

CMP344 Modification Development Support – Summary of independent report by Cornwall Insight

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Background

- RWE commissioned Cornwall Insight to undertake independent analysis of the impact of CMP344 on generators
- The analysis was carried out by Cornwall Insight (we, us) and has already been provided to the workgroup
- We have focused on quantifying the impact of implementing CMP344 on future CfD bid price

Income Adjusting Events

- When an OFTO incurs certain costs beyond its control, it may be able to apply to Ofgem to approve an Income Adjusting Event (IAE).
- If Ofgem approves an IAE request, it will grant an adjustment to the OFTO's allowed revenue reflecting the unforeseeable costs incurred
 - This is recovered from demand TNUoS in the short term and “paid back” by the relevant generator in the long-term through an increase to the offshore local circuit tariff from the start of the next transmission price control period
- No IAE claims have been approved to date
 - Four claims have been rejected by Ofgem and one is pending a formal decision
 - The root cause of claims vary but typically relate to instances where issues were not, and could not have been, identified by previous inspections, and therefore not reasonably foreseeable
 - In such cases, the IAE value reflects the associated repair costs
- CMP344 would result in adjustments to OFTO revenue from IAEs being recovered from all demand users via TNUoS, rather than solely through the offshore local circuit charges of the affected generator

Methodology

Cornwall Insight's approach to this analysis was as follows:

- We reviewed the IAE applications submitted to Ofgem to date to inform potential additional TNUoS costs which would be incurred by generators under current arrangements
- We undertook a high-level review of subsidy bidding strategies (e.g. CfDs) in relation to the treatment of risks beyond a bidder's control
- Taking central, high and low cases for generator assumptions on the likelihood of an IAE impacting their operation, we modelled the impact of IAEs TNUoS risk on CfD costs. This considered how much generator CfD bids (required strike prices) would change if they did not need to take into account the impact of TNUoS costs related to IAEs

At the time of this report the number of approved IAEs has been nil. Our analysis assumes that the information contained in the IAE applications will be utilised by generators to illustrate the potential severity and frequency of any future IAEs.

IAE claims to date

We identified five claims for Income Adjusting Events (IAEs) since the OFTO regime was established. In that time, there have been ~200 years of offshore wind operation. Of the IAE claims to date, four applications have been rejected by Ofgem and the other is pending.

Figure 1: Proposed IAEs since beginning of OFTO regime

Windfarm	Decision date	Outage date	Status	Submitted claim value (unadjusted)
<u>Blue Transmission</u> <u>London Array</u>	October 2016	RY 2014-15	Rejected	£1.8mn
<u>Gwynt y Môr</u>	May 2017	March 2015	Rejected	£10.2mn
<u>Thanet</u>	May 2017	February 2015	Rejected	£11.7mn
<u>Gwynt y Môr</u>	June 2020	September 2015	Rejected	£14.2mn
<u>Gwynt y Môr</u>	n/a	October 2020	Pending	Redacted

Although four IAE applications were deemed ineligible by Ofgem, the claim cost information is consistent with costs and circumstances for an eligible outage claim. This is the information that would be available to investors in generation assets for risk modelling purposes.

The mean average of the claims cost is £9.48mn, while the median is £10.95mn. For modelling purposes, the cost of an eligible IAE will be deemed to be £10mn.

CfD calculation approach

- We have approximated the impact of an IAE on a CfD risk premium by including IAE applications' costs as an additional OPEX cost for generators and included in a Levelised Cost of Energy (LCOE) calculation.
 - Generators will have differing bidding strategies which add a layer of complexity to bids over and above the relatively simple Levelised Cost of Energy (LCOE) calculation we have carried out.
- The risk of IAEs being approved is low, with none having been finalised to date. But because of the high impact an IAE could have on an investment, generators must factor them into bids. We have used three cases to quantify this:
 - Low - assuming an event occurs every 1 in 250 years.
 - Central - assuming an event occurs every 1 in 50 years
 - High – assuming an event occurs every 1 in 15 years
- Considering the significant scope for different factors to influence the relative value over time (both positively and negatively), we have assumed the IAE value remains constant over the given period

Input parameters

- We have used an example 1.5GW site in order to show the impact on future assets as the market grows.
- CfD strike prices are quoted in 2012 equivalent figures to maintain comparability with AR1 in 2014
- Results are inflated to today's money when calculating the consumer impact
- We have used the BEIS Levelised Cost of Energy (LCOE) data to inform our analysis on load factors and asset costs when determining the strike price

Figure 2: CfD Strike price forecasting inputs

Element	Input	Source
Hurdle rate	6%	BEIS LCOE analysis
Load factor	57%	BEIS LCOE analysis
Project life (Years)	30	BEIS LCOE analysis
Capital costs – 2011-12 prices (£/kW)	£1,362.06	BEIS LCOE analysis (deflated to 2011-12 prices)
Fixed operational and maintenance costs – 2011-12 prices (£/kW)	£ 83.73	BEIS LCOE analysis (deflated to 2011-12 prices)
Variable operational and maintenance costs – 2011-12 prices (£/MWh)	£ 2.72	BEIS LCOE analysis (deflated to 2011-12 prices)
Negative price forecast periods	5.7%	Cornwall internal analysis
Transmission Loss Multiplier (TLM)	0.9%	CfD AR4 <u>Framework</u>

TNUoS repayment impact

We have presented two bid prices for each of the Central/High/Low scenarios:

- A bid price based on the BEIS LCOE data – labelled with CMP344
- Three bid price scenarios, based on the same inputs as the Base scenario, but with the £10mn cost of the IAE spread evenly across the variable O&M costs of the asset for 15 years (High), 50 years (Central), and 250 years (Low) - labelled “without CMP344”

The results of this analysis are shown in the table below.

Figure 3: TNUoS repayment strike price impact analysis

Scenario	Generator Assumption on IAE Frequency	Bid Price (£/MWh, 2011-12 Prices)	
		1.5GW – With CMP344	1.5GW – Without CMP344
Central	50 years	£40.93	£40.96
High	15 years	£40.93	£41.01
Low	250 years	£40.93	£40.94

CMP344 Impact if no IAEs occur

- We have assessed the potential increase in costs to consumers in relation to CfD Allocation Rounds 5, 6 and 7 of the pre-CMP344 risk premium
 - AR7 is the latest allocation round in which projects which will contribute to the 50GW of offshore wind by 2030 could be awarded a CfD, assuming annual auctions
 - We have approximated the pipeline of assets for AR5 and 6 at 7GW and 6.5GW respectively, leaving 10GW required under AR7 to meet the 50GW by 2030 target
- The analysis shows a significant saving via CfD bid prices if CMP344 were introduced and the CfD risk premia were reduced

Figure 4: CMP344 Impact analysis – AR5/6/7

Scenario	Generator assumption on IAE frequency	Net benefit of CMP344			
		Load Factor (%)	AR5/6/7 Capacity (MW)	AR5/6/7 Volume (TWh)	AR4 Cost / CMP344 Net Benefit (£mn, 2021-22 Prices)
Central	1 in 50	57.00%	23,500	1,760	50.3
High	1 in 15	57.00%	23,500	1,760	167.6
Low	1 in 250	57.00%	23,500	1,760	10.1

Source: Various, compiled by Cornwall Insight

Impact of an IAE occurring

- If a £10mn IAE were to be approved now:
 - Consumers would face an additional £10mn TNUoS cost in 2023-24
 - Without CMP344, that cost would effectively be “paid back” to consumers by the generator over the RIIO-ET3 period
 - If CMP344 were implemented, consumers would not be “paid back”
- However, without CMP344, generators would likely increase their CfD bid risk premia in response to IAE approval, also driving a customer cost
- If an IAE occurred now, the bid risk would conservatively increase to the equivalent of five IAEs in every 200 years, or 1 in 40 (as opposed to 1 in 50 in our central case).
 - The realisation that IAEs are more than a theoretical risk likely results in a bigger shift in CfD bids, but we have used a shift from 1 in 50 to 1 in 40 to as a conservative estimate.
- Moving to a 1 in 40 assumption drives a 3.57p/MWh increase in CfD bids, compared to 2.86p/MWh under a 1 in 50 assumption.
 - This would be avoided if CMP344 were implemented, which we estimate would result in a £62.9mn cost saving to consumers across AR5/6/7 projects.
 - While CMP344 would result in consumers facing an additional £10mn cost in TNUoS in the year following approval of the IAE, CMP344 still results in a £52.9mn net benefit to consumers in this scenario.

Impact per customer

- The benefit of CMP344 is clear in a scenario in which no IAEs occur – consumers face no cost and save on CfD risk premia
- The benefit of CMP344 actually **increases** on a simple net basis when an IAE occurs – the increase in future generator risk premia more than offset the cost faced by consumers in TNUoS
- But this does not take into account time value of money
 - The £10mn cost is in year one...
 - ...while the £62.9mn benefit is over the full term of all AR5/6/7 generators

Based on a discounted analysis of the customer cost and later benefit, we have identified that:

- Under our central scenario, if no IAEs are approved, CMP344 being implemented has a net present value benefit of £0.22 per domestic customer
- If an IAE were to be approved, CMP344 being implemented would have a £0.16 net present value benefit per domestic customer, comprising a £0.13 cost in 2023-24 offset by £0.27 per customer lower CfD levies across the late 2020s and 2030s as AR5/6/7 projects come online

CMP344 Impact Summary

If an IAE were to occur under CMP344, consumers would pay more in the short term. But the counterfactual without CMP344 would see generator risk premia increase as generators would perceive an increased IAE risk. So, in the long-run consumers would still be detrimentally impacted.

	No IAE	An IAE occurs
CMP344 adopted	<p>Ideal outcome – no consumer cost in TNUoS or CfDs</p> <ul style="list-style-type: none"> • No recovery required • Future CfD risk premia related to IAEs removed • Consumers benefit overall 	<p>Good outcome – consumers face upfront cost of IAE but no reactive increase in future CfD costs</p> <ul style="list-style-type: none"> • Permitted costs recovered from all demand users via TNUoS, consumers pay more short term... • ...but CfD IAE related risk premia remain zero • Consumers benefit overall
CMP344 rejected	<p>Poor outcome – consumers fund risk premia in bids despite no cost ever being incurred</p> <ul style="list-style-type: none"> • No recovery required • Consumers continue to fund CfD risk premia • Consumer detriment overall 	<p>Poor outcome – customers still exposed to upfront costs (albeit paid back in RIIO-3) as well as to reactive increase in CfD risk premia</p> <ul style="list-style-type: none"> • Permitted costs recovered from Generator • Consumers save in short term... • ...but CfD risk premia increase based on higher perceived IAE risk Consumer detriment overall

Source: Various, compiled by Cornwall Insight