Roadmap Report Feedback Summary

Reflecting the strong engagement in workshops and webinars throughout the process there has been a strong response from stakeholders to the release of the Electricity Network Transformation Roadmap Key Concepts Report in December 2016.

Since the release of the Key Concepts report, the Roadmap team has taken part in over 30 briefings across all major capital cities and regions with more than 300 participants and we also received a range of formal submissions.

The final report is the product of more than two years of collaborative work carried out by Energy Networks Australia and CSIRO. More than 200 different industry representatives contributed at over 14 workshops and webinars held as part of the public consultation process. Information on the Roadmap has been viewed more than 30,000 times during the development process.

Much of the feedback received, both during the development process and the final consultation period has been positive about how the Roadmap has engaged with diverse stakeholders; the focus on a pathway for industry transformation; and the approach to building an evidence base of robust analysis and research.

Based on constructive feedback, the Roadmap Reports have been updated to address points in several areas where it was identified that the Roadmap could be strengthened or, in some cases, simplified. The most substantial changes that were made in response to feedback received are summarised below. A full summary of feedback received, and the responses adopted, is included in a table that follows below.

Expanding on the role of retailers in price reform

Feedback was received that indicated that the discussion of pricing and incentive reform needed clarification about what the Roadmap's position was on the role of retailers in small customer pricing and incentive reform. Broadly;

- Some stakeholders interpreted the Key Concepts report as proposing that cost reflective network tariffs must be "passed through" automatically to end use customers, as the only approach to managing this pricing transition, and;

- If so, these stakeholders considered the Roadmap Key Concepts report may underestimate the challenges for this type of implementation impacting the potential benefits in the Roadmap

While this interpretation was not intended, the Roadmap project team recognised that a clearer discussion of the role of retailers in the pricing reform process should be included. To improve the clarity of the important role of retailers in tariff reform, the Final Roadmap report now highlights that:

- Retailers play a core role in tariff reform and should have the flexibility to determine how they want to develop and innovate their customer facing price structures recognising that:

  – Retailers may choose to bundle new tariffs and include other services, and

  – Some customers will have a preference for simpler tariff structures and Retailers will continue to innovate to provide products suiting those needs while responding to, and optimising, network charges in a similar way to other input costs

- Retailers already have considerable experience in managing the distillation of several generation pricing products into a simpler retailer product for customers

The Roadmap team tested this approach to clarification with key stakeholders.

Other feedback on Pricing Reform

The Key Concepts report identified the need for cost reflective network prices for small customers to be implemented by 2021, enabled by metering deployment. During stakeholder briefings, the Roadmap team received feedback from some government representatives that the Roadmap timing on pricing reform was not ambitious enough. Given the prerequisites for successful reform, the Roadmap program team has *not* made changes to adjust the timing of proposed tariff reform, but the program considered this as evidence of stakeholders support for the electricity industry to progress this important milestone.

A related point is that it is apparent that many stakeholders were not aware that distribution networks generally do not have good visibility of their networks below the substation level. Addressing this issue will be an essential early step for networks and industry to enable the industry to move to the establishment of more sophisticated transactions that reflect more localised constraints.

Clarifying the scope for avoided network expenditure

Some stakeholders questioned the savings that could be achieved in network expenditure given the current environment. With low, or declining growth in peak demand in some states, and with significant recent investment in capacity in others, stakeholders queried whether the opportunities to avoid network augmentation to deliver the savings may be limited.

This query in part reflected an interpretation that the savings were due to avoided augmentation expenditure alone. The final Roadmap Reports have been updated to clarify that, in the modelling undertaken for the roadmap, the avoided network expenditure in the shorter term is mostly reduced replacement expenditure (i.e. building networks back smaller).

In the longer term, as peak demand starts to grow relative to capacity in some states, the major opportunities are both in reduced REPEX (replacement network investment) and AUGEX (network investment in new augmentation). The final reports have been modified to ensure the Roadmap does not over-emphasise avoided augmentation benefits to better reflect the results of the Roadmap modelling.

Climate policy

At the launch of the Key Concepts Report in December, the Roadmap program's recommendation of an emission intensity scheme received particular attention. In the Roadmap Final Report, this position is maintained.

The Roadmap's objective is to deliver lower greenhouse gas emissions, reliably and at lowest cost to customers. All of the available modelling in this area demonstrates that a stable, emissions intensity, baseline and credit scheme is the most effective way to achieve these outcomes.

It is worth noting that since the launch of the Key Concepts report, it is clear that the Roadmap is not alone in supporting this view, with other organisations also recommending the same approach.

However, a key objective of our program is that the final Roadmap needs to be resilient to alternative futures, and the program recognises that an emission intensity scheme might not ultimately be the policy mechanism that emerges.

To address the possibility that an alternative policy may emerge the Final Report text has allowed for that possibility but emphasises the principles that any alternative policy should meet. The Roadmap Program suggests that any carbon policy should:

- Be stable

- Meet the required target

- Be technology neutral, and

- Keep costs to customers low

Regional modelling

While broadly supportive of the Roadmap findings, several stakeholders sought to advise us of how local circumstances might impact the extent to which the findings apply to their State.

To address this feedback, a new Appendix has been added to the Roadmap report providing more detail on State and regional modelling.

For simplicity, the Key Concepts report focussed mainly on national level outcomes when discussing the impacts of the various scenarios and issues explored. However, we conducted the modelling and analysis at regional scale, typically state and zone substation level, and outcomes at that level are, not surprisingly, more diverse.

The major implication of the diversity of regional results is that some of the Roadmap milestones and actions, particularly the issue of timing, will need to be considered in the context of the region in which they are implemented. The state analysis highlights emergent issues in some states or regions, which may require modified timing of actions to suit local conditions.

This new section does not change the national results represented in the Roadmap Reports.

Detailed Roadmap Report Feedback

The following table provides a summary of feedback received on the Electricity Transformation Roadmap Key Concepts Report, including the issues highlighted above, with an explanation of what action was taken to address and incorporate feedback into the Final Roadmap.

	Feedback	Comment/Suggestion	Response or Action
High level Roadmap feedback	Timing of Milestones	Timing of milestones needs to be flexible as not all networks and jurisdictions will need to implement *All* roadmap actions as listed in the roadmap. Feedback asked: • Do all networks have to follow all actions in detail? • What are next steps for implementation and how will milestone and action timing be monitored? • Flexibility in the roadmap is required to enable each network and jurisdiction to progress market reform in a manner that best suits their resourcing levels, regulatory and jurisdictional obligations, network constraints and customer needs. • Networks may support but not actively participate in individual milestones, or may participate earlier or later than the timelines suggested in the roadmap.	• Strengthened the text in the executive summary, pricing and incentives, grid transformation and network optimisation to emphasise that the Roadmap timings are a guide for industry wide transformation and that timings will differ across jurisdictions and networks due to differences in demand growth, DER adoption, customer needs and past investment cycles. • Some changes in the pricing and incentives section to recognise that broad based price reform will, for some jurisdictions, be initially more about achieving customer equity and reducing volume signalling than demand signalling to address constraints • Creation of an implementation plan that addresses differences amongst businesses while monitoring all actions and timings to maintain progress of roadmap recommendations. Network rollout of solutions would be based on individual network business needs.
	Governance of Roadmap Implementation	Several stakeholders asked what the governance process would be for Roadmap execution and monitoring of Roadmap progress	• Creation of an Implementation plan to provide an oversight framework, which envisages both networks and industry stakeholders guiding roadmap actions and timings.
	Identification of opportunities for the procurement of DER services as an alternative to grid augmentation	• Several stakeholders highlighted that the language in the report about $16BN of benefits wasn't clear and questioned the modelling supporting this assertion • Discussions with several stakeholders also identified there was not wide knowledge that networks have very limited monitoring below the substation level. • Networks have likewise highlighted the difficulty in accurately identifying opportunities to utilise DER as a firm alternative to	The modelling was carefully reviewed by a number of industry experts, and this highlighted that the benefits from a more dynamic procurement of customers DER are realisable, but the report has been adjusted to make it clearer that this is not achieved solely through avoided augmentation but also considerably through reduced replacement of aging assets. It is also noted clearly in the Roadmap Report that realisation of these benefits will happen in a localised fashion dependent on jurisdictional differences between states and also dependent on networks identifying localised network drivers, and hosting capacity challenges triggered by customer adoption of new technologies at different points on the network.

		traditional network augmentation. This is due to: a) Lack of capacity constraints identified within next 5 years and in many cases out to 10 years b) Lack of visibility at lower ends of network to accurately identify or value future DER driven network issues	
Program Evaluation & Benefits	DER adoption assumptions	How do DER adoption rates and average sizes of systems vary across different jurisdictions? Is more data available?	Further data analysis was conducted and made available in the latest report through the addition of a regional modelling chapter addressing state-by-state drivers and differences. Increased systems sizes are important aspect of the projected distributed energy resources capacity levels, which was not previously emphasised
	EV adoption benefits	Does the roadmap benefit of $101BN reduction in system expenditure include the costs to deliver extra capacity for energy to manage additional EV charging? Is it possible that the roadmap comparison is probably better than that as the Roadmap expenditure covers a significant amount of transport energy through the take-up of electric vehicles? That is, the current comparison is potentially not "like for like" in terms of the services provided.	It is true that the counterfactual is a 300TWh system and the roadmap scenario is a 350TWh system by 2050. Thus the roadmap sees the electricity grid deliver more energy. However, the pricing reform also results in big differences in the peak demand of the counterfactual and roadmap scenarios with Electric Vehicles being incentivised and orchestrated in such a way that almost no peak demand is added through the Roadmap scenario. It is therefore impossible to reach a like for like situation. However, because we examine costs from several angles (total cumulative expenditure, prices and bills) we are able to avoid relying too heavily on one financial indicator. Prices and bills are an indicator of unit system costs irrespective of system size. Also note that we separately model every combination of with and without both price reform and EVs in two supporting reports which is why we can be confident the system size is not overly impacting the results

Customer Oriented Networks & Customer Safety Net	Future Customer segments	Stakeholders asked if there had been enough thinking about the relative size of the Consumer Groupings discussed in the roadmap, being "Empowered, Active, Passive, Vulnerable."	Rough estimates of the potential size of the customer groupings were calculated but were not pursued further or included in the report due to the inability to access load curve data that mapped back to the demographic characteristics of those groups. The Roadmap instead used some customer categories based on simple household demographics that were available (e.g. number of occupants and age). However, it is acknowledged that further work needs to continue to be undertaken with customer advocacy bodies to understand the impacts and required protections for increasingly diverse groups of customers.
	Customer protections and engagement activities	Stakeholders highlighted that further work is required to ensure customer protections are effective and supported through appropriate customer engagement activities.	The Roadmap program acknowledges that more work is required to review and ensure customer protection frameworks and concessions are appropriate for different groups of customers. This will also be supported through ongoing customer engagement activities.
Carbon Policy	Carbon policy and Emissions Intensity Trading Scheme	1) How will the Roadmap report deal with the political issue of Emissions intensity trading scheme given Government announcements at the time of the concept launch? 2) What is the role of clean coal technology in our generation mix projections?	The Roadmap report continues to recommend an emission intensity baseline and credit scheme since all available evidence finds this is the best outcome for customers. However, should that policy formulation not be adopted we recommend that the principles of technology neutrality, least cost to customers and stability be applied to any alternative carbon policy. Addressing 2) clean coal technology does not play a large role but could under the right circumstances. Again, this goes back to the Roadmap's commitment to technology neutral policies and balanced scorecard outcomes.
Incentives / Tariff Reform	Pace of Tariff reform	Several stakeholders questioned the political feasibility of the pace of tariff reform outlined in roadmap. While other stakeholders suggested that tariff reform pace is not ambitious enough. Feedback generally acknowledged tariff reform drivers but highlighted the critical role of retailers in providing supporting infrastructure and in enabling customer uptake of cost-reflective tariffs.	After considering feedback it was decided to maintain the pace of tariff reform outlined in the roadmap. This is supported by Roadmap modelling which shows the impact that failure to accelerate uptake of cost-reflective tariffs will have from mid-2020's onwards. In addition, the timing of tariff reform outlined is necessary to address timing of the next round of TSS submissions by electricity networks. Addressing these comments also included adjusting wording around logic of timing for grid modernisation, smart meter rollout and realisation of network efficiency benefits that are dependent on tariff reform, data provision and supporting grid capabilities.
	Tariff Reform reference to 'Demand Tariffs'	Several stakeholders noted that 'Demand based tariffs' may not be the most appropriate form of cost-reflective tariffs in all cases given some instances of limited forward network growth.	Used 'cost reflective' terminology instead of 'demand based' to recognise that while this is the most popular structure, it is not the only approach which networks are considering to suit their local circumstances.

	TSS timings and restrictions in enabling tariff reform	TSS processes were designed to ensure certainty and flexibility for the market, and pushing through changes from what has been agreed could be seen to retreat from this certainty	Noted in Roadmap that timing of early tariff reform actions is aligned with current TSS submissions, and will also lay ground for network TSS submissions from 2020 onwards
	Pass through of Network price signal	It was noted that the Roadmap did not appropriately address the role of Retailers in packaging network price signals to customers.	Emphasised that more efficient price signals could be achieved by pass through to customers or by customer agents (i.e. retailers). Modified text notes that retailers will play a significant role in managing how new cost-reflective tariffs are introduced to customers. Retailers should have the flexibility to either pass through tariffs directly (noting that customers have the right to opt-out) or, noting customer preference for simpler tariffs, innovate how they package up electricity costs and manage the risks associated with sufficient revenue collection on behalf of networks (just as they currently manage risks around generation prices).
	Tariff reform for export charging	Suggestion to include explicit solution to export tariff for customers where export exceeds import	No change made. The intention of Milestone 2 of the Incentives chapter is to keep innovative new solutions/review broad with further investigation to explore suitable new tariff structures.
	Social Tariff	Suggestion that social tariff should be proposed as solution to protect vulnerable customers in rapid tariff reform environment	No change. Customer safety net recommends review of customer protections and concession frameworks and social tariffs is one option that should be considered as part of this rollout rather than being prescriptive.
Regulatory & Policy frameworks	Integration of DERs, carbon policy and system security	Feedback from stakeholders indicated that greater attention should be paid to supporting the capability of decentralised DER in maintaining system security.	No changes made - Several aspects of the report align directly to the feedback, including the need for regulatory design to take into account a high DER future, and locational DER valuation is proposed as a high priority stream of work flowing from the roadmap report. The report explicitly supports the integration of carbon and energy policy.
	Micro-grids	General support was received for removal of barriers to micro-grids being used, where cost-effective, as an alternative to traditional network augmentation.	
	Trialling new regulatory frameworks	Some stakeholders noted concerns about the challenges of addressing the outlined scale and timing of proposed trials for new regulatory frameworks	Noted that the proposed timing of trials for new regulatory frameworks (such as TOTEX) were suggested initially on small and controlled scales only where it made sense for networks to undertake such trials.
System Security	Interconnectors and RIT-T	The Roadmap could provide more guidance on Interconnectors and role of Transmission networks more broadly in supporting grid stability given increased VRE penetration.	Strengthened the discussion of the need for consideration and assessment of Transmission network role in System Security and Interconnector capabilities in providing a reliable and cost-effective form of grid stability/security with increased VRE penetration.
	System Strength definition	Noted that Roadmap often uses term system 'weakness' to define lack of	Replaced with 'lack of system strength' and refined definition of 'system strength.'

		system strength which is a more well defined term	
	System Strength considering changing Inertia	Stakeholders noted that the Roadmap wording did not clearly address the challenge of maintaining system stability as inertia reduced.	Wording in the System security section modified to highlight that modelling conducted noted solutions could feasibly be implemented to support growing penetrations of VRE and non-synchronous generation sources.
Intelligent Networks and Platforms	Timing of Grid Modernisation activities	Several stakeholders noted that the timing of early grid-modernisation trials and actions seemed overly ambitious.	Updated Roadmap content to note that such trials are necessary to support identified need to increase visibility of lower levels of network and to support increase data availability to networks, AEMO and customers alike. However, it is also noted that not every network will need to advance this capability at the same pace, and early actions are only required where networks are experiencing high localised penetration levels of DERs. The timing of these grid-modernisation actions is also deliberately designed to support improved network services to customers and to support delivery of new products and services by a range of new market actors and retailers.
	Ongoing role for networks in behind the meter relationships with customers	Network businesses have highlighted the need for networks to play an ongoing role behind the meter, both to ensure efficient operation of network and to insource DM solutions where more cost-effective solutions are not available.	Strengthened wording to emphasise that networks should continue to play a behind the meter role where efficient to do so (e.g. insourcing DM to address constraints) and where important for network to ensure orchestration of DERs to maintain network stability and security. In addition, reinforced text to highlight that development of NOMs happens in progressive manner, initially tested in localised areas where networks are experiencing issues, and only expanding based on proven examples of appropriateness of DER services in addressing emerging network challenges.
	Network constraints addressed by NOM development	Increasing the hosting capacity of the network to support the projected levels of DER is a significantly larger problem than the opportunity to leverage DER to avoid (traditional) network expenditure. A lot of Roadmap narrative gives the impression that the latter opportunity is potentially quite large where it may not be for many networks.	Ensured the language of report reflects the need to address network capability to address increasing penetrations of DER at localised equally with traditional network capacity driven constraints.