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Australian Institute of Company Directors

Climate Governance Initiative Australia

Energy governance: A system in transition

A primer for Australian boards

Introduction

Australia's energy system is going through a significant structural shift. For boards, energy is no longer solely a procurement issue. It carries strategic, legal, and reputational consequences with implications for board oversight.

The 2026 fuel security crisis exposed Australia's deep reliance on imported liquid fuels. The electricity market is becoming more weather dependent as new sources of generation and storage are integrated into the system, and ageing coal-fired power stations retire. Demand patterns are being reshaped by data centres, electric vehicles and distributed energy resources such as rooftop solar photovoltaic (PV) and batteries, creating a more dynamic electricity system.

Scrutiny of energy and emissions claims is intensifying across courts and regulators, and mandatory climate disclosure is now in force for large Australian organisations. The changing energy landscape also creates opportunities for organisations that understand their energy exposure and proactively explore options and trade-offs.

This primer covers:

Why energy is a board-level issue

How fuel security, the energy transition and mandatory climate-related financial disclosure requirements are elevating energy from an operational matter to an issue of board oversight.

Australia's electricity market

How the electricity system is changing and what it means for organisational resilience, energy costs and long-term decision making.

The energy transition opportunity

How organisations may use electrification, energy efficiency, on-site generation, storage and demand flexibility to strengthen resilience, manage energy exposure and create value.

Why energy is a board-level issue

For decades, Australian organisations benefitted from reliable, affordable, and largely 'invisible' access to energy. That assumption is now under pressure from three directions. Boards are increasingly considering governance issues related to fuel security, electricity market transformation and electrification Table 1.

Table 1: Key energy developments influencing board oversight

Development	Detail
Fuel security	Australia imports 80 to 90% of its liquid fuels (the highest dependency of any OECD nation) and holds approximately 25-30 days of consumption cover for key transport fuels, against an IEA benchmark of 90 days.[1] In early 2026, conflict in the Middle East led to the closure of the Strait of Hormuz, through which around 20% of global oil trade transits.[2] Supply chain disruption flowed directly through freight, mining, agriculture, construction, and aviation.
Electricity market transformation	Australia's grid is transforming from a centralised, dispatchable coal-based system to one increasingly dependent on renewable (solar and wind) generation. Driven in part by the shift towards a lower-emissions energy system, this energy transition changes how electricity prices are formed, how reliability is managed, and how organisations think about resilience. Prices now feature extended periods of very low or negative prices when renewable generation is abundant, punctuated by sharp spikes when it is not.
Demand growth	A global electrification surge, including growth in data centre construction and electric vehicle uptake, means global emissions have reached new highs even as clean energy investment has reached record levels. Organisations are increasingly procuring renewable electricity as part of emission reduction and resilience strategies, but they must do so with a clear understanding of market dynamics, where claims of '100% renewable electricity' require careful verification and communication.[3]

Australia's structural energy position adds to these challenges. Around 41% of total primary energy demand comes from oil (almost entirely imported), with approximately 25% from coal and 25% from gas. Around 9% of total energy consumption currently comes from renewable sources.[4] Total energy consumption includes transport fuels, gas and electricity, rather than electricity alone. Throughout this resource, energy and electricity are not used interchangeably. Electricity is one component of the broader energy system, which also includes fuels such as oil and gas.

Increased focus on energy governance

The legal and regulatory environment is tightening, with increasing expectations that boards actively oversee energy-related risks and disclosures. An organisation whose size, structure or industry creates material exposure to energy price volatility, fuel supply disruption or the challenges of the energy transition should have these risks identified and highlighted on the risk register. This allows the board to have an informed view of the organisation's position and management's actions.

Boards of organisations with elevated energy-related risks should expect to receive structured reporting on energy exposure, test management's assumptions and seek assurance that energy-related disclosures are accurate and substantiated (noting that in the case of forward-looking disclosures, the requirement is that there are reasonable grounds for making them). This does not require directors to become energy engineers, market analysts, or climate scientists, but rather to adopt an enquiring mind, supported by advice where appropriate, to challenge and hold management accountable.

[1] Department of Climate Change, Energy, the Environment and Water (DCCEEW), Measures of liquid fuel stocks, April 2026; NRMA, Australia's fuel supply chain explained, Open Road, 27 March 2026
[2] International Energy Agency (IEA), Strait of Hormuz factsheet
[3] Ad Standards Community Panel, Case Report 0236-24, Ad Standards, 2024
[4] Department of Climate Change, Energy, the Environment and Water (DCCEEW), Energy consumption, Australian Government, Australian Energy Statistics

Four governance roles, reoriented for energy

The relevance and application of the governance roles in Table 2 will vary between organisations. Factors such as energy intensity, fuel dependency, operational resilience requirements, exposure to transition risk and reliance on energy-intensive supply chains will influence the level of board attention required.

Table 2: Applying four governance roles to energy

Governance issue	Detail
1. Strategy	Energy is treated as a strategic resource. The organisation's energy position is forecast and presented over appropriate time frames, for example 3, 5, 10, 15+ year horizons, with the exposure to fuel price volatility modelled.
2. Risk	Energy price, supply, fuel dependency, and transition risk are assessed, quantified, and reported to the board. Management should be able to address both supply-side elements (how the organisation sources and contracts for energy); and demand-side (how it manages, reduces, and shifts consumption). Both may be material.
3. Disclosure	Claims about energy, emissions, offsets, and transition commitments are accurate, substantiated, and defensible at the time they are made, that reasonable grounds exist for making forward-looking statements, and disclosure obligations are met on an ongoing basis.
4. Capability	The board has confidence that management has sufficient energy literacy to manage energy risks and opportunities. This does not mean technical expertise; it means the ability to ask informed questions, interpret analysis and engage independent advisers when needed.

Information that can assist a board understand the organisation's energy position

The following is key information that, dependent on the nature of the organisation, can assist a board in assessing the organisation's energy profile. Ultimately, it is for the board and, where appropriate, the relevant board committee to engage with management on what information will provide genuine insight on energy-related opportunities and risks.

- An assessment of the organisation's exposure to energy price volatility and supply risk, segmented by energy type (electricity, fuel, gas) and by time horizon (short, medium, long). This could include exposure to near-term supply disruptions, medium-term availability, and affordability challenges (such as gas supply and pricing[5]), and longer-term structural changes in energy markets and technologies.
- The organisation's approach to contracting electricity and whether it accounts for the structural changes underway in Australia's major electricity markets, including the National Electricity Market (NEM), Western Australia's Wholesale Electricity Market (WEM), and the Northern Territory electricity system.
- A position on liquid fuel dependency and whether there is a plan for the organisation's exposure to diesel and transport fuel supply disruption.
- An evaluation of long-term transition risks and opportunities, including the financial implications of Australia's legislated emissions targets and the organisation's exposure to transition policy.
- A disclosure framework that has, as a feature, assurance that energy and emissions-related claims are substantiated at the time they are made, and that reasonable grounds exist for any forward-looking statements. It should also support ongoing compliance with disclosure obligations.

[5] For an example of government analysis of energy supply and affordability risks, see: Victorian Government, Securing gas supply for Victoria (2025)

Understanding the electricity market

Understanding Australia's electricity market is essential to effective energy governance. The way electricity is generated, traded, and priced is changing rapidly, with direct relevance to organisational cost, resilience, and long-term investment decisions (Figure 1). Central to these changes is a distinction the recent NEM Review[6] identified as critical: the difference between variability and volatility (Box 1).

The NEM at a glance

The NEM is the wholesale electricity market connecting Queensland, New South Wales, Victoria, South Australia, Tasmania, and the ACT. Western Australia and the Northern Territory operate separate electricity systems.

The NEM combines a real-time spot market with a derivatives market that allows retailers, generators and large consumers to manage exposure to price volatility. Electricity is delivered through regulated transmission and distribution networks regulated by the Australian Energy Regulator.

Moving from centralised to distributed energy

Australia's electricity system is undergoing a transition of profound scale and speed. Millions of households and businesses are now active participants in the power system through rooftop solar, batteries, and emerging demand-side technologies.[7] The system has shifted from dozens of large generators to millions of distributed participants. This transformation is significant for emissions, price, reliability, and investment.

Electricity prices are no longer driven primarily by coal and gas costs.[8] Prices increasingly reflect a changing generation mix, including the growing share of renewable generation, and the transition from ageing coal-fired generation to new sources of generation and storage. The result is longer periods of very low – or even negative – prices when solar and wind output is abundant, punctuated by sharp price spikes when renewable generation falls or unexpected outages occur.

These changes alter where and when risks emerge, increasing the importance of timing, flexibility, and resilience. Organisations that identify how and when they use energy may be able to benefit from periods of abundant low-cost electricity while managing exposure during tighter market conditions.

Figure 1: Australia's electricity system is transitioning from a centralised, dispatchable system to one with more distributed generation

The previous system

- Energy is stored before generation (coal, gas, liquid fuels)
- Generation is largely dispatchable
- Financial contracts manage variable demand

The emerging system

- Energy is increasingly stored after generation (batteries and other storage)
- More generation is weather dependent
- Financial contracts must increasingly manage both variable demand and variable supply

[6] Nelson, T, Conboy, P, Hancock, A and Hirschhorn, P, National Electricity Market wholesale market settings review: Final Report, Department of Climate Change, Energy, the Environment and Water, December 2025
[7] Australian Energy Market Operator (AEMO), Integrated System Plan (ISP)
[8] CSIRO and AEMO (2026) GenCost: Cost of Building Australia's Future Electricity Needs

Box 1: The critical distinction between variability and volatility

One of the most important distinctions for boards is between variability and volatility.

Variability, refers to predictable fluctuations in energy output, such as daily and seasonal patterns in renewable (solar and wind) generation. These can generally be forecast and managed (Figure 2).

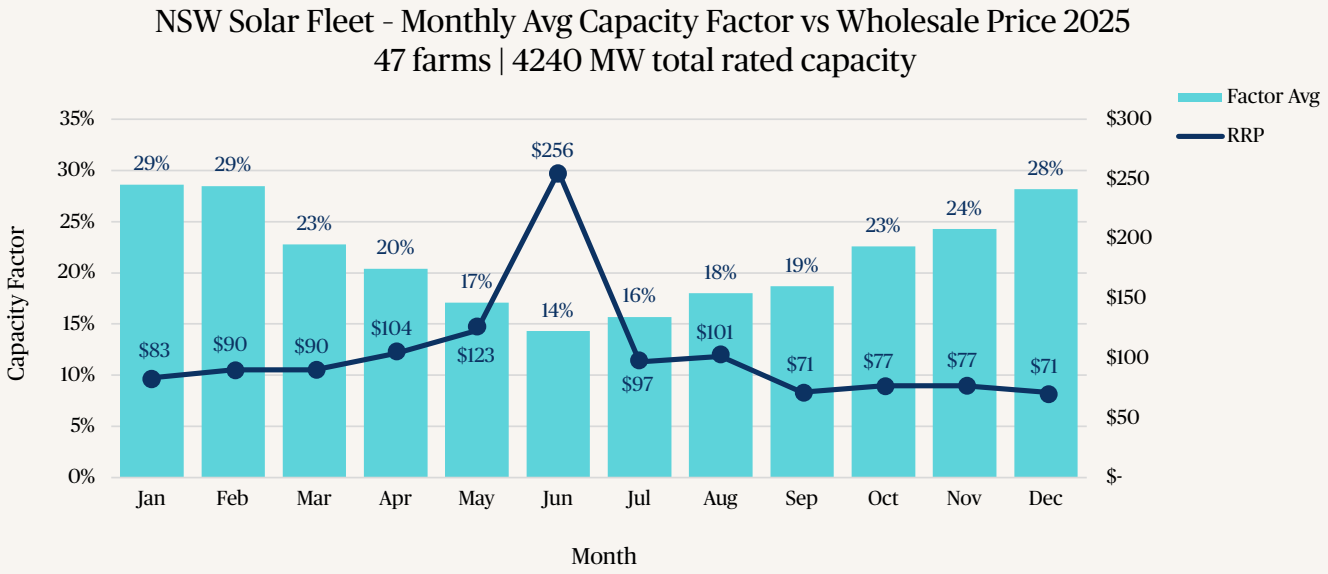

Figure 2: Variability in solar generation follows predictable daily and seasonal patterns. Source: NEM data

Volatility, refers to sudden or extended departures from expected supply conditions, such as unplanned outages or prolonged periods of low wind and solar generation (known internationally as 'dunkelflaute' or dark doldrums). This poses more significant challenges and can be difficult to anticipate (Figure 3).

Boards should expect management to clearly distinguish between these two types of risk in its energy procurement strategies. For example, a wind Power Purchase Agreement may provide long-term price certainty, but boards should also understand how the wind farm's generation profile aligns with the organisation's electricity demand and how periods of unexpectedly low output would be managed.

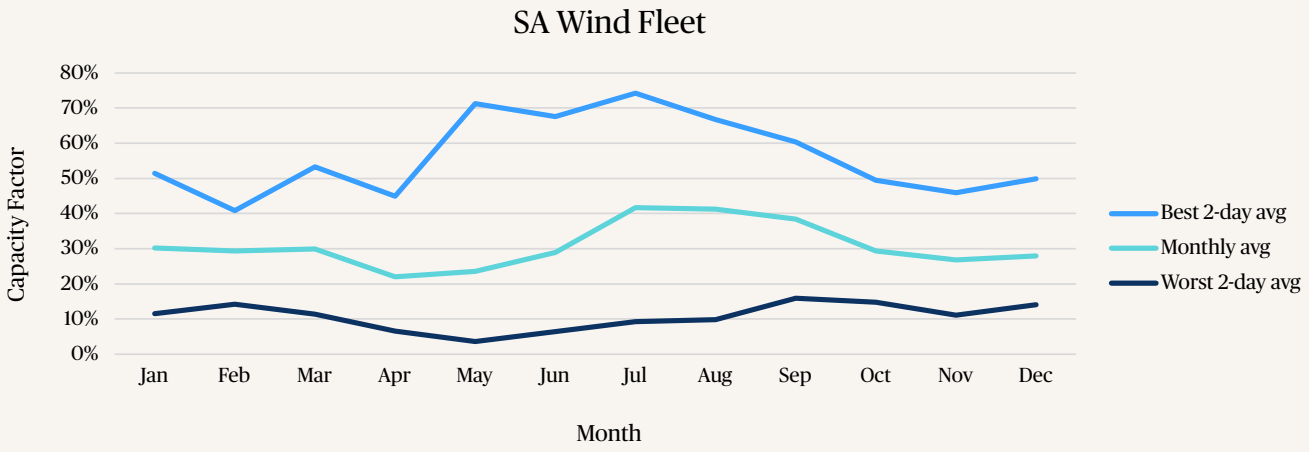

Figure 3: Wind generation can experience periods of unexpectedly low output, illustrating the distinction between volatility and predictable variability. Source: NEM data[9]

[9] For further information and chart detail, Nelson, T. 2026. Market Design in a Weather-Dependent and Distributed Electricity System: Lessons From the 2025 NEM Review. Australian Journal of Agricultural and Resource Economics 1–6

Key shapers of energy markets

Policy uncertainty continues to be identified as one of Australia's most significant barriers to investment, and the energy sector sits at the centre of that uncertainty. Many of these pressures are reflected in the electricity market, which is central to Australia's energy transition.

The 2025 NEM Review identified three structural problems in the electricity market. A fourth challenge – reliability risk shifting to winter – is an increasingly important consideration for boards (Table 3).

Table 3: Structural forces reshaping Australia's energy markets

Problem	What is happening	Why it matters
Spot market under pressure	Instead of being driven by coal prices, electricity prices are increasingly variable and influenced by 'hidden participants' such as rooftop solar, on-site batteries and electric vehicles (EVs). These 'hidden resources' are growing rapidly and are invisible in real time.	Energy cost forecasting may be based on assumptions that no longer hold.
Derivatives market under strain	As coal generators exit, the derivative contracts that provided the foundation for fixed-price retail products are disappearing, and liquidity is declining.	Fixed-price retail contracts may become more expensive or shorter-term.
Long-term investment signals absent	Many energy infrastructure projects require long-term revenue certainty to attract investment, yet most energy users prefer shorter-term contracts. This mismatch can make it difficult for new generation, storage, and other energy infrastructure to obtain financing. The NEM Review refers to this problem as a 'tenor gap'.	Expectations of lower future technology costs can discourage long-term contracting today, affecting investment in new energy infrastructure and, ultimately, future energy costs and reliability.
Reliability risk shifting to winter	Historically, reliability concerns centred on extreme summer demand. As solar penetration increases, reliability risk is expected to shift towards winter, when solar output is lower, heating demand is higher and prolonged periods of low wind can coincide with peak demand.	Energy strategies based on annual averages may overlook seasonal risk.

The wider policy and legal context

A challenging policy environment

Australia has legislated a 43% reduction in greenhouse gas emissions (on 2005 levels) by 2030 and net zero emissions by 2050.[10] As electricity generation accounts for around one-third of Australia's emissions, and because many sectors will rely on electrification to reduce emissions, the electricity sector sits at the centre of efforts to achieve these targets.

However, the energy transition itself faces delivery challenges. Achieving a reliable, secure, and least-cost transition requires the coordinated development of new generation, transmission, and storage infrastructure, much of which takes time to plan, approve and build. Projects may also face investment, planning, and social license challenges. Maintaining reliability and affordability while ageing coal-fired generation retires and the generation mix changes remains a significant policy and market challenge.[11]

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[10] Department of Climate Change, Energy, the Environment and Water (DCCEEW), Reducing emissions
[11] Integrated System Plan (ISP); National Electricity Market wholesale market settings review: Final Report

These competing priorities create challenges for organisations that must plan long-term energy strategies against climate policy objectives and emissions reduction targets, while implementation pathways continue to develop. Boards increasingly need to consider how developments in electricity markets interact with broader energy system trends, including fuel security, electrification and decarbonisation, as they shape both organisational energy strategies and the transition to a lower-emissions economy.

The legal environment continues to evolve

Australia's mandatory climate-related financial disclosure regime commenced on 1 January 2025, requiring the largest listed and private entities (Group 1) to report climate-related risks and opportunities under the Australian Sustainability Reporting Standards. Smaller entities are being brought into the regime on a phased basis, with Group 2 entities commencing from 1 July 2026 and Group 3 entities from 1 July 2027.[12]

Courts and regulators are also shaping expectations around the quality of climate- and energy-related corporate disclosures. Further, activist litigation also continues to test governance practices and influence expectations of board oversight, as demonstrated by the Federal Court's decision in proceedings brought by the Australasian Centre for Corporate Responsibility (ACCR) against Santos.

The case centred on allegations that Santos' net zero targets, clean energy claims and statements about hydrogen projects were misleading. The court dismissed all claims, finding Santos had reasonable grounds for its climate-related disclosures. The judgment, which has been appealed by ACCR, highlights the importance of board oversight, internal deliberation, documentation of assumptions, and the clear communication of uncertainty in long-term climate and transition plans.[13]

Australia's energy transition opportunity

Australia is well-positioned to benefit from the energy transition. The country has some of the world's best renewable resources (solar irradiation, wind, and available land area) and significant potential in green minerals, green steel, and attracting energy-intensive industries seeking to decarbonise supply chains.

Increasingly, organisations are not simply consumers of energy, but active participants in energy markets through on-site generation, storage, demand response, and electrification. For many organisations, these capabilities can strengthen resilience, reduce costs, and create competitive advantage. Depending on the nature of the organisation, it may be appropriate for management to present to the board on where these opportunities exist and whether they support the organisation's long-term strategy (Appendix 1 provides a hypothetical example of how a board might approach this discussion).

Australia's energy transition cannot be understood in isolation from broader environmental and social considerations. For example, the rapid growth of data centres is increasing demand not only for electricity but also for water, with cooling requirements potentially competing for natural resources. The minerals needed to build solar panels, electric vehicles, wind turbines and batteries, including lithium, cobalt, nickel and rare earths, are sourced through global supply chains that can carry material modern slavery risks. The expansion of renewable infrastructure can also raise land-use issues.

Participation in the energy transition also comes with governance responsibilities. Boards should have confidence that energy- and climate-related claims are accurate, supported by evidence and aligned with the organisation's underlying strategy.

[12] AICD, Deloitte and MinterEllison (2024), A Director's Guide to Mandatory Climate Reporting (Version 2)
[13] Australasian Centre for Corporate Responsibility v Santos Limited [2026] FCA 96

Appendix 1: Hypothetical case study - A practical energy strategy

The following is a hypothetical illustration of how a board might oversee a comprehensive organisational energy review. It is intended to help a board apply the governance concepts in this primer to a realistic organisational scenario. While informed by contemporary energy market developments, Hird Food Manufacturing is a fictional organisation and the assumptions, figures, and outcomes are included for illustrative purposes.

Background: Hird Food Manufacturing

Hird Food Manufacturing is a mid-sized Australian food and beverage producer with two sites in regional Victoria and one in south-east Queensland, consuming around 8,500 MWh of electricity annually. The company also operates a 28-vehicle refrigerated logistics fleet, predominantly diesel-powered.

Step 1: Energy intelligence – Understanding what you actually have

The review mapped Hird's energy position by site, time of use and energy type. It found that demand charges made up 28% of the electricity bill despite little management attention – three monthly production start-ups alone inflated them by an estimated $50,000 a year. Fleet analysis showed diesel costs had risen 34% since the 2026 fuel supply crisis, with 19 of the 28 vehicles running routes well within range for commercial electric alternatives.

Step 2: Operational flexibility – Reducing demand without reducing output

A 15-minute staggered start-up sequence for refrigeration and mixing equipment, requiring no capital investment, cut monthly peak demand by around 18% and saved an estimated $30,000 a year. Shifting batch mixing and pasteurisation outside the 3pm–7pm peak pricing window was estimated to save a further $45,000 annually, without affecting output.

Step 3: Behind-the-meter solar and storage

With the demand profile better understood, the review assessed the optimal behind-the-meter (BTM) solar and battery storage configuration for each site.

The Victorian sites had roof area for around 450 kW of solar, but winter generation there is typically 35–45% lower than summer – meaning a system sized for annual averages would under-deliver exactly when wholesale prices are highest. The review recommended a 450 kW solar and 500 kWh/250 kW battery system sized for winter peak demand rather than solar self-consumption, with an indicative payback of 7–9 years, improving to 5–6 years with demand response participation.

The Queensland site, with stronger solar and a lower 'winter risk' premium, was assessed for a 220 kW solar system with no battery, backed instead by a network-supported demand response program. In this context, the winter risk premium reflects the greater value of storage and energy resilience measures in locations where winter conditions create higher reliability and price risks.

Step 4: Contracting strategy – Finding the best deal

With a clearer picture of its actual and prospective demand profile, Hird was in a position to approach the electricity contracting market more intelligently. The review identified four contracting options:

Option	Description	Suitability for Hird
Standard retail contract	Fixed-price contract, typically 1–3 years. Retailer absorbs spot market risk; consumer pays a premium for certainty.	Provides certainty but removes all upside. NEM Review noted these may become more expensive or shorter-term as derivatives liquidity declines. Suitable for the Queensland site's baseline load.
Time-of-use with market exposure	Prices vary by time of day and season. Consumer shares in low-price periods but is exposed to high-price events.	Suitable for the Victorian sites given the demand-shifting capability identified in Step 2. Requires active management but was estimated to reduce costs by $45,000–$80,000 annually.

Option	Description	Suitability for Hird
Power Purchase Agreement (PPA)	Long-term contract (typically 7–15 years) to purchase renewable electricity at a fixed or indexed price, usually from a specific generator.	Provides long-term price certainty and renewable energy credentials. However, a PPA from a renewable generator does not provide 'firm' power – protecting the customer against price spikes.
Demand response enrolment	Consumer agrees to reduce load during grid stress events (typically 10–20 times per year) in exchange for payments from the grid operator or aggregator.	The battery storage system and production flexibility identified in Step 2 make Hird a strong candidate for demand response. Estimated payments of $35,000–$60,000 per year under current Victorian demand response arrangements.

Step 5: Fleet electrification roadmap

A phased five-year electrification plan targeted the 19 vehicles on sub-200km routes first. Electric alternatives showed a total cost of ownership advantage of around $8,000 per vehicle per year at current fuel prices, rising to $14,000 under a sustained 25% diesel price increase. The board approved six vehicles in year one, with charging infrastructure integrated into the Victorian sites' solar and battery system; the remaining fleet follows a rolling plan contingent on model availability.

What the board did – and why it matters

The board's role in this case was not to design the energy strategy. It was to:

- Work with management to commission a structured review with clear terms of reference and reporting requirements
- Understand whether the review assessed seasonal and time-of-use dimensions of risk, not just annual averages
- Ask management to explain the demand charge problem and what had been done about it
- Satisfy itself that the BTM solar and battery recommendation was sized for winter risk, not just solar self-consumption
- Understand the contracting options and the implications of the NEM Review for product availability
- Connect the fleet review to the fuel security discussion and the broader organisational resilience agenda
- Set a clear decision framework for staged capital investment with review milestones

Estimated annual savings – Hird Food Manufacturing (illustrative)

- Demand management (staggered start-up): $30,000
- Load shifting to off-peak periods: $45,000–$80,000
- BTM solar and storage (net of capex): $85,000–$130,000 (Year 1 onwards)
- Demand response participation: $35,000–$60,000
- Fleet electrification (19 vehicles over 5 years): $152,000–$266,000 per year at scale
- Total estimated annual benefit at scale: ~$500,000

Key lesson: For organisations whose operations depend on energy continuity, backup power and supply resilience are key governance matters, and the energy transition is changing what 'resilient' infrastructure looks like.

Appendix 2: Questions for boards

Not every question below will be relevant to every organisation. The issues that warrant board attention will depend on the organisation's circumstances, including its energy use, risk profile, operating environment, and strategic objectives.

Energy strategy, resilience, and risk

- Does the board treat energy as a strategic resource affecting competitiveness, resilience, and organisational performance, rather than solely as a procurement cost?
- Has the board considered opportunities to create value through on-site generation, storage, or demand response?
- Has the organisation's exposure to energy risk been explicitly assessed and quantified across short, medium, and long-term and seasonal dimensions?
- For organisations with critical service delivery functions: are current backup and resilience arrangements fit for purpose?

Energy investment and operations

- Has management identified opportunities to improve energy efficiency and flexibility, and assessed the economics of behind-the-meter solar and storage, including seasonal generation and winter risk (the heightened risk of higher prices and tighter supply conditions during winter periods)?

Fuel and supply chain resilience

- Does management have a current assessment of the organisation's exposure to fuel price, supply disruption, and second-order supply chain effects (such as increased supplier costs, delivery delays, or reduced availability of critical inputs)?
- Has the organisation assessed its fleet electrification pathway and the economics under a sustained fuel price increase scenario?
- Where the organisation is materially dependent on gas, has the board considered its exposure to future price and supply risk, and whether electrification could reduce that exposure?

Disclosure and stakeholder impacts

- Where the organisation has made public commitments about energy or emissions (including through offsets, Renewable Energy Certificates, or transition plans) has the board tested whether those claims can be substantiated (or in the case of forward-looking statements that there are reasonable grounds) at the point in time at which they are made? And do disclosure processes support compliance on an ongoing basis?
- Does the organisation's mandatory climate disclosure accurately reflect the real changes in energy strategy and supply chain arising from the transition?
- Has the board considered the transition's broader impacts, including modern slavery risk in renewable technology and critical mineral supply chains and, where relevant, cultural heritage, and land use?

Related AICD resources and education

- Governing for net zero: The board's role in organisational transition planning (with ACSI)
- Principles for setting climate targets: A guide for Australian boards (with the Insurance Council of Australia and Herbert Smith Freehills Kramer)
- A director's guide to mandatory climate reporting V2 (with Deloitte and MinterEllison)
- Opportunities in the circular economy: A primer for directors (with Accenture)
- Climate change: Science snapshot 2025 – An overview for Australian directors (with CSIRO)
- Climate Governance for Australian Directors (online short course delivered regularly throughout the year)

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