ATSE

SUBMISSION

Submission to the Department of Education

Submission to the 2026 National Research Infrastructure (NRI) Roadmap Issues Paper Consultation

1 December 2025

Research infrastructure underpins Australia's research and development capability, driving the advancements that improve our quality of life, transform how we live and work, and stimulating economic growth. Research infrastructure can be physical laboratories and equipment, but is increasingly based around virtual systems, networks of experts and international collaborations. The rise of artificial intelligence could lead to significant disruptions to how research is conducted across a wide range of fields and presents opportunities for enhancing research outcomes. The National Research Infrastructure (NRI) Roadmap will be critical to ensure the NRI adapts to these changes in infrastructure and its use, while also continuing to foster research collaborations and the commercialisation of research, so that Australians get the most out of public research infrastructure.

This submission outlines ATSE's responses to the Issue Paper survey, submitted through the Department of Education portal.

Should the proposed definition of NRI in the 2026 NRI Roadmap be modified – such as by elaborating what is meant by 'nationally significant', or by other changes?

ATSE supports the proposed updated definition of National Research Infrastructure, particularly noting the inclusion of virtual and distributed assets which are becoming increasingly relevant and impactful across science, research and innovation. Complex and interdisciplinary work means that data systems, shared and collaborative resources and the governance structures and rules that underlie these are vital infrastructure systems for many researchers. An example of such an approach is the National Energy Analysis Centre that operates a Systems Science Toolbox – a collection of datasets and analytical software based on a multi-energy framework – amongst other accessible research facilities. Simultaneously, the rise of artificial intelligence could have long-lasting benefits across multiple research fields. The inclusion of virtual and distributed resources in the new definition therefore makes NRI more responsive to the research ecosystem. A more detailed definition will also help create clarity in funding decisions, particularly for infrastructure that is considered landmark infrastructure with their own budget lines such as ANSTO. It may be helpful to define the difference between landmark infrastructure and national infrastructure.

What is the best approach to retain staff and add to new capabilities to the current NRI workforce?

Staffing at National Collaborative Research Infrastructure Strategy (NCRIS) facilities has been falling, with staffing numbers corresponding to a drop in user numbers. If the Federal Government wishes to expand the NRI user base, the NRI workforce needs to be expanded and supported. As mentioned in our previous submissions to the NRI Roadmap consultation and the NRI Workforce Survey, long-term planning and funding is needed to support the NRI workforce and retain talented staff members. Long-term funding models, that support the workforce for the life of the infrastructure, will help ensure staff feel secure in their employment and help to develop career pathways.

Improving workforce diversity can also help to grow the NRI workforce, creating resilience to attrition of specialised positions. While women already make up 40% of the NRI's technical and managerial staff, growing representation from women, as well as Aboriginal and Torres Strait Islander people and those from regional backgrounds, could help to boost the workforce. Linking NRI facilities with the recommendations of the Diversity in STEM review, and Diversity programs like ATSE's Elevate: Boosting Diversity in STEM and Industry Mentoring Network in STEM (IMNIS) could help to recruit a more diverse workforce.

How can NRI facilities ensure their capabilities are made widely known and available to potential users in relevant industry sectors across Australia's cities and regions?

The current landscape of NRI remains fragmented and difficult to navigate – particularly for small and medium enterprises (SMEs) that lack the networks or resources to identify and access suitable capabilities. This causes the underutilisation of research infrastructure (ATSE 2025). A single accessible database of

research infrastructure can support users, including industry, to easily find infrastructure to support their aims. This database should include information about all pilot plants, laboratories, manufacturing facilities, digital infrastructure and other infrastructure resources. Ideally, this information would allow users to identify whether a particular NRI meets their needs, while also demonstrating previous outcomes from that infrastructure (where possible). Systems already exist that could manage such a register of national research infrastructure, with institution level databases already acting as valuable resources for both industry and research. These institution level databases can potentially act as a starting point for a national database. This could be further supported by regular outreach programs to universities, industry and not-for-profits – industry roundtables, workshops, networking events and showcases could all be used to promote NRI and support potential users to find appropriate infrastructure.

How can NRI facilities build the know-how and support that will lead to an increase in productive research-industry collaborations?

Getting the most out of NRI requires more than infrastructure. One major barrier to translating innovation identified in ATSE's _Boosting Australia's Innovation_ report is a lack of intellectual property (IP) support. There are often challenges associated with managing IP ownership arising from research, especially where collaborations between universities and industry researchers are involved. Investing in talent development programs that support NRI staff to help manage these IP issues can help to build a network of NRI that supports researchers to navigate complex IP issues and unlock greater commercialisation opportunities based on Australian research.

To improve research translation capability, can you identify and briefly describe needed enhancements of existing NRIs, and/or new NRI?

Research translation is dependent on research data and findings being widely available and accessible. The Office of the Chief Scientist has proposed a public access model for research that would see all Australian research be made public, helping to disseminate research findings (including negative results) and allowing industry better access to cutting edge research. Similarly, open data that is findable, accessible, interoperable and reusable can help identify new research and development opportunities, allow results to be double checked and build partnerships between industry and academia. Investing in research data infrastructure and open access for Australian research can help improve research translation and industry engagement.

How should research translation be planned for in the development of new NRI?

NRI facilities will be most effective when supporting collaboration and integration across the research, development and innovation ecosystem. Industry-academia collaborations result in increased productivity, economic growth and help to ensure the dissemination of knowledge (Bhullar et al. 2019). Research infrastructure is a key component of these collaborative research efforts (ATSE 2025). NRI facilities can act as hubs for local and international industry-academia collaboration, bringing together research stakeholders through partnerships and knowledge-sharing. This can be supported through innovation clusters or precincts that link education (both tertiary and workforce upskilling), research and commercialisation opportunities. Further support can be gained by linking NRI facilities with international funding schemes – such as the Horizon Europe scheme with which Australia is currently negotiating admission. This foundation will work best when industry needs and the broader innovation ecosystem are built into NRI facilities from the beginning. This includes building shared governance and co-investment models to enable genuine collaboration.

If you wish to propose an additional priority suggestion for a new or enhanced capability, that was not in the Survey responses, please name it here, and briefly describe the need, the capability, the medium-term goals, impacted research communities, and the timeframe over which its establishment should occur.

As mentioned in ATSE's initial submission, there is significant need for supercomputing infrastructure in Australia. Current supercomputing infrastructure through the National Computational Infrastructure and the Pawsey Supercomputer Centre are not sufficient to meet future requirements, adapt to changing research environments or manage computing lifespan issues. It is also unclear what supercomputing infrastructure is

even available and accessible beyond these two facilities with no ongoing survey and strategy for supercomputing in Australia. Investment in a national capability and strategy will help understand the foundations currently in place while. Infrastructure investment would ideally include both traditional supercomputers (built on CPUs) and AI supercomputing capability (built on GPUs). This technology can help support research in computational sciences (including AI and machine learning), as well as in areas a major national need, like climate modelling and weather projections. ATSE's recent action statement on AI sovereignty proposes a model for a mission-based approach to AI infrastructure investment.

ATSE thanks the Department of Education for the opportunity to respond to NRI Roadmap Issues Paper Consultation. For further information, please contact academypolicyteam@atse.org.au.

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