



Central NSW Councils  
**Distributed Energy Plan**  
Framework

Final Issue | 20 December 2012



This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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# 1 Introduction

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The Central NSW Distributed Energy Plan ('the Plan') is being developed by Arup to assist seven councils across Central NSW with the development and definition of energy efficiency, peak demand management and distributed energy generation initiatives. The key stakeholders involved in the development of the plan include the seven participating councils as well as Centroc and the Bathurst Orange Dubbo Alliance.

The objective of the Plan is to:

- Deliver significant financial and environmental benefits through:
- The reduction of energy usage; and
- Substitution of coal-fired electricity with lower carbon, potentially locally generated alternatives.
- Increase the understanding of participating councils of the benefits of distributed energy;
- Provide General Managers and Directors of the respective Councils with an energy strategy for the next 10 years;
- Provide an exhaustive list of options and a tool that enables each option to be evaluated and costed;
- Build on the energy efficiency and carbon work already completed within each council; and
- Allow the nine remaining Centroc councils to utilise and adapt the work to develop their own distributed energy plans and projects.

## 1.1 About the Framework

The Framework document is to be used in conjunction with the Central NSW Distributed Energy Plan Toolkit. Specifically the document outlines the steps required to undertake assessment and prioritise energy efficiency and decentralised generation options.

This report may be used by participating councils to assess future options or options for facilities not included in this plan. The report may also be used by other councils not involved in this project to prepare their own DEPs.

## 1.2 Project process

The final council and regional DEP's represent the culmination of a five month process of data collection, analysis and report development. The relationship of the Distributed Energy Plans to the overall project process is outlined in Figure 1.

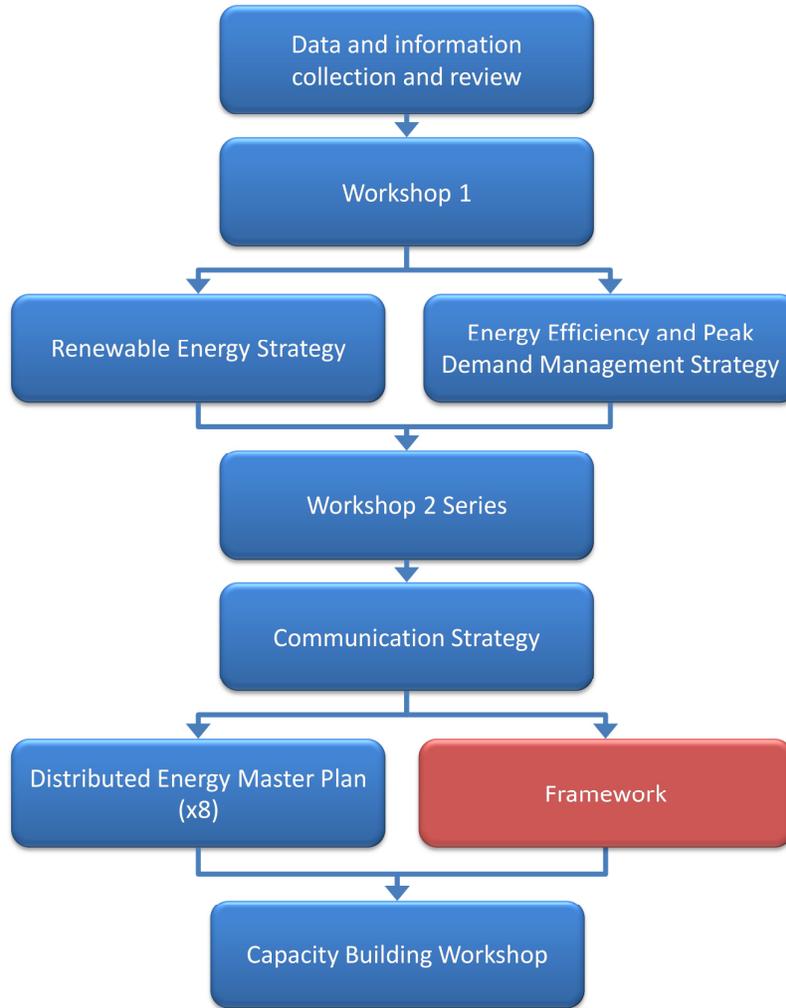


Figure 1 Project Progress

In addition to the Distributed Energy Plans a number of other deliverables have been produced for this project as outlined in the following table.

Table 1 Summary of Deliverables

Report	Report scope	How to use the report
Energy Efficiency and Peak Demand Management Strategy	This report presents a comprehensive range of energy efficiency and peak demand management initiatives which may be suitable for the Central NSW region and, in particular, to the 70 nominated sites. The report describes where and when each initiative may apply and provides high level analysis of the financial performance that may be expected with a typical application.	The report may be used to understand the risks, opportunities and constraints associated with each technology. The financial analysis contained in the report shows a typical performance which may vary for individual facilities.

Report	Report scope	How to use the report
Renewable Energy Strategy	This report presents a comprehensive range of distributed and renewable energy technologies which may be suitable for the Central NSW region. The report describes where and when each initiative may apply based on the direct connection and supply of energy to a facility, and in some instances, also examines the opportunities for large scale generation technologies which are suitable only for grid-connection and dispatch within the National Electricity Market.	The report may be used to understand the risks, opportunities and constraints associated with each technology. The financial analysis contained in the report shows a typical performance which may vary for individual facilities.
Communication Strategy	The Communication Strategy outlines the steps which will enable a Regional Council to take the recommendations in the DEP's through to implementation stage, focussing on the key internal and external stakeholders.	The report may be used as a toolkit to assist the communication and stakeholder engagement process as part of project planning and implementation.
Distributed Energy Plan(s)- Council Specific	This report presents a council-specific Distributed Energy Plan which includes the detailed technological and financial analysis of energy efficiency and renewable energy opportunities for each of the ten nominated council facilities. The report recommends opportunities, identifies the grant readiness of councils, and discusses any gaps and barriers to implementation of initiatives.	The report may be used to directly assist the grant application and tendering processes for those recommendations which are considered 'grant ready'. The report also may be used to identify what actions need to occur in to assist in further identifying and assessing options for facilities which may not yet be 'grant ready'.
Distributed Energy Plan(s) - Regional	This report presents a region wide Distributed Energy Plan for which includes explores distributed energy generation and energy efficiency options which require collaboration of a regional basis. These opportunities require significant resources and coordination beyond that which individual councils are able to provide.	The report may be used to identify what actions can occur at regional scale and to prioritise actions for regional coordination.
<b>Framework</b>	<b>This report outlines the steps required to undertake assessment and prioritise energy efficiency and decentralised generation options.</b>	<b>This report may be used by participating councils to assess future options or options for facilities not included in this plan. The report may also be used by other councils not involved in this project to prepare their own DEPs.</b>

## 2 Framework

This section outlines the steps that should be undertaken in order to determine whether specific technology applications (energy efficiency, demand management or renewable energy generation) are economically viable for specific council-owned facilities.

There are five steps including:

- Step A – Understanding of current energy use;
- Step B – Development of decision making criteria;
- Step C – Identification and evaluation of energy efficiency initiatives;
- Step D – Identification and evaluation of energy generation initiatives; and
- Step E – Development and implementation of final distributed energy plan.

These steps are outlined below and make reference to each of the reports produced as part of the Central NSW Distributed Energy Project (referred to in Table 1).

### Step A - Understanding of current energy use:

Action	Data and information sources	Applicability of the toolkit	Outcomes
Obtain energy consumption and expenditure data for all fuels (energy, gas, LNG)	Utility bills Planet Footprint E21	The toolkit asks for this data to be inputted and then allows the user to visualise the data	An understanding of when energy is consumed and how much it costs
Review the retail tariffs	Utility bills Utility provider Essential energy website for network charges	The toolkit ask for this data to be inputted to assist in understand how different tariffs affect expenditure	An understanding of the different components of the retail tariff and how each affects expenditure
Develop seasonal demand profiles	Estimates of end use Energy audit Facility managers' site knowledge O&M manuals	The toolkit allows users to enter in a facility specific demand profile, if available. If not, the toolkit has a default profile based on the facility type, total energy consumption and assumptions around energy end use	Demand profiles and understanding of when peaks occur

## Step B – Development of decision making criteria

Action	Data and information sources	Applicability of the toolkit	Outcomes
Decide upon the relevant social, financial, environmental and governance criteria	Default criteria and definitions developed in this project Existing Council policies and strategies relating to carbon and energy as well as broader social, financial, environmental and governance objectives	The toolkit provides default criteria	Agreed decision making criteria
Weight decision making criteria	Input from relevant cross section of council staff	The toolkit allows the evaluation criteria to be weighted	Agreed weightings for evaluation criteria
Determine threshold financial criteria (to eliminate unviable initiatives)	Financial managers Council policies	The toolkit does not provide any threshold but can be used to compare initiatives to the financial threshold expressed in terms of Internal Rate of Return, Net Present Value, Payback period or cost of abatement	Agreed threshold financial criteria

## Step C – Identification and evaluation of energy efficiency initiatives

Action	Data and information sources	Applicability of the toolkit	Outcomes
Identify energy efficiency initiatives	Energy audits Toolkit	The toolkit provides a list of potential initiatives applicable to each facility type	A list of energy efficiency initiatives to test
Develop estimates of capital costs, maintenance costs and energy savings	Energy audits Formal quotes Facility managers' estimates Default values within the toolkit	The toolkit provides default estimates as a starting point	Estimates to input into toolkit
Evaluate individual energy efficiency initiatives	Toolkit	The toolkit includes allows each initiative to be evaluated against each criteria	Evaluation of each energy efficiency initiative against all criteria
Eliminate options which do not exceed financial threshold	Toolkit Previously agreed financial threshold(s)	This task is done outside of the toolkit	Shortlist of energy efficiency initiatives
Prioritise shortlist using evaluation criteria score	Previously agreed evaluation criteria	This task is done outside of the toolkit	Prioritised list of energy efficiency initiatives

## Step D – Identification and evaluation of energy generation initiatives

Action	Data and information sources	Applicability of the toolkit	Outcomes
Identify energy generation initiatives	Energy audits Toolkit	The toolkit provides a list of potential initiatives applicable to each facility type	A list of energy generation initiatives to test
Develop estimates of capital costs, maintenance costs and energy generation	Energy audits Formal quotes Resource mapping Facility managers' estimates Default values within the toolkit	The toolkit provides default estimates as a starting point	Estimates to input into toolkit
Evaluate individual energy generation initiatives	Toolkit	The toolkit includes allows each initiative to be evaluated against each criteria	Evaluation of each energy generation initiative against all criteria
Eliminate options which do not exceed financial threshold	Toolkit Previously agreed financial threshold(s)	This task is done outside of the toolkit	Shortlist of energy generation initiatives
Prioritise shortlist using evaluation criteria score	Previously agreed evaluation criteria	This task is done outside of the toolkit	Prioritised list of energy generation initiatives

## Step E – Development and implementation of final DEP

Action	Data and information sources	Applicability of the toolkit	Outcomes
Evaluate combined short list of energy efficiency and energy generation initiatives (in terms of capital cost, utility savings and carbon abatement)	Energy audits Toolkit	The toolkit can be used to evaluate the cumulative outcomes of all initiatives	An evaluation of the overall costs and benefits of the DEP
Identify internal and external stakeholders and develop stakeholder engagement process	Communication strategy	This task is done outside of the toolkit	Evaluation of each energy generation initiative against all criteria
Review and evaluate funding and procurement options	Communication strategy	This task is done outside of the toolkit	Agreed funding and procurement process
Identify internal approvals process and form business case	Communication strategy	This task is done outside of the toolkit	Business case
Identify external approvals process and requirements	Communication strategy	This task is done outside of the toolkit	Requirements for all external approvals
Undertake RFT process	Communication strategy	This task is done outside of the toolkit	Selection of preferred contractors