



Oakley Greenwood

Peer review of the willingness to pay research submitted by SAPN

prepared for:
Australian Energy Regulator



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1. Review background, requirements and limits

1.1. Background of the review

In accordance with the recent requirements of the regulatory process, SA Power Networks (SAPN) developed its Consumer Engagement Program (CEP), the design of which was completed in 2012. The CEP was structured into the following three stages:

- Stage 1: Research - which included:

- Preliminary Stakeholder Perception surveys
- Stakeholder and Industry Consumer Workshops
- An Online Consumer Consultation Survey
- Bilateral Engagement with Key Stakeholders

The outcomes and insights of these consumer engagement activities served as an input to Stage 2.

- Stage 2: Strategy - which included:

- Targeted Strategic Workshops
- Another round of Stakeholder and Consumer Workshops
- Further Bilateral Engagement with Key Stakeholders
- A Targeted Willingness to Pay Survey
- Development of a set of Directions & Priorities based on the information gained from Stage 1 and the activities above in Stage 2
- Conduct of a set of Directions & Priorities briefings and a formal Directions & Priorities Consultation process
- The development and conduct of a Service-Price Research survey with input from the Directions & Priorities consultation process
- Development of the SAPN Regulatory Proposal, which was submitted to the AER in October 2014.

- Stage 3: Regulatory - which commenced with the submittal of the Regulatory Proposal and will continue through to October 2015 when the AER's Final Determination on SAPN's Regulatory Proposal is scheduled to be published.

1.2. Requirements of the review

The AER has commissioned Oakley Greenwood to peer review the willingness to pay (WTP) research that was commissioned by SAPN. The AER specified that the peer review meet the following requirements:

- *Provide a report that peer reviews SAPN and its consultants' willingness to pay findings and the assumptions and methodology that underpinned the research. In particular, the report should comment on:*
 - *the robustness of the research including the assumptions or methodology used and the accuracy of its findings;*
 - *the strength of the conclusions that can be drawn from the results of the survey;*
- *In undertaking this review, have regard to:*

- *SAPN Targeted Willingness to Pay Research - Research Findings and supporting material listed in attachment A of this RFQ submitted as part SAPN's regulatory proposal in October 2014;*
- *supporting material listed in attachment B of this RFQ provided by SAPN in March 2015 in response to an information request from the AER.*

The supporting materials listed in Attachment A were the following:

- SAPN *Regulatory Proposal*- Chapter 6
- ORC International: *SAPN Customer Management Model Study - regulatory summary*, February 2013 (attachment 6.1)
- Deloitte: *SAPN Stage 1 Stakeholder & Consumer Workshop Report*, July 2013 (attachment 6.3)
- Deloitte: *SAPN Stage 1 Online Consumer Survey Report*, July 2013 (attachment 6.5)
- Deloitte, *SAPN Stage 2 Stakeholder & Consumer Workshop Report*, December 2013 (attachment 6.7)
- The NTF Group: *SA Power Networks Targeted Willingness to Pay Research Findings*, July 2014 (attachment 6.8)
- The NTF Group: *Estimating Community Willingness to Pay* - February 2009 (supporting document 6.12)
- SAPN: *Discussion Paper - Directions for vegetation management, SAPN's long -term plan for managing trees near power lines*, March 2014 (attachment 6.9)
- Local Government Association of South Australia: *Submission - Directions for vegetation management, June 2014* (supporting document 15.1)
- SAPN: *The South Australian Distribution Network, Directions and Priorities 2015 to 2020*, May 2014 (attachment 6.10)
- SAPN: *Directions and Priorities 2015 to 2020 consultation - submissions*, June 2014 (supporting document 6.11)
- The NTF Group: *Service-Price Research Findings*, October 2014 (attachment 17.3)

The supporting materials listed in Attachment B were:

- SAPN RE: AER SAPN 031 - Consumer Engagement, March 2015
- The NTF Group *Service-Price Research Questionnaire*, October 2014
- The NTG Group *Targeted Willingness to Pay Survey Instrument*, undated
- Deloitte, Stage 1 *Online Consumer Survey Questionnaire*, 2013

1.3. Limits and caveats

It should be noted that the review was limited to the documents above. The review did not have access to the datasets that resulted from the surveys that were conducted throughout the course of the CEP.

2. Findings

This section of the review examines:

- The genesis of the WTP study that was commissioned by SAPN and how it fits in with the rest of the SAPN CEP,
- The robustness of the research, including the assumptions and methodology used, and the accuracy of its findings, and
- The strength of the conclusions that were drawn from the results of the survey.

2.1. Genesis of the WTP study

The WTP study commissioned by SAPN as part of the Stage 2 Research program was an addition to the CEP. When the CEP was first designed, and indeed even when Stage 2 was commenced, a WTP study was not contemplated as part of the research¹.

The decision to undertake the WTP study appears to have been made in the following steps:

- The Stage 1 Research (Stakeholder and Industry Workshops and Online Survey) identified 13 key ‘insights’ concerning what SAPN’s customers want.
- It also identified ‘the community’s top three safety and reliability initiatives’ as being:
 - Inspecting, maintaining and upgrading the network
 - Bushfire prevention activities
 - Hardening the network against lightning and storms.
- At the commencement of Stage 2, a workshop was held in which Deloitte, who had conducted the Stage 1 research, presented the findings from the Stage 1 customer workshops and surveys to 30 SAPN business leaders. Those business leaders then “workshopped a range of services and opportunities that might deliver on customer expectations, noting that many of the customer insights were directly relevant to SA Power Networks’ core business activities. These opportunities were then further considered and analysed by the responsible business areas to develop plans and refine approaches”².
- That process identified “two key areas – undergrounding power lines and managing vegetation clearance”³ as being of particular relevance, given that they are elements of SAPN’s core business and according to Deloitte, “were topics of considerable public interest during the Stage 1 engagement activities”⁴.
- Two Targeted Strategic Workshops were specially designed and added to the CEP to explore these two topics in further detail, one workshop for each topic.

¹ This is evident from the fact that Figure 1 on page 5 the *SA Power Networks Stage 2 Stakeholder and Consumer Workshop Report* (December 2013) makes no mention of the WTP study (or the Targeted Strategic Workshops). The Stage 2 Stakeholder and Consumer Workshops were the first activity in Stage 2, and Figure 1 in the report about those workshops presented a schematic diagram of all activities planned in each of the three stages of the CEP.

² SAPN, *Regulatory Proposal 2015-20*, October 2014, p 64.

³ Ibid.

⁴ Deloitte, *A Power Networks Stage 2 Stakeholder and Consumer Workshop Report*, December 2013, p 19.

- The objective was to “foster community thinking and develop a shared citizen-focused interest in the future of the South Australian electricity distribution network. SA Power Networks wanted to understand what consumers value and how they prioritise alternative activities and strategies concerning vegetation management and undergrounding, in addition to exploring a range of issues, tensions, and trade-offs to generate further consumer insights”⁵.
- Each of the workshops was attended by “customers from stage one workshops, external parties with relevant expertise on the topic as well as key SA Power Networks personnel with responsibility for the relevant business area”⁶. A total of 24 consumers participated across the two groups.
- SAPN stated that “In each workshop, participants were provided with objective information about the respective topic including regulatory and safety obligations, the cost of undergrounding power lines and the annual cost of vegetation clearance. Workshop participants explored perceptions of the present situation, evaluated possible alternatives with the required commitments (including the consequences) of implementation in order to develop a future vision”⁷.
- According to SAPN, “the principles and proposals for undergrounding and vegetation management [that came out of the workshops] translate to a range of investment levels [and] SA Power Networks considered it prudent to test consumers’ Willingness to Pay using discrete choice modelling techniques”⁸.

It is clear, therefore, that the WTP study that was undertaken was not conceptualised - and should not be interpreted - as providing information on customers’ preferences or willingness to pay for anything other than the specific service levels and associated costs pertaining to the two service areas of undergrounding and vegetation management.

2.2. Robustness of the research

2.2.1. Assumptions

The assumption that the only services that needed to be submitted to WTP considerations were those concerning undergrounding of powerlines and vegetation management was addressed in Section 2.1. As noted, that assumption could lead to the view that these service areas are the only ones in which service level improvements are worth considering.

Other than that, the review did not find any assumptions in the WTP research that caused any concern regarding its methodological soundness or that would potentially compromise the validity of its results.

5 Ibid.

6 SAPN, op. cit., p 64.

7 Ibid.

8 Ibid., p 65.

2.2.2. Methodology, scope and implementation

Methodology

The SAPN WTP used a Discrete Choice Experiment (DCE) design in which different pairs of service options and their impacts on the quarterly bill of an average customer were presented to the respondent who was then asked in each case to select the option he or she preferred.

Figure 1 below provides an example of how the choice sets were constructed.

Figure 1: Example of the form of discrete choice question used in the SAPN WTP study

	MAINTAIN CURRENT Network & Service	IMPROVED Network & Service
Vegetation Management	Every year in HBFRA and BFRA trees and vegetation are inspected and cleared to prevent bushfire starts, power interruptions and damage to powerlines, and electric shock.	Current Service Offering plus Reduce fire start potential by removing inappropriate vegetation in approximately 8.0% of targeted areas (equivalent to 800km of powerlines) in HBFRA and BFRA . This option includes tree replacement activities.*
Undergrounding Powerlines	SA Power Networks continues to support limited undergrounding through the PLEC scheme. Undergrounding also occurs in all new residential subdivisions.	Current Service Offering plus Reduce fire start potential through targeted undergrounding of approximately 7.0% (around 375km) of powerlines in in HBFRA .
Change in your quarterly bill	Assume no increase to your current bill	Add \$8.60** to your average quarterly bill.
Choose	<input type="button" value="CHOOSE"/>	<input type="button" value="CHOOSE"/>

* In the long term, the cumulative reduction of inappropriate vegetation could lead to reduction in vegetation management costs.
** Includes GST.

Source: NTF Group, *SAPN Targeted Willingness to Pay Survey Instrument*, p 21.

Another option in the same series was comprised as follows:

- Removing inappropriate vegetation in approximately 5% of targeted areas (equivalent to 500 km of powerlines in High Bushfire Risk Areas (HBFRA) and Bushfire Risk Areas (BFRA))
- Targeted undergrounding of approximately 5% (around 270 km) of powerlines in HBFRA
- Add \$6.00 to your average quarterly bill.

In each case the customer was asked to choose the option they preferred, and in so doing expressed a preference for the specific service levels contained in the bundle and its price as compared to those in the other option. Analysis of the choices made across all survey respondents as the combinations of service attribute levels and price were changed allows the DCE approach to provide a preference function for the various service attributes, levels and prices.

However, the choice that is being provided is about inputs, not outcomes. Presumably, the objective of these service activities is to reduce the incidence of fires in bushfire risk areas. What is lacking is the relative reduction in fire risk that could reasonably be expected to result from the implementation of each service bundle as compared to the status quo. In effect, the respondent is being asked to choose between different cost levels without understanding what the benefit level is likely to be.

This problem also characterises the choice options posed concerning the number of traffic blackspots at which consumers would be willing to pay to underground electricity lines, and the frequency of tree trimming and the removal and replacement of inappropriate vegetation in relevant Non Bushfire Risk Areas (NBFRA) that consumers would be willing to pay for.

In these cases, there is no relationship between the relative amounts of money paid and:

- the likely reduction in traffic accidents and associated property damage and injury/death (in the case of the traffic blackspots), or
- the risk of fires and unplanned outages resulting from trees contacting or bringing down powerlines.

In each of these cases, the consumer is being asked to make a choice on either a best guess or emotional basis. The analysis will provide a result, but it will not necessarily be the result of a particularly well-informed decision.

The exception to this problem is the consideration of undergrounding powerlines to improve visual amenity. In this case, as there is no quantitative measure of improvement in visual amenity, the choice options are simply asking customers how much they would be willing to spend.

In the survey, however, this service area was part of the bundle for NBFRA that also included tree trimming and the removal and replacement of inappropriate vegetation. While those services have some level of visual amenity associated with them (particularly the frequency of tree trimming), having to choose between options that mix strictly visual amenity improvements with others that are primarily safety and reliability related again entails the problem of not including a measure by which the respondent can assess the relative improvement in an outcome based on a change in service levels and price.

Implementation

The following aspects of how the survey was implemented were entirely in accordance with standard practice:

- Sample size -- The survey was launched on the 17 January 2014 and a sample of 895 electricity customers was achieved by 17 February 2014. The WTP study did not provide information on the statistical validity of either the sample or the survey results. However, the sample size is likely to provide results that provide results at acceptable levels of statistical validity for the overall SAPN customer base.

Participants represented all ESCOSA reliability regions, though the samples in a few regions were very small making it impossible to draw statistically valid conclusions for those regions. This is not seen as a major flaw, but could have been overcome with enforced quotas in recruitment.

- Sampling frame -- A combination of two modes of recruitment were used in order to obtain a usable sample of SAPN customers in a timely manner:
 - Telephone recruitment via random number dialling, subject to known South Australian telephone number prefixes, and
 - Online panels.

The percentage of the sample that was derived from the two approaches was not provided in NTF's *SA Power Networks Targeted Willingness to Pay Research Findings* report.

Areas in which the implementation of the survey could have been improved include:

- Inclusion of statistics on response rates - NTF did not report statistics on the response and abandonment rates of the survey, which would have been useful given that the survey included 13 choice sets in the WTP portion of the survey as well questions on respondents' current attitudes and behaviours, satisfaction with the network, perceptions and level of exposure to SA Power Networks, and demographics. However, as noted above, the achieved sample was adequate in terms of size and therefore the lack of these statistics is not a significant concern.
- Sample quotas - As noted above, the number of customers from three ESCOSA reliability regions was too small to allow statistically valid conclusions to be drawn about those areas. Some other areas - and types of customers (particularly customers with solar systems) - were over-represented in the sample. Weights were able to be applied to adjust the sample composition to the composition of the overall customer base in all cases (age, gender and solar usage) except that of regional representation. The authors of the WTP study did not comment on whether or the extent to which the under-representation of those three ESCOSA reliability regions might impact the statistical validity of the study results.

Survey scope and content

The genesis of the WTP study makes it clear that its results cannot be construed as providing information on anything other than customers' willingness to pay for different levels of undergrounding and vegetation management in three specific areas:

- High Bushfire Risk Areas and Bushfire Risk Areas
- Non-Bushfire Risk Areas
- Traffic Blackspots (undergrounding only)⁹.

No conclusions can be drawn regarding whether customers would prefer SAPN to undertake other activities instead of activities related to undergrounding and vegetation management, and no conclusions can be drawn regarding consumers' willingness to pay for other services.

⁹ The inclusion of Traffic blackspots was identified in the Stage 1 research as part of key insight no 9, consider improvements to public safety in asset planning. It may have also been discussed in the Targeted Strategic Workshops.

Furthermore, the WTP study did not ascertain whether customers who expressed a willingness to pay for at least one option in more than one of the safety and reliability initiatives would actually be willing to pay for both (or all three) of the safety and reliability initiatives - which was essentially assumed in SAPN's conclusion from the study.

While the decision to test consumers' willingness to pay for these services is not illogical, there would seem to be equally valid reasons to widen the focus of the willingness to pay study.

For example, 13 key 'insights' about what customers want from SAPN that were identified in the Stage 1 workshops and online survey (see Figure 2 below) suggest that a number of other areas are likely to have offered fertile ground for areas in which SAPN's service could be improved to better meet customers' expectations and needs.

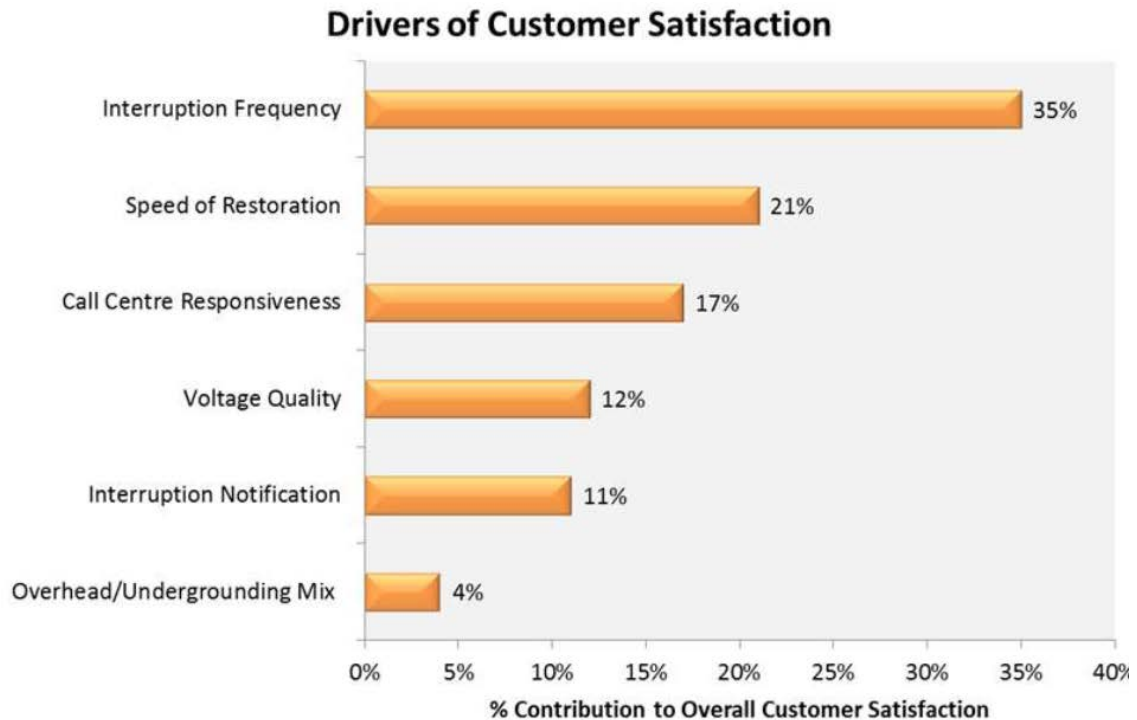
Figure 2: The 13 key 'insights' identified in the Stage 1 research

13 key 'insights' based on the views of South Australian electricity customers were drawn from the research stage of the TalkingPower Customer Engagement Program. The program confirmed customers want us to:	
1	Educate customers about the South Australian electricity industry and SA Power Networks' role. Customers indicate they would like more information and consultation about SA Power Networks' role in delivering electricity, the role of retailers and the electricity industry in South Australia.
2	Maximise opportunities to improve service experience. Customers rate their overall customer experience as positive or neutral while urging SA Power Networks to improve service interactions wherever possible.
3	Develop multi-channel communication strategies. Customers want to interact with SA Power Networks using multiple channels (voice, telephone, text, email and social media) for a variety of different actions.
4	Continue managing assets and investment to drive reliability, manage risk and support economic growth. Customers rank any asset management initiatives with a direct impact on reliability and/or preventing potential safety hazards as most important. Priority areas included assets located in high bushfire risk areas and near roads in residential areas. Business customers also identified areas that would support economic growth.
5	Design vegetation management programs (tree pruning) to consider their visual impact. Customers support vegetation management activities that improved the visual aesthetics and would benefit the wider community.
6	Prioritise preventative maintenance to reduce risk. All preventative initiatives should consider potential safety hazards and be completed as a priority when they can help to reduce risks.
7	Ensure CFS Bushfire Safer Places have continuous power. Investment in bushfire management initiatives would help to ensure that essential services can be maintained in specific safer places under critical conditions.
8	Maximise opportunities to improve the visual appearance of assets. Almost everybody supports initiatives to underground the network and improve the appearance of substation facades. This is a customer priority in areas where the visual appearance of the network has the largest effect on the community.
9	Consider improvements in public safety and reliability in asset planning. High bushfire risk areas and areas where additional safety and reliability benefits could be realised are customer priority areas for undergrounding the network.
10	Consider installing advanced meters. Customers support the adoption of advanced meters to give them greater control over their electricity usage.
11	Continue upgrades to support a two-way network. Almost universally, customers favour upgrades to enable a two-way network to support the increasing uptake of new technologies.
12	Develop cost-reflective pricing tariffs. Customers are in favour of developing and phasing-in socially equitable cost-reflective pricing strategies.
13	Educate customers about new technology and industry change to help increase their satisfaction. Customers say they need education on new technologies and changes to the industry.

Source: SAPN, *Regulatory Proposal*, October 2014, p 63.

This is further borne out by findings within the WTP research itself which identified the factors that contribute to customer satisfaction and the relative importance of each, as shown in Figure 3 below.

Figure 3: Contribution of the various drivers of SAPN customer satisfaction



Source: NTF Group, *SAPN Targeted Willingness to Pay Research - Research Findings*, July 2014, p 13.

It is worth noting that while vegetation management and undergrounding can have an impact on the frequency of interruptions, which is the largest driver of customer satisfaction noted above, undergrounding in and of itself is not a strong driver of satisfaction and there are several other material drivers of satisfaction that are unlikely to be affected by the service areas considered in the WTP study.

This is not a reason to say that the service areas considered in the WTP study should not be candidates for implementation, but it does raise the question of how SAPN decided on the relative level of resource to devote to these areas as compared to other areas which may provide greater impacts in terms of customer satisfaction.

2.3. Accuracy and strength of conclusions drawn

SAPN, on the basis of the WTP results, stated that

Community consultation confirmed majority support and Willingness to Pay for the following service enhancements:

- *implementing a program for 2.5% removal and replacement of vegetation in NBFRA, HBFRA and BFRA;*
- *move from a 3 year to a 2 year trimming cycle for vegetation near power lines in NBFRA;*
- *undergrounding up to 135kms of power lines in HBFRA; and*

■ *undergrounding power lines around 20 traffic black spots in NBFRA.*¹⁰

These service bundles were those identified in the NTF WTP research as the best option in each case. NTF also provided the following description of the criterion it used to identify the level at which WTP results should be seen as justifying that a particular initiative should be undertaken:

In WTP research there are no accepted deterministic rules governing the level of WTP support that mean a given proposal has community endorsement. Service improvements receiving greater than 50% WTP represent majority customer support. To use an analogy from Federal Elections or Referendums, a political party or proposal garnering a 55% majority (in two-party-preferred terms) is deemed to have attracted a significant majority of community support.

*Therefore, in NTF's opinion SA Power Networks has an evidence based case for improvement proposals where 55% of the community or more are willing to fund the proposal. This case is reinforced where this threshold is achieved amongst all key community segments, particularly hardship customers. In this report, 55% acceptance has been used as the threshold that determines support for the proposal.*¹¹

Using that criterion, NTF recommends rejecting any service bundle that achieves acceptance by less than 55% of respondents, and prefers service bundles that achieve even higher levels of acceptance.

Upon review we find the threshold criterion plausible - it is intuitively persuasive.

However, we do not agree that service bundles that achieve higher acceptance levels are necessarily better than those that achieve lower levels (but that still exceed the 55% acceptance threshold).

Our reason for this is that once the initiative has been deemed to be acceptable by dint of exceeding the 55% acceptance threshold, all customers will be required to bear the additional cost associated with the initiative. This amounts to an impost on customers who did not choose a particular service bundle by those who were willing to pay more. And the amount of that impost is the same amount that those who were willing to pay accepted.

Under the NTF approach, if even more customers were willing to pay a yet higher amount (a somewhat counter-intuitive result in its own right), that higher amount would be imposed on all other customers. This was in fact the case for one of the service areas, and is explored further below.

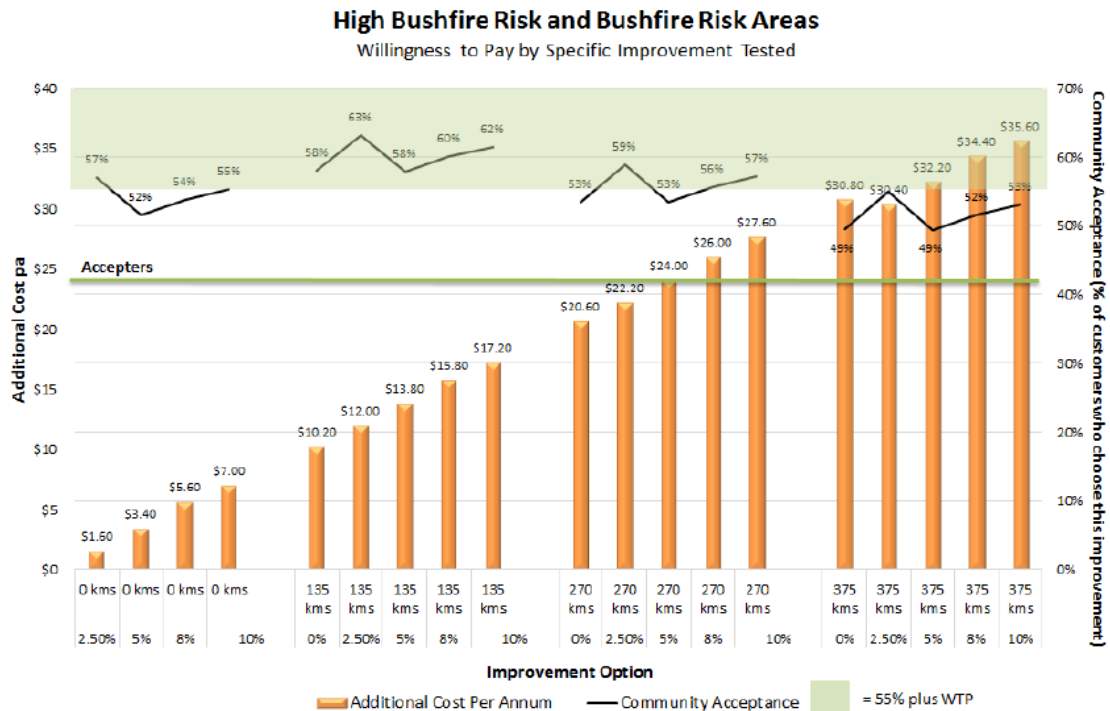
Rather, our view is that it is important to balance the desire among some customers for higher service levels with the amount of cost that desire imposes on other customers who are not willing to pay for the higher level of service. This would allow the majority to affect the collective outcome while seeking to minimise the impact of the majority will on others.

Consider for example, the results obtained in the NTF WTP study concerning respondents' willingness to pay for the service bundles presented regarding HBFRA and BFRAs (which were comprised of varying combinations of the removal and replacement of inappropriate vegetation and the undergrounding of powerlines in targeted areas), which are shown in Figure 4 on the following page.

¹⁰ SAPN, *Regulatory Proposal 2015-20*, p 66.

¹¹ NTF Group, *SAPN Targeted Willingness to Pay Research - Research Findings*, July 2014, p 5.

Figure 4: Willingness to pay for improved vegetation removal and undergrounding in HBFRA and BFRAs



Source: NTF Group, *SAPN Targeted Willingness to Pay Research - Research Findings*, July 2014, p 13.

In assessing these results, NTF states:

- *2.5% removal and replacement of inappropriate vegetation is perceived by customers as the 'sweet spot' amongst the vegetation management improvement options. This level consistently attracts the highest level of community willingness to pay.*
- *The highest level of community willingness to pay is associated with 135kms of undergrounding.*
- *The combination of 135 km of undergrounding and 2.5% tree removal and replacement achieved support from nearly two-thirds (63%) of the community¹², who are prepared to pay an additional \$12 per year to see this service improvement delivered.¹³*

Based on this analysis, SAPN endorsed that service initiative for HBFRA and BFRAs.

Table 1 on the following page explores the financial impact of accepting each of the service options shown in Figure 4 above that exceeded the 55% acceptance threshold on those customers who did not 'vote' for the option. The options as listed from top to bottom in Table 1 correspond with the options from left to right in Figure 4.

¹² We note that these were also the levels given in the examples in the Survey - although this was not the case for the blackspot results; see SAPN, *Targeted Willingness to Pay Survey Instrument*, pp18, 19 and 28.

¹³ NTF Group, *SAPN Targeted Willingness to Pay Research - Research Findings*, July 2014, p 16.

Table 1: Alternate calculation approach to identify most preferred option

Option (km, % target area)	% Accepting	Additional Cost	Aggregate cost imposed on those who did not 'vote' for the option
0 - 2.5%	57%	\$1.60	\$516,000
0 - 5.0%	52%	\$3.40	NA
0 - 8.0%	54%	\$5.60	NA
0 - 10.0%	55%	\$7.00	\$2,362,500
135 - 0.0%	58%	\$10.20	\$3,213,000
135 - 2.5%	63%	\$12.00	\$3,330,000
135 - 5.0%	58%	\$13.80	\$4,347,000
135 - 8.0%	60%	\$15.80	\$4,740,000
135 - 10.0%	62%	\$17.20	\$4,902,000
270 - 0.0%	53%	\$20.60	NA
270 - 2.5%	59%	\$22.20	\$6,826,500
270 - 5.0%	53%	\$24.00	NA
270 - 8.0%	56%	\$26.00	\$8,580,000
270 - 10.0%	57%	\$27.60	\$8,901,000
375 - 0.0%	49%	\$30.80	NA
375 - 2.5%	55%	\$30.40	\$10,260,000
375 - 5.0%	49%	\$32.30	NA
375 - 8.0%	52%	\$34.40	NA
375 - 10.0%	53%	\$35.60	NA

Source: OGW analysis

As shown, this approach would select the service bundle comprised of 0 km of undergrounding of powerlines in HBFRA and BFRAs, and removal and replacement of inappropriate vegetation in 2.5% of the HBFRA and BFRAs, rather than the 135 km of undergrounding and removal and replacement of inappropriate vegetation in 2.5% of the areas. This option would reduce the additional annual costs to those who were not willing to pay for this service from \$12.00 per customer to \$1.60, and reduce aggregate costs to those who were not willing to pay for this service from \$3,330,000 to \$516,000.

Note that the majority has still occasioned an improvement in service, but at the least cost to those who were not willing to pay for improvements in this service area.

Further thoughts about the modelling of the willingness to pay for this service area are discussed later in this section.

Use of this approach in the other service areas investigated in the NTF WTP results in:

- A preference in NBFRA for
 - a 3 year tree trimming cycle, removal and replacement of inappropriate vegetation in about 2.5% of the target area, and no undergrounding

- rather than the move from a 3 year to a 2 year trimming cycle for vegetation near power lines, removal and replacement of inappropriate vegetation in about 2.5% of the target area and undergrounding of about 140 km of powerlines.

This shift would reduce the annual additional cost of those who were not willing to pay to improve this service from \$29.40 to \$0.40, and would also reduce aggregate costs to those who were not willing to pay to improve this service from \$8,599,500 to \$108,000.

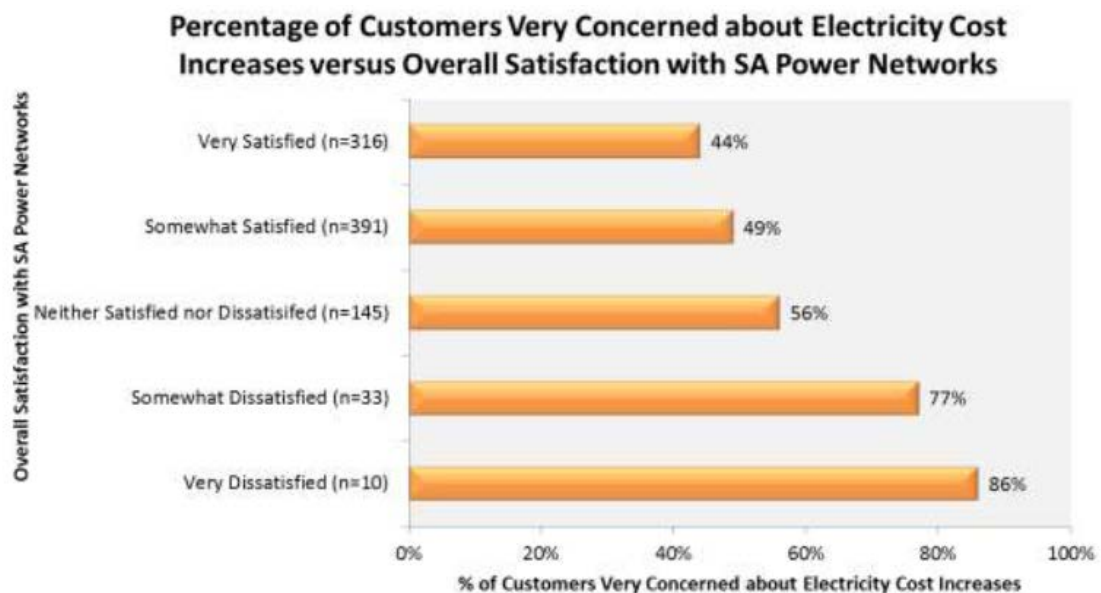
- A preference for treating 10 blackspot traffic intersections rather than 20, as this would reduce the annual additional cost paid by those unwilling to fund this service initiative from \$6.20 to \$3.00. Further thoughts about the modelling of the willingness to pay for this service area are discussed later in this section.

We think this approach is particularly warranted given SAPN customers' concerns about future electricity prices. As noted above, the WTP survey addressed a number of areas in addition to customers' WTP regarding service levels in the areas of vegetation management and the undergrounding of powerlines.

One set of questions explored customers' views about future electricity prices. In its analysis of survey results, NTF found that those views were related to customers' satisfaction levels:

Overall satisfaction with SA Power Networks also appears to be correlated with customer concerns about future price increases. The following chart shows that the more concerned customers are regarding electricity price increases, the more likely they are to be dissatisfied with SA Power Networks. Only 44% of customers who indicated that they were very satisfied with SA Power Networks were very concerned about rising electricity costs.¹⁴

Figure 5: Relationship between SAPN customers' concern about electricity cost and overall satisfaction



Source: NTF Group, SAPN Targeted Willingness to Pay Research - Research Findings, July 2014, p 12.

However, multiplying these segment sizes and percentages through reveals that overall 49.8% of the respondents to the WTP survey described themselves as being 'very concerned about future electricity prices'. An additional 22% say they are somewhat concerned about future electricity prices¹⁵.

Given this level of concern we think SAPN should consider the absolute amount of additional cost that discretionary initiatives based on the willingness to pay of some customers would impose on those who did not choose or could not afford to choose those service improvements.

In this regard we note that the NTF WTP study also found that:

- *Generally, willingness to pay is higher amongst those customers:*
 - *living in Adelaide;*
 - *with solar panels or solar hot water systems installed;*
 - *receiving higher levels of household income;*
 - *who have achieved a university education;*
 - *aged in the 50-64 (asset accumulation, pre-retirement life cycle stage) age category, and*
 - *who use clothes dryers and dish washers.*¹⁶

and

- *We observed a strong desire to pay for service improvements amongst hardship customers, but their capacity to pay is severely constrained by their financial circumstances.*¹⁷

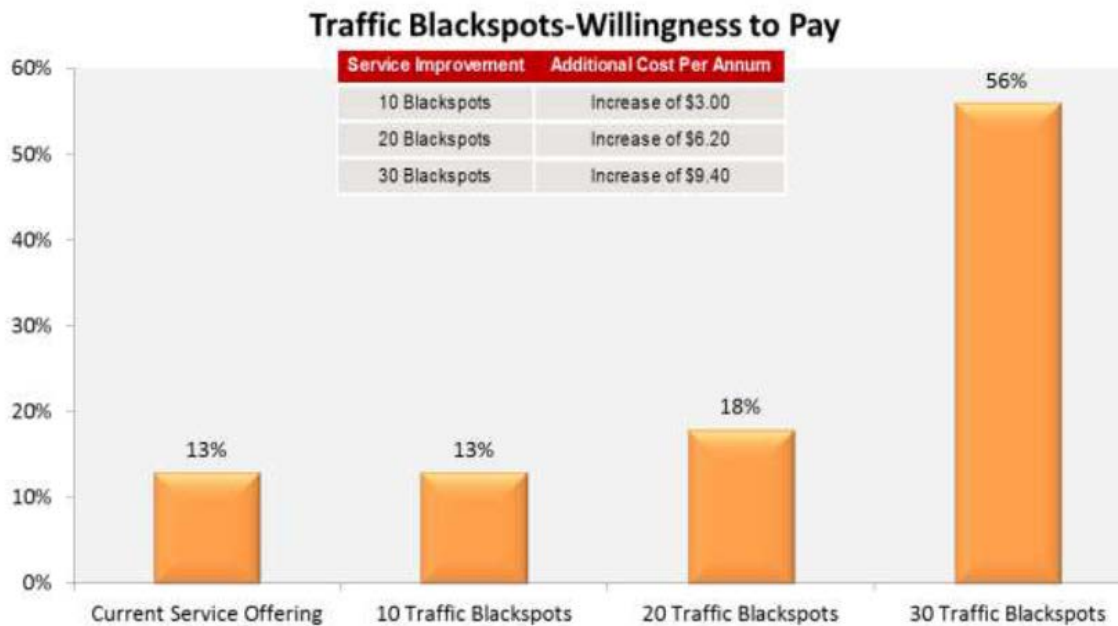
In addition, some of the research results are puzzling. For example, every customer segment - even core hardship customers -- strongly preferred the service level that involved treating 30 blackspot traffic intersections as compared to the other choices (20, 10 or no intersections, as shown in Figure 6 on the following page.

¹⁵ NTF Group, *SAPN Targeted Willingness to Pay Research - Research Findings*, July 2014, p 21.

¹⁶ NTF Group, *SAPN Targeted Willingness to Pay Research - Research Findings*, July 2014, p 18.

¹⁷ NTF Group, *SAPN Targeted Willingness to Pay Research - Research Findings*, July 2014, p 7.

Figure 6: Willingness to pay for undergrounding at traffic blackspots

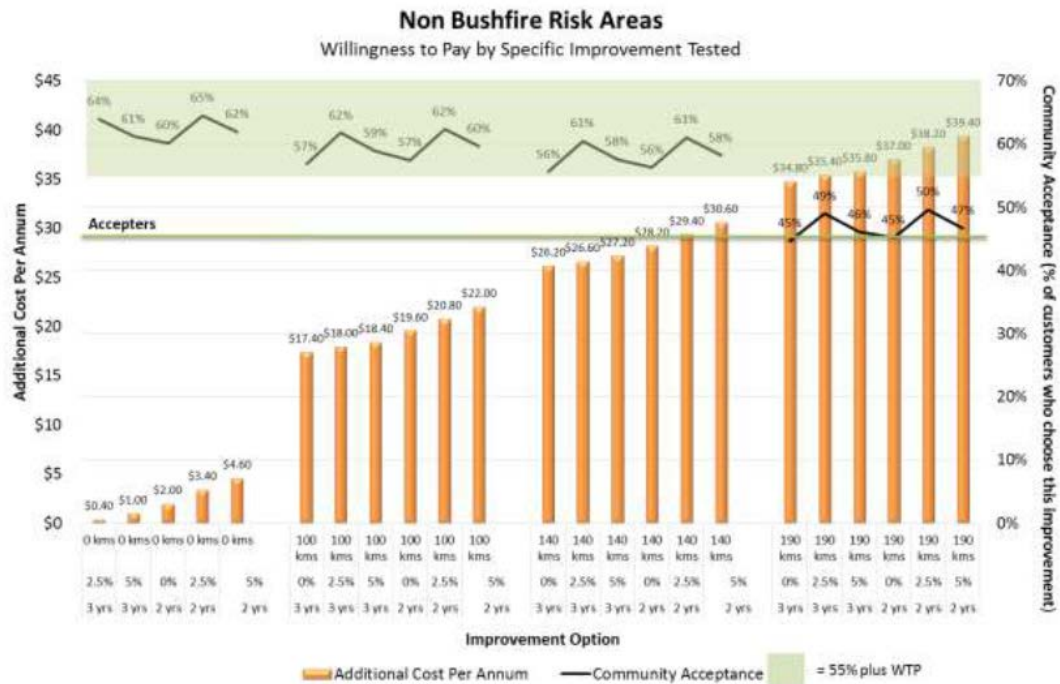


Source: NTF Group, *SAPN Targeted Willingness to Pay Research - Research Findings*, July 2014, p 18.

Furthermore, the 30 intersection option was the only one that reached the acceptance threshold. Could this be an artefact of the numbers themselves? Did the number of intersections just seem very small as compared to what respondents may have perceived as the number of intersections for which this treatment might be warranted?

Similarly, it is worth noting the difference in the pattern of the willingness to pay for the service options contemplated for HBFRA and BFRA on the one hand and those contemplated for NBFRA on the other. Figure 7 on the following page shows the pattern for the service options contemplated for NBFRA.

Figure 7: Willingness to pay for service options developed for NBFRA



Source: Source: NTF Group, *SAPN Targeted Willingness to Pay Research - Research Findings*, July 2014, p 17.

Note that the percentage of customers that are willing to pay for the groups of options generally decreases as the relative costs of the options increases. Given that the groups of options are essentially increasing levels of service this makes sense.

However, the pattern with regard to the service options developed for HBFRA and BFRAs is different as shown in Figure 4 on page 11 above. In that chart willingness to pay increases between the first and second groups of service options, and then decreases as the service options continue to increase in service levels and cost. Given that respondents had no way of assessing the relative reduction in the incidence of bushfires from the different levels of service could it be that there was some bias against choosing the lowest level of service improvement as perhaps not taking the issue seriously enough or not expressing the appropriate level of willingness to assist fellow South Australians who live in bushfire-risk areas?

As a result, it is difficult to see the WTP Survey as a comprehensive assessment of SAPN customers' willingness to pay for improved service: it simply too narrow in its scope. It is also limited in its value in providing a meaningful preference function for the service improvement options it does canvas in that it does not provide information on how the different service levels and associated costs can be expected to impact on the objectives of the service improvements. Further, its results have not been used in a way that adequately takes into account the impact of the willingness to pay of what may be a relatively narrow majority of customers on the annual bills of other customers who were not interested in or possibly could not afford the candidate service improvement(s).

Finally, significantly more information was collected in the survey than was analysed. More could have been done in a number of areas to improve understanding of and to draw out the implications of the survey results, including:

- Additional profiling of acceptors, improvement-specific acceptors and rejecters. This was an interesting segmentation. These groups were profiled in terms of their attitudes and their location in HBFRA and BFRA vs NBFRA. It would have been useful to continue the profiling to include income, education and household composition.
- Customers with solar equipment who also received concessions were included in the overall solar customer segment despite an apparent difference in income, and the sizeable proportion of this concession sub-segment as compared to all solar users (32%). Breaking out that group might have been interesting.

3. Other considerations

Two other considerations may be worth considering more generally regarding the role of willingness to pay research in AER regulatory determinations:

- The relationship of WTP study values for reliability as compared to the use of benchmarking

Benchmarking establishes the level of service that can be provided at a given cost by similar distribution businesses. How should research documenting a willingness to pay more for a higher level of service (or less for a lower level) be viewed in regulatory proceedings where that same level of service is already provided elsewhere at a lower relative cost? Would such an instance imply the possibility that trade-offs in less-valued service attributes may have already been made in those jurisdictions and that these could usefully be identified and tested in the jurisdiction being reviewed?

- The relationship of WTP study values to AEMO's VCR values

The Australian Energy Market Operator has recently undertaken a NEM-wide study that established the value that residential (and other customer classes) place on the reliability of their electricity supply. How should research documenting a willingness to pay more than the VCR for a higher level of service be treated in regulatory proceedings? Similarly, where a willingness to pay study documents a lower willingness to accept value than the VCR, how should that be handled in a regulatory proceeding considering reduced reliability for reductions in network charges?