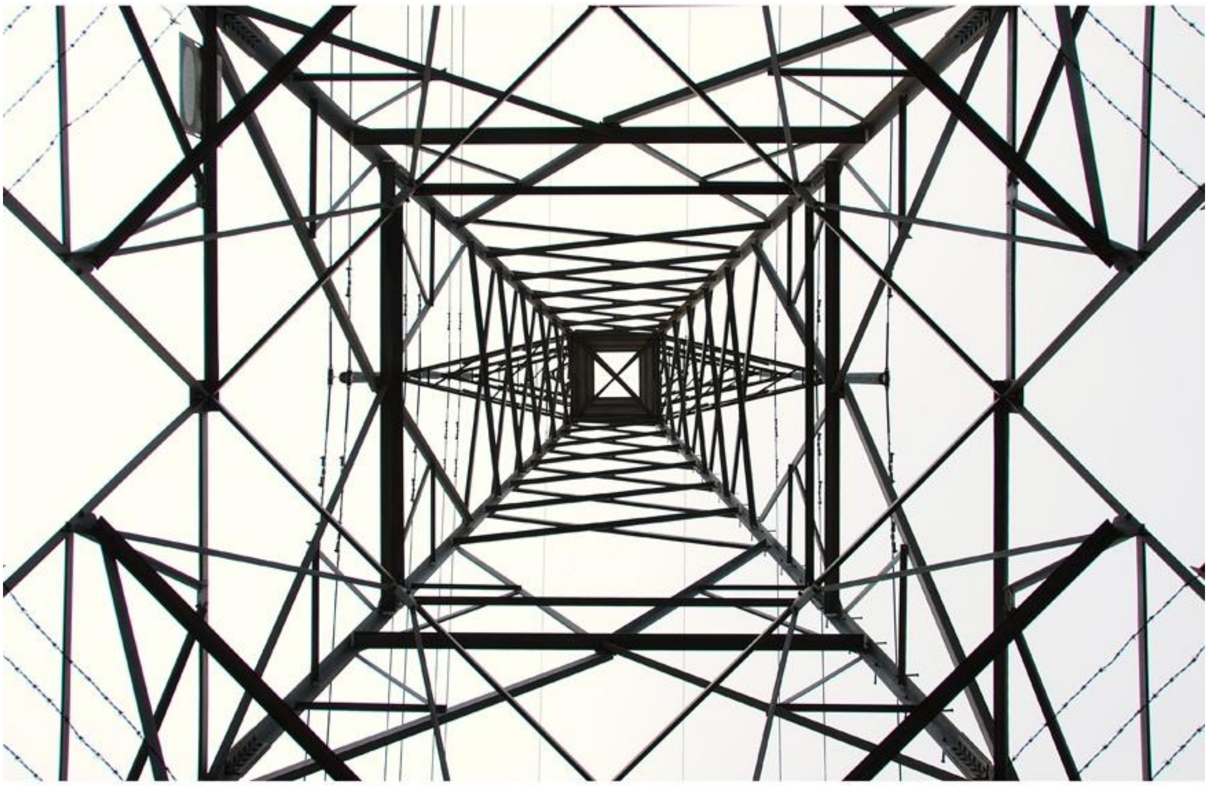
Demand-side Opportunities in the Fleurieu Region

March 2012



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Acknowledgements

This report was prepared by Wessex Consult Pty Ltd. We would like to thank Mr Joe Caruso, Major Customer Manager, ETSA Utilities and Mr Marcus Keller, Zen Technologies for their assistance.

Important Notice

The information in this document is for general guidance only. It does not constitute professional advice. It is intended only as a general guide and is based upon publically available information which may be subject to error or contain generalisations.

1 Table of Contents

2 Preface

This document presents the outcome of a review of the demand side opportunities on the Fleurieu Peninsula in South Australia.

The investigation and report was carried out by Wessex Consult Pty Ltd on behalf of the City of Victor Harbor.

The report has been drafted for the five local councils covering the Fleurieu Region; Victor Harbor, Mount Barker, Alexandrina, Yankalilla and Kangaroo Island Councils and Regional Development Australia: Adelaide Hills, Fleurieu Peninsula and Kangaroo Island Office.

Further, it is intended that the results of the project be made available to any organisations:

- Intending to promote policy change in the NEM.
- Wishing to participate in the current or future Guideline 12 process.
- In negotiations with the DNSP and/or TNSP regarding demand side initiatives in the region.
- Participating or preparing for the next round of regulatory price resets in South Australia.

The project was funded by the Consumer Advocacy Panel.

The report:

- Undertakes a brief review of the population of the Fleurieu Region.
- Describes the electricity network supplying the Peninsula.
- Analyses the network data for 4 11kV substations in the region.
- Reviews existing opportunities for demand side participation for customers on the Fleurieu.
- Briefly describes alternative demand side opportunities.
- Review opportunities for Council participation in the facilitation of demand initiatives.

The language in this report attempts to strike a balance between technical accuracy and readability for a non-technical person.

This document is not intended as a full financial or technical feasibility study. As such any financial figures quoted are for comparative purposes only.

3 Précis

Population

This report identifies that in the period 2009-10 the population growth of Alexandrina and Victor Harbor Local Government Areas (LGAs) were 3.0% and 2.6 % respectively. These were the two highest growth rates in South Australia.

Rank	Local Government Areas in Regional South Australia	2006 SEIFA index of disadvantage
27	**Yankalilla (DC)**	**975.7**
28	Kangaroo Island (DC)	979.6
29	**Victor Harbor (C)**	**980.7**
30	Franklin Harbour (DC)	981.3
31	Tumby Bay (DC)	981.6
32	Streaky Bay (DC)	982.9
33	**Alexandrina (DC)**	**983.3**

Figure 1: SEIFA Index of Disadvantage for Fleurieu LGAs

It also find that the population of the region has bias toward over 50s and is relatively disadvantaged compared to the average in South Australia.

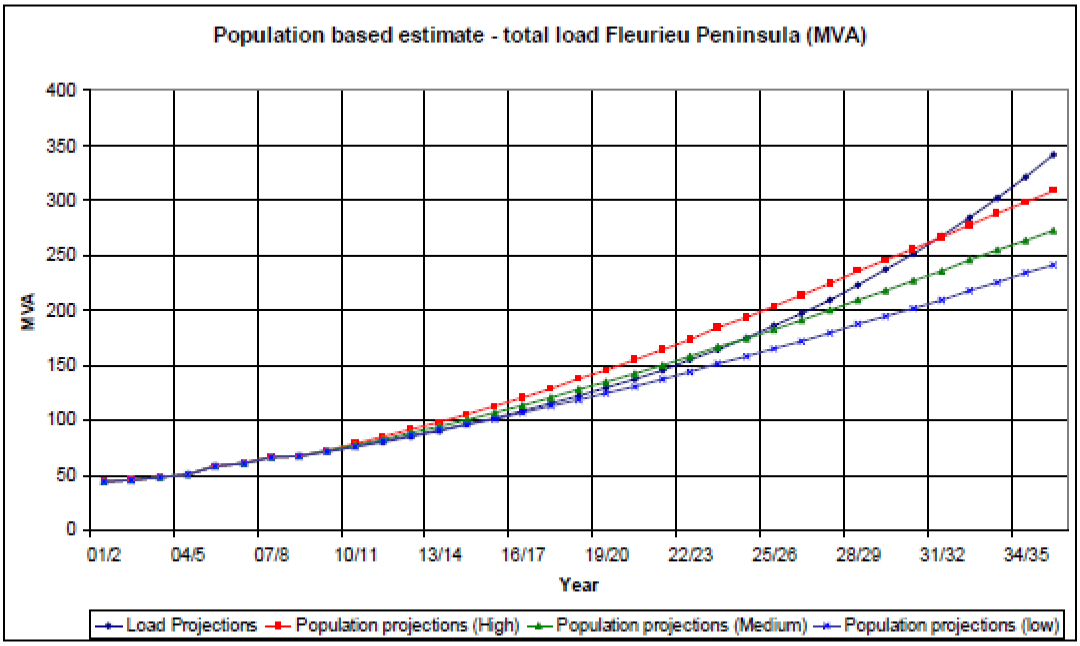
Figure 1 shows the SEIFA index of disadvantage for the three key local government areas in the Fleurieu region. It shows that all three areas have an index below the benchmark 1,000 for South Australia.

Electricity

Review of the half hourly load data for four 11kV substations on the Peninsula shows that:

- Aggregate load factor for the region was 39%. This indicates that network asset utilisation is less than optimal.
- Demand is peaky. The top 25% of demand on the Goolwa substation persisted for only 16.5 hours in 2009.
- Network peak demands occur in three distinct periods:
    - On afternoons and evenings on hot summer days - caused by air-conditioning.
    - Winter at midnight - caused by 'off-peak' hot water systems.
    - Winter evenings - caused by residential heating, cooking and lighting.

As result of the relatively high population growth in the area demand growth on the Peninsula is correspondingly high. Graph 1 illustrates ETSA Utilities demand forecast for the region.



Graph 1: ESTA Utilities' Forecast Demand Growth for the Fleurieu Peninsula

In order to meet demand ETSA Utilities and Electranet have submitted a proposal to expend several $100m over the coming decade to augment the network in the area.

Demand Response

The report identifies that currently, apart from PV generation, there are limited options for customers to participate in or facilitate demand response.

A number of demand-side solutions that can be deployed to mitigate demand growth on the Peninsula are briefly described. These fall into three broad categories:

- Energy Conservation
- Distributed renewable generation
- Peak load reduction

Recommendations

Finally the report makes five recommendations as to the way Councils in the region could usefully support the development of demand side initiatives. They are:

- Source funding through the Commonwealth Clean Energy Futures programme to facilitate energy conservation and renewable energy initiatives.
- Augment existing planning processes to incorporate the energy domain.
- Facilitate the 'Smart' new housing developments
- Participate in the Energy regulatory and reform processes
- Develop an enterprise that has the capability and resources to source funding and expedite energy related initiatives.

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4 Fleurieu Region

4.1 Region

Figure 2: The Fleurieu Region

The geographic definition of the Fleurieu Region is shown in Figure 2.

Figure 3 depicts the Local Government and Statistical boundaries for Adelaide environs. It can be seen that the Alexandrina, Victor Harbor and Yankalilla LGAs correspond most relatively closely with the Fleurieu geographic region. Therefore, where possible information used in this report will be sourced by these LGA areas.

Figure 3: Local Government and Statistical Divisions[1]

The Fleurieu Region is located south of Adelaide, across the southern Mount Lofty Ranges. The area is generally recognised as a tourist and retirement destination. However, it should be noted that particularly in the northern districts are increasingly becoming part of Adelaide's commuting belt. Agriculture and service industries are important components of the local economy.

4.2 Population

Population growth in the Fleurieu Region is significantly and consistently higher than the South Australian Average. In 2010, the Estimated Resident Population of the Fleurieu Peninsula was 42,500, an increase of 2.7% on 2009 (c.f. 1.2% for South Australia). In the period 2009-10 the population growth of Alexandrina and Victor Harbor Local Government Areas (LGAs) were 3.0% and 2.6 % respectively. These were the two highest growth rates in South Australia (only matched by Playford at 3.0%). This relatively rapid growth poses significant planning challenges for a region with a small population base[2].

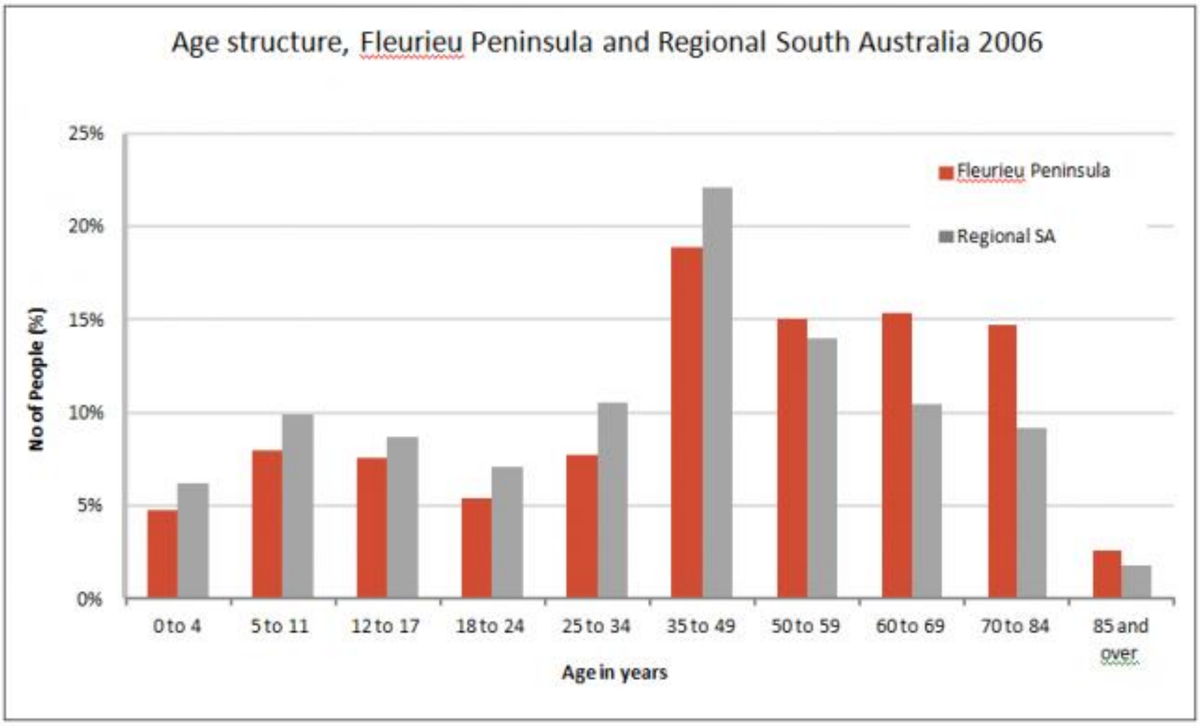
The pressure of population growth is exacerbated by the impact of the transient tourist population – some estimates suggest Victor Harbor's population trebles in peak holiday seasons[3].

Population in the region is focussed on the coastal strip between Victor Harbor and Goolwa. Victor Harbor is the largest single population centre with a current population of approximately 14,000[4]. In addition to the southern coastal strip there are some other small centres including Cape Jervis, Milang, Strathalbyn, Mount Compass, Myponga, Normanville and Yankalilla. The more northerly settlements having grown rapidly in recent years as they are increasingly becoming part of Adelaide's commuting belt.

[1] Department of Planning and Local Government SA
[2] Informed Decisions Pty Ltd
[3] Informed Decisions Pty Ltd
[4] City of Victor Harbor

4.2.1 Age Profile

The Fleurieu region has an older age profile than other regional areas in South Australia. Victor Harbor in particular has an elderly bias, with almost one-quarter of the population aged 70 years and over. Graph 2 below shows a distinct skew in the demographic towards over 50's and post retirement age.



Graph 2: Fleurieu Region Age Profile[5]

4.2.2 Employment

Agriculture and service industries (retail and tourism) are primary employers in the area. The 2006 Census indicated that 10,587 persons were employed in the Alexandrina, Yankalilla and Victor Harbor LGAs. Agriculture and viticulture, forestry and fishing and Retail Trade are the main employing industries (13% each), followed by Health care and social assistance (12%), Manufacturing (11%) and Accommodation and Food Services (10%).

A high proportion of the working population work within the LGA in which they reside - Victor Harbor (62%), Yankalilla (58%) and Alexandrina (50%). This indicates the population is dependent on the health of the local economy.

4.2.3 Metrics

The Index of Relative Socioeconomic Disadvantage (IRSD) is one of four Socioeconomic Indices for Areas

(SEIFA) developed by the Australian Bureau of Statistics based on Census data. The IRSD is based on data relating to education, income, occupation, Aboriginal status, ethnicity, and housing. Disadvantaged areas exhibit low scores whilst those where the population is less disadvantaged exhibit higher scores. The reference score for this index is 1,000.

The IRSD scores for 52 regional LGAs are ranked in Table 1. The LGA areas of Yankalilla, Victor Harbor and Alexandrina are highlighted. The table shows that each of the areas exhibit scores below the SA mean

[5] Informed Decisions Pty Ltd

score of 1,000. This indicates that the Fleurieu is an area of relative disadvantage compared to the whole of South Australia.

Rank	Local Government Areas in Regional South Australia	2006 SEIFA index of disadvantage
1	Anangu Pitjantjatjara (AC)	526.6
2	Peterborough (DC)	840.3
3	Coober Pedy (DC)	870.4
4	Whyalla (C)	887.2
5	Port Augusta (C)	897.2
6	Port Pirie City and Dists (M)	902
7	Murray Bridge (RC)	906.8
8	Ceduna (DC)	911.3
9	Copper Coast (DC)	923.3
10	Flinders Ranges (DC)	924.4
11	Unincorporated SA	930.6
12	Renmark Paringa (DC)	938.3
13	Berri and Barmera (DC)	939.6
14	Mid Murray (DC)	940
15	Yorke Peninsula (DC)	944.1
16	Mount Gambier (C)	944.6
17	The Coorong (DC)	947.4
18	Port Lincoln (C)	948.6
19	Barunga West (DC)	949.2
20	Wattle Range (DC)	951.5
21	Loxton Waikerie (DC)	957.4
22	Goyder (DC)	959.6
23	Wakefield (DC)	962.5
24	Northern Areas (DC)	968.2
25	Kingston (DC)	972.1
26	Mount Remarkable (DC)	973.9

Rank	Local Government Areas in Regional South Australia	2006 SEIFA index of disadvantage
27	**Yankalilla (DC)**	**975.7**
28	Kangaroo Island (DC)	979.6
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31	Tumby Bay (DC)	981.6
32	Streaky Bay (DC)	982.9
33	**Alexandrina (DC)**	**983.3**
34	Mallala (DC)	985.9
35	Orroroo/Carrieton (DC)	991.1
36	Southern Mallee (DC)	993
37	Karoonda East Murray (DC)	994.5
38	Elliston (DC)	996.2
39	Le Hunte (DC)	997.5
40	Clare and Gilbert Valleys (DC)	999
41	Tatiara (DC)	1000.5
42	Naracoorte and Lucindale (DC)	1003.1
43	Lower Eyre Peninsula (DC)	1005.5
44	Cleve (DC)	1007.9
45	Robe (DC)	1011
46	Kimba (DC)	1016.5
47	Barossa (DC)	1018.6
48	Light (RegC)	1022.7
49	Mount Barker (DC)	1024
50	Grant (DC)	1024.2
51	Adelaide Hills (DC)	1083
52	Roxby Downs (M)	1084.7

Table 1: Ranking of SA Regional LGAs by SEIFA Index of Relative Disadvantage[6]

Figure 4 depicts the Index of Disadvantage for the whole of South Australia by Health Region. This reinforces the relative disadvantage of the Fleurieu (and in particular the Victor Harbor region) when compared to the Southern and Eastern Suburbs of Metropolitan Adelaide.

[6] City of Victor Harbor

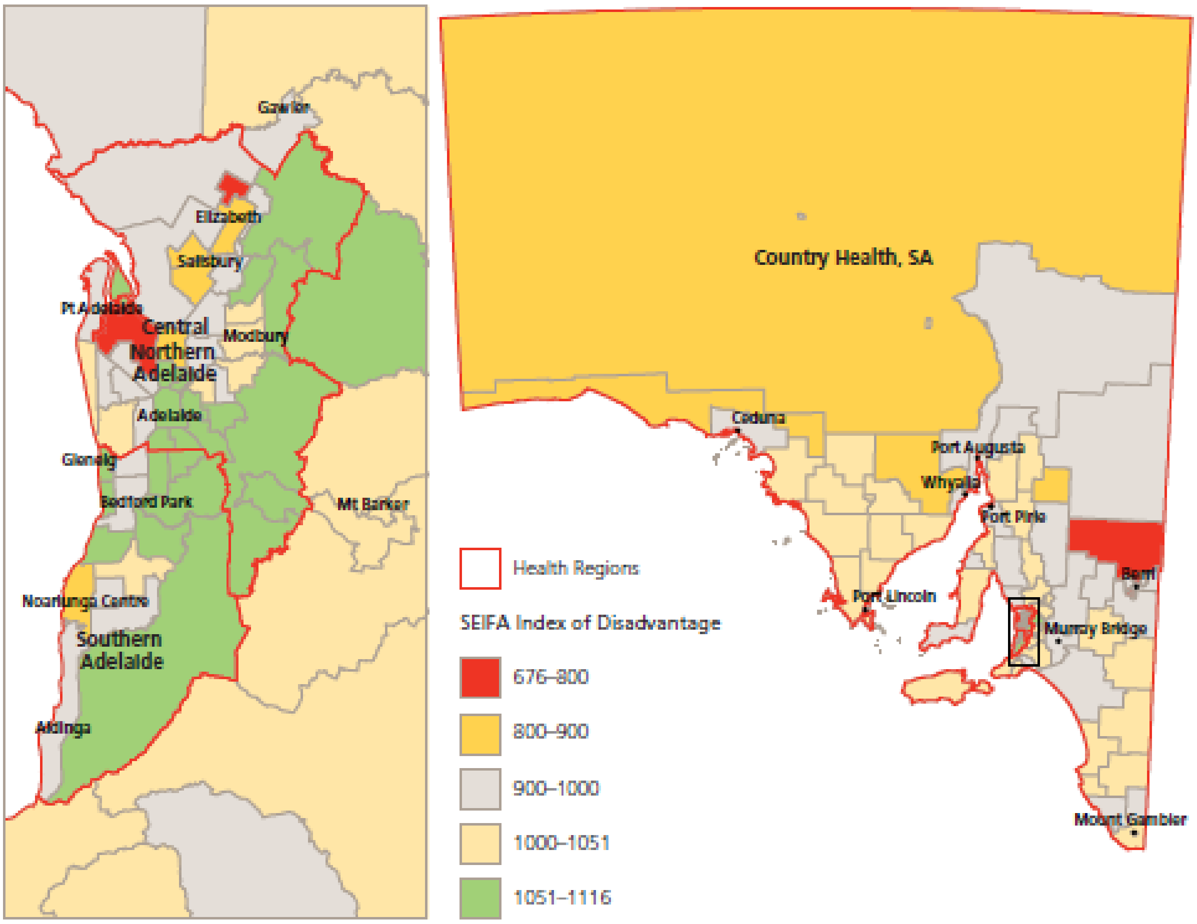


Figure 4: SEIFA Index of Disadvantage by Health Region (2001)[7]

4.2.4 Projections

Local Government Area (LGA)	Resident Population at 30 June				
	2006	*2011*	*2016*	*2021*	*2026*
Alexandrina	21,495	24,567	27,531	29,412	31,119
Victor Harbor	12,470	14,298	16,171	17,673	19,343
Yankalilla	4,303	4,776	5,415	6,033	6,763
Fleurieu	38,268	43,641	49,117	53,118	57,225
South Australia	1,567,888	1,667,444	1,770,644	1,856,435	1,935,161

Local Government Area (LGA)	Percentage Population Increase				
	2006	*2011*	*2016*	*2021*	*2026*
Alexandrina	0.0%	14.3%	28.1%	36.8%	44.8%
Victor Harbor	0.0%	14.7%	29.7%	41.7%	55.1%
Yankalilla	0.0%	11.0%	25.8%	40.2%	57.2%
Fleurieu	0.0%	14.0%	28.4%	38.8%	49.5%
South Australia	0.0%	6.3%	12.9%	18.4%	23.4%

Table 2: Forecast Population for Fleurieu and South Australia[8]

[7] *South Australia: Our Health and Health Services 2008* – SA Government

Table 2 details the actual and percentage population for each LGA in the Fleurieu, the Fleurieu Region and South Australia as a whole (red figures are forecasts).

This data clearly demonstrates continued growth at a significantly higher rate than the State average.

4.3 Summary

The customers in the Fleurieu Region are more susceptible to electricity price rise for a number of reasons. These are:

1. The Australian Bureau of statistics Index of Relative Socioeconomic Disadvantage shows that the population is disadvantaged when compared to the South Australian norm.
2. Census data shows that the population in the region is heavily weighted toward retirement age. This sector of the population has a lower than average income and therefore will be ore adversely impacted by energy price increases.
3. A large portion of the population (in excess of 50%) is dependent on local business for employment. Small to medium enterprises are more likely to be sensitive to energy price increases. Therefore it could be expected that escalating energy prices could have a disproportionally high impact on the region.

[8] Government of South Australia - 2011

5 Electricity

5.1 Network

All electricity supply for the Fleurieu Peninsula is presently provided via the Willunga Zone Substation by ETSA Utilities' 66 kV sub-transmission system, which is in turn supplied from ElectraNet's Morphett Vale East 275/66 kV substation.

The western peninsula is supplied by a single radial 66 kV line from Willunga to Cape Jervis via Zone Substations at Myponga and Yankalilla.

Kangaroo Island is supplied via a short 33 kV line from Cape Jervis substation connected to a single 33 kV undersea cable and a long 33 kV line to Kingscote with a number of 11 kV and 19.1 kV Single Wire Earth Return (SWER) lines attached.

The eastern peninsula is supplied by a single radial 66 kV line from Willunga to the Square Water Hole Zone Substation near Mount Compass. From there two radial 66 kV lines supply Victor Harbor and Goolwa Zone Substations.

Willunga is supplied from Morphett Vale East Connection Point via two 66 kV lines, one via McLaren Flat and the second via Port Noarlunga and Aldinga.

Figure 5 illustrates the bulk electricity supply infrastructure for the Fleurieu Peninsula[9].

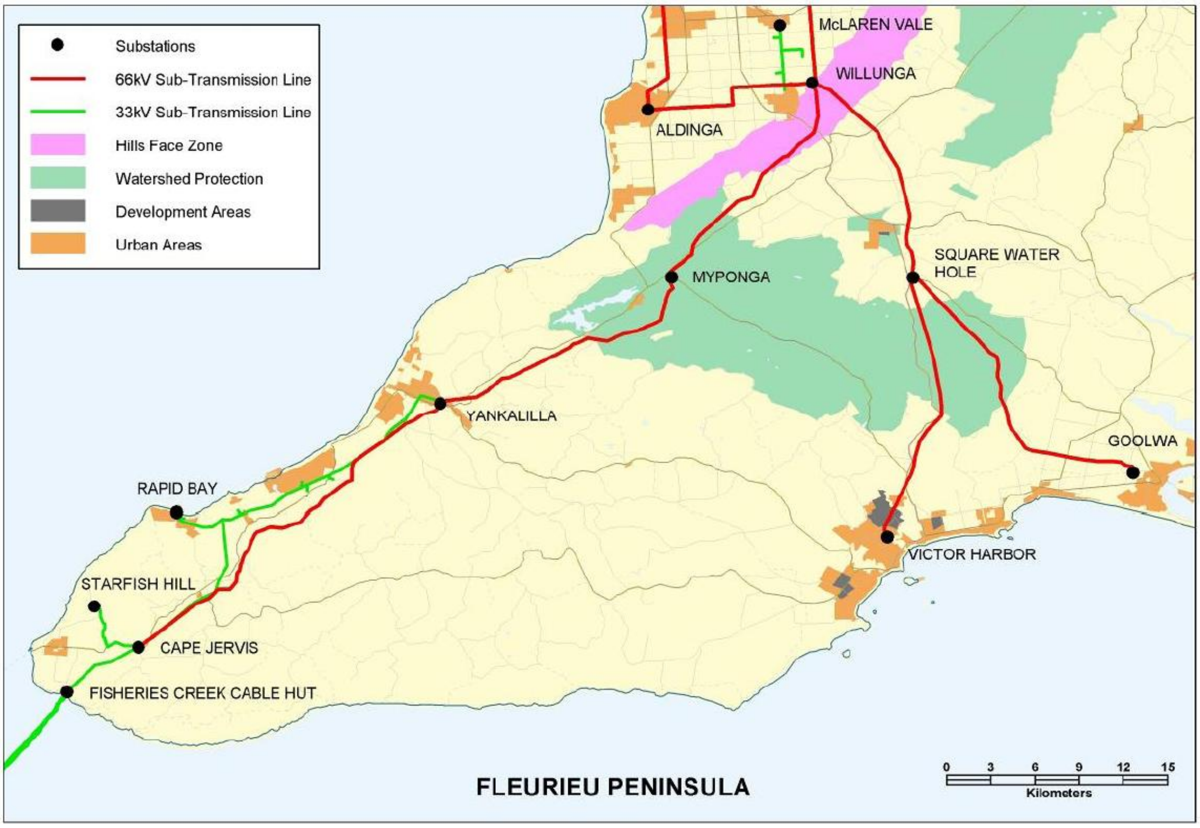


Figure 5: 33kV and 33kV electricity network supplying the Fleurieu Region[10].

[9] *Request for Proposals: Bulk Supply to the Fleurieu Peninsula* - ETSA Utilities 1 March 2010
[10] *Request for Proposals: Bulk Supply to the Fleurieu Peninsula* - ETSA Utilities 1 March 2010

5.2 Demand

This section presents the results of the analysis of the aggregate system load data metered half hourly at Yankalilla, Square Water Hole, Victor Harbor and Goolwa 11kV substations for the calendar year 2009. The data was provided courtesy of ETSA Utilities.

The issue of distribution losses is complex and relies on information that is not publically available therefore this paper does not address system losses.

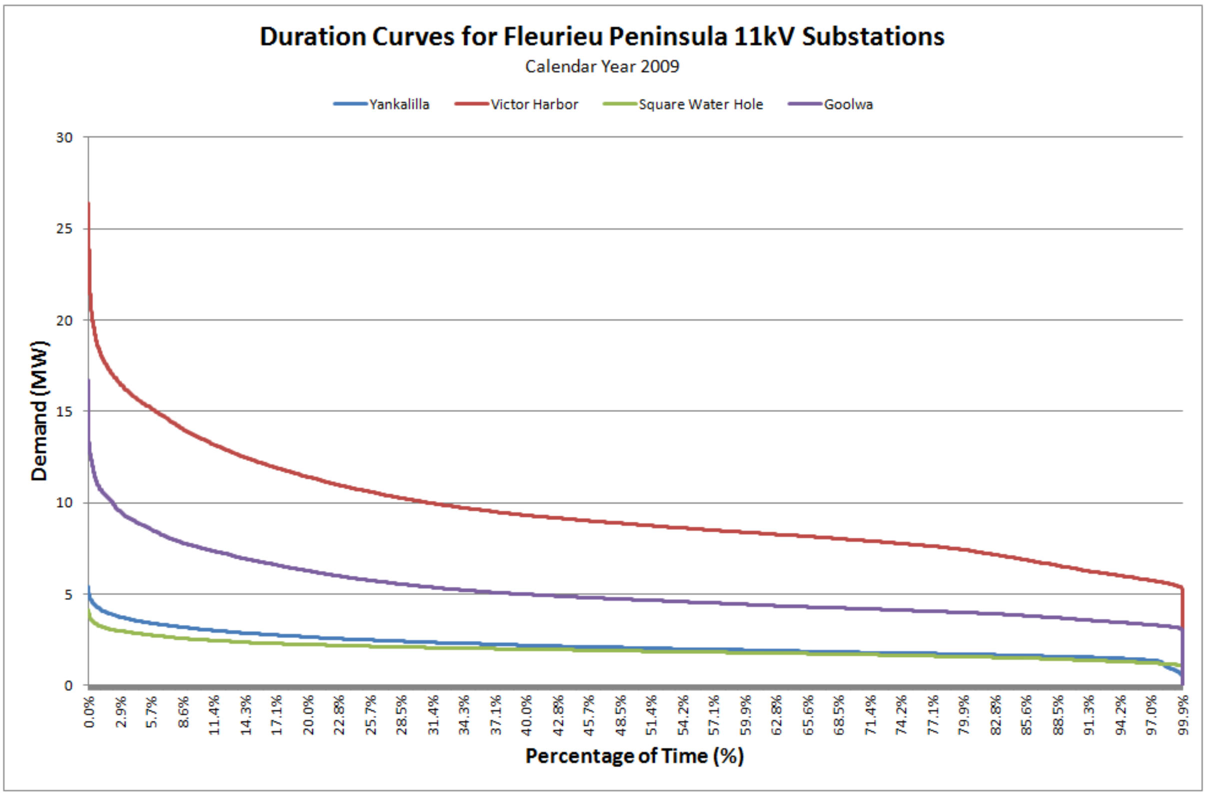
Table 3 details demand and energy consumption by substation for the period.

Detail	Unit	Yankalilla	Victor Harbor	Square Water Hole	Goolwa	Total
Maximum Demand	MW	5.41	26.41	4.14	16.72	48.63
Average Demand	MW	2.19	9.50	1.92	5.19	18.80
Annual Energy	MWh	19,160	83,205	16,832	45,489	164,686
% of Total Energy	%	12%	51%	10%	28%	100%
Load Factor	%	40%	36%	46%	31%	39%

Table 3: Summary Electricity Data by 11kV substation

It can be seen that Victor Harbor substation carries half the load for the region, just over a quarter of the load flows through the Goolwa substation and the remainder is split almost equally between the Yankalilla and Square Water Hole transformers. It is also pertinent to note that the load factors for Goolwa and Victor Harbor are significantly lower than for Square Water Hole and Yankalilla.

5.2.1 Profiles



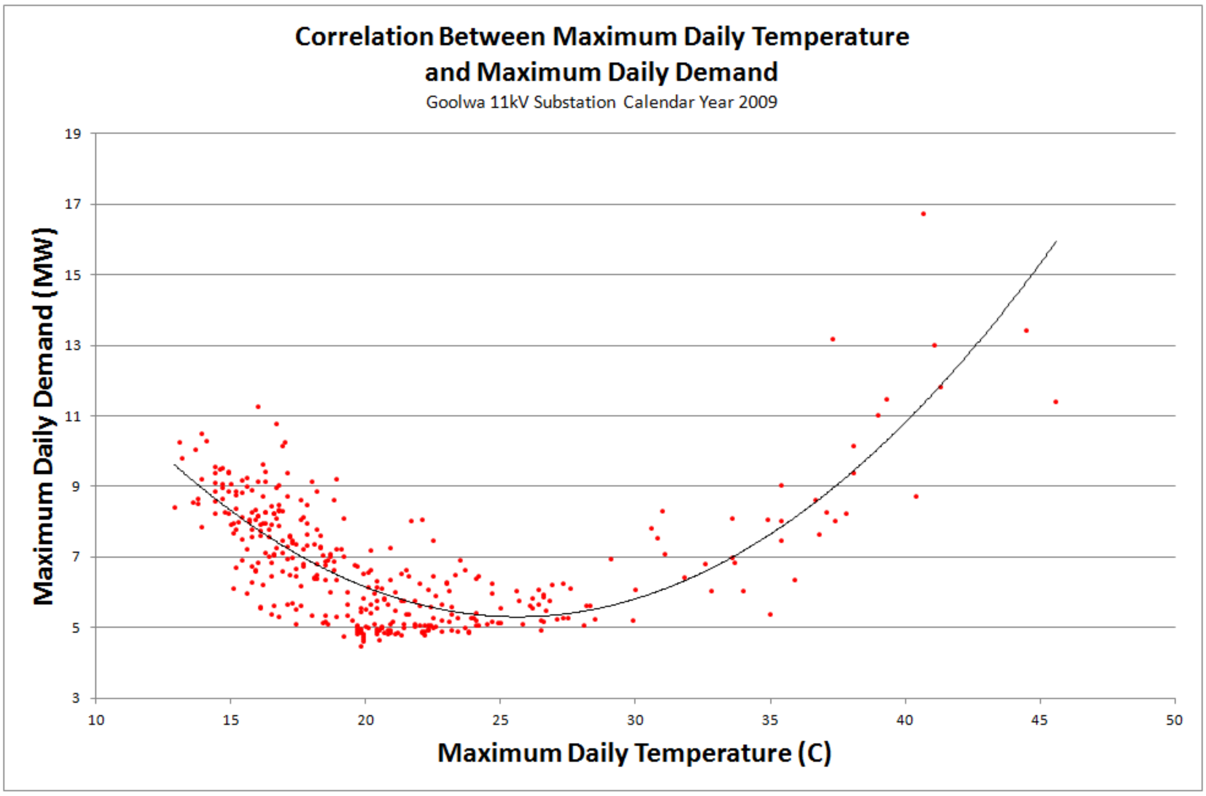
Graph 3: Duration Curves for Fleurieu Peninsula 11kV Substations

Graph 3 illustrates the duration curves for the four 11kV substations on the Fleurieu Peninsula.

The following conclusions can be made from this graph.

- The majority of the load for the region is connected to the Victor Harbor and Goolwa substations.
- The duration curves for Square Water Hole and Yankalilla are relatively flat. This indicates that there is very little variation in load across the year. It also confirms the superior load factor of these substations.
- The duration curves for Goolwa and Victor Harbor show that there is a relatively high load on the transformers for a very short period of time. This indicates a short duration peak occurs at some period of the year. This is likewise reflected in the exceptionally low load factors for these two substations.

Goolwa substation the top 10% of demand persists for only 3.5 hours per year whilst the top 25% only persists for 16.5 hours. This indicates an extreme under utilisation of the distribution asset.

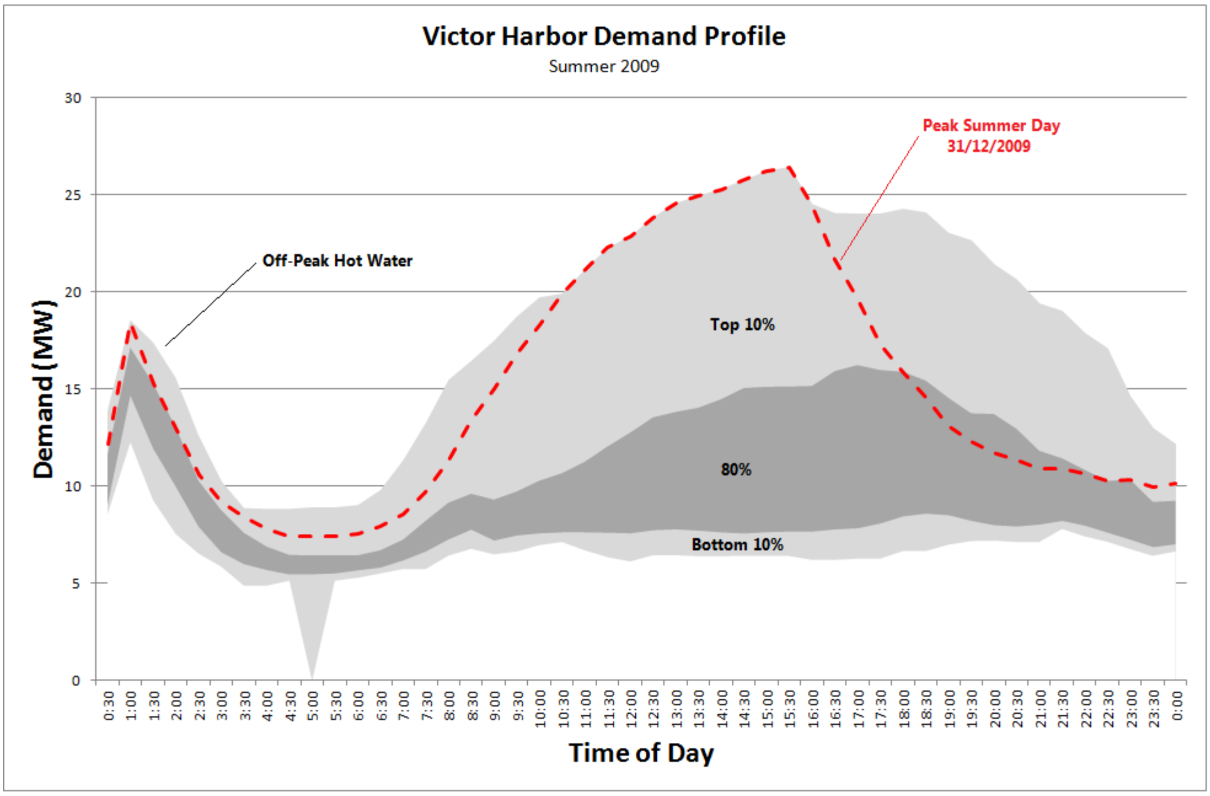


Graph 4: Temperature – Demand Correlation for Goolwa Substation

Graph 4 shows the correlation between maximum daily temperature and maximum daily demand for the Goolwa substation load (this substation exhibited the lowest load factor of all the substations in the region).

It is clear that there is a definite relationship between temperature and demand. As temperature rises above 25C demand increases exponentially and similarly demand increases as temperature falls below 25C.

This demand profile is a characteristic function of a high penetration of reverse cycle air conditioning.

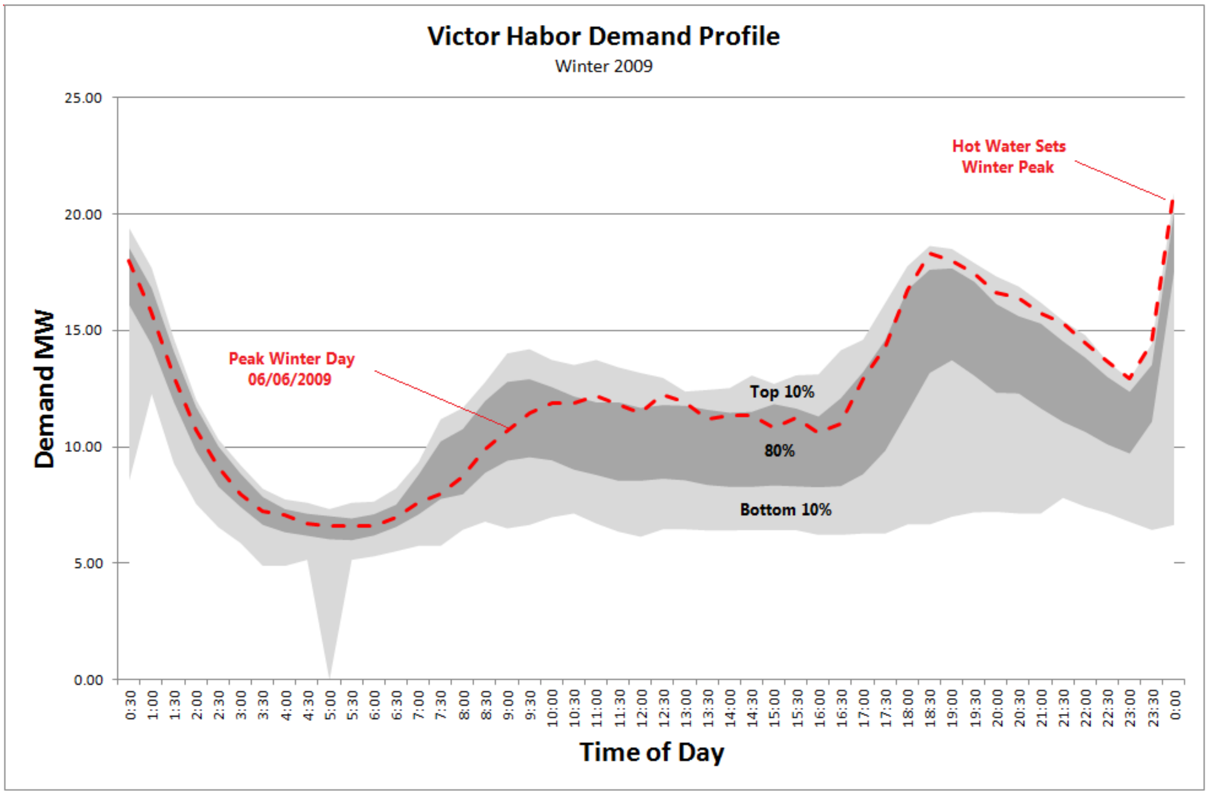


Graph 5: Victor Harbor 11kV Substation Summer Demand Profile

Graph 5 shows the upper 10% of demand, the middle 80% and lower 10% bands of half hourly demand for the summer of 2009. The demand for the summer peak day (31/12/2009) is super-imposed on the percentile bands.

This graph shows:

- That off-peak hot water services set peak demand on the network for in excess of 90% of the time.
- The lower 10% band is 'tight'. This indicates that there is very little variance in minimum demand from day to day. There appears to be a baseload of approximately 5MW throughout the period.
- There is some 'flex' in the middle 80% of demands; however this is not as prominent as the 'flex' in the top 10% of demands.
- The peak day was on the 31st December 2009 – peak holiday season when the temperature exceeded 40C.



Graph 6: Victor Harbor 11kV Substation Winter Demand Profile

Graph 6 shows the top 10%, mid 80% and lower 10% of demands for the winter of 2009. This profile is markedly different from the summer profile.

- 'Off-peak' hot water sets winter peak demand.
- A second, slightly lower, peak is prevalent in the evening period (peaking around 6pm to 7pm). This is most likely a demand created by residential cooking, heating and lighting.
- The winter load profile is more stable than the summer, exhibiting less 'flex' in demand between days.

Rank	Date	Time	Maximum Demand All Day MW	Maximum Temperature C	Notes
1	31-Dec-09	15.30	26.41	40.7	Summer Afternoon
2	29-Jan-09	18.00	24.26	44.5	Summer Evening
3	13-Jan-09	19.00	22.39	41.1	Summer Evening
4	28-Jan-09	14.00	21.49	45.6	Summer Afternoon
5	30-Dec-09	18.00	21.16	37.3	Summer Evening
6	06-Jun-09	0.00	20.92	16	Winter Midnight
7	29-Aug-09	0.00	20.7	16	Winter Midnight
8	11-Jul-09	0.00	20.5	16.3	Winter Midnight
9	17-Jul-09	0.00	20.4	16.2	Winter Midnight
10	03-Oct-09	0.00	20.4	15	Winter Midnight

Table 4: Top 10 Daily Maximum Demands (all day)

Table 4 shows the time, date and temperature of the top 10 daily maximum demands. This indicates that the top 5 demands were set in summer evenings and afternoons – as a result of air-conditioning loads on hot days. The next 5 days peak demand was set at midnight in winter – as a result of 'off-peak' hot water.

Rank	Date	Time	Maximum Demand 7am - 8pm MW	Maximum Temperature C	Notes
1	31-Dec-09	15.30	26.41	40.7	Summer Afternoon
2	29-Jan-09	18.00	24.26	44.5	Summer Evening
3	13-Jan-09	19.00	22.39	41.1	Summer Evening
4	28-Jan-09	14.00	21.49	45.6	Summer Afternoon
5	30-Dec-09	18.00	21.16	37.3	Summer Evening
6	19-Nov-09	18.30	19.43	41.3	Summer Evening
7	16-Dec-09	17.00	19.14	39.3	Summer Afternoon
8	27-Jan-09	17.30	18.72	39	Summer Afternoon
9	14-Jul-09	18.30	18.63	13.9	Winter Evening
10	06-Jul-09	18.30	18.59	13.1	Winter Evening

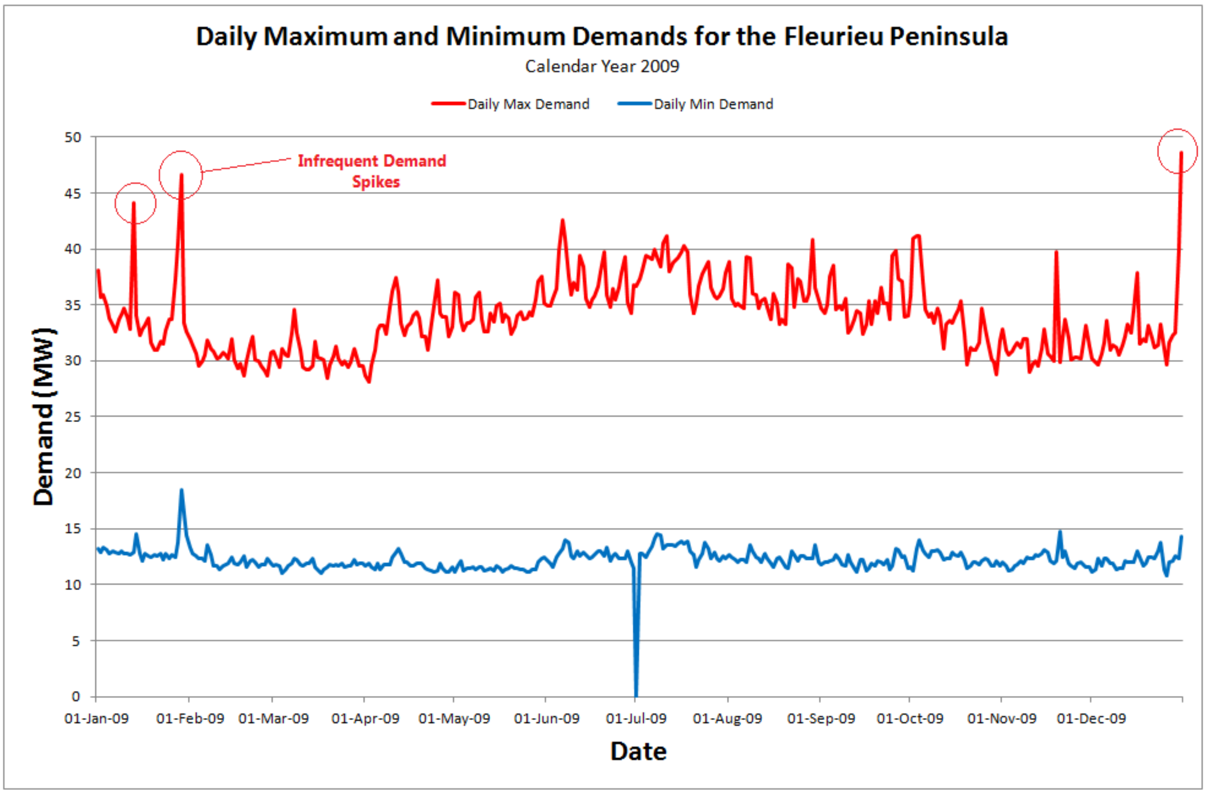
Table 5: Top 10 Daily Maximum Demands (7am to 8pm)

Table 5 shows similar information except that the maximum demand period has been restricted to 7am to 8pm. This has the effect of excluding hot water peaks.

The result of excluding off-peak peaks is that the top 8 peaks now occur in summer afternoons and evenings and the next two highest demands occur in winter evenings.

Graph 7, overleaf, shows the daily maximum and minimum demands for the aggregate of the four 11kV substations in the Fleurieu region. This graph shows:

- That there is a baseload demand of slightly over 10MW.
- That there is a seasonal bias to demand.
- There is a higher average demand in winter.
- The extreme summer peak demand due to air-conditioning on hot days is evident.



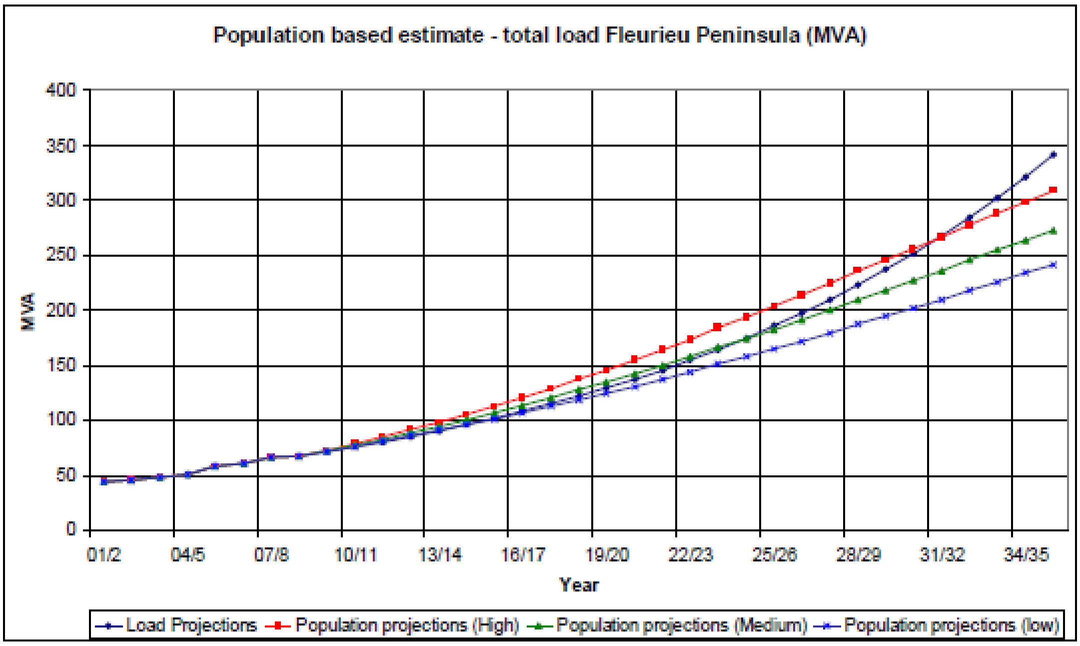
Graph 7: Daily Maximum and Minimum Demands for the Fleurieu Peninsula (Calendar Year 2009)

5.2.2 Key Characteristics

The key characteristics of the Fleurieu load profile are detailed below:

- Load factors on the 11kV substations are poor, particularly at Goolwa and Victor Harbor. This results in extremely poor asset utilisation.
- Network peak demands occur in three distinct periods:
  - On afternoons and evenings on hot summer days - caused by air-conditioning.
  - Winter at midnight - caused by 'off-peak' hot water systems.
  - Winter evenings - caused by residential heating, cooking and lighting.
- Load is temperature dependent, indicating a high prevalence of reverse cycle air-conditioning used for heating and cooling.
- More energy is used in winter but highest demand occurs in summer.

5.2.3 ETSA Growth Forecast



Graph 8: ESTA Utilities' Forecast Demand Growth for the Fleurieu Peninsula[11]

Graph 8 illustrates ETSA Utilities' forecast for load growth for the Fleurieu Peninsula as a whole. This estimate has been based on population growth. Table 6 summarises ETSA's assessment of historical demand and population growth.

Substation	2000/1 Peak MVA	2006/7 Peak MVA	Annual % Growth	Annual Pop Growth	Per capita Growth	Minimum rate	Maximum rate
Victor Harbor	15.9	23.1	6.42%	2.40%	**4.02%**	3.16%	4.89%
Goolwa	8.2	15.3	10.95%	4.90%	**6.05%**	5.16%	6.96%
Yankalilla	4.7	7.1	7.12%	2.30%	**4.82%**	3.95%	5.69%
Kangaroo Island [3]	5.1	6.9	5.17%	0.90%	**4.27%**	3.42%	5.13%

Table 6: ETSA Utilities Assessment of Historical Population and Demand Growth

[11] *Request for Proposals: Bulk Supply to the Fleurieu Peninsula* - ETSA Utilities 1 March 2010

Year	Total Load (MW) (1)	Peak Load At Risk (MW) (3)	Hours at Risk (2)	% of Total Load
2013/2014	132	15	37	11.5%
2014/2015	139	23	47	16.3%
2015/2016	147	31	57	20.9%
2016/2017	156	39	77	25.2%
2017/2018	165	48	105	29.4%
2018/2019	174	58	155	33.3%
2019/2020	183	67	222	36.5%

Table 7: ETSA Utilities' Forecast of Load at Risk for the Fleurieu Peninsula[12]

Table 7 shows ETSA Utilities forecast of load at risk. ETSA predict that the reliable network capacity will exceeded in the financial year 2013/14.

5.3 Request for Proposals

As a result of the predicted network constraint ETSA Utilities and Electranet released a request for proposals from potential suppliers of non-network solutions as required under the National Electricity Rules.

The document "*Request for Information (RFI 001/10) / Request for Proposals (RFP001/10): Bulk Electricity Supply to the Fleurieu Peninsula Region*" states:

"Continuing growth of electricity demand in the peninsula means that peak demands are forecast to approach the capacity of the local electricity supply network. The two companies [ETSA & Electranet] are investigating initiatives to reduce this demand ("demand management" or DM) as part of a solution that will maintain existing system reliability and levels of service more cost effectively than installing additional network infrastructure alone. In the context of this investigation, "demand management" includes but is not limited to measures to alter the magnitude or timing of customers' peak demand such as:

- Installation of energy efficient equipment in energy users' premises that
- permanently reduces peak demand including power factor correction
- equipment;
- "Fuel switching" from electricity to another fuel, such as gas;
- Installation of equipment such as energy and thermal storage;
- Agreements with energy users to interrupt or reduce certain loads when called upon to do so;
- Agreements with energy users to run standby generators when called upon to do so and
- Installation of generation or cogeneration equipment."

[12] *Request for Proposals: Bulk Supply to the Fleurieu Peninsula* - ETSA Utilities 1 March 2010

In the same document the costs of a number of potential network solutions are presented. These are detailed in Table 8, below.

Option	Period of Expenditure	ETSA Utilities Expenditure	ElectraNet Expenditure	Total ($M)
Currency Creek CP	2012-2015	38	-	38
	2016-2020	87	227	314
	2021+	96	25	121
SQWH CP	2012-2015	38	-	38
	2016-2020	124	243	367
	2021+	85	25	110
Late SQWH CP	2012-2015	38	-	38
	2016-2020	176	-	176
	2021+	162	268	430

Table 8: Network Solutions Costs (Approximate)

Clearly the costs to augment the network are significant.

It is understood that currently ETSA Utilities are negotiating with a provider of diesel generation to install and operate peaking diesel fuelled generation in the Victor Harbor area. Because of the commercial nature of the arrangements no detail on the solution is currently available.

6 Existing Demand Side Solutions

This section reviews the demand side incentives, products and services offered through electricity market mechanisms that are available to customers on the Fleurieu Peninsula.

6.1 Network Tariffs

Network tariffs for residential customer typically account for 50% of a retail energy bill.

Currently only two residential Network Tariffs are available:

- Low Voltage Residential – Single Rate
- Low Voltage Residential – Single Rate with Controlled Load

The rates applicable for these tariffs are detailed in Table 9.

Element	Price	Unit
Uncontrolled Load		
Supply Rate	33.7953	c/day
First 333.3kWh/month	10.9692	c/kWh
Next 500kWh/month	14.7455	c/kWh
Balance of usage	17.6451	c/kWh
Controlled Load		
First 666.7kWh/month	4.0854	c/kWh
Balance of usage	5.2294	c/kWh

Table 9: ETSA Residential Network Tariffs

Appliances supplied on a controlled load tariff have their supply restricted by time-switch. The hours of availability are at ETSA's discretion, however they are typically for eight hours between 11pm and 7am. A one hour afternoon boost is available on request.

Only certain loads are permitted to be charged as controlled loads. These are:

- Permanently installed storage water heaters with a capacity of 125 litres or more.
- Under-floor heating.
- Swimming pool and spa heating.

6.2 Retail Tariffs

Retail tariffs in South Australia are typically inclining block tariffs that follow the blocks in ETSA Utilities' single rate tariff.

Some retailers do offer a two-rate tariff where only the energy component of the bill has differential 'peak' and 'off-peak' rates. Most commonly South Australian customers purchase a bundled product where energy and network components are offered at a single unit rate.

No evidence of tariff innovation was discovered.

6.3 Smart Metering

Smart metering is currently not offered (nor is it likely to be offered in the foreseeable future) to customers in South Australia.

Interval metering with In-Home-Displays (IHD) are available on a contestable basis from some retailers.

Given that no innovative customer tariff propositions were identified, the use of interval metering and IHDs would provide information to customers only.

6.4 PV Incentives

There are currently two arrangements for solar photovoltaic (PV) Feed-in Tariff (FIT) for SA:

- For installations commissioned prior to 30/09/2011
- For new PV installations.

Pre-existing Installations

For installations prior to 30/09/2011 customers receive:

- 44c/kWh for energy exported to the network (until 30/06/2028).
- Plus 7.1c/kWh from 27/01/2012 to 30/06/2012.
- Plus 9.0c/kWh from 1/07/2012 to 30/06/2013.
- Plus 9.9c/kWh from 01/07/2013 to 30/06/2014.

New Installations

For new installations until 30/09/2013 customers receive:

- 16c/kWh for energy exported to the network (until 30/09/2016).
- Plus 7.1c/kWh from 27/01/2012 to 30/06/2012.
- Plus 9.0c/kWh from 1/07/2012 to 30/06/2013.
- Plus 9.9c/kWh from 01/07/2013 to 30/06/2014.

The FIT will be only b applicable to the first 45 kWh exported per day. Customers will be restricted to one generator per person. Generators will be specifically excluded if they are operating primarily for the purpose of generating a profit from receiving the feed-in tariff.

6.5 REES

The Residential Energy Efficiency Scheme (REES) is designed to facilitate reductions in greenhouse gas emissions in South Australia. The scheme obliges electricity retailers with 5,000 or more residential customers to provide incentives for South Australian customers to reduce greenhouse gas emissions and energy consumption.

Under the scheme obliged retailers are required to meet pro-rated targets for greenhouse gas reduction. There are a number of defined activities for which retailers receive specified credits which contribute toward their target. The allowable activities under the scheme are:

- Undertaking energy audits
- Install efficient showerhead
- Install ceiling insulation
- Install draught proofing
- Dispose of secondary fridge or freezer
- Install compact fluorescent lamps
- Install efficient down-lights
- Upgrade air-conditioner ductwork
- Upgrade non-ducted heating/cooling system
- Replace water heater
- Install standby power controllers
- Install efficient pool pump

Whilst all South Australian customers are able to access the scheme obliged retailers are incentivised to target disadvantaged households.

The Essential Services Commission (ESCOSA) is the administrator of the scheme. ESCOSA is responsible for ensuring compliance and annual reporting to the Minister for Energy.

6.6 Guideline 12

The Essential Services Commission of South Australia released Guideline 12 in September 2003 and revised it in July 2007.

The objectives of the current version of Guideline 12 are:

- ensure the quality and transparency of assessments and comparisons of network augmentations, extensions and demand management alternatives, thereby assisting ETSA Utilities and its customers in making more efficient investment decisions;
- encourage an interactive approach between ETSA Utilities, electricity customers and energy service providers, to facilitate the development and implementation of appropriate demand management initiatives in the future;
- raise the awareness of demand management in the general community and, in particular, of the circumstances in which demand management options can be effective; and
- facilitate the development of an energy services industry in South Australia which can provide electricity demand management services to the South Australian community and ETSA Utilities.

In respect to information pertaining to the network the Guideline also requires ETSA Utilities to provide both:

- future or forecast information; and
- historical or actual information.

Guideline 12 operates under the auspices of the National Electricity Rules (NER). Under clause 6.2.3(e)(2) of the NER, "Principles for regulation of distribution service pricing", there is a requirement for the regulatory regime administered by the Jurisdictional Regulator [ESCOSA] to have regard to the need to:

"Create an environment in which generation, energy storage, demand side options and network augmentation are given due and reasonable consideration."

Clause 5.6.2(f) of the NER, "Network Development", requires:

"Within the time for corrective action notified in clause 5.6.2(e) the relevant Distribution Network Service Provider must consult with affected Registered Participants, NEMMCO and interested parties on the possible options, including but not limited to demand side options, generation options and market network service options to address the projected limitations of the relevant distribution system except that a Distribution Network Service Provider does not need to consult on a network option which would be a new small distribution network asset.'

Only one demand side project has been identified that was initiated as a result of Guideline 12. The project was the installation of a standby diesel generator in a customer's premises in the SE of the State. No technical or financial details of this project are publically available.

It is understood that as a result of the invitation for submissions in its document *Request for Proposals: Bulk Supply to the Fleurieu Peninsula* (March 2010), ETSA Utilities are in negotiations with a proponent. It is understood that the project is based upon the installation of diesel generation in the Victor Harbor area. The negotiations are commercial in nature and as such no information is publically available.

6.7 Efficacy of Existing Demand Side Initiatives

Network Tariffs

The only demand side option available is the Controlled Load tariff. This offering is targeted mainly at traditional off-peak electric water storage systems. Since 2010 the South Australian Government has been systematically prescribing the use of electric storage hot water services. It is not currently permissible to install such systems in any residential premises except apartments. Therefore, this tariff is effectively defunct.

Further, the tariff in fact is the cause of significant peaks on the electricity network. The methodology of control is antiquated – simple time-switches. This method of control effectively precludes any flexible scheduling of load control.

Retail Tariffs

No evidence of retail tariff innovation to facilitate demand side response was identified.

Smart Metering

Smart metering has the capability to act as a platform for product innovation in the NEM. Smart Metering is not available in South Australia.

Interval metering with in-home display capability is available for purchase in South Australia, however, without supporting product offerings it can only be used for information. Thus its facility is limited.

Solar PV

Solar PV generation has been popular with South Australian customers. More than 166MW of generation has been installed by 75,000 customers across South Australia[13].

The uptake of solar power in the Fleurieu region has been exceptional. The five areas with the highest penetration of solar PV in SA (by percentage of homes) are[14]:

- Goolwa/Hindmarsh Island 40%
- Victor Harbor 38%
- Aldinga 34%
- Hallet Cove/Sheidow Park/Flagstaff Hill 24%
- Moana/Seaford 24%.

Using the government figures above it is possible to estimate the impact on of solar PV on South Australian customer bills.

The calculation below assumes a conservative capacity factor of 12%, allowing for imperfect installations, and 25% of energy generated being exported.

[13] South Australian Government
[14] City of Victor Harbor

Capacity of PV installed (kW)		166,000
Hours per annum		8,760
Capacity Factor		12%
Annual Generation (kWh pa)		174,499,200
Energy Used on site (%)		75%
Energy Used on site (kWh pa)		130,874,400
Cost of Electricity (c/kWh)		0.30
Value of Electricity Generated ($ pa)	$	39,262,320
Energy exported (%)		25%
Energy exported (kWh pa)		43,624,800
FIT (c/kWh)		0.44
Value of Electricity Generated ($ pa)	$	19,194,912
Total Value of Electricity Generated ($pa)	$	58,457,232
Number of Customers		75,000
Value per customer ($pa)	$	779.43

Using these assumptions the average benefit per South Australian customer who participates in the feed in tariff scheme is $780 per annum.

REES

There is insufficient publically available information to estimate the potential benefits of the REES to customers on the Fleurieu. However, each of the activities in the scheme has undergone rigorous evaluation by ESCOSA. Each initiative will certainly reduce energy consumption and greenhouse gas emissions at customer premises.

For customers on the Fleurieu accessibility to the scheme and its benefits is the prevailing hurdle. To provide widespread benefit an effective mechanism for deployment of the various solutions is required.

7 Potential Solutions

ETSA Utilities and Electranet are proposing to expend 100's of millions of dollars on the Fleurieu Peninsula in the coming decades (see Table 8 on page 25). This expenditure is intended to meet growth in demand in the region, which is one of the fastest growing regions in the State (see section 4.2 on page 11).

However, analysis of the half hourly load data for the four 11kV substations on the Fleurieu has shown that the existing load factor on the system, and thus asset utilisation, is poor – only 39% in aggregate (see Table 3 on page 17). For the Goolwa substation the top 25% of demand persists for only 16.5 hours per annum.

The data also showed that peaks in demand are seen in three distinct periods:

- On afternoons and evenings on hot summer days - caused by air-conditioning.
- Winter at midnight - caused by 'off-peak' hot water systems.
- Winter evenings - caused by residential heating, cooking and lighting.

It is entirely feasible to mitigate these peaks in demand, and thus improve asset utilisation, by adopting a demand side approach in conjunction with any necessary network augmentation. Three distinct approaches are required:

1. Reduce existing peak demand through retrospective means.
2. Mitigate the rate of demand growth by addressing peak demand in new housing.
3. Deploy distributed generation and/or energy storage.

The following sections briefly describe the potential solutions available that could be utilised to improve asset utilisation and therefore retard the growth rate of system demand.

7.1 Reducing Existing Demand

The principal targets for mitigation of existing peak demand are:

- Air-conditioners in summer
- Off-peak hot water over-night
- General consumption in winter afternoons

7.1.1 Air-conditioning

There are three main ways of reducing demands due to air-conditioning load:

1. Improving the efficiency of air-conditioners by replacement or improvement to the appliance or its ducting.
2. Improve the properties of the building to reduce cooling loads.
3. Initiate a direct load control programme for air-conditioners.

The REES identifies four ways of addressing points 1&2. These are:

- Install ceiling insulation
- Install draught proofing
- Upgrade air-conditioner ductwork
- Upgrade non-ducted heating/cooling system

Air-conditioning Demand Response

ETSA has conducted numerous trials to demonstrate that direct load control programmes for air-conditioning are acceptable to customers and provide a credible level of demand mitigation.

In the document *Demand Management Program Interim Report No 1 – June 2007*, ETSA Utilities gave a favourable report on its trials of air-conditioner direct load control.

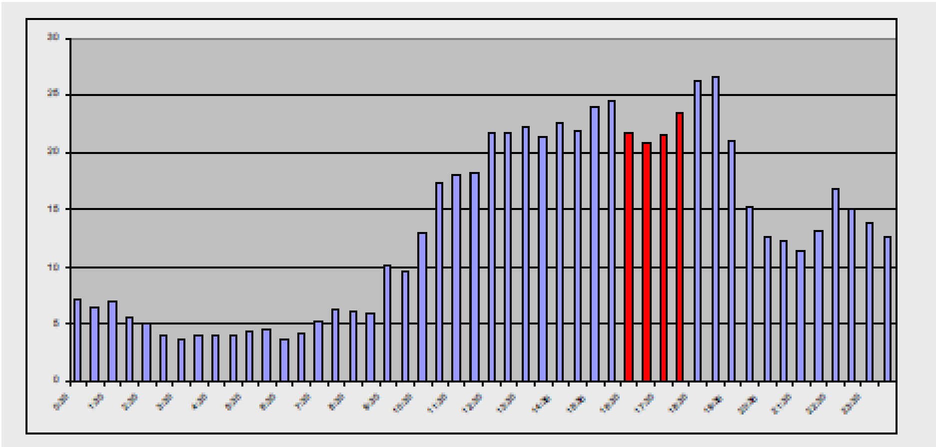


Figure: Aggregate Load Curve Switching 15 Minutes Off in Every 30 Minutes

Figure 6: Extract Graph from ETSA Utilities DM Interim Report No 1

Figure 6 shows the level of demand response achieved in an early trial whilst the extract in Figure 7 below demonstrates positive customer response to the trial.

> The results of this trial confirmed that external control of air conditioners had taken place and that customers felt no perceptible reduction in comfort levels. In the words of one customer:
>
> *"If anyone would notice a change in temperature it would be me. I hate the heat. I always have the air conditioner on. And I kept a diary through every hot day and I did not feel any change in the temperature. Now I've seen the data of what you did …. That's amazing."*

Figure 7: Extract passage from ETSA Utilities DM Interim Report No 1

In a subsequent document *Demand Management Program Interim Report No. 3 - June 2010* ETSA utilities confirmed that air-conditioner programmes were financially as well as technically viable propositions:

"The business case analysis for the Peakbreaker+ at 2007/08 price points supported a full scale roll out."[15]

Figure 8 is an extract from the report and depicts ETSA Utilities preferred technical solution.

[15] *Demand Management Program Interim Report No. 3 - June 2010*

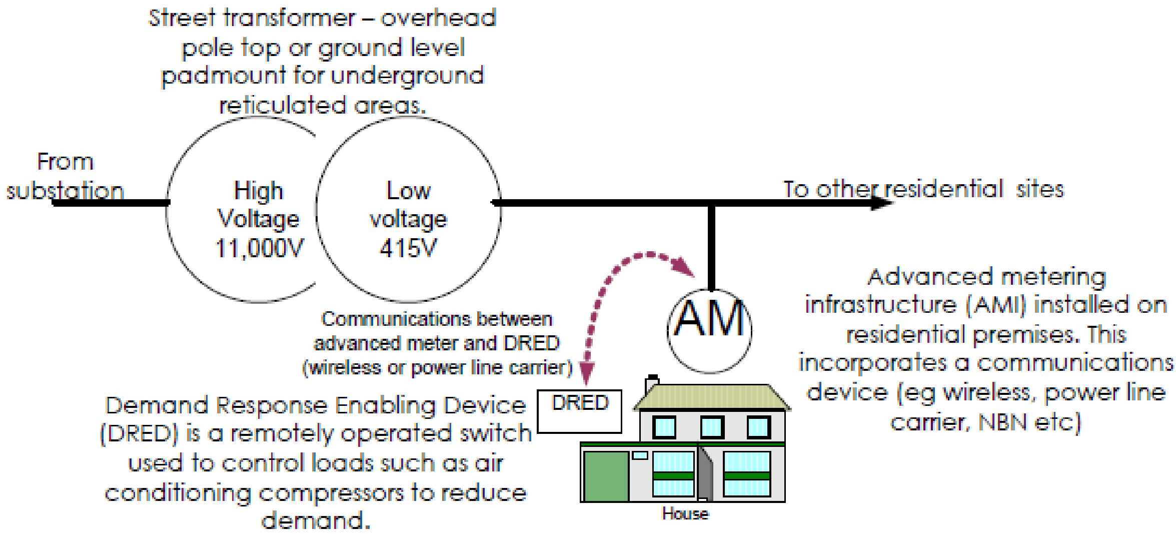


Figure 8: ***Demand Management Program Interim Report No. 3 - June 2010***

7.1.2 Off-Peak Hot Water

The spikes in demand caused by off-peak hot water services can easily be mitigated by replacing existing water heaters with energy and emissions efficient solar thermal and heat pump water heaters.

7.1.3 Winter Afternoon Peak

The demand peak in winter afternoons can be mitigated by improving the efficiency of both building fabric and appliances. The REES activities offer a number of solutions:

- Install efficient showerhead
- Install ceiling insulation
- Install draught proofing
- Dispose of secondary fridge or freezer
- Install compact fluorescent lamps
- Install efficient down-lights
- Upgrade non-ducted heating/cooling system
- Install standby power controllers

7.2 New Housing

There are a number of approaches to mitigating peak demand in new housing:

- Energy conservation – building envelope
- Energy conservation – electrical appliances
- Load reduction
- Load shifting

Energy Conservation - Buildings

Under current South Australian legislation all new homes and extension must attain a 6-star rating when assessed against a Nationwide House Energy Rating Scheme (NatHERS) accredited rating system.

Further improvements to in energy consumption can be achieved by constructing homes that exceed the minimum standard.

Energy Conservation - Appliances

Currently the following appliances carry energy labels:

- Air-conditioners
- Clothes Dryers
- Clothes Washers
- Dishwashers
- Refrigerators & Freezers

Energy labelling allows the specification and promotion of highly efficient appliances – particularly in new homes.

Load Reduction and Load Shifting

Currently a suite of Australian to facilitate demand response in a number of priority electrical appliances (those that contribute to peak demand) is being developed. The appliances are:

- Air-conditioners - AS 4755.3.1
- Pool pumps – AS 4755.3.2
- Electric water heaters (heat pumps and solar thermal water heaters) – AS 4755.3.3

A Regulation Impact Statement (RIS) is currently being drafted by the Commonwealth Department for Climate Change and Energy Efficiency (DCCEE). This proposes that AS 4755 compliant interfaces be mandated on all air-conditioners, pool pumps and electric water heaters.

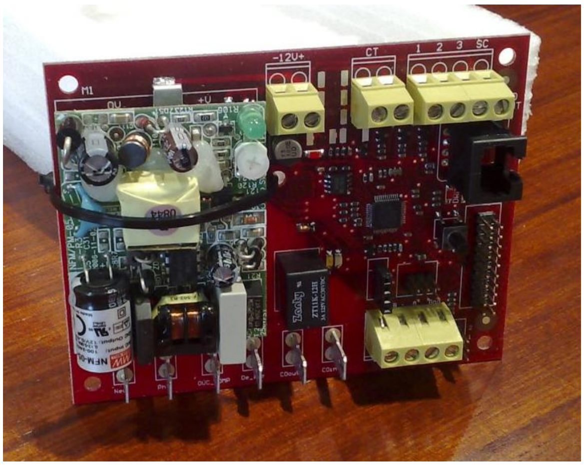


Figure 9: Commercially available AS4755 air-conditioner interface

A further standard for electric vehicle chargers and energy storage devices is being assessed.

These standards are designed to facilitate load reduction and load shifting with minimal reduction in utility to the customer.

To enable this latent demand response to be accessed a further Australian Standard, AS4755.2, is being drafted to standardise the interaction between these appliances and utility demand response systems. The devices that facilitate demand response are known as Demand Response Enabling Devices (DREDs).

Notwithstanding the fact that the suite of standards for appliances and DREDs is still being developed AS4755 compliant DREDs and priority appliances are currently commercially available. Figure 9 illustrates an AS4755 demand response interface for a compliant air-conditioner.

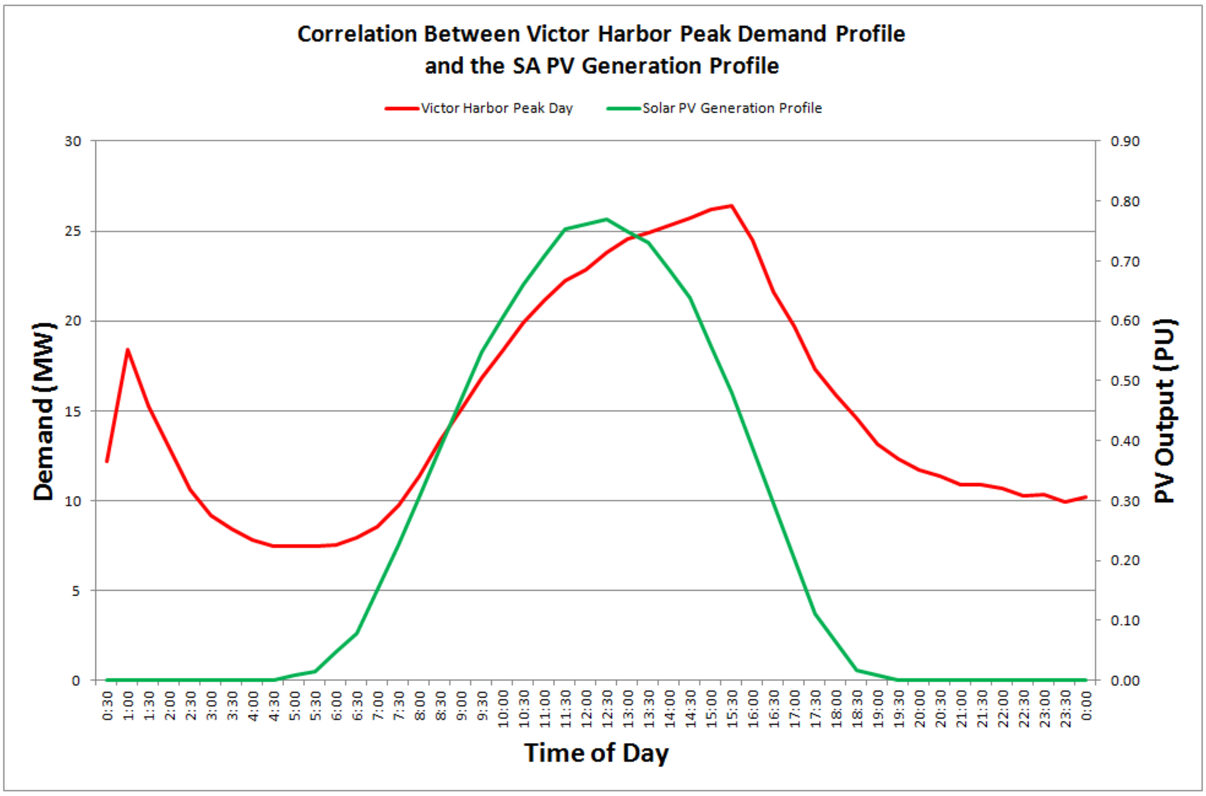
In addition a range of communication and control systems is also available to facilitate a fully functioning demand response platform.

7.3 Distributed Generation and Energy Storage

Small scale distributed generation can be readily deployed 'beyond' the customer meter in the premises. kW scale PV and micro-wind generation is commercially available.

The out-put of distributed generation reduces the energy flow through distribution networks – this is useful for mitigating network load at times of peak demand.

PV generation out-put in particular is particularly useful in mitigating demand on summer days. Graph 9 clearly shows the correlation between demand on the 31/12/2009 (peak day) and the PV output profile.



Graph 9: Correlation between summer peak demand in Victor Harbor and PV output

Energy Storage

Figure 10: Li-ion Battery

Residential scale energy storage is now commercially available in South Australia. Figure 10 shows a residential Lithium Ion battery, available from Zen Technologies with a power out-put of 5kW and an energy storage capability of 20kWh – sufficient to meet the energy needs of an average household for 24 hours.

Such devices may be used to improve security of supply, mitigate peak demand and absorb the output from renewable generation sources.

7.4 Customer Participation

In this Section 7 a range of demand side solutions have been identified that could be usefully used to improve the asset utilisation of the distribution network. They fall into three broad categories:

1. Energy conservation
2. Distributed renewable generation
3. Peak load reduction

7.4.1 Clean Energy Future

The deployment of solutions in the first two categories would not only mitigate energy demand but would also:

- Reduce energy consumption.
- Reduce customer bills.
- Reduce greenhouse gas emissions.

As such they also meet the Federal, State and Local government aspirations for reducing carbon emissions and mitigating the impact of carbon pricing on residential customers – particularly disadvantaged customers.

Metrics show that the Fleurieu region is relatively disadvantaged compared to the South Australian average (see Table 1).

Carbon pricing will increase the price of electricity in the order of 8%. The revenue generated from carbon pricing will be used to mitigate the impact of price increases to businesses and individuals. A range of initiatives under the Clean Energy Future banner have been created to improve energy efficiency, facilitate the deployment of renewable generation and mitigate the impact of increased energy prices.

It is clear, therefore, that there is alignment between the goals of Government and a number of the solutions identified that could deployed to mitigate demand growth in the Fleurieu Peninsula.

7.4.2 Peak Load Reduction

Unlike energy conservation and renewable generation the reduction of peak load may not result in customers reducing energy consumption (and therefore emissions) to any great extent. Peak load reduction focuses on reducing kW at particular times rather than kWh.

The aim of peak load reduction is rather to mitigate costs to supply. The objective is to reduce the level of generation, transmission and distribution assets required by improving asset utilisation.

Given the impending constraint in transmission and distribution assets on the Fleurieu Peninsula this paper focuses on participation in the transmission and distribution markets.

Cost of Network Capacity

The cost of supplying residential premises with electricity is predominantly a function of the level of distribution and transmission capacity deployed. Costs of supply are kW based.

However, residential customers pay for their electricity based on energy consumption. Customers pay for kWh.

This is a fundamental mismatch and a flaw in the energy market. This mismatch between revenue and costs means that customers are given no effective price signal to indicate the real cost of electricity distribution. The result is that customer behaviours and buying decisions are not informed by real costs – this means that customers continue to use energy in ways that continue to drive up the cost of distribution and transmission.

By introducing a capacity or demand component into residential tariffs customers would be able to make informed choices about how they use their energy. In this way they can change their behaviour and make investments and buying decisions that will reduce the cost of energy.

It is estimated that the marginal cost to supply a kW of capacity in the National Electricity Market is in the order of $3,500[16]. Given that the design ADMD of a new residential property in South Australia is currently 8.0kVA. Assuming unity power factor this means that the marginal cost to connect a new home to the National Electricity Market is on average $28,000. In fact, given the relatively high growth rate in the region and the resultant cost of augmentation (see Table 8) it is likely that the actual marginal cost of a kW of capacity on the Fleurieu Peninsula is substantially higher than $3,500. It is important to note here that it is impossible to ascertain this as metrics on the marginal cost of capacity in SA are not currently available.

The Figure 11 below shows an extract from the ETSA Utilities document RFP 002/11 Overload of Campbelltown and Woodforde Substations.

The tables below indicate the amount of load reduction required in each year per substation and the available $/kVA amount to make Demand Management viable. An allowance has been made for oversubscription in order to guarantee the load reduction required, and a range of deferral benefit values are provided. The stated benefits also include an allowance to cover administrative costs.

Load reduction required and $/kVA available for Campbelltown Substation

Year	Load Reduction Required (kVA)	Typical number of Days at Risk	$/kVA available per year for DM
2013/14	3.2	3	$80 - $140 / kVA
2014/15	5.2	6	$60 - $100 / kVA
2015/16	7.7	7	$50 - $70 / kVA

Figure 11: Extract from RFP 002/11 Overload of Campbelltown and Woodforde Substations

[16] Draft Energy White Paper – December 2011: Commonwealth of Australia

This indicates that ETSA value peak load reduction at $140/kVA per annum. In fact this figure has been mitigated, possibly substantially, to cover '*over-subscription*' and '*administrative costs*'. It is likely that the actual value of peak load reduction is double the stated value – but as with the margin cost of supply metrics for the value of a mitigated kW are not available.

In order for there to be effective participation by customers in the distribution and transmission sector of the National Electricity Market the needs to be clear and information made available on the cost of capacity and the value of demand response.

Further, there need to be mechanisms in place to deliver these values to customers.

For example, if a new sub-division is to be built on the Fleurieu Peninsula planners and developers of the project should be clear as to:

- The Design ADMD of the project
- The marginal cost of capacity
- The value of peak load reduction
- The timing and nature of the network constraint (summer afternoon, winter evening, over-night etc)

In this way proponents of the project, in conjunction with home owners, can make appropriate technical and financial decisions about the approach to energy on the site. Figure 12 shows the possible configuration of a localised 'smart network' that could readily be deployed on new housing sub-division. All the elements described in the schematic are currently commercially available.

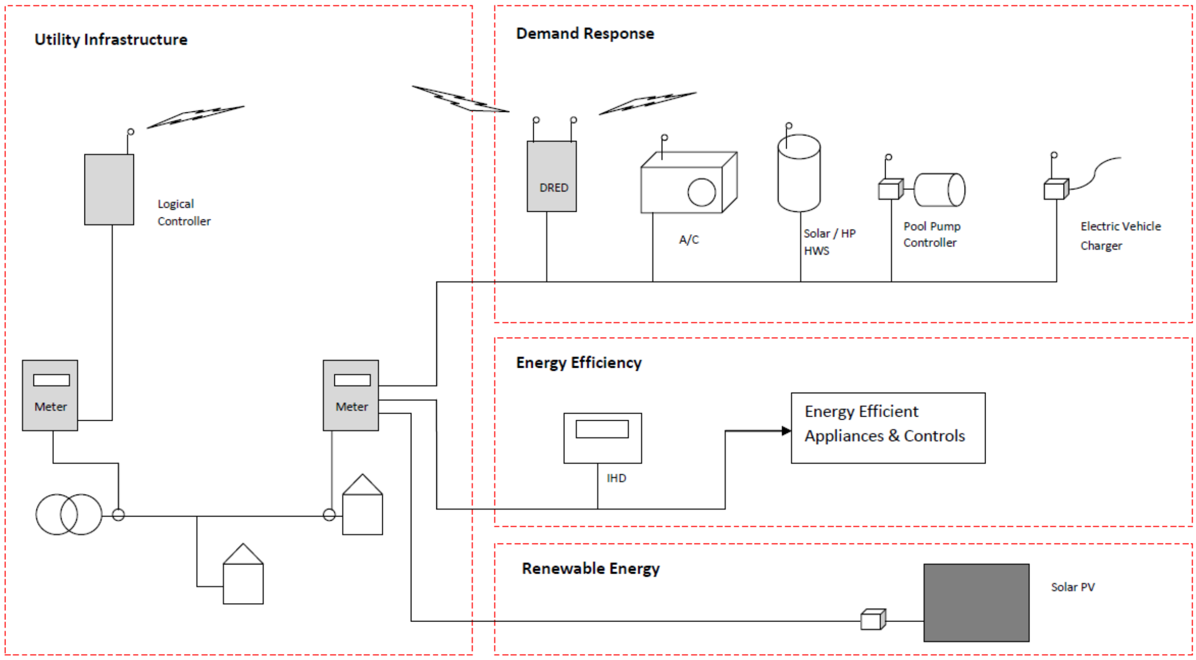


Figure 12: Possible configuration for a localised 'smart network'

The deployment of such a system could significantly reduce the Design ADMD of a new sub-division. This would have the desirable benefit of mitigating the cost of electricity supply to the project and importantly retarding load growth on the Fleurieu Peninsula. The technology illustrated is consistent with ETSA Utilities preferred technical solution for demand response (see Figure 8) currently being deployed in North Adelaide.

In order to facilitate such an approach it is necessary to align the cost of supply with the revenue mechanism in the National Electricity Market – in short customers need to be able to access the benefits of reducing ADMD and making load reduction available to the market.

There is a pressing need for reform in the way the market recovers costs for the development of new housing developments, the information made available to planners and developers and the tariff arrangements that would incentivise customers to participate in demand response schemes and deliver the benefits of avoided costs to customers.

Currently the barriers to improvements in these respects are not technology but market and regulatory issues.

8 Council Participation

Councils are uniquely placed to participate constructively in reforming some aspects of the distribution and transmission market in South Australia, they:

- are a key element in planning of new housing in SA
- are active in the development and policing of building regulations and codes
- have close and enduring connection with the community
- understand infrastructure development and maintenance
- understand the regulatory environment
- have the necessary skills and expertise to participate

8.1 Recommendations

There are a number of specific initiatives that the Fleurieu Councils could conduct in order to address the pressing energy issues on the Fleurieu Peninsula.

8.1.1 Clean Energy Futures

Councils could co-ordinate to gain access to Commonwealth funds made available to mitigate the impact of carbon pricing and improve Australian green-house gas emissions. Projects may include:

- Improving the energy efficiency of existing homes by improving their thermal performance
- Improving the energy efficiency of the appliance stock
- Replacement of existing electric hot water services
- Energy information and education

The current South Australian REES provides an excellent basis for creating financial cases and developing such initiatives.

8.1.2 Planning

Councils could improve the planning for energy in the region by:

- Engaging with ETSA Utilities in the on-going planning of energy infrastructure in the region.
- Developing a set of metrics for energy in the region:
    - Annual regional peak demand (MW)
    - Annual regional energy consumption (kWh)
    - Annual regional renewable energy generation (MWh)
    - Regional Design ADMD (kW)
    - Regional marginal cost of capacity
    - Value of load reduction
- Develop initiatives for continually improving the energy and demand efficiency of new housing in the region.

8.1.3 New Housing Developments

Councils could work with developers, ETSA Utilities and other stakeholders to develop financial and technical models for 'smart' new home developments in the region.

Such a development might some or all of the following:

- Utility owned enabling technology.
- Advanced metering infrastructure and in-home displays.
- AS 4755 compliant air-conditioners, water heaters and pool/spa controllers.
- Energy efficient homes - perhaps 7.5 or 8 star.
- Energy efficient appliances.
- Integrated solar PV.
- Energy storage technology.
- Home energy management systems.
- Tariffs and incentives to encourage participation.

It would be possible to create an accreditation mechanism so that homes in such developments could be rated according to their energy and demand efficiency. Customers might select the level of energy and demand efficiency that meets their aspirations and budget – perhaps a bronze, silver, and gold specification? The minimum specification home would have a basic level of energy efficiency and demand response capability, with the ability to easily augment in the future.

In order to achieve such an outcome needs must there is a level of co-operation between Councils, planners, developers and the electricity supply industry.

8.1.4 Participate in Energy Regulatory Processes

Councils should consider increased participation in energy industry regulatory processes in order to exercise greater influence on the development of energy infrastructure in the region.

In particular Councils should participate in the Distribution Price Reset process and AER regulatory reform processes.

Information

Councils should advocate for improved provision of energy related information that can be used to improve energy planning and benchmark changes in the energy domain. Specifically Council might lobby for:

- Improved access to network load data.
- Improvements in information provision on existing and pending network constraints.
- Published information on the marginal cost of capacity.
- Published in formation the value of load reduction.
- More clarity on the Design ADMD for specific new developments.

Participation in Energy Planning

Councils should consider ways in which energy planning could be further integrated into other state and local government community planning processes. Particular emphasis might be placed on:

- The development of energy related metrics (energy consumption, peak demand, ADMD and emissions intensity).
- Linkages between population growth and the growth in energy consumption and demand.
- Planning for energy and demand conservation.
- Planning for integrated distributed generation – particularly renewables.

Demand Side Response

Council may consider ways of actively advocating for the development of customer products and services delivered by the electricity supply industry. This might include:

- Development of innovative tariffs for example:
  - Capacity based tariffs
  - Demand response rebates
  - Dynamic Peak Pricing
- Direct load control programmes
- Optional advanced metering

Increased Focus on Demand Side

In addition to supporting continued reform of the National Electricity market to facilitate demand side participation, Councils may advocate for increased funding for demand side initiatives through the Distribution Price Reset process. A onus on distributors to offer customers demand side products and services and to develop ubiquitous enabling technologies would present customer with options for reducing their energy bills.

Develop an Energy Services Industry

The development of an effective and well funded energy services industry would enable customers to access tools and services that would enable them to improve their energy and demand efficiency – mitigating the impact of increasing energy prices.

Innovative and cost effective products and services will only be delivered if there is a secure and reliable funding stream. Councils are well placed to advocate for the development of funding mechanisms that put energy service companies on an equal footing with the transmission and distribution sectors in being able to access ongoing – risk free revenue streams to facilitate capital investment. Specifically it may be valuable to advocate for the development of an ancillary services market for demand side initiatives, similar to the ancillary services market in the generation sector. In the generation ancillary services market the Australian energy Market Operator is able to procure non-energy services on a competitive basis in order to maintain supply security in the market. The costs of procurement are integrated into the market financial mechanism. A similar approach to demand side services could be achieved. This could operate instead of or alongside the relatively ineffective Guideline 12 mechanism.

8.1.5 Develop Domain Capability and Expertise

In order to facilitate initiatives energy conservation and demand response initiatives and participate in planning and regulatory processes Councils would need to:

- Develop domain expertise and capability
- Access resources to bid for funds
- Create the capability to execute initiatives
- Develop community engagement capability
- Resource planning advocacy activities

Councils should investigate options for creating a new enterprise that would have the financial mechanisms and resources to facilitating such activities. It is recommended that Councils consider a collaborative approach with State Government, Regional Development Australia and Local Government Association.