CMP418: Refine the allocation of Static Var Compensators (SVC) costs at OFTO transfer

Thursday 19 October 10am

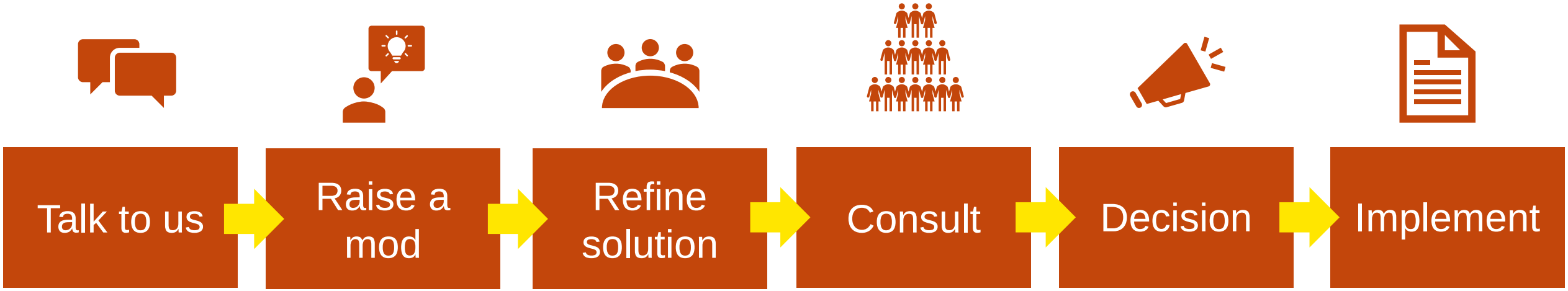
Online Meeting via Teams

WELCOME

Modification Process

Claire Goult – ESO Code Administrator

Code Modification Process Overview



Forums

Panel decided standard governance route

Workgroups
(Workgroup Consultation, Workgroup Vote, Workgroup Report, Code Admin Consultation, DFMR, FMR)

Ofgem

Workgroup Responsibilities

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Expectations of a Workgroup Member

- Contribute to the discussion
- Be respectful of each other's opinions
- Language and Conduct to be consistent with the values of equality and diversity
- Do not share commercially sensitive information
- Be prepared - Review Papers and Reports ahead of meetings
- Complete actions in a timely manner
- Keep to agreed scope

Your Roles

- Help refine/develop the solution(s)
- Bring forward alternatives as early as possible
- Vote on whether or not to proceed with requests for Alternatives
- Vote on whether the solution(s) better facilitate the Code Objectives

Workgroup Alternatives and Workgroup Vote

Claire Goult – ESO Code Administrator

Can I vote? and What is the Alternative Vote and Workgroup Vote?

To participate in any votes, you will have been nominated as a Workgroup member (not observer) and need to have attended at least 50% of meetings

Stage 1 – Alternative Vote

- This Vote is carried out to identify the level of Workgroup support there is for any potential Workgroup Alternative Requests brought forward by a member of the Workgroup OR an Industry participant as part of the Workgroup Consultation. should become Workgroup Alternative CUSC Modifications (WACM).

- Should the majority of the Workgroup OR the Chair believe that the potential alternative solution may better facilitate the CUSC objectives than the Original then the potential alternative will be fully developed by the Workgroup with legal text to form a Workgroup Alternative CUSC Modification (WACM) and submitted to the Panel and Authority alongside the Original solution for the Panel Recommendation vote and the Authority decision.

Stage 2 – Workgroup Vote

2a) Assess the Original and Workgroup Alternative (if there are any) against the relevant Applicable Objectives compared to the Baseline (the current code)

2b) Vote on which of the options is best.

Objectives and Timeline

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Timeline for CMP418 – As at 21 September 2023

Milestone	Date	Milestone	Date
Proposal Presented to Panel	17 August 2023	Panel sign off that Workgroup Report has met its Terms of Reference	**CUSC Panel Date 23 February 2024**
Workgroup Nominations	29 August 2023 – 26 September 2023 (Extended)	Code Administrator Consultation (15 working days)	29 February 2024 – 21 March 2024
Workgroup 1 – Understand / discuss proposal and solution(s), review and agree on Terms of Reference and Timeline, review cross code impacts, review analysis and agree next steps.	19 October 2023	Draft Final Modification Report (DFMR) issued to Panel	18 April 2024
Workgroup 2 – Refine solution(s), draft legal text, consider potential Workgroup Consultation questions and finalise Workgroup Consultation	8 November 2023	Panel undertake DFMR recommendation vote	**CUSC Panel Date 26 April 2024**
Workgroup Consultation (15 Working Days)	20 November 2023 – 08 December 2023	Final Modification Report issued to Panel to check votes recorded correctly (5 working days)	29 April 2024 – 03 May 2024
Workgroup 3 – Review Workgroup Consultation responses, consider new points raised, refine solution, review legal text and discuss any potential alternatives	10 January 2024	Final Modification Report issued to Ofgem	06 May 2024
Workgroup 4 – Finalise solutions (including legal text) and alternatives and hold alternative vote. Finalise Workgroup Report and hold Workgroup Vote	31 January 2024	Ofgem decision	By 30 September 2024
Workgroup Report issued to Panel (5 working days)	15 February 2024 (Papers Day)	Implementation Date	01 April 2025

Terms of Reference

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Terms of Reference

Workgroup Term of Reference
a) Consider EBR implications;
b) Consider any cross code impacts and interactions, specifically with the STC, Grid Code and CM085;
c) Confirm whether the change is proposed to be retrospective or to apply only to future plant;
d) Consider whether changes are required to Section 11 via a separate modification;
e) Consider the extent to which the revenue recovery requirements need to be codified to provide clarity for parties;
f) If SVC asset costs are socialised, or alternatively if they are not socialised, consider whether parties who bear the costs of those assets as a consequence should also receive Balancing Services revenue for the associated reactive provision.
g) Consider the impact of the change on the different OFTO set-ups and if this change is likely to impact future design set-ups;
h) Consider aligning the definitions used with the Grid Code;
i) Consider the impact on other Dynamic Reactive Compensation Equipment.

Proposer's Solution: Background;
Proposed Solution;
Scope; and
Assessment vs Terms of Reference

Giulia Licocci – Ocean Winds

CMP418: Refine the allocation of Static Var Compensators (SVC) costs at OFTO transfer

Workgroup meeting 1

DATE: 19 October 2023

Reactive Compensation Compliance

- Reactive power is crucial for ensuring voltage levels remain within acceptable limits and is required for the reliable and efficient operation of the National Electricity Transmission System (NETS)

- The Grid Code sets out the mandatory reactive compensation requirements for offshore generators and offshore transmission owners (OFTO) :

CC.6.3.2(e)(i) - Offshore generator requirement:

- Radially connected offshore windfarms are required to **maintain zero reactive transfer at the Offshore Grid Entry Point**

- Generators typically use the reactive capability of the WTGs to compensate for the inductance of the inter-array cables and achieve zero reactive transfer at the offshore grid entry point. Shunt reactors/switched reactors are used to compensate for the offshore export cables.

CC.6.3.2 (c) - OFTO requirement:

- The OFTO is required to **maintain 0.95 power factor lagging and 0.95 power factor leading at the Onshore Interface Point**

- This is achieved via the installation of Static Var Compensators (SVC). The absorption or delivery of reactive power from the SVC is continuously adjusted to meet the requirement for reactive power flow

- The requirement for reactive compensation is placed on the OFTO and not the wind farm because it is not efficient to comply with the normal generator dynamic reactive compensation requirements offshore due to the long Offshore Export Cable (OEC) lengths

- In a generator build OFTO exercise (all OFTO transfers to date), the generator bears the cost to comply with both reactive compensation requirements by installing shunt reactors offshore and the SVC onshore

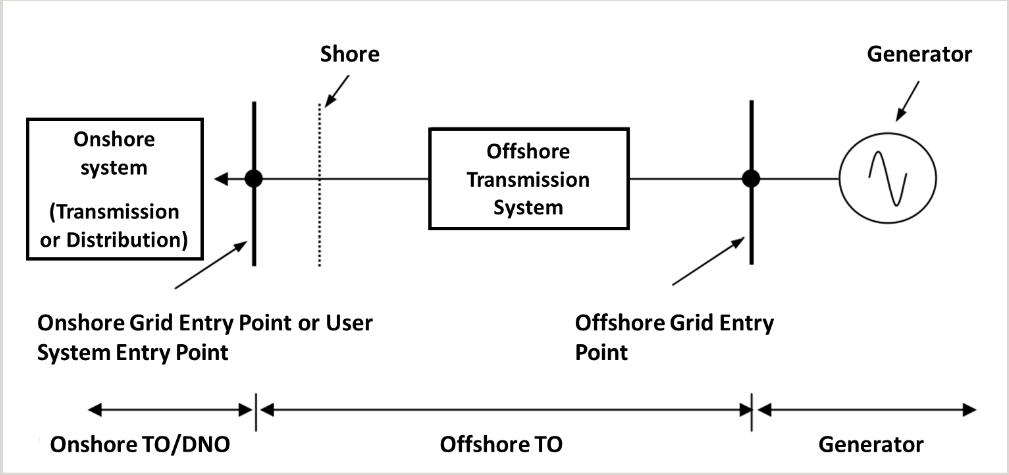
OFTO Transfer and TNUoS charges

- After the OFTO transaction, the SVC is transferred to the OFTO and paid via the Final Transfer Value (FTV), which forms the basis for the Tender Revenue Stream (TRS)
- NGESO uses the TRS, including the cost of SVCs, to calculate the TNUoS offshore local circuit tariff paid by the generator to the OFTO for the lifetime of the asset
- The cost of the SVC falls into the local circuit tariff, and is ultimately born by the generator after OFTO transfer
- The cost allocation of SVCs is neither codified nor specifically mentioned in the CUSC document, and implementation of costs is an interpretation applied by NGESO

Cost allocation	Tariff	Asset/Cost category
Offshore Generator	Circuit Tariff	Cable
		Cable Assets
		Reactive Equipment
		Harmonic Filtering Equipment
		HVDC Converter Station
	Substation Tariff	Transformer Assets
		Switchgear Assets
		Platform
		Auxillary Supply Equipment
Socialised	Onshore tariff	Onshore Substation

Defect

- After the OFTO transaction, an offshore wind farm's point of connection (POC) is offshore, and the SVC is not used for compliance at this POC
- Consequently, the generator pays, via the TNUoS offshore local circuit tariff, for an asset located within the onshore transmission system that is used for OFTO reactive compensation compliance rather than wind farm compliance
- The SVCs are not used for offshore export cable compensation. Therefore, while it is intuitive that the shunt reactor costs fall into the local circuit tariff, it should not follow that SVCs are treated in the same way
- The SVCs provide valuable reactive compensation services to the grid and wider users. However, under current arrangement generators bears 100% of the costs whilst the value of this benefit does not flow back to the generator



Proposed solution

Cost allocation	Tariff	Asset/Cost category
Offshore Generator	Circuit Tariff	Cable
		Cable Assets
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		Harmonic Filtering Equipment
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	Substation Tariff	Transformer Assets
		Switchgear Assets
		Platform
		Auxillary Supply Equipment
Socialised	Onshore tariff	Onshore Substation

- The status quo fails to meet the CUSC charging objective (b) of charges accurately reflecting the costs incurred by transmission licensees
- This highlights the necessity for a fairer approach that is more consistent with CUSC objectives
- The proposal is to amend the calculation of TNUoS by allocating the cost of SVCs to the socialised onshore tariff

Terms of Reference

Workgroup Term of Reference	Initial assessment
a) Consider EBR implications;	EBR was reviewed and no interactions were found
b) Consider any cross code impacts and interactions, specifically with the STC, Grid Code and CM085;	Confirmed no interaction with CM 085 Chair as this mod does not consider allocation of costs
c) Confirm whether the change is proposed to be retrospective or to apply only to future plant;	Only applies to future plants
d) Consider whether changes are required to Section 11 via a separate modification;	Section 11 – Interpretations and Definitions. Potentially required to address classification of 4 set ups (G)
e) Consider the extent to which the revenue recovery requirements need to be codified to provide clarity for parties;	To consider codification in 4.1.2 in Section 4 of the CUSC
f) If SVC asset costs are socialised, or alternatively if they are not socialised, consider whether parties who bear the costs of those assets as a consequence should also receive Balancing Services revenue for the associated reactive provision.	Our proposal refers to the set up whereby the OFTO controls onshore volts and wind turbines compensate for the cable. In these instances, and within our proposal, the SVC will continue to be transferred to the OFTO. OFTO's ability to recover mandatory reactive power service costs is not codified. Discussions with a TO confirmed that they are unable to recover this cost, but WG discussion is required to confirm this dynamic.
g) Consider the impact of the change on the different OFTO set-ups and if this change is likely to impact future design set-ups;	a) OFTO controls onshore volts, wind turbines compensate for the cable (the situation we are addressing, which is the majority of offshore wind farms to date, and it will be the large majority of wind farms that will be deployed, as the SVC installation is required when farther from shore) b) OFTO controls onshore volts and compensates for cable, wind turbine does nothing (In this case it's the OFTO that would be receiving compensation, to be confirmed) c) wind turbine does everything (Very rare as only available in configurations with very short cable lengths. In this case there is no SVC (or the SVC is not transferred to the OFTO? Point TBC) but the generator is remunerated for the provision of reactive power) d) OFTO and wind turbines together control onshore volts (In this case if the SVC is required and is transferred then this falls into CMP418)
h) Consider aligning the definitions used with the Grid Code;	Will be aligned
i) Consider the impact on other Dynamic Reactive Compensation Equipment.	To be discussed

Cross Code Impacts

Claire Goult – ESO Code Administrator

Any Other Business

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Next Steps

Claire Goult – ESO Code Administrator