# Pivot – Rebound – Transform

A practical plan for rapidly transforming the energy management market that supports Australian industry

June 2020

# Acknowledgements

Market transformation is never an easy task. It is particularly difficult with a product supply and service delivery market as complex and nuanced as the energy management market. It is even more difficult when the energy management market in Australia is growing rapidly, yet still young enough to not be fully understood or quantified.

Planning how this can be accomplished in the short window available to meet the immediate carbon reduction trajectory required to limit global warming to between 1.5°C and 2°C of temperature increase could not have been achieved without a group of committed individuals working passionately towards the same goal.

The ideation and consultation process, undertaken over late 2019 and early 2020, involved many experts from across industry and government. I thank all the people with whom I have spoken to for their time, expertise and insights. The members of the Market Transformation Task Group, though, deserve a special mention for the invaluable contributions they have made to the development of ***Pivot – Rebound – Transform.*** I would like to thank the following individuals for their collective years of experience, in depth industry knowledge and openness to bringing bold new ideas to the table:

- Bruce Rowse;
- Charlie Knaggs;
- Claire Pollock;
- David Hershan;
- Elisabeth Ross;
- Jon Jutsen;
- Mark Goodsell;
- Matt Sprague;
- Professor Neil Horrocks;
- Robert Nicholson; and
- Tennant Reed.

In addition to the above, John Huggart deserves a special mention for overseeing the Task Group as Chair and ensuring we collectively landed on the recommendations contained in this plan. I would also like to thank Luke Menzel from the Energy Efficiency Council for instigating this work and assisting me along the way to ensure ***Pivot – Rebound – Transform*** contains a realistic set of achievable transformative initiatives for both industry and government.

**Bradley Anderson**
Manager, Business Energy Solutions
Energy Efficiency Council

# Foreword

Australia's energy system is decentralising and transitioning away from fossil fuels. At the same time, we've seen rapid advances in digital technologies that enable businesses to manage their energy use in real time. These dual trends open up an opportunity for businesses – especially energy intensive businesses – to utilise smart energy management to bring down energy costs. It also enables businesses to play a more proactive role in the energy system; improved energy efficiency and practices like demand management, demand response and on-site generation can actively support the reliability of our electricity system.

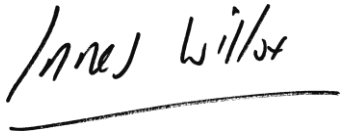
There are big benefits through more competitive businesses and a more stable, cheaper electricity system if these trends accelerate over the next decade. However, there is also a steep learning curve for businesses that take a leadership position in energy management. Demonstrating and deploying smart energy management technologies and solutions in industry sectors where they are uncommon or non-existent can have significant risk and cost. Supply chains for these technologies and solutions tend to be underdeveloped, and the expertise of local advisors and service providers can be low.

Overcoming these barriers will require nothing short of transformation in the market for energy management product and services. Energy intensive businesses need to be supported as they take a lead in rolling out new technologies and practices. At the same time, the energy management market of products and services that supports Australian industry needs to rapidly increase in size and sophistication. Simultaneously pursuing these goals will allow discrete, interrelated 'enabling ecosystems' of expertise, products and services to be developed around key sectors of the Australian economy. While this is a big goal, it is the right one, as it will ensure that Australian business can adapt and thrive as our energy system continues to transition.

Our organisations supported the production of this report by an independent group of experts as a way of progressing this crucial debate. The report's recommendations are substantive and, in some cases, original. We will be considering them carefully as we review our own policy positions and suggest governments – state and federal – do the same.

Together, industry and government can overcome the immediate challenges facing the Australian economy, put Australia's energy management market on a pathway to transformation, and ensure our industries thrive for decades to come.

**Luke Menzel**
Chief Executive Officer
Energy Efficiency Council



**Innes Willox**
Chief Executive
Australian Industry Group

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2.1 Catalyse Energy Management System (EnMS) uptake by inclusion of ISO 50001 (or similar) provisions in current state-based energy efficiency schemes

2.2 Engage closely with other governments as NSW designs the new Energy Security Safeguard, with the goal of encouraging a cross-jurisdictional approach to incentivise widescale adoption of sub-metering, sensors, control systems, and industrial energy storage

3.1 Rapidly create the foundation of a professional development pathway for energy management service providers by delivering training and certification on key energy management opportunities for industrial businesses

3.2 Utilise the training and certification framework recommended in 3.1 to develop whole-of-government panels made up of highly qualified experts in targeted fields that will be able to deliver – with confidence from both government and industry – services to industrial businesses

3.3 Develop and deliver holistic process heat programs that develop whole of supply chain capacity and provide on-ground support to help establish emerging technologies in Australian industrial sectors

3.4 Implement an integrated suite of sector-specific EnMS funding and capacity building programs that aid harmonisation of state-based approaches to supporting energy management improvements for businesses

3.5 Enter into partnerships with industrial businesses to develop a more holistic analysis of long-term decarbonisation strategies and de-risk energy management investment

3.6 Progress metering, monitoring and active management solutions to make energy use visible, tangible and manageable

4.1 Undertake a NEM demand-side transformation study to analyse and prioritise additional rule changes and energy market reforms that are required to allow consumers to access the full value of their energy assets

5.1 Initiate changes in product labelling to including greenhouse gas information, whether embodied, or generated when a product is in use

5.2 Adapt and utilise existing open-source energy management assessment tools

5.3 Instigate a mission zero rating system to provide a common methodology to validate an organisation's progress to net zero and energy management maturity

# Background

From December 2019 to April 2020 the Energy Efficiency Council (EEC) established and provided secretariat support for a Market Transformation Task Group (Task Group). The Task Group was made up of independent energy management experts, leading academics and industry representatives. These experts were asked to consider how Australia could transform the energy management market that services its industrial sectors, including manufacturing, resources and energy intensive agriculture. The plan contained in this document is independent of the EEC and is intended to provide guidance that will inform policy development in both the public and private sectors, by industry associations such as the EEC and Ai Group along with federal, state and territory governments.

***Pivot – Rebound – Transform: A practical plan for rapidly transforming the energy management market that supports Australian industry*** is the culmination of the initial phase of this work. It identifies:

- Priority themes considering market needs;
- Effort-to-impact ratio; and
- Alignment with potential partners.

Importantly, it also contains recommendations for immediate action and further research that are essential first steps for this effort to build momentum.

## The energy management market needs to pivot, rebound and then transform

The work of this Task Group took place at an extraordinary moment in Australia's history. The bushfires of the 2019-20 summer changed the Australian landscape in more ways than what can be shown by images; the national debate surrounding climate change has profoundly shifted. There is now a growing consensus among industry and government leaders that action must be taken to rapidly change our energy system. Growing penetration of large-scale variable renewables and the growing consumer uptake of distributed generation and energy storage are creating huge opportunities for greater value to consumers through improved energy use management.

While the need for transformation remains, the world is now also facing an unprecedented health emergency and an equivalent economic challenge in the form of COVID-19. The EEC has been working with a number of partners to develop a framework for how government and business can work together to minimise the damage to Australia's economy. This has resulted in a broad framework for activity that is described as *Protect, Pivot and Rebound*. The Task Group welcomed the immediate need for the EEC's *Protect, Pivot and Rebound* framework and incorporated it to encompass a longer-term view with a focus on the job of transformation. This resulted in the name of this paper: ***Pivot – Rebound – Transform.***

## Pivot – Rebound – Transform

### Pivot

Industry and government should consider how to use the shutdown period proactively so that the economy is in the best possible position to rebound on the other side of this crisis. Businesses in the manufacturing, resources, agriculture and energy management sectors are dealing with a range of circumstances, with some in complete shutdown and others experiencing high levels of activity. However, most businesses will experience some downtime over the coming months. An immediate effort to quickly identify and leverage opportunities for strong collaboration between industry and government, including capability building and project planning, during the pivot phase will ensure this period of downtime is used as productively as possible.

### Rebound

There are a range of energy efficiency and energy management technologies that are mature and, in some cases, common overseas, but have not been deployed in Australia for a variety of reasons. Dedicated stimulus measures focused on driving the rollout of these technologies would assist the market to rebound by delivering significant, rapid economic benefits and help governments meet their broader goals around:

- Increased employment opportunities for sole traders and SMEs;
- Lowering energy costs for consumers and business through improved energy productivity;
- Strengthening the reliability of national electricity systems by encouraging smart energy management behind-the-meter; and
- Reducing carbon emissions by driving low cost abatement.

### Transform

While industry and government will have an understandable focus on the pivot and rebound stages, the Task Group strongly recommended that the longer-term task of market transformation continues to be prioritised. The priority recommendations set out on page 9 have been carefully chosen as they support the immediate needs to pivot and rebound, as well as starting to build the necessary market capacity together with the institutional and regulatory infrastructure to support longer term market transformation.

# About this plan

Intended for key decision makers, policy makers and influencers in both government and industry, ***Pivot – Rebound – Transform*** identifies a cohesive set of separate but integrated recommendations to transform the energy management market – the enabling ecosystem.

The recommendations fall under five main themes:

1. Rapid market development through government and industry working together;
2. Energy efficiency scheme reforms to incentivise a wholistic approach to energy management;
3. Energy management capability and technology improvements supporting each other;
4. Regulatory modification to further incentivise demand-side participation; and
5. Behaviour change and energy literacy being achieved at low cost.

These recommendations are summarised in a plan to achieve step-change under all five themes and will deliver cost-effective action on climate change aligning with the timeline to achieve the required carbon emissions reduction by 2035, and ultimately a net zero economy by 2050. Energy management market transformation needs to underpin this journey to net zero emissions – *mission zero* – in addition to playing a vital role to help industry rebound. It will also provide energy security for Australia's industrial sectors and will enable increased renewable penetration through improving demand response capacity.

With government and industry working together to deliver the key recommendations under these five priority themes, Australia's goal of becoming a world leader and exporter of energy management technology and knowledge can be easily realised, while at the same time stimulating the economy and driving employment in clean energy jobs.

Market transformation should not be noticeable when it has occurred – many experts and insiders don't usually see it coming. Exposure, availability and equitability of innovation and regulation need to create momentum that can sustain itself. This will create transformation of the market on many levels, which is nuanced and continues to change and evolve.

Energy management products and services are supplied to diverse industry sectors that use energy for a variety of reasons and have different demands. As the energy management market is coupled to Australian industry in this way, there must also be a step-change in the way industrial sectors manage their energy use for the market that services them to be considered transformed.

## Relationship of this plan with other initiatives

In the future, small and large energy users will interact with the energy system in different ways. Smaller energy users will see most energy management improvements delivered through behaviour change, sensors, automation, artificial intelligence, appliance standards, batteries and changes to how Australia's energy markets and retailers operate.

By contrast, larger energy users will need tailored, targeted support to make step-change improvements in how they generate, manage and use energy. This will require multiple pathways and roadmaps all pointing to the same destination – decarbonising industry by 2050. Happily, these plans are being developed, including:

- The industry-led Australian Industry Energy Transitions Initiative, facilitated by ClimateWorks Australia and Climate-KIC Australia;
- Industry roadmaps produced by the Australian Alliance for Energy Productivity (A2EP), Beyond Zero Emissions and others;
- Investigation of the required technical step-change by Cooperative Research Centre's (CRCs) such as the Reliable Affordable Clean Energy, or RACE for 2030 CRC; and
- The Commonwealth Government's Technology Investment Roadmap and the proposed ongoing iterative process around this.

Many of these energy transition pathways and roadmaps contain detailed analysis of the technology improvements and industrial step-changes required to achieve *mission zero.*

The Australian Industry Energy Transitions Initiative, mentioned above, is a current example that aims to produce an industry led pathway to realise the opportunities of net zero supply chains in Australia. This model will be investigated for the demand-side, supply-side and shared infrastructure opportunities, including critical supply chains in:

- Iron ore, iron and steel;
- Bauxite, alumina and aluminium;
- LNG;
- Other key metals;
- Chemicals, especially plastics, fertilisers and explosives;
- Cement; and
- Heavy transport.

***Pivot – Rebound – Transform*** has a different focus: what needs to be done now by businesses and government to transform the energy management market so that it is prepared to support industry to make these step-changes possible and achieve *mission zero*.

# Creating a cross-sectoral voice on carbon and energy management policy

To rapidly develop, co-design and implement the energy management market transformation recommendations contained in this plan – including immediate economic stimulus measures – a committed group from all parts of industry will need to come together and engage deeply with government.

## The Industry Council on Energy and Emissions (ICEE)

The Task Group recommended the creation of an **Industry Council on Energy and Emissions (ICEE)** to enable the high level of collaboration that will be essential for success in driving and implementing ***Pivot – Rebound – Transform*** as well as future initiatives that build on this work.

This recommendation was inspired by successful examples of collaborative bodies in other sectors, such as the Australian Sustainable Built Environment Council (ASBEC), the National Australian Built Environment Rating System (NABERS) Steering Committee, and the Australian Climate Roundtable. ICEE would consist of people who represent or work closely with Australia's industrial sectors, including influential representatives of:

- Key industry bodies;
- Professional associations;
- Non-government organisations; and
- Governments (as observers).

Government policy and programs will be central to this effort, which means governments will need to be at the table. However, it is important that this group is industry hosted and led.

It is therefore recommended that governments provide seed funding for an industry organisation to host and provide secretariat support for ICEE for an initial twelve to twenty-four-month period, with a view to ICEE becoming self-sufficient beyond that.

The host organisation must be trusted by all parties, and ready to immediately make a time commitment, as the speed of establishment is a critical factor in the success of this energy management market transformation plan.

## The plan's priority recommendations

The ***Pivot – Rebound – Transform*** plan makes 15 recommendations across the five key themes outlined above. Five of these recommendations, which are highlighted below, are considered priorities and are marked with the following icon throughout the plan: 

| Theme | Recommendation | | Area of activity |
|---|---|---|---|
| **1. Rapid market development through government and industry working together** | 1.1 | Run a rapid co-design process of agreed energy management market stimulus measures including the plan's priority recommendations listed in this table | Foundational |
| **2. Energy efficiency scheme reforms to incentivise a wholistic approach to energy management** | 2.1 | Catalyse Energy Management System (EnMS) uptake by inclusion of ISO 50001 (or similar) provisions in current state-based energy efficiency schemes | Market transformation |
| | 2.2 | Engage closely with other governments as NSW designs the new Energy Security Safeguard, with the goal of encouraging a cross-jurisdictional approach to incentivise widescale adoption of sub-metering, sensors, control systems, and industrial energy storage | Innovation |
| **3. Energy management capability and technology improvements supporting each other** | 3.1 | Rapidly create the foundation of a professional development pathway for energy management service providers by delivering training and certification on key energy management opportunities for industrial businesses | Information and capability building |
| | 3.2 | Utilise the training and certification framework recommended in 3.1 to develop whole-of-government panels made up of highly qualified experts in targeted fields that will be able to deliver – with confidence from both government and industry – services to industrial businesses | Expert support and facilitation |

# Understanding how the plan works

The recommendations in the plan are defined by two metrics:

1. Areas of activity; and
2. The impact-ease-speed-lead assessment.

## Areas of activity explained

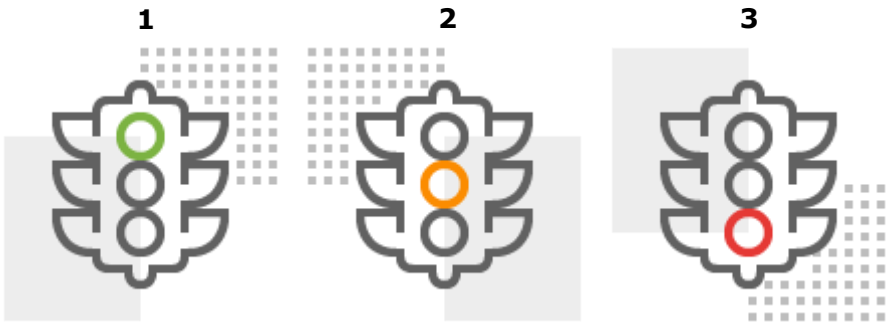
Market transformation initiatives from governments to support Australian industry through the current energy transition should have six key areas of activity, all of which are essential and are ideally delivered as an integrated suite of policies:

- **Foundational activities** support the establishment of collaboration between industry and government, and ensure processes are in place for continuous improvement;
- **Information and capability building** support the provision of information, training and professional certification to rapidly build energy strategy and management capability in target subsectors for both:
    - Businesses; and
    - Expert advisors and service providers;
- **Expert support and facilitation** support businesses to implement, integrate and sustain effective energy management strategies;
- **Market transformation** uses targeted grants, standards and other tools to encourage deployment of technologies that are mature but uncommon in Australia;
- **Innovation** supports sector specific R&D and demonstration of smart energy management technologies to solve longer term challenges; and
- **Recognition** profiles and recognises businesses that are leaders in energy strategy and management.

## Impact-ease-speed-lead assessment

**Impact**

1) This recommendation will directly drive market transformation
2) This recommendation will help to achieve market transformation
3) This recommendation is worthwhile, but not central to the ecosystem




**Ease**

1) We know what to do based on previous experience
2) We need to undertake further research or trials before scaling up
3) We can learn or borrow from the past but still need to run pilots

**Speed**

1) These recommendations will take time to co-design and/or implement
2) These recommendations can be implemented quickly


**Lead**

1) Government should lead
2) Industry should lead
3) Government and industry need to work together

## Theme 1: Rapid market development through government and industry working together

*There is a role for government to not only support industry's interaction with Australia's future energy system, but to work with industry to grow the energy management market and stimulate the economy for both the immediate needs of post-pandemic stimulus and to also take advantage of Australia's unique potential to become a global clean energy leader. Energy management is a timely economic opportunity, with AU$346 billion of investment poured into the global market in 2018 (International Energy Agency, World Energy Investment 2019). There are also significant jobs benefits as demonstrated by the almost 520,000 clean energy jobs across energy efficiency, renewable energy, smart grid and next generation vehicles in California (E2, Clean Jobs California 2018).*

### 1.1 Run a rapid co-design process of agreed energy management market stimulus measures including the plan's priority recommendations

Once created, the immediate focus of ICEE should be to have members work together over the next six to eight months to lead a rapid co-design process with government, focused on targeted market stimulus and the priority recommendations from this report.

ICEE will lay the fundamental building blocks to ensure that government, the industrial sector and the energy management market can move as fast as possible to ***Pivot – Rebound – Transform***. To this end, its initial focus should include:

1. Dedicated, short term COVID-19 stimulus measures;
2. Reforms that catalyse the uptake of energy management systems (EnMS) in the medium and long term; and
3. Capability building measures that support the priority recommendations.

Another important consideration to note is that this process is replicable to drive transformation of other market sectors. ICEE will need to ensure that all learnings and roadblocks are captured and shared to inform future market transformation processes.

**Area of activity: Foundational**

**Impact-ease-speed-lead assessment:**

| Transformational | Models exist | Quick to start | Joint initiative |
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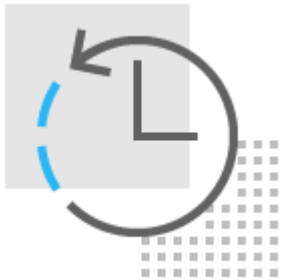
|  |  |  |  |

### 1.2 Develop early growth in the energy management market by reducing overheads for new market entrants and growing their customer-base

Dedicated hubs for energy management start-ups could deliver capital funding and business support programs for innovative energy management business models. Government grant and industry incubator programs exist, but none offer start-up support initiatives that work through existing industry channels to energy intensive markets and foster energy management market entrants or new energy management business models.

Supporting regionally based start-up hubs and groups that build capability to deliver programs and activities to attract, inspire and build the knowledge and skills of local innovators is a proven model delivered by governments across Australia. These proven models of funding, as well as support programs and tax incentives, have accelerated business development in new markets and could be replicated for new entrants to the energy management market.

Accelerator programs provide pre-seed capital funding and intensive mentoring for new market entrants, whereas incubator programs work with start-ups over a longer period for products and services that are ready to promote to customers. Both models would help to develop early growth in new energy management markets.

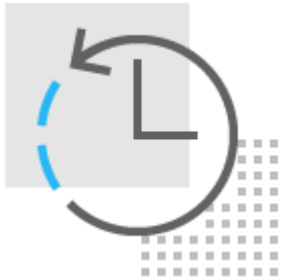
Establishing a new business model within the energy management market is also not just about a lack of capital, access to energy data and localised industrial centres to test and refine new products is also of great importance. Regional hubs for energy management start-ups and demonstration of new business models must also address these barriers, including where they will be located. Distributed Network Supply Provider's may be interested in these hubs being located in or near planned renewable energy zones or network constrained regions.

**Area of activity: Market transformation**

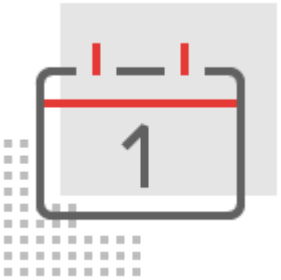
**Impact-ease-speed-lead assessment:**

**Assists step-change**

**Models exist**



**Lead time needed**




**Joint initiative**

### 1.3 Provide expert independent energy advice to SMEs and encourage commercialisation of novel products, processes or services that innovate and transform how they manage energy

Expert independent energy management advisors could be embedded in peak body industry organisations and work with high energy using SMEs to provide independent advice, improve their energy management capabilities and networks, engage with researchers, foster innovation and improve supply chains.

This recommendation would be quick to develop within existing business advice networks by utilising the framework that has proven successful in the Commonwealth Government's Entrepreneurs' Programme. The model is highly successful and continues to deliver business support through a trusted network of advisors, but energy management is not included in the service offering.

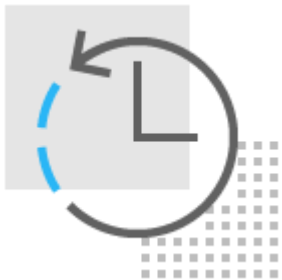
Implementing a complimentary service to foster development of the energy management market would help encourage commercialisation of novel products, processes or services.

**Area of activity: Expert support and facilitation**

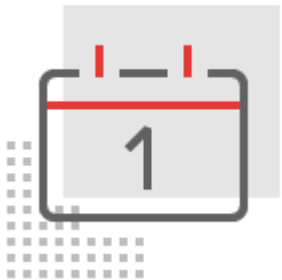
**Impact-ease-speed-lead assessment:**

**Assists step-change**

**Models exist**



**Lead time needed**




**Joint initiative**

## Theme 2: Energy efficiency scheme reforms to incentivise a wholistic approach to energy management

*State Governments including NSW, Victoria, the ACT and South Australia are actively working towards scheme harmonisation, and both NSW and Victoria have started considering how to incentivise energy management practises. The duration of the current slump in wholesale energy prices is highly uncertain. Underlying gas market drivers still suggest high future prices, and transition management will determine whether power prices rebound. While the slump lasts, however, traditional energy efficiency upgrades - that see large volumes of uptake in state-based schemes - will be less attractive. At the same time, carbon emissions are becoming more important to businesses and governments, and supply and demand constraints have the potential to disrupt the market. Incorporating incentives in energy efficiency schemes for energy management, including storage and demand management, will help to solve both problems despite the current reduced business case for energy efficiency upgrades.*

## 2.1 Catalyse Energy Management System (EnMS) uptake by inclusion of ISO 50001 (or similar) provisions in current state-based energy efficiency schemes

In Australia, uptake of formalised EnMS that conform to the ISO 50001 standard is low. While in other countries such as Germany there are tax breaks, regulatory levers and programs that greatly incentivise ISO 50001 uptake, there are limited drivers in the Australian regulatory context.

An opportunity exists to drive a dramatically greater uptake of formalised EnMS and ISO 50001 certification within energy intensive industrial businesses utilising the existing state-based energy efficiency schemes. The Victorian Government is currently looking at changes to the VEU which will incentivise implementation of a formalised EnMS for large energy users. There is also potential for the NSW Government to explore rule changes within the ESS to incentivise EnMS uptake and certification.

If these changes were to occur, the demand for EnMS services and ISO 50001 certification would drive the energy management market to respond, accelerating EnMS upskilling and development of new business models. States without existing energy efficiency schemes could look at other successful pathways to drive EnMS uptake.

Some large energy users already have their own version of an EnMS in place and may not need ISO 50001 certification each year. The NSW Government has developed an EnMS maturity model and benchmarking assessment that could be used as an alternative to ISO 50001 certification for companies or sectors that feel that ISO 50001 is less relevant for them. To achieve the goal of creating an incentive for having a system in place, a simplified way of assessing EnMS performance may be needed.

**Area of activity: Market transformation**

**Impact-ease-speed-lead assessment:**

| Assists step-change | Pilots needed | Quick to start | Government led |
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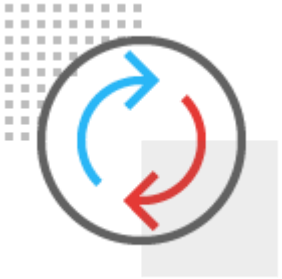
|  |  |  |  |

### 2.2 Engage closely with other governments as NSW designs the new Energy Security Safeguard, with the goal of encouraging a cross-jurisdictional approach to incentivise widescale adoption of sub-metering, sensors, control systems, and industrial energy storage

The NSW Government has announced the change of the Energy Savings Scheme (ESS) to the Energy Security Safeguard (Safeguard) but is yet to undertake detailed design of the scheme. The Safeguard will incentivise deployment of peak demand reduction technologies, such as batteries, smart pool pumps and electric vehicle chargers, that enable electricity demand to be shifted away from peak periods. This detailed design process could also be opened to other governments, aiding harmonisation.

Some of Australia's industrial sectors are well placed to take advantage of the introduction of time and location-based pricing of energy savings that reduce electricity demand. Smart energy management approaches to cooling and heating processes, in addition to various forms of energy storage, could be rewarded in congested network areas and at specific times of the day when the local electricity grid is under strain.

There is already latent capacity under control of advanced energy management technology within some industrial sites but there is a need to incentivise widescale adoption of the sub-metering, data and control systems, including more granular data analysis. Scheme reforms such as the Safeguard will help make the business case stake-up and ensure energy management product and services capability can respond to the site-specific needs of industry.

**Area of activity: Innovation**

**Impact-ease-speed-lead assessment:**

| Transformational | Research needed | Lead time needed | Government led |
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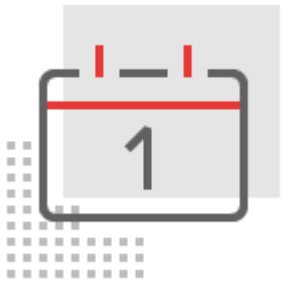
|  |  |  |  |

## Theme 3: Energy management capability and technology improvements supporting each other

*Evidence from successful energy management programs in both local and international settings reinforce the need for a wholistic approach to energy management market transformation. Global leaders in industrial energy management, such as Germany, the United Kingdom and Japan, have all introduced integrated suites of complementary measures. Recently, both state and Commonwealth governments have encountered capacity issues from supply chains in emerging technologies and traditionally, industrial energy productivity has suffered from low standards of energy management product and service offerings from the Australian market.*

### 3.1 Rapidly create the foundation of a professional development pathway for energy management service providers by delivering training and certification on key energy management opportunities for industrial businesses

A Task Group convened by the EEC in 2019 established a clear need for a sector-recognised, coordinated, quality assured and strategically focused professional development pathway to address immediate and possible future skills within the energy management industry. There are several existing certification programs and professional development opportunities for energy management professionals, in addition to many entry points into the market and corresponding prior education. A cohesive pathway is needed to recognise capability within the market and to identify skills and knowledge requirements not currently met by the existing offerings.

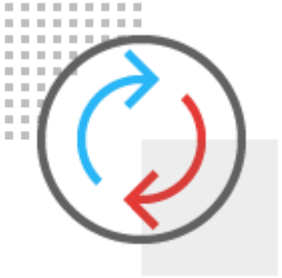
The most streamlined approach to establishing this professional development pathway is to 'pick the winners' where it is known there is an existing energy management opportunity for industrial businesses but the Australian energy management market does not yet have the skills and knowledge to fulfil the needs of industry. This approach will drive immediate uptake of any capability building initiatives, particularly if they are paired with government programs to drive activity in these areas.

A report commissioned by the NSW Government in 2018 found that the top three energy management options to save energy in manufacturing were related to process heat with waste heat capture being twice the size of any other opportunity. Combining the two largest energy savings related to EnMS implementation placed it as the fourth best energy management option; reducing compressed air leaks was number five (Pitt & Sherry, Industry Sector Analysis 2018).

Separate training and certification programs that target these fields of focus should be developed simultaneously to share common content. Analysis of these opportunities exists to rapidly create solutions to these skills shortages.

**Area of activity: Information and capability building**

**Impact-ease-speed-lead assessment:**

| Transformational | Pilots needed | Quick to start | Industry led |
|---|---|---|---|
|  |  |  |  |

### 3.2 Utilise the training and certification framework recommended in 3.1 to develop whole-of-government panels made up of highly qualified experts in targeted fields that will be able to deliver – with confidence from both government and industry – services to industrial businesses

Governments should take advantage of the training and certification programs recommended in recommendation 3.1 by using the certifications as a way of streamlining procurement process for faster delivery of grant programs and other stimulus measures. Whole-of-government panels in certain fields, made up of certified energy management service providers, would improve program delivery and provide added risk management.

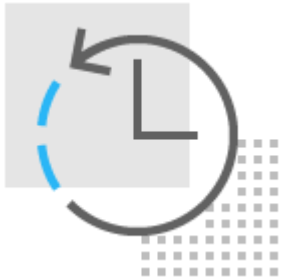
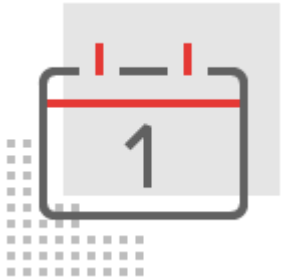
There is potential for market stimulus measures focused on providing large energy users with EnMS advisory and certification, process heat and compressed air services. However, there are significant capacity constraints that could make it challenging for the energy management market to deliver these services at scale unless upskilling efforts are ramped up.

Utilising the opportunity to provide critical upskilling for energy management service providers while state governments are stimulating a customer-base, provides an opportunity to cement these professionals as trusted energy management service providers in which industry can have confidence.

Government can also have confidence in these panels of experts to deliver the engineering studies and business case development that will be necessary for future grant programs and other market incentive measures to stimulate the economy when industry is ready to rebound from the current downturn.

**Area of activity: Innovation**

**Impact-ease-speed-lead assessment:**

| Part of ecosystem | Models exist | Lead time needed | Government led |
|---|---|---|---|
|  |  |  |  |

### 3.3 Develop and deliver holistic process heat programs that develop whole of supply chain capacity and provide on-ground support to help establish emerging technologies in Australian industrial sectors

As identified in recent ARENA funded low temperature heat-pump feasibility studies, even if the technology works and the end-user approves the project to progress, there are significant roadblocks to implementation. These include:

- Service providers' understanding of the technology options and required engineering approaches;
- Supply chain capacity; and
- Localised engineering design, commissioning and maintenance support needed to prove new technologies in Australian industrial sectors.

Other barriers will also need to be addressed, including the cost and risk of many process heat projects.

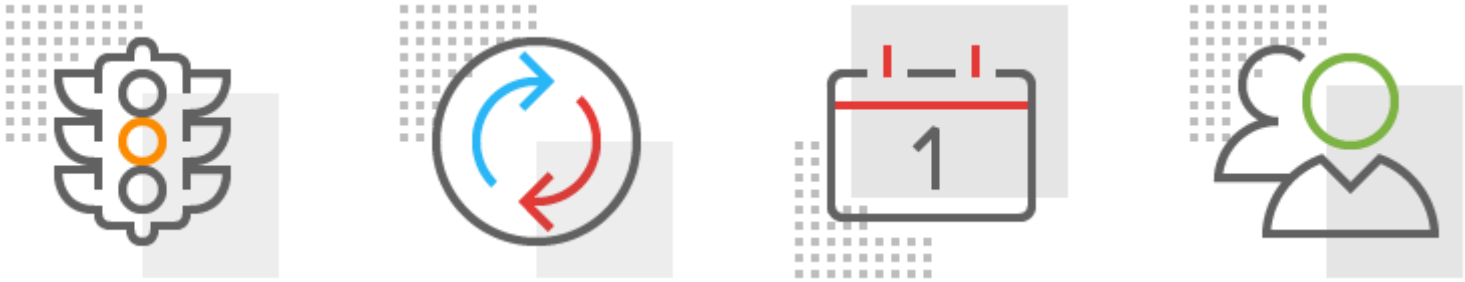
A holistic program working across governments, ARENA and the private sector should be developed to address these interrelated market deficiencies. Importantly, one of the areas of focus in recommendation 3.1 is designed to build energy management capacity around process heat services. These service providers are a crucial piece of the puzzle, as they can be utilised to support the rollout of this program. Capacity could be accelerated in regional industrial areas by encouraging demonstration projects that upskill local intermediaries that interact with new technology, technical information and changed processes.

The Victorian Government is currently mapping and exploring deficiencies in low temperature heat pump supply chains. This research could be used as a starting point to engage all the key market actors including specifiers, influencers, and the product suppliers to develop innovative business models for delivery.

**Area of activity: Market transformation**

**Impact-ease-speed-lead assessment:**

**Assists step-change** **Pilots needed** **Lead time needed** **Joint initiative**



### 3.4 Implement an integrated suite of sector-specific EnMS funding and capacity building programs that aid harmonisation of state-based approaches to supporting energy management improvements for businesses

Energy management support for businesses is offered in various ways across the country. This creates a barrier to entry for any industrial business that operates in more than one state, restricts the sharing of data and knowledge amongst industry and government, and reduces the likelihood momentum will be maintained – in a business or the broader market – once a state-based program ends.

Global leaders in industrial energy management such as Germany, the United Kingdom and Japan, have all introduced integrated suites of complementary measures that include:

- An incentive or mandate to encourage good energy management practices;
- Information and capability building efforts, such as funding for training and accreditation; and
- End-to-end support programs to help businesses identify and implement energy saving measures.

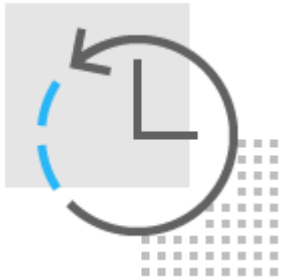
Models for integrated market development programs could be shared and adopted across state and territory governments. A harmonised approach could be based on successful international examples, or homegrown efforts that are beginning to get traction. The NSW Department of Planning, Industry and Environment's current suite of industrial programs would be a candidate for scaling up across the country; the suite includes a manufacturing efficiency funding program, EnMS benchmarking and coaching program, EnMS advisor training and the state's energy efficiency certificate scheme.

**Areas of activity: Information and capability building + Expert support and facilitation**

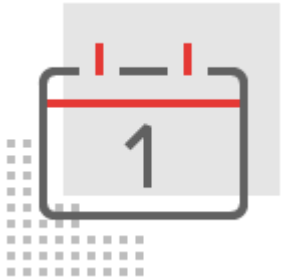
**Impact-ease-speed-lead assessment:**

**Assists step-change**

**Models exist**



**Lead time needed**




**Joint initiative**

### 3.5 Enter into partnerships with industrial businesses to develop a more holistic analysis of long-term decarbonisation strategies and de-risk energy management investment

There are many barriers for industrial businesses to participate in traditional government grant programs. One of the main barriers is that programs' funding cycles do not match the timing of when businesses can access it and implement step-change projects. The Energy Efficiency & Conservation Authority (EECA) in New Zealand has overcome this barrier by entering into collaborative arrangements with over 100 businesses to help identify opportunities to improve energy management and switch to renewable energy sources. EECA also assists with the development of business cases to invest in these opportunities, and demonstration projects to de-risk investment.

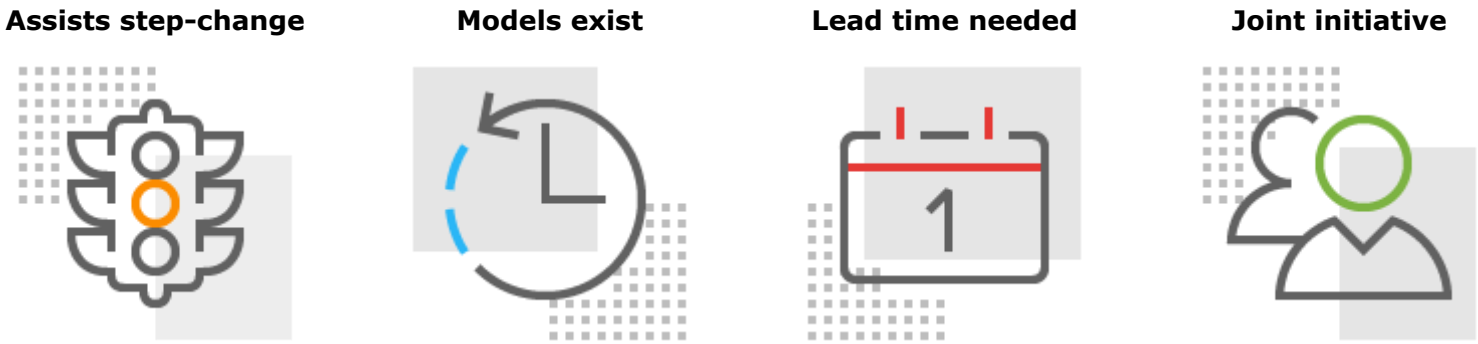
EECA then co-invests in projects, usually funding up to 40% of the total project cost, with businesses paying the balance. Some projects are funded directly to businesses, and others via energy management consultants who are approved EECA programme partners who work with the businesses on EECA's behalf. This framework could be replicated using the whole-of-government panels that is recommended in recommendation3.2.

To take the EECA model a step further, it is also recommended that these partnerships with industrial businesses are formalised over a number of years, ensuring long-term decarbonisation strategies are prioritised to time actions according to where the business expects to be and the availabilty of funding and support that can help them get there. This approach will provide a view of the projects needed over the long term to match investment where it is needed in the short term.

For many large industrial businesses, funding the projects has never been the problem. Mistrust in the savings, whether from a lack of internal understanding or a market failure, is the biggest barrier for investment in complex energy managagement projects that will achieve a step-change. Further opportunities to de-risk investment, such as government sharing the risk through energy savings gaurantees, should be explored.

**Area of activity: Information and capability building + Expert support and facilitation**

**Impact-ease-speed-lead assessment:**



### 3.6 Progress metering, monitoring and active management solutions to make energy use visible, tangible and manageable

ARENA has recently announced funding of $2.7 million towards Wattwatchers' $8 million *My Energy Marketplace* (MEM) program that targets households and small businesses. This program will provide consumers with smart devices and a MEM interface on their phone or tablet, changing how they interact with energy from a bill to a screen.

Industry initiatives such as these demonstrate the current market opportunity for new entrants and the potential for business models to capitalise on:

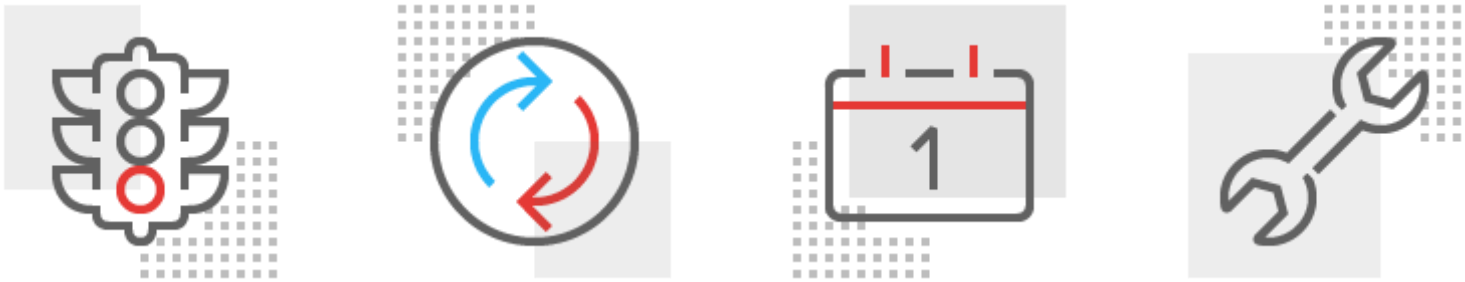
- Digital platforms for consumer energy trading;
- Data and insights on industrial energy profiles; and
- Customer aggregation and participation in emerging demand response and demand management opportunities.

Industry should work with government to foster and activate the digital energy management technology and automation sector that will help drive the transition to advanced manufacturing and deliver improved energy management outcomes. Innovative businesses are already entering the market and there is an opportunity to improve integration and deployment across industrial sectors with industry led initiatives.

**Area of activity: Information and capability building**

**Impact-ease-speed-lead assessment:**

**Part of ecosystem** **Pilots needed** **Lead time needed** **Industry led**



## Theme 4: Regulatory modification to further incentivise demand-side participation

*Energy market reform that enables using demand response as an alternative to building new network infrastructure and gas-fired peaking plants could provide the playing field to develop new business models for intermediaries and the opportunity to act for industrial businesses.*

### 4.1 Undertake a NEM demand-side transformation study to analyse and prioritise additional rule changes and energy market reforms that are required to allow consumers to access the full value of their energy assets

The Australian Energy Market Operator's Draft 2020 Integrated System Plan (ISP) states:

> *[Demand side participation] across the NEM is forecast to double by 2040 in the Central scenario (and almost quadruple in the Step Change scenario). This forecast growth is driven by advances in information and control technology and market reforms. Behind-the-meter battery storage (VPP) and charging of EVs will also add significant extra controllable demand across the NEM… Two-sided markets will not only need to be designed for peak shaving services but address other flexibility requirements – minimum demand, load shifting and load shaping to name a few.*

A range of reforms are currently being implemented or considered that will impact on demand side participation in the energy market, including the wholesale demand response mechanism, five-minute settlement and a two-way energy market. However, these reforms are being considered in a relatively fragmented way and without significant input from current and potential demand-side participants. The last review that looked at demand-side issues holistically was the Australian Energy Market Commission's *Power of Choice* review in 2012. Given the rapid changes in the energy sector, this review is now out of date. This group therefore suggests a stand-alone demand-side review that could support the Energy Security Board's *Post 2025 Market Design for the NEM.*

A NEM demand-side transformation study will help to integrate pricing signals into decision making processes, offer the ability to trade excess energy, give suppliers of smart equipment and appliances a voice, leverage investment into batteries and fully utilise back-up generation as additional market resources. This will need to involve the Energy Security Board and all energy market bodies, as well as consider the National Electricity Objective and be done quickly to meet the end of 2020 deadline for recommending any changes to the existing market design.

**Area of activity: Market transformation**

**Impact-ease-speed-lead assessment:**

| Transformational | Research needed | Lead time needed | Government led |
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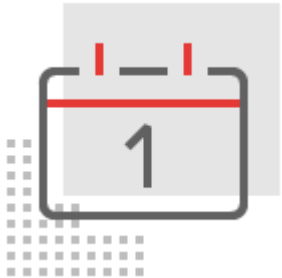
|  |  |  |  |

## Theme 5: Behaviour change and energy literacy being achieved at low cost

*There is agreement from most governments in Australia that behaviour change is necessary to assist the energy transition and energy management behaviour change programs have been operating in NSW and Victoria for several years. Similarly, energy literacy is now understood to be a major barrier in decision making and governments are actively working on solutions, primarily targeted at consumers.*

### 5.1 Initiate changes in product labelling to including greenhouse gas information, whether embodied, or generated when a product is in use

Displaying the climate cost is becoming just as important as displaying the financial cost of certain products within energy intensive supply chains. Requiring greenhouse gas emissions data on invoices and on consumer products will make it easier for consumers to understand the consequences of their choices and drive a new competitive advantage amongst businesses wanting to display their sustainability credentials.

Priority 2 in the NSW Government's Net Zero Plan Stage 1: 2020-2030 is to empower consumers and businesses to make sustainable choices and states:

> *The NSW Government will empower people with more information that allows them to compare products and services, not only in terms of price and quality, but also in terms of their impact on the environment. We will do this by enhancing the information that must be provided at the point of sale for various goods and services and creating opportunities for consumers to offset their carbon footprint.*

Energy intensive products throughout industrial supply chains contribute to Scope 3 emissions and industrial businesses with carbon reduction strategies or net zero plans are increasingly looking to take advantage of sustainable options to lower their emissions footprint. National Greenhouse and Energy Reporting (NGER) liable entities are already well placed to include $CO_2e$ details on invoices and on labels for manufactured goods. And Safeguard Mechanism baselines are increasingly becoming intensity-based by production variable, making them a relevant data source for labelling on manufactured goods.

The challenge for joint work will be drawing together this existing information in ways that are useful and accessible to consumers, while fair and simple for businesses.

**Area of activity: Recognition**

**Impact-ease-speed-lead assessment:**

| Assists step-change | Research needed | Lead time needed | Joint initiative |
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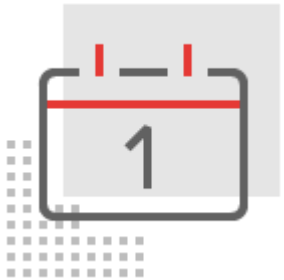
|  |  |  |  |

### 5.2 Adapt and utilise existing open-source energy management assessment tools

As the energy management market matures, the energy literacy gap between end consumers and energy management product and service providers will grow. With exception of large and energy intensive manufacturers, it is not reasonable to expect businesses to develop this knowledge. Much like other technical markets such as risk management and information technology, this gap could be closed through the development of open source assessment tools.

The U.S Department of Energy (DOE) has developed an integrated tool suite – Manufacturing energy assessment software for utility reduction (MEASUR) – to aid manufacturers in improving energy systems and equipment by analysing most major sub-systems found within manufacturing facilities, including pumps, fans, process heat, steam, motors and compressed air –. In addition to new tools such as a *Treasure Hunt Module* and a range of energy calculators, MEASUR consists of the updated versions of DOE legacy energy system assessment tools including:

- Pumping System Assessment Tool;
- Process Heating Assessment and Survey Tool;
- Fan System Assessment Tool;
- Steam System Assessment Tool (SSAT)/ Steam System Modeler; and
- AIRMaster+.

Australian governments could work with DOE to adapt and utilise tools such as MEASUR and provide them to Australian industrial businesses in an open-source environment.

**Area of activity: Information and capability building**

**Impact-ease-speed-lead assessment:**

**Part of ecosystem** **Models exist** **Quick to start** **Government led**

### 5.3 Instigate a mission zero rating system to provide a common methodology to validate an organisation's progress to net zero and energy management maturity

The National Carbon Offset Standard (NCOS) sets out the requirements for calculating, auditing and offsetting the carbon footprint of an organisation to achieve carbon neutrality. In the build environment sector, the Climate Active Carbon Neutral Standard for Buildings is an extension of a NABERS Energy rating that provides additional sector-specific benefits.

A simple star rating output, like that used for NABERS, could be used for stakeholders to assess industrial businesses for procurement decisions based on their energy management performance and advancement to net zero. Utilising the headway that other sectors like the built environment have made, the Commonwealth Government could set a framework for industrial businesses to develop ambitious solutions to achieve *mission zero* that work in an Australian context.

Minimum criteria as a weighting should consider:

- Governance – Board endorsement or commitments;
- Efficiency – recency and activations of audits, M&V activities and other forms of demonstrating commitment;
- Energy procurement – on-site generation / power purchase agreements (PPAs) / GreenPower / large-scale generation certificates (LGCs) / carbon credits;
- Materiality – Scope 1, 2 or 3 emissions; and
- Efficacy – EnMS maturity, adoption of standards and certification such as ISO 50001.

**Area of activity: Recognition**

**Impact-ease-speed-lead assessment:**

| Transformational | Research needed | Lead time needed | Joint initiative |
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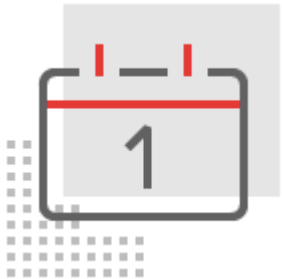
|  |  |  |  |


OLD WAY
NEW WAY