NEMDE QUEUE USERS' GUIDE

Prepared By: EMD

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- Commercial-in-confidence with participants

1.8 Document meta-information

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VERSION	DATE	AUTHOR	NOTES
0.05	17 August 2006	MMS	Initial Release to Participants
0.06	21 September 2007	MMS	Updated to new format
0.07	21 September 2007	MMS	Added legacy file solving
1.00	18 June 2009	EMD	AEMO format
1.01	28 May 2014	MMS	Updated tested environments in section 4 Installation

Table of Contents

1. DISCLAIMER	2
1.1 Copyright	2
1.2 Purpose	2
1.3 Reliance	2
1.4 Intellectual property	2
1.5 No warranty	2
1.6 No liability	2
1.7 Distribution	2
1.8 Document meta-information	3
2. NAMING CONVENTIONS USED IN THIS DOCUMENT	6
2.1 NEMDE Format Files vs Input and Output Files	6
3. WHAT IS NEMDEQUEUE?	6
3.1 What NEMDEQueue is for	6
3.2 How NEMDEQueue works	7
3.3 The process	8
3.4 References	10
4. INSTALLATION	11
4.1 NEMDE Input File Editor	11
5. DIRECTORIES	11
5.1 NEMDE Input and Output files	11
5.2 Solving Legacy Files	12
5.3 Zip files	13
6. MODIFYING A NEMDEQUEUE FORMAT FILE INPUT SECTION	13

7. REVIEWING SOLUTIONS 18

7.1 Reviewing NEMDE Output files 18

8. READING NEMDE FORMAT FILES 20

8.1 Reading NEMDE Format File Input Sections 20

8.2 Reading NEMDE Format File Output Sections 21

8.3 Reading NEMDE Format File Price Setting Sections 22

8.4 Other information 23

9. FILE NAMING CONVENTIONS 23

9.1.1 NEMDE Format Files 23

10. ARCHIVE AND LOG FILES 24

10.1 Archive files 24

10.2 Log files 24

10.3 File Retention 24

2. Naming conventions used in this document

2.1 NEMDE Format Files vs Input and Output Files

With the release of NEMDE v2.2.10, introduced 12th July 2007, the format of the files used by the NEMDE Solver changed to a hierarchical structure. This change saw the consolidation of the existing NEMDE Input File, NEMDE Output File, and NEMDE Price Setter File into the single hierarchically structured XML file referred to in this document as a NEMDE Format File. The NEMDE Format File contains an **Input Section**, described by the <*NemSpdInputs*> tag, an **Output Section**, described by the <*NemSpdOutputs*> tag, and a **Price Setting Section**, described by the <*SolutionAnalysis*> tag.

When the NEMDE Solver receives an XML file to solve it expects the contents to contain an Input Section in the correct hierarchical format, and by extension files submitted to NEMDEQueue for solving must conform to this format.

References in this document to an input file therefore refer to a NEMDE Format File submitted as an input to the NEMDE Solver. Physically this file is an input to the NEMDE Solver, and logically the contents of the NEMDE Format File must contain an Input Section as described above. Similarly, references to an output file refer to a NEMDE Format File received as an output from the NEMDE Solver. These files will always contain an Output Section and Price Setting Section.

3. What is NEMDEQueue?

3.1 What NEMDEQueue is for

AEMO makes Production NEMDE Solver Dispatch solutions available each day in the Market Data area so that you can review previous outcomes in detail. Using NEMDEQueue, you can create your own scenarios based on previous real-case solutions by changing the input data associated with that real-case solution and sending modified input files to NEMDEQueue. There, the NEMDE Solver will process your input files and deliver back to you output files showing the results, which you can analyse.

NEMDEQueue provides an application interface enabling you to model alternative outcomes from AEMO's dispatch engine, the NEMDE (formerly SPD) Solver. Essentially, it is a tool for analysts.

The output is provided almost immediately (within seconds) after you send a scenario to NEMDEQueue for processing.

Because this is a facility shared with other Users, there are rules contained in the NEMDEQueue legal agreement that control its use. No guarantee of performance or reliability is given outside that agreement.

3.2 How NEMDEQueue works

AEMO supplies two interfaces to the XML-based NEMDE files that are input to and output from NEMDEQueue. One interface makes use of Microsoft Excel to view the Output Section of output files, the other interface is a simple XML editor with functionality for NEMDE files, used to create/modify the Input Section of input files. You are not restricted to using these file interfaces – you can prepare and view these NEMDE files in other ways, provided they match the conventions of the Market Data files which have been designed for use internally in the NEM systems and provided that you place the files you want to send in the correct directories. (The use of directories is explained under 'Directories' on page 11.) Advanced users may find using an XML or text editor a preferred option.

The interfaces supplied by AEMO are:

- **NEMDE Input File Editor**
  This application enables you to load a NEMDE Format File, edit the data in the Input Section of that NEMDE Format File, and save the file for submission to NEMDEQueue for NEMDE Solver processing. As of 21/09/2007 the latest version of the NEMDE Input File Editor is v1.0.7. This application has replaced the previous NEMDE Input File Editor Spreadsheet.

- **NEMDE Output File Viewer**
  This application enables you to read the NEMDE Format File Output Section, which contains the dispatch, pricing solution and price setter information reached by NEMDE Solver using the input file you submitted to NEMDEQueue. This version has combined the previous Output File Viewer Spreadsheet and Price Setting Spreadsheet. As of 21/09/2007 the latest version of the NEMDE Output File Viewer is v3.0.0. Older versions may work but will have reduced functionality.

Each day AEMO publishes into the Market Data area the NEMDE Format Files used by the Production NEMDE Solver to arrive at 5-minute Dispatch solutions. These files contain an Input Section, an Output Section and a Price Setting Section. You can copy these files and then use the **NEMDE Input File Editor** to open a selected NEMDE Format Files and edit the data in the Input Section in order to create new scenarios. You then place your edited file in a special NEMDEQueue directory, from which it is picked up by NEMDEQueue for processing by the NEMDE Solver. You can also create your own test cases from scratch, if you wish, using the NEMDE Input File Editor or other techniques.

The resultant solutions from NEMDEQueue's NEMDE Solver are delivered back to you for analysis. You use the **NEMDE Output File Viewer** to review the dispatch and pricing solution and to see which scheduled units contributed to the price solution. Again, you may wish to use other means of doing this, you are not restricted to using the interfaces supplied by AEMO.

The NEMDE files used for processing are XML files with an .XML filename extension (although note that the NEMDE Format Files from the Production Market Data area have filename extensions of .loaded).

Because the NEMDE Format Files can be quite big (over 4 Mb), you can compress them using Winzip or the Windows zip function before submitting to NEMDEQueue in order to speed up their delivery from your server to AEMO's. (See 'Zip files' on page 11 for more information.)

3.3 The process

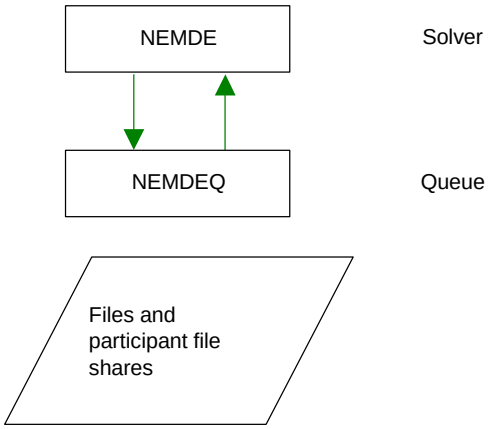


Figure 1 shows how the transfer of files proceeds:

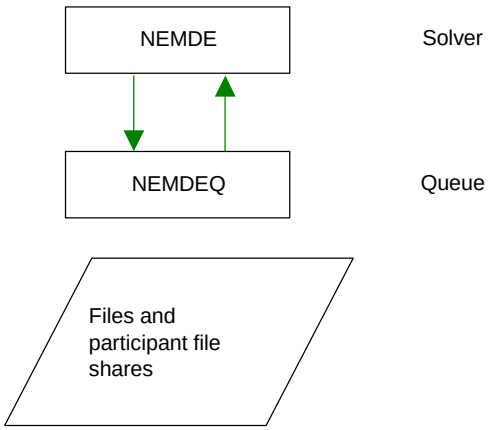


FIGURE 1

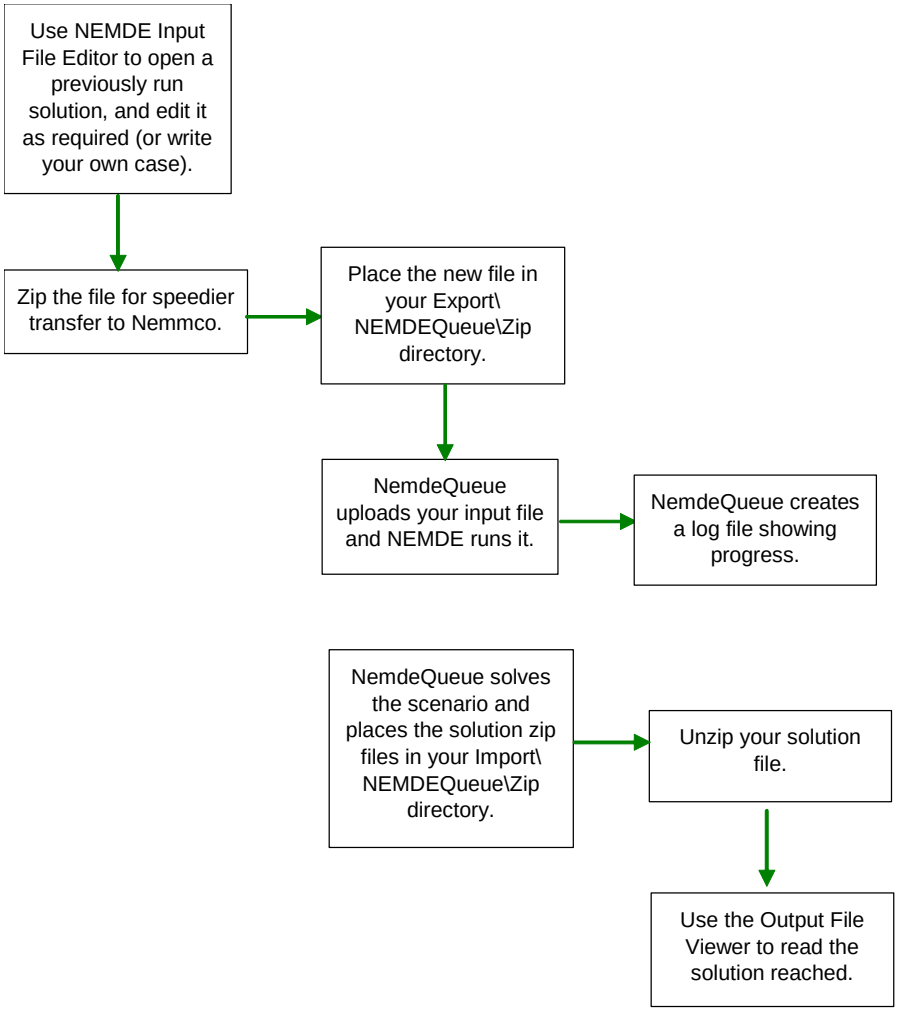

Use NEMDE Input File Editor to open a previously run solution, and edit it as required (or write your own case).
Zip the file for speedier transfer to Nemmco.
Place the new file in your Export\ NEMDEQueue\Zip directory.
NemdeQueue uploads your input file and NEMDE runs it.
NemdeQueue creates a log file showing progress.
NemdeQueue solves the scenario and places the solution zip files in your Import\ NEMDEQueue\Zip directory.
Unzip your solution file.
Use the Output File Viewer to read the solution reached.

Figure 2 illustrates the steps for input and output using zip files:

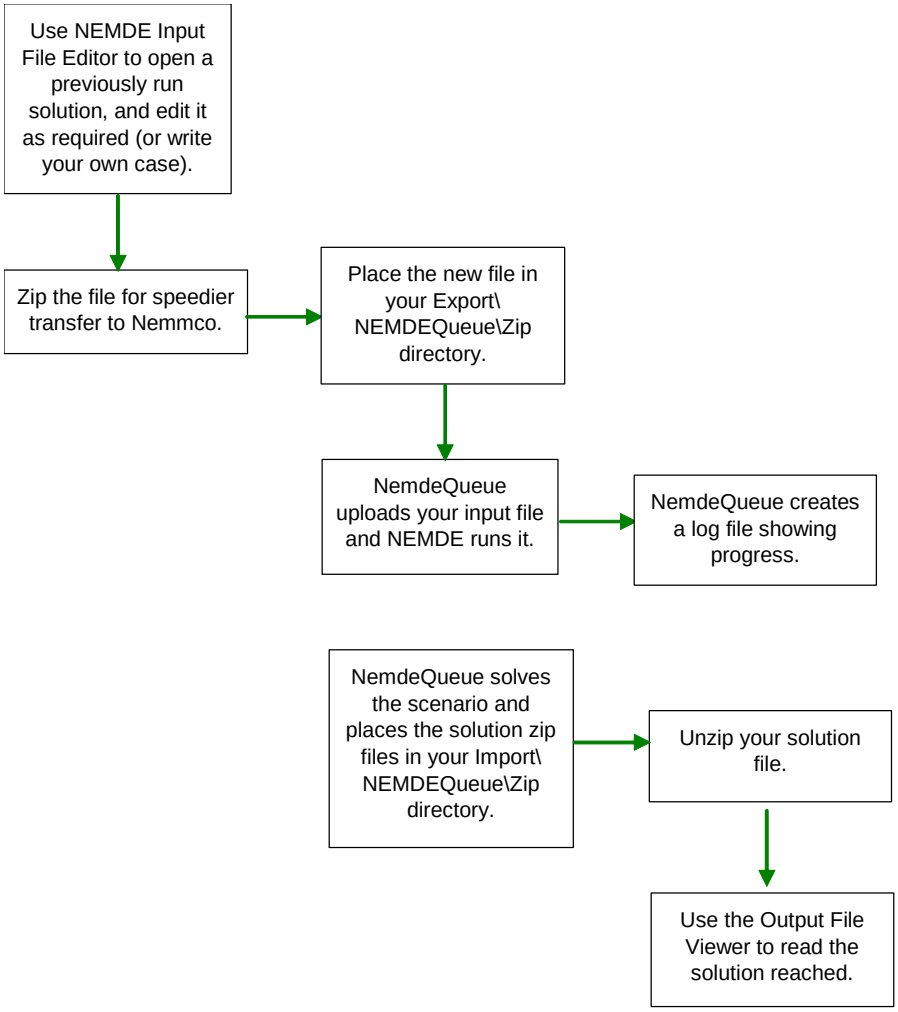


FIGURE 2

3.4 References

This document refers to NEMDE version 2.2.10. For guidance in working with NEMDEQueue files, you may need to refer to the following AEMO documentation:

- *Publication of Price Setter Data – Business Specification*

For those participants with access to *NEMDE Formulation, version 1.20.6* (SPD: Scheduling, Pricing and Dispatch), you may find Appendix A and referenced sections useful. This document is available to Registered Participants only.

4. Installation

NEMDEQueue has been tested with the following environment:

- Microsoft Excel 1997
- Microsoft .NET framework v4.0

You will need to register to use NEMDEQueue with AEMO, sign a legal agreement for its use and pay a fee. You won't be able to log on to upload files to NEMDEQueue for the Solver to process until you have done this. Contact the AEMO Registration Officer (via the Info Line on 1300 361 011) in order to register.

The interfaces (for use with NEMDEQueue) are distributed by AEMO as zip files. They are included in the Releases share on the Participant Server (in MarketData area) and in the monthly AEMO Archive DVDs.

4.1 NEMDE Input File Editor

NEMDE Input File Editor is installed by default in the *C:\Program Files\AEMO\NEMDE Input File Editor* directory. If the installation directory has been modified, the configuration file will need to be updated to point to the new installation directory.

The config key *<add key="PlugIns" value="C:\Program Files\AEMO\NEMDE Input File Editor\PlugIns" />* will need to be modified so it points to the new PlugIns directory. For example, if you installed NEMDE Input File Editor in *C:\NEMDE Input File Editor*, then the key should read: *<add key="PlugIns" value="C:\NEMDE Input File Editor\PlugIns" />*.

To add a default save or open directory, modify the *Open* and *Save* keys.

5. Directories

5.1 NEMDE Input and Output files

When you first log in to AEMO's Participant Server, you see two directories, Export and Import.

Once you have registered to use NEMDEQueue, you have access to the following additional directories within your Export and Import directories:

- Export\NEMDEQueue\Input
- Export\NEMDEQueue\Zip

- Import\NEMDEQueue\Output
- Import\NEMDEQueue\Zip
- Import\NEMDEQueue\Archive
- Import\NEMDEQueue\Log

These directories are used as follows:

- **Export\NEMDEQueue\Input**
  This is where you place any unzipped XML files ready for processing, after using the NEMDE Input File Editor (or some other application) to create them. They are collected and processed by NEMDE Solver almost immediately.
- **Export\NEMDEQueue\Zip**
  If you store your NEMDE Format Files in one or more zip files (for faster transmission to AEMO) you will need to place each zip file in the Zip directory:
  \Export\NEMDEQueue\Zip\Yourfile.zip
  You can have more than one NEMDE Format File in a zip file. The zip file is collected almost immediately by NEMDEQueue. The NEMDE Format Files contained within the zipped file are automatically extracted and copies placed in your Input directory for processing by NEMDE Solver.
- **Import\NEMDEQueue\Log**
  While the NEMDE Solver is processing your NEMDE Format File, entries are written to a daily log file recording progress – the log files and stored here. (See ‘Log files’ on page 24 for more information.).
- **Import\NEMDEQueue\Output**
  After a NEMDE Format File has been processed by the NEMDE Solver, the solution file is placed here, prior to being automatically zipped.
- **Import\NEMDEQueue\Zip**
  Zip files containing your solution files (separate) are placed in this directory.
- **Import\NEMDEQueue\Archive**
  NEMDEQueue automatically moves all submitted NEMDE Format Files (after unzipping, if necessary) into this directory.

5.2 Solving Legacy Files

To solve files in the old file format, the files should use the NEMDEQueue_Legacy folder Import and Export paths as follows:

- Export\NEMDEQueue_Legacy\Input
- Export\NEMDEQueue_Legacy\Zip

- Import\NEMDEQueue_Legacy\Output
- Import\NEMDEQueue_Legacy\Zip
- Import\NEMDEQueue_Legacy\Archive
- Import\NEMDEQueue_Legacy\Log

Old files can be edited/viewed using the previous versions of the NEMDE Input File Editor, NEMDE Output File Viewer and NEMDE Price Setter File Viewer spreadsheets. However, these interfaces are no longer supported by AEMO.

5.3 Zip files

Because the XML NEMDE Input files can be quite large (4Mb or more), you can zip them using Windows Zip or Winzip so that they transfer quickly to and from AEMO. You should copy your zipped NEMDE Input files in the Export\NEMDEQueue\Zip directory. The files are automatically unzipped and copies of the uncompressed files temporarily placed in your Export\NEMDEQueue\Input directory for processing by NEMDE Solver.

When the associated NEMDE Output files have been created, you receive them in zip files placed in your Import\NEMDEQueue\Zip directory. Unzipped copies exist only briefly in the Import\NEMDEQueue\Output directory.

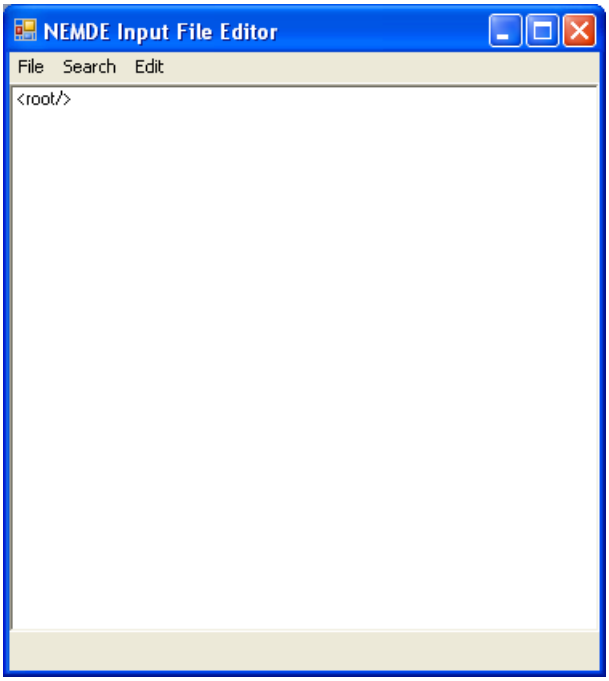
6. Modifying a NEMDEQueue Format file input section

1 Decide which Production NEMDE Format File (from the Market Data area) you want to use as your starting point. The NEMDE Format Files in this area all relate to the 5-minute Dispatch process.

Note that you can also create your own NEMDE Format File from scratch if you wish. You can also submit a Predispatch NEMDE Format File with multiple half-hourly intervals.

2 Start NEMDE Input File Editor.

You see an application screen like this:



3 Click File and select Open.

A file prompt window is displayed.

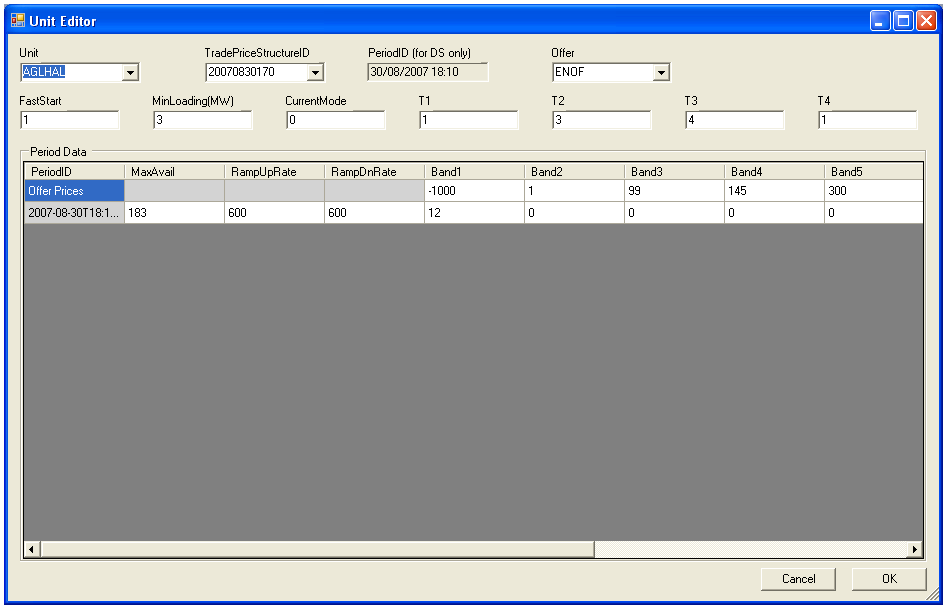
4 Locate the file you want to work with, select it, and then click **Open**.

Files from the Market Data area have the extension .loaded, but **NEMDE Input File Editor** can also modify .xml files by changing the file type filter.

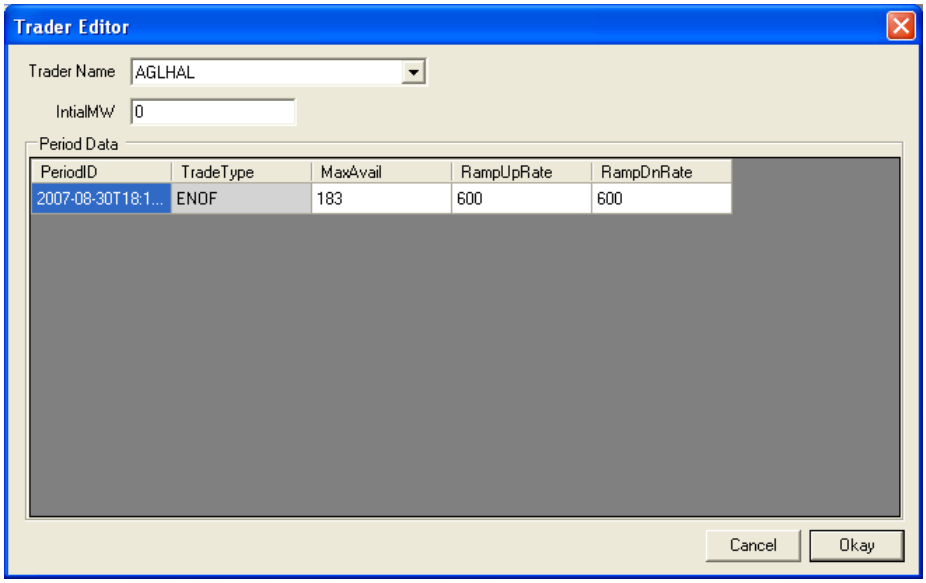
When the file has been opened the text area will be populated with the contents of the file.

5 Edit the data in the Input Section as required, to create your scenario. To edit the data, click on **Edit** and select an option as follows:

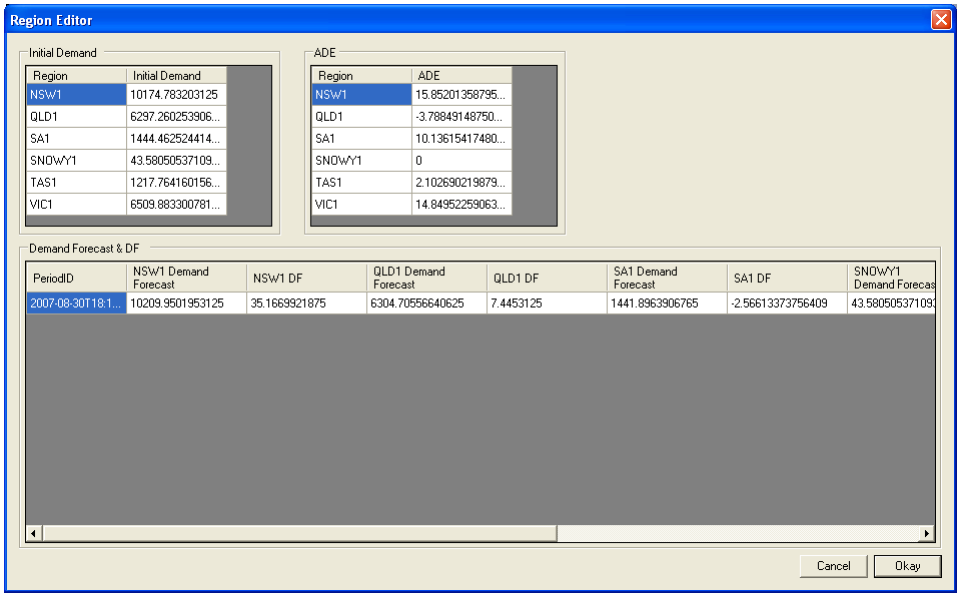
1. To modify trader band price offers for different trade types, band availabilities for different trade types, maximum available MW's, and ramp rates, select **Full Trader Editor**. The following screen will be displayed:



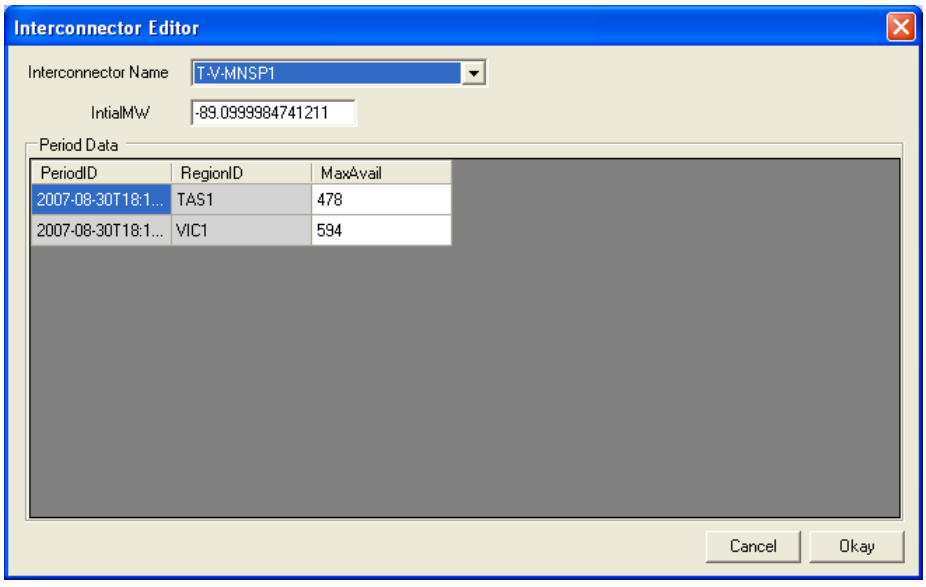
2. To modify trader initial MW's, select **Simple Trader Editor**. The following screen will be displayed:



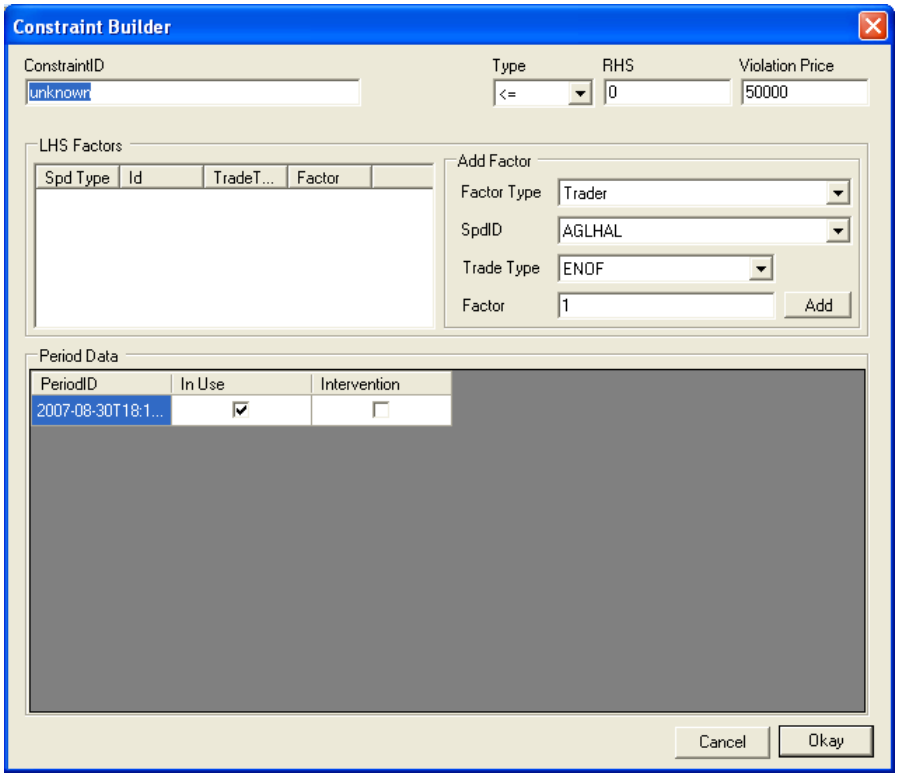
3. To modify region initial demands and demand forecasts, select **Region Editor**. The following screen will be displayed:



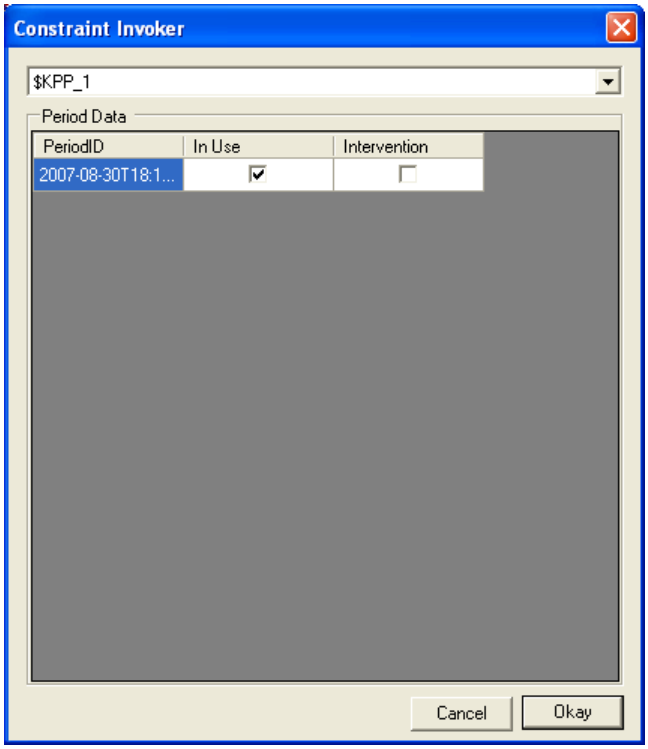
4. To modify interconnector initial MW's and maximum available MW's, select **Interconnector Editor**. The following screen will be displayed:



5. To create a constraint, select **Constraints -> Create Constraint**. The following screen will be displayed:



6. To invoke/revoke a constraint, select **Constraints -> Edit Constraint Invocation**. The following screen will be displayed:



6 When you have finished, click **Okay** and you will be prompted to save.

Select **Yes** and you will return to the main window.

7 To save the file, select **File -> Save As**.

8 At the **Save in** box, specify your Export\NEMDEQueue\Input directory.

Save the file with extension .xml as these files are processed by NEMDE Solver.

OR Choose another directory in which you want to store the file for zipping.

9 If you wish, zip the file that you have created, and, when ready to submit to NEMDEQueue, place the zip file in your Export\NEMDEQueue\Input\Zip directory.

NEMDEQueue uploads your ZIP or XML file for processing by the NEMDE Solver.

7. Reviewing Solutions

After processing your NEMDE Format File (zipped or not), you receive a zipped NEMDE Format File containing an Output Section and a Price Setting Section. It is placed in your Import\NEMDEQueue\Zip directory. You need to unzip the file before you can review the solution that the NEMDE Solver has created. You can temporarily store the unzipped files in the Import\NEMDEQueue\Output directory in the first instance, but you aren't constrained to do this and you can extract the files to any directory you like for viewing using the NEMDE Output File Viewer.

Since all files older than 24 hours are purged automatically from NemdeQueue directories, remember to save any useful files (e.g. log files) on your own systems.

7.1 Reviewing NEMDE Output files

You can use the **NEMDE Output File Viewer** to review the results of the NEMDSpdOutputs file produced by NEMDEQueue's Solver. The file name is like NemSpdOutputs_yyyymmddiiicc00.xml.

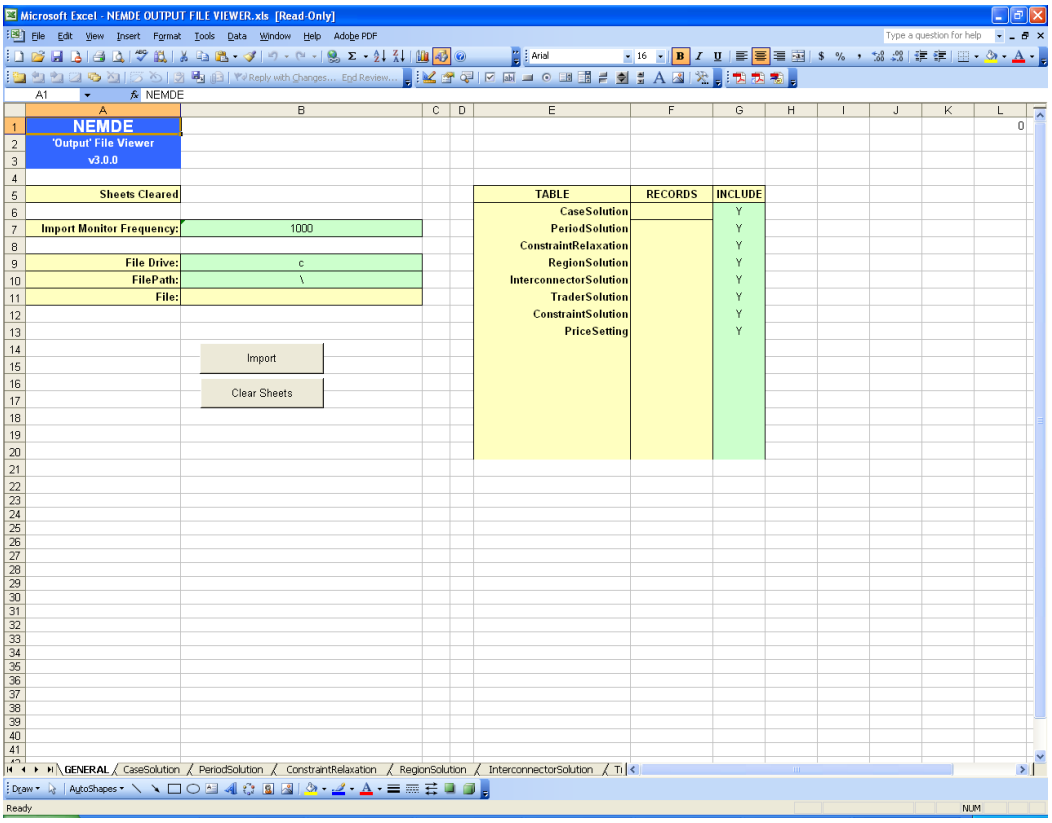
The **NEMDE Output File Viewer** is the same viewer as can be used for NEMDSpdOutputs files from Market Data and DVDs; they are all XML files despite the different suffixes (e.g. .loaded and .raw)

Before you start, you need to unzip any NEMDE Output zip files and store them either temporarily in your Import\NEMDEQueue\Output directory or (preferably) in some other local directory.

1 Start NEMDE Output File Viewer.

Ensure the Macro Security Level is set to a level which enables macros to be run. Enable macros if prompted.

You see a spreadsheet screen like this:



2 Click on Import.

The window called **Select the Loaded File to Import** displays.

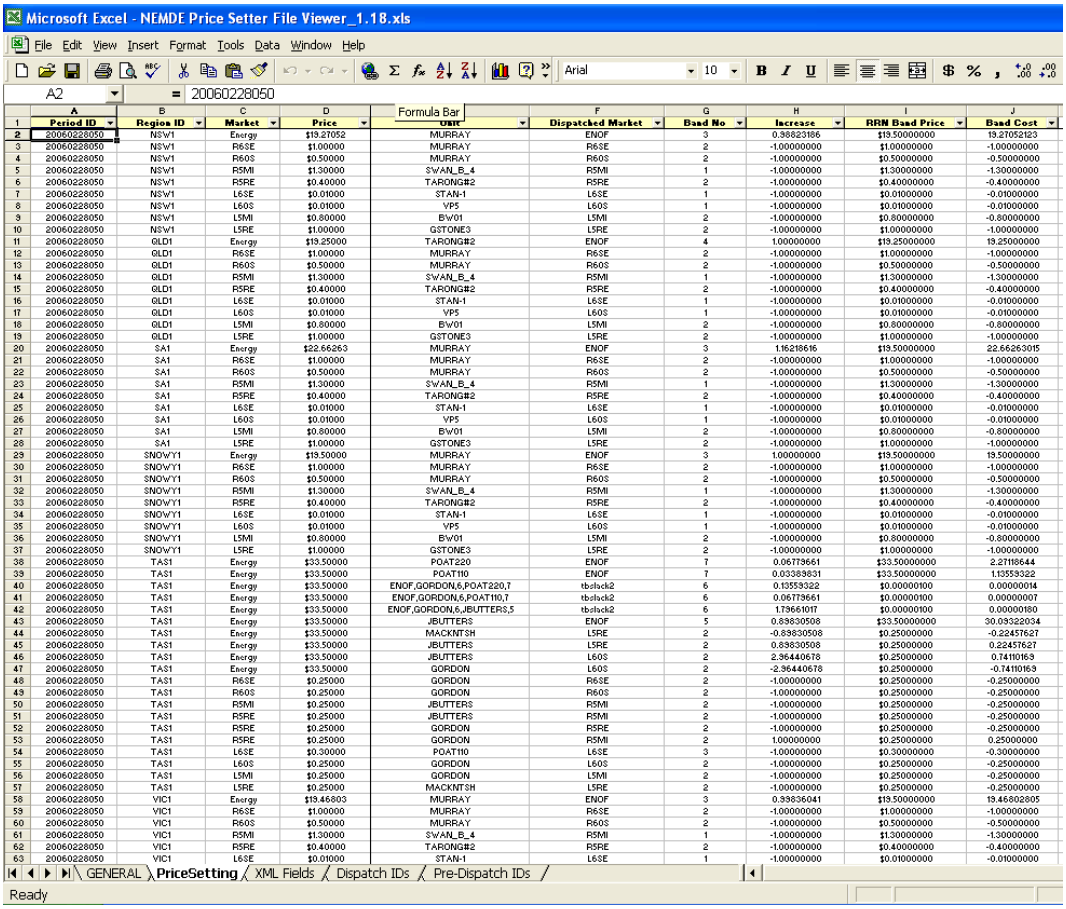
3 At the Files of type box:

- If you want to view a NEMDE Format File produced by NEMDEQueue, choose the (default) **XML Files (*.xml)** option.
- If you want to view a Production NEMDE Format File from Market Data area, choose **Loaded XML Files (*.loaded)** option
- Else, select the **All Files (*.*)** option.

4 Browse for and select the file that you want to look at, and click **Open**.

Now, you can review the data on the various worksheets listed at the bottom of the screen. The dispatch and pricing solution that NEMDE arrived at is displayed on the various Solution worksheets. There are brief descriptions of the different worksheets under the heading ‘Reading NEMDE Format File Output ’ on page 21.

On the PriceSetting worksheet, you can see which units contributed to the solution you have chosen and were involved in setting the relevant energy or FCAS price. It looks similar to this:



	A	B	C	D	E	F	G	H	I	J
1	Period ID	Region ID	Market	Price	DUID	Dispatched Market	Band No	Increase	RRN Band Price	Band Cost
2	20060228050	NSW1	Energy	$19.27052	MURRAY	ENOF	3	0.38823186	$19.50000000	19.27052123
3	20060228050	NSW1	R6SE	$1.00000	MURRAY	R6SE	2	-1.00000000	$1.00000000	-1.00000000
4	20060228050	NSW1	R60S	$0.50000	MURRAY	R60S	2	-1.00000000	$0.50000000	-0.50000000
5	20060228050	NSW1	R5MI	$1.30000	SWAN_B_4	R5MI	1	-1.00000000	$1.30000000	-1.30000000
6	20060228050	NSW1	R5RE	$0.40000	TARONG#2	R5RE	2	-1.00000000	$0.40000000	-0.40000000
7	20060228050	NSW1	L6SE	$0.01000	STAN-1	L6SE	1	-1.00000000	$0.01000000	-0.01000000
8	20060228050	NSW1	L60S	$0.01000	VP5	L60S	1	-1.00000000	$0.01000000	-0.01000000
9	20060228050	NSW1	L5MI	$0.80000	BW01	L5MI	2	-1.00000000	$0.80000000	-0.80000000
10	20060228050	NSW1	L5RE	$1.00000	GSTONE3	L5RE	2	-1.00000000	$1.00000000	-1.00000000
11	20060228050	QLD1	Energy	$19.25000	TARONG#2	ENOF	4	1.00000000	$19.25000000	19.25000000
12	20060228050	QLD1	R6SE	$1.00000	MURRAY	R6SE	2	-1.00000000	$1.00000000	-1.00000000
13	20060228050	QLD1	R60S	$0.50000	MURRAY	R60S	2	-1.00000000	$0.50000000	-0.50000000
14	20060228050	QLD1	R5MI	$1.30000	SWAN_B_4	R5MI	1	-1.00000000	$1.30000000	-1.30000000
15	20060228050	QLD1	R5RE	$0.40000	TARONG#2	R5RE	2	-1.00000000	$0.40000000	-0.40000000
16	20060228050	QLD1	L6SE	$0.01000	STAN-1	L6SE	1	-1.00000000	$0.01000000	-0.01000000
17	20060228050	QLD1	L60S	$0.01000	VP5	L60S	1	-1.00000000	$0.01000000	-0.01000000
18	20060228050	QLD1	L5MI	$0.80000	BW01	L5MI	2	-1.00000000	$0.80000000	-0.80000000
19	20060228050	QLD1	L5RE	$1.00000	GSTONE3	L5RE	2	-1.00000000	$1.00000000	-1.00000000
20	20060228050	SA1	Energy	$22.66263	MURRAY	ENOF	3	1.16218616	$19.50000000	22.66263015
21	20060228050	SA1	R6SE	$1.00000	MURRAY	R6SE	2	-1.00000000	$1.00000000	-1.00000000
22	20060228050	SA1	R60S	$0.50000	MURRAY	R60S	2	-1.00000000	$0.50000000	-0.50000000
23	20060228050	SA1	R5MI	$1.30000	SWAN_B_4	R5MI	1	-1.00000000	$1.30000000	-1.30000000
24	20060228050	SA1	R5RE	$0.40000	TARONG#2	R5RE	2	-1.00000000	$0.40000000	-0.40000000
25	20060228050	SA1	L6SE	$0.01000	STAN-1	L6SE	1	-1.00000000	$0.01000000	-0.01000000
26	20060228050	SA1	L60S	$0.01000	VP5	L60S	1	-1.00000000	$0.01000000	-0.01000000
27	20060228050	SA1	L5MI	$0.80000	BW01	L5MI	2	-1.00000000	$0.80000000	-0.80000000
28	20060228050	SA1	L5RE	$1.00000	GSTONE3	L5RE	2	-1.00000000	$1.00000000	-1.00000000
29	20060228050	SNOWY1	Energy	$19.50000	MURRAY	ENOF	3	1.00000000	$19.50000000	19.50000000
30	20060228050	SNOWY1	R6SE	$1.00000	MURRAY	R6SE	2	-1.00000000	$1.00000000	-1.00000000
31	20060228050	SNOWY1	R60S	$0.50000	MURRAY	R60S	2	-1.00000000	$0.50000000	-0.50000000
32	20060228050	SNOWY1	R5MI	$1.30000	SWAN_B_4	R5MI	1	-1.00000000	$1.30000000	-1.30000000
33	20060228050	SNOWY1	R5RE	$0.40000	TARONG#2	R5RE	2	-1.00000000	$0.40000000	-0.40000000
34	20060228050	SNOWY1	L6SE	$0.01000	STAN-1	L6SE	1	-1.00000000	$0.01000000	-0.01000000
35	20060228050	SNOWY1	L60S	$0.01000	VP5	L60S	1	-1.00000000	$0.01000000	-0.01000000
36	20060228050	SNOWY1	L5MI	$0.80000	BW01	L5MI	2	-1.00000000	$0.80000000	-0.80000000
37	20060228050	SNOWY1	L5RE	$1.00000	GSTONE3	L5RE	2	-1.00000000	$1.00000000	-1.00000000
38	20060228050	TAS1	Energy	$33.50000	POAT220	ENOF	7	0.06773661	$33.50000000	2.27118644
39	20060228050	TAS1	Energy	$33.50000	POAT110	ENOF	7	0.03383831	$33.50000000	1.13553322
40	20060228050	TAS1	Energy	$33.50000	ENOF,GORDON,6,POAT220,7	tbsllsck2	6	0.13553322	$0.00000100	0.00000014
41	20060228050	TAS1	Energy	$33.50000	ENOF,GORDON,6,POAT110,7	tbsllsck2	6	0.06773661	$0.00000100	0.00000007
42	20060228050	TAS1	Energy	$33.50000	ENOF,GORDON,6,JBUTTERS,5	tbsllsck2	6	1.73661017	$0.00000100	0.00000180
43	20060228050	TAS1	Energy	$33.50000	JBUTTERS	ENOF	5	0.89830508	$33.50000000	30.09322034
44	20060228050	TAS1	Energy	$33.50000	MACKNTSH	L5RE	2	-0.89830508	$0.25000000	-0.22457627
45	20060228050	TAS1	Energy	$33.50000	JBUTTERS	L5RE	2	0.89830508	$0.25000000	0.22457627
46	20060228050	TAS1	Energy	$33.50000	JBUTTERS	L60S	2	2.36440678	$0.25000000	0.74110169
47	20060228050	TAS1	Energy	$33.50000	GORDON	L60S	2	-2.36440678	$0.25000000	-0.74110169
48	20060228050	TAS1	R6SE	$0.25000	GORDON	R6SE	2	-1.00000000	$0.25000000	-0.25000000
49	20060228050	TAS1	R60S	$0.25000	GORDON	R60S	2	-1.00000000	$0.25000000	-0.25000000
50	20060228050	TAS1	R5MI	$0.25000	JBUTTERS	R5MI	2	-1.00000000	$0.25000000	-0.25000000
51	20060228050	TAS1	R5RE	$0.25000	JBUTTERS	R5MI	2	-1.00000000	$0.25000000	-0.25000000
52	20060228050	TAS1	R5RE	$0.25000	GORDON	R5RE	2	-1.00000000	$0.25000000	-0.25000000
53	20060228050	TAS1	R5RE	$0.25000	GORDON	R5MI	2	1.00000000	$0.25000000	0.25000000
54	20060228050	TAS1	L6SE	$0.30000	POAT110	L6SE	3	-1.00000000	$0.30000000	-0.30000000
55	20060228050	TAS1	L60S	$0.25000	GORDON	L60S	2	-1.00000000	$0.25000000	-0.25000000
56	20060228050	TAS1	L5MI	$0.25000	GORDON	L5MI	2	-1.00000000	$0.25000000	-0.25000000
57	20060228050	TAS1	L5RE	$0.25000	MACKNTSH	L5RE	2	-1.00000000	$0.25000000	-0.25000000
58	20060228050	VIC1	Energy	$19.46803	MURRAY	ENOF	3	0.39836041	$19.50000000	19.46802805
59	20060228050	VIC1	R6SE	$1.00000	MURRAY	R6SE	2	-1.00000000	$1.00000000	-1.00000000
60	20060228050	VIC1	R60S	$0.50000	MURRAY	R60S	2	-1.00000000	$0.50000000	-0.50000000
61	20060228050	VIC1	R5MI	$1.30000	SWAN_B_4	R5MI	1	-1.00000000	$1.30000000	-1.30000000
62	20060228050	VIC1	R5RE	$0.40000	TARONG#2	R5RE	2	-1.00000000	$0.40000000	-0.40000000
63	20060228050	VIC1	L6SE	$0.01000	STAN-1	L6SE	1	-1.00000000	$0.01000000	-0.01000000

When you have finished, you can clear the data from the worksheets (click **Clear Sheets**) and import another file.

8. Reading NEMDE Format files

8.1 Reading NEMDE Format File Input Sections

The following NEMDE Input Section data is used by the NEMDE Solver to produce NEMDE dispatch pricing solutions. AEMO publishes this NEMDE Format File information to the Production “Market Data” directory each day at 4am covering all the dispatch intervals of the previous 24 hours (trading day) up to 4am EST. Separate NEMDE Format Files are published for each of the 288 five-minute dispatch intervals during that 24 hour period.

The NEMDE Format Files from the “Market Data” directory are of the form NemSpdOutputs_yyyymmddiiirr_XXX.xml in the zipped file NemSpdOutputs_yyyymmdd_xml.zip. If the run is not a re-run, the “_XXX” is omitted. For a binding network constraint, the “_XXX” is “_BNC”. For an over-constrained dispatch re-run, the “_XXX” is “_OCD”.

Any NEMDE Format File that you open using the NEMDE Input File Editor also includes this information. You can make changes to the information provided in order to create your own scenarios, submit them to NEMDEQueue’s NEMDE Solver, and then see the results using the NEMDE Output File Viewer.

CASE	DESCRIBES THE CASE TO BE SOLVED.
RegionCollection	Definitions of regions and data used to compute each region’s energy demand forecast.
ConstraintScadaDataCollection	SCADA information for constraints.
TraderCollection	Details of dispatchable unit parameters that are not time-based, including fast start inflexibility profile parameters and real-time SCADA initial conditions.
GenericEquationCollection	Each generic equation for a subset of time intervals.
PeriodCollection	Time based information for regions, traders, constraints, interconnectors etc.
InterconnectorCollection	Definitions of interconnectors, including whether interconnector is regulated or MNSP.
GenericConstraintCollection	Each generic constraint for a subset of time intervals.

8.2 Reading NEMDE Format File Output Sections

When the NEMDE Solver has processed your NEMDE Format File, you see the following solution data for the particular interval.

CaseSolution	Case-based Solution status, intervention status, VoLL, NPL status, Dispatch Objective Value and violation data.
PeriodSolution	Period-based Intervention, Dispatch Objective Value, Solver status, NPL status and violation data.
RegionSolution	Period-based solution data for each region, including energy price, dispatched generation, dispatched load, fixed demand, net export, surplus generation, aggregate dispatch error, demand forecast, available generation, available load, initial demand and cleared demand.
InterconnectorSolution	Period-based solution data for each interconnector, including cleared flow, cleared losses, flow limit deficit, flow limit price, metered flow, MNSP, flow ramp deficit and flow ramp price, import limit, export limit, marginal interregional loss factor, ideal losses, and whether non-physical losses (NPL) occurred.
TraderSolution	Period-based solution data for each trader (dispatchable unit),

	including energy and FCAS targets, fast start mode target, unit trapped/stranded flags, marginal prices and violations for unit FCAS and unit ramp rate constraints.
ConstraintSolution	Period-based solution data for each generic constraint (all interconnector constraints plus any other binding constraints), Includes calculated constraint right-hand side constraint marginal value and violation of constraint RHS .

For more details on the fields in these groups, refer to the *NEMDE Output File Description* document.

8.3 Reading NEMDE Format File Price Setting Sections

The NEMDE Format File Price Setting Section attempts to identify the marginal unit setting the energy and each of the FCAS prices based on some analysis of the solution returned from NEMDE for the final LP solve that is published to the market. It is recognised that the analytical method used does not always show a single or even a group of units setting the price.

The market price setter data is presented in terms of marginal band cost contributions, being the marginal band dispatch from dispatchable unit bands required to meet that particular market's demand at the associated marginal band price (as referred to their regional reference node).

The information is as follows:

Period ID	The five-minute period for which data is displayed in the other columns.
Region ID	The ID of the region for which data is displayed in the other columns.
Market	The market the unit is trading into.
Price	The market price in $/MWh.
Unit	For trade band variables, this is the unit that the trade band belongs to. For MNSP band variables it is the name of the interconnector and the region that the band belongs to. For tbslack1 and tbslack 2 variables it is a representation of the priced-tied trade bands. For generic constraint deficit and surplus variables it is the constraint name. For deficit product and surplus generation variables you will see the name of the region and market.
DispatchedMarket	For trade band variables, this is the market that the trade band is for. For MNSP band variables it is the ENOF. For all other variables, it is the name of the variable.
BandNo	For trade band or MNSP band variables this is the band number.

	For all other variables it is blank.
Increase	An amount in MW, rounded to eight decimal places. For the Energy market, this is the marginal increase in band dispatch or constraint violation for a marginal 1MW increase in the energy demand for this region and market. For any FCAS market, this is the marginal decrease in band dispatch or constraint violation for a marginal 1MW decrease in the FCAS demand for this region and market. If the price-setting energy bands or energy-violations belong to a different region, the amount of increase may also take into account inter-regional losses.
RRNBandPrice	An amount in $/MWh, rounded to eight decimal places. For energy and FCAS bands, this is the band prices, as referred to its RRN. For all other variables this is the constraint violation penalty (CVP) price.
BandCost	An amount in $/hour, rounded to eight decimal places. It is the “Increase” figure multiplied by the RRN band price.

For more detailed information, refer to the *NEMDE Price Setter File Description* and the *Publication of Price Setter Data – Business Specification,* both published by AEMO.

8.4 Other information

The NEMDE Output File Viewer spreadsheet includes three worksheets at the end to help with reading the data:

XML Fields	Explains which worksheets include the specified XML fields.
Dispatch IDs	Explains which five-minute interval each Dispatch ID relates to.
Pre-Dispatch IDs	Explains which 30-minute interval each Predispatch ID relates to and which two-hour interval each STPASA ID relates to.

9. File naming conventions

Usually, when you create a scenario, you start with an existing Production market data NEMDE Format File as a template and edit some of the details in it to suit your needs. You can then save your file and call it anything you like – you don’t need to follow the naming conventions of the market data files or the NEMDEQueue files, though you do need to ensure that your files have the “.xml” extension. NEMDE Format Files returned from the NEMDE Solver are automatically named according to established convention.

9.1.1 NEMDE Format Files

FILENAMES FOLLOW THIS CONVENTION	
	NemSpdOutputs_yyyymmddiiicc00
where	iii represents the five-minute interval number, and

	cc represents the Case ID.

NEMDE Format File filenames may also end in '_BNC' or '_OCD' if they relate to binding network constraints (BNC) or over-constrained dispatch (OCD) re-runs.

10. Archive and Log files

10.1 Archive files

After you submit NEMDE Format Files for NEMDEQueue to process, copies of these files are automatically placed in your NEMDEQueue\Archive directory once processed. These are created so that you have backup copies of the originals to refer to if necessary. You may, for example, have edited a file submitted to the \Input directory but later want to refer to the original data again.

10.2 Log files

As NEMDE processes your submitted NEMDE Format Files and arrives at a solution, it keeps a real-time log of actions taken. This log file is sent to your Log directory so that, if you wish, you can follow the tasks undertaken to reach the solution. You can open the file in any text editor such as Notepad.

The log can be particularly useful if a process fails and you want to establish why.

10.3 File Retention

All files in NEMDEQueue directories older than 24 hours are automatically deleted. If you want to keep copies of any files, including Archive and Log files, remove or copy the files from AEMO's NEMDEQueue directories within 24 hours.