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ADVOCACY CENTRE

Submission in response to the Energy Security Board consultation paper: Converting the Integrated System Plan into Action

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About the Public Interest Advocacy Centre

The Public Interest Advocacy Centre (PIAC) is an independent, non-profit legal centre based in Sydney.

Established in 1982, PIAC tackles barriers to justice and fairness experienced by people who are vulnerable or facing disadvantage. We ensure basic rights are enjoyed across the community through legal assistance and strategic litigation, public policy development, communication and training.

Energy and Water Consumers' Advocacy Program

The Energy and Water Consumers' Advocacy Program (EWCAP) represents the interests of low-income and other residential consumers of electricity, gas and water in New South Wales. The program develops policy and advocates in the interests of low-income and other residential consumers in the NSW energy and water markets. PIAC receives input from a community-based reference group whose members include:

- NSW Council of Social Service;
- Combined Pensioners and Superannuants Association of NSW;
- Ethnic Communities Council NSW;
- Salvation Army;
- Physical Disability Council NSW;
- St Vincent de Paul NSW;
- Good Shepherd Microfinance;
- Affiliated Residential Park Residents Association NSW;
- Tenants Union;
- Solar Citizens; and
- The Sydney Alliance.

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The Public Interest Advocacy Centre office is located on the land of the Gadigal of the Eora Nation.

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Introduction

PIAC welcomes the opportunity to respond to the Energy Security Board's consultation paper, Converting the Integrated System Plan into Action.

Co-ordinating the energy transition in the NEM

The National Energy Market (NEM) is in a period of rapid transformation. At the same time, energy is increasingly unaffordable for many residential, commercial and industrial consumers.

If not planned for and managed correctly this transition may result in an inefficient and expensive electricity system and a needlessly slow and non-optimised emissions reduction pathway.

Planning and investment that considers the entire energy system is required, but the current industry structure, market design and regulatory framework makes efficient system-wide planning difficult. Vertically disaggregated ownership and operation across the supply chain makes optimisation unrealistic without some centralised planning.

At the inception of the NEM, system requirements where predicated on growing demand and increasing load connection points, governments owned the entire energy supply and value chains, social outcomes were paramount in planning and investment decisions, and commercial issues such as funding, short-term profits and competition were not primary concerns.

Today's system planning and investment frameworks remain a legacy of those times, and are designed to support incremental investment in an established, centralised generation and transmission system. Under this framework, the costs and benefits of individual investments are assessed without full regard for their impact on the rest of the energy system. Planning is largely left to the market and monopoly businesses, guided by a combination of profit-motivated responses to price signals and regulatory oversight.

Lack of framework for whole-of-system outcomes

The current regulatory framework is designed to deliver efficiency of incremental investment to a centralised generation and transmission system which has already been 'built out'. The transformation the NEM is currently going through is not incremental – it is a step change.

The NEM needs a planning and investment framework that delivers efficiency for strategic, whole-of-system investments in order to ensure this transformation is delivered in a timely and cost-effective manner. This is the challenge PIAC sees is central to the work the AEMC and ESB are doing through a number of workstreams including the Coordination of generation and transmission investment (COGATI).

Without such a framework, the cumulative impacts of individual generation and transmission investments diverging from the optimal system-wide outcome will be:

- Inefficient generation investment – in terms of the sizing of new generators; their location and impact on the network; the cost to connect each individual generator including those

otherwise efficient investments which do not occur; and the geographic and fuel source diversity of the generation fleet as a whole.

- Inefficient network investment – in terms of the shallow connection assets to connect new generation; the deeper assets required to connect the new generation to major load centres; the interconnection of major load and generation regions to make the most of fuel diversity and maintain reliability of supply; and the ability to maintain system security and stability.

- A lack of coordination between generation and network meaning consumers may have to pay twice for the same problem to be solved, by duplicated investment in networks and, potentially, generation

- Missed opportunities to exploit economies and scale and scope.

- A longer and more expensive transition to a low-emissions energy sector.

All of these ultimately lead to increasing pressures on consumers through the wholesale and network components of their electricity bills as well the impacts of climate change.

Objectives

The frameworks for centralised supply comprise policy and regulatory obligations as well as the practices of relevant businesses and market bodies in implementing them, to plan, deliver and pay for the large-scale generation[1] and transmission network.

PIAC has identified three objectives that the regulatory framework for delivering centralised generation and transmission must deliver, in the current context of the NEM's transformation and affordability challenge. We use this as a basis for assessing the need and priority of any reforms to the current framework and the merit of any solutions proposed. The framework must:

1. **IDENTIFY** the most efficient system-wide solution.

- A NEM-wide planning framework that is outcome-focused and solution-agnostic.
- It must deliver the services consumers want, at a price they are willing to pay.
- It must be technology agnostic: treating supply-, network- and demand-side solutions on an equal footing, with regard to both how options analyses are conducted and the financial incentives faced by the investing parties.
- It must be geographically agnostic: the process should be indifferent as to which NEM-region the solution is physically located so long as the solution achieves the necessary performance characteristics and the assessment captures all the associated costs and benefits.
- It must balance the risks and benefits of investing for the long-term to exploit economies of scale and scope where feasible.
- It must also consider the staged implementation of a solution as well as the combination of multiple individual solutions to address the need. Often a coordinated suite of supply-, network- and demand-side solutions may provide the most efficient option and can help address the risk of overinvestment due to future uncertainty.

[1] And, increasingly, the potential role for large-scale storage as well.

2. **DELIVER** the solution in a timely and efficient way.

- The parties best placed to deliver the projects must be properly incentivised to do so in a way that delivers the entirety of the modelled benefits (in both time and cost), ultimately to consumers.
- In order to achieve this, the policy and regulatory framework must allocate responsibility and incentives to those parties that have the capacity to manage the various risks.
- Therefore, the party or parties responsible for delivering the investment(s) must be exposed to the consequences of failing to deliver it.
- And equally, the party or parties responsible must also stand to be rewarded for the benefits of delivering the investment efficiently.
- The risks and rewards parties are exposed to must be symmetric with respect to the magnitude of costs and benefits at stake.
- The financial incentives parties receive must be in relation to efficiently achieving the end result, not dependant on the technology of the solution used to achieve it.

3. **RECOVER COSTS** for the delivered solution in the fairest and most equitable way.

- Those who benefit from a given investment should also pay for that investment.
- Where there are multiple beneficiaries, the costs should be recovered proportionally to their share of the benefits.
- Where it is not practical and transparent to identify the beneficiaries, a causer-pays principle should be used.
- Cost recovery should also include the risk, to the extent it exists, of the underutilisation of assets and hence asset stranding.
- Cross-subsidies should only be permitted where they are accepted by informed consumer feedback (such as retaining postage stamp pricing for distribution network tariffs) or immaterially small.

Developing the ISP

Goal of the ISP

PIAC considers the goal of the Integrated System Plan (ISP) is to optimise whole-of-system outcomes, in the long term interests of energy users, with respect to the trilemma: price, reliability/security and emissions reduction. Market and regulatory bodies should use the ISP as a guide for policy and rulemaking, sending signals to other participants such as industry to respond in a way that promotes system-wide efficiency.

The ISP should be used to address the following gaps in the existing planning framework for the NEM:

- the lack of a mechanism to identify how different parts of the system can be coordinated and co-optimised;
- the lack of a mechanism to deliver on opportunities for co-optimisation once identified; and
- the lack of any process or institution taking on a planning role at a system-wide level.

It is essential to confirm the role and purpose of the ISP, and its interaction with other instruments or risk sub-optimal outcomes as the ISP is developed and put into action, such as:

- inefficient, and costly, duplication of functions between the ISP and other policy mechanisms (for example, multiple overlaid reliability instruments); and
- inefficient 'siloing' in implementation of the ISP's planning and optimisation functions (for example, the ISP may be applied in a transmission-centric way rather than co-optimising transmission, generation and demand-side measures/tools).

Evolution and recommended scope and purpose of the ISP

The stated and implicit goals of the ISP have evolved over time. This is understandable and represents continuous improvement, but has created ambiguity as to what ISP is intended to achieve and how it should do so. Stakeholders have adopted a variety of ways of understanding the ISP, resulting in a lack of consistent definition and shared understanding of what the ISP covers in scope, what it is intended to achieve, and the mechanisms by which it should achieve this.

The concept of an ISP was introduced in the Finkel Review as the Integrated Grid Plan. The Plan's remit was to plan transmission infrastructure to facilitate development and connection of renewable energy zones:

> By mid-2018, the Australian Energy Market Operator, supported by transmission network service providers and relevant stakeholders, should develop an integrated grid plan to facilitate the efficient development and connection of renewable energy zones across the National Electricity Market.[2]

When AEMO published the first iteration of the ISP in 2018, the concept had evolved to:

> This Integrated System Plan (ISP) is a cost-based engineering optimisation plan by the Australian Energy Market Operator (AEMO) that forecasts the overall transmission system requirements for the National Electricity Market (NEM) over the next 20 years.[3]

Given the evolution and different expectations of the ISP, PIAC considers this consultation an opportunity to clarify what the ISP constitutes, what it seeks to achieve, and the scope which it covers. PIAC's recommendations are:

- **What is the appropriate scope for the ISP – should it apply specifically and only to the 'grid', or to all 'transmission system' elements, or to the energy system as a whole?**

  PIAC recommends the ISP be used as an opportunity to fill the whole-of-system planning/optimisation role currently lacking in the NEM.

- **Should the ISP be purely or primarily a descriptive/information provision document, i.e., forecasting optimal system requirements given the outcome of external market**

2 Commonwealth of Australia, *Independent Review into the Future Security of the National Electricity Market: Blueprint for the Future*, 2017, 24.

3 AEMO, *Integrated System Plan*, 2018, 3.

and policy processes? Should it be an agenda-setting document, intended to shift the system towards the optimal outcome?

PIAC recommends the ISP act as a guide, setting out infrastructure requirements for an optimal whole-of-system outcome for energy, particularly with respect to co-ordinating generation and transmission. The ISP can also be used by industry as a direct source of information about what an efficient future state of the physical system would look like, and identify barriers to optimal whole-of-system outcomes, which in turn should inform market and regulatory bodies in policy and rulemaking.

- **How should the ISP interact and co-ordinate with other system processes and mechanisms?**

  PIAC recommends that where overlap exists between the ISP and other processes, rules and policy mechanisms, AEMO and other market bodies seek to avoid unnecessary and costly duplication. They should also consider co-ordinating policy responses, for example, by changing the objectives of one or more processes to avoid inefficient overlap, establishing the primacy of one process, or overlaying a new framework to avoid duplication and optimise the relative strengths of each.

The ISP and emissions

PIAC considers that, owing to various drivers, which could include state government policy and price signals, the continued rapid deployment of renewable energy in the system is inevitable, regardless of emissions and renewable policy settings in any jurisdiction at any given time.

From a risk management perspective, an ISP that fails to account for and optimise growth in renewable generation, leaves consumers vulnerable to sharp increases in cost.

In keeping with this, the ISP was conceived as part of the Finkel Review in part to support the efficient development of renewable energy zones[4] as a reform to system planning envisaged as a pillar 'to help make the transition to an innovative, low emissions electricity system'.[5] This is also consistent with objectives of a growing number of state and territory governments.

We recommend that AEMO assume that the energy system of the future is characterised by the rapid deployment of renewables, in line with the ISP's original policy intent and as a key input into managing risks for consumers. In practical terms, this means planning a system that assumes:

- uptake of renewable generation
- firming sources of firmness such a storage and demand response, and
- continuing improvement to greater energy efficiency.

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4 See Recommendation 5.1: ''By mid-2018, the Australian Energy Market Operator, supported by transmission network service providers and relevant stakeholders, should develop an integrated grid plan to facilitate the efficient development and connection of renewable energy zones across the National Electricity Market.' Ibid, p. 264.

5 See 'System Planning: To help make the transition to an innovative, low emissions electricity system…', ibid, p. 7.

Mechanism of action – how the ISP should shape the NEM

The ISP should set out a guide for optimising the NEM with respect to the long term interests of all consumers. Consistent with this role:

1. AEMO, in consultation with stakeholders, should use the ISP to set out a guide for what an optimal (or more optimal) state of the physical system would look like. This includes the location and capacity of physical infrastructure including transmission and generation.

2. Market and regulatory bodies, such as the AEMC and AER, should use guidance from the ISP as an input to creating rules, and an overarching regulatory framework that aligns private incentives with system-wide optimisation. In other words, the framework should create incentives for private actors and system participants to behave in a way that optimises the system.

3. The ISP should also function as a source of information for investors and other market participants, signalling for them opportunities which support optimal whole-of-system outcomes.

4. The ISP should consider the impact of, and need for, policy and regulatory reforms both at a whole-of-system level and regional level, with a goal of informing the agenda of reforms needed to facilitate the future energy system.

Inputs and constraints to system optimisation

In developing the ISP, AEMO should consider the following:

- **Networks** – Given the ISP is focussed on centralised generation, AEMO should primarily consider the transmission and sub-transmission networks. The distribution network should be considered at a high level to the extent it informs the potential use of DER – both in terms of any necessary network upgrades required but also the potential benefits it can provide by alleviating other constraints.

- **Generation** – a range of generation technologies and potential sizes must be considered, including DER at an aggregated level (discussed more below). However, only generation technologies that are technically and economically viable at the time of modelling should be considered, rather than those that are experimental or not yet commercial. This is not to suggest that the same technologies available today will be those best suited in the future, rather it is to avoid the uncertainty associated with forecasting which particular technologies that are nascent today will become mainstream in the future – attempting this is fraught with risk of error.

- **Storage** – as for generation, a range of storage technologies and potential sizes must be considered, including DER at an aggregated level (discussed more below). However, only storage technologies that are already technically and economically viable at the time of modelling should be considered rather than those that are experimental or not yet commercial. This is not to suggest that the same technologies available today will be those best suited in the future, rather it is to avoid the uncertainty associated with forecasting which particular technologies that are nascent today will become mainstream in the future –

attempting this is fraught with risk of error. Where there are market barriers to the deploying otherwise technically and economically viable storage options, the ISP should identify what changes need to be made to remove these barriers.

- **Distributed Energy Resources (DER)** – the ISP must consider the role of DER alongside centralised generation and transmission investments. To be clear, the DER options considered must include Demand Response (DR) and Virtual Power Plants (VPP). Due to the nature and scope of the ISP modelling, the DER considered would usually be aggregated to a practical level, for instance to the relevant transmission bulk supply point. As mentioned earlier, the potential of DER options must be cognisant of the distribution network – both in terms of any necessary network upgrades required but also the potential benefits it can provide by alleviating other constraints. Where there are market barriers to the deploying otherwise technically and economically viable demand response options - such as the current inability for aggregators to access the energy market independently of retailers - the ISP should identify what changes need to be made to remove these barriers.

Pathways to reform and changes to the regulatory framework

The ISP should set out a guide for optimising the NEM with respect to the energy trilemma. Consistent with this role, it should consider the impact of policy and regulatory reforms at a whole-of-system level, with the ultimate goal of setting out directions for reform that will maximise system-wide benefits.

One means of achieving this would be to conduct 'base' ISP modelling premised on what AEMO gauges as the most likely regulatory and policy environment. A range of potential reforms could be treated as sensitivities to this base case modelling. AEMO would use its judgement and be informed by public consultation as to which reforms it should incorporate into these scenarios. If the modelling indicates these reforms (or combinations of reforms) are likely to result in some material increase in net benefits across the system, AEMO should set out the nature and magnitude of these benefits in the ISP. This should provide an impetus to investigate these reforms and potentially conduct more detailed modelling of their implications, which in turn can provide an impetus for regulatory and market bodies and other stakeholders to undertake beneficial changes to the framework.

Examples of such reforms might include the transmission cost recovery and risk sharing arrangements, or a wholesale demand response mechanism.

Responding to consultation questions

3.1 Should timing deadlines associated with the ISP process be specified in the Rules?

Determining the timing deadlines for ISP development process necessitates a trade-off between providing planning stability and the ability to respond to changing circumstances. PIAC supports the proposed requirement for AEMO to publish an ISP at least every two years as this:

- provides AEMO with sufficient time to consult and develop subsequent ISPs;
- gives stakeholders sufficient time to prepare and meaningfully participate in these consultation processes;
- provides a level of stability and certainty for generation and transmission investments; yet
- still allows for revisions based on unexpected and material developments as required.

PIAC recommends that this frequency of ISP development be reviewed after several iterations of the ISP, such as in 2025. This would allow for the effectiveness of the proposed timeframe to be reassessed as well as allowing the ISP development to be incorporated into other reform processes such as the ESB's post-2025 market reforms work program.

As the ESB notes, there are several interdependencies between any timeframes for ISP development and existing obligations regarding the RIT-T and other regulatory processes. PIAC recommends that any obligations regarding ISP development that are placed in the Rules remain at a high level, while more detailed obligations instead be set out in relevant guidelines and procedure documents that are periodically consulted and reviewed by AEMO and/or the AER.

PIAC supports a two-stage public consultation process as proposed in the draft guidelines. We recommend a complementary process be applied to collaboration between the AER and AEMO. The AER should play a review role in the early stages of the ISP, specifically to validate the reasonableness of key data inputs and assumptions, and suitability of any new or altered modelling and analysis approaches.

3.2 Governance framework that applies to the ISP

There are at least three different processes - the ISP, market price settings and Retailer Reliability Obligation - that share the objective of the reliability standard. All have different levers for achieving the standard: network infrastructure in the case of ISP; price signals in the case of market price settings; penalties or interventions in the case of RRO.

However, there is no clarity in how these settings interact and no overarching framework to determine the best combination of levers for meeting any projected shortfall of the reliability standard in the most efficient way at a given point in time.

It is not in the long term interests of consumers for separate processes to try to achieve the same outcome in an uncoordinated fashion, as the likely result is that consumers will end up paying more than the value they place on reliability.

There are a number of options for addressing this problem by resolving the potential duplication or conflict between different processes. These options include:

1. The Reliability Panel could be required to have regard to the future system as described by the ISP in its modelling and analysis for recommending the market price cap and cumulative price threshold. In PIAC's view, this option would be the minimum requirement to prevent consumers from paying beyond the value they place on reliability.

2. Make the ISP's reliability objective subordinate to the other processes. For example, the ISP could have a lower long term reliability objective than the reliability standard, and the market price setting and RRO could be used to bridge any anticipated reliability gap in the medium term. In PIAC's view, this option is likely to be unworkable.

3. The scope of the ISP could be expanded to include recommending market price settings, and as a result responsibility for recommending market price settings would be transferred from the Reliability Panel to AEMO. While a substantive change in responsibilities, in PIAC's view this appears to be the only option that permits co-optimisation of physical infrastructure and market price settings to provide the lowest-cost option for achieving the reliability standard.

PIAC recommends that the ESB considers the interaction of different processes that share the objective of the reliability standard, and recommend how they can be best coordinated and co-optimised.

3.3 Comments on the proposed guidelines and whether further subordinate guidelines are required

Cost-Benefit Analysis

Following the overarching objectives that the regulatory framework for delivering centralised generation and transmission must deliver described previously,[6] the stages for planning and assessing regulated transmission investments in particular can be considered as:

- Determining an optimal solution for the system as a whole – this would comprise a coordinated portfolio of individual transmission needs or opportunities.
- Determining an optimal solution for each specific transmission project – having considered in greater detail the particular options possible for each project.
- Determining an optimal solution to recover costs for the project(s) identified.

The first can be conducted by the ISP or a similar planning process. The second can be conducted by a process substantially similar to the existing RIT-T processes. Given the degree of overlap between these two stages there is merit in clarifying and formalising these.

PIAC supports the direction suggested by the draft Cost Benefit Analysis guideline proposed in the ESB's consultation paper.

However, the last stage, determining the optimal solution to recover costs, is not explicitly conducted in the current planning processes. Instead, it is implicit in the Rules for all regulated transmission investments and, therefore, is not on a project-specific basis.

[6] See above p 2-3: IDENTIFY the most efficient system-wide solution; DELIVER the solution in a timely and efficient way; and RECOVER COSTS for the delivered solution in the fairest and most equitable way.

This is not sufficient for strategic projects in the current period of transformation as the regulatory framework was designed to deliver efficiency in incremental investments. As described in PIAC's submission to the AEMC's COGATI review, the misalignment of benefit accrual and cost recovery for strategic projects risks exacerbating the current affordability challenges facing many consumers in the NEM. We put forward an alternate model for the planning processes to reflect this, which is described below.[7]

PIAC proposed model for incorporating the ISP into existing regulatory framework

In developing its portfolio of individual transmission projects in the ISP, AEMO should recommend, and the AER determine, which of these projects should be considered to be "strategic" transmission projects (i.e.: where significant benefits accrue across multiple NEM regions – such as those involving completely new or major upgrades to existing interconnectors or national transmission flow paths[8]). The market modelling conducted as part of the ISP development should be used as a starting point for the AER's determination.

Based on the AER's determination, the individual transmission projects would follow either the regular RIT-T process or a modified version which reflects the unique nature of strategic transmission projects. The modified version for strategic projects would consider a broader range of issues through development and consultation including, but not limited to:

- The allocation of costs to multiple NEM regions to the degree to which they are align with the accrual of benefits (including considering a range of appropriate sensitivities or alternative scenarios);
- A broader range of benefits and costs which could be considered either directly or qualitatively in the cost-benefit analysis; and
- Determining the need for, and potentially the structure of, alternative cost-recovery mechanisms if the current regulated cost-recovery methods are unsuitable.

As a result of this process, the TNSP should identify the optimal size, configuration, use of non-network options and timing of the project to meet the identified need (i.e. the preferred option). In addition, the TNSP may make a recommendation as to whether there is any need for an alternative cost recovery mechanism as described below.

PIAC considers the AER would be best-placed to make a formal determination as to whether an alternative cost-recovery mechanism is required and what form it should take. It would likely need to be made on a project-by-project basis to allow the AER to appropriately balance the risks and return for businesses and ensure the project is in the long-term interests of consumers.

For the preferred option identified in the PACR, the AER must determine whether the existing cost recovery mechanism for regulated transmission projects is sufficient or whether an alternative mechanism is required. This determination should use the distribution of expected benefits modelled as part of the RIT-T assessment as well as other sources deemed necessary.

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7 PIAC, *Submission to COGATI Access and Charging consultation paper*, April 2019, 10-16.

8 This definition was proposed by PIAC and subsequently adopted by the AEMC in its final COGATI report in December 2018.

The AER should consider a range of factors affecting the equity of risk allocation and cost recovery including but not limited to:

- The alignment of benefit accrual to cost allocation in terms of geography – for instance if the majority of costs would accrue to one NEM region while the majority of expected benefits would accrue to another.
- The alignment of benefit accrual to cost allocation in terms of time – for instance if the expected benefits do not eventuate for many years after the investment must be made.
- The degree to which the benefit accrual is affected by a range of potential alternative scenarios.
- Whether consumers are best placed to bear the utilisation risk of the investment or whether a different party should wear this cost, such as the TNSP as a speculative investment or a generator as part of its connection charges.

If the AER determines that an alternative cost recovery mechanism is required, it should be able to consider options including:

- Revenue or RAB allocation to particular NEM regions according to where the benefits are expected to accrue rather than where the physical assets are located.
- Alternative depreciation schedules to help address any temporal misalignment of costs recovery and benefit accrual.
- Co-funding of network investment with other parties to recover costs from parties who are better placed to manage the risks or uncertainties.
- Underwriting of network investment to reduce the risks or uncertainties which may otherwise prevent investment proceeding.
- Speculative investment mechanisms such as for generation-leading transmission investment.

Forecasting best practice guidelines

PIAC supports the role of the AER in setting out binding forecasting guidelines to be used by AEMO as part of the ISP development process. We are broadly supportive of the draft guidelines presented. We propose additional points for inclusion as set out below.

Methodology

Compare predicted with historical values to support transparency in forecasting

PIAC considers forecasts prepared as part of the ISP and elsewhere should in principle be falsifiable. Forecasts are usually 'wrong'; there is often material difference between expectation and reality. This is particularly true in a complex and evolving system such as the NEM.

Divergence between forecasts made by AEMO or any other body, and the actual observed historical values, does not in and of itself indicate bias or other problems with forecast methodology and inputs, but rather the inherent uncertainty of making predictions about the future. However, if forecast errors consistently tend in a particular direction, or if they tend to increase rather than decreasing or remaining stable over time, this may indicate bias in the methodology or other problems that need to be explored and rectified.
For example, if a forecasting process consistently under forecasts uptake of distributed energy resources, this indicates an underestimation bias. Adjusting this bias could take the form of

amending the forecast methodology or seeking inputs from alternative sources. Stakeholders should have access to this information as a means to promote accountability and transparency in the forecasting process.

ISP forecasts and scenario modelling also rely on a number of inputs which themselves are forecasts. These include consumption and demand, demand side participation, generation and storage, and transmission modelling. Some of these inputs are generated 'in house' by AEMO while others are provided by external entities. For example, AEMO often seeks input from consultants in developing scenarios of uptake for new generating technologies.

PIAC considers these inputs and supporting information should be open to scrutiny by consumer advocates, market bodies and other stakeholders. Comparison of existing predicted and actual historical values should be presented - ideally in both numeric and graphical form - and any assumptions made in the application of input data should be stated. This will support accountability in the forecasting process and give guidance on how much confidence should be attached to the ISP scenarios and their underlying components.

We acknowledge some of this information is already available via AEMO's Forecast Accuracy Report (for example, historical versus predicted values for operational demand by jurisdiction). We consider this an important mechanism for transparency, and support both the commitment to accountability embedded in this approach and its extension to other forecasting processes.

Incorporate an 'error correction loop' into the forecast methodology

If the size and direction of forecast errors can be incorporated as an input into future predictions, this can create a feedback loop which supports process-improvement over time. AEMO should use these and/or other methods to incorporate mechanisms for 'error correction' into the ISP forecasting process.

Consultation

PIAC supports a two-stage public consultation process as proposed in the draft guidelines. We recommend a complementary process be applied to collaboration between the AER and AEMO. The AER should play a review role in the early stages of the ISP, specifically to validate the reasonableness of key data inputs and assumptions, and suitability of any new or altered modelling and analysis approaches

Key parameters

PIAC supports publication of key non-confidential parameters and forecast inputs, as this will help guide stakeholders' response to consultation and increase accountability for the forecasting process more generally.

PIAC considers there is merit in further exploring AEMO's access to information as an input to the ISP and other forecasting processes. In particular there may be value in considering whether the current framework can be improved to support AEMO in obtaining data to generate rigorous, accurate and unbiased forecasts. We recommend further consideration of the following questions:

- Under the current framework, do generators and other market participants have adequate incentives to provide AEMO with sufficient quality and quantity of information as an input to forecasts?

- Is there a role for AEMO to have compulsory information-gathering powers (for example, analogous to those currently held by the ACCC)?
- Are there opportunities for improved data sharing between AEMO and other market bodies?

Scenarios

Scenarios as a risk management tool

PIAC recommends the guidelines explicitly recognise the role of scenario development as a risk-management tool.

Forecasting in the energy market is inherently a probabilistic process. There is no single 'correct' answer in predicting the evolution of a complex system. Rather, forecasters will develop a range or distribution of potential scenarios and develop measures of confidence attached to each. This approach, which incorporates uncertainty into forecasting processes and their outputs, should typically be preferred to a deterministic approach which yields only one predicted result and does not capture the spread of potential outcomes – or of the consequences (costs and benefits) associated with those outcomes.

Incorporating uncertainty into the forecasting process is particularly important in the ISP which plans whole-of-system outcomes on an extended timescale. Due to the time horizon, the many inputs required, the system-wide nature of the outcomes predicted, and the 'system-shaping' (rather than just predictive) nature of forecasts in the ISP, the degree of uncertainty is greater compared to forecasts which are more limited in scope (for example, predicting demand in isolation).

An example of where the use of scenarios is vital for the appropriate treatment of uncertainty, and therefore risk management, is the prospective Snowy 2.0 development. While there is a high likelihood it will proceed due to government support, estimates of the cost of this project are varied, and it is unlikely to be commercially viable. It is still possible the development will not go ahead, and in any case it is unlikely to be operating within the ambitious timeframe announced by its shareholder.

PIAC therefore recommends that in preparing the ISP, AEMO develops scenarios both with and without the inclusion of the Snowy 2.0 scheme, so that market bodies and stakeholders can access guidance on whole-of-system optimisation under either outcome. More broadly, we consider government-backed schemes should be assessed on a level playing field with purely commercial investments, enabling stakeholders to model and mitigate risk associated with uncertainty with respect to all kinds of projects.

Communicating information about scenarios

PIAC supports the proposal set out in the draft guidelines that AEMO publish information on the construction of ISP scenarios and sensitivities. We consider there is merit in developing guidelines for how the probabilistic nature of scenario development should be represented in public communications.

In general, where a particular forecast result or input comprises a range of values rather than a single value, visual representation and commentary on that information should seek to depict the

distribution of that range rather than (or at least in addition to) extracting a single instance. Depicting a single case risks conveying the erroneous impression that a one definitive outcome has been predicted, which may cause stakeholders to over or underestimate the probability of particular scenarios with negative consequences for decision-making. Where for brevity or illustrative purposes a single number is provided or case depicted, information should be provided as to how the range was 'collapsed' to converge upon that single value.

PIAC also recommends that AEMO and other forecasters should consider means of incorporating measures of the confidence level/uncertainty attached to scenarios in communications relating to the ISP, including at a 'headline messaging' level as well as in more technical documents, so that these can be used to guide market and policy responses and better inform public discussion.

Additional areas for comment on forecasting

Governance

PIAC recommends that responsibility for developing ISP forecasts be shared between different institutions which play complementary roles through different incentives and expertise. We support the ESB's approach of having both the AER and AEMO play a role in forecast development, taking advantage of AEMO's technical and engineering knowledge and the AER's focus on efficient regulated costs.

3.4 Should the contingent project mechanism be amended to provide more time for the AER to undertake its assessment?

PIAC agrees with the ESB that the current, strict Rules obligations regarding the timeframe for assessing contingent project applications may be problematic for ISP projects. We are generally supportive of measures which provide the AER the necessary resources – be it time, information or powers to use its discretion – to act as an expert regulator and make determinations in the long-term interests of consumers.

However, we consider there are potentially broader issues with the contingent project framework, as more network businesses are regularly using contingent projects as part of their revenue proposals. Therefore, we recommend reviewing the contingent project framework more holistically, such as through the AEMC's ENERF review, to ensure it remains fit for purpose given its changing applications from when the mechanism was first developed.

3.5 Proposed dispute resolution framework

PIAC agrees it is preferable for any concerns relating to the various elements of the ISP and its development are raised and resolved as part of the ISP process itself rather than separately. However, this must not be the only option available to stakeholders.

We support a mechanism which would "allow stakeholders to raise issues in relation to the ISP following each key decision point" as proposed by the ESB.[9] However we do not support the approach of limiting grounds for dispute only to matters previously identified in submissions to AEMO (or an NSP) by the disputing party. There are potential barriers which may prevent stakeholders from being aware of, or able to raise, an issue in the ISP development or RIT-T

[9] ESB, *Converting the Integrated System Plan into Action*, May 2019, 13.

consultation processes. The fact alone of a matter not being raised during the consultation process does may have no bearing on whether a disputed matter has bearing on the long term interests of consumers.

This is especially true for consumer advocates, as noted in our submission to the COAG Energy Council on consumer advocate resourcing.[10] The technological transition that is underway in the energy market, and in the Australian economy more generally, means the framework of the NEM is being substantially redesigned. There are many policy and regulatory reforms underway that relate to networks, including those which will help define many large, capital-intensive investments and which products and services are to be delivered as regulated services or through contestable markets. Without effective and informed consumer engagement in these processes, consumers could be locked into less efficient regulation and markets resulting in unnecessarily high costs for energy services.

Restrictions on what issues can and cannot be raised as a dispute to the AER also risks introducing unnecessary ambiguity as to eligibility for little gain. For instance, would a stakeholder have to raise and maintain an issue throughout the consultation process for it to be eligible? How detailed or specific must it be to constitute it having been raised? If an issue has been raised and responded to by AEMO or the TNSP through the process, is it still eligible to be raised as a formal dispute?

Rather than specifying eligibility criteria for disputes in the Rules or a similar regulatory guideline, PIAC instead supports maintaining the AER's existing discretion as an expert regulator to assess each dispute on its merits and deal with accordingly. There may also be merit in providing additional transparency or guidance around how the AER may approach assessing disputes under such a mechanism.

10 PIAC, *Consumer resourcing for participation in revenue determinations*, November 2017.