Australian National University

Submission:

ACT Budget 2024-2025

ANU Institute for Climate, Energy & Disaster Solutions

This submission is the collated perspective of independent researchers that work at The Australian National University. The views and opinions expressed in this submission reflect those of the authors and contributors.

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Andrew Barr MLA
ACT Legislative Assembly
GPO Box 1020
Canberra ACT 2601
Australia

Re: 2024-2025 ACT Budget Consultation

Dear Chief Minister Andrew Barr,

Please find enclosed a submission by the ANU Institute for Climate, Energy and Disaster Solutions (ICEDS) for the 2024-2025 ACT Budget Consultation process.

Based in the ACT, ICEDS connects industry, governments and communities with climate, energy & disaster-risk research from the Australian National University. Our goal is to advance innovative solutions to address climate change, energy system transitions and disasters. We facilitate integrated research, teaching and policy engagement across disciplines. The enclosed submission contains contributions from experts in climate adaptation, urban energy and climate governance, land use and carbon sequestration, and youth climate anxiety.

Our network of ANU researchers will gladly offer further consultation.

Sincerely,

Professor Mark Howden
Director, Institute for Climate, Energy and Disaster Solutions

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Executive Summary

The Australian National University (ANU) Institute for Climate, Energy and Disaster Solutions (ICEDS) welcomes the opportunity to submit recommendations to the ACT Budget 2024-25.

This submission focuses on two key areas, addressing greenhouse gas emission policy and land management in the ACT and supporting ACT community wellbeing and equity in a changing climate.

Recommendations relating to *net zero and carbon reduction through land management* include:

1. Raise net zero ambition in the ACT to align with limiting warming to 1.5°C:
    a. Allocate resources to accelerate progress towards achieving net zero emissions before 2035.
    b. Allocate appropriate funding to implement best practice Scope 3 accounting and publication in the ACT Budget 2024-25 as identified in the review below.
    c. Emissions are likely to increase in the ACT over the next ten years. Include assessment of the ACT's Scope 3 emissions in the ACT Budget 2024-25 to identify effective pathways to reduce them in accordance with the Paris Agreement.
    d. Allocate resources to accelerate the electrification of the ACT bus fleet in line with net zero targets in Recommendation 1a. and increase direct bus services from outer suburbs to key transport hubs in the ACT to reduce public reliance on private vehicles.
2. Enhance disaster risk reduction in national parks: explore land management strategies in national parks to reduce disaster risks and maximize carbon removal potential.
    a. Allocate resources to explore controlled/cultural burning opportunities that support increased carbon removal.
    b. Allocate resources to increase groundcover vegetation around waterways throughout the ACT National Parks to reduce soil erosion and reduce fire and flood risk.

Recommendations relating to *community wellbeing and equity in a changing climate* include:

3. Empower education professionals to integrate climate change into their curriculums through professional development programs.
    a. Allocate funding to support professional development programs for educators focused on integrating climate change into their curriculums.
    b. Continue to grow the ACT Sustainable Schools Program.
4. Create housing stock that is fit-for-purpose in a changing climate.
    a. Reduce the percentage of time spent in unsafe indoor temperatures for ACT residents by allocating funding to new rental and building standards that promote passive temperature regulation and energy efficient heating and cooling systems.
    b. Accelerate the electrification of households and businesses to 2035 by allocating funding to expand existing schemes including the Home Energy Efficiency Program, Home Energy Support Rebates and the Sustainable Household Scheme.
    c. Explore financial mechanisms to reduce barriers to electrification and sustainable technology adoption in the housing sector.

Section 1: Net zero and carbon reduction as a land management opportunity.

Recommendation 1:
Raise net zero ambition in the ACT to align with limiting warming to 1.5°C.

ICEDS commends the ACT's commitment to achieving net zero by 2045, and recognises its ambition as one of only three states or territories in Australia to commit to a net zero goal earlier than 2050.[1] However, according to the Climate Council of Australia, the whole country needs to achieve net zero emissions by 2035 to limit climate change to an average of 1.5°C of warming,[2] as described in the Paris Agreement[3] (to which Australia is a signatory).

Recommendation 1a): The Environment, Planning and Sustainable Development Directorate (EPSDD) allocate resources to accelerate progress towards achieving net zero emissions before 2035.

The ACT will be developing a renewed Climate Change Strategy in the next two years, given the current iteration lapses in 2025. This is an opportunity to reinforce the ACT's position as a leader in addressing the global challenge of climate change[4] by shifting the targets to align with current climate science.

While the ACT's net zero commitments are ambitious relative to the rest of Australia, and globally,[5] it is worth noting that these commitments include only Scope 1 and Scope 2 emissions.[6] According to a report from the Office of the Commissioner for Sustainability and the Environment (OCSE), Scope 3 emissions account for 94% of the ACT's overall emissions profile.[7] As such, the current net zero targets tackle only a small fraction of the ACT's emissions. In 2022, the ACT government responded to the OCSE report, stating that it will not be seeking to mandate Scope 3 emission reduction targets at that time.[8] Reasoning included the complexities and uncertainty with measurement and data available for estimating Scope 3 emissions.

The ACT government also stated that it would be undertaking a literature review and assessment of Scope 3 emissions methodology and data availability in 2024, with improvements to data collection and publication subject to budget processes.

Recommendation 1b): The Environment, Planning and Sustainable Development Directorate (EPSDD) allocate appropriate funding to implement best practice Scope 3 accounting and publication in the ACT Budget 2024-25 as identified in the literature review.

This would reduce the complexity and uncertainty barrier to developing Scope 3 targets in the ACT, allowing the ACT government to begin to tackle the 94% of territory emissions that are currently unaccounted for in its net zero commitments.

The largest sources of Scope 3 emissions in the ACT in order are transport (including postal and warehousing), food, retail, construction, public administration (including policing and defence)

[1] Others include Victoria (net zero by 2045) and Tasmania (net zero by 2030)
[2] Steffen, W. *et al.* (2021)
[3] Conference of the Parties, Adoption of the Paris Agreement, (Dec. 12, 2015)
[4] Environment, Planning and Sustainable Development Directorate (2019)
[5] Energy & Climate Intelligence Unit (2024)
[6] EPSDD (2019)
[7] Office of the Commissioner for Sustainability and the Environment (2021)
[8] Rattenbury, S. (2022)

and manufacturing.[9] Because the ACT produces so little in terms of goods, it relies on imported emissions to satisfy consumption.

The ACT's population is projected to grow by approximately 20% over the next ten years.[10] Studies show that population increases in high-income areas are associated with increases in CO_2 emissions due to the population's high consumption.[11] The ACT population has the highest average weekly disposable income in Australia.[12] Increasing population in the ACT is therefore consistent with increasing emissions, everything else being equal. Increasing emissions over the next ten years is inconsistent with limiting warming to 1.5°C, which (according to the Intergovernmental Panel on Climate Change) requires global emissions to peak before 2025 at the latest.[13]

Recommendation 1c): Emissions are likely to increase in the ACT over the next ten years. The EPSDD should include assessment of the ACT's Scope 3 emissions in the ACT Budget 2024-25 to identify effective pathways to reduce them in accordance with the Paris Agreement.

The largest source of Scope 3 emissions in the ACT is transport. According to the latest available data (from 2021), 90% of ACT households had at least one car, and according to Transport Canberra and City Services (TCCS), most Canberrans travel mainly by car.[14] Geographically, the ACT has multiple dispersed town centres connected by road networks and has limited bus coverage connecting the CBD to its outer suburbs.[15] The ACT has made progress in electrifying its bus fleet. However, only 20% of the fleet is expected to be zero-emissions by 2026, with the remaining vehicles aimed to transition by 2040.[16] The ACT is leading Australia in uptake of electric vehicles (EVs) and has the highest level of cycling in Australia.[17] However, focusing on personal vehicles or active travel options leaves behind people in the ACT who are not able-bodied, are suitably located or wealthy enough to access and use low/zero emissions vehicles, e-scooters or electric bicycles.

Recommendation 1d): TCCS allocates resources to accelerate the electrification of its bus fleet in line with net zero targets in Recommendation 1a. and increases direct services from outer suburbs to key transport hubs in the ACT to reduce public reliance on private vehicles.

Recommendation 2: Manage the ACT's National Parks to reduce disaster risk and maximise potential for atmospheric carbon dioxide removal.

Future budgets will increasingly need to address an increase in frequency and intensity of extreme events due to climate change. ACT Emergency Services Agency identified the ACT as likely to experience worse bushfire, storm, heatwave and flood risk.[18] The ACT has an opportunity to leverage its vast coverage of national parkland, grazing areas and plantation forestry to improve the adaptability of ACT landscapes to climate change and see carbon dioxide removal of one to eight tonnes of carbon dioxide per hectare per year (depending on plant type, rainfall, temperature, slope/soil and management input)[19] for some decades. As part

[9] OCSE (2021)
[10] ACT Chief Minister, Treasury and Economic Development Directorate (2024)
[11] Weber, H., Sciubba, J.D. (2019)
[12] ACT Chief Minister, Treasury and Economic Development Directorate (2024)
[13] Intergovernmental Panel on Climate Change (2022b)
[14] Transport Canberra and City Services. Travel in Canberra (2024)
[15] Transport Canberra and City Services (2023)
[16] ACT Government (2023)
[17] Transport Canberra and City Services (2024)
[18] ACT Emergency Services Agency (2024)
[19] According to output from *Full Carbon Accounting Model (FullCAM)*

of the EPSDD parks and conservation objective to develop, implement and review land management programs, including fire, pine plantations and offset areas,[20] the ACT government should explore disaster risk reduction options that offer carbon co-benefits. While the ACT government has suggested that it would prefer not to use carbon offsets as part of its journey to net zero, there is still good reason to explore improving the ACT's capacity to improve landscape carbon storage.

The ACT incorporates 1,432km^2 of natural environment, located primarily in the Namadgi National Park and Tidbinbilla Valley.[21] Land management of these areas are concentrated around existing roads (where visitor recreation is a key focus) and waterways (managed to protect urban water supply and biodiversity values).[22]

Controlled or cultural burning, away from property and settlement, can reduce bushfire risk. However, the ACT's operations manuals were last published in 2019, prior to the Black Summer Bushfires of 2019-20. As the ACT continues to enact recovery efforts, future plans for controlled or cultural burning should include increased research into realising the co-benefits of targeted burning, including encouraged grass growth and increased root biomass, leading to increased stored carbon.

Recommendation 2a): The EPSDD allocates resources to explore controlled and cultural burning opportunities that support increased carbon removal.

Erosion control measures can also be enacted upstream in national parkland to reduce flood and drought risk. Increased heavy storms due to climate change are likely to worsen erosion of waterways leading to reductions in water quality.[23] In the national park context, local ecological measures can be established and maintained, bringing co-benefits that would not be realised through traditional infrastructure responses.[24] Establishing ground cover vegetation can stabilise soil material and reduce soil loss.[25] Additionally, using native vegetation as an erosion management tool has the co-benefits of spreading water from heavy rains allowing soil infiltration and ground water percolation to reduce extreme weather, fire risk and improve forest growth and health.

Recommendation 2b): The ESPDD allocates resources to increase groundcover vegetation around waterways throughout the ACT National Parks to reduce soil erosion and reduce fire and flood risk.

Section 2: Community Wellbeing and Equity in a Changing Climate

Recommendation 3:
Empower education professionals to integrate climate change into their curriculums through professional development programs.

The ACT Government has developed a Wellbeing Framework to frame government decision making and investment. The Framework notes the intersection of three factors (among others) - Environment and Climate; Education and Life-long Learning; and Health.[26] The Intergovernmental Panel on Climate Change has presented compelling evidence that climate

[20] ACT Government (2023)
[21] Australia's Environment Explorer (2022)
[22] ACT Government (2010)
[23] Li, Z. and Fang, H. (2016)
[24] Rey, F. (2021)
[25] Hann, M.J. and Morgan, R.P.C. (2006)
[26] ACT Government (2020)

change poses implications for physical and mental health and wellbeing.[27] While physical health impacts of climate change have been reported for some time, research attention has relatively recently shifted toward how climate change affects mental health, including experiences of climate anxiety.[28]

The environment and climate change are key concerns for young people in Australia. A recent survey shows the environment is identified by young Australians as the most important issue facing the country.[29] This research also revealed that in the ACT, 25% of young people were 'extremely, or very concerned about climate change' - a finding supporting those in the broader literature concerning climate anxiety in youth.[30]
Despite the importance of the issue, climate change is poorly integrated into the Australian Curriculum. Recent literature highlights that climate change is mainly addressed through the cross-curriculum priority of Sustainability, rather than having a specific mandate of its own.[31] As a result, whether and how climate change content is delivered in classrooms largely depends upon individual teachers' knowledge and motivations to do so, with little systemic guidance or support. This situation inevitably creates consequences for students. Studies show that students perceive their climate education at school as fragmented and disempowering, with scant discussion of how young people can meaningfully contribute to societal responses.[32]

At the same time, teachers are experiencing significant challenges in delivering climate change content, including:

- a lack of curricular and policy mandate;
- a lack of professional development opportunities to engage with rapid scientific developments;
- and concerns over the emotional impact that this topic elicits in some students. [33]

Taken together, these findings suggest that strategic opportunities to improve climate education in schools should be pursued. There should also be a focus on mainstreaming climate change throughout the curriculum, so that *all* students obtain a comprehensive education on an issue of critical importance to their future. A crucial element of this is to support teachers, through centralised funding and other support, to undertake professional development programs targeted at the abovementioned challenges they face in the classroom**.** With appropriate policy interventions, schools could become a site of empowerment for young people, supporting their wellbeing and helping to counter the anxiety elicited by climate change.

To align with the ACT Government's commitment to prioritising the intersection of Environment and Climate, Education and Life-long Learning, and Health, it is imperative for the ACT Government to address the inadequate integration of climate change in the Australian Curriculum. The focus should be on providing teachers with the necessary training and resources to effectively deliver climate change content in classrooms. This targeted professional development will not only enhance educators' knowledge but also empower them to engage students in meaningful discussions about climate change, contributing to a more comprehensive and impactful educational experience.

Recommendation 3a): Allocate specific funding within the ACT Education Directorate Budget 2024-25 to support professional development programs for educators focused on integrating climate change into their curriculums.

Existing initiatives that schools can opt into, such as the ACT Sustainable Schools Program, should continue to be supported and indeed grown. These provide much-needed avenues for

[27] IPCC (2022a)
[28] Lawrance, et al. (2022)
[29] Mission Australia (2023)
[30] Hickman, et al. (2021)
[31] Beasy, et al. (2023), *and* Whitehouse, H., Gough, A. (2022)
[32] Jones, C.A., and Davison, A. (2021) *and*; Russell, T. (Under review).
[33] Beasy et al. (2023)

students to learn practical skills regarding sustainability – for example, growing vegetables and composting. These are important activities, given that taking action has been suggested as offering young people protection from the psychological impacts of climate change.[34]

Recommendation 3b): Continue to grow the ACT Sustainable Schools Program, allocating funding to maintain and expand the program in the ACT Education Directorate Budget 2024-25.

Recommendation 4: Create housing stock that is fit-for-purpose in a changing climate.

Harmful effects of climate change are likely to disproportionately impact lower income residents.[35] According to the Reserve Bank of Australia, lower income households are more likely to also be renters.[36] The EPSDD has made significant progress in ensuring that renters in the ACT will be able to enjoy minimum ceiling insulation standards by November 2026, allowing improved heating and cooling.[37] However, there are currently no requirements for ACT rental properties to provide heating or cooling systems (with public and community housing provided by Housing ACT excepted, which are required to provide a heating appliance). Given the ACT's cool winters, and the impact of climate change on frequency of extreme heat, existing housing stock could be adjusted, and new housing stock built with climate change in mind to allow residents to live comfortably in their own home.

The World Health Organisation (WHO) recommends 18°C as the minimum healthy indoor temperature. However, in 2022, community organisation, Better Renting, found that, during winter, ACT rental homes were below this temperature 88% of the time with an average minimum temperature of 7.4°C.[38] While insulation standards are likely to reduce heat loss by up to 35%, this is clearly insufficient to tackle the ACT's indoor temperatures.[39]

Similarly, as the instance of extreme heat increases, renters are struggling to maintain healthy temperatures in their homes. Better Renting found that, across Australia, temperatures in rental houses were above safe levels 45% of the time (despite the data coming from an unusually cool summer).[40] The report found that, in ACT rentals, access to air conditioning significantly increased the amount of time spent in a healthy temperature range.

While access to air conditioning with both heating and cooling capabilities is an obvious solution, their use has impacts on energy usage. There are opportunities to greatly reduce reliance on appliances to maintain a healthy indoor temperature in the ACT's housing stock by mandating building standards over and above the national building code. In addition to providing occupants with energy efficient heating and cooling appliances, building standards could be developed that focus on building orientation, and tight building envelope for passive temperature regulation in addition to proper insulation for new builds.[41] To improve energy efficiency, existing housing stock can retrofit solar panels and tiles to allow for cheaper use of heating and cooling appliances.

Recommendation 4a): Reduce the percentage of time spent in unsafe indoor temperatures for ACT residents by allocating EPSDD funding to new rental and building standards that promote passive temperature regulation and energy efficient heating and cooling systems.

[34] Sanson, A.V., Van Hoorn, J., Burke, S.E.L. (2019)
[35] Australian Council of Social Services (2024)
[36] Reserve Bank of Australia (2023)
[37] ACT Government (2023)
[38] Dignam, J., Barrett, B. (2022)
[39] ACT Government (2023)
[40] Barrett, B., Catania, L., Dignam, J. (2023)
[41] Alexandra, J., Lawrence, K. and Howden, M. (2023)

As discussed in section 1, the ACT's electrification goal of mandating no more gas by 2045 is too slow to be consistent with the Paris Agreement. No more gas by 2035 is a more appropriate mandate. The ACT Government already has mechanisms in place to ease the financial burden of transitioning from gas. Expanding these will support the acceleration of the ACT's transition away from household gas.

Recommendation 4b): Accelerate the electrification of households and businesses to 2035 by allocating funding to expand existing Environment, Planning and Sustainable Development Directorate schemes including the Home Energy Efficiency Program, Home Energy Support Rebates and Sustainable Household Scheme.

However, it is also crucial for the ACT Government to explore new financial mechanisms to address the upfront costs associated with electrification and adoption of sustainability technologies. For instance, Energy Performance Contracting (EPC) is a market-based solution that encompasses both technical assistance and essential funding for investments in energy cost savings.[42] EPC enables facility owners and managers to upgrade outdated and inefficient assets, with the required capital recovered directly from the energy savings guaranteed by an Energy Saving Company or Energy Services Company (ESCO). [43]

Introducing EPC along with appropriate standards and safeguards in the ACT could potentially contribute to expediting building electrification and retrofitting initiatives for energy efficiency. This recommendation is substantiated by the following points:

1. EPC operates as a market-driven mechanism, simplifying implementation by necessitating agreements among the executive committee (EC), strata, and ESCOs. This streamlines procedures, ensuring minimal disruption for most units.
2. Unlike some international ESCOs that navigate the complexities of EPC for manufacturing, which involves intricate energy-saving solutions for production lines, EPC in the ACT could primarily focus on building retrofitting. This distinction reduces risks for ESCOs, particularly in instances of business failure during the contract period.

By supporting the choice of EPCs, the ACT government may strategically address challenges in the electrification and retrofitting landscape, fostering a more streamlined and efficient approach to sustainable development.

Recommendation 4c): Explore financial mechanisms and appropriate standards and safeguards to reduce barriers to electrification and sustainable technology adoption in the housing sector.

[42] Brown, I. (1988)
[43] The Australasian Energy Performance Contracting Association (2001)

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