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CMP242 - Workgroup 4



Monday 10 August 2015

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1. Introductions

2. Review Workgroup Consultation Responses

Workgroup Consultation Responses

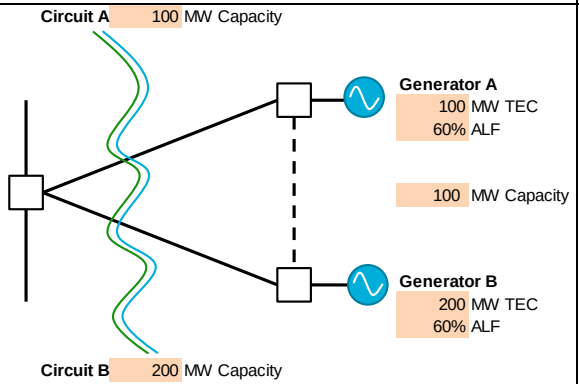
- Three responses were received:
  - Aled Moses – Dong Energy
  - Joe Dunne – SP Renewables
  - Garth Graham – SSE

Worked Examples from DONG's response

1 – high ALFs

Constraint (for gen B): interlink and circuit A

Expect greater benefit for generator A



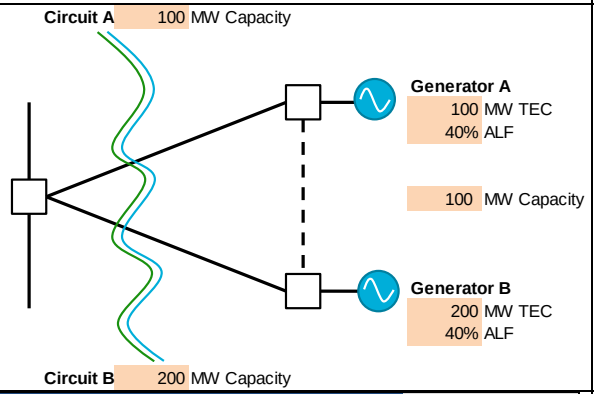
Workgroup preferred	A	B
iv Shared and Unshared (by TEC)	33.3%	66.7%
Shared Capacity	*100 MW*	
A Only Capacity	*- MW*	
B Only Capacity	*- MW*	

Workgroup preferred	A	B
viii Restricted Availability Measure (using ALF)	60.0%	40.0%
Generator A via Circuit B	*60 MW*	
Generator B via Circuit A	*40 MW*	

2 – lower ALFs

Constraint (for gen B): circuit A

Expect greater benefit for generator B



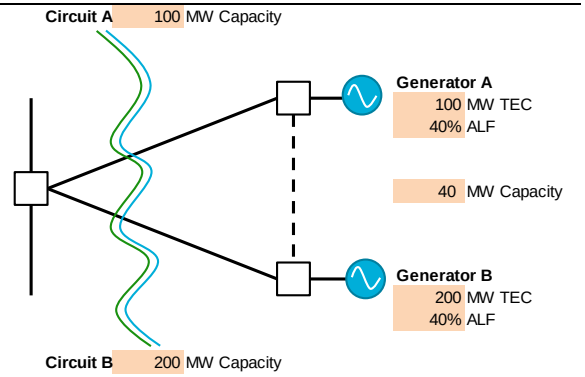
Workgroup preferred	A	B
iv Shared and Unshared (by TEC)	33.3%	66.7%
Shared Capacity	*100 MW*	
A Only Capacity	*- MW*	
B Only Capacity	*- MW*	

Workgroup preferred	A	B
viii Restricted Availability Measure (using ALF)	40.0%	60.0%
Generator A via Circuit B	*40 MW*	
Generator B via Circuit A	*60 MW*	

3 – small interlink

Constraint (for both gen): interlink capacity

Expect equal benefit for both generators



Workgroup preferred	A	B
iv Shared and Unshared (by TEC)	33.3%	66.7%
Shared Capacity	*40 MW*	
A Only Capacity	*- MW*	
B Only Capacity	*- MW*	

Workgroup preferred	A	B
viii Restricted Availability Measure (using ALF)	50.0%	50.0%
Generator A via Circuit B	*40 MW*	
Generator B via Circuit A	*40 MW*	

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Outstanding Issue:
Extension of formulae to more than 2 interlinks

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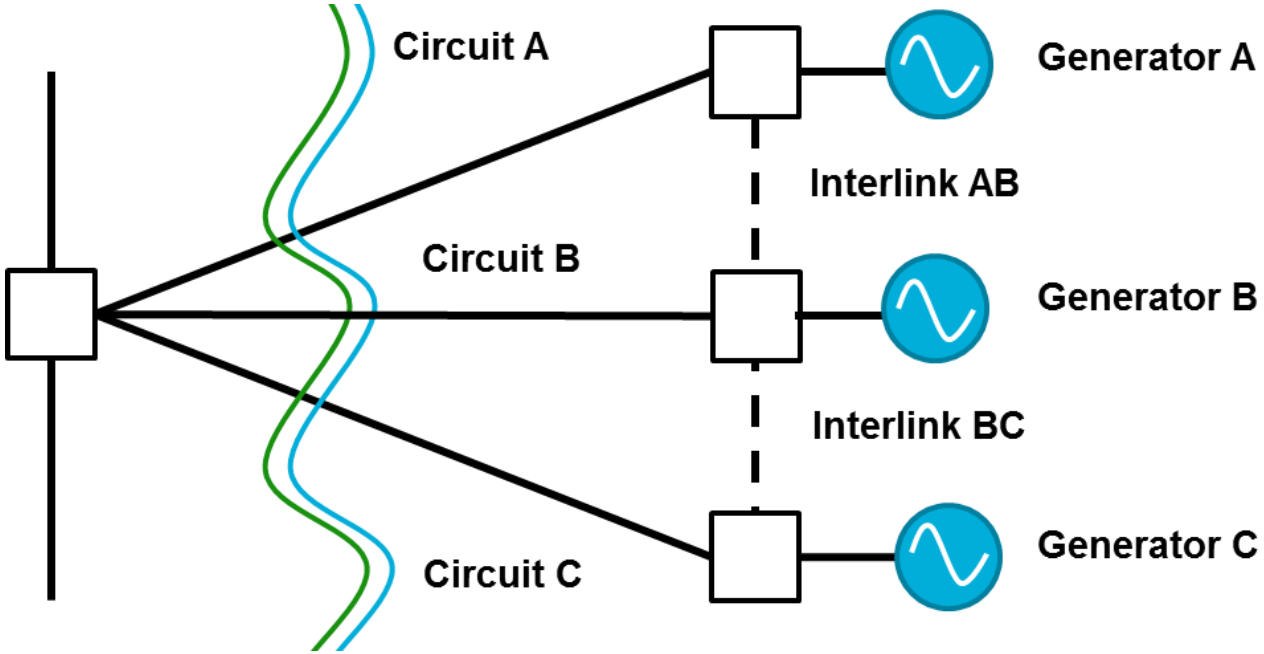
What is an ALF

- A concept from CMP213 (Transmit)
  - Annual Local Factor for a given year:

$$\frac{\sum_{\text{All SPs}} \max(\text{FPN}, \text{Metered Output})}{0.5 \times \sum_{\text{All Settlement Periods}} \text{TEC}}$$

  - Once all five charging year ALFs have been calculated for the individual Power Station they are compared, and the highest and lowest figures are discarded. The final ALF, to be used for transmission charging purposes, is calculated as the average of the remaining three ALFs
  - Where output data is not available for a Power Station, including for new Power Stations and emerging Power Station technologies, generic data for the appropriate generation plant type will be used.

Q10. The situation of more than two interlinks



Generator A

Routes via	Interlink AB and Circuit B	Interlinks AB & BC and Circuit C

Generator B

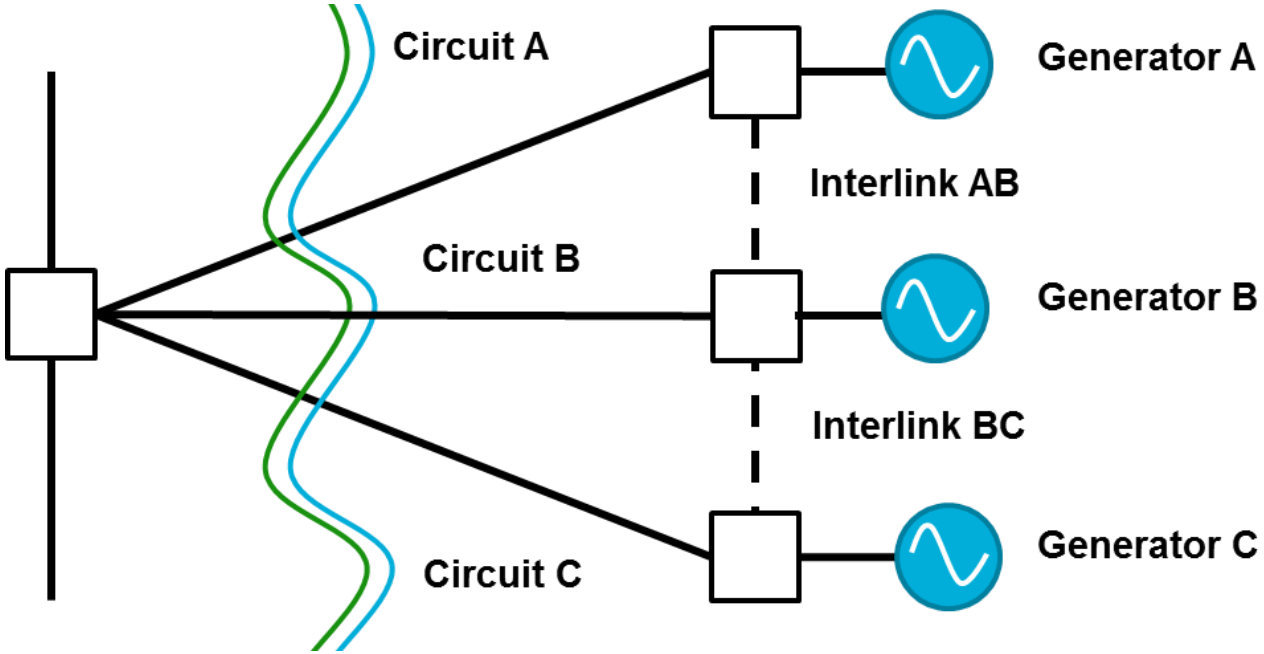
Routes via	Interlink AB and Circuit A	Interlink BC and Circuit C

Generator C

Routes via	Interlink BC and Circuit B	Interlinks BC & AB and Circuit A

Note. An error was identified in this approach at the Workgroup. A replacement approach will be prepared.

Q10. The situation of more than two interlinks



Note that if CAP_{IBC} = 0, i.e. no second interlink, this formula reduces to the same as option viii.

A via CCT B = min (CAP_{IAB}, CAP_B - $ALF_B \times TEC_B$, $ALF_A \times TEC_A$)
A via CCT C = min (CAP_{IAB}, CAP_{IBC}, CAP_C - $ALF_C \times TEC_C$, $ALF_A \times TEC_A$)

B via CCT A = min (CAP_{IAB}, CAP_A - $ALF_A \times TEC_A$, $ALF_B \times TEC_B$)
B via CCT C = min (CAP_{IBC}, CAP_C - $ALF_C \times TEC_C$, $ALF_B \times TEC_B$)

C via CCT A = min (CAP_{IBC}, CAP_{IAB}, CAP_A - $ALF_A \times TEC_A$, $ALF_C \times TEC_C$)
C via CCT B = min (CAP_{IBC}, CAP_B - $ALF_B \times TEC_B$, $ALF_C \times TEC_C$)

Note. An error was identified in this approach at the Workgroup. A replacement approach will be prepared.

Q10. The situation of more than two interlinks

Applicable for one or two interlinks

- Proportion for Generator A = (A via CCT B + A via CCT C) / sum (routes 1 - 6)
- Proportion for Generator B = (B via CCT A + B via CCT C) / sum (routes 1 - 6)
- Proportion for Generator C = (C via CCT A + C via CCT B) / sum (routes 1 - 6)
- *Where*

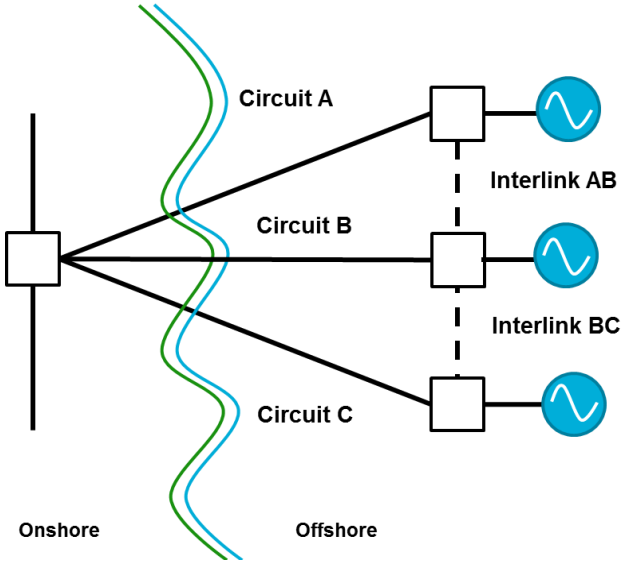
1. A via CCT B = $\min (CAP_{IAB}, CAP_B - ALF_B \times TEC_B, ALF_A \times TEC_A)$
2. A via CCT C = $\min (CAP_{IAB}, CAP_{IBC}, CAP_C - ALF_C \times TEC_C, ALF_A \times TEC_A)$
3. B via CCT A = $\min (CAP_{IAB}, CAP_A - ALF_A \times TEC_A, ALF_B \times TEC_B)$
4. B via CCT C = $\min (CAP_{IBC}, CAP_C - ALF_C \times TEC_C, ALF_B \times TEC_B)$
5. C via CCT A = $\min (CAP_{IBC}, CAP_{IAB}, CAP_A - ALF_A \times TEC_A, ALF_C \times TEC_C)$
6. C via CCT B = $\min (CAP_{IBC}, CAP_B - ALF_B \times TEC_B, ALF_C \times TEC_C)$

Note. An error was identified in this approach at the Workgroup. A replacement approach will be prepared.

Worked Examples: Everything Equal

Model

Circuit A	200	MW Capacity
AB Interlink	100	MW Capacity
Circuit B	200	MW Capacity
BC Interlink	100	MW Capacity
Circuit C	200	MW Capacity



Generator A
180 MW TEC
40% ALF

Generator B
180 MW TEC
40% ALF

Generator C
180 MW TEC
40% ALF

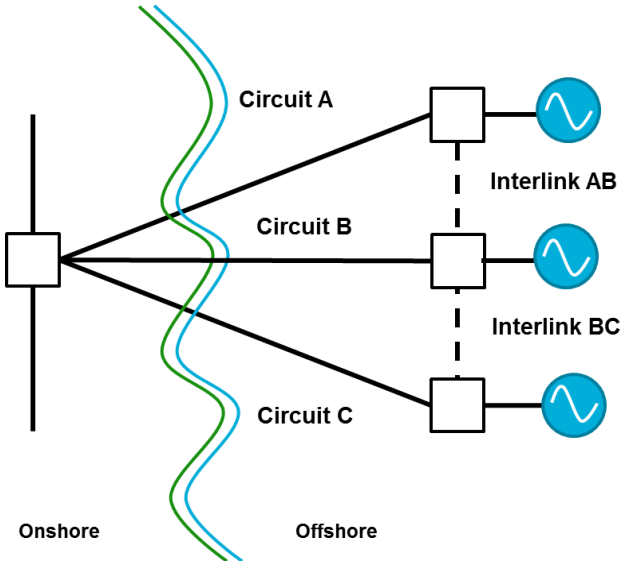
		A	B	C
viii Restricted Availability Measure (using ALF)		**33.3%**	**33.3%**	**33.3%**
	A via CCT B	*72*	*MW*	
	A via CCT C	*72*	*MW*	
	B via CCT A	*72*	*MW*	
	B via CCT C	*72*	*MW*	
	C via CCT B	*72*	*MW*	
	C via CCT A	*72*	*MW*	

Note. An error was identified in this approach at the Workgroup. A replacement approach will be prepared.

Worked Examples: One smaller Interlink

Model

Circuit A	200	MW Capacity
AB Interlink	100	MW Capacity
Circuit B	200	MW Capacity
BC Interlink	50	MW Capacity
Circuit C	200	MW Capacity



Generator A
180 MW TEC
40% ALF

Generator B
180 MW TEC
40% ALF

Generator C
180 MW TEC
40% ALF

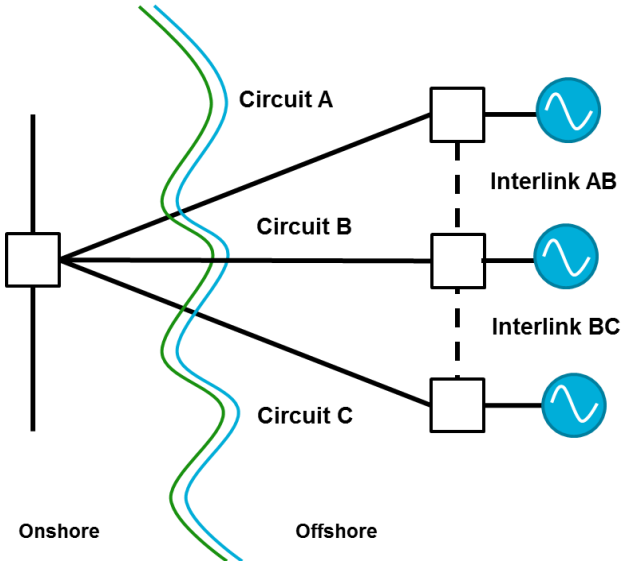
		A	B	C
viii	Restricted Availability Measure (using ALF)	35.5%	35.5%	29.1%
	A via CCT B	*72*	*MW*	
	A via CCT C	*50*	*MW*	
	B via CCT A	*72*	*MW*	
	B via CCT C	*50*	*MW*	
	C via CCT B	*50*	*MW*	
	C via CCT A	*50*	*MW*	

Note. An error was identified in this approach at the Workgroup. A replacement approach will be prepared.

Worked Examples: One Larger Generator

Model

Circuit A	200	MW Capacity
AB Interlink	100	MW Capacity
Circuit B	200	MW Capacity
BC Interlink	150	MW Capacity
Circuit C	330	MW Capacity



Generator A
180 MW TEC
40% ALF

Generator B
180 MW TEC
40% ALF

Generator C
300 MW TEC
40% ALF

		A	B	C
viii Restricted Availability Measure (using ALF)		**28.3%**	**28.3%**	**43.3%**
	A via CCT B	*72*	*MW*	
	A via CCT C	*72*	*MW*	
	B via CCT A	*72*	*MW*	
	B via CCT C	*72*	*MW*	
	C via CCT B	*120*	*MW*	
	C via CCT A	*100*	*MW*	

Outstanding Issue
Dealing with TEC Changes

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TEC Changes

- The Workgroup discussed fixing the proportions paid by each generator for a **price control period**.
- The Workgroup Consultation agreed with this approach
- However, it has some consequences:
  - Possible to game by having lower initial TEC
  - A generator doesn't benefit from another increase in TEC (causing an over recovery)
  - Potential significant shift in charge at price control, depending on how TEC has changed, e.g. if one is now zero.
- The Workgroup proposed to use the maximum value of TEC a station had ever held.

3. Original Proposal and potential workgroup alternatives

This text will be updated, following the discussion at the Workgroup.

Original Proposal

The TNUoS charging methodology within Section 14 of the CUSC is modified so that:

- The **local circuit tariff** will be updated to include the portion of the OFTO(s) costs associated with the interlink:
  - costs will be apportioned to each generator according to the formulae (see below) and these proportions will be fixed for a price control period based on initial TEC.
  - Alternatively, generator parties may bilaterally negotiate the proportion of the interlink revenue they will pay (this must sum to 100%), and notify NGET as appropriate. If no agreement is reached, the formulae in the CUSC will be used.

<u>Points to note</u>

- No changes will be made to the methodology for other elements of the charge (e.g. offshore substation or charge for another circuit(s))
- There is no opt-out clause.

Note. An error was identified in this approach at the Workgroup. A replacement approach will be prepared.

Original Proposal Formulae

(WG Consultation viii as extended)

Applicable for one or two interlinks

- Proportion for Generator A = (A via CCT B + A via CCT C) / sum (routes 1 - 6)
- Proportion for Generator B = (B via CCT A + B via CCT C) / sum (routes 1 - 6)
- Proportion for Generator C = (C via CCT A + C via CCT B) / sum (routes 1 - 6)
- *Where*
  1. A via CCT B = $\min (CAP_{IAB}, CAP_B - ALF_B \times TEC_B, ALF_A \times TEC_A)$
  2. A via CCT C = $\min (CAP_{IAB}, CAP_{IBC}, CAP_C - ALF_C \times TEC_C, ALF_A \times TEC_A)$
  3. B via CCT A = $\min (CAP_{IAB}, CAP_A - ALF_A \times TEC_A, ALF_B \times TEC_B)$
  4. B via CCT C = $\min (CAP_{IBC}, CAP_C - ALF_C \times TEC_C, ALF_B \times TEC_B)$
  5. C via CCT A = $\min (CAP_{IBC}, CAP_{IAB}, CAP_A - ALF_A \times TEC_A, ALF_C \times TEC_C)$
  6. C via CCT B = $\min (CAP_{IBC}, CAP_B - ALF_B \times TEC_B, ALF_C \times TEC_C)$

Using the station specific ALF where available or the generic ALF for the type of station.