

Electricity transmission reliability standard optimisation model - explanatory note

This note explains the model we have released and how to run it. Further information on the inputs and assumptions used in our modelling is available in the document titled *Electricity transmission reliability standards – optimisation model inputs and assumptions*. A copy of this document is also included as an appendix in our final and supplementary draft reports.

The optimum unserved energy limits for each bulk supply point in TransGrid’s network were calculated using a computer program written in the C programming language.

The source code is contained in the file **SourceCode.cpp**. This program is intended to be used as a console application. It reads a text input file from standard input (**Input_file.txt**) and produces a text output file to standard output (**Output_file.txt**).

The full set of sensitivity run outputs is contained in the spreadsheet **Sensitivity analysis results.xlsx**. In the tab “full_summary” near the end of this Excel workbook, an allowance for unserved energy due to non-catastrophic transformer failure is added to the unserved energy calculated by the optimisation program. The final tab “grouped_bsp” performs a calculation of optimal unserved energy for grouped bulk supply points.

How to run the model

To run the program you will need to take the following steps:

1. You will need a C or C++ compiler that is compatible with your computer and operating system
2. Compile the source code to run as a console application on your computer named SourceCode.exe
3. Modify the input file (Input_file.txt) to meet your requirements, but take care not to change the formatting. It is important that the number of data items on each line remains the same and that they be separated by spaces. Do not add any text or comments. If these or the number of lines change, the program will not work.
4. At the MS-DOS prompt, enter the command line:

```
SourceCode.exe <Input_file.txt >Output_file_1.txt
```

Note: If your operating environment does not have MS-DOS, you may need to use different command line syntax.

5. Depending on your machine, we expect that the program will take between 10 seconds and 2 minutes to run.
6. A new output file (Output_file_1.txt) will be created by running the program. It contains a summary of the input data that was used and a table of output data. There is explanatory text embedded in the output file. Note that you may name this file whatever you like by modifying the file name chosen in Step 4.
7. The output file can be read into excel using the 'open' command. You must specify that it is a text file, which is delimited by commas and spaces.

IPART contact for questions

If you have any questions regarding the model, or how to run it, please contact Mike Smart on (02) 9113 7728.