

Integrating Stakeholders for the NEM Energy Transition

Ria Sheryl Belisario, Senior Network Planning Engineer, Western Power, Western Australia

Fiona Griffith, Senior Connections Cost Engineer, Ergon/Energex, Queensland

Shilpa Kala, Senior Network Connections Engineer, Transgrid, New South Wales

Adrian Knack, Chief Technology Officer, Redback Technologies/Luceo Energy, Queensland

Beer Opatsuan, Manager Intelligent Grid Program, Ergon/Energex, Queensland

Executive Summary

The Australian energy market is going through a transition from the incumbent centralised generation model to a distributed generation model. Adding to this emission targets resulting from the Paris Agreement and opportunities from increasing technical change have resulted in the major stakeholders in the Australian power industry having differing investment and operational priorities. Accommodating the interests of the growing number and variety of stakeholders, many with more than one role, has proven challenging to date.

This lack of certainty in stakeholder identification and engagement has proven to slow the industry in implementing solutions and focusing investment. Moreover, this slowness is reducing the focus on providing the optimal solutions to the consumer as the target dates approach. It is imperative that as an industry we identify stakeholders early and ensure they are involved in the optimising the customer outcome.

To this end this board briefing paper outlines five key recommendations to address this issue. Foremost among these recommendations is to establish a trusted, independent industry-wide taskforce to deliver optimal outcomes for customers. This taskforce is entrusted initially with the identification and consultation with all the stakeholder groups. The second stage of works for the taskforce is to create a clear stakeholder engagement strategy for each of the identified stakeholders. Key to building trust from all stakeholders the taskforce will publish the outcomes of stakeholder engagement sessions. Successful implementation of the recommendations will enable the taskforce to independently review and overhaul the current market structure, thus enabling the energy transition to be accelerated.

Recommendation

- (1) Establish a trusted, independent industry-wide *taskforce* to deliver optimal outcomes for customers through the imminent National Electricity Market (NEM) energy transition.
- (2) Entrust this taskforce with the identification and consultation of all key stakeholder groups and industry considerations necessary to engage in the energy transition journey.
- (3) Assign the taskforce the role of creating a stakeholder engagement strategy for each of the identified stakeholders.
- (4) Publish the outcomes of stakeholder engagement sessions. This provides transparency which leads to trust and holds stakeholders to account for their engagements.
- (5) Empower this taskforce with sufficient jurisdiction to independently review and overhaul the current industry and market structures necessary for a whole of industry unified approach.

Purpose of Briefing Paper

How can we best integrate all the stakeholders in the energy transition, including their competing priorities and interests, to deliver the optimal customer solution in terms of safety, costs, reliability and the environment in a world where technology is redefining solutions faster than ever before?

Naturally, major Australian power industry stakeholders¹ have differing investment and operational priorities within a swiftly changing environment destabilised by emission targets resulting from the Paris Agreement and increasing technical change. Developing certainty in a solution whilst accommodating the interests of the growing number and variety of stakeholders, many with more than one role, has proven challenging. The current industry response has been inefficient and unfocussed, leaving Australian consumers at risk from poor investments and unreliable electricity supplies.

The Paris Agreement and subsequent emissions targets were fundamentally based upon protecting vulnerable peoples from climate change. In a similar vein, the Australian power industry needs to focus on understanding and delivering optimal outcomes for all customers. Careful development of strategy and agreements will ensure all stakeholders across the energy supply chain remain relevant throughout the transition and enable these players to evolve whilst continuing to benefit all Australians. The establishment of an inclusive and trusted stakeholder engagement framework will ensure all Australians are protected from and benefit from the approaching energy transition.

Background

Australian energy industry reforms² late last century promoted competition to better serve the interests of consumers and the wider community. Structural reform and competitively neutral markets were implemented, and regulation was restricted to the industry sectors where market competition was not feasible. Although widely accepted that these reforms were imperfect on some levels, they united the industry approach, minimised government interference, reallocated risk to private investors, and provided economic security for consumers.

Early this century, Australia's state and federal governments widened their objectives to include decarbonization. Net Zero investment drivers disrupted the industry and influenced investor outcomes, subsequently destabilizing the energy market economically and technically. The existing National Electricity Market (NEM) rules and regulations now act against the interest of consumers evidenced by the consistently increasing price of electricity. This issue is compounded by the fast acceleration of industry change with no indication of relief. The National Electricity Market (NEM) has only three (3) years³ remaining to prepare for 100% instantaneous penetration of renewables on the existing network.

¹ Major Australian power industry stakeholders include but are not limited to generators, regulators, the market operator, network service providers, retailers, aggregators, original equipment manufacturers, environmental bodies, and consumers.

² The National Competition Policy in the 1990s led to the creation of the NEM in 1998, AEMC in 2005 and AEMO in 2009.

³ [Energy Security Board | Post 2025 electricity market design project \(aemc.gov.au\)](https://www.aemc.gov.au/energy-security-board/post-2025-electricity-market-design-project)

“So, the goal that I’m setting for us, Australia’s independent system operator, is to harness the talents, capabilities, experience, and know-how across the industry, to engineer grids that are capable of running at 100 per cent instantaneous penetration of renewable energy. And do this by 2025!”

Daniel Westerman⁴, CEO of AEMO, 2021

While there has been a significant amount of work from various industry bodies which have adequately defined a roadmap to achieving the industry goals none of these have adequately defined a comprehensive stakeholder identification and engagement plan which is customer focused. While it may be argued otherwise, the evidence for this is a general lack of trust from customers in the ability for the industry to manage power prices and reliability.

Technical Impact on Stakeholder Economy

The electricity system supporting Australia’s modern economy and lifestyle is experiencing change on an unprecedented scale and at an unprecedented pace. This change has been driven by several key factors, including but not limited to increasing expectations to take control on climate sustainability, increasing expectations of industry safety and reliability, increasing customer adoption of small-scale renewable energy technologies, and the growing number of diverse industry stakeholders. The complexity of the challenge is compounded as the existing power system is not designed for bi-directional, intermittent energy flow, and is sufficiently mature to integrate emerging technologies. These issues present serious technical, regulatory challenges to the operational model of the existing power systems. Technical, economic, societal, and environmental risks have therefore increased in recent years at faster rate than the expected industry adaptation. The risks of unreliable electricity supplies, system-wide blackouts, safety implications and escalated energy prices will result in significant disadvantage for vulnerable customers and severe economic costs for all Australians.

Fragmentation of Stakeholders

The Australian power industry must urgently address the elephant in the room. Generators, investors and network service providers are grappling with the technical challenges but lack direction for the planning and prioritisation of their investments. Consumers are seeking optimum economic outcomes, but they are paying the price for this lack of direction. Without immediate action, all Australians will ultimately bear the risks of this obsolete consumer protection model. Any feasible solution will require swift and efficient collaboration between stakeholders whilst considering that few stakeholders are adequately prepared to trust the process and compromise on their own outcomes for the greater good.

To use another elephant analogy, this ancient Indian parable portrays the key stakeholder issue facing the Australian power industry:

“A group of blind men heard that a strange animal, called an elephant, had been brought to the town, but none of them were aware of its shape and form. Out of curiosity, they said: “We must inspect and know it by touch, of which we are capable”. So, they sought it out, and when they found it, they groped about it. The first person, whose hand landed on the trunk, said, “This being is like a thick snake”. For another one whose hand reached its ear, it seemed like a kind of fan. As for another person,

⁴ [AEMO announces 100% renewables by 2025 target - Energy Magazine.](#)

whose hand was upon its leg, said, the elephant is a pillar like a tree-trunk. The blind man who placed his hand upon its side said the elephant, "is a wall". Another who felt its tail, described it as a rope. The last felt its tusk, stating the elephant is that which is hard, smooth and like a spear.

In some versions (of this story), the blind men then discover their disagreements, suspect the others to be not telling the truth and come to blows ... While one's subjective experience is true, it may not be the totality of truth."⁵

Although integral to a successful outcome, Australia's energy transition approach has lacked a cohesive nation-wide approach. Out of necessity, industry stakeholders have developed independent views of the future, their investments and the roles they will play. They have worked from their restricted view of the problem as it is the only view that they have. They have been blinded to the other views and can only interpret their part of the elephant in the room.

The current Australian power industry has been fragmented and many industry innovation investments have been counterproductive. Competing interests of stakeholders across the energy supply chain leave the future of Australia's power systems vulnerable.

Realigning and Building Trust

There is a significant opportunity for these technical and regulatory challenges to be addressed through an organised stakeholder management approach which promotes cohesion and prioritises customer access to safe, reliable, and affordable electricity above the interests of individual stakeholders. The industry needs to be challenged to empathise with stakeholder differences and willingly take risks to harness the collective synergies.

Further examination into various aspects of the energy transition challenge has evidenced that the current electricity market structure in Australia was established on the underlying assumption that a competitive market would produce better overall outcomes for the community and consumers. This market approach has not evolved to account for new technologies, changing consumer and stakeholder behaviour, and the inclusion of new industry stakeholders. The notion of "better outcomes" has now been interpreted in vastly different ways for each market player.

At present, there is not a unified agency tasked with directing and overseeing the transformation of the Australian power industry. Stakeholder sub-groups, however, are strongly represented by certain industry advocacy groups. In order to return consumers to the core of the discussion and promote engagement with external advocacy groups, it is proposed an overarching stakeholder engagement taskforce be established to represent the combined interest of all stakeholders and bridge the policy gaps through a best practice stakeholder management approach.

⁵ [Blind men and an elephant - Wikipedia](#)

Risk Analysis

Many risks have been previously stated in this paper; however, the below technical and economic risks have been identified as high impact should the energy industry continue to forge along the path of disconnection:

- Disrupted by the rapid uptake of renewable energy resources, the existing Network Electricity Market (NEM) and National Electricity Rule (NER) frameworks are no longer driving the best pricing outcomes for the customer.
- The current framework will soon fail to meet the expectations of customers and communities.
- There will be an escalated cost of living due to the ongoing increase in electricity prices.
- There are increased risks of power system blackouts leading to negative economic impacts for the entire Australian population.
- Some current market stakeholders may become redundant due to the competing directions and lack of investor confidence.
- Market pricing models do not provide for essential system services such as voltage control, system strength, inertia, and frequency control. It currently falls to Australia Energy Market Operator (AEMO) and the network service providers to navigate technical solutions. However, this is becoming increasingly difficult, and the impact would be minimised by providing market incentives to generators for these services.
- Electricity prices do not reflect the social marginal costs of emissions. The current market design propagates generator congestion, including incentivising batteries to locate near load does not supply, exploiting transmission assets.
- The pace of the energy transition will leapfrog the implementation speed of technical solutions and energy infrastructure exacerbating the energy transition risks. The AEMO target is 100% renewables by 2025 which presents a significant time pressure for the industry.

The rate of rapid energy transition to renewables, penetration of Inverter Based Resources [IBR], Distributed Energy Resources [DER], and the early withdrawal of synchronous fossil-fuelled (i.e., coal) power generation renders the grid vulnerable to system blackouts the economic impacts to all Australians which would be enormous in comparison to investment in preventative strategies with a focus on averting such risks.

Corporate Governance and Compliance

The proposed **Stakeholder Engagement Working Group**⁶ will challenge the current framework that governs the energy system including the roles of the Energy Security Board (ESB), Australia Energy Market Commission (AEMC), Australia Energy Regulator (AER) and Australia Energy Market Operator (AEMO). These bodies were created for regulatory and statutory purposes to protect consumer outcomes within industry sectors not guided by the market mechanisms. As such, many stakeholders base their interactions with these bodies on a compliance focussed, audit passing perspective. The ESB, AEMC, AER and AEMO have identified the risks of the current model to their consumer outcomes, and as a result, they have been focussing on industry and market strategies to support the Australian energy transition. A successful outcome will navigate an industry stakeholder shift from compliance only behaviours to a strategic partnership achieving optimum industry outcomes.

⁶ Working model in WEM - [The Energy Transformation Taskforce \(www.wa.gov.au\)](http://www.wa.gov.au)

Successful navigation of the Australian energy transition will necessitate stakeholder businesses to apply new strategies effectively and efficiently within their businesses. Many of these businesses have been structured for the current industry framework and lack the necessary agility or risk appetite to swiftly respond within limited time frames. It is recommended that the leadership roles of customer, environmental and future grid planning be fundamental in the new business structures influencing all aspects of the business but particularly the company-wide embedding of the energy transition strategy.

Appendix A – Contributors

1. **Ria Sheryl Belisario**, Senior Network Planning Engineer, Western Power, Western Australia

Ria Sheryl, or preferred to be called 'Ri', is a Senior Network Planning Engineer at Western Power, the Transmission & Distribution Network Service Provider for SouthWest Interconnected System (SWIS) of Western Australia. Ri recently joined the Distribution Network Planning Team after ~10years in Network Operations as Senior Operations Engineer where she was focused in the Transmission Networks Real-time Operations, Control, Outage Planning & Transmission reliability as subject matter expert; it was due to her interest in the changing energy landscape & the imminent transformations. Prior shifting to power system sector, Ri has worked in the manufacturing, research & design, and product engineering in the 3-Phase Uninterruptible Power supply industry (APC by Schneider Electric) for her first ~6years of her career as a Power Electronics Engineer in the Asia-Pacific & Greater China regions. She is a licensed Electronics & Communication Engineering overseas and received her master's degree in Electrical Utility Engineering from Curtin University. Ri is also an active committee member in WA chapters of both Electric Energy Society of Australia (EESA) & IEEE PEL/PSE organisations. Her interest is in Power System Volt-VAR (Reactive Power) management & optimisation as well as DER, which predominantly emerging power electronics application in the power system.

2. **Fiona Griffith**, Senior Connections Cost Engineer, Ergon/Energex, Queensland

Fiona Griffith has twenty years of broad engineering experience across diverse Australian industries. Since graduating with a Bachelor of Chemical Engineering (Hon 1) from the University of New South Wales, Fiona has worked in oil and gas, steel milling, sugar milling, biomass generation, pressure vessel manufacture and the power industry. Fiona has developed transferable skillsets in production, engineering design, statutory reporting, systems development, cost engineering and business development as well as being keenly interested in alternative renewable generation opportunities. Within her current role as the Senior Connections Cost Engineer in Ergon and Energex (Energy Queensland) and with her broad business connections, Fiona is actively working to promote customer outcomes within the power industry.

3. **Shilpa Kala**, Senior Network Connections Engineer, Transgrid, New South Wales

Shilpa Kala is a Senior Network Connections Engineer in the Network Planning team at Transgrid, the Transmission Network Service Provider for NSW and ACT. In her role, Shilpa leads technical due diligence reviews for new generator applications. Shilpa graduated with the degrees of Bachelor of Engineering and Master of Engineering in Electrical Engineering from the University of New South Wales in 2018. Shilpa carried out industrial theses for her undergraduate and master's degrees on topics related to the integration of renewables and system security in the NEM in collaboration with Transgrid. Her master's thesis on the inertia requirements of the NEM was presented and published at the 2019 IEEE Innovative Smart Grid Technologies - Asia (ISGT Asia) conference. Shilpa was also an API bursary program student from 2013 to 2016. She has over 4 years of total experience in the energy industry spanning Endeavour Energy, Schneider Electric and Transgrid.

4. **Adrian Knack**, *Chief Technology Officer, Redback Technologies/Luceo Energy, Queensland*

Adrian Knack had 15 years of industry experience in the development of innovative and high-reliability engineering solutions for the Defence, Mining, and Telecommunications sectors before joining Redback Technologies as Director of Hardware. With PhDs in Electrical Engineering, Electronics and Communications Engineering as well as undergraduate degrees in Computer Systems Engineering and Computer Science, Adrian is uniquely placed to develop the intelligent platforms for Redback.

“At Redback Technologies I have the honour of working with some very talented team members both in the Australian based team and with our team in China. Together we are keenly focused on ensuring we provide a high quality of product and service to our customers while giving every team member the opportunity to grow their own knowledge and careers.”

Since joining Redback in 2016, Adrian has been instrumental in designing and developing the original Luceo Energy platform for modern energy networks, the current Redback home solar and battery systems, and has been a key member of the executive team. With a strong background leading teams in developing products and delivering services, and building strategic partnerships to ensure company success, Adrian is the natural successor to step into the role of CTO with Redback Technologies.

5. **Beer Opatsuwan**, *Manager Intelligent Grid Program, Ergon/Energex, Queensland*

Beer Opatsuwan is a chartered electrical engineer and a chartered manager at Energy Queensland, the parent company of Energex and Ergon Energy which manages Australia’s largest electricity distribution network. Beer holds a Bachelor of Electrical Engineering, a Post-graduate Certificate in Electricity Supply Engineering and an MBA. His portfolio of experience covers a broad range of engineering management activities within the energy industry in Australia and the UK. As the Manager Intelligent Grid Program, Beer is responsible for leading a team in developing and maintaining the whole of grid technology project governance, coordination of technology diverse projects, strategic program management & execution and on-strategy response for new sustainable energy solution projects on behalf of Energy Queensland. Beer is currently representing Australia on the International Electrotechnical Commission’s Standardisation Management Board and contributing to numerous national industry forums.