



RULE CHANGE

Australian Energy Market Commission

DRAFT RULE DETERMINATION

National Electricity Amendment (Publication of a Carbon Dioxide Equivalent Intensity Index for the National Electricity Market) Rule 2010

Rule Proponent(s)

Australian Energy Market Operator

Commissioners

Tamblyn
Henderson

6 May 2010

JOHN TAMBLYN

Chairman

For and on behalf of the Australian Energy Market Commission

Inquiries

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

E: aemc@aemc.gov.au

T: (02) 8296 7800

F: (02) 8296 7899

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About the AEMC

The Council of Australian Governments, through its Ministerial Council on Energy (MCE), established the Australian Energy Market Commission (AEMC) in July 2005 to be the rule maker for national energy markets. The AEMC is currently responsible for rules and providing advice to the MCE on matters relevant to the national energy markets. We are an independent, national body. Our key responsibilities are to consider rule change proposals, conduct energy market reviews and provide policy advice to the Ministerial Council as requested, or on AEMC initiative.

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Summary of draft Rule determination

On 13 November 2009, the Australian Energy Market Operator (AEMO) made a request to the Australian Energy Market Commission (AEMC or Commission) to make a Rule regarding the publication of a Carbon Dioxide Equivalent(CO₂-e) Intensity Index for the National Electricity Market (NEM).

The Rule Change Request specifically seeks to include a new obligation in the National Electricity Rules (NER or Rules) for AEMO to calculate and publish an appropriate CO₂-e Intensity Index for the NEM. The information provided by a CO₂-e Intensity Index is specifically sought by market participants to assist in determining and accounting for a carbon price, should one be present in the future, in the settlement of certain forward electricity contracts.

Currently there is no explicit obligation under the Rules regarding provision of a NEM CO₂-e Intensity Index. AEMO propose that a formal obligation and framework in the Rules is required to remove uncertainty as to whether AEMO is the appropriate body to provide the Index, and also to provide the necessary clarity and protections to carry out the role. AEMO also consider that a formal framework is necessary to reduce the uncertainty for market participants that an Index will be available in the future; that the form of the Index is clarified formally for use in commercial transactions and the processes to be followed if Index is changed. In addition, to clarify how suitable inputs for calculation of the Index should be identified and those Inputs which should be treated as confidential.

Commissions draft Rule determination

Under section 99 of the National Electricity Law (NEL), having considered the issues raised by this Rule Change Request and stakeholder submissions, the Commission has determined it should make a Draft Rule. The Draft Rule reflects the Rule proposed by AEMO, that is, that a new provision be included in Chapter 3 of the Rules, that provides for AEMO to develop and publish a CO₂-e Intensity Index for the NEM. The Commission has made some amendments which seek to provide guidance and clarify the matters AEMO should consider and consult upon when developing detailed procedures to support the publication of a NEM CO₂-e Intensity Index.

The Commission is satisfied the Draft Rule meets the Rule making test under section 88 of the NEL and will, or is likely to, contribute to the achievement of the National Electricity Objective (NEO). In making this assessment, the impacts of the Draft Rule on promoting the efficient investment in, and operation of electricity services were taken into account.

Making a submission or request for a hearing

The Commission invites submissions on this draft Rule determination, including a draft Rule, by 17 June 2010.

In accordance with section 101(1a) of the NEL, any interested person or body may request that the Commission hold a hearing in relation to the draft Rule determination. Any request for a hearing must be made in writing and must be received by the Commission no later than 13 May 2010.

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1 AEMO Rule Change Request

1.1 The Rule Change Request

On 13 November 2009, the Australian Energy Market Operator (AEMO) made a request to the Australian Energy Market Commission (AEMC or Commission) to make a rule regarding the publication of a Carbon Dioxide Equivalent (CO₂-e) Intensity Index for the NEM (the Rule Change Request).¹ The Rule Change Request proposed amendments to Chapter 3 of the National Electricity Rules (NER or Rules).

1.2 Rule Change Request rationale

The Rule Change Request arises in response to AEMO terminating the publication of an informal greenhouse intensity index in April 2009.²

In the Rule Change Request, AEMO noted that the ongoing development of policy initiatives on climate change policy, such as the Australian Government's proposed Carbon Pollution Reduction Scheme (CPRS) has placed greater significance and reliance on information about the carbon intensity of generation in the NEM. Significance of the information has also become important in the context of the ongoing policy uncertainty of the CPRS.³

The ongoing policy uncertainty of the proposed CPRS is presenting challenges to the market to be able to manage the price risks associated with the likely introduction of a CPRS on wholesale electricity prices, and thus settle longer term forward electricity contracts. As a result, market participants and the financial markets have been searching for a mechanism that provides parties with the ability to agree on the impact of a future price on carbon in their negotiations and the settlement of forward contracts in electricity.⁴

In 2008, the Australian Financial Markets Association (AFMA), via its Electricity Committee⁵, developed an Addendum its existing over the counter contract⁶

1 refer to www.aemc.gov.au

2 Since January 2000, AEMO had published on its website a Greenhouse Intensity Index (GII) (an alternate naming convention to a CO₂-e Intensity Index). The request for a NEM GII was from the Commonwealth Government Department of Industry, Science and Resources, responsible for energy policy matters at the time - the Index was provided as generic information in light of the emerging policies on climate change matters. The GII represented a single number and provided information on the amount of carbon dioxide equivalent greenhouse gas emitted per megawatt hour of electricity sent out by generators operating in the NEM during the nominated week (tonnes CO₂-e/megawatt hour (MWh)).

3 AEMO Rule Change Proposal p.4.

4 The Australian Government intended to introduce a CPRS in 2011. Consideration of a CPRS has now been delayed to 2013. See <http://www.climatechange.gov.au>

5 The AFMA Electricity Committee comprises representatives from generators, retailers, financial institutions and brokers participants in over-the-counter hedge market.

documentation - Australian Carbon Benchmark Addendum (ACBA). This Addendum effectively provides a means for a relevant carbon price (should one be present in the future) to be taken into account in the settlement of a forward electricity contract, when the settlement takes place⁷. To derive the relevant carbon price, the Addendum nominates a CO₂-e Intensity Index⁸ for the NEM (published by AEMO) with a nominated carbon reference price. In the absence of this form of a CO₂-e Intensity Index, parties who wish to use the Addendum are required to negotiate an outcome, or if an agreement cannot be reached within a certain time period, appoint an independent expert.⁹

As noted, AEMO, following advice from AFMA that the informal NEM Index was used as a key input to inform and support certain commercial trading applications terminated the publication of the informal Index on its website.¹⁰ AEMO specifically considered that the:

- GII was not robust enough in nature to be relied upon for commercial negotiations (the emission factors of individual generators were outdated and those generators which did not have an established emission factors were not included in the GII);
- inaccuracy of the data, as well as the absence of a formal governance arrangement providing AEMO with the role to provide the GII, presented specific risks to AEMO; and
- lack of a formal arrangement also presented risks to potential parties as there was no certainty on the form and continuation of the Intensity Index.

AEMO outlined in the Rule Change Request that industry participants consider that there is no other alternative suitable index available for use which market participants can rely upon and are now seeking that AEMO publish a future CO₂-e Intensity Index for the NEM.

1.3 Solution proposed by the Rule Change Request

Currently there is no formal obligation under the Rules for AEMO to publish information regarding the average carbon intensity of the NEM. In this Rule Change Request, AEMO propose to add a new provision in the Rules for it to publish a NEM

⁶ The over-the-counter contract (OTC) market is part of the financial market. Derivative products that are commonly traded in the OTC market to hedge exposure to electricity spot price are forward contracts.

⁷ AEMO Rule Change Proposal, p.6

⁸ The 2008 and 2009 ACBA references the previous NEM GII published by AEMO. The Index represents the average carbon intensity (expressed as in tonnes of CO₂-e/MWh of generating units (as defined in the NEM)).

⁹ Refer to AFMA Addendum p.18 of AEMO Rule Change Request.

¹⁰ Emission factors used were those provided to AEMO in January 2000 by the relevant Commonwealth government department at the time

² National Electricity Amendment (Publication of a Carbon Dioxide Equivalent Intensity Index for the National Electricity Market)

CO₂-e Intensity Index for use by the market. AEMO consider a formal obligation and framework is required because such an arrangement:

- removes uncertainty as to whether AEMO is the appropriate provider of the NEM CO₂-e Intensity Index and thus provide clarity and the appropriate protections with respect to AEMO's role;
- reduces uncertainty faced by commercial parties, particularly when entering into financial contracts, as to whether a type of NEM CO₂-e Intensity Index will be available in the future;
- formally establishes the form of the NEM CO₂-e Intensity Index for use, and specifies the process to be followed if the if the Index is to be changed;
- clarifies how suitable inputs for the calculation of the NEM CO₂-e Intensity Index should be identified; and
- clarifies whether certain inputs to the NEM CO₂-e Intensity Index are to be treated as confidential.¹¹

The proposed Rule, if implemented, places:

- an obligation on AEMO to calculate and publish a NEM CO₂-e Intensity Index that would represent an approximation of the volume weighted average of the greenhouse gas emissions from all market generating units and scheduled generating units for a specified time period;
- a requirement for AEMO to develop, in consultation with stakeholders¹², publically available procedures that would set out the mechanism for how the CO₂-e Intensity Index is calculated, timing of publication of the Index and the form of emission factors AEMO would use in respect of the market generating units and scheduled generating units. These procedures would also include how any other supplementary intensity indicators would be determined and published;
- a requirement for AEMO to publish and maintain a list of all generating units that have been included in the NEM CO₂- e Intensity Index or supplementary greenhouse intensity indicators, the emission factors and sources used in respect of each generating unit; and
- a requirement for AEMO to include the timing obligations for the NEM CO₂-e Intensity Index in the spot market operations timetable.¹³

11 AEMO Rule Change Proposal, p.7

12 AEMO proposes to undertake stakeholder consultation in accordance with the Rules consultation procedures – rule 8.9 of the NER

13 Clause 3.4.3 of the Rules.

1.4 Commencement of Rule making process

On 23 December 2009, the Commission published a notice under section 95 of the NEL advising of its intention to commence the Rule change process and the first round of consultation in respect of the Rule Change Request. A consultation paper prepared by AEMC staff which identified specific issues or questions for consultation was also published with the Rule Change Request. Submissions closed on 11 February 2010.

The Commission received five submissions on the Rule Change Request as part of the first round of consultation. They are available on the AEMC website.¹⁴ A summary of the issues raised in submissions and the Commission's response to each issue is contained in Appendix A.

The Rule Proponent had requested that the Commission consider expediting the Rule Change Request on the basis that the Rule Change Request was non-controversial because it would provide support for trading in the NEM and does not impose any additional reporting/compliance obligations on generators.¹⁵ The Commission considered that the Rule Change Request was not a request for a non-controversial Rule and therefore decided not to expedite the Rule Change Request under section 96 of the NEL.

1.5 Consultation on draft Rule determination

In accordance with the notice published under section 99 of the NEL, the Commission invites submissions on this draft Rule determination, including a draft Rule, by 17 June 2010.

In accordance with section 101(1a) of the NEL, any person or body may request that the Commission hold a hearing in relation to the draft Rule determination. Any request for a hearing must be made in writing and must be received by the Commission no later than 13 May 2010.

Submissions and requests for a hearing should quote project number "ERC0098" and may be lodged online at www.aemc.gov.au or by mail to:

Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

¹⁴ www.aemc.gov.au

¹⁵ Under section 96 of the NEL, if the AEMC considers that a request for a Rule is a request for a non-controversial Rule or for an urgent Rule, the AEMC may expedite the Rule Change Request process such that the final Rule determination in respect of the relevant Rule must be published 6 weeks from the date of the publication of the notice under section 95 of the NEL.

⁴ National Electricity Amendment (Publication of a Carbon Dioxide Equivalent Intensity Index for the National Electricity Market)

2 Draft Rule Determination

2.1 Commission's draft Rule determination

In accordance with section 99 of the NEL the Commission has made this draft Rule determination in relation to the Rule proposed by AEMO. In this draft Rule, the Commission has determined that it should make, with amendments, the Rule proposed by AEMO.¹⁶

The Commission's reasons for making this draft Rule determination are set out in section 3.1.

A draft of the proposed Rule to be Made (Draft Rule) is attached to and published with this draft Rule determination. The Draft Rule is different from the Rule proposed by AEMO. Its key features are described in section 3.2.

2.2 Commission's considerations

In assessing the Rule Change Request the Commission has considered the following matters:

- the Commission's powers under the NEL to make the Rule;
- the Rule Change Request;
- the fact that there are no relevant Ministerial Council on Energy (MCE) Statement of Policy Principles in relation to this Rule Change Request;¹⁷
- submissions received during first round consultation;
- other relevant processes that intersect with the issues considered under this Rule Change Request; and
- the Commission's analysis as to the ways in which the proposed Rule will or is likely to, contribute to the National Electricity Objective (NEO).

2.3 Commission's power to make the Rule

For the reasons set out below, the Commission is satisfied that the Draft Rule falls within the subject matter about which the Commission may make Rules.

¹⁶ Under section 99(3) of the NEL the draft of the Rule to be made need not be the same as the draft of the proposed Rule to which the notice under section 95 relates.

¹⁷ Under section 33 of the NEL the AEMC must have regard to any relevant MCE statements of policy principles in making a Rule.

Under section 34(1)(a)(iii) of the NEL, the Commission may make Rules for or with respect to regulating “the activities of persons (including Registered participants) participating in the national electricity market or involved in the operation of the national electricity system”. AEMO participates in the national electricity market. The Draft Rule seeks to regulate the activities of AEMO in so far as it requires AEMO to, among other things, develop, review and update a carbon dioxide equivalent intensity index. AEMO’s activities under the Draft Rule are associated with its participation in the NEM because the carbon dioxide equivalent intensity index is calculated by AEMO, in part, on the basis of metered energy data collected by AEMO in its role as operator and administrator of the wholesale exchange.

Separately, under section 34(1)(b) of the NEL, the AEMC may make Rules for or with respect to “any matter or thing contemplated by this Law, or is necessary or expedient for the purposes of this Law”.

What matters are “contemplated by” the NEL is guided by consideration of the NEO, as the NEO sets out the objectives of the NEL.

The NEO is set out in section 7 of the NEL and states:

“The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—

- (a) price, quality, safety, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system.”

For the reasons set out in section 2.4 below, the Commission considers that the Draft Rule will contribute to the achievement of the NEO and is therefore a matter contemplated by the NEL.

2.4 Rule making test

Under section 88(1) of the NEL the Commission may only make a Rule if it is satisfied that the Rule will, or is likely to, contribute to the achievement of the NEO. This is the decision making framework that the Commission must apply.

For the Rule Change Request, the Commission considers that the relevant aspect of the NEO is promoting efficient investment in, and efficient operation of, electricity services for the long term interests of consumers with respect to price and reliability of supply of electricity.¹⁸

The Commission is satisfied that the Draft Rule will, or is likely to, contribute to the achievement of the NEO because the Draft Rule provides clarity to AEMO to on its role

¹⁸ Under section 88(2) of the NEL, for the purposes of section 88(1) of the NEL, the AEMC may give such weight to any aspect of the NEO as it considers appropriate in all the circumstances, having regard to any relevant MCE statement of policy principles.

and to provide the Index and reduces the administrative costs burden between market participants by providing for a reliable, transparent and consistent Index which can be used to inform commercial decision making in the NEM.

The Draft Rule also supports a greater level of certainty and predictability regarding the availability of a CO₂-e Intensity Index in the future, which will assist to reduce the existing uncertainty and risks for market participants to settle forward electricity contracts that seek to take account of the price risks associated with the proposed CPRS. The Draft Rule therefore is likely to support liquidity in forward electricity contracting, which in turn promotes efficient pricing in the wholesale spot market and encourage investment certainty in electricity services in the NEM. These are both essential to supporting competition in the market so as to deliver more efficient prices to consumers.

Under section 91(8) of the NEL the Commission may only make a Rule that has effect with respect to an adoptive jurisdiction if satisfied that the proposed Rule is compatible with the proper performance of AEMO's declared network functions. The Draft Rule is compatible with the proper performance of AEMO's declared network functions because it has no impact on AEMO's declared network functions.

3 Commission's reasons

The Commission has analysed the Rule Change Request and assessed the issues/propositions arising out of this Rule Change Request. For the reasons set out below, the Commission has determined that a Rule should be made. Its analysis of the Rule proposed by AEMO is also set out below.

3.1 Assessment

As outlined in Section 1.2, the Rule Change Request seeks to introduce a new governance arrangement under the Rules for AEMO to develop, maintain and publish a CO₂-e Intensity Index for the NEM.

The Commission notes industry views that a CO₂-e Intensity Index is required to provide market participants with information to inform and support commercial outcomes in the NEM, specifically to account for the uncertainty and the impact of a future price on carbon, should one be present in the future, on wholesale electricity prices, when settling forward electricity contracts.

The Commission recognises that under the existing ACBA, market participants would, in the absence of a CO₂-e Intensity Index need to negotiate an outcome, or where disputes arise appoint an independent expert to settle their contracts . This is presenting further uncertainty for market participants and as a result likely to result in additional risks and costs which market participants are likely to price into their contracts, and thus pass onto consumers. It is also noted that these separate processes may not provide for the most accurate information regarding the average carbon intensity of generation in the NEM, which is likely to result in inefficiencies with respect to determining the appropriate uplift due to carbon on wholesale electricity prices.

The provision of a CO₂-e Intensity Index for the NEM is therefore likely to promote efficiency benefits in the NEM. The Index represents the optimal information needed to determine the likely uplift due to carbon on future wholesale electricity prices and the need for market participants to engage in separate, and costly, bilateral negotiations to determine the required value of the average carbon intensity of generation in the NEM would not be required. This is likely to provide confidence to market participants to trade and settle forward electricity contracts, which is therefore likely to result in more efficient pricing in wholesale electricity market. The provision of a CO₂-e Intensity Index therefore is also likely to encourage investment certainty in the NEM.

Currently there is no obligation under the Rules for the provision of information relating to the carbon intensity of generators in the NEM. The Commission considers that a Rule is required to provide a clarity regarding the provision of an Intensity Index by AEMO, enhance transparency regarding the processes which underpin the development of the Index and ensure reliability is maintained over time to inform more efficient outcomes in the NEM. The Rule also seeks to promote certainty and predictability for market participants regarding the availability of a suitable Intensity

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Index in the future so as to settle forward electricity contracts that take account of the uncertainty related to the proposed CPRS.

3.2 Draft Rule

The Draft Rule proposed by AEMO, in terms of its policy intent has been adopted by the Commission. The Commission has made some amendments to the Draft Rule that seek to provide the guidance on the factors to be considered when developing and publishing the CO₂-e Intensity Index.

The Draft Rule incorporates the Rule as proposed in the Rule Change Request including the requirements for AEMO to:

- develop, review, amend and publish a CO₂-e Intensity Index for the NEM that represents the volume weighted average of the carbon dioxide equivalent greenhouse gas emissions from all scheduled generating units and market generating units for the relevant time interval;
- develop procedures for the Index in consultation with stakeholders, that outline the methodology for calculating the Intensity Index; the form of emission factors and energy measurements used (i.e. sent out emission factors and energy data); methodology for estimating any emission factors where the emission factors for the relevant generation units are not publicly available; and the time intervals for which the index is to be published and reviewed;
- publish the procedures and information relating to the relevant generating units used in the calculation of the Intensity Index. AEMO must also publish the relevant emission factors used, with their appropriate source – these are to be updated as appropriate or when AEMO is formally advised if emission factors have changed; and
- modify the timetable to include the time intervals in which AEMO must publish the CO₂-e Intensity Index.

The Draft Rule also incorporates the provision for AEMO to develop and publish supplementary indicators, where these relate to a subset of the relevant generating units included in the CO₂-e Intensity Index. The same provisions provided above would apply to these supplementary indicators.

The Draft Rule also incorporates guidance to AEMO with respect to maintaining an appropriate level of accuracy and reliability of the relevant data sources to calculate the Index, particularly with respect to how the emission factors of individual generators are sourced and/or determined by AEMO. The Draft Rule provides that AEMO is to have regard to the appropriate guidelines for calculation methods of emission intensity factors for generators under the Australian Governments National Greenhouse and Energy Reporting System framework to ensure that there is the appropriate level of consistency with national approaches for deriving emission factors.

4 Commission's analytical framework

This chapter describes the analytical framework that the Commission has applied to assess the Rule Change Request in accordance with the requirements set out in the NEL (and explained in Chapter 2).

4.1 General analytical framework

As noted in section 2.4, the Commission may give such weight to any aspect of the NEO as it considers appropriate in all the circumstances. For this Rule Change Request, the Commission considers it appropriate to give weight to the following aspect of the NEO: efficient investment in, and efficient operation of electricity services for the long term interests of consumers with respect to price, reliability of supply of electricity.

Economic efficiency is a concept central to the NEO. As the Commission has discussed in relation to previous Rule change requests, economic efficiency is commonly considered to have three elements:

- Productive efficiency - e.g. the electricity market should be operated on a least cost basis given the existing and likely network and other infrastructure;
- Allocative efficiency - e.g. electricity generation and consumption decisions should be based on prices that reflect the opportunity cost of the available resources; and
- Dynamic efficiency - e.g. ongoing productive and allocative efficiency should be maximised over time. Dynamic efficiency is commonly linked to the promotion of efficient long-term investment decisions.

In the context of regulated energy markets, a relevant consideration is the extent and form of market intervention. Interventions in the operation of the market should be minimised. This enables resources to be allocated primarily on the basis of prices established through market mechanisms, hence supporting productive, allocative and dynamic efficiency.

The Commission also seeks to apply principles of good regulatory design and practice. In applying these principles, the Commission seeks to have regard to the need, where practicable to:

- promote stability and predictability - market Rules should be stable, or changes to them predictable, so that participants and investors can plan and make informed short and long-term decisions; and
- promote transparency - to the extent that intervention in the market is required, it should be based on, and applied according to, transparent criteria.

4.2 Application of analytical framework for the Rule Change Request

In the present circumstances the application of this analytical framework has involved focussing on the following issues, the:

- role of a standardised NEM CO₂-e Intensity Index and the potential benefits of such an Index for promoting efficiency in the NEM;
- provision of a NEM CO₂-e Intensity Index by AEMO and proposed governance framework under the Rules for the publication of the Intensity Index.

The Commission has focussed on this set of issues because:

- these issues relate to whether a regulatory obligation is required for AEMO to develop and publish a CO₂-e Intensity Index in the NEM; and
- are considered by the Commission to be of material significance as to whether or not the proposed Rule would meet the Rule making test.

In addition to the elements of the statutory Rule change process adhered to by the Commission, the application of the Commission's analytical approach in this instance has involved the following tasks and methods:

- bilateral consultation with stakeholders, including AEMO, AFMA and Australian Government Department of Climate Change and Energy Efficiency on the issues raised in this Rule Change Request; and
- reviewing existing national protocols/approaches pertaining to greenhouse and energy reporting.

5 Role and potential benefits of a Carbon Dioxide Equivalent Intensity Index in the NEM

In this Rule Change Request, AEMO has proposed to include a new provision in the Rules for it to publish a CO₂-e Intensity Index for the NEM. In order to assess whether the Rules should provide for the publication of a NEM CO₂-e Intensity Index, the Commission has considered the role of the Intensity Index in the market and how provision of such an Index is likely to promote efficiency in the NEM.

5.1 Rule Proponent's view

In the Rule Change Request, AEMO stated that a CO₂-e Intensity Index is required to provide a standard reference point regarding the average carbon intensity of generation in the NEM for a specified time period (i.e. a day or a week). AEMO noted that this information is specifically sought by market participants to determine the mark up on a contract due to carbon (if a carbon price should be present) in the settlement of forward electricity contracts.¹⁹

5.2 Stakeholder's views

Stakeholders noted the importance of a singular CO₂-e Intensity Index to guide energy and financial transactions and allow market participants and other relevant parties assess the likely future costs and benefits of carbon-inclusive pricing of electricity. Stakeholders generally considered that the provision of a CO₂-e Intensity Index for the NEM will streamline existing processes, ensure that an optimal approach is taken to price in potential future carbon costs and reduce the ongoing uncertainty faced by market participants. Stakeholders generally considered the provision of the Index therefore will contribute to liquidity of forward electricity markets, thus providing for efficiency benefits in the wholesale market.

5.3 Commission's analysis

The Commission recognises that any CPRS is likely to have a significant impact on wholesale electricity prices, and that this impact is largely dependant on the likely future price of carbon. The Commission notes that the ongoing policy uncertainty related to the CPRS is presenting specific challenges to market participants regarding their ability to manage the price risks associated with a future price on carbon on NEM pool prices, particularly in negotiating and settling forward electricity contracts. This as a result is also causing some level of investment uncertainty in the NEM.

The Commission notes that whilst forward contracting operates outside the Rules, it is inextricably linked to the efficient operation of the NEM. Forward contracting effectively provides a tool for market participants to manage the financial risks associated with the significant degree of spot price volatility in the NEM. Contracting

¹⁹ AEMO Rule Change Proposal, p.5.

¹² National Electricity Amendment (Publication of a Carbon Dioxide Equivalent Intensity Index for the National Electricity Market)

also helps signal the need for new investment through converting the expected future spot market prices into a financial instrument that can be used to underwrite an investment decision. Liquidity in the financial electricity market therefore is important to promote efficient pricing in the wholesale market and assist to inform efficient investment decision making in the NEM

The Commission understands that the Carbon Addendum developed by AFMA to its existing over the counter documentation is generally considered by stakeholders as a suitable tool to manage the ongoing policy uncertainty and is an equitable method of offsetting windfall gains and losses arising from the impact of carbon on NEM pool prices. The Commission also notes that the ACBA references the provision of a NEM CO₂-e Intensity Index (as published by AEMO)²⁰ as one of the key determinants to price in the uplift due to determine the uplift due to carbon on a contract.

Currently stakeholders consider that there is not a suitable Index available for use or to rely upon when settling forward contracts that utilise the Addendum. As a result, in the absence of a suitable Index, market participants are required to enter into separate bilateral negotiations and/or appoint an independent expert if an agreement cannot be reached within a specified time period.²¹ It is considered by stakeholders that this presents even greater uncertainty and additional risks and costs for market participants to enter into these contracts.

The Commission considers that the provision of standard NEM CO₂-e Intensity Index is likely to promote more efficient outcomes. This is because the Intensity Index provides market participants and the market with a more informed view of the likely uplift, due to a future price of carbon on wholesale electricity prices - the Index represents the average carbon intensity of generation in the NEM over a specified time period, which would be consistent with the dispatch and settlement outcomes of the wholesale spot market. The information would also be available to all market participants, which is likely to provide for greater transparency with respect to determining impact of carbon on wholesale electricity prices. In addition, the likelihood of different and multiple values used which seek to represent the carbon intensity of generation in the NEM would be reduced as market participants would not need to engage in separate bilateral process or to appoint an independent expert. As a consequence, the provision of a standardised CO₂-e Intensity Index is likely to promote more efficient pricing in the wholesale spot market, and therefore prices paid by consumers. It is likely that that greater investment certainty will also be provided.

5.4 Commission's conclusion

The Commission recognises that the provision of a CO₂-e Intensity Index which provides standard and consistent information about the average carbon intensity of the NEM is likely to inform and support commercial outcomes in the NEM, specifically to

²⁰ The 2008 and 2009 ACBA references the previous NEM GII published by AEMO. The Index represents the average carbon intensity (expressed as in tonnes of CO₂-e/MWh of generating units (as defined in the NER)).

²¹ Refer to AFMA Addendum p.18 of AEMO Rule Change Request.

facilitate the trade and settlement of forward electricity contracts which account for the policy uncertainty related to the proposed CPRS. A NEM CO₂-e Intensity Index is therefore likely to support liquidity in the financial electricity market which in turn is likely to promote efficiency with respect to the operation of, and investment in, electricity services.

6 Provision of a CO₂-e Intensity Index for the NEM by AEMO and proposed governance framework under the Rules

This chapter sets out the Commissions considerations regarding the provision of the desired CO₂-e Intensity Index for the NEM by AEMO and the need for a governance arrangement and framework under the Rules.

6.1 Rule Proponent's view

As discussed in section 1.3, AFMA has requested that AEMO produce and publish a CO₂-e Intensity Index for the NEM as currently it is considered that there is no suitable CO₂-e Intensity Index available for which market participants can rely upon and use in following the termination of an equivalent index on AEMO's website in April 2009.²²

AEMO consider that for it to publish a suitable future CO₂-e Intensity Index for the NEM, a formal governance arrangement is required under the Rules. AEMO consider that this arrangement is necessary as it would: remove uncertainty as whether AEMO should provide the Index; provide the appropriate guidance and protections to carry out the role; and provide increased transparency and certainty for market participants regarding the form and availability of a CO₂-e Intensity Index in the future.²³

AEMO have proposed a framework in the Rules which would specify the requirements for it to calculate and publish the Intensity Index. Such requirements include the development of detailed procedures²⁴ that would set out the desired methodology, form of data inputs to be used and what information should be publically available. The framework as provided by AEMO does not propose to impose any administrative/compliance costs on market participants as AEMO intends to use publically available emission factors and use internal systems for retrieving the relevant energy data.²⁵

AEMO indicated that, therefore, the costs and the administrative burden to produce and publish the Index would be on AEMO with costs being passed on to market participants. It was noted however that this administrative burden would not be large as development activities would leverage, to the extent possible, off the earlier design of the previous Intensity Index published and established market information systems.²⁶

²² AEMO Rule Change Proposal, p.5.

²³ AEMO Rule Change Proposal, p.7.

²⁴ This would be in accordance with the Rules consultation procedures – rule 8.9 of the Rules.

²⁵ AEMO Rule Change Proposal, p.8.

²⁶ AEMO Rule Change Proposal, p.10.

6.2 Stakeholder's views

Stakeholders generally considered AEMO was the appropriate body to provide required CO₂-e Intensity Index for the NEM given its access to the most accurate metered energy data (which is the changing variable for the Index), its ability to source and update individual generators emission factors, and that existing processes which were used to develop the previous equivalent intensity index could be used and built upon.

Stakeholders also considered that the Rules should provide for the calculation and publication of the proposed Intensity Index by AEMO. Stakeholders considered that a formal and transparent framework which outlined the principles and objectives for the Index would reduce existing uncertainty faced by market participants and enhance transparency of information available to all market participants. It was noted that such a framework is likely to enhance the transparency of electricity contract pricing in the NEM, which is likely to promote efficient operation of both physical and financial electricity markets.

Stakeholders raised a number of key issues with respect to the proposed framework for AEMO to calculate and publish the Intensity Index. Generally stakeholders considered that:

- the data inputs to calculate the Index should be sufficiently reliable and accurate, but should not impose considerable regulatory burden on NEM participants;
- specific emission factors for individual generators should be sourced from public sources where possible, as long as these are updated as appropriate. It was noted that the emission factors should maintain an appropriate level of consistency with existing national greenhouse and energy measurement and reporting processes²⁷;
- any procedures developed to support the publication of the Index should be sufficiently transparent, available to the public and provide flexibility for AEMO to review and update accordingly; and
- generally a daily CO₂-e Intensity Index is appropriate as this would provide for greater flexibility for market participant to apply in their contracts based on their individual circumstances.

The Commission has considered these issues in assessing the proposed framework that may be included under the Rules. The relevant issues and comments by stakeholders are outlined in the submissions summary provided in Attachment A.

²⁷ The national reporting system for greenhouse and energy reporting will be utilised as the national system that will be used to support reporting requirements under the CPRS.

¹⁶ National Electricity Amendment (Publication of a Carbon Dioxide Equivalent Intensity Index for the National Electricity Market)

6.3 Commission's analysis

In determining whether a new governance arrangement under the Rules is required for AEMO to develop a CO₂-e Intensity Index, the Commission has had regard to the existing national regulatory reporting instruments that underpin climate change policies as these are the primary mechanisms that provide for greenhouse gas emission and energy data.

6.3.1 National Greenhouse and Energy Reporting System

The Commission notes that the Australian Government has introduced a National Greenhouse and Energy Reporting System (NGERs) that provides a national approach for greenhouse and energy reporting. This reporting system encompasses the *National Greenhouse and Energy Reporting Act 2007* (Cth) (NGER Act), which establishes the mandatory corporate reporting system for greenhouse gas emissions, energy consumption and production. It is noted that the NGER system will also support the reporting obligations of businesses under the proposed CPRS.

The NGER Act mandates that corporations with greenhouse gas emissions or energy consumption or production above a certain specified threshold, must report the relevant greenhouse and energy data to the appropriate designated authority, i.e. the Australian Government Department of Climate Change and Energy Efficiency (DCCEE). The data is reported by registered corporations at the end of each relevant financial year and is made available to all relevant Australian Government, state and territory officials nominated under the NGER Act. Aggregate level greenhouse and energy information of the relevant facilities who report into NGERs is released publically, generally in the second quarter, after the end of the appropriate reporting financial year.

To calculate a CO₂-e Intensity Index that represents an approximation of the average of the greenhouse gas emissions from all market generating units and scheduled generating units operating in the NEM over a specified time period, two important data sources are required. Firstly, the emission factors of individual generators²⁸, and secondly the relevant energy data of those relevant generators. The time period sought is for example a week or day of operation of the NEM, therefore specific operational data is required.

The Commission notes NGERs was designed to provide annual greenhouse and energy production data and is based on facility level information (i.e. that is, the emissions/energy production/consumption for the whole site of the facility). To derive the required value for the Index, significant manipulation of the greenhouse and energy data reported under NGERs would be required. In addition, significant amendments would be needed to the existing online reporting tool to extract the

²⁸ Emission factors representing the amount of greenhouse emissions per unit of electricity (t CO₂-e/MWh) of energy produced by each generator).

appropriate information. This is likely to impose significant costs as a result. Further, any data that may be reported publically is likely not going to be provided in a timely manner for market participants due to the end of year financial reporting requirements.

The Commission also notes that to publish the required information, changes to relevant legislation would be required. Firstly, with respect to the relevant emission factors of individual generators, these are currently commercial in confidence under the NGERs. Secondly, timely and sufficiently accurate energy data would need to be sourced from AEMO. Metered energy data is also currently treated as confidential information under the Rules. Changes to legislation are likely to involve lengthy processes and be subject to the objectives of each of the legislative instruments.

The Commission, taking into account the relevant issues, is therefore of the view that the use of the NGER reporting mechanism is not likely to be fit for purpose, in this instance, to provide a NEM CO₂-e Intensity Index for the market that could be relied upon to settle forward electricity contracts which utilise the existing Carbon Addendum.

6.3.2 Provision of a governance arrangement under the Rules

The Commission notes that an Intensity Index provided by AEMO is considered the preferred option for the market as this is likely to result in the most reliable and robust information for market participants to rely upon regarding the average carbon intensity of generation in the NEM. The Commission also notes stakeholder views that AEMO has access to accurate metered energy data and the appropriate emission factors of generators which it gathers through other market reporting functions.

The Commission is of the view that AEMO is the appropriate body to provide the Intensity Index as alternative market approaches are not likely to deliver the most efficient outcomes in the NEM and are also likely to present greater risks and thus costs for market participants. The provision of an Index in the market may not provide sufficiently reliable or transparent information and may impose costs if required to report information directly. There is also a risk that such an Index may not be representative of all generators in the NEM, if the data is not available in the public domain and/or generators do not wish to report their energy or emission factors data. In addition there may not be sufficient incentives for generators to provide accurate data over time, or for the Index to be available in the future. Further, the Commission considers that there also may be risks of multiple indices being published in response to the different stakeholders needs i.e. informing climate change policy outcomes. This is likely to result in inaccurate and different data being available and thus inefficiencies with respect to market participants determining the efficient future price of electricity.

Currently there is no regulatory obligation for AEMO to provide a CO₂-e Intensity Index, nor do the Rules provide for such information to be published generally.

As discussed in Chapter 5, the role and need for a NEM wide CO₂-e Intensity Index is to provide suitable information about the carbon intensity of generation in the NEM so as to assist market participants settle forward electricity contracts, which take account

of the uncertainty related to the proposed CPRS on NEM pool prices. The Commission considers therefore that the benefit and value of a CO₂-e Intensity Index to market participants and for promoting efficiency in the NEM, will be a function of the quality and appropriate level of data accuracy; and the certainty provided to market participants.

The Commission therefore considers that the inclusion of a framework in the Rules that sets out the intent of the Index and requirements for calculating and publishing the Intensity Index is likely to deliver a greater level of efficiency in the market and certainty for market participants than in the absence of such an arrangement. This is because a formal arrangement would provide a greater level of guidance on ensuring and maintaining reliability and accuracy of the data inputs over time, enhance transparency with respect to how the Index is calculated and provide certainty and predictability for market participants regarding the availability of the Index in the future. The Commission also considers that it is appropriate that sufficient clarity is provided to AEMO regarding its role given the proposed use of the Index in commercial applications.

6.3.3 Proposed framework to develop and publish the CO₂-e Intensity Index

AEMO have proposed a framework to develop a CO₂-e Intensity Index for the NEM. The Commission has considered this framework having regard to the need to ensure a robust Index for which market participants can rely upon and the level of administrative/regulatory burden placed on AEMO and NEM participants. These issues are discussed further below.

Information requirements for calculating the Intensity Index

As noted, to calculate the CO₂-e Intensity Index, specific emission factors of individual generators and the volume of metered energy (in MWh) for those generators is required. The proposed framework by AEMO does not seek to have any explicit powers that would require generation businesses to provide information, specifically with respect to the relevant emission factors of individual generating units. AEMO indicate that emission factors would be sourced from publically available sources and where an explicit emission factor in respect of a particular generating unit cannot be found, AEMO anticipates that it would need to determine an estimate of the data. The means of estimation would be determined through the proposed stakeholder consultation process and included in the procedures supporting the Index. AEMO note that energy data would be sourced from its metering databases.

The Commission considers that it is important that reliable and sufficiently accurate data inputs are sourced and derived by AEMO to calculate the Index. This is important to maintain the level of accuracy of the index over time which is in turn important for promoting allocative efficiency outcomes. The Commission understands that AEMO has access to sufficiently reliable data sources with respect to emission factors of

generators, and maintains the most accurate metered energy data. Whilst the Commission considers that flexibility should be provided to AEMO regarding the relevant form of data required (i.e. sent out energy data/emission factors) and the methodology for calculating emission factors, the Commission has determined to include some guiding principles which AEMO should consider when deriving the relevant data inputs. These principles relate to maintaining reliability of the data inputs, ensuring appropriate level of consistency with national guidelines for deriving emission factors of generators, and ensuring the Index is updated in accordance with changing circumstances.

Methodology

AEMO propose to develop detailed procedures in consultation with stakeholders that would set out the methodology for publishing of the Index. The Commission considers that there should be flexibility with respect to the determining the mechanism for which the Intensity Index is calculated. This is likely to reduce the regulatory burden on AEMO and thus costs to derive the Index. It is noted, however, that there is the appropriate level of transparency and certainty for market participants regarding the methodology and the parameters for which the Intensity Index is published. Therefore the Commission has decided to include the key parameters for which AEMO should include in the procedures, and the information that should be made publically available.

Publication and Review

AEMO did not propose the time period for which a NEM CO₂-e Intensity Index would be published. The Commission notes that some stakeholders raised the need for a weekly or monthly index. The Commission notes that a daily index is likely to provide the appropriate level of flexibility for market participants to determine the appropriate value needed to settle forward electricity contracts, however has not proposed to provide the time period for which the Index should be provided. The Commission is of the view that the frequency for which the Intensity Index is published can be determined by AEMO, in consultation with stakeholders and specified in the procedures. The Commission notes that some stakeholders and AEMO considered the need for supplementary intensity indicators. The Commission considers that it is appropriate for AEMO to derive and publish such information where this is a subset of the data in the CO₂-e Intensity Index. The Commission considers that the procedures would set out both information and methodology in the event that this information is required by market participants.

6.4 Commission's Conclusion

The Commission considers that inclusion of a formal framework in the Rules for AEMO to develop, maintain and publish a CO₂-e Intensity Index would ensure that the relevant considerations are taken into account when developing and publishing the Intensity Index. It would also ensure that there is guidance on the need to use

sufficiently reliable and accurate data sources, and the reliability and relevance of the Index is maintained over time. The inclusion of a framework in the Rules will also enhance the transparency of information and methodology used to calculate the Index which will provide confidence to market participants and other parties regarding the form and availability of the Index in the future. The Commission considers that such an arrangement is likely to benefit market participants, and will provide the certainty to settle forward electricity contracts. This is likely to promote liquidity in the electricity financial market, which in turn is likely to promote more efficient pricing in wholesale market and create a greater level of investment certainty. Therefore the Commission considers that the proposal is likely to contribute to the achievement of the National Electricity Objective.

Abbreviations

ACBA	Australian Carbon Benchmark Addendum
AEMC or Commission	Australian Energy Market Commission
AER	Australian Energy Regulator
AFMA	Australian Financial Markets Association
CPRS	Carbon Pollution Reduction Scheme
GII	Greenhouse Intensity Index
MCE	Ministerial Council on Energy
MWh	megawatt hour
NEM	National Electricity Market
NEO	National Electricity Objective
NER or Rules	National Electricity Rules
NGERs	National Greenhouse and Energy Reporting System
OTC	over-the-counter contract

A Summary of issues raised in submissions

Stakeholder	Issue	AEMC Response
AGL	Supports proposed Rule change - considers Rule change will assist the wholesale electricity market transition to inclusion of carbon costs; will lead to streamlining within standard contracts applicable to wholesale electricity that are being written and traded prior to the proposed introduction of the CPRS; and support an open and competitive wholesale contract market that is not distorted by sub-regional characteristics - optimal way to price in uplift due to carbon as reflects the competitive wholesale market operation.	Noted. Analysis notes issues relating to the role of CO ₂ -e Intensity Index for the NEM and difficulties faced by market participants associated with pricing carbon in forward electricity contracts.
AGL	Consider AEMO is the most appropriate body to provide Index, given they house the most accurate data with respect to market dispatch within in the NEM.	Noted. Analysis of alternative arrangements suggests that these are not likely to be fit for purpose or maintain level of accuracy and transparency which could be provided by AEMO.
AGL	Supports inclusion of a governance framework in the Rules for AEMO to develop and publish the required Index. Provides clarity to AEMO of its Role to publish the Index and reduces uncertainty faced by market participants which will contribute to liquidity of the forward electricity markets. A formal structure regarding calculation and publication frequency establishes an informed view of the key input into future electricity costs.	Noted. Analysis suggests that inclusion of a formal arrangement in the Rules would provide clarity, improve transparency of information on likely price impacts of carbon for future electricity costs and is likely to reduce the existing uncertainty faced by market participants.
AGL	Notes AEMO proposal to source emission factors of generating units from publically available information. Supports an approach that imposes	Noted. There is a need to ensure appropriate level of accuracy and relevance of data inputs for deriving the intensity index to ensure delivering of appropriate benefits for market participants and the NEM.

Stakeholder	Issue	AEMC Response
	least administrative burden for market participants and AEMO. Considers inputs to NEM CO ₂ -e Intensity Index do not need to be treated as confidential.	Draft Rule does not propose to impose administrative/regulatory burden on NEM participants, however guidance to AEMO has been included in the Draft Rule for deriving and sourcing emission factors.
AGL	Considers that there is review processes to ensure that NEM CO ₂ -e Intensity Index emission factors used do not stray from data used in national greenhouse accounts - index with emission factors that stray from national emissions and measuring reporting process may result in cost-pass through occurring that is not reflective of market costs (and emissions).	The risks of multiple sources of emission factors is noted. Guidance to AEMO relating to methodology for calculating and sourcing emission factors of individual generators has been included in the Draft Rule.
AGL	Considers a weekly NEM CO ₂ -e Intensity Index is reasonable for commencing publication, however notes that the frequency should be subject to review based on market feedback and behaviour.	The flexibility required for market participants to utilise information in the Index accordingly to their individual needs is noted. The timing of publication of the Index, whether weekly or daily is to be established and specified by AEMO when developing procedures for the Intensity Index.
Clayton Utz	Supports proposed Rule change - considers publication of Index is important to transparency and stability of price in the NEM for NEM participants and ultimately consumers. Will assist to stabilise electricity derivatives by providing information needed to make assessment of likely future costs and benefits of carbon-inclusive pricing of electricity.	Noted.
Clayton Utz	Supports approach of compiling Index on basis of publicly available information as proposed by AEMO. Considers information sufficiently reliable allows AEMO to prepare Index without imposing additional compliance obligations on NEM	Noted and agreed. Draft Rule incorporates guidance for maintaining appropriate level of accuracy of data inputs to calculate the Intensity Index.

Stakeholder	Issue	AEMC Response
	participants.	
Clayton Utz	Supports publication of list of generating units, information/methodology used to calculate Intensity Index. Consider detailed procedures should provide for corrections to index to be made as soon as possible.	Agreed. There is a need to maintain transparency with respect to processes to calculate intensity Index. Draft Rule incorporates provisions for the development of procedures that provide requirements to calculate, update and publish the Intensity Index. These procedures are to be published and updated as appropriate.
Clayton Utz	Propose an amendment to proposed Rule to clearly allow AEMO publish more than one Index, i.e. weekly or monthly index. Most retail energy contracts operate on a monthly or quarterly billing cycle, a monthly intensity Index would assist in pass through of carbon values under those contracts.	Noted. Draft Rule provides for AEMO to publish supplementary indicators. The timing to publish the CO ₂ -e Intensity Index and supplementary indicators is to be determined by AEMO in consultation with stakeholders.
Ergon Energy	Supports AEMO to maintain, update and publish the Index with an explicit obligations under the Rules.	Noted.
Ergon Energy	Consider the need for detailed specification by AEMO in the procedures to be developed as to the means by which emission factors are to be derived and the nature of publically available information that may be relied upon, and estimation methodology to be applied in the absence of verified data.	Agreed. See comments above.
National Generators Forum	Supports development of a generic but robust Intensity Index for use by market participants and related financial institutions based on individual power station emission intensities and energy generated or sent out. Consider it appropriate for the calculation and publication of the Intensity	Noted.

Stakeholder	Issue	AEMC Response
	Index to be provided for in the Rules. A transparent approach using appropriate inputs provides most cost effective and consistent way of developing and reporting the Index on a periodic basis.	
National Generators Forum	Consider AEMO appropriate body to provide the Index, given access to accurately metered generated and sent out energy data which is the key changing variable. AEMO is well placed to obtain/update necessary emission factors.	Noted.
National Generators Forum	Supports use of transparent publically available individual power station CO ₂ -e Intensities (emission factors) which is updated regularly (annual or more frequently basis).	Noted. See commentary above
National Generators Forum	Consider a daily Index is appropriate as provides most flexibility and allow parties to apply data according to their needs.	Noted. See commentary above.
Origin Energy	Consider that it is important for stakeholders to have confidence in data sourced from publicly available sources of information for emission factors. Propose that consideration is given to determining appropriate information required, need for appropriate level of confidentiality.	Agreed.
Origin Energy	Consider methodology to calculate the Index is best included in procedures. This would provide AEMO with appropriate flexibility to improve approach/inputs accordingly.	Agreed. Draft Rule provides for development of detailed procedures which will include the methodology for how the Intensity Index is calculated, and how/timing of processes and inputs are to be updated.
Origin Energy	Considers that there is consistency between the Intensity Index derived by AEMO and the	Noted. Draft Rule provides guidance on the need for emission factors derived or sourced to have regard to national greenhouse reporting

Stakeholder	Issue	AEMC Response
	<p>information which Australian Government proposes to use for determining level of generator compensation as part of proposed CPRS. Maintaining appropriate level of consistency ensures that there is minimal potential for unintended wind-fall gains and loses.</p>	<p>processes/guidelines.</p>
Origin Energy	<p>Without the presence of an Index, parties are required to agree on the average carbon intensity, or defer to a Independent Expert. Imperative that Index is operational prior to a CPRS, and thus the implementation period for producing first index should be as soon as practicable.</p>	<p>The purpose of CO₂-e Intensity Index is noted and its relevance relates to the fact that there is not an established carbon price to inform decision making on future price of electricity under a CPRS. The draft Rule indicates that the timing of publication of first Intensity Index is to be as soon as practicable after detailed procedures are to be published. Detailed procedures are to be developed and published at least by twelve months after the commencement date of the amending Rule.</p>