## CUSC Modification Proposal Form

# CMP432: Improve “Locational Onshore Security Factor” for TNUoS Wider Tariffs

**Overview:** This modification seeks to improve the cost reflectivity of the “Locational Onshore Security Factor”, so that Wider locational TNUoS charges better reflect the way Transmission Owners plan for a secure network based on the Security and Quality of Supply Standard requirements

**Modification process & timetable**

1. **Proposal Form** 07 March 2024
2. **Workgroup Consultation** 25 June 2024 - 16 July 2024
3. **Workgroup Report** 19 September 2024
4. **Code Administrator Consultation** 02 October 2024 - 22 October 2024
5. **Draft Final Modification Report** 29 November 2024
6. **Final Modification Report** 10 December 2024
7. **Implementation** 01 April 2026

**Status summary:** The Proposer has raised a modification and is seeking a decision from the Panel on the governance route to be taken.

**This modification is expected to have a: High impact**

On Generators and Suppliers

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|---|---|---|
| **Proposer’s recommendation of governance route** | Standard Governance modification with assessment by a Workgroup | |
| **Who can I talk to about the change?** | **Proposer:**<br>John Tindal<br>John.tindal@sse.com<br>01738 341835 | **Code Administrator Contact:**<br>Claire Goult<br>Claire.Goult@nationalgrideso.com<br>07938737807 |

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## What is the issue?

The defect is that the Locational Onshore Security Factor applied to Transmission Network Use of System (TNUoS) Wider locational tariffs is not cost reflective. Explained further below.

### Principle of incremental price signals

The Connection and Use of System Code (CUSC) explains that TNUoS charges should reflect incremental cost:

> *"The underlying rationale behind Transmission Network Use of System charges is that efficient economic signals are provided to Users when services are priced to reflect the* ***incremental costs*** *of supplying them." (*CUSC 14.14.6, emphasis added*)*

The Security and Quality of Supply Standard (SQSS) requires that the Main Interconnected Transmission System (MITS) network is already sufficiently secure.

The TNUoS Transport and Tariff model calculates a value to reflect the cost of reinforcing the transmission network to provide incremental power transport capability, so:

- If additional MITS network capacity does not require additional redundant network capacity for security, then;
- TNUoS Wider locational price signal should not charge for additional redundant network capacity for security.

### SQSS Requirements

Transmission Owner's (TOs) plan network additions using SQSS criteria. This requires a level of surplus network capacity is available as a form of reserve, so the network can continue to accommodate flows in the event of particular network faults or outages. An example of a fault condition that must be secured against is an outage/fault on the two largest separate circuits, a situation often referred to as "N-2"[1].

The following illustrates the implications of the SQSS security requirement, which should be the basis for any security factor in the CUSC. The SQSS requires that a boundary is initially sufficiently secure against relevant fault conditions specified in absolute terms, such as N-2 requiring a surplus network capacity equivalent to two redundant circuits.

Where additional network transfer capacity built across that boundary leaves the relevant fault conditions the same as it was before, then the security provided by the already existing two redundant circuits means the network remains sufficiently secure after the additional transfer capacity is added. This additional transfer capacity would not trigger a requirement for any additional redundant network capacity to be added for additional security.

In this way, the network that initially had sufficient redundant capacity to meet the security conditions, continues to have sufficient redundant capacity to meet security conditions and no additional redundant secure capacity is required.

### TNUoS Transport and Tariff Model

[1] The principle of *N*-2 security in transmission expansion planning requires the system to maintain a constant power supply with a two component failure, e.g. two transmission lines

The TNUoS Transport and Tariff model takes a different approach from the SQSS.

Instead of modelling security as a specific test, it instead assumes that the capacity of redundant secure network always increases on a pro-rata basis with increases in network transfer capacity. TNUoS does this by assuming security is a factor multiplier of all MITS network reinforcement. The current TNUoS tariff methodology has the effect of assuming:

- For each 1MWkm of required new network capacity, then (based on the current “Security Factor”), 1.76 times that capacity is actually built.
- Capacity of redundant secure network capacity is modelled to increase pro-rata with all increases in network transfer capacity.

If this pro-rata increase in security did happen in practice, then it would lead to the network being over-secure compared with the SQSS requirements.

The result is that the TNUoS Transport and Tariff Model is over-forecasting how much network will be planned to meet SQSS requirements.

This gives rise to the issue that the CUSC TNUoS charging methodology treatment of system security is not cost reflective of what actually occurs with transmission network planning.

## Why change?

The CUSC TNUoS charging methodology treatment of system security should be more cost reflective of network planning.

The proposed change would also be better for effective competition because it would improve predictability of Wider locational charges by reducing their sensitivity to variations in input variables, such as Expansion Constant, or changes in the location of generation, demand, or network reinforcement.

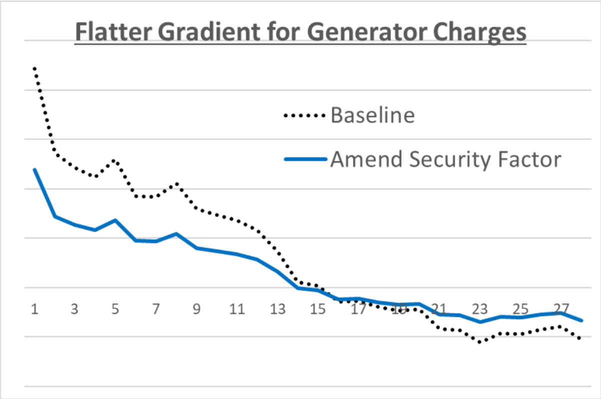
## What is the proposer's solution?

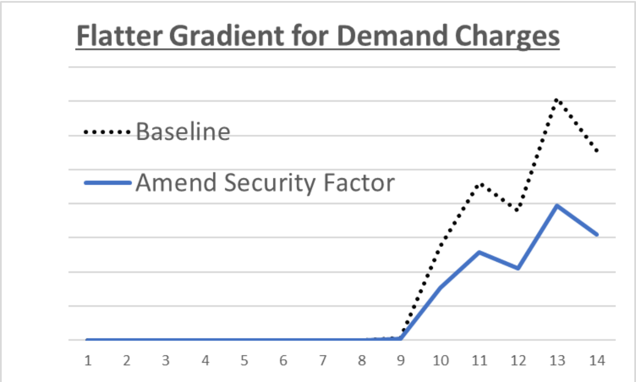
It is proposed that the existing Locational Onshore Security Factor uplift should be removed from all TNUoS Wider locational tariffs for both Peak Security and Year-Round, for both generation and demand tariffs.

Note it is the intent that local charges would remain unchanged.

Examples of Charges Before and After Amending the Security Factor

[Examples based on forecast charges in 2035, generation assumes an intermittent generator]




Results for Generators

- Flatter gradient for locational charges: reduced differential between North & South as charges become smaller charges and credits become smaller credits.

- Reduced magnitude of generator adjustment credit: if the reduction in total revenue recovered from positive generator charges outweighs the corresponding reduction in credits paid out to other generators.

Results for Demand

- Flatter gradient for locational charges: reduced Southern charges, while Northern charges remain floored at £zero.

- Higher Demand Residual charges: smaller collection from demand locational charges.

## Draft legal text

The changes to the legal text will depend on the approach taken to implementing the solution. Options for how this could be implemented in the CUSC and Transport and Tariff model include:

- **OPTION 1**: Remove references to the Locational Onshore Security Factor entirely from the CUSC and all Wider charge calculations.

- **OPTION 2**: Amend the value of the Locational Onshore Security Factor for Wider Tariffs to be 1.00 (instead of 1.76 at present).

CUSC Section 14.15.88 – 14.15.90A currently describes the Locational Onshore Security Factor, with 12 other references to it within the rest of Section 14.

Some additional legal text changes may be required to avoid unintended changes to the way the security factor is applied to local charges.

## What is the impact of this change?

| Proposer's assessment against CUSC Charging Objectives | |
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| **Relevant Objective** | **Identified impact** |
| (a) That compliance with the use of system charging methodology facilitates effective competition in the generation and supply of electricity and (so far as is consistent therewith) facilitates competition in the sale, distribution and purchase of electricity; | **Positive**<br><br>Removing Security Factor would be better for effective competition for both generators and demand through:<br><br>Firstly, deliver better predictability of Wider locational TNUoS charges, for both generators and demand, by reducing the sensitivity of charges to changes in elements such as: Expansion Constant, Expansion Factors, or location of generation, demand and new network. Currently, the impact on charges from changes in any of these elements is amplified by multiplying their impact by the 1.76 Security Factor.<br><br>Secondly improve international competition for generators because the Security Factor would no-longer inappropriately amplify the cost of network charges compared with the network charges paid by generators in other markets. |

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| (b) That compliance with the use of system charging methodology results in charges which reflect, as far as is reasonably practicable, the costs (excluding any payments between transmission licensees which are made under and accordance with the STC) incurred by transmission licensees in their transmission businesses and which are compatible with standard licence condition C26 requirements of a connect and manage connection); | **Positive**<br><br>Removing the Security Factor would be better for cost reflectivity for both generator and demand charges.<br><br>This is because the change would result in Wider locational TNUoS charges that better reflect the cost of incremental network investment. |
| (c) That, so far as is consistent with sub-paragraphs (a) and (b), the use of system charging methodology, as far as is reasonably practicable, properly takes account of the developments in transmission licensees' transmission businesses; | **Positive**<br><br>As the planned growth of the Transmission network increases to meet net zero, it is becoming increasingly apparent that such new network is being built for economic reasons to increase power transport capacity.<br><br>It is increasingly clear that such new network investment is not being built with accompanying pro-rata additional surplus redundant network capacity for security purposes. |
| (d) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency *; and | **Neutral** |
| (e) Promoting efficiency in the implementation and administration of the system charging methodology. | **Positive**<br><br>Removing the Security Factor calculation and its application to Wider charges would make the administration of the charging methodology more efficient by removing the need for ESO to operate the Secure Load Flow model |

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| | (SECULF) that is currently used to calculate the Security Factor or implement its results into the charging methodology. |
| **The Electricity Regulation referred to in objective (d) is Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (recast) as it has effect immediately before IP completion day as read with the modifications set out in the SI 2020/1006. | |

| **Proposer's assessment of the impact of the modification on the stakeholder / consumer benefit categories** | |
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| **Stakeholder / consumer benefit categories** | **Identified impact** |
| Improved safety and reliability of the system | **Neutral**<br><br>Click or tap here to enter text. |
| Lower bills than would otherwise be the case | **Positive**<br><br>By improving both cost reflectivity and predictability, this improvement should reduce existing distortions to locational investment decisions, as well as reduced cost of capital and risk premiums for investors in new generation. This should result in a lower total system cost and lower pass-through costs to customers, such as cheaper CfD Strike Prices. |
| Benefits for society as a whole | **Positive**<br><br>Better facilitate net zero at best value to customers and the energy system overall by reducing the cost and distortions to investment in generation, and in low carbon generation in particular. |
| Reduced environmental damage | **Positive**<br><br>For the reasons given above, it would better facilitate the journey toward statutory net-zero targets. |
| Improved quality of service | **Positive**<br><br>As per above, would improve contribution of economic growth and jobs due to better facilitating achieving net zero at best value to customers and the energy system overall. |

## When will this change take place?

**Implementation date**
April 2026

**Date decision required by**
Preferably no later than end of December 2024 to give relevant parties sufficient notice of the change implemented in tariffs from April 2026.

**Implementation approach**
TNUoS Transport and Tariff Model and CUSC will require amendments

**Proposer's justification for governance route**
Governance route: Standard Governance modification with assessment by a Workgroup. Proposing normal governance process to enable appropriate industry engagement and consultation.

## Interactions

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|---|---|---|---|
| ☐Grid Code | ☐BSC | ☐STC | ☐SQSS |
| ☐European Network Codes | ☐ EBR Article 18 T&Cs[2] | ☐Other modifications | ☐Other |

There are no interactions with other codes or modifications.

## Acronyms, key terms and reference material

| Acronym / key term | Meaning |
|---|---|
| BSC | Balancing and Settlement Code |
| CMP | CUSC Modification Proposal |
| CUSC | Connection and Use of System Code |
| EBR | Electricity Balancing Regulation |
| MWkm | Megawatt-kilometres |
| MITS | Main Interconnected Transmission System |
| STC | System Operator Transmission Owner Code |
| SQSS | Security and Quality of Supply Standards |
| T&Cs | Terms and Conditions |
| TNUoS | Transmission Network Use of System |
| SECULF | Secure Load Flow model (used by ESO to calculate the Security Factor) |

**Reference material**

- TCMF slides from Meeting on 29th February 2024 where the Proposal was presented (item 7 on the agenda) PowerPoint Presentation (nationalgrideso.com)

- Taskforce Headline report from the TNUoS Task Force meeting held on 27th February 2024, where the proposal was presented and discussed. download (nationalgrideso.com)

[2] If your modification amends any of the clauses mapped out in Exhibit Y to the CUSC, it will change the Terms & Conditions relating to Balancing Service Providers. The modification will need to follow the process set out in Article 18 of the Electricity Balancing Guideline (EBR – EU Regulation 2017/2195) – the main aspect of this is that the modification will need to be consulted on for 1 month in the Code Administrator Consultation phase. N.B. This will also satisfy the requirements of the NCER process.