ETSA Utilities

Delivering energy to South Australians

Demand Management

The Way Forward

2005/06 - 2009/10

ETSA Utilities

Delivering energy to South Australians

STATEMENT OF INTENT

ETSA Utilities plans to lead the nation in the astute and strategic delivery of demand management solutions.

Through demand management, we are committed to developing practical, sustainable strategies to lower charges to our customers and to defer the costly requirements of distribution network expansion.

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1. INTRODUCTION

Ensuring that distribution capacity is available to meet South Australia's few days of extreme peak electricity demand each year, plus the rate at which that peak demand is continuing to grow, leads to a necessity for on-going and increased investment in the State's distribution network.

This expenditure is the critical driver of ETSA Utilities' costs. The distribution network capacity is required to be almost three times' larger to manage those few peak days, than is needed for the remainder of the year.

Maintaining and augmenting a distribution network of the size to manage those few peak demand days, is also why ETSA Utilities does not currently have the financial capability to reduce network charges to customers to the level it would wish.

Under the terms of our Distribution Licence, ETSA Utilities is required to take account of "non-network" alternatives which may provide a more efficient solution to network augmentation. In this regard, the Essential Services Commission of South Australia (ESCOSA) has put in place extremely stringent regulations to ensure alternatives are considered.

This requirement is in line with ETSA Utilities' own business strategy. ETSA Utilities has been pursuing a research program to explore an astute and strategic delivery of such alternative network solutions within South Australia – namely demand management.

Demand management is a complex area as it relates to technology; to its introduction in a disaggregated, privatised and competitive market, and to its critical dependability (that is, it must be available when needed or it is of no value to a network business). It also requires a willing partnership between ETSA Utilities and the South Australian community.

ETSA Utilities is committed to this way forward, as demand management strategies hold the potential to reduce short and long-term electricity costs for both business and residential customers. The South Australian community stands to benefit most.

We have confidence that for this reason, South Australians will be open to understanding and embracing how demand management can work, for them as well as for ETSA Utilities.

Victoria and NSW are now also beginning to experience summer peak demand issues. As South Australia's only distributor, ETSA Utilities is taking the national lead to find ways to deliver financially beneficial solutions.

ESCOSA has funded ETSA Utilities to expand its current research program, to conduct a range of pilot demand management programs. These pilot programs will, between now and 2010, explore what should be the most effective demand management strategies to introduce within South Australia. The pilot programs will investigate primarily the use of available and emerging technologies, and also take note of regulatory and economic impacts.

ESCOSA has funded an expenditure of $20.4 million for the project during the 2005 – 2010 regulatory period.

2. BACKGROUND

2.1 Definition of Demand Management

Demand Management is defined by ESCOSA's Guideline 12 for Distribution Networks as:

"Management of the level or pattern of energy use on the transmission/ distribution network, so as to minimise the supply costs to customers, whilst maintaining or enhancing customer service levels. Supply costs include costs of projects associated with the augmentation of, or extension to, the transmission or distribution network, and include electrical losses. This definition includes such initiatives as:

1. embedded generation
2. fuel switching
3. energy efficient appliances or
4. alternative network options e.g. new transmission support"

2.2 Supply and Demand issues

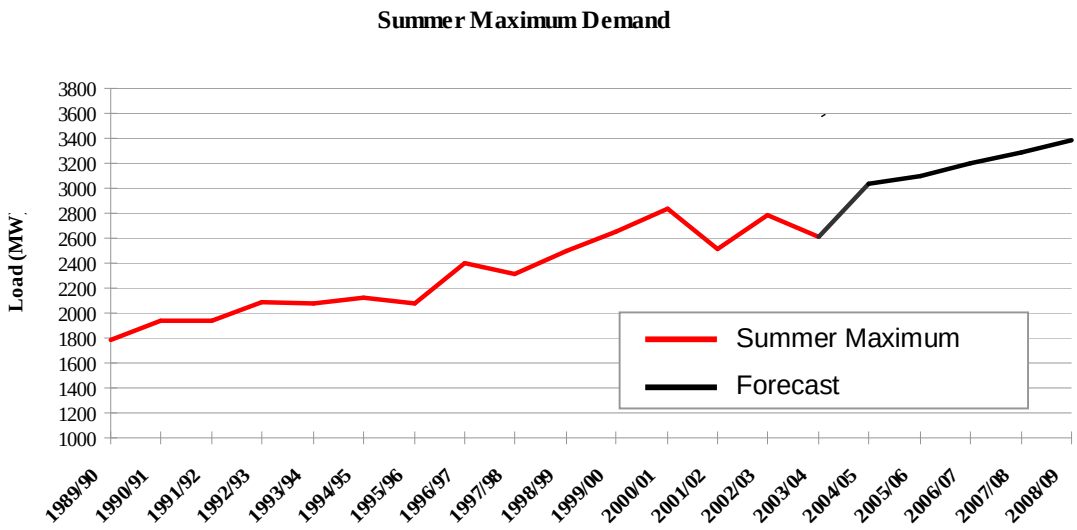
South Australia has some unique electricity issues within the National Electricity Market – the lack of enough high quality coal as a fuel source leaves us as the only State reliant on more expensive gas for use in base-load generation. We are also the State with the most expansive (per capita), and therefore expensive, transmission and distribution networks to maintain.

There is limited availability of interconnection with the eastern states and what is available can be constrained when SA needs it most. There are also a small number of generation participants in SA, creating reduced wholesale market competition. But the State's main problem is what the industry refers to as Q1. It is Q1 that is a primary cause of the electricity price differential between SA and other States, particularly as it affects residential customers.

2.3 Q1

South Australia has a generally mild climate. However, for just a few unpredictable hot days each summer - usually during the first quarter of the year and so called Q1 - power usage in South Australia peaks at a higher level (per capita) than in any other State. The peak is also much higher as a percentage of average demand than in any other State. Each year this SA peak demand is becoming more pronounced. The peak demand of residential customers is approximately three and a half to four times their average demand. This is mainly caused by air conditioning. Around 90% of South Australian homes now have air conditioners.

The graph below shows long term summer electricity demand growth in South Australia. Capital expenditure is closely linked to the growth in maximum demand.



Note: The actual electricity demand is weather dependant. Consequently the unusual mild summers of 2001/02 and 2003/04 resulted in a lower electricity demand than forecast. On the other hand, very extreme hot conditions similar to 2000/01 will result in higher electricity demand than forecast.

Demand on peak days for small to medium sized businesses is one and a half to three times higher at 2pm than on a normal day, but has dropped to a typical demand by 6pm when power usage is at its peak across the State. The demand of large business customers is unchanged on a peak day from a mild day.

Q1 is why prices to residential customers are high. It is mainly residential customers who create the peak use. This has been exacerbated by the trend to high density housing without either eaves or appropriate window placement, or other design features, to reduce summer heat. Those customers rely heavily on large air conditioning units.

Much of the generating plant, and the network capacity to deliver power during those few peak days, is underutilised for most of the year. Some plant only operates within SA for a few days each year.

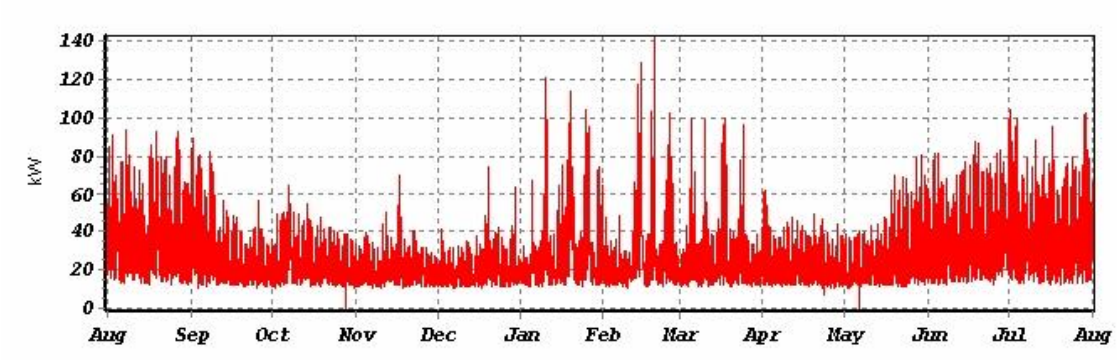
But network owners are required to have available the capacity to meet those peaks. There is an added issue - the fact that in SA the average demand is much lower as a percentage of the peak demand than in other States, means capital costs must be recovered from less total output.

The pricing effects for customers, and the continual requirement to increase network capacity to ensure reliable supply on these peak days, is therefore the key factor in ETSA Utilities' commitment to deliver a demand management solution. ETSA Utilities and ESCOSA are at one in their focus on demand management strategies for South Australia.

2.4 Examples of Residential Demand Changes with Q1

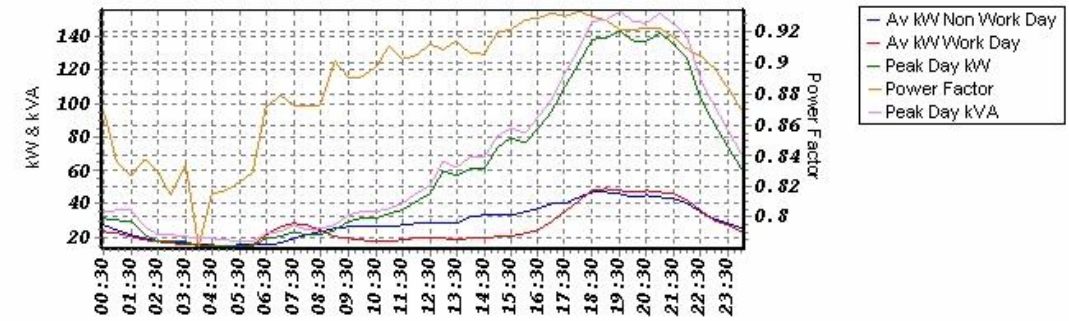
During a hot summer, poor housing design and large scale air conditioning can lift demand by up to 300% in some developments. The chart below shows the electricity usage of 43 houses in one of Adelaide's newest developments, Mawson Lakes, from August 2001 to August 2002.

Network Load Profile Mawson Lakes August 2001-July 2002



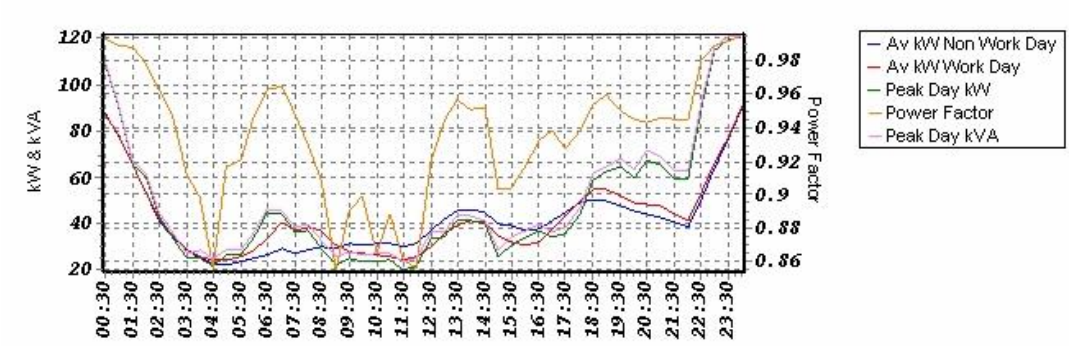
The daily average and peak kW and kVA profile below shows that the highest demand of these homes during the period spiked from approximately 50 kW on an average day, up to almost 140kW on peak demand days, an increase of 2.1kW per house. Each house averaged 3.3kW demand at peak times, which occurred in the half hour to 7.30pm.

Daily Profile Mawson Lakes August 2001-July 2002 (43 homes)



By comparison, the demand of 200 Murray Bridge homes monitored during the same period was more constant, averaging 1.78kW each over the 12 month period. On peak demand days their demand was only 0.15kW per house higher than on average days.

Daily Profile Murray Bridge August 2001-July 2002 (200 homes)



To the extent that Mawson Lakes is an example of trends in modern housing developments, and Murray Bridge is an example of older housing stock, albeit for a different demographic profile, this comparison reflects increasingly pronounced peak demand outcomes in South Australia.

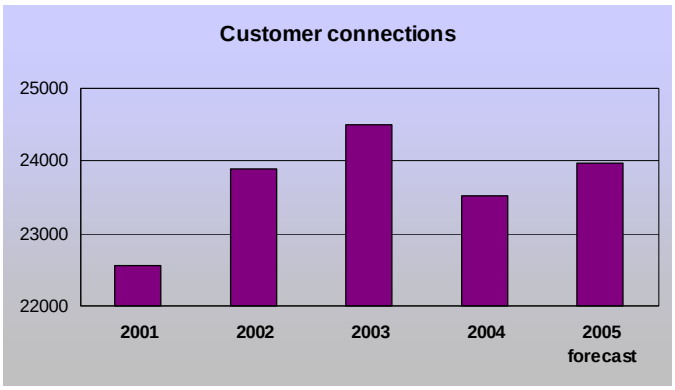
2.5 The Economy

The economy also has a major impact on electricity demand. Economic growth, with its subsequent housing approvals, increased household discretionary spending on air conditioners (which have also become much less expensive to purchase) and business expansion, all increase the need for capital expenditure on the distribution network to meet customer electricity requirements.

The South Australian economy grew 4.3% in 2003-04, underpinned by a near record crop harvest, increased investment spending and a booming housing market.

Economists forecast a cyclical slowdown to approximately 2.5% growth for the State in 2004-05, picking up to 3.0% in 2005-06 consistent with national GDP forecasts[1]. Electricity peak demand is predicted to grow approximately 2.7% in 2005.

The number of customer connections reflects the strong economic performance of 2003-04 and a slowing in 2004, with a predicted minor recovery in 2005.



2.6 ETSA Utilities' Demand Management Status

ETSA Utilities was a member of the SA Government's demand management task force that was set up in 2001.

[1] *Economic Update*, Economics@ANZ, 21 February 2005

It has also been part of the Federal Government's Solar Cities initiative and is likely to commit resources to the project's Adelaide trial.

ETSA Utilities has been in negotiations with a number of South Australian companies and organisations which have embedded (standby) generation on-site, regarding the potential for its use on days of peak demand to relieve network stress.

This is one promising stream of available demand management capability, if the technical, environmental and network issues which have delayed this path can be resolved. Negotiations and a trial with a number of major customers, and research into technical solutions, will continue in tandem with the current pilot program defined within this document.

ETSA Utilities already has a major program for the collection of customer load profiles. ETSA made this resource commitment during the late 1990s and has now compiled collective load information on 19 separate residential suburbs comprising around 1000 homes across various socio economic groups and building age. This program of data capture will now be significantly expanded as such data is the cornerstone not only to the introduction of demand management to targeted customers and areas of the State, but also to ensuring that the demand management technologies that are explored and implemented are applicable to the State's requirements. Demand management strategies cannot be implemented without such data being collected.

ETSA Utilities is currently in the process of preparing to engage the necessary external support to ensure the implementation of an information/communication program that will enable the South Australian community to understand, accept, and seek to become involved in the delivery of demand management strategies.

ETSA Utilities is currently in communication with utilities in the US which are at the leading edge of successful use of demand management technologies. It is planned for members of ETSA Utilities' demand management unit to scope these technologies and their usage on-site to enable ETSA Utilities, in the shortest possible timeframe, to reach a conclusion on which of the available and emerging technologies and strategies would be most suitable to propose to consumers as best able to deliver the customer and network results required in South Australia.

ETSA Utilities has also begun investigating the potential for business solutions associated with demand management i.e. demand aggregation.

3. STRUCTURE OF THE PLAN

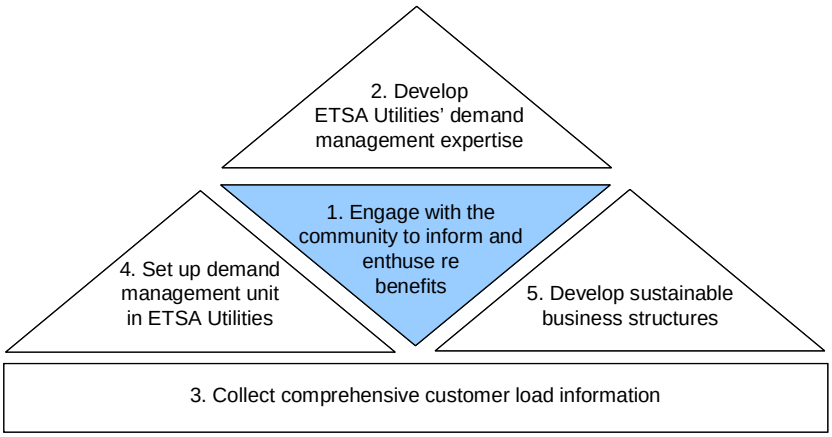
3.1 Strategic Intent

ETSA Utilities plans to lead the nation in the astute and strategic delivery of demand management solutions.

Through demand management, we are committed to developing practical and sustainable strategies to lower charges to our customers and to defer the costly requirements of distribution network expansion.

3.2 Objectives

To achieve our strategic intent, our demand management approach will drive action on key fronts.



1. Encourage South Australian business and residential customers to work with us in partnership to develop the potential for demand management as a mutually beneficial program in the delivery of the State's electricity.
2. Continue to develop in-house demand management expertise to ensure that the methods we plan to introduce into the State can deliver the required positive outcomes and, at all times, meet customer expectations.
3. Ensure that comprehensive customer load information is in place so that demand management strategies introduced are appropriate and benefits can be measured.
4. Ensure the required staff, processes and systems are in place to manage the introduction and delivery of demand management within ETSA Utilities.
5. Identify, evaluate and develop new business structures to sustain and expand demand management capabilities.

3.2.1 Encourage South Australian business and residential customers to work with us in partnership to develop the potential for demand management as a mutually beneficial program in the delivery of the State's electricity

ETSA Utilities understands that demand management can only work successfully if it is researched and introduced in partnership with the community. ETSA Utilities will

ensure South Australians are well informed so that they become enthused to be part of a “joint venture”.

ETSA Utilities believes that the past five years of controversy in South Australia over electricity ownership, supply, and charges, has created a community with a higher level of electricity industry understanding than is to be found anywhere else in Australia. We intend to harness and accelerate this understanding through a positive long-term information campaign, initially targeted, and later State-wide, stressing the customer benefit of demand management – the why, the how, and the end result – namely, lower power prices.

Underpinning this approach will be a theme of collaboration with relevant stakeholders, such as local government, building and building services designers, and community groups.

Key steps:

- ensure that political leaders, industry and welfare groups, and the media, understand demand management strategies, objectives and benefits.
- introduce a communications campaign with an emphasis on information, and on demand management success being a partnership
- encourage media interest in the strategy, and pilot programs
- set up a demand management shopfront at ETSA Utilities to encourage early community access to demand management information
- engage with local communities chosen to become involved in demand management pilot programs
- meet with individual customers chosen to take part in specific demand management trials/products
- reinforce the successes and learnings of those demand management trials using a State-wide information campaign.

3.2.2 Continue to develop in-house demand management expertise to ensure that the methods we plan to introduce into the State can deliver the required positive outcomes and, at all times, meet customer expectations

ETSA Utilities is committed to ensuring that the introduction of demand management within South Australia has no "false starts". It is seen as an imperative to choose demand management methodologies that are sustainable and which deliver the quantum of benefit that meets the expectations of ETSA Utilities (enabling the deferment of costly network capital expenditure, capex which is reflected in higher electricity charges) and meets the expectations of customers who have embraced demand management (lower electricity charges).

Key steps:

- investigate and evaluate other utilities' implementation of demand management techniques
- conduct mini-trials of selected technologies in Adelaide with selected customers
- evaluate those mini-trial outcomes and use outcomes to plan wider pilot programs
- undertake wider pilot programs in targeted suburbs of promising high-potential demand management techniques
- evaluate wider trial outcomes and use results for full scale project planning
- full scale demand management projects in other regions in partnership with customers
- evaluate outcomes of full scale projects for further refinements before introduction of chosen demand management strategies currently planned for after 2010.

3.2.3 Ensure that comprehensive customer load information is in place so that demand management strategies introduced are appropriate and benefits can be measured

ETSA Utilities has an ongoing program for collection of customer load profiles. It understands that the key to a successful implementation of demand management strategies is having comprehensive, real-time, access to sophisticated data on electricity usage of customers. It is also critical to understand the *why* of any customer's usage pattern. It is this data base which is the foundation to targeting areas, suburbs, streets and individuals whose involvement in demand management can influence peak load in such a way as to deliver lower electricity charges, and provides the ability for ETSA Utilities to defer costly network infrastructure projects. The expansion of the data capture program will take place prior to and in tandem with targeted pilot trials.

Key steps:

- ensure timely completion of the load information systems and processes within ETSA Utilities
- begin the new information capture activities
- ensure there is continuous review and improvement of data available to ETSA Utilities.

3.2.4 Ensure the required staff, processes and systems are in place to manage the introduction and delivery of demand management within ETSA Utilities

ETSA Utilities' business plan, in line with the ESCOSA 2005 – 2010 Electricity Distribution Price Determination, requires the company to deliver specific demand management projects within that timeframe. An essential component of meeting those targets is the efficient commitment of resources and knowledge base to the project and the development of a discrete project unit. This is underway.

Key steps:

- establish the demand management unit structure and resource accordingly
- integrated demand side/supply side planning and management
- ensure ETSA Utilities' demand management processes and systems are sufficiently flexible to allow for the possible requirements of Australian Greenhouse Office Solar Cities program
- business integration
- continuous product development to ensure South Australia is offered leading edge solutions.

3.2.5 Identify, evaluate and develop new business structures to sustain and expand demand management capabilities

ETSA Utilities has identified from its on-going research into the delivery of astute and strategic demand management programs that there are a range of possible business structures which should also be investigated. One example that shows the value of a preparedness to seek innovative solutions is ETSA Utilities as a demand management aggregator.

There is also the Solar Cities consortium that may require ETSA Utilities to provide services for a project which may be trialled in Adelaide over a period of several years.

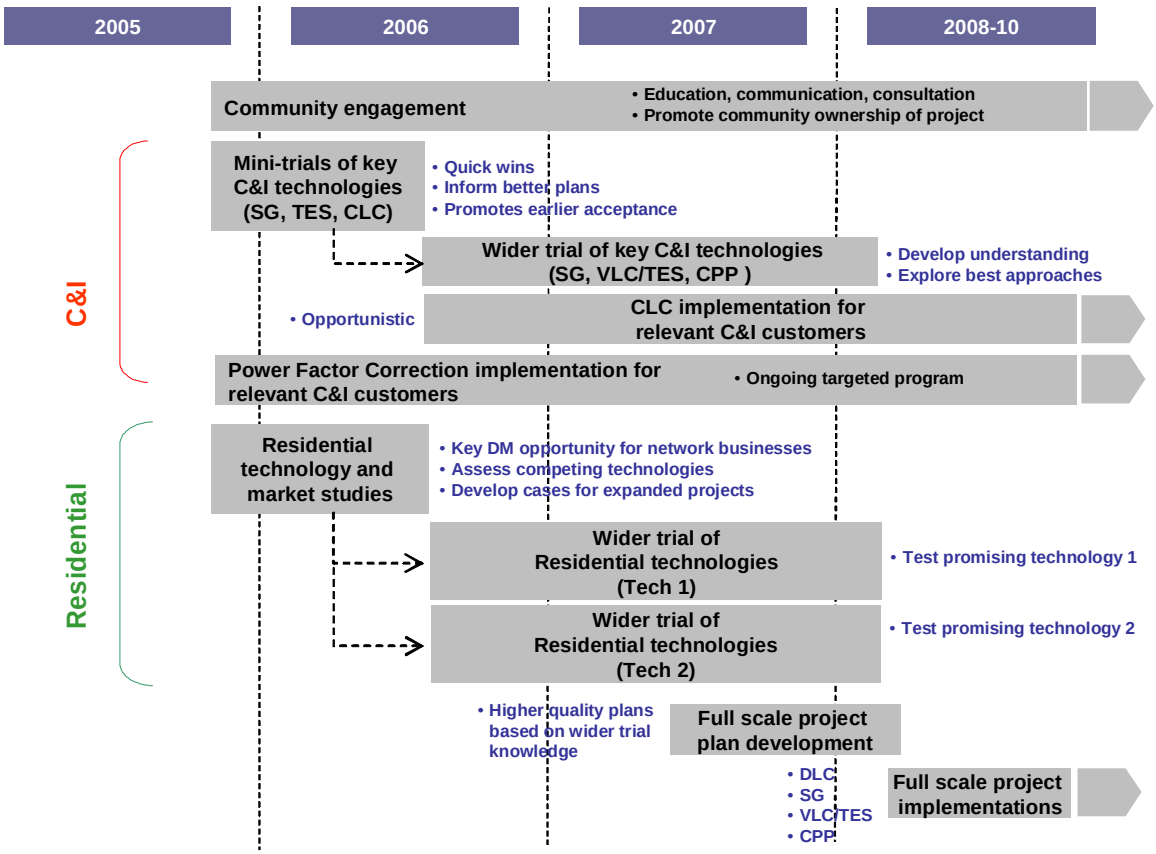
Key steps:

- investigate and evaluate alternative business models related to load aggregation
- implement Solar Cities project initiatives as required
- pursue 'local industry network' collaborations and partnerships that support demand management objectives.

3.3 Work Program

Communicating with the community and the further development of ETSA Utilities' demand management expertise are set out in the diagram below, which outlines the high level sequence of key activities under this plan.

The program focuses on the 2005-2007 period, with early initiatives aimed at delivering better-informed and better-supported activities in later years.



In the works program shown later in this document, strategies that address all core areas of the demand management program are detailed.

The following five sections provide more detailed information on ETSA Utilities' demand management strategy.

4. COMMUNICATION AND CONSULTATION WITH SOUTH AUSTRALIA

Demand management pilot programs will present South Australia with a new and different level of interaction with ETSA Utilities. It is one which involves embracing new ideas, and considering new offerings. South Australians will see ETSA Utilities in a different light, not simply as the company whose poles and wires deliver their electricity, but as an entity offering them a financial benefit – lower electricity charges in the medium term.

In some cases, depending on the technologies eventually chosen, it may be that customers receive an immediate incentive in return for becoming part of a demand management program. Such a program may, for example, have them use air conditioning but not an electric stove for a critical couple of hours on a few days each year, or have an agreement which turns off their pool pump for so many minutes each hour. All such demand management strategies, already employed overseas, are currently being investigated by ETSA Utilities to ensure that what is chosen to be trialled in South Australia is the best available.

Gaining community support and involvement is vital to the successful introduction of demand management in the State. For demand management to work, it has to be in

partnership with our customers. To ensure the community understands exactly what demand management is, what it means to them, at work and at home, and to ETSA Utilities, and how this astute use of electricity can indeed give them a lower electricity account, a comprehensive communications strategy will be undertaken.

Having the community – politicians, media, industry and welfare groups and opinion leaders, large and small businesses and individual households – see demand management as a forward thinking project with a financial benefit outcome is of vital importance.

It will:

- facilitate better trials of the technology if the community embraces its role and is enthused to deliver a positive outcome
- expedite the demand management program by accelerating acceptance of its objectives and approaches.

To deliver this outcome, ETSA Utilities will:

- install the right team to manage such a complex communications brief – a brief which has political, regulatory, industry, financial, business and community expectations and demands to manage
- design, construct and manage a targeted public communications campaign aimed at creating community awareness of what demand management is, and a positive understanding of its objectives and benefits. This will embrace free and paid media as required, and the use of ETSA Utilities' CEO and its management team experts in demand management being visible in the community i.e. attending industry and community meetings, speaking engagements, media availability.
- ensure the community has easy access to information on demand management products and options i.e. demand management shopfront, web-based information including demonstration visuals, brochures, field demonstrations where possible.
- encourage stakeholder involvement well before the introduction of pilot programs. A series of structured opportunities will be organised for feedback on demand management programs and specific project issues. The existing Register of Interested Parties (an ESCOSA Guideline 12 process requirement) is one broad stakeholder grouping, and others include local government, manufacturers and local service providers, and mechanical engineering and building services/air conditioning experts. Others will be identified as appropriate.
- where possible and appropriate, pursue opportunities for productive collaboration and partnership arrangements with parties such as builders, building and building services designers, equipment manufacturers and service providers, energy retailers and other market participants.
- engage constantly at all levels to reduce any possibility for demand management being misunderstood or misinterpreted. ETSA Utilities must ensure stakeholders and customers understand that demand management is a mechanism to reduce prices to customers by deferring costly network expansion - expansion that would be used at most a few days each year. We will continue to seek targeted key stakeholder involvement through direct approaches for meetings, submissions or other input at all stages of the process between now and 2010.
- produce and distribute comprehensive, targeted information materials and reports at key points of the demand management program. Such information

will be aimed at the public, the business community and energy industry stakeholders. It would include general information, status reports and evaluation reports.

- use the pilot projects to compile and make available to the public valuable case studies on various households and businesses regarding matters such as ease of use, cost benefits, or any issues related to the technology. By this means, the community can build a knowledge base and a security about the processes inherent in demand management from a customer perspective.
- encourage schools state wide to embrace demand management as a monitoring and reporting project within their energy and environment syllabus.

4.1 Reporting

Regular reporting will support these critical strategies in a form suitable for all stakeholders' needs.

Reporting to ESCOSA will be in accordance with existing regulatory reporting requirements. For instance, annual regulatory financial reporting will track program expenditures, and quarterly reports will provide information on status and progress of each demand management project.

Other interested parties will have access to a variety of reports and information processes, as appropriate to their needs and preferences.

In addition, ETSA Utilities plans to hold regular meetings with key stakeholder groups to discuss progress on the Plan and to consult on future developments. Such meetings will be targeted at the particular groups depending on their area of interest.

5. DEVELOPMENT OF ETSA UTILITIES' DEMAND MANAGEMENT EXPERTISE

5.1 Community Involvement

ETSA Utilities is already committed to a residential pilot program structure which allows for incremental studies that can be more easily managed from both a communication and technology standpoint.

It is the view of ETSA Utilities that the community can be more easily encouraged to partner us in the larger region-wide pilot programs if there are already early tangible "runs on the board" for them to refer to. These early results from specifically targeted mini-trials can be used to inform and promote demand management as a positive way forward.

Using first a small group of keen and willing customers, then progressing to groups of homes in various targeted areas of Adelaide, will enable the community to gain a gradual, and importantly non-threatening, understanding of demand management and its benefits before any larger trials are put in place.

Such a graduated program structure is especially relevant in South Australia which has had to deal with too many large electricity "shocks" in recent years – privatisation, the NEM almost simultaneously and, for householders, price increases. The community remains suspicious of electricity delivery and price. It would be disappointing therefore if the delivery of positive price outcomes for customers was hampered by an ill-judged research program on demand management technologies.

ETSA Utilities is mindful that its expertise in the technology and its delivery cannot be advanced at the expense of community support.

At the same time, ETSA Utilities will continue to work with business customers on various demand management strategies relevant to them.

It should be noted that the starting-small strategy allows for any issues encountered to be resolved more quickly, and for different technologies to be advanced or removed from a trial also more quickly than if there had been immediate wide technology testing.

In turn this could lead to a speedier implementation of the wider trials using a specific, tested, demand management method.

5.2 Advancing Technology Case Studies

ETSA Utilities is committed to using the demand management pilot programs for the construction of relevant case studies on various demand management technologies. While it could be seen by the community that the emphasis of the project as a whole is on residential consumers, this is not a true reflection of priorities. Demand management is as relevant to large customers as it is to small. Its introduction in residential areas is however more complex, and therefore requires more communication, more advance trialling, more data capture than for each large customer. Technology case studies will be undertaken at all levels of power usage and customer size. Of particular interest to ETSA Utilities is advancing studies on standby generation, thermal energy storage and applications relevant to commercial customers.

5.3 Exploring Demand Management Products

ETSA Utilities has undertaken comprehensive research into what demand management strategies have been developed, and operate successfully, with community acceptance.

This research has indicated that it is the US utilities which are the leaders in the development of suitable demand management products, and which have implemented successful demand management programs.

These various products centre on technologies that enable selected appliances within the home or business to be controlled remotely by the electricity utility.

- Florida Light and Power (Florida) has implemented a power line carrier system that switches air-conditioners and pool pumps. This technology utilises low bandwidth power-line carrier (PLC) technology for communications between the Utility and the appliance switches that are hard wired into the home's electrical system. This technology is similar to ETSA Utilities' SWD technology that remotely switches hot water systems in homes around metropolitan Adelaide.
- Sempra Energy (San Diego), Nevada Power (Nevada) and the City of Ashland (Oregon) have implemented a Goodwatts system that switches air-conditioners. This technology utilises radio wave technology for communications between the utility and the air conditioning thermostat in the home.
- LG&Energy (Kentucky) has implemented a demand conservation switch for air-conditioners and pool pumps using radio wave technology that switches in the home.

It is now planned that ETSA Utilities will meet with Sempra Energy, Nevada Power, City of Ashland and LG&Energy Utilities as soon as the itinerary can be put in place. By visiting these utilities and also meeting with their local communities, we will gain an enhanced understanding and appreciation of the methods used by those utilities to inform their communities and encourage them to embrace demand management. ETSA Utilities will also seek to source the utilities' data on the take up of demand management within their service areas. ETSA Utilities will also use this study to expand its knowledge of available demand management technologies.

5.4 Demand Trading

Another demand management product that will be explored is Demand Trading. This the purchasing of surplus demand from one business customer and on-selling it to a customer supplied from the same feeder or substation who is requesting either new supply or an increase to their existing demand requirements through business expansion. Such a trade negates the need for any costly network augmentation. In South Australia, only ETSA Utilities could operate as a demand trader as it is the only entity with the required load information.

6. ENSURING COMPREHENSIVE CUSTOMER LOAD INFORMATION IS IN PLACE SO THAT DEMAND MANAGEMENT STRATEGIES INTRODUCED ARE APPROPRIATE AND BENEFITS CAN BE MEASURED

The effectiveness of any demand management initiative is the availability and reliability of real time energy data, coupled with knowledge of *why* customers have specific usage patterns. This data is critical.

ETSA has already compiled collective load information on 19 separate residential suburbs comprising around 1000 homes across various socio economic groups and building age.

However a far more comprehensive data collection is required to be in place before the commissioning of even the planned mini-trials.

To reach this stage, significant resources are required to install real time metering with data storage facilities at strategic locations along networks and at individual homes and businesses. This data, and other data relating to customer attributes that relate to electricity usage, will need to be captured and analysed, with effective software systems in place to provide actual and real time energy usage information.

This analysis will enable ETSA Utilities to understand the impact of any demand management initiative on the customer, and on the network. It provides understanding of the usage behaviours, and the reasons for those behaviours, at either the level of the individual customer or the aggregated data from strategic locations along the network, including substations.

A team will be required to install metering equipment and attend to any faults and problems with the equipment that may occur during the project.

The data can be collected manually or remotely.

This type and depth of load information provides wide benefits as it will:

- improve the breadth and depth of customer load information before and after any demand management initiative is trialled
- provide useful research data on the penetration of different electrical appliances in homes and businesses

- deliver an estimation of the number of different types of customers served by each network
- display information on the demand management opportunities in all medium and large businesses connected to the ETSA Utilities network, and
- allow assessment of the number, configuration and condition of standby generators within the ETSA Utilities service area.

7. ENSURING THE REQUIRED STAFF, PROCESSES AND SYSTEMS ARE IN PLACE TO MANAGE THE INTRODUCTION AND DELIVERY OF DEMAND MANAGEMENT WITHIN ETSA UTILITIES

ETSA Utilities has begun the process of setting up a discrete demand management unit. The unit will have carriage of all demand management research, strategies and implementation. It will be the bridge to ESCOSA, and any other key initiatives such as the Federal Government's Solar Cities initiative. It will also be responsible for the demand management shopfront initiative.

The unit's objectives include:

- delivering the required level of demand management so that costly expenditure on network infrastructure can be deferred and electricity charges reduced
- leading the on-going major customer briefing sessions
- progressing any embedded generation solutions and trials
- managing the evaluation of the various relevant demand management technologies, both available and emerging, in cost and effectiveness, so that what is implemented in SA can best deliver the required outcomes for both customers and the network
- the implementation of processes to enable load data capture, the management of that capture, and its analysis
- organisation and evaluation of pilot trials
- responsibility for the judicious implementation of desired demand management solutions in targeted areas of the State
- implementation of internal demand management training programs in areas such as customer advisory skills, sales and marketing, after sales support, and technical sales support
- responsibility for customer communication and information programs
- management and staffing of the demand management shopfront
- ensuring ETSA Utilities has, at all times, the leading edge demand management technologies available to it.

8. IDENTIFY, EVALUATE AND DEVELOP NEW BUSINESS STRUCTURES TO SUSTAIN AND EXPAND DEMAND MANAGEMENT CAPABILITIES

ETSA Utilities as part of its business plan and licence requirement to move forward expeditiously with demand management strategies has been investigating possible new business structures which provide additional innovative solutions.

To this end ETSA Utilities is currently investigating a potential new business model - ETSA Utilities as demand aggregator.

Beyond the possibilities inherent in new business models for ETSA Utilities, it will be critical to explore the potential to utilise the skills and resources of local manufacturers, suppliers, energy retailers and other electricity market participants to the benefit of positive demand management outcomes. Consequently, ETSA Utilities will actively pursue any such 'local industry network' collaborations and partnerships that may support demand management objectives.

8.1 Demand Aggregation

ETSA Utilities is keen to progress this business option. It is about to commission a study on whether a business case can be made for the company to do so. Following the study a report will be compiled for ESCOSA.

Becoming a demand aggregator would allow ETSA Utilities to manage an innovative program through which the community would benefit. Those customers whose specific load is aggregated for market use through a demand management initiative would derive a financial reward from the transaction, and the community would benefit from lower charges generally from the introduction of demand management strategies.

9. WORK PROGRAM

9.1 Issues

The preceding material has outlined the importance of:

- ensuring the support of the South Australian community
- adopting a methodical and step-wise approach to the development of expertise that will underpin sustainable demand management strategies to benefit the community and ETSA Utilities
- meticulously collecting, organising and utilising customer load, demand resource and other information that can enable higher quality planning and delivery of demand management initiatives
- allowing for the flexibility to adjust the demand management program so that any new information that arises from the step-wise approach to the trials can be harnessed and any changes to the planning environment i.e. perhaps through the implementation of a Solar Cities initiative, can be addressed
- seeking to identify new business structures that can provide wider benefits as demand management is pursued, adding to the program's sustainability.

In developing the work program, ETSA Utilities has taken note of these issues and has set out key activities accordingly.

Key features of the five year program are:

- § comprehensive community and stakeholder communication to ensure demand management proceeds supported by an informed South Australian community
- § early steps to ensure the timely completion of important market and technical studies of residential and C&I demand management technologies, and of the valuable technical experience gained through highly targeted trials
- § early steps to investigate the possibilities attached to demand aggregation business structures
- § completion of wider trials to further build community acceptance of demand management and advance ETSA Utilities' understanding of key promising demand management techniques
- § after assessment of trial results and price impacts, the program will move to the planning and implementation of key projects

9.2 Work Program

Accordingly, we have developed a detailed work program that achieves the core objectives of this plan.

The work program logically focuses on the 2005-07 period, with reduced detail attached to the longer-term components that will be contingent upon future circumstances and information.

The work program is shown below. Its structure reflects the framework described in the section, 'STRUCTURE OF THE PLAN', above.

The accountabilities shown in the tables below are:

NW&DM = Networks and Demand Management Department

CA = Corporate Affairs Department

BR = Business Relations Department

IT = Information Technology Branch

PS = Property Services

SP = Strategic Planning

Other acronyms used are:

C&I = Commercial and Industrial

PFC = Power Factor Correction

DLC = Direct Load Control

CLC = Curtailable Load Control

VLC = Voluntary Load Control

TES = Thermal Energy Storage

CPP = Critical Peak Pricing

SG = Standby Generation

Objective 1

Encourage South Australian business and residential customers to work with us in partnership to develop the potential for demand management as a mutually beneficial program in the delivery of the State's electricity

Key Steps

- § Ensure that political leaders, industry and welfare groups, and the media, understand demand management strategies, objectives and benefits
- § Introduce a communications campaign with an emphasis on information, and on demand management success being a partnership
- § Encourage media interest in the strategy, and pilot programs
- § Set up a demand management shopfront at ETSA Utilities to encourage early community access to demand management information
- § Engage with local communities chosen to become involved in demand management pilot programs
- § Meet with individual customers chosen to take part in specific demand management trials/products
- § Reinforce the successes and learnings of those demand management trials using a State-wide information campaign

Action Strategies	Accountability	Timing
1. Ensure that political leaders, industry and welfare groups, and the media, understand demand management strategies, objectives and benefits		
§ Develop and produce briefing materials – stakeholder information packs	NW&DM, BR	Q1 2006
§ Business groups briefing program – Building designers, building services companies, architects, Business SA, Viva SA – where possible and appropriate, signal collaboration and partnership possibilities	NW&DM	Q2 – Q3 2006
§ Industry groups briefing program – retailers, generators, EUG – where possible and appropriate, signal collaboration and partnership possibilities	NW&DM	Q2 – Q3 2006
§ Electrical and demand management suppliers briefing program – where possible and appropriate, signal collaboration and partnership possibilities	NW&DM	Q2 – Q3 2006
§ Media groups briefing program – press, radio, television, specialist print	NW&DM, BR	Q2 – Q3 2006

§ State and Local Government briefing program – Local government, SAESAG, Energy SA, PIRSA, Cabinet, Select Committee	NW&DM, CA	Q2 – Q3 2006
§ NGO briefing program – SACOSS, COTA, ACF	NW&DM	Q2 – Q3 2006
2. Introduce a communications campaign with an emphasis on information, and on demand management success being a partnership		
§ Develop a campaign designed to build awareness and understanding to support success of demand management program, taking account of views of key stakeholders	NW&DM, BR	Q1 – Q2 2006
§ Develop and produce campaign materials and components	NW&DM, BR	Q2 2006
§ Implement initial integrated campaign as appropriate – public speaking program, internet resources, direct marketing program, schools program, display and demonstration program, print media, as appropriate	NW&DM, BR	Q2 – Q4 2006
§ Ongoing, lower level, integrated campaign to maintain interest and awareness	NW&DM, BR	Q1 2007 – Q2 2010
3. Encourage media interest in the strategy, and pilot programs		
§ Provide topical and timely information releases and advice of demand management events or successes of public interest to key media outlets	NW&DM, BR	Q4 2006 ongoing
4. Set up a demand management shopfront at ETSA Utilities to encourage early community access to demand management information		
§ Research stakeholder views to confirm desirable format and resources of the demand management shop front	NW&DM	Q1 2006
§ Establish and launch the demand management shop front	NW&DM, PS	Q2 2006
§ Leverage the shop front to improve tangibility and accessibility of demand management communication and engagement activities wherever possible	NW&DM, BR	Q3 2006 ongoing
5. Engage with local communities chosen to become involved in demand management pilot programs		

§ Work with local government and community groups to build customer awareness of imminent trials in target areas	NW&DM, BR	Q2 – Q3 2006
§ Develop and produce communications and briefing materials – range of customer information packs	NW&DM, BR	Q2 2006
§ Implement communications campaign directed at candidate customers in Residential wider DLC trial target areas	NW&DM, BR	Q3 2006
6. Meet with individual customers chosen to take part in specific demand management trials/products		
§ Recruit selected customers in C&I demand management 'quick wins' program	NW&DM	Q4 2005
§ Recruit employees for Residential DLC technical trials (mini-trials only – wider trials will use customer participants)	NW&DM	Q4 2005
7. Reinforce the successes and learnings of those demand management trials using a State-wide information campaign		
§ Develop and maintain expanded Register of Interested Parties	NW&DM	Q1 2006 ongoing
§ Distribute regular update newsletters and other reports to Interested Parties	NW&DM, BR	Q1 2006 ongoing
§ Opinion leader feedback program	NW&DM, BR	Q4 2006 ongoing
§ Community feedback program	NW&DM, BR	Q4 2006 ongoing

Objective 2

Continue to develop in-house demand management expertise to ensure that the methods we plan to introduce into the State can deliver the required positive outcomes and, at all times, meet customer expectations.

Key Steps

- Investigate and evaluate other utilities' implementation of demand management techniques
- Conduct mini-trials of selected technologies in Adelaide with selected customers
- Evaluate those mini-trial outcomes and use outcomes to plan wider pilot programs
- Undertake wider pilot programs in targeted suburbs of promising high-potential demand management techniques
- Evaluate wider trial outcomes and use results for full scale project planning
- Undertake full scale demand management projects in other regions in partnership with customers
- Evaluate outcomes of full scale projects for further refinements before introduction of chosen demand management strategies currently planned after 2010

Action Strategies	Accountability	Timing
1. Investigate and evaluate other utilities' implementation of demand management techniques		
§ Visits to shortlist of DLC and similar demand management implementations to assess overseas customer and marketing experiences	NW&DM, SP, BR	Q4 2005 – Q2 2006
§ Complete technology assessments on prospective demand management technologies and products	NW&DM	Q4 2005 – Q2 2006
§ Report on demand management implementation evaluations	NW&DM	Q2 2006
2. Conduct mini-trials of selected technologies in Adelaide with selected customers		
§ Install equipment for C&I mini-trials	NW&DM	Q4 2005
§ Implement C&I mini-trials	NW&DM	Q1 – Q2 2006

§ Monitor and evaluate C&I mini-trials	NW&DM	Q1 – Q2 2006
§ Install equipment for Residential DLC technical mini-trials (employees as customers)	NW&DM	Q1 2005
§ Implement Residential DLC technical mini-trials	NW&DM	Q1 – Q2 2006
§ Monitor and evaluate Residential DLC technical mini-trials – include customer impact evaluations	NW&DM	Q1 – Q2 2006
3. Evaluate those mini-trial outcomes and use outcomes to plan wider pilot programs		
§ Evaluate C&I mini-trial outcomes	NW&DM	Q2 – Q3 2006
§ Evaluate Residential DLC technical mini-trial outcomes	NW&DM	Q2 2006
§ Finalise scoping, targeting and planning for wider trials of DLC and other high-potential DM techniques – possible multiple trials	NW&DM	Q2 - Q3 2006
4. Undertake wider pilot programs in targeted suburbs of promising high-potential demand management techniques		
§ Establish systems and processes in support of Residential DLC wider trials	NW&DM	Q3 2006
§ Market and recruit participants for Residential DLC wider trials	NW&DM, BR	Q3 2006
§ Install equipment for Residential DLC wider trials	NW&DM	Q3 – Q4 2006
§ Implement Residential DLC wider trials	NW&DM	Q4 2006 – Q1 2008
§ Monitor and evaluate Residential DLC wider trials – include customer impact evaluations	NW&DM, BR	Q4 2006 – Q1 2008
§ Establish systems and processes in support of C&I wider trials of SG, TES/VLC, CPP techniques	NW&DM	Q3 2006
§ Market and recruit participants for C&I wider trials of SG, TES/VLC, CPP techniques	NW&DM	Q3 2006
§ Install equipment for C&I wider trials of SG, TES/VLC, CPP techniques	NW&DM	Q3 – Q4 2006

§ Implement C&I wider trials of SG, TES/VLC, CPP techniques	NW&DM	Q4 2006 – Q1 2008
§ Monitor and evaluate C&I wider trials of SG, TES/VLC, CPP techniques – include customer impact evaluations	NW&DM, BR	Q4 2006 – Q1 2008
5. Evaluate wider trial outcomes and use results for full scale project planning		
§ Evaluate all trial outcomes	NW&DM	Q2 – Q3 2007
§ Finalise scoping, targeting and planning for full scale demand management program projects	NW&DM	Q3 2007 – Q1 2008
§ Reporting to ESCOSA and key stakeholders	NW&DM, CA	Q4 2006 – Q1 2008
6. Undertake full scale demand management projects in other regions in partnership with customers		
§ PFC project (note – PFC is well understood, and will be implemented without the need for the 'wider trials' approach)		
o PFC phase 1 - tariff rationalisation, analysis and preliminary Excluded Service Charge development	NW&DM, CA	Q3 2005 – Q2 2008
o PFC phase 2 – implement ESC and assistance program	NW&DM, CA	Q3 2008 – Q2 2010
§ CLC project (note – CLC is relatively well understood, and will be implemented without the need for the 'wider trials' approach)		
o Establish systems and processes in support of targeted C&I trials of CLC techniques	NW&DM	Q3 2006
o Implement C&I targeted trial of CLC technique	NW&DM	Q4 2006 ongoing
§ DLC project - expansion of wider trials or new project design based on Residential DLC wider trials	NW&DM	Q4 2007 – Q2 2010
§ VLC/TES project - expansion of wider trial or new project design based on VLC/TES wider trial	NW&DM	Q2 2008 – Q2 2010

§ SG project - expansion of wider trial or new project design based on SG wider trial	NW&DM	Q2 2008 – Q2 2010
§ CPP project - expansion of wider trial or new project design based on CPP wider trial	NW&DM, CA	Q2 2008 – Q2 2010
§ Reporting to ESCOSA and key stakeholders	NW&DM, CA	Q4 2005 – Q2 2010
7. Evaluate outcomes of full scale projects for further refinements before introduction of chosen demand management strategies currently planned after 2010		
§ Preliminary review of all trial outcomes as early input to 2010 regulatory reset	NW&DM, CA	Q2 – Q2 2009
§ Final review and evaluation of all trial outcomes	NW&DM	Q1 - Q2 2010
§ Final consultation with stakeholders	NW&DM	Q2 2010
§ Final reports	NW&DM, CA	Q2 2010

Objective 3

Ensure that comprehensive customer load information is in place so that demand management strategies introduced are appropriate and the benefits can be measured.

Key Steps

- § Ensure timely completion of the load information systems and processes within ETSA Utilities
- § Begin the new information capture activities
- § Ensure there is continuous review and improvement of data available to ETSA Utilities

Action Strategies	Accountability	Timing
1. Ensure timely completion of the load information systems and processes within ETSA Utilities		
§ Scoping studies and systems requirements review	NW&DM	Q4 2005 – Q2 2006
§ Develop specifications and procedures	NW&DM	Q3 – Q4 2006
§ Systems, data capture, research and analysis plans	NW&DM, SP	Q3 2006 – Q1 2007
§ Systems implementation	NW&DM	Q2 – Q3 2007
2. Begin the new information capture activities		
§ Regular updates of smart metered customer demand profiles into new systems (note that current information systems and processes will continue from now - this action relates to new system commencement)	NW&DM	Q3 2007 ongoing
§ Residential low voltage load profile capture program – expanded 'poletop' program	NW&DM, CA	Q3 2006 ongoing
§ C&I customer and load primary research program – high-resolution customer business and load information	NW&DM	Q3 2006 ongoing
§ Secondary sources research program – eg ABS, air conditioning statistics, etc	NW&DM, SP	Q3 2006 ongoing

3. Ensure there is continuous review and improvement of data available to ETSA Utilities		
§ Review and enhancement of systems and processes	NW&DM	Q3 2007 ongoing

Objective 4

Ensure the required staff, processes and systems are in place to manage the introduction and delivery of demand management within ETSA Utilities.

Key Steps

- § Establish the demand management unit structure and resource accordingly
- § Integrated demand side/supply side planning and management
- § Ensure ETSA Utilities' demand management processes and systems are sufficiently flexible to allow for the possible requirements of Australian Greenhouse Office Solar Cities program
- § Business integration
- § Continuous product development to ensure South Australia is offered leading edge solutions

Action Strategies	Accountability	Timing
1. Establish the demand management unit structure and resource accordingly		
§ Review high level organisational structure for optimal demand management execution	NW&DM	Q4 2005
§ Review capabilities and resources required for demand management program and unit	NW&DM	Q3 2005 – Q1 2006
§ Identify gaps in capabilities and resources	NW&DM	Q4 2005 - Q1 2006
§ Resource the demand management unit	NW&DM	Q4 2005 – Q2 2006
2. Integrated demand side/supply side planning and management		
§ Integrate 5 and 10 year supply side forecasts with demand management unit goals and objectives	NW&DM	Q2 2006
3. Ensure ETSA Utilities' demand management processes and systems are sufficiently flexible to allow for the possible requirements of Australian Greenhouse Office Solar Cities program		

§ Monitor Solar Cities developments and evaluate relationships with the demand management program	NW&DM	Q3 2005 – Q2 2006
§ Adjust organisational arrangements subject to Solar Cities developments	NW&DM	Q1 – Q2 2006
4. Business integration		
§ Integrate demand management unit principles and practices into ETSA Utilities' cross-functional processes	NW&DM	Q2 – Q3 2006
§ Build demand management skills and initiatives of Customer Supply personnel	NW&DM	Q2 – Q4 2006
5. Continuous product development to ensure South Australia is offered leading edge solutions		
§ Continuous improvement of ETSA Utilities' demand management products and initiatives with world's best practice demand management innovations	NW&DM	Q4 2005 ongoing
§ Maintain collaborative links with local manufacturers and suppliers wherever possible	NW&DM	Q4 2005 ongoing

Objective 5

Identify, evaluate and develop new business structures to sustain and expand demand management capabilities.

Key Steps

- § Investigate and evaluate alternative business models related to load aggregation
- § Implement Solar Cities project initiatives as appropriate
- § Pursue 'local industry network' collaborations and partnerships that support demand management objectives

Action Strategies	Accountability	Timing
1. Investigate and evaluate alternative business models related to load aggregation		
§ Complete Load Aggregation study and evaluate	NW&DM, SP	Q4 2005 – Q2 2006
§ Modelling for business case purposes	NW&DM, SP, CA	Q3 2006
§ Integrate outcomes into Corporate and demand management plans	NW&DM, SP, CA	Q4 2006 – Q2 2007
2. Implement Solar Cities project initiatives as appropriate		
§ Finalise ETSA Utilities' involvement in Solar Cities program	NW&DM	Q2 2006
§ Evaluate potential for synergy with regulated demand management program	NW&DM	Q3 2006
§ Integrate outcomes into Corporate and demand management plans where appropriate	NW&DM, SP, CA	Q3 – Q4 2006
3. Pursue 'local industry network' collaborations and partnerships that support demand management objectives		
§ Utilise stakeholder engagement strategies to identify potential beneficial collaborations and partnerships	NW&DM	Q2 2006 - ongoing
§ Evaluate and implement strategies that optimise use of beneficial collaborations and partnerships	NW&DM	Q2 2006 - ongoing

10. FINANCIALS

10.1 Early Work Program

The work plan described in this document is predicated upon a methodical and step-wise approach to the development of expertise that will underpin sustainable demand management strategies to benefit the community and ETSA Utilities.

Importantly, it incorporates the flexibility to adjust the demand management program so that any new information that arises from the step-wise approach to the trials, or changes to the external environment such as Solar Cities developments, can be incorporated into future refinements of the plan.

Despite these uncertainties, it is clear that the early phase of the program will focus on community engagement, knowledge development and resource and systems establishment.

In line with this approach, the initial expenditure profile will reflect moderate expenditures, accelerating in the final three years of the current regulatory period as the various full scale programs are implemented.

Ultimately, ETSA Utilities will plan for the efficient and effective execution of the demand management program, and expects to utilise the full regulatory allowance of $20.4 million (December 2004 dollars) by June 2010.

The table below indicates the key expenditure areas for the period October 2005-Dec 2006. Future updates to this plan will detail anticipated expenditures for subsequent periods, as appropriate. Annual regulatory accounts submitted to ESCOSA will detail all actual expenditures.

Item	October 2005 to Dec 2006 Expenditure
Labour – additional resources	$500,000
Demand management shopfront	$150,000
Market and technical studies (includes C&I mini-trial costs)	$300,000
Community engagement	$700,000
Other	$230,000
Total	**$1,880,000**