

Customer System Study Requirements

1 OBJECTIVE

This document is to specify the typical power system studies required to demonstrate power quality and electrical distribution code compliance prior to connecting loads and/or generators.

The prospective customers must demonstrate by system studies that their installation;

1. Will not adversely impact on the AusNet Services' network (i.e. cause AusNet Services to operate outside the Electricity Distribution Code and/or National Electricity Rules), and
2. Complies with the Electricity Distribution Code¹ and its requirements and the National Electricity Rules².

To allow the customer to do these studies, AusNet Services will provide the relevant system data after signing a confidentiality agreement indicating that data will be used only for the proposed study.

2 TYPICAL SYSTEM STUDIES

2.1 BACKGROUND

System Studies are required to identify any adverse impact the proposed connection will have on the distribution or transmission networks. These studies will identify any additional works required to ensure that the proposed connection will not impact adversely on the performance of the AusNet Services' network.

AusNet Services gives the responsibility for arranging system studies to the customer connecting to the network. This enables the customer, who will eventually bear the cost burden of the solution, to have significant influence over the scenarios to be modelled and in recommending an economic solution.

There are two conditions required of the studies: steady state and dynamic. Each of these conditions needs to be undertaken to meet at least system normal, (n) and (n-g) conditions. All relevant (n-g) scenarios need to be considered under the full range of system loading and customer demand or production, including summer and winter ratings. If other large connections are present, these must also be taken into consideration.

2.2 DETAIL

These studies need to include the following as a minimum. It is possible that the initial studies may identify further studies that need to be performed to evaluate the potential impact of the connection.

¹ The Electricity Distribution Code can be found at <https://www.esc.vic.gov.au/container/energy/30289-electricity-distribution-code/>

² The National Electricity Rules can be found at <https://www.aemc.gov.au/regulation/energy-rules/national-electricity-rules>

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- Thermal rating of network equipment,
- Voltage variation under normal operating conditions and loss of customer’s installation,
- Steady state voltage conditions including capacitor switching on the network,
- Fault level limitations on system elements,
- Protection coordination,
- System X/R impact,
- Possibilities of reverse power flow,
- Voltage flicker,
- System harmonics including voltage and currents,
- System stability,
- Generator ride through performance following voltage disturbance.
- Distribution transformer tap changing studies
- If variable loads or generator output, stochastic load flow study

A written report on the studies must be provided to AusNet Services. This report will be reviewed by the Planning Engineers and recommend any further studies if necessary. This report will summarise the findings and recommendations resulting from the studies and all assumptions made in the studies. A presentation of the findings will also be requested.

3 SYSTEM DATA FORMAT

AusNet Services currently uses the system modelling software PSS®E (Siemens) for subtransmission network analysis and PSS®SINCAL (Siemens) for distribution network analysis. AusNet Services will provide network information of the 66 kV network in the PSS®E format and the 22 kV network in PSS®SINCAL format, as raw data files.

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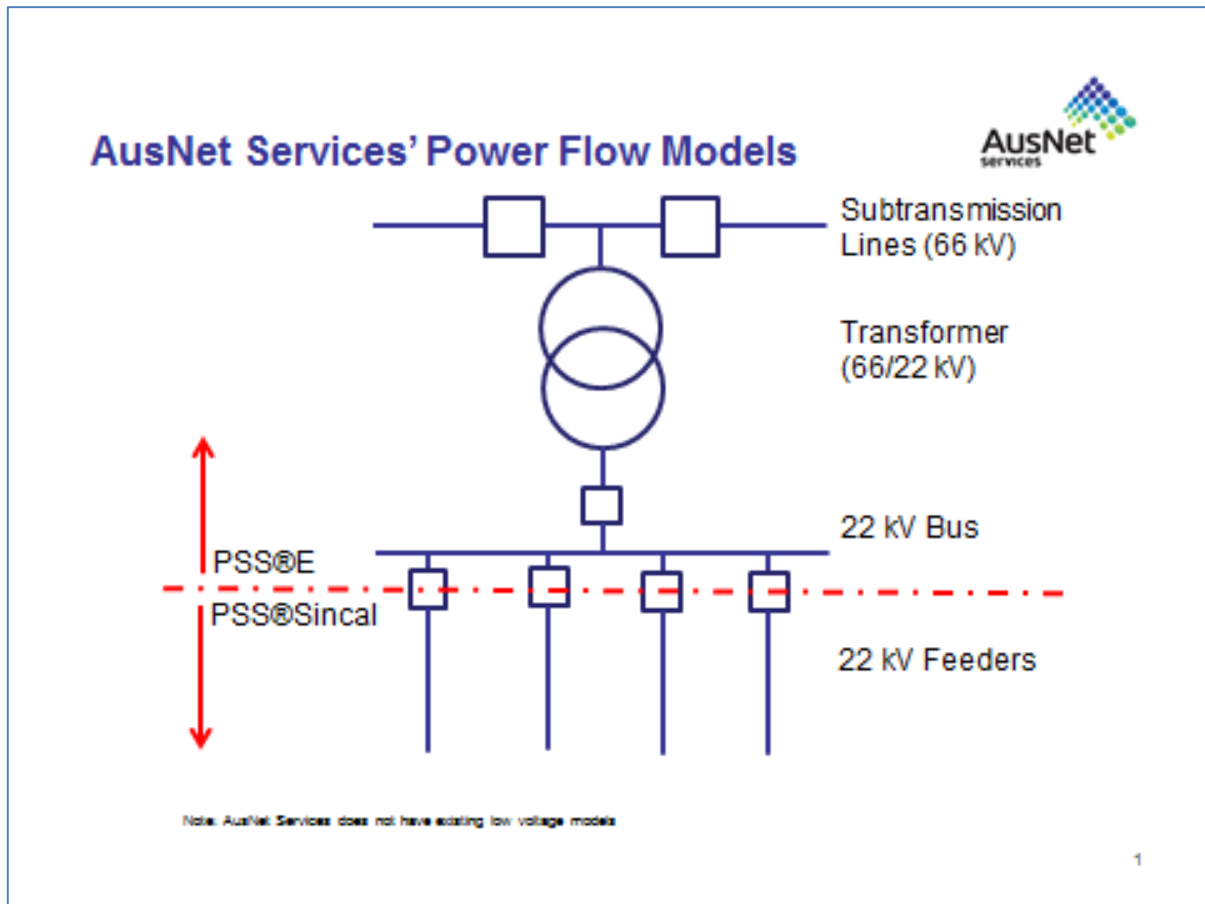


Figure 1: AusNet Services' Model Formats

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4 PREVIOUSLY USED CONSULTANTS

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