

# **NSW Emerging Energy Program Overview**

**October  
2018**



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# What is the Emerging Energy Program?

This overview document provides information about the Emerging Energy Program (Program). The NSW Department of Planning and Environment (Department) expects to open registrations and a call for Expressions of Interest in the first quarter of 2019. At that time the Department will release updated and additional materials about the Program, including the Program Guidelines. Upon the release of any such materials, this document will be superseded by those materials (unless otherwise stated in those materials).

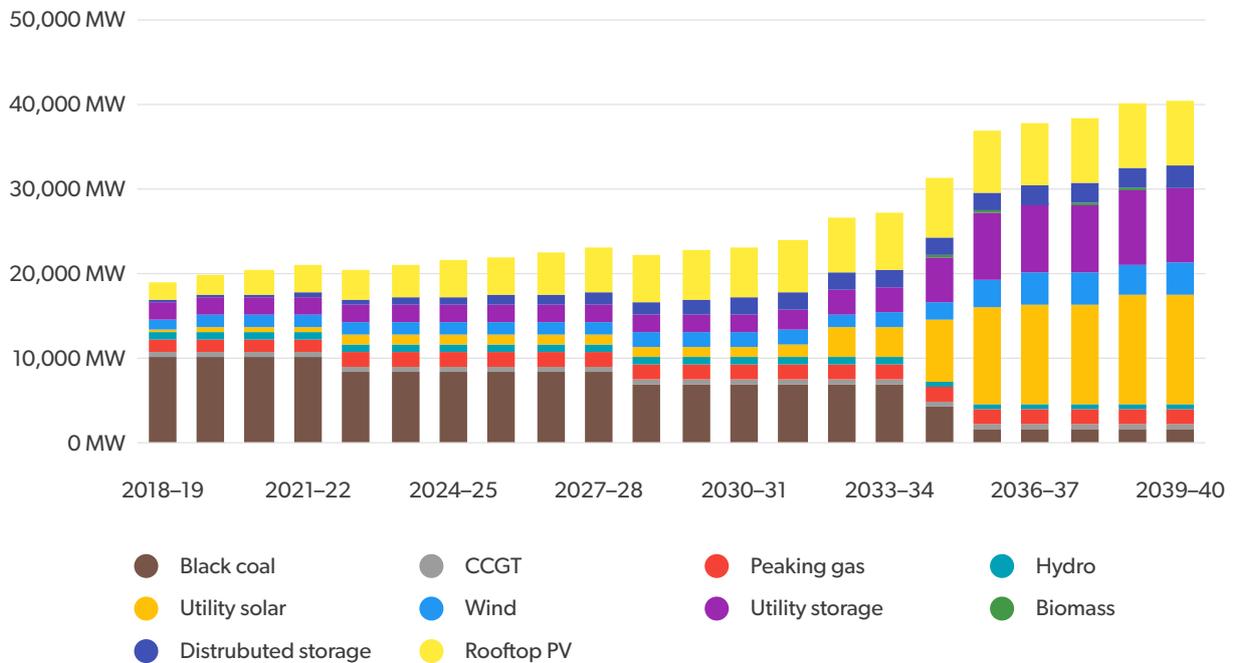
## The NSW energy system

The NSW energy system is in transition. Our generation mix is changing, with more variable generation entering the system and older power stations scheduled for retirement. Our system has a current peak demand of around 15,000 megawatts. In September 2018 there were almost 17,000 megawatts of new gas, renewable energy and generator upgrades worth \$21 billion either with, or seeking, NSW planning approval.

It is expected that new dispatchable, emerging energy resources will be needed in the system over the next two decades to support this transition. In its June 2018 Integrated System Plan the Australian Energy Market Operator (AEMO) stated that “energy security is projected to be supported by new flexible, dispatchable resources at utility scale.”



**Figure 1 — Projection for NSW electricity capacity under the AEMO 2018 Integrated System Plan neutral economic scenario**



## The NSW Emerging Energy Program

The Department is developing this Program to support the commercialisation of new, large-scale, NSW electricity projects that use emerging, dispatchable technology. The Program aims to bring forward a pipeline of electricity projects that provide energy on-demand and help drive emerging technologies down the cost curve to support an orderly transition to a clean, reliable and affordable energy future. The Program is technology-neutral and aims to leverage substantial private sector investment and support a significant number of jobs in regional NSW.

This document explains the Program and its objectives, the available funding, notes eligibility and merit criteria, and provides information about the opportunity for joint funding, how funding will be awarded, and where to find more information. Definitions of bold key terms used in this overview are provided at the end of this document.

# What are the Program objectives?

The Program's objectives are to:

- 1** enhance electricity System Reliability and System Security in NSW (see Explanatory Box 1)
- 2** promote competition in the National Electricity Market (NEM) to place downward pressure on wholesale electricity prices to promote affordability for NSW electricity users
- 3** promote diversification of electricity supply through the development of new dispatchable, emerging technologies at utility scale (see Explanatory Boxes 2 and 3), and
- 4** reduce greenhouse gas emissions<sup>1</sup> (see Explanatory Box 4).

## Explanatory Box 1 — Services for a changing electricity sector

The NSW Government recognises that a secure and reliable electricity system requires a range of services to be available. The Program encourages emerging, dispatchable technologies that can supply on-demand energy at times of peak demand. The Program also seeks to accelerate projects that can provide ancillary services including supplying AEMO's existing markets for **Frequency Control Ancillary Services (FCAS)** such as **Regulation FCAS** and **Contingency FCAS**, as well as projects which have the potential to supply emerging future markets in **Fast Frequency Response**.

## Explanatory Box 2 — Dispatchable Technologies

A **Dispatchable Technology** is an electricity technology that can demonstrate the ability to manipulate output/load in response to one or more of the wholesale energy or ancillary service price signals in the NEM. Eligible projects must demonstrate the ability and intention to deploy a Dispatchable Technology and the intention to register with AEMO as a **Registered Participant**.

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<sup>1</sup> Consistent with section 34F, Energy and Utilities Administration Amendment (Climate Change Fund) Act 2007 No 35

### Explanatory Box 3 — Emerging Technologies

**Emerging Technologies** are electricity technologies that can achieve a **Technology Readiness Level (TRL)** of 9 and a **Commercial Readiness Index (CRI)** score of 2 to 5, as defined by **ARENA** (see Appendix A).

### Explanatory Box 4 — Emissions reduction requirements

Program treatment of emissions intensity depends on a project's ability to generate electricity.

For projects that generate electricity, the emissions intensity maximum limit is 0.5 tonnes of carbon dioxide equivalent per megawatt hour (CO<sub>2</sub>-e/MWh) of electricity generated by the project. This is based on projected NSW system average emissions intensity in 2032 under AEMO's 'Neutral Planning Scenario with Storage' in its 2018 Integrated System Plan.

Projects which do not generate electricity must demonstrate how the project will assist in the operation of a lower-emission NSW electricity system.



# What funding is available?

The NSW Government’s priority is to co-fund projects with the private sector that will be developed in the near term, with any grant funding provided being the minimum required for a Project to proceed. The Program will provide grant funding to contribute to Capital Projects and Pre-investment Studies, identified individually as a Project, as detailed in Figure 2. The Department retains absolute discretion on the quantum of funding awarded to successful Projects or otherwise made available from the total grant funding.

Figure 2 — Types of Project funding available

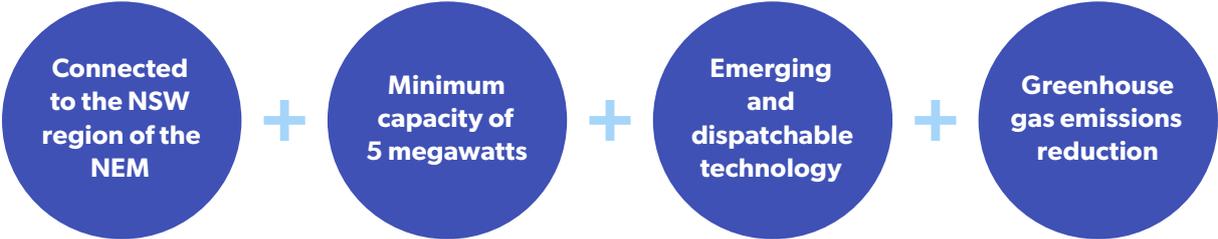


# What are the Program eligibility criteria?

## Project characteristics

Applicants must demonstrate to the satisfaction of the Department that they are planning to develop an electricity project with the four characteristics depicted in Figure 3.

Figure 3 — Eligibility: Project characteristics



## Applicant eligibility

To be eligible for grant funding, the applicant must meet all criteria listed below.

- 1** Hold an Australian Business Number.
- 2** Be an Australian entity duly incorporated under the Corporations Act 2001 (Cth) and hold and comply with all necessary authorisations material to the conduct of the business of the applicant.
- 3** Not be subject to any insolvency event, including the subject of an order or resolution for winding up or dissolution (other than for the purposes of reconstruction or amalgamation) or the appointment of a receiver, liquidator, administrator or similar.
- 4** Be the legal and beneficial owner of, or have all necessary rights to use, any intellectual property necessary to carry out the Project.
- 5** Agree to enter into an agreement with the Department to publicly share knowledge and information about, and resulting from, the Project described in the application.
- 6** Disclose any legal proceedings or investigation including, litigation, arbitration, mediation or conciliation that are taking place, pending or (to the best of the applicant's knowledge, after having made proper enquiry) threatened against the applicant or a related body corporate (as defined in the Corporations Act 2001 (Cth)).
- 7** Materially comply with all obligations under employment contracts, industrial agreements and awards, and with all codes of conduct and practice relevant to conditions of service and to the relations between the applicant and the employees employed by the applicant. Included in this, applicants must comply with all applicable occupational health and safety legislation.
- 8** Hold all insurances required by law to be effected by the applicant.
- 9** Not be named as an organisation on the list of persons and entities on the Australian Department of Foreign Affairs and Trade sanctions list. See: [www.dfat.gov.au/international-relations/security/sanctions/pages/sanctions.aspx](http://www.dfat.gov.au/international-relations/security/sanctions/pages/sanctions.aspx)

## Eligible activities

Applicants must demonstrate to the satisfaction of the Department that the activities described in their application are eligible. Eligible activities relate directly to the Project and may differ between Capital Projects and Pre-investment Studies. As a guide, eligible activities can include:

1. activities directly related to deployment of an electricity Project;
2. activities directly related to undertaking the final investment decision concerning an electricity Project.

Further details will be provided when the Program Guidelines are released. The Department may approve other eligible activities.

## Exclusions

The NSW Government will not fund the following under the Program:

- Activities that directly relate to NSW Government planning assessment processes, such as: biodiversity studies; heritage studies; noise, air quality and traffic studies; and water, waste and hazardous material studies; or
- Projects that solely improve the efficiency or availability of existing electricity projects. Upgrades that materially increase the capacity of existing plant may be considered, at the Department's discretion, if they meet the Program eligibility criteria.

Other activities or projects may also be excluded from funding, the details of which will be provided in due course.

## Eligible expenditure

Program funding must only be used for eligible expenditure on the Project. On release, the Program Guidelines will provide further guidance on the specific kinds of expenditure that are eligible. This guidance must be adhered to in the preparation of the budget that is submitted with an Expression of Interest (EOI) or full application and as part of the regular milestone reporting required of successful grant recipients. Some general principles for the consideration of eligible expenditure are provided below.

1. Eligible expenditure is expenditure related directly to eligible activities undertaken as part of the Project.
2. Eligible expenditure is calculated exclusive of GST.
3. Non-cash contributions as an alternative to cash contributions are not preferred and will be assessed on a case-by-case basis.
4. Expenditure prior to signing of the funding agreement or after the completion date for the Project specified in the funding agreement is generally ineligible.
5. Opportunity costs are not eligible expenditure.
6. Related party transactions must be treated on an 'at-cost' basis, without mark-up.
7. Generally accepted accounting principles are to be followed and it must be possible to track expenditure relating to the Project through a recipient's accounting system to meet the financial reporting and audit requirements in the funding agreement.

# What are the Program merit criteria?

For an application to be competitive, it must address all merit criteria. The merit criteria will apply to applications for funding for both Pre-investment Studies and Capital Projects. An outline of the expected merit criteria, against which eligible applications will be assessed, is provided in Table 1. Further details will be provided when the Program Guidelines are released.

**Table 1 — Merit criteria**

<b>Contribution to Program objectives</b>
Contribution to enhancing electricity System Reliability and System Security in NSW
Contribution to promoting competition in the NEM
Contribution to promoting diversification of electricity supply through the development of new dispatchable, emerging technologies at utility scale
Reduction of greenhouse gas emissions
<b>Interface with network, community and industry</b>
Achieved, or plan to achieve, planning and environmental approvals, grid connection (as applicable) and social licence (including demonstrating best-practice community engagement)
Knowledge sharing, scalability and replicability of the project
<b>Commercial attractiveness and deliverability</b>
Viability of the business case (including market competitiveness of the Project and legal and contractual arrangements), consortium structure, key partners and roles
Requested level of grant funding and the proposed level of private sector contributions, including split between equity, debt and in-kind funding
An understanding of the technology and delivery risks, and the appropriateness of the proposed risk mitigation measures to reduce project risk
Applicant's ability to demonstrate experience in delivering similar Projects, and the availability of resources and expertise to successfully execute the Project

### Financial and other characteristics

Applicant's financial capacity and access to the proposed level of private sector contributions to deliver the project

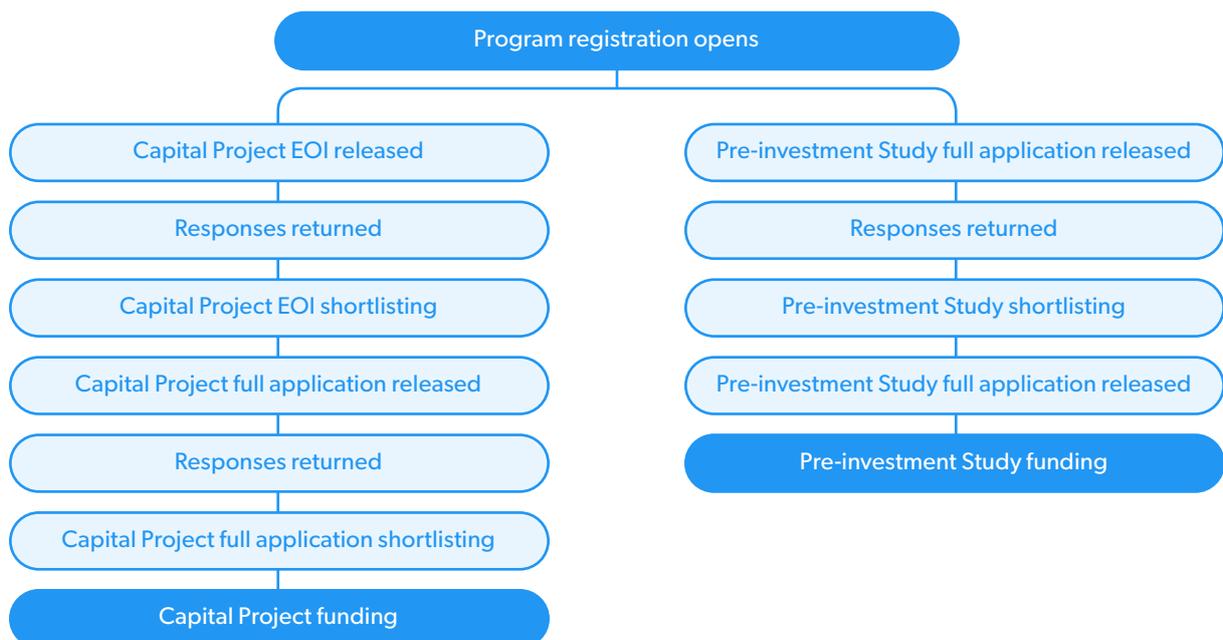
The need for grant funding sought through the provision of detailed financial modelling of the project, including proposed milestones for grant payments

Level of change required to the Program funding agreement or term sheet

## How will the application and assessment process work?

The Program application process is competitive. For Pre-investment Studies there will be registration, then full application. For Capital Projects, there will be registration, then EOI, followed by full application. Eligibility and merit criteria will be assessed at both the EOI and full application stages. The indicative process is illustrated in Figure 4. The Department reserves the right to amend the process if required.

**Figure 4 — Application and assessment process**



## Registration

Following the opening of registration, all applicants will be required to register to participate in the Program. Information requested at registration will include Project name, description, technology and whether joint funding will be sought from the ARENA or any other sources of grant funding.

## Expression of Interest (EOI)

An EOI application form for Capital Projects will be provided to registered applicants. Information requested in the EOI application form will be based on the eligibility criteria and merit criteria. The Department and its advisers will assess each EOI against the eligibility criteria to determine the eligible applications. Only eligible applications will be assessed against the merit criteria to determine a shortlist of Capital Projects.

## Full Application

Separate full application forms will be released for Pre-investment Studies and Capital Projects. For Pre-investment Studies, applicants will be invited to submit a full application after registration. For Capital Projects, following the shortlisting of EOI submissions, applicants will be invited to submit a full application and will be supplied the application form at that time.

Based on factors such as information received during the EOI process or changes in the market, the Department reserves the right to announce an amendment to the process, for example that full applications may be submitted by parties who did not respond to the EOI or who were not shortlisted through the EOI process.

## Assessment

Applications must be assessed as satisfying all eligibility criteria before they can proceed to the merit assessment stage. Only eligible applications will be assessed against the merit criteria. The merit criteria will apply to applications for funding for both Pre-investment Studies and Capital Projects. An outline of the expected merit criteria, against which eligible applications will be assessed, is provided in Table 2. Further details will be provided when the Program Guidelines are released.

## Can Projects receive joint funding?

Applications for funding under the Program may have the opportunity to receive joint funding from the NSW Government and ARENA or another co-funding organisation. Guidance on applying for joint funding will be provided following applicant registration under the Program. The NSW Government will, where possible, endeavour to streamline the application process for joint funding.

Applicants seeking joint funding should contact ARENA or their preferred co-funding organisation, prior to submitting a formal application under the Program.

Joint funding will be assessed on a case-by-case basis. Applicants that are unsuccessful in obtaining joint funding may still be considered for support under the Program.

## How will funding be awarded?

To receive Program grant funds, successful applicants must enter into a funding agreement with the Department. This agreement will detail the applicant's and any other relevant parties' obligations in relation to the Project. A draft funding agreement for Pre-investment Studies and Capital Projects is expected to be provided with the full application form. In some circumstances, the Department may only provide the draft funding agreement to shortlisted or preferred applicants, in which case detail on the terms of the funding agreement will be communicated to applicants in advance (such as through a term sheet), to be assessed by applicants when preparing their applications. The final funding agreement will include, but is not limited to, the following principles:

- **Timely progression:** The Program seeks to support Projects that meet the Program objectives in a timely manner. Funding payment will be made according to the requirements set out in the funding agreement, subject to satisfactory Project progress and reporting. Funding may be discontinued, with any unspent funds recovered, if Projects fail to progress in accordance with (or otherwise comply with) the funding agreement.
- **Value for money test at financial close:** All assumptions in the Project's financial model will be updated at financial close for Capital Projects. Where estimated costs or other assumptions have changed from when the grant was awarded, and less grant funding support is required for a Capital Project to proceed, the quantum of grant funding may be commensurately reduced.
- **Knowledge sharing:** A condition of Program funding is agreement to inform industry and the broader community about the Project's development and findings.

## ***Where can I find out more?***

Registration and a call for EOI are expected in the first quarter of 2019. Program Guidelines will be released at this time. Interested parties are encouraged to refer to the Program website for key dates and up-to-date information: [www.energy.nsw.gov.au/clean-energy-initiatives](http://www.energy.nsw.gov.au/clean-energy-initiatives)

For further information or questions regarding the Program, please email: [emergingenergy.program@planning.nsw.gov.au](mailto:emergingenergy.program@planning.nsw.gov.au)



## Definitions and acronyms

<b>AEMO</b>	Australian Energy Market Operator
<b>ARENA</b>	Australian Renewable Energy Agency
<b>Commercial Readiness Index (CRI) 2 to 5</b>	The technology and/or business case for a Project has been tested commercially in some setting (small or large scale) and it is not yet considered as a bankable or a mature commercial technology. See Appendix A for further details.
<b>Contingency FCAS</b>	Contingency FCAS are provided by technologies that can locally detect the frequency deviation and respond in a manner that corrects the frequency. For further details see the AEMO's Guide to Ancillary Services in the NEM. <sup>2</sup>
<b>Department</b>	The NSW Department of Planning and Environment
<b>Dispatchable Technology</b>	A Dispatchable Technology is an electricity technology that can demonstrate the ability to manipulate output/load in response to one or more of the wholesale energy or ancillary service price signals in the NEM. A Project must demonstrate the ability and intention to deploy a Dispatchable Technology and the ability and intention to register with AEMO as a Registered Participant.
<b>Emerging Technology</b>	Electricity technologies that can achieve a Technology Readiness Level (TRL) of 9 and a Commercial Readiness Index (CRI) of 2 to 5, as defined by ARENA.
<b>EOI</b>	Expression of Interest
<b>Fast Frequency Response</b>	Refers to the delivery of a rapid active power increase or decrease by generation or load in a timeframe of two seconds or less, to correct a supply-demand imbalance and assist in managing power system frequency. For further details see the AEMO Working Paper — Fast Frequency Response in the NEM. <sup>3</sup>
<b>FCAS</b>	Frequency Control Ancillary Services. A market mechanism employed by AEMO specifically to correct imbalances between supply and demand which cannot be addressed through the central dispatch process which follows the forecast average demand movement. For further details see the AEMO's Guide to Ancillary Services in the NEM. <sup>4</sup>

<sup>2</sup> <https://www.aemo.com.au/-/media/Files/PDF/Guide-to-Ancillary-Services-in-the-National-Electricity-Market.pdf>

<sup>3</sup> [https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security\\_and\\_Reliability/Reports/2017/FFR-Working-Paper---Final.pdf](https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Reports/2017/FFR-Working-Paper---Final.pdf)

<sup>4</sup> <https://www.aemo.com.au/-/media/Files/PDF/Guide-to-Ancillary-Services-in-the-National-Electricity-Market.pdf>

<b>NEM</b>	National Electricity Market
<b>Program</b>	The NSW Emerging Energy Program
<b>Program Guidelines</b>	A document which will provide the framework for the operation and administration of the Program.
<b>Project</b>	A project described in an application for Program funding, which includes one or more eligible activities. This includes both Capital Projects and Pre-investment studies — see Figure 2 for further details.
<b>Registered Participant</b>	Meet the AEMO definition of a Registered Participant. For further details see the AEMO Registered participant categories and classifications. <sup>5</sup>
<b>Regulation FCAS</b>	Frequency Control Ancillary Services used by AEMO to manage minor deviations in power system frequency within the five-minute dispatch periods by issuing regular signals to increase or decrease output. For further details see the AEMO’s Guide to Ancillary Services in the NEM. <sup>6</sup>
<b>System Reliability</b>	Having sufficient resources to meet consumer demand in the NEM.
<b>System Security</b>	Operating the NEM power system within defined technical limits even if there is a credible incident, such as the loss of a major transmission line or large generator.
<b>Technology Readiness Level (TRL) 9</b>	The full-scale technology to be employed in a Project must have been previously operated across all expected operating conditions. This means the technology must have progressed past all initial commissioning, demonstration, and prototype stages. See Appendix A for further details

5 [https://www.aemo.com.au/-/media/Files/Electricity/NEM/Participant\\_Information/Participant-Categories-in-the-NEM.pdf](https://www.aemo.com.au/-/media/Files/Electricity/NEM/Participant_Information/Participant-Categories-in-the-NEM.pdf)

6 <https://www.aemo.com.au/-/media/Files/PDF/Guide-to-Ancillary-Services-in-the-National-Electricity-Market.pdf>

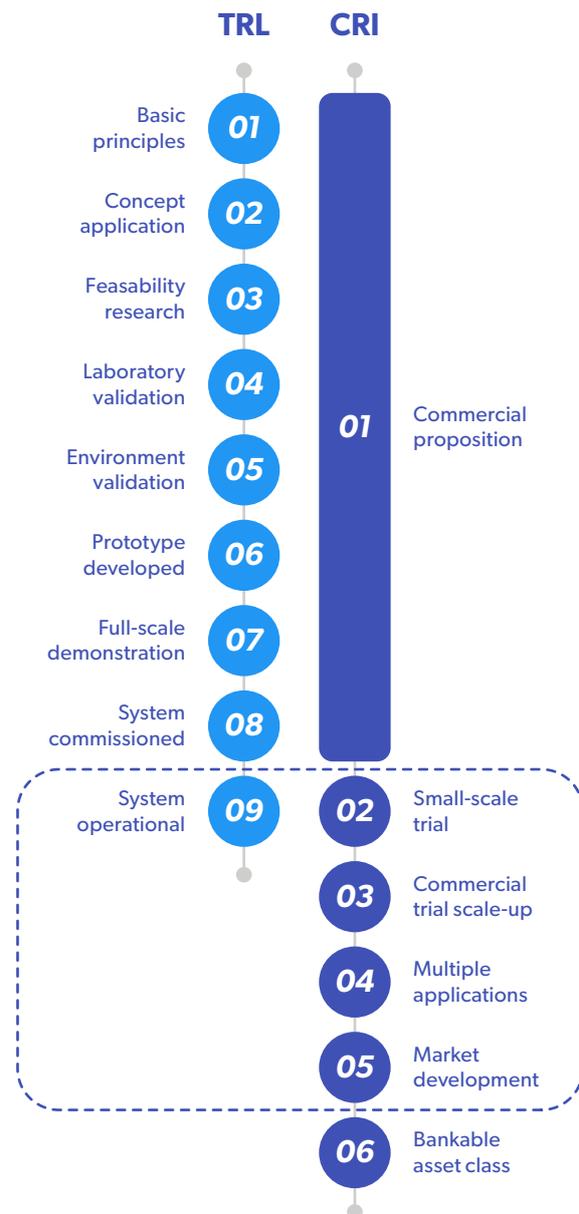
# Appendix A: Technology and commercial readiness

To be eligible, Projects applying to the Program must achieve a Technology Readiness Level (TRL) of 9 and a Commercial Readiness Index (CRI) of 2 to 5. ARENA’s Advancing Renewables Program Guidelines provide formal definitions for these metrics and should be referred to for this purpose.<sup>7</sup>

To qualify for a TRL of 9, the full-scale technology to be employed in a Project must have been previously operated across all expected operating conditions. This means the technology must have progressed past all initial commissioning, demonstration, and prototype stages. A Project with a CRI of 2 to 5, means the technology and/or business case for the Project has been tested commercially in some setting (small or large scale) and it is not yet considered as a bankable or a mature commercial technology.

Figure 5 outlines the TRL and CRI metrics and highlights the stages of development eligible under the Program.

**Figure 5 — Technology and commercial readiness**



<sup>7</sup> Available at: [https://arena.gov.au/assets/2017/05/ARENA\\_ARP\\_Guidelines\\_FA\\_Single\\_Pages\\_LORES.pdf](https://arena.gov.au/assets/2017/05/ARENA_ARP_Guidelines_FA_Single_Pages_LORES.pdf)





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