



A U S T R A L I A N
U N I V E R S I T I E S
R O C K E T
C O M P E T I T I O N

2024 AURC Rules

Version 2.0: 12 August 2024





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Revision History

Revision	Description	Date
Version 1.0	Initial release	28/11/2023
Version 2.0	Adjusted for dispersed format	12/08/2024

1. Purpose and Scope

This document outlines the rules and details of the 2024 Australian Universities Rocket Competition (AURC) including assessment criteria and due dates, eligibility criteria and payment deadlines. Subsequent information outlining the imposed restrictions and minimal design requirements of competing rockets are provided in the "AURC 2024 Rocket Specifications" document and a timeline of the competition is provided in the "AURC 2024 Key Dates" document. Please contact an AURC representative for further queries either by email at aurc@ayaa.com.au or through the AURC 2024 Slack channel.

2. Terms Used

Please see Table 1 for a list and definitions of the terms used in this document.

Table 1: Terms used and their definitions

Term	Definition
AGL	Above-ground-level
AURC	Australian Universities Rocket Competition
AYAA	Australian Youth Aerospace Association
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations
COTS	Commercial Off the Shelf
GPS	Global Positioning System
HPR	High-Power Rocket
NAR	National Association of Rocketry
SRAD	Student Researched and Developed
TRA	Tripoli Rocketry Association
WARS	Western Australian Rocketry Society

1 Introduction

1.1 Cancellation of Launch Event

Due to factors out of AYAA's control it became unfeasible for the 2024 competition to accommodate a physical rocket launch event. This was officially announced on the 17th of July and a full letter is available on our website [here](#). Based on the remaining options and consultation with teams, the 2024 AURC has moved to a 'dispersed' format. Information surrounding refunds is available in section 3.1.

Scoring associated with launch and recovery of the rocket has been removed and the in-person assessment items will take place in the city of each Australian university, removing the need for travel. International universities will be assessed locally where possible and otherwise online. The dates of deliverables have been revised accordingly and are available in section 2.3. A final awards ceremony will be live-streamed online on Friday the 18th of October.

1.2 Mission

The Australian Universities Rocket Competition (AURC) is a multidisciplinary team engineering competition for tertiary STEM students, organised by the Australian Youth Aerospace Association (AYAA). In the competition universities compete to design, manufacture, and launch a high-power rocket to a target altitude in the span of a year.

The AURC is the first Australian competition of its kind, with the core purpose of providing student engineers and scientists with the skills required for Australia's growing aerospace industry. Commercial space projects require a mix of technical specialists from various backgrounds to solve complex problems. The AURC promotes a multidisciplinary approach to problem solving by simulating a real-world engineering project of considerable technical difficulty. The competition occurs under the same constraints of time, budget and standards, and regulations that students would experience in their future careers.

This event continues the AYAA's goals of promoting education, awareness and involvement in the aerospace industry to young Australians. The AURC is a step forward in strengthening the Australian space sector and fundamentally serves a critical role in providing industry relevant extracurricular experience to undergraduate and postgraduate university students of all STEM disciplines.

1.3 Background

Australia is no stranger to space; the nation's involvement can be dated back as far as the 1940's when the Woomera Rocket Range was established in South Australia. This site eventually became a landmark as the world's second largest launch and tracking facility. Paul Scully Power, the first Australian to enter space as an Oceanographer in 1985, and Andy Thomas, the first Professional Australian Astronaut acting as a payload commander in 1996 are a few famous names in Australia's space adventures.

The inception of the AURC dates back to 2018, marking its inaugural launch event in October 2019, which garnered remarkable success. However, the subsequent 2020 competition diverged from the traditional format, forgoing an in-person launch event owing to the challenges posed by the global COVID-19 pandemic. Following a hiatus of two years, the AURC was set to make a triumphant return with an in person launch event scheduled for September 2024. Unfortunately, due to factors out of AYAA's control, the 2024 competition will not include launch and recovery assessment components and will take place in a dispersed format.

1.4 Documentation and Resources

This document outlines the rules and details of the 2024 AURC including assessment criteria and due dates, eligibility criteria and payment deadlines. The document is not all-encompassing and additional documentation outlining competition details in other areas are available and listed in Table 2. Many of this documentation have been revised since the 2020 competition and are still in the process of being finalized. Further documentation will be released in accordance with the "AURC 2024 Key Dates" timeline.

1.5 Revisions

AYAA reserves the right to revise the AURC Rules. This document amongst all AURC documentation may be subject to change in which case competing teams will be notified. The most recent version will always be maintained on the AURC website. Student teams should always verify they are working with the correct version by checking the version number and date and ensuring it matches the document on the website.

Minor revisions which do not impact the design goals of the teams competing may be made throughout the year. Major revisions which affect the design goals of competing teams will only be made during the transition between competition years, where possible.

2 The Competition

2.1 Competition Categories

Student teams competing in the 2024 AURC must design, build, and launch a single-stage, high power rocket to an above ground level (AGL) target altitude with propulsion from a commercial-off-the-shelf (COTS) solid rocket motor. There are two competition categories available in 2024:

- 5,000 ft AGL apogee with COTS solid propulsion system
- 10,000 ft AGL apogee with COTS solid propulsion system

Rockets with student research and developed (SRAD) solid rocket motors, hybrid or liquid propellant are not permitted in the 2024 competition. More information on these exclusions is provided in section 5.

2.2 Competition Location and Dates

Due to the revised dispersed format, the 2024 AURC will not have a centralised location where teams will meet to compete. Instead, teams will attend a final judging time in their native city with a location to be advised on a case-by-case basis. Winners will be announced at a livestreamed awards ceremony on Friday the 18th of October.

The 2024 AURC was originally scheduled to take place at Williams Wildfire Westernationals, a 3-day rocket launch festival scheduled on September 20th to 22nd near Williams, Western Australia. The festival is hosted by the Western Australian Rocketry Society (WARS) and welcomes all model rocket enthusiasts to launch their own personal rockets in parallel with the university competition as well as industry sponsors and spectators. An event schedule which outlines the timetable for the multiday launch event and further details of ticket sales was released but is since not applicable.

Table 2: AURC 2024 resources

Resource	Description	Location
Key Dates	Timeline of 2024 competition including release dates of documents	https://aurc.ayaa.com.au/competitor-info/
Rules	Competition details, assessment criteria and due dates, eligibility criteria and payment deadlines.	https://aurc.ayaa.com.au/competitor-info/
Rocket Specifications	Rocket restrictions and minimal design requirements	https://aurc.ayaa.com.au/competitor-info/
Deliverables Requirements	Required scope and marking rubrics for each competition deliverable.	https://aurc.ayaa.com.au/competitor-info/
Range SOP and Launch Infrastructure	Standard operating procedure for all rocket launches and details of provided launch site equipment	https://aurc.ayaa.com.au/competitor-info/
Event Schedule	Timetable for in-person multiday launch event	https://aurc.ayaa.com.au/competitor-info/
Registration	Official competition enrolment	AURC Website (closed)
Submission Portal	Location to submit competition deliverables	https://aurc.ayaa.com.au/submission-form/
Leaderboard	Up to date competition standings	AURC Website https://aurc.ayaa.com.au/leaderboard/
Civil Aviation Safety Regulations 1998: Part 101	Regulations for Unmanned Aircraft and Rockets under <i>Civil Aviation Act 1988</i>	https://www.legislation.gov.au/Details/F2023C00499/Html/Volume_3#_Toc139897686
Tripoli Safety Code	Guidelines for the reasonably safe operation of rockets at Tripoli Launches.	https://www.tripoli.org/safety

2.3 Registration

Teams wishing to participate in the 2024 AURC will be required to complete registration which opens on the 1st and close on the 31st of December 2023 in accordance with the “AURC 2024 key dates timeline”. Registration will be available through the AURC website and require the submission of supporting documentation including university declaration of involvement.

2.4 Project Deliverables

Table 3 summarises each of the assessed items associated with the AURC and their respective dates, with explanations below. The due dates listed for all deliverables conclude at 11:59pm AEST. The progress and technical reports are submitted for assessment throughout the year and the remainder of deliverables take place in person on Tuesday the 8th of October

Although initially included, Flight Performance and Recovery deliverables have been removed from the 2024 competition scope due to the move to a dispersed format.

Each competition deliverable will be marked in accordance with its corresponding marking rubric which is specified in the “2024 AURC Deliverables Requirements” document.

Table 3: Competition Deliverables Schedule

Date Due (2024)	Deliverable	Allocated Points
Monday, 22 nd of January	Progress Report 1	75
Monday, 29 th of April	Progress Report 2	100
Monday, 9 th of September	Technical Report	250
Tuesday, 8 th of October	Presentation	150
	Build Quality	150
	Payload	150
-	Flight Performance	-
-	Recovery	-
	Total	875

2.4.1 Progress Report 1

75 points are allocated to Progress Report 1 (PR1) which takes the form of a written report with a maximum page limit of ten pages. The primary focus areas of PR1 are preliminary rocket design, motor selection, team structure and project management. PR1 is due on Monday the 22nd of January, three weeks after the competition start date and one week before the motor payment deadline.

2.4.2 Progress Report 2

100 points are allocated to Progress Report 2 (PR2) which also takes the form of a written report. PR2 has a more demanding scope than PR1 and provides a more detailed overview of the rocket design and progress to date. PR2 is due on Monday the 29th of April.

2.4.3 Technical Report

250 points are allocated to the final technical report, which is intended to be an all-inclusive professional written report evaluated based on quality and technical aptitude. The report must contain details about the team's research, design process, design decisions, manufacturing processes, payload details, adherence to safety guidelines, adherence to legal requirements, and adherence to competition requirements, final design, estimation of performance, suggested improvements/limitations, and any other relevant details. The technical report was due on Monday the 5th of August, but now due to the dispersed format of the competition will be due on Monday the 9th of September.

2.4.4 Presentation

150 points are allocated to an in-person presentation by the teams to the judges, followed by an informal Q&A. Details of presentation format and duration will be provided in the "AURC 2024 Deliverables Requirements" document. In the Q&A, students will be required to articulate their rocket functionality and justify design decisions on the spot. Full marks will be awarded to teams that are able to demonstrate a deep understanding of the design, especially those with members who understand areas beyond their own discipline of study.

2.4.5 Build Quality

150 points are allocated to the overall build quality of the launch vehicle which is inspected by a judge in-person. Full marks will be awarded to teams whose rocket is physically manufactured to a high and professional standard, and for team members who show a deep understanding of the construction process. In-house construction will be looked on favourably, provided that it is of a suitable quality. Note that it is expected that the rocket construction is completed despite the rockets not physically launching for the competition.

2.4.6 Payload

150 points are allocated to the rocket payload which inspected by a judge in-person. Payloads are judge based on their compliance with the restrictions outlined in the "AURC 2024 Rocket Specifications" document in addition to further criteria to be confirmed in the "AURC 2024 Deliverables Requirements" document.

2.4.7 Flight Performance

The flight performance deliverable has been removed from the 2024 competition as it is changed to a dispersed format. Although zero points are allocated, the scoring is still listed here as it is relevant to future competitions.

2.4.7.1 Score Calculation

The score for the flight performance carries a maximum of 250 points and is determined according to the measured apogee z according to the equation in (1). It is normally distributed about the target apogee Z^* with a mean and standard deviation equal to the target apogee and 7.5% of the target apogee, respectively. A graph showing the scoring for the 10,000ft target altitude category is given in Figure 1.

$$Score(z) = \frac{1}{0.075 \cdot Z^* \cdot \sqrt{2\pi}} e^{-\frac{(z-Z^*)^2}{2(0.075 \cdot Z^*)^2}} \quad (1)$$

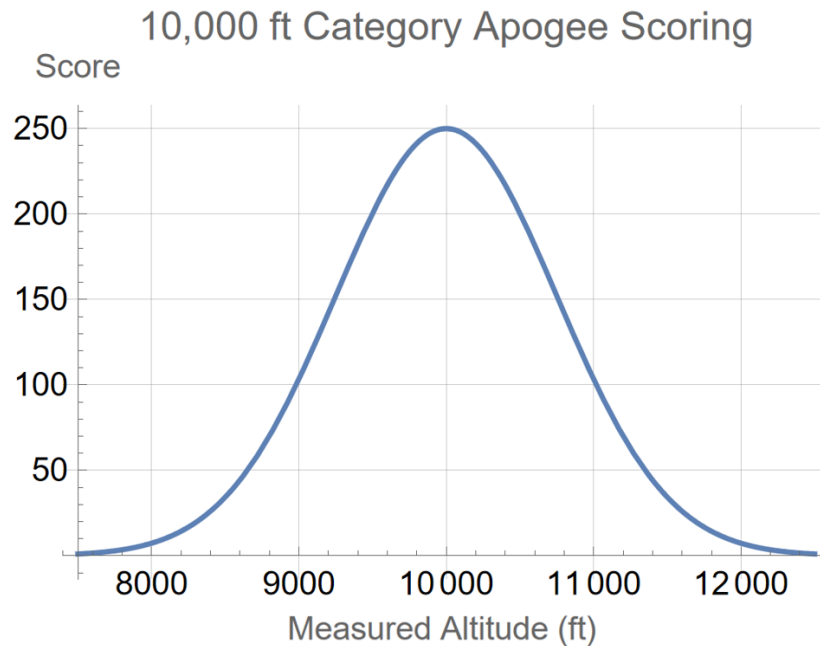


Figure 1: Distribution of scores for 10,000 ft altitude competition

2.4.7.2 Scoring Justification

The "linear" scoring used in the previous AURC and other target altitude competitions does not reflect the fact that improvement towards the target becomes more difficult for closer apogees. In the normal distribution scoring, apogees closer to the target are increasingly more valued than those further away. This weighting has been chosen as it is consistent to a real-world context whereby the rocket apogee requirement is derived from the needs of another subsystems and there is diminishing utility of rocket positioning with increased distance from the target.

Further, the distribution will mitigate the effects of randomness on scoring for high performing teams who are close to the target. This is important since competition results are determined from a single flight which is susceptible to unpredictable variation.

2.4.7.3 Determining Apogee

The measured apogee of a flight is determined by measurements made by approved COTS altimeters, with a list available in the "AURC 2024 Rocket Specifications" document. Teams that have more than one COTS altimeter may elect to calculate the apogee before the launch through one of the following methods:

- By taking the arithmetic mean of the apogee readings from all onboard altimeters (default option)
- By electing the order of preference of altimeter readings. The apogee determined from the first preference altimeter will be used unless it is not available (through malfunction or failure), in which case the second preference will be used, and so on.

Please note, retrospectively adopting the altimeter reading that is closest to the target is not an allowable option. Furthermore, where differentiation between altimeters is not possible (i.e. they are the same model) teams will be required to adopt option 1.

2.4.8 Recovery

The recovery deliverable has been removed from the 2024 competition as it is changed to a dispersed format. Although zero points are allocated, the scoring is still listed here as it is relevant to future competitions.

100 points are allocated to the successful recovery of the flight vehicle post launch. A designated AURC official is required to attend the physical recovery of the flight vehicle to avoid tampering. No marks will be awarded for vehicles retrieved without the associated recovery teams. Recovery marks are determined according to whether the rocket's recovery subsystem performed to its design specifications as well as the level of damage (if any) inflicted on the vehicle. Full points will be awarded to teams who have nominal recovery events and are able to re-fly the vehicle without repair.

3 Fees

Table 4 summarises each of the fees associated with the AURC and their respective dates, with explanations below. The due dates listed for all fees conclude at 11:59pm AEST. All fees besides the competitor fees are non-refundable after their respective due dates.

Table 4: Fee Schedule

Date Due (2024)	Fee Name	Amount (AUD)
Monday, 22 nd of January	Registration fee	\$500 (per team)
Monday, 29 th of January	Motor payment	Variable
Wednesday, 6 th of May	Rocket fee	N/A - was \$700 (per rocket)
Monday, 12 th of August	Competitor or guest fee	N/A - was \$163.35 (per person)
Monday, 19 th of August	Festival fee	N/A

3.1 Refunds

As outlined in section 5, preparation is underway for the 2025 AURC with in-person launch event. With regard to financial obligations and commitments in the 2024 competition we offer the following:

- **Half price registration for 2025 (for 2024 teams).** All teams who registered for the 2024 AURC will be eligible for a half-price registration fee in the 2025 competition. AYAA understands the disappointment caused by the 2024 launch festival cancellation and has consequently provided this option to highlight our commitment to delivering a launch event.
- **Full Refund of individual tickets.** In lieu of the dispersed format with no launch event, any competitor or guest fees purchased will be entitled to a full refund. Purchases made through trybooking will be automatically refunded. Please allow for 5-10 business days for the funds to return to your account as per trybooking's own [policy](#). Purchase made by invoice will be processed by AYAA's financial team. For questions on the status of your refund please reach out by email.
- **Optional Rocket fee refund.** The AYAA is pleased to be able to offer a refund of Rocket fees if requested by Monday the 26th of August. It is otherwise assumed that AYAA will hold onto the rocket fee for teams to enrol in the 2025 competition, where said fee will be credited towards their new entry, thus preventing unnecessary back and forth.

Unfortunately, it remains the case that Registration fees paid for the 2024 competition are not refundable. We understand that the competition is different than the one teams initially signed up for. However, that does not change the fact that we have already incurred costs towards the AURC 2024 that are non refundable. The AYAA

is a volunteer run not-for-profit and will always aim to provide the largest benefit back to teams. With any suggestions, enquiries or concerns we would ask you to please reach out to contact@ayaa.com.au

3.2 Registration Fees

Each competing university is required to pay a registration fee to secure their place into the competition. Universities entering multiple categories will only be charged one registration fee. The registration fee is \$500 for each university and is due three weeks after the registration period closes on Monday the 22nd of January.

3.3 Motor Payment

To assist with procurement of solid rocket motors for use in the competition, a group propellant order with delivery to the launch site location is available. AYAA will not be directly responsible for dealing with propellant purchases and only facilitate the linkage of teams and a third-party vendor who will receive payment. Teams are not required to procure propellant through this avenue, however, motors must be TRA certified and transported according to the relevant state and federal laws for them to be used in the AURC.

Further information on propellant ordering will be released in accordance with the "AURC 2024 Key Dates" document and include the list of available motors, prices, and shipping costs. Teams should note that due to the long shipping times associated with dangerous goods, motor selection and payment is due eight months before the competition launch date. Teams wishing to purchase their motors through this avenue will be required to pay the cost of motors and shipping in full by Monday the 29th of January.

3.4 Rocket Fee

Each rocket launched in the AURC will incur an accompanying rocket fee. This fee is used to pay for rocket launch infrastructure including launch rails, ignition systems and recovery teams. Teams will also be provided with undercover rocket preparation areas with tables and electricity. The rocket fee is \$700 for each launch completed and is due on Wednesday the 6th of May.

3.5 Competitor Fee

Students attending the AURC in-person are required to pay the competitor fee which grants them admission to the event during rocket-launching (business) hours and the final awards ceremony. This fee is used to pay for festival amenities such as toilets, electricity, water and first aid. The competitor fees are still to be confirmed in price and are due 3 weeks before the competition date on Monday the 12th of August. Competitor fees are refundable 1 week after the due date.

3.6 Festival Fee

As the AURC is taking place at a larger rocket launch festival, tickets may be purchased to attend the festival in addition to the AURC competition. These tickets will include camping grounds and facilities for the entire 3-day event and are available to non AURC competitors. Competitors are not required to purchase festival tickets and are welcome to stay off-site and travel to the competition each day at their own expense. If competitors do pay the festival fee, the compulsory competitor participant fee will be deducted off the advertised public price. Festival fees are still to be confirmed in price and are due two weeks before the competition date on Monday the 19th of August.

4 Conditions

4.1 Team Composition and Eligibility

Teams are encouraged to diversify their educational background when selecting or recruiting new team members. The AURC is designed to be as multidisciplinary as possible, by encouraging students from all fields to take part in the project and work alongside each other. Real world complex projects, such as launching rockets with a scientific payload, require teamwork by people from different educational backgrounds and experiences.

4.1.1 Student Team Members

AURC teams shall consist of members who are current undergraduate or graduate students (including Master's or PhD students) during the current academic year from one or more tertiary academic institutions. "Joint teams", with members from two or more collaborating universities are eligible, but must have approval from all involved universities. Teams may be of any size as long as the majority of students involved in rocket construction are current undergraduates. Students who graduate throughout the course of a competition (e.g. are enrolled at the time of registration but have graduated by the time of competition) remain eligible to compete in the AURC of their graduating year.

4.1.2 Multiple Rocket Entries

Only one rocket per university organisation (or joint teams) may be entered into each launch category. This restriction is to ensure the fairness of the competition such that all teams are judged on the outcome of a single rocket launch.

If a team is entering more than one category, it is encouraged that each entry has a separate project team with its own personnel. This will encourage participation amongst team members by sharing learning opportunities and workloads. However, it is not a mandatory requirement and separate category rocket entries by the same personnel are permitted.

4.1.3 Participation Waiver

Each attendee of the AURC launch event must sign the AURC Participation Waiver. By signing this waiver each individual team member and/or participant acknowledges that the AURC (and AYAA) are not liable for any errors, omissions, acts, failures, or harm caused to or by any individual. The waiver will be completed when students pay their competitor fees.

4.1.4 Academic Advisors

The work surrounding the design of the launch vehicle for the AURC is to be completed by students. To ensure that no team has an unfair advantage, all advisors will be required to sign a waiver as part of the enrolment process to serve as a document of record stating their level involvement with their respective team. Teams that have academics actively assisting in the developments of their payload and or project will be at risk of having severe penalties imposed, including disqualification of pieces found to be in breach or disqualification from the competition as a whole.

It is the responsibility of all teams to ensure that their advisors are fully aware of the level of support they are allowed to provide to students and for waiver forms to be submitted. If teams are uncertain regarding the level of support they can request from their advisor, please contact an AURC representative. The AURC representatives will evaluate the details and merits of requests on a case by case basis.

4.2 Withdrawal

Teams may withdraw from the AURC at any time by sending a formal email to the AURC organising committee with their Team ID in the subject title. Withdrawing teams will not be eligible for refunds.

4.3 Submissions

Competition deliverables are to be submitted through the online portal listed in section 1.3 prior to 11:59pm AEST on the dates listed in section 2.4. Should any issues with the online portal occur, email your submission to aurc@ayaa.com.au with the specific deliverable name as the subject.

4.4 Penalties

The AURC reserves the right to disqualify or enforce penalties as they see fit to teams who grossly violate competition expectations, including teams who exhibit unsportsmanlike conduct or who are found guilty of cheating or plagiarism. This extends to penalties for breaching safety protocols as detailed in section 4.4.3 which will be taken with the utmost seriousness and includes failing to adhere to range safe operating procedures (section 4.7.5), governing regulations (section 4.7.2), or generally behaving in an unsafe manner. Disqualified teams will not be eligible for refunds as outlined in section 3.

Unsportsmanlike behaviour infringements include, but are not limited to:

- Hostility shown towards other teams;
- (Intentional) failure to comply with a reasonable request from AURC committee members or any other relevant officials;
- Intentionally presenting misleading information to any AURC or any other relevant officials, etc.

4.4.1 Late Payments

The due dates of fees outlined in section 2.4 are non-negotiable. The AURC reserves the right to disqualify teams who do not pay registration or team fees.

4.4.2 Late Submissions

Late submission of any deliverable will result in a 5% per day penalty of the overall mark of the deliverable in question, accruing to a total maximum of a 35% reduction. This means that after seven days, a given team can achieve a maximum of 65% of the original available mark. After seven days the deliverable will receive a score of zero.

Requests for extensions and special consideration must be made by email to aurc@ayaa.org.au within three business days of the due date. Special consideration will only be granted in extenuating circumstances. Computer/IT failure, misunderstanding or misreading of due dates, team commitments or university assessment periods are not adequate grounds for special consideration. Leniency and exceptions will be assessed on a case-by-case basis.

4.4.3 Safety Infringements

High power rockets are inherently dangerous and safety is of paramount importance to the AURC. As such, the following not only applies to conduct during the final launch event, but will cover the entire duration of the competition, from registration to the end of the closing ceremony. The AURC and its industry partners want to highlight that teams can (and will) be disqualified for breaching critical safety protocols. However, for minor safety infringements a smaller penalty will be enforced.

Safety infringements include, but are not limited to:

- Failing to adhere to range safe operating procedures (section 4.7.5).
- Failing to adhere to governing regulations (section 4.7.2).
- Unapproved team members crossing the flight line.
- Unsafe setup and bench testing of your launch vehicle.
- Failure to use appropriate personal protective equipment.

4.5 Scoring

Each competition deliverable outline in section 2.4 will be marked in accordance with its corresponding marking rubric which is specified in the "AURC 2024 Deliverables Requirements" which will be released in accordance with the "AURC 2024 Key Dates" timeline. Judges and safety reviewers will be required to meet the prerequisites outlined in their respective information packs, which are also published according to the released timeline.

Feedback on written assessment items will be provided along with the rubric score. Further detail and supporting information of the marking can be requested up to seven days after the score has been released. The head judge will be the final authority on any scoring disputes.

4.6 Prizes

Teams may score a maximum of 1000 points in the competition with the weighting of each assessable item given in section 2.4. In each category there will be two prizes awarded; a first place and runner up award which correspond to the team with the highest and second highest aggregate score in their category, respectively. An overall winner will be awarded to the team with the highest score in the 2024 competition.

4.7 Rocketry Compliance

4.7.1 Rocket Design

Competing rockets will be required to meet the restrictions specified in the "AURC 2024 Rocket Specifications" document which will be released in accordance with the "AURC 2024 Key Dates" timeline. Launch vehicles which do not meet mandatory specifications will not pass the safety review that is detailed in section 2.4.

4.7.2 Regulations

Rockets entered in the AURC are considered a type of high-power rocket (HPR) and will be treated as such in compliance with the Civil Aviation Safety Authority (CASA) regulations (location provided in section 1.3) and all other federal, state, and local laws, bylaws, rules and regulations. During testing, teams must launch from a CASA approved area (see CASR 101.425) regardless of the intended altitude. It is the responsibility of competing teams to be aware of these regulations. AYAA recommends seeking the guidance of local Tripoli or NAR rocketry clubs for guidance on the restrictions of launching model rockets.

The competition launch will take place on a site operating as a Tripoli Prefecture and teams will be required to follow the relevant Tripoli rules, regulations, guidelines, safety codes and certification requirements as outlined section 1.3.

4.7.3 Propellant

The categories available in the 2024 competition are only for solid, commercial off the shelf (COTS) rocket motors. Motors must be TRA certified and transported according to the relevant state and federal laws for them

to be used in the AURC. The 2024 AURC is unable to accommodate launches of other propulsion types including student research and developed (SRAD) solid rocket motors, hybrid or liquid propellant.

4.7.4 Certification

Each rocket launched at a Tripoli prefecture requires a flyer of record (FOR) who possesses the correct high-power certification to launch the installed solid rocket motor. Motors with an installed impulse exceeding 640 and 5120 newton-seconds require a level two and level three certification, respectively. Information regarding high power certification can be found on the Tripoli [website](#).

FOR's will need to possess a high level of familiarity of the rocket functionality and personally prepare or oversee preparing of the rocket on the day of launch. The AYAA is able to assist teams in finding a suitable flyer of record who can launch the rocket on behalf of the team.

4.7.5 Safety Procedures

Safety is a core principle of experimental rocketry. Rocketry involves handling energetic materials such as black powder, solid rocket propellant and in some cases high pressure fluids. As such, it is expected that all teams uphold consistent and sufficient safety standards throughout the competition and at any other launch events. All AURC launch event specific safety guidelines for the AURC will be outlined in the "AURC 2024 SOP's" (standard operating procedures) document.

Note that the written competitions deliverables will require teams to submit their own checklists and procedures for rocket assembly and launch preparation. Checklists allow your team to work more efficiently and consistently, while helping ensure safety critical steps are not overlooked.

5 Future Plans

The 2024 AURC will be the first time that the competition has ran in 2 years in conjunction with being the second time it has included an in-person launch event. Launching rockets is inherently dangerous and carries with it significant organizational obstacles, particularly those associated with securing a suitable launch site. The launch site available for 2024 will not be able to accommodate launches to 30,000 ft altitude. AYAA has decided to exclude this altitude category for the 2024 competition and continue with 5,000 and 10,000 ft options, as opposed to avoiding the competition altogether.

Further, the 2024 competition will not include student research and developed (SRAD) solid rocket motors, hybrid or liquid propellant and two stage categories. These categories demand more infrastructure than conventional COTS solid rocket motors as well as carrying an elevated level of risk and therefore more demanding requirements of risk management. Building launch capabilities in these areas is timely and not feasible for our team with a one-year turn around. Other categories offer a more challenging problem for universities with well-established rocketry teams and encourage innovation in the Australian space industry. Preparations for a 2025 competition are underway, with a scope planned to accommodate COTS solid launches to 10,000 and 30,000 ft.

THANK YOU

AYAA would like to express our thanks to you for competing in the 2024 Australian Universities Rocketry Competition. With your help, we can continue to strengthen the Australian space sector and provide industry relevant extracurricular experience to undergraduate and postgraduate university students of all STEM disciplines. Please do not hesitate to direct any questions about the AURC to auro@ayaa.com.au.