

TRANSFORMATIVE RESEARCH ACCELERATING COMMERCIALISATION (TRAC) PROGRAM

HYDROGEN R&D FUNDING
ANNOUNCEMENTS

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Australian Government
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ARENA

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HYDROGEN R&D FUNDING ANNOUNCEMENT

This Hydrogen Research and Development (R&D) Funding Announcement (Funding Announcement) details the competitive process the Australian Renewable Energy Agency (ARENA) will use to fund Projects under the Transformative Research Accelerating Commercialisation (TRAC) Program. This process is referred to as the R&D Funding Round. The Priority Technology of this R&D Funding Round is renewable hydrogen.

This Funding Announcement should be read in conjunction with the [TRAC Program Guidelines](#), which apply to this R&D Funding Round. Definitions contained in the Program Guidelines also apply to this Funding Announcement.

1. CONTEXT

Australia's 2019 National Hydrogen Strategy positions Australia as a major player in the global hydrogen industry by 2030. The 2019 Strategy highlights targeted support for R&D activities as the key enabler to rapidly develop the critical technologies required to build a clean, innovative, safe, and competitive hydrogen industry.

While hydrogen technologies and targets have continued to evolve, R&D investment remains a critical imperative to commercialise clean hydrogen. ARENA views this R&D Funding Round as a valuable mechanism to progress the commercialisation of low cost, clean hydrogen in Australia. The R&D Funding Round follows ARENA's first Hydrogen R&D Round launched in 2018 and is additive to the existing deployment funding available under ARENA's ongoing Advancing Renewables Program (ARP).

This R&D Funding Round seeks Proposals to accelerate innovative, renewable hydrogen technologies with a path to commercial application.

2. HYDROGEN R&D FUNDING ROUND OBJECTIVES

The objectives of the R&D Funding Round (Round Objectives) are to:

- a. Accelerate the commercialisation of renewable hydrogen through innovative R&D in hydrogen production, storage and distribution technologies; and
- b. Build academic research capacity and facilitate collaboration between research groups and industry.

3. FUNDING ALLOCATION

ARENA has allocated a funding envelope of \$25 million (Funding Envelope) for the R&D Funding Round under two streams (as outlined below).

ARENA reserves the right to allocate an amount of funding that is lower than the Funding Envelope if there is an insufficient number of high merit Proposals received. ARENA may, at its discretion, allocate an amount of funding greater than the Funding Envelope if it considers this to represent value for money.

The Funding Envelope will be split amongst the two Stream's at ARENA's discretion, based on the volume and merit of Proposals received.

STREAM	DESCRIPTION
a) Hydrogen and Hydrogen Vector Production	This Stream is focused on innovative production systems that could feasibly serve a significant addressable market at commercial scale.
b) Hydrogen Storage and Distribution	This Stream is to advance technologies for efficient, low cost and safe storage and distribution of hydrogen.

Proposals under both Streams must demonstrate a pathway to commercial scale application(s).

4. SCOPE OF ACTIVITY

The R&D Funding Round is open to Projects that align with the Round Objectives. The Scope of Activity eligible for each Stream is as follows:

a. Hydrogen and Hydrogen Vector Production Stream:

ARENA may seek to support areas including, but not limited to, novel production; significant design optimisation and / or alternative direct pathways for high efficiency, low-cost, renewable hydrogen or hydrogen vectors. Examples may include, but are not limited to:

- i. Improved electrolysis efficiency or improved operational flexibility;
- ii. Capital cost reductions (extending to balance of production system);
- iii. Direct production of hydrogen vectors; and
- iv. Innovation in water usage for hydrogen production.

b. Hydrogen Storage and Distribution Stream:

ARENA may seek to support areas including, but not limited to, significant optimisation of hydride-based, adsorbent-based, liquid organic hydrogen carrier-based and liquefaction technologies for commercial hydrogen storage and distribution.

It should be noted that industry proven existing storage and distribution technologies (such as compressed hydrogen gas) will be considered on the basis that Proposals demonstrate step change cost reductions could be achieved.

Any technology pathways outside ARENA's mandate (e.g. including Carbon Capture, Utilisation and Storage) are out of scope.

Proposals must additionally comply with the following parameters:

- a. Projects align with the Scope of Activity of one of the Streams outlined in Section 3;
- b. Development of technology that is assessed as having achieved a minimum Technology Readiness Level (TRL) of 2 at the time of applying. Projects should aim to progress the relevant technology beyond its starting TRL;
- c. The amount of ARENA grant funding requested should be a minimum of \$500,000 and no greater than \$5 million;

- d. Proposals should budget no more than 50 per cent of total ARENA funding sought towards research commercialisation activities, up to a limit of \$2.5 million;
- e. The Project timeframe is up to five years, which is split between core research (up to three years) and research commercialisation activities (up to two years). A stage-gate mechanism will be implemented within the Funding Agreement to assess the viability of the proposed technology and commercialisation pathway to approve commencing research commercialisation along with the release of associated funding; and
- f. The Applicant must present a proposed scope for research commercialisation of the technology (in the form of a research commercialisation plan), which is expected to be refined during the Project.

5. ELIGIBILITY REQUIREMENTS

Applicants under this R&D Funding Round are required to meet all Eligibility Criteria as outlined in Part 3 of the Program Guidelines and the following.

PROGRAM ELIGIBILITY CRITERIA	APPLICATION TO FUNDING ROUND
<i>B – Eligible Project</i>	<p>The Applicant must be able to demonstrate to the satisfaction of ARENA that the Project described in the Proposal:</p> <ul style="list-style-type: none"> › involves technologies specific to Renewable Hydrogen (or Renewable Hydrogen vectors); › addresses one of the Stream requirements in Section 3; and › meets the definition of R&D activities as set out at item 3.5 of the Program Guidelines. <p>Further, the Proposal must:</p> <ul style="list-style-type: none"> › involve a technology with a minimum of TRL 2 at the time of applying;

6. CLARIFICATION OF MERIT CRITERIA

The Merit Criteria for the R&D Funding Round includes all criteria in Part 4 (Merit Criteria) of the TRAC Program Guidelines, with additional detail and clarifications as set out in the table below. Applications must address each of the Merit Criteria. A list of requirements for each stage of the application process is provided at Appendix A and should be addressed in addition to the items set out in this section.

PROGRAM CRITERIA	APPLICATION TO FUNDING ROUND MERIT
<p><i>A – Contributes to the Program Outcomes and Round Objectives</i></p>	<p><i>This criterion assesses how well the Project contributes to the Program Outcomes and the Round Objectives as detailed in the Program Guidelines and this Funding Announcement.</i></p> <p>In assessing the contribution of a Project to the Program Outcomes, ARENA will consider:</p> <ul style="list-style-type: none"> › alignment with the R&D Funding Round Objectives and Scope of Activity; › technologies performance against key metrics where relevant, including: <ul style="list-style-type: none"> – cost (\$ / kg of hydrogen produced, stored or transported) relative to the equivalent or alternate technology or process the Project is researching; – production efficiency or electrolyser efficiency (% based on kWh of energy input and energy output); and – TRL advancement. › potential for commercial viability, including where relevant: <ul style="list-style-type: none"> – size of addressable market at commercial scale; and – pathway to commercial scale (as outlined in research commercialisation plan). › the value of the proposed knowledge sharing deliverables and its impact to future technology development.
<p><i>B – Applicant capacity and capability</i></p>	<p><i>This criterion assesses the capability and capacity of the Applicant and Project Partners to deliver the Project.</i></p> <p>In assessing this criterion, ARENA will consider:</p> <ul style="list-style-type: none"> › the demonstrated level of experience and expertise of the Applicant and any proposed consortium partners with a focus on industrial partnerships with organizations within the hydrogen value chain; › the quality and completeness of Project documentation and agreements provided to ARENA, as well as the extent to which these provide evidence of the Applicant’s capability and capacity; and › the involvement or contribution of overseas subject matter experts (if relevant).
<p><i>C – Project design and methodology</i></p>	<p><i>This criterion assesses:</i></p> <ul style="list-style-type: none"> › technical strength of the Project and how well the Applicant has designed and planned the Project, including identifying and managing risks to successfully deliver the Project; and › Project risk not identified in the assessment of the other Merit Criteria and the steps the Applicant proposes to take to mitigate those risks. It also assesses Project risk in terms of the likely success of the Project and the achievement of stated outcomes and considers the risk of negotiating and executing a Funding Agreement that is acceptable to ARENA. <p>In assessing this criterion, ARENA will consider:</p> <ul style="list-style-type: none"> › the quality and completeness of the Project Plan, including the level of Project definition; › the level of Project technical definition and pathway to complete the core research activities; › the completeness of the Project timeline; › the quality of the Applicant’s proposed commercialisation pathways for the technology. The research commercialisation plan is expected to be developed and refined during the core research stage of the Project building on the Project’s core research activities; › the quality of the Risk Management Plan (including the extent to which the requirements outlined in Appendix A have been addressed) and the extent to which key risks have been identified and mitigated; › the extent to which the Applicant accepts the terms of the Funding Agreement template; and › the Applicant’s compliance with any other requirements outlined in Part 2 of the Program Guidelines.

PROGRAM CRITERIA	APPLICATION TO FUNDING ROUND MERIT
<i>D– Financial viability and co-funding</i>	<p><i>This criterion assesses the amount of ARENA funding sought and total cost of the Project. The ARENA Grant request is not expected to change materially between the EOI stage and the Full Application stage, refer to Section 7 part (c) for further information.</i></p> <p>In assessing this criterion, ARENA will consider:</p> <ul style="list-style-type: none"> › co-funding contributions of the Applicant and any consortium partners; › any other grant funding or government or state funding contributions (if relevant); and › the rationale for the ARENA funding amount requested.

Refer to Appendix A for the specific requirements for the Expression of Interest and Full Application stage applications.

7. APPLICATION AND ASSESSMENT PROCESS

An application made under the R&D Funding Round must be completed according to the Program Guidelines and submitted via ARENANet.

Further details are outlined below on the application and assessment process that is specific to the R&D Funding Round.

a. Measurement and assessment by ARENA

When evaluating Proposals against the Round Objectives, ARENA will assess Proposals against the Scope of Activity parameters and the Program Merit Criteria provided in Part 4 of the Guidelines and Section 6 of the Funding Announcement.

Note that Section 6.8 of the Program Guidelines allows ARENA (in its absolute discretion) to reject, refuse to consider, or cease evaluating an EOI or Full Application at any time if ARENA determines (at its absolute discretion) that the EOI or Full Application is unlikely to be successful. This will apply particularly when a Proposal does not fit within the Scope of Activity parameters as presented in Section 4 for this R&D Funding Round.

b. EOI stage

EOI Proposals must clearly address each of the Merit Criteria, taking into account the clarifications provided in the table above. Only eligible EOI Proposals will be assessed against the Merit Criteria. Each Merit Criterion has equal weight.

Only Proposals assessed as being of high merit against the Program Merit Criteria may be invited to submit a Full Application. Only the highest-ranking Proposals will be invited to submit a Full Application.

EOI Proposals must be completed online using ARENA's Grants Management System, ARENANet, which is accessible from the [TRAC Program Guidelines](#) on ARENA's website arena.gov.au no later than 5 PM (AEST) on the EOI Due Date.

Further details on information requirements for the EOI stage are presented at Appendix A.

c. Full Application stage

A Full Application will only be accepted from Applicants invited by ARENA to submit a Full Application following the assessment of EOIs. ARENA may issue an Updated Funding Announcement at the commencement of the Full Application stage. Full Applications must clearly address each of the Program Merit Criteria, considering the clarifications provided in the table above. Full Applications will be assessed against the Program Merit Criteria. Each merit criterion has equal weight.

Only Proposals that are assessed as being of high merit against the Program Merit Criteria at Full Application stage will be considered for funding.

The highest ranked Proposals will be recommended to the ARENA Board for funding approval subject to the Funding Envelope available and the portfolio approach described in Section 7.e. below.

Full Applications must be completed online using ARENA's Grants Management System, ARENANet, which is accessible from the TRAC Program webpage on ARENA's website arena.gov.au no later than 5pm (AEST) on the Full Application Due Date.

Further information on requirements for the Full Application stage is presented at Appendix A.

To ensure fairness in the assessment, no material change to the Proposal will be permitted between the EOI and Full Application stages. ARENA retains the right to not assess Full Application Proposals where a material change(s) is observed from the EOI stage.

A material change would include but is not limited to:

- i. a change in the focus of fundamental research activities; and/or
- ii. an increase in the size of the ARENA Grant request greater than 30 per cent of the ARENA Grant request at the EOI stage.

Similarly, no material change to the Project is expected between the Full Application and execution of the Funding Agreement. ARENA will determine, at its discretion, whether any such change is material in nature. In the event that a material change occurs, ARENA reserves the right to determine if the changes are acceptable and support the objectives of the R&D Funding Round. ARENA may, at its discretion, determine it is appropriate to increase (or decrease) the amount of ARENA funding if it is considered to represent value for money and in line with the Round Objectives and subject to the Applicant meeting the conditions of the Offer to Negotiate letter.

d. Publication of information

ARENA may publish aggregated and non-identifiable data from the Proposals received at the conclusion of the Full Application stage of the Funding Round to provide a high level of transparency to stakeholders on the range of Proposals received.

e. Portfolio approach

ARENA intends to apply a portfolio approach when offering funding under the R&D Funding Round under clause 2.22 of the Program Guidelines. ARENA may elect not to fund an otherwise meritorious Project, or a higher ranked Project, if the aims or outcomes of that Project are the same as, or similar to, the aims and outcomes of a Project that ARENA is intending to fund through the R&D Funding Round or has previously funded.

8. OFFER TO NEGOTIATE

Applicants that are successful at the Full Application stage of the R&D Funding Round will be issued a non-binding Offer to Negotiate letter. The Offer to Negotiate will outline the terms under which ARENA is prepared to enter into negotiations for a Funding Agreement for the Proposal. The Offer to Negotiate will outline:

- a. the amount of ARENA funding that is being offered;
- b. any conditions attached to the negotiation offer;
- c. the terms under which ARENA may withdraw the offer of funding; and
- d. other relevant information.

9. FUNDING AGREEMENT

The Funding Agreement will provide the legal framework for the obligations of each party and terms of payment for each successful Full Application under the R&D Funding Round.

ARENA's Funding Agreement template is provided on the ARENA website page dedicated to the R&D Funding Round at arena.gov.au/funding/hydrogen-rd-funding-round. Applicants are expected to accept this Funding Agreement with no changes.

Applicants are required to provide a response to the template Funding Agreement with their Full Application. A table identifying areas of non-compliance with the standard terms and conditions in the Funding Agreement template and summarising proposed amendments is to be provided at the Full Application stage.

The Funding Agreement will stipulate the milestones for the Project that the Recipient will be expected to adhere to.

ARENA will consider the extent to which Applicants accept the terms of the Funding Agreement template. Applicants should be aware that low compliance with the Funding Agreement template will impact on ARENA's assessment of Project risk. Strong compliance with the Funding Agreement will generally increase the merit of a Proposal.

10. KNOWLEDGE SHARING PLAN

As required under Eligibility Criterion G in the Program Guidelines,, the Applicant must agree that it will participate in any knowledge sharing events and activities related to the R&D Funding Round. ARENA's Knowledge Sharing Plan template is provided on the ARENA website page dedicated to this R&D Funding Round at arena.gov.au/funding/hydrogen-rd-funding-round. Applicants are expected to accept this Knowledge Sharing Plan with no, or very limited, changes. ARENA reserves the right to make amendments to the Knowledge Sharing Plan following the EOI and Full Application stages to ensure the knowledge sharing outcomes support the Round Objectives.

11. TIMETABLE

The timetable for the R&D Funding Round is presented in the table below.

EOI STAGE	
EOI Open	5 PM Australian Eastern Standard Time (AEST), Thursday 13 April 2023.
EOI Due Date	5 PM AEST, Thursday 1 June 2023.
FULL APPLICATION STAGE	
Applicants invited to submit a Full Application	ARENA aims to issue invitations to submit a Full Application in July 2023.
Full Application Due Date	Full Applications will be due approximately eight weeks after receiving an invitation to submit a Full Application.
Offer to Negotiate or communication of outcome of the Full Application stage	ARENA aims to issue outcome letters from the Full Application stage in November 2023.

ARENA reserves the right to refuse to accept an EOI or a Full Application submitted after the relevant due dates.

The above dates represent the current timetable for the R&D Funding Round. ARENA retains the right to amend proposed timelines and stages or alter any element of the R&D Funding Round at its discretion. ARENA may extend or change the timetable for the R&D Funding Round if ARENA deems this beneficial to achieving the Objectives of the R&D Funding Round.

GLOSSARY

\$	All references to dollars or \$ are to Australian Dollars.
AEST	Australian Eastern Standard Time.
Applicant	An eligible institution as defined in item 3.3 of the Program Guidelines that has submitted a Proposal for funding under the Program.
Eligibility Criteria	The Eligibility Criteria for Projects listed in Part 3 of the Program Guidelines.
EOI Open Date	5 PM Australian Eastern Standard Time (AEST), 13 April 2023.
EOI Due Date	5 PM Australian Eastern Standard Time (AEST), 1 June 2023.
Full Application Due Date	Full applications will be due approximately eight weeks after the invitations to submit a Full Application are sent.
Funding Agreement	<p>The agreement between a Recipient and ARENA for funding under the Program. A template is available on the ARENA website This includes a Head Funding Agreement or an individual Funding Agreement. Both agreements consist of two parts - the General Conditions and the Schedule:</p> <ul style="list-style-type: none"> › General Conditions – the predetermined standard contract approved by ARENA. › Schedules – the specific information and conditions that are consistent with the funding offer of one or several Projects.
Funding Envelope	\$25 million allocated to this R&D Funding Round.
Knowledge Sharing Plan	An agreement entered into between ARENA and the Applicant under a Funding Agreement to share knowledge from the Project.
Merit Criteria	The Merit Criteria listed in Part 4 of the Program Guidelines.
Offer to Negotiate	ARENA will issue a non-binding offer to negotiate a Funding Agreement to those Applicants that are successful at the Full Application stage of the R&D Funding Round.
Priority Technology	Those Priority Technologies identified for the Program listed in this Funding Announcement for the Round.
Program	The Transformative Research Accelerating Commercialisation (TRAC) Program.
Program Guidelines	The Transformative Research Accelerating Commercialisation (TRAC) Program Guidelines.
Project	Research, development and commercialisation activities involving a Priority Technology that meets the Program's objectives and priorities as advised in the Program Guidelines and this Funding Announcement.
Project Partner	A person, organisation or institution that the Applicant has engaged as a joint venturer, contractor or consultant to help deliver the proposed Project activities
Project Plan	A project plan document that contains the information requirements listed in Appendix A of this Funding Announcement.
Proposal	An application to ARENA for a proposed TRAC Project.
R&D	Research and development.
R&D Funding Round	The competitive process to which the Program Guidelines apply, to be used by ARENA to fund Projects as set out in this Funding Announcement.
R&D Risk Management Plan	A research and development risk management plan that contains the information requirements listed in Appendix A of this Funding Announcement.
Round Objectives	The objectives of the Program Funding Round as outlined in this Funding Announcement.
Stream	The Funding Round priority area(s) defined in the relevant Funding Announcement.
Total Project Cost	All costs incurred to undertake the Project activities.

APPENDIX A – ADDITIONAL INFORMATION REQUIREMENT

Note Proposals should include information in this Appendix in addition to the guidance provided in Section 6 Clarification of Merit Criteria.

EOI STAGE

Applicants must provide the following attachments with their Proposal; in addition to completion of the ARENAnet form.

- a. An attachment of up to four pages that describes technical aspects of the Project and any other important aspects of the Project that are not able to be addressed via the Application Form; including
 - i. Supporting justification for estimated performance against key metrics as outlined in Merit Criterion A

FULL APPLICATION STAGE

At Full Application stage, Applicants must provide the following attachments with their Proposal; in addition to completion of the ARENAnet form.

- a. A Project Plan document of no more than 15 pages that includes:
 - i. Summary of the Project including a clear description of the objectives and technical activities and proposed location and any other important aspects of the Project that are not able to be addressed via the Application Form;
 - ii. Any supporting explanation of how the Project builds on previous work and knowledge;
 - iii. Supporting justification for estimated performance against key metrics as outlined in Merit Criterion A;
 - iv. List of the key Project Partners, summary of their experience, including their proposed role in the Project;
 - v. An appendix noting responses to any EOI feedback;
 - vi. Any other relevant information;
- b. Using the table from Schedule 1, item 1.7 of the Funding Agreement template, provide a detailed timeline for the Project. The timetable should include:
 - i. Objectively verifiable milestones and deliverables consistent with the Milestones table;
 - ii. A summary of the expected level of commitment from industry partners as the Project progresses against the Milestones;
- c. Supporting justification for the refined Project budget of up to two pages. This should provide rationale for funding sources and key assumptions in the budget;
- d. A research commercialisation plan for the Project of up to five pages (to be refined over the course of the Project), including:
 - i. An updated overview with further detail on the objectives, activities and deliverables;
 - ii. A description of how this stage builds on the core research stage and aligns with the Round Objectives;
 - iii. An expected scope of work and timeline consistent with the milestones contained in Schedule 1 of the Funding Agreement template;
 - iv. Consideration of market assessment activities to inform the technology development plan during the course of the Project.

ATTACHMENTS

- a. Risk Management Plan (using ARENA's template), which should include:
 - i. Consideration of personnel risk and how this will be managed;
 - ii. Consideration of technology risk and how this will be managed;
 - iii. Details on how the Applicant will manage contingency costs and cost overruns.
 - iv. Any other key Project risks; and
 - v. Work Health and Safety Management System Plan.
- b. Table identifying areas of non-compliance with the standard terms and conditions in the Funding Agreement template and summarising proposed amendments;
- c. Evidence/letters of support by the Applicant and any Project Partners, including their commitment to provide the specified cash and In-Kind Contributions;
- d. A list of any Research and Development Projects in a similar field for which the Applicant or the key personnel have received funding from Australian Government, state government and local government sources (including from agencies such as ARENA) in the past three years; and
- e. CVs of key personnel (limit of 2 pages per person, no more than 5 key personnel).

Further information is available at
arena.gov.au

Australian Renewable Energy Agency

To explore potential for funding visit:
arena.gov.au/funding

Postal Address
GPO Box 643
Canberra ACT 2601

Location
2 Phillip Law Street
New Acton ACT 2601

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