DEPARTMENT OF ENERGY,
UTILITIES AND SUSTAINABILITY
NEW SOUTH WALES GOVERNMENT

NSW Standby Generators Survey

Summary Report

June 2005

This Summary Report prepared by:

Next Energy
Level 12 – 220 George Street
Sydney NSW 2000
T 02 9251 40472 F 02 9247 5103
Email: rroy@nextenergy.com.au

For:

NSW Department of Energy Utilities and Sustainability

GPO Box 3889

Sydney NSW 2001

T. 02 8281 7777 F. 02 8281 7351

Email: information@deus.nsw.gov.au

Website: www.deus.nsw.gov.au

FOREWORD

Australia enjoys relatively low cost and reliable electricity supply by world standards. It also uses energy less efficiently than many other countries and has relatively high greenhouse gas emissions from electricity generation. As demand for power rises, NSW faces the challenge of maintaining reliable and low cost energy supplies, while improving energy efficiency and moderating greenhouse gas emissions.

To meet this challenge, smart innovative solutions will be required. The recently released Energy Directions for NSW Green Paper discusses some such solutions. One possible solution is greater use of Demand Management (DM), which involves providing incentives to help consumers to save money by using energy more efficiently and reducing their demand at times of peak consumption.

One of the many aspects of DM that has been effectively employed overseas is to coordinate the use of standby generators to reduce the net demand on the electricity supply system at times of peak load. These generators are idle for most of the time, but need to be tested (typically about once a month) to ensure their reliability.

In principle, offering incentives to owners of standby generators to coordinate the testing of some standby generators during a few hours of peak demand each year could improve supply reliability. It could also spread out the planned investment in new electricity supply capacity, saving money for electricity suppliers and consumers.

For such an approach to be applied in NSW, it would need to meet strict environmental requirements and offer significant advantages to the owners of the standby generators. This could also provide an opportunity to improve the efficiency and reduce emissions of some standby generators, while enhancing their reliability in providing emergency power for the owners and customers that rely on them.

As a first step in investigating standby generation's potential to contribute to the peak electricity load management, the Sustainable Energy Development Authority of NSW (now incorporated into DEUS) commissioned a survey to develop a database of existing standby generation in NSW. This survey includes information of technical factors (size, type, condition, age, exhaust location; maximum running time, environmental controls) and commercial data (key contact name and details, practical operational issues, permit constraints on operations).

This Summary Report of the survey identifies combined electrical standby generating capacity of 347 MW. Not all of this capacity will be suitable for providing DM services and not all standby generator owners would wish to participate if a program were to be established. Nevertheless, this survey provides a useful basis for further investigation and possible program development.

DEUS is currently considering what role standby generation resources might appropriately play as part of a broad sustainable energy strategy for NSW.

PURPOSE OF THE STANDBY GENERATION DATABASE

The database of standby generators in NSW was developed using the results of a survey conducted in late 2003 by Next Energy and was commissioned by the NSW Government's Sustainable Energy Development Authority (SEDA). The purpose of developing the database of existing standby generation facilities is to help assess the potential for viable, dispatchable standby generators to contribute to the management of peak electricity loads more effectively, and as a first step in facilitating a coordinated standby generation program.

If standby generation were to be harnessed in a coordinated way during periods of peak demand, potential benefits for electricity distribution networks and retailers may include:

- Enhanced network reliability;
- Reduced overall energy costs;
- Reduced frequency of supply interruptions; and
- Modest greenhouse gas emissions reduction.

Potential benefits for standby generator owners may include:

- Enhanced site reliability;
- Advance warning during periods of peak electricity demand;
- Enhanced maintenance & monitoring paid for by a third-party;
- Lower greenhouse gas emissions; and
- Lower overall net operating costs.

The survey and resulting database are important first steps in assessing these potential benefits and facilitating implementation in a timely fashion.

The Project developed a database with a focus on the Sydney metropolitan area. The database includes information including technical factors (including: size, type, condition, age, exhaust location; maximum running time, environmental controls,) and commercial issues (including: key contact name and details, practical operational issues, permitting constraints on operations).

The data was collected through a combination of:

a) telephone surveys or meetings with of facility managers and owners;

b) discussions with standby generation equipment and service providers;

c) development consent documents.

While the focus was on facilities with a minimum of 500kW of standby generation capacity, the database also includes information on some smaller size units identified.

SUMMARY OF SURVEY RESULTS

The survey identified 283 standby diesel generating units at 143 sites with a total capacity of 347,172 kVA. Key conclusions from the survey and database are that:

- With aggregate capacity of 347MVA (equivalent to a medium-sized gas peaking plant), there is significant potential for standby generators to help manage NSW peak loads;
- Major data/telecoms centres and the largest commercial office buildings account for 77% of all standby generators identified, with more than 95% of total reported capacity being in metropolitan Sydney; and
- Extrapolating from the survey results, it is not unreasonable to assume that 400-500MVA of standby generators are present in NSW.

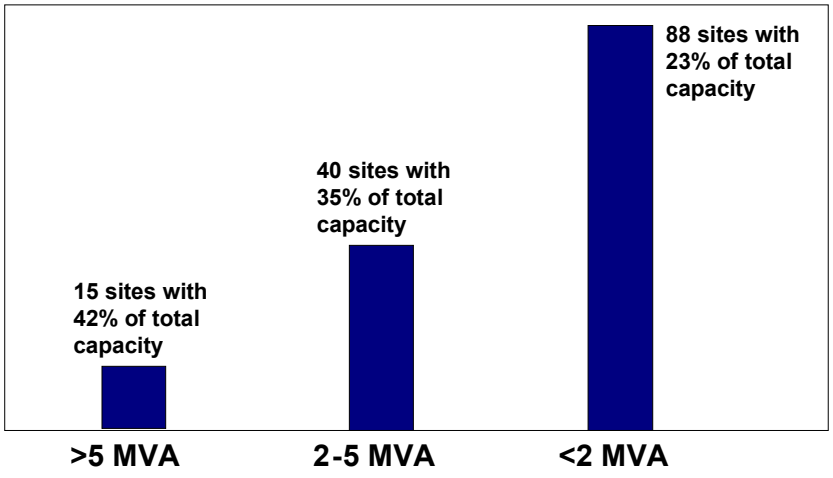
Managers of some 220 likely sites were approached during November and December 2003 with approximately 80% ultimately supplying some data either through a written survey form a telephone interview. The target sites included a broad selection of:

- Office and residential towers;
- Telecommunications and data centres;
- Retail shopping centres;
- Broadcasting facilities;
- Hospitals;
- Miscellaneous manufacturing sites, large government installations, emergency services, utilities, sporting venues, registered clubs, hotels and airports.

Of the 220 target sites, 143 were confirmed as having standby generators while a further 36 sites were confirmed as having no standby units or very small units (eg less than 350kVA).

The largest 15 sites account for 42% of total installed capacity, with the next largest 40 sites accounting for a further 35% of total capacity (see Figure 1).

Figure 1: Standby Generators by Site Capacity



The overwhelming majority of capacity is to be found at data / telecoms sites (52%) and office buildings (25%) (See Figure 2).

Figure 2: Standby Generators by Industry Sector

Sector	Total MVA	% of Total MVA
Data / Telecoms	179.7	52%
Office Buildings	86.2	25%
Retail	22.6	7%
Broadcast	19.9	6%
Hospitals	10.2	3%
Misc	28.6	8%

While there are likely to be gaps in the database for non-metropolitan sites, the vast majority of respondents identified sites located in metropolitan Sydney (see Figure 4) and mostly within Energy Australia's distribution territory (See Figure 3).

Figure 3: Distribution of Standby Generators Capacity by Electricity Distributor Service Territory

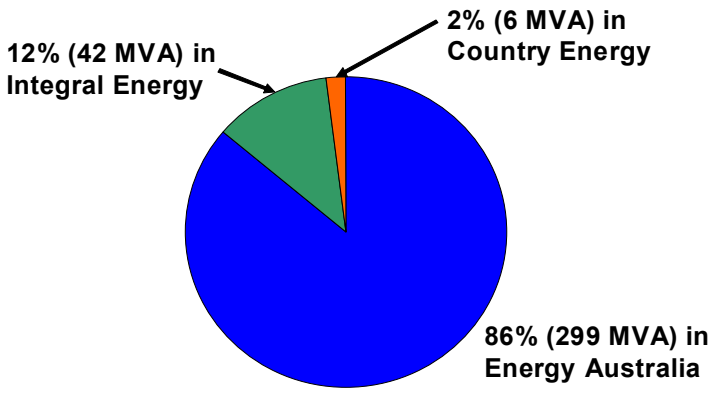
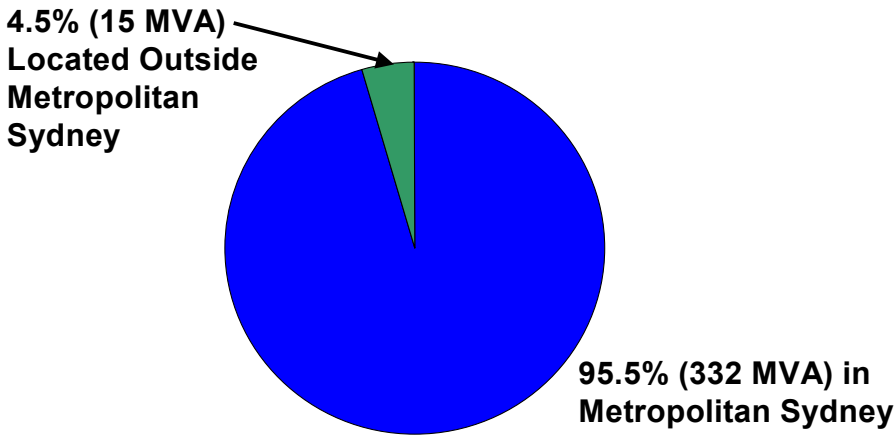


Figure 4: Location of Standby Generators Capacity



LIMITATIONS OF SURVEY DATA

The survey was not intended to represent the entire population of standby generators in NSW. Accordingly, gaps in the database are likely to exist for sites with standby generators outside of the Sydney metropolitan area and amongst miscellaneous industrial sectors.

PRIVACY

The data in this survey was collected and is being handled in keeping with the National Privacy Principles of the Privacy Amendment (Private Sector) Act 2000 and the Commonwealth Privacy Act 1988. The information provided is to only be used for the stated purpose of assessing the potential for standby generators to help manage electricity loads more effectively, and to facilitate a coordinated standby generation program as appropriate. All information provided by participants is being be kept confidential unless participants consent to its release and is being stored securely.

The Database is the property of the NSW Government's Department of Energy, Utilities and Sustainability (DEUS). DEUS is currently considering how to best make use of this information while protecting the privacy of those who provided it.

For further information please contact DEUS.

New South Wales Government