

# **Report from the independent members of NIAC to Ausgrid (and the AER) about the proposed Network Innovation Program in Ausgrid's 2024-29 Regulatory Proposal**

## **1. Purpose of this report**

This report is provided to Ausgrid by the independent customer and technical members of the Network Innovation Advisory Committee (NIAC) to be included as an attachment to Ausgrid's 2024-29 Regulatory Proposal (the Proposal) to be lodged with the Australian Energy Regulator (AER) on 31 January 2023. The establishment of NIAC in July 2019 was a sector-first approach to network innovation decision making, approved by the AER as part of Ausgrid's final 2019-24 revenue determination. In this first report on NIAC we:

- review the establishment of NIAC and its first 3 years of operation;
- make observations on how it is delivering for customers and industry; and
- make recommendations to further improve NIAC's operation for the future.

This report expresses our strong support for the continuation of Ausgrid's network innovation program (NIP) and its proposed capex (\$49.5m) and opex (\$5m) for the NIP for 2024-29, subject to the:

- exclusion of the \$49.5m capex from the Capital Efficiency Sharing Scheme (CESS);
- exclusion of the \$5m opex from the Efficiency Benefit Sharing Scheme (EBSS); and
- implementation of the various recommendations in section 10 of this report.

We would be happy to meet with the AER staff and to this report, if requested by the AER.

## **2. Key observations**

1. The transition to a low emissions energy system will necessitate considerable changes in the operation of the electrical energy system.
2. The scale of the challenge is huge – new technology, new workforce skills and an adaptive regulatory environment that provides the right incentives to support an efficient and timely transition.
3. NIAC was established in 2019 with strong customer support, as a sector leading program enabling customers to become central to Ausgrid's innovation decision-making.
4. All customer engagement that Ausgrid has done on its 2024-29 innovation program has resulted in the same conclusion that the program is too small and that Ausgrid must scale its capability to deliver innovation with the ambition necessary to meet rapid net-zero transition.
5. We believe that the NIP and NIAC is an excellent program, professionally managed and delivered and that it is delivering benefits to customers.
6. We acknowledge that CBA accuracy for innovation projects will vary as it is difficult to do accurate estimates as by definition the technology being assessed is new and evolving. We are pleased to see the evolution of the NPV modelling.
7. We strongly support the 2024-29 NIP proposed by Ausgrid. We will continue to encourage Ausgrid to improve its NPV modelling, enhance the program and the

benefits for customers and the wider industry through the adoption of the recommendations in this report and the findings in the Mid-term review.

8. There is a big opportunity for Ausgrid to lift its internal innovation culture and capability to deliver the NIP and to meet its customer's expectations.
9. Our support for the proposed 2024-29 NIP is conditional on Ausgrid implementing our recommendations in this report.

### **3. Background to the authors**

There are currently 8 independent members of NIAC<sup>1</sup>. A brief bio of each of the authors follows:

**Louise Benjamin (independent customer advocate)**: Louise has been a member of NIAC since inception. Louise is a commercial and regulatory lawyer with extensive experience in telecommunications and energy regulation. Louise has been a member of the AER's CCP (including CCP10), is a former consultant with ECA, is a member of Ausgrid's CCC and Reset Customer Panel (RCP) and recently joined the Energy Queensland RRG.

**Mark Byrne (Energy Market Advocate Total Environment Centre (TEC))**: Mark has been a member of NIAC since inception. Mark has been with TEC for 11 years and was funded by ECA until the end of 2022 to work on energy market reforms to integrate local energy solutions. He has been responsible for several changes to the National Electricity Rules and was co-creator of the Green Electricity Guide (with Greenpeace).

**Dr Jill Caine (Acting Director Distributed Energy Clean Energy Council (CEC))**: Jill joined NIAC in November 2022<sup>2</sup>. Jill is a climate scientist with extensive experience in the electricity sector covering storage and networks, and has a focus on resilient electricity to address climate impacts.

**Professor John Fletcher (Energy Systems Research Group, Electrical Engineering and Telecommunications UNSW)**: John joined NIAC on 16 October 2019. John is a Chartered Electrical Engineer and a Professor of Electrical Engineering with expertise in power electronics and electrical power conversion. He is the Director of UNSW Digital Grid Futures Institute, and co-leads the Electrification and Energy Systems Network in the NSW Government's Decarbonisation Innovation Hub.

**Mark Grenning (Director Policy and Regulation Energy Users Association of Australia (EUAA))**: Mark has been a member of NIAC since inception. Mark is an experienced energy consultant with a focus on the consumer side. Mark's role at EUAA includes advocacy to all energy market bodies and governments. He is a member of many network consumer consultation forums as well as the 2024 ISP Consumer Panel. He had a 30-year career with Rio Tinto, the last 7 being their global subject matter expert on electricity and gas supply to its operations.

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<sup>1</sup> Between July 2019 and March 2021 Shelley Ashe from Energy Consumers Australia (ECA) was a member of NIAC

<sup>2</sup> CEC was previously represented on NIAC by Darren Gladman

**Jan Kucic-Riker** (Policy Officer, Energy + Water Consumers' Advocacy Program Public Interest Advocacy Centre (PIAC)): Jan joined NIAC in November 2022<sup>3</sup>. Jan is a Policy Officer in PIAC's Energy and Water Consumers' Advocacy Program. His work focuses on energy planning, renewables, and decarbonisation to ensure people's needs are met by clean, resilient, and efficient energy and water systems.

**Mike Swanston** (Principal Consultant The Customer Advocate): Mike has been a member of NIAC since inception. Mike is an electrical engineer with many years experience in the electricity industry, focussing on network investment and operations. More recently, Mike's interest has been to ensure investment is relevant to changing consumer needs through the transition to a low carbon economy.

**Peter Youll** (volunteer Solar Citizens): Peter has been a member of NIAC since inception. Peter is a retired engineer with personal experience with domestic solar and battery, EV and heat pump water systems.

#### **4. The role of innovation in the transition and why it is important**

The transition to a low emissions energy system will necessitate considerable changes in the operation of the electrical energy system. New sources of generation will be integrated into both the transmission network and the distribution network.

New technologies will be used both to connect new sources of generation, storage and load and then actively control the flow of power and energy throughout the network. This will ultimately move what is currently a relatively passive one way system down a pathway to a fully two way system where active control is necessary in order to fully utilise the network of the future that helps facilitate net zero ambitions.

In addition, these technologies will drive a rapid acceleration in power system dynamics: the relatively slow changing system that is based on the average control of parameters such as frequency and voltage will become a system where the dynamics of the system will be considerably faster. Control will be required at 10s of microseconds rather than 10s of milliseconds. This will entirely change the way power systems will be planned, designed and operated.

This paradigm shift will require new forms of modelling, simulation and protection to keep the network stable, delivering power of the necessary quality, maintaining safety of people, equipment and the environment, and delivering this essential service efficiently and equitably. Innovation will be necessary not just for Ausgrid to adapt its current distribution system to deliver the increased demand for energy services (generation, storage, load) but also to deliver the networks of the future, for example, the electrification of transportation.

This transition is a huge opportunity for Ausgrid. It offers an order of magnitude increase in demand for access to their network. While Ausgrid can draw on innovation internationally and domestically it still has to make it work for its network.

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<sup>3</sup> PIAC was previously represented on NIAC by Miyuru Ediriweera and Anna Livsey

The scale of the challenge is huge – new technology, new workforce skills and an adaptive regulatory environment that provides the right incentives to support an efficient and timely transition.

## **5. Why was NIAC formed?**

On 23 November 2018 Ausgrid hosted the Network of the Future Forum with a broad range of industry experts, academics, customer representatives, EWON, Endeavour and Essential and Ausgrid staff. Several of the authors attended the Forum. The Forum developed a future customer vision for the grid, guiding principles for customer funded innovation investment and priority areas for customer funded innovation. A key output from the Forum was customers seeking a greater role in delivering the direction of innovation and embedding customer oversight into Ausgrid's innovation decision making process. Ausgrid proposed that a new committee be formed, to be known as NIAC, to provide the opportunity for customers to drive the direction of the network innovation program.

In January 2019 Ausgrid described the background to the formation of NIAC in these terms:

*"The purpose of the NIAC is to place the customer at the centre of investment decisions as we transform our network. The NIAC will provide a forum for Ausgrid to collaborate with consumers on determining future investment relating to innovation and the transformation of our network. Importantly, as technology evolves it may become apparent that certain innovation projects are no longer appropriate and investment is better directed elsewhere. The NIAC will oversee and provide advice on this prioritisation."*<sup>4</sup>

Some submissions to the AER in support of Ausgrid's 2019-24 NIP and the role for NIAC set out in its Revised Regulatory Proposal made these observations about expectations for NIAC and how it would deliver for customers:

### CCP10:

- *"CCP10 continues to strongly support this program and the \$42M expenditure. The Network Innovation Program was unanimously supported by all present at the Network of the Future Forum on the basis of the safeguards reflected in the membership of the NIAC, its terms of reference and the principles for innovation."*<sup>5</sup>
- *"CCP10 supports the change proposed by Ausgrid to exclude the expenditure proposed under the Network Innovation Fund from the Capital Efficiency Sharing Scheme (CESS), and place a high degree of responsibility for its governance in the hands of the customer focussed NIAC."*<sup>6</sup>

### PIAC:

- *"In particular, we commend Ausgrid for holding the Network of the Future forum in November 2018 which was attended by all three DNSPs as well as consumer advocates including PIAC and other stakeholders to discuss the potential benefits to be gained through better utilisation of DER and network data. One key output of the*

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<sup>4</sup> [Ausgrid Revised Regulatory Proposal 2019-24](#) January 2019 at p.80

<sup>5</sup> [CCP10-Ausgrid – Response to Final Regulatory Proposal 2019-24](#) at p.41

<sup>6</sup> Ibid at p.42

*forum was the development of the Network Innovation Advisory Committee including consultation on its proposed terms of reference.*

*Despite consumer support for the Network Innovation Fund the AER rejected it in its Draft Decision, noting that Ausgrid had not provided business cases for the projects and had therefore not substantiated the consumer benefits of the program. PIAC considers that the establishment of the Network Innovation Advisory Committee provides a useful mechanism to help ensure consumer benefits are, indeed, realised by the fund. As such, we support Ausgrid's proposed Network Innovation Fund."*<sup>7</sup>

ECA:

- *"In recent months, Ausgrid has made genuine efforts to engage effectively with our list of unanswered questions and concerns about its initial proposal. Our questions were broadly aimed at assessing how Ausgrid's approach to future expenditure would help mitigate price risk to consumers. These questions covered issues such as.....:*
  - *transparency of non-network expenditure. For example, understanding the tangible benefits to consumers from proposed network innovation programs;..."*
- *"We see this as the beginning of an ongoing, long-term dialogue with Ausgrid about culture, governance and innovation. New modes of engagement that were tried and tested in recent months need to be refined and embedded in business-as-usual."*<sup>8</sup>

After the AER's Draft Decision rejected the program, Ausgrid provided more information about the 11 projects it intended to include in the NIP as well as an independent review of the program from GHD Consulting. In its final decision published in April 2019 the AER approved the NIP and the formation of NIAC with a caveat. It remained concerned that it was hard for it to assess the innovation programs differently to ordinary network augmentation programs. This meant NIP projects needed to be subject to the normal business case review and cost benefit assessment in accordance with capital expenditure criteria.

The final AER decision provided important guidance to Ausgrid and to NIAC about the AER's expectations:

*"While we do not accept or approve certain projects, we note that if Ausgrid decides to undertake this program in the forthcoming period, it is our expectation that Ausgrid documents closely the benefits arising from this expenditure. We expect detailed ex-post reviews and regular performance reporting for all projects to demonstrate the prudence and efficiency of these projects. It is also important to note that, as GHD states:*

*"86% of Ausgrid's proposed Network Innovation Program costs are incurred between 2020 and 2024 whilst 73% of the forecast benefits will occur from 2025-29. Where benefits are realised, there should be appropriate adjustments made to forecasts in future periods. The implementation of the Network Innovation Advisory Committee*

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<sup>7</sup> [PIAC sub to NSW DNSP revised proposals 7 February 2019](#) at p.10

<sup>8</sup> [ECA – submission on Ausgrid 2019-24 draft decision and revised proposal 15 February 2019](#) at p.3

*provides an opportunity for more detailed and transparent examination of costs and benefits throughout the regulatory period.”*

*We concur with GHD. We consider it an expectation that these adjustments are accounted for as part of future regulatory proposals.”<sup>9</sup>*

## 6. How was NIAC established and run?

### **Governance, reporting and funding approval processes**

Following its establishment, NIAC began by drawing on the guiding principles for customer funded innovation investment and priority areas for customer funded innovation as output from the Network of the Future Forum to co-design the weighted Network Innovation Principles (Principles) in the following Table,.

An initial principles weighting was developed and this is shown in the following table<sup>10</sup>:

*Table 4 Inaugural Guiding Principles for Network Innovation Investment*

<b>Guiding Principle</b>	<b>Weighting</b>
<b>Maintains safety for the employees &amp; community</b>	17%
<b>Improves fairness</b>	14%
<b>Accelerates de-carbonisation</b>	14%
<b>Lowers costs for consumers</b>	13%
<b>Improves resilience</b>	12%
<b>Solves a specific problem</b>	11%
<b>Improves the economic utility of new &amp; existing assets</b>	10%
<b>Uniqueness of problem &amp; collaborative opportunities</b>	9%

These principles were tested in late 2022 with Ausgrid’s broader customer base and they have now been reweighted<sup>11</sup> with the revised Principles to operate from 2023:

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<sup>9</sup> [AER – Final decision April 2019 – Ausgrid distribution determination 2019-24 – chapter 5 -Capital expenditure](#) at p.5-50

<sup>10</sup> The inaugural principles are set out in Table 4 on p.8 of the NIP Project Justification in attachment 5.8a to Ausgrid’s 2024-29 Proposal

<sup>11</sup> The details of this review and reweighting are set out on p.11 of the Mid-term review

Table 6 Revised Network Innovation Investment Principles

Prioritisation Principle	Weighting
Accelerates decarbonisation	28%
Improves resilience	18%
Lowers costs for customers	18%
Improves fairness	18%
Improves safety for employees & the community	17%

For projects that are approved by NIAC for funding we have worked with Ausgrid to develop a NIP dashboard to be used to track progress of NIAC approved projects against time, cost and customer benefits. An extract of the dashboard from our June 2022 meeting follows:

#### Network Innovation Program Dashboard (2 of 2)

Workstream	Project Score	Estimated Budget \$m	Actual Spend \$m	Committed Spend \$m	Status	Update/Comments/Feedback	High Level Project Timeframes				
							2020	2021	2022	2023	2024
Portable All-in-One Off-Grid Supply Units	2.51	\$0.70	\$0.00	\$0.03	●	Desktop review and field inspections completed and working with identified supplier on design changes to meet Ausgrid safety and reliability standards.	Market Review	Market Review	Market Review		
Self-Healing Networks	3.58	\$0.33	\$0.17	\$0.35	●	Equipment solution failed testing, project terminated. Lessons Learnt report to be developed.	Costs Over Budget	End of Project	End of Project	Future information trials	
Dynamic Load Control	2.83	\$0.49	\$0.00	\$0.04	●	Product proposal developed for more flexible daytime controlled load service. Engagement with retailers to commence in June with capability to be made available on an opt-in basis from July.	Engage market	Engage market	Engage market	Engage market	
Asset Condition Monitoring	3.17	\$7.04	\$1.32	\$2.90	●	Travelling Wave relays commissioned and under evaluation. Business case development for large scale pilot for smart meter data in progress considering both safety and DER integration benefits.	Strong trial	Strong trial	Strong trial	Strong trial	
Line Fault Indicators	2.75	\$0.70	\$0.15	\$0.34	●	Initial trial sites commissioned in June. Further testing of advanced LFI products required following some testing failures.	Development	Development	Development	Development	

LEGEND

- Project not yet commenced. Remains within timeframes
- Project on track to meet budget and key milestones
- Project may be at risk if issues are not addressed. Attention required.
- Project is at risk of being over budget and/or significantly behind in meeting key milestones.
- Task completed
- Task on track
- Task not on track
- NIAC input required

Note: Expenditure as at 31/05/2022

With the decision to expand the NIP to a more sophisticated innovation timeline - research and development, trial, pilot, mature (staged roll out) to BAU, we are now developing with Ausgrid a more nuanced governance with clear questions to be answered at each gate in order to secure funding from NIAC for the next level. We gave Ausgrid feedback on the early draft of that enhanced governance framework<sup>12</sup> in the December 2022 meeting.

Section 3 of the Project Justification describes the approach Ausgrid used for the initial NIP for 2019-24 – where 11 specific projects were selected supported by a cost benefit model

<sup>12</sup> See Mid-term review p.23

for each project that had estimates or assumptions about costs and benefits. This allowed calculation of an initial BCR value for each project. The BCR for the initial 2019-24 projects are set out in the Mid-term review on p.10:

Project	Innovation principle score	Benefit Cost Ratio	Estimated Cost (\$m)	Customer Benefits
Advanced Voltage Regulation Statcom trial	3.45	1.75	\$3.0	Enabling renewables & the zero-carbon economy
Network Insights Program	3.82	3.10	\$10.5	Enabling renewables & the zero-carbon economy Improved service delivery
Fringe of Grid Optimisation	3.71	3.02	\$4.7	Safety & reliability for remote communities
HV Microgrid Trial	3.44	1.37	\$17.2	Safety & reliability for remote communities
Advanced EV Charging Platform Trial	3.53	1.38	\$1.2	Enabling renewables & the zero-carbon economy
Grid Battery Trial	3.81	1.01	\$2.0	Enabling renewables & the zero-carbon economy
Portable All-in-one Off-Grid Supply Units	2.51	1.26	\$1.0	Improved service delivery
Self Healing Networks	3.58	1.19	\$0.6	Improved service delivery
Dynamic Load Control	2.83	1.05	\$0.6	Enabling renewables & the zero-carbon economy
Asset Condition Monitoring	3.17	1.72	\$0.6	Improved service delivery
Line Fault Indicators	2.75	1.11	\$0.6	Improved service delivery

While NIP projects are subject to Ausgrid's general capital governance procedures including cost benefit analysis, Ausgrid acknowledges that some of the business case analyses were of a general nature due to them not knowing the exact location/details of a particular project.

When we recently asked Ausgrid to describe in more detail the challenges with costing very small innovation projects they have advised us:

*"We use similar approaches for larger and smaller projects. For DM&C projects (which could be as low as ~\$3-5k) we actually developed a model that calculates benefits for each individual distribution substation being considered including the configuration of the surrounding network and the availability of other remote devices on the same 11kV feeder. In this way we have been able to undertake analysis of very low value individual projects but in a systematic fashion. For other examples, such as SAPS we undertake the analysis for particular locations that we are intending to target so we are able to use the information we have available (for example, replacement needs for the feeders that a customer is connected to, unserved energy etc)."*

Ausgrid's approach has been to update its modelling and refine the BCR for these projects as new data becomes available. This revised modelling and BCR is then presented to NIAC in order to seek funding to:

- continue projects;
- discontinue projects; and/or
- reallocate funding.

The NIAC is well aware that a number of distribution network businesses have similar challenges and opportunities to apply new technologies and ideas. Often, a number of these businesses can be investigating similar needs and the application of new technologies.



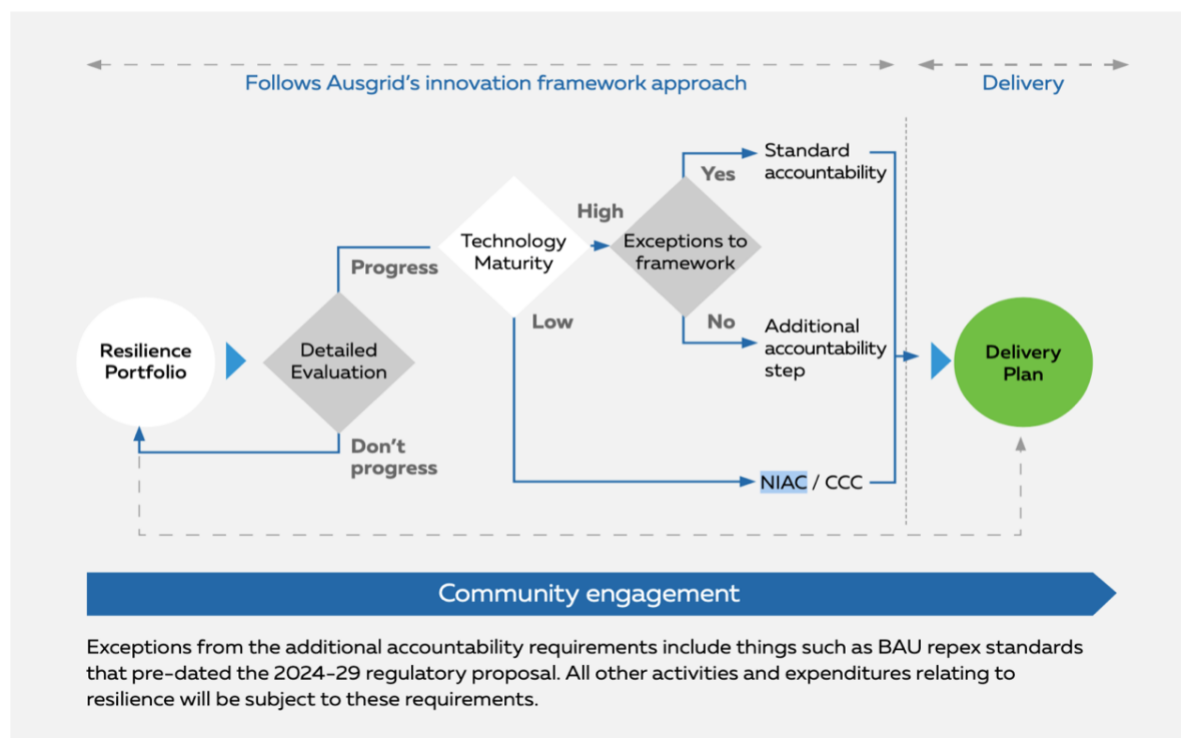
As the NIAC's focus is to encourage the innovation investment to deliver best customer value and outcomes, we provide a far more transparent governance framework to Ausgrid by challenging them to demonstrate:

- **Collaboration** - that should the area of innovation be part of another utility's activities, to collaborate with that utility to efficiently extract mutual benefits;
- **True innovation** - ensure 'innovation' is not actually largely just the vehicle for the application of new technologies to the Ausgrid network;
- **Customer accountability** - that the innovation maintains a strong customer focus, and a clear line of sight exists to provide distinct value to Ausgrid's customers in terms of lower costs, lower risks and accepted reliability.

## 7. New role for NIAC in resilience expenditure governance

In order to support the proposed resilience opex step change and capex program in its regulatory Proposal for 2024-29, Ausgrid, the RCP and TEC codesigned a climate resilience Investment decision-making framework (the Framework). Section 10 of the Framework sets out the enhanced accountability requirements that Ausgrid has agreed to ensure that Ausgrid delivers on its resilience related commitments. NIAC has 2 important roles as part of this resilience program governance. The first is our usual role to provide oversight of trials, pilots and research of resilience related innovation as part of the resilience workstream. The second is a new role for NIAC to provide oversight of enhanced BAU resilience activities. This latter role is set out in Figure 10 in the Framework (p.43):

**Figure 10: Standard example**



During the course of 2023 NIAC will need to develop governance and reporting processes to ensure that NIAC can fulfil this important role to support the proposed resilience program.

## 8. Is NIAC meeting expectations?

### **Our approach to reviewing the Network Innovation Program and NIAC's role**

As this is a sector-first program, other than the AER comments on its final determination discussed above in Section 4, there is no AER guidance on how to assess the effectiveness of the NIP and the extent to which NIAC is fulfilling its role within the program. We are looking at the AER's approach to the revised Demand Management Innovation Allowance (DMIA) to see if it may provide some guidance.

We also believe that it is too early in the life of this new and evolving program for a full scale review of its effectiveness and the development of success benchmark criteria. So the approach we take in this section of our report is to outline our focus to date on:

- establishing strong governance, reporting and funding approval processes;
- delivering benefits for customers from trials; and
- ensuring that the learnings are made available to other networks and the industry more broadly.

This approach has been informed in this report by the approach taken in the international review of the UK's network innovation fund<sup>13</sup> referred to below as well as the experience of some of the authors in running innovation programs.

### **Governance, reporting and funding approval**

We believe that the NIP and NIAC is an excellent program, professionally managed and delivered and that it is delivering benefits to customers. NIAC independent members are working very collegially and in a collaborative way with the Ausgrid members. Our experience is that Ausgrid is fully supporting NIAC and our role within the NIP. The authors are offered sitting fees; detailed papers are received in advance and Ausgrid is keeping accurate lists of action items and reporting progress on them at each meeting. The Ausgrid executive is very supportive of the program and the Executive General Manager, Asset Management chairs our meetings. Our suggestions for the Mid-Term review and 3 project post investment reviews PIRs were fully embraced by Ausgrid.

If requested we can also provide to the AER examples of feedback and closing the loop by Ausgrid with members.

We commend Ausgrid for taking up our suggestion to do the Mid-term review of the NIP and NIAC's role. Ausgrid consulted with us on the scope of the review and the proposed internal and external stakeholder engagement as well as the questions in the review. Most of the authors participated in stakeholder feedback interviews. In this report we discuss several of the important outputs from the Mid-term review including the review, testing and reweighting of the Principles, the development of the gateways in the enhanced governance framework and the PIR of the 3 major projects.

The timing of the Mid-term review and this report has been helpful as it has led to a series of recommendations, summarised below, that we will be working through with Ausgrid

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<sup>13</sup> CCC

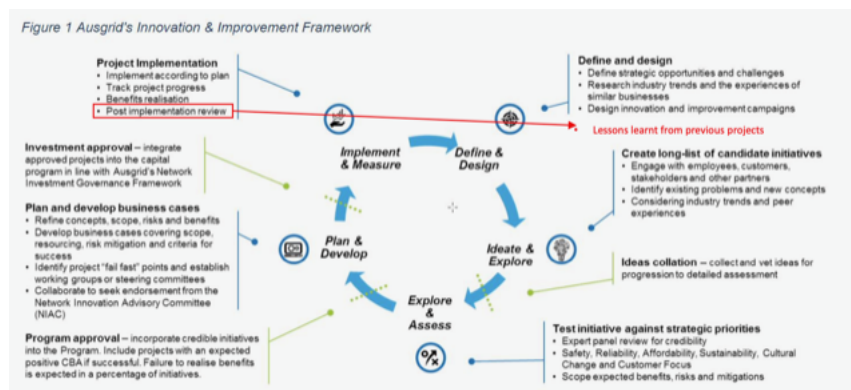
during 2023-24. One of the recommendations we are looking to progress soon is for the appointment of an additional technical member(s) to NIAC. We are keen for NIAC to progress into a forum where we increase our ability to propose technologies to be tried as part of the NIP, rather than NIAC being more reactive and providing oversight to trials that are identified and proposed by Ausgrid.

In early 2022 we asked Ausgrid to undertake detailed PIRs of three of the innovation programs as well as a mid-term review of the whole of the NIP and the role of NIAC. We agreed these three projects as:

- one program that was unsuccessful and did not proceed (river communities microgrid case study);
- one project that did succeed and moved into BAU (the trial of static compensators (STATCOMS)); and
- one project where there were significant delays in delivery and cost overruns (the community battery trials).

The PIRs of the microgrid case study, STATCOMS and community batteries programs are discussed below. Our views on any adjustments for the 2024-29 period are discussed in section 8.

The value in the PIRs is that they will influence the future design of innovation projects. Figure 1 in the NIP Project Justification (p.8) sets out Ausgrid's innovation and Improvement Framework. At the moment the findings in any PIR do not flow into lessons learnt in the Define and Design stage and we believe this needs to be changed:



The Mid-term review stakeholder engagement process led to important findings which are detailed in pp 12-19 of the Mid-term review. This led to detailed recommendations which will inform our work and focus going forward. A summary of the recommendations at program level is set out in Table 4 on p.12 of the NIP Project Justification:

Table 4 Program Level Recommendations from NIP PIR

Theme	Recommendation
<b>Program Structure</b>	<ul style="list-style-type: none"> <li>Shift to portfolio model to allow more flexibility with bringing projects into the program and de-prioritising others</li> <li>Be prepared to take on more risk – be more prepared to fail</li> <li>Include capex and opex funding to allow for more fulsome assessment of potential project options, including an additional research and development focus to develop a greater understanding of customer needs</li> </ul>
<b>Program Governance</b>	<ul style="list-style-type: none"> <li>Continue with NIAC</li> <li>Expand committee membership to extend technical input</li> </ul>
<b>Project/Program Delivery</b>	<ul style="list-style-type: none"> <li>Develop projects with a longer timeframe to deliver to ensure all stakeholders are adequately prepared, and there is adequate time to include in worklist and resource scheduling processes</li> <li>Provide better communication and collaboration with internal stakeholders during project scoping</li> </ul>
<b>Realisation of Benefits</b>	<ul style="list-style-type: none"> <li>Implement stronger change management governance internally to ensure that new technologies and processes are maintainable in the long term</li> </ul>
<b>Communication &amp; Engagement</b>	<ul style="list-style-type: none"> <li>Provide the NIAC with greater visibility of existing (and perhaps complementary) research projects (e.g. Reliability, Affordable Clean Energy Cooperative Research Centre (<b>RACE CRC</b>), demand management innovation allowance projects)</li> <li>Provide the NIAC with greater visibility of sharing between networks and within industry</li> </ul>
<b>Regulation &amp; Strategy</b>	<ul style="list-style-type: none"> <li>Undertake better advocacy on where cyber security may impede innovation development, implementation and outcomes</li> </ul>
<b>Keep Doing</b>	<ul style="list-style-type: none"> <li>Ongoing project reviews</li> <li>Sharing knowledge from lessons learnt</li> <li>Continue to embed transparency across the entire regulatory period, not just the reset process</li> </ul>
<b>Start Doing</b>	<ul style="list-style-type: none"> <li>Bringing in ideas from customer advocates (related to recommendations to expand committee membership)</li> <li>Incorporate fast fail processes that allow projects to take on more risk of unsuccessful outcomes with limited resource commitment</li> <li>Bring more analytics to the table to better define problems and issues to be solved</li> </ul>
<b>Stop Doing</b>	<ul style="list-style-type: none"> <li>Nothing yet identified</li> </ul>

We are aware that other networks are proposing similar innovation programs to the AER as part of their current regulatory proposals for 2024-29. Our hope is that by Ausgrid sharing the Mid-term review, the lessons learnt information from the 3 PIRs and other trials, and the governance documentation underpinning NIAC's role that this will inform the design of other network innovation programs.

### **Delivering benefits for customers**

We assess this against a range of metrics:

#### **1. Delivering against forecast project times and budgeting**

This has been a big focus for us to date with particular attention on the community battery program, the largest single program. There were several reasons why we asked Ausgrid to undertake a PIR of the community battery program in the Mid-term review<sup>14</sup> to:

<sup>14</sup> See Mid-term review pp 42-67

- review and understand the time, budget and scope overruns<sup>15</sup>;
- share the lessons learned in terms of optimal design and installation of the batteries with other networks; and
- understand what additional project guard rails we will need to implement as the program seeks additional funding to expand to the co-funded pilot stage under the enhanced governance framework.

We remain confident that the learnings from this trial will assist other networks who are running community battery trials and the proposed pilot will assist the Government with its proposed national community battery roll out.

## 2. Discontinuation of programs and reallocation of funding

We believe it is a measure of the success of the NIP that innovation programs are allowed to fail. Innovation is not an exact science and the setbacks and challenges that Ausgrid meets are just part of the experience gained. We believe that network innovation is more likely to thrive in an environment where setbacks are able to be celebrated for the things that can be learned. It is important that a different risk appetite is applied to innovation projects that have a degree of investment uncertainty, provided they still come within the governance of the NIP cost benefit analysis and Principles.

The Ofgem Low Carbon Networks Fund was independently reviewed in 2016 and the regulator's lack of willingness to accept failure as a consequence of high levels of innovation was seen as a barrier to progress:

*"...more focus should be placed on the learning which results from unsuccessful projects, or parts of projects."*<sup>16</sup>

The key issue for the authors when deciding whether to approve or discontinue a trial is – did Ausgrid discontinue it at the right time? We are thinking about ways to assess Ausgrid's performance on this issue to ensure the right balance between learning from failure, not wasting too much money at the same time as being sure it was not worth continuing.

The extract from the NIP dashboard on page 7 shows that Ausgrid discontinued the Self healing networks trial. The Advanced EV Charging Platform trial has also been deferred from its original timing and Ausgrid is currently focussed instead on other EV charging trials such as the Jolt kiosks and recent EV charging pole top trial.

The Mid-term review of the river communities microgrid study showed how the topography of the river communities' area was unsuitable for the operation of a microgrid<sup>17</sup>. As a result of the learnings from that trial, Ausgrid sought NIAC approval to

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<sup>15</sup> We note that this is not unusual for innovation programs and this project was formulated during COVID-19, which also impacted delivery

<sup>16</sup> See [An Independent Evaluation of the LNCF](#), POYRY October 2016 at p.3

<sup>17</sup> NIAC remains focussed on trials of technological solutions for the river communities who are amongst Ausgrid's worst served customers

shift to trialling a microgrid in Merriwa. Whilst we are very supportive of this new trial we are concerned that the Merriwa project is not moving fast enough, with many of the services and community benefits resulting from integration with customers' DER only being trialled in Phase 2 of the project projected for March – December 2024. We observed that the extended project timeline and delay was a concern also expressed by some of the local Merriwa customers during the engagement.

As part of NIAC's new governance role for resilience, NIAC suggested a reallocation of some unspent NIP funding to resilience focussed programs including the funding of community research. This mid period reallocation outlined on p.27 of the Mid-term review is consistent with the views in this report that it is important for Ausgrid's NIP to remain agile given the pace of change within the industry, increasing threat from severe weather events and the pace of technology development.

### 3. Direct engagement between Ausgrid and customers

We are aware that Ausgrid has lifted the level of its engagement in relation to innovation projects with a view to partnering with local communities. Examples include the river communities microgrid case study, the community battery trials and the Merriwa microgrid trial. To date members of NIAC have only observed engagement in connection with Merriwa microgrid. Whilst the Committee was consulted on the current RPS community battery customer survey work, we did not have the opportunity to observe this.

### 4. Partnering with others

We have been encouraging Ausgrid to partner with independent researchers in the development of its trials. To date this has not been a feature of any of the projects undertaken, and with the exception of the Jolt kiosk program, Ausgrid has been running these innovation programs on its own. One option would be for Ausgrid to develop partnerships with organisations who are already represented on NIAC (UNSW and NSW Innovation Hub) and on the CCC (CSIRO) as well as other academics and researchers. We believe this will assist with lifting capability internally as well as being a managed way to expand the NIP. We note the recent partnership International Community for Local Smart Grids (ICLSG) (<https://communitysmartgrids.org/about/>) that includes Scottish and Southern Energy Networks (SEN) and Ausgrid, but we note that this partnership is managed by the University of Oxford with no representation from Australian research partners.

### 5. Projects progressing from pilot to BAU

We agree with Ausgrid that the successful trial of STATCOMs and the way it has progressed to BAU as a way to cost effectively manage voltage interruptions from DER integration is an example of the NIP working well and delivering on customers' priorities. A PIR of the STATCOMS trial is included in the Mid-term review<sup>18</sup>.

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<sup>18</sup> See Mid-term review pp 35-41

## **Sharing learnings with other networks and the industry**

Since the formation of NIAC we have been focussed on Ausgrid using its NIP to trial new and emerging technologies. We do not believe that it is in customers' interests for each network to trial the same technology unless it is building on prior learnings. Achieving this outcome will involve greater knowledge sharing and collaboration with other networks and with the industry more broadly. One of regular features of Ausgrid's reporting to NIAC is the Innovation Program Workstream Collaboration. An example from the recent December 2022 meeting is reproduced below:

### **Innovation Program Workstream Collaboration**

Workstream	Collaboration Activities	Date
Adaptive Voltage Regulation	<ul style="list-style-type: none"><li>Information exchanges with peer utilities within Australia and key research institutions on existing trials and pilots</li><li>Knowledge sharing between utilities operating similar STATCOM trials</li><li>Knowledge sharing through the ENA Future Networks Forum program</li></ul>	2020-2022
Network Insights	<ul style="list-style-type: none"><li>Participation in ARENA funded Evolve trial with 5 DNSPs, Zephen and Australian National University</li><li>Established Project Edith Project Reference Group with wide range of industry stakeholders</li><li>Knowledge sharing forums with other DNSPs deploying network monitoring and control devices</li><li>Knowledge sharing through the ENA Future Networks Forum program</li></ul>	2019-2022
Fringe of Grid Optimisation	<ul style="list-style-type: none"><li>Knowledge sharing sessions with peer and rural DNSPs on deployment of Standalone Power Systems (SAPS) and related technologies</li><li>Active participation in development of ENA guidelines on SAPS.</li><li>Knowledge sharing through the ENA Future Networks Forum program</li></ul>	2019-2022
Microgrids	<ul style="list-style-type: none"><li>Knowledge sharing on similar projects with peer DNSPs</li><li>Support to research projects from UNSW and Oxford University (through International Community of Smart Grids membership)</li><li>Knowledge sharing through the ENA Future Networks Forum program</li></ul>	2021-2022
Advanced EV Charging Platform	<ul style="list-style-type: none"><li>Support for RACE2030 EV charging activities</li><li>JOLT partnership</li><li>Transport for NSW bus charging trial support</li><li>Knowledge sharing through the ENA Future Networks Forum program</li></ul>	2020-2022
Community Batteries	<ul style="list-style-type: none"><li>Publication of community battery feasibility studies</li><li>Knowledge sharing with other DNSPs and government on battery projects</li><li>Development of regulatory model proposals in collaboration with other DNSPs</li></ul>	2019-2022
Portable Off-grid Supply Units	<ul style="list-style-type: none"><li>Knowledge sharing with other DNSPs</li><li>Market engagement and co-design with suppliers</li></ul>	2021-2022
Dynamic Load Control	<ul style="list-style-type: none"><li>Engagement and collaboration with key retailers and metering providers in our network area to develop solar soak trial</li></ul>	2021-2022
Asset Condition Monitoring	<ul style="list-style-type: none"><li>Undertaking Travelling Wave trial in conjunction with Endeavour Energy</li><li>Active participation in AEMC metering services review on smart meter data benefits, challenges and opportunities</li><li>Knowledge sharing through the ENA Future Networks Forum program</li></ul>	2021-2022

The authors would like to see Ausgrid build further on this collaboration and sharing with the industry.

We are aware that the NIP does not represent the full extent of Ausgrid's innovation initiatives. For example Ausgrid is a Tier 1 partner in the RACE 2030 program. As part of NIAC meetings we are given an update on progress with the RACE projects as part of our background briefing. See for example this extract from our December 2022 materials:



## RACE Project List

RACE Category	Project	Description	Ausgrid role	Ends	Status
Business	Flexible demand and demand control technology	Explores sources of flexible demand in Australia and evaluate the opportunity to unlock demand side participation benefits.	Proponent and IRG member	Oct-21	Completed
	Fast Track to Net Zero Carbon Buildings	PhD project explores opportunities for dynamic optimisation of energy use in large buildings to minimise carbon emissions, reduce energy costs and support the electricity distribution network.	IRG member	Sept-25	Progress
	Energy trends visualisation	Trial of online tool for energy stakeholders to better understand opportunities and challenges in the energy sector	Proponent and IRG member	Dec-22	Progress
	Business Power Flex Pilot(s): business customer solutions to minimum demand.	Explores business customer solutions for flexible demand and minimum demand to help maintain a stable and reliable electricity network	IRG member	Jul-24	Proposal
	Australian National Charge Link	Explores development of a nationally significant infrastructure platform to hold standing data on public EV charging data registers	IRG member	Jul-22	Final Stage
Networks	Urban REZ – Fast Track	Explores the barriers, opportunities and impacts of Urban REZ, to develop a blueprint which will provide a pathway for demonstration and replication.	Proponent and IRG member	Aug-22	Final Stage
	Optimised Zone Substation MV Voltage Management	Tests novel solutions to manage challenges introduced by DERs in power distribution networks and increase Distributed Energy Resource (DER) Hosting Capacity	IRG Member	May-23	Progress
	Local DER Network Solutions	Explores microgrids where cost effective to reduce costs for customers.	Proponent and IRG member	Oct-22	Progress
	DSO and beyond	Coordinated analysis and scoping of electricity planning and regulation in the era of Decentralised Energy, including optimising planning and regulation for DM & DER.	Proponent and IRG member	Sept-22	Progress
	My V2X (Everything): Strategic EV grid integration	Explores EV opportunities to reduce grid integration costs passed on to consumers and accelerate emissions reduction through the balancing of distributed and grid-scale variable renewables.	Proponent and IRG member	Dec-24	Stage 2 Proposal
	Network visibility and hosting capacity	Demonstration pilots for low cost visibility of network conditions at the low voltage/customer end of the grid.	Proponent and IRG member	Jun-24	Stage 2 Proposal

Note: IRG – Industry Reference Group

As we noted Ausgrid is also a member of the ICLSG. In November 2022 some of the authors attended a meeting convened by the University of Oxford where Ausgrid and other ICLSG members presented innovation in findings on network resilience. This was a very worthwhile event with several important approaches to network resilience being shared by Ausgrid and New Zealand and Japanese distributors.

We acknowledge that Ausgrid's participation in RACE 2030 and in the ICLSG is used by Ausgrid to research before innovation but at the moment it is not clear to the authors how Ausgrid's research program interacts with the NIP nor what the funding balance is.

### 9. Comments on the proposed 2024-29 Network Innovation Program

We have reviewed the details of the 2024-29 NIP found in attachment 5.8a to Ausgrid's Proposal (NIP Project Justification). The expenditure forecast (FY24 real) is \$49.5m capex and an opex step change of \$5m. This compares to a similar allowed capex in 2019-24 of \$42m (FY19). The \$49.5m capex is excluded from the CESS and the \$5m opex is excluded from the EBSS. Ausgrid has accepted the recommendation to partition the NIP from the efficiency schemes. We believe this sends a strong message to the company. In being outside the schemes, it generates a priority to actually invest in innovation, in a 'use it or lose it' environment. The related arrangement, strong customer oversight, brings a powerful focus on the investment being prudent and efficient.

The program is divided into 3 workstreams:

- building safe, intelligent networks;
- improving energy resilience; and
- supporting and enabling DER integration.

In our July and September 2022 meetings NIAC had detailed discussions about how Ausgrid was developing its proposed 2024-29 NIP expenditure, workstreams and potential programs. In addition, several of the authors attended a separate deep dive on 19 October 2022 to review the modelling underpinning several of the proposed projects. For the



reasons we mention in this section we support the greater flexibility in the new workstream approach but this must still be supported by sufficient cost benefit analysis.

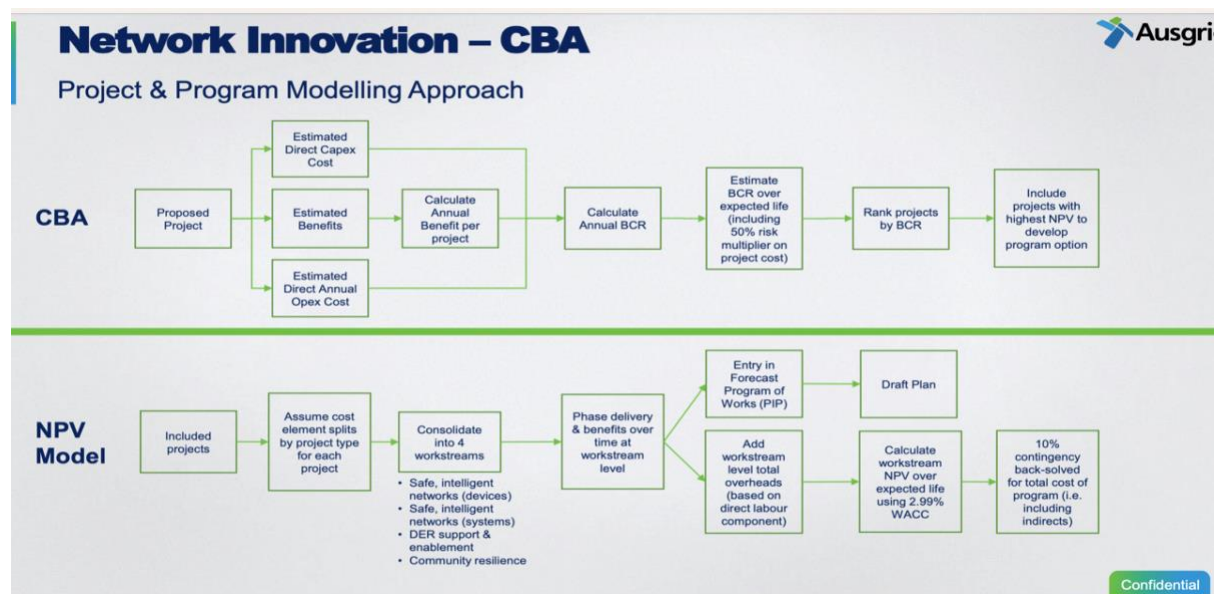
In the July 2022 NIAC meeting Ausgrid discussed their evolving and maturing approach to preparing the cost benefit analysis for the 2024-29 NIP. That methodology was described for NIAC in the following graph from the meeting:

## Cost Benefit Analysis Methodology

Benefits Calculation	NPV Calculation
<ol style="list-style-type: none"> <li>1. Determine/estimate overall annual benefits pool for each benefit category (shown on next page)</li> <li>2. Assign relevant benefits categories to each project</li> <li>3. Estimate (on best available information) the % impact of the proposed project on each relevant benefit pool</li> <li>4. Sum benefits for each project to calculate annual benefit per category at a project level</li> </ol>	<ol style="list-style-type: none"> <li>1. Consolidate project level costs and benefits for each workstream</li> <li>2. Phase costs and benefits over the regulatory period based on expected delivery profile</li> <li>3. Calculate NPV for each workstream, analysed over the asset life defined for each workstream (for the purposes of this analysis the 'Safe, Intelligent Networks' has been split into 'systems' and 'field devices' to account for the different asset lives)</li> <li>4. Evaluate key factor sensitivities</li> </ol>

The July meeting also reviewed the benefit categories and the cost benefit analysis of 3 example projects - 2 which were positive (Smart meter enquiry Integration System and SCADA Linked Fault Passage Indicators) and one which was negative and therefore rejected at this early stage (Automated LV switches).

In the subsequent October deep dive 3 of the authors reviewed the Project and program modelling approach, the benefit categories and the approach to developing BCR for the 2024-29 NIP. The approach is summarised in the following slides from that meeting:



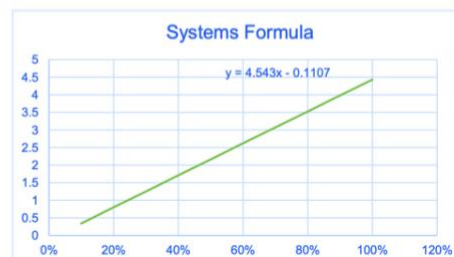
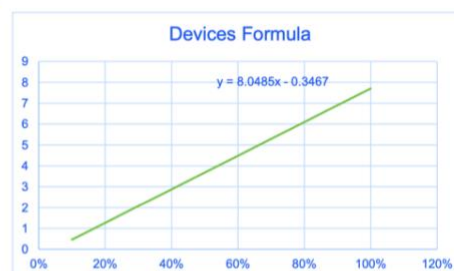
## Ranking Projects by Lifetime BCR

To rank projects at program formulation stage – an lifetime NPV estimate was developed to convert annual BCR to lifetime BCR.

- A linear regression was developed from a template NPV calculation. This was used to calculate the lifetime BCR of each project from the initial annual BCR estimate
- This enables a simple method for projects to be ranked against each other within the program
- This ranking was used to assess which projects met the threshold for inclusion in the different program options

Key assumptions:

- WACC – 3%
- Asset life of 15 years for devices, 7 years for systems
- Capex cost spread over 5 yr reg period equally
- An allowance for ongoing opex included through to end of asset life
- 50% cost uplift built into regression model to reflect risk and uncertainty in project cost and benefit realisation



We have confirmed with Ausgrid that they have increased the pre-tax real WACC of 3% in this BCR modelling to the 3.44% WACC in the Proposal.

We acknowledge that CBA accuracy for innovation projects will vary as it is difficult to do accurate estimates as by definition the technology being assessed is new and evolving. We are pleased to see the evolution of the NPV modelling, especially the use of the 50% cost multiplier when calculating BCR over the expected life.

At the September 2022 meeting the authors supported the proposed Option 3 forecast, although some members expressed the view that the totex for the 2024-29 NIP should be higher than the proposed \$49.5m capex and \$5m opex. We also endorsed the workstream approach with a portfolio approach (as opposed to a list of identified specific projects) and the indicative allocation of the expenditure among the 3 workstreams:

### 2024 – 29 Network Innovation Program Capex Draft Plan

FY24 Real Direct \$m

Workstream	FY25	FY26	FY27	FY28	FY29	Total
DER Support & Enablement	\$2.91	\$3.51	\$2.35	\$1.76	\$1.18	\$11.7
Community Resilience	\$0.37	\$0.56	\$1.13	\$0.94	\$0.76	\$3.77
Safe, Intelligent Networks	\$6.97	\$4.47	\$4.81	\$7.4	\$8.4	\$32.04
<b>Total</b>	<b>\$10.25</b>	<b>\$8.54</b>	<b>\$8.29</b>	<b>\$10.11</b>	<b>\$10.34</b>	<b>\$47.52</b>

This equated to an expenditure allocation by workstream of:

- DER<sup>19</sup> support and enablement – 25%
- Community resilience – 8%
- Safe, intelligent networks – 67%

We recommended that Ausgrid test the workstreams and the allocations more broadly with customers as part of the Townhall engagement on the 2024-29 Proposal. The RCP<sup>20</sup> has confirmed to NIAC that during both the Voice of Community Program and the subsequent Townhall that customers strongly supported the innovation program, the level of expenditure (again several customers argued strongly that it should be higher) and the indicative allocation across the 3 workstreams.

We note that the final allocations in the Section 8 Appendix in the NIP Project Justification total \$49.7m and the allocations have remained consistent across the 3 workstreams:

- DER support and enablement (\$12.2m) – 25%
- Community resilience (\$4.1m) – 8%
- Safe, intelligent networks (\$33.4m) – 67%

We strongly support the 2024-29 NIP proposed by Ausgrid, the workstream approach with the portfolio of projects and we are satisfied that the NIP under the oversight of NIAC will continue to deliver benefits for customers. We believe that the portfolio approach will enable greater flexibility to respond to new technologies as they emerge within the 3 core workstreams. We will continue to encourage Ausgrid to improve its NPV modelling, enhance the program and the benefits for customers and the wider industry through the adoption of the recommendations in this report and the findings in the Mid-term review. Our support for the proposed 2024-29 NIP is conditional on Ausgrid implementing our recommendations in this report.

## **10. Are any adjustments required to the 2024-29 Network Innovation Program?**

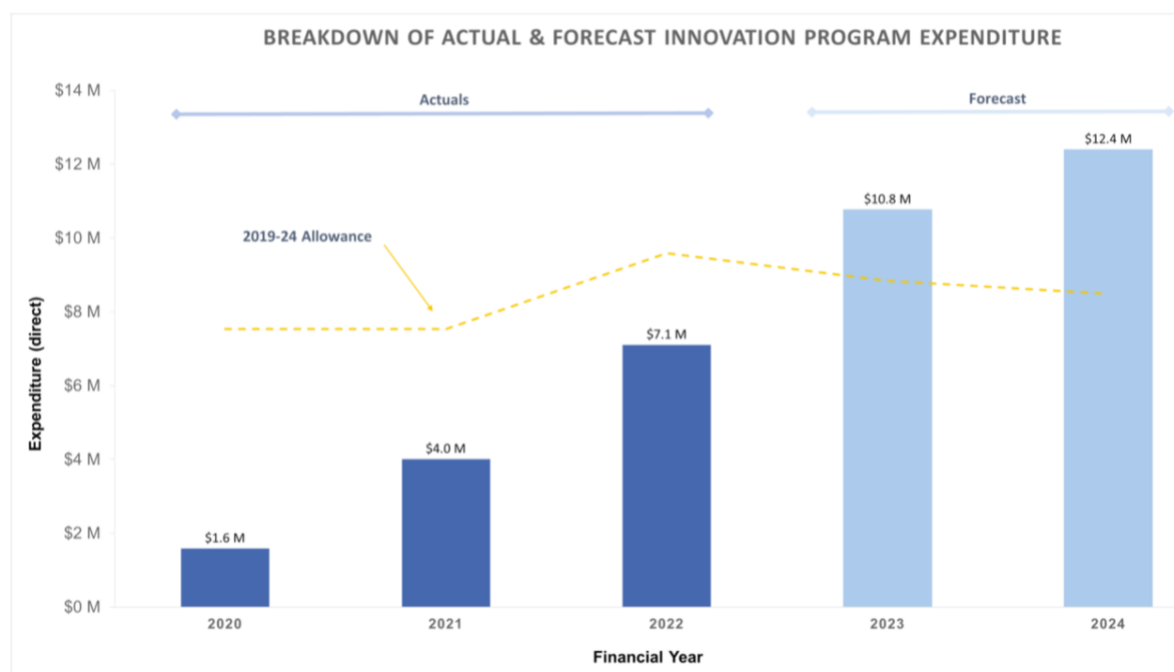
Any underspend of the \$42m allowed revenue in 2019-24 is excluded from CESS and Ausgrid will need to make an adjustment to the revenue for 2024-29 to account for any benefits it has received from this unspent revenue in the current 2019-24 period. At this stage Ausgrid is projecting an underspend of approx. \$6m. The actuals to date and forecast spend for 2019-24 from the NIP Project Justification (p.10) are:

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<sup>19</sup> Recently Ausgrid has changed its terminology from DER to CER

<sup>20</sup> 4 NIAC members are also members of the RCP

Figure 2 Network Innovation Program 2019 - 24 Actual & Forecast Expenditure



On current forecast this would be a spend of approx. \$36m by 2024 compared to an allowance of \$42m. We have some reservations about the size of the estimated spend in years 4 and 5 and we look forward to discussing with Ausgrid ways to de-risk projects that will be part of these larger spends. We support the proposed co-funded community battery pilot as this is an example where funding risk is being shared with the Government.

During 2023 we will continue to monitor Ausgrid's capacity to implement the program at approx. \$10-\$11m per annum as forecast in the graph. This level of capability will be required to support the proposed \$55m totex in the 2024-29 innovation program. We agree with Ausgrid that the 4 reasons it has set out on pp 9 and 10 of the NIP Project Justification have contributed to the spend in the current period being lower than expected (the NIP was a new program that needed to be established; the pandemic; the live work pause and protected industrial action). However we also believe that there is an opportunity for Ausgrid to lift its internal innovation culture and capability to deliver the NIP. We have made several recommendations about ways to lift and scale this in section 10. We believe that it is in customers' interests for this capability and spend to be increased during the transition rather than the NIP being reduced to match Ausgrid's current innovation capability.

As noted in section 4, the AER's final 2019-24 decision approving the NIP and formation of NIAC set out an expectation that adjustments to future forecasts would be accounted for as part of future regulatory proposals – especially where costs were incurred in the current period with benefits to be realised in 2024-29. The Section 7 Appendix in the NIP Project Justification sets out the details of the customer benefits from programs to date and how Ausgrid is accounting for them in the 2024-29 proposal. We believe that the reporting in the Section 7 Appendix in the Project Justification could have one or more numerical metrics that demonstrate technical performance improvements.

Currently Appendix 8 of the Project Justification does not include the BCR resulting from the CBA and NPV modelling approach that we reviewed in October 2022. We recommend that Ausgrid include this modelling approach and the resulting BCR for the potential projects as it provides greater rigour to the 2024-29 expenditure forecast than is currently presented in either the Mid-term review or the NIP Project Justification.

## 11. Our recommendations to further improve the NIP and NIAC

All customer engagement that Ausgrid has done on its 2024-29 NIP has resulted in the same conclusion that the program is too small and that Ausgrid must scale its capability to deliver innovation with the ambition necessary to meet rapid net-zero transition. We recommend that Ausgrid benchmark themselves against international equivalents in terms of \$ spent, size and customer reach to give stakeholders some confidence that the proposed annual expenditure of approx. \$10-12m expenditure is consistent with international best practice given the network challenges it faces.

We also recommend that Ausgrid work with NIAC in the medium term to develop success metrics for the NIP that can be used in addition to cost benefit analysis to measure the success of the NIP. For example UK Power networks (UKPN) regularly publishes its innovation strategy documents. An example of some metrics that UKPN used to measure the effectiveness of its 2020 innovation program is seen in the following chart<sup>21</sup>:



We also believe that other relevant metrics would include working with behavioural and social experts, knowledge sharing and customer engagement, which we recommend in this section.

<sup>21</sup> UK Power Networks [Innovation Strategy 2020](#) at p.2

Innovation in the network sector is traditionally challenging by virtue of the history of the organisations, their charter, and the slow pace of change traditionally associated with the sector. However as we noted in Section 3, the sector now faces a period of rapid technology change, societal change and new external factors that are both opportunities and threats.

We support Ausgrid's decision in 2024-29 not to inflate the size of the NIP by outsourcing to consultants. However Ausgrid needs to come up with ways to lift and scale its internal innovation capability. The benefits of having sufficient people to support innovation are to:

- ensure that there are enough resources to deliver innovation projects;
- create "champions" for innovation that will embed a culture of innovation that will be necessary to adapt to changing needs (customer, physical, technological etc.); and
- support adoption of new approaches as BAU.

Some ideas that the authors have for how this capability might be increased include:

- partnerships with universities and researchers;
- supporting staff to engage in research/PHDs and new industry PHDs;
- secondments of staff to research organisations and other relevant industry partners;
- inter-DNSP exchanges to avoid each network repeating previous work done by other networks plus this would enhance knowledge sharing;
- develop reskilling and retraining programmes to enable the huge increase in trades and engineers and all the other necessary skills required; and
- considering the role of behavioural and social experts when dealing with customers.

In addition to the general recommendations on benchmarking and scaling internal capability that we set out in this section, we have some additional specific recommendations on ways Ausgrid can improve the functioning of the NIP and NIAC:

Theme	Recommendation	Section
Governance and reporting	The dashboard is enhanced by providing information about the size of the Ausgrid team working on a particular project	Section 5 page 7
Governance and reporting	Change Ausgrid's innovation and Improvement Framework so that PIRs flow into lessons learnt in the Define and Design stage	Section 8 page 11
Customer engagement	NIAC members are invited to observe community engagement	Section 8 page 14
Developing partnerships	Ausgrid should explore further partnerships for innovation trials with academics and researchers such as for potential pilot or test sites or simulated modelling	Section 8 page 14
Industry collaboration	The Innovation Workstream Program Collaboration should be expanded to include webinars with market bodies (e.g. Ausgrid's presentation on the DSO model)	Section 8 page 15

Industry collaboration	Ausgrid to share results from innovation projects at the ENA innovation conference in March 2023.	Section 8 page 15
Sharing learnings	Ausgrid needs to initiate some low-technology readiness level collaborative research programs with research partners.	Section 8 page 16
Accounting for benefits	Include technical performance improvements as part of accounting for customer benefits	Section 10 page 20
CBA modelling	Include CBA modelling approach and BCR values in the Potential Projects	Section 10 page 21

The recommendations in this section 10 are in addition to the recommendations to be implemented as a result of the 2022 Mid-term review referred to in section 6.

**Independent NIAC members**  
**25 January 2023**