

PLANNING STUDIES – 2013: INFORMATION AND CONSULTATION PAPER

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Version Release History

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1.0	30 January	Ursula Dwyer	Initial release

1. Executive summary

This consultation paper provides information and invites feedback from stakeholders on topics of relevance to AEMO's planning functions.

In particular, the consultation paper invites stakeholders to comment on:

- The evolution of AEMO's planning publications and the manner in which we engage with stakeholders.
- Improvements to our modelling methods, data and inputs, specifically demand forecasts.
- Matters being considered during the scoping of the 2013 NTNDP.

This consultation paper is also accompanied by a *Methodology and Input Assumptions Report* which outlines the data and assumptions that AEMO proposes to use for its 2013 planning reports.

AEMO is progressing the work started in 2012 to consolidate our publications to improve the focus and engagement of our analysis.

To engage with our stakeholders better, we are also reviewing our working group structures. That review is currently underway, however we have already identified the need for a new Planning and Modelling Forum. The purpose of this forum will be to facilitate effective consultation between AEMO and stakeholders in modelling, forecasting and planning matters. Feedback is sought on the forum's potential topics, and dissemination of information to non-member stakeholders.

Stakeholder consultation is critical in guiding meaningful progress on AEMO's energy forecasting value proposition, which seeks to ensure national energy forecasts that represent a holistic view of the energy markets. An update of activities being undertaken to achieve this proposition is outlined in this paper, and stakeholder feedback on the aims, content, and proposed next steps is invited.

We are also looking to improve the accuracy of our modelling and data. Specifically, we are considering emissions intensity data, which comprises a key input into activities such as market modelling and calculating generator emission intensity. Further we are conducting a review of the current electricity supply-demand outlook modelling methodology with a view to delivering increased value to stakeholders by improving the quality of longer term reserve adequacy assessments. Introducing a more effective methodology would mean AEMO no longer requires the existing Supply Demand Calculator. Stakeholder feedback is invited on both of these issues.

AEMO welcomes comments from stakeholders at any time. To assist with our modelling and analysis we would welcome feedback on these proposals and the planning assumptions available by 15 March 2013.

2. Planning value propositions

AEMO's *2012–13 Statement of Corporate Intent*¹ outlines three value propositions aimed at improving the focus and engagement of our analysis, improving the productivity and efficiency of our communication with stakeholders, and providing a holistic national view on energy forecasts.

The following sections provide an overview of AEMO's progress and next steps against these initiatives.

2.1. Planning publications

AEMO seeks to improve its suite of planning publications each year in response to stakeholder requirements. The publications produced vary in terms of maturity, with some in production for over ten years (ESOO and APR), and others being released for the first time in 2012 (NEFR).

¹ Available at: http://www.aemo.com.au/About-AEMO/Corporate-Publications/~/_media/Files/Other/corporate/Statement%20of%20Corporate%20Intent.ashx.

One of AEMO's value propositions for 2012–13 is to consolidate our publications to improve the focus and engagement of our analysis.

The specific objectives of this value proposition are to:

1. Increase the value of AEMO's planning information to industry by reviewing relevance, timeliness, and frequency.
2. Improve the clarity and accessibility of AEMO's planning information by reviewing how information and analysis are delivered to stakeholders. This includes a review of online access.
3. Refocus internal efforts towards value-added planning activities rather than document production where appropriate. This will include consideration of the National Electricity and Gas Rules obligations, the need for improved planning processes, and how to improve the time-to-market of planning processes to ensure that improved publications result from high quality planning.

Consultation on the relevance, timeliness, frequency, focus of analysis, and value of the suite of information that AEMO publishes will be sought later in the first half of 2013.

2.2. Planning and Modelling Forum

Another of AEMO's value propositions is to streamline our industry working groups and processes to improve productivity and efficiency. AEMO is undertaking a review of the consultative forums, working groups, and committees that it facilitates for a range of purposes across its electricity and gas market functions.

While we are currently consulting stakeholders through established working groups, we have identified the need for a Planning and Modelling Forum. The forum will coordinate the activities undertaken by the Scenario Reference Group, the Demand Side Participation Working Group, and the Market Modelling Working Group.

The forum is intended to have the following functions:

- Provide a forum for consultation and involvement of interested and affected parties on matters related to scenarios, planning, modelling, forecasting, and AEMO's planning documents.
- Provide an efficient means to form working groups with broad participation for specific planning and related matters.
- Review and report on issues as requested by the Energy Market Leaders Forum.

Further details on this and AEMO's broader consultative framework will be released shortly.

Stakeholder feedback is sought on the forum's potential topics, and method of dissemination of information to non-member stakeholders.

2.3. Energy forecasting

AEMO's third value proposition in 2012–13 is developing a national energy forecast to provide a holistic view of the energy markets.

This translates into two key deliverables:

- developing a consistent methodology for connection point forecasting across the NEM (at transmission level).

- publishing a core set of definitions for electricity and gas demand across AEMO.

The target delivery date for this work is end of June 2013.

Work under this value proposition will also support the future alignment of AEMO's regional forecast data with the DNSPs' aggregated connection point forecasts.

The value proposition also recognises the Standing Council on Energy and Resources (SCER)'s recommendation to the Council of Australian Governments (COAG) in December 2012 that AEMO be responsible for:

- Developing independent demand forecasts to inform future regulatory determination processes undertaken by the Australian Energy Regulator (AER).
- Assessing demand forecasts submitted by network businesses.

During stakeholder workshops held in October 2012, AEMO presented the energy forecasting value proposition and five-year national forecasting strategy to industry. Subsequent discussion and feedback identified the need to:

- Build better links between connection point and regional forecasts while continuing to improve regional forecasts.
- Engage more with TNSPs to better align regional forecasts.
- Better incorporate local issues and demand trends into the modelling process.

Initially, AEMO will consult with stakeholders through a specific industry reference group comprising representatives from each jurisdiction. Consultation will be moved across to the Planning and Modelling Forum once it has been established. The key focus is to develop a strategy for energy forecasting activities across the industry.

Work is also set to commence on one-on-one collaboration and information gathering from Network Service Providers (NSPs).

Consultation will primarily be sought via either the Planning and Modelling Forum or an industry reference group, however, feedback on aims, content and means of progressing this item is welcome.

3. Input modelling and assumptions

Accompanying this paper are several documents detailing the input modelling and assumptions to be used in AEMO's 2013 planning studies. The suite of accompanying information includes:

- The *2013 Planning Consultation Methodology and Input Assumptions* paper, which provides an overview of the assumptions employed for AEMO's 2013 planning reports.
- Three workbooks containing data used in AEMO's planning modelling. These are:
 - A workbook containing data, information, and assumptions used to model existing generation in the NEM.
 - A workbook containing data, information, and assumptions used to model new entry generation in the NEM.
 - A workbook containing additional modelling data.

Appendix A of the 2013 Planning Consultation Methodology and Input Assumptions paper provides a detailed breakdown of which data is included in each workbook.

Feedback on, or suggestions to improve the accuracy and relevance of the input modelling and assumptions is welcome.

3.1. NEM power station emission factors

AEMO publishes and consults on estimated NEM power station emissions factors annually, and relies on these factors for use in several key activities:

- Executing market modelling for planning reports (such as the NTNDP) where the costs associated with emissions affect simulated bidding behaviour and operating cost projections.
- Calculating the Carbon Dioxide Equivalent Intensity Index (CDEII), which estimates average NEM and region-based generator emissions intensity by multiplying the emissions factors by the actual generator outputs.

Emissions factor information is being reviewed this year to ensure changes in emissions intensity are captured as plant age or fuel quality changes, or where a plant has repowered with more efficient technology.

The current set of emissions factors (see Section 4.9.1.5 of the Modelling Methodology and Assumptions document) is derived from information provided by ACIL Tasman ahead of the 2010 NTNDP. ACIL's estimates intend to present the expected emissions intensity over time, noting that actual intensity will vary a few per cent from year to year due to plant condition, fuel quality and dispatch. AEMO is aware of the importance of this information being accurate and up-to-date, and stakeholders support the update of this information.

The Clean Energy Regulator (CER) also maintains a detailed database of all Australian emissions, known as the National Greenhouse and Energy Reporting (NGER) data. This forms the basis for emissions liability under the Clean Energy Act, and is therefore the definitive source of energy emissions data. While this data is published on a company-wide basis, values for individual facilities are considered protected information and are not publicly disclosed.

AEMO proposes to:

1. Formally request consent under section 51 of the Clean Energy Regulator Act² from registered fossil fuel generators in February 2013, and allow one month for responses. (This will enable AEMO to directly calculate emissions intensity based on the most recent, actual data collected by the CER.)
2. Where consent is not provided, refresh the current set of emission factors using consultant advice. (If necessary, consultant support will be engaged in late March 2013 and is expected to take six to eight weeks.)

AEMO expects to publish the updated set of emission factors on the Planning Assumptions webpage and to update the CDEII data inputs by July 2013.

Participants should note that if the updated information results in significantly altered emissions factors, then this will inevitably introduce a step change in the CDEII.

² Section 51 creates a mechanism by which liable entities may consent to the CER's release of protected data, which may then be published. Using this, AEMO intends to ask all registered fossil fuel generators to grant consent to release of the emissions intensity data to AEMO for use in planning studies and calculating the CDEII.

After July 2013, AEMO intends to make a Section 49³ request for the CER to release emissions data for a confidential audit assessing the average accuracy of the consultant-provided factors. The result of the audit would be published and would indicate the average level of error in the CDEII.

Participant feedback is sought on the proposed approach to improve emissions data accuracy and stakeholder confidence.

3.2. Changes to electricity supply-demand outlook modelling

Up to and including 2012, supply adequacy in the ESOO was assessed using a supply-demand calculator approach which compares available capacity and demand-side participation against regional demand and a safety margin of minimum reserves. These reserve requirements have historically been produced using a complex suite of market simulations, and need regular review to ensure they remain appropriate as the power system evolves.

A review of both the reserve requirements calculation and supply adequacy assessments aims to identify accuracy and efficiency improvements gained by moving away from pre-calculated values, and instead integrating reserve requirement calculations within the supply adequacy assessment itself.

The review will confirm whether replacing the current supply-demand calculator approach with the time-sequential model that AEMO employs for detailed market modelling studies (such as the NTNDP) will deliver the following benefits:

- Increased value to stakeholders by significantly improving the quality of longer-term reserve adequacy assessments.
- Improved quality and accuracy of the Low Reserve Condition (LRC) points reported in the ESOO.
- Increased consistency between the ESOO modelling and other planning or operational studies such as the NTNDP and Energy Adequacy Assessment Projection (EAAP).
- Increased value, and amount, of information provided to stakeholders.

AEMO is also investigating how a set of traditional minimum reserve requirements might be extracted from the above approach for use by:

- AEMO in running deterministic studies such as the Medium Term Projected Assessment of System Adequacy (MTPASA).
- Participants or interested parties in running their own deterministic studies.

As this investigation progresses, AEMO intends to provide stakeholders with further information on any proposed changes to the minimum reserve level calculation methodology.

The use of the time-sequential model for the ESOO would remove the need for AEMO to prepare and maintain the Supply Demand Calculator for its own use.

AEMO seeks feedback on whether the Supply Demand Calculator is still of value to stakeholders for running independent supply-demand sensitivities.

³ Section 49 of the Clean Energy Regulator Act permits the CER to disclose protected information to AEMO to assist in the performance of AEMO's functions. AEMO is not permitted to publish confidential emissions data.

4. National Planning documents

The 2012 NTNDP was published in December 2012. AEMO has developed some preliminary views on potential scope of work for 2013; the material issues under consideration are set out below along with AEMO's preliminary views on how these might be addressed.

AEMO may not need to address all issues in detail, and seeks stakeholder feedback on their respective priority, and any additional issues that should be considered.

4.1.1. Integrating short-term and long-term planning

The cost of electricity is receiving increased attention as (real) electricity prices are expected to increase in the short-term contributing to a reduction in electricity demand growth expectations. This is leading to increased scrutiny of network development planning.

While previous planning documents have considered long-term strategic plans for the National Electricity Market (NEM), there is potential for AEMO to explore short- and medium-term planning issues in more detail, and consider how such plans could link to long-term strategic plans.

This could be used for shorter-term planning and regulatory purposes.

AEMO seeks stakeholder feedback as to whether such work would add value.

4.2. Scenario modelling

AEMO believes it is more efficient to update the scenarios in response to influential changes in the economic and policy environment, rather than within a set update timeframe.

AEMO does not propose to revise the 2012 scenarios, or to provide a new set of results for generation and nationally significant transmission development unless significant changes in the input conditions develop (including demand and energy forecasts, and assumptions on carbon and fuel prices). However, there may be value in modelling an additional scenario to those outlined in 2012 to complement the 2012 medium and low growth rate scenarios.

The following sections outline potential scenario parameters that could be explored.

4.2.1. Demand forecasts

AEMO has previously considered two scenarios incorporating the most recent regional demand forecasts views: a medium growth (Planning) scenario, and a lower growth (Slow Rate of Change) scenario.

AEMO did not explore a number of the other scenarios available, and seeks stakeholder feedback as to whether the results of another scenario from the suite available would add value, and if so, which one.

4.2.2. Gas fuel prices

Gas fuel price projections in 2012 were higher than in previous NTNDPs given the combined impact of gas fuel prices, carbon prices and lower energy projections on the least-cost generation expansion.

While AEMO's next review of fuel costs will occur during 2014 planning activities, in 2013 AEMO is investigating the value of conducting a sensitivity study using a lower gas fuel price.

AEMO seeks stakeholder feedback as to whether such a sensitivity study would add value, and the range of gas fuel price assumptions to use.

4.2.3. Carbon prices

With continued uncertainty around future carbon prices, the 2012 NTNDP explored two carbon price trajectory scenarios.

The Planning scenario included the Australian Treasury core trajectory, and the Slow Rate of Change scenario tested outcomes of a significantly reduced carbon price by modelling a zero carbon price from 2015.

AEMO will monitor carbon price trends in 2013 and conduct a review in 2014 if necessary.

AEMO is investigating the value of conducting a sensitivity study using a lower carbon price in 2013.

AEMO seeks stakeholder feedback as to whether such a sensitivity study would add value, and the range of carbon price trajectory assumptions to use.

4.2.4. Integrating renewable generation

Meeting the Federal Government's large-scale renewable energy target (LRET) will require considerable new renewable generation, and AEMO estimates that this will include approximately 8,800 MW of new wind generation.

AEMO will build upon the work presented in the 2011 NTNDP studies and conduct a study into the possible technical issues which may arise due to increased wind penetration. Market modelling will be used to assess the impact of these technical issues on electricity market operation, and to evaluate potential solutions.

5. 2013 consultation and next steps

Supporting information for the consultation, including relevant inputs, is available on AEMO's website.⁴

AEMO welcomes comments from stakeholders at any time, however to assist with our modelling and analysis timeframes, we appreciate feedback on these proposals and planning assumptions by **15 March 2013**.

⁴ <http://www.aemo.com.au/Consultations/National-Electricity-Market/Planning-Studies-2013-Consultation>.

Submissions and questions relating to this paper should be emailed to planning@aemo.com.au or posted to:

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5.1. Publication of supporting information

From 30 January 2013 the following information will be available from AEMO's website⁵:

- *2013 Planning Consultation Methodology and Input Assumptions* (pdf).
- 2013 existing generation data (xlsx).
- 2013 new entry generation data (xlsx).
- 2013 additional modelling data (xlsx).

Any further information that relates to planning study assumptions will be published on the website as it becomes available. This information includes:

- Electricity and gas peak and annual demand forecasts.
- Constraint equation workbook.
- Existing generator capacity. Information from the AEMO Generation Information Page⁶ current at the time of analysis will be used.
- Existing and future gas infrastructure capability. This will be collected as part of the GSOO development.
- Current and forecast gas reserves. This will be collected as part of the GSOO development.

⁵ Data that will not be updated is still available from the 2012 Planning Assumptions webpage, available at: <http://www.aemo.com.au/Electricity/Planning/Related-Information/2012-Planning-Assumptions>.

⁶ <http://www.aemo.com.au/data/gendata.shtml>.