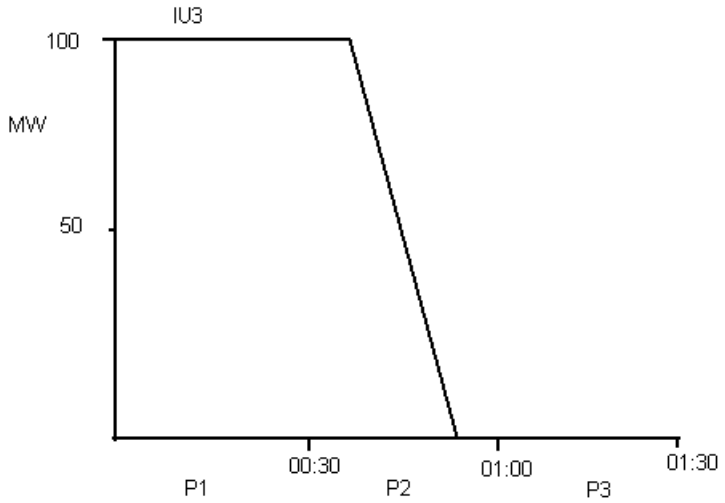
Nominations

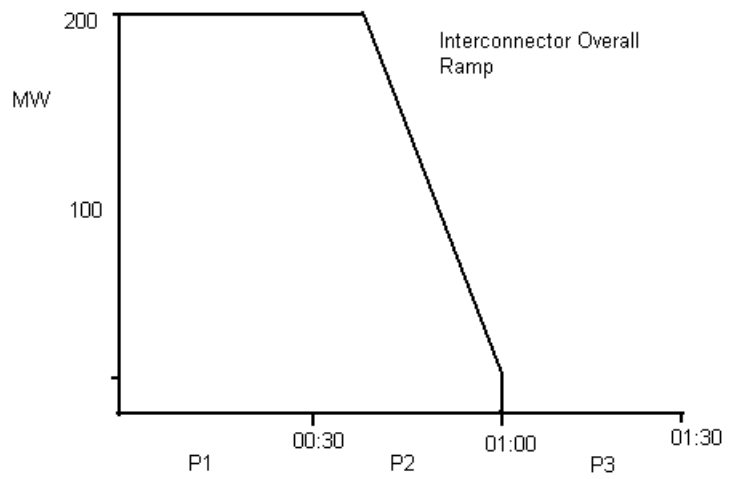
	P1	P2	P3
IU1 {Priority Contract}	50	50	0
IU2	50	50	0
IU3	100	100	0

Ramp rate of the interconnector – assume 10MW/min


Priority Contract IU1
100
MW
50
00:30
01:00
01:30
P1
P2
P3


IU2
100
MW
50
00:30
01:00
01:30
P1
P2
P3


IU3
100
MW
50
00:30
01:00
01:30
P1
P2
P3



Energy Allocations

IU1

(3.5/30*15) + ((3.5/30 * 35) / 2) + (26.5/30 * 50) = 47.958

IU2

(3.5/30 * 0) + ((15/30 * 50) / 2) + (11.5/30 * 50) = 31.667

IU3

(3.5/30 * 0) + ((15/30 * 100) / 2) + (11.5/30 * 100) = 63.333

	P1	P2	P3
IU1 {Priority Contract}	50	47.958	0
IU2	50	31.667	0
IU3	100	63.333	0

Dispatch Instructions

Contract	Start Time	From MW	To MW	Ramp Rate	End Time
IU2	00:41.5	50	0	3.333MW/min	00:56.5
IU3	00:41.5	100	0	6.667MW/min	00:56.5
IU1	00:56.5	50	15	10MW/min	01:00
IU1	01:00	15	0	Instantaneous	01:00
Whole Interconnector					
IC	00:41.5	200	15	10MW/min	01:00
IC	01:00	0	15	Instantaneous	01:00

Note : Times will be rounded to the nearest minute for actual dispatch purposes.

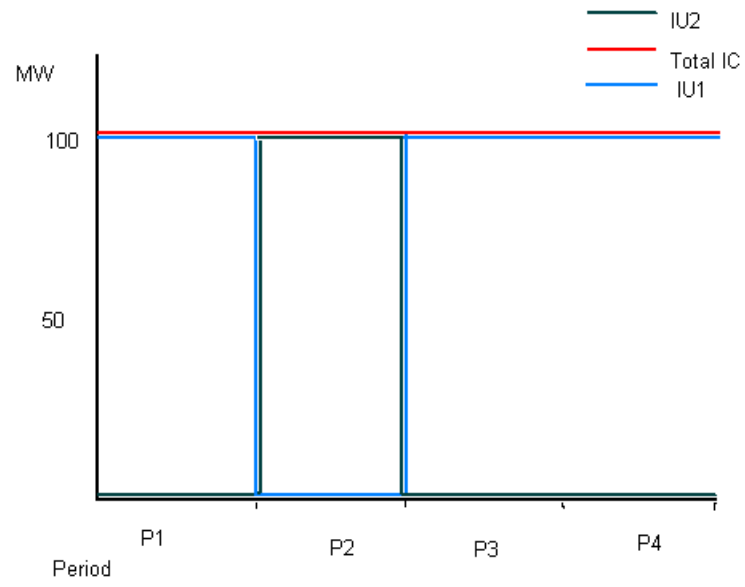
RAMP UP AND RAMP DOWN IN THE SAME SETTLEMENT PERIOD

The following outlines the rules for ramping the interconnector, the individual contracts and the subsequent energy allocation calculations in the situation where one or more contracts are increasing their nominations and one or more contracts are decreasing their nominations within the same settlement period.

Example 1.

Nominations

	P1	P2	P3	P4
IU1	100	0	100	100
IU2	0	100	0	0



Dispatch Instructions

Interconnector - No Change

Individual Contracts
IU1 end of P1 ramp from 100 to 0 instantaneously
IU2 end of P1 ramp from 0 to 100 instantaneously
IU1 end of P2 ramp from 0 to 100 instantaneously
IU2 end of P2 ramp from 100 to 0 instantaneously

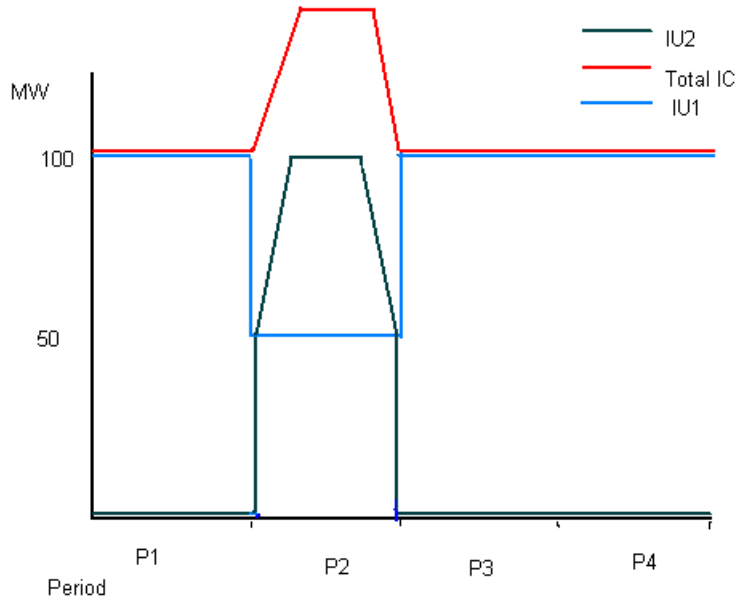
Energy Allocations

	P1	P2	P3	P4
IU1	100	0	100	100
IU2	0	100	0	0

Example 2.

Nominations

	P1	P2	P3	P4
IU1	100	50	100	100
IU2	0	100	0	0



Dispatch Instructions

Interconnector
Ramp end of P1 ramp from 100 to 150 @ 10MW/min
Ramp 5mins before start of P3 from 150 to 100 @ 10MW/min

Individual Contracts
IU1 end of P1 ramp from 100 to 50 instantaneously
IU2 end of P1 ramp from 0 to 50 instantaneously
IU2 start of P2 ramp from 50 to 100 @ 10MW/min
IU2 Ramp 5mins before start of P3 from 100 to 50 @ 10MW/min
IU1 end of P2 ramp from 50 to 100 instantaneously
IU2 end of P2 ramp from 50 to 0 instantaneously

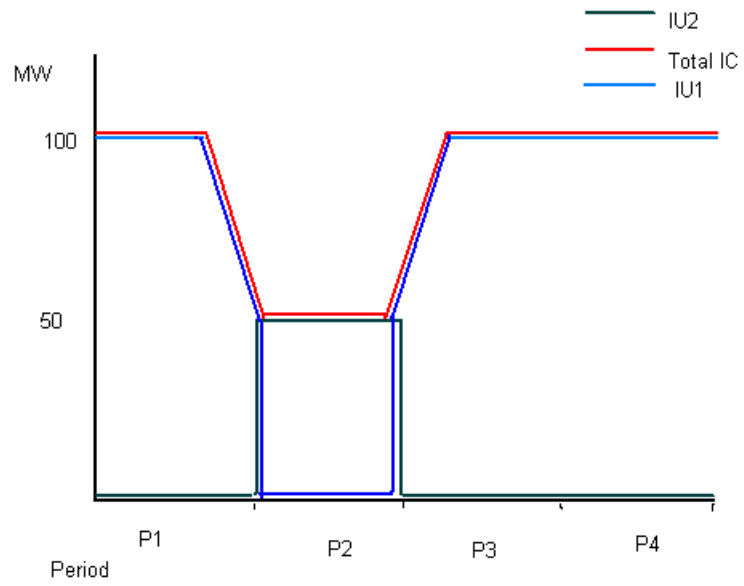
Energy Allocations

	P1	P2	P3	P4
IU1	100	50	100	100
IU2	0	91.7	0	0

Example 3.

Nominations

	P1	P2	P3	P4
IU1	100	0	100	100
IU2	0	50	0	0



Dispatch Instructions

Interconnector
Ramp 5mins before end of P1 from 100 to 50 @ 10MW/min
Ramp 5mins before start of P3 from 50 to 100 @ 10MW/min

Individual Contracts
IU1 Ramp 5mins before end of P1 from 100 to 50 @ 10MW/min
IU1 end of P1 ramp from 50 to 0 instantaneously
IU2 start of P2 ramp from 0 to 50 instantaneously
IU1 end of P2 ramp from 0 to 50 instantaneously
IU2 end of P2 ramp from 50 to 0 instantaneously
IU1 start of P3 ramp from 50 to 100 @ 10MW/min

Energy Allocations

	P1	P2	P3	P4
IU1	95.8	0	95.8	100
IU2	0	50	0	0