



Operations Division

SP-EA-003 Secondary Risk Policy

This Policy is part of the Engineering Assessment (EA) process within Transpower and forms part of the System Operator function. The document can be found in the [Operational Documentation Library](#)

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1 Purpose

1.1.1 Purpose and Objectives

To set policy around management of all secondary risks on the power system.

1.1.2 Background

The system operator must manage its principal performance obligations at all times, which includes both during the commissioning of new equipment and when there are grounds to consider previously commissioned equipment on the power system may become unstable or trip for events external to the equipment.

The allocation of a secondary risk to a unit and/or station (as appropriate) ensures additional reserves are procured within market tools to ensure the System Operator maintains minimum island frequencies when managing Contingent and extended contingent events.

1.1.3 Reference

The Operations Division's operational procedures are located in the Volt DM.

Operational Documentation (Published)

- [GL-EA-010 Generator Testing Requirements](#)
- [PR-EA-0010 Planned and Urgent Asset Testing](#)
- [TI-DP-0434 Management of Temporary ACCE and ACECE Risks](#)
- [PR-EA-0999 Secondary Risk](#)

2 Definitions

Term/Abbreviation	Description
CE	Contingent Event
ECE	Extended Contingent Event
Commissioning	Means to verify the correct operation of an asset
Commissioning Period	The time between first connection of the asset to the power system and when all tests have been carried out to demonstrate Code compliance are completed as defined in the Commissioning Plan
Commissioning Plan	A document prepared by the asset owner and agreed by the system operator to meet Clause 2 (6) of Technical Code A, Part 8 of the Code
Energy Injector	Any synchronous, inverter based or other technology that exports energy (MWh) into a local network or the grid with a rated net maximum capacity equal to or greater than 1 MW
Proven	Shown to remain connected and operate as intended in accordance with the Code
RMT	Reserve Management Tool
Secondary Risk	A risk of tripping in response to an external event also described as "cascade" or "sympathetic" tripping
Secondary CE Risk	A secondary risk that may occur after a contingent event on the power system.
Secondary ECE Risk	A secondary risk that may occur after an extended contingent event on the power system.

3 At all times

3.1.1 Ownership	The SO Power Systems Group Manager is responsible for the end to end process from the identification of a secondary risk to its removal. Others play a part in this process as described in this policy and related documents.
3.1.2 Identification	<p>Any equipment may be assigned a secondary risk by the system operator based upon its response to a power system event.</p> <p>Any information leading to the identification of a secondary risk must be advised to the SO Power Systems Group Manager at the time the risk is first managed. Where possible it should include:</p> <ul style="list-style-type: none">▪ The date and time the risk is first managed▪ The nature of the risk, how it may be mitigated and/or removed▪ The likely duration of the risk <p>The identification of when an asset should be treated as a secondary risk sits outside this policy</p>
3.1.3 Management	Secondary risks must be managed in market tools by the system operator in accordance with this policy.
3.1.4 Mitigation	Where a secondary risk cannot be removed its effects must be mitigated as far as possible to reduce the need to carry additional reserves. This may include not dispatching the asset unless it is connecting to the power system for the purpose of commissioning or testing to allow the risk to be removed.
3.1.5 Removal	Instructions to remove a secondary risk will be given by the SO Power Systems Group Manager or delegate and shall be based on testing or demonstration of performance as agreed with the SO Power Systems Group Manager.
3.1.6 Changes in risk level	Changes may be made to the level of secondary risk as advised by the SO Power Systems Group Manager or delegate
3.1.7 Concurrent secondary risks	<p>The system operator will only accept multiple secondary risks during the same trading period after assessing the potential risks posed by the combination of the risks when connected to the power system.</p> <p>This assessment will include:</p> <ul style="list-style-type: none">▪ Security of the power system▪ Impact and availability of reserves▪ Operational and functional complexity



4 Short-term (commissioning) secondary risk

4.1.1 Application	<p>Risks</p> <ul style="list-style-type: none">▪ necessary during the commissioning of equipment▪ identified on the power system which are not fully investigated or mitigated
4.1.2 Allocation prior to commissioning	<p>Assignment of a short-term (commissioning) secondary risk will be based upon information received from asset owners and the current system operator practice for the equipment type and agreed between the asset owner and the system operator before the risk is applied.</p> <p>The asset owner is often best able to identify secondary risks during commissioning, the system operator will help categorise these as either a secondary CE or a secondary ECE risk as appropriate.</p> <p>Often when the asset is being designed a Hazard and Operability Study (HAZOP) is carried out between the asset owner and their vendors. Ideally the HAZOP will consider any interactions between the asset being commissioned and the power system that could cause the asset to trip during the Commissioning Period.</p> <p>Once identified commissioning (short-term) risks must be managed by inclusion in market tools until fully mitigated or removed in accordance with this policy.</p>
4.1.3 Single or multiple risks within a single generating station	<p>During commissioning of multiple new controls systems at a single site (eg more than one of AVR; Governor; generator; turbine) a residual risk of secondary ECE risk will be applied in market tools until the end of the commissioning period.</p> <p>Where a secondary CE risk also exists a (CE + ECE) risk will be entered in market tools for the period that both risks need to be managed.</p> <p>Where single components are commissioned, such as a governor or AVR, after all secondary CE risks identified are removed the residual risk should be set back to normal thus removing the commissioning risk completely.</p>
4.1.4 Risk removal strategy to be agreed in advance	<p>Any risk mitigation and the requirements for risk removal shall be documented preferably at the time the risk is identified.</p>
4.1.5 Testing prior to connection to the power system	<p>Components should be tested prior to connection to the power system where possible to prove as much functionality as possible and the adequacy of preliminary settings.</p> <p>Components that lend themselves to testing in this manner include the off-line testing (and modelling) of automatic voltage regulation and frequency control systems, where functionality and a good fit for settings can be demonstrated.</p> <p>See <i>GL-EA-010 Companion Guide for Testing of Assets</i> for further information on suitable tests.</p>
4.1.6 Management of multiple sites, each with its own short-term (commissioning) risks	<p>The total short-term (commissioning) secondary CE risk managed will be the cumulative total of risks identified at each individual site noting the threshold allowable in each island as described in PR-EA-0999.</p> <p>The total short-term (commissioning) secondary ECE risk managed will be the cumulative total of risks identified at each individual site unless the technologies being commissioned are different, such as a synchronous machine and inverter based technologies, in which case the secondary ECE risk applied will be the larger of the two risks</p>



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- 4.1.7 Management of secondary risks prior to proving control systems by testing**
- Once connected to the power system it is not always possible to complete the agreed tests immediately to remove secondary risks, so consideration should be given to prioritise risk removal.
- Where priority is given to testing voltage systems, for instance, it may be possible to take steps to minimise or eliminate secondary risk from frequency control systems by temporarily removing their frequency sensitivity until they can be tested. In this way the order of removing secondary risks can be planned and prioritised.
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- 4.1.8 Assessment of test results**
- The system operator must assess test results where testing is the agreed measure to demonstrate asset performance prior to any reduction or removal of secondary risk.
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- 4.1.9 Prioritising across multiple sites**
- If the cumulative secondary risk is deemed too great to allow concurrent commissioning projects on the power system, priority will be given to the date of approval of their respective Operational Test Plans on a “first-come first-served” basis.
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5 Long-term secondary risk

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- 5.1.1 Application** Long-term secondary risks which are persistent and unrelated to commissioning or testing activities are configured permanently within RMT.
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- 5.1.2 Documentation** A full description of the secondary risk and its management strategy are to be recorded in *TI-DP-434 Management of Temporary ACCE and ACECE Risks*.
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- 5.1.3 Management of multiple sites, each with its own long-term risks** All long-term secondary risks will be managed cumulatively and in addition to any short-term (commissioning) secondary risks.
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6 Typical Secondary Risks

6.1 Commissioning (short-term)

Commissioning secondary risks have included but are not limited to:

Asset Type	Commissioning Secondary Risk	Risk removal strategy
Gas Turbine and Combined Cycle Gas Turbine generators and auxiliaries	<ul style="list-style-type: none"> ▪ Combustion stability ▪ Compressor stages driven directly/indirectly by generator shaft ▪ Fault ride through capability of auxiliaries ▪ Governor control systems ▪ AVR control systems 	<ul style="list-style-type: none"> ▪ Combustion tuning ▪ System ride-through test using grid frequency as an input ▪ System ride-through test using grid frequency as an input ▪ Proof of control system operation ▪ Proof of control system operation
Geothermal and hydro generators	<ul style="list-style-type: none"> ▪ Governor control systems ▪ AVR control systems ▪ Common fuel control systems 	<ul style="list-style-type: none"> ▪ Proof of control system operation ▪ Proof of control system operation ▪ Proof of control system operation
HVDC converters	<ul style="list-style-type: none"> ▪ Control system and/or protection modifications ▪ Auxiliaries not riding through system faults ▪ Protection settings 	<ul style="list-style-type: none"> ▪ Control system tuning ▪ Control system tuning ▪ Control system tuning
Wind Generators	<ul style="list-style-type: none"> ▪ Point of common coupling response to internal and external inputs 	<ul style="list-style-type: none"> ▪ Control system testing and tuning

6.2 Long-term

Other secondary risks have included but are not limited to:

Asset Type	Secondary Risk	Risk removal strategy
Wind generation	Failing to ride through multiple system events	Control system modification and subsequent testing
Wind generation	Failing to ride through an AUFLS event	Procure additional reserves at the cost of the non-compliant asset owner
Thermal generation	Output reduces as frequency drops	Procure additional reserves at the cost of the non-compliant asset owner
Cogeneration station islands upon drop in frequency	Loss of net injection into the grid	Procure additional reserves at the cost of the non-compliant asset owner

7 Document Information

7.1 Copyright Information

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7.2 Document Feedback

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7.3 Revision History

Link to document review survey <https://forms.office.com/r/sYbiNMKMwY>

SharePoint Revision	Date	Change	Section
1.0	23/8/19	Initial Issue	All new
2.0	6/5/21	Cyclic review, minor updates and links updated	
3.0	8/12/22	Review to expand to management of all secondary risk types and ensure alignment with PR-EA-999. Policy renamed from Commissioning Policy to Secondary Risk Policy.	All new
4.0	2/10/2023	Section 4.1.6 Management of multiple sites, each with its own short-term (commissioning) risks updated.	
5.0	23/03/2026	Cyclic: Issued with no change	



7.4 Metadata

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