

This contract implements the Government's commitment to investigate the energy market and transmission planning implications of moving towards 100% renewable energy.

The Australian Energy Market Operator (AEMO) must provide a report to the Government addressing the following scope:

100% RENEWABLES STUDY – SCOPE

Purpose

The Government announced its Clean Energy Future Plan in July 2011, which foreshadowed that the Government would ask AEMO to expand its planning scenarios to include further consideration of energy market and transmission planning implications of moving towards 100 per cent renewable energy. AEMO has held discussions with the Department of Climate Change and Energy Efficiency (DCCEE) and the Department of Resources, Energy and Tourism (RET) to prepare a scope for such a study.

This document sets out the scope of an initial study of potential 100% renewables electricity generation mix scenarios at 2030 and 2050.

Scope

The form of a 100% renewable scenario for this period is inherently uncertain, due to uncertainty around the types of technology that could emerge in the intervening 40 years, the cost of those technologies and the potential for regulatory change in that timeframe. There are also uncertainties around the strength of growth in energy demand and the load profile of the network. The proposed study also extends well beyond the scope of AEMO's National Transmission Network Development Plan (NTNDP) which has a 20 year horizon.

With those limitations in mind, the objective of this study is to develop some scenarios which could shed light on generation and transmission network outcomes, for 100% renewable electricity generation in the National Electricity Market (NEM) at 2030 and 2050.

The Deliverable will be a report to be provided to DCCEE and RET. The report will contain:

- Scenarios for a 100% renewable electricity supply at 2030 and 2050.
- Generation plant and major transmission networks required to support each scenario.
- The estimated capital cost requirements for each scenario based in today's dollars; and
- An indicative estimate of the impact on customer energy prices.

This report will not model the year-to-year transition to 100 per cent renewable electricity supply for any of the scenarios.

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| | | and reliability standard assumptions. |
| 3 | Develop Capacity Requirements | Determine the generation portfolio required under each scenario and the level of storage necessary to reliably meet demand. |
| 4 | Develop Transmission requirements | Determine the impacts on the shared transmission network and project the likely scale of investment requirements under each scenario. |
| 5 | Develop total capital cost requirements | Total capital cost requirements will be developed for each scenario and include indicative estimation of impact on energy price outcomes for consumers. Costs will be presented in net present value terms, where appropriate. |

Assumptions

| Assumption | Description |
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| Stakeholder engagement | <p>The project may be undertaken in consultation with industry, academia and other stakeholders.</p> <p>An information forum will be hosted by DCCEE on the inputs to the modelling once a report detailing the inputs has been provided by AEMO and published by DCCEE. The purpose of this forum will be to provide information to stakeholders on the inputs and assumptions being used for the modelling.</p> <p>A consultation forum to test the draft results will be hosted by DCCEE and RET following the release of the draft report. It is envisaged there will be a single consultation.</p> |
| Publication | <p>The scope will be published by DCCEE at the start of work.</p> <p>A document detailing the inputs to the analysis will be published by DCCEE when finalised by AEMO.</p> <p>It is envisaged that the draft report be publicly released and, following consultation, the final report will be made available on DCCEE's website.</p> |
| Coverage | The interconnected NEM only will be covered in the analysis by AEMO (ie not WA and NT). |
| Commentary | The report will include no "finding" or recommendation based on the results of the study. In particular, the study will not be expressing a view as to the viability of achieving 100% renewable electricity supply by 2030 or 2050. |
| Technology costs and | These costs, as seen in 2030 and 2050, are key assumptions for |

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| availabilities | this study. The study will use the AETA estimates, supplementing this with information from international sources where necessary, with implications of lower future technology costs to be assessed as part of the defined scenarios. |
| Renewables | The study will explicitly exclude consideration of nuclear, gas, coal, and CCS generation and the range of detailed generation options to be considered will be confirmed with DCCEE and RET prior to the commencement of modelling. |
| Transition path | Scenarios would be required for 2030 or 2050 only, and there is no requirement to describe the path to these years. |
| Modelling approach | The modelling approach is to be determined by AEMO. Given the very long term nature of this study, and therefore the many uncertainties and assumptions required, it is unlikely that market <i>modelling</i> approaches used in the NTNDP would be useful, and may in fact imply a level of accuracy in the results that is not appropriate. Instead, it is understood AEMO may utilise a more simplified <i>scenario</i> planning based approach. |

Stakeholder Engagement

As above, DCCEE will hold two forums, one on the inputs to the analysis, and another on the outcomes of the modelling exercise as detailed in the draft report. For reference, this scope is to be published on the DCCEE website shortly after contracts between DCCEE and AEMO have been signed.

Timeframe

Input assumptions report to be finalised 21 September 2012. Draft report available 30 March 2013. Final report by 31 May 2013.

Governance and Project Team

AEMO would establish this project as a consultancy, and establish an internal project team and report to the AEMO CEO and Board.