



Gas Bulletin Board

September 2020

Biennial Report

A review of the Gas Bulletin Board

Important notice

PURPOSE

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Executive summary

This inaugural Biennial Report provides a review of the Gas Bulletin Board (GBB) to assess its functionality and effectiveness and identify recommendations for the future. As set out in the National Gas Rules, AEMO has prepared this report by consulting with GBB stakeholders, the Australian Energy Regulator (AER) and the Australian Energy Market Commission (AEMC).

Work program over the review period

The major change to the GBB over the past two years was the release of a new GBB platform to deliver the AEMC's 2017 Natural Gas Bulletin Board rule change. The rule represented a significant enhancement from the previous GBB. It incorporated a large amount of new data, an increase in the number of stakeholders required to submit data, and a technology platform uplift and redesign to the GBB.

Since go live in September 2018, AEMO has made several enhancements to the GBB to address specific technical issues or to incorporate additional functionality for the Pipeline Capacity Trading and Day Ahead Auction rule changes.

AEMO has also enhanced its website that houses the GBB with the aim of providing easier access to information stored on the GBB.

Stakeholder consultations and desktop review

For this review, AEMO:

- Prepared an online survey and received 45 responses from GBB users and other relevant stakeholders.
- Undertook 12 in-depth one-on-one interviews to investigate specific issues.
- Provided regular updates to the Gas Wholesale Consultative Forum (GWCF) on the progress of the review, with the opportunity to give feedback.
- Engaged a specialist IT consultancy through the Department of Industry, Science, Energy and Resources to conduct a detailed review of the GBB application, including its user interface.
- Undertook a desktop review of past work programs and deliverables, including an assessment of available GBB website statistics.

Consultation findings

From this review, it is apparent that there are two main types of user:

- Analytical users, who primarily use the data portal to obtain data for interrogation offline.
- Ad hoc users, who access the summary information provided on the map or are searching for a specific piece of information.

This consultation found a range of user experiences since the 2018 update was implemented:

- Some users reported performance issues with regards to extracting data from some of the larger reports in the data portal. AEMO has already made improvements to address this, such that users are now experiencing better download performance and better access to GBB information.
- Users agreed that the increase in the amount of information available on the GBB has been beneficial, but the information can be hard to interpret. Stakeholders considered that clearer explanatory notes and a glossary of terms would improve the usefulness of the GBB.

- The summary map was ranked highly in terms of features that users most liked; more advanced geospatial presentation and interrogation of data was not seen as a high priority.
- Users also commented that the layout of tables in the data portal was too small and hard to scroll through, and is something to improve.

Recommendations to make the GBB easier to use

This review highlighted a number of opportunities to improve access to key information and make the content more accessible and easier to use. In particular, AEMO will work on enhancing:

- Clarity of data and data aggregations in the data portal.
- User navigation experience.
- More detailed glossaries of terms for the user to find information quickly and easily.
- The education available for GBB users, with simplified training packs available for users to understand various components of the GBB, as well as further collaboration with industry to seek guidance on areas that require more clarity.
- The layout of reports and provision of data calculations or explanatory notes to increase understanding of the information being presented.
- Map information, such as topological data and more information about pipelines and facilities, with the two focus areas being:
 - Availability of a schematic view of all GBB facilities and their connections,
 - Incorporation of the geospatial presentation within the broader AEMO map¹.
- GBB website statistics to better capture usage data.

Future work program

As well as implementing changes identified through the review of the GBB, AEMO's focus over the next two-year period will be on incorporating the changes required to deliver the Measures to Improve Transparency in the Gas Market. This will see new types of data being incorporated into the GBB, and new suppliers of information.

AEMO will continue to work closely with the industry to deliver these changes and to ensure that the GBB continues to provide valuable information to all its current and future users.

¹ AEMO. Gas Bulletin Board Map. Available at <https://www.aemo.com.au/aemo/apps/visualisations/map.html>.

Contents

Executive summary	3
1. Gas Bulletin Board	6
1.1 Scope of the 2020 biennial review	6
1.2 The Gas Bulletin Board website	7
1.3 Types of users and information	8
2. GBB development	10
3. Consultation and analysis	11
3.1 Stakeholder survey	11
3.2 Stakeholder interviews	13
3.3 Gas Wholesale Consultative Forum	17
3.4 GBB usage	17
3.5 External GBB review	18
4. Summary of forward-looking changes	20
5. Recommendations	21
5.1 Improve different user experiences	21
5.2 Fit-for-purpose	21
5.3 Interactive glossaries and education opportunities	22
5.4 Upgrade of the data portal	22
5.5 Making the map and data more interactive	22
5.6 Subscriptions and market notices	23
6. Conclusion	24
A1. Stakeholder interview feedback	25

1. Gas Bulletin Board

The Gas Bulletin Board (GBB)² was established under the National Gas Law (NGL) and National Gas Rules (NGR) in mid-2008 to facilitate decision making and trade in gas commodity and pipeline capacity. AEMO operates the website to provide historical and forward-looking information on Australia's gas facilities and pipeline network (with the exception of Western Australia, which has its own bulletin board³).

The GBB contains data and reports on all major gas production and storage facilities, demand centres, and transmission pipelines, and provides a valuable resource for market participants, governments, regulators, consultants, and other interested parties.

1.1 Scope of the 2020 biennial review

The terms of reference for the biennial review, as set out in the NGR, are to assess the functionality and effectiveness of the GBB and the reforms over the past two years, as well as to identify what enhancements can be made into the future.

The NGR require AEMO – in consultation with GBB users, the Australian Energy Regulator (AER) and the Australian Energy Market Commission (AEMC) – to prepare a biennial report about the GBB containing:

- A summary of AEMO's program of work to maintain the Bulletin Board over the review period and on a forward-looking basis.
- Performance and usage statistics.
- Any recommendations for change.
- Any other information AEMO considers relevant.

1.1.1 Review process

In accordance with the terms of reference, this review covers the period from 2018 to 2020, and was conducted as follows. AEMO:

- Prepared an online survey and invited GBB users and other relevant stakeholders to participate. AEMO received 45 responses to the survey.
- Undertook in-depth one-on-one interviews to investigate specific issues.
- Provided regular updates to the Gas Wholesale Consultative Forum (GWCF) on progress with the review, so potential respondents were aware of the opportunity to give feedback.
- Engaged a third-party consultant, through the Australian Government Department of Industry, Science, Energy and Resources, to conduct a detailed review of useability and the technology platform underpinning the GBB, including attending one-on-one interviews with stakeholders.
- Undertook a desktop review of past work programs and deliverables, including an assessment of available website statistics.

² Available at <https://www.aemo.com.au/energy-systems/gas/gas-bulletin-board-BB>.

³ The Western Australian jurisdiction is covered under a different set of regulatory instruments, and a separate Gas Bulletin Board is in place for reporting as the WA Gas Bulletin Board.

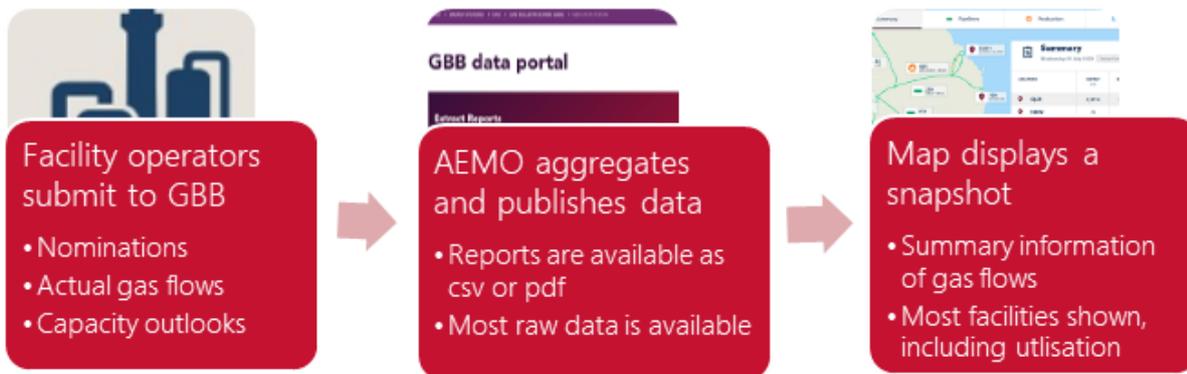
1.2 The Gas Bulletin Board website

Gas facilities that meet the threshold as set out in the NGR for reporting to the GBB must register and report a range of information. These include natural gas pipelines, gas production facilities, gas storage, and gas compression. Any directly and indirectly connected facilities to the east coast gas system are also included.

The GBB is located on AEMO's website and is organised in five main sections:

1. A map which displays high level information about current gas system operations.
2. A data portal for downloading data and reports.
3. Reports about other gas market information such as market notices, liquefied natural gas (LNG) maintenance⁴, and pipeline capacity trading.
4. Procedures, policies and guides.
5. Registration information.

Figure 1 Gas Bulletin Board process



GBB map

The GBB map display provides information overlaid on a map with four different views:

- The supply and demand of gas.
- Pipeline capacity and utilisation.
- Production capacity and utilisation.
- Gas storage.

The map is primarily intended to provide a quick snapshot of the day and provides some limited functionality:

- Cycles in play-mode through each of the four different views of the data.
- Allows the date to be changed to show actual gas flows on a prior day or forecast flows over the next week.
- Allows tabulated data to be downloaded for a chosen date range.

Data portal

The data portal section of the GBB provides a number of standard reports that can be viewed online or downloaded into an Excel file and analysed offline. More sophisticated users can extract the GBB data

⁴ ACCC. Authorisation for publication of LNG Maintenance, 2016. Available at <https://www.accc.gov.au/public-registers/authorisations-and-notifications-registers/authorisations-register/australia-pacific-lng-pty-ltd-ors-authorisations-a91516-a91517>. Viewed 11 September 2020.

through an automated download using data interchange or application programming interfaces (APIs)⁵ and load into their own systems.

GBB reports

This section provides additional information on the gas market such as market change notices, pipeline capacity trading market, and allocation methodologies and agreements. The GBB reports and the data portal both contain information required to be published by the NGR, and ideally the information should be centralised into the one area.

Procedures, policies and guides

This section of the GBB has the procedures, policies and guides which govern the GBB. Information in this section includes the GBB Market Procedure, Submission Procedure, Reports guide, and methodologies.

Registration information

This section of the GBB provides the administrative information, documents and processes for participating in the GBB. The list of shippers with contracted primary pipeline capacity on each GBB pipeline can also be found in this section.

1.3 Types of users and information

The types of users on the GBB can be broadly identified as:

- GBB reporting entities – facility operators obliged by the NGR to register to the GBB and submit data and information at prescribed intervals (daily, monthly, annually and ad hoc). Many facility operators tend to manage numerous assets and will use automated software (either in-house or third-party) to submit data. Once submitted, data must pass validation to be accepted by AEMO systems. Many who supply the data only use the GBB occasionally, if at all, to download data relating to other facilities.
- Market participants – includes facility operators, retailers, shippers, and brokers who download the data through automated systems or directly from the website. Generally, these are irregular users of the GBB who look for specific reports or to confirm information.
- Consultants, on-sellers of information, government, media and energy regulatory bodies (including AEMO) – others interested in the information held on the GBB. Some automatically download the data and analyse the data through in-house tools, but many usually access data through the GBB website. These users will range from those looking for a specific piece of information or to perform a specific piece of analysis from the data in an ad hoc manner through to more intensive users who will be performing detailed analysis on the data.

The information relating to GBB facilities falls into three categories:

- Facility information – the detailed facility information for each facility including connection point information, contact details and facility operators.
- Gas flow data – the ability to analyse actual and nominated gas flows of pipelines, production facilities, storage and compression.
- Capacity information – to understand potential impacts to the market, reviewing utilisation of facilities, including the LNG maintenance activities at Curtis Island. This includes nameplate, short-term and medium-term capacities of the facilities, linepack adequacy, connection point capacities, uncontracted capacity outlooks, and lists of shippers with contracted primary capacity.

Other information contained on the GBB includes:

⁵ AEMO. Gas systems guides. Available at <https://aemo.com.au/energy-systems/market-it-systems/gas-systems-guides>.

- Information relating to Pipeline Capacity Trading and Day Ahead Auction, referred to as Capacity Trading and Auction (CT&A).
- Other capacity trading information including off-market trades.
- Notices published when there are registration changes, or to provide additional information including information provided by reporting entities.
- Compliance reports to indicate where there may be gaps in data or where data was submitted after the cut-off time.

2. GBB development

In September 2018, AEMO released the new GBB platform to deliver the AEMC’s 2017 Natural Gas Bulletin Board rule change which aimed to enhance the breadth and accuracy of information provided to the market⁶. The rule also created a new requirement on AEMO to conduct a biennial review.

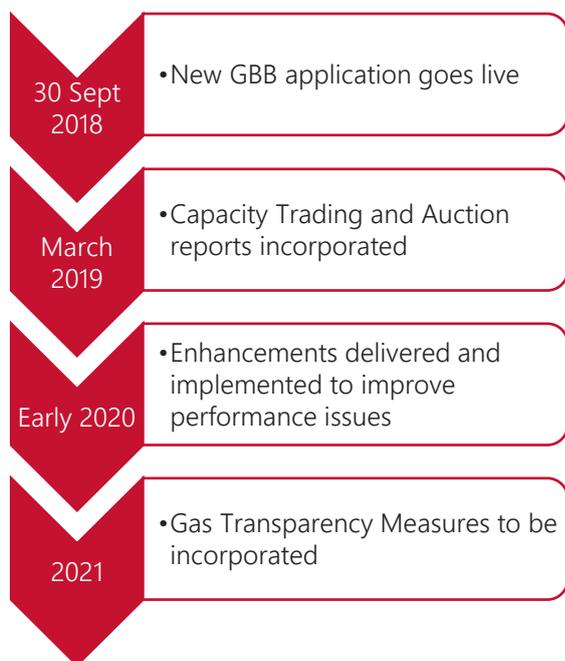
The new GBB platform was a significant enhancement from the previous GBB, and incorporated a large amount of new data, an increase in the number of parties required to submit data, and a technology platform uplift and redesign.

A key challenge has been how to educate users to ensure they can make use of the mass of data available. For example, a new set of detailed data on raw pipeline connection point flows was made available to supplement the more summarised actual flows data. However, to compare the datasets requires a detailed understanding of the topology of the connection points, facilities and pipeline segments, and users note it is complicated.

Feedback from users has been that the GBB can be difficult to navigate, the data can be hard to interpret, and the performance of the website has been poor. Since go-live, AEMO has progressively implemented changes to the platform to improve its useability and performance. A major release of the GBB in early 2020 also addressed some longstanding defects and performance issues, most notably the time to run the gas flow reports.

Market reform continues to drive augmentation of the GBB. The launch of the CT&A reforms that went live in March 2019 required a suite of new reports to be published on the GBB. AEMO is currently developing the requirements for the Measures to Improve Transparency in the Gas Market⁷ (Gas Transparency Measures) which will commence in 2021. Refer to Figure 2 for a timeline of the GBB since 2018.

Figure 2 Timeline of changes to the GBB since 2018



⁶ AEMC, 2017. Improvements to natural gas bulletin board. Available at <https://www.aemc.gov.au/rule-changes/improvements-to-natural-gas-bulletin-board>. Viewed: 1 July 2020.

⁷ COAG Energy Council. Measures to Improve Transparency in the Gas Market, Regulation Impact Statement for Decision, March 2020. Available at <http://www.coagenergycouncil.gov.au/publications/measures-improve-transparency-gas-market-consultation>. Viewed 19 August 2020.

3. Consultation and analysis

From surveys to one-on-one interviews and consultative forums, this review engaged with GBB users to discuss and draw out aspects of the GBB that were working well and to investigate areas that required further improvement. Most of the focus of the consultation has been on the GBB application, rather than on potential regulatory changes, given the Gas Transparency Measures reforms that are underway.

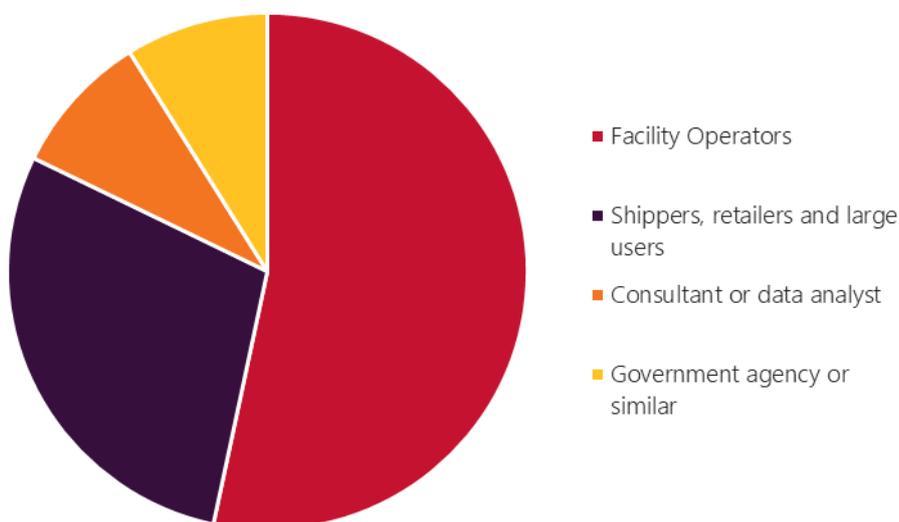
AEMO added these consultation findings to an analytical review of the current performance of the GBB and where there are improvement opportunities to assist with GBB development to meet user expectations.

This section discusses both the findings from the stakeholder feedback and analysis of the available website performance and usage statistics.

3.1 Stakeholder survey

As part of this review, AEMO sought to collect information on what is working well and what can be improved. A survey was designed and open for responses for three weeks in February 2020, to provide insights on what users of the GBB found useful and whether there are improvement opportunities to assist with GBB development. AEMO received 45 responses to the survey; a breakdown of the type of survey respondents is provided in Figure 3⁸.

Figure 3 Breakdown of survey respondents



Generally, the results indicated the useability of the site and understanding existing reports could be greatly improved. These key insights into how the GBB is used focus this review's findings on areas for improvement.

3.1.1 Key findings

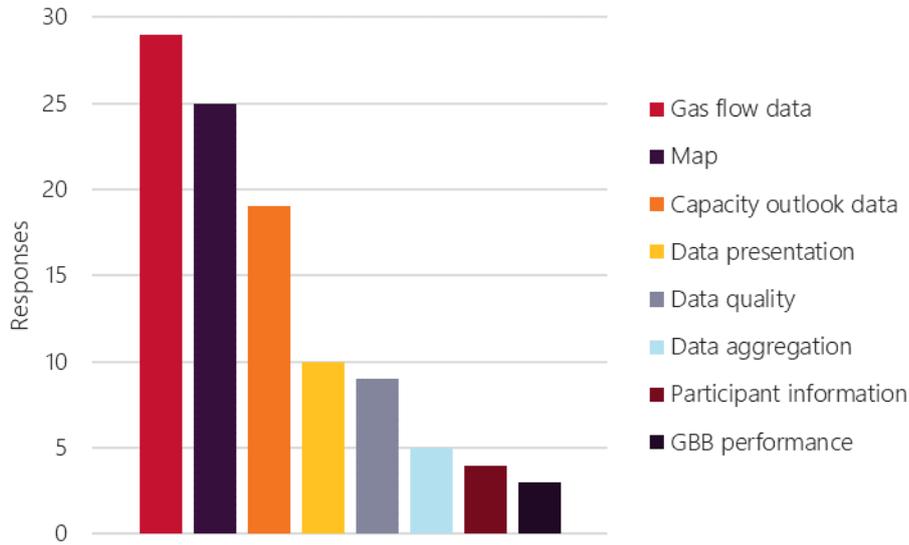
From the survey results, key insights can be drawn. This section discusses the key findings as well as how these findings influence the recommendations from this review.

⁸ There are some respondents that fit into multiple categories. For the purpose of the chart in Figure 1, a single category has been assigned.

Around half of the users responded that they interact with the GBB through the website only. The other half indicated they use a combination of the website and automated processes.

When asked about which features are positive on the GBB, Figure 4 highlights that the top three were the gas flow data, the GBB map, and the capacity outlook data.

Figure 4 Positive features of the GBB

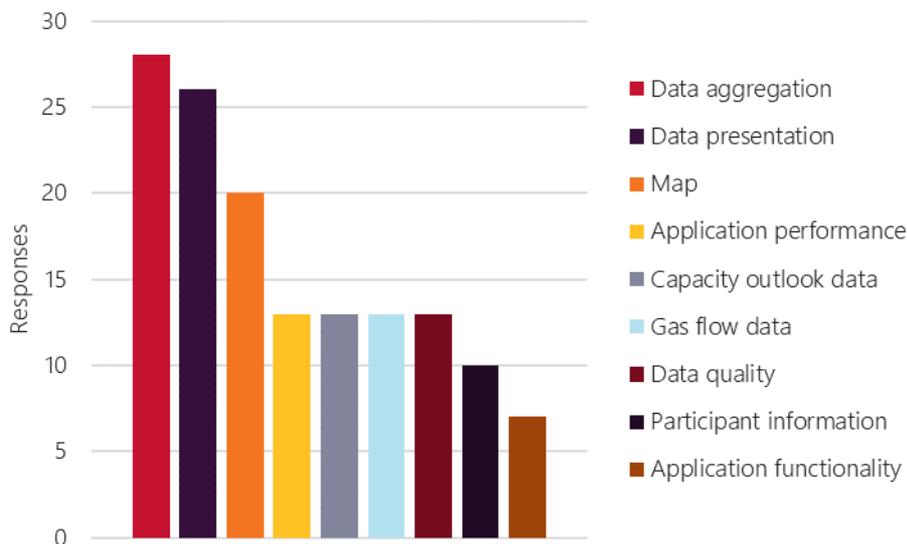


When asked how useable the GBB is, almost 90% of respondents indicated the GBB was only either sometimes useful or it should be more useful than it is.

The two main areas highlighted in the survey as the most important to focus on were data aggregation and presentation, as shown in Figure 5. When prompted, respondents indicated that additional information it would be useful to have on the GBB was:

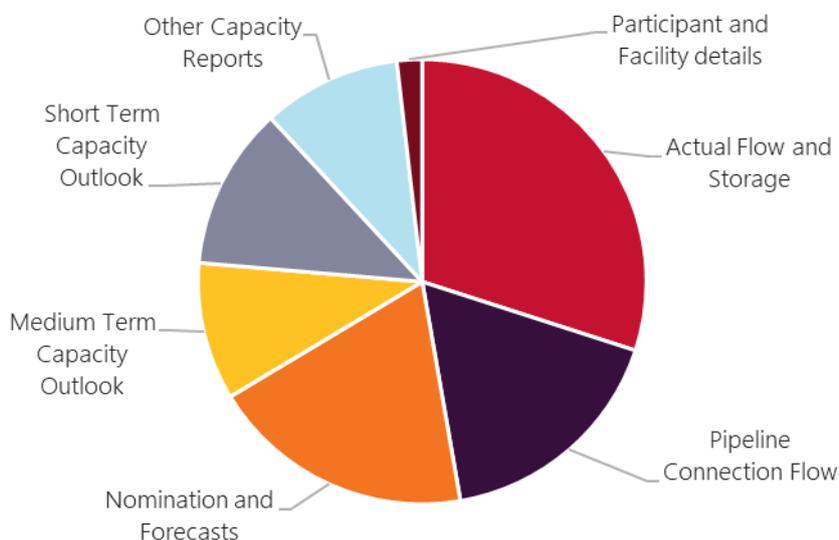
- Real-time market events, such as market notices.
- Market data such as gas prices and charts.
- Consolidation of existing reports.

Figure 5 Areas for improvement



When asked to choose the most useful information on the GBB, respondents highlighted the importance of the gas flow and capacity information, with nominations and forecasts also being rated as important. A full breakdown of most useful information can be seen in Figure 6.

Figure 6 Most useful information



Other key findings from the survey responses were:

- 80% indicated that overall GBB performance was important to them.
- 78% indicated that improving the way information was published was important.
- 78% saw value in having visualisations on the GBB.
- 60% felt that it was important to make improvements to the map.
- When asked to agree or disagree, 61% agreed and 27% were neutral with the statement that “a short to medium term outlook on large users’ demand (or capacity) could be reported through the Bulletin Board”.

3.2 Stakeholder interviews

To further explore outcomes from the survey, AEMO undertook 12 one-on-one stakeholder interviews with different user types. Interviews were conducted with the AER, AEMC, AEMO’s real-time gas operations team, consultants, facility operators, and shippers.

The aim of these interviews was to better understand participant interaction with the GBB and explore areas where user experience could improve, using the survey results as a basis for questions. The interviews were structured around:

- Current interaction with the GBB.
- Current valuable and useful components to stakeholders.
- Future interaction with an enhanced GBB.
- Other relevant information.

Key themes emerged regarding areas that were of higher importance to stakeholders, and some quality insights were derived from the interviews highlighting areas for AEMO to prioritise in future work plans. These themes are explored in more detail in this section, and a detailed list of themes and comments from the interviews are included in Appendix A1.

3.2.1 Common ways the GBB is used

Through the interviews it became apparent that stakeholders use the GBB for multiple purpose, ranging from wanting to find a specific piece of information through to performing a detailed piece of analysis.

The most common ways stakeholders said they use the information were:

- Trying to understand gas participant behaviour, and to analyse gas flow patterns and seasonality trends.
- Looking for summary information.
- Finding specific information, such as new gas production facilities.
- Reconciling market data, such as the Day Ahead Auction and GBB information.
- Understanding upcoming outages that may impact on gas markets.
- Viewing the map at a quick glance to see a snapshot of what is happening.

Many users indicated that the GBB website was not their primary source of obtaining GBB data. Much of the data was automatically downloaded into internal systems and then analysed. Quite often the GBB would be used to verify data or to confirm information.

The two most common themes were users:

- Users analysing data on a historical basis (actual flow data) to understand trends.
- Users analysing data on a forward-looking basis (capacity outlooks) to understand outages that may impact on gas markets.

3.2.2 Feedback

AEMO aims to focus improvements on areas that users see as being of most value.

Common themes on areas for improvement that were discussed during the interviews, and in some cases gained from the survey responses, are grouped below into four categories:

- Useability – feedback relating to functionality that could be improved on the GBB.
- Understanding of the GBB – areas where further education was required, or information needed to be clearer.
- Map.
- Other.

Stakeholders generally acknowledged that the GBB would never satisfy everyone all the time, and that the suggested improvements should be assessed on their merit. An assessment of the feedback is provided within the Recommendations (Section 5).

Useability

Website useability encompasses the effectiveness, efficiency and ease in which a user can access information. Stakeholders indicated that the GBB website lacked general useability. There were common issues with:

- The table display on the data portal section of the website due to the poor use of screen real estate.
- Confusion in relation to the definitions of table headings and data calculations.
- Users' inability to view a consolidated set of capacity outlook data.
- Difficulty finding content on the GBB website due to poor navigation.

Regarding the small screen space provided to view the data, users reported limited ability to analyse the data on the screen. The ability of the data to be filtered or aggregated were considered difficult, and users usually download data into Excel format for manual aggregation and filtering. Some noted that the lack of mobile responsiveness should be addressed.

In terms of difficulty navigating, users indicated it was not always clear whether they were within the GBB section of the AEMO website, or where specific GBB information might be located. An example from users exists in the GBB Reports section, which is separate from the data portal section, which can make it confusing for the user to locate information. Users noted that information such as shipper lists, market notices, and CT&A information are all located in different sections of the GBB.

Stakeholders emphasised that much of the GBB's content is hidden behind counterintuitive navigation, resulting in users not locating what they are looking for or missing important or valuable content. Side navigation does not appear on some pages, causing users to go back out of specific pages (data portal) to move elsewhere or navigate back to the GBB homepage via the header navigation.

When navigating within the GBB, users must first choose a tiled icon. These tiled icons can make hard to identify quickly what a user is looking for, as the tiles do not clearly articulate the information contained in them. Once a user chooses a tile, they can be confronted with long lists of information which are not easily searchable.

Stakeholders regularly referred to the WA GBB⁹, where the layout is simpler, data is visualised in a more useful manner, and users can drill into data more easily. They also pointed out that the WA GBB data table layout, with horizontal tabs across the top, enables easy discovery of information in a more intuitive manner.

Understanding the GBB

Stakeholders observed specific problems with the data and how it is explained or understood by the users. For example, stakeholders observed that it is not always clear how data is aggregated, if it is a complete set, or if it is aggregated.

Stakeholders also noted that there were terms and data that they were unfamiliar with, and suggested a glossary of terms explaining meanings of words would be useful. They also identified that they needed more methodology explanations about where data comes from. This could include a list of common data calculations, or for information to be provided on aggregation and assumptions used for data in the report. Users noted that as procedures, guides and reports are not easily searchable, and can be too technical, they need to know what they are looking for to be able to quickly locate a document.

Stakeholders said that because the GBB website is embedded in the broader AEMO website, the GBB website needs to be clearer about what is specific to GBB.

Some stakeholders noted that while AEMO holds the data, there are gaps in how the data relates to them. In fact, some users said they lack trust in the data and therefore speculated that it could cause an information asymmetry for market participants in terms of access to data and making informed decisions.

Feedback indicated that users were unaware of content and functionality that exists on the GBB, including:

- Knowledge that disaggregated connection point data exists.
- Ability to find the GBB aggregation methodologies documents.
- Knowledge of subscriptions to access updates on the GBB website.

There was some discussion about other websites where data about the gas markets is also available, including the WA GBB and the AER's website. Some stakeholders, when discussing useful aspects of the GBB, mentioned that the charts available in the Wholesale Statistics¹⁰ section of the AER website are examples of what they want on the GBB, due to the way these charts explain the data to users and market participants. Stakeholders said they were able to more easily check where the data is from and what constituted the data on other websites. They noted that the visualisations available in the WA GBB¹¹ were helpful to understand large datasets without the need to download the data and manipulate it.

⁹ AEMO. Gas Bulletin Board Western Australia. Available at <https://gbbwa.aemo.com.au/#home>.

¹⁰ AER. Wholesale Statistics. Available at <https://www.aer.gov.au/wholesale-markets/wholesale-statistics>. Viewed 26 August 2020

¹¹ AEMO. Gas Bulletin Board Western Australia. Available at <https://gbbwa.aemo.com.au/#home>.

Stakeholders commented that there is a balance between knowing where the data is and knowing it is the right data, with some stakeholders perceiving integrity and accuracy issues with the GBB data (generally relating to gas flow data). They also emphasised that it is important to know if the data is a complete set and what makes up the data. This can include breaking reports down into raw data and having charts with descriptions.

Some stakeholders suggested that education sessions on how to use the GBB and interpret the data would be useful, especially to new employees. Knowing what the data means and the associated limitations of gas flow data would help create additional transparency for the GBB. An example given was the requirement to understand that as gas moves relatively slowly through the network and can be stored in the pipelines, it can create an imbalance between gas injected into a pipeline and gas withdrawn from the pipeline.

Map

There were a variety of views among stakeholders regarding the map. While some considered the current map fit-for-purpose, many considered the map to be too simplistic and would like to see more facilities on the map. Some wanted a hover capability to find information and the ability to zoom-in on sections of the map.

Stakeholders pointed out that while the map does provide some functionality, it is not interactive in the true sense, in that it does not allow the user to interact with it in a way that provides more insight on points of specific interest. For instance, as stakeholders commented, a user cannot quickly see details such as pipeline flow or demand, and while a user might expect to be able to click into a point and see the information that is shown in the table, the map does not have this level of interactivity

Additional map information suggested by stakeholders included:

- Geographical information.
- Pipeline topology and schematics.
- The location of gas-fired power generation units and other facilities.
- Constraint or outage information.

Some stakeholders commented that the current map and GBB are not mobile or tablet device responsive, and this would be useful. AEMO advised that the map would need to be enhanced first, and making the GBB accessible via a mobile platform would be part of an overall interactive map upgrade.

Most stakeholders reported limited use of the map, saying they predominantly use the map to gain quick insights of information of the daily gas dynamics. Consistent with earlier findings, some data has been aggregated and the underlying calculations and assumptions are not immediately obvious to the user.

Users also said that important information they expect to find on the map is not available, such as when outages occur.

Some users are confused by the differences in information between the map and the data tables presented alongside the map. It is unclear to users where the marker point on the map is for facilities with their corresponding data.

Some key functionalities of the map were not known to users, for example, the play-mode button is not clearly marked and not obvious to a new user. It does not provide an indication of when the visual will update.

Stakeholders regularly referred to the map on the WA GBB where the layout is simpler, and users can drill into data more easily. Some stakeholders cited the WA GBB map as something the GBB should aspire to, due to its level of summary information to provide a relevant snapshot and its more granular information on pipelines, connection points and production facilities.

Other general improvements suggested

During the interviews, the following list of improvements were captured:

- Some stakeholders noted that because some participants may operate in some, but not all, of the east coast gas markets and there is a strong relationship between each of the markets, the ability of the GBB to communicate market notices about real-time events more broadly could be beneficial. Suggestions included that such improved notifications could be customised to user type.
- Stakeholders suggested developing a hub, some form of one-stop-shop, with more information from all gas markets, showing market prices, outage information, notices and reports from other markets.
- A lot of focus was placed on capacity outlooks and that the information had to be pieced together in order to use it. Users said consolidation of capacity outlook information, to show a more detailed view of the capacities for each facility, would allow them to more easily identify outages that may impact on gas markets.
- Many stakeholders were unaware of changes and upgrades to the GBB and suggested a log of updated issues, where AEMO notifies users where a known issue has been resolved or in the process of being resolved, would be useful.

3.3 Gas Wholesale Consultative Forum

The GWCF comprises members from organisations that have an interest in the gas wholesale markets, and holds quarterly meetings to discuss changes to the wholesale gas markets and items of interest. AEMO uses the GWCF to discuss highlighted inconsistencies in procedures and guides that may require amendment or clarification.

AEMO used the GWCF to discuss and notify members about this review to allow and encourage feedback and involvement. The review has used this feedback to inform its conclusions and recommendations.

Specifically, inconsistencies in the market rules and procedures are considered through the GWCF and resolved. These are then fed back into AEMO's processes for updating documents such as procedures and guides and potentially rule changes. In a recent package of such considerations that were considered in mid-June 2020 by the GWCF¹² there was limited feedback. However, the interest level could be a result of the new package of work that participants are currently considering as part of the Gas Transparency Measures. These will be a large regulatory change for participants and the GBB and to the extent practicable will be used to inform updates to the market procedures. Such changes will also be an opportunity to incorporate changes that are recommended from this review. For this reason, limited regulatory changes have been recommended under this review.

3.4 GBB usage

In the period September 2018 to August 2020, website page views to the GBB website accounted for 5% of approximately 7.6 million total views to the AEMO website. In terms of overall views on parts (or pages) within the GBB, the greatest number of views is on the "Gas Bulletin Board (GBB)" home page.

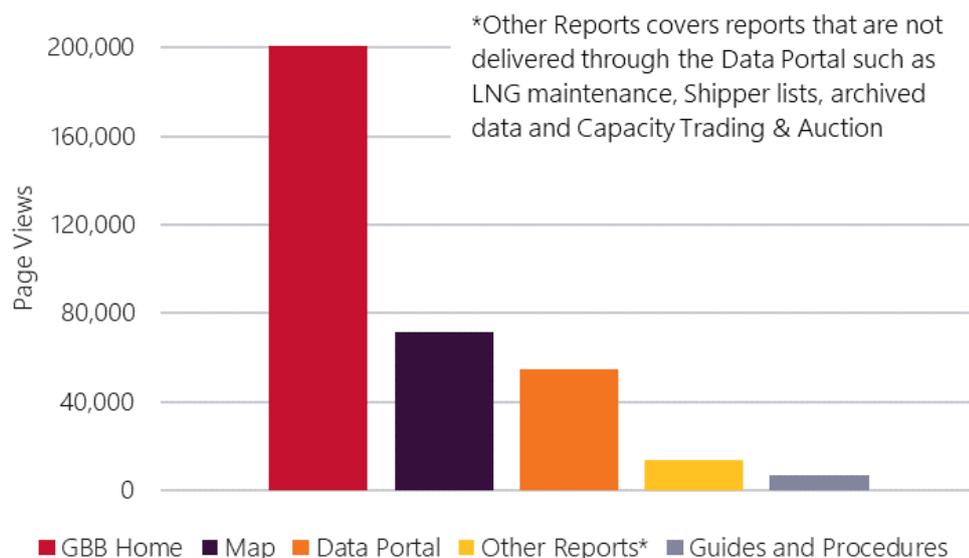
From the home page, the data shows that users will generally view the map and then go to the data portal, or users will go from the home page straight to the data portal.

Another frequently visited page is Guides and Procedures, where GBB reports are downloaded. A common path for users is viewing the home page straight to the GBB reports page where they can view all the LNG Maintenance PDFs.

Figure 7 shows a breakdown of total page views to the various pages in the GBB in the past two years.

¹² AEMO, GWCF Meeting 27, Meeting Papers, 18 June 2020. Available at https://aemo.com.au/-/media/files/stakeholder_consultation/working_groups/wholesale/gwcf/2020/gwcf-meeting-27--meeting-pack-18-june-2020.zip?la=en.

Figure 7 GBB website page views



A Google Analytics review of the AEMO website from the period 2018-20 showed that over 94% of PDF documents downloaded from the GBB were related to LNG maintenance. This highlights the importance users place on the LNG maintenance notices, given the potential impacts these outages can have on the availability of gas in the market.

The number of downloads from the data portal page is not currently captured in the analytics from the website. Users indicated that instead of using the GBB website to access data they will utilise the Data Interchange or APIs¹³ to download data directly from AEMO's systems. There are 268 users¹⁴ generally subscribed to all GBB reports through the Data Interchange, of which 98 are categorised as being gas users.

Data analysed from the period July 2020 to September 2020 indicated that around 30 reports a day are downloaded through APIs. Most reports are only downloaded once a day, with the gas flow reports typically downloaded 10 times a day, followed by short-term capacity outlooks being downloaded three times a day. This is consistent with stakeholder feedback that the most frequently downloaded data is the capacity data and the pipeline flow data, however the actual number of downloads from the data portal is not known.

Improvements to the tracking of usage statistics has been recommended as a result of the limited data that has been available for this review.

3.5 External GBB review

The Department of Industry, Science, Energy and Resources worked with AEMO to engage a consultant (Reviu¹⁵) to undertake a review of the GBB. The outcome of this review was to:

- Recommend changes that would improve the useability and usefulness of the existing GBB.
- Review the changes required to the GBB for the Gas Transparency Measures and recommend how these should be integrated into the application.
- Review the existing IT solution architecture and recommend design changes that would improve performance and useability for both providers and users of information (including the Transparency Measures).

¹³ AEMO. Gas systems guides. Available at <https://aemo.com.au/energy-systems/market-it-systems/gas-systems-guides>.

¹⁴ Each user is reflective of an individual company name, but many of these companies have closely related entities and the total number is not reflective of the number of downloads occurring. However, it is indicative of the number of participants that do not need to access the GBB website to access the data.

¹⁵ Reviu website. Available at <https://revium.com.au/>. Viewed 26 August 2020.

- Recommend what, if any, part of the IT solution could be more effectively delivered by an outsourced provider taking account of AEMO's data confidentiality and cyber-security obligations.

This review identified 66 recommended changes, with the highest priority recommendations being:

- Redesign the User Interface around two key user types (analytical and at-a-glance users).
- Redevelop the User Interface (UI) of the data portal (improve real estate, navigation and useability).
- Improve descriptions and labels of data points/sets that have been aggregated, or where data has been revised or is missing.
- Implement Google Analytics across the GBB to improve understanding of how users are accessing the GBB.
- Handle information relating to the Gas Transparency Measures in the same manner as the existing transactions, noting this should be done in conjunction with recommended system uplifts.
- Implement a separate market participant portal for irregular submitters of data.
- Develop a single interface in the GBB website for consistency and useability (CT&A, GBB, market register, notifications, shipper lists).
- Improve the system architecture and codebase.
- Improve the system documentation, processes and tools.

4. Summary of forward-looking changes

The GBB will continue to evolve. At the time of this review, the future changes will be the implementation of the Gas Transparency Measures. The challenge of the requirements for this change is how the data will be integrated into the GBB, given the different data types the Gas Transparency Measures introduces to the GBB.

To date, most GBB information has been focused on daily and monthly data, typically related to gas flows and capacities. The Gas Transparency Measures introduce gas field information such as reserves and resources, as well as information on facility developments and expands on the requirements for transaction reporting. It is important that improvements are made to the GBB to integrate this new information in a way that is easy to use and understand.

In 2018, the Australian Competition and Consumer Commission (ACCC) and the Gas Market Reform Group (GMRG) worked together to advise on options to further improve transparency in the gas market. This work identified a range of information gaps and asymmetries across the eastern and northern Australian gas markets, leading to recommendations to address information deficiencies. A Regulation Impact Statement (RIS) was issued in 2019 to evaluate various measures to improve the level of transparency in the gas market. On 20 March 2020, the COAG Energy Council endorsed the Decision RIS¹⁶.

The RIS set out additional considerations for the future biennial reviews, including the assessment of the Gas Transparency Measures package of work into the GBB. Future biennial reviews are to consider whether more reserves and resources information is required on the GBB and to review the effectiveness and the success of the Gas Transparency Measures implementation. For instance, some changes from the Gas Transparency Measures package will lead to changes in automated data being provided to the GBB as part of Gas Transparency Measures objectives, such as the consolidation of automatic reporting (for example, the LNG maintenance reports).

In developing the requirements for the Gas Transparency Measures, AEMO will assess the recommendations from the external GBB application review, as well as the recommendations from this biennial review, to deliver a GBB that is both useful and fit-for-purpose for GBB users.

¹⁶ COAG Energy Council. Measures to Improve Transparency in the Gas Market, Regulation Impact Statement for Decision, March 2020. Available at <http://www.coagenergycouncil.gov.au/publications/measures-improve-transparency-gas-market-consultation>. Viewed 19 August 2020.

5. Recommendations

This inaugural biennial review has led to some broad and some specific conclusions. To achieve the purpose of the GBB, there are some areas where user interactions with the GBB need to improve. Following suggestions by stakeholders during this review, recommendations to improve the GBB are discussed below.

5.1 Improve different user experiences

From this review, it is apparent that there are two main user types – analytical users who primarily use the data portal, and ad hoc users who rely on the summary information provided on the map or are looking for a specific piece of information. For all users there are improvements that can be made to the look and feel of the data.

Improvements should be made to the User Interface of the data portal that make it easier for users to:

- Know where the data is and that they are looking at the right data.
- Understand how that data is aggregated and whether it is a complete set.
- Ensure the maximum amount of relevant data is made available on the screen.
- Use filters on the data tables, making sure the tables fit the screen.
- Find glossaries where unfamiliar terms exist.

There may be some merit in addressing the summary information on the map and including more market data to create a hub of information, but it is likely that this will be beyond the scope of the Gas Transparency Measures project.

Similarly, there was a general idea that the GBB could be a one-stop-shop for gas market participants. This could see similar data sets, which participants provide to multiple different parties, provided to just AEMO to improve efficiency, especially when participants operate in multiple AEMO markets. A redesign of the user interface, where a user chooses whether they are a frequent user or an ad hoc user, could be part of this, with the interface for each type of user tailored to their specific needs and knowledge. While this is not a direct recommendation for the upcoming development, incremental improvements to the GBB should be made with this purpose in mind.

5.2 Fit-for-purpose

The useability and understandability of the GBB needs to be improved to create an overall better experience for both frequent and ad hoc users. Changes to make the system more user-friendly are key.

Most users, both frequent and ad hoc, visit the GBB with a clear intent to either collect one or several datapoints. An opportunity exists to redefine the overall user experience to improve access to the key information these user groups seek. This could include making content more easily seen and delivering the right content in a format that is more user-friendly.

It is important to ensure information is well managed and clearly identified as being within the GBB website component of the broader AEMO website.

For users wanting to know where a calculation came from or what a term means, improvements could include the ability to hover over glossary terms and methodology links. This type of enhancement would provide users with tips and help functions that allow them to better understand the data, calculation information and aggregation methodologies.

It is expected that the new data from Gas Transparency Measures transactions will be handled in broadly the same manner as the existing transactions. The same logic for the data submissions and reports relating to the

new Gas Transparency Measures will follow a similar pattern to the existing submissions and reports. As a result, no significant changes are expected for the database and application structure. The Gas Transparency Measures changes will reduce the number of gaps in the bigger picture and the new data will be a valuable addition to visibility of the gas market.

5.3 Interactive glossaries and education opportunities

Feedback from users noted that there are instances where a new user or an ad hoc user can be overwhelmed by the data and layout of the GBB. An easy to access glossary of terms in conjunction with an induction-type page or video would allow new users to easily locate information and how to use the GBB.

It is important that users are aware of what is available, where it is located and what the information means. Where appropriate, reports should be enhanced so it is clear such that information is provided on aggregation and assumptions used for data in the report. The focus of any changes will be targeted on that information that stakeholders find most useful, being the capacity outlooks and gas flow information.

AEMO is also investigating digital platforms for introductory videos and other interactive ways to better explain the GBB and its data.

5.4 Upgrade of the data portal

To improve the access to GBB reports, all information available on the GBB – such as market notices, the market register, shipper lists, and CT&A reports – should be incorporated into a common reporting platform for useability with quick reference guides.

Some minor changes to the data portal's most accessed reports would assist frequent users, such as:

- Increasing the screen size capacity for the viewing platform of the tables.
- Having the ability to filter the data.
- Placing new consolidated reports together so only one report needs to be downloaded rather than many prior to analysing the data. An example is the capacity outlook information, which would benefit from having a consolidated table of facility capacity which includes the short- and medium-term capacity outlooks.

The main focus for change will be clarity of data and data aggregation. This includes the display of data sets being unimpeded by other functions such as filters and report selection.

Through upgrading the data portal, the navigation of the GBB can be improved to ensure users are clear in where information is and how to easily move around in the GBB component of the AEMO website.

5.5 Making the map and data more interactive

All improvements to the GBB are to achieve greater visibility into the east coast gas markets. While the map is the first landing point on the GBB, the stakeholder survey and interviews confirm that not many users are actively using the map and that, while stakeholders see it as an important feature, it is not seen as the most important aspect to improve.

This review has concluded that some enhancements – such as topological data and more information about pipelines and facilities – can provide clarity and value.

There is some value in providing more meaningful data to assist users, such as summarising information into charts, being able to drill down into the map, and glossaries of terms regarding the names and locations of each data point. These could be in the form of visuals such as on-page map guides, tool tips and introductory videos.

As the new Gas Transparency Measures will create more data across the GBB, such as pipeline and facility information, improvements should be made that could include a static map consisting of summary information linked to the AEMO interactive map¹⁷ and including additional schematic styled data.

Longer term, improvements should be made to the GBB map, but this isn't the highest priority.

Stakeholders regularly referred to the map on the WA GBB, saying that the layout is simpler, users can drill into data more easily, and it provides better summary information for a relevant snapshot and more granular information on pipelines, connection points and production facilities.

Any improvement to the GBB map would need further research to validate with stakeholders how the East Coast gas network could be displayed with a similar level of intuitiveness.

5.6 Subscriptions and market notices

Currently, subscriptions can be made to the AEMO website for changes to a specific web page. This same functionality is not available for the data portal or for changes in status of data. As the gas markets are interconnected, market notices (currently issued for each of the different gas markets) should be made available to all interested users.

This could be extended to include market notices for market participants choosing to be notified about events such as changes in capacity outlooks, linepack adequacy and forecasts. Users should be able to subscribe to website notifications that are automated to notify users of these updates.

Longer term, a newsfeed on the GBB home page could allow users to see who is submitting data as it happens, so they know new information is available. The potential to have a link to a notice or alert would also be beneficial. This is an area that will require further assessment and is likely to be beyond the scope of the upcoming changes to the GBB.

As previously mentioned, this feature could be part of a redesign of the User Interface where a user chooses whether they are a frequent user or an ad hoc user and the information they receive, or view, would be tailored to their specific needs and knowledge.

¹⁷ AEMO. Gas Bulletin Board Map. Available at <https://www.aemo.com.au/aemo/apps/visualisations/map.html>.

6. Conclusion

This inaugural biennial review has received and assessed stakeholder feedback through 45 responses to an online survey and 12 one-on-one interviews.

From this feedback, it has been apparent that there are two main user types:

- Analytical users.
- Ad hoc users.

The stakeholders gave useful feedback that has led to some recommended areas for improvement. The recommendations are focused on the GBB application, with minimal recommendations for regulatory change, as a result of the upcoming Gas Transparency Measures regulatory reforms.

The main areas for recommendation and changes to be considered, both for an immediate timeframe and a long-term view, are:

- Updates to the data portal for better navigation and consolidation of popular reports.
- Improvements to the overall understanding of the data and a plan for educating users.
- Changes to align with the future of the GBB and the needs of different types of users.
- Better ways to capture and use information across the GBB.

Some areas where further investigation is warranted or that are to be deferred at this time, but should still be considered, are:

- Larger wholesale improvements to the map to make it more interactive.
- The consideration that the GBB is a hub or one-stop-shop for gas data and information for the east coast gas markets.
- Individualised subscriptions and data-driven market notices.
- Customising the GBB for user types, needs and proficiency.

AEMO will undertake the next Biennial Review of the Gas Bulletin Board in 2022.

A1. Stakeholder interview feedback

The majority of this feedback was consolidated by Revium¹⁸, the consultants who conducted the GBB review, from interviews that AEMO and Revium attended together. Two additional interviews were conducted by AEMO only.

Usage of the GBB	
How often are users using the GBB, if at all?	Frequency of use <ul style="list-style-type: none">• Participants who visited the GBB interface reported doing so from as frequently as once per day through to almost never visiting the GBB. Some users of the data or market participants submitting data never visit the GBB interface.• Often the participant's role or organisation type was an indication of the frequency of use, depending on their requirements.
What are the valuable reports offered by the GBB?	<ul style="list-style-type: none">• Nomination data• Pipeline flow data• Information on outages and notices• Medium and short-term capacity• LNG train outage information• Uncontracted capacity outlook• Line pack capacity adequacy
Why is the GBB valuable to the varied organisations and users?	<ul style="list-style-type: none">• To see what other operators are doing, and broader market trends• Visibility of markets that participants are not operating in• Understand what interconnected facilities are doing from an outages/maintenance activities perspective. This helps to understand market supply needs and potential demand gaps• Data to inform commercial and operational decision making• Forecasts and actuals data to influence trading decisions and pricing• Accessing data to make decisions on how to run participant's portfolio• Supply/demand to understand effect on pricing• Access to quick and simple visualisations• Accessing specific information to help with market analysis
What is the role of the GBB?	<ul style="list-style-type: none">• Provide reliable and complete data on the East-coast gas market• Help the market make more informed commercial/operational decision <p>"The GBB should not be about being accessible [us] as industry experts, we just a need reliable, accurate data source. It should focus on providing industry access and information to someone who needs a single data point for a specific purpose like an article. Could be as simple as pricing for Victoria (on the front page of the AEMO website now). Flow patterns for a facility could be important – things that an analyst within a news organisation would be looking for." – Consultant</p> <p>"GBB shouldn't be about providing an answer to every possible question – it should be about showing commonly required data points simply visualised and effective ways to download detailed data." – Market participant</p>

¹⁸ Revium website. Available at <https://revium.com.au/>. Viewed 26 August 2020.

What are the existing challenges?

Data accuracy, completeness and validation

"The Philosophy of AEMO as a business should be – dictator in terms of the data and the integrity. Unfortunately, currently the GBB does not have the same integrity as the electricity industry body for example, so is falling short at the moment." – Market Consultant

"Data integrity and accuracy is an issue. Currently needing to verify and cross-check. Sometimes inputs are out by a factor of 1000 because people are inputting based on the incorrect measurement metric. These mistakes are easy to spot it is when the data is slightly over or under reported that it is much harder to spot. Assume that there are errors." – Market participant

"Not having reliable reporting creates an information asymmetry for market participants in terms of the data that they have access to and how they can make informed decisions." – Market Consultant

"Lack of reliable reporting from LNG sector of planned and unplanned outages. e.g. currently a big outage in progress but there is nothing that has been reported. Making assumptions based on field data." – Retailer / Shipper

"Data changes are not transparent - No way to know what has or has not been done – no visibility of updates, no way of easily seeing what has been changed or where an update is still missing." – Market Consultant

"GBB not as reliable as it has to deal with republished data so therefore trust compromised" – Market Consultant

- Lack of clarity of data aggregation
- Users would like to see the data used for aggregation such as assumptions and calculations
- Some of the tables have a description but there is not enough information. Useful to have links to calculation formulas for the table. Some users know this information is somewhere on the site but "don't have the time to dig around to find it"
- Needs an explanation of assumptions / calculations for arriving at aggregate totals

"Sometimes the derivations of the summarised numbers on the map are not particularly obvious – not clear where the total is coming from. Understanding what the calculations are is not obvious" – Data Analyst

- Map shows flows but hard to reconcile with the data that is supplied – 3 different layers within the data – not clear how AEMO is calculating net flow. Need a bit of a sense check.
- Not clear when a report has been aggregated
- Data revision / Updates to data
- Producers are adding/updating information both current and historic cannot see what this is, so no way to knowing what needs to be adjusted in own data reporting.

"Would find it useful to be advised when previous data is updated" – Market Consultant

"Updating data each hour to try and make sure all that is new is included. Some suppliers have a regular update schedule some don't, so cannot predict when data will be updated." – Market Consultant

"Flagging of new information would be a good improvement. Maybe notifications." – Market participant

- Market notifications and alerts
- Market notifications are broadly categorised and are often not relevant. Lots of people getting irrelevant notices at the moment because there is no way to choose

"Getting alert messages at night that I don't find at all relevant." – Market Analyst

"Timing of alerts is important – SMS notices come through in VIC from AEMO. Currently this is too late compared to when market players are notified. Need to level the playing field with timely communications" – Retailer / Shipper

- There are so many ways alerts are sent – email, SMS and different types of SMS. Would like one source where these are all categorised, you could then subscribe for specific notifications.

"AEMO makes decisions that affect the market – e.g. Longford went offline and communicated the impact would first hit gas facilities– this type of info needs to be public so that there is less inside

Usage of the GBB

information within the market. AEMO has an obligation to communicate events like this, but currently isn't" – Market Consultant

- Not getting notifications for interconnected markets that you are not a participant in. This is valuable information. Event in one region can affect prices in another region.

"Maintenance notices don't mean anything – too technical to be understood by a trader. Mechanism to change the tech speak into something that the rest of the industry can understand – field-based information is not user friendly." – Facility Operator

- Accounting for gas in transit

"Pipelines can take 2 days to deliver gas – daily data cannot take this into account. Not accounting for transit states means the system day to day can be incorrect as mistakes are essentially written in" – Market Consultant

What are the opportunities to improve the useability and usefulness?

- Pricing
- Short Term Trading Market (STTM) and Declared Wholesale Gas Market (DWGM) prices for today and tomorrow should be added to the GBB interface
- Would like to see trends in prices
- Having prices on the GBB would be helpful
- Outages
- Users would like more information on maintenance and outages:
- Reporting on planned and forced outages would be useful
- Would like notifications about LNG Maintenance etc.

"LNG outages and planned maintenance report outages in standardised format – Portable Document Format (PDF) – not the best format, can't capture in our data base." – Retailer / Shipper

"Useful tool currently not in the GBB - Outage diary that uses the medium- or long-term data as an outlook. Highlights areas where there are big % changes identifying where there are potential maintenance events." – Retailer / Shipper

- Additional data and reports
- DWGM data currently not in the GBB, could be valuable
- Historical gas generation numbers
- Pipelines have line pack pressure information, helps understand if volume can be moved. This information exists in the DWGM but not others.
- Gas Powered Generation (GPG) nominations and the forecast generation
- Current actual in pipelines and actual schedules
- Gas storages and facility capacities

"Not obvious where there is unused capacity – currently reported through Capacity Trading and Auction (CT&A) – is there an opportunity to have this data leveraged in the GBB so that there is more transparency of where there is unused capacity?" – Retailer

"Hub that has more information, like prices. More market information; schedules, backhauls on the STTM pipes, summary of the demand submission for the STTMs. If you could get more info you might be inclined to use it more." – Facility Operator / Generator

Useability

Challenges

"The GBB should follow the West Coast platform" (WA GBB) – Facility Operator

- Not easy to use as an infrequent user

"Current GBB looks a lot nicer but not as simple to see everything at once. Not summarised in one view - all in different tabs and takes several clicks and mental math to get your answers" – Retailer / Shipper

- Supply and demand not easy to understand the aggregation.
- Facility IDs can be very hard to get your head around, sometimes this is all that is used in a table so hard to marry up facility and the information if you are not familiar with all the IDs

Usage of the GBB

- New GBB took a bit of getting used to. Data being visualised may be a little simplistic, but experience is more intuitive now
- No breadcrumbs to take you back so need to keep going back to the home page
- Want to be able to toggle between map and the report
- Not straightforward to use
- Seasoned users understand how to use the site and what the assumptions / definitions are.

“Data portal – bit tricky to get what I want not always immediately apparent, get there in the end. Not intuitive.” – Market Consultant

- Opportunities
- Want to be able to access on phone. Currently struggle to do this at the moment.

“Checking GBB on mobile when there are interesting events. Not daily butt a few times a week.” – Market participant

- Understanding the value of the GBB
- Users aren't sure about what is available to them in the GBB
- Some Users don't believe that the GBB has enough information and should be a one-stop-shop

“It's already very useful and has improved significantly – but if it could be a one-stop-shop and educational tool that would be great.” – Data Analyst

Data portal usage

Current usage

- Using data portal interface to review data sets and take out specific pieces of information or data-points
- Internal tools purpose built, drawing on AEMO data. Most use just AEMO data, but there are some tools that will draw on other sources.
- Use API to pull the data into internal tools
- For data analysis using a Power BI with direct access to database and this allows them to produce lots of graphs
- Built a new alerts system to interface with the GBB to get notifications
- Using own systems to provide a longer-term view
- Real Time Operations (RTO) take in the GBB data direct from the GBB source and have built a BI console to view data in a valuable way
- Download data as too clunky to use in the website.
- Capture all the data and then bring it into an internal data base/dashboard and have bespoke views

“I'd be tempted to say the GBB should have everything in the same place but, it's easier for me to download into my own systems and then do analysis in own excel. Not as easy using someone else's views.” – Large User / Retailer

Challenges

- Difficult to extract specific data sets e.g. just a single day or a single facility for a long time
- Use of data over a broader time period than 30 days - up to 5 years
- Would like to have the option to be able to focus on single data point over a long period of time. The broader data set only needs to be more recent
- Would like access to longer periods of data (say 6 months) currently limited to 30 days
- Table interface is utilising the least amount of the screen as possible. Locked so you cannot see the remainder of the table information. Structure does not allow you to access simple pieces of information.
- Improve setting dates, hitting GO button too early
- When looking at the tables you cannot see the total amount of columns needed to scroll. Not user friendly.

Usage of the GBB

- Single facility data - the challenge is the table format, cannot see all the information at once, because you cannot see all data columns
- Sometimes want 2 reports together rather than having to download separately
- Nameplate rating plus Actual flow and storage by facility
- Short term capacity outlook plus nomination and forecast flow by facility
- Nameplate rating plus Uncontracted capacity outlook by facility
- Difficult to find the correct participant
- Opportunities
- AER website reports cited as a good way of presenting reports
- Would like to see historical information from pre-2018 integrated – Facility operator
- Don't see a need to integrate historical information – Market participant
- Useful to see a chart of the data report

"I think the secondary capacity data tab in the data portal at the moment is based on old reporting and has been effectively replaced with the capacity trading reforms, so I wondered if this tab could be populated with the PCT data in the GBB reports." – Market Consultant

- Some users prefer disaggregated data as it allows them to use the data as they wish

Map

Current use

- Look at map but haven't used it a lot – useful for new traders to see the picture of the gas market
- The map is purely a quick daily view – extractable data is far more useful data
- Maps and flow data important to a wide industry
- Only look at the map because the site takes you there, but not really using.
- Happy with map for our purposes
- Good for quick checks - Participants and locations
- Use GBB interface on occasion to get a quick idea of what is going on. Interested in overall pipeline demands for the day
- Want to be able to have it on the screen to view regularly

Challenges

- Not always getting the data required from the map. Particularly specific timelines.
- Adelaide in the GBB seems to not be showing up and this is long term issue
- It is difficult to get a picture of where infrastructure and facilities are. Don't need data linked to detailed facility view just general information / standing data.
- There doesn't seem to be the right balance of what should and shouldn't be displayed on the map
- Map graphics could be enhanced little clunky
- Map– too simple or too granular, no middle layer
- There has been an update nice clean simple, but the complexity has been lost. Could click on a pipeline to see the capacity outlook for a week can't do it anymore.
- Map view has map and table in view - Map shows STTM but the table shows demand for the region. It's a bit confusing because the table is not a direct reflection of the map. Not the same metric being reported.
- The map is somewhat oversimplified
- The map can be confusing if the wrong data is submitted or missing.
- Opportunities
- Would like to see data over time on map

Usage of the GBB

- Need to provide better day -2 day -3 forecasts. Would want to see a schematic map of this if this data is accurate.
 - Would like to see pipeline permit numbers
 - Include more facilities on the map
 - A stylised version of the map works for flow data but need a real view of the entire network
 - Would like to be able to zoom in on the map to access pipeline connections data
 - Missing functionality – drill down to a facility over a specific time period – all connection points. Deeper level of visibility.
 - WA GBB visualisations and map is better.
 - Would be good to be able to zoom in to see all the facilities/ infrastructure – then pop up basic details on the facility owner operator, name plate, what is it flowing today.
 - Would like to hover over more information on production / storage / large users
- “If you could click on the facility and see information that would be more useful. Like to see daily flows and constraints.” – Market participant
- Would be beneficial to see outages on the map

Reporting

Data Submission

Frequency

- Market participants have varied reporting requirements
- Some participants are uploading data multiple times per day
- Some only need to report every month or less

“3-4 are daily, these are all published 3 times a day... takes the error out of people needing to remember to publish when something changes.” – Facility Operator

“Aggregated reporting challenge/risk - if one facility/line of data in non-compliant run the risk that all are not. Reporting treated as a whole not verified per line item.” – Facility Operator

- Regularity requirement to report 10% change in nominations and forecasts – Some participants over supply data to ensure they are always compliant
- Some participants update data historically – where there are significant changes to actual flow data - Anything greater than 1 TJ is republished

Method of submission

- Submission via Comma Separated Value (CSV) file upload
- Feed data into the GBB via the API

“Use the API function of the GBB to transfer the data. To date it has worked well. Occasionally there are little blips, 99% of time no issues.” – Facility Operator

Challenges

Upload failures

- API fails once every few months, it is an issue if you don't notice. Recently upgraded to see why a file is rejected. Now have more visibility on reasons for fails.
- There have been instances where the data has been rejected for no apparent reason. – fallback is variable – manual resubmission, also checking process to see whether data has been successfully submitted.
- One thing with combined API submission if the password has expired then the failure mode of the submission is ordinary – just a completely invalid HyperText Transfer Protocol (HTTP) response, no context of why.
- Need to regularly call AEMO support hub for assistance.
- Need notification that password is going to expire, more elegant handling when it does

“Ideally all correct data would be able to get through and just the incorrect held back from a submission – could you validate on a per line basis so that this would be overcome?” - Facility Operator

Usage of the GBB

- Reporting limitations
- Secondary trades outside market reporting is a requirement in national gas rules, option to report through the GBB but not clear how

"Only 1 requirement to supply data, reporting on secondary trades that are done outside the market. At the moment this process is very confusing and not even sure that it works from the AEMO side." – Facility Operator

Gas Transparency Measures Changes

What will the Gas Transparency Measures changes mean for Users?

- Gas Transparency Measures changes will increase data and ad hoc users - this will be a challenge to ensuring useability and navigation
- Access to more data for users
- Added challenge for market participants in providing additional data

"Currently don't have to give pipe-liners seven days of nominations, we give monthly and yearly so this will be a challenge for them to supply the seven-day forecasts." – Facility Operator

"We had a quick look – not a lot there for us, need to start reporting compression and storage facility information over 36 months and report on website. But came out reasonable unscathed." – Retailer / Shipper

"Short term trades will impose a new reporting requirement, will need to submit." – Facility Operator

- Respondents were unsure of the best way to display gas-field data and the level to which it should be aggregated