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NemSight® User Guide

Spot Market Analysis for the Australian Energy Markets

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modelling, software and audits for electricity markets

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NemSight®

NemSight is a spot market surveillance and analysis tool designed for the Australian Energy markets

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NemSight®

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Part 1

NemSight® User Guide

Introduction

Welcome to the NemSight® User's Guide

NemSight is a spot market surveillance and analysis tool designed for the energy market in Australia. There are various editions available with included modules as follows:

Module	Electricity				Gas				Enterprise
	Lite	Standard	Historical	Premium	Lite	Standard	Historical	Premium	Enterprise
Price Bar	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dashboards	Y	Y	Y	Y	Y	Y	Y	Y	Y
Live Reports	Y	Y		Y	Y	Y		Y	Y

Module	Electricity				Gas				Enterprise
	Lite	Standard	Historical	Premium	Lite	Standard	Historical	Premium	Enterprise
Live Charts	Y	Y		Y					Y
Live Maps: Energy, Electricity, FCAS	Y	Y		Y	Y	Y		Y	Y
Live Maps: Weather				Y				Y	Y
Live Maps: RoofTop PV									Y*
Time Machine: Electricity, FCAS		Y	Y	Y		Y	Y	Y	Y
Time Machine: Weather		Y	Y	Y			Y	Y	Y
Time Machine: Dispatchable Units		Y	Y	Y			Y	Y	Y
Time Machine: Gas						Y	Y	Y	Y
Regional Statistics		Y	Y	Y		Y	Y	Y	Y
Live Generation				Y					Y
Live Network				Y					Y
Constraints				Y					Y
PASA Delta, MTPASA DUID Availability				Y					Y
Rebidding			Y	Y				Y	Y
Price Setters			Y	Y				Y	Y
Generation Statistics			Y	Y				Y	Y
DUID Details	Y	Y	Y	Y	Y	Y	Y	Y	Y
Live Gas Overview, Live Gas					Y	Y		Y	Y

Module	Electricity				Gas				Enterprise
	Lite	Standard	Historical	Premium	Lite	Standard	Historical	Premium	Enterprise
Network, Gas Bidstack									
Mobile & Email Alerts				Y				Y	Y
Forward Prices				Y					Y
NemSight Mobile				Y				Y	Y
Rooftop PV				Y*				Y*	Y*

Y* : Module available with additional cost

NemSight displays data extracted from data files published by AEMO. Please note AEMO's disclaimer regarding the source data files: "This data is provided for information only and is not intended for commercial use. AEMO does not guarantee the accuracy of the data or its availability at all times."

The weather data and dam level data presented by NemSight is sourced from the Bureau of Meteorology with their permission. Please see their disclaimer for use of this data http://www.bom.gov.au/other/disclaimer.shtml

To contact EnergyOne please log a ticket via the Energy One Jira Customer Service Portal or ring the help desk number on 1300 997 287 within Australia or +61 2 8916 2203 outside Australia. Energy One's Jira Customer Service Portal allows users to self-register.

Copies of our Privacy Policy and End User Licence Agreement can be found on our website.

www.analytics.com.au/PrivacyPolicy.pdf

www.analytics.com.au/NemSightEULA.pdf

1.1 Installation

Installing NemSight

Download the latest version from our website: https://download.nemsight.com.au/

Starting NemSight for the first time

Please start NemSight from the desktop shortcut or the Windows Start menu (Start > All Programs > Creative Analytics > NemSight).

Please see Login for more information about the initial user registration process.

Running the setup will install the NemSight executable file, a help file, and a collection of supporting data and audio files.

Information for IT staff

Companies wanting to build automated installers can supply parameters on the command line as follows:

```
nemsight.msi /quiet INSTALLDIR="C:\NemSight" COMPANYNAME="ABC Energy"
PIDKEY="123456-123456"
```

If an executable must be run, then the command line can be prefixed as follows:

```
msiexec /I nemsight.msi /quiet etc
```

Troubleshooting
Please check the details mentioned under Connection and Performance section for troubleshooting the issues.

1.2 Login

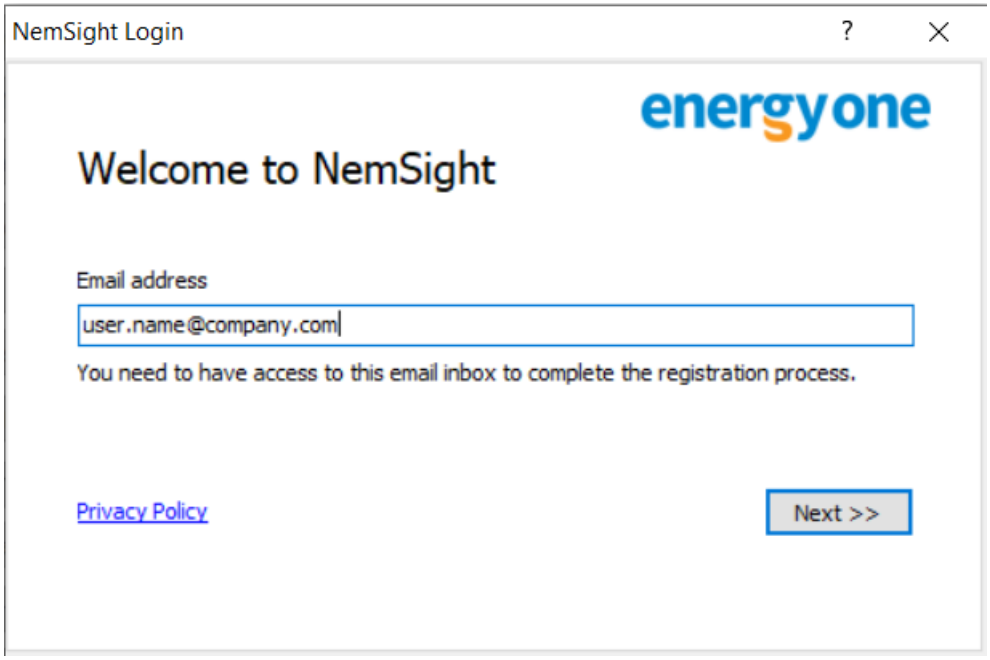
Login

When starting NemSight for the first time, NemSight will request your name, email address and optionally your mobile phone number. This registers you as a user with our servers allowing you to receive email alerts, and optionally SMS alerts, even when NemSight is not running.

New users to NemSight will need to complete the following 3 steps for registration. If you are an existent user of NemSight but installing it on a new machine, you will be required to complete Steps 1 and 3.

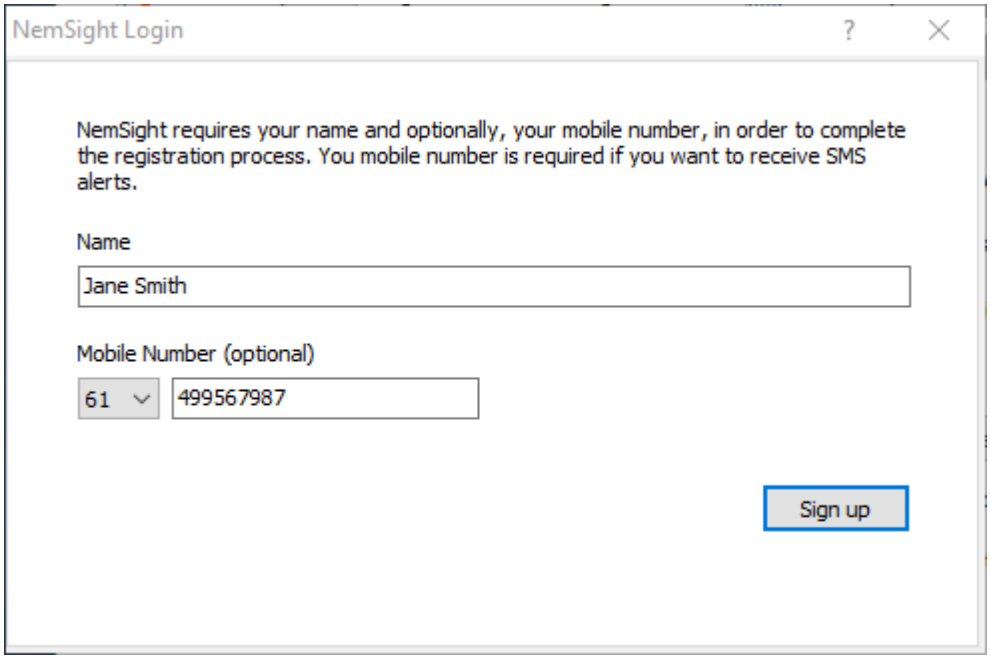
Step 1:

Whether you are a new or existent NemSight user, please enter your email address and click Next.

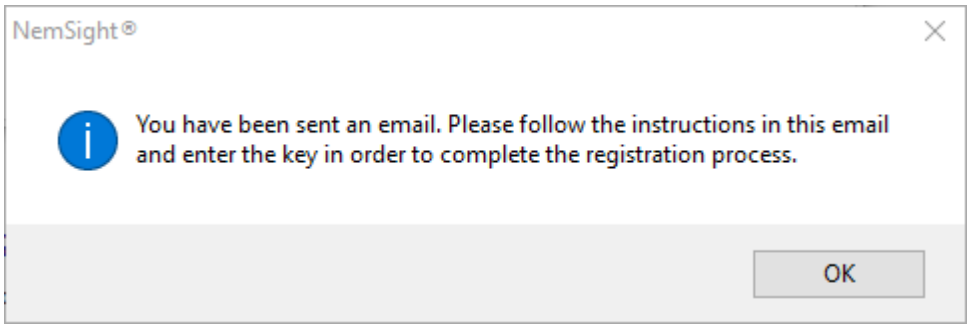


Step 2:

If you are a new user the following window will appear requesting your name and (optionally) your mobile number.

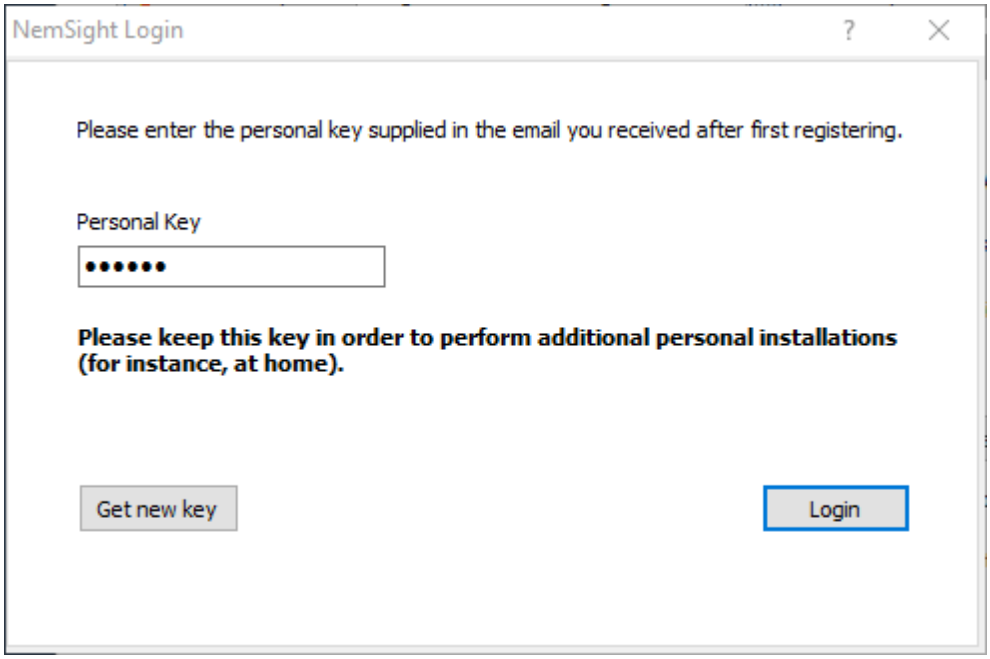


Upon clicking "Sign Up" the following window will appear.



Step 3:

Please check your emails to obtain your Personal Key. Please record your Personal Key for future personal installations of NemSight (for example if you wish to install it on your home computer).



If you are an existent user and are installing a new instance of NemSight, please type in the Personal Key you were provided during your initial installation. If you have lost your personal key, please click "Get new key" and a new Personal Key will be sent to your registered email address. Note that this is effectively a reset of the Personal Key and the new key will then need to be entered for any other instances of NemSight accessed by that user.

Changing User:

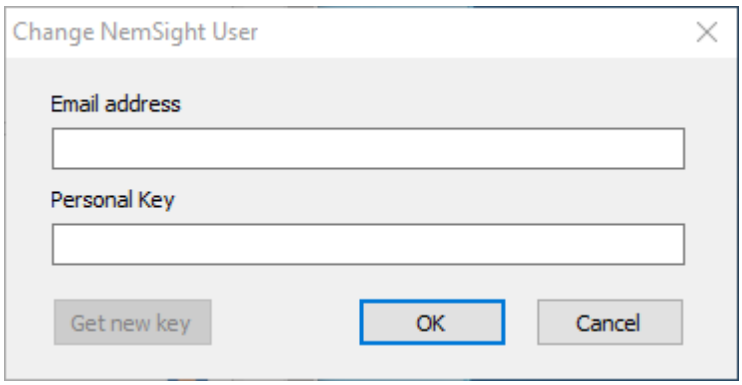
To change the user currently logged into NemSight:

Step 1:

On the Overview tab of the NemSight Configuration dialog, click on the displayed name of the current user, which sits to the immediate right of the test "Welcome to NemSight".

Step 2:

The following dialog will appear. Enter email address of user logging in. If existing user, enter Personal Key. If new user or have forgotten Personal Key, click **Get new key**. As detailed above, the key will be emailed to the user, verifying the entered email address. Enter the key and click OK to complete the login.



1.3 System Requirements

System Requirements

NemSight is available as a 64 bit desktop application designed for windows 10. It is a client application and should be installed on each user's PC.

Processor	Recent (Last 3 years) Intel or compatible processor
Memory	4 GB minimum, 8 GB recommended
Disk Space	10 GB free disk space A solid-state disk will improve performance
Operating System	Windows 7 (no longer supported) Windows 8.1 Windows 10
Architecture	Windows 64 bit
Screen Resolution	1280 by 1024 recommended minimum

Regional Settings and Date Formats

We have made every effort to ensure that NemSight works with various Windows regional date formats, but cannot test all formats. English(Australia) has been thoroughly tested, while English(United States) and English(Singapore) have been tested to some extent.

Filesystem Permissions

Permission **must** be granted to allow the Windows user to create folders and files and update files in the user's Local profile area, specifically AppData\Local\Creative Analytics\NemSight.

Anti-virus Software

Some anti-virus software has been known to interfere with the operation of NemSight by temporarily locking or blocking access to downloaded files. NemSight frequently downloads data from the Internet in the form of zip files, text files and other data. We recommend that the following folders be added to the trusted/allowed/exclusion list in anti-virus software:

- User specific settings folder: AppData\Local\Creative Analytics\NemSight
- Public documents market data download location: <Public>\Documents\NemSight

Firewalls

NemSight relies heavily on web file downloads from the Internet from NemSight and other servers. NemSight **must** be permitted to download files. See the URL/host list in the Connection and Performance section if you need to whitelist specific sites.

1.4 Data Glossary

Glossary

NemSight primarily displays data from the wholesale electricity market but also includes gas and weather data. The Australian Energy Market Operator, AEMO operate the NEM electricity market, and the STTM and VIC gas markets.

Electricity Market Terms

Name	Description
NEM	The National Electricity Market covering Queensland, New South Wales, Victoria, South Australia and Tasmania
DUID	The unique code for a generating unit, or more specifically a Dispatchable Unit Identifier
Trading Period	The period used for settlement purposes. This is 30 minutes before the Five Minute Settlements transition date (01/10/2021) and 5 minutes starting on the transition date
Dispatch Period	The 5 minute period used for dispatching generators and establishing the spot price
AEMO Settlement Calendar	Defines billing weeks for NEM Settlements. Weeks run from Sunday to Saturday. Week 1 always includes Jan 1st so will usually commence in December.
Rooftop PV	Photovoltaic (solar) generation within the distribution network. This is typically installed in small capacities on residential, commercial and industrial rooftops. Also see Rooftop PV Data.

VIC Gas Market Terms

Name	Description
6:00am Schedule	The BOD (beginning-of-day) schedule (the gas day runs from 6am to 6am).
10:00am Schedule	Variations to the 6:00am schedule
2:00pm Schedule	Variations to the 10:00am schedule
6:00pm Schedule	Variations to the 2:00pm schedule
10:00pm Schedule	Variations to the 6:00pm schedule
D-1 Schedule	The Provisional schedule that is released one day in advance
D-2 Schedule	The Provisional schedule that is released two days in advance
Culcairn	The Culcairn node
IONA	The IONA node
VIC	The VIC node
SEAGas	The SEAGas node
Longford	The Longford node, the primary supply point in the VIC gas market

Name	Description
LNG	The LNG node
Bassgas	The Bassgas node
Otway	The Otway node
Mortlake	The Mortlake node
DTS	Declared transmission system, the network of pipes in the VIC Gas market
MS	Market schedule, used to determine prices
OS	Operating schedule, used to determine injections and withdrawals

For more information please search for "Technical Guide to the Victorian Gas Wholesale Market" on AEMO's web site.

STTM Gas Market Terms

Name	Description
STTM	The gas market for South Australia, New South Wales and Queensland regions
Ex-ante (D-1)	The formal market schedule that is released mid afternoon for the next day
D-2	The Provisional schedule that is released two days in advance
D-3	The Provisional schedule that is released three days in advance
RBP	Roma to Brisbane Pipeline
EGP	Eastern gas pipeline
MSP	Moomba to Sydney pipeline
ROS	Rosalind Park Production Facility, Sydney Gas
MAP	Moomba to Adelaide pipeline
SEAGAS	Adelaide to Port Campbell pipeline
NETBRI1	Withdrawals at the Brisbane hub
NETSYD1	Withdrawals at the Sydney hub
NETADL1	Withdrawals at the Adelaide hub

For more information:
http://www.aemo.com.au/media/Files/Other/STTM/1130-0679%20pdf.pdf

Gas Bulletin Board Codes

Capacity Abbreviations

Name	Description
MDQ	Daily maximum firm capacity (name plate) under the expected operating conditions adjusted for any plant that is decommissioned, down-rated or cannot be recalled within 1 week, planned maintenance excepted Based on the Flow direction this column may be named as MDQ DELIVERY (A flow of gas out of the BB facility) or MDQ RECEIPT (A flow of gas into the BB facility) or just MDQ if the Flow direction is not indicated
STORAGE	Holding capacity in storage

Nomination Forecast

Name	Description
Forecast DELIVERY	Aggregated scheduled flow out of each connection point for the given Pipeline
Forecast RECEIPT	Aggregated scheduled flow into each connection point for the given Pipeline
Forecast	Aggregated flow In/Out of the Facility/Storage

For more information refer to AEMO's Guide to National Gas Bulletin Board

1.4.1 Electricity

Electricity Data

NemSight uses the following data from the MMS files published by AEMO. Most of the AEMO values come from inputs and outputs of the NEMDE (the NEM dispatch engine).

* The values highlighted with an asterisk are the only values available historically.

Dispatch Regional Data

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Price *	PRICE RRP	The regional reference price for the region
ROP	PRICE ROP	The Regional Override Price, being the original price prior to any price scaling, price capping or override being applied.
Cumulative Price	PRICE CUMUL_PRE_AP_ENERGY_PRICE	Cumulative price that triggers administered pricing event if above the threshold
Trading	TRADINGPRICE	Trading Price is the interval level settlement price paid to

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Price		generators and paid by retailers.
Scheduled Demand *	REGIONSUM TOTALDEMAND	This is the demand used to dispatch scheduled generators in the NEM. Sum of cleared scheduled generation and imported generation (at the region boundary). See next table for what's included.
Estimated Demand	REGIONSUM DEMAND_AND_NONSCHEDGEN	This value appears to be native demand less exempt generation according to the table below. In spite of the field name this value is close but not exactly Scheduled Demand plus Non-scheduled Generation.
Operational Demand		Operational Demand refers to demand for a region that is met by local scheduled generating units, semi-scheduled generating units, and non-scheduled intermittent generating units of aggregate capacity ≥ 30 MW, and by generation imports to the region and by Wholesale Demand Response
Native Demand	Not available	This value is not available because there are many small off-market generators including solar which are not published by AEMO or publicly available.
Generation *	REGIONSUM DISPATCHABLEGENERATION	Dispatched Generation (includes semi-scheduled generation but does not include non-scheduled generation)
Availability *	REGIONSUM AVAILABLEGENERATION	Aggregate generation bid available in region
Net Export	REGIONSUM NETINTERCHANGE	The net inter-connector flow from the regional reference node
Semi-scheduled	REGIONSUM SEMISCHEDULE_CLEAREDMW	Regional aggregated Semi-Schedule generator Cleared MW
Non-scheduled *	REGIONSUM TOTALINTERMITTENTGENERATION	This is a poorly named field and is the Non-scheduled Generation that AEMO collect for dispatch purposes.

The AEMO document "Demand Terms in EMMS Data Model" version 7.0 dated 6 September 2016 describes the contents of the two following AEMO fields in Table 2 'Components of EMMS Data Model Terms published by AEMO'

AEMO Dispatch Field	TOTALDEMAND	DEMAND_AND_NONSCHEDGEN
NemSight Variable	**Scheduled Demand**	**Estimated Demand**
Scheduled Generation	✓	✓
Semi-scheduled Generation	✓	✓

AEMO Dispatch Field	TOTALDEMAND	DEMAND_AND_NONSCHEDGEN
Non-scheduled Generation (Wind/Solar >= 30MW)	×	✓
Non-scheduled Generation (Non-wind/Non-solar or Wind/Solar < 30MW)	×	✓
Exempt Generation	×	×
Scheduled Loads	×	✓
Interconnector Import at RRN	✓	✓
Interconnector Losses	×	✓
Aggregate Dispatch Error	✓	✓

SCADA Generation / Dispatch Unit Data

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Generation *	DISPATCH_UNIT_SCADA SCADAVALUE	Instantanous MW reading from SCADA at the start of the Dispatch interval. Note that while it may be close, it is not the average of the energy generated over the Dispatch interval.
Initial MW *	METERDATA_GEN_DUID MWH_READING or DISPATCH_UNIT_SCADA SCADAVALUE	The Initial MW value uses a combination of source tables depending on the availability of the data. The primary source is the METERDATA_GEN_DUID table. If data for the DUID is not present then the value is sourced from the DISPATCH_UNIT_SCADA. The values displayed in the NemSight are rounded to the nearest whole number.

Dispatch Interconnector Data

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Target Flow	INTERCONNECTORRES MWFLOW	The target flow for the current dispatch interval
Initial Metered Flow *	INTERCONNECTORRES METEREDMWFLOW	The metered flow from Scada at the start of the dispatch interval
Losses	INTERCONNECTORRES	The calculated losses in MW for the dispatch interval

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
	MWLOSSES	
Import Limit *	INTERCONNECTORRES IMPORTLIMIT	The calculated import limit for energy (not including FCAS)
Export Limit *	INTERCONNECTORRES EXPORTLIMIT	The calculated export limit for energy (not including FCAS)

Dispatch Constraint Data

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Marginal Value *	CONSTRAINT MARGINALVALUE	The marginal value of the constraint, assuming it is binding ($/MWh)
Constraint RHS *	CONSTRAINT RHS	The RHS side value (maybe calculated from the dynamic RHS model) (MW)
Constraint LHS	CONSTRAINT LHS	Aggregation of the constraints LHS term solution values (MW)
Violation Degree	CONSTRAINT VIOLATIONDEGREE	The degree to which the constraint is violating the RHS limit (MW)

STPASA Regional Data (for a RUNTYPE of LOR; updated every 2 hours)

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
10 POE Demand	REGIONSOLUTION DEMAND10	The 10th percentile probability of exceedence demand
50 POE Demand	REGIONSOLUTION DEMAND50	The 50th percentile probability of exceedence demand
90 POE Demand	REGIONSOLUTION DEMAND90	The 90th percentile probability of exceedence demand
Availability	REGIONSOLUTION AGGREGATECAPACITYAVAILABLE	Sum of MAXAVAIL quantities offered by all Scheduled Generators
PASA Availability	REGIONSOLUTION AGGREGATEPASAAVAILABILITY	Sum of PASAAVAILABILITY quantities offered by all Scheduled Generators (the physical plant capability (MW) including any capability potentially available within 24 hours)
Surplus Reserve	REGIONSOLUTION SURPLUSRESERVE	Regional reserve surplus
Constrained	REGIONSOLUTION	Regional energy constrained capacity subject to energy

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Capacity	CONSTRAINEDCAPACITY	and network security constraints
Unconstrained Capacity	REGIONSOLUTIONUNCONSTRAINEDCAPACITY	Regional energy unconstrained capacity subject to energy and network security constraints
Semi-scheduled	REGIONSOLUTIONLOR_SEMISCHEDULEDCAPACITY	The 50th percentile probability of exceedence regional aggregated Unconstrained Intermittent Generation Forecast of Semi-scheduled generation
Non-scheduled	REGIONSOLUTIONTOTALINTERMITTENTGENERATION	Allowance made for non-scheduled generation in the demand forecast

STPASA Interconnector Data (for a RUNTYPE of LOR in live Charts and LOR in all other screens; updated every 2 hours)

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Target Flow	INTERCONNECTORSOLNCAPACITYMWFLOW	Interconnector loading level (MW) that can be reached in case of capacity scarcity in neighboring regions subject to network and energy constraints
Import Limit	INTERCONNECTORSOLNCALCULATEDIMPORTLIMIT	Calculated Interconnector limit of importing energy on the basis of invoked constraints and static interconnector import limit. Note unlike the input interconnector import limit this is a directional quantity and should be defined with respect to the interconnector flow.
Export Limit	INTERCONNECTORSOLNCALCULATEDEXPORTLIMIT	Calculated Interconnector limit of exporting energy on the basis of invoked constraints and static interconnector export limit

STPASA Constraint Data (for a RUNTYPE of LOR; updated every 2 hours)

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Value/MV	CONSTRAINTSOLUTIONCAPACITYMARGINALVALUE	Capacity adequacy assessment marginal value, 0 if not binding
Limit/RHS	CONSTRAINTSOLUTIONCAPACITYRHS	The RHS value in the capacity evaluation

MTPASA Data (updated weekly)

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Demand	REGIONRESULT DEMAND	Demand value from selected half hourly interval (MW)
Aggregate Installed Capacity	REGIONRESULT AGGREGATEINSTALLEDCAPACITY	The total installed capacity of all generation (MW)
Total Scheduled Gen 10	REGIONRESULT TOTALSCHEDULEDGEN10	The 10th percentile for scheduled generation across iterations and reference years (MW)
'Total Scheduled Gen 50	REGIONRESULT TOTALSCHEDULEDGEN50	The 50th percentile for scheduled generation across iterations and reference years (MW)
'Total Scheduled Gen 90	REGIONRESULT TOTALSCHEDULEDGEN90	The 90th percentile for scheduled generation across iterations and reference years (MW)
Total Semi-scheduled Gen 10	REGIONRESULT	The 10th percentile for scheduled generation across iterations and reference years (MW)
Total Semi-scheduled Gen 50	REGIONRESULT	The 50th percentile for scheduled generation across iterations and reference years (MW)
Total Semi-scheduled Gen 90	REGIONRESULT	The 90th percentile for scheduled generation across iterations and reference years (MW)
Total Intermittent Gen 10	REGIONRESULT TOTALINTERMITTENTGEN10	The 10th percentile for intermittent generation, across iterations and reference years (MW)
Total Intermittent Gen 50	REGIONRESULT TOTALINTERMITTENTGEN50	The 50th percentile for intermittent generation, across iterations and reference years (MW)
Total Intermittent Gen 90	REGIONRESULT TOTALINTERMITTENTGEN90	The 90th percentile for intermittent generation, across iterations and reference years (MW)
Demandside Participation 10	REGIONRESULT DEMANDSIDEPARTICIPATION10	The 10th percentile for demand side participation, across iterations and reference years (MW)
Demandside Participation 50	REGIONRESULT DEMANDSIDEPARTICIPATION50	The 50th percentile for demand side participation, across iterations and reference years (MW)
Demandside Participation 90	REGIONRESULT DEMANDSIDEPARTICIPATION90	The 90th percentile for demand side participation, across iterations and reference years (MW)
USE Max	REGIONRESULT USE_MAX	Maximum unserved energy, across iterations and reference years (MW)

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
USE Upper Quartile	REGIONRESULT USE_UPPERQUARTILE	Upper quartile unserved energy, across iterations and reference years (MW)
USE Median	REGIONRESULT USE_MEDIAN	Median unserved energy, across iterations and reference years (MW)
USE Lower Quartile	REGIONRESULT USE_LOWERQUARTILE	Lower quartile unserved energy, across iterations and reference years (MW)
USE Min	REGIONRESULT USE_MIN	Minimum unserved energy, across iterations and reference years (MW)
USE Average	REGIONRESULT USE_AVERAGE	Average unserved energy, across iterations and reference years (MW)
USE Event Average	REGIONRESULT USE_EVENT_AVERAGE	Average unserved energy event size, across iterations and reference years (MW)

MTPASA Region Availability Data (updated 3 hourly)

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Demand 10	REGIONAVAILABILITY DEMAND10	10% probability demand (ex non-scheduled demand)
Demand 50	REGIONAVAILABILITY DEMAND50	50% probability demand (ex non-scheduled demand)
Pasa Availability Scheduled	REGIONAVAILABILITY PASAAVAILABILITY_SCHEDULED	Aggregate of the offered PASA Availability for all Scheduled generators in this region
Energy Unconstrained Capacity	REGIONAVAILABILITY ENERGYUNCONSTRAINEDCAPACITY	Region energy unconstrained MW capacity
Energy Constrained Capacity	REGIONAVAILABILITY ENERGYCONSTRAINEDCAPACITY	Region energy constrained MW capacity
Non-scheduled Generation	REGIONAVAILABILITY NONSCHEDULEDGENERATION	Allowance made for non-scheduled generation in the demand forecast (MW)
Energy Req	REGIONAVAILABILIT	Total weekly operational as generated consumption

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Demand 10	Y ENERGYREQDEMAND10	(POE 10)
Energy Req Demand 50	REGIONAVAILABILITY ENERGYREQDEMAND50	Total weekly operational as generated consumption (POE 50)

MTPASA Interconnector Data (updated weekly)

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Flow 10	INTERCONNECTORRESULT FLOW10	The 10th percentile for flows, across iterations and reference years. Positive values indicate exporting, negative values indicate importing (MW)
Flow 50	INTERCONNECTORRESULT FLOW50	The 50th percentile for flows, across iterations and reference years. Positive values indicate exporting, negative values indicate importing (MW)
Flow 90	INTERCONNECTORRESULT FLOW90	The 90th percentile for flows, across iterations and reference years. Positive values indicate exporting, negative values indicate importing (MW)
Probability Of Binding Import	INTERCONNECTORRESULT PROBABILITYOFBINDINGIMPORT	Proportion of iterations and reference years with interconnector constrained when importing
Probability Of Binding Export	INTERCONNECTORRESULT PROBABILITYOFBINDINGEXPORT	Proportion of iterations and reference years with interconnector constrained when exporting
Calculated Import Limit	INTERCONNECTORRESULT CALCULATEDIMPORTLIMIT	Calculated Interconnector limit of importing energy on the basis of invoked constraints and static interconnector import limit, averaged across iterations and reference years
Calculated Export Limit	INTERCONNECTORRESULT CALCULATEDEXPORTLIMIT	Calculated Interconnector limit of exporting energy on the basis of invoked constraints and static interconnector export limit, averaged across iterations and reference years

Dispatch FCAS Data

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
Raise 1 sec	PRICE	The raise 1 second FCAS price for the region

NemSight Variable	AEMO Table/Field Name	Definition/Interpretation
	RAISE1SECRRP	
Raise 6 sec	PRICE RAISE6SECRRP	The raise 6 second FCAS price for the region
Raise 60 sec	PRICE RAISE60SECRRP	The raise 60 second FCAS price for the region
Raise 5 min	PRICE RAISE5MINRRP	The raise 5 minute FCAS price for the region
Raise Reg	PRICE RAISEREGRRP	The raise regulation FCAS price for the region
Lower 1 sec	PRICE LOWER1SECRRP	The lower 1 second FCAS price for the region
Lower 6 sec	PRICE LOWER6SECRRP	The lower 6 second FCAS price for the region
Lower 60 sec	PRICE LOWER60SECRRP	The lower 60 second FCAS price for the region
Lower 5 min	PRICE LOWER5MINRRP	The lower 5 minute FCAS price for the region
Lower Reg	PRICE LOWERREGRRP	The lower regulation FCAS price for the region

Rooftop PV Data

See Rooftop PV

1.4.1.1 Rooftop PV

Rooftop PV is photovoltaic (solar) generation within the distribution network. This is typically installed in small capacities on residential, commercial and industrial rooftops. While some installations approach 1MW many are in the 2-6kW range. Rooftop PV generation essentially reduces demand for other forms of electricity generation and, as expected, typically peaks in the middle of the day. Rooftop PV is collected and displayed separately to large scale solar generation in the NEM.

AEMO currently provides rooftop PV forecasts four times daily at 01:30, 07:30, 13:30 and 19:30 market time. Each forecast includes half-hourly data starting with the next half hourly interval and extending for eight days. This forecast data is based on complex modelling taking into account historical PV generation, weather, location and other metrics and comprises four values: the estimated mean power, and power with 50%, 10% and 90% probability of exceedance. NemSight currently displays only the estimated mean power. AEMO also provides a single value for estimated actual generation on a daily basis at 00:15 for each half hour interval on the previous day.

1.4.2 Gas

Gas Data

NemSight uses the following data from the gas market files published by AEMO.

Live VIC Gas Market

NemSight Variable	AEMO File	AEMO Field Name	Definition/Interpretation
Price	INT037B	price_value_ex_gst	The price from a specified schedule of supply and demand bids
90%	INT037B	price_value_ex_gst	The price calculated by reducing the uncontrolled withdrawals by 10%
110%	INT037B	price_value_ex_gst	The price calculated by increasing the uncontrolled withdrawals by 10%
EDD	INT108	dff_edd	The effective degree day, useful in determining heating requirement which is correlated to gas demand
Injections by node	INT235	value	Volume of gas injected at a particular node
Withdrawals by node	INT235	value	Volume of gas withdrawn at a particular node
Uncontrolled Withdrawals	INT235	value	The sum of the all the uncontrolled withdrawals in the Operational Schedule which currently includes Geelong, Ballarat, Northern, Gippsland and Melbourne
Injections (total)	n/a	n/a	The sum of the injections by node
Withdrawal (total)	n/a	n/a	The sum of the withdrawals by node
Inj-Wdl	n/a	n/a	Calculated by subtracting Withdrawals from Injections
Price	INT235	price_value	Ex-ante price for schedule 1 at 6am
Withdrawals[1]	INT235	sched_wdl_gj	Scheduled withdrawal for schedule 1 at 6am

1. The VICGas withdrawals is calculated for the current day by summing the CTLD WDL and UNCTLD WDL fields in the INT235TD... file for the earliest schedule id (6:00am). To find the correct group of withdrawal values to sum, this file needs to be joined with the INT108... file. Filter the INT235.. file by gas_date = current date, flag = "OS", day_in_advance = "D-0", and data_type = both "CTLD WDLS" and "UNCTLD WDLS". The transmission_id should then be joined with the INT108 file where the approval_datetime should be between 5am and 6am of the current day.

Live STTM Gas Market

NemSight Variable	AEMO File	AEMO Field Name	Definition/Interpretation
Ex-ante Price	INT651 Ex Ante Market Price	ex_ante_market_price	The price from the Ex-ante schedule of supply and demand bids
Ex-ante D-2 Price	INT654 Provisional Market Price	provisional_price	The price from the D-2 schedule of supply and demand bids
Ex-ante D-3 Price	INT654 Provisional Market Price	provisional_price	The price from the D-3 schedule of supply and demand bids
Ex-post Price	INT657 Ex Post Market Data	ex_post_imbalance_price	The imbalance price which reflects the net impact of the deviations from the Ex-ante schedule for a given gas day. Calculated the day after.
Injections	INT655 Provisional Schedule Quantity	provisional_qty + price_taker_bid_provisional_qty	Volume of gas injected at a particular node
Withdrawals	INT655 Provisional Schedule Quantity	provisional_qty + price_taker_bid_provisional_ qty	Volume of gas withdrawn at a particular node
Quantity	n/a	n/a	The sum of the withdrawals by node
Price[2]	INT651 Ex Ante Market Price	ex_ante_market_price	Ex-ante price from the supply and demand bids
Withdrawals[2]	INT652 Ex Ante Schedule Quantity	sum of scheduled_qty and price_taker_bid_qty where flow_direction = 'F'	The sum of the price taker and scheduled quantities by pipeline

2. These variables apply to the Time Machine module whereas all other variables above refer to the Live Gas Screens.

GSH (Wallumbilla) Market

NemSight Variable	AEMO File	AEMO Field Name	Definition/Interpretation
Vol Weighted Price	GSH Historical	VOLUME_WEIGHTED_AVERAGE_PRICE	

NemSight Variable	AEMO File	AEMO Field Name	Definition/Interpretation
	Transaction Summary		
Rolling Avg Price	"	ROLLING_WEIGHTED_AVERAGE_PRICE	
Quantity (GJ)	"	TOTAL_QUANTITY	
Last Trade(s)	GSH Daily Transaction Summary		
Low	"	LOW_PRICE	
High	"	HIGH_PRICE	
Price	"	VOLUME_WEIGHTED_AVERAGE_PRICE	
Volume	"	TOTAL_QUANTITY	
Trades	"	TOTAL_NUMBER_OF_TRADES	
Contract	"	FROM_GAS_DATE,TO_GAS_DATE	

Live Gas BB Market

Uses the infoserver.

1.4.3 Weather

Weather Data

The weather data presented by NemSight is sourced from the Bureau of Meteorology with their permission. Please see their disclaimer for use of this data http://www.bom.gov.au/other/disclaimer.shtml

Regional Weather

The Price Bar and Overview Map presents current temperatures for each AEMO region and forecasts for capital cities. The Time Machine module presents daily minimum and maximum temperatures for each AEMO region. The following weather stations are used to source temperature data for each of the AEMO region capital cities.

NemSight Variable	BOM Weather Station Name	BOM Station ID
Queensland	BRISBANE	94576
New South Wales	SYDNEY (OBSERVATORY HILL)	94768
Victoria	MELBOURNE (OLYMPIC PARK)	95936
South Australia	ADELAIDE	94675
Tasmania	HOBART	94970

All weather data is sourced from http://www.bom.gov.au/catalogue/data-feeds.shtml

Part 2

NemSight® User Guide

Features

NemSight® Features

The price bar provides real-time surveillance of each region in the NEM, presenting the current dispatch prices. This sits in your desired location on your screen, allowing you to keep working on other tasks while NemSight keeps you up-to-date with market activity. After starting the application, a live data feed is established by clicking the **Connect** button. Access to further functionality is available through the menu button on the right-hand side.

The menu provides the following features:

	**Live Maps**	Diagrammatic maps of live Electricity and Gas market data.

Live Reports	Select from a collection of miscellaneous reports.
Live Network	Displays live price and constraint information in the context of the electrical network schematic.
Live Gas Overview	Displays a live snapshot of the latest price, supply and demand information for the STTM and VIC gas markets
Live Gas Network	Displays a schematic of the Eastern Australian gas network.
Live Generation	Displays live generation for the current period grouped by fuel-type or participant.
Live Charts	Presents dispatch, pre-dispatch, price sensitivities, short and medium term PASA and constraint data
Constraints	Presents constraints from Dispatch, Pre-dispatch, Interconnectors, Invoked due to outages and historical analysis of constraints.
Time Machine	Amalgamates a range of electricity, gas and weather data, primarily historical but some live data.
MTPASA, PASA Delta	Compare any two medium-term regional PASA files. Includes both the 3-hourly and weekly MTPASA files.
MTPASA, MTPASA DUID Availability	View and compare any two medium-term PASA DUID availability datasets by DUID, or grouped by participant, region, fuel type or schedule type.
Electricity Bidding	Generator re-bidding analysis for energy or any FCAS product for a nominated bid-day including price setters and constraints.
Gas Bids	Gas bids display bidstacks for the STTM and VIC gas markets over a chosen date range.
Regional Stats	Peak/off-peak, profile, distribution and other time-bucket style analysis of regional or interconnector data.
Generation Stats	Generation, revenue and carbon emissions module, reporting results by region, participant, power station, or fuel type.
DUID Details	This screen lists all the Units in the NEM and their details. Allows navigation to/from Time Machine/ Network Diagram/ Live Generator for the selected DUID.
Saved Charts	Allows creation of one or more previously saved Live Charts or Time Machines.
Dashboards	Allows creation and display of multiple window layouts.

	**Configuration**	This screen provides a range of configuration options including Dashboards. It provides an overview of the software, sets alarm options and folder locations, displays version and licence information.
	**Help**	Displays this user manual.
	**Videos**	Provides access to video overviews.
	**Save Windows**	Only available if Window and Dashboard saving set to Manual - will save current configuration of Windows and Dashboards.

Note that the functions requiring live data will only be available once a live data feed has been established. Other functionality is available at any time.

See the Introduction for more information on which models provide which features.

2.1 What's New?

What's New in NemSight?

Version 2025.2.1.10757

- Improvements to the design of the Network Diagrams to facilitate the clear incorporation of new DUIDs, transmission lines and other network elements
- Improvements to automation of loss factor changes and retention of historical data
- Support BDUs when importing NEM Price Setter data
- Performance enhancements
- Security enhancements
- EMMS 5.5 changes
- General bug fixes

2.1.1 Previous Features

Version 2025.1.1.10658

- The Rebidding screen now has the ability to export the full bid stack for the currently opened day
- Problem loading Market data in new installations has been fixed
- Rebidding and Live Generation now only display commissioned units
- Live Generation now displays the Load side of BDUs
- DUID Details now displays the Secondary Loss Factor for BDUs
- Rebidding now displays the volume of Scheduled Loads in the Energy market correctly
- Live Charts now displays STPASA POE 50 data hourly
- Various other minor enhancements and fixes

Version 2024.2.1.10434 IESS Release

- New BDUs are now viewable in multiple screens, with the ability to select the bid direction to view generation and load bids in Rebidding and Time Machine
- New Electricity Bids menu item in NemSight drop down. Rebidding and Price Setters are now sub-items within Electricity Bids
- New Bid Price History screen in Electricity Bids allows users to compare bid band prices across time
- New historical date and time selector in Live Generation to go back in history
- New MWh function and Sum aggregation in Time Machine
- New variables Trading RRP/ROP, Dispatch ROP and Operational Demand in Time Machine and Live Charts
- New variable Operational Demand in Regional Stats
- New daily grouping of Price Setter stats by DUID
- New Additional unit details in DUID Details
- Energy One may add additional historical units and/or smaller units to NemSight in the future
- Multiple functional improvements
- Multiple bug fixes

Version 2023.4.1.10090

- Added support for the new fast FCAS markets Lower 1 Second and Raise 1 Second
- Added weekly price setter statistics (access from the Price Setters screen in Rebidding)
- Added constraint search by term ID (DUID, interconnector ID, transmission line ID, region ID)
- The constraint details screen is now accessible directly from the Price Bar menu
- Constraint IDs are listed in the popup hint for constrained items in the electricity network diagram
- Improved performance in Rebidding, particularly the Overview chart and rebid playback features
- Improve highlight of matching items when searching in the electricity network diagram
- Improve contrast of colours when using the dark mode themes
- Support AEMO legacy NEXT_DAY_OFFER_ENERGY files
- Fix rebidding UI left in a disabled state in some scenarios where there are multiple consecutive duplicate rebids for a unit
- Fix double-click of constraint set ID and constraint ID in the constraint details description
- Various other minor enhancements and fixes

Version 2023.3.2.10004

- Add file/folder permission checks on start to detect IT/anti-virus issues
- Allow dashboards to be overwritten on import
- Improve display of fixed width text in some windows
- Fix selected items when loading time machine from a saved window/dashboard

Version 2023.3.1.9986

- Dark Mode colour schemes are now available in NemSight. Dark and Classic colour scheme options are available on the Appearance tab of the configuration screen
- A new constraint visualization tool - Constraint timelines, is available in Gantt chart form and can be accessed from the Constraints area
- Added a dispatch interval countdown timer on the NemSight price bar
- Unit groups is new feature where the NemSight user can create named groups/lists of units (DUIDs). These can then be used to filter the unit treeview in Rebidding, Time Machine, MTPASA DUID Availability, Live/Current Generation, and DUID Details
- Pan and zoom is now available on electricity Live Network diagrams
- Market Event history filter and search. Market event and Alarm screens can now be searched and sorted
- Added an additional level of grouping to the Generation Statistics report
- Network Diagram DUIDs display if they don't have Scada data, when they are hovered over, instead of being hidden
- Chart series' that are deselected and hidden in Time Machine will now cause the column in the table to also be hidden. The setting will also be remembered on reopening
- MTPASA DUID Availability is not unavailable until NemSight is connected
- Disabled "Show Bid Stack" button if Gas bids have not been published by AEMO
- Error display enhancements
- Display suitable messages when NemSight is collecting data instead of being unresponsive
- Display suitable error messages when affected by network issues
- Fixed minor errors in Dashboard screen
- Fixed error regarding holiday file downloads
- Various minor fixes and enhancements

- **Version 2022.1.2.9590**
- Restored market notice desktop alert
- Improved the list and order of participants and MIRNs displayed on the Gad Bids screen
- Minor improvements to the electricity Rebidding screen
- Additional enhancements and fixes

Version 2022.1.1.9435

- Improved speed when opening YESTBID files in the rebidding screen. Data is now loaded and cached in response to the selected DUID(s)
- Added option to reverse the bid stack order for scheduled loads in the rebidding screen

Version 2021.6.1.9384

- New forward price curves provided by FEX Global, by product, by date and inter-regional spreads
- New electricity P5 (5-minute) price sensitivities added to Live Charts
- Added custom "compare to" dates to Time Machine allowing for comparison of data (demand, prices, and so on) across specific dates
- Re-bidding enhancements:
  - The bid data for the previous day is no longer opened by default. This saves time opening the screen when the required date is in the past
  - Added support for WDR loads
  - Added option to treat scheduled loads as negative bids (enabled by default)
  - Added option to limit bids to the maximum availability offered (allows display of the full bid stack when disabled) (enabled by default)
- Scheduled loads are now displayed as negative across all other screens (e.g. bids in Time Machine and Timeseries)
- Added electricity P5 (5-minute) predispatch data to Time Machine
- Improved responsiveness when there are connection issues
- Improved loading of historical data in Regional Stats
- Improved precision when averaging large volumes of data in Time Machine
- Fix display of year-on-year data in Regional Stats
- Various minor fixes and enhancements

Version 2021.5.1.9285

- Add final support for Five Minute Settlements in line with the AEMO 5MS production release schedule
- Add log off feature (clear saved password)
- Improved performance when loading market data

Version 2021.3.1.9211

- Add FCAS price alerts for email and NemSight Mobile push notifications
- Added semi-scheduled solar and wind data for dispatch and pre-dispatch to Live Charts
- Fix to allow custom settings for the right axis in charts
- Fix monthly folder check when opening regional stats
- Improve handling of DWGM schedule updates displayed on the VicGas overview screen
- Re-enable display of dispatch price revisions published on the current day (note: historical price revisions are not displayed in dispatch data)

Version 2021.2.1.9150

- Add preliminary support for push notification alerts to NemSight Mobile
- Add preliminary support for Five Minute Settlements in line with the AEMO 5MS production

release schedule
- Added and updated MTPASA variables available in Live Charts
- Improved performance opening the MTPASA DUID Availability screen

Version 2021.1.1.9062
- Fix some live data not being displayed

Version 2021.1.1.9059
- New MTPASA DUID Availability screen
- Allow multiple negative price bands in electricity desktop alerts
- All data transfers now use secure communications
- Fix link to help file from DUID Details screen
- Fix DUID Details button state in Time Machine when opened from a saved window

Version 2020.1.1.4504
- STPASA semi scheduled capacity in Live charts now uses the 50% POE value instead of 90% POE value
- Fixed Time Machine/Dashboard windows that were losing selections and displaying a blank graph/table
- Updated Regional Stats peak/off-peak calculations for market closed dates

Version 2019.4.1.4403
- Intervention fix for 5 minute pre-dispatch prices

Version 2019.2.1.4316
- Fix a defect in text-to-speech audible notifications for Desktop alarms in Win 7 operating systems

Version 2019.2.1.4275
- "show bid Stack" button added; shortcut to Bid Stack screen
- Historical FCAS prices added in Time Machine with the restriction to download 3 months of data at a time
- New FCAS live map
- Rebidding screen now displays FCAS details; no need to open a YesBid file
- Desktop alarms have been modified to include numerous GAS alarms and a 3 hourly MTPASA delta file alarm. There is a provision for both Pop up Alerts and Audio including a text to speech option.
- "Scale to Capacity" option added under Y Axis scaling in time Machine context menu for Dispatchable Units
- Live Gas network now displays the new Gas Bulletin Board data from AEMO and includes several improvements
- DUID Details window added to display details of all the Dispatchable units included in NemSight
- Added a fourth connection reception bar in the left of the Price Bar to provide a more accurate indication of the state of connectivity
- Loads will be displayed as negative in Time Machine and Live Generation
- Increased the historical data of 3 hourly MTPASA Availability from 1 week to 2 months
- Various minor improvements and bug fixes

Version 2018.1.1
- PASA Delta - handle new AEMO file format

- Live Charts - MTPASA - new AEMO fields
- Pumps and batteries are now collectively named Loads
- Option to display Loads in Live Generation

Version 2017.3.0
- Rooftop PV Live Map
- Rooftop PV added to Time Machine and Live Generation
- Gas - consolidation of RBP, SWQP and QGP into WAL and addition of SEQ
- Various minor improvements and bug fixes

Version 2017.2.0
- Improvements to the handling of interventions

Version 2016.2.0
- Configurable price bins for Gas bid stack analysis
- Refinements to Dashboard functionality
- Curtis Island added to the Gas Network

Version 2016.1.2
- Market price cap increased to 14,000
- Restored functionality where NEM Overview can be included in saved Window layout

Version 2016.1.1
- New Dashboard functionality that enables the creation of multiple window layouts.

Version 2015.2.2
- New Live Gas Network Diagram showing Actual Flows, Capacities and Outlook.

Version 2015.2.1
- Holidays now loaded from CA servers
- Temperature forecasts added; Perth and Darwin added
- Gas Supply Hub overview windows
- GSH added to Time Machine
- Current Generation improvements

Version 2015.1.1
- Holidays updated
- Improved constraint searching
- Moved Melbourne weather site from regional office to new Olympic park site

Version 2014.4.2
- New contribution factor in Price Setters
- Improved anti-aliased charts
- Four new help videos
- Re-arranged Time Machine nodes
- Live Generation bug fixes and timeliness improvements
- Interconnector and constraint bug fixes

Version 2014.4.1
- New window (launched from the Rebidding module) to display spot prices, price setters and constraints for a full bid day.

- Expanded supply stack analysis for a selected dispatch interval in the Rebidding module.
- Improved display of Live Generation (previously called Current Generation) including colour coding for fuel type.
- Addition of ex-ante gas price and withdrawals to the Time Machine module.
- Ability to calculate average, minimum or maximum values over various intervals such as daily, weekly, monthly etc in the Time Machine module.
- Merge the interconnector constraints window in the Constraints module.
- Apply new ribbon interface to Rebidding, Constraints, Live Generation and Gas Bids modules, making the functionality more obvious.
- Current and forecast capital city temperatures now available from the pricebar and forecasts added to the temperature map.

Version 2014.3.2

- Alternative colour scheme for the Current Generation screen to emphasis the generation changes rather than percentage dispatch.
- Improvement for the Bid Stack window for a single Dispatch Period to use the 5 minute bid stack data rather than the old 30 minute snapped data.
- Bug fix where the 3-hourly MT PASA files were not getting cleaned up.
- Removal of the old Price Setter module as multiple price-setters are now supported in the Re-bidding module (now that NemSight handles multiple price setters the old "Statistics" tab is incorrect and this will be re-introduced in the next release).

Version 2014.3.1

- Warning: This release of NemSight includes a per-machine installer. Previous installers were per-user installers. We strongly recommend that you uninstall all previous installations of NemSight from your PC prior to installing this release. If you have any questions about this then please call Creative Analytics support prior to updating.
- Rebidding module
  - displays bids using 5 minute time granularity
  - option to display **all** price setters and constraints for the selected 5 minute period (replacing the Price Setter module which has been deprecated).
  - option to display an enhanced Bid Stack for selected regions for the selected time. The Bid Stack now includes Cumulative Dispatched and per unit Cumulative Dispatched columns
- Legacy Price Setter and Live Generation modules moved to Deprecated menu item

Version 2014.2.1

- Added ability to save and restore Time Machine windows at start up or from Saved Charts
- Restored option to extend Live Charts back 2 days
- Ability to add 7, 28, 91 and 364 day comparisons in Time Machine
- Market price cap increased to 13,500
- The Live Generation menu option has been removed. Existing saved live generation windows will still open until the next release, to give users time to migrate these to Time Machine.

Version 2014.1

- New Time Machine module, integrating live and historical data covering final energy bid stacks, generation stacks, regional data, interconnector data
- Minimum and maximum historical temperatures included in the new Time Machine module
- New live weather map for user-selected weather stations
- Network diagrams support historical data

- Semi-scheduled and Non-scheduled generation added to ST-PASA and MT-PASA in Live Charts
- Copy to clipboard (via CTRL-C) added to Overview Map, Network diagrams, and Price Bar modules
- Anonymous usage data will be collected to help improve NemSight
- Pool Sales calculation in the Generation Module now uses estimate of Sent Out generation
- Live Generation and Timeseries modules are to be removed in a future release, having been replaced by the Time Machine module

Version 2013.3

- Change to carbon emissions and intensity factor in the Generation module to use latest ACIL Tasman figures
- Addition of Sent Out Generation and Fuel Consumption to the Generation module
- New Gas Overview screens
- New Gas Bidding module
- New alerts - MT PASA & gas price alerts

Version 2013.2

- MTD Averages added to QTD Report
- Price Bar includes buttons to minimise and Restore all windows

Version 2013.1 includes

- SMS and Email alerts.
- New web portal to manage SMS credit.
- Additional 64 bit version of NemSight available
- Statistics now includes regional generation, availability and interconnector flows and limits.
- Ability to exclude "system normal" contraints from live contraints view.
- Added constraint LHS to interconnector import/export contraint charts.
- Ability to save layout at any time rather than at exit.
- Improved licence management, no more licence keys as licence expiry managed from our web servers.
- Improved labeling in Timeseries.

Version 2012.3 includes

- New capture of price revisions including alarms
- Splitting out dispatch, 5 minute pre-dispatch and 30 minute pre-dispatch in Live Charts
- New Capacity factor calculation in the Generation module
- New Availability factor calculation in the Generation module
- Changing the Registered Capacity to the Maximum Capacity in the configuration file
- New NEM-wide group in the Generation module
- New copy transposed data from tables
- New help buttons on each dialog linked to the integrated help
- Additional price setter information for interconnectors, generic constraints and regions
- Added copy to clipboard to price setter details
- Improved window management using Task Bar

Version 2012.2 includes

- New map based overviews

- New Gas overview
- New Price Setter statistics, ability to search across a nominated date-range aggregating power stations that set the price
- Ability to customise your own NemSight layout across multiple screens and this is remembered on re-start
- Non-scheduled generation now included in the Timeseries and Generation modules
- New historical constraints module with ability to search across a nominated date-range for binding constraints
- Addition of peak and off-peak schedules in the Generation module
- Dual independent data feeds to improve reliability

Version 2011.4 includes

- New constraints module including Pre-dispatch constraints, and addition of LHS, headroom and violation degree
- New invoked constraints displaying up-coming outages and constraints affected
- New constraints look-up including RHS terms and improved visibility of DUID, Interconnector and Region terms
- Addition of constraint LHS and violation degree series in Live Charts
- Addition of ROP series in Live Charts
- Replacement of Intermittent generation in Live Charts with Semi-scheduled and Non-scheduled generation (by region)
- Extension of 5 minute price window to 1 hour
- Fix to MT PASA delta due to file name change
- Addition of new 3-hourly MT PASA files in Live Charts and PASA Delta.

Version 2011.3 includes

- New current generation module, displaying the live generation for the current period
- New dispatch-weighted emissions factor calculation in the Generation module
- Network maps, loss factors and CO2 emission factors updated
- Ability to group generators by region or fuel-type in Timeseries and Live Generation modules
- Internal changes to handle changes to AEMO data feed

Version 2011.2 includes

- New generation, revenue and emissions module, reporting results by region, participant or power station
- Re-bidding module can load NEXT_DAY_OFFER_ENERGY file which replaces the YESTBID files

Version 2011.1 includes

- Internet connection diagnostics
- Moving of installation files to a single user-defined folder for ease of deployment
- Negative spot price and generator start-up alerts

Version 2010.4 includes

- Improvements to PASA Delta module to allow comparison of any two files, not just those published on Tuesdays.

- Live generation included in the live network schematics

Version 2010.3 includes

- New live network schematic for prices and constraints in the context of the electrical system network.
- New Price Setters module to for combined price setter, constraints and bid stack analysis.

Version 2010.2 includes

- Modifications in PASA analysis required to match to the changes implemented by AEMO in May 2010.
- Improved live data performance due to implementation of dual redundant data servers, and less reliance on nemweb.
- Changes to Statistics module, providing more flexibility in the analyses, and the ability to change the analysis without re-importing the data.
- New Enterprise edition supporting analysis of generic database data and private generator data.
- Automatic and manual updating of constraint data.

Version 2010.1 includes numerous enhancements to the Overview screen and to constraints.

- Interconnectors on the Overview screen display initial metered flow and constraint information when hovered over.
- Right click menus provide quick access to charts for regions and interconnectors on the Overview screen.
- A new screen showing 30 minute pre-dispatch constraints has been added.
- The constraints database is automatically updated when NemSight is started each day.
- Constraint information now includes the LHS equation.

Previous releases included the following enhancements amongst others:

Version 2009.2 includes the following enhancements which primarily feature in the premium edition of NemSight:

- New Price Setters display option in the Timeseries module.
- New Binding Constraint Limits and Marginal Values display options Timeseries module.
- New PASA Delta module (accessible from the main menu).
- Additional options to automatically start and display overview and / or saved live charts

Version 2009.1.1

- Live FCAS prices in the Live Charts module
- Faster live data feed
- Additional price columns on the Overview screen (Cap Estimate and Cap Minimum for the quarter)

Version 2009.1.0

- Overview screen Pre-dispatch prices display
- 'Movers and Shakers' display in Rebidding module

- Chart colours editor in Options

NemSight has a web site at http://www.nemsight.com.au

2.2 Price Bar

Display of Live Spot Prices

The price bar displays the current 5 minute spot price in each region. The market time (in Eastern Standard Time) associated with these prices is displayed in grey on the left hand side.

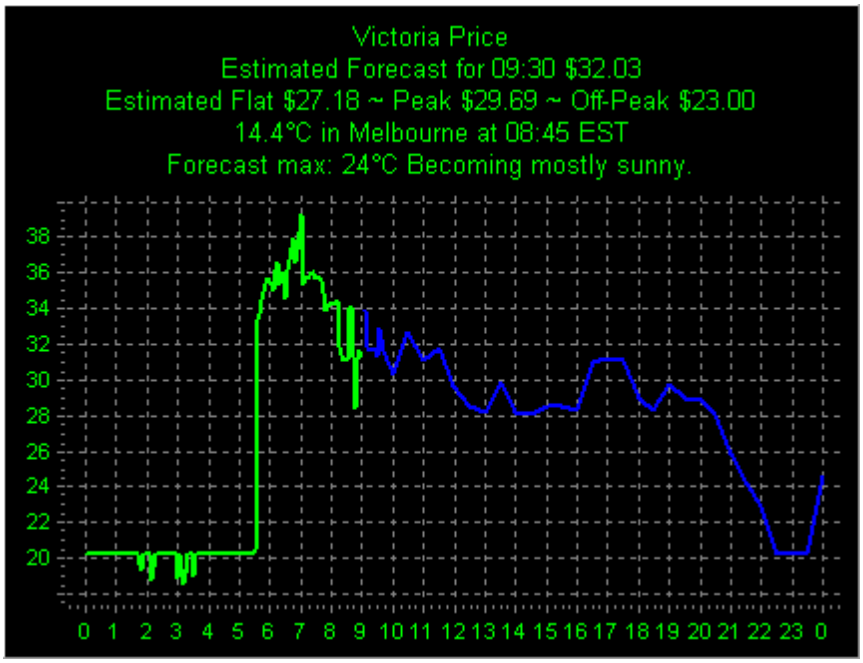
The reception bars on the left hand side indicates the connection states to the servers. See the Connection and Performance topic for more details.

The colours of the prices change when the current dispatch price is above the alert level or if the pre-dispatch price is above the alert level. The alert level can be set in the alerts tab on the Configuration screen.

- Green is if the spot price is between positive 'Spot Price' and 'Negative Spot Price' thresholds set under Alarm Levels
- Red is shown if spot prices are outside of those thresholds
- Yellow relates to pre-dispatch prices

The right most icon displays the main NemSight menu. At the bottom of the menu are the options Log Off (exit NemSight and clear any saved password, you will need to log in again next time that you start NemSight), and Exit (exit NemSight, retaining any saved password). The other two icons on the price bar minimise and restore all windows. To minimise the Price Bar press Ctrl and select the minimise icon on the Price Bar. To restore, select the Price Bar on the NemSight task bar icon.

Holding the mouse over a value in the price bar will display a chart showing 5 minute dispatch values until the current dispatch period (in green) and the 30 minute pre-dispatch values beyond this (in blue).



In addition, the price chart will display

- Estimated flat, peak and off-peak prices for the day based on dispatch and pre-dispatch prices.
- An estimated price forecast for the current trading period. This is determined by the pre-dispatch price adjusted by any 5 minute dispatch prices within the trading period.
- State capital forecast max and recent temperatures from the Bureau of Meteorology. The forecast maximum for the following day is displayed after 3:00pm AEST.

The Price Bar position is automatically saved whenever it is repositioned. Move the price bar to a new position by dragging on the three x's on the left edge.

Copy to clipboard (via CTRL-C) is enabled to allow for ease of copying of the underlying data.

The bar displayed above the price is a ticker for the current 5 min period. It ticks down from left to right over 5 min, with each section representing 1 minute of the period.

The bar is colour coded representing 4 different statuses. Colours are configurable by the user and defaults are:

- The bar starts off Green for the first 3 minutes. (Minutes 1 to 3 of the interval).
- The background colour of the bar starts off Yellow representing the fact that the dispatch data for the next interval has not arrived yet. When the data does arrive the background changes to Black.
- When 3 minutes of the interval are over, the bar turns Orange for the next minute (Minutes 3 to 4 of the interval)
- When 4 minutes of the interval are over, the bar turns Red until the end of the interval (Minutes 4 to 5 of the interval)

It must be noted that the ticker is synced with an NTP server and so may differ very slightly with the time on a user's computer**.**

2.3 Live Maps

Live Maps

A collection of live maps are available for the following:

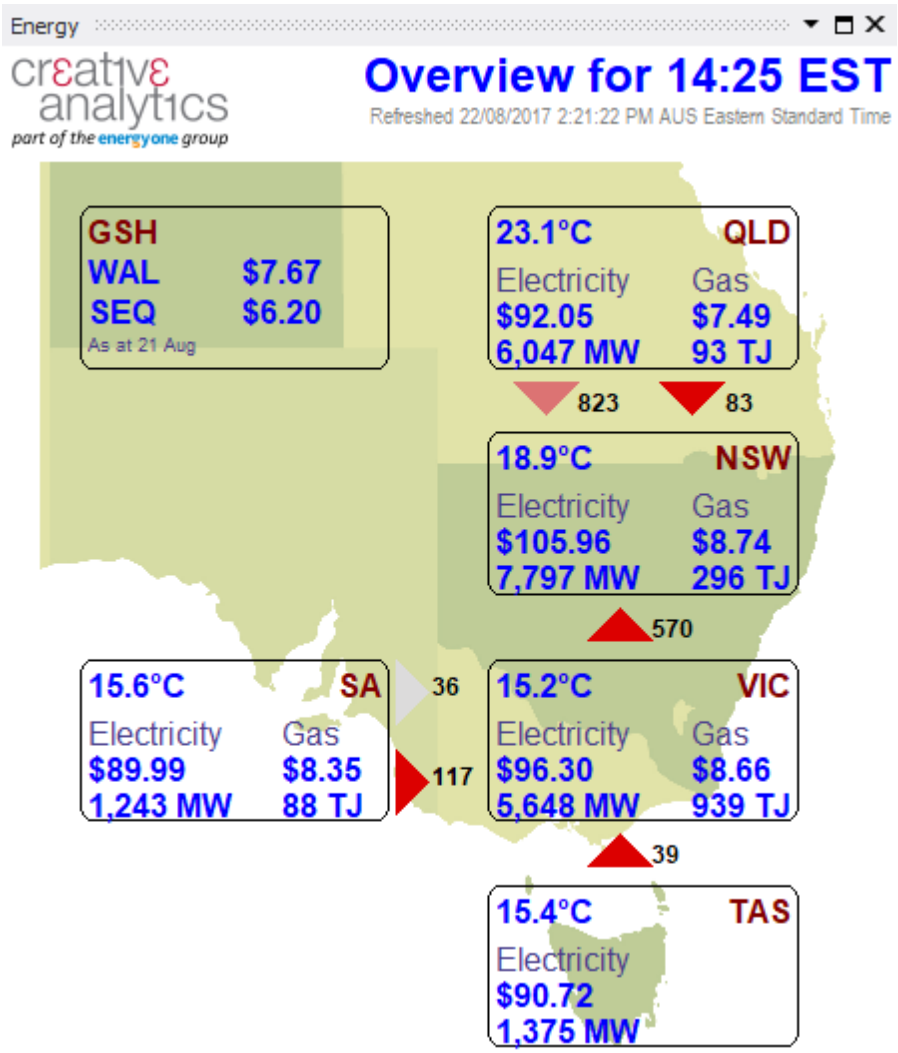
- Energy - Electricity and Gas markets
- Electricity - Detailed Electricity market
- Rooftop PV
- FCAS
- Weather

These maps may be scaled and their position and size will be remembered on re-start. All Maps except for the NEM Overview can be included in Dashboards.

2.3.1 Energy

Energy

This map provides a simple overview of the Electricity and Gas markets and regional capital city temperatures. The interconnector flows are also displayed for the electricity market. The map can be turned on/off if desired using the right-click menu of Show Map/Hide Map. This map can be included in a Dashboard.



The GSH prices are typically those for yesterday. They are updated soon after 17:30 AEST each day.

The Demand is the System Demand plus any non-scheduled generation, indicating more closely the total demand for the region.

The direction of the flow in each interconnector is indicated by the arrow which becomes more red in colour as the flow approaches the import or export limit.

Right click a region to choose from a choice of quick charts. These charts are standard live charts pre-configured with selected variables.

- Price, Demand, Generation and Availability
- Price Sensitivity
- Demand and STPASA for the next week
- Cumulative Price

Right click an interconnector to choose from a choice of quick live charts:

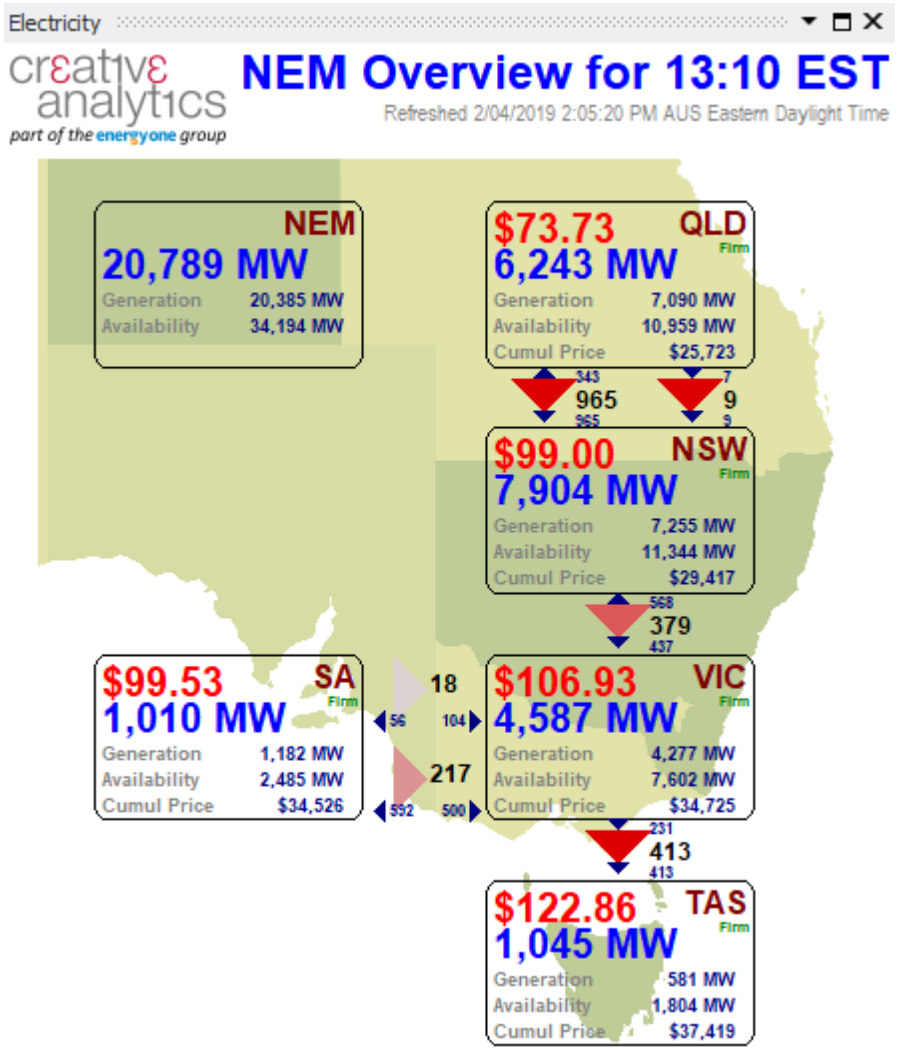
- Target Flow, Initial Metered Flow, Import and Export Limits
- Import or Export Constraint Marginal Value and Constraint Limit
- 30 minute Pre-dispatch constraints

Copy to clipboard (via CTRL-C) is enabled to allow for ease of copying of the underlying data.

2.3.2 Electricity

Electricity

This map provides an overview of the current state of the Electricity market presenting current dispatch values for spot price, demand, generation, availability, interconnector flows and interconnector limits. The map can be turned on/off if desired using the right-click menu of Show Map/Hide Map. This map can be included in a Dashboard.



The Demand is the System Demand plus any non-scheduled generation, indicating more closely the total demand for the region.

The direction of the flow in each interconnector is indicated by the arrow which becomes more red in colour as the flow approaches the import or export limit. If the minimum flow limit is in the same direction as the current flow then this is termed "Min Flow". If the minimum flow is in the opposite direction to the current flow then this is termed "Reverse Flow".

Right click a region to choose from a choice of quick charts. These charts are standard live charts pre-configured with selected variables.

- Price, Demand, Generation and Availability
- Price Sensitivity
- Demand and STPASA for the next week
- Cumulative Price

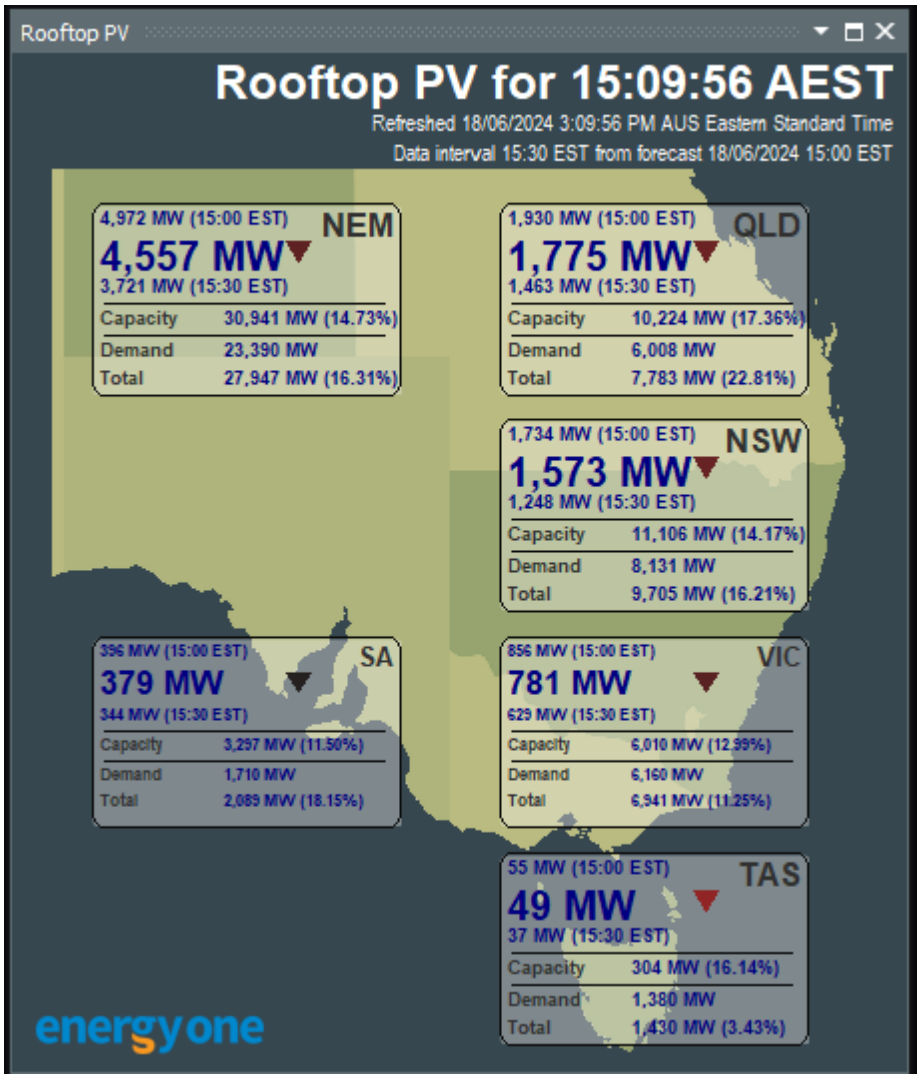
Right click an interconnector to choose from a choice of quick live charts:

- Target Flow, Initial Metered Flow, Import and Export Limits
- Import or Export Constraint Marginal Value and Constraint Limit
- 30 minute Pre-dispatch constraints

Copy to clipboard (via CTRL-C) is enabled to allow for ease of copying of the underlying data.

2.3.3 Rooftop PV

The Rooftop PV map provides details of the estimated Rooftop PV statistics for the current period.



This map shows current rooftop PV data based on the most recent forecast by region, and a total for the NEM. The data includes:

- Forecast generation for the beginning of the current half hourly interval

- Forecast generation for the end of the current half hourly interval
- Current generation displayed in large text, linearly interpolated at the current time between the forecast generation at the beginning and end of the current interval
- Arrow indicating the level of increase or decrease in the current interval
- Capacity of rooftop PV generation (updated periodically) and the current rooftop PV generation as a percentage
- System demand that needs to be met by other forms of generation
- Total demand, estimated as the sum of system demand and rooftop PV generation and the current rooftop PV generation as a percentage

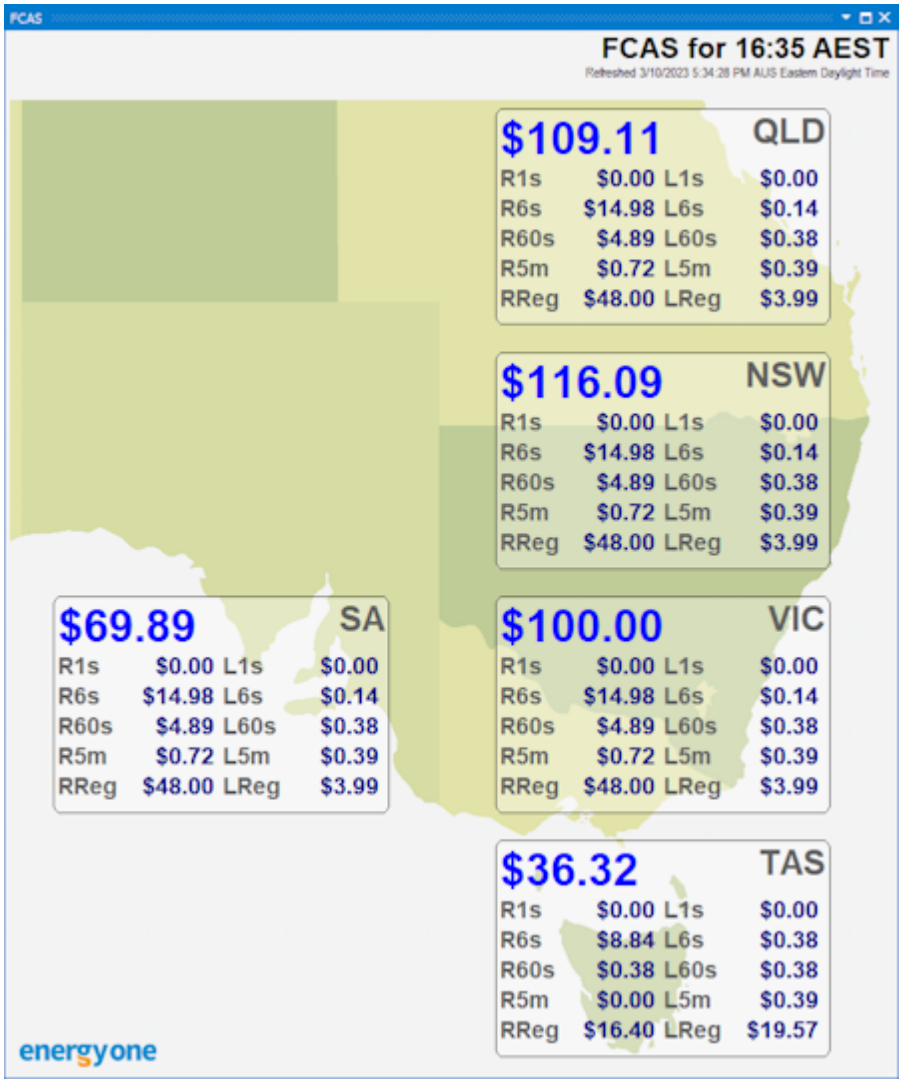
A popup hint appears when the mouse cursor is placed over the data and displays additional demand and generation details.
The displayed data can be copied to the clipboard in table format by pressing the <ctrl>-c keyboard combination.
You can right-click on the data for a region to open a new Time Machine window displaying system demand and rooftop PV generation for the selected region.

For more details on Rooftop PV data see Rooftop PV Data.

2.3.4 FCAS

This map provides a simple overview of the FCAS (Frequency Control Ancillary Services) prices per region. The map can be turned on/off if desired using the right-click menu of Show Map/ Hide Map. This map can be included in a Dashboard.

The following market prices are displayed:
- Energy
- Raise 1 sec
- Raise 6 sec
- Raise 60 sec
- Raise 5 min
- Raise Reg
- Lower 1 sec
- Lower 6 sec
- Lower 60 sec
- Lower 5 min
- Lower Reg

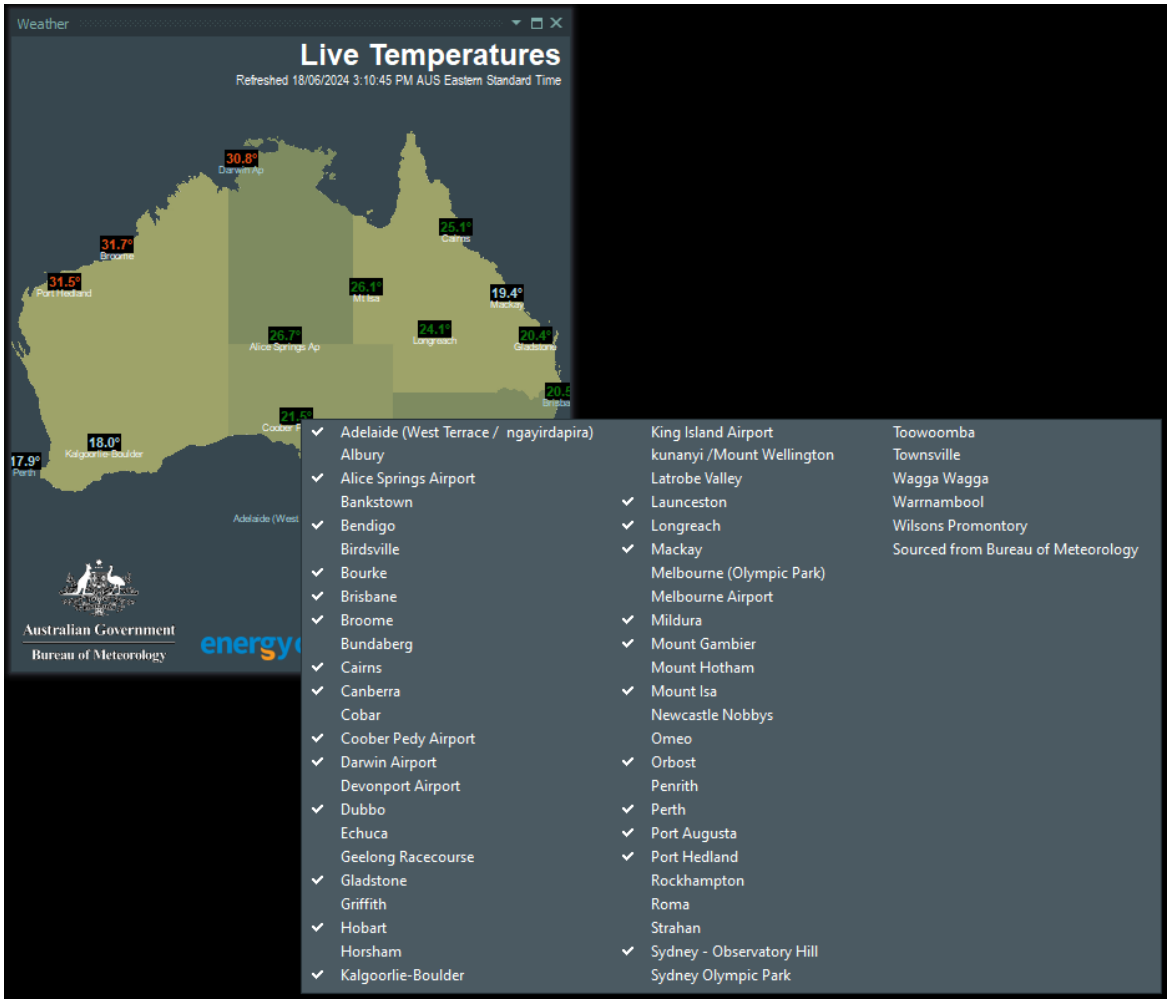


2.3.5 Weather

Weather

This map provides an overview of the current temperatures, wind speeds and direction for a selection of weather stations across Australia. WA and NT have been included as the weather tends to come from the west. The weather data presented by NemSight is sourced from the Bureau of Meteorology with their permission. Please see their disclaimer for use of this data http://www.bom.gov.au/other/disclaimer.shtml

This map can be included in a Dashboard.



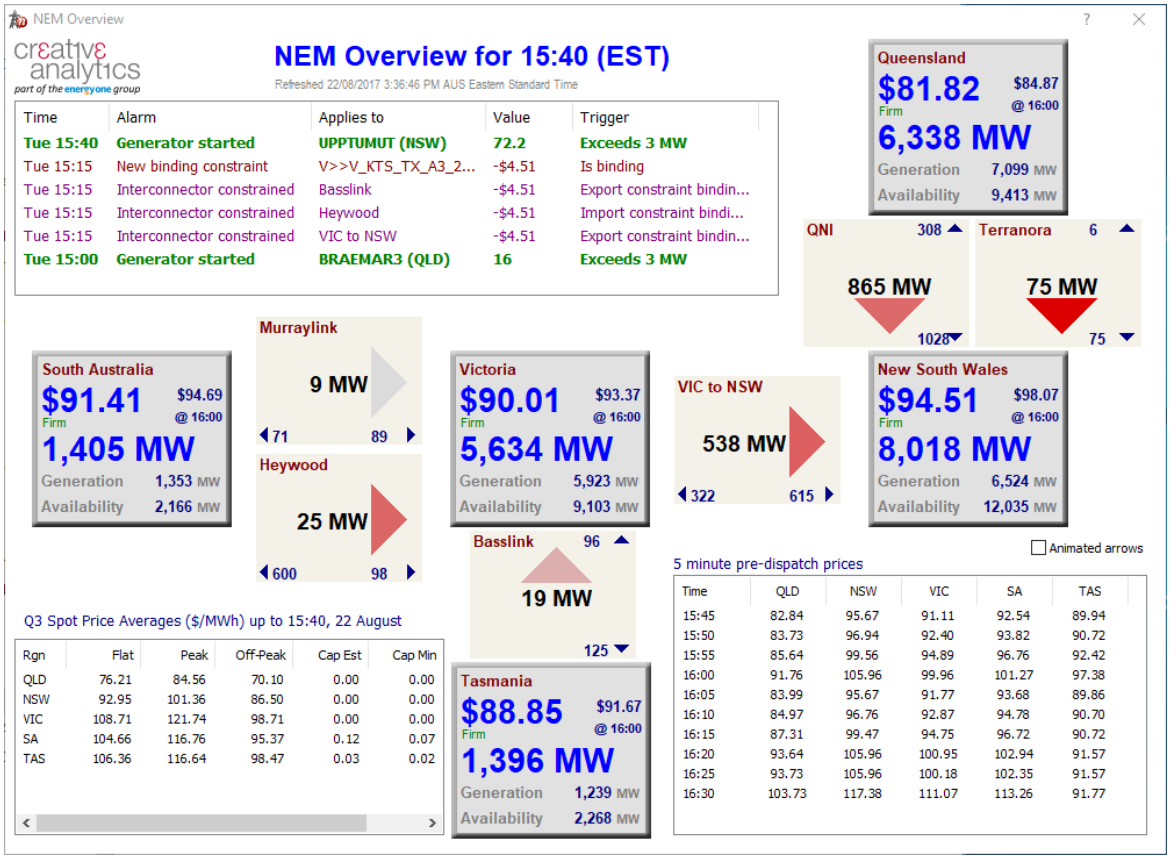
The right-click menu many be used to select the weather stations to display. Hover your mouse over a weather station to display more details including wind speed and direction (where available). In addition, capital cities will display the forecast. At 3pm AEST this will switch from the current day's forecast to that of the following day.

Clicking on the map displays the list of locations that are currently displayed. The user can change this list by ticking on or off next to the desired locations.

2.3.6 NEM Overview

NEM Overview

This map provides an overview of current state of the Electricity market presenting current dispatch values for spot price, demand, generation, availability, interconnector flows and interconnector limits. This map cannot be included in a Dashboard.



The Demand is the System Demand plus any non-scheduled generation, indicating more closely the total demand for the region.

The direction of the flow in each interconnector is indicated by the arrow which becomes more red in colour as the flow approaches the import or export limit. If the minimum flow limit is in the same direction as the current flow then this is termed "Min Flow". If the minimum flow is in the opposite direction to the current flow then this is termed "Reverse Flow".

Right click a region to choose from a choice of quick charts. These charts are standard live charts pre-configured with selected variables.

- Price, Demand, Generation and Availability
- Price Sensitivity
- Demand and STPASA for the next week

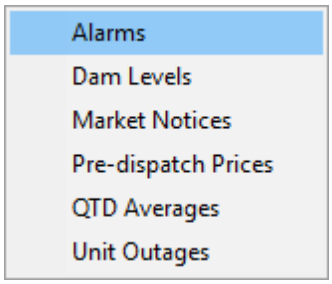
Right click an interconnector to choose from a choice of quick live charts:

- Target Flow, Initial Metered Flow, Import and Export Limits
- Import or Export Constraint Marginal Value and Constraint Limit
- 30 minute Pre-dispatch constraints

2.4 Live Reports

Live Reports

A collection of live reports are available. The report or data may be copied to the clipboard using the right-click menu on each report. All Live Reports can be included in Dashboards.



2.4.1 Alarms

Alarms

This screen presents the following Nem and Gas alarms as they occur. The set-points for each alarms can be configured on the Desktop Alerts tab of the Configuration screen. Alarms can be included in Dashboards.

NEM Alarms:

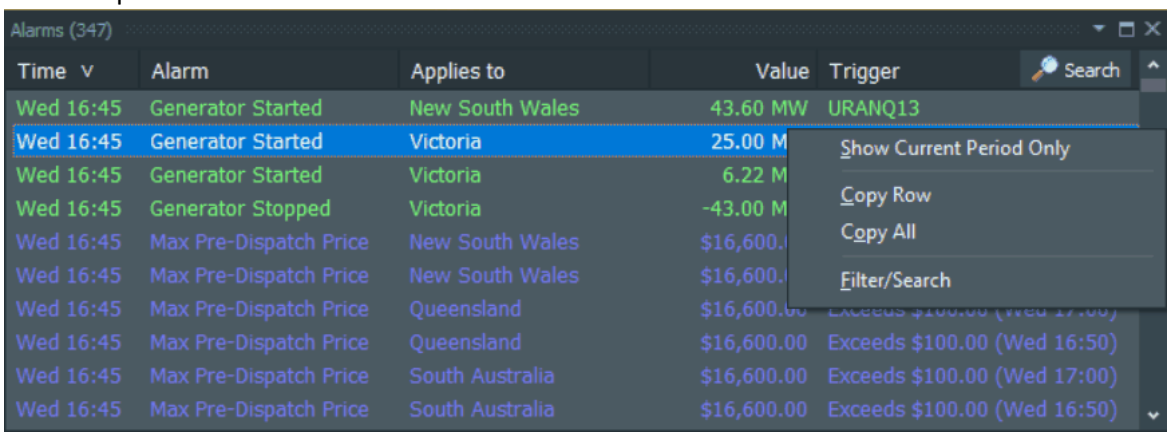
- Dispatch spot price exceeds the nominated level
- Dispatch spot price drops below the nominated (negative) level
- Pre-dispatch spot price exceeds the nominated level
- The change in dispatch availability exceeds the nominated level
- The metered generation of a unit drops below the nominated level (trips)
- The metered generation of a unit exceeds the nominated level (starts)
- An interconnector constraint (export or import) binds
- A generic constraint binds
- New market notice
- New pre-dispatch file
- Pre- dispatch file for 12:30 pm only
- New short-term PASA file
- New medium-term PASA file - 3 hourly and weekly
- New Price Revision file

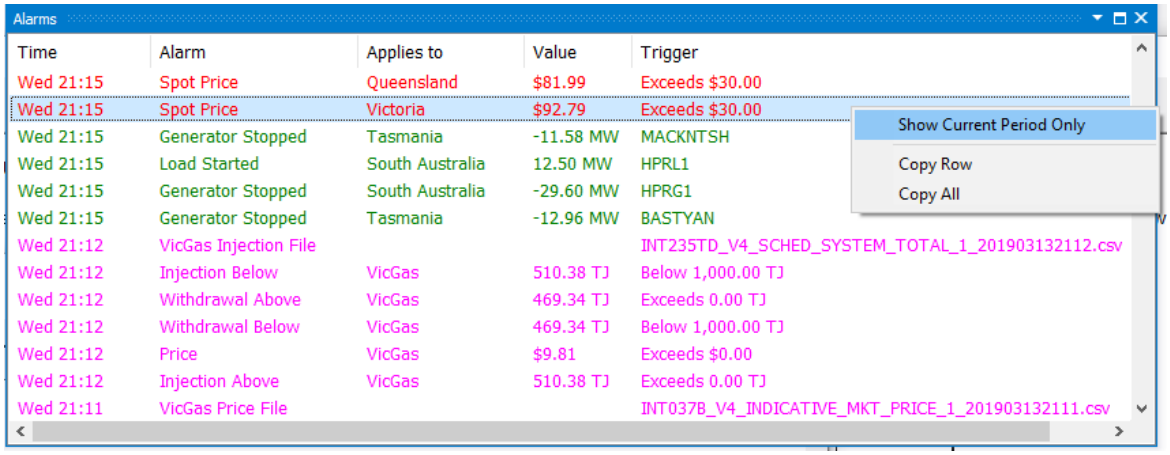
Gas Alarms:

- Vic Gas price exceeds the nominated level
- Vic Gas price drops below the nominated (negative) level
- Vic Gas Injection Above and Below the nominated level
- Vic Gas Withdrawal Above and Below the nominated level
- STTM Quantity exceeds the nominated level
- STTM Ex-Ante Above and Below the nominated level
- STTM Ex-Post above Ex-Ante
- GSH price exceeds the nominated level

- GSH price drops below the nominated (negative) level
- GSH Quantity exceeds the nominated level
- Vic Gas price file
- Vic Gas Injection/Withdrawal File
- STTM Ex-Ante file
- STTM Ex-Post file
- STTM Quantity file
- GSH Summary file

The Gas Alarms will be visible only for the users with the license for Gas module or if the user has Enterprise license





The screen contains a search field, which can be used for a search in the Trigger field for letters or numbers. The results can also be filtered by selecting a field heading.

The displayed alarms can be restricted to the current half hour period using the right click menu.

2.4.2 Dam Levels

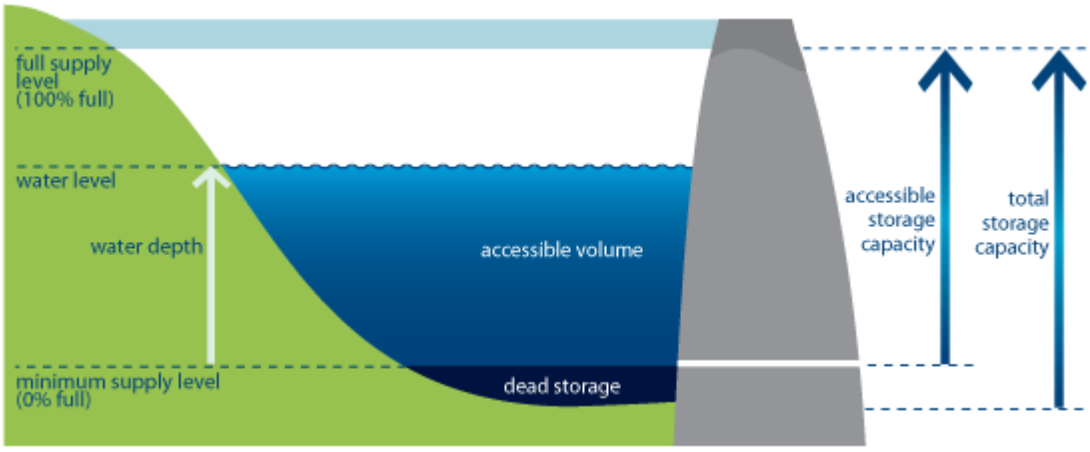
Dam Levels

Dam levels across the NEM regions are collated daily from the Bureau of Meteorology. Energy One does not monitor alternative data sources.

This screen groups the dam levels by participant and presents the following:

- The Capacity of each dam in GL. The Capacity is defined as the volume of water that a water storage can hold between the minimum supply level and full supply level; equal to the total storage capacity excluding the dead storage capacity. It is the sum of this Capacity that is reported for a collection of water storages.

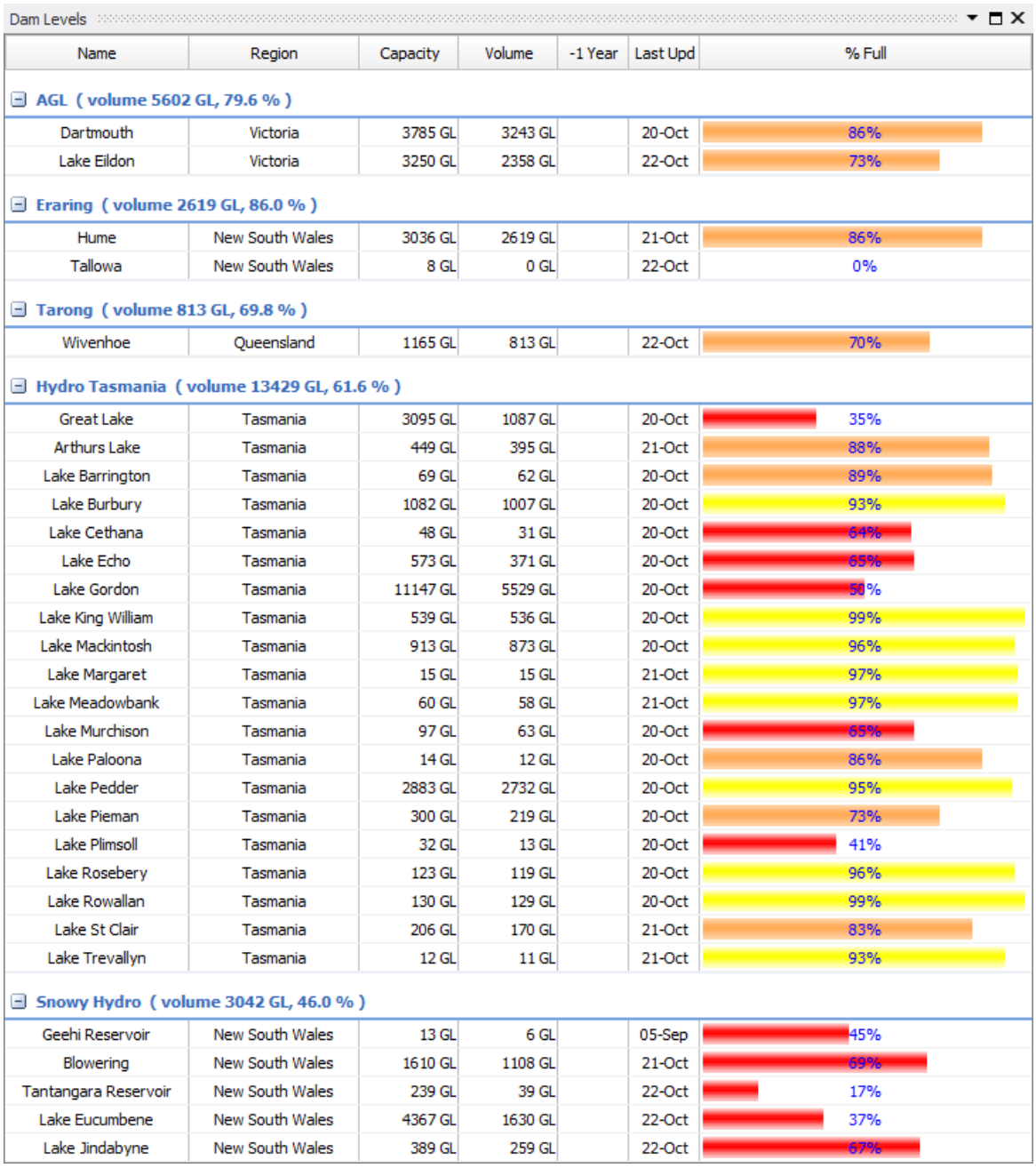
- The Volume of each dam in GL is the volume of water stored at a particular time and date. It excludes the dead storage volume and hence is the volume of water than can be accessed under normal circumstances without the installation of additional infrastructure.



- Last years Volume as a percentage of Capacity.
- The date the Volume figures were last updated
- The % Full which is calculated by dividing the current Volume by the Capacity. This is displayed as a coloured bar which is yellow if the % Full is greater than 90%, orange for values between 70% and 90% and red for values below 70%.

The % Full figure obtained from the Bureau of Meteorology is based on their assessment of the minimum supply level. Please note that this may differ to the minimum supply level assumed by hydro power generators (such as Hydro Tasmania or Snowy Hydro) and their assessment of the storage available. Consequently the % Full figures presented in NemSight may differ from the figures presented by hydro power generators.

Dam Levels can be included in Dashboards.


Dam Levels

Name	Region	Capacity	Volume	-1 Year	Last Upd	% Full
AGL (volume 5602 GL, 79.6 %)						
Dartmouth	Victoria	3785 GL	3243 GL		20-Oct	86%
Lake Eildon	Victoria	3250 GL	2358 GL		22-Oct	73%
Eraring (volume 2619 GL, 86.0 %)						
Hume	New South Wales	3036 GL	2619 GL		21-Oct	86%
Tallowa	New South Wales	8 GL	0 GL		22-Oct	0%
Tarong (volume 813 GL, 69.8 %)						
Wivenhoe	Queensland	1165 GL	813 GL		22-Oct	70%
Hydro Tasmania (volume 13429 GL, 61.6 %)						
Great Lake	Tasmania	3095 GL	1087 GL		20-Oct	35%
Arthurs Lake	Tasmania	449 GL	395 GL		21-Oct	88%
Lake Barrington	Tasmania	69 GL	62 GL		20-Oct	89%
Lake Burbury	Tasmania	1082 GL	1007 GL		20-Oct	93%
Lake Cethana	Tasmania	48 GL	31 GL		20-Oct	64%
Lake Echo	Tasmania	573 GL	371 GL		20-Oct	65%
Lake Gordon	Tasmania	11147 GL	5529 GL		20-Oct	50%
Lake King William	Tasmania	539 GL	536 GL		20-Oct	99%
Lake Mackintosh	Tasmania	913 GL	873 GL		20-Oct	96%
Lake Margaret	Tasmania	15 GL	15 GL		21-Oct	97%
Lake Meadowbank	Tasmania	60 GL	58 GL		21-Oct	97%
Lake Murchison	Tasmania	97 GL	63 GL		20-Oct	65%
Lake Paloona	Tasmania	14 GL	12 GL		20-Oct	86%
Lake Pedder	Tasmania	2883 GL	2732 GL		20-Oct	95%
Lake Pieman	Tasmania	300 GL	219 GL		20-Oct	73%
Lake Plimsoll	Tasmania	32 GL	13 GL		20-Oct	41%
Lake Rosebery	Tasmania	123 GL	119 GL		20-Oct	96%
Lake Rowallan	Tasmania	130 GL	129 GL		20-Oct	99%
Lake St Clair	Tasmania	206 GL	170 GL		21-Oct	83%
Lake Trevallyn	Tasmania	12 GL	11 GL		21-Oct	93%
Snowy Hydro (volume 3042 GL, 46.0 %)						
Geehi Reservoir	New South Wales	13 GL	6 GL		05-Sep	45%
Blowering	New South Wales	1610 GL	1108 GL		21-Oct	69%
Tantangara Reservoir	New South Wales	239 GL	39 GL		22-Oct	17%
Lake Eucumbene	New South Wales	4367 GL	1630 GL		22-Oct	37%
Lake Jindabyne	New South Wales	389 GL	259 GL		22-Oct	67%

For more information, please see the Bureau of Meteorology website:
http://www.bom.gov.au/water/waterstorage/glossary.shtml

2.4.3 Pre-dispatch Prices

Pre-dispatch Prices

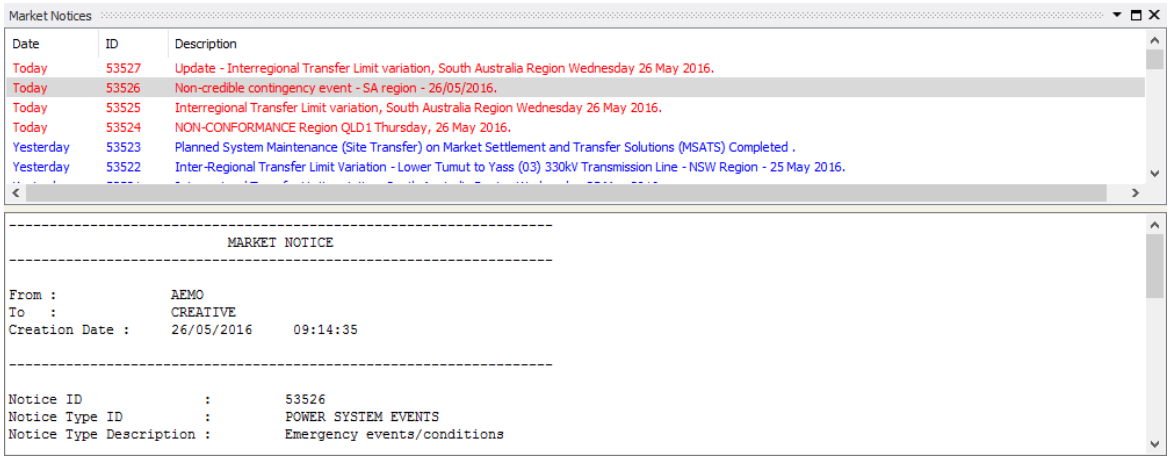
The five minute pre-dispatch prices for the next hour are presented in this screen. They are updated every five minutes when published by AEMO. Pre-dispatch prices can be included in Dashboards.

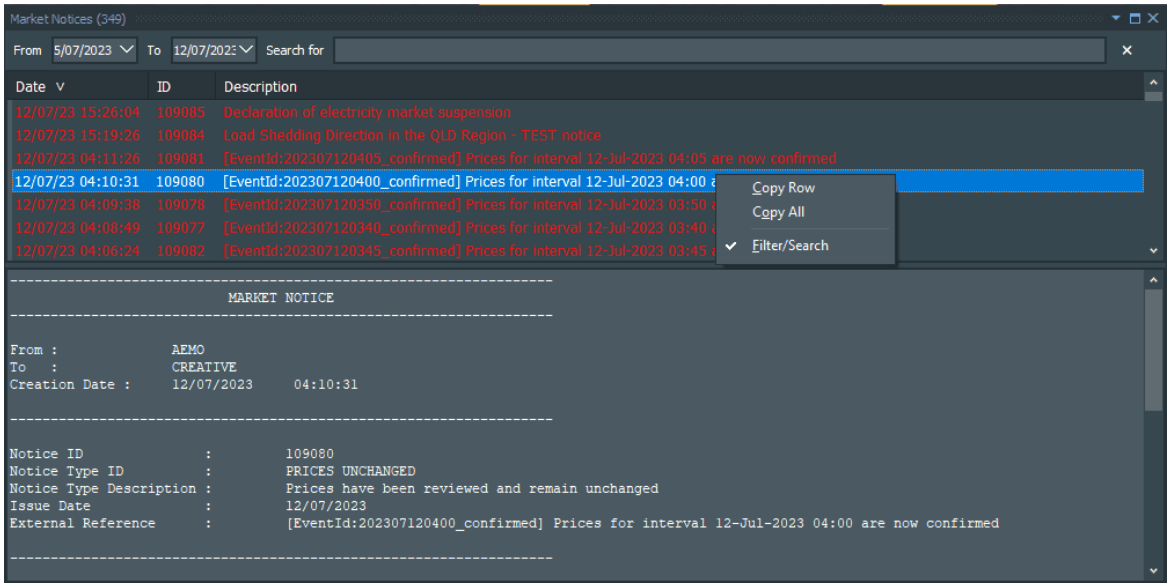
Time	QLD	NSW	VIC	SA	TAS
14:25	73.42	75.75	76.00	81.37	70.28
14:30	74.04	76.38	76.00	81.38	70.28
14:35	74.42	76.34	76.00	81.37	70.28
14:40	75.07	77.00	76.00	81.38	70.28
14:45	79.91	81.81	80.82	86.12	70.28
14:50	79.90	81.81	80.79	86.06	70.28
14:55	85.68	87.70	86.62	92.29	70.28
15:00	85.68	87.07	86.01	91.63	70.28
15:05	80.51	81.81	80.71	85.98	70.28
15:10	85.68	87.05	85.99	91.61	70.28

2.4.4 Market Notices

Market Notices

Market notices for the last seven days are presented in this screen. Click on a market notice in the top section and the details will be displayed in the lower section. Market notices can be included in Dashboards.





The screen contains a search field, which can be used for a search in the Description field for letters or numbers. The results can also be filtered by selecting a field heading.

If older data is required: Zip files (which include market notices) going back to 2002 can also be manually downloaded from AEMO's website at http://www.nemweb.com.au/REPORTS/ARCHIVE/

2.4.5 QTD Averages

Quarter-to-Date and Month-to-Date Averages

This screen displays the quarter and month to date prices for the current quarter for each region up to the current dispatch interval. Note that the dispatch prices used to calculate the averages for the current trading period are an estimate for the current trading period until the trading period is complete. For example, in an extreme case where a price spike appears in the first dispatch period of a trading period and then remaining dispatch prices are significantly less (example: 15:00 on 9 December 2014 in Queensland) then the cap payoff would drop as time progresses through the trading period.

Peak prices are based on periods between 7am to 10pm on working days. Working days are week days excluding public holidays, and the public holidays are set to match the ASX calendars*. The holidays can be observed in the Regional Statistics module. Off-peak prices are based on all periods other than peak.

The "Cap Est" prices are calculated by summing the excess over $300 and dividing by the number of days in the quarter or month so far, the "Cap Min" prices are the same excess total divided by the total number of days in the quarter or month.

This report can be included in Dashboards.

Rgn	Flat	Peak	Off-Peak	Cap Est	Cap Min
QLD	65.91	76.87	57.93	0.78	0.48
NSW	63.10	71.28	56.86	0.00	0.00
VIC	45.92	61.75	33.84	0.00	0.00
SA	56.23	76.44	40.80	3.91	2.39
TAS	146.86	138.98	152.88	21.07	12.87
Current Month Averages					
QLD	65.23	78.36	55.44	1.67	1.38
NSW	59.65	68.02	52.77	0.00	0.00
VIC	45.96	63.69	31.36	0.00	0.00
SA	64.02	91.97	41.01	8.48	7.00
TAS	41.43	47.97	36.04	0.10	0.09

*Note that as the ASX calendars are set in advance, changes to public holidays will not always be reflected in these calendars

2.4.6 Unit Outages

Unit Outages

This report presents the units unavailable between 4am yesterday and 4am today. They represent the units unavailable as at 4am today and the number of hours prior to 4am this morning they were unavailable based on the YestBid file published by AEMO. (Prior to 4am today the results will be for the day before). Unit Outages can be included in Dashboards.

Units unavailable at 4am this morning (and the number of hours yesterday each unit was unavailable prior to 4am)

Unit	Duration	Capacity	Station	Company	Region
BARCALDN	24 hours	37 MW	Barcaldine	Ergon Energy	QLD1
TORRB1	24 hours	210 MW	Torrens Island	AGL	SA1
TORRA3	24 hours	120 MW	Torrens Island	AGL	SA1
GSTONE2	24 hours	285 MW	Gladstone	CS Energy	QLD1
ER03	24 hours	750 MW	Eraring	Origin Energy	NSW1
TNPS1	24 hours	480 MW	Tarong North	Stanwell	QLD1
BW02	24 hours	700 MW	Bayswater	AGL	NSW1
VP6	24 hours	680 MW	Vales Point B	Delta	NSW1
KPP_1	24 hours	781 MW	Kogan Creek	CS Energy	QLD1
HUMEV	24 hours	70 MW	Hume	Green State Power	VIC1
CALL_B_2	24 hours	385 MW	Callide	CS Energy	QLD1
URANQ12	8 hours	166 MW	Uranquinty	Origin Energy	NSW1
TVCC201	24 hours	208 MW	Tamar Valley	Hydro-Electric Corporation	TAS1
TORRB2	24 hours	210 MW	Torrens Island	AGL	SA1

2.5 Live Network

Live Network

The Live Network module displays live generation, spot price, constraints, and current and future line outages in the context of the electrical network schematic. The Live Network diagram can display data for prior days to today. The schematic diagram has been simplified to fit into a computer screen and is not necessarily accurate or up to date. Be aware that the configuration of lines, bus bars and generations does not change as you move back in time. Live Network windows can be included in Dashboards with default settings of 7 Days of Outages, Generation ticked so that total generation is displayed under each Power Station and lines coloured by voltage.

Lines

The line and bus bars represent a simplified single line diagram, colours indicate different voltages. Moving the mouse across the diagram will display line voltages and bus names.

Outages

Live line outages are displayed with a red blocked circle for "current" outages and a yellow warning triangle for "future" outages. The amount of forward looking days which will be included for line outages is controlled in the top menu bar. The logic to extract current and future outages is based on fuzzy matching and consequently not all outages may be identified. Outage information is for the current date only and is not available as you move back in time.

Generators

Generators are displayed in light blue, however they will change to red if they are constrained off and green if they are constrained on due to binding constraints in the selected Dispatch period. If all of the units associated with a Generator are shutdown (zero MW) the colour will change to grey. If Generation is ticked the total generation is displayed under each Power Station. Holding the mouse over a generator will display the output of each unit at that Power Station along with the spot price, total generation and capacity. The generation values are instantaneous MW at the start of the selected Dispatch period. **If a generator does not have scada data, its details will still appear on hover, however the message "no scada" will be displayed in the details.**

Binding Constraints

All binding constraints relating to a selected 5 minute dispatch period are displayed in the window to the left of the map. These may be double-clicked to open in Constraint Viewer.

Substation IDs are now visible in the Constraint information on hover.

Search

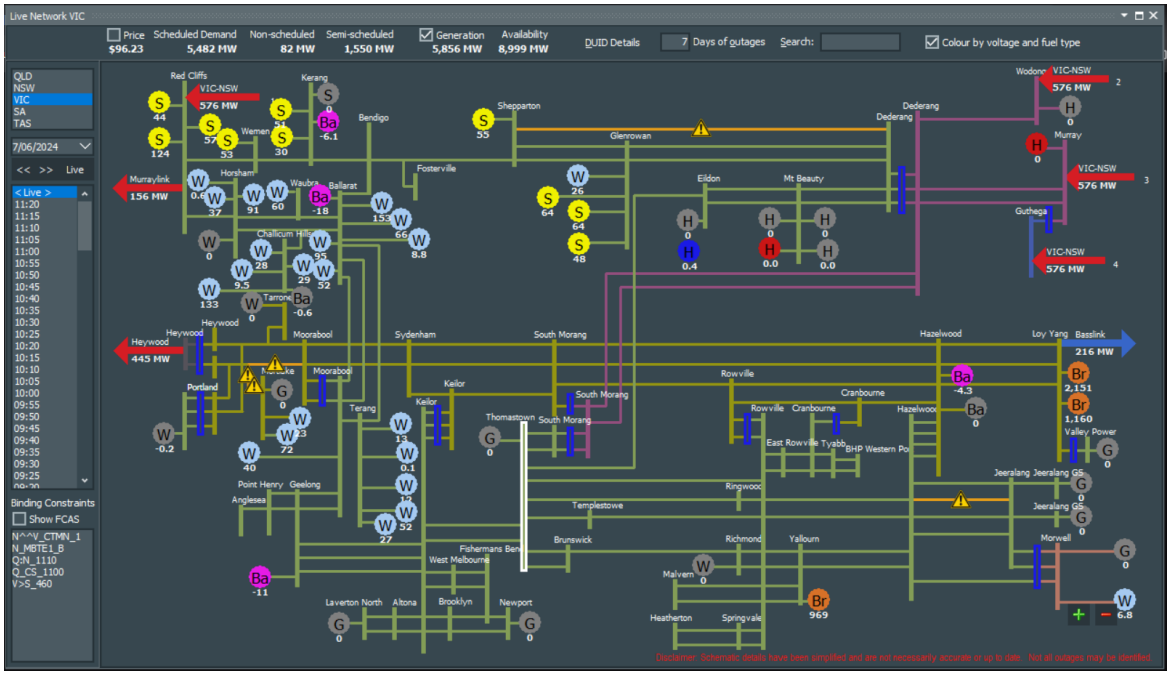
The elements of this map may be searched for using the "Search" button in the menu bar. The resulting search results will be highlighted in bright green.

DUID Details

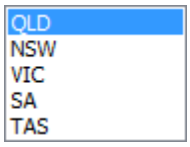
The DUID details button will open up the DUID Details screen.

Right click on a on a Station in any live network screen and click DUID details. This will open the DUID details screen and automatically select all DUIDs linked to the Generator.

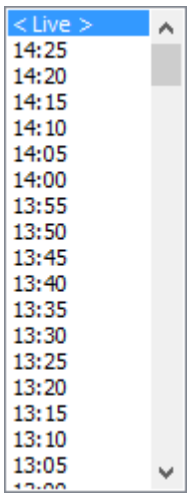
Navigating to Live Network screen from DUID Details screen for any selected generator, will highlight the generator in bright green in Live Network screen.



Select a region in the top left



Select either Live to refresh the display as new data becomes available, or select a 5 minute dispatch period and date.



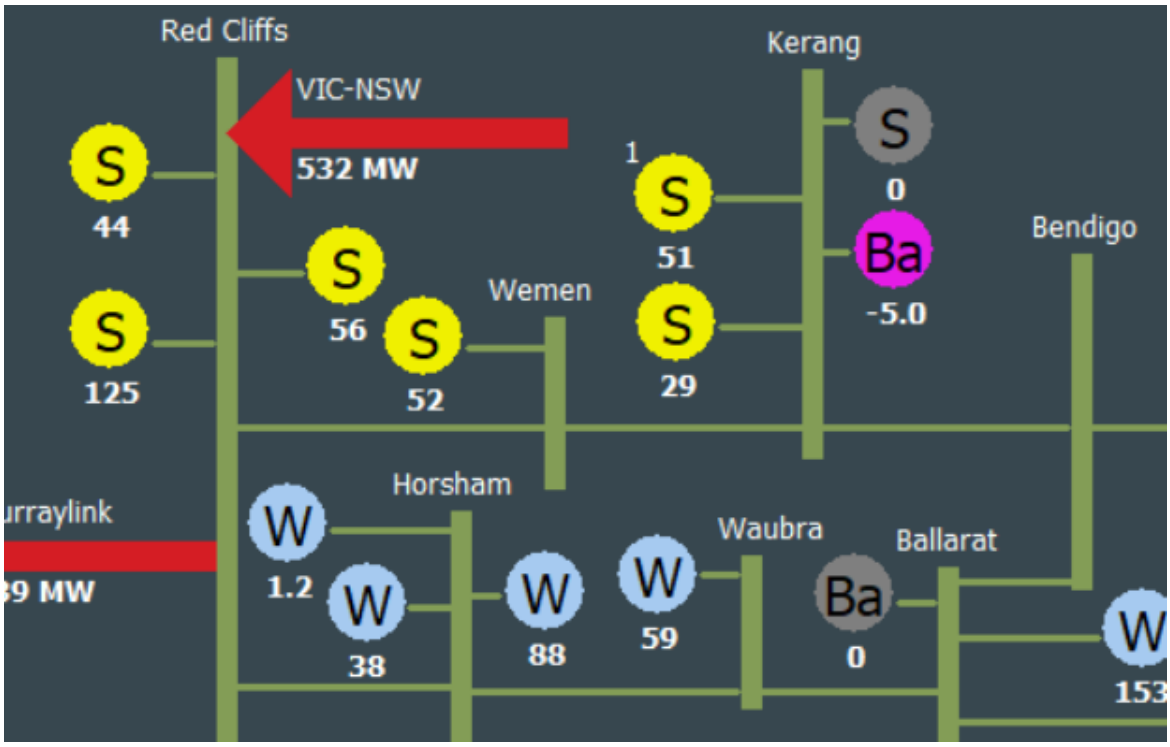
Once a date is selected, any generators not in commission at that date will display a "Not in commission" message on hover.

The tick box in the top left toggles the display to show the spot price at each TNI (according to the current set of loss factors) or the name of the TNI.

Copy to clipboard (via CTRL-C) is enabled to allow for ease of copying of the underlying data.

The left panel may be hidden using the right click menu.

The diagram can be zoomed with the scroll wheel or with the buttons on the bottom left of the screen. Once zoomed, the mouse can be used to move the screen around.



2.6 Live Gas Overview

Live Gas Overview

The gas overview screens give a live snapshot of the latest price, supply and demand information for the STTM, VIC gas and GSH markets. They refresh throughout the day as new schedules are released by AEMO. Please see the Glossary for descriptions of the terms and data values. A right click menu provides the ability to copy the data or select larger or smaller fonts. Live Gas Overview windows can be included in Dashboards.

STTM Gas Market - QLD, NSW, SA

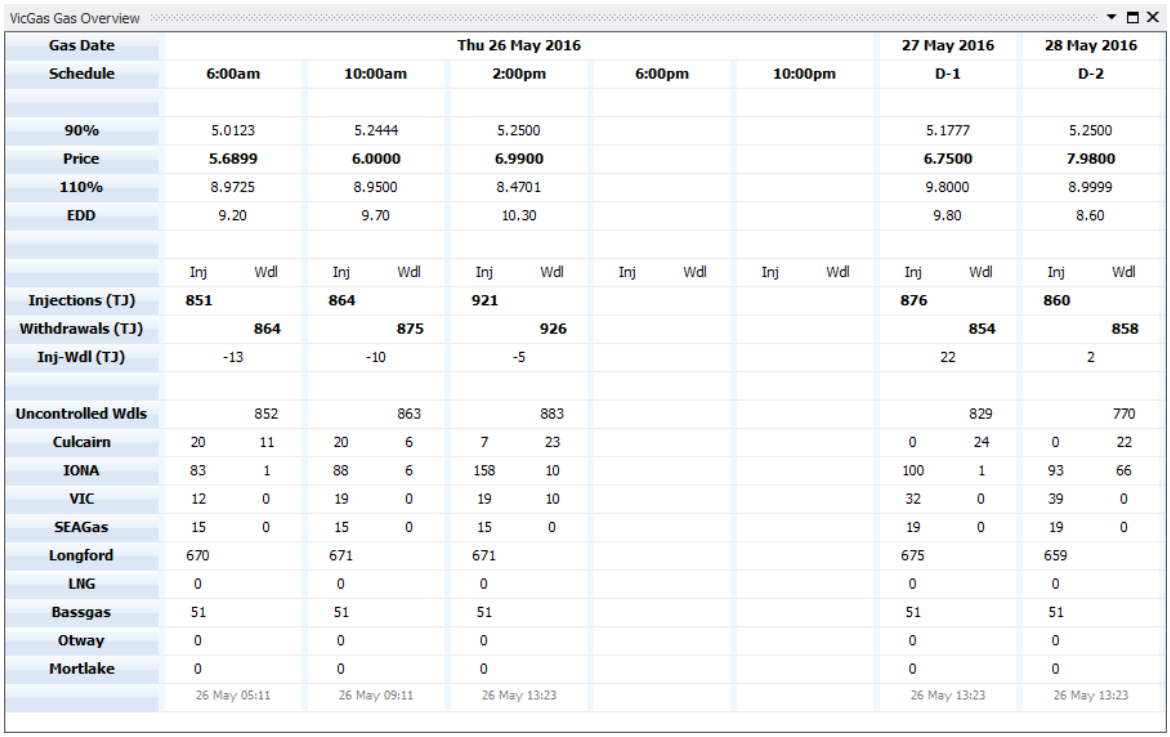
The overview screens for each region display 7 gas days including 3 historical, today, and 3 future days. The historical days include ex-post prices. The future days display the most recent provisional schedule data (D-2 and D-3). When tomorrow's ex-ante schedule is released tomorrow's gas day will be refreshed to display this data. At the commencement of the gas day, the overview will update so that the highlighted cells represent the current gas day. The SA and NSW gas day commences at 6.30am. The QLD gas day commences at 8am

STTM - Adelaide Gas Overview

Gas Date	30 Mar 2019		31 Mar 2019		01 Apr 2019		02 Apr 2019		03 Apr 2019		04 Apr 2019		05 Apr 2019	
Schedule							ex ante		D-2		D-3			
Ex-ante Price	10.7789		10.6549		10.7789		10.7066		10.7481		10.7400			
Ex-post Price	10.7789		10.6549											
Quantity (TJ)	45		46		52		50		48		48			
	Inj	Wdl	Inj	Wdl	Inj	Wdl	Inj	Wdl	Inj	Wdl	Inj	Wdl	Inj	Wdl
NETADL1		44		44		49		48		46		45		
MAP	33	0	35	2	30	2	42	2	39	2	37	2		
SEAGAS	12	1	12	1	22	1	8	0	9	0	11	0		
	1 Apr 12:31		1 Apr 12:31		1 Apr 13:30		1 Apr 15:31		1 Apr 15:31		1 Apr 15:31			
	INT657		INT657		INT652		INT655		INT655		INT655			

VIC Gas Market

The VIC overview screen displays the current gas day's schedules and 2 future days. In the event that AEMO releases multiple versions of a schedule prior to it's commencement time, the latest will always be used. The future days use the most recent provisional schedules available. The VIC gas day commences 6am and will update prior to this to show new gas day schedule.



VicGas Gas Overview

Gas Date	Thu 26 May 2016										27 May 2016		28 May 2016	
Schedule	6:00am		10:00am		2:00pm		6:00pm		10:00pm		D-1		D-2	
90%	5.0123		5.2444		5.2500						5.1777		5.2500	
Price	**5.6899**		**6.0000**		**6.9900**						**6.7500**		**7.9800**	
110%	8.9725		8.9500		8.4701						9.8000		8.9999	
EDD	9.20		9.70		10.30						9.80		8.60	
	Inj	Wdl	Inj	Wdl	Inj	Wdl	Inj	Wdl	Inj	Wdl	Inj	Wdl	Inj	Wdl
Injections (TJ)	**851**		**864**		**921**						**876**		**860**	
Withdrawals (TJ)		**864**		**875**		**926**						**854**		**858**
Inj-Wdl (TJ)	-13		-10		-5						22		2	
Uncontrolled Wdls		852		863		883						829		770
Culcairn	20	11	20	6	7	23					0	24	0	22
IONA	83	1	88	6	158	10					100	1	93	66
VIC	12	0	19	0	19	10					32	0	39	0
SEAGas	15	0	15	0	15	0					19	0	19	0
Longford	670		671		671						675		659	
LNG	0		0		0						0		0	
Bassgas	51		51		51						51		51	
Otway	0		0		0						0		0	
Mortlake	0		0		0						0		0	
	26 May 05:11		26 May 09:11		26 May 13:23						26 May 13:23		26 May 13:23	

Gas Supply Hub (GSH) - WAL, SEQ

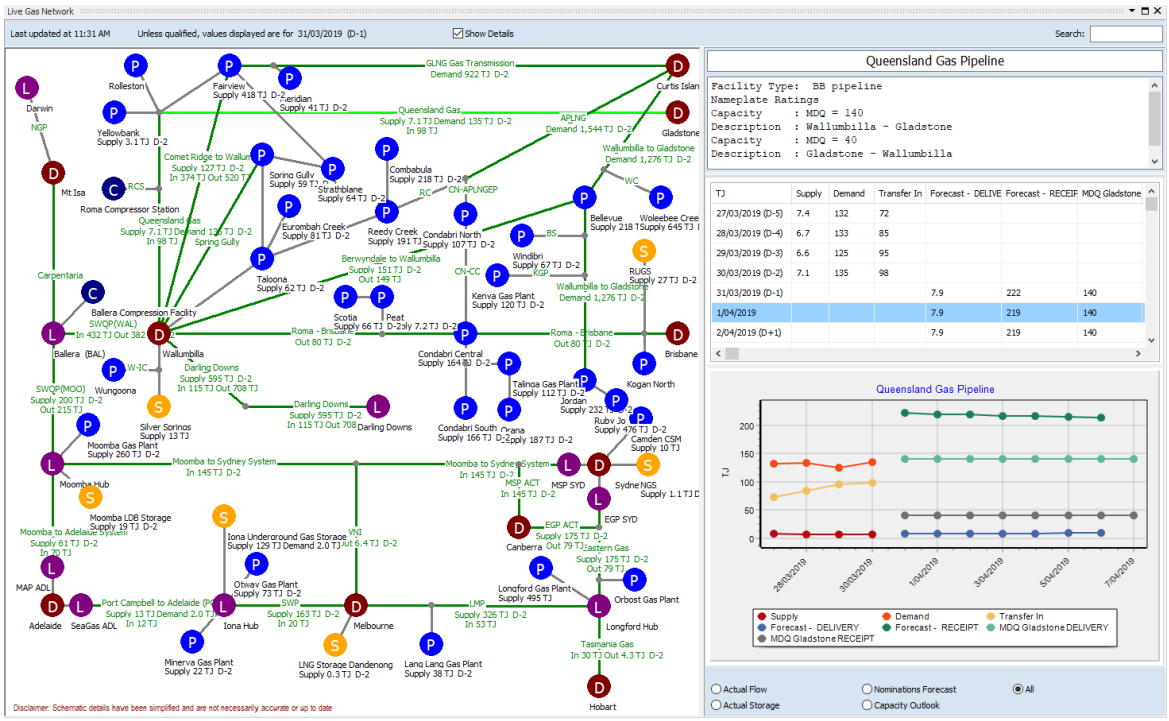
The GSH overview windows display the most recent 6 days of prices and quantities for the selected hub. In addition, the most recent trades for a hub are displayed below the historical summary. Currently only the trades from the most recent AEMO Public_GSHDailyTransactionSummary file are displayed.

GSH - SEQ Gas Overview

Date	03 Aug 2017	04 Aug 2017	05 Aug 2017	06 Aug 2017	07 Aug 2017	08 Aug 2017
Vol Weighted Price	**7.2239**	**7.3340**	**7.2038**	**7.2850**	**7.0825**	**7.1414**
Rolling Avg Price	**6.9207**	**6.9286**	**6.9250**	**6.9256**	**6.9172**	**6.9336**
Quantity (GJ)	38000	30000	18000	9000	17000	12000
Last Trade(s)	Low	High	Price	Volume	Trades	Contract
07 Aug 2017	7.1500	7.1500	7.1500	5000	1	08/08-08/08
07 Aug 2017	7.1500	7.1500	7.1500	5000	1	09/08-09/08
07 Aug 2017	7.0000	7.1500	7.0800	10000	2	07/08-07/08

2.7 Live Gas Network

The Live Gas Network module displays a schematic of the Eastern Australian gas network. Click on a gas production plant, demand hub or pipeline to display flow and capacity information as well as a chart of the forecast flow nominations. Only the Gas Network diagram on the left panel will be saved in a Dashboard. The right panel can be turned off so just the gas network diagram is shown using the right-click menu.



The flows displayed on the main schematic are updated throughout the day when published by AEMO. At the beginning of the day they will be for day (D-2), ie the day before yesterday. These nodes will be qualified with the text "D-2" beneath the node to the right of the flow. As AEMO progressively publishes data, individual nodes will be updated by one day to yesterday (D-1), and this qualifying text will be removed. Towards the end of the work day, all nodes should have been updated.

Click on **Show details** check box in order to see the Supply/ Demand/ Transfer In / Transfer out details for the Actual Flow. Only the Non zero values will be displayed. If the check box is not selected, only the Flow will be displayed.

By default the table will display "All" the values, but the user can choose : Actual Flow , Nomination Forecast, Actual Storage or Capacity Outlook to be displayed in the table by selecting the individual option.
The chart can be further zoomed In/Out if required using the mouse by left clicking and dragging a rectangle towards right for zooming in and dragging the rectangle towards left to restore to original view.

Actual Flow

The Actual Flow will display non zero flow value for (D-1), (D-2) up to (D-5) days for the selected Pipeline / Facility / Storage. If the "**Show Details**" check box has been selected, Actual flow table will display Supply, Demand, Transfer In & Transfer out values. All values are expressed as terajoules per day (TJ/day)

The Flow is calculated based on the generic formula:

Facility Type	Flow formula
Pipeline	Flow = Supply + Transfer In - Demand - Transfer Out
Production Facility	Flow = Supply
Compression Facility	Flow = Supply
Storage	Flow = Demand - Supply

There are few exceptions where the pipeline or facility does not follow the above mentioned generic formula. The exceptions are mentioned below:

- **Flow = Transfer In**
  - Moomba to Sydney Pipeline System
  - MSP ACT

- **Flow = Demand**
  - Queensland Gas Pipeline
  - Wallumbilla to Gladstone Pipeline
  - GLNG Gas Transmission Pipeline
  - APLNG Pipeline

Nominations Forecast
Nomination forecast displays non-zero forecast data (Forecast RECEIPT and Forecast DELIVERY for Pipelines and Forecast for Storage and Facility) for (D-1), (Current), (D+1), (D+2) up to (D+5) days.

Actual Storage
This table will display the non-zero storage values for (D-1), (D-2) up to (D-5) days for the selected Storage.

Capacity Outlook
This table displays the non-zero short term capacity outlook values for (D-1), Current, (D+1) up to (D+6) days for the selected Pipeline/Facility or Storage.

Name Plate Rating
This section displayed at the top right panel displays the nameplate capacity for the selected Pipeline/ Facility or Storage.

Conventions in the Gas Network Diagram

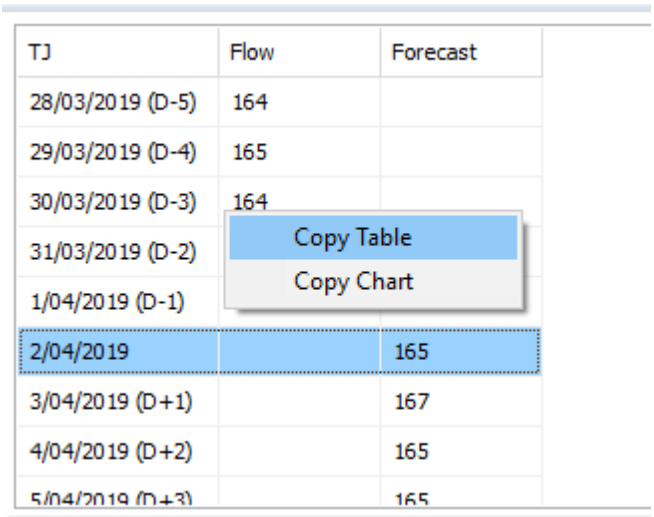
Code	Description
P	Production Facility
S	Storage
L	Location
D	Demand Zone
C	Compression Facility

Database tables that are accessed for Gas BB data
Following database tables are accessed to get the latest values for the Gas network diagram and table.

- GAS_DAILY_FLOW_ACTUAL
- GAS_NOMINATIONS_FORECAST_AGG
- GAS_SHORT_TERM_CAP_OUTLOOK
- GAS_NAMEPLATE_RATING

Multiple Gas Network diagrams can be opened and, if saved as part of the set of open windows when NemSight is closed, they will be restored displaying the details of the last selected plant or pipeline.

Copy Table/Chart
Right click on the table and choose either Copy Table or Copy Chart option in order to copy the Table / Chart.



Search
The elements of this map may be searched for using the "Search" field in the menu bar. The resulting search results will be highlighted in bright green.

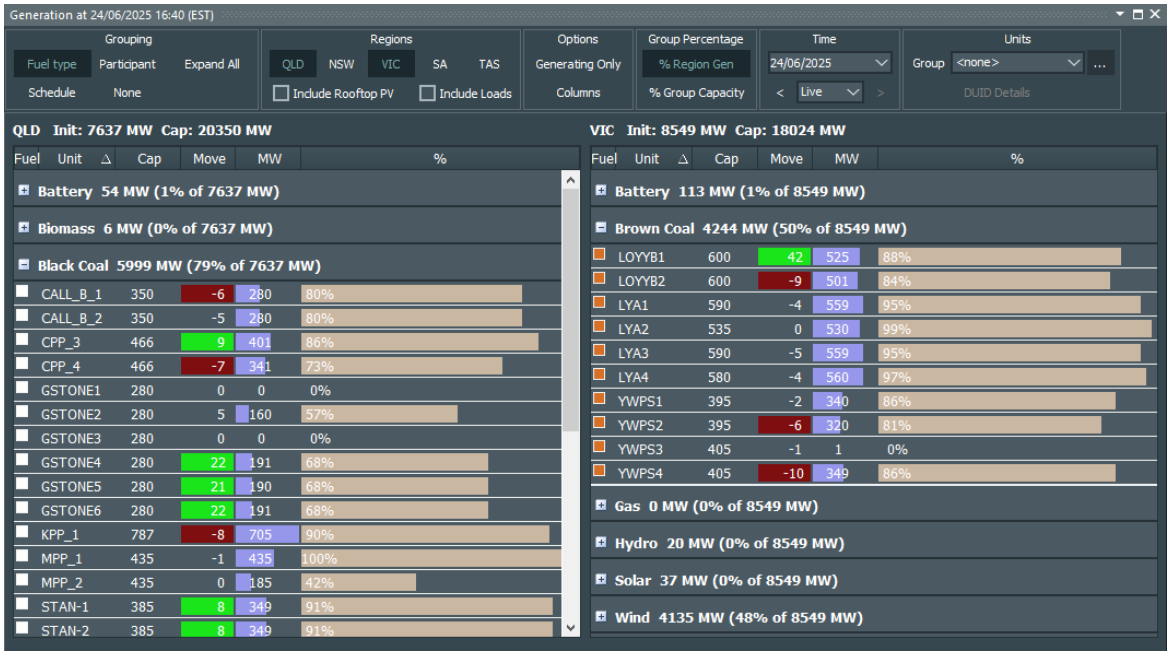
See the Gas BB section in the Glossary for the meaning of the codes.

2.8 Live Generation

Live Generation

This module displays live generation for the current period for all dispatchable generators in selected regions, highlighting the fuel with a small coloured rectangle to the left. Regions can be included or excluded by clicking the region buttons. The generators can be grouped by fuel, participant, schedule type or no grouping. Generators starting are displayed with their names highlighted in green while generators stopping have their names highlighted in red. Users can choose a period by clicking the buttons to the side, clicking the drop down and selecting a period, along with selecting a date from the date picker. The Movement column highlights the increase or decrease in generation from the previous 5 minute period with a bright green or red background block. The Generating Only button filters the generators further to just those currently generating. The display of each column can be toggled by right-clicking the column headers and the widths changed by dragging the column separators. The % Group Capacity shows the total group generation as a percentage of the group itself rather than the region's generation. The Time panel enables the user to view the generation for previous dispatch periods.

Live Generation can be included in a Dashboard.



This module is only available in the Electricity Premium and Enterprise editions.

Include Loads check box is made available to include the Batteries and Pumps.
Generating Only button allows the user to display only DUIDs that are currently generating.

If your licence includes Rooftop PV, a checkbox will be visible which will allow AEMO's rooftop PV data to be toggled. If included, this displays the current generation, linearly interpolated at the displayed dispatch interval between the forecast generation at the beginning and end of the current half-hourly rooftop PV interval.

DUID Details
Clicking on the DUID details button will open up the DUID Details screen displaying all the

DUIDs by default.
Right click on a DUID in live Generation screen and select DUID details. This will open the DUID details screen and automatically filter to show the selected DUID only. You may select other DUIDs once you are in this screen.

Note: Decommissioned Units are no longer visible in Live Generation.

2.9 Live Charts

Live Dispatch and Pre-dispatch Charts

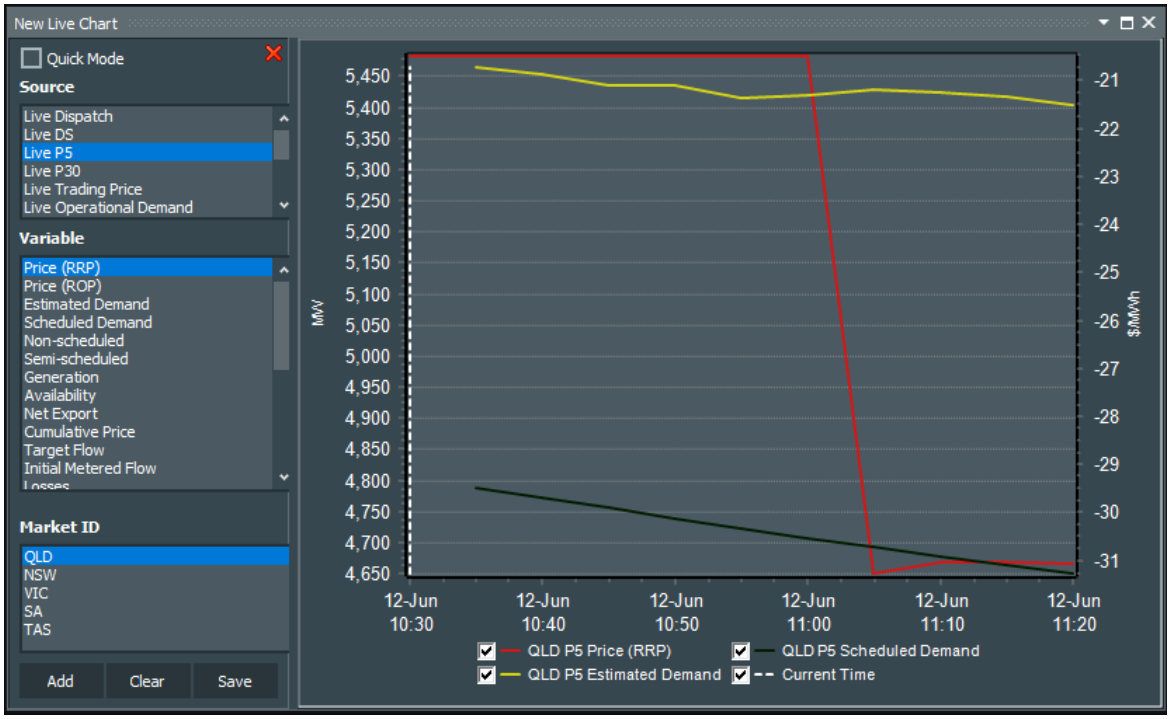
Live Charts present data from dispatch, pre-dispatch, price sensitivities, short and medium term PASA file sources. Live charts are built by adding data series to the chart. A live chart and its associated series definitions can be saved and will then be available to be created at another time via the "Saved Charts" menu. Saved and/or Unsaved Live Charts can be included in a Dashboard. Saving a Chart will provide a user-defined title for the window rather than a generic 'Live Chart' window title.

A data series is added to a chart by selecting a Source, Variable, Market ID and then clicking the Add button. The list of variables will change depending on the selected source, and the set of market ID's will change depending on the selected variable.

Quick Mode enables fast chart creation of a sub-set of dispatch and pre-dispatch data by clicking on one or more variables and one or more regions. Charts created in Quick Mode cannot be saved to a Dashboard.

The Save button saves the chart and all the series definitions to the list of saved charts. The chart can then be re-created at a later time by selecting Saved Charts from the main menu.

The section on Charts describes further functionality common to charting windows.



Source	Description
Dispatch	Combines historical dispatch for the last few days, the current dispatch interval, 5 minute predispatch and 30 minute predispatch. Where 5 and 30 minute predispatch overlap only 5 minute predispatch is displayed
DS	Historical dispatch for the last few days up to the current dispatch interval
P5	5 minute predispatch (currently available for the next hour)

P30	30 minute predispatch (currently available until 4AM market time tomorrow)
Trading Price	Trading Price is the interval level settlement price paid to generators and paid by retailers
Operational Demand	Operational Demand refers to demand for a region that is met by units whose aggregated MW capacity is >30
Price Sensitivities	30 minute price sensitivities showing the predicted effect on price given changes to demand for the selected variable
Short-term PASA	30 minute short term PASA regional availability, demand and other data for approx. 1 week sourced from the most recently published STPASA data
MTPASA	Daily medium term PASA regional generation, capacity and other data for 2 years sourced from the most recently published MTPASA data
MTPASA Region Availability	Daily medium term PASA regional scheduled availability, demand and other data for 3 years sourced from the most recently published MTPASA Region Availability data
MTPASA Interconnector	Daily interconnector flow, import and export data for 2 years sources from the most recently published MTPASA Interconnector data
FCAS	Combines historical FCAS market prices for the current day with 5 minte predispatch and 30 minute predispatch prices

2.10 Constraints

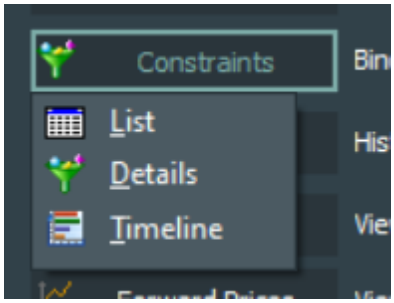
Constraints

This module displays a variety of constraints:

- Binding constraints for today based on Dispatch, 5 minute Pre-dispatch and 30 minute Pre-dispatch
- Invoked constraints
- Analysis of historical constraints
- Interconnector constraints from the 30 minute Pre-dispatch

A constraints dictionary provides further information on a constraint or constraint set.

The constraints window can be included in Dashboards with it's default settings.



2.10.1 Binding

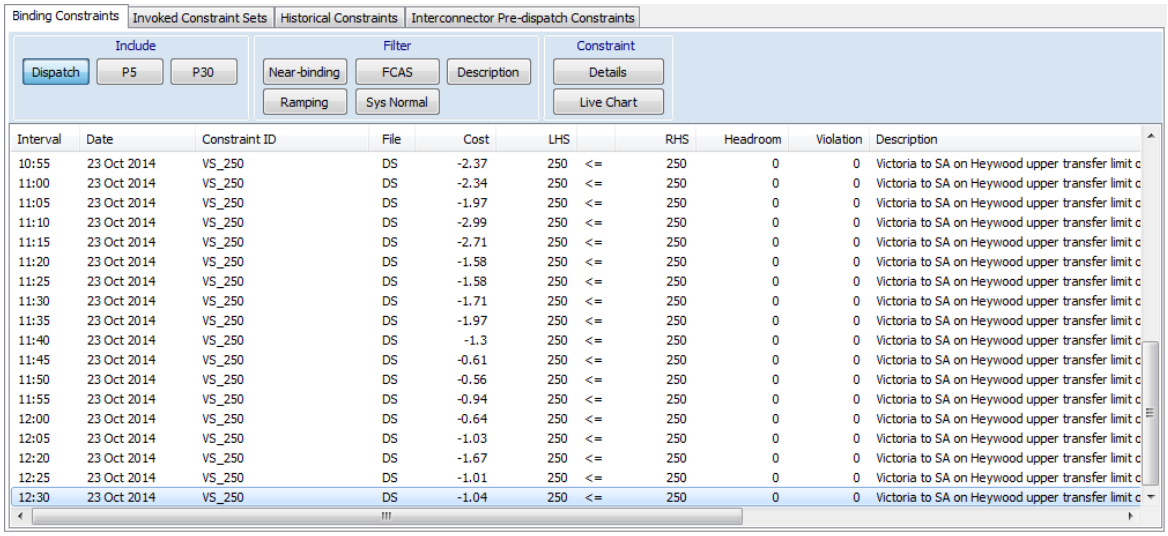
Binding Constraints

This tab displays Dispatch, and 5 minute and 30 minute Pre-dispatch constraints, and each dataset can be individually included/excluded. The list displays the marginal value of each constraint (Cost), its left-hand-side value (LHS), right-hand-side value (RHS), headroom and the violation degree. The headroom is the difference between the LHS and RHS if the constraint is not binding. The violation degree is the difference between the LHS and RHS if the constraint is binding.

The filter allows Near-binding Pre-dispatch, Ramping, FCAS and System Normal constraints to be included or not. Near-binding constraints are defined as those constraints with a headroom (difference between the LHS and RHS) of 50 units or less. The Description filters constraints which contain the specified text.

Click the Details button to launch the Constraints Dictionary for the particular constraints (or double-click). Click the Live Chart button to build a live chart of the LHS, RHS and marginal value for the particular constraint.

Right-click on the list to copy the constraint ID or all the data on the grid.



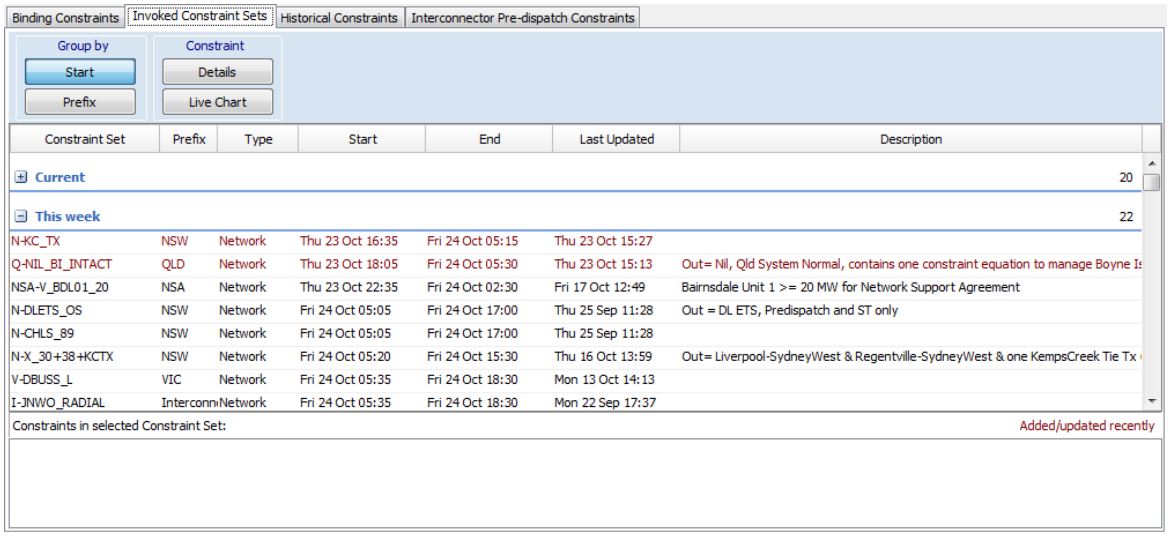
2.10.2 Invoked

Invoked Constraints

This tab displays Invoked constraints that are current, start this week, start next week, and start beyond next week. It identifies the start and end date of each outage and the description. Selecting a line displays the constraints included in the constraint set associated with the invoked constraint. Click on a constraint (in the lower panel) to launch the constraint viewer to see further details on the constraint. This module displays the Invoked Constraints published over the last 30 days.

The table can be grouped by the Start date or the Constraint Set prefix. If a constraint is selected from the lower panel then click the Details button to launch the Constraints Dictionary for the particular constraints (or double-click). Click the Live Chart button to build a live chart of the LHS, RHS and marginal value for the particular constraint.

Right-click on the list to copy the constraint ID or all the data on the grid.



2.10.3 Historical

Historical Constraints

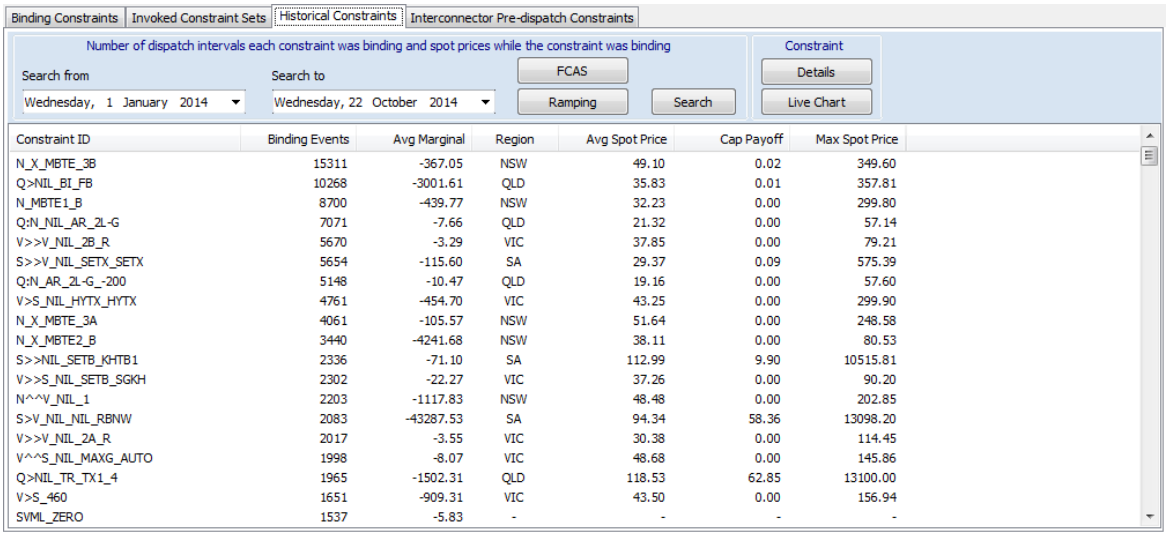
This tab searches through binding constraints over a nominated date-range and presents aggregate information about each constraint.

Binding Events - the number of dispatch periods within the date-range that the constraint was binding.
Avg Marginal - the average marginal cost of the constraint over the date-range.
Region - the region in which the constraint belongs.
Avg Spot Price - the average spot prices for the dispatch periods for which the constraint was binding (if the region is known).
Cap Payoff - the cap payoff for the dispatch periods for which the constraint was binding (if the region is known).
Max Spot Price - the maximum dispatch price within the dispatch periods for which the constraint was binding (if the region is known).

FCAS and/or Ramping type constraints can be included or not in the search.

Click the Details button to launch the Constraints Dictionary for the particular constraints (or double-click). Click the Live Chart button to build a live chart of the LHS, RHS and marginal value for the particular constraint.

Right-click on the list to copy the constraint ID or all the data on the grid.



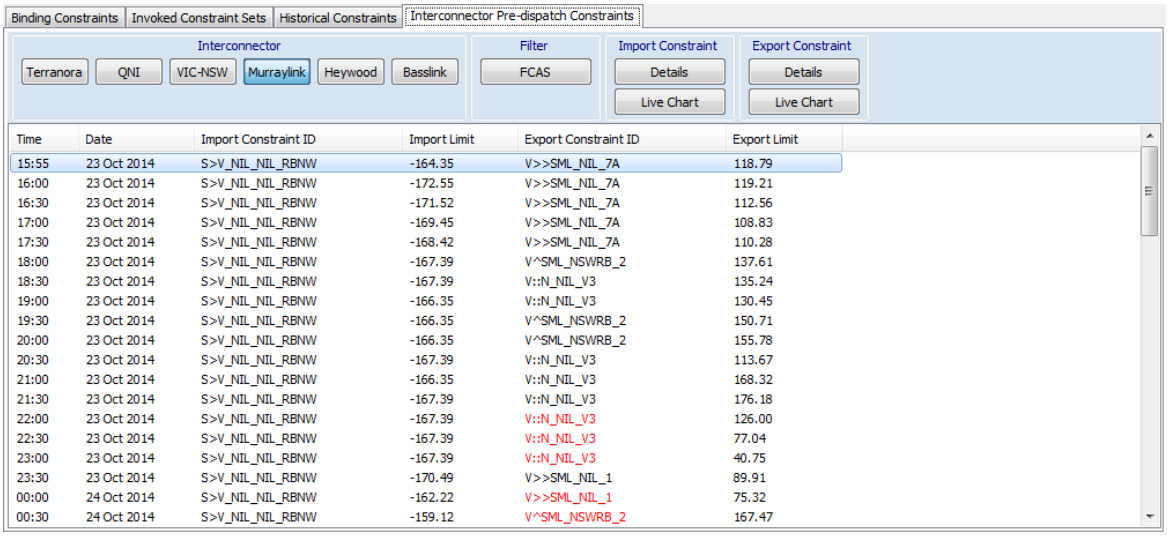
Constraint ID	Binding Events	Avg Marginal	Region	Avg Spot Price	Cap Payoff	Max Spot Price
N_X_MBTE_3B	15311	-367.05	NSW	49.10	0.02	349.60
Q>NIL_BI_FB	10268	-3001.61	QLD	35.83	0.01	357.81
N_MBTE1_B	8700	-439.77	NSW	32.23	0.00	299.80
Q:N_NIL_AR_2L-G	7071	-7.66	QLD	21.32	0.00	57.14
V>>V_NIL_2B_R	5670	-3.29	VIC	37.85	0.00	79.21
S>>V_NIL_SETX_SETX	5654	-115.60	SA	29.37	0.09	575.39
Q:N_AR_2L-G_-200	5148	-10.47	QLD	19.16	0.00	57.60
V>S_NIL_HYTX_HYTX	4761	-454.70	VIC	43.25	0.00	299.90
N_X_MBTE_3A	4061	-105.57	NSW	51.64	0.00	248.58
N_X_MBTE2_B	3440	-4241.68	NSW	38.11	0.00	80.53
S>>NIL_SETB_KHTB1	2336	-71.10	SA	112.99	9.90	10515.81
V>>S_NIL_SETB_SGKH	2302	-22.27	VIC	37.26	0.00	90.20
N^^V_NIL_1	2203	-1117.83	NSW	48.48	0.00	202.85
S>V_NIL_NIL_RBNW	2083	-43287.53	SA	94.34	58.36	13098.20
V>>V_NIL_2A_R	2017	-3.55	VIC	30.38	0.00	114.45
V^^S_NIL_MAXG_AUTO	1998	-8.07	VIC	48.68	0.00	145.86
Q>NIL_TR_TX1_4	1965	-1502.31	QLD	118.53	62.85	13100.00
V>S_460	1651	-909.31	VIC	43.50	0.00	156.94
SVML_ZERO	1537	-5.83	-	-	-	-

2.10.4 Interconnector

Interconnector Constraints

This tab displays the 30 minute pre-dispatch constraints for a selected interconnector. FCAS constraints can be filtered out or displayed. Click the Details button to launch the Constraints Dictionary for the particular constraints. Click the Live Chart button to build a live chart of the LHS, RHS and marginal value for the particular constraint. Binding constraints are displayed in red and non-binding FCAS constraints are displayed in grey.

Right-click on the list to copy the constraint ID or all the data on the grid.



Time	Date	Import Constraint ID	Import Limit	Export Constraint ID	Export Limit
15:55	23 Oct 2014	S>V_NIL_NIL_RBNW	-164.35	V>>SML_NIL_7A	118.79
16:00	23 Oct 2014	S>V_NIL_NIL_RBNW	-172.55	V>>SML_NIL_7A	119.21
16:30	23 Oct 2014	S>V_NIL_NIL_RBNW	-171.52	V>>SML_NIL_7A	112.56
17:00	23 Oct 2014	S>V_NIL_NIL_RBNW	-169.45	V>>SML_NIL_7A	108.83
17:30	23 Oct 2014	S>V_NIL_NIL_RBNW	-168.42	V>>SML_NIL_7A	110.28
18:00	23 Oct 2014	S>V_NIL_NIL_RBNW	-167.39	V^SML_NSWRB_2	137.61
18:30	23 Oct 2014	S>V_NIL_NIL_RBNW	-167.39	V::N_NIL_V3	135.24
19:00	23 Oct 2014	S>V_NIL_NIL_RBNW	-166.35	V::N_NIL_V3	130.45
19:30	23 Oct 2014	S>V_NIL_NIL_RBNW	-166.35	V^SML_NSWRB_2	150.71
20:00	23 Oct 2014	S>V_NIL_NIL_RBNW	-166.35	V^SML_NSWRB_2	155.78
20:30	23 Oct 2014	S>V_NIL_NIL_RBNW	-167.39	V::N_NIL_V3	113.67
21:00	23 Oct 2014	S>V_NIL_NIL_RBNW	-166.35	V::N_NIL_V3	168.32
21:30	23 Oct 2014	S>V_NIL_NIL_RBNW	-167.39	V::N_NIL_V3	176.18
22:00	23 Oct 2014	S>V_NIL_NIL_RBNW	-167.39	V::N_NIL_V3	126.00
22:30	23 Oct 2014	S>V_NIL_NIL_RBNW	-167.39	V::N_NIL_V3	77.04
23:00	23 Oct 2014	S>V_NIL_NIL_RBNW	-167.39	V::N_NIL_V3	40.75
23:30	23 Oct 2014	S>V_NIL_NIL_RBNW	-170.49	V>>SML_NIL_1	89.91
00:00	24 Oct 2014	S>V_NIL_NIL_RBNW	-162.22	V>>SML_NIL_1	75.32
00:30	24 Oct 2014	S>V_NIL_NIL_RBNW	-159.12	V^SML_NSWRB_2	167.47

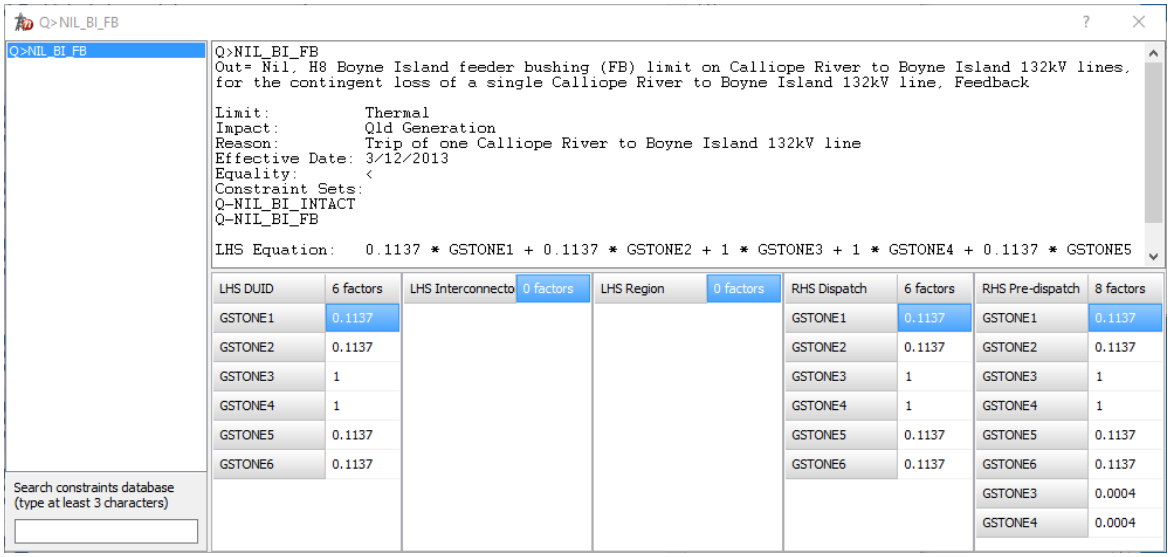
2.10.5 Dictionary

Constraints Viewer

This window displays information about a constraint or a constraint set. This window can be launched from anywhere in NemSight that a constraint is identified by double clicking the constraint name.

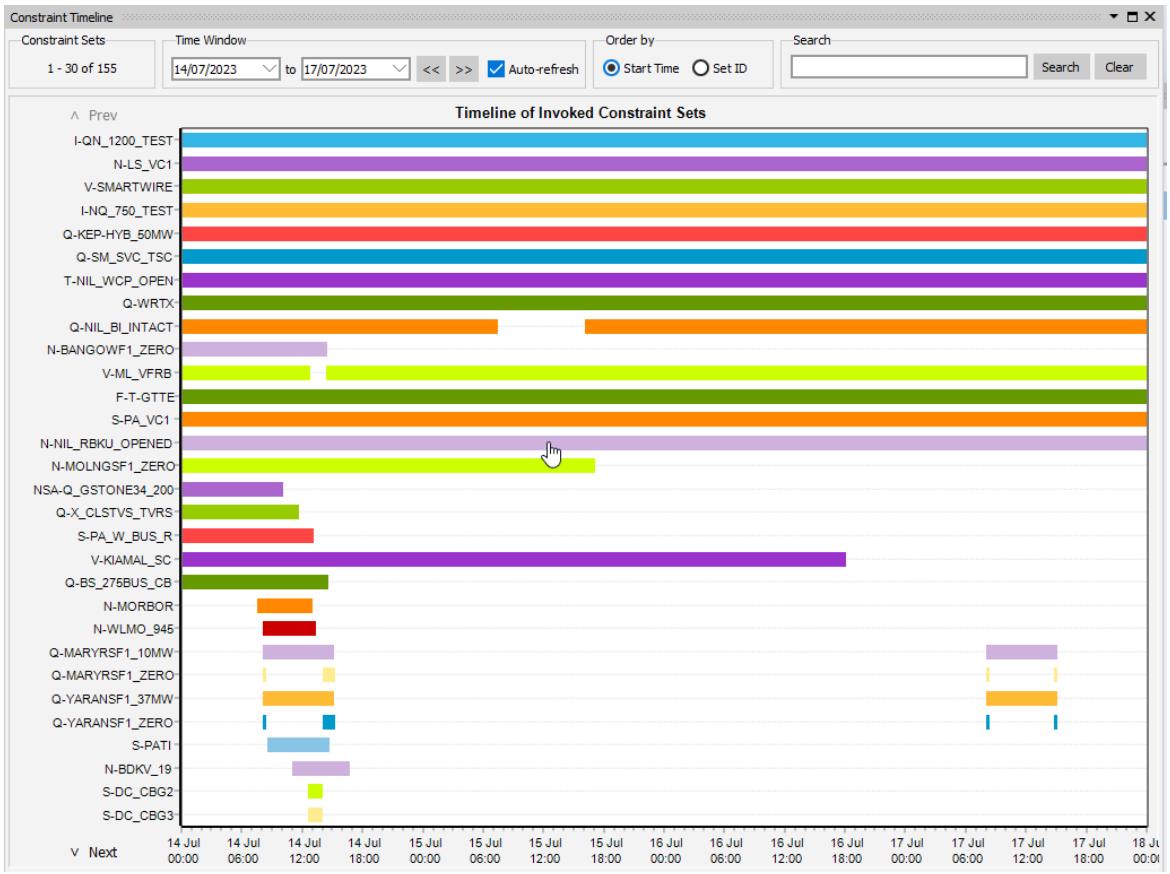
- Overview Alerts
- Binding Constraints
- Invoked Constraints
- Interconnector Constraints
- Rebidding

The list on the left hand side accumulates constraint ID's that have been requested. The window displays the description, impact and other information on the constraint in addition to all the LHS terms and their factors. Only the DUID related RHS terms and their factors are displayed as displaying all the RHS information is too expansive and prohibitive for performance reasons. Other constraints in the Constraint Library can be searched for using the entry field at the bottom left of the window. At least 3 characters must be typed before a search is performed.



2.10.6 Timeline

This screen displays a chart of the current timeline of invoked constraint sets. The data is taken from the Invoked Constraints screen and displayed in the form of a Gantt chart. The constraints are colour coded and are originally displayed with a 3 day time window. The time window can be changed to display previously active constraints and filtered by ID or Start Time.
The list can be moved up and down by the arrows above the Constraint IDs.



2.11 PASA Delta

(Regional) PASA Delta

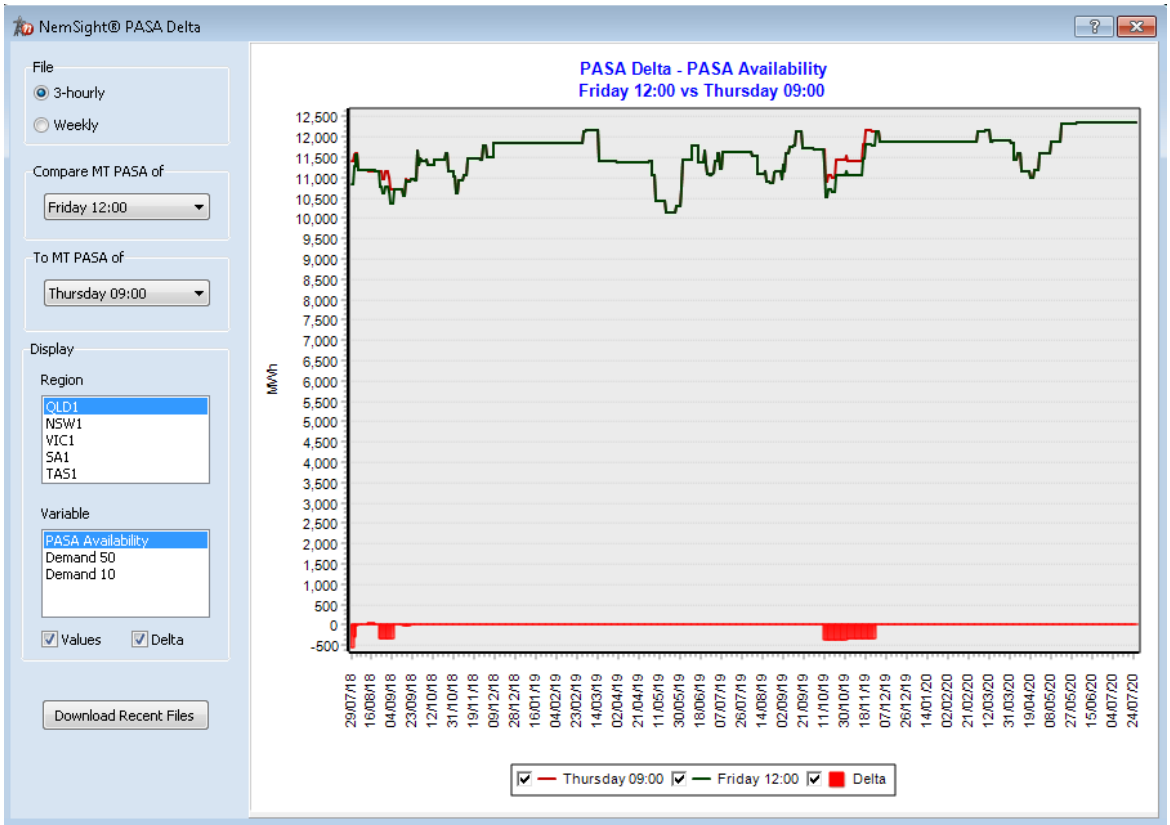
The PASA Delta module enables you to compare the differences between two regional MT PASA files. NemSight supports both the 3-hourly and the weekly MT PASA files, and this choice can be made at the top of the PASA Delta screen. The Live module of NemSight will automatically obtain the latest 3-hourly and weekly MT PASA files as they become available and the weekly MT PASA file will be copied to the MT PASA folder. However, please note that this module will not automatically update as new files become available. Switching to a new file type (3-hourly or weekly) will refresh the list of files available to select from.

The PASA Delta module cannot be included in Dashboards.

Each time the PASA Delta module is started it will refresh the list of files available. Click the Download Recent Files button to obtain a greater history of MT PASA files. Choose any two files, a region and variable to compare. The 3-hourly MT PASA files only support the PASA Availability. The 3 hourly PASA will display 2 months of Historical data.

Clicking the Download Recent **Files** button (for 3-hourly) will obtain the MT PASA REGIONAL AVAILABILITY files for the last six days available from nemweb at http://www.nemweb.com.au/REPORTS/CURRENT/MTPASA_RegionAvailability/. The files will be downloaded in to the Live folder (specified in Configuration - Manage Data). These files will be maintained for 7 days, and older files will be deleted.

Clicking the **Download Recent Files** button (for weekly) will obtain the MT PASA files for the last two months available from nemweb at http://www.nemweb.com.au/REPORTS/CURRENT/Medium_Term_PASA_Reports/. The files will be downloaded in to the MT PASA folder (specified in Configuration - Manage Data).



The variables are defined in the Electricity Glossary.

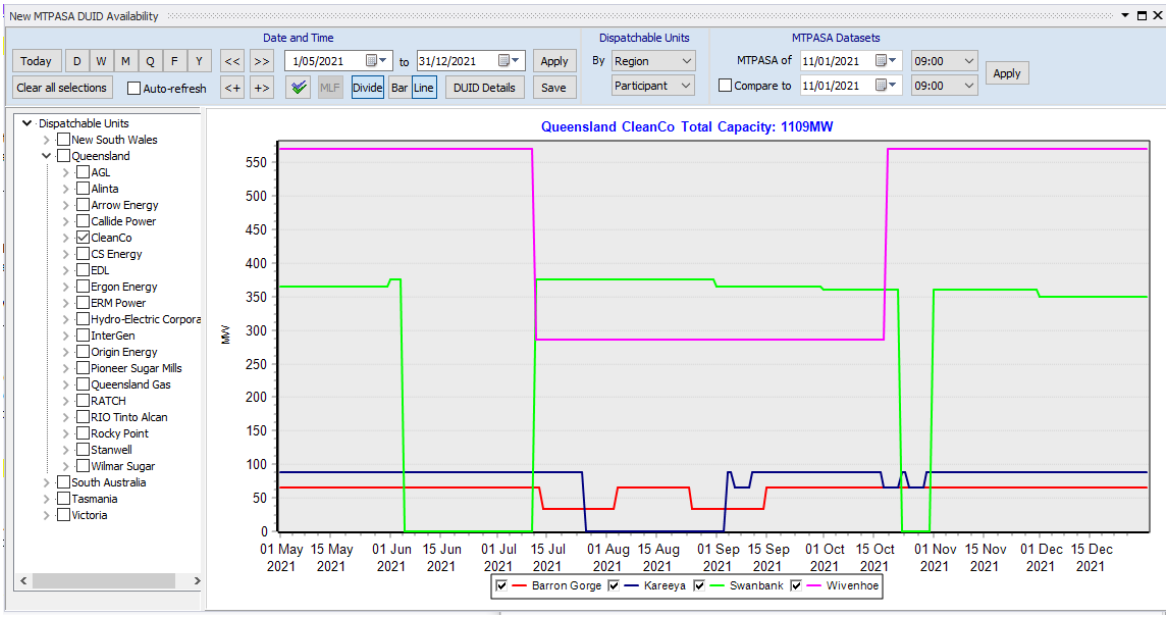
2.12 MTPASA DUID Availability

MTPASA DUID Availability

This module enables you to view generation availability of individual units in the current or a historical availability dataset, and compare the differences between two datasets. **The module is not available until NemSight has been connected.**

Note: Click on MTPASA from the drop down menu in the price bar and select MTPASA DUID Availability to navigate to this screen.
Alternatively, in the Configuration screen select MTPASA and choose MTPASA DUID Availability from the pop up menu.

MTPASA DUID Availability windows can be included in a Dashboard. Saving a window will allow you to provide a user-defined title rather than the generic title 'New MTPASA DUID Availability', and allow you to close and re-open the window using the Saved Charts feature.



The Date-Range

The date range controls which days the data is displayed for from the selected availability dataset. The default date range is 3 months starting from the current date. Click **Today** to set the date-range to today and **D** will be highlighted for a single day date-range. Click **W** for an AEMO week (Sunday to Saturday), **M** for a month, **Q** for a quarter, **F** for a financial year or **Y** for a calendar year. The date-range can then be moved back and forth with the **<<** or **>>** buttons, or extended back and forth with the **<+** or **+>** buttons. A custom date-range may be set by specifying the start and end dates then clicking **Apply**.

A practical limit of 2 years is imposed on the date range selection.

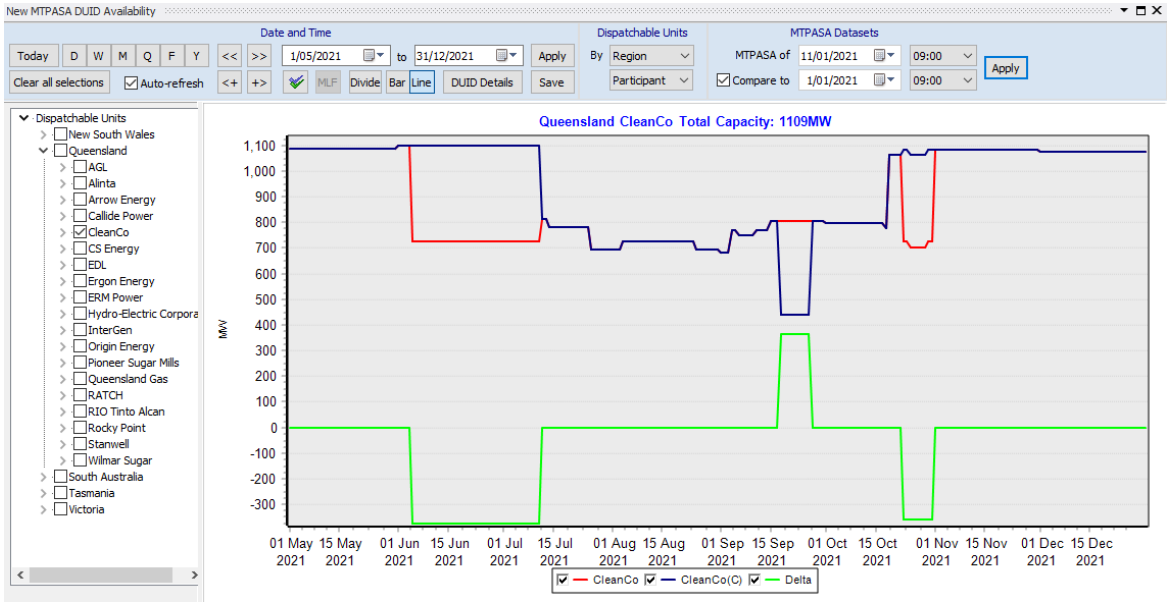
MTPASA Dataset

Select the published MTPASA DUID Availability dataset that you are interested in using the date or drop-down calendar and drop-down time of day. Dates with one or more published datasets are shown in the calendar in bold. When you have selected the required dataset click the Apply button to display the data for the selected units and date range.

AEMO typically publishes a new dataset shortly after 09:00, 12:00, 15:00 and 18:00 market time on each day except Sunday. Each dataset contains the daily availability for each unit (where provided) for a forward looking window starting a few days after the publish date and for a duration of two to three years.

Compare to Dataset

You can optionally select a second MTPASA DUID Availability dataset to compare with. Tick the compare to box and select the dataset by date and time and click the Apply button. A data series for each selected item in dispatchable units will be displayed for both the original and compare to dataset. The name of data series for the compare to dataset will be appended with the text "(C)". A **delta** series will also be shown. The values in the delta series are calculated for each day as the sum of the data in the original dataset minus the sum of the data in the compare to dataset. Note that the delta is only calculated and displayed where data exists for both the original and compare to dataset.



Auto Refresh

When "Auto-refresh" is ticked, the most recent dataset will be selected. If the window is left open the selected dataset will automatically update to the latest dataset as each new dataset is published by AEMO. Auto refresh is only available when the selected date range includes a future time period.

Save

Click the Save button to name this chart and save it so that it can be automatically opened when NemSight starts or quickly reopened manually from Saved Charts.

Dispatchable Units

The individual generators/units are displayed using their DUID and are grouped by station. They can be further grouped at two levels by region, participant, fuel type or schedule type using the **By** drop-down controls on the toolbar.

Individual units can be selected or a group of units can be selected by clicking the checkbox of the parent station, or the higher level region, participant, fuel type or schedule type. A practical selection limit of 200 units is imposed.

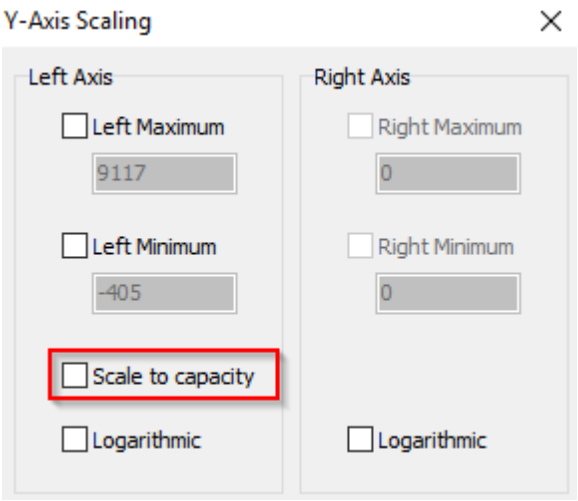
Multiple units across different groups may be selected by clicking the ✓✓ button on the toolbar and then selecting the units, stations, etc. All items selected must be at the same grouping level. For example, you may select individual units from multiple participants or all units for multiple selected participants but may not include all units for a selected participant and all units for a selected station from another participant.

The **DUID Details** shortcut button opens the DUID Details window to show the details of the selected dispatchable units. If no units are selected the button will be disabled.

The **Breakdown** button toggles the chart to display the total generation for the item selected or breakdown to its children.

Chart

The section on Charts describes further functionality common to charting windows. Additionally, Y axis scaling can be toggled between *Scale to Capacity* and *Auto scale to data* using the option "Scale to Capacity". Scale to Capacity can be used to scale generation to max capacity for the selected generators.



2.13 Forward Prices

Forward Prices

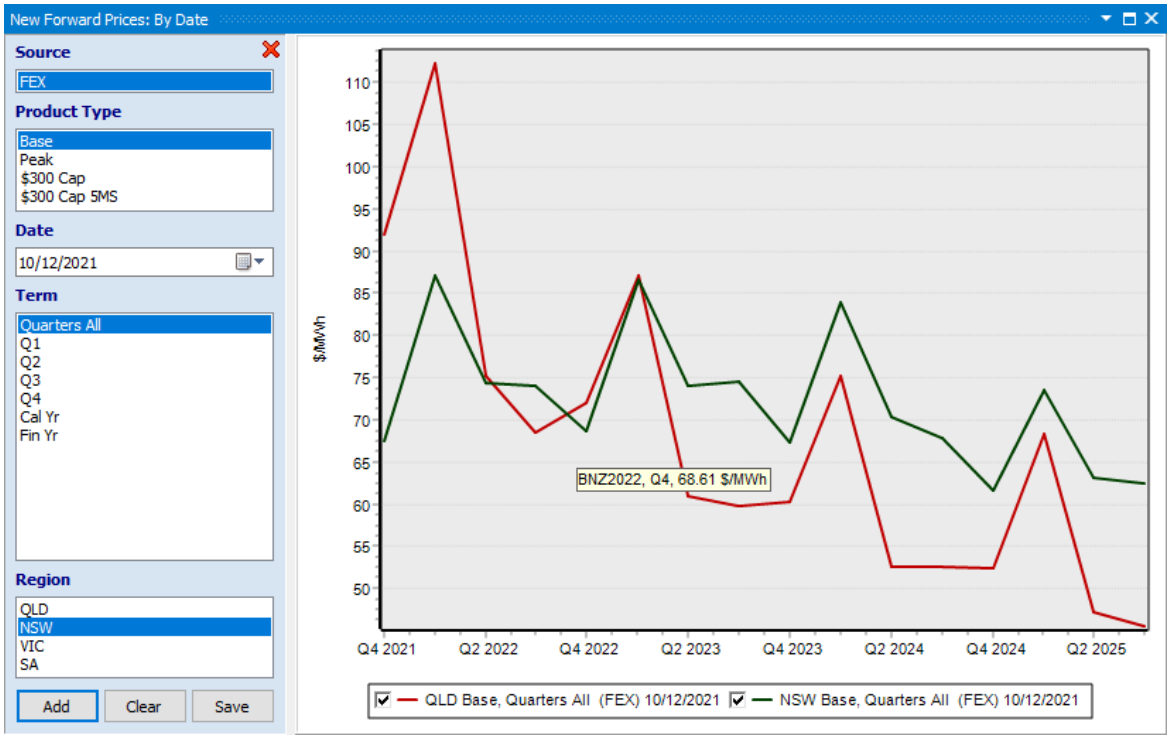
This module enables you to view forward (derivative) market electricity data. This data is provided by FEX Global for the exchange traded 'futures' market in the form of FEX closing prices.

Note: Click on Forward Prices from the drop down menu in the price bar and select either By Date, By Product or Inter-regional Spreads to navigate to the selected Forward Prices screen. Alternatively, in the Configuration screen select Forward Prices and choose one of the options from the pop up menu.

Forward Prices windows can be included in a Dashboard. Saving a window will allow you to provide a user-defined title rather than the generic title 'New Forward Prices', and allow you to close and re-open the window using the Saved Charts feature.

By Date

This displays a graph of prices as at the selected date for the selected product group.

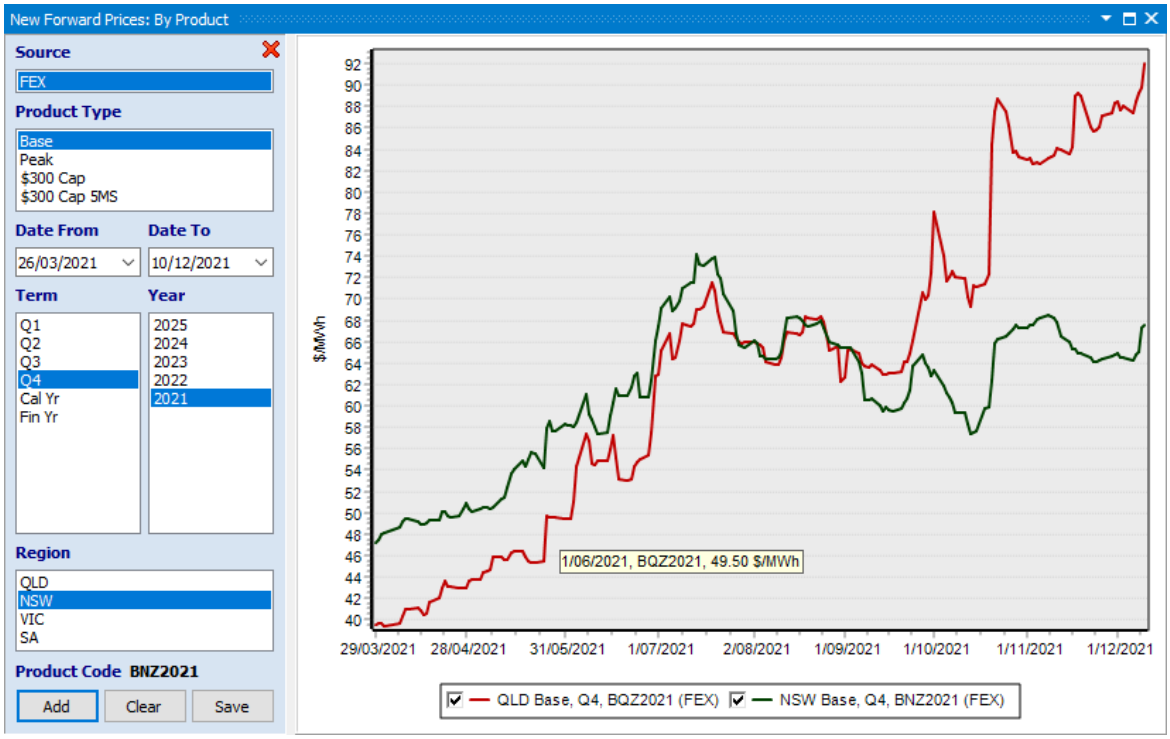


- Y Axis: Price ($/MWh)
- X Axis: Term (Quarter or Year)
- Select Source: FEX
- Select Product Type: Base, Peak, $300 Cap or $300 Cap 5MS
- Select Date: price date (defaults to most recent)
- Select Product Term: Quarters All, Q1, Q2, Q3, Q4, Cal Yr or Fin Yr
- Select Product Region: QLD, NSW, VIC or SA

Note: Hover over the graph to display individual product codes (e.g. BQU2022) and prices.

By Product

This displays a graph of prices across a date range for a selected individual product type (i.e. price history).

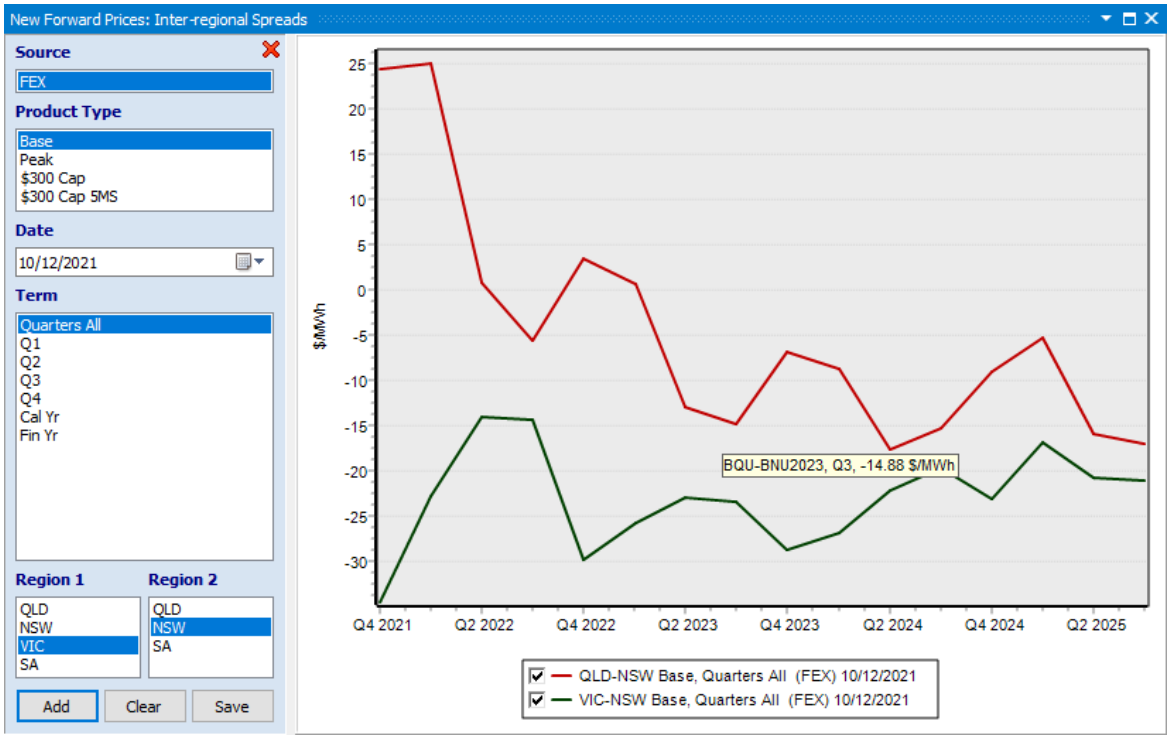


- Y Axis: Price ($/MWh)
- X Axis: Date Range
- Select Source: FEX
- Select Product Type: Base, Peak, $300 Cap and $300 Cap 5MS
- Select Price Date Range: e.g. last 30 days
- Select Product Term: Q1, Q2, Q3, Q4, Cal Yr or Fin Yr
- Select Product Year (of Term): e.g. 2021
- Select Product Region: QLD, NSW, VIC or SA

Note: Hover over the graph to display the settlement date, product codes and prices.

Inter-regional Spreads

This displays a graph of inter-regional (IR) spreads (i.e. price difference) as at the selected date between selected regions by product group.



- Y Axis: Price ($/MWh)
- X Axis: Term (Quarter or Year)
- Select Source: FEX
- Select Product Type: Base, Peak, $300 Cap and $300 Cap 5MS
- Select Date: price date (defaults to most recent)
- Select Product Term: Quarters All, Q1, Q2, Q3, Q4, Cal Yr or Fin Yr
- Select Product Region 1: QLD, NSW, VIC or SA
- Select Product Region 2: QLD, NSW, VIC or SA for price difference calculation

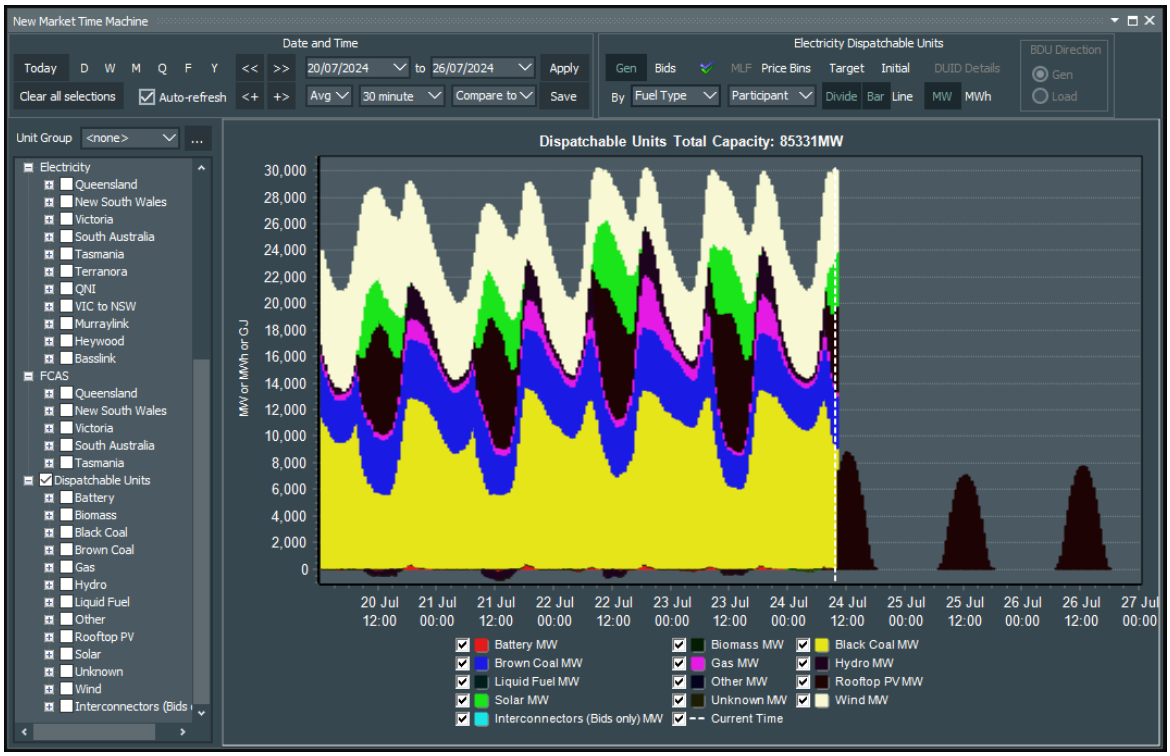
Note: Hover over the graph to display product codes (e.g. BQU-BNU2023 means price difference for BQU2023 and BNU2023) and price differences.

2.14 Time Machine

Time Machine

The Time Machine module amalgamates a range of electricity, gas and weather data, primarily historical but also includes a limited set of live data.

Saved and/or Unsaved Time Machine Charts can be included in a Dashboard. Saving a Chart will provide a user-defined title for the window rather than a generic 'Live Time Machine' window title.



The Date-Range

Click **Today** to set the date-range to today and **D** will be highlighted for a single day date-range. Click **W** for an AEMO week (Sunday to Saturday), **M** for a month, **Q** for a quarter, **F** for a financial year or **Y** for a calendar year. The date-range can then be moved back and forth with the **<<** or **>>** buttons, or extended back and forth with the **<+** or **+>** buttons. A custom date-range may be set by specifying the start and end dates then clicking **Apply**.
The date range will be restricted to 3 months if FCAS option is ticked.

Auto Refresh

When "Auto-refresh" is ticked, the chart will update every time new data within the date range is available. For example if you have "Today" selected the chart will update every 5 minutes. This only applies to future time periods.

The Interval

An interval of 5 minute, 30 minute, Daily, Weekly, Monthly, Quarterly or Yearly may be selected. The intervals available to select from depend on the date-range: the date-range must be greater than one interval for that interval to feature in the selection. Apart from the 5 minute interval (which is the resolution of most of underlying data), the other intervals are an average of the underlying data. All underlying data is in 5 minute resolution except the bid stacks (which are 30 minute resolution) and the gas price and demand and temperatures

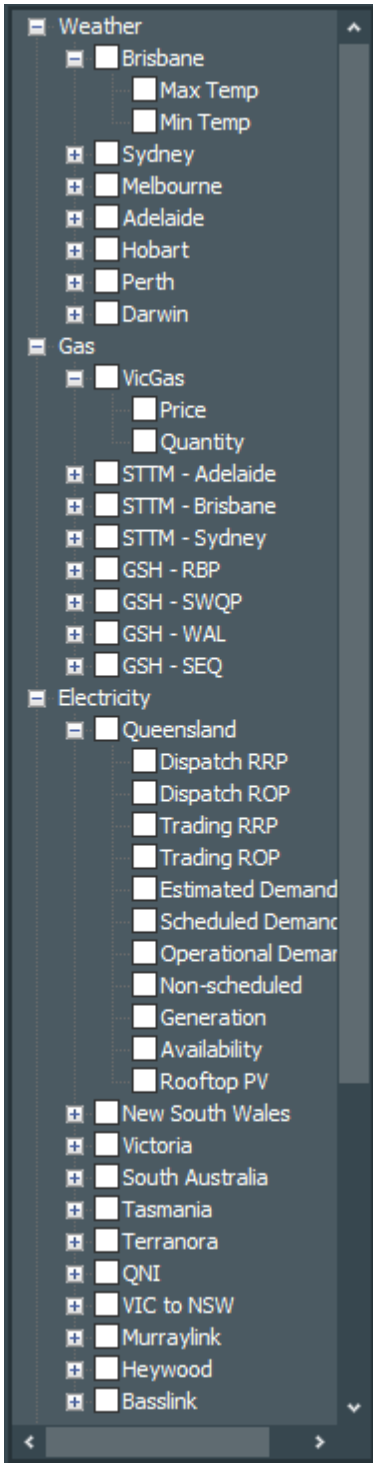
(which are daily resolution). Note that due to the large amount of data involved, the 5 minute interval can only be selected for periods up to 1 year. If the period is extended beyond this, the interval will automatically drop back to 30 minutes.

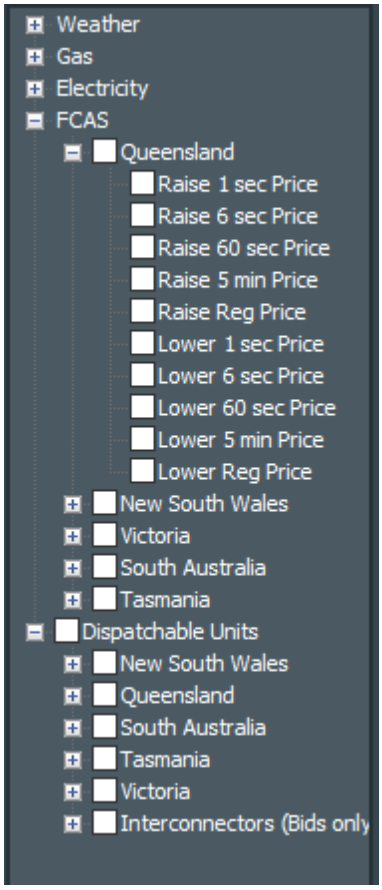
Aggregation Operator (Avg, Min, Max)
If an interval greater than the underlying data is selected, (for example Monthly for daily temperature values, or Daily for electricity prices) then the aggregation operator will determine how the values within the time bucket shall be presented. Average, Minimum and Maximum operators are available. Please note that the average, minimum and maximum are based on the frequency of the underlying data, for example 5 minute resolution for regional electricity data and daily resolution for gas price and demand and temperatures.

Compare To
One or more comparison series may be added for each series selected in Time Machine by choosing -364, -91, -28 or -7 days (these values are designed to align the comparison to the same day of the week) or -1 day, or by selecting Custom and selecting a specific date. The series will be overlaid with the same series for the selected historical day. You can add additional comparison series by selecting other historical days, and clear the comparison series by selecting Clear from the drop-down menu. This feature is not available for generation or bid stacks.

Save
Click the Save button to name this Time Machine instance and save it so that it can quickly be reopened or automatically opened when NemSight starts. Saved Time Machines are listed in Saved Charts.

Variables
Variables may be selected from the Navigator to be included in the chart (and table). Variables are organised by commodity (Weather, Gas, Electricity ,FCAS). Please see the Glossary for a description of electricity market, gas , weather and FCAS variables. If Rooftop PV is included in your licence, Rooftop PV data will be included in Electricity and Dispatchable Units. This displays actual data where available (previous days) and the most recent forecast data for each interval where actual is not available (current and future days).





FCAS
This section displays FCAS prices per regions. Both current and historical FCAS values are displayed. There will be restriction on the time machine date range to download only 3 months of historical data prior to the end date if FCAS is selected.

Generators
The Dispatchable Units section can display a Generation stack or a Bid stack by clicking on the **Gen** or **Bids** button. The regions, participants, power stations and units can be organised in a variety of ways, selected by the drop-down control in the ribbon.

Loss factors can be applied to the bid stacks by toggling the **LF** button. This button will be greyed out when Gen is selected as it cannot be applied to the Generator Stack.

The **Price Bins** button only applies to the Bid stack mode, and launches a dialog to configure the price bins.

The **Target** and **Initial** buttons include Dispatch Target and Initial MW in the bid stacks if toggled on.

DUID Details shortcut button is enabled only when Dispatchable units is selected, otherwise it will be greyed out.

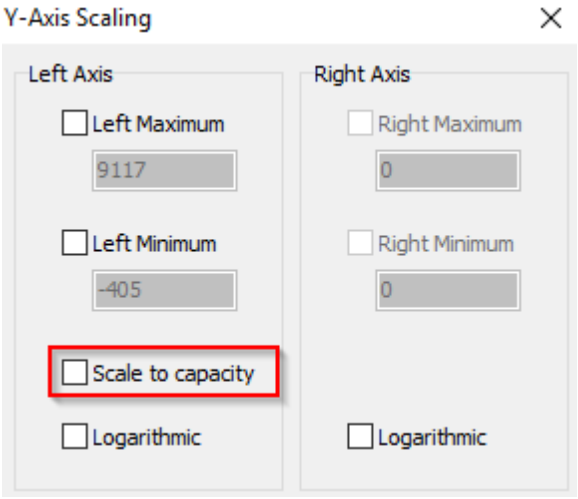
Generation data is orignally displayed in **MW** but can also be displayed in **MWh**.

Time Machine is IESS compatible, allowing DUID data to be switched between Gen and Load modes for applicable generators such as Bi Directional battery units (BDUs).

Multiple generators may be selected by clicking the ✓✓ button.

The **Breakdown** button only applies to the Generation stack mode, and toggles the chart to display the generation for the item selected or breakdown to its children.

Chart
Prices and temperatures are displayed against the right axis while all other variables are displayed against the left axis. The section on Charts describes further functionality common to charting windows.
For the Dispatchable Units, Y axis scaling can be toggled between *Scale to Capacity* and *Auto scale to data* using the option "Scale to Capacity". Scale to Capacity can be used to scale generation to max capacity for a single generator.



Generation Stacks
If the module is in Generation stack mode, selecting an item from the Dispatchable Units section will display a chart of Initial MW. Prior to 1/1/2009 the Dispatch Target is used instead of the Initial MW. The generation may be broken down by the children of the selected item if the Breakdown button is toggled on. Loss factors are not applied to generation.

Bid Stacks
If the module is in Bid stack mode, selecting an item from the Dispatchable Unit section will display a bid stack based on twelve price bands specified in the Price Bins dialog. The bid stack represents the final (end of day) view of all bids, with each bid taking effect from the trading interval following the date and time that the bid was offered.

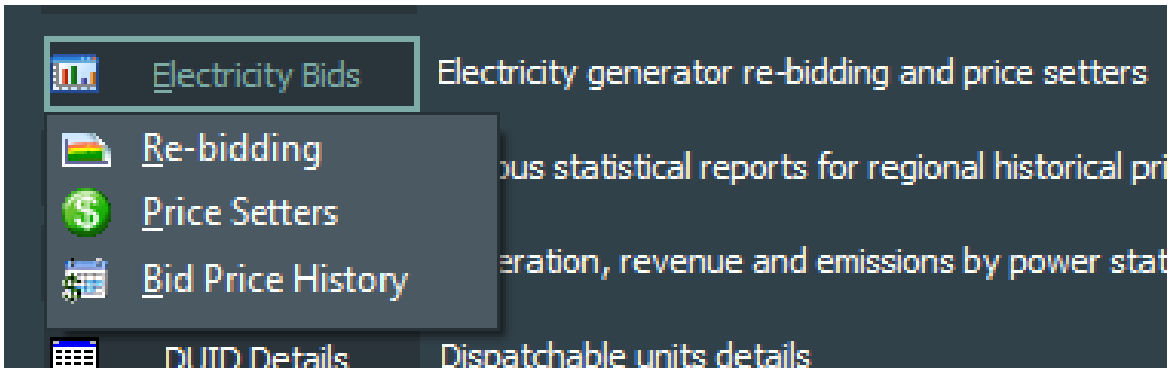
The bid stack will be the aggregate bid stack for all the DUID's under the item selected. For example, if New South Wales is ticked (and the tree is organised with region at the top level), the bid stack will be calculated for all the DUID's in New South Wales. If loss factors are applied, the bid prices for each DUID are adjusted to the regional reference node prior to aggregating the bid quantities into the nominated price bands. The current loss factors as defined in the market configuration file are applied across all time. NemSight does not retain historical loss factors. Bids are displayed at 5 minute resolution but for dates prior to the Five Minute Settlement transition date (01/10/2021) the underlying bid data is half-hourly and the values will repeat six times. The Bid stack may be overlaid with Dispatch Target and/or Initial MW. The Initial MW is not available prior to 01/01/2009.

See also: Rebidding (detailed rebid analysis)

2.15 Electricity Bidding

Electricity Bids

Re-bidding prices and bid history are displayed under the Electricity bidding menu.

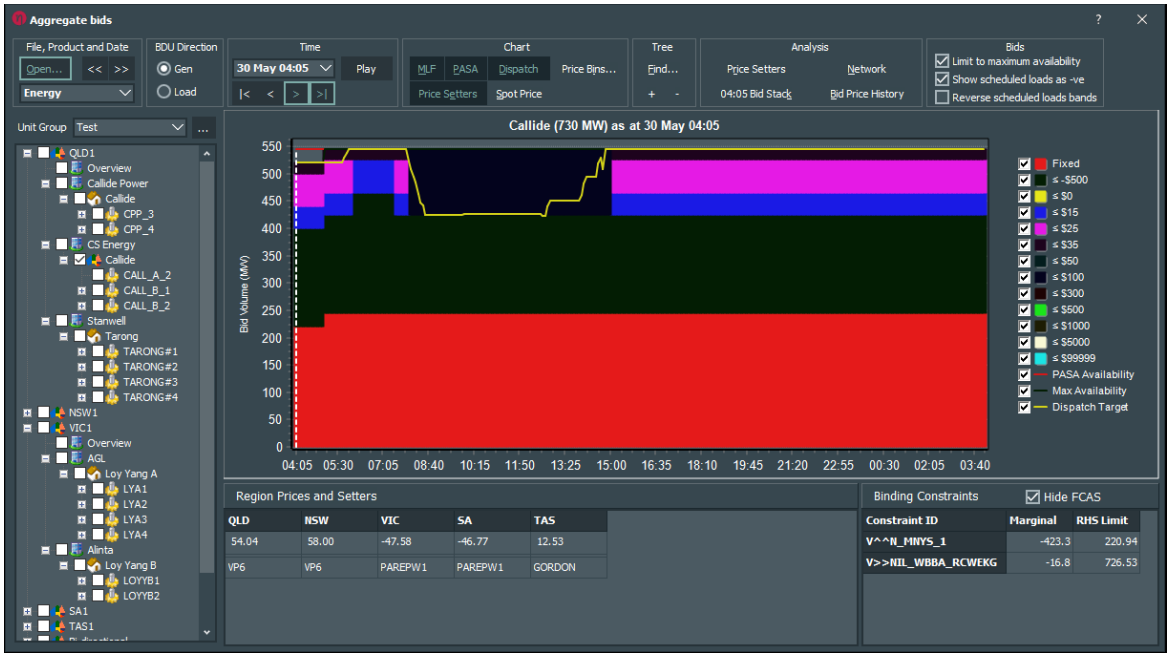


2.15.1 Re-bidding

The Re-bidding module examines bid stacks for a single settlement day (4am to 4am) exploring bid versions, supporting the energy market and all eight ancillary services markets. All data is presented in five-minute resolution and includes generator bid stacks, spot prices, generator dispatch, price setters and binding constraints. Please note that the Re-bidding module cannot currently be included in a Dashboard.

When opening the rebidding module, the user needs to press the 'Open' button at the top left of screen to load the Yestbid file for either Yesterday's bids for any Energy or FCAS market, or Next Day Offer energy bids for a specified single market day.

A typical day includes around 100 million data points, so to reduce load times only the list of bids is loaded initially. Bid volumes are loaded and cached as you select items from the region/participant/station/DUID/rebid list. Once compiled they will be presented in a window with toolbar along the top, tree view menu on the left and a chart on the right. The tool bar consists of a number of buttons and a period selector (described below). The section on Charts describes further functionality common to charting windows.



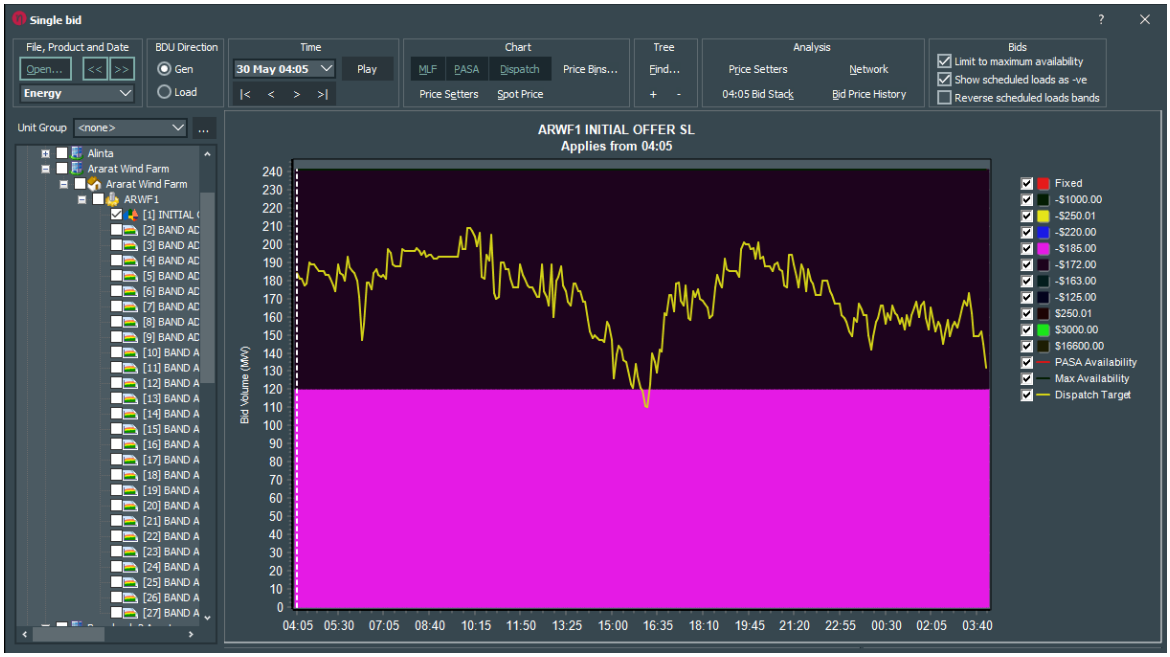
Bids are viewed by selecting the tick box for an item in the tree view menu on the left hand side. A summary bid of each valid submission for each 5 minute interval is displayed by ticking the box next to the unit name (e.g. tick next to ARWF1 in screenshot below). If a specific initial bid or rebid is selected in the tree view below the unit name, the bid is displayed as submitted by the participant (See 2nd screenshot below). If a unit is selected the bids will be displayed "as at" the period indicated in the period selector and at the prices submitted by the participant. Bids can also be aggregated at the power station, participant or region level.

When a power station's selection is expanded, the list of bids for that unit are displayed.

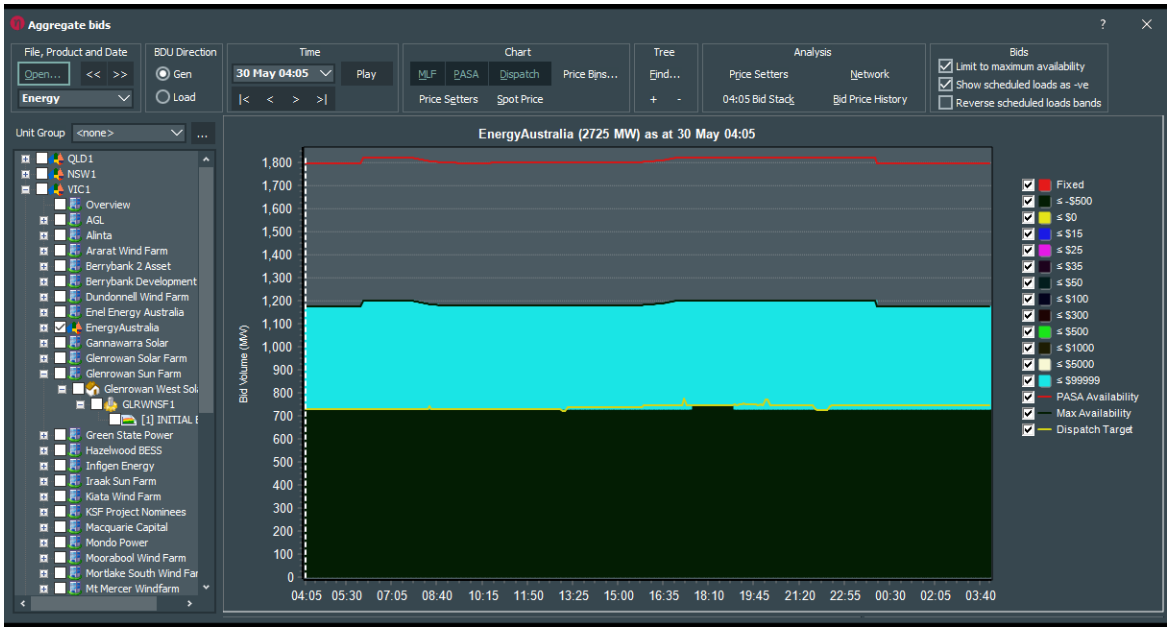
Price Bins

If items in the tree view menu above unit level are selected such as stations or companies, then bid bands will be displayed according to price bins rather than price bands.

Screenshot showing actual bid band prices.



Screenshot showing price bins instead of actual bid band prices.



The period in the period selector is in dispatch interval time-ending format. If the last period is selected, then the bid stack displayed will be the "final" bids.

Note that in all cases the bid prices submitted by the participant may be modified by the loss factor specified for the unit if the MLF loss factors button is selected.

Additionally, hovering the mouse over a specific bid version (rebid) will display the offer date and time in a popup hint.

Group	Button	Description
Date	**Open**	Displays the file selection dialog so a different bid day can be analysed or file type. Allows specification of other import options
	<<	Select the previous day and load the bid stacks
	>>	Select the next day and load the bid stacks
BDU Direction	**Gen/ Load**	Switches the direction of the generator if it is a BDU
Time	**Time Selector**	Allows jumping to a different time in the bid day. The selected time can also be changed by choosing a rebid or by clicking directly on the chart
	|<	Sets the period to the first period of the bid day (04:05)
	<	Steps back 5 minutes
	>	Steps forward 5 minutes
	>|	Sets the period to the last period of the bid day (04:00 the next day)
	Play	The bid stacks for a unit, power station, participant or region may be animated through time by clicking the Play button. The animation will commence from the period selected and continues until the last period
Chart	**MLF**	Adjusts bid prices to the regional reference node according to the loss factors specified in the market configuration file. If not selected, bid prices are as submitted by the generator
	PASA	Toggle display of PASA Availability on the chart. The PASA Availability is the physical plant capability (MW) including any capability potentially available within 24 hours
	Dispatch	Toggle display of the Dispatch Target on the chart
	Price Setters	Toggles the lower panel which displays prices, price setters and constraints for the selected time. The values displayed in this panel are not affected by the node selected
	Spot Price	Toggle display of the Spot Price for the selected region on the chart
	Price Bins	Launches a dialog to define the twelve price bins
Tree	**Find**	Search for a item in the navigator the contains the specified text
	+	Expand the market navigator to show all re-bids
	-	Collapse the market navigator to the regions
Analysis	**Price Setters**	Opens the Price Setter screen, displaying all the spot prices, price setters and constraints for the bid day. Also see topic Price Setters for Bid Day.

	Bid Stack	Opens a new window showing the Bid Stack across multiple regions for the selected dispatch interval. Right clicking the Bid Stack button displays the "Export" option, which allows the user to Export the currently selected bid day into a CSV. The format will copy the existing Rebidding display format.
	Network	Opens the Network Diagram at the selected region and time
Offers	**Limit to Max Availability**	Cap volume in offers to the maximum availability specified in the offer. When deselected you can view the complete bid stack
	Scheduled Loads -ve	Scheduled loads increase demand when dispatched, working opposite to generators (increase generation) and Wholesale Demand Response loads (decrease demand), so it is usually helpful to view their volume and dispatch as negative
	Reverse scheduled loads bands	Scheduled loads are dispatched using bid volumes from highest price to lowest, so it can be helpful to reverse their bid bands to reflect this

Price Setters panel

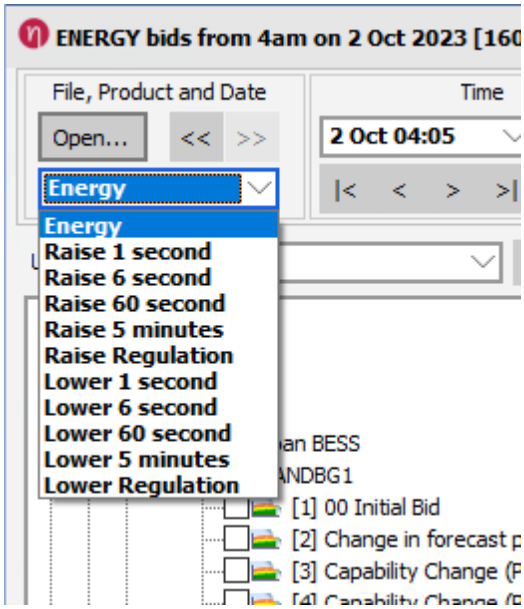
The price setters panel displays the price and price setters for each region for the time on the bid day. A unit can be double clicked to display the bid stack for that unit. The double clicked unit will become the selected unit in the tree view.

The values in the grids in this panel can be copied to the clipboard by right clicking and choosing Copy All.

Binding Constraint and FCAS Constraints are displayed under the Binding Constraint panel. FCAS constraints are hidden by default. It can be enabled by deselecting Hide FCAS check box. Double clicking on the constraint values will display the Constraint details in a new window.

FCAS details

FCAS details can be selected from the list items as specified in the below screenshot:

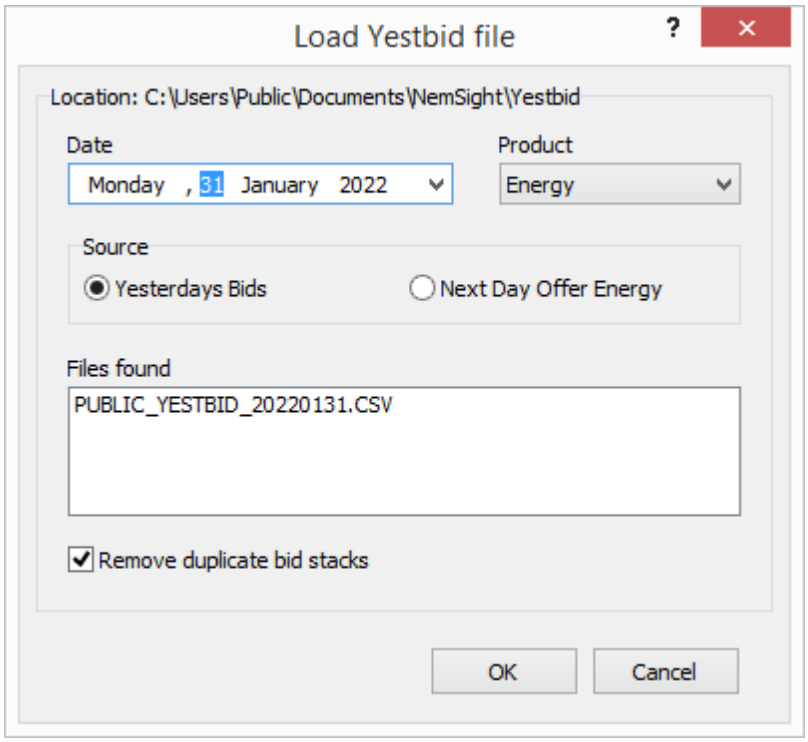


2.15.2 File Options

Re-bidding File Options

The default option when moving back or forward a day is to present the **Energy** bid stacks using the **Yesterdays Bids** file and removing duplicates.

A re-bidding analysis compiles all the bid stacks for each dispatchable unit (generator, scheduled load or wholesale demand response unit) in the market for a single bid day. A bid day commences at 4 am and ends at 4 am the next day. The bid stacks may be compiled for energy or any of the FCAS products (FCAS is only supported with the Yestbid file). The dialog enables you to select the day and product type to analyse. The application will search in the folder (specified in Options) for all Yestbid or Next Day Offer Energy files (both zip and csv format) for the nominated date. Occasionally, there may be more than one file available due to a revision published by AEMO. Where there is more than one file, the file to be analysed may be specified by selecting it in the file list. The first file in the list will be analysed by default. If there are no files available NemSight will attempt to download it from the NemSight servers when OK is clicked.



The **Yestbid** files present a composite view of the bids that were used in dispatch and pre-dispatch solutions throughout the previous trading day. Note that due to the strong ties the report has to the pre-dispatch system, it is possible that some bids that were used in dispatch but not in pre-dispatch would not be present in the Yestbid report.

The **Next Day Offer Energy** files, on the other hand, present a complete list of every bid that was submitted on the previous trading day, regardless of where, when or how that bid was used by AEMO. It does not include any FCAS products, while the Yestbid files do.

NemSight is limited in how far back it can automatically download Next Day Offer Energy files. If earlier files are required, they can be manually downloaded from the AEMO archive at http://www.nemweb.com.au/REPORTS/ARCHIVE/Next_Day_Offer_Energy/ which currently

provides files back to 2010.

2.15.3 Price Setters

Price Setters

The **Price Setters screen** is used to display two sets of price setter information, daily price setters by dispatch interval, and DUID statistics.

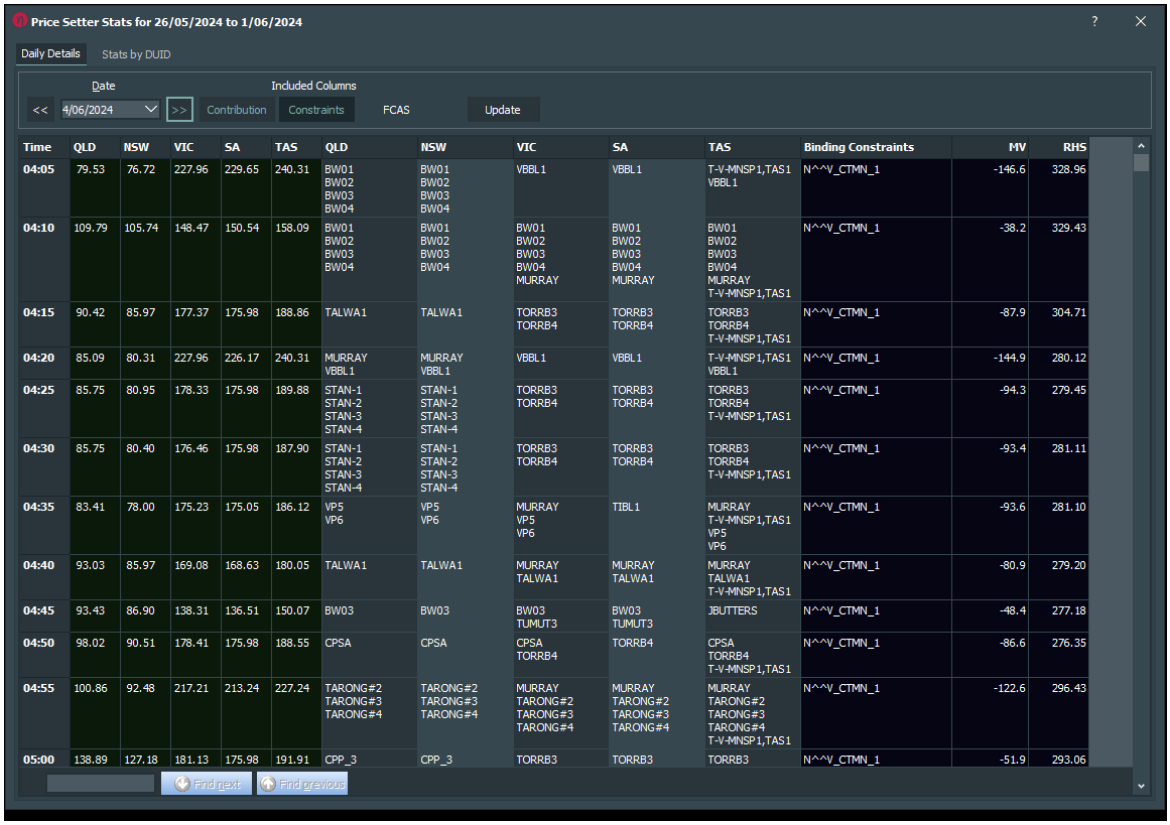
Daily Details

The Daily Details tab displays the spot price, price setters (with their MW contribution) and constraints across a selected bid day in five minute resolution. Note that there often multiple price setters per region in each five minute period. The day can be changed with the date selector.

The **Contributions** button toggles on or off the contribution MW for each price-setting element.
The **Constraints** button toggles on or off the binding constraints columns which are on by default.
The **FCAS** button toggles on or off display of the FCAS constraints in the binding constraints columns.

The entire grid can be copied to the clipboard with the right-click menu. Because many of the cells have multiple values you may need to expand the row height to see all the values.

The search function on the bottom highlights matching text in the display.



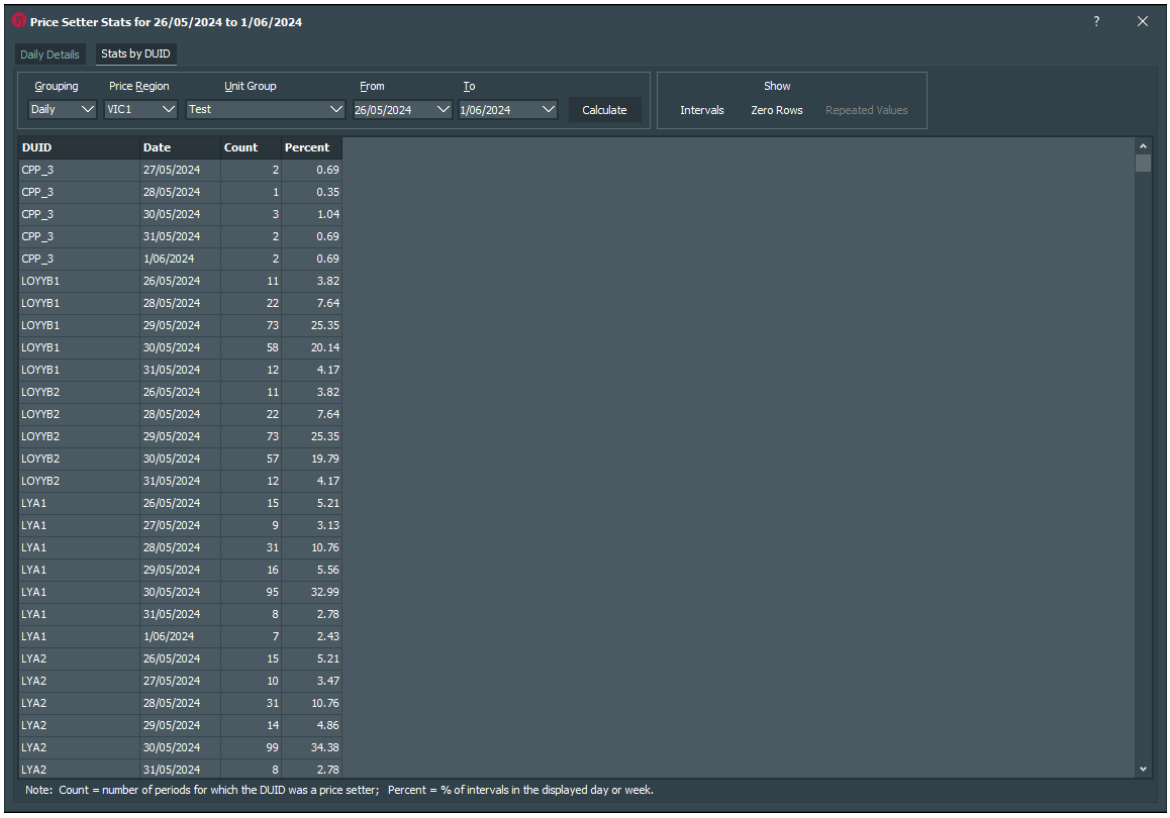
Time	QLD	NSW	VIC	SA	TAS	QLD	NSW	VIC	SA	TAS	Binding Constraints	MV	RHS
04:05	79.53	76.72	227.96	229.65	240.31	BW01 BW02 BW03 BW04	BW01 BW02 BW03 BW04	VBBL1	VBBL1	T-V-MNSP1,TAS1 VBBL1	N^^V_CTMN_1	-146.6	328.96
04:10	109.79	105.74	148.47	150.54	158.09	BW01 BW02 BW03 BW04	BW01 BW02 BW03 BW04	BW01 BW02 BW03 BW04 MURRAY	BW01 BW02 BW03 BW04 MURRAY	BW01 BW02 BW03 BW04 MURRAY T-V-MNSP1,TAS1	N^^V_CTMN_1	-38.2	329.43
04:15	90.42	85.97	177.37	175.98	188.86	TALWA1	TALWA1	TORRB3 TORRB4	TORRB3 TORRB4	TORRB3 TORRB4 T-V-MNSP1,TAS1	N^^V_CTMN_1	-87.9	304.71
04:20	85.09	80.31	227.96	226.17	240.31	MURRAY VBBL1	MURRAY VBBL1	VBBL1	VBBL1	T-V-MNSP1,TAS1 VBBL1	N^^V_CTMN_1	-144.9	280.12
04:25	85.75	80.95	178.33	175.98	189.88	STAN-1 STAN-2 STAN-3 STAN-4	STAN-1 STAN-2 STAN-3 STAN-4	TORRB3 TORRB4	TORRB3 TORRB4	TORRB3 TORRB4 T-V-MNSP1,TAS1	N^^V_CTMN_1	-94.3	279.45
04:30	85.75	80.40	176.46	175.98	187.90	STAN-1 STAN-2 STAN-3 STAN-4	STAN-1 STAN-2 STAN-3 STAN-4	TORRB3 TORRB4	TORRB3 TORRB4	TORRB3 TORRB4 T-V-MNSP1,TAS1	N^^V_CTMN_1	-93.4	281.11
04:35	83.41	78.00	175.23	175.05	186.12	VP5 VP6	VP5 VP6	MURRAY VP5 VP6	TIBL1	MURRAY T-V-MNSP1,TAS1 VP5 VP6	N^^V_CTMN_1	-93.6	281.10
04:40	93.03	85.97	169.08	168.63	180.05	TALWA1	TALWA1	MURRAY TALWA1	MURRAY TALWA1	MURRAY TALWA1 T-V-MNSP1,TAS1	N^^V_CTMN_1	-80.9	279.20
04:45	93.43	86.90	138.31	136.51	150.07	BW03	BW03	BW03 TUMUT3	BW03 TUMUT3	JBUTTERS	N^^V_CTMN_1	-48.4	277.18
04:50	98.02	90.51	178.41	175.98	188.55	CPSA	CPSA	CPSA TORRB4	TORRB4	CPSA TORRB4 T-V-MNSP1,TAS1	N^^V_CTMN_1	-86.6	276.35
04:55	100.86	92.48	217.21	213.24	227.24	TARONG#2 TARONG#3 TARONG#4	TARONG#2 TARONG#3 TARONG#4	MURRAY TARONG#2 TARONG#3 TARONG#4	MURRAY TARONG#2 TARONG#3 TARONG#4	MURRAY TARONG#2 TARONG#3 TARONG#4 T-V-MNSP1,TAS1	N^^V_CTMN_1	-122.6	296.43
05:00	138.89	127.18	181.13	175.98	191.91	CPP_3	CPP_3	TORRB3	TORRB3	TORRB3	N^^V_CTMN_1	-51.9	293.06

Stats by DUID

Price setting statistics can be displayed for selected units in a specified date range. The

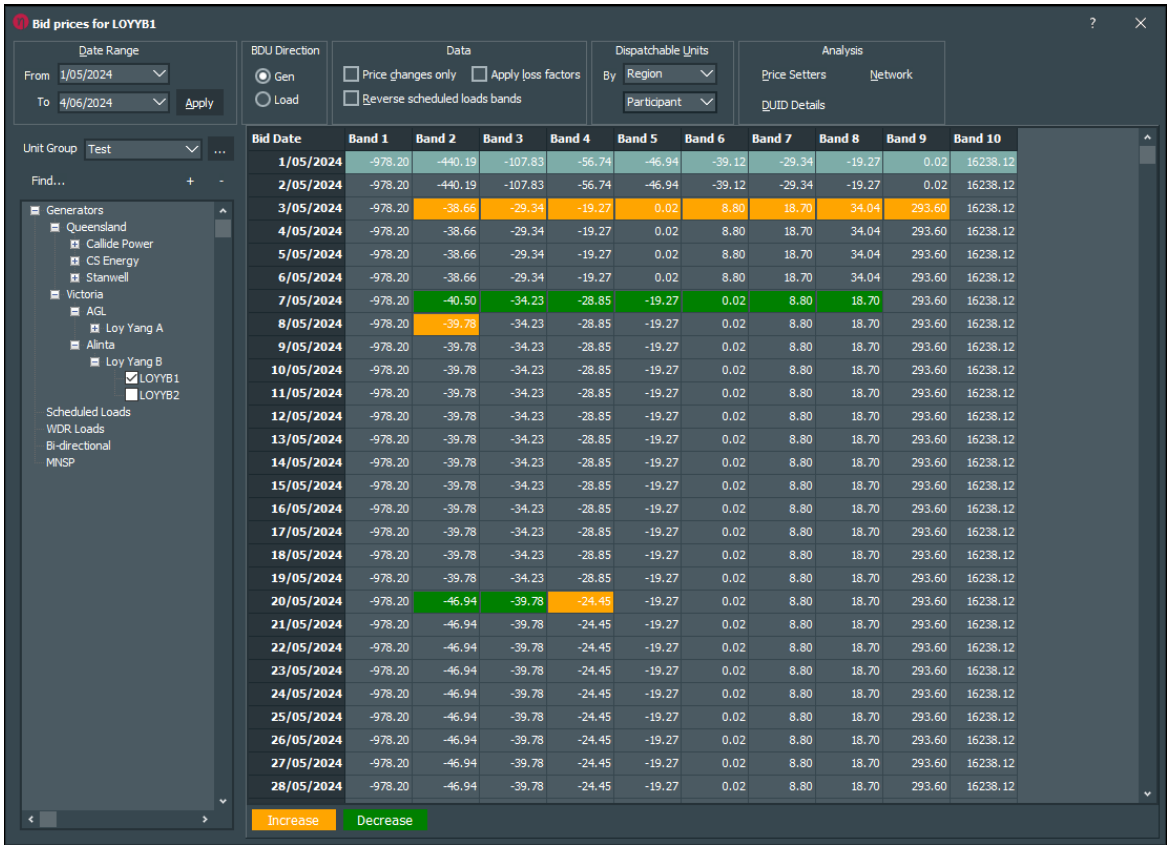
number of dispatch intervals and percentage of intervals for the week is displayed for each unit. Use the Unit Groups feature to restrict the statistics to your desired subset of units.

The **Intervals** button displays which intervals the selected DUIDS were price setters for.
The **Zero Rows** button unhides rows which have a count and percentage of zero.
The **Repeated Values** button displays the stat information for repeated intervals.



2.15.4 Bid Price History

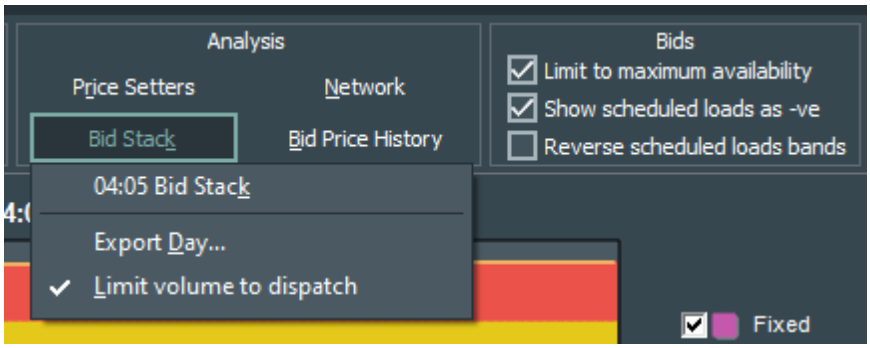
The Bid Price History screen allows the user to select on DUID and a date range of up to 1 year. The information is displayed grouped by price bands and are displayed in table form. If the price bid is up from the previous day it is coloured green, whereas if the bid was down the cell is coloured orange. The user can optionally select to only show rows with changed bid prices. In that scenario the row for the first day is always shown and then only days with one or more bid prices different to the previous day will be shown.
DUIDs can also be selected from a Unit Group.



2.15.5 Bid Stack

Bid Stack

The Bid Stack button opens a drop down menu with 3 options.



The **Export Day** button exports the full bid stack of the selected day into a .csv file.

The **Limit volume to dispatch** option must be selected before selecting **Export Day.** If not ticked will output volumes as bid by participants. However, if ticked, it will limit the volumes to the level that the units were actually dispatched at. For example, the volume will be 0 in intervals where the units were not dispatched, regardless of the bid volume. A unit that was dispatched at 100MW in a given interval with bids of 75MW in band 1 and 75MW in band 2, will show a volume of 75MW at the price of band 1 and 25MW at the price of band 2.

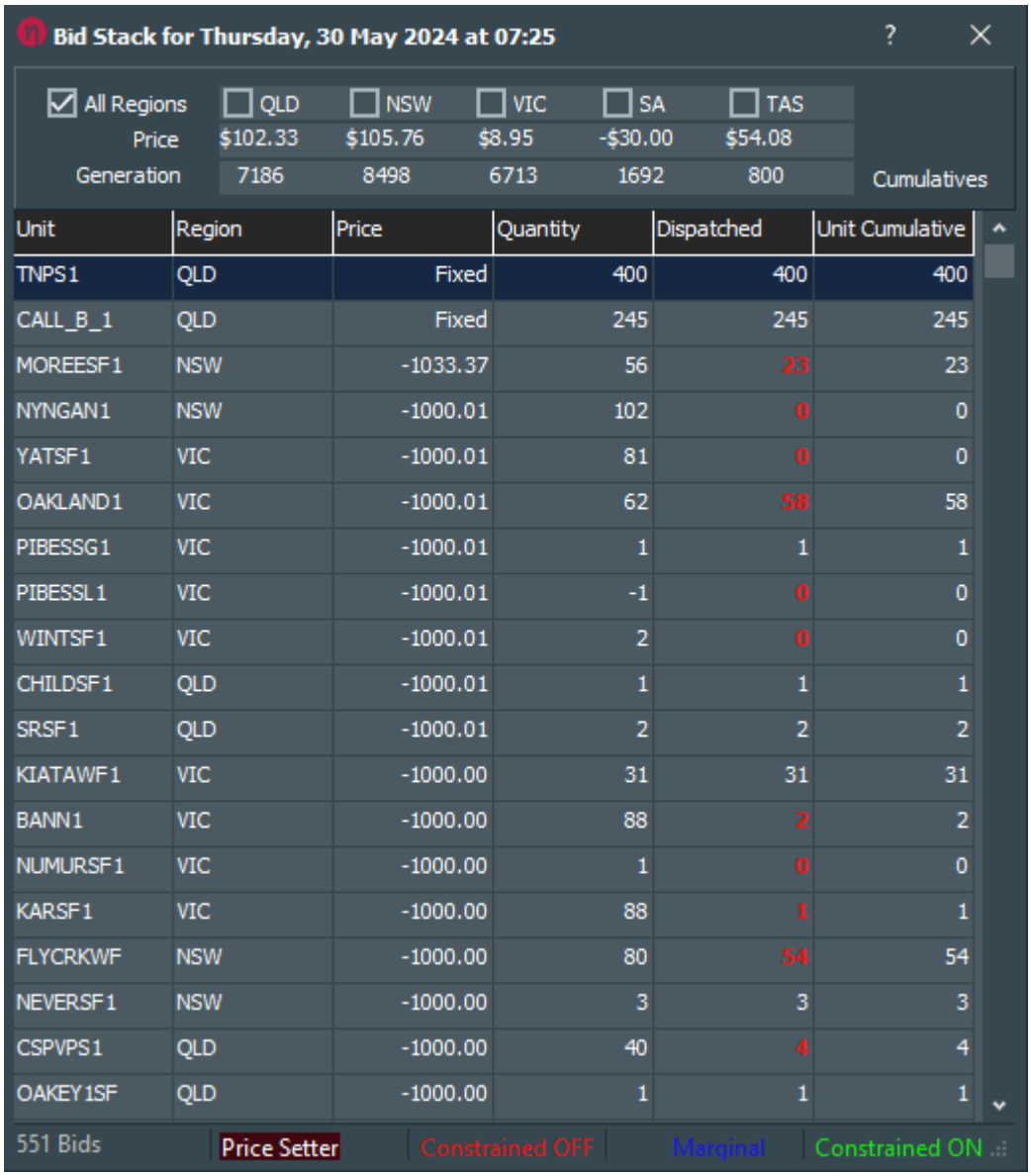
Clicking the **Bid Stack** button with the selected time period launches a detailed bid stack window. This displays the bids from all regions (or a selected set of regions) loss adjusted to

their regional reference node in price ascending order. It calculates the dispatched quantity of each bid and highlights constrained off, marginal and constrained on bids. Constrained off bids are determined when the bid is not fully dispatched and the bid price is less than the regional reference price. Constrained on bids are determined when the bid is partially or fully dispatched and the bid price is greater than the regional reference price. Marginal bids are determined when the bid price matches the regional reference price. In addition to the ranking of the bid due to it's price, the dispatched quantity may be affected by a number of factors including transmission constraints, generation constraints and co-optimisation of ancillary services.

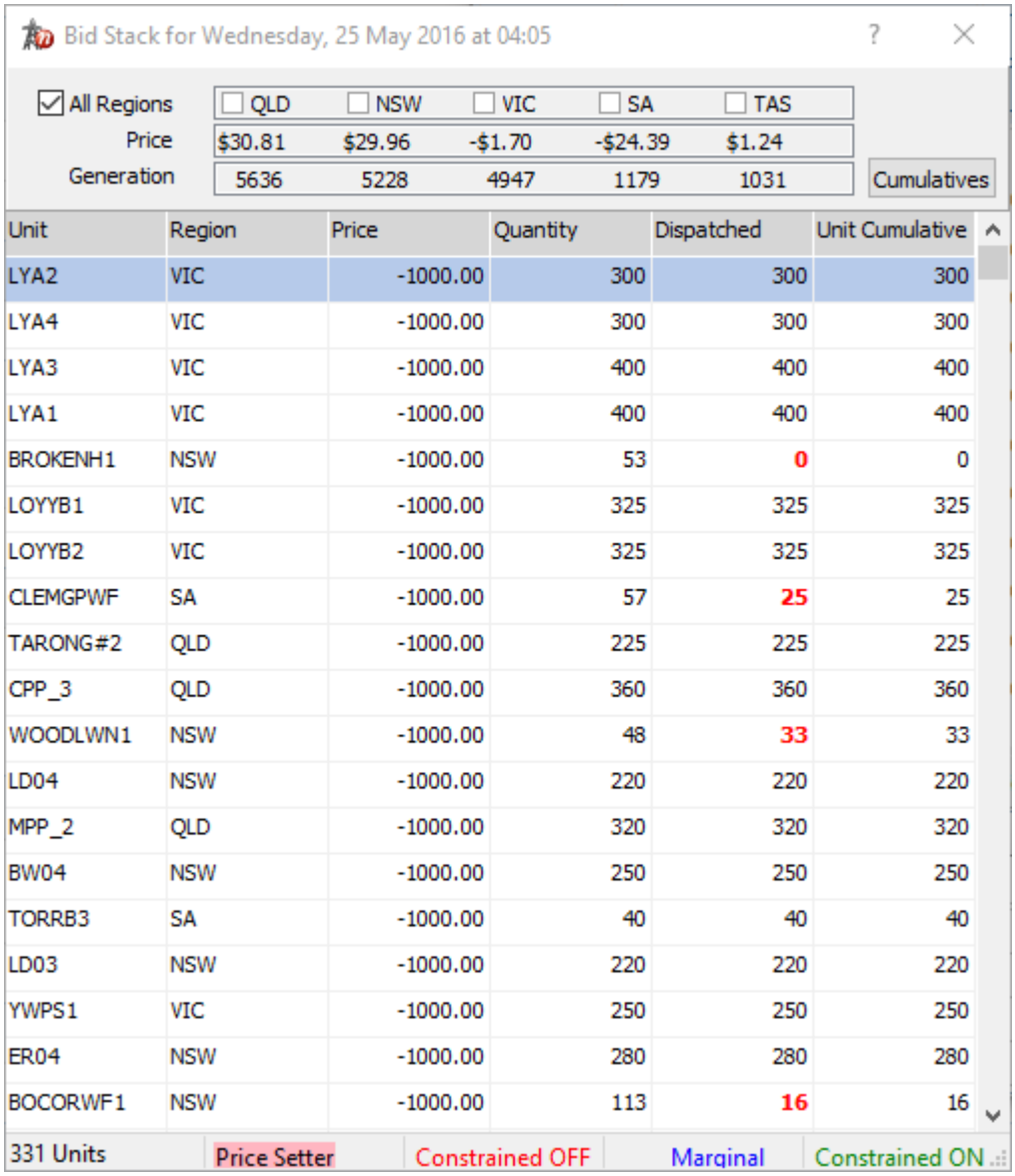
Please note that the bid stack feature requires loading data for all DUIDs which may take several minutes.

The price setting bid bands are highlighted in pink, based on linking the price setter unit and the spot price.

Click the **Cumulatives** button to show additional columns displaying the cumulative dispatch for each region. This makes it easy to identify groups of bid bands from then same region. The Unit Cumulative column is a running sum of Dispatched by Unit.



Unit	Region	Price	Quantity	Dispatched	Unit Cumulative
TNPS1	QLD	Fixed	400	400	400
CALL_B_1	QLD	Fixed	245	245	245
MOREESF1	NSW	-1033.37	56	23	23
NYNGAN1	NSW	-1000.01	102	0	0
YATSF1	VIC	-1000.01	81	0	0
OAKLAND1	VIC	-1000.01	62	58	58
PIBESSG1	VIC	-1000.01	1	1	1
PIBESSL1	VIC	-1000.01	-1	0	0
WINTSF1	VIC	-1000.01	2	0	0
CHILDSF1	QLD	-1000.01	1	1	1
SRSF1	QLD	-1000.01	2	2	2
KIATAWF1	VIC	-1000.00	31	31	31
BANN1	VIC	-1000.00	88	2	2
NUMURSF1	VIC	-1000.00	1	0	0
KARSF1	VIC	-1000.00	88	1	1
FLYCRKWF	NSW	-1000.00	80	54	54
NEVERSF1	NSW	-1000.00	3	3	3
CSPVPS1	QLD	-1000.00	40	4	4
OAKEY1SF	QLD	-1000.00	1	1	1



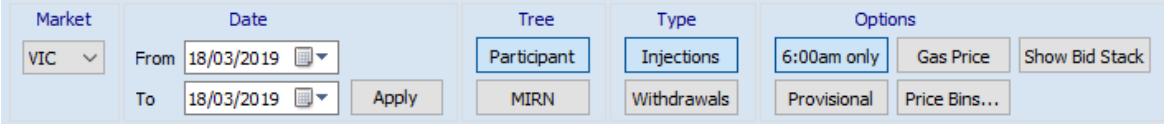
Unit	Region	Price	Quantity	Dispatched	Unit Cumulative
LYA2	VIC	-1000.00	300	300	300
LYA4	VIC	-1000.00	300	300	300
LYA3	VIC	-1000.00	400	400	400
LYA1	VIC	-1000.00	400	400	400
BROKENH1	NSW	-1000.00	53	0	0
LOYYB1	VIC	-1000.00	325	325	325
LOYYB2	VIC	-1000.00	325	325	325
CLEMGPWF	SA	-1000.00	57	25	25
TARONG#2	QLD	-1000.00	225	225	225
CPP_3	QLD	-1000.00	360	360	360
WOODLWN1	NSW	-1000.00	48	33	33
LD04	NSW	-1000.00	220	220	220
MPP_2	QLD	-1000.00	320	320	320
BW04	NSW	-1000.00	250	250	250
TORRB3	SA	-1000.00	40	40	40
LD03	NSW	-1000.00	220	220	220
YWPS1	VIC	-1000.00	250	250	250
ER04	NSW	-1000.00	280	280	280
BOCORWF1	NSW	-1000.00	113	16	16

331 Units | Price Setter | Constrained OFF | Marginal | Constrained ON

2.16 Gas Bids

Gas Bids

The gas bids to be displayed are determined by the settings in the ribbon bar.



The market is selected; Brisbane, Sydney, Adelaide from the STTM market, or the Victorian market. The Apply button loads data for the specified date range. Once loaded

- the tree can be organised by Participant then MIRN or MIRN then Participant
- bid or offer stacks can be displayed by selecting Injections or Withdrawals
- for the VIC market it is possible to view just the 6am (BOD) bids or offers (this is the default view)
- the provisional bids or offers can be included by clicking the Provisional button
- the gas price can be superimposed as long there is only one schedule per day (6am for VIC and the non-provisional schedules for the STTM)
- the price bins can be defined in the Configuration>Price Bins tab which can be launched from the Price Bins button.

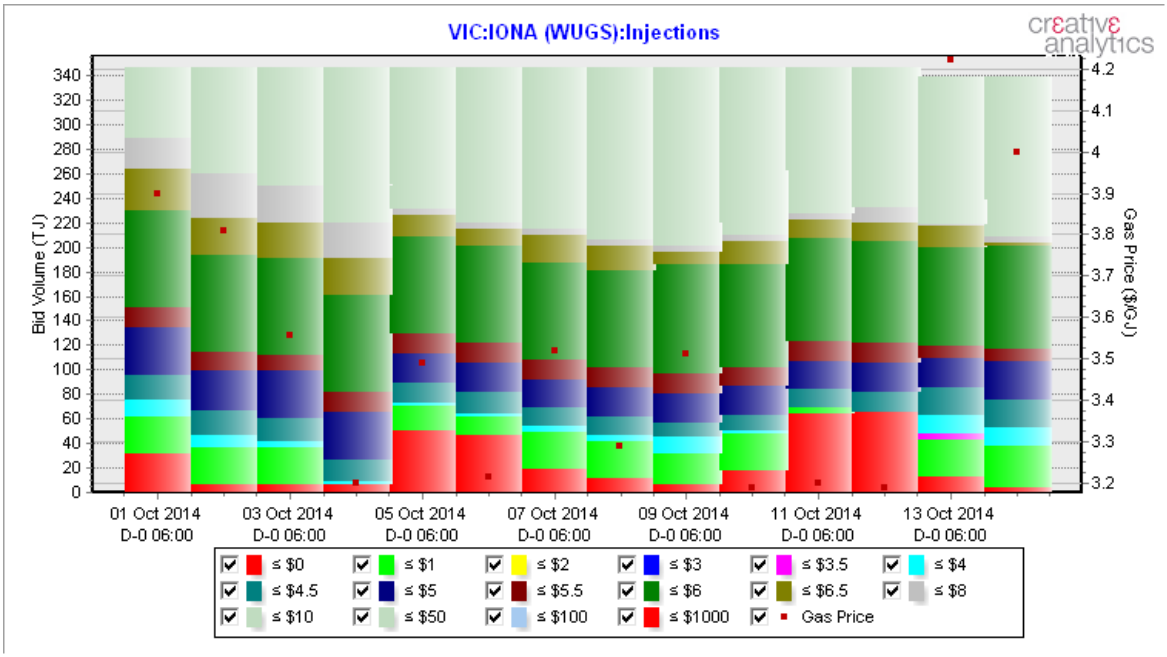
Note: Yesterday's gas bids are available from 7.30am (VIC) and 9.30am (STTM). Historical days since 1st Jan 2013 are available at any time to view.

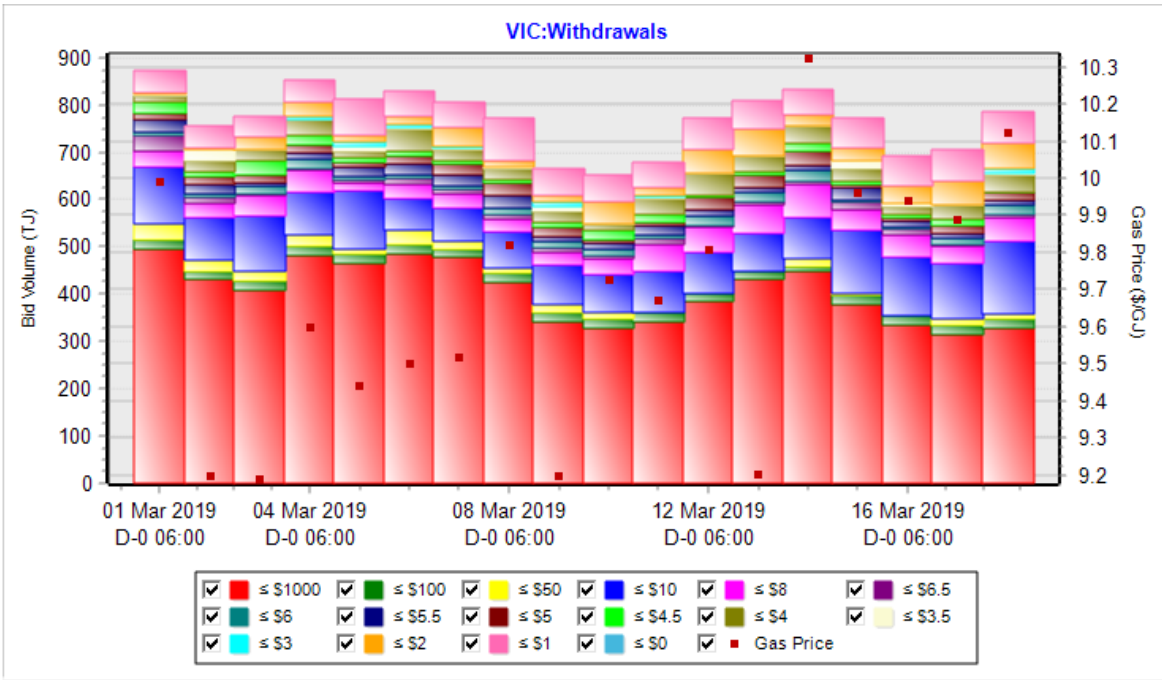
Note: The "Show Bid Stack" button is disabled if Gas bids have not been released by AEMO.

The stacked chart which is launched shows the INJECTIONS bid stacks for each selected schedule, with cumulative volume for each price-bin. The provisional bid stacks are those which were published on prior days but pertain to the bid date, specified. They are labeled according to how many days prior to gas date (D) that they were created. For example, D-2 was a provisional schedule released 2 days prior to the specified gas date.

Note: the D-1 provisional schedule refers to the schedule released the prior day at 7am.

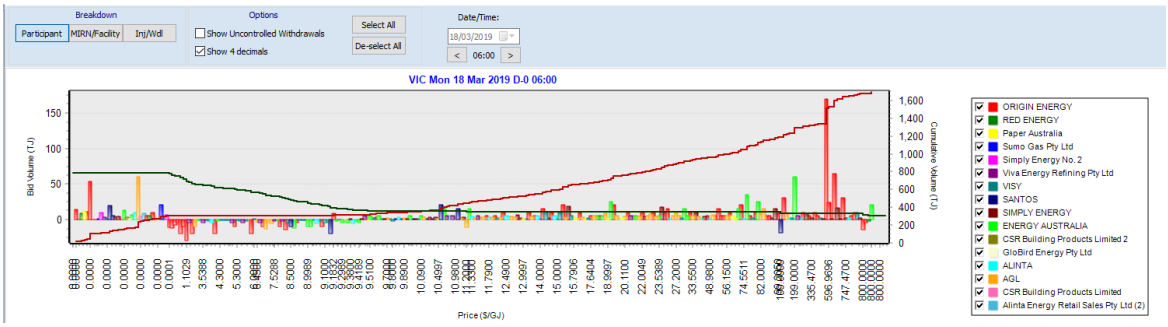
A more detailed bid stack analysis for a particular gas day may be launched by clicking on any particular day's bid stack (see below). Gas bid windows cannot be included in Dashboards.





Show Bid Stack button allows users to examine the bid and offer stacks for the selected day. This chart can also be accessed clicking on one of the bars in the above screen.

The 10am, 2pm, 6pm and 10pm schedules in the VIC market use the 6am uncontrolled withdrawals.



It is possible to display all the Participants or a subset using the check boxes in the chart legend. Select All/ De-select All options can also be used for selecting/de-selecting all the participants.

By right clicking on the above chart, users may access the injection and withdrawal stack in a tabular form. This may be copied into Excel. Please note, the "qty" field is an incremental quantity, not a cumulative quantity.
By default all the Participants will be displayed in the Bid stack table, however if specific participants are selected, only the selected ones will be displayed in the Bid Stack table.

market	gas_date	participant	code	offer_type_c	schedule_ty	schedule_tir	price	qty
VIC	18 Mar 2019	ORIGIN ENEI	Yolla (BassG	I	D-0	06:00:00	0	14001
VIC	18 Mar 2019	ORIGIN ENEI	VIC Hub	I	D-0	06:00:00	0	1
VIC	18 Mar 2019	RED ENERGY	Longford	I	D-0	06:00:00	0	8000
VIC	18 Mar 2019	Paper Austr	Longford	I	D-0	06:00:00	0	11203
VIC	18 Mar 2019	ORIGIN ENEI	Longford	I	D-0	06:00:00	0	11159
VIC	18 Mar 2019	ORIGIN ENEI	Longford	I	D-0	06:00:00	0	53676
VIC	18 Mar 2019	ORIGIN ENEI	SEAGas	I	D-0	06:00:00	0	1
VIC	18 Mar 2019	ORIGIN ENEI	Mortlake	I	D-0	06:00:00	0	1
VIC	18 Mar 2019	Sumo Gas P	VIC Hub	I	D-0	06:00:00	0	1150
VIC	18 Mar 2019	Simply Ener	Longford	I	D-0	06:00:00	0	9298
VIC	18 Mar 2019	Viva Energy	Longford	I	D-0	06:00:00	0	3288
VIC	18 Mar 2019	VISY	Longford	I	D-0	06:00:00	0	1000
VIC	18 Mar 2019	SANTOS	VIC Hub	I	D-0	06:00:00	0	19000
VIC	18 Mar 2019	SANTOS	Longford	I	D-0	06:00:00	0	5355
VIC	18 Mar 2019	SIMPLY ENE	SEAGas	I	D-0	06:00:00	0	3000
VIC	18 Mar 2019	SIMPLY ENE	Longford	I	D-0	06:00:00	0	4000
VIC	18 Mar 2019	ORIGIN ENEI	LNG	I	D-0	06:00:00	0	1
VIC	18 Mar 2019	ENERGY AUS	Longford	I	D-0	06:00:00	0	12896
VIC	18 Mar 2019	CSR Building	Longford	I	D-0	06:00:00	0	2700
VIC	18 Mar 2019	GloBird Ener	TasHub	I	D-0	06:00:00	0	500
VIC	18 Mar 2019	ENERGY AUS	Longford	I	D-0	06:00:00	0	6453
VIC	18 Mar 2019	ALINTA	Longford	I	D-0	06:00:00	0	9224
VIC	18 Mar 2019	AGL	Longford	I	D-0	06:00:00	0	60092
VIC	18 Mar 2019	CSR Building	Longford	I	D-0	06:00:00	0	4278
VIC	18 Mar 2019	Alinta Energ	VIC Hub	I	D-0	06:00:00	0	9000
VIC	18 Mar 2019	ONE STEEL	Longford	I	D-0	06:00:00	0	5075
VIC	18 Mar 2019	O-I Internati	Longford	I	D-0	06:00:00	0	4686
VIC	18 Mar 2019	ORIGIN ENEI	IONA (WUGS	I	D-0	06:00:00	0	9171
VIC	18 Mar 2019	ORIGIN ENEI	Culcairn	I	D-0	06:00:00	0	1
VIC	18 Mar 2019	M2Energy Pt	Longford	I	D-0	06:00:00	0	3500
VIC	18 Mar 2019	LUMO	Longford	I	D-0	06:00:00	0	20000
VIC	18 Mar 2019	O-I Internati	IONA (WUGS	I	D-0	06:00:00	0	3000
VIC	18 Mar 2019	Mobil Oil Au	Longford	I	D-0	06:00:00	0	6303
VIC	18 Mar 2019	ORIGIN ENEI	Culcairn	W	D-0	06:00:00	0.0001	11000
VIC	18 Mar 2019	ORIGIN ENEI	VIC Hub	W	D-0	06:00:00	0.001	11993
VIC	18 Mar 2019	ORIGIN ENEI	VIC Hub	W	D-0	06:00:00	0.01	7999
VIC	18 Mar 2019	ORIGIN ENEI	SEAGas	W	D-0	06:00:00	0.02	5000
VIC	18 Mar 2019	ORIGIN ENEI	IONA (WUGS	W	D-0	06:00:00	0.0501	20000
VIC	18 Mar 2019	ORIGIN ENEI	Culcairn	W	D-0	06:00:00	0.1555	10000
VIC	18 Mar 2019	ORIGIN ENEI	IONA (WUGS	W	D-0	06:00:00	1.1029	30000

Data Sources:

STTM Market
bids: int659
price taker quantities: int652 (ex-ante) and int655 (provisional)
prices: int651

VIC Market
bids: int131
uncontrolled withdrawals: int235
prices: int37b

2.17 Regional Statistics

Regional Statistics

The Regional Statistics function provides the ability to analyse a set of historical data from the following

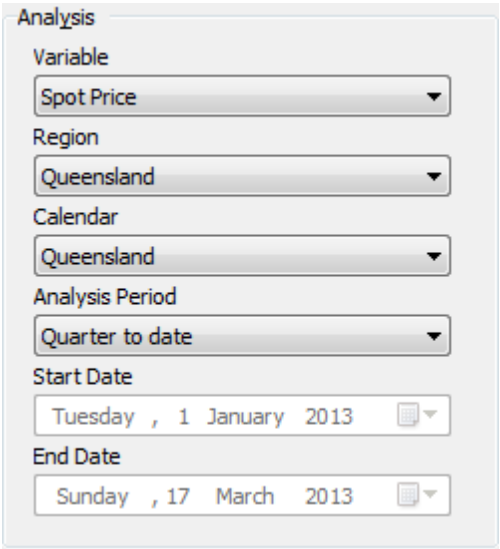
- Spot price
- Regional Demand
- Regional Availability
- Regional Generation
- Regional Non-scheduled (Generation)
- Interconnector Flow (metered)
- Interconnector Export Limit
- Interconnector Import Limit

Regional Statistics cannot be included in a Dashboard.

2.17.1 Select Data

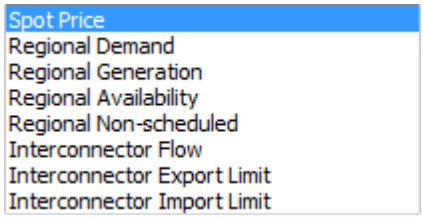
Choose Data

On Selecting **Regional Statistics** the following dialog appears allowing selection of the data to be analysed.



Choose a Variable, Region, Calendar and Analysis Period then click the **Display** button to analyse the selected dataset.

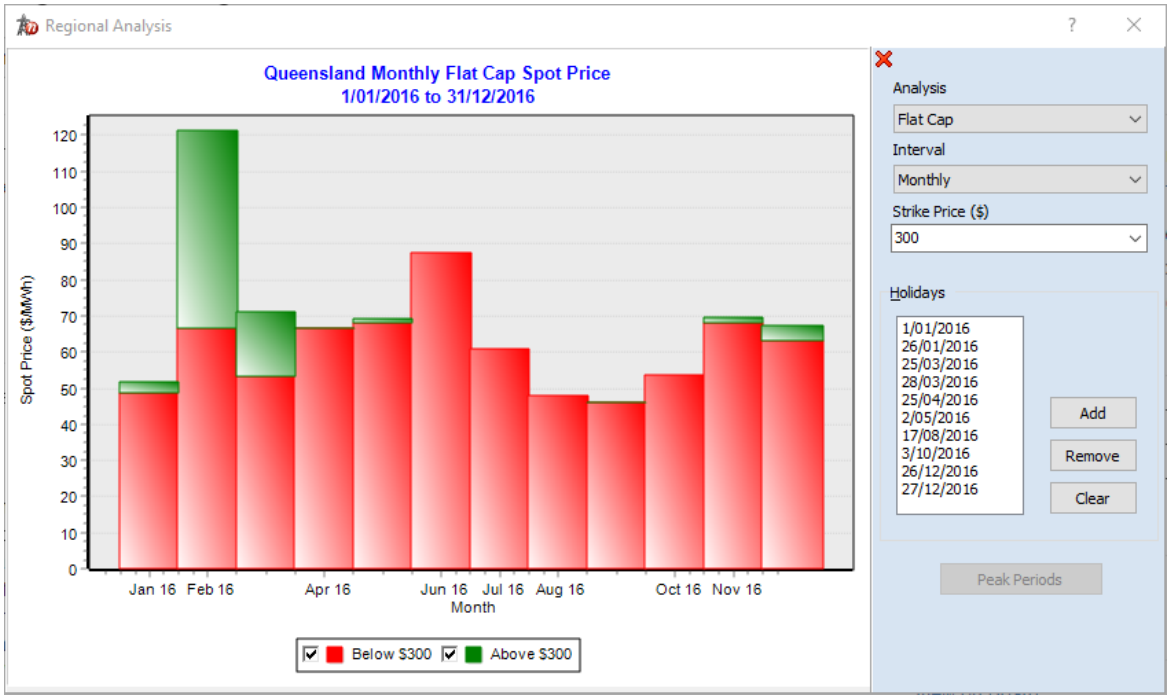
The following variables are available for analysis. Spot Price and Regional Demand are sourced from the AEMO monthly price and demand files while the other variables are sourced from the Timeseries files.



2.17.2 Analysis

Analysis

After selecting your Variable, Region, Calendar and Analysis Period the following window will be displayed where various calculations can be performed.



Each section of the Statistics dialog is described below. The section on Charts describes further functionality common to charting windows.

Select Analysis Type

Peak/Off-Peak
Aggregates data over the selected interval for Flat, Peak and Off-Peak periods between two dates. The aggregation operator can be average, total, minimum, maximum or standard deviation, and is aggregated by the nominated interval. The holiday calendar set is used to define working and non-working days. The NemSight holiday calendars are set to match the ASX calendars.

Profiles
A profile aggregates data by half-hour for working (WOR) or non-working (NON) days between two dates. The aggregation operator can be average, total, minimum, maximum or standard deviation, and is aggregated by the nominated interval. The holiday calendar set is used to define working and non-working days.

Overlay
An overlay consists of overlaying the daily profiles for all working (WOR) or non-working (NON) days. The aggregation operator can be average, total, minimum, maximum or standard deviation, and is aggregated by the nominated interval. The holiday calendar set is used to define working and non-working days.

Histogram
A Histogram sorts the data into bins. The Fixed Bins option is designed specifically for Spot Prices with non-linear bins scaled to best display Spot Price Data. Choosing the Automatic Bins option will provide 100 evenly spaced bins, the spacing of which has been automatically calculated to fit the data.

Duration Curve
The Duration Curve plots the Spot Prices in descending order, hence showing the number of periods that the Spot Price is above a certain value.

Capped Price
Calculates average prices for a nominated interval aggregated into flat, peak or off-peak periods. Two price averages are presented (i) below a nominated strike price, and (ii) the excess above the nominated strike price. Please note that each average calculation is an average over all periods in the selected interval. In the calculation of part (i), for prices above the strike price, the strike price is included in the average. Similarly, in the calculation of part (ii), for prices below the strike price, a zero is included in the average. A drop down box is provided for easy selection of Strike Price, but any value can be manually typed into the field.

Non-aggregated
Displays the raw data in the source five-minutely or half-hourly intervals over the selected dates.

Intervals

The following intervals are available for selection:
- Daily (only available for peak/off peak)
- Weekly
- Monthly
- Quarterly
- Annual
- Whole period
- Monthly year on year
- Quarterly year on year

Year on year will average the values for the same months and quarters over multiple years. For example, Peak/Off Peak Monthly Year on year will create 12 monthly intervals where all Januaries are averaged into the shown January etc. At least 2 years of data must have been selected for the year on year intervals to appear for selection.

Holidays

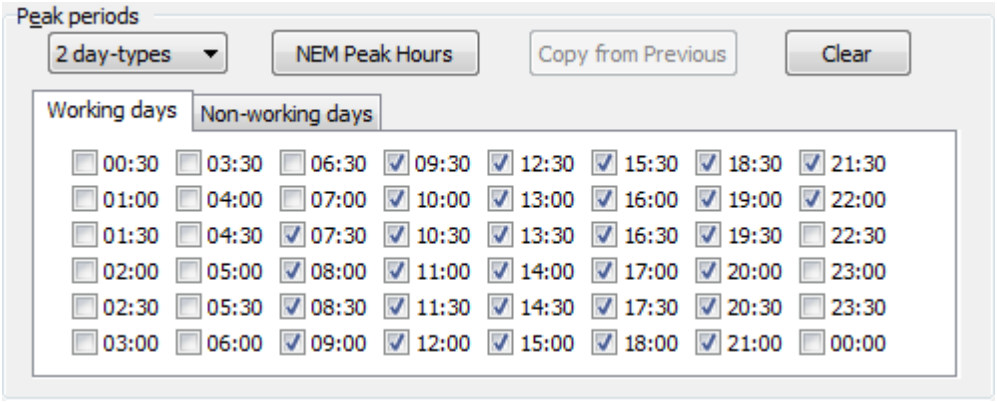
The Holidays section of the dialog defines how NemSight will determine non-working days across the analysis. The holidays are initially calculated on standard rules however the dates

can be amended with the **Add**, **Remove** and **Clear** buttons.

Please note that the holidays are based on calculations and may not match published holidays. Be sure to check that these dates are correct, as the standard rules may occasionally be over-ridden by state or federal authorities.

Peak/Off-peak Periods

Clicking the **Peak Periods** button will open the window below.



Some of the analyses in the Statistics module rely on a definition of peak and off-peak periods. These periods are defined by the user and can be set to the NEM definition or customised by setting:

- The number of day-types.
- The half-hours which are designated as peak for each day-type.
- The set of holidays which determine the peak profiles for each day-type that is applied to each day in the analysis (see Holidays section above).

As seen in the screen shot above, a drop down box allows the choice of 2, 3, 4 or 8 day-types. All tabs will default to the standard peak hours configuration, ie 7am to 11 pm on working days. This can be manually altered by ticking or unticking boxes. Clicking on the **NEM Peak Hours** button will populate the standard peak hours for that tab. Clicking on the **Copy from Previous** button will copy the peak hour configuration from the previous tab to the current tab. It will appear inactive for the first tab, as there is no previous tab to copy from. The **Clear** button will clear all boxes of ticks for the current tab. Clicking **Save** will save the current day-type and all associated tabs and close the window. If the **Peak Periods** window is re-opened, this data will appear. Note, however, that clicking over to a different day-type will clear it. Whenever a new day-type is selected it will be initialised with the standard peak hours configuration.

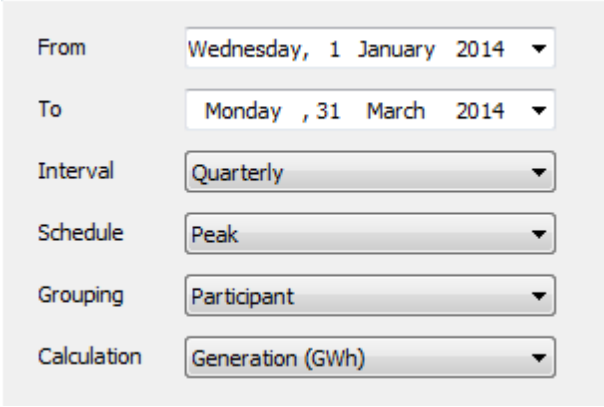
2.18 Generation Statistics

Generation Statistics

The Generation Statistics module calculates the following for the NEM or by region, participant, power station or fuel type over weekly, monthly, quarterly or yearly intervals.

1. Generation in GWh
2. Sent Out Generation in GWh
3. Fuel Consumption in TJ
4. Carbon emissions in thousand tonnes of CO2 (equivalent)
5. Dispatch-weighted emissions in tonnes of CO2/MWh
6. Pool sales in $m
7. Dispatch-weighted pool price in $/MWh
8. Capacity factor in %
9. Availability in % for scheduled units only

The calculation dialog allows choice of Date-range, Interval, Schedule, Grouping and Calculation. The **Date-range** is always from 4am on the specified From date to 4am on the day following the To date. The **Interval** can be weekly, monthly, quarterly or yearly. The first or last Interval may not be complete if the Date-range does not include the full Interval, for example choosing a quarterly Interval with a Date-range from 1 February 2010 to 31 December 2010. The **Schedule** allows selection of all hours (Flat), Peak or Off-Peak hours. Peak and off-peak periods are determined using the eight Australia-wide public holidays (excluding those specific to any state). The **Grouping** can be NEM Wide or by region, participant, power station or fuel type. The results are aggregated for each group and interval. The **Calculation** types are described below. Generation Statistics cannot be included in Dashboards.



The **Generation** is not loss-adjusted and uses the five-minute Initial MW. It is converted from five-minute MW values to GWh over the specified interval. The generation is then aggregated for each group and interval.

The **Sent Out Generation** is Generation that is adjusted for auxiliary power and is therefore an estimated value. Sent Out Generation = Generation * (1 - Auxiliaries).

The **Fuel Consumption** is an estimate of the amount of fuel consumed to produce the Generation. Fuel Consumption = 3.6 * Sent Out Generation / Thermal Efficiency

The **Carbon emissions** calculation is not loss-adjusted and uses the Sent Out Generation before multiplying by the Emission Intensity for the unit. The carbon emissions are aggregated for each group and interval.

The **Dispatch-weighted emissions** calculation is not loss-adjusted and divides the carbon emissions (as above) by the Sent Out Generation for each group and interval.

The **Pool sales** calculation uses Sent Out Generation that is loss-adjusted using the loss factors specified in the market configuration file. The Sent Out Generation is converted from five-minute MW to MWh, loss-adjusted to the regional reference node and multiplied by the relevant spot price. The pool sales are aggregated for each group and interval then converted to millions of dollars. Since the Sent Out Generation is an estimated value, Pool Sales is also an estimated value.

The **Dispatch-weighted pool price** calculation divides the loss-adjusted Pool sales for each group and interval by loss-adjusted Generation for each group and interval. Note that Generation is used for this calculation, not Sent Out Generation.

The **Capacity Factor** calculation divides the generation by the maximum capacity, both of which may be aggregated by power station, participant or region.

The **Availability** is calculated for scheduled generators only and divides the availability by the maximum capacity, both of which may be aggregated by power station, participant or region.

Limitations

1. Prior to 1/1/2009 the Dispatch Target is used instead of the Initial MW.
2. The date-range is always based on the bid-day, starting at 4am.
3. Working days for determining peak and off-peak periods are defined by the Australia-wide public holidays.
4. Loss Factors used are the current loss factors, as specified in the market configuration file. The same figures are applied regardless of the start and end dates selected (ie no historic Loss Factors are stored).
5. Auxiliary, Thermal Efficiency and Emission Intensity data used is as specified below. The same figures are applied regardless of the start and end dates selected (ie no historic figures are stored).
6. When the selected interval is "Weeks", each week will start on a Sunday and finish on a Saturday. This is taken from the ISO8601 standard: "The week number can be described by counting the Thursdays: week 12 contains the 12th Thursday of the year. If 1 January is on a Monday, Tuesday, Wednesday or Thursday, it is in week 01. If 1 January is on a Friday, Saturday or Sunday, it is in week 52 or 53 of the previous year (there is no week 00). 28 December is always in the last week of its year.

Data Source for Calculation Factors

The Emission Intensity, Thermal Efficiency and Auxiliaries are sourced from the ACIL Tasman Report dated 8 April 2013 published on the Australian Government website for climate change. The document is currently available from the following link:
http://www.climatechange.gov.au/sites/climatechange/files/files/consultations/CEPA-2013-Electricity_assumptions.pdf

The **Auxiliaries** uses the column titled "Auxiliaries (%)" in Table 2.
The **Thermal Efficiency** uses the column titled "Thermal efficiency HHV (%) sent-out" in Table

2.
The **Emission Intensity** uses the column titled "emission intensity (tonnes CO2-e/MWh sent-out)" in Table 2.
Where there is no value for the Emission Intensity, Thermal Efficiency or Auxiliaries, NemSight uses zero.

2.19 DUID Details

This screen displays all Dispatchable Units shown in NemSight and associated details. They can be grouped by Region, Participant, Fuel Type and Schedule type.

Right clicking on the DUID provides the user with options to navigate to Network Map, Time Machine, Display option panels or to Copy the DUID Details table.

Selecting the **Network Map** option opens the Live Network screen highlighting the station of the DUID selected.

Selecting the **Time Machine** opens the Time Machine window showing details of the selected DUID under Dispatchable Units section of Time Machine.

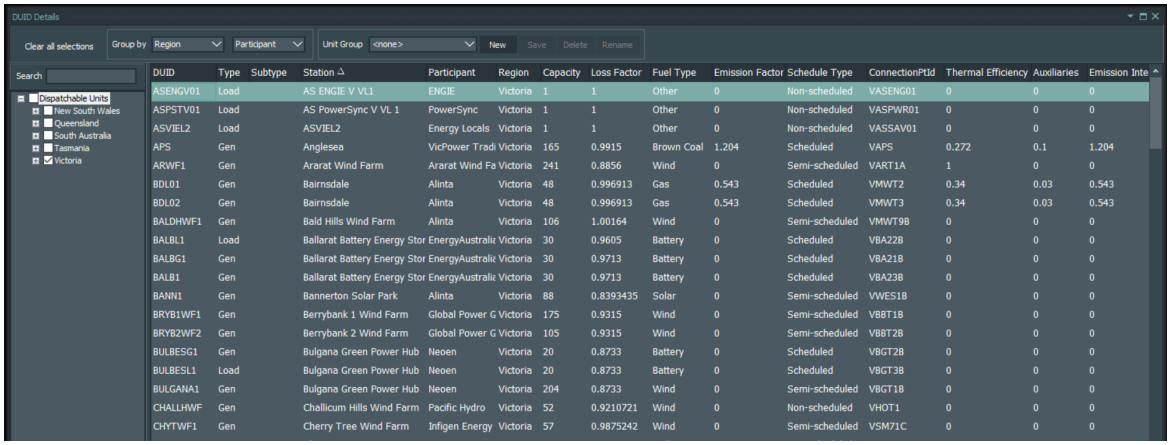
Copy Table option can be used to copy the DUID details to a clipboard.

Clicking a column header in the DUID Details table sorts data ascending/descending on that field.

A **search bar** is available to search by station or DUID. The first occurrence of the search field that is found will be highlighted for the user to select.

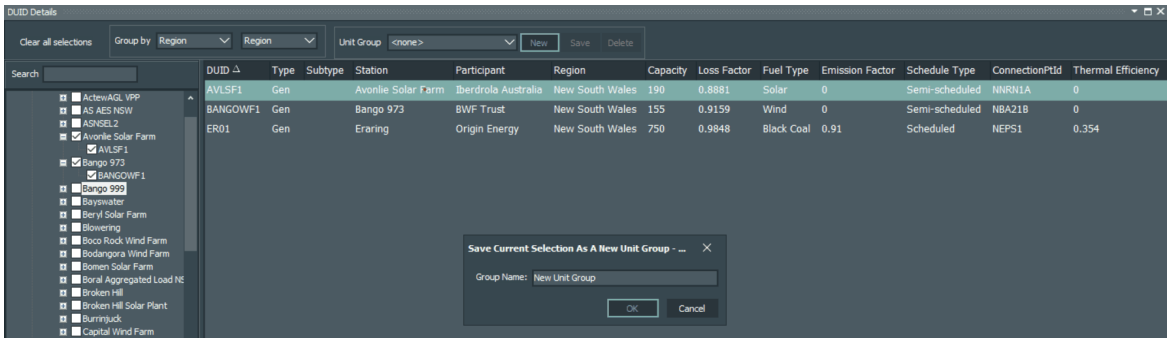
DUID Details can be included in a Dashboard.

DUID Details can also be opened from Live Generation / Time Machine / Live Network.



2.20 Unit Groups

Unit Groups is a feature where the NemSight user can create named groups/lists of units (DUIDs). These can then be used to filter the unit tree-view in Rebidding, Time Machine, MTPASA DUID Availability, Live/Current Generation, and DUID Details.
Displayed below is the Unit Groups feature in the DUID Details screen.



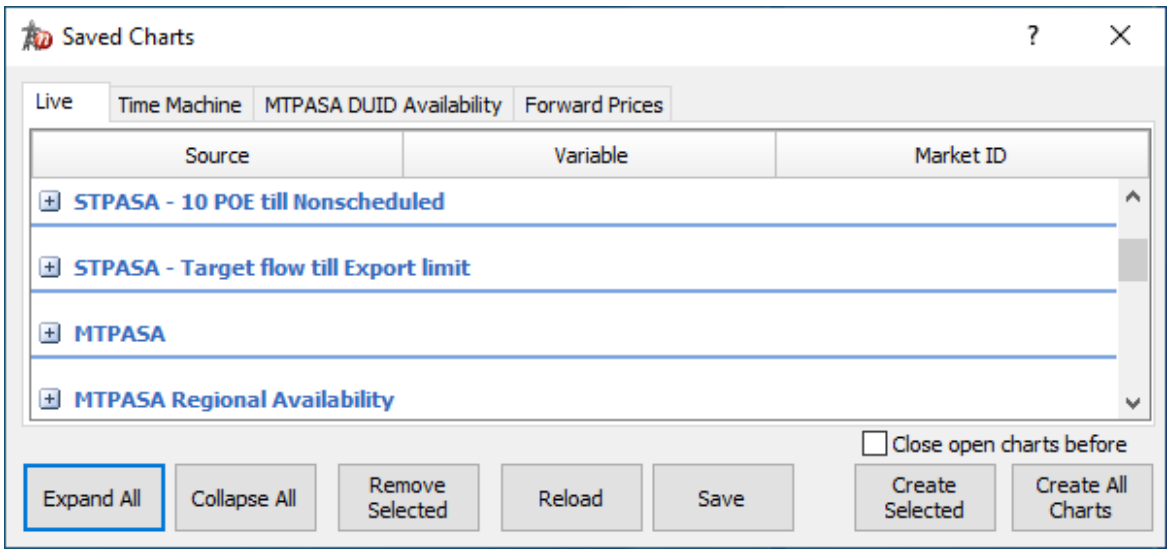
2.21 Saved Charts

Saved Charts

This feature allows creation of one or more previously saved Live Charts, Time Machine, MTPASA DUID Availability or Forward Prices charts. Each chart is shown with its list of series or parameters underneath. Any series or chart can be removed from the list by selecting the series or chart and clicking the **Remove Selected** button. The revised list may be saved by clicking the **Save** button. Saved Charts can be included in Dashboards.

One or more charts may be selected and then created by clicking the **Create Selected** button. Alternatively all the charts may be created by clicking the **Create All Charts** button.

Saved Charts are automatically restored if they were open when Window Positions were last saved. See Configuration for more details.



The chart definitions are stored in the LiveCharts.dat, TimeMachines.dat, MTPASADUIDAvailability.dat and ForwardPrices.dat files in the application folder. These files can be copied to other computers, or definitions can be merged using Notepad or other text editor.

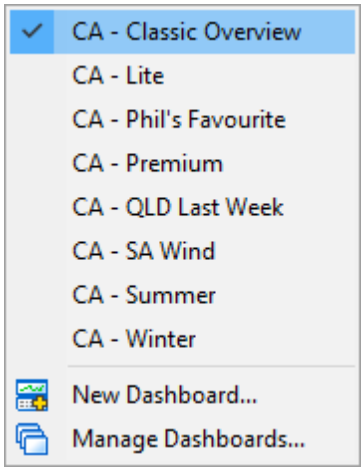
2.22 Dashboards

Dashboards are a new feature in NemSight. They provide the ability to create collections of live windows that can be opened and closed as a group. Dashboards can be selected from the main NemSight menu drop down list or the Dashboards tab of the Configuration menu. Any dashboards that were open when NemSight Window and Dashboard positions were last saved, will be restored on start up of NemSight.

Dashboards can be imported and exported so that Dashboard layouts can be shared between users. Note that not all Windows are suitable for inclusion in Dashboards. The Dashboards are primarily designed to display market data rather than data analysis, and hence functions such as PASA Delta, Re-bidding, Gas Bids, Regional and Generation Stats are not included.

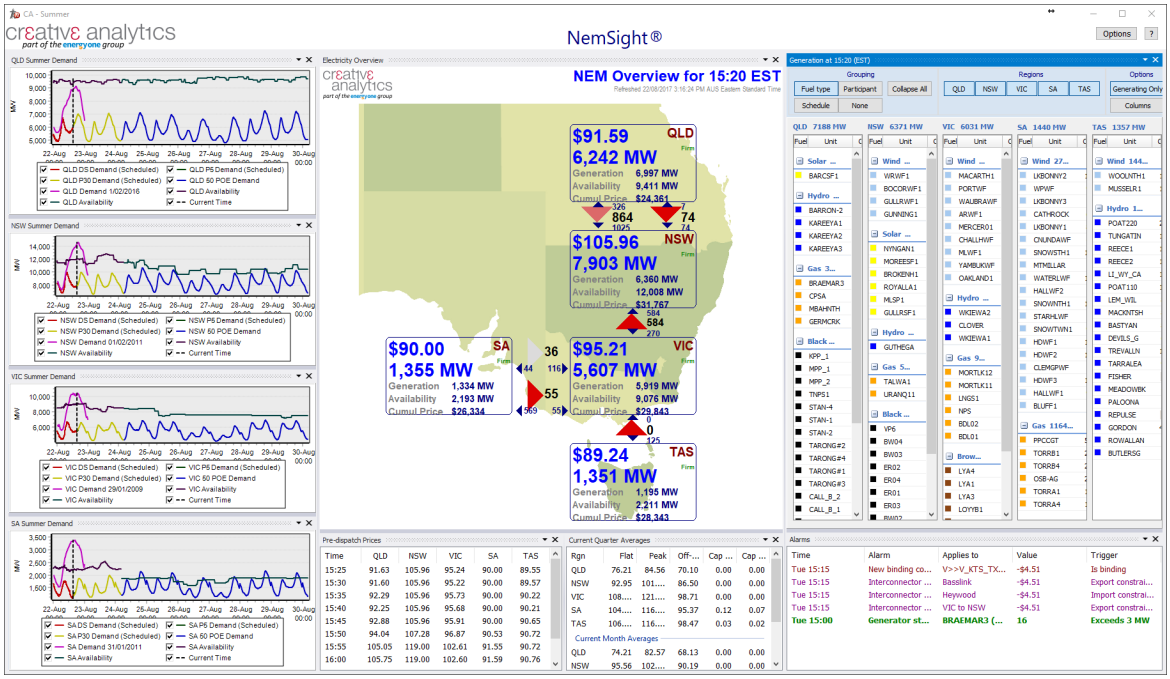
The main NemSight drop-down menu allows for the opening/selection of existing Dashboards, the creation of a New Dashboard or the Management of Dashboards through the Configuration menu. A Dashboard that is active will have a tick displayed on the left hand side. Select an existing inactive Dashboard (without a left hand side tick) to open and display it. Note that dashboards containing many windows with a large amount of data may take a while for the data to fully populate on opening the dashboard. Minimising a Dashboard rather than closing it will keep it active and avoid the need to repopulate the data next time you wish to display it. There is no restriction on the number of Dashboards and Windows that can be open at the one time however please note that the update of large amounts of data may impact on performance. Please wait until the data for the Dashboard is fully populated before minimising.

NemSight includes a number of example Dashboards that you can use, amend or delete as desired. Please note that Dashboards may only include functionality that is included in your licence. Some example Dashboards include functionality that your licence may not include.



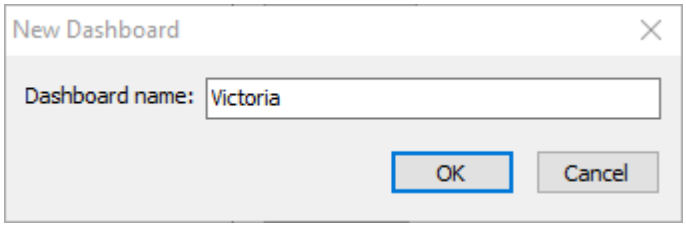
The Dashboard tab of the Configuration menu can also be used to create New Dashboards, while also allowing users to rename existing Dashboards, delete Dashboards, import and export Dashboards, and display Dashboards. See the Configuration>Manage Dashboards help topic for further information.

Format options for legends and line widths can be set using the Dashboard Options menu found in the top right hand corner of the Dashboard. The Dashboard can also be Saved from this menu. Help can be accessed for each window within the Dashboard by selecting on the down arrow and then Help.



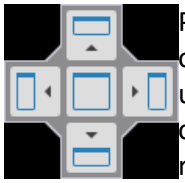
2.22.1 New Dashboard

Select New Dashboard on the Dashboard menu or from the Dashboards tab on the Configuration menu to create a New Dashboard and enter a Dashboard name.



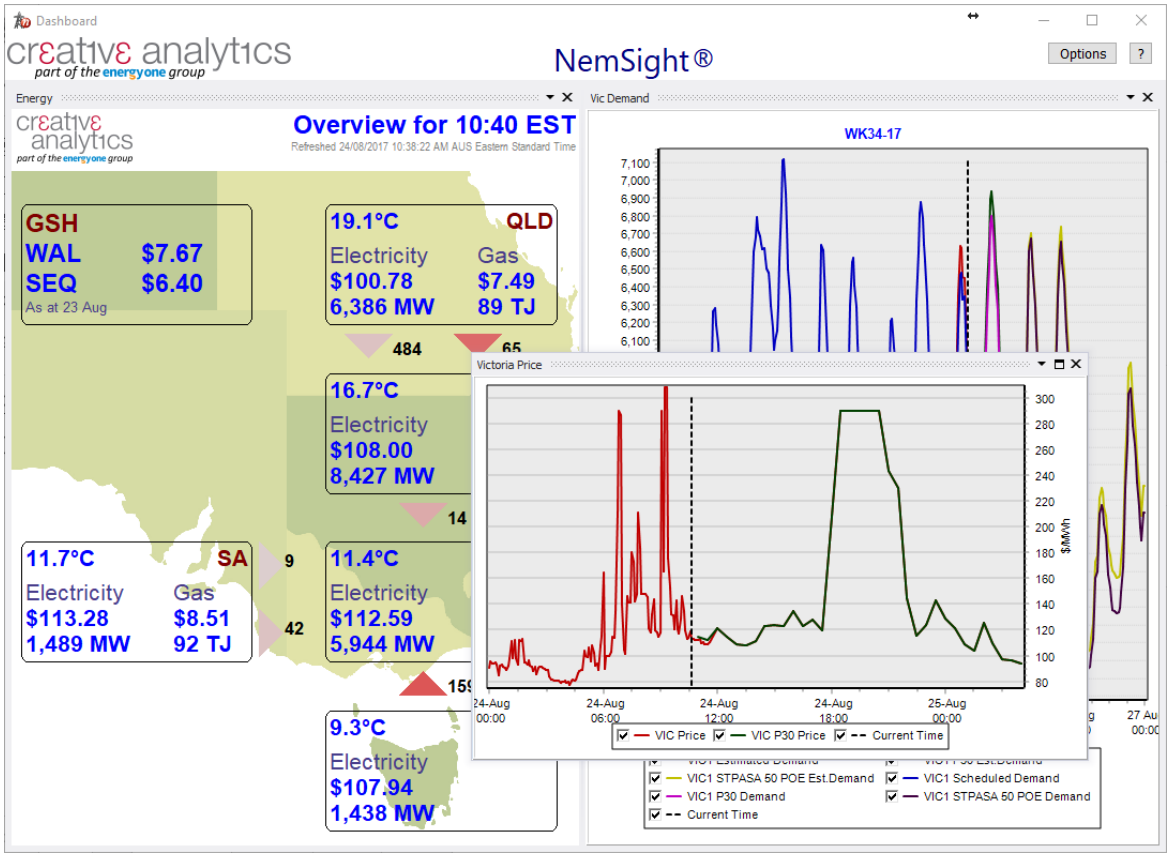
This will create a blank dashboard. Live Charts (excluding those created in Quick Mode), Time Machine Charts or other Windows containing live market data can be dragged onto the Dashboard. A Docking Tool will appear to assist with positioning the chart. The first chart, when docked, will fill the dashboard. Subsequent charts will be placed relative to the docked charts based on the selection made on the Docking Tool.

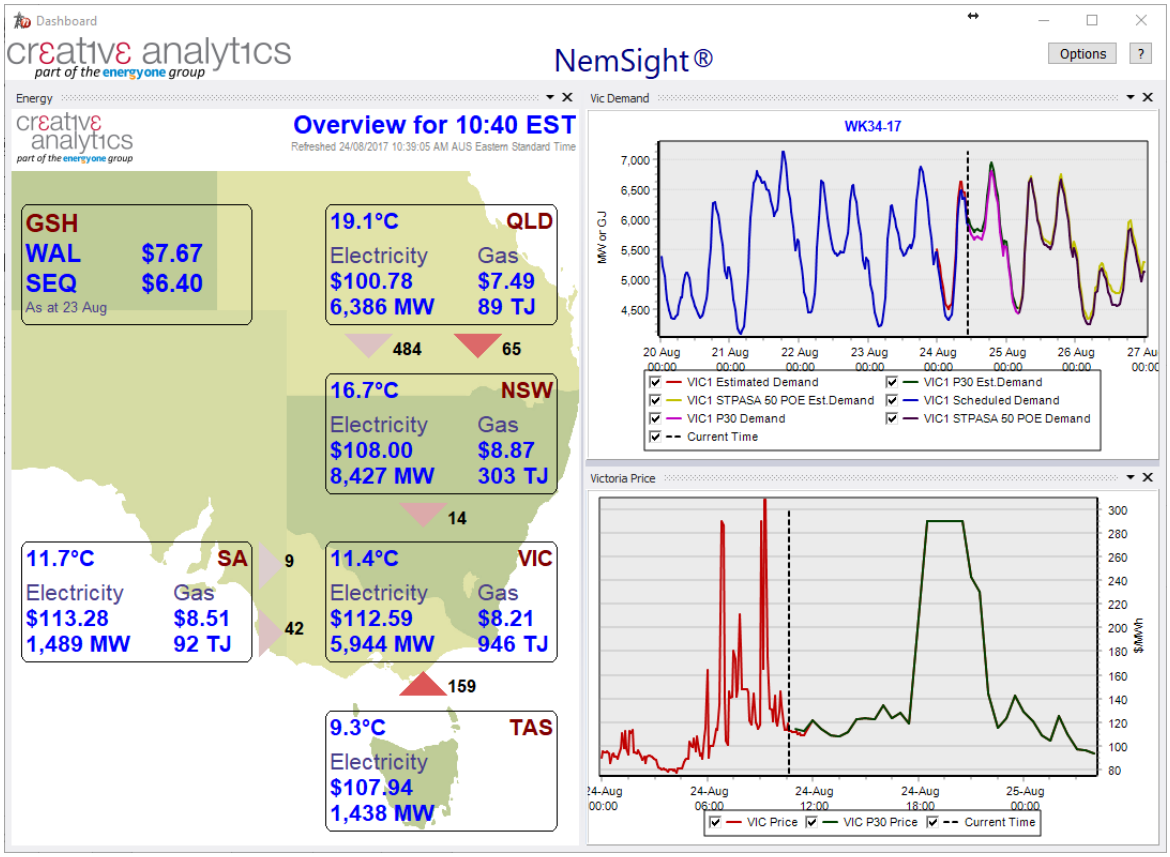
The Docking Tool will float on the dashboard when a chart is dragged onto the Dashboard. The mouse cursor is used to select the position of the active Chart relative to the docked Chart. There are five options available in the Docking Tool - centre, left, right, top or bottom.



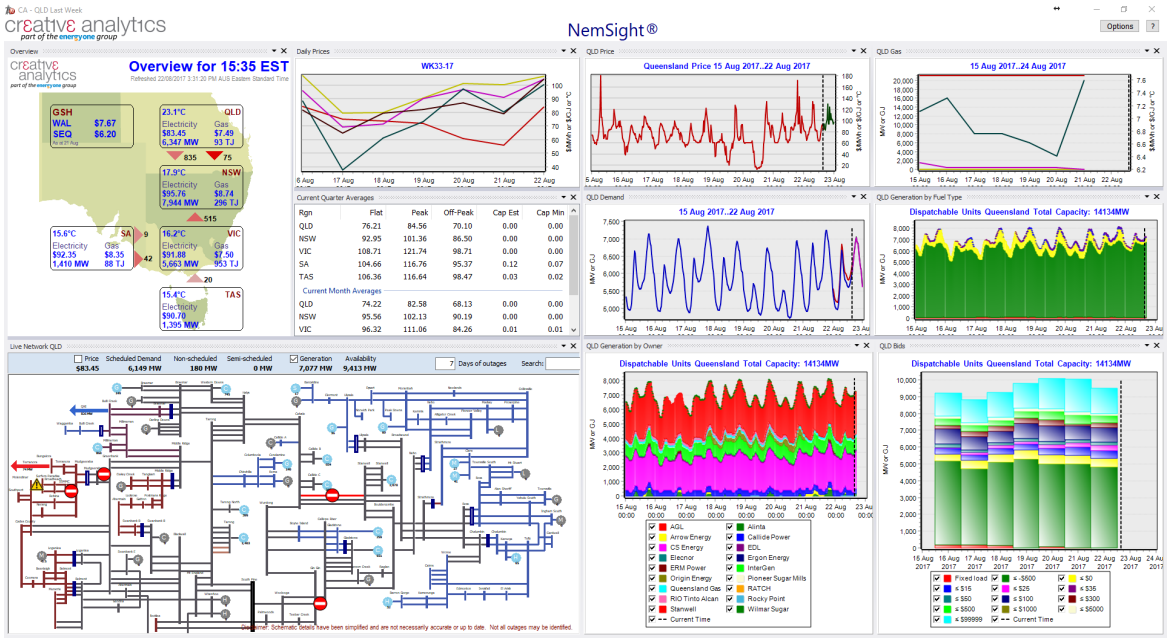
Pointing the mouse cursor to the centre square will place the active chart on top of the selected docked chart. The two or more docked charts can be selected using tabs that will appear at the bottom of the charts. Pointing the mouse cursor to a side or top or bottom rectangle will place the active chart in that relative position to the selected docked chart. When using the docking tool it is safer to ensure that your dashboard is not sitting over any other dashboards, as multiple layered Dashboards may confuse the docking tool and hamper its docking ability.

As an example, in the Victoria Dashboard (below left) the VIC Price Chart has been dragged onto the dashboard. If the mouse cursor is pointed to the bottom rectangle of the Docking Tool on top of the VIC Demand Chart, the VIC Price Chart will position below the VIC Demand Chart as seen in the Victoria Dashboard below right. Please view the Dashboard help video for more detail on creating or editing a Dashboard.





Multiple window layouts can be designed to suit users needs by dragging additional Charts to the Dashboard and using the Docking Tool - see the example below. Saving the Dashboard can be Automatic on close of the window or NemSight, or the Dashboard can be manually saved using the Options menu item in the top right hand corner.



2.23 Charts

Common Chart Functions

All windows that display charts incorporate most of the common functions described below. All but the last two are activated by right-clicking on the chart, and the last two features are activated by clicking and dragging with the mouse.

View Chart Sets the active window to display the data as a chart.

View Table Sets the active window to display the underlying data in a table.

Left Panel This toggles the display of the variable selection panel. This is only applicable to Live Charts.

Series Accesses a sub-menu allowing each series to be displayed or hidden from the chart.

Legend Shows or hides the chart legend.

Thin Lines This plots line graphs with thin lines which can be useful when lines are close together.

Y-Axis Scale Launches the y-axis scaling dialog. Any item left unticked will be automatically set. In the example below there is no y-axis on the right-hand side so these options are greyed-out.

Copy The chart is copied to the clipboard as a picture if in "chart" mode. If in "table" mode the data is copied to the clipboard.

Copy Transpose Copies the data from the table and transposes before copying to the clipboard.

Print Sends the chart to the printer. A dialog is displayed where the user can set margins and select the printer.

Close Closes the active window.

Zoom It is possible to zoom into an area of the chart by using the mouse to left-click and drag a rectangle towards the right and down. Clicking and dragging a rectangle towards the left and up will restore the chart to its original view.

Pan It is possible to pan (move) the chart by using the mouse to right-click and drag the chart around.

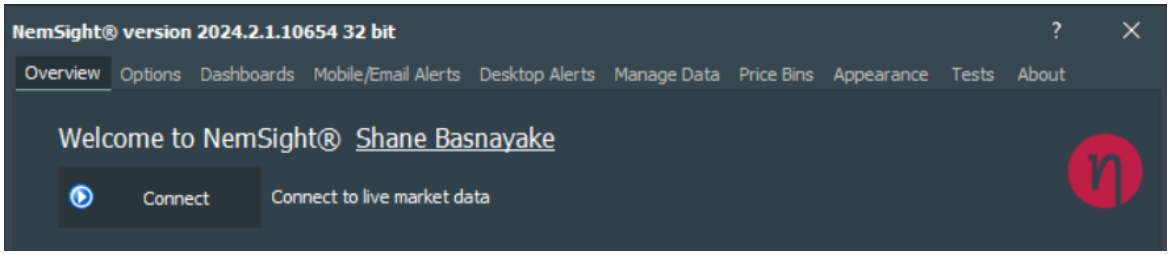
Part 3

NemSight® User Guide

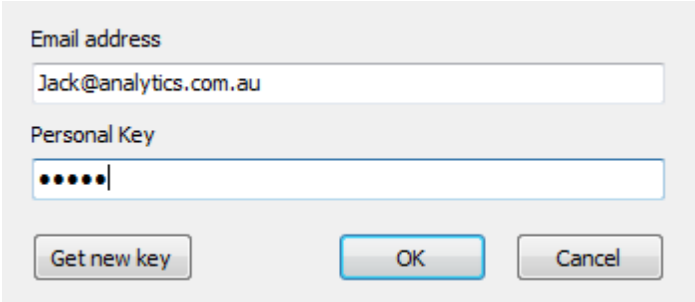
Configuration

Configuration

User settings are defined in various tabs in the Configuration screen as shown below. These settings are saved in Settings.ini file in the application folder (see Manage Data). The Re-bidding and Timeseries modules use the market structure and unit specifications defined in the market file (also stored in the application folder). Check the SMS Alerts tab to set up SMS and Email alerts. Check the Desktop Alerts tab to set up desktop alerts. Check the Manage Data tab to specify which folders contain the various market data files. Please note that it is necessary to click the **Save** button to save any changes.



To change user, please click on the name (eg. Sam Smith). Then log in with the your registration email address and Personal Key.



3.1 Overview

Configuration and Start-up Screen

This screen is launched each time NemSight is started. This screen provides a summary of functionality within NemSight and access to those functions. It will check the Creative Analytics' web site for new versions or supporting files. Clicking the **Connect** button will start live data processing. It also enables configuration of dashboards, alerts, folders, price bins, fonts and colours, licence details and running diagnostic tests. To auto start NemSight each time please see the Options tab.

3.2 Options

Options

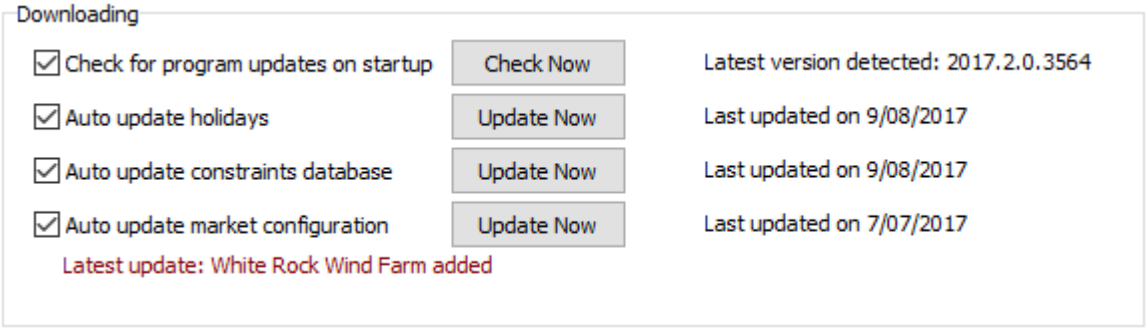
Downloading

If the **Auto update Constraints** option is ticked, each time NemSight is started it will automatically check for updates to the constraints data and apply any changes.

If the **Auto update holidays** option is ticked, each time NemSight is started it will automatically check for updates to the regional holidays on Creative Analytic's servers.

If the **Auto update market configuration** option is ticked, NemSight will automatically download the latest NemSight market configuration file from the internet.

If the **Check for program updates** on startup option is ticked, NemSight will notify the user that a new version of NemSight is available for installation.



Preferences

Tick the **Auto connect to live market data when NemSight starts** box to have NemSight automatically start downloading data when opened.

The **Disable server messages** should be left unticked for optimal performance. When ticked NemSight will poll for new messages - this is only advised for situations where the user is unable to receive our push notifications.

Tick **Extend Live by 2 days** to show two prior days of data in all Live Charts. Note that this feature is not recommended as it significantly slows the startup of NemSight. Historical data is included in TimeMachine and Network Diagrams. In the event of AEMO sending price revisions to dispatch data for periods in the live data period (1-2 days), these will be updated in TimeMachine but not Live Charts, so there is also a small chance that the older Live Chart dispatch data may be incorrect.

Untick the **Send Usage Data to help improve NemSight** option if you do not wish to provide us with anonymous usage data. This data will help us to make informed decisions on which modules of NemSight we should focus development time.

Tick **Open Welcome/Configuration window on start up** to automatically have the Configuration window open when NemSight starts.

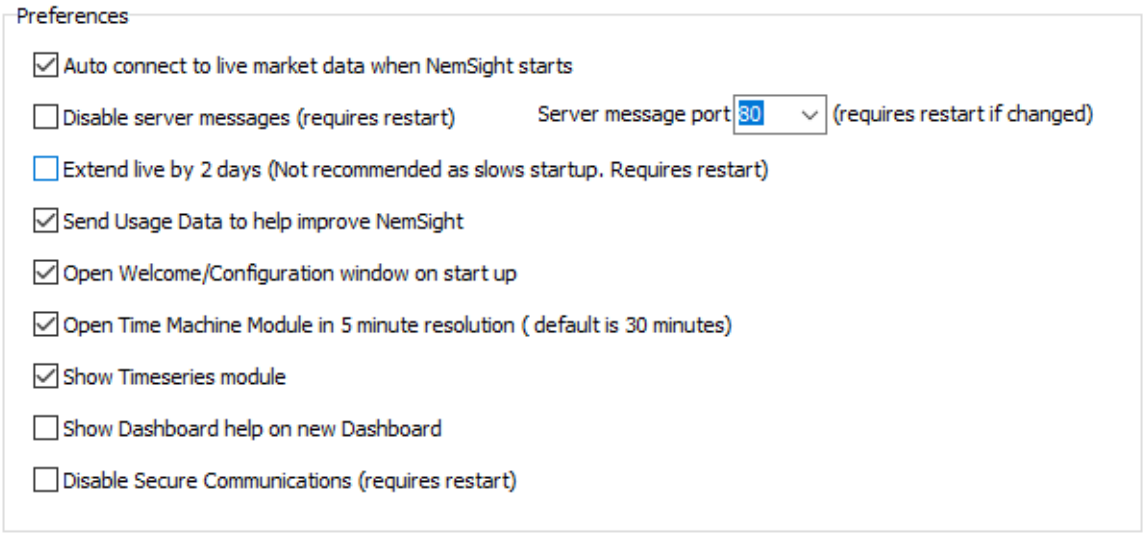
The **Open Time Machine Module in 5 minute resolution** option defaults to unticked, meaning

Time Machine will default to 30 minute resolution. 5 Minute resolution can still be manually selected upon opening Time Machine. Using 5 minute resolution will increase the quantity of data and slow down the module's operation.

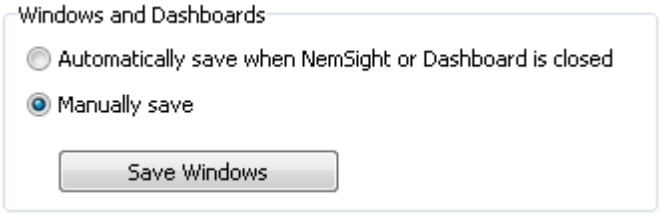
The Time Series button and menu item has been removed. The majority of its functionality is now available in improved form in the TimeMachine module. If it is still required, it can be accessed from the drop down menus by ticking the **Show Timeseries module** tickbox.

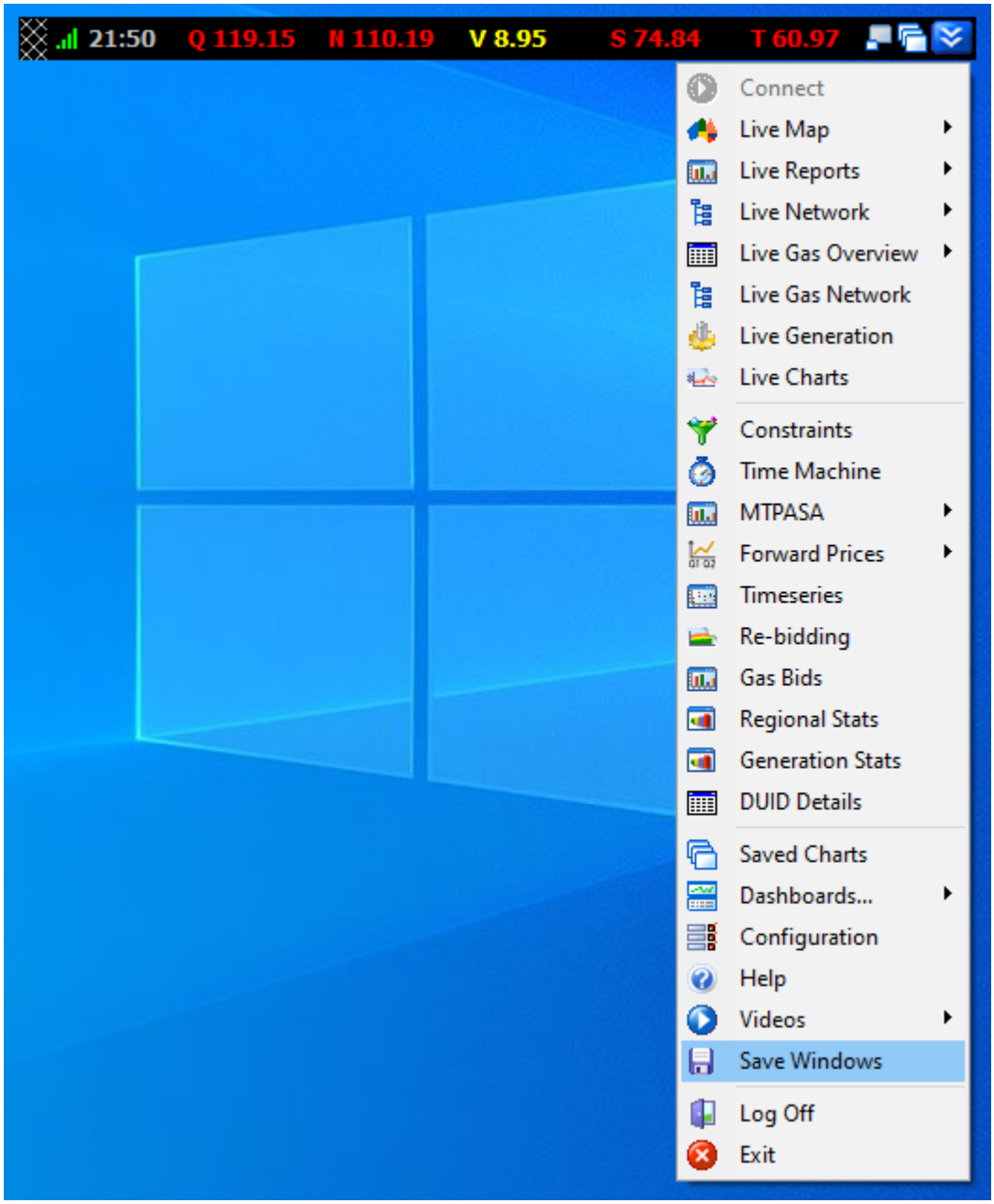
Tick **Show Dashboard help on new Dashboard** to enable a help pop-up with a link to Dashboard help and a creating Dashboard video, each time a new Dashboard is created.

Disable Secure Communications turns off the use of secure (HTTPS/SSL) communications. It is provided for backwards compatibility until your IT team configures your corporate firewall or proxy server to allow secure communications. We highly recommend leaving this option unchecked and asking your IT team to resolve any connection issues. See also: Test Internet Connection and Connection and Performance.



Select whether you would prefer NemSight to automatically save your open windows and Dashboards when NemSight or a Dashboard is closed. Alternately, you can choose to manually save the window positions (you need to select "Save Windows" from the main drop down menu of the floating price bar when you have the correct set of windows open).

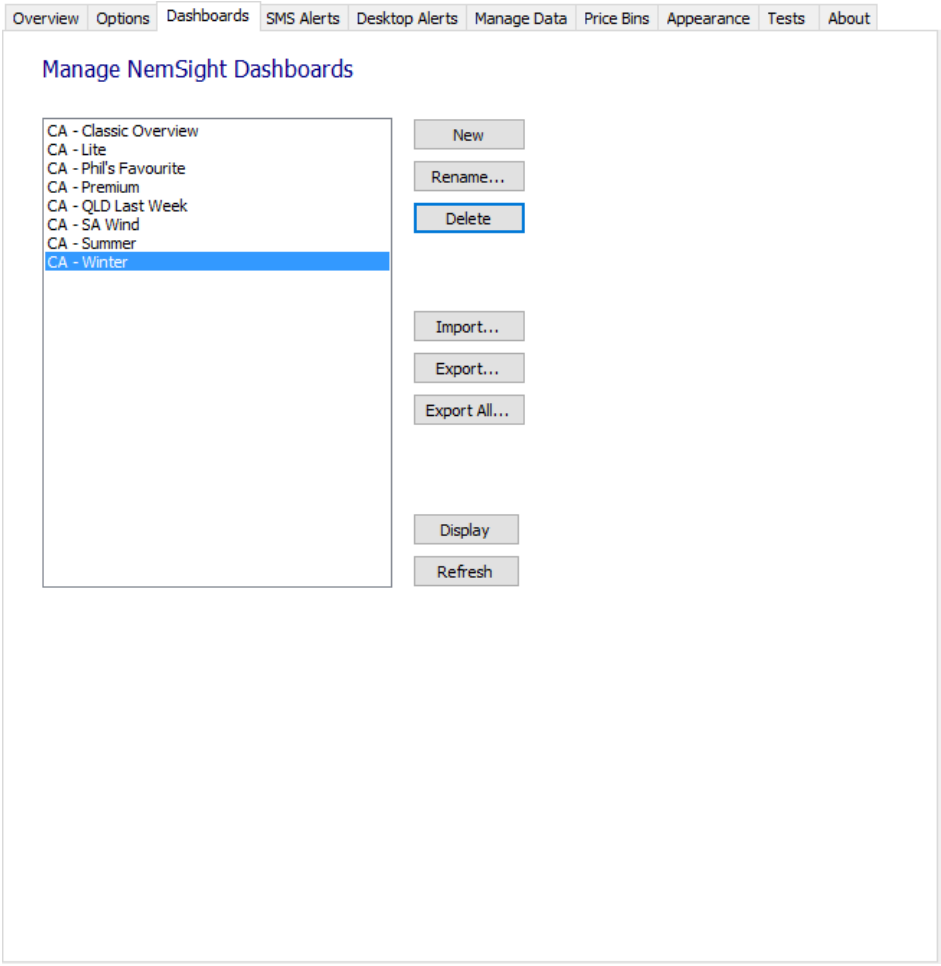




3.3 Manage Dashboards

Dashboards are a new feature in NemSight. Dashboards can be managed from the Dashboards tab in the Configuration menu or displayed or created using the NemSight drop down Dashboard menu.

The Dashboards tab can be used to
- Create New Dashboards
- Rename Existing Dashboards
- Delete Dashboards
- Import or Export Dashboard sets
- Display a Dashboard
- Refresh the list of created Dashboards to ensure all new Dashboards are displayed.



More information on these options is detailed in the table below.

Function	Description
New	Creates a New Dashboard
Rename	Rename an Existing Dashboard
Delete	Select on a Dashboard and press the Delete button to delete a Dashboard
Import	Select Import and select a Dashboard file created by an Export or Export All from NemSight (*.nsdx file). If a dashboard already exists with the same name as a dashboard being imported, the user will be

Function	Description
	given the opportunity to rename the new dashboard.
Export /Export All	Export will export the selected Dashboard. Export All will export all existing Dashboards. Both options will export to a *.nsdx file. This file can be Imported by other NemSight users.
Display	Select on a Dashboard and press Display to open the selected Dashboard
Refresh	Refresh the list of created Dashboards to ensure all new Dashboards are displayed.

3.4 Mobile/Email Alerts

Mobile and Email Alerts

The Mobile/Email Alerts tab controls the sending of NemSight Mobile notifications, emails and SMS messages when various user-defined alert conditions are triggered. NemSight does not have to be running for these alert messages to be dispatched.

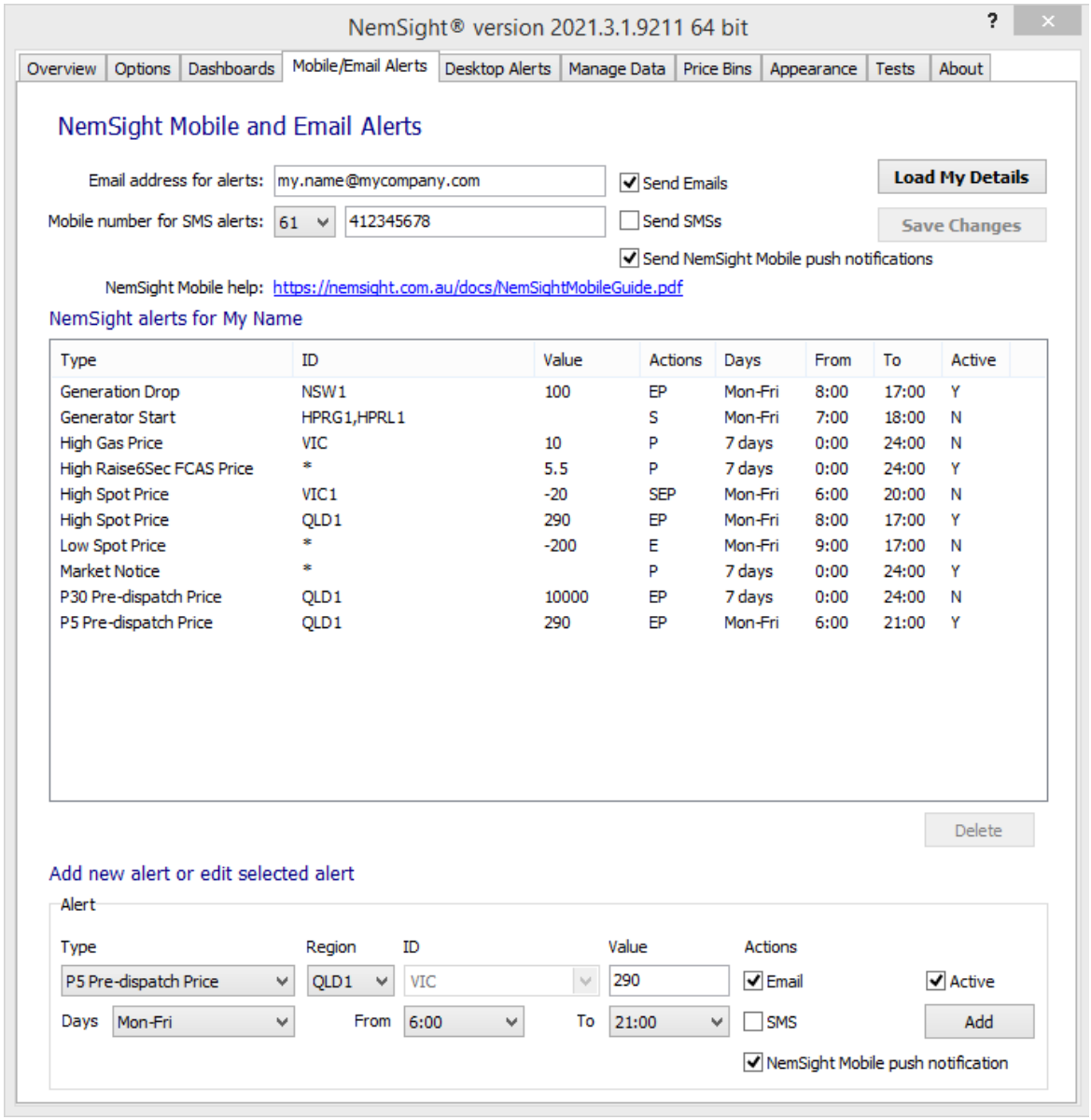
By default, the email address for email alerts is the same as the email address you originally used to login to NemSight. It can be changed to an alternative email address here; for instance when you are going to be away from the office for a period and want to have emails sent to a personal email address. Your mobile number for SMS alerts can also be supplied or changed on this tab.

The sending of NemSight Mobile notifications, emails and SMS message alerts can be enabled or disabled using the checkboxes alongside the email and mobile phone number fields. These are "master" controls as they enable the sending of messages for all alerts using these actions to be quickly stopped or started. For example, they can be enabled when away from the office, or disabled when on leave without having to edit or delete the individual alerts. Individual alerts can also be activated or deactivated by selecting the alert and changing the Active checkbox.

SMS alerts can be disabled and re-enabled from your mobile phone by sending an SMS with the word PAUSE (to stop) or START (to enable) to the following number: +61 448 767 767 (NB: these commands will not work if you reply to the alert message directly).

To use NemSight Mobile notifications you must be licensed to use NemSight Mobile, install the NemSight Mobile app on your mobile phone from the Google Play Store (Android) or Apple App Store (iOS) and log into the app at least once using your NemSight user account. The NemSight Mobile app does not need to be running to receive notification alerts, however app notifications must be enabled on your phone. A history of recent notification alerts is available in the app for later reference and these can be shared or deleted.

Information on NemSight Mobile can be found in the **NemSight Mobile User Guide**: https://nemsight.com.au/docs/NemSightMobileGuide.pdf



Use the Alert group of controls to add a new alert or edit the selected alert. Click the Add button after entering the required fields for a new alert. Click the Update button after changing the fields when editing an existing alert. An existing alert can be deleted by selecting the alert and clicking the Delete button. Alerts can also be de-activated rather than deleted by selecting the alert, unchecking the Active checkbox and clicking Update.

Note: After adding or updating alerts or changing any settings on this tab click Save Changes at the top of the tab to save all changes.

ALERTS REFERENCE TABLE

Define Alerts	**Fields**	**Trigger**
Type	High Spot Price	spot price >= VALUE
	Low Spot Price	spot price <= VALUE
	P30 Pre-dispatch Price	30 minute predispatch price >= VALUE
	P5 Pre-dispatch	5 minute predispatch price >= VALUE

ALERTS REFERENCE TABLE

	Price	
	Availability Drop	regional availability drop >= VALUE
	Generation Drop	individual generating unit (ID) drops its generation output by an amount that is >= VALUE
	Generation Increase	individual generating unit (ID) increases its generation output by an amount that >= VALUE
	Generator Start	generator unit (ID) starts.
	Generator Stop	generator unit (ID) stops.
	Interconnector	interconnector binds. Includes directional value of flow. Please see below table for +/- definitions of interconnector flow.
	Constraint Binding	constraint (ID) binds.
	Constraint Marginal Value	constraint (ID) marginal value >= VALUE
	MT PASA	changes to availability >=VALUE for 3hrly MT PASA.
	High Gas Price	most recent published schedule (excluding provisional) gas price >= VALUE
	Low Gas Price	most recent published schedule (excluding provisional) gas price <= VALUE
	Market Notice	A market notice has been published
	High FCAS Price	FCAS price in the selected market (raise/lower 1 sec, 6 sec, 60 sec, 5 min, reg) >= VALUE
	Low FCAS Price	FCAS price in the selected market (raise/lower 1 sec, 6 sec, 60 sec, 5 min, reg) <= VALUE
Region	*	Select * for ALL regions
	QLD1	Queensland
	NSW1	New South Wales
	VIC1	Victoria
	SA1	South Australia
	TAS1	Tasmania
ID	various, depending on "Type"	Select * for ALL. Note: constraints may be manually typed into this field.
Value	User defined	Set the VALUE as described in the alert Types above.
Days	7 days, M-F, Sat Sun	Set the days which you would like to receive the alerts
From	Hourly time increments	Set the times between which you would like to receive the alerts
To	Hourly time increments	Set the times between which you would like to receive the alerts
Actions (checkboxes)	SMS	Receive messages for this alert as an SMS to the specified mobile number
	Email	Receive messages for this alert an an email to the specified email address
	NemSight Mobile push notification	Receive messages for this alert in the NemSight Mobile app on your mobile phone. A history of alerts is displayed on the alerts (bell icon) tab within the app
Active	Checkbox	Is this alert currently active. Alert messages will be sent when active

Note: DUIDs not in commission are filtered out as options for alerts.

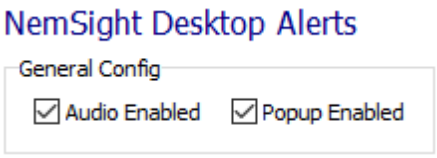
Interconnector Alerts	+ Flow	- Flow
N-Q-MNSP1	N - Q	Q - N
NSW1-QLD1	N - Q	Q - N
VIC1-NSW1	V - N	N - V
V-SA1	V - SA	SA - V
V-S-MNSP1	V - SA	SA - V
T-V-MNSP1	T - V	V - T

3.5 Desktop Alerts

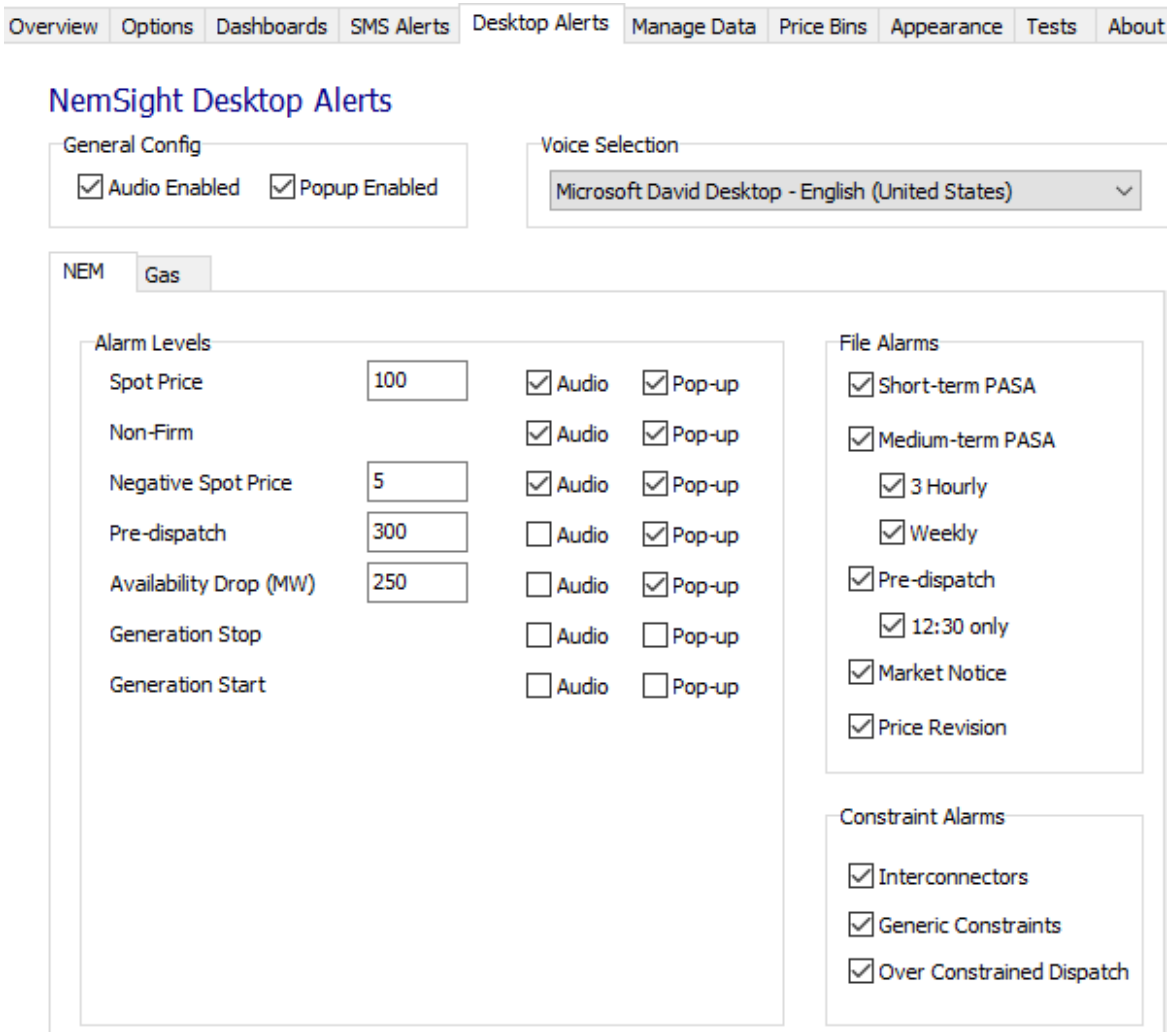
Desktop Alerts

NemSight provides a number of alarms which are presented in the Alarms window on the user's desktop, and may be audio-enabled, Pop up -enabled or both.

The relevant alarm option should be set under Generic Config for the alarm to be Audio enabled or Pop-up enabled or Both.



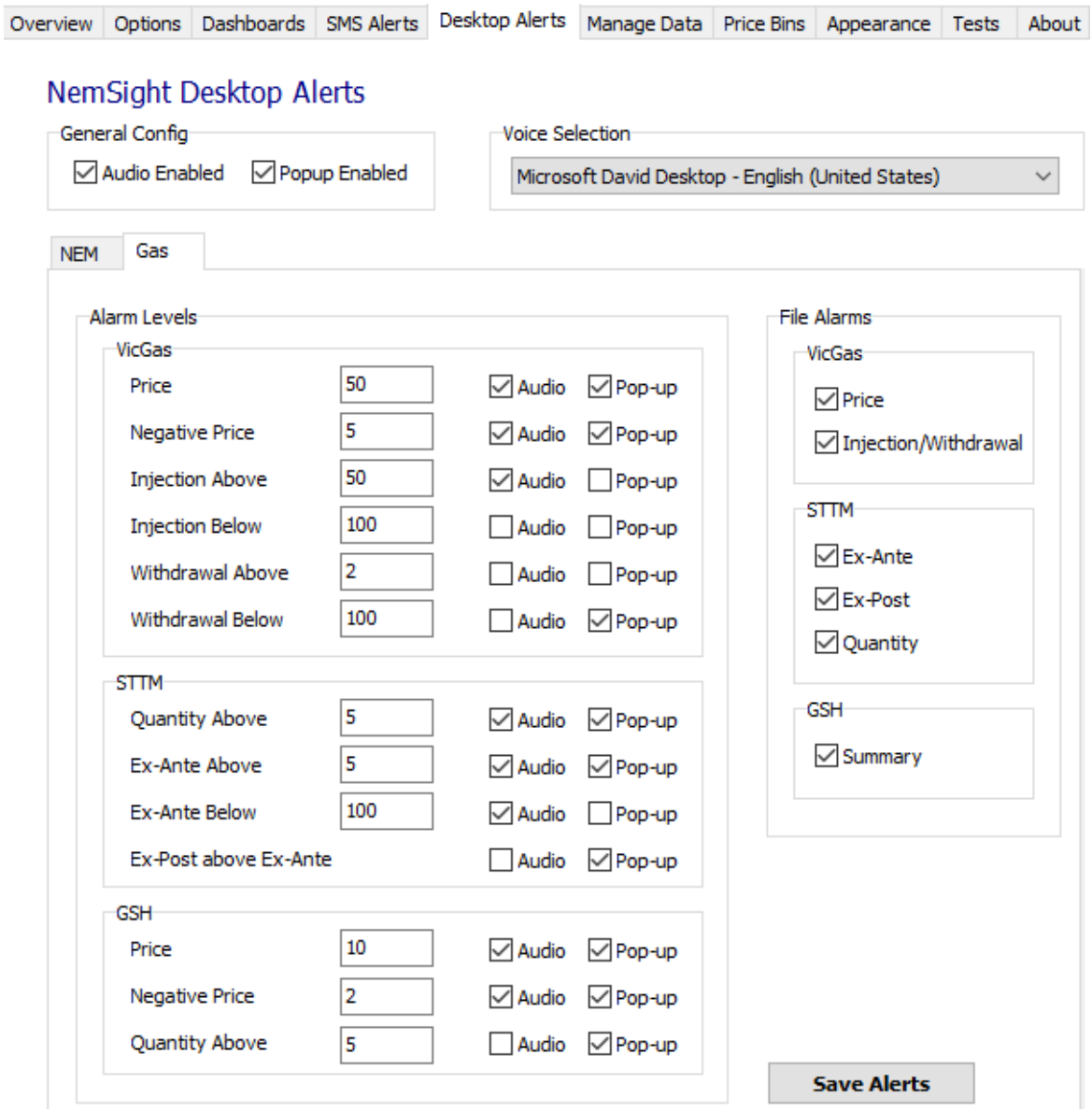
NEM alarms can be set under the NEM tab of the Desktop alerts.



Arrival of the files can be notified audibly/via Pop up by ticking the relevant file under File Alarms.
Constrained interconnectors or generic constraints can be notified audibly/ via pop up by

ticking the relevant box.

Gas alarms can be set under the Gas tab. User with the privilege to view the Gas details can set the Gas Alarms.



Arrival of the Vic Gas/ STTM and GSH files can be notified audibly/via Pop up by ticking the relevant file under File Alarms.
Save Alerts will save all the changes made to the Desktop Alerts.

3.6 Managing Data

Manage Data

Folders

NemSight uses data files published by AEMO and automatically downloads these into the folder specified in the **Managed Live Data Files** folder. The default setting is the Applications Data folder on your local drive for your user name. This is the recommended setting.

Multiple NemSight applications can share a common folder for more efficient downloading. Files already downloaded by one instance of NemSight will not be downloaded again by another instance. If one instance of NemSight is set to download, others may be set to not download. NemSight will delete old files to save disk space, but does require around 200Mb of disk space for normal operation as some of the market files are quite large. This configuration may not be effective if the link to the shared folder is slow.

The **Managed Live Data Files** folder will ensure that it does not get too large by deleting old files.

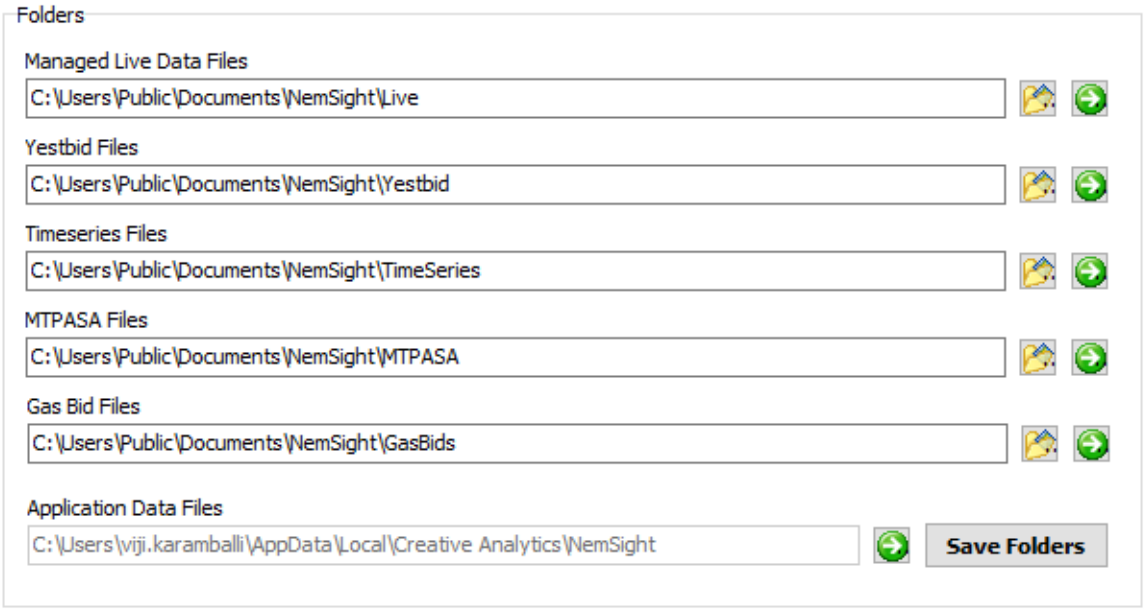
The **Yestbid Files** folder stores files for the Re-bidding module, both Yestbid and Next Day Offer Energy files.

The **Timeseries Files** folder stores files for the Timeseries module.

The **MT PASA Files** folder stores files for the PASA Delta module.

The **Gas Bid Files** folder stores files for the Gas Bids module.

The **Application Files** folder stores all the files related to the NemSight application including local settings, live chart definitions and licence keys.

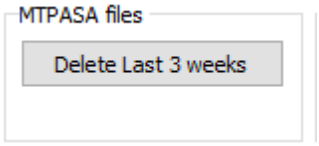


Data Files

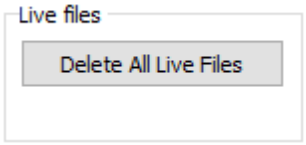
The buttons allow you to delete selected files that have been downloaded to your local or server folders. Nemsight will re-download any files it needs. You only need to use this capability if AEMO have reversed their published monthly files or if directed to do so by Energy One.

This function will clear the **Timeseries** (nm2) files for the last seven days from the Timeseries folder. Also a feature to check the completeness and availability of each file.

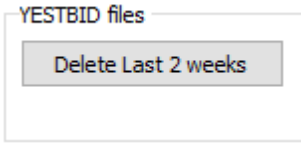
This function will clear all the **MT PASA** files for the last three weeks from the MTPASA Files folder.



This function will clear all the **Live** files from the Managed Live Data Files folder.



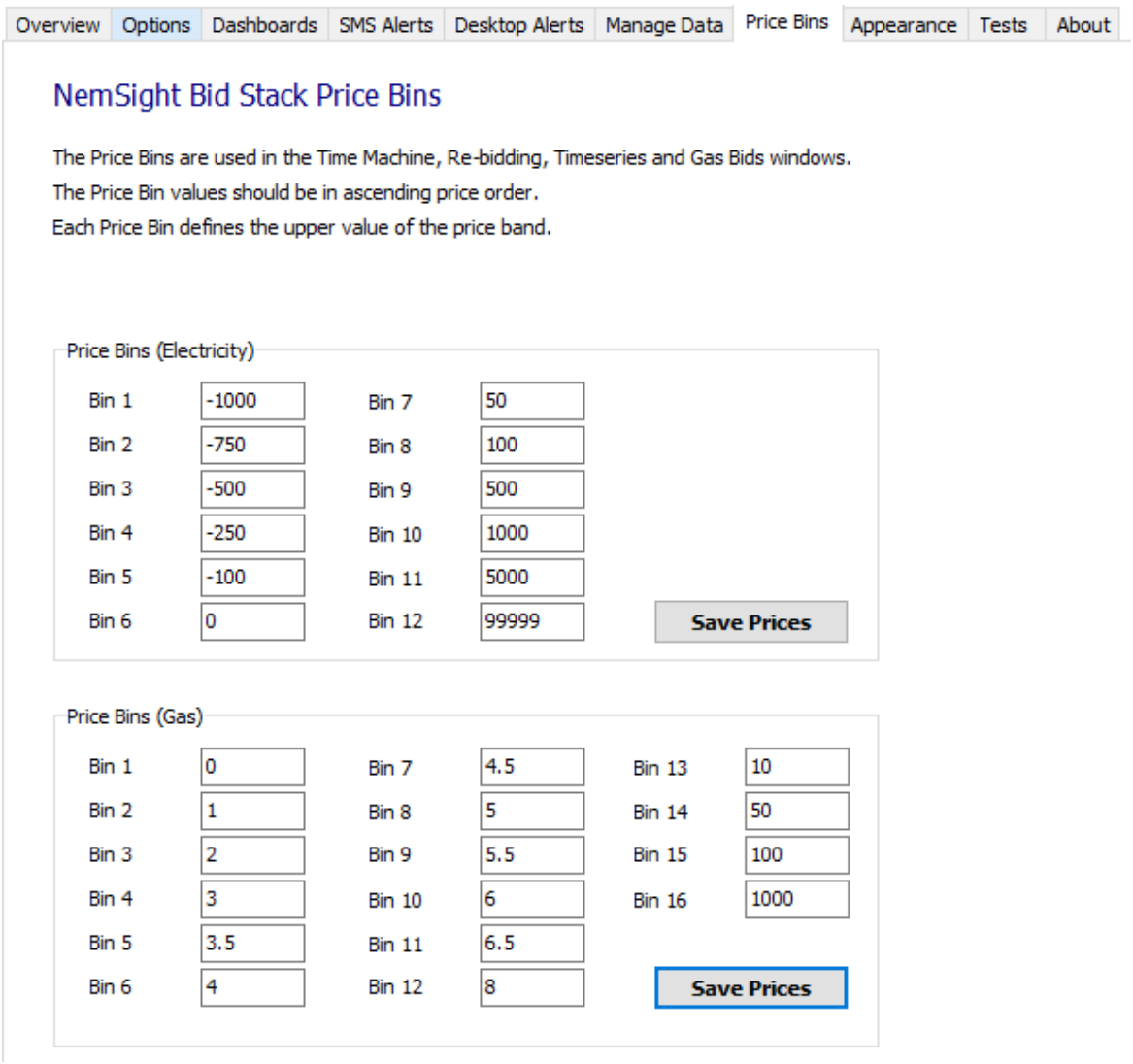
This function will clear YESTBID files for the last 2 weeks from Yestbid files folder.



3.7 Price Bins

Price Bins for Bid Stack Aggregation

The Price Bins dialog is launched from the Time Machine, Re-bidding, Timeseries and Gas Bids windows and applies to electricity and gas bid stack analysis. The bids submitted are aggregated into the twelve price bins defined in this dialog. Price Bands can be either Negative or Positive. Price bins should be set in ascending price order.

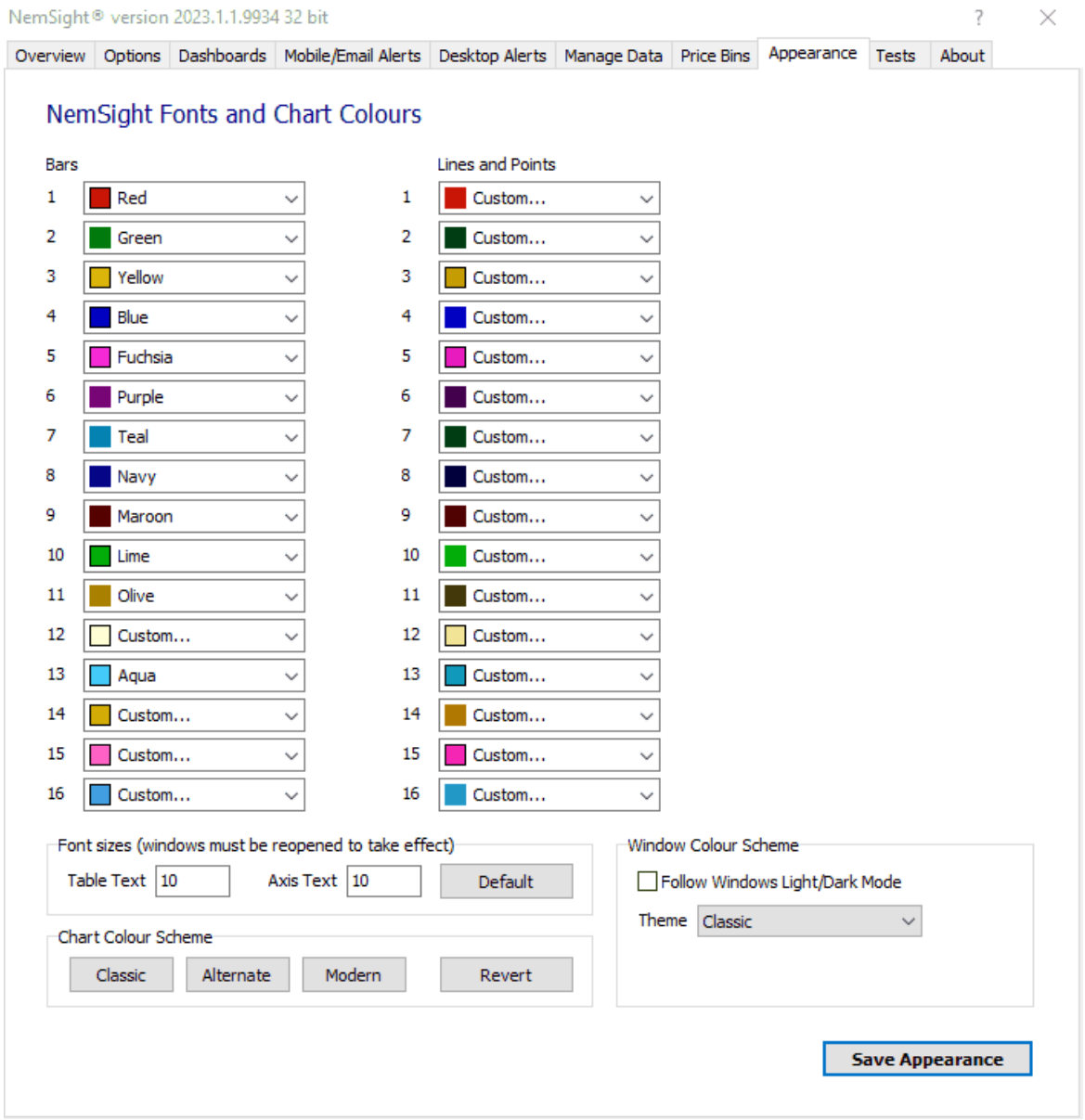


3.8 Appearance

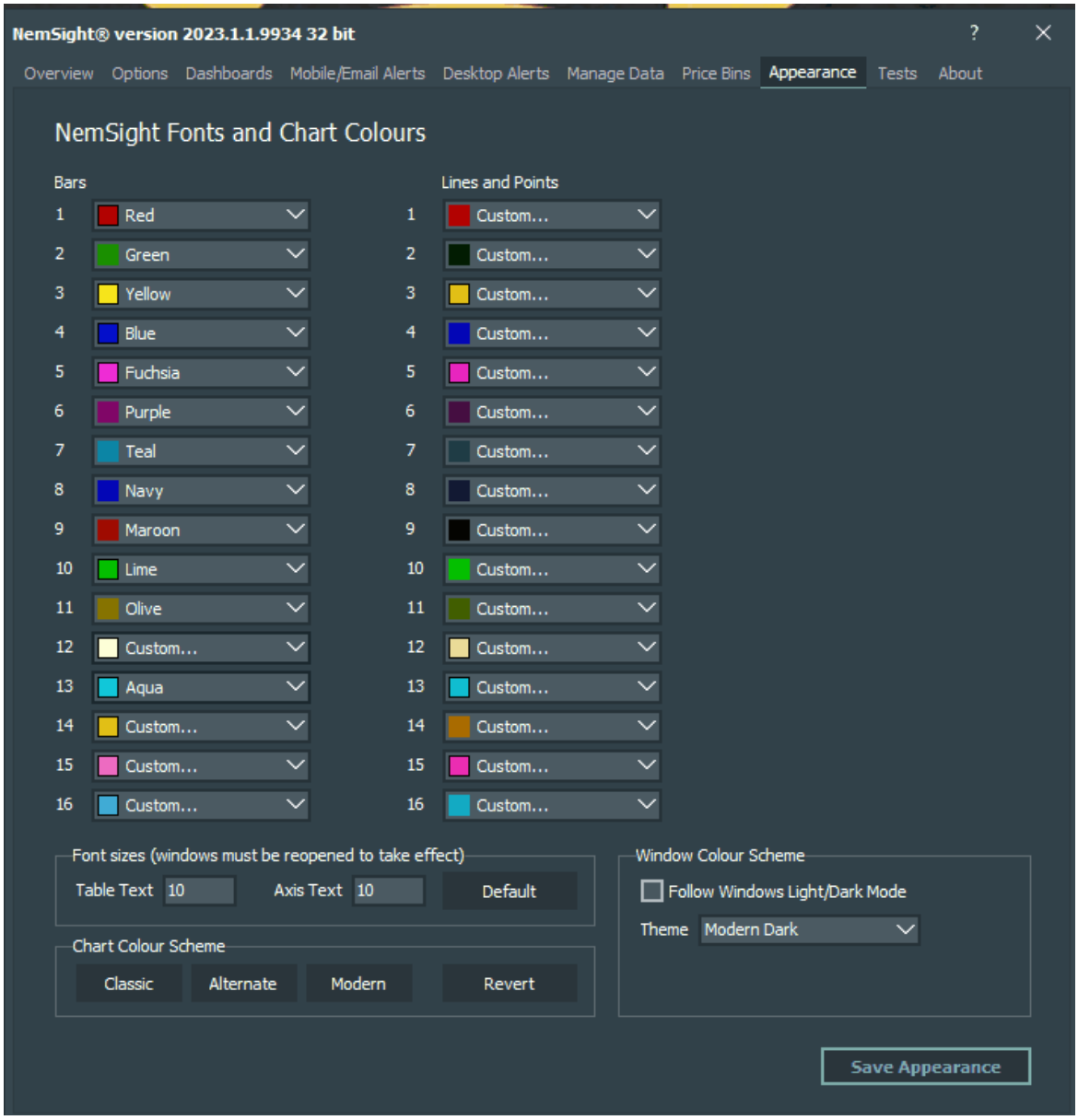
NemSight Fonts and Chart Colours

The colours used in generating charts are specified in the Appearance tab of the Configuration screen. Each subsequent series in the chart uses the next colour. Two schemes are available as quick-sets "Classic" and "Modern" or each colour can be specified.

The font size for Table Text and Axes Test defaults to 10pt. This can be changed by entering the desired value for the size of Table Text and Axes Text and selecting the 'Save Appearance' button. Please note that an open window must be closed and reopened for the changed font to take effect.



There are 4 different themes in NemSight including 2 different dark modes, which can be accessed via the Theme drop down in the Colour Scheme box.
The change in appearance must be saved and NemSight will remember the settings on start-up.

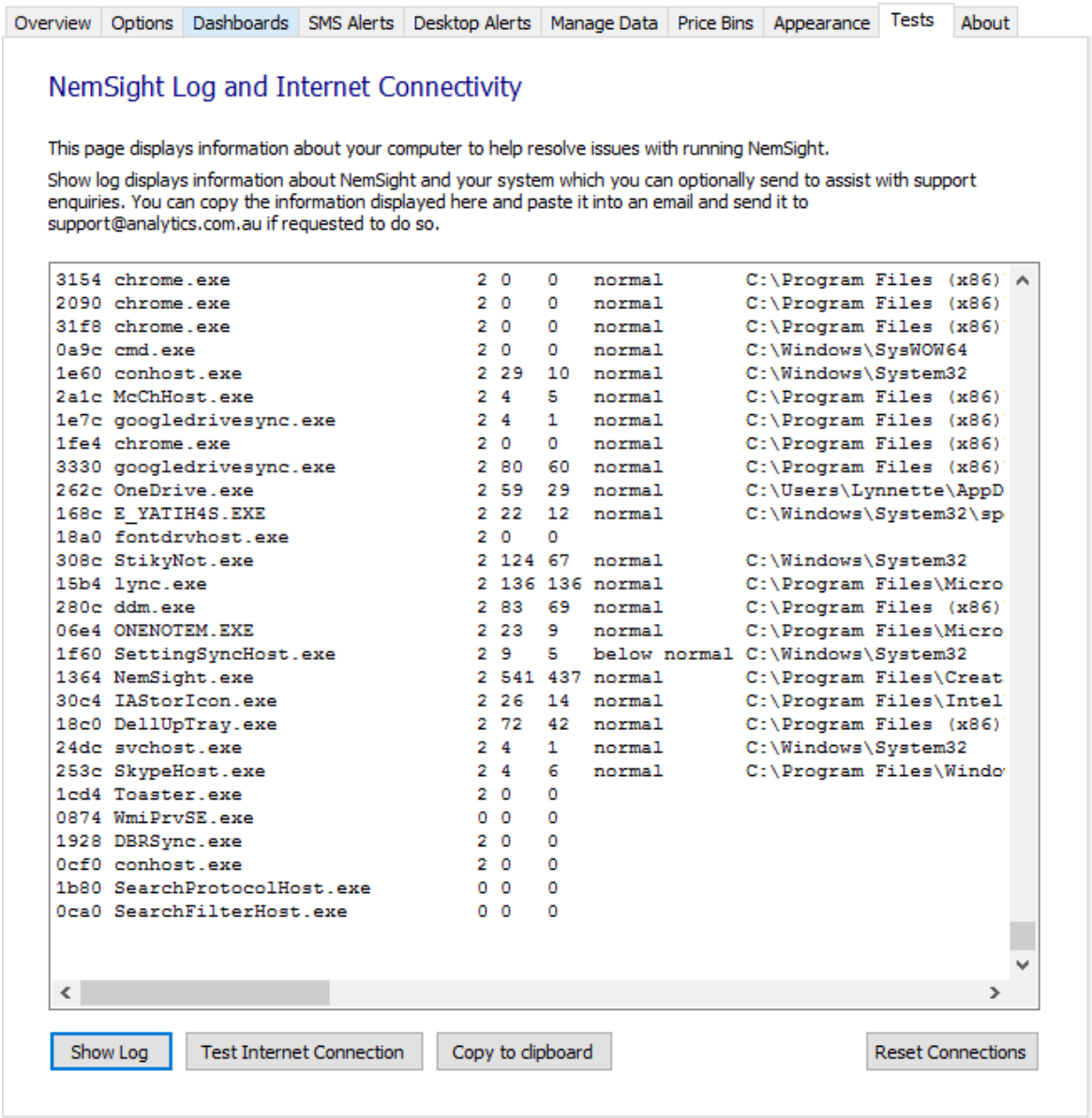


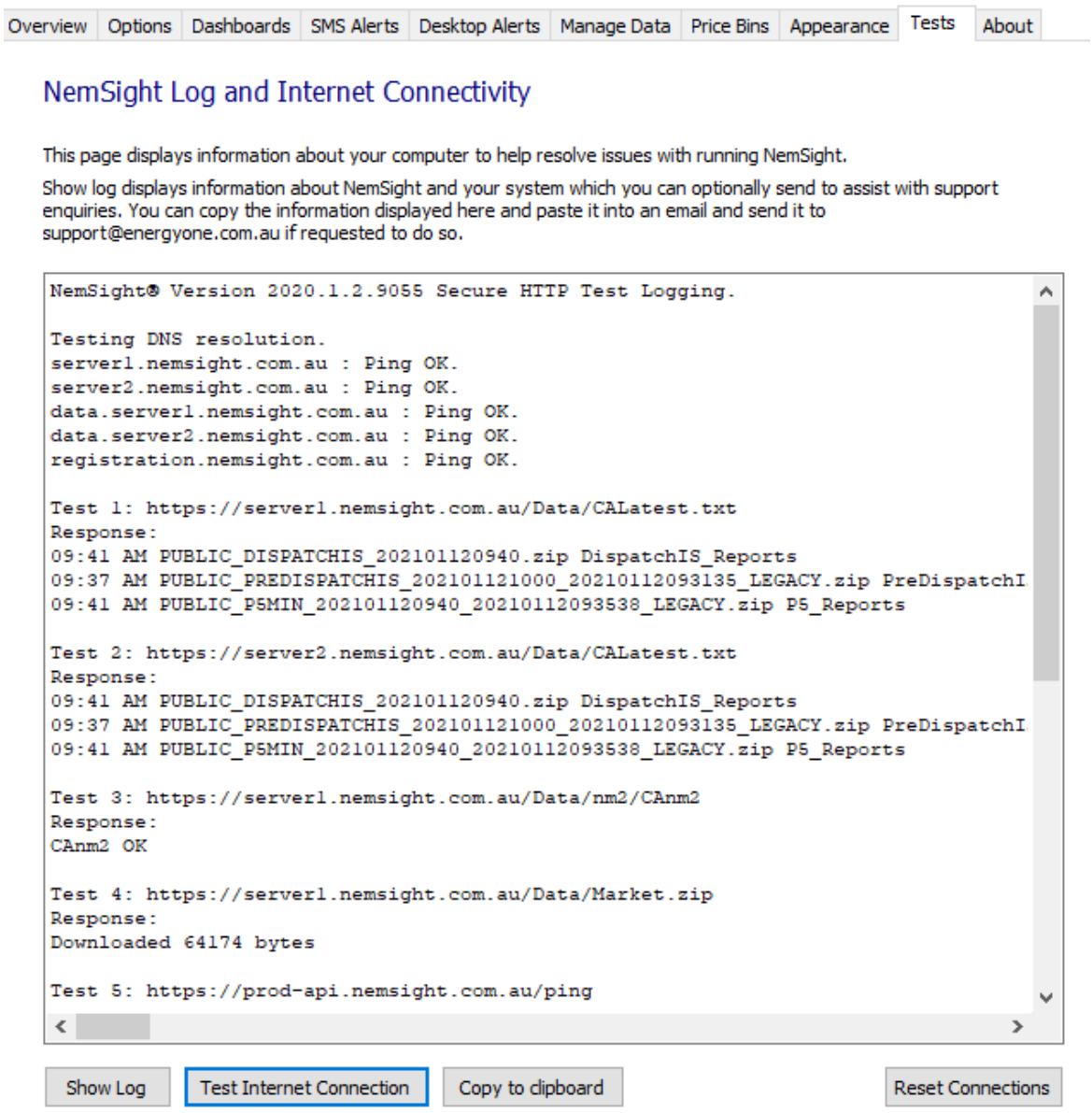
3.9 Tests

Tests

NemSight generates a log of actions which can be useful to diagnose performance issues.

- The display can be refreshed by clicking the **Show Log** button.
- The **Copy to Clipboard** button enables this information to be easily pasted into an email and sent to Creative Analytics for analysis of a problem.
- The **Test Internet Connection** button runs a set of diagnostic tests against the web servers it uses to check connectivity. If the Disable Secure Communications option is turned off - the connections to the web servers will use HTTPS, otherwise the connections will use HTTP. You should use HTTPS wherever possible.
- The **Reset Connections** button resets the connections to the servers.

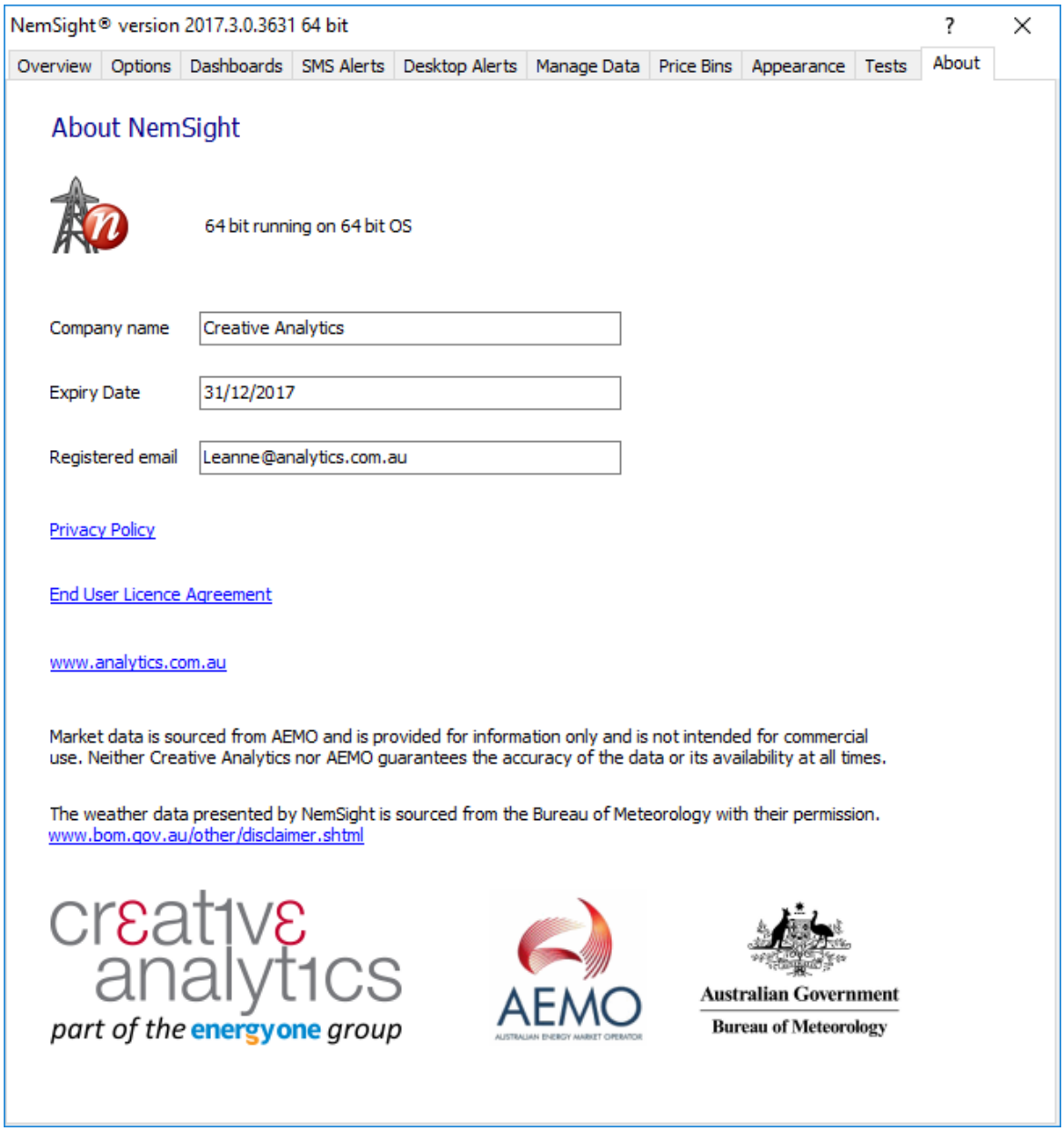




3.10 About

About

The Company Name refers to the company whose is licenced to use this instance of NemSight. The expiry date shows when the company's licence expires. The registered email is refers to the login email address for user who is logged onto this instance of NemSight. This may differ from the Alerts email address. To change the registration email address, please contact Creative Analytics (see Overview).



Part 4

NemSight® User Guide

Troubleshooting

Troubleshooting

This section is provided to assist in explaining some of the common issues seen with NemSight and to facilitate troubleshooting.
If the provided information does not resolve your particular issue please log a ticket via the Energy One Jira Customer Service Portal or ring the help desk number on 1300 997 287 within Australia
or +61 2 8916 2203 outside Australia.

Energy One's Jira Customer Service Portal allows users to self-register.
An automated response will inform you of the ticket ID and the request will be handled by the appropriate staff member. You will be notified of any response and changes to the ticket and can respond via the portal to view the history.

Support Portal User Guide: https://nemsight.com.au/docs/NemSightSupportPortalGuide.pdf

4.1 Upgrading

Upgrading

Before commencing to install a new release or upgrade of NemSight please ensure:

- that NemSight is not running
- that your Windows user account has administrator privileges or permission to install Windows applications

4.2 Connection and Performance

Connection and Performance

The reception bars (left side of the Price bar) indicate the connection status as follows:

- 4 green bars indicates a fast connection to both NemSight servers
- 3 green bars indicates a fast connection to only one NemSight server
- 2 yellow bars indicates a slower polling connection to the NemSight servers. It is likely that your network/firewall are blocking web socket connections. Please check with you IT Team if the items mentioned under **Possible Solutions** are whitelisted.
- 1 yellow bar indicates a connection cannot be made to the NemSight servers and is polling the delayed AEMO nemweb data

If you are not seeing all 4 green bars it may indicate a problem connecting to the NemSight servers.

Problem: NemSight is not getting updates in a timely fashion. NemSight takes a long time to start up or doesn't start at all. **Note:** When NemSight is started for the first time on any particular day, a large amount of data is downloaded as part of the startup. This can typically take approximately 1 minute early in the day and up to 5 minutes later in the day. Anything in excess of this can be considered abnormal.

Possible Solutions:

Try the following:

1. Check that your firewall allows access to the following Internet domains/folders by adding them to the whitelist of any firewall/anti-virus software and in any corporate firewall or proxy server:

You must allow HTTP and HTTPS and web socket connections to the following servers:

- server1.nemsight.com.au/Data (and all sub-folders)
- server2.nemsight.com.au/Data (and all sub-folders)
- prod-api.nemsight.com.au
- data.server1.nemsight.com.au
- data.server2.nemsight.com.au
- registration.nemsight.com.au
- www.nemweb.com.au/Reports/Current (and all sub-folders)
- www.bom.gov.au (and all sub-folders)

Please note: The prod-api and registration server names listed above have multiple IP addresses. You should whitelist by name if at all possible, as IP addresses may change in the future.

2. On the Manage Data tab of the Configuration screen, check that the **Download files** box is ticked in the Configuration section. This is not always required. If the files are being downloaded to a shared drive and another user has the box ticked then the files will be available to other users. However, this is not the recommended method of running NemSight. It is preferable for each user to download the data files to their local drive so that the speed of operation is not slowed down by having to access data across a network. Note that the setting of the **Download files** box can only be changed before NemSight is started. If the box is disabled, close and re-launch NemSight and then make the change and click **Apply** before clicking **Start**.

3. On the Manage Data tab of the Configuration screen, check that the paths to the various data files are set correctly. Clicking the **Apply** button will report any file paths that are invalid. Note that the path to the **Managed Live Data Files** cannot be edited once NemSight has been started. If this path needs altering, exit and relaunch NemSight and modify folder path, then click **Apply** before clicking **Start**. Another method of checking whether the data files can be accessed is to run the internet connection tests provided.

4. If none of the above have worked, in the Manage Data tab of the Configuration screen, untick **Auto Update Constraints** in the Configuration section of the screen and click the **Apply** button. This will prevent the constraints file from automatically updating on startup. When a new constraints file is available a message will appear on the Overview tab of the Configuration screen. Clicking on the link will manually update the constraints data.

4.3 Unexpected or Missing Values

Unexpected or Missing Values

Problem: Price and/or demand, generation, bid-stack etc data does not appear to be correct or AEMO has issued a notice that it has revised prices.

Solution: The Manage Data tab of Configuration screen deleting some market data files and forces NemSight to re-download files.

4.4 Missing buttons

Problem: Certain features of a particular window may not appear, for example: buttons at the top right or bottom of the window.

Possible Solution:
This may be due to the windows scaling setting being set too high. To fix this go to Display Settings and adjust the sliding scale that says 'Change the size of text, apps and other items' back down to 100%.
You may need to restart NemSight for this setting to take effect.

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