



COAG Energy Council

COAG Energy Council

Energy Working Group

Network Strategy Working Group

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Policy advice

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Executive Summary

In May 2014 the Council of Australian Governments (COAG) Energy Council tasked officials with a strategic assessment of the adequacy of the network economic regulatory framework under likely future scenarios in the next 20 years.

Officials developed four scenarios for stress testing the framework adapting the CSIRO's Future Grid work (**Attachment I**). The scenarios were deliberately crafted to push the boundaries and be sufficiently different to stress test the regulatory framework in the broadest way.

Given the nature of the task and the time available, officials agreed that the stress test would be of a high-level, qualitative nature, with the key aim to identify potential areas for further work as foreshadowed by Ministers. Synergies Economic Consulting was engaged by officials to develop and apply a stress testing methodology, with input from jurisdictional representatives on the Network Strategy Working Group (NSWG).

The stress testing (**Attachment II**) involved identifying key risks to the delivery of the National Electricity Objective (NEO) in relation to the future scenarios; and then assessing whether the existing regulatory arrangements are likely to be sufficiently flexible to enable the risk to be mitigated, either through market participant responses or by application of the existing framework.

Risks that were not likely to be managed through the existing regulatory arrangements, and which were determined material in terms of likely consequence and/or probability of occurrence, were identified as requiring further work to determine whether reforms to the framework are required.

A stakeholder reference group, involving representatives from the CSIRO, key peak bodies for the traditional and alternative energy industries, consumer groups and the energy market bodies, provided input during the process. This included workshops to facilitate input into the scenario development and the approach to the stress test, including testing the key risks identified.

Outcomes

In summary, the stress test found that the regulatory framework is generally robust under scenario 1, which effectively represents the status quo. The stress test found that scenario 4 (Government policy drives outcomes) will challenge the regulatory framework primarily with respect to facilitating incentives for transmission businesses to make investment to incorporate renewable generation and manage a more volatile energy supply. However, the risks under scenario 4 would only require consideration in the event government announces a similar centralised renewables policy.

Scenario 2 (New consumer choices drive an evolution) and scenario 3 (Centralised to localised) were found to have the most disruptive impacts such that elements of the existing economic regulatory framework have potential to be significantly challenged under scenario 2, and in the case of scenario 3 'may need to be fundamentally re-thought'.

Importantly, it was determined that attempts to incrementally change the regulatory framework once the key market features of scenario 3 present will be too late to allow market participants and associated regulatory frameworks to adequately adapt. Hence, it is critical that the Energy Council acts proactively rather than in a reactive manner in addressing the implications of key identified risks.

The table below highlights the risks to the NEO which the Synergies report identified may emerge under some or all of the scenarios. Of these, asset under-utilisation/stranding was identified as most critical in terms of the potential consequences and timing of further work.

Risk	Description of Risk
Network asset under-utilisation or asset stranding materially increases the unit price of electricity services	<ul style="list-style-type: none"> • Network investments are inefficient in terms of the level of utilisation. • Consumers pay an inefficiently high price for network services given networks' right to recover on these investments. • High prices may encourage network disconnections exacerbating the issue. • Under scenario 3 cost reflective pricing is no longer workable.
Networks fail to adapt to a decline in the regulated electricity network services market	<ul style="list-style-type: none"> • Networks do not sufficiently change their approach to service delivery. • The quality, reliability and security of electricity network services may be adversely affected by network businesses delaying or reducing new investment.
Weak incentives exist for networks to innovate in the provision of electricity network services	<ul style="list-style-type: none"> • Efficient investment in network is compromised by networks being deterred from investing in 'smart' technologies. • Consumers may not gain the full benefits of new technologies that could improve the network service.
Development of competition in unregulated alternative service markets is inhibited	<ul style="list-style-type: none"> • Network businesses could use their market power to hinder competition in alternative service markets. • Consumers may not gain the full benefits of new technologies.
Weak incentives exist for networks to enter alternative service markets	<ul style="list-style-type: none"> • Networks may be unable to enter and/or compete effectively with new providers in alternative service markets due to weak incentives, regulatory impediments or lack of appetite. • Networks accessing the alternative services markets may improve the quality and reliability of network services.
Technology diffusion in alternative services markets is delayed or distorted	<ul style="list-style-type: none"> • Service classification decisions could hinder new technology based alternative services. • Consumers may not be able to access the benefits of new technologies.
Retail and network prices for electricity network services are not cost reflective at the individual customer level	<ul style="list-style-type: none"> • Potentially higher than necessary investment in network services given the absence of appropriate price signals to drive consumer behaviour and temper peak demand. • Under scenario 3 cost reflective pricing is no longer workable.
Disincentives to make new investment in regulated network services threaten	<ul style="list-style-type: none"> • Inefficiently low investment in network services threatens security

security of supply of the interconnected electricity system

of the grid supply.

- Under scenario 3 there is a high probability of this risk occurring due to the declining role of network services and the large number of customers reliant on the grid for backup or disconnected from the grid.
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Recommendations

- Assess whether the current frameworks appropriately allocate the risk of network under-utilisation and asset stranding and, if not, whether the regulatory frameworks need to be amended (including the removal of regulation if appropriate)
 - Assess whether trade-offs between the Regulatory Asset Base and other incentives in the framework will continue to deliver the NEO
 - Examine with the Australian Energy Regulator (AER) whether the Rules are flexible enough to encourage network innovation
 - Explore the nature and causes of network businesses market power in the context of alternative service providers
 - Consider whether there are regulatory barriers to network businesses competing on a level playing field with alternative supply options
 - Examine with the AER whether the service classification framework is fit for purpose such that it will not hinder technology diffusion
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Other findings

The stress test identified a number of areas of the regulatory framework where the key risk to the NEO is in how the AER exercises its regulatory discretion, rather than the operation of the framework itself, including service classification.

The nimbleness of the economic regulatory framework as a whole to respond to rapidly evolving electricity market developments was also raised, including the scope of network economic regulation as market competition develops.

Officials considered that while the specific recommendations proposed by Synergies provide a valuable starting point, these areas would be more effectively investigated through a consolidated approach that recognises the overlap of this work with the other strategic work being progressed by officials; specifically the New Products and Services work and the review into the National Energy Customer Framework in the context of the ongoing change taking place in the energy markets. Officials will develop a detailed work programme for progressing this work and will report to the Energy Council in December on recommendations around specific reform activities, where appropriate, and an update on the progress of longer term work.

In addition, while not directly relating to the economic framework the stress test identified a number of broader policy issues that require consideration, which includes:

- reconciling the current framing and interpretation of the NEO in light of increasingly important alternative services markets – i.e. achievement of the NEO in a future where the network service is no longer the primary electricity service;
- the connection, supply and reliability obligations that should appropriately be imposed on network businesses when the electricity network service is no longer the primary electricity service;
- questions around the achievement of the NEO for consumers who are either less, or not, reliant on the traditional network service; and
- reconciling system optimisation and whole-of-market benefits with allowing individual choice.

Officials consider that this work is best progressed as part of the broader strategic reform programme identified above.

Table of contents

EXECUTIVE SUMMARY	II
TABLE OF CONTENTS	VI
1 INTRODUCTION	1
1.1 BACKGROUND	1
1.2 POLICY INTENT	2
2 ANALYSIS AND RECOMMENDED AREAS FOR FURTHER WORK	3
2.1 SCENARIOS	3
2.2 STRESS TEST FINDINGS	4
2.2.1 NETWORK ASSET UNDER-UTILISATION/ASSET STRANDING INCREASES THE UNIT PRICE OF ELECTRICITY NETWORK SERVICES	4
2.2.2 NETWORKS FAIL TO ADAPT TO A DECLINE IN THE REGULATED ELECTRICITY NETWORK SERVICES MARKET	5
2.2.3 WEAK INCENTIVES EXIST FOR NETWORKS TO INNOVATE IN THE PROVISION OF ELECTRICITY NETWORK SERVICE	6
2.2.4 DEVELOPMENT OF COMPETITION IN UNREGULATED ALTERNATIVE SERVICE MARKETS IS INHIBITED	7
2.2.5 WEAK INCENTIVES EXIST FOR NETWORKS TO ENTER ALTERNATIVE SERVICE MARKETS	8
2.2.6 TECHNOLOGY DIFFUSION IN ALTERNATIVE SERVICES MARKETS IS DELAYED OR DISTORTED	8
2.2.7 RETAIL AND NETWORK PRICES FOR ELECTRICITY NETWORK SERVICES ARE NOT COST REFLECTIVE AT THE INDIVIDUAL CUSTOMER LEVEL	9
2.2.8 DISINCENTIVES TO MAKE NEW INVESTMENT IN REGULATED NETWORK SERVICES THREATEN SECURITY OF SUPPLY OF THE INTERCONNECTED ELECTRICITY SYSTEM	10
2.2.9 OBLIGATIONS ON NETWORKS TO CONNECT AND SUPPLY (INCLUDING TO MAINTAIN SUPPLY TO EXISTING CONNECTIONS) ARE UNECONOMIC	11
2.2.10 POLICY AROUND SYSTEM OPTIMISATION COMPARED TO INDIVIDUAL CHOICE	12

1 Introduction

At the COAG Energy Council (the Council) meeting of 1 May 2014, officials proposed a strategic assessment of the future adequacy of the economic regulation framework applying to electricity networks. The proposal was prompted by energy market changes, including falling overall demand, a growing gap between peak and average demand, increasing decentralised generation, and the uncertain future impact of emerging technologies on the sector.

In light of this advice, the Council tasked officials with undertaking a scenario analysis exercise and to come back to it with recommendations, if necessary, about the need for further work in mid-2015.

The following sets out the findings of officials initial analysis of the performance of the economic regulatory frameworks in light of emerging challenges and recommends further work to aid the development of a strategic reform agenda.

1.1 Background

As noted by the Council's predecessor, the Standing Council on Energy and Resources (SCER), in December 2013, the electricity sector has recently undergone significant reform, with some key reforms still to be implemented. However, emerging challenges indicate that consideration of the future direction of network regulation is warranted.

These challenges include changes in the production and consumption of electricity in recent years, most notably increasing uptake of distributed generation, and increasing divergence of aggregate demand from peak electricity demand. Consideration of further changes to market dynamics from greater adoption of technological change (e.g. storage, electric vehicles) is also worthwhile.

Increased take-up of energy efficiency, distributed generation, and other forms of demand-side participation reduces the need for network investments in some cases. However, the costs of paying for existing network infrastructure and the risks to consumers bearing the costs of stranded assets resulting from falling demand needs to be addressed. How to minimise cross-subsidies between those who can afford to take up certain technologies (air conditioning, solar, storage) and those who cannot, continues to be a policy issue under consideration.

These developments in the market were not considered when the current electricity regulatory frameworks set out in the National Electricity Rules (NER) were designed. Consequently, a strategic assessment of the likely performance of the existing economic regulatory model for networks under future scenarios was considered necessary to test the adequacy of the current regulatory framework in light of these challenges.

1.2 Policy intent

The policy intention is for the economic regulatory frameworks to contribute to the delivery of the National Electricity Objective (NEO). As such, the primary focus of the assessment is around whether potential future scenarios create circumstances where the long term interests of consumers as set out in the NEO are not delivered.

In addition, in the Communique for its 11 December 2014 meeting, the Council articulated a number of its expectations around what the regulatory frameworks should deliver in responding to current changes in the market; specifically it:

- i. expressed a desire to ensure electricity networks secure the benefits of technology change;
- ii. recognised that the business environment of energy networks is changing rapidly and that networks need to reconsider their role;
- iii. supported consideration of regulatory models which are more flexible, where regulation is an enabler and not a barrier to changes;
- iv. supported consumers' right to take up new technologies, but recognised that this should not be on the basis of cross subsidies from other end users;
- v. noted the importance of having the right balance between take up of technology and efficient outcomes for consumers across the system as a whole;
- vi. recognised that development of new energy services, technologies and recent reforms increasingly provide strong opportunities to progress Australia's energy productivity; and
- vii. recognised that essential next steps are tariff reform and recent changes to Distribution Network Pricing Principles which enable distributors to set prices that reflect efficient costs.

This analysis is focused on the first five of these expectations as part of a wider work programme. There are other work streams that will also contribute to these goals and the other expectations listed, most notably a number of demand side reforms have been implemented by the Australian Energy Market Commission (AEMC) or are currently being considered which will support greater demand side participation that contributes to network and market efficiencies. These include:

- Distribution pricing reforms which will support the introduction of cost reflective network tariffs by 2017 that will provide better price signals to energy consumers, reduce existing cross-subsidies and ensure new and emerging technologies are integrated in a way which minimises network costs and supports greater network utilisation.
- Metering reforms which will support a market led rollout of smart meters that will enable the introduction of new tariffs and energy services giving consumers more choice in managing their energy use and allowing retailers and distributors to improve business efficiency.

- A review of the existing Demand Management and Embedded Generation Connection Incentive Scheme to consider whether changes are required to support networks to undertake demand management to address network constraints.

Officials have also been considering whether the regulatory frameworks in the National Electricity Market (NEM) will enable small customers to benefit from new energy products, while offering appropriate consumer protections and ensuring the safe and secure operation of the national electricity system. A discussion paper on the impacts at the retail level of new products and services is being presented to Ministers at the same time as this scenario analysis.

The New Products and Services paper identifies some of the same issues that emerge in the scenario analysis, particularly around customer protections and the most efficient way of providing electricity services to customers as distributed generation and storage enter the market. The focus of the new products and services work is on balancing benefits to consumers from innovation in the market with the need to ensure consumers are adequately protected; and have access to essential services as the market evolves.

Although some broader policy issues have been highlighted, this strategic assessment considers the economic regulatory framework, focussing on the implications of market change for efficient investment, operation and use of electricity network services in the long term interest of consumers.

2 Analysis and recommended areas for further work

2.1 Scenarios

The following provides a brief description of the four scenarios used in the stress test.

- Scenario 1 – ‘Network business models evolve’ – the traditional electricity supply chain model is enhanced through incorporation of new technologies but substantively preserved in the way it is operated and used through evolution. Network businesses dominate the provision of alternative services.
- Scenario 2 – ‘New consumer choices drive an evolution’ – the traditional electricity supply chain model is being challenged due to strong growth in new innovative alternative services, including off-grid and smart technology services, met primarily by third party service providers.
- Scenario 3 – ‘Centralised to localised’ – the electricity supply chain model is fundamentally changed with centralised generation becoming displaced by a more decentralised generation model, including reliable storage. Strong growth in new innovative alternative services has resulted in significant penetration of distributed generation and storage, resulting in around 30% of consumers going ‘off grid’.

- Scenario 4 – ‘Government policy drives outcomes’ – both centralised and localised renewable generation rapidly increase as a proportion of the generation mix driven by government targets. The majority of consumers remain reliant on the grid.

The economic regulatory framework was found to be generally robust under scenario 1. However, each scenario does have implications for delivering the NEO.

Scenario 2 and scenario 3 were found to have the most disruptive impacts such that elements of the existing economic regulatory framework have potential to be significantly challenged under scenario 2; and in the case of scenario 3 ‘may need to be fundamentally re-thought’.

While scenario 4 raises some risks, particularly for transmission investment, it was found that policy action to mitigate against these risks need not be taken unless a centralised renewables policy was in fact proposed.

2.2 Stress test findings

The stress test identified a small set of broad risk groupings that are likely to present under the future scenarios. Those relating specifically to the economic regulatory framework are as follows.

2.2.1 Network asset under-utilisation/asset stranding increases the unit price of electricity network services

This risk relates to the potential for market developments to result in under-utilisation or stranding of electricity network assets. Specific risks include:

- the framework provides weak incentives and/or constrains network businesses ability to avoid potentially stranded or under-utilised assets
- high cost reflective network tariffs encourage network disconnections by making off-grid supply more attractive (exacerbating under-utilisation)
- customers are required to pay for stranded or significantly underutilised assets
- jurisdictional government policies require under-utilised assets to remain operational to supply isolated customers

This risk is medium to high in scenario 2 and high in the scenario 3 ‘death spiral’ where there are large numbers of small customers with embedded generation and storage, or completely disconnected from the grid. Further, this risk has been identified as the most critical to mitigate in terms of timing, such that it is addressed ahead of the key features of scenario 3 presenting.

Significantly under-utilised and/or stranded network assets adversely affect the efficient use of network services. Consumers will also pay an inefficient price for network services due to the cost of these albeit un-used assets being recovered through network tariffs which under scenario 3 will be spread across a declining customer base.

The economic regulatory frameworks currently provide network businesses with a range of options for managing the risk of asset stranding. For example, they are able to reduce their expenditure proposals with regards to future capital programmes and ask for a more rapid depreciation of the existing asset base. Transmission network businesses also have the option to seek removal of unutilised assets from the Regulatory Asset Base (RAB).

However, consumers ultimately bear the risk of these arrangements being inadequate to address the level of under-utilisation that could occur as the market evolves. This is a particular concern for scenario 3 which the stress test finds would render the current regulatory arrangements for recovery of capital costs unworkable.

Synergies recommended a specific review of the treatment of under-utilised assets and stranded assets under Chapters 6 and 6A of the NER noting the current arrangements are not aligned. They also recommended a review of how network businesses have sought to manage this risk in their most recent Australian Energy Regulator (AER) determination process, with the review to commence in 2017. However, officials consider the recommendations to be too narrow in scope such that other options for addressing this risk may be overlooked and does not wish to delay detailed investigations until 2017.

Recommendation: Assess whether the current frameworks appropriately allocate the risk of network under-utilisation and asset stranding and, if not, whether the regulatory frameworks need to be amended (including the removal of regulation if appropriate)

2.2.2 Networks fail to adapt to a decline in the regulated electricity network services market

This risk relates to the potential that network businesses will not sufficiently change their approach to service delivery despite fundamental changes in their operating environment, in particular competition from alternative sources of supply. Specific risks identified by the stress test include the potential for network businesses to run down network assets with the intention of exiting the market, or finding it increasingly difficult to co-ordinate efficient provision of the network service, given strong competition from third party service providers.

The implication for delivery of the NEO is the potential for the quality, reliability and security of electricity network services to be adversely affected by network businesses delaying or reducing new investment.

The stress test found that this risk is highest under scenarios 2 and 3 where strong growth in alternative services is occurring. It notes that network businesses may struggle for many reasons including internal cultural barriers, aggressive marketing by alternative service providers or because of regulatory impediments.

The stress test ultimately finds adaptation of network businesses is largely a commercial issue and notes the most important issue for policy makers with regard to this risk is to

ensure the regulatory framework does not contain significant barriers to network businesses adapting. Synergies recommended monitoring this risk given an absence of clearly identifiable regulatory barriers at this time.

In this regard, while the regulatory framework may not contain significant barriers to network businesses adapting, officials are concerned it may create poor incentives for the network businesses to change the way they create value. That is, to the extent network businesses do continue to invest in their assets, the guaranteed rate of return on the RAB could create an overwhelming incentive for network businesses to continue focussing on building new network over and above other more efficient technology based solutions. This could be to their long-term detriment given expectations around the growth of alternative services and the attendant risk of under-utilisation and asset stranding (see below).

Work is currently under way to improve incentives for more innovative investment in demand management as an alternative to network infrastructure. However, officials consider a critical question relates to the comparative proportionality of the RAB incentive compared to the measures in place to ensure that capital investment is efficient and appropriate, and all viable means for meeting the investment need are considered.

Recommendation: Assess whether the current regulatory balance between provision of a regulated rate of return on the Regulatory Asset Base (RAB) to incentivise investment in the RAB, and other incentives in the framework will continue to deliver the National Electricity Objective (NEO)

2.2.3 Weak incentives exist for networks to innovate in the provision of electricity network service

This risk relates to networks failing to innovate in the provision of network services. The stress test found there are two major factors that could contribute to this risk.

Firstly, the capability and/ or willingness of networks to pursue emerging technologies could be weak due to cultural barriers that tend to favour building infrastructure to meet service requirements reflecting the type of business network service providers have historically been required to provide. Secondly, the regulatory framework could create weak incentives for networks to innovate in the provision of network services through the prescriptive way in which opex, capex and other revenue assessments are undertaken.

The stress test found this risk to be medium in terms of consequence and probability under scenario 2, given innovation could be used as a defensive strategy in an environment where alternative service providers are seeking to take market share. The risk was high in scenario 3 because innovation will be critical to networks maintaining their competitiveness.

Low levels of innovation are contrary to facilitating dynamic efficiency in electricity service provision. In terms of NEO impacts, consumers may not gain the full benefits of new technologies that could improve the quality and reliability electricity network services.

The incentives to innovate are likely to be important under all scenarios because of the opportunities available to optimise regulated network service provision through greater application of new technologies. Synergies recommended a review, commencing 2017, to assess likely innovation in network service provision in 2015-2020 by looking at the handling of innovation in the current round of AER determinations. However, officials consider there would be benefit in approaching the AER before this time for advice on potential ways to mitigate to this risk.

Recommendation: Examine with the AER whether the Rules are flexible enough to encourage network innovation

2.2.4 Development of competition in unregulated alternative service markets is inhibited

This risk relates to the potential for network businesses to use their market power to hinder competition in alternative service markets to maintain the dominant role of providing traditional network services for consumers of electricity.

The stress test found there is a strong incentive for networks to hinder competition in alternative services in scenarios 1 and 4 where network service provision remains dominant. The materiality of this risk is low however based on the assumption that network businesses actions will not be the key determinant of how these markets develop. However, it was noted the network businesses are uniquely positioned to impose restrictions on their competitors by imposing unreasonably stringent technical and/or safety conditions for connection to the network.

In scenario 2 alternative services are emerging as a more prominent threat to the traditional service, so the probability of network businesses using their market power to hinder competition is medium to high. However, in scenarios 2 and 3 new services are being provided in ways that complement the electricity networks and so the materiality of the risk is lower reflecting potential for network businesses to recognise the opportunity to improve the network service by leveraging new technologies.

As above, the implications for the NEO of this risk is that consumers may not gain the full benefits of alternative services that could improve the quality and reliability of their electricity services, including the ability to better manage their electricity use.

Synergies did not recommend specific work to address this risk. However, officials consider it important to ensure that network businesses' connection conditions are fair and reasonable so alternative service providers can offer competition resulting in efficient costs.

Recommendation: Explore the nature and causes of network businesses market power in the context of alternative service providers

2.2.5 Weak incentives exist for networks to enter alternative service markets

This risk relates to networks potentially being unable to enter and/or compete effectively with new providers in alternative service markets.

The stress test found that the regulatory framework could hinder a network business's entry into alternative services markets, particularly under scenarios 2 and 3, due to the way in which ring-fencing arrangements are applied, and to a lesser extent due to cost allocation and shared asset guidelines. It was also found that jurisdictional regulations could put constraints on network businesses competing in alternatives services markets, for example, through provisions preventing distribution business holding a retail or generation licence, unless the generation is used to support the network service.

Alternative services may allow network businesses to improve the quality and reliability of network services, including achieving service obligations in the most cost-effective way.

The AER will publish ring-fencing guidelines by July 2016, which should provide a level playing field for competition while not imposing unnecessary costs or burdens on network businesses delivering a cost effective solution. However, there may be unintended barriers at either the national or jurisdictional level that could hinder networks offering alternative services. Synergies recommended a review of the regulatory treatment of battery storage and embedded generation as services that could be provided by the network businesses. Given some barriers may be in the AER's exercise of its discretion, officials consider a first step should be to consult with the AER.

Recommendation: Consider whether there are regulatory barriers to network businesses competing on a level playing field with alternative supply options

2.2.6 Technology diffusion in alternative services markets is delayed or distorted

This risk relates to the potential for the economic regulatory framework to limit the efficient deployment of alternative services to support the grid, reflect consumer choice and/or as an off-grid solution to electricity supply requirements.

With respect to the regulatory framework, this risk primarily relates to questions around the timeliness of regulatory recognition of alternative service markets, particularly the potential for the AER through its service classification decisions to hinder new technology based alternative services e.g. reclassifying services as unregulated could promote competition in alternative services markets.

The implications for achievement of the NEO are that consumers are unable to access the benefits of new technologies that could improve the quality of the electricity network service and/or the alternative services that they demand, including technologies that may assist to better manage their electricity use.

Despite this risk being low to medium under all scenarios, Synergies recommended a review in 12 months of the responsiveness of the regulatory framework to new technology development. However, noting this risk is primarily linked to decisions to be made by the AER, it is proposed to consult with the AER regarding how it is managed.

Recommendation: Examine with the AER whether the service classification framework is fit for purpose such that it will not hinder technology diffusion

The following risks were identified that are outside the scope of chapters 6 and 6A of the regulatory framework.

2.2.7 Retail and network prices for electricity network services are not cost reflective at the individual customer level

This refers to the risk that retail prices will not be fully cost reflective from a whole of system perspective, discouraging efficient consumption and continuing inefficient cross-subsidies.

Distribution networks may be constrained by jurisdictional requirements from implementing cost reflective tariffs. For instance, jurisdictional community service obligations may weaken or preclude locational network pricing signals, with flow on effects for technology diffusion and growth in alternative services

The stress test found that the nature of this risk differs under each scenario:

- Under scenario 1 it relates to the risk that network price signals will not be passed through in retail tariffs – as this is a commercial decision for retailers or subject to jurisdictional governments retail prices oversight
- Under scenario 2 it relates to questions around whether cost reflectivity in network tariffs is actually achievable in an environment where an increasing number of consumers are accessing off-grid options
- Under scenario 3 it relates to the fact that strong alternative service markets is highly likely to make the distribution and transmission pricing rules unworkable – the level of grid defection and resulting asset under-utilisation/stranding contributes to this
- Under scenario 4 it relates to the risk that government policy/regulatory intervention results in network (and retail tariffs) that are not cost reflective

The stress test found the materiality of this risk is greatest under scenario 3 due to the disruption to networks' business models and relatively large number of customers only using

the grid for back-up implying a much smaller customer base to recover network costs. The result would be, as found in the stress test, that the current distribution and transmission pricing rules become unworkable.

The AEMC has made new rules that will affect a transition to more cost reflective distribution network pricing, based on a new pricing objective and amended distribution pricing principles to start no later than 2017. Officials will monitor the implementation of these new rules in relation to the identified risk.

Synergies recommended a review of the nature of distribution and pricing rules that would be appropriate under market conditions consistent with scenario 3, given the stress test finding that the current arrangements would become unworkable and require a fundamental re-think. Officials are mindful that the Council has a strong commitment to cost reflective pricing and the review proposed by Synergies would undermine this. While noting Synergies' advice that it will be difficult to revise policy once scenario 3 conditions emerge, officials consider a review of this fundamental nature should be deferred until there is clearer evidence of scenario 3 potentially becoming a reality.

Officials note that Synergies also recommended a review related to electricity consumer education to support the implementation of cost reflective network tariffs. This has already been addressed through the Energy Council commitment to consult with industry on opportunities for governments to assist in supporting consumer understanding and uptake of new tariffs. However, officials do recognise that work is required to identify whether current regulatory arrangements around retail prices are appropriate in the future, given the shift towards greater cost reflectivity in energy policy.

2.2.8 Disincentives to make new investment in regulated network services threaten security of supply of the interconnected electricity system

This relates to the risk that network businesses will have a reduced willingness to invest in the network or will delay investments such that infrastructure requirements are not delivered in a timely manner.

The stress test found that this risk is high under scenario 3 in terms of materiality and probability given relatively large numbers of consumers only using the network for back-up supply and a more volatile electricity supply, including the potential for problems in meeting peak demand due to growth in EV load.

The stress test has identified that a more volatile electricity supply could require high levels of investment in networks and jurisdictional reliability standards may not accommodate a more volatile decentralised electricity supply. Where the risk exceeds the likely gains for the businesses, it could result in the network businesses not making necessary investments to maintain the security of the system. The risk is highest in scenario 4 due to government policy directing investment in, and connection of, new renewable generation.

Because they are a key driver of network spending, jurisdictional reliability standards are likely to pose the biggest risks, particularly in scenarios 3 and 4 where decentralised and renewable generation is most significant.

Synergies recommended a review be conducted, no later than end 2018, of the long-term investment outlook for provision of network services, taking into account the impact of likely market developments and likely investment requirements beyond 2020. However, officials consider it likely that other work being proposed by this review and the New Products and Services project will start to highlight the nature of the investment environment. Other recommendations in this strategic assessment project around the appropriateness of the RAB and balance of incentives it provides also capture consideration of this risk. Accordingly, officials do not consider a review of this specific nature is necessary at this time but will monitor the situation for signs of scenario 3 or 4 emerging.

2.2.9 Obligations on networks to connect and supply (including to maintain supply to existing connections) are uneconomic

This risk relates to the nature of the obligations imposed on networks to connect consumers to the grid on request, given the growing attractiveness of off-grid supply under some scenarios. It also extends to the obligation to maintain supply to existing connections, which under scenario 3 in particular could lead to isolated customers remaining connected to significantly under-utilised parts of the network (i.e. network acting as facilitator of 'supplier of last resort'). These obligations are set out in both the NER and in jurisdictional requirements.

Under scenarios where competitive alternatives to the network service emerge, networks may no longer be the primary electricity service for some consumers or communities. This would change the basis of connection to the network, raising questions about the nature of the obligation to connect placed on network distribution businesses, as well as whether consumer protections should stay the same in an islanded network.

In light of these questions, Synergies recommended reviewing the nature of connection and supply obligations that should appropriately be imposed on distribution networks in an environment when the electricity network service is no longer the primary electricity service. They also recommended a review of reliability standards that would be appropriate in such an environment. Officials note that reliability standards remain a matter for jurisdictions.

Issues have been raised in the context of both the stress testing and New Products and Services work streams around current obligations on network businesses to maintain supply to existing connections, and whether in the future network businesses will be able to offer least cost options to these customers, including off-grid options. Although the New Products and Services work did not make specific recommendations on this issue, officials consider there is value in exploring this issue further and it will be taken up as part of the strategic work programme.

2.2.10 Policy around system optimisation compared to individual choice

Changes underway in the electricity sector mean that there is a growing need to consider electricity policy from a whole of system perspective, recognising that delivering the NEO through regulation may not always be compatible with the trend towards promoting individual choice. Policy, therefore, needs to make sure that consumer empowerment and system efficiency policy objectives are aligned.

There is merit in exploring from a strategic perspective the role of energy reform in the context of how the regulatory framework and the market platform design might be reformed to promote system optimisation and whole-of-market benefits while still allowing for individual choice.