

Introduction

The EUAA is the peak national body representing major Australian commercial and industrial energy users. A not-for-profit organisation we are 100% funded by member contributions. Our membership covers a broad cross-section of the Australian economy including significant retail, mining, manufacturing, materials and food processing industries. Our member companies spend anywhere between \$1 million per year to \$1 million per day on energy and combined directly employ over 1 million Australians.

While our membership is made up of a diverse group of companies they all seek affordable, reliable and ecologically sustainable energy supply and expect to see national energy policy and regulation that puts downward pressure on electricity and gas costs while achieving positive environmental and social outcomes.

We welcome this opportunity to provide our initial views on the Technology Investment Roadmap Discussion Paper and look forward to participating in the various stakeholder engagement pathways.

The discussion paper comes at an opportune time given the transition of energy markets is well underway and gaining in momentum. Over the last decade, a number of clean energy technologies have moved rapidly down their cost curve which is driving a rapid transition of our energy markets. Unfortunately, this rapid transition is also creating significant issues that if left unattended will have dire consequences for both consumer costs and system reliability. We are pleased to see this is recognised in the discussion paper as we believe it is one area where the prospect of fast tracked technological evolution should be considered.

We are also pleased to see recognition of the challenges facing heavy industry as they progressively manage scope one emissions. A technology led approach involving a partnership between industry and government will be central to ensuring our heavy industry is well placed to prosper in a future carbon constrained global economy. Assisting these industries in the interim will be just as important as they face competition from international players who do not have the same emission reduction requirements.

When it comes to energy generation the EUAA take a technology neutral approach, recognising that future energy technology must seek to be low cost, low carbon and have a low social impact.

Based on our experience with energy users, they are interested in emerging technology to the extent it:

- Can assist them reduce energy consumption (energy efficiency, load control)
- Can assist them in reducing scope 1 emissions over the medium to long term
- Solves emerging problems in energy markets

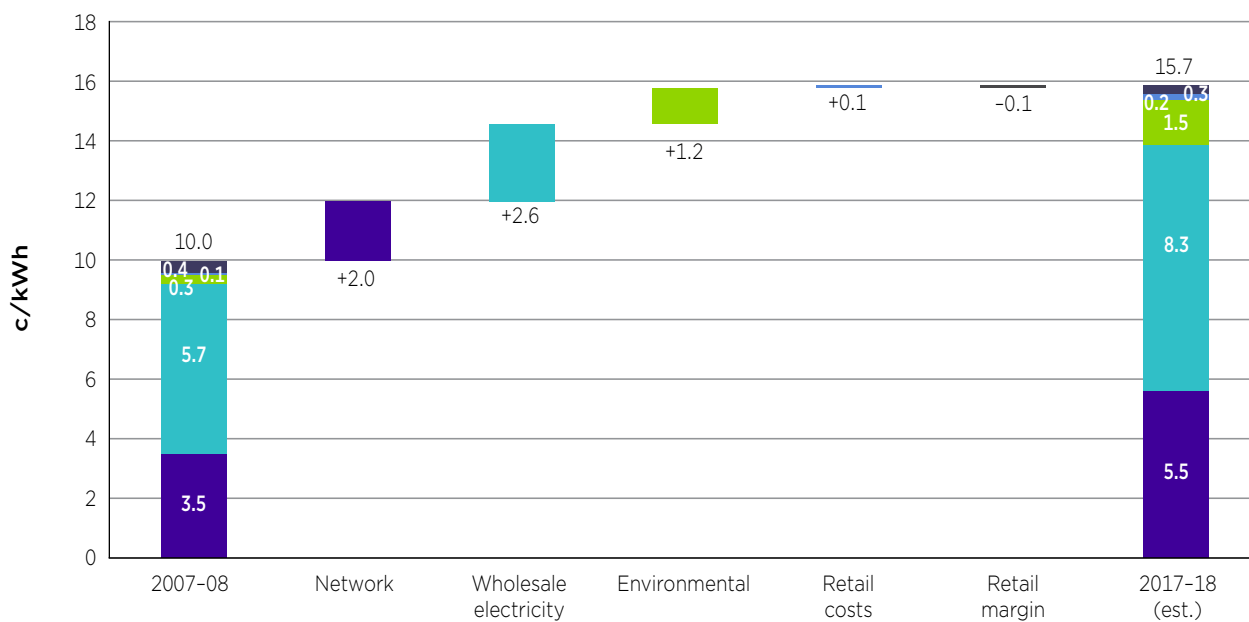
Therefore, rather than identifying preferred technologies we will identify emerging energy market issues that need to be resolved and as such will recommend specific areas of focus for governments to address including system strength and reliability, energy efficiency and productivity and heavy industry modernisation. We are pleased to see that many of our focus areas have already been identified in the road map.

Drivers Of Higher Energy Bills

While energy users are interested in the type of technologies or alternative fuels that will emerge over time, they are more concerned about the deployment cost of technology, including long-term risks associated with significant investment in infrastructure to support technology deployment. Therefore, one of our priorities is to ensure we have efficient markets to achieve technology deployment at least cost and a more equitable framework for sharing risk across a broad set of market participants.

The chart below, taken from the ACCC Retail Electricity Pricing Inquiry Final Report June 2018¹, shows that increases in environmental program costs (such as the Federal LRET² and SRES³ schemes) has been one of the largest drivers of increased C&I customer bills between 2007 and 2017.

Figure 1.30: Change in average C&I customer effective prices (c/kWh) from 2007-08, NEM-wide, real \$2016-17, excluding GST



More recently, in its August 2019 update on the wholesale electricity market the ACCC identified that environmental program costs increased a further 0.3 cents per KW/h in 2018 alone⁴. Based on this trend, environment program costs will account for in excess of \$20MW/h of a typical C&I customer bill in 2020, or approximately 12.5% of the total bill making it the third largest component behind network and wholesale electricity costs.

This is comparable to the increase in network costs over the same period driven by the so called “gold plating” of networks that has been the cause of significant consumer concern and political division.

¹ https://www.accc.gov.au/system/files/Retail%20Electricity%20Pricing%20Inquiry%20Final%20Report%20June%202018_Exec%20summary.pdf

² LRET – Large Scale Renewable Energy Target

³ SRES – Small Scale Renewable Energy Scheme

⁴ <https://www.accc.gov.au/system/files/Inquiry%20into%20the%20National%20Electricity%20Market%20report%20-%20August%202019.pdf>

While recognising that schemes designed to support technology such as wind and solar have succeeded in large scale deployment, the long-term costs associated with this are not trivial. This is compounded by numerous state based schemes overlapping with federal programs, increasing complexity for liable parties and costs for consumers.

Therefore, in supporting the concept of technology neutrality, the EUAA believe that the introduction of a market based emissions reduction policy is the most cost effective means of meeting long-term technology and emissions reduction goals. This should be accompanied by the phase out of existing state based programs to avoid unnecessary duplication of costs.

We are also conscious that “road maps” can gain momentum and evolve into something beyond their original intent. For example, we have seen the AEMO ISP move from being a useful guide to future transmission investment to a plan that now “directs” investment due to the desire to make it “actionable”. We wonder if the technology investment road map will, at some point, be made “actionable” and what that will mean for consumer costs and the stability of energy market investment.

Any approach to make the technology road map “actionable” that does not include a market based response to emissions reduction will be less efficient than it could be. Equally, any approach to make the technology road map “actionable” that avoids robust, independent and transparent cost benefit analysis that is consumer focused will be of great concern.

Energy Market Transition

The EUAA and its member companies understand that the electricity market is undergoing a paradigm shift away from a centralised, fossil fuel based system to a highly decentralised, zero carbon system. This is occurring at great pace and is driving many positive outcomes.

For example, we have seen in recent years that the capital cost of renewable energy (in particular wind and solar) has dropped so dramatically that they now represent the cheapest form of new build energy available on an LCOE basis. Accordingly, these technologies and the companies involved in their operation are no longer fringe players in the energy market, but are increasingly becoming central players.

Therefore, it is our view that wind and solar technologies no longer require funding support or subsidy to assist deployment. This should be seen as a positive outcome by governments, community and the renewable energy industry itself who have long argued that once the playing field has been levelled, subsidy is no longer required.

While the falling capital cost of wind and solar is positive there are a number of new challenges presented by the sharp increase in this type of energy generation. Significant issues associated with system reliability and system strength along with substantial increases in network capacity are new challenges of the energy transition that require greater attention by governments and regulators.

It must also be recognised that the gradual exit of large synchronous generation means that many of the system strength services these generators provided (i.e. frequency, inertia) to the market as a consequence of their operation will need to be replaced. As this requires new technology to be deployed by a range of new players, a new layer of costs will now be incurred meaning consumers will now be paying for services they used to receive for free.

These new costs, which are likely to emerge as significant, need to be considered as part of the total system cost of the transition. In recognition of this, much of our work has been focused on the concept of solving the new “Energy Equation” of total system cost being:

Levelised Cost Of Energy (LCOE) + Firming + Grid Augmentation

It is our view that focussing on policy and regulation that drives lower total system costs over time will be the key to ensuring the transformation of our energy system is as efficient and cost effective as it can be. The following table provides a summary of policy and regulatory priorities that are used by the EUAA to guide our advocacy in this area over the last three years. We are pleased to see this aligns with many of the priority areas identified in the discussion paper.

Equation Element	Current Status	Next Steps
Levelised Cost of Energy (LCOE)	Largely resolved – Wind and solar now cheapest on LCOE basis. Do not extend federal RET, wind back state-based schemes.	De-risk investment: <ul style="list-style-type: none"> Establish a market-based approach to emissions abatement. Consistent policy narrative, long-term vision and single national response to energy issues. Targeted equity support for “innovative” projects.
Firming and System Strength	Technology evolving but issues remain with scale and cost.	Accelerate and Innovate: <ul style="list-style-type: none"> R&D funding. Support technology trials. Strategic investments that align with market needs.
Grid Augmentation	Significant costs are coming as we re-wire the grid. Consumers should not be asked to wear all the cost and risk of this.	Participate and regulate: <ul style="list-style-type: none"> Strategic government investments that align with market needs and shield consumers from risk. Explore new means of long-lived asset cost recovery such as a move to Generator TUOS, co-funding arrangements and optional firm access rights.

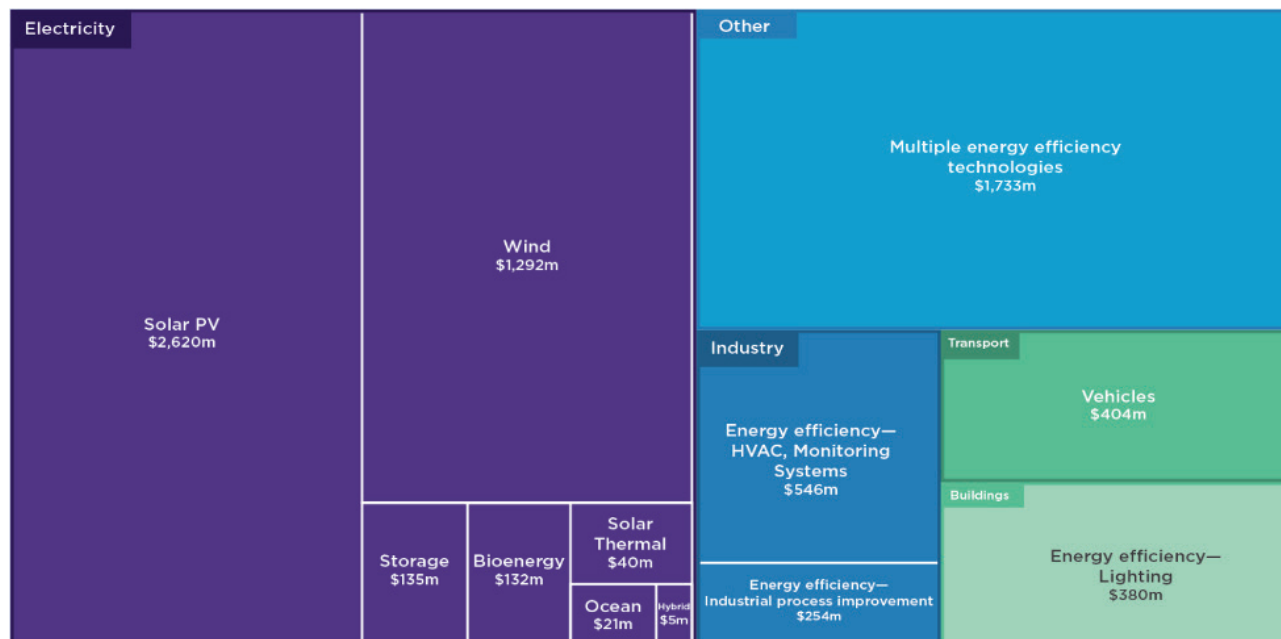
We note that the following chart that appears on page 36 of the roadmap shows a clear change in investment priorities for the CEFC between 2013 and 2019 and largely reflects our view that support needs to be directed to areas of emerging need.

While we believe the CEFC has played a key role in the deployment of solar and wind energy technologies, it will need to adapt its investment scope and mandate if it is to remain relevant to an energy market in transition.

In addition to welcome investments in energy efficiency, which should continue, we would suggest investment in technologies that assist in system strength (such as large scale batteries and synchronous condensers), energy infrastructure that unlocks new low cost resources and technologies and help energy users engage in demand response.

Finally, as technology becomes available the CEFC should continue to adapt to provide funding support to heavy industry modernisation and de-carbonisation, which may include hydrogen as an alternative input into metals processing.

Figure 8: CEFC funding commitments 2013–2019 (total \$7.6 billion)



Note: to September 2019

In addition to these supply side responses, we believe that increasing demand side participation in energy markets will also be an important aspect of the energy transition. We have already seen a number of large energy users deploy significant energy efficiency, productivity and demand response measures, participate in the AEMO Reliability and Emergency Reserve Trader (RERT) scheme and actively manage spot market risk through controlled load shedding.

We look forward to significantly greater opportunities to emerge as a result of the Wholesale Demand Response Market (WDRM) that is due to commence in October 2021.

We believe this is an area where greater focus could deliver large benefits to consumers and the market in general. By accelerating demand response technologies, we reduce the costs associated with building a peak demand energy system (both networks and generation), we provide the market operator with greater flexibility therefore helping to avoid costly interventions and give energy users more control, helping to lower costs and increase competition.

Firming and System Strength

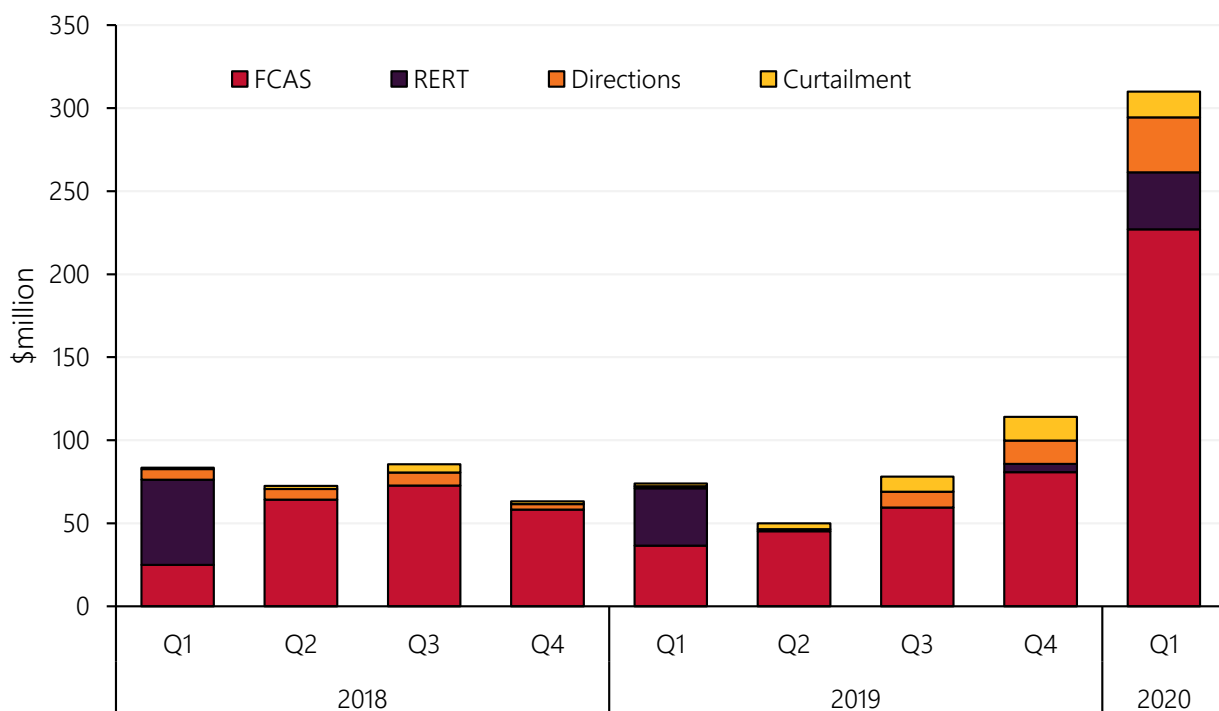
Careful management of the National Electricity Market (NEM) will be required as we move from a centralised, fossil fuel based generation fleet that has a high degree of “dispatchability” to a decentralised, low emission but variable generation fleet. We have also seen what could be described as High Impact Low Probability (HILP) events impact the system in recent years, mostly brought about by freak weather events (i.e. SA System Black event and recent loss of the Victoria to SA interconnector).

We have already seen the financial impact on consumers of the intervention required by AEMO to maintain system strength. This is not just the cost of managing extreme events but in some regions of the NEM, AEMO are required to intervene through market directions on a regular basis.

According to the recent AEMO Quarterly Energy Dynamics Q1 Report⁵, system costs have increased dramatically in recent years. This is a disturbing trend and is a clear indicator that well considered and cost effective measures to address system strength are required. Part of this response also needs to consider the existing and emerging technologies that will be required and what market and regulatory responses will be the most appropriate to achieve a least cost solution.

Figure 29 NEM system costs increase to record levels

Quarterly system costs by category



Identifying emerging technologies and applying targeted R&D and pre-commercialisation support via ARENA and CEFC is an appropriate approach by governments. This will be most effective as a complimentary suite of measures to a market based approach to emissions abatement.

Grid Augmentation

With the nature and structure of our energy market changing rapidly there will be an ongoing need to “re-wire” the national grid. This is a major component of the energy transition and key to the deployment of new large scale technology. Ironically, more widespread deployment of small scale technology such as rooftop solar, home batteries and electric vehicles may impact the utilisation rates of some big transmission investments that are being contemplated.

⁵ <https://aemo.com.au/-/media/files/major-publications/qed/2020/qed-q1-2020.pdf?la=en>
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This tension between large scale and small scale technology, the impact it is having on stability of the grid and its long-term impact on energy flows and therefore infrastructure utilisation rates is one of the great unknowns that the market is grappling with. The concept of a “no regrets” investment in network infrastructure, as seen over the 40 year asset life, seems to be under threat.

Another key challenge is that we now have many non-government participants in our energy markets, many of whom are new entrant generators seeking to connect in remote areas of the grid. This is clearly demonstrated in the AEMO ISP. Under the current regulatory approach, consumers would pay for the entire cost of this re-wiring despite the fact that multiple participants will benefit from it. We think it is inequitable that all the costs should be socialised when all of the benefits are not.

When this change to benefit re-distribution is combined with the increasing asset utilisation risks associated with the energy transition, consumers are seeking a user/causer pays approach to the costs associated with “re-wiring” of the national grid, including that which is associated with the AEMO ISP. It is an approach that would share the costs and risks across a broad range of stakeholders all of whom benefit from the proposed transmission investments.

A range of regulatory work is underway in this area that seeks to re-balance the cost and risk sharing model that may include requiring new entrant generators to pay for a percentage of grid augmentation. These reforms are slow moving and may not be in place for some years meaning grid augmentation may be stalled or consumers will be required to shoulder all costs and risks.

There is likely to be a role for governments to participate in these markets to help address the cost and risk issues described here. This may include initial funding of strategic network assets with costs re-couped from connecting parties or development of new network revenue models such as Generator Transmission Use Of System Charges (GTUOS). Equitable, cost efficient development of connection assets is a central issue for technology investment and the transition of energy markets and should be given serious consideration as part of future technology statements released by the federal government.

Heavy Industry Modernisation

Australia’s heavy industries operate in an international environment where carbon risks are material and where there is a real prospect of carbon costs being levied on their product, either directly or indirectly. Therefore, it is becoming increasingly important for heavy industry to minimise carbon risk in their business, especially that which is embedded in the final product.

Modernisation of our industrial base is of vital importance. This includes energy efficiency and productivity improvements, the potential for low and zero emissions inputs to reduce scope one emissions and modernisation of industrial plant and equipment.

An opportunity exists for the Commonwealth to take a leadership position to assist in the modernisation of our heavy industry to ensure it remains “match fit” for the global market it is competing in. For example, accelerating “green steel” technology trials is one of a number of areas in which the Federal Government could play a positive role.

Fuel Switching

While the EUAA are supportive of expanding fuel switching initiatives and would not be opposed to the prospect of increased research into alternative fuels and potential capital support for technology deployment, the near-term opportunities may be limited to a narrow group of industrial activities such as low-temperature heat applications in food processing industries.

It is the experience of the EUAA that in most cases, even in low-temperature heating, fuel switching for large commercial and industrial is not a viable option given the level of capital already committed to plant and equipment and the capital intensity of replacement.

For example, the recent 200% to 300% increase in gas costs has driven a new round of investigations into energy efficiency and low temperature heat technologies. We are aware that some opportunities in advanced heat recovery and improved energy efficiency have come to fruition but we are not aware of any material fuel switching from say gas to biomass. Apart from the capital cost impact, which are substantial, practical issues of on-site fuel storage, local planning and emissions requirements, social license considerations and integration of new equipment and processes into an existing facility create significant barriers to adoption.

At this point in time, if significant investment in plant and equipment is being contemplated by large industrials, the question doesn't involve switching from one fuel to another but switching from a region with high fuel costs to a region with low fuel costs.

Regarding the future of hydrogen. The EUAA maintain a watching brief on this fuel source and can see the medium to long-term opportunities for hydrogen as a means of large volume fuel transportation. We are yet to be convinced that hydrogen will become a reticulated fuel in Australia that can be accessed by energy users. Even if the cost of hydrogen can be reduced to that of natural gas, the cost involved in retrofitting existing gas networks seems significant. To overcome this network retrofitting cost, the fuel cost would need to be well below the projected cost of gas (or electricity) for it to be economically viable for energy users.

Once again, thank you for the opportunity to respond to the Technology Investment Roadmap and we would welcome further opportunities to engage.

Kind regards



Andrew Richards
Chief Executive Officer