OXFORD ECONOMICS
AUSTRALIA

# ENERGY AND INVESTMENT ASSESSMENT

## Analysis of the food & grocery manufacturing sector's energy and investment needs

Report for the Australian Food and Grocery Council

# Disclaimer

## June 2025

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# Contents

# Executive summary

# Key insights into the food & grocery manufacturing sector's energy & investment needs

## The sector faces a challenging energy transition that requires a significant investment uplift

The food & grocery manufacturing sector currently accounts for 32% of total manufacturing output in Australia at $163 billion in FY23, with an ambition to reach $250 billion by FY30.

Growth capital investment needs are likely to total $38.1 billion between FY24 and FY30 to reach this growth ambition, a significant uplift on previous investment activity within the sector.

The sector is also projected to have substantial energy requirements under this growth ambition, with energy demand surpassing 220 PJ by FY30 and natural gas making up around 40% of total energy usage.

The ongoing national energy transition challenges poses significant risks to the sector, including:

- projections of rising energy costs,
- shortfalls in east coast natural gas supply, and
- concerns about grid reliability.

Key barriers to the sector's energy transition include:

- high upfront capital investment requirements which often yield low returns,
- limitations in available technologies (particularly for high temperature processes), and
- The sector's strong regional presence which increases its vulnerability to energy supply challenges.

To successfully reduce reliance on natural gas, improve energy efficiency and transition to more sustainable energy sources, it is estimated that the sector's immediate investment injection needs could be as high as $13.7 billion.

# Industry actions and policy support

## Industry and government will have a role to play in supporting the sector's transition

The **four key areas for industry action** include:

1. Reduce gas demand by electrifying gas intensive processes across the sector, where technologically feasible
2. Focus on energy efficiency to reduce energy demand pressures on the system and limit cost pressures within the sector
3. Supplement grid energy use with on-site energy generation where possible to reduce exposure to reliability issues and price spikes
4. Provide advice to policy makers on the energy demands of the sector moving forward

The **five key areas for policy action** include:

1. Maintain a clear and consistent energy policy framework that provides confidence to the sector and supports investment
2. Support short to medium-term supply of gas particularly in the southern states as the sector electrifies its processes over the longer term
3. Ensure network planning activities actively take into account the regional footprint of the sector's energy needs and associated grid requirements
4. Support grid stability by engaging with the sector to promote localised energy generation activities
5. Provide targeted grants aligned to the sector's characteristics and energy investment needs to reduce high upfront project costs and meet payback hurdle rates

# Project background

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## Providing an evidence base on incentives to support industry investment

The food & grocery manufacturing sector is one of Australia's major manufacturing sectors, playing an important role in supplying products to both domestic and international markets. It also has the third highest energy consumption of all manufacturing industries in Australia, with a high reliance on natural gas for its operations.[1]

The food & grocery manufacturing sector finds itself in a low investment trap. Weak investment activity is weighing on the productive capacity of the sector and hampering its growth potential, further jeopardising future investment. Achieving the ambitious growth target of $250 billion in total sector turnover by 2030, as outlined in the *Sustaining Australia 2030* report, will require a significant uplift in investment.[2]

In addition, Australia's energy market is experiencing significant and multi-faceted challenges, presenting significant risks for the food & grocery manufacturing sector with implications on cost, supply, growth and competitiveness.

Oxford Economics has been engaged by the Australian Food and Grocery Council (AFGC) to develop a comprehensive understanding of the sector's energy and investment challenges, and develop an evidence-base that can inform its policy position and advocacy efforts.

Oxford Economics Australia's analysis is broken into four main stages of work:

1. Quantify the energy demands of the industry under 2030 goals
2. Identify risks to the sector under energy transition scenarios
3. Assess the investment required to meet 2030 goals
4. Advice on fit for purpose investment scheme that will encourage investment in the sector

To ensure that the analysis incorporates the industry's perspectives and experiences, Oxford Economics and AFGC engaged with industry representatives through a set of working group discussions. These working groups were comprised of member companies to:

- Provide insights into the future energy demand and types of investment needed by the industry
- Identify issues and risks under different national energy transition scenarios
- Identify the challenges in the current investment landscape
- Provide guidance on the level of investment required to reach 2030 goals

This report presents Oxford Economics' analysis including insights from the industry working group.

1. Australian Energy Update, Department of Climate Change, Energy, the Environment and Water, 2024
2. Sustaining Australia, Food And Grocery Manufacturing 2030, Australian Food & Grocery Council, 2024 Sustaining Australia - Australian Food & Grocery Council

# Report structure

## This report provides an evidence base into the energy and investment needs of the sector

This report analyses the energy needs of the food & grocery sector under an ambitious growth outlook and identifies the investment needed to both reach this level of growth and undertake a significant energy transition. The report is broken into five key sections:

- **Outlook for the Australian food & grocery manufacturing sector** – this section outlines the growth outlook under a business as usual baseline and the high growth ambition outlined in the *Sustaining Australia 2030* report. The section starts by providing a profile of the sector, outlining the outlook to FY30 and analysing the related energy demands under this outlook.
- **An energy transition risk assessment for the sector** – this section identifies the challenges facing Australia's energy transition journey and the risks that this poses to the sector and its growth ambitions. The section starts by outlining Australia's energy transition journey and identifying the recent impacts of this transition on energy prices. The challenges, barriers and risks of this transition and impact on the food & grocery manufacturing sector are then identified.
- **The investment needs of the sector** – this section outlines the investment uplift required to meet the *Sustaining Australia 2030* goals and mitigate the risks under Australia's energy transition. This section provides a summary of investment activity by the sector to date before outlining the investment needs to both reach its 2030 goals and undertake the significant energy transition.
- **Analysis of potential incentive schemes for the sector** – this section analyses how incentive schemes may be able to support investment into the food & grocery manufacturing sector. This section identifies four key incentive schemes and analyses each in detail for its relevance to the food & grocery manufacturing sector.
- **Appendix** – this section provides details of assumptions underpinning the analysis contained within the report.

# Outlook for the Australian food & grocery manufacturing sector

# The food & grocery manufacturing sector profile

## Food & grocery manufacturing is a significant sector in the Australian economy

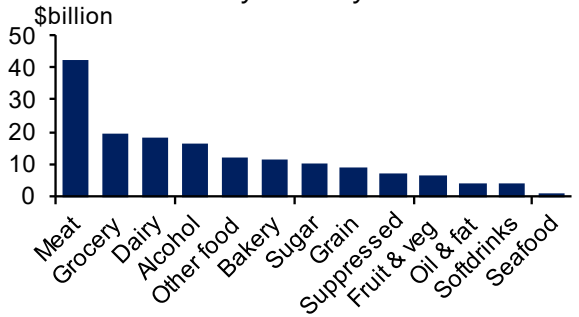
The food & grocery manufacturing sector currently accounts for 32% of total manufacturing output in Australia at $163 billion in FY23.[1] This is comprised of food & beverage manufacturing (88% of sector output) and non-food grocery manufacturing (12% of sector output). The largest industries within food & beverage manufacturing are meat manufacturing ($42 billion) and dairy manufacturing ($19 billion), while the largest industry within grocery manufacturing is human pharmaceuticals manufacturing ($12 billion).

Australia's food & grocery manufacturing sector faces tight profit margins due to the high operating cost environment and cost of living pressures. Operating profits have been slowly declining, with a profit margin of around 4.3% for the food & beverage manufacturing sector in FY23. This is lower than average across all manufacturing, which is estimated to average around 7.6% in FY23.[2]

The sector has a large number of small businesses, but the majority of activity occurs within larger organisations. While the bulk of food & grocery manufacturers within Australia employ fewer than 20 employees, the majority of turnover is concentrated in those with 20 or more employees. Despite comprising only 5% of firms, businesses that employ 100 or more employees comprise 39% of total turnover.[3] The support measures required by smaller firms are very different to those required by larger organisations.

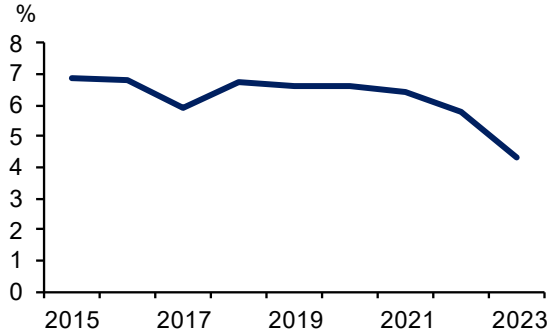
The food & grocery manufacturing sector has high levels of foreign ownership. The Australian Bureau of Agricultural and Resource Economics in 2011 found 42% of red meat processing, 87% of milk processors, and 59% of sugar milling operations were foreign owned.[4] These foreign organisations provide capital to the sector, supporting investment flows into Australia.

Australian food & grocery manufacturing turnover, FY23, by industry



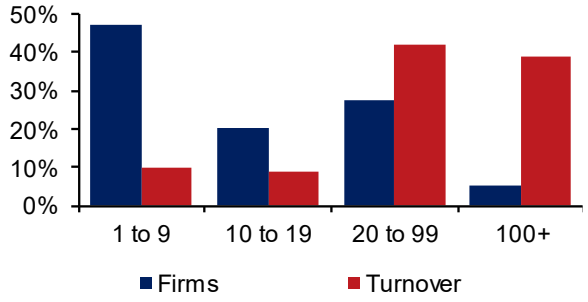

Source: Oxford Economics, ABS

Operating profit before tax as a share of total income



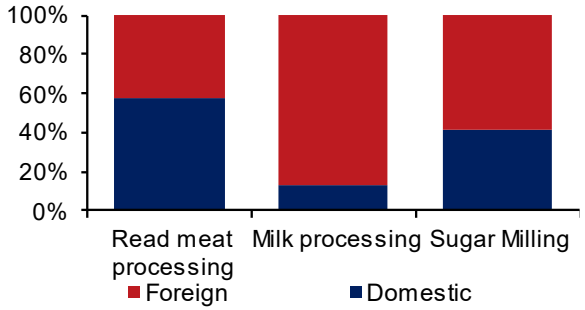

Source: Oxford Economics, ABS

Food & grocery manufacturing sector share of firms and turnover by employees




Source: Oxford Economics, ABS

Food & grocery manufacturing sector share of foreign ownership




Source: Oxford Economics, ABARES

1. State of the Industry, Australian Food & Grocery Council, 2024 State of the Industry - Australian Food & Grocery Council
2. Various industry reports, IbisWorld, 2025.
3. Turnover figures are estimated. For firms with turnover exceeding $50 million, a cap of $50 million has been applied. The actual distribution of turnover is likely more skewed to larger employing firms than shown in the chart.
4. ABARES in 2011 stated 53% of milk processors were foreign owned, although Australian owned Murray Goulburn with a market share in 2011 of 34% was sold to Canadian owners Saputo in 2018.

# The growth outlook for the sector

## Food & grocery manufacturing has strong growth potential in Australia

The food & grocery manufacturing sector is a large and growing sector in Australia, driven by both domestic and export demand. This growth potential also helps to drive employment in the sector.

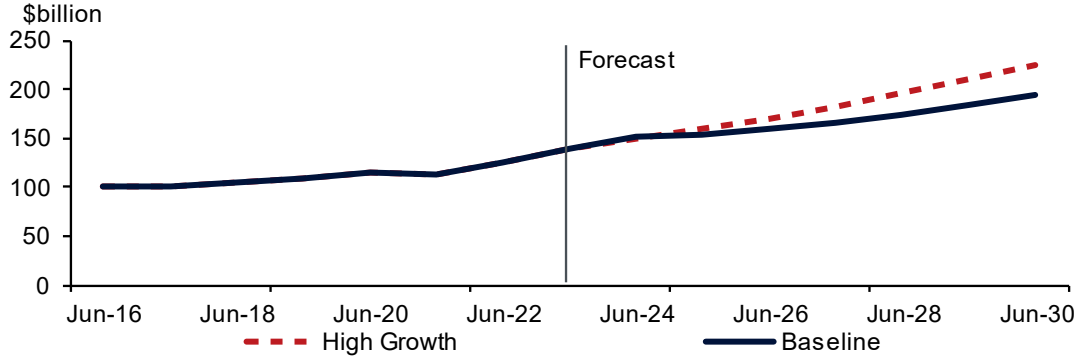
Alcohol beverage manufacturing, which accounts for around 15% of the sector output, has been excluded from the food & grocery manufacturing sector for the purpose of this report.[1]

The COVID-19 pandemic drove significant demand for Australian food & grocery manufactured products, with output growing an average 6.8% over 2019-20 to FY23. This was well above the 4.3% annual average rate reached in the preceding decade.

Under a business as usual baseline, turnover is expected to grow from $139b in FY23 to $195b by FY30. This reflects the challenges the industry faces including increasing competition from overseas imports, a high cost environment, and challenging domestic conditions. This would see employment increase from 235,00 to 248,200 over the same period.

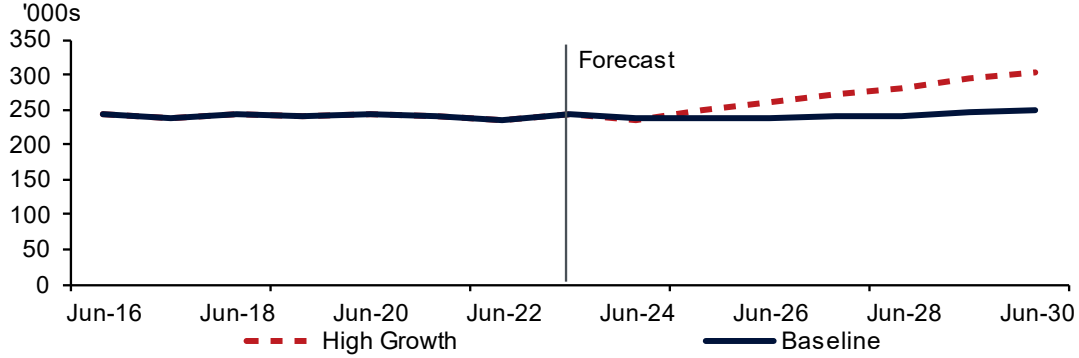
However, with the right policies and incentives in place the AFGC proposes the sector could reach $225b in turnover and 303,300 in employment by FY30.[2] This aligns with a key component of the broader 2030 vision for the sector as outlined in the *Sustaining Australia 2030 report*.

Australian food & grocery manufacturing turnover, by scenario




Source: Oxford Economics, ABS

Australian food & grocery manufacturing employment, by scenario




Source: Oxford Economics, ABS

1. Industries covered within the energy analysis are outlined in the appendix.
2. This aligns with the $250 billion goal outlined in the Sustaining Australia: Food and Grocery Manufacturing 2030 produced by AFGC (Sustaining-Australia-2030-Report-2.pdf) which includes the alcohol beverage manufacturing sector that is not part of this study.

# Energy demand within the food & grocery manufacturing sector

## The sector's energy needs could reach 223 PJ by FY30, with gas playing a significant role

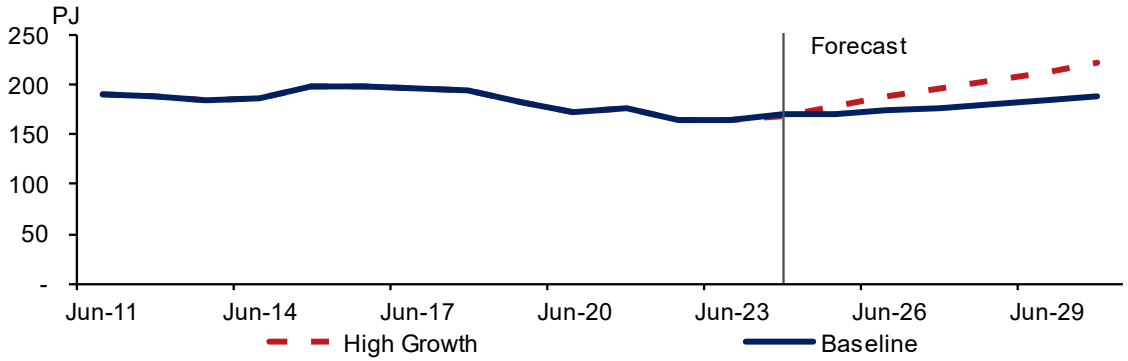
Total energy demand from the food & grocery manufacturing sector is estimated to be 165 PJ in FY23, accounting for around 16.5% of manufacturing energy use.[1] Among manufacturing sectors, it is the second largest consumer of energy. Food & beverage manufacturing is the largest consumer of energy (62%) followed by grocery (38%). Within food manufacturing, the major user of energy is meat manufacturing given the large size of the industry and energy intensive nature of activity.

The food & grocery manufacturing sector is an energy intensive sector with energy demand around 7.3 PJ per gross value add for the sector.[2] Energy intensity has been falling over the past five years at an average annual rate of 0.4% per year given a focus on energy efficiency and growth in lower energy demanding industries. Energy intensity improvements are expected to stall in the sector as the easy wins have already been achieved.

Gas is the main source of energy within the food & grocery manufacturing sector, representing 37% of total energy needs in FY23. Gas is used predominantly in heating processes such as ovens, baking, pasteurisation, etc. Biofuels play a significant role for the sector, particularly in sugar manufacturing where bagasse is a key energy source.[3]

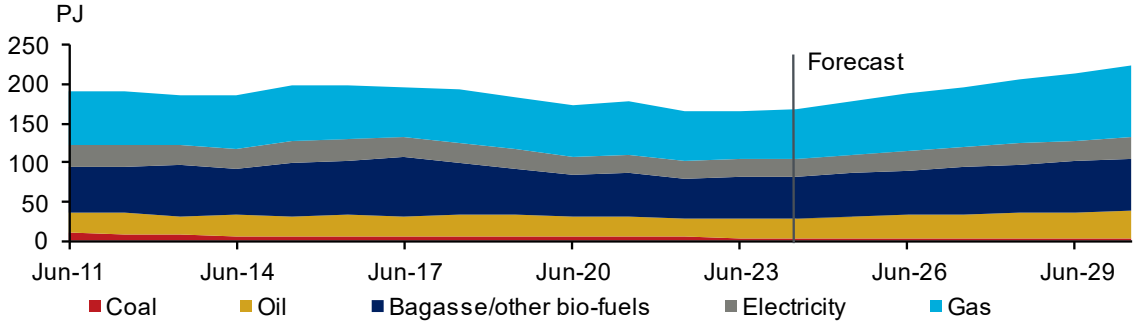
Under the 2030 vision for the sector, energy demand from the food & grocery manufacturing sector is expected to increase due to higher production activity. Total energy demand from the sector is expected to increase at an annual average rate of 2.0% reaching 189 PJ by FY30 in the baseline scenario. If the sector's growth ambitions are met, this would result in a stronger 4.4% growth in energy needs, reaching 223 PJ by FY30. This is twice the growth expected in the broader manufacturing sector.

Australian food & grocery manufacturing energy demand by scenario




Source: Oxford Economics, DCCEEW

Australian food & grocery manufacturing energy source by fuel type under high growth scenario




Source: Oxford Economics, DCCEEW

1. Energy demand of the sector has been estimated using Department of Climate Change, Energy, the Environment and Water data combined with industry reports. Further information can be found in the appendix.
2. Gross value add is an economic productivity metric that measures the contribution the sector to the economy.
3. Renewable energy. Wilmar Sugar.

# Regional energy needs in the food & grocery manufacturing sector

## Energy demand from food manufacturing is significant in regional areas

The food & grocery manufacturing sector has a significant regional footprint. Around 40% of the sector's activity occurs outside Australia's major capital cities, driven by the strong regional presence of the meat (47%), sugar (47%) and dairy (45%) manufacturing industries.[1] The sector plays an important role in supporting the livelihoods of many regional communities, with around 37% of employment in the sector located outside capital cities.[2]

While around 72% of total sector energy demand is centred in greater city capital areas, this is predominantly due to grocery related activities. When considering just the food manufacturing sub-sector, this share drops to 57% predominantly due to the regional footprint of the meat, sugar and dairy industries.[3]

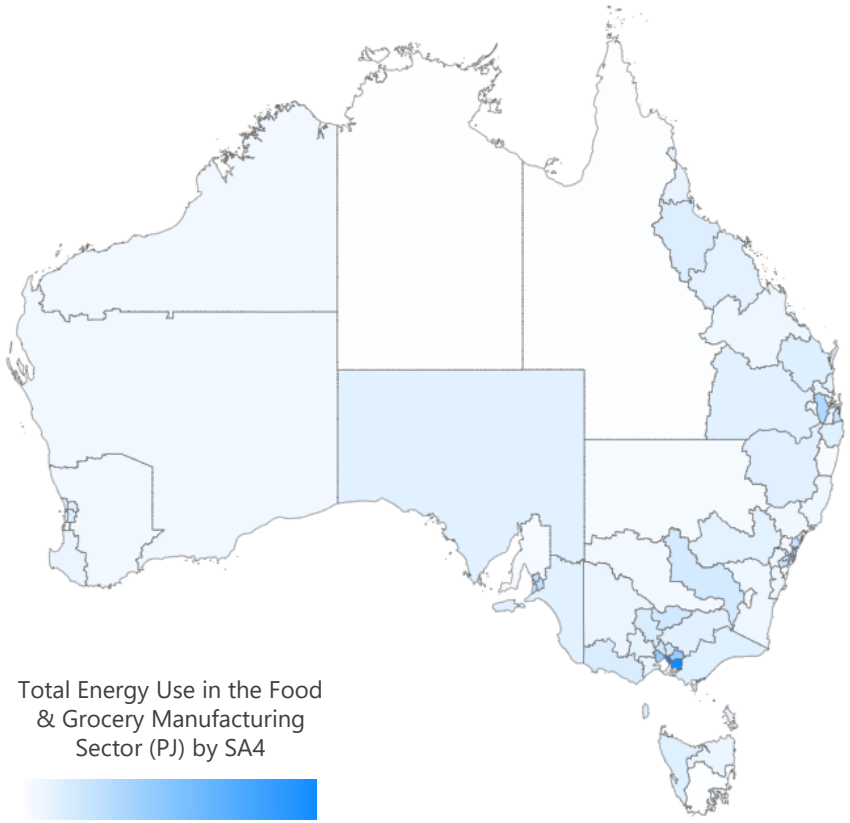
Meat manufacturing predominantly occurs in QLD, NSW and VIC with regional footprints across each of these states. Energy needs are most significant in the Riverina area which represents 4% (1.2 PJ) of the meat manufacturing industry's total energy use.

Sugar manufacturing is centred in regional QLD where around 32% of total activity occurs. Townsville is the largest sugar manufacturing region with energy needs of 1.1 PJ (around 10% of the industry's total energy needs).

Over half of all dairy manufacturing activity occurs in VIC, with regional VIC accounting for 26% of total activity alone. The Warrnambool and South West region is where activity is centred, accounting for around 9% of the dairy manufacturing industry's total energy needs.

Further information on the top regions facing significant energy needs can be found in the appendix.

Food & grocery manufacturing sector's energy demand by SA4 region, 2023-24




Source: Oxford Economics, REMPLAN

1. REMPLAN data
2. State of the Industry, Australian Food & Grocery Council, 2024 State of the Industry - Australian Food & Grocery Council
3. Energy needs of the sector is based on REMPLAN's regional value add estimates for each industry multiplied by that industry's energy intensity.

# An energy transition risk assessment for the sector

# Australia’s energy transition

## Australia’s broader energy transformation comes with significant challenges

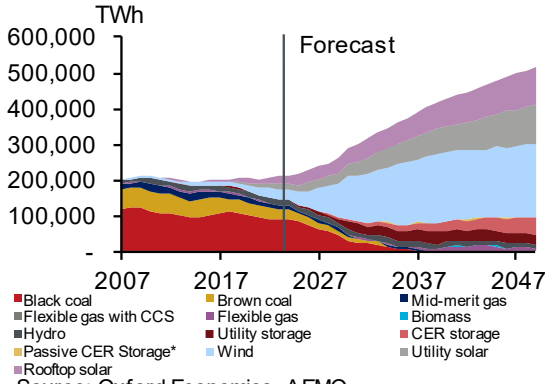
The Australian Government has set an emission reduction target of 43% by 2030 and net zero by 2050. Transforming Australia’s electricity grid, currently the largest emitting sector within the economy, will be key to achieving these goals.

Australia is targeting 82% renewable energy within the electricity grid by 2030, an increase from renewables current share of 34% and mainly driven by a transition to wind and solar generation away from coal and firmed with storage and gas.[1] [2] This transition paired with a near doubling of electricity consumption will require significant capital investment into the grid, with the value of electricity construction work to average $24.6 billion a year between FY25 and FY30.[3]

Gas plays a critical role in Australia’s energy transition as demand for firming fuel increases. The ACCC’s gas inquiry report forecast that the east coast gas market may experience gas supply shortfalls in Q3 2025, with Southern states expected to rely on gas transported from Queensland to meet demand.[4,5] Longer term, AEMO forecasts structural supply gaps emerging from 2029 unless new sources of supply are made available to meet growing demand.[6,7]

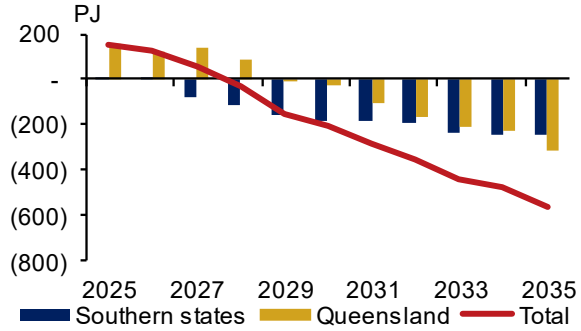
AEMO recognises the transition pathway is uncertain. These uncertainties are analysed through three scenarios within the Integrated System Plan process: Step Change scenario where the scale of energy transformation supports Australia’s contribution to limiting global temperature, Progressive Change scenario where a slower pace of change in Australia’s energy sector occurs, and Green Energy Exports scenario where there is a rapid transformation of Australia’s energy sectors, including a strong use of electrification, green hydrogen and biomethane.

Generation mix, NEM, 2005-6 to 2049-50



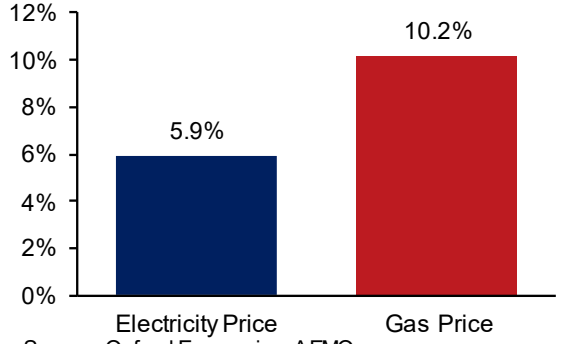

Source: Oxford Economics, AEMO

Queensland and southern states gas supply outlook, 2025 to 2035



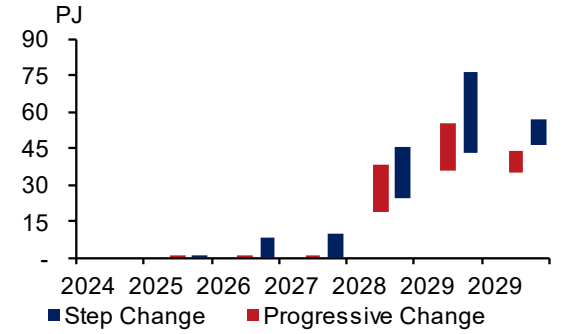

Source: Oxford Economics, AEMO

% Deviation of Progressive Change over Step Change




Source: Oxford Economics, AEMO

Range of domestic annual supply gaps forecast in southern regions




Source: Oxford Economics, AEMO

1. Australian Energy Update, Department of Climate Change, Energy, the Environment and Water, 2024
2. 2024 Integrated System Plan (ISP), AEMO, 2024
3. Greening the Grid: the next wave of electricity construction, Oxford Economics 2024
4. Gas inquiry March 2025 interim report: Supply-demand outlook, Australian Competition & Consumer Commission (ACCC), 2025 Gas Inquiry 2017-2030
5. Southern states are New South Wales (including the Australian Capital Territory), South Australia, Tasmania and Victoria. Northern states are the Northern Territory and Queensland.
6. Gas Statement of Opportunities March 2025, Australian Energy Market Operator, 2025 2025 Gas Statement of Opportunities
7. A structural supply gap is driven by insufficient gas production or transport capacity to meet total seasonal or yearly demand.

# Price growth and volatility in Australia's energy sector

## Electricity and gas prices remain elevated when compared to historic averages

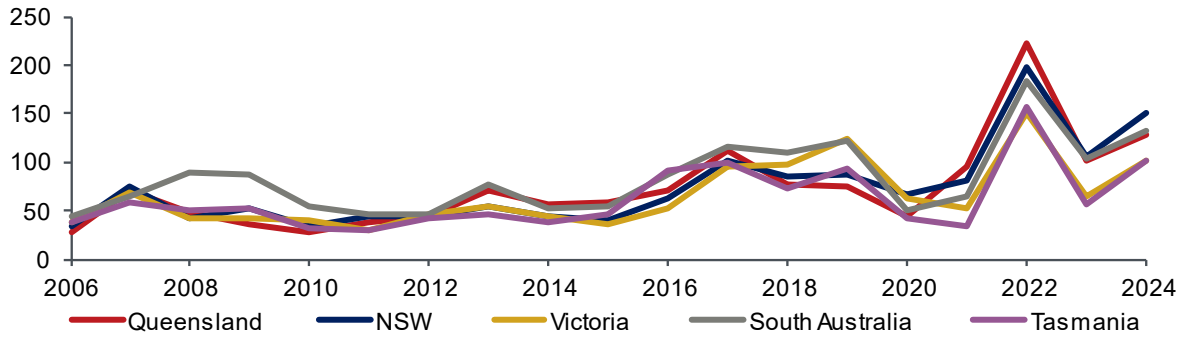
Average electricity prices experienced significant growth over 2024 and remain elevated above historic averages, although they remain below the record highs of 2022. Government has also intervened to reduce energy prices, keeping a lid on headline figures. More variable demand profiles across the northern states have driven average electricity prices in these regions higher than their southern counterparts.[1]

The volatility in prices over 2024 was driven by a decrease in low-priced offers, an increase in coal generator outages, higher demand at peak times and high-price events. As a result, there were 23 30-minute price periods exceeding $5,000 per MWh in Q4 2024. This is well above the average wholesale rates experienced across the NEM, which ranged from $101 MWh in Victoria to $150 MWh in New South Wales, highlighting ongoing acute price fluctuations.[2] The Australian Energy Regulator identified a general market expectation of decreasing wholesale spot prices over 2025.

Gas prices similarly rose across 2024, well above historic averages, but still below the sharp increase seen in 2022. Industry has also benefited from government policy intervention on gas prices. Like electricity, the northern states experienced sharper increases in gas prices, driven by elevated gas-powered generation demand in Queensland.

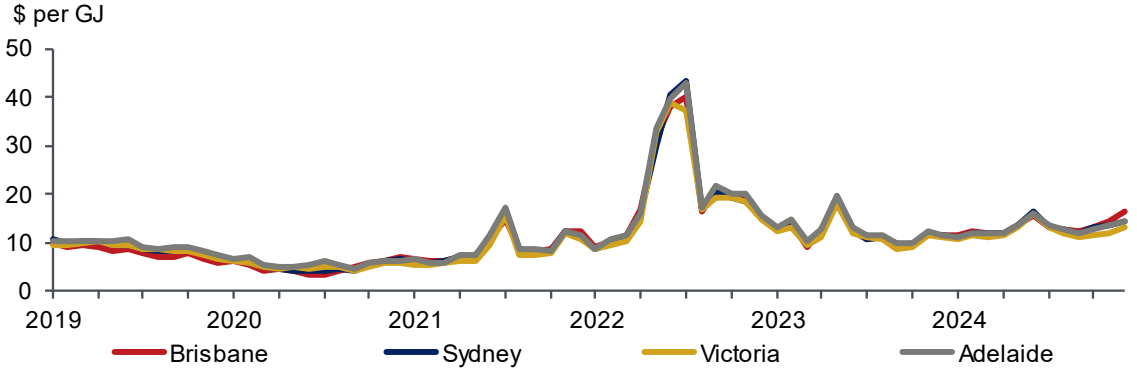
Although the increased international availability of gas somewhat stabilised prices across the latter half of 2024, AEMO's forecast of shortfalls during peak conditions in Australia from 2028 are likely to result in rising volatility in future periods.[3,4] Potential gas shortfalls may necessitate sourcing additional gas from alternative sources to meet demand, which could be expected to increase prices, putting further pressure on gas prices for the sector.

Average annual electricity prices in the National Electricity Market by state




Source: Oxford Economics, AER

East coast gas market average monthly prices




Source: Oxford Economics, AER

1. Southern states are New South Wales (including the Australian Capital Territory), South Australia, Tasmania and Victoria. Northern states are the Northern Territory and Queensland.
2. Wholesale markets quarterly Q4 2024, Australian Energy Regulator, 2024 Q4 2024 Wholesale markets quarterly report.pdf
3. Gas Statement of Opportunities March 2025, Australian Energy Market Operator, 2025 2025 Gas Statement of Opportunities
4. A peak conditions shortfall is driven by insufficient available gas production or transport capacity to meet extreme peaks in demand on a single day.

# Challenges and barriers facing the sector's energy transition

## There are significant challenges achieving the energy transition for Australia and the sector

We have identified **five critical challenges to achieving Australia's energy transition** based on our assessment of the transition pathway and recent developments in the electricity and gas market:

- **Changes in energy policy landscape create uncertainty** and reduce investment into the energy sector more broadly
- A multitude of factors including planning challenges **reduce the supply of gas** into the Australian market
- **Slower rate of investment into the electricity grid** due to capacity constraints and cost blowouts
- **Technology is not available** at commercial scale when expected to enable the transition from coal and gas towards renewable solutions
- Peak periods of demand are underestimated and the addition of volatile renewable energy sources **creates grid stability issues**

We have identified **four critical barriers to the food & grocery manufacturing sector's energy transition** based on consultation with industry members:[1]

- The **high upfront cost** of investing in new equipment and energy solutions is significant which yields lower returns and limits the sector's ability to invest in the transition
- There are **technology limitations at higher temperatures** for industrial processes that may limit the sector's ability to transition away from gas
- The sector's **high operating cost environment** reduces the available funds for investing in the transition
- The **location of facilities** within the sector do not always lend themselves to easily transition towards renewable energy sources

1. These challenges have been identified through consultation with industry members across food & grocery manufacturing.

# Identifying energy transition risks to the sector

## Key risks under the energy transition are higher prices, shortages and reliability issues

### Higher and more volatile prices

- There is a risk that the sector faces higher and more volatile energy prices due to challenges achieving either the national transition, or the sector's own transition.
- AEMO's modelling of different scenarios highlights that wholesale energy costs could be higher for gas (10.2% ) and electricity (5.9%) under a slower roll out scenario.[1]
- A lack of investment by the sector due to the higher upfront costs and technology limitations could also increase overall energy costs.

### Gas shortages

- There is a risk that the sector faces significant gas shortages due to gas equating to 40% of the sector's total energy needs and limited national availability.
- The ACCC has identified potential shortfalls from as early as Q3 2025, with the south-east region (where the sector has a significant foodprint) facing shortages earlier.[2]
- There are significant technological and commercial challenges in transitioning away from gas within the sector, particularly for high heat processes.

### Reliability

- There is a risk that the sector faces energy reliability issues due to challenges in the national electricity grid and the regional footprint of the sector's facilities.
- AEMO's modelling identified that if investment into the grid is delayed there is potential for reliability gaps in some regions over the next four years.[3]
- The location of the sector's facilities are concentrated in Victoria, New South Wales and South Australia which are more exposed to grid reliability challenges.

1. AEMO, 2023-24 inputs, assumptions and scenarios, 1 September 2023.
2. ACCC, Gas inquiry December 2024 interim report, 10 January 2025.
3. AEMO, 2024 Electricity Statement of Opportunities, August 2024

# Assessing the potential impacts on food & grocery manufacturing

## Operating costs and profit margins are likely to bear the brunt of energy transition risks

There are five key channels where higher and more volatile energy prices, gas shortages, and grid stability issues may impact the food & grocery manufacturing sector. These impacts would likely weigh on the outlook for the sector, limiting its ability to achieve the 2030 growth objectives.

### 1. Cost of doing business

The sector has a relatively high cost of doing business and higher energy prices would have a significant impact on the sector's operational costs. Utility costs, predominantly energy, are estimated to account for around 15% of total operational expenses in the food & grocery manufacturing sector in 2023-24.[1] The industry has received some relief through energy price subsidies, but these are temporary measures.

In addition, higher energy prices would impact other input costs, increasing the cost of doing business more broadly across the sector. Purchases account for over half of total revenue in the food & grocery manufacturing business, by far the biggest cost component for the sector.[2] This includes the cost of packaging, which can be significant for many businesses.

### 2. Profitability

Ultimately high cost pressures are likely to put additional pressure on the sector's profitability. Food & grocery manufacturing has a relatively low profit margin at an estimated 4.3% compared to the 7.6% average across manufacturing in FY23.[2] Higher energy prices are likely to further eat into these profit margins as price competition from importers reduces the ability to increase prices.

### 3. Competitiveness

The sector is relatively more expensive than imports, with Australia placing as one of the least cost competitive countries for manufacturing.[3] Higher operating costs through rising energy prices would further hurt the sector's ability to compete with imports and reach its goal of driving growth through stronger export competitiveness.

### 4. Production activity

The sector's high growth ambitions are expected to increase demand for energy by 4.4% per annum reaching 223 PJ by FY30. Increased energy costs will significantly limit the sector's ability to grow and expand operations in Australia. Low grid stability, fluctuating prices and shortfalls add further challenges for operations as uncertainty limits investment into new growth areas.

### 5. Investment

Investment into the food & grocery manufacturing sector has averaged $3.7 billion annually on average over the past decade, growing just 0.6% per annum. Higher energy prices and potential gas highlight the need for the sector to invest in its energy transition. This investment would be in addition to other areas of need for the sector's long-term growth outlook, including automation and innovation. High cost pressures and relatively lower profit margins are likely to limit the sector's ability to undertake this investment.

Department of Climate Change, Energy, the Environment, and Water. Food and beverage manufacturing website.
ABS, Australian Industry, 2023-24.
Landed cost competitiveness for goods shipped to the US, BCG analysis, Harnessing the Tectonic Shifts in Global Manufacturing | BCG

# An energy transition risk assessment

## Reducing reliance on gas and improving electricity resilience can mitigate energy risks for the sector

| Risks assessment for the food & grocery manufacturing sector | | | Key energy risks | | |
|---|---|---|---|---|---|
| | | | *Higher energy prices* | *Gas shortages* | *Grid reliability* |
| **Impact channels for the food & grocery manufacturing sector** | Cost of doing business | *Energy accounts for around 15% of operational expenses* | Increases the cost of doing business both through higher energy costs and higher input costs | Places increased cost pressures on around 37% of energy use across the sector where gas is used in 2023 | Places increased cost pressures on around 46% of energy use across the sector, which is exposed to volatile electricity prices |
| | Profitability | *The sector's profit margins were 4.3% in FY23* | Reduces profit margins, which are already below other manufacturing sectors | Creates higher profit margin pressures for industries that rely heavily on gas | Creates higher profit margin pressures for industries that rely heavily on electricity from the grid |
| | Production activity | *Energy demand to grow by 4.4% p.a. to meet high growth ambitions* | Potentially reduces ability to expand production activities | Reduces output potential due to operation disruptions | Reduces output potential due to operation disruptions |
| | Investment | *CAPEX has grown 0.6% per annum over the past 10 years* | Increases the need to invest into energy efficiency processes | Increases the need to transition from gas processes | Increases the need to invest in off-grid solutions |
| | Price competitiveness | *Australia's manufacturing sector is less cost competitive than its global peers* | Reduces the price competitiveness of Australian products | Reduces the price competitiveness of Australian products | Creates challenges for regionally based operations to access export markets and remain competitive domestically |
| **Mitigation strategies** | | | **Improve energy efficiency** | **Reduce gas reliance** | **Strengthen electricity resilience** |

# The investment needs of the sector

# The food & grocery investment environment

## Investment activity has recently improved but remains lacklustre over the last decade

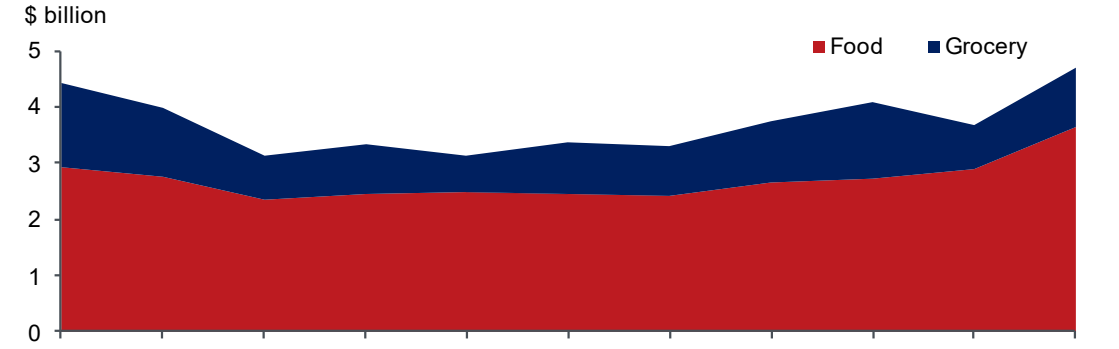
Investment in the food & grocery manufacturing sector has remained relatively stagnant over the past decade, limiting the sector's productive capacity. Capital investment within the food & grocery manufacturing sector is estimated to have averaged $3.7 billion per year between FY14 and FY24, growing at an annual average rate of 0.6%.[1]

The post-COVID period saw a recent resurgence in investment activity with capital investment growing at an annual average rate of 7.9% between FY20 and FY24 to reach $4.7 billion. This has predominantly been through stronger investment in equipment, plant and machinery within the food manufacturing sector as labour shortages have driven a need for automation. Investment into the sector's energy transition has also been underway, though more will be needed moving forward.

The capital to turnover ratio within the food & grocery manufacturing sector is relatively low, reflecting the challenging operating conditions within the sector. In 2023-24 the sector is estimated to have achieved a capital to turnover ratio of 3.4%. While in line with general manufacturing, this is well below the agriculture sector and average of Australian industries.[2] Worryingly, the capital to turnover ratio within the sector is estimated to have fallen by 1.4 percentage points in the last decade.

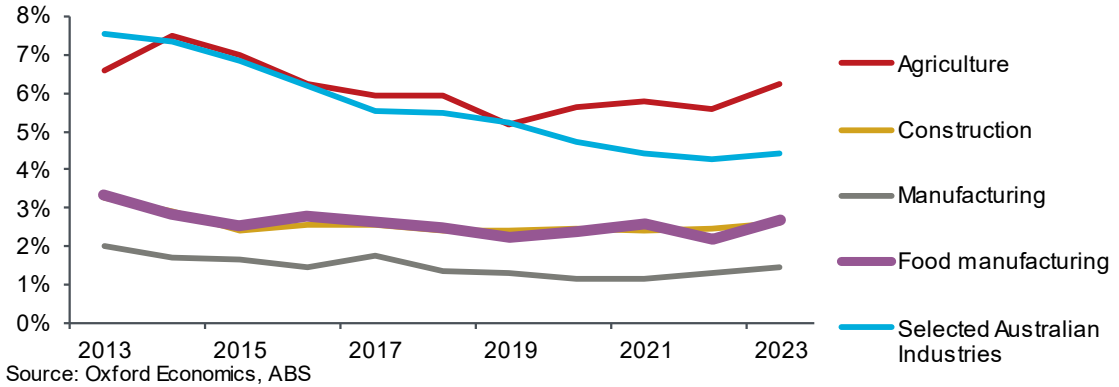
Capital investment across the sector varies substantially. Investment in the food sub-sector represented 78% of total investment in FY24. However, the food sub-sector has a relatively lower capital to turnover ratio at just 3.0% compared to 5.3% in the grocery sub-sector.

Food & grocery gross fixed capital investment by subsector




Source: Oxford Economics, ABS

Capital to turnover ratio, by sector, Australia




Source: Oxford Economics, ABS

1. Capital investment within the food & grocery sector is estimated using 2-digit gross fixed capital formation to turnover ratios, adjusted for 4 digit industries using ATO company tax data.
2. The average of Australian industries refers to the select industries within the ABS Australian Industry data release

# Investment needs of the sector moving forward

## A significant uptick in investment is needed to support the sector's 2030 goals

The current rate of investment into the sector is unlikely to be sufficient to achieve the goals outlined in the *Sustaining Australia 2030* report. The sector aims to achieve a significant uplift in growth compared to recent history, while also mitigating the risks of energy transition challenges.

**Growth capital** will be needed to increase the productive capacity of the sector and improve productivity. This is an ongoing investment that is needed to drive growth and ensure a sustainable food & grocery manufacturing sector in Australia moving forward.

**Energy transition capital** will also be needed to support the sector's transition needs. The risk of higher energy prices, gas shortages and electricity volatility requires a shift in the way the sector uses energy. This will require significant investment to reduce energy needs and implement new technology & processes.

Each of these areas of investment have been modelled to quantify the uplift needed for the food & grocery manufacturing sector to achieve its 2030 goals. This has been supported with industry consultation to identify the key areas for investment and test assumptions underpinning investment calculations. The next section explores these investment needs in further detail.

# Assessing the sector's growth capital investment needs

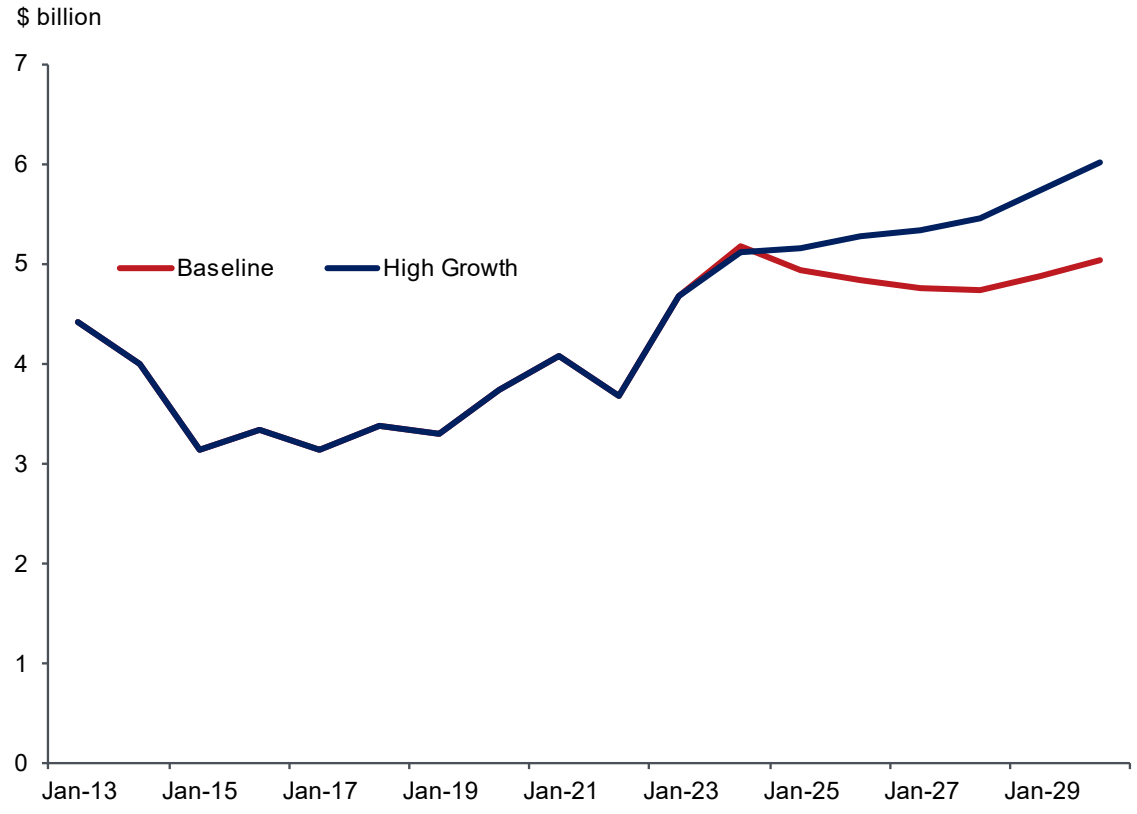
## Investment needs for the sector are likely to total $38.1 billion in the five years to FY30

**Growth capital investment needs are likely to total $38.1 billion between FY24 and FY30**, a significant uplift on the $26.0 billion investment achieved in the preceding 7 years.[1] This is an ongoing investment that is needed to drive growth and ensure a sustainable food & grocery manufacturing sector in Australia moving forward.

Investment will need to focus on three main areas to achieve the sustainable growth ambitions of the sector: [2]

- **Growth and new product capacity** - Primary investment for meeting domestic consumer and export market demand. Industry consultation identified that expanding current and new product lines will be critical to achieving the 2030 growth ambitions.
- **Automation and efficiency** - Investment required to reduce operating costs and improve profitability. Industry consultation identified that the high-cost environment and labour shortages post COVID have increased focus on investment that improves the productivity of facilities, and this will continue moving forward.
- **Business as usual capital** - This is critical investment for the sector to support current and future capacity. Industry consultation highlighted the sector has been sweating assets for a long period pre-COVID, and this investment is critical to maintaining and replacing ongoing assets.

Food & Grocery manufacturing sector gross fixed capital formation, by scenario




Source: Oxford Economics, ABS

1. This is based on the relationship between turnover and investment in the Australian food & grocery manufacturing sector over the past decade.
2. This is based on industry consultation and feedback.

# Assessing the sector's energy transition investment needs

## Investment needs to support the sector's energy transition could be as high as $13.7 billion

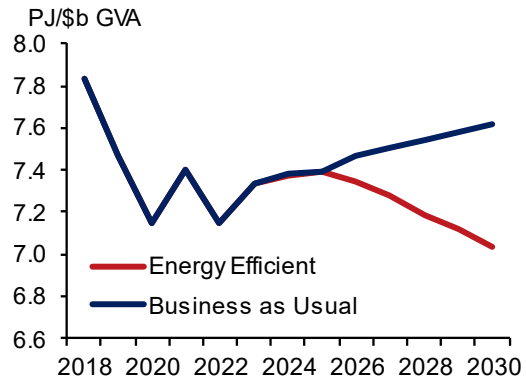
It is estimated that the sector's immediate investment injection needs could be as high as $13.7 billion to progress its energy transition. This represents a significant uplift in the investment levels achieved over the last decade. This finding aligns with industry consultation, where most respondents suggested transforming energy needs would require double or more the current level of investment.

- **Gas conversion** is expected to require the most significant investment.[1] Efforts to convert gas have the potential to reduce the sector's gas usage by 73% when compared to a business as usual outlook. This is through the electrification of gas for high heat processes, which account for the majority of gas usage in the sector.
- **Energy efficiency** efforts are expected to require additional investment.[2] This type of investment could reduce total energy use by 7.6% in FY30 when compared to the business as usual outlook.
- **Onsite energy production** investment to support energy resilience is expected to be significant.[3] Onsite generation efforts have the potential to reduce the sector's reliance on grid electricity by 5% in FY30 when compared to a business as usual outlook.

These projects typically have large upfront costs with payback periods nearing a decade once energy savings are accounted for. This is well beyond the hurdle rate required by industry for investments to be given the green light.

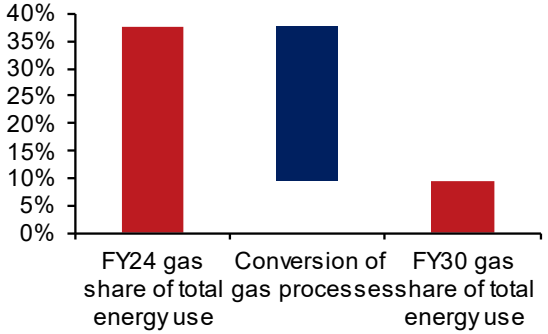
Note: This analysis only considers currently feasible and widely commercialised technologies, excluding consideration of hydrogen, energy storage, or the electrification of high heat processes.

Energy Intensity



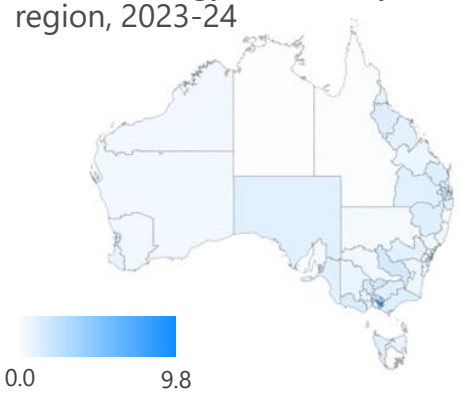

Source: Oxford Economics, ABS, DCCEEW

Change in gas share of total energy use



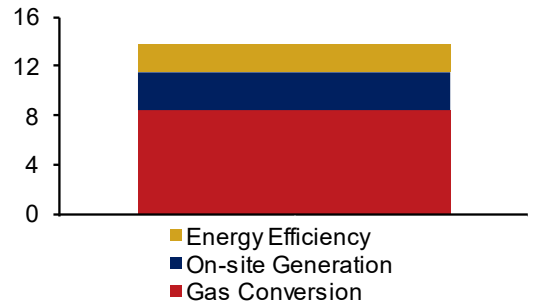

Source: Oxford Economics, DCCEEW

Food & grocery manufacturing sector's energy demand by SA4 region, 2023-24




Source: Oxford Economics, REMPLAN

Estimated energy investment needs by 2030




Source: Oxford Economics

1. Gas conversion investment has been estimated based on the level of gas required to be converted across each industry multiplied by the maximum cost per PJ converted.
2. Energy efficiency investment has been estimated based on applying the USA's historical growth rate of energy per GVA over the forecast period and multiplying by the maximum cost per PJ saved.
3. Onsite energy production investment has been estimated based on 5% of total energy use multiplied by the maximum cost per PJ converted.

# Analysis of potential incentive schemes for the sector

# Incentive schemes to support investment into the sector

## Industry consultation identified four types of incentive schemes that could drive investment

The investment needs of the sector to achieve the 2030 growth ambition and support the sector's energy transition are significant. Current rates of investment are unlikely to be sufficient to achieve these goals. Government can help drive investment into the sector by providing targeted incentive schemes that improve the short-term commercial outcomes of investments. There are many incentive schemes already available to businesses. However, these are often not well aligned to the needs of the food & grocery manufacturing sector.

Four broad types of investment schemes that could support investment into the food & grocery manufacturing sector were identified through industry consultation.

**Grants** provide direct funding to a business for a specific purpose. This can reduce the initial investment required by an organisation and improve the cost-benefit analysis of a specific investment. Co-funding arrangements where government and the business are contributing to the investment ensures alignment between organisational and policy objectives. These incentives generally support larger investments and are often targeting specific areas of investment.

**Capital allowance tax incentives** enables businesses to reduce their taxable income at a faster rate by bringing forward depreciation expenses. Examples of such schemes include the 'Backing business investment – accelerated deprecation' scheme, and the 'Instant asset write-off' scheme. These schemes can improve the pay-back period for a specific investment. Outside periods of economic uncertainty, like the COVID-19 pandemic, these incentives generally support smaller investments and are often limited to businesses that meet strict eligibility criteria.

**Targeted tax incentives** enable a business to reduce its tax payable by providing a tax offset for a specific area of expenditure, such as for R&D activities in the case of the research and development tax incentive. This can improve the cost-benefit analysis of a specific investment. These incentives can support broader activity beyond just CAPEX, targeting specific areas of expenditure.

**Operating cost reductions** provide direct subsidies for specific business expenditures such as import duties in the case of the 'Certain Inputs to Manufacture' scheme, or energy prices in the case of the 'Energy Price Relief Plan'. This can improve the profitability of businesses, providing additional funds available for investment. These incentives are often available to whole industries and target specific areas of expenditure.

The next section explores each of these incentive schemes in further detail. In addition, examples of each type of incentive scheme can be found in the appendix.

# Incentive scheme assessment – Grants

## Food & grocery manufacturing could strongly benefit from targeted grants

**Current state of play**

Current grants relevant to the food & grocery manufacturing sector prioritise CAPEX for innovation and the energy transition.

Grants that seek to encourage CAPEX investment target the commercialisation of new and advanced products and processes. These grants usually provide access to technical knowledge and the capital necessary to scale novel processes. This enables SMEs to enhance their productivity and allow for the businesses to better integrate and compete in national and international markets. Grants promoting CAPEX investment often require co-contribution and have eligibilities regarding regional presence or specific industry of operation that often match government priorities.

Grants targeting the energy transition generally emphasise the early phase of transition by encouraging energy audits and feasibility studies. While there are some existing grants that promote adoption of energy efficient technologies and on-site generation, these are typically targeted towards SMEs.

Although current grant incentives address some key challenges facing the sector, there is little support for larger businesses, and limited assistance for automation efforts, the gas transition or on-site generation.

Further, most grants relevant to food & grocery manufacturers are available to all Australian manufacturers. As a result, food & grocery manufacturers must compete for limited funding with other manufacturing types, including those that are more internationally competitive and employ more energy-intensive processes.

**Grant characteristics required to support food & grocery manufacturing**

Co-contribution requirements encourage collaboration between industry and government while giving credibility to projects and supporting their long-term viability.

Grants must target key challenges facing the food & grocery manufacturing sector, including capital investment and energy transition needs.

Eligibility criteria must be tailored to food & grocery manufacturers of different sizes, noting most firms within the sector are SMEs, while larger firms have the greatest propensity to drive impactful change.

| Incentive scheme assessment | Industry | Government |
|---|---|---|
| Key benefit | Halves the initial CAPEX requirements, increasing the commercial viability of projects that otherwise would have failed. | Limited risk of budget over-runs, effective targeting or core policy issues and potential to increase foreign capital inflows. |
| Main challenges | Competition for limited funding and complex application processes. | Complex administration and challenges in identifying target areas. |

# Incentive scheme assessment – Capital allowances tax incentives

## Capital allowance tax incentives are well-established and encourage CAPEX investment

**Current state of play**

Current capital allowance tax incentive schemes seek to encourage ongoing capital investment and improve business cash flow.

Common examples of these incentives include accelerated depreciation, instant asset write-offs, and temporary full expensing. Accelerated depreciation allows for a business to deduct the cost of an asset earlier in its life, while instant asset write-offs allow for a deduction in the year an asset is purchased or installed ready for use. Temporary full expensing is similar to instant asset write-offs, but allow for full write-offs and are typically more targeted to specific periods of financial distress.

These schemes are all aligned in that they reduce taxable income sooner and allow for immediate tax savings. As well as incentivising capital investment of itself by reducing the impact of asset purchases on cash flow, capital allowance tax incentives also enable additional growth, innovation, and operational efficiency through business reinvestment.

Although a lack of prescription regarding asset classes that are eligible for these incentives is beneficial to promoting CAPEX more broadly, it fails to target key challenges facing the food & grocery manufacturing sector such as the energy transition. Eligibility for the most lucrative capital allowance tax incentives are often limited to SMEs.

**Capital allowance tax incentive characteristics required to support food & grocery manufacturing**

Capital allowance tax incentives that are broadly applicable and encourage capital investment are crucial to freeing cash flow within the sector to encourage growth and competitiveness.

Expanding the eligibility criteria for capital allowance tax incentives would propel sector growth.

Tax incentives targeting the food & grocery manufacturing sector specifically could encourage the sector's international competitiveness.

| Incentive scheme assessment | Industry | Government |
|---|---|---|
| Key benefit | Improved cash flows. Simple and predictable while available to a broad range of businesses. | No direct expenditure and easily integrated into the existing tax system. |
| Main challenges | Does not reduce initial investment costs. Uncertainty over future government commitment. | Ongoing revenue loss can lead to challenging budget management. Risks of inefficient policy design. |

# Incentive scheme assessment – Targeted tax incentives

## Tax incentives that target specific outcomes have strict eligibility criteria

**Current state of play**

Existing targeted tax incentives focus on government priority areas and aim to elevate the global competitiveness of Australian businesses and encourage innovation.

Current target priority areas for tax incentives include research and development, digitisation, and energy efficiency. Research and development tax incentives provide a tax offset to eligible entities conducting R&D, with a greater offset offered for businesses that spend a greater portion of their total expenditure on R&D. Digitisation incentives provide a tax deduction on eligible expenditure, while energy efficiency incentives provide additional bonus deductions on eligible assets.

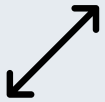
These targeted tax incentives have stricter eligibility requirements than capital allowance tax incentives. Research and development tax incentives are only available to R&D entities, while digitisation and energy efficiency incentives are exclusively applicable to smaller businesses with a turnover of less than $50 million.

Noticeably, firms that conduct in-house R&D or have larger turnovers are excluded from these schemes that could boost the sector's overall competitiveness and innovation.

The lack of energy transition targeting also limits the effectiveness of existing incentive frameworks.

**Business growth tax incentive characteristics required to support food & grocery manufacturing**

Targeted tax incentives that address key issues facing the food & grocery manufacturing sector are crucial to ongoing growth and global competitiveness.



Allowing for the scalability of targeted tax incentives would enable the participation of larger businesses with the greatest propensity to drive sectoral change.

Ongoing performance-based incentives can drive adoption rates of crucial technologies and improve efficiency.

| Incentive scheme assessment | Industry | Government |
|---|---|---|
| Key benefit | Allows for certain industries and SMEs to better compete on the global stage. Simple and predictable. | No direct expenditure and easily integrated into the existing tax system. Targets specific priorities. |
| Main challenges | Does not reduce initial investment costs. Shifting government priorities and strict eligibility. | Ongoing revenue loss can lead to challenging budget management. Risks of inefficient policy design. |

# Incentive scheme assessment – Operating cost reduction

## Operating cost reductions are uncommon

**Current state of play**

Operating cost reduction schemes are limited and typically have narrow eligibility criteria.

The most common operating cost reduction scheme is energy price relief. These schemes place a cap on the price paid by consumers for energy. While they significantly reduce a major input cost for industry, these incentives are generally provided only during times of exceptionally high energy prices for small businesses and households.

An ongoing scheme applicable to the food & grocery manufacturing sector is the 'Certain Inputs to Manufacture' program which provides concessions to import duties for crucial inputs to manufacturing that cannot be feasibly substituted for local products.

Energy production credits allow for the viability of high-cost energy production through guarantees that cover the difference between producer and market prices. Although these incentives are commonly found in emerging clean energy industries, they could also support negotiations between food & grocery manufacturers and electricity wholesalers as part of energy investment schemes.

Public infrastructure development, while operating on longer time frames, can still function as an operating cost reduction through the development of efficient transport and dedicated logistical hubs.

**Operating cost reduction characteristics required to support food & grocery manufacturing**

Targeting the high cost inputs such as energy can effectively increase currently narrow profit margins and drive international competitiveness.

Policy can be designed to aid and incentivise capital investment and sustainable practices as part of the energy transition.

Programs that effectively distribute funds and provide predictable support can limit time and cost spent on administration.

| Incentive scheme assessment | Industry | Government |
|---|---|---|
| Key benefit | Improved cash flows allowing for greater investment. | Cost effective targeting of the greatest price pressures facing the sector. |
| Main challenges | May lead to stronger profits rather than long-term investment | Ongoing costs can lead to challenging budget management. |

# Appendix

# Food & grocery manufacturing sector definition

## The food & grocery manufacturing sector excludes alcohol manufacturing for the purpose of this study

| ANSZIC code | Sub-industry | Real Industry Value Add, $ million, FY23 | Turnover, $ million, FY23 |
|---|---|---|---|
| 111 | Meat and meat product manufacturing | 5,664 | 42,123 |
| 112 | Seafood processing | 207 | 1,190 |
| 113 | Dairy product manufacturing | 2,282 | 18,546 |
| 114 | Fruit and vegetable processing | 1,244 | 6,617 |
| 115 | Oil and fat manufacturing | 416 | 4,311 |
| 116 | Grain mill and cereal product manufacturing | 1,606 | 8,695 |
| 117 | Bakery product manufacturing | 2,943 | 11,609 |
| 118 | Sugar and confectionery manufacturing | 1,607 | 10,469 |
| 1199 | Other food product manufacturing n.e.c. | 1,867 | 11,957 |
| 1211 | Softdrink, cordial and syrup manufacturing | 657 | 4,269 |
| 1524 | Sanitary paper product manufacturing | 486 | 2,757 |
| 1841 | Human pharmaceutical and medicinal product manufacturing | 2,409 | 11,815 |
| 185 | Cleaning compound and toiletry preparation manufacturing | 1,081 | 5,074 |

Source: ABS, Australian Industry 2022-23

# Energy needs assumptions for FY23

## We have used a range of sources to estimate the current energy needs of the sector

| ANSZIC code | Sub-industry | Energy intensity, MJ per IVA | Coal demand, % of total | Gas demand, % of total | Electricity demand, % of total | Biofuels demand, % of total | Oil demand, % of total |
|---|---|---|---|---|---|---|---|
| 111 | Meat and meat product manufacturing | 4.8 | 13% | 33% | 32% | 17% | 5% |
| 112 | Seafood processing | 6.3 | 0% | 17% | 9% | 70% | 3% |
| 113 | Dairy product manufacturing | 4.3 | 4% | 68% | 28% | 0% | 0% |
| 114 | Fruit and vegetable processing | 6.0 | 0% | 17% | 9% | 70% | 3% |
| 115 | Oil and fat manufacturing | 6.3 | 0% | 17% | 9% | 70% | 3% |
| 116 | Grain mill and cereal product manufacturing | 6.7 | 0% | 17% | 9% | 70% | 3% |
| 117 | Bakery product manufacturing | 6.3 | 0% | 17% | 9% | 70% | 3% |
| 118 | Sugar and confectionery manufacturing | 7.1 | 1% | 3% | 2% | 93% | 1% |
| 1199 | Other food product manufacturing n.e.c. | 6.3 | 0% | 17% | 9% | 70% | 3% |
| 1211 | Softdrink, cordial and syrup manufacturing | 0.9 | 7% | 57% | 17% | 1% | 18% |
| 1524 | Sanitary paper product manufacturing | 11.0 | 8% | 27% | 34% | 23% | 8% |
| 1841 | Human pharmaceutical and medicinal product manufacturing | 16.7 | 0% | 59% | 6% | 0% | 35% |
| 185 | Cleaning compound and toiletry preparation manufacturing | 16.7 | 0% | 59% | 6% | 0% | 35% |

Source: Department of Climate Change, Energy, the Environment and Water, Australian Meat Processor Corporation, Dairy Australia, Tully Sugar, Australian Farm Institute, Coca Cola

# Regional energy splits by sector

## Top 10 regions for energy demand by subsector

| SA4 ranking by energy use | Meat | Seafood | Dairy | Fruit and vegetable | Oils and fats | Grain milling and cereals | Bakery | Sugar | Food products | Soft drinks | Human pharma | Cleaning products and toiletries |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Riverina | West and North West | Warrnambool and South West | West and North West | Newcastle and Lake Macquarie | Southern Highlands and Shoalhaven | Gold Coast | Townsville | Shepparton | Wide Bay | Gold Coast | Gold Coast |
| 2 | Bendigo | South Australia – Outback | Shepparton | Sheeparton | Central West | Riverina | Sunshine Coast | Mackay – Isaac-Whitsunday | Warrnambool and South West | Gold Coast | Launceston and North East | Sunshine Coast |
| 3 | New England and North West | Launceston and North East | Latrobe – Gippsland | Ballarat | Riverina | Central West | Latrobe – Gippsland | Cairns | Riverina | Riverina | Darling Downs Maranoa | Shepparton |
| 4 | Darling Downs – Maranoa | South East | West and North West | Central West | Geelong | Hume | Geelong | Wide Bay | Bendigo | Bunbury | Bendigo | Richmond – Tweed |
| 5 | Bunbury | Sunshine Coast | Capital Region | North West | Shepparton | South Australia – South East | Ballarat | Hume | Wide Bay | Murray | Warrnambool and South West | Newcastle and Lake Macquarie |
| 6 | South Australia – South East | Geelong | Gold Coast | Latrobe – Gippsland | North West | Gold Coast | Newcastle and Lake Macquarie | Ballarat | Gold Coast | Townsville | Barossa – Yorke – Mid North | Southern Highlands and Shoalhaven |
| 7 | Central Queensland | Mid North Coast | Richmond – Tweed | Wide Bay | Hunter Valley exc Newcastle | Ballarat | Bendigo | Central West | Townsville | Newcastle and Lake Macquarie | Richmond – Tweed | Hunter Valley exc Newcastle |
| 8 | Wide Bay | Western Australia – Outback (South) | Sunshine Coast | South Australia – South East | Western Australia – Wheat Belt | Richmond – Tweed | Richmond – Tweed | Mid North Coast | Hume | Sunshine Coast | Sunshine Coast | Capital Region |
| 9 | Richmond – Tweed | Gold Coast | Hume | Richmond – Tweed | Gold Coast | New England and North West | Hume | Richmond – Tweed | Latrobe – Gippsland | Ballarat | Latrobe – Gippsland | Bunbury |
| 10 | Western Australia – Wheat Belt | Capital Region | South Australia – South East | Riverina | Toowoomba | Murray | South Australia – South East | Coffs Harbour - Grafton | New England and North West | South Australia – South East | Wide Bay | Geelong |

Source: Based on GVA by industry data from REMPLAN and average industry energy intensity estimates. Note that this assumes there is no difference in energy intensity across regions.

# Food & grocery investment assumptions

## We have estimated food & grocery investment for the related subindustries

| Industry sub-sector | FY13 – FY20 average CAPEX, $ millions | FY20 – FY23 average CAPEX, $ millions | FY13 – FY23 average CAPEX, $ millions | FY23 CAPEX, $ millions | Capital to turnover ratio, FY23 |
|---|---|---|---|---|---|
| Meat and meat product manufacturing | 540 | 680 | 590 | 860 | 1.6% |
| Seafood processing | 10 | 10 | 10 | 20 | 1.1% |
| Dairy product manufacturing | 320 | 370 | 340 | 440 | 1.9% |
| Fruit and vegetable processing | 140 | 160 | 150 | 180 | 2.2% |
| Oil and fat manufacturing | 60 | 90 | 70 | 130 | 2.4% |
| Grain mill and cereal product manufacturing | 190 | 220 | 200 | 280 | 2.6% |
| Bakery product manufacturing | 250 | 290 | 270 | 370 | 2.5% |
| Sugar and confectionery manufacturing | 640 | 680 | 650 | 780 | 5.9% |
| Other food product manufacturing n.e.c. | 250 | 360 | 290 | 460 | 3.1% |
| Softdrink, cordial and syrup manufacturing | 150 | 110 | 140 | 120 | 2.3% |
| Sanitary paper product manufacturing | 30 | 20 | 20 | 30 | 0.9% |
| Human pharmaceutical and medicinal product manufacturing | 880 | 940 | 900 | 900 | 6.2% |
| Cleaning compound and toiletry preparation manufacturing | 80 | 110 | 90 | 110 | 1.8% |
| **Food & grocery manufacturing sector** | **3,550** | **4,040** | **3,710** | **4,680** | **2.5%** |

Source: ABS Australian Industry 2022-23; ATO company tax data, table 4

# Energy investment needs

## Gas conversion assumptions and approach

We have estimated the energy investment needs to convert gas processes to electrified process through a four-step calculation:

1. Estimate gas used in heating processes by multiplying gas demand for each subsector by 86%. This assumption is based on the ARENA report that states the food & beverage manufacturing sector consumed 115.3PJ (of 134.4PJ) of energy in 2017 for heat process needs.[1]
2. Estimating the share of processes that cannot be converted to electricity based on research regarding high heat processes from ARENA and industry consultation. For grocery sub-sectors, assumed the share of gas used as feed-stock as sourced from the U.S EIA, could not be transitioned.
3. Estimating the level of gas that can be converted to electric processes as the remaining gas demand for each sub-sector. This is outlined in the adjacent table.
4. Estimating the investment needed to convert gas processes based on the maximum upfront capital cost of conversion from case studies. The maximum cost per PJ is outlined in the adjacent table.

Example: Energy Sustainability Australia reports through an energy assessment that a poultry products manufacturer in south east Queensland would be able to replace their LPG hot water boiler with an air sourced electric heat pump. The projects capital cost would be $380,000 and save 6,092GJ (0.006092 PJ) of gas annually. ($62.4M/PJ)

| Industry subsector | % of gas use that can be converted by FY30 | Capital cost of conversion ($M/PJ) |
|---|---|---|
| Meat and meat product manufacturing | 43% | $107.9 |
| Seafood processing | 100% | $121.8 |
| Dairy product manufacturing | 64% | $135.0 |
| Fruit and vegetable processing | 75% | $121.8 |
| Oil and fat manufacturing | 100% | $121.8 |
| Grain mill and cereal product manufacturing | 43% | $121.8 |
| Bakery product manufacturing | 43% | $121.8 |
| Sugar and confectionery manufacturing | 43% | $121.8 |
| Other food product manufacturing n.e.c. | 43% | $121.8 |
| Softdrink, cordial and syrup manufacturing | 100% | $135.0 |
| Sanitary paper product manufacturing | 99% | $135.0 |
| Human pharmaceutical and medicinal product manufacturing | 99% | $135.0 |
| Cleaning compound and toiletry preparation manufacturing | 76% | $135.0 |

Source: ARENA, Renewable energy options for industrial process heat, 2019 - ARENA Process Heat, U.S. Energy Information Administration; MECS Survey Data, Table 1.2, and 2.2
Note: Feedback from industry identified that heat processes between 100 and 250 degrees Celsius could be converted depending on the application.

# Energy investment needs

## Onsite energy generation assumptions and approach

We identified from industry consultations that solar projects can provide between 15 to 20% of a facilities energy needs, while other onsite generation solutions such as co-generation plants can account for nearly 100% of energy needs. However, there are significant limitations to implementing these solutions based on the site of the facility. This can include if there is available space (taking into account expansion plans) and if that space is suitable for an onsite energy generation solution. **We take a conservative estimate that 15% of the sector's energy needs can be delivered via onsite energy generation sources.**

We note that there has been a recent uptick in solar solutions such that the sector is not starting from scratch. We identified that renewable energy provides around 10% of direct (non-electricity) energy use across the total of Australian industry activity.[1] **We take a conservative estimate that an additional 5% of energy use across the food & grocery manufacturing sector can be transitioned to onsite energy generation.**

Using case studies we identify the maximum capital cost of onsite energy generation by subsector. These estimates are outlined in the adjacent table. These are multiplied by 5% of each subsector's energy needs to create an estimate of the total capital cost of onsite energy generation needs across the food & grocery manufacturing sector.

Example: Energy Sustainability Australia reports through an energy assessment that a food manufacturer in Brisbane could install a 99kW solar PV system. The projects capital cost would be $153,515 and have potential to save/convert 552.6GJ (0.0005526 PJ) of energy annually ($277.8M/PJ).

| Industry subsector | Cost of onsite energy ($M/PJ) |
|---|---|
| Meat and meat product manufacturing | $307.7 |
| Seafood processing | $277.8 |
| Dairy product manufacturing | $185.2 |
| Fruit and vegetable processing | $277.8 |
| Oil and fat manufacturing | $277.8 |
| Grain mill and cereal product manufacturing | $277.8 |
| Bakery product manufacturing | $277.8 |
| Sugar and confectionery manufacturing | $277.8 |
| Other food product manufacturing n.e.c. | $277.8 |
| Softdrink, cordial and syrup manufacturing | $307.7 |
| Sanitary paper product manufacturing | $307.7 |
| Human pharmaceutical and medicinal product manufacturing | $307.7 |
| Cleaning compound and toiletry preparation manufacturing | $307.7 |

1. ARENA, Renewables for industry - Renewables for industry - Australian Renewable Energy Agency (ARENA)

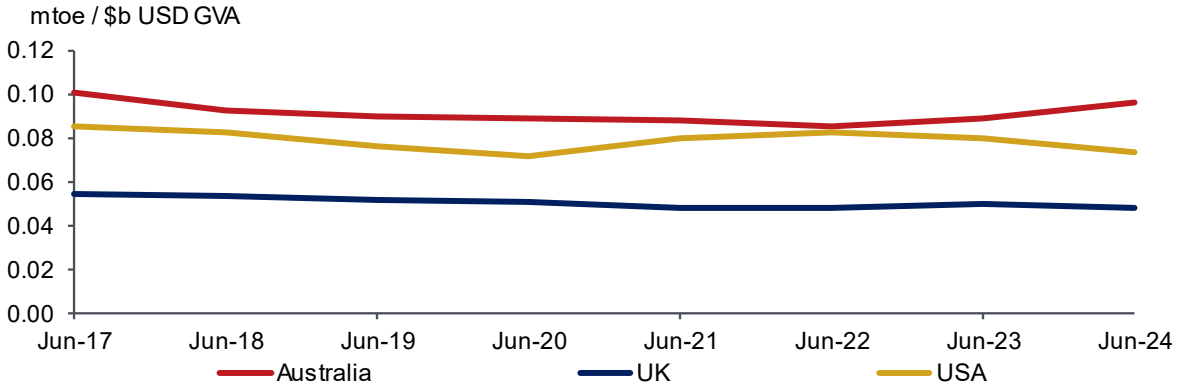
# Energy investment needs

## Energy efficiency assumptions and approach

We benchmarked Australia's food, beverage, and tobacco manufacturing sector to that in the UK and USA to identify potential benchmarks for energy efficiency improvements. Australia has a higher energy intensity compared to the UK and USA – 81% and 16% higher comparatively on average between FY17 and FY24. Australia's energy efficiency has also improved less than these two markets – Australian energy intensity has fallen 0.6% p.a. between FY17 and FY24 compared to 1.9% for the UK and 2.1% of the US.

We use the energy efficiency improvement achieved by the USA over the forecast period, and multiply this by the maximum capital cost of energy efficiency projects as identified through case studies, to estimate the total capital cost of energy efficiency needs of the sector.

Food, beverage and tobacco manufacturing energy efficiency




| Industry subsector | Cost of reduced energy use ($M/PJ) |
|---|---|
| Meat and meat product manufacturing | $117.8 |
| Seafood processing | $144.6 |
| Dairy product manufacturing | $77.0 |
| Fruit and vegetable processing | $144.6 |
| Oil and fat manufacturing | $144.6 |
| Grain mill and cereal product manufacturing | $144.6 |
| Bakery product manufacturing | $144.6 |
| Sugar and confectionery manufacturing | $144.6 |
| Other food product manufacturing n.e.c. | $144.6 |
| Softdrink, cordial and syrup manufacturing | $144.6 |
| Sanitary paper product manufacturing | $144.6 |
| Human pharmaceutical and medicinal product manufacturing | $144.6 |
| Cleaning compound and toiletry preparation manufacturing | $144.6 |

Example: Dairy Australia found for an undisclosed dairy products manufacturing plant in Victoria that replacing existing dryer fan impellors with a more energy efficient design would save the equivalent of 2,520GJ of energy annually (0.00252 PJ), at a capital cost of $194,000 ($77.0M/PJ)

Source: International Energy Agency, Australian Bureau of Statistics, Office for National Statistics, Bureau of Economic Analysis, Haver Analytics

# Incentive scheme assessment – Grants for energy transition

## Grants typically target emissions reductions across all sectors

| Grant | State | Purpose | Incentive | Eligibility |
|---|---|---|---|---|
| Advancing Renewables Program | National | Funds projects that benefit Australia by reducing renewable energy costs, enhancing value, improving technological readiness, removing uptake barriers, or increasing skills and knowledge related to renewable energy. | Projects under the Program are expected to be between $100,000 and $50 million, with applicants typically expected to at least match the funding being sought. | All Australian businesses with a proposed project that involves renewable energy technology that would not be viable without the assistance of ARENA. |
| Energy Efficiency Grants for Small and Medium Sized Enterprises | National | Supports businesses to upgrade or replace inefficient equipment and implement other energy efficiency activities. | Grants of $10,000 to $25,000. | All Australian SMEs with between 1 to 199 FTE employees. |
| Manufacturing Energy Efficiency Grant program | Queensland | Increases the competitiveness of manufacturers in a low carbon future by implementing energy efficiency measures that reduce energy costs and operational emissions. | Grants up to $50,000 to cover up to 75% of project cost. | Queensland-based manufacturing SME's with between 5 and 200 FTE employees having operated in the state at least 12 months prior to their application. Must be able to demonstrate the project will result in at least a 10% reduction in energy use. |
| Metering and monitoring planning | New South Wales | Develops metering and monitoring plans to help reduce energy use and costs. | Grants up to $15,000. | NSW-based manufacturing businesses or, another industrial or commercial sector with complex energy needs, with $200,000 or more spent annually per site on energy. |
| Large Energy User Electrification Support Program | Victoria | Conducts electrification feasibility assessments on up to four separate technologies | Grants of $14,000 to $60,000 (or $66,000 if regional). | Victorian-based businesses in operation for 2 years prior to application with an average gas consumption of between 10 and 100 terajoules per annum. |
| PowerSmart for Small Businesses | Tasmania | Supports businesses to conduct energy efficiency audits | Grants up to $1,000. | Tasmanian-based SMEs with between 1 and 19 FTE employees. |
| Home and Business Battery Scheme | Northern Territory | Assist both homes and businesses to buy and install batteries and inverters. Can be used to buy and install a solar PV panels if purchased in tandem with a battery. | Grant of $400 per kilowatt hour of useable battery system capacity, up to a maximum of $12,000. | Northern-Territory-based businesses, home-owners, and not-for-profits in either owned or leased premises. |

Source: DISR, Grants and programs finder

# Incentive scheme assessment – Grants for CAPEX

## Grants assist manufacturers in commercialising new processes

| Grant | State | Purpose | Incentive | Eligibility |
|---|---|---|---|---|
| Industry Growth Program (Future Made in Australia Innovation Fund) | National | Supports SMEs and start-ups to commercialise their ideas and enhance their ability to engage in national and international markets | Grants of $50,000 to $250,000 to establish the commercial viability of an innovative product, process or service.<br>Grants of $100,000 to $5 million to help push ideas from prototyping through to market readiness stages. | All Australian SMEs or start-ups operating in one of 7 priority areas as part of the National Reconstruction Fund: renewables, and low emissions technologies, medical science, transport, value-add in the agriculture forestry and fisheries sectors, value-add in resources, defence capability, and enabling capabilities. |
| Export Market Development Grants | National | Promotes SMEs entrance into export markets through marketing and promoting their services globally and providing export training. | Tier 1 – grants of $20,000 up to $30,000 per financial year, Tier 2 – grants of $20,000 up to $50,000 per financial year, Tier 3 – grants of $20,000 up to $80,000 per financial year, Representative bodies – up to $50,000 per financial year | All Australian SMEs in operation for at least 2 years with a turnover of less than $20 million and capacity to spend at least $20,000 per financial year of the applicants own money of eligible activities. There are differing tiers for grant eligibility: Tier 1 - ready to export, Tier 2 – exporting within existing markets, Tier 3 – exporting to new key markets, Representative bodies – that support small and medium business members to achieve export success. |
| Manufacturing Hubs Grant Program | Queensland | Assists manufacturers in becoming more productive, building advanced manufacturing capabilities, and creating jobs, through terchnology adoption, skills and training, business development, advanced robotic manufacturing services. | Grants of $10,000 to $500,000 matched by the applicant. | Queensland-based SME manufacturing businesses in operation for 3 year prior to application, currently operating in the Cairns, Townsville, Central Queensland, Mackay, and Gold Coast SA4 regions. |
| Advanced Manufacturing Ecosystem Fund | Northern Territory | Assists manufacturers with growing advanced manufacturing capabilities through commercialising new products and processes, transitioning new products to full commercial operations, and supporting early-stage small scale research projects. | Grants of $25,000 to $500,000 matched by the applicant. | All Australian manufacturing SMEs with up to 199 FTE employees with a manufacturing project located in the Northern Territory that aligns with one or more of the Territory's Manufacturing Priorities. |
| Modern Manufacturing Initiative – Manufacturing Integration Stream | National | Support projects that integrate Australian businesses into domestic and international value chains. | Grants of $1 million to $20 million co-funded by the applicant, up to 50% of eligible product expenditure. | All Australian manufacturers with eligible expenditure over $2 million in one of 6 priority areas: Space, Medical Products, Resources Technology and Critical Minerals Processing, Food and Beverage Defence, Recycling and Clean Energy. |

# Incentive scheme assessment – Tax incentives

## Tax incentives are not targeted towards food and beverage manufacturers

| Tax incentive | Purpose | Incentive | Eligibility |
|---|---|---|---|
| **Capital Allowance** | | | |
| Backing Business Investment – Accelerated Depreciation | Stimulate business investment. | Faster depreciation of assets as tax deductions. | All Australian businesses with a turnover of less than $500 million. |
| Instant asset write-off | Stimulate business investment. | Immediate $20,000 deduction for the business portion of the cost of an asset in the year the asset is first used or installed ready for use. | Small businesses with less than $10 million aggregated turnover. |
| Temporary full expensing | Stimulate business investment. | Immediate deduction for the business portion of the cost of an asset in the year it is first used or installed ready for use. | All Australian businesses with an aggregated turnover of less than $5 billion, or if the asset is second-hand, turnover below $50 million. |
| **Targeted** | | | |
| Research and development tax incentive | Encourage innovation and R&D to boost competitiveness and productivity of the Australian economy. | A refundable tax offset equal to the entity's company tax rate plus an 18.5% premium for eligible entities with an aggregated turnover of less than $20 million per annum, or, a non-refundable tax offset for all other eligible entities equal to the entity's company tax rate plus a two-tiered premium determined on the notional R&D expenditure as a proportion of total expenditure for the income year. 8.5% for R&D expenditure up to 2% of total expenditure, 16.5% for R&D expenditure above 2% of total expenditure. | R&D entities incurring notional deductions of at least $20,000 on eligible R&D activates. |
| Small business technology investment boost | Encourage digitisation of small business | 20% tax deduction capped at $100,000. | All Australian small businesses with an aggregated turnover of less than $50 million. |
| Small Business Energy Incentive | Encourage businesses to improve energy efficiency and save on energy bills | 20% bonus tax deduction capped at $20,000. | All Australian small businesses, with an aggregated turnover of less than $50 million. |

Source: DISR, Grants and programs finder

# Incentive scheme assessment – Operating cost reductions

## Operating cost reductions typically have narrow eligibility requirements

| Operating Cost Reduction | Purpose | Incentive | Eligibility |
|---|---|---|---|
| Certain Inputs to Manufacture | Reduce the cost of manufactured products by reducing the cost of imported inputs. | Import duty concessions. | All Australian manufacturers who import chemical, plastics, and paper goods, as well as metal materials and goods used in food packaging, and can demonstrate the imported goods provide a performance advantage. |
| Hydrogen Headstart program (Energy Production Credit) | Incentivise clean energy industries. | Production credit to cover the current commercial gap between the cost of producing renewable hydrogen and its market price. | Large-scale Australian renewable hydrogen projects. |
| Energy Price Relief Plan | Reduce costs for business and households. | Temporary cap on the price of gas and coal | Australian small businesses and households. |

Source: DISR, Grants and programs finder

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