New South Wales Auditor-General's Report
Performance Audit

Building energy use in NSW public hospitals

Ministry of Health
NSW Treasury
NSW Office of Environment and Heritage

audit office
OF NEW SOUTH WALES

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ISBN 978 1921252 709

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In accordance with section 38E of the *Public Finance and Audit Act 1983*, I present a report titled **Building energy use in NSW public hospitals: Ministry of Health, NSW Treasury and NSW Office of Environment and Heritage.**

Peter Achterstraat.

Peter Achterstraat
Auditor-General
4 June 2013

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Executive summary

Background

As we face steep rises in electricity, gas and other fuel prices, managing energy use plays an increasingly important role in NSW government operations.

The NSW Government has introduced a number of measures to reduce energy use and improve energy efficiency. They include:

- the Treasury Loan Fund set up in 1998 to provide low interest loans to general government budget dependent agencies to implement cost-effective energy and water efficiency projects. The NSW Office of Environment and Heritage administers and assesses agencies' applications for loans from the fund to invest in those projects, and recommends suitable projects to NSW Treasury for approval to access the fund
- the *Energy Administration Amendment (Water and Energy Savings) Act 2005* required large government and business energy users to develop Energy Savings Action Plans
- the 2008 Government's Sustainability Policy required public sector agencies to reduce their greenhouse gas emissions, improve energy efficiency and manage their rising energy cost.

The 2008 Government's Sustainability Policy sets an emissions reduction target for building energy use. The target is to reduce emissions to the year 2000 level by 2019–20. Emissions can be reduced by using less energy and/or switching to cleaner energy sources.

The policy also sets a specific strategy for building energy use in health facilities, recognising them as the highest building energy users, responsible for over 50 per cent of NSW government emissions.

Public hospitals account for around 85 per cent of NSW Health's total building energy cost and emissions. Most run 24 hours, seven days a week and they use energy intensive equipment for diagnoses and treatments.

NSW Health is the largest public health system in Australia with a budget of $16.4 billion in 2011–12. It has more than 230 public hospitals, 500 community health centres, 220 ambulance stations and a workforce of over 100,000 staff serving a population of 7.3 million.

In 2011–12, NSW Health paid over $120 million for its building energy covering the use of electricity, natural gas, LPG, diesel, coal and heating oil. Although high relative to total government spend on energy, this figure represents less than one per cent of NSW Health's total expenditure.

This audit examined how well NSW Health manages its building energy use, focusing on public hospitals since 2008.

During that period the structure of NSW Health changed significantly. In 2011, 15 new Local Health Districts (LHDs) were established, with new boundaries, more autonomy and greater accountability for spending, including on energy. The role of the Ministry of Health was refocused on policy, strategy, and oversight.

During the same period, there has been continuing growth in activity in hospitals across New South Wales and constraints on both capital and recurrent expenditure in NSW Health. These present challenges for management in general, and for energy management in particular.

NSW Health refers to the whole NSW public health system which comprises the Ministry of Health, 15 geographically-based LHDs, three specialty health networks, the Ambulance Service, four specialised agencies and four statutory health corporations.

Conclusion

Over the last four years, NSW Health has managed to reduce its energy use by two per cent despite increases in hospital activity. It has invested in cost-effective energy savings initiatives, but did not meet its emissions reduction target in 2010–11 and, at the current rate, is unlikely to meet its 2013–14 target. We conclude that NSW Health has not managed its building energy use as well as it intended.

Over the same period, energy prices have increased significantly. Expenditure on energy in NSW Health increased by 47 per cent (nearly $39 million), despite a two per cent reduction in energy use. This increase was considerably faster than the increase in total health expenditure and activity. The price of energy over the next five years is expected to continue to rise. This makes the case for investment in energy efficiency measures stronger than ever.

There are significant variations in energy efficiency across LHDs and hospitals. Some of these variations reflect buildings of different design, size and age, in different climate zones and running different services. Some will also reflect LHDs and hospitals with better energy management than others. The scale of the variations suggests there is scope for further improvement.

The 2011 organisational restructure and other priorities of the LHDs delayed the development of NSW Health's Environmental Sustainability Strategy and local plans. There has been progress recently. The strategy was completed in 2012; the LHD implementation plans are due in 2012-13.

In the absence of a strategy and plans up until recently, energy efficiency measures have been limited in scope, and the available government investment funds have not been fully utilised. While it is too early to comment on the implementation plans being prepared by the LHDs, we can say that more work is needed in some critical areas if the strategy and plans are to translate into sustained improvement in energy efficiency. This work includes:

- an energy efficiency investment program
- more technical support to LHDs
- the right incentives to invest and manage energy costs.

We conclude that planning to improve building energy use has not been as effective as it could be, so far.

NSW Health reporting and evaluation of energy use and energy efficiency are under-developed. As a result, KPIs, targets and benchmarks are needed to identify scope for improvement and to monitor progress.

Our recommendations are intended to support NSW Health's effort to address these issues.

Supporting findings

Is NSW Health improving its building energy use in a cost-effective way and meeting targets?

NSW Health's Environmental Sustainability Strategy 2012–15 includes an emissions reduction target for 2019–20 and interim targets for 2010–11, 2013–14 and 2016–17.

Between 2008–09 and 2011–12, NSW Health has improved its building energy use despite increases in the number of separations and bed days of over eight per cent and nearly two per cent respectively. NSW Health reduced its:

- emissions by two per cent, from 921,253 tonnes of CO_2-e (that is, carbon dioxide equivalent) to 906,593 tonnes of CO_2-e
- energy use by two per cent, from 4.6 million gigajoules to 4.5 million gigajoules.

However, NSW Health did not meet its 2010–11 interim emissions reduction target of 817,000 tonnes of CO_2-e. Emissions were 15 per cent above target. The reasons for this include:

- only six out of 62 initiatives identified in Energy Savings Action Plans were reported as being implemented
- investment in cost-effective energy saving initiatives did not deliver sufficient emissions reduction.

NSW Health is also unlikely to meet its 2013–14 target.

While NSW Health's strategy includes emissions reduction targets for building energy use, it does not include KPIs and targets for reducing energy use and cost, and improving energy efficiency.

Between 2008–09 and 2011–12, energy prices increased significantly and NSW Health building energy cost increased by 47 per cent or nearly $39 million.

Does NSW Health plan well to improve its building energy use?

NSW Health's Environmental Sustainability Strategy released in 2012 provides a broad strategic framework for managing building energy use. It identifies the priority sites and includes a series of emissions reduction targets through to 2019–20 (at five per cent below the year 2000 emissions level).

The strategy was an important step, but further work is needed in some critical areas to guide detailed planning at LHD level. This includes:

- a method to account for the impact of new facilities on overall emissions
- KPIs, targets and benchmarks
- guidance on investment decisions, including system-wide bundling of projects at whole-of-health, and the uptake of cleaner/renewable energies
- an energy efficiency investment program
- guidance for managing energy demand and influencing behaviour to reduce energy use.

Current management arrangements and governance structures do not always encourage investment in energy efficiency. In particular:

- LHDs and energy managers receive limited support and training
- increases in energy bills are covered through budget supplementations, irrespective of performance
- LHDs have no internally allocated seed funding to cover the cost of energy audits
- the monetary threshold to seek loans from the Treasury Loan Fund limits investment choices
- the Treasury Loan Fund processes are lengthy and complex
- there is no permanent prequalified panel of energy performance contractors to select from
- there is no flexibility in using and repaying loans from the Treasury Loan Fund.

Does NSW Health report on and review/evaluate its building energy use performance?

NSW Health reports on building energy use in its annual report and to the Office of Environment and Heritage through the online system for comprehensive activity reporting. However, the annual report does not show progress against targets and reporting to the Office of Environment and Heritage could be more reliable, if:

- formal procedures were developed to assure the quality and timeliness of information reported through the online system
- all data could be captured at source and transferred automatically into NSW Health's management information system, rather than entered manually or estimated.

We recognise that at present some retailers may be unable to provide information to NSW Health electronically so as to avoid manual data entry.

NSW Health has not undertaken a formal evaluation of its performance in managing building energy use. Our analysis showed that it has improved energy efficiency, but this has not been enough to compensate for increases in costs. Between 2008–09 and 2011–12, energy use:

- per separation reduced by nearly ten per cent
- per bed day reduced by four per cent
- per full-time equivalent (FTE) employee reduced by over nine per cent.

NSW Health building energy cost:

- per separation increased by over 36 per cent
- per bed day increased by over 44 per cent
- per FTE increased by nearly 37 per cent.

Our analysis also showed significant variations in energy efficiency across LHDs and the top ten hospitals. Some of these variations reflect buildings of different design, size and age, in different climate zones and running different services. Some will also reflect LHDs and hospitals with better energy management than others. The scale of the variations suggests there is scope for further improvement.

The development of benchmarks and evaluations of energy efficiency of hospitals are in early stages. The Office of Environment and Heritage has developed and piloted a draft energy benchmarking tool for existing NSW hospitals based on the National Australian Built Environment Rating System methodology, but further work is required to finalise it. NSW Health is also piloting specific benchmarks for the thermal performance of new hospitals.

NSW Health requires its new facilities valued at over $10 million to undergo the Green Star process and to achieve a minimum four star rating. However, independent certification to that rating is not required and the rating does not guarantee optimal thermal performance of buildings. Also, the required post-evaluation of new buildings to ensure they operate as per the design specifications is not applied consistently.

Recommendations

To set clear direction for managing building energy use and investing in system-wide improvements, the Ministry of Health should:

by December 2013:

- develop in consultation with LHDs and relevant specialty health networks, a strategy to guide investment in energy efficiency that includes:
  - minimum energy efficiency performance standards for technologies, plant and equipment used in public hospitals (page 32)
  - provision of seed funding for energy audits (page 32)
  - bundling energy efficiency improvements at an appropriate level to maximise value (page 32)
  - an investment program with financing options ranging from the use of recurrent budgets to large scale capital investment outside the Treasury Loan Fund (page 32)
  - phasing in investment in renewable energy where cost-effective (page 32)
- develop KPIs and targets for reducing energy cost and use, and improving energy efficiency (page 25)
- develop and start implementing a strategy to strengthen the role of the Sustainability Unit as a centre of expertise by ensuring it:
  - has a business plan and is well resourced (page 32)
  - delivers appropriate energy management training, guidance materials and resources, including strategies to manage demand and influence behaviour (page 32)
  - uses a systematic process for identifying and sharing better practices across the health system (page 32).

by June 2014:

- review the NSW Health Engineering services and Sustainable Development Guidelines TS11 and include a requirement for all new and refurbished facilities to:
  - have their energy and emissions baselines determined (page 32)
  - use the benchmarks once finalised for monitoring performance (page 40)
  - be independently certified to a minimum four star Green Star rating (page 40)
  - have a budget for energy efficiency in initial project costing (page 40)
  - implement evaluations of thermal performance at 18 months post-occupancy (page 40)
- work with LHDs to provide energy managers with a budget for minor energy saving initiatives, as well as support and training (page 32)
- link any budget supplementations provided to LHDs and relevant specialty health networks for increases in energy costs to their performance in managing building energy use (page 32)
- have all small sites, including franchise accounts, on State Contracts or similar contracts to secure competitive energy prices and electronic access to data from providers (page 40).

To better measure, monitor and report on performance, the Ministry of Health should:

- require LHDs and relevant specialty health networks to report annually to the Ministry of Health on progress against their implementation plans (page 32)
- review performance in managing building energy use at each interim target (page 40).

by December 2013:

- develop quality assurance procedures for data on building energy use (page 40).

by June 2014:

- work with the Office of Environment and Heritage to develop a benchmarking tool for NSW hospitals and adopt it for monitoring performance (page 40)
- give LHDs, relevant specialty health networks and hospitals access to performance information so they can compare their performance to others and set improvement targets in their implementation plans (page 40)
- start progressively to monitor and report:
  - on the performance of existing, new and refurbished facilities against respective KPIs, targets and benchmarks (page 40)
  - trends in energy use, cost and efficiency on a rolling three years basis, including in annual reports (page 40)
- review the extent to which sub-meters are being used for monitoring energy use in hospitals to identify gaps and develop funding options (page 40)
- include energy management in Chief Executives performance agreements with the Ministry of Health (page 32).

To encourage investment in energy efficiency, NSW Treasury should by December 2013:

- review, jointly with the Office of Environment and Heritage, the administrative arrangements for the Treasury Loan Fund to secure its continuation (page 33)
- assist NSW Health to identify appropriate financing options for energy efficiency initiatives, including the existing Treasury Loan Fund, and ways to secure such funds (page 33)
- assist NSW Health with approval processes to seek authorisation to draw down and spend outstanding loans from the Treasury Loan Fund in new financial years (page 33)
- introduce flexible loan repayment options for the Treasury Loan Fund, such as delayed loan repayments where justified (page 33).

To encourage greater investment in energy efficiency and benchmarking of performance, the Office of Environment and Heritage should:

by December 2013:

- review, jointly with NSW Treasury, the administrative arrangements for the Treasury Loan Fund to secure its continuation (page 32)
- allocate resources to a seed funding program for projects which could be potentially funded from the Treasury Loan Fund (page 32)
- review the administrative rules to enhance successful access to loans from the Treasury Loan Fund, including risk-based assessment and approval processes (page 32)
- simplify key Treasury Loan Fund application documents and administrative processes (page 32)
- provide guidance and training on energy management (page 32)
- establish, in consultation with the Department of Finance and Services, a permanent panel of prequalified energy performance contractors, including contractors with expertise in health settings (page 32)
- require agencies to apply for loans from the Treasury Loan Fund for energy savings projects at set regular intervals, and introduce time standards for finalising the assessment of compliant applications (page 32).

by June 2014:

- finalise the energy efficiency benchmarking tool for NSW hospitals (page 40).

Response from the Department of Premier and Cabinet

2013-199870

Mr Peter Achterstraat
Auditor-General
Audit Office of New South Wales
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24 MAY 2013

Dear Mr Achterstraat

Thank you for your letter of 29 April providing a copy of the final report for the Performance Audit – Building energy use in public hospitals. The Report and its recommendations raise complex cross-agency issues. As such I requested the Ministry of Health, The Treasury and the Office of Environment and Heritage prepare a single management response to the Report. This response is attached.

The agencies welcome the Report and are pleased it recognises the achievements of the NSW Health system in improving energy efficiency whilst health service activity has increased. The Report acknowledges the work NSW Health has done to improve:

- data quality and access;
- investment in the Sustainable Government Investment Program and Energy Performance Contracts funded through the Treasury Loan Fund; and
- the development of the Environmental Sustainability Strategy for NSW Health 2012-2015 in which targets for greenhouse gas reductions are set.

The Report highlights opportunities for improvement in the approach to energy management to date and I acknowledge the work NSW Health is currently undertaking to develop an Energy Performance Management Strategy.

The Ministry of Health, The Treasury and the Office of Environment and Heritage note the majority of the recommendations in the Report can be implemented and will support public hospitals to improve the management of building energy use in the future. These agencies have already begun working on a number of initiatives highlighted in the Report, such as benchmarking and improving access to the Treasury Loan Fund.

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I would also like to acknowledge the Audit Team for their professionalism and collaborative manner in which this Performance Audit was conducted. The three agencies involved are appreciative of the co-operation of the auditors in negotiating achievable timeframes, given the complexity and diverse range of issues surrounding energy management.

Yours sincerely

Chris Eccles
Director General

Ministry of Health comment on the Auditor General's Report on the Performance Audit: Building energy use in public hospitals

The Ministry of Health welcomes the opportunities presented in the Report on the Performance Audit: Building energy use in public hospitals, and is pleased the Report acknowledges the complex nature of energy management in the hospital environment and the achievements NSW Health has made to date. The range of competing priorities, budgetary constraints and other barriers to implementing energy efficiency projects in public hospitals was discussed within the Report, and many of the recommendations seek to address these issues.

The Ministry of Health accepts the emission reduction targets set in the Environmental Sustainability Strategy for NSW Health 2012-15 were ambitious and notes the Report outlines many of the reasons why the targets were not met. In relation to reviewing these targets, the Ministry is awaiting the direction of the Energy Efficiency Action Plan and will work with the Office of Environment and Heritage to bring forward energy targets for the Government's consideration as part of a whole of government approach to energy efficiency. Given NSW Health is the largest user of building energy across government, this will strongly guide new targets.

The report failed to fully acknowledge that the Ministry of Health has complied with the Health Facilities Strategy in the NSW Government Sustainability Policy. Specific activities include:

- sites that emit approximately 35% of NSW Health's total greenhouse gases have had either an Energy Performance Contract or a Sustainable Government Investment Project undertaken.
- sites that account for a further 50% of NSW Health's emissions have been identified and attention to investigate energy and water savings is underway, some through the Office of Environment and Heritage's Government Building Retrofit Program.
- NSW Health established the Sustainability Executive Working Group in December 2008 which compiled a draft NSW Health Environmental Sustainability Strategy. The Strategy was workshopped with a network of Energy and Waste managers through the Sustainable Health Roundtable in March 2011 and in January 2012 the Ministry of Health endorsed the Health Environmental Sustainability Strategy. In July 2012 it was published on the NSW Health website.
- In 2010, the Ministry of Health embarked on designing a purpose-built Environment Information Management System to better measure, monitor and report on building energy use, with an initial focus on electricity. The long-term strategy for improving data management is through the new IBM TRIRIGA system which will be rolled out during 2014.
- NSW Health worked with the Office of Environment and Heritage on the draft NABERS for Hospitals benchmarking tool, primarily on the Technical Advisory Group. The difficulties in identifying clear boundaries and activity indicators within the hospital environment saw the tool not being rolled-out. Recently, the Ministry of Health and the Office of Environment and Heritage have entered into a partnership to revisit the development of a benchmarking tool for hospital energy and water use.
- NSW Health has invested more funding into the energy efficiency of its facilities through the Treasury Loan Fund compared to any other NSW Government agency.

The Ministry of Health, independent to this audit, has completed a business case to establish an Energy Performance Management Strategy. This Strategy considers many issues including the development of procurement pathways to access new and emerging areas of the market, alternative financing mechanisms, targets and benchmarks, and capacity building alongside many other areas critical to the implementation of a successful energy management program. Many of the recommendations in the Report will be addressed through the implementation of the Energy Performance Management Strategy.

In addition to the development of the Energy Performance Management Strategy, NSW Health has worked in partnership with the Office of Environment and Heritage to overcome a number of barriers to implementing energy efficiency projects in hospitals. In particular, through the Government Building Retrofit Program, seed funding has been provided to identify and design energy saving projects and build robust business cases to secure funding from the Sustainable Government Investment Program (SGIP) and Energy Performance Contracts (EPC) funded through the Treasury Loan Fund. Also, Technical Advisors have been engaged to provide the much needed support to implement Energy Performance Contracts in the Northern NSW Local Health District, Western NSW Local Health District, Hunter New England Local Health District (John Hunter Hospital), Central Coast Local Health District and North Sydney Local Health District.

Specific responses to each recommendation made to the Ministry of Health are below:

Recommendation	Ministry of Health (MOH) Comment
To set clear direction for managing building energy use and investing in system-wide improvements, the Ministry of Health should:	
by December 2013:	
develop in consultation with LHDs and relevant specialty health networks, a strategy to guide investment in energy efficiency that includes:	
minimum energy efficiency performance standards for technologies, plant and equipment used in public hospitals	***Accept Recommendation*** MOH will work with HealthShare and Health Infrastructure, in consultation with the LHDs and specialty health networks, to develop a strategy to guide investment in energy efficiency that includes minimum energy performance standards for major and minor plant and equipment that is used in public hospitals.
provision of seed funding for energy audits	***Partially Accept Recommendation*** MOH accepts energy audits are important in the identification of energy efficiency opportunities, however maintains they must be integrated into an implementation program. Evidence to date shows energy audits without implementation support do not result in investment in energy efficiency. Through the Energy Performance Management Strategy, MOH is working with The Treasury and the Office of Environment and Heritage (OEH) to develop integrated financing options, including accessing the Treasury Loan Fund, which include facilitated support and seed funding for project identification and business case development.
bundling energy efficiency improvements at an appropriate level to maximise value	***Accept Recommendation*** MOH has completed a business case that considered bundling energy efficiency projects as part its Energy Performance Management Strategy. The business case showed that due to the governance structure of NSW Health, the transactional costs associated with bundling across LHDs will need to be weighed against the cost savings through economies of scale.
an investment program with financing options ranging from the use of recurrent budgets to large scale capital investment outside the Treasury Loan Fund	***Accept Recommendation*** MOH notes the NSW Health capital investment program is both constrained and fully committed. MOH is working with The Treasury and OEH to develop integrated financing options, including accessing the Treasury Loan Fund.
phasing in investment in renewable energy where cost-effective	***Accept Recommendation*** MOH has completed a business case that reviewed the impact and applicability of renewable energy as part of the Energy Performance Management Strategy. LHDs are already pursuing alternative and renewable energy sources independent of this audit, for example at Lockhart and Gulgong Hospitals.

develop KPIs and targets for reducing energy cost and use, and improving energy efficiency	***Partially Accept Recommendation*** MOH has developed its Environment Information Management System to capture and report on electricity cost and use and is currently working with OEH to develop a benchmarking tool for water and energy use in hospitals which will be utilised to set KPIs and targets for improving energy efficiency and reducing energy use. With respect to the cost of energy, this is out of the control of MOH and as such the recommendation to develop KPIs and targets to reduce energy cost cannot be accepted. MOH will continue its role as NSW Energy Category Chair for the State energy contracts and work with the Department of Finance and Services to achieve the best energy price for all government agencies. MOH notes that due to the current alternative procurement model being used to purchase electricity for government's largest sites, a relatively competitive price for electricity has been secured. MOH will also work to avoid energy costs through the improved management of energy through the Energy Performance Management Strategy.
develop and start implementing a strategy to strengthen the role of the Sustainability Unit as a centre of expertise by ensuring it:	***Accept Recommendations*** MOH is currently developing a strategy to strengthen the role and capacity of its Sustainability Unit as part of the Energy Performance Management Strategy. This includes a Business Plan and resourcing strategy to facilitate and/or deliver appropriate energy management training, develop materials and resources and staff engagement strategies to manage demand and influence behaviour and to implement a systematic process to identify and share better practices across the health system. MOH notes the success of the Sustainable Health Roundtable to date.
has a business plan and is well resourced	
delivers appropriate energy management training, guidance materials and resources, including strategies to manage demand and influence behaviour	
uses a systematic process for identifying and sharing better practices across the health system.	
by June 2014:	
review the TS11 guidelines and include a requirement for all new and refurbished facilities to:	
have their energy and emissions baselines determined	***Accept Recommendation*** Health Infrastructure and MOH note that this is achievable for all new facilities which have sub-metering and contemporary building management and communication systems (BMCS)
use the benchmarks once finalised for monitoring performance	***Accept Recommendation***

be independently certified to a minimum four star Green Star rating	***Not Accept Recommendation*** All major projects are designed to meet four star Green Star ratings, which is deemed 'best practice'. As acknowledged in the Report, clinical needs have to be prioritised above investment in environmental performance. Funding for independent certification of Green Star ratings is not currently available and is unlikely to be available by June 2014.
have a budget for energy efficiency in initial project costing	***Accept Recommendation*** Major project budgets have an allowance for Environmentally Sustainable Development for initiatives that go beyond four star Green Star design, which can include energy efficiency.
implement evaluations of thermal performance at 18 months post-occupancy	***Not Accept Recommendation*** On the basis there is an existing mechanism to evaluate thermal performance. All major projects have a 12 month defect liability period. Part of this period is to ensure the building performs to design specification, including thermal performance.
work with LHDs to provide energy managers with a budget for minor energy saving initiatives, as well as support and training	***Partially Accept Recommendation*** Providing energy managers with a budget for minor energy saving initiatives is at the discretion of the Local Health Districts through their internal budgeting arrangements. MOH acknowledges the budget is constrained and inflexible and is working with The Treasury to develop flexible financing options, including recurrent to capital swap to address whole-of-lifecycle costs.
link any budget supplementations provided to LHDs and relevant specialty health networks for increases in energy costs to their performance in managing building energy use	***Not Accept Recommendation*** NSW Health will continue to partly supplement LHD's for price increases in electricity beyond their control. Budgets are managed in aggregate on performance and will be retained in this manner in preference to an itemised arrangement.
have all small sites, including franchise accounts, on State Contracts or similar contracts to secure competitive energy prices and electronic access to data from providers.	***Accept Recommendation*** In mid-2012 MOH initiated a program to transition all NSW Health accounts, large and small sites, on to State Contracts or large-scale Health contracts where possible. MOH notes access to electronic data from providers is generally available for electricity, but not as readily available for other energy sources.
To better measure, monitor and report on performance, the Ministry of Health should:	
require LHDs and relevant specialty health networks to report annually to the Ministry of Health on progress against their implementation plans	***Accept Recommendation*** The Environmental Sustainability Strategy 2012-15 for NSW Health requires annual reporting on progress against Annual Implementation Plans, which will commence in 2012-13. The NSW Health Annual Report will expand sustainability reporting by LHD from 2012-13.

review performance in managing building energy use at each interim target.	***Accept Recommendation*** MOH will review performance in managing building energy use. The Ministry is awaiting the direction of the Energy Efficiency Action Plan and will work with OEH to bring forward energy targets for the Government's consideration as part of a whole of government approach to energy efficiency. Given NSW Health is the largest user of building energy across government, this will strongly guide new targets.
by December 2013:	
develop quality assurance procedures for data on building energy use.	***Accept Recommendation*** MOH will continue to develop quality assurance procedures and notes the work to date on the purpose-built Environment Information Management System and also the roll-out of the new data management system, IBM TRIRIGA.
by June 2014:	
work with the Office of Environment and Heritage to develop a benchmarking tool for NSW hospitals and adopt it for monitoring performance	***Accept Recommendation*** MOH has worked with OEH since 2008-09 to develop the draft NABERS for Hospitals tool, which was not adopted for reasons outlined in the Report. MOH is currently working with OEH to develop a benchmarking tool that will address the shortcomings of the draft NABERS for Hospitals tool and intends on adopting it to monitor performance.
give LHDs, relevant specialty health networks and hospitals access to performance information so they can compare their performance to others and set improvement targets in their implementation plans	***Accept Recommendation*** MOH has developed the Environment Information Management System which will be made available to the LHDs, relevant specialty health networks and hospitals. This system will enable LHDs and site managers to compare their electricity use to other sites. In addition all Energy Managers are provided with monthly electricity use data for all sites on the large sites electricity contract and have access to 30 minute interval data via a web-based system. MOH will work with OEH to develop a benchmarking tool to enable measurement of performance and target setting.
start progressively to monitor and report:	
on the performance of existing, new and refurbished facilities against respective KPIs, targets and benchmarks	***Accept Recommendation*** MOH is committed to progressively monitor and report on the performance of existing, new and refurbished facilities.
trends in energy use, cost and efficiency on a rolling three years basis, including in annual reports	***Accept Recommendation*** MOH is committed to continue to progressively monitor and report energy use and cost and will incorporate efficiency on a rolling three year basis. MOH will report on relevant trends in its Annual Report.

review the extent to which sub-meters are being used for monitoring energy use in hospitals to identify gaps and develop funding options	***Accept Recommendation*** MOH acknowledges the importance of sub-metering to managing and monitoring energy use and will review the extent of sub-metering in hospitals. MOH is considering financing options for sub-metering as part of the Energy Performance Management Strategy. MOH notes sub-metering is a requirement of all new facilities under Section J of the Building Code of Australia.
include energy management in Chief Executives performance agreements with the Ministry of Health.	***Accept Recommendation*** MOH will include energy management in Chief Executive performance agreements.

The Treasury response to relevant recommendations is set out in the table below:

Recommendation	The Treasury Comment
To encourage investment in energy efficiency, The Treasury should by December 2013:	
review, jointly with the Office of Environment and Heritage, the administrative arrangements for the Treasury Loan Fund to secure its continuation	***Accept Recommendation in Principle*** The Treasury Loan Fund (TLF) is the funding mechanism for loans approved under the Sustainable Government Investment Program (SGIP) and Energy Performance Contracts (EPC). The actual criteria are contained within the SGIP, not the TLF. The Treasury supports a review of the TLF funding mechanism to assess the issues raised in the Audit Office Report. Changes to administrative aspects need to be considered by the Minister for the Environment and Minister for Heritage within these programs and continuation is a matter for Government.
assist NSW Health to identify appropriate financing options for energy efficiency initiatives, including the existing Treasury Loan Fund, and ways to secure such funds	***Accept Recommendation*** The Treasury is collaborating with NSW Health to identify appropriate financing options for energy efficiency initiatives.
assist NSW Health with approval processes to seek authorisation to draw down and spend outstanding loans from the Treasury Loan Fund in new financial years	***Accept Recommendation*** The Treasury manages approval processes that can be used by Health to request adjustments to its Net Cost of Services and its Asset Authorisation Limits where required to support a sound business case
introduce flexible loan repayment options for the Treasury Loan Fund, such as delayed loan repayments where justified	***Partially Accept Recommendation*** Flexible repayment options may be relevant for approved energy efficiency projects funded from the Treasury Loan Fund where supported by a sound business case. Changes to administrative aspects need to be considered by the Minister for the Environment and Minister for Heritage within the SGIP and EPC programs.

The Office of Environment and Heritage response to relevant recommendations is set out in the table below:

Recommendation	Office of Environment and Heritage (OEH) Comment
To encourage greater investment in energy efficiency and benchmarking of performance, the Office of Environment and Heritage should:	
by December 2013:	
Review, jointly with NSW Treasury the administrative arrangements for the Treasury Loan Fund to secure its continuation	***Accept Recommendation in Principle*** OEH is currently reviewing the administrative arrangements of the Sustainable Government Investment Program that provides access to the Treasury Loan Fund. This includes developing new business rules, funding and governance options in consultation with The Treasury for consideration by the Minister for the Environment and Minister for Heritage. The ongoing continuation of the Treasury Loan Fund is a matter for Government.
Allocate resources to a seed funding program for projects which could be potentially funded from the Treasury Loan Fund	***Partially Accept Recommendation*** The Government is currently considering options for future government agency energy efficiency programs, including continuation of up-front seed funding and options to finance this funding.
Review the administrative rules to enhance successful access to loans from the Treasury Loan Fund, including risk-based assessment and approval processes	***Accept Recommendation*** OEH is currently reviewing the administrative arrangements of the Sustainable Government Investment Program that provides access to the Treasury Loan Fund. This includes developing new risk based criteria for funding access in consultation with The Treasury.
Simplify key Treasury Loan Fund application documents and administrative processes	***Accept Recommendation*** OEH is currently developing improved documents and simpler processes in consultation with key agencies.
Provide guidance and training on energy management	***Partially Accept Recommendation*** OEH will provide guidance to energy management for government agencies. OEH will continue to work with training providers to ensure appropriate energy management courses are available for NSW Health employees.
Establish, in consultation with the Department of Finance and Services, a permanent panel of prequalified energy performance contractors, including contractors with expertise in health settings	***Accept Recommendation*** The Department of Finance and Services approved the establishment of a permanent panel of prequalified energy performance contractors in May 2013.
Require agencies to apply for loans from the Treasury Loan Fund for energy savings projects at set regular intervals, and introduce time standards for finalising the assessment of compliant applications.	***Partially Accept Recommendation*** OEH is considering the introduction of regular intervals for loan application intakes and will review the time taken to assess applications as part of the review of the administrative arrangements of the Sustainable Government Investment Program.

by June 2014:	
Finalise the energy efficiency benchmarking tool for NSW hospitals.	***Accept Recommendation*** OEH is currently working with the Ministry of Health to develop a benchmarking tool for monitoring and improving energy performance in hospitals. This project is on track for completion by June 2014.

Introduction

1.1 Building energy use in NSW Health

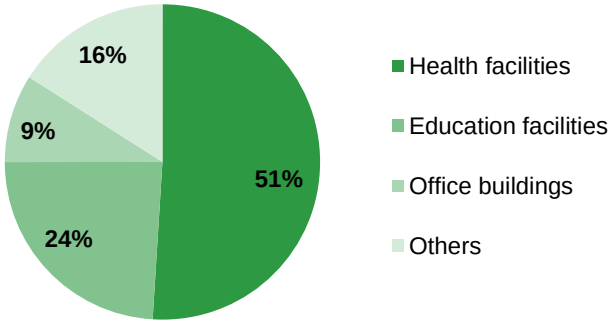
NSW Health is Australia's largest state-based public health system. It:

- serves a population of 7.3 million, that is, nearly a third of the Australian population
- deals annually with 2.5 million emergency department attendances, 1.6 million hospital admissions and 26 million non-admitted service occasions
- has more than 100,000 employees
- had a recurrent budget of $16.4 billion and a capital expenditure budget of $1.1 billion in 2011-12
- includes over 230 public hospitals, 500 community health centres and 220 ambulance stations.

NSW Health is the largest energy user in the public sector

Public health facilities are the highest users of building energy in the public sector, accounting for over 50 per cent of the NSW Government emissions from budget dependent agencies. This is because generally hospitals are large energy intensive facilities, many with older plant and equipment, and must run 24 hours, seven days a week.

Exhibit 1: Greenhouse gas emissions from building energy use for NSW general government budget dependent agencies in 2009-10



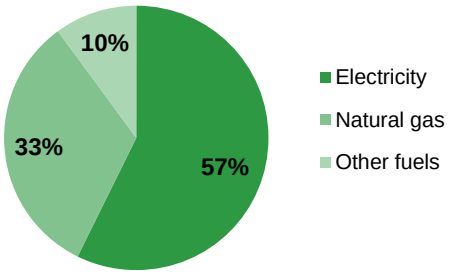
Source: Office of Environment and Heritage.

A number of factors cause energy use in health facilities to increase over time, including:

- more facilities being built to meet increased demand for hospital care
- the introduction of higher standards of patient care
- the greater use of energy intensive equipment for diagnostics and treatments.

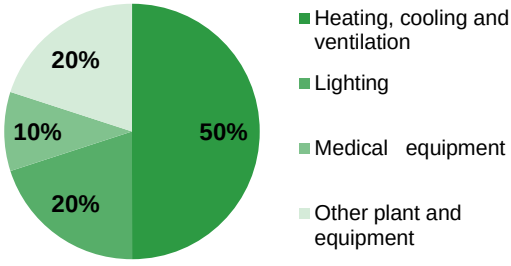
Reducing energy use and improving energy efficiency are therefore important to lessen the impact of these factors.

Exhibit 2: Building energy use in NSW Health in 2011–12



Source: Audit Office of New South Wales analysis of NSW Health data reported to the Office of Environment and Heritage.

Exhibit 3: Building energy use in large hospitals



Source: Based on energy use in a number of hospitals, including Westmead and Orange.

To give a sense of the impact of energy intensive technologies in hospitals, a large scale Magnetic Resonance Imaging (MRI) unit used for diagnosing illnesses or a linear accelerator used in radiation treatment of cancer patients can account for three to four per cent of a large hospital's total annual electricity use.

Exhibit 4: A linear accelerator in Orange hospital

Source: Orange hospital.

NSW Health paid $120m for its energy use

NSW Health paid over $120 million for its building energy use in 2011–12. Energy cost constitutes less than one per cent of NSW Health's total expenditure.

Energy prices are expected to continue to rise over the next five years. This is an incentive to reduce energy use and improve energy efficiency, especially in hospitals as they account for around 85 per cent of NSW Health's total building energy cost, emissions and use.

This audit focused on the ten public hospitals which account for over 40 per cent of NSW Health's total building energy use and emissions. These are: Westmead, Royal Prince Alfred, Prince of Wales, John Hunter, St George, Gosford, Concord, Liverpool, Royal North Shore and St Vincent's. We also selected six hospitals of different size and age, and in different locations as case studies for an appreciation of local issues. These were: Westmead, Prince of Wales, John Hunter, Orange, Mt Druitt and Deniliquin hospitals. See Appendix 1 for information about the audit.

1.2 The role of the Office of Environment and Heritage and NSW Treasury

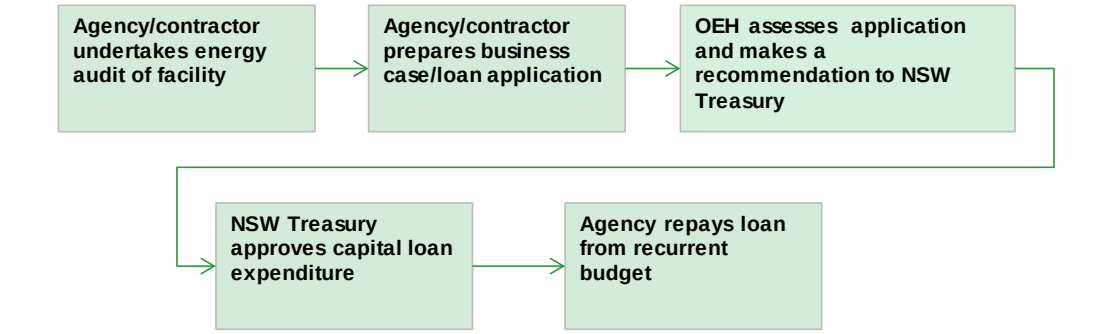
The audit also examined the role of the Office of Environment and Heritage in assisting agencies deliver on the Government's Sustainability Policy objective. This role includes:

- administering access to the NSW Treasury Loan Fund
- providing seed funding to priority sites to develop energy efficiency projects for funding through the Treasury Loan Fund
- providing diagnostic tools, guidelines, case studies training and technical advice
- administering an online system for comprehensive activity reporting on building energy use and emissions
- helping agencies to identify, fund and implement cost-effective measures.

Treasury Loan Fund provides low interest loans for energy efficiency projects

The Treasury Loan Fund provides low interest loans to general government budget dependent agencies to implement energy and water efficiency capital projects in their existing facilities. The fund has an annual provision of $40 million. NSW Treasury's role is to advise the Treasurer whether to approve loans from the fund based on the verification and endorsement of projects by the Office of Environment and Heritage.

Exhibit 5: Key steps to obtain a loan from the Treasury Loan Fund



Source: Audit Office of New South Wales research.

1.3 Accessing loans from the Treasury Loan Fund

General government budget dependent agencies can apply for loans from the Treasury Loan Fund through two streams:

- the Sustainable Government Investment Program for projects valued at less than $0.5 million (or $1 million for NSW Health) and that agencies can implement themselves
- Energy Performance Contracts for projects valued at over $0.5 million (or $1 million for NSW Health) and to be implemented by an Energy Services Contractor that guarantees the savings.

Once loans are repaid, agencies keep the cost savings.

To be eligible for a loan from the Treasury Loan Fund, a project must:

- be cost-effective, that is, having an internal rate of return of 12 per cent
- have 75 per cent of its benefits directly related to energy and associated emissions and/or water savings
- not be part of the agency's forward capital program.

Government agencies are required to manage their capital expenditure program within approved capital expenditure authorisation limits. Agencies are ultimately responsible for making decisions on their respective strategic capital investment priorities. NSW Health advised that the limit creates competition for funding between different capital investment classes, for example, major developments, minor capital works, maintenance, and locally funded initiatives. Clinical needs have to be prioritised above investment in energy efficiency. Also, energy expenditure is small compared to other operating costs, and savings generated might be relatively small compared to savings that can be achieved in other areas.

The Treasury Loan Fund is a source of capital funds that potentially allows agencies to finance specific energy efficiency projects. The Treasury Loan Fund loans are repaid from agencies recurrent budgets from savings achieved.

Key findings

2. Is NSW Health improving its building energy use in a cost-effective way and meeting its targets?

Finding: NSW Health's Environmental Sustainability Strategy 2012–15 includes an emissions reduction target for 2019–20 and interim targets for 2010–11, 2013–14 and 2016–17.

Between 2008–09 and 2011–12, NSW Health has improved its building energy use despite increases in the number of separations and bed days of over eight per cent and nearly two per cent respectively. NSW Health reduced its:

- emissions by two per cent, from 921,253 tonnes of CO_2-e (that is, carbon dioxide equivalent) to 906,593 tonnes of CO_2-e
- energy use by two per cent, from 4.6 million gigajoules to 4.5 million gigajoules.

However, NSW Health did not meet its 2010–11 interim emissions reduction target of 817,000 tonnes of CO_2-e. Emissions were 15 per cent above target. The reasons for this include:

- only six out of 62 initiatives identified in Energy Savings Action Plans were reported as being implemented
- investment in cost-effective energy saving initiatives did not deliver sufficient emissions reduction.

NSW Health is also unlikely to meet its 2013–14 target.

While NSW Health's strategy includes emissions reduction targets for building energy use, it does not include KPIs and targets for reducing energy use and cost, and improving energy efficiency.

Between 2008–09 and 2011–12, energy prices increased significantly and NSW Health building energy cost increased by 47 per cent or nearly $39 million.

2.1 Does NSW Health have a strategy, targets and KPIs for building energy use?

In January 2012, the Director-General of NSW Health endorsed the Environmental Sustainability Strategy 2012–15. It was published on the website in July 2012.

The strategy identifies the top 20 priority sites and includes an emissions reduction target set at five per cent below the year 2000 level (that is, at 665,000 tonnes of CO_2-e) by 2019–20. The strategy also includes interim emissions reduction targets for:

- 2010–11 at 817,000 tonnes of CO_2-e
- 2013–14 at 769,500 tonnes of CO_2-e
- 2016–17 at 741,000 tonnes of CO_2-e.

Agencies are expected to reduce their emissions as well as improve their energy efficiency and manage their energy cost.

NSW Health's strategy has no targets and KPIs for reducing energy use and cost, and improving energy efficiency.

NSW Health has no KPIs and targets for reducing energy use and cost, and improving energy efficiency

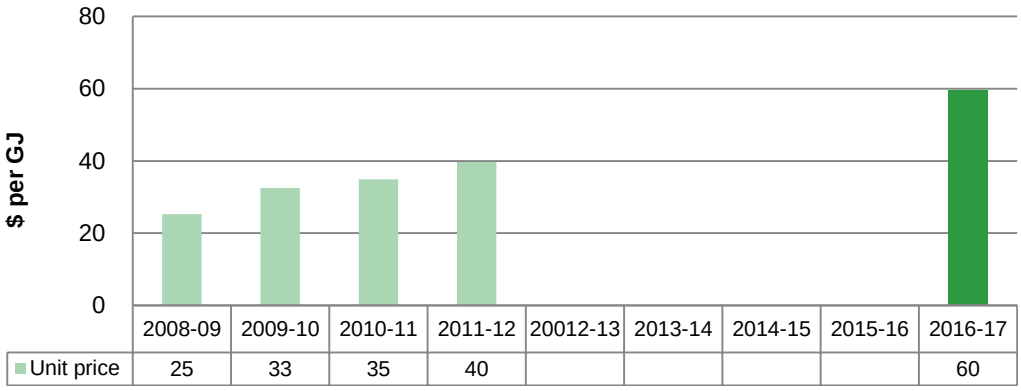
NSW Health's building energy cost has increased at a faster rate than maintenance expenses, activity levels, employee related expenses and total expenditure. Between 2008-09 and 2011–12:

- the number of bed days increased by nearly two per cent (6.4 million to 6.5 million)
- maintenance expenses increased by nearly four per cent ($404 million to $419 million)
- the number of separations (that is, discharge, transfer, death or change of episode of care of an admitted patient) increased by over eight per cent (1.6 million to 1.7 million)
- employee related expenses increased by 18 per cent ($8.5 billion to $10.1 billion)
- total expenditure increased by nearly 19 per cent ($13.8 billion to $16.5 billion)
- energy cost increased by 47 per cent ($81.8 million to $120.4 million) and the unit cost by nearly 51 per cent (from $18 per gigajoule to $27 per gigajoule).

Energy cost as a proportion of NSW Health's total expenditure has also increased since 2008–09 as energy prices increased, but it still constitutes less than one per cent.

In the next five years, electricity prices alone are expected to rise by 50 per cent. This will increase NSW Health's electricity unit price from $40 per gigajoule in 2011–12 to nearly $60 per gigajoule in 2016–17. Also, NSW Treasury's estimates show public hospitals energy bills rising by an extra $27 million a year with the introduction of the carbon price in July 2012.

Exhibit 6: NSW Health electricity unit price ($/gigajoule)



Source: 2008–09 to 2011–12 unit prices are based on NSW Health data. The 2016–17 unit price is the Audit Office of New South Wales estimate based on advice from the Office of Environment and Heritage.

Energy efficiency is about avoiding energy waste and using less energy to achieve the same outcomes. It is measured by the amount of energy used by some form of business output or other measures such as full-time equivalent (FTE) employees or floor area. The number of separations and bed days are the main output indicators of hospital activities currently used. The energy cost per unit of output is a useful measure to assess how well an agency is managing its energy cost.

NSW Health's performance against these measures is discussed in Chapter Four.

2.2 Has NSW Health implemented initiatives as planned and met its targets?

NSW Health did not meet its 2010–11 emissions reduction target despite improvements

NSW Health did not meet its 2010–11 interim emissions reduction target and is unlikely to meet the next interim target for 2013–14.

Between 2008–09 and 2011–12 NSW Health:

- reduced its energy use from 4.6 million gigajoules to 4.5 million gigajoules (two per cent reduction)
- reduced its emissions from 921,253 tonnes of CO_2-e to 906,593 tonnes of CO_2-e (two per cent reduction).

Despite these reductions, building energy cost increased by 47 per cent or nearly $39 million. Such increases will add to the cost pressure on the health system if not contained.

The two key initiatives that were planned to reduce energy use and emissions were the Energy Savings Action Plans and investment in energy saving initiatives funded through the Treasury Loan Fund.

Energy Savings Action Plans

Under the *Energy Administration Amendment (Water and Energy Savings) Act 2005*, 12 public hospitals designated as large energy users were required to prepare Energy Savings Action Plans by September 2006.

All 12 hospitals had their plans approved in June 2009. The plans identified a total of 62 cost-effective initiatives to be implemented over four years at a cost of $1.8 million. The Act does not mandate the implementation of initiatives in the plan.

At November 2012, only six of the 62 initiatives were reported as being implemented at a cost of $88,000 to deliver savings of $8,000 and a reduction in energy use of nearly 1,300 gigajoules per year. These projects involved:

- refurbishing parts of a hospital cooling system
- upgrading a system for automatic control of heating, cooling and ventilation in a hospital
- modernising substation controlling equipment in two hospitals to reduce energy loss
- optimising steam heating systems in two hospitals.

NSW Health's reporting on the Energy Savings Action Plans to the Office of Environment and Heritage is incomplete. The 12 sites were required to report annually to the Office of Environment and Heritage, but only five reported and only once.

Investment in energy efficiency initiatives funded through the Treasury Loan Fund

General government budget dependent agencies could have potentially sought a total of $440 million for investment in energy savings measures since the start of the Treasury Loan Fund in 1998. However, the uptake has generally been low. Since 1998–99, 14 agencies accessed loans totalling $59 million for 51 projects. Although NSW Health has been the major borrower from the Treasury Loan Fund, its investment did not reduce its emissions enough to meet the 2010–11 target.

NSW Health borrowed $30 million from the Treasury Loan Fund for energy saving initiatives

From the start of the Treasury Loan Fund in 1998–99 to the first interim target of 2010–11, NSW Health borrowed over $30 million from the fund for 28 energy saving projects. These projects were assessed by the Office of Environment and Heritage as cost-effective and led to annual reductions of nearly 48,000 tonnes of CO_2-e and $5.9 million in energy cost.

Since the introduction of the NSW Government's Sustainability Policy in 2008–09 to 2010-11, only two out of 15 LHDs took up loans from the Treasury Loan Fund totalling nearly $2 million. This investment was especially small compared to the available pool of $120 million, given that NSW Health accounts for over 50 per cent of budget dependent agencies' emissions.

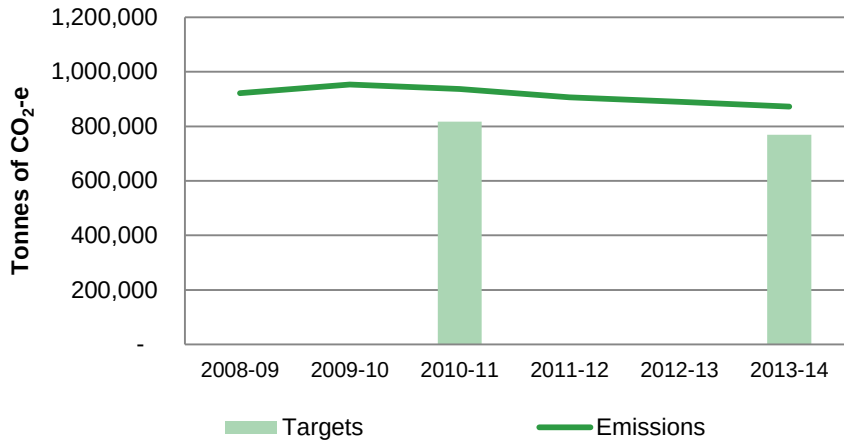
NSW Health is unlikely to meet its 2013–14 emissions reduction target

Since 2010-11, NSW Health had:

- 11 projects approved for Treasury Loan funding totalling over $10 million, with annual savings of nearly $2 million and emissions reduction of 11,620 tonnes of CO_2-e
- 21 energy savings proposals in development worth nearly $28 million to be funded from the Treasury Loan Fund, with expected annual savings of nearly $5 million and emissions reduction of 30,798 tonnes of CO_2-e.

Despite the significant increase in the number of applications to Treasury Loan Fund, the expected emissions reduction from these projects, if approved, will not be enough to achieve the 2013–14 interim emissions reduction target of 769,500 tonnes of CO_2-e.

Exhibit 7: NSW Health greenhouse gas emissions levels compared to targets



Source: Audit Office of New South Wales analysis based on actual emissions up to 2011–12 and projections based on approved and proposed investment in energy efficiency through the Treasury Loan Fund up to 2013–14. Projecting emissions beyond 2013–14 is not possible without knowing the scale of the planned investments.

NSW Health needs to reduce its emissions by:

- 103,190 tonnes of CO_2-e to meet the 2013–14 target
- around 200,000 tonnes of CO_2-e beyond current emissions reduction proposals to meet its 2019–20 target.

2.3 Does NSW Health use a consistent method for assessing the costs and benefits of energy improvement measures and for verifying savings?

The Office of Environment and Heritage uses consistent criteria for reviewing applications which seek loans from the Treasury Loan Fund to ensure they meet the fund criteria, including cost-effectiveness. Cost-effectiveness is defined as having an internal rate of return of at least 12 per cent. However, NSW Health does not use a consistent method for verifying savings achieved.

Once an energy saving project is implemented, the approach to verifying the savings achieved differs depending on the type of program accessed through the Treasury Loan Fund.

Savings achieved by an Energy Services Contractor must be verified by the contractor according to agreed protocols. However, up until recently, there were no agreed verification protocols or guidance for savings achieved from projects implemented by LHDs, that is, a Sustainable Government Investment Program. As a result, it was difficult to assure that the promised savings were delivered.

In December 2012, the Office of Environment and Heritage released comprehensive operational guides on measurement and verification of savings.

Where the baseline energy use of a facility increases as a result of changes to the level of activities and/or expansion of the facility, measurement and verification of savings becomes a difficult task, irrespective of whether a project is delivered by an LHD or a contractor.

Recommendation

The Ministry of Health should by December 2013 develop KPIs and targets for reducing energy cost and use, and improving energy efficiency.

3. Does NSW Health plan well to improve its building energy use?

Finding: NSW Health's Environmental Sustainability Strategy released in 2012 provides a broad strategic framework for managing building energy use. It identifies the priority sites and includes a series of emissions reduction targets through to 2019–20 (at five per cent below the year 2000 emissions level).

The strategy was an important step, but further work is needed in some critical areas to guide detailed planning at LHD level. This includes:

- a method to account for the impact of new facilities on overall emissions
- KPIs, targets and benchmarks
- guidance on investment decisions, including system-wide bundling of projects at whole-of-health, and the uptake of cleaner/renewable energies
- an energy efficiency investment program
- guidance for managing energy demand and influencing behaviour to reduce energy use.

Current management arrangements and governance structures do not always encourage investment in energy efficiency. In particular:

- LHDs and energy managers receive limited support and training
- increases in energy bills are covered through budget supplementations, irrespective of performance
- LHDs have no internally allocated seed funding to cover the cost of energy audits
- the monetary threshold to seek loans from the Treasury Loan Fund limits investment choices
- the Treasury Loan Fund processes are lengthy and complex
- there is no permanent prequalified panel of energy performance contractors to select from
- there is no flexibility in using and repaying loans from the Treasury Loan Fund.

3.1 Has NSW Health determined its baseline emissions for existing and new facilities?

NSW Health determined its year 2000 baseline emissions level at 698,250 tonnes of CO_2-e. However, the year 2000 emissions reported to the Office of Environment and Heritage were 759,217 tonnes of CO_2-e, nearly nine per cent higher than the adopted baseline.

Establishing the baseline was a critical step in setting the emissions reduction targets. This was difficult because NSW Health did not:

- collect detailed data on building energy use before 2008
- have a robust management information system to capture complete and accurate data.

NSW Health set itself an ambitious emissions reduction target. By adopting the lower baseline rather than what was reported to the Office of Environment and Heritage and by setting its 2019–20 emissions reduction target at five per cent below that level, means that NSW Health has to reduce its emissions by an extra 94,217 tonnes of CO_2-e.

Exhibit 8: Impact of baseline on target setting

	Emissions
2000 baseline reported to the Office of Environment and Heritage	759,217 tonnes of CO_2-e
2000 baseline adopted in NSW Health strategy	698,250 tonnes of CO_2-e
2019–20 NSW Health target (five per cent below the year 2000 baseline)	665,000 tonnes of CO_2-e
Difference between target and baseline reported to the Office of Environment and Heritage	**94,217 tonnes of CO_2-e**

Source: Audit Office of New South Wales analysis based on NSW Health data.

New facilities impact on NSW Health's energy use, emissions and cost

New and refurbished facilities add to NSW Health's total building energy use, emissions and cost. NSW Health does not set baselines and targets for its new health facilities to ensure they operate at an optimal energy level.

3.2 Has NSW Health developed plans to meet its targets and KPIs?

The delay in developing NSW Health's strategy hindered the development of implementation plans in LHDs. LHDs are expected to deliver their first annual implementation plans in 2012–13, that is four years after the Government Sustainability Policy and two years after the first interim emission reduction target of 2010–11.

LHDs may find it difficult to develop effective implementation plans to meet the expected emissions reduction target for 2013–14 and manage the rising cost of energy. This is because the strategy does not:

- include KPIs, targets and benchmarks
- offer guidance on investment decisions that allow for greater savings through appropriate bundling, such as system-wide multi-site/feature, and the preferred energy saving technologies to be adopted, including cleaner/renewable energies
- include an investment program with financing options for energy savings initiatives outside the Treasury Loan Fund
- include a support and facilitation program to LHDs
- deal with the use of energy inefficient plant and equipment past its economic life
- address demand management and influencing behaviour to reduce energy use.

Potential savings could be greater if energy projects are bundled at system level

Bundling projects

Potential savings in NSW Health might be greater if the savings opportunities were identified in collaboration with LHDs and bundled at an appropriate level including system level and/or across several LHDs and sites, rather than a facility or an LHD level as has been the practice. Bundling enables NSW Health to take better advantage of its strong market power and avoid duplication of efforts.

Exhibit 9: Bundling of projects in SA Health

SA Health is developing a business case for a SA Health wide lighting upgrade project. The first stage of this project has the potential to cost-effectively reduce energy use for SA Health by 1.8 per cent from the 2000–01 baseline energy use.

SA Health has already made significant investments in lighting upgrades across five major metropolitan sites, reducing energy use by more than 15,000 gigajoules and energy cost by approximately $750,000 a year.

Source: SA Health and Ageing Annual Report 2011–12.

Energy efficiency investment program

NSW Health's overall capital expenditure program should have an integrated energy efficiency investment program. While NSW Health can apply for more loans from the Treasury Loan Fund, it may also need to develop in consultation with NSW Treasury an investment program that covers various financing options. Funding options that could be considered outside the Treasury Loan Fund include:

- the use of Health's existing capital and recurrent funding allocations
- private financing from contracting with private energy service companies
- transfers between Health's existing recurrent and capital funding so that upfront capital is self-funded through the recurrent savings generated.

The Ministry of Health is considering various energy performance management models to identify the most efficient and cost-effective approach for application across the health system.

Exhibit 10: Energy efficiency investment program in the Department of Health, Victoria

The Victorian Greener Government Buildings program was established in 2009 to reduce the energy use in Victorian Government buildings and infrastructure. It is facilitated by the Victorian Department of Treasury and Finance and has an established funding source similar to the NSW Treasury Loan Fund.

The Victorian Department of Health is rolling out a program to implement energy performance contracts at 27 health services. This will meet the whole-of-government program target of implementing energy performance contracts at sites comprising 90 per cent of portfolio energy use by 30 June 2018. The department is on track to have commenced the energy performance contract process at sites using some two petajoules of energy, or around half of the health portfolio energy use, by the end of 2013.

The delivery of the Greener Government Buildings program within the healthcare sector is being managed centrally by the department to ensure that learning from specific projects is included across the program, to achieve economies of scale and to manage health system risks.

Source: Department of Health, Victoria.

Cleaner/renewable energy sources

The uptake of cleaner and renewable energy in NSW Health has been limited

The adoption of renewable energy sources such as solar and wind, and cleaner fuels such as gas (with lower emissions than electricity generated from coal) could reduce emissions and help NSW Health meet its emissions reduction target.

The uptake of cleaner/renewable energy in NSW Health has been limited because:

- currently renewable energy costs more and is not always cost-effective
- there is no requirement to use cleaner/renewable energy.

NSW Health advised that some LHDs use solar energy which helps them reduce demand for electricity during peak times and can produce significant savings.

Over time, renewable energy will become cheaper and a more attractive option.

Exhibit 11: Comparison of emissions and cost of different energy sources

Energy source	Emissions (kg CO_2-e/GJ)	Cost in 2012 ($/GJ)	Projected cost in five years ($/GJ)
Electricity	270	*$40	**$60
Natural gas	63	*$7	**$11
Solar PV	0	$67	$53
Wind	0	$36	$28

Source: The Office of Environment and Heritage and the NSW Draft Renewable Energy Action Plan.
* Based on NSW Health 2011–12 data reported to the Office of Environment and Heritage.
**Cost is inclusive of carbon price.

Plant and equipment

Energy savings initiatives implemented as part of ongoing asset maintenance programs can reduce emissions and cost. However, the key drivers of asset maintenance are service continuity and lifecycle cost, of which energy use is a small component.

NSW Health expenditure on maintenance in 2011–12 was 1.2 per cent of the value of assets, which is below the two per cent benchmark. This results in energy inefficient equipment being used past its economic life, adding to the energy cost and emissions.

The continued use of inefficient plant and equipment is a waste of public expenditure.

There has been little focus on changing behaviour to reduce energy use

Demand management and behavioural change

NSW Health has over the last twenty years introduced initiatives to reduce overall demand for hospital care and thus reduce the growth in hospital expenditure. Such measures include:

- expansion of day surgery to reduce overnight stays for surgical patients
- more treatment at home or at out-patient clinics for chronic diseases, chemotherapy and radiography.

However, to date, the approach to managing building energy use has focused mainly on investment in energy efficiency of plant and equipment. There has been little attention on:

- controlling specifically the demand for energy from operational activities
- training and awareness raising to influence energy use.

Controlling the demand for energy through behavioural change is an area of untapped potential in NSW Health.

Exhibit 12: Raising awareness and changing behaviour at a small hospital

As part of the Murrumbidgee LHD broader strategy, the Deniliquin hospital is implementing a series of small actions aimed at reducing energy use by raising staff awareness and influencing behaviour. This is done through presentations and e-mails to staff with useful statistics and hints and tips on what they can do to reduce energy waste. Labels and posters are also used across the hospital serving as reminders.

Source: Deniliquin hospital.

3.3 Is there a governance framework for building energy use?

The Ministry of Health

Before establishing a Sustainability Unit in 2012, the Ministry of Health had one officer driving the sustainability agenda across the public health system. That officer played a key role in the development of NSW Health's Environmental Sustainability Strategy, setting up the Sustainable Health Roundtable, moving a large number of small sites to state electricity and gas contracts, identifying sites for potential energy savings, and developing an Environment Information Management System.

The Sustainability Unit is yet to develop a business plan, measures to monitor performance, guidance materials and online resources and deliver training.

There are numerous pockets of good energy management practices in some LHDs that are delivering small but important improvements and savings without significant investment. Currently, the Sustainable Health Roundtable provides an excellent forum for networking, sharing information and providing training to participants. NSW Health needs to build on this to ensure better practices are promulgated across the health system in a systematic way and a formal training program is delivered to get the LHDs on board.

The Ministry of Health advised that the Sustainability Unit is developing standard documents to assist LHDs and will deliver formal training to energy managers on energy topics.

Local health districts

Energy managers play an important role in energy management across their LHDs, including planning, monitoring and reporting. However, they have limited guidance from the Ministry of Health, have no dedicated budgets to effect improvements, receive minimal training, and their skills and scope of work vary across LHDs.

Energy management is not a specific element in Chief Executives performance agreements with the Ministry of Health. Some LHDs have incorporated energy management as a standing item in executive meetings, giving energy managers a more prominent role.

Incentives to manage building energy cost

It is important to have the right incentives to manage energy costs and encourage energy savings.

The Ministry of Health provides budget supplementations to all LHDs that cover increases in utilities bills. Supplementations are not linked to improvement in energy efficiency. This acts as a disincentive to improve energy efficiency and manage energy cost.

Budget increases are not linked to performance in managing building energy use

The Ministry of Health advised that:

- budget supplementations were provided in recognition of the pressures on LHD budgets due to price increases outside their control
- in 2011-12, budget supplementations covered only 80 per cent of energy costs in order to provide an incentive for improved energy management.

Incentives to invest through the Treasury Loan Fund

A number of factors may have also discouraged using the Treasury Loan Fund for greater investment in energy efficiency projects, including:

- the lack of seed funding before 2010 for energy audits and the preparation of business cases
- the threshold for accessing loans from the Treasury Loan Fund, limiting investment choices
- the lengthy and complex Treasury Loan Fund application, assessment and approval process

- the lack of a permanent prequalified panel of energy performance contractors to select from
- the lack of flexibility in using and repaying loans and the interest charged.

A facilitated program and seed funding may encourage agencies to consider seeking loans from the Treasury Loan Fund for their energy efficiency projects. An application for a loan from the Treasury Loan Fund must be supported by a sound business case that identifies potential savings. LHDs require on average about $40,000 for an energy audit to identify potential savings, which is not included in the loan amount. The Office of Environment and Heritage assists LHDs in developing proposals and has to date provided seed funding of over $700,000 to cover the cost of energy audits. However, the Office of Environment and Heritage advised that as of July 2012, it had no new seed funding available.

The decision as to whether a project is implemented by an LHD or an Energy Services Contractor is determined by the Treasury Loan Fund's $1 million threshold. The threshold restricts LHDs from implementing low risk but high value projects themselves, rather than through a contractor. Some high value projects such as upgrades of lights in a large hospital or across an LHD might require millions of dollars but are low risk and can be managed by the LHD. Other low cost projects may be high risk because they involve complex equipment or unproven technologies requiring external expertise.

Treasury Loan Fund processes are lengthy, complex and not risk-based

The Treasury Loan Fund project application, assessment and approval process takes on average 12 months to complete and is complex involving the preparation of detailed technical and financial business cases. Approved loans are linked to the annual budgetary cycle, which means an agency needs to seek authorisation to draw down and spend outstanding loans in new financial years. Some energy managers have limited expertise in developing business cases and identifying best energy solutions. The Office of Environment and Heritage and the Ministry of Health have not:

- offered sufficient guidance and training to energy managers
- established a permanent panel of prequalified energy contractors with expertise in health settings (although we understand such a panel is now planned).

The Office of Environment and Heritage applies the same assessment criteria to all applications for loans from the Treasury Loan Fund. Recommendations to NSW Treasury to approve loans is also implicit for all projects that meet the Treasury Loan Fund criteria and are within the monetary threshold, irrespective of their risk profile (that is, complexity, agency expertise in delivering similar projects, appropriateness of the proposed technology, and whether it is best delivered by the agency or an Energy Services Contractor).

The Ministry of Health advised that poor past experience of some LHDs with failed energy savings projects or adopted technologies may have also discouraged investment through the Treasury Loan Fund.

The Treasury Loan Fund does not offer flexible loan repayment options to suit different situations, for example, delayed repayments for some investments.

Exhibit 13: Queensland Health funding model

In Queensland Health, energy savings initiatives are funded under the Minor Capital Projects and Acquisitions Program. Districts are provided with interest free capital to implement projects and funds are repaid from future capital allocations to the districts. The cost-effectiveness hurdle for these projects is an internal rate of return of 20 per cent.

Since 2004, Queensland Health invested over $28 million on energy efficiency projects that led to a reduction of nearly 36,000 tonnes of CO_2-e and annual savings of $4 million.

Source: Queensland Health.

It is important that the Office of Environment and Heritage, in consultation with NSW Treasury, secures a decision for the continuation of loans from the Treasury Loan Fund before proceeding with any improvement to the fund processes and procedures.

Recommendations

The Ministry of Health should by December 2013:

- require LHDs and relevant specialty health networks to report annually to the Ministry of Health on progress against their implementation plans
- develop in consultation with LHDs and relevant specialty health networks, a strategy to guide investment in energy efficiency that includes:
  - minimum energy efficiency performance standards for technologies, plant and equipment used in public hospitals
  - provision of seed funding for energy audits
  - bundling energy efficiency improvements at an appropriate level to maximise value
  - an investment program with financing options ranging from the use of recurrent budgets to large scale capital investment outside the Treasury Loan Fund
  - phasing in investment in renewable energy where cost-effective
- develop and start implementing a strategy to strengthen the role of the Sustainability Unit as a centre of expertise by ensuring it:
  - has a business plan and is well resourced
  - delivers appropriate energy management training, guidance materials and resources, including strategies to manage demand and influence behaviour
  - uses a systematic process for identifying and sharing better practices across the health system.

The Ministry of Health should by June 2014:

- review the NSW Health Engineering Services and Sustainable Development Guidelines TS11 and include a requirement for all new and refurbished facilities to have their energy and emissions baselines determined
- work with LHDs to provide energy managers with a budget for minor energy saving initiatives, as well as support and training
- link any budget supplementations provided to LHDs and relevant specialty health networks for increases in energy costs to their performance in managing building energy use
- include energy management in Chief Executives performance agreements with the Ministry of Health.

The Office of Environment and Heritage should by December 2013:

- review, jointly with NSW Treasury, the administrative arrangements for the Treasury Loan Fund to secure its continuation
- allocate resources to a seed funding program for projects which could be potentially funded from the Treasury Loan Fund
- review the administrative rules to enhance successful access to loans from the Treasury Loan Fund, including risk-based assessment and approval processes
- simplify key Treasury Loan Fund application documents and administrative processes
- provide guidance and training on energy management
- establish, in consultation with the Department of Finance and Services, a permanent panel of prequalified energy performance contractors, including contractors with expertise in health settings
- require agencies to apply for loans from the Treasury Loan Fund for energy savings projects at set regular intervals and introduce time standards for finalising the assessment of compliant applications.

NSW Treasury should by December 2013:

- review, jointly with the Office of Environment and Heritage, the administrative arrangements for the Treasury Loan Fund to secure its continuation
- assist NSW Health to identify appropriate financing options for energy efficiency initiatives, including the existing Treasury Loan Fund, and ways to secure such funds
- assist NSW Health with approval processes to seek authorisation to draw down and spend outstanding loans from the Treasury Loan Fund in new financial years
- introduce flexible loan repayment options for the Treasury Loan Fund, such as delayed loan repayments where justified.

4. Does NSW Health report on and review/evaluate its performance?

Finding: NSW Health reports on building energy use in its annual report and to the Office of Environment and Heritage through the online system for comprehensive activity reporting. However, the annual report does not show progress against targets and reporting to the Office of Environment and Heritage could be more reliable, if:

- formal procedures were developed to assure the quality and timeliness of information reported through the online system
- all data could be captured at source and transferred automatically into NSW Health's management information system, rather than entered manually or estimated.

We recognise that at present some retailers may be unable to provide information to NSW Health electronically so as to avoid manual data entry.

NSW Health has not undertaken a formal evaluation of its performance in managing building energy use. Our analysis showed that it has improved energy efficiency, but this has not been enough to compensate for increases in costs. Between 2008–09 and 2011-12, energy use:

- per separation reduced by nearly ten per cent
- per bed day reduced by four per cent
- per full-time equivalent (FTE) employee reduced by over nine per cent.

NSW Health building energy cost:

- per separation increased by over 36 per cent
- per bed day increased by over 44 per cent
- per FTE increased by nearly 37 per cent.

Our analysis also showed significant variations in energy efficiency across LHDs and the top ten hospitals. Some of these variations reflect buildings of different design, size and age, in different climate zones and running different services. Some will also reflect LHDs and hospitals with better energy management than others. The scale of the variations suggests there is scope for further improvement.

The development of benchmarks and evaluations of energy efficiency of hospitals are in early stages. The Office of Environment and Heritage has developed and piloted a draft energy benchmarking tool for existing NSW hospitals based on the National Australian Built Environment Rating System methodology, but further work is required to finalise it. NSW Health is also piloting specific benchmarks for the thermal performance of new hospitals.

NSW Health requires its new facilities valued at over $10 million to undergo the Green Star process and to achieve a minimum four star rating. However, independent certification to that rating is not required and the rating does not guarantee optimal thermal performance of buildings. Also, the required post-evaluation of new buildings to ensure they operate as per the design specifications is not applied consistently.

4.1 Does NSW Health review/evaluate and benchmark its performance?

Review of performance

The 2010–11 intermediate emissions reduction target was an important milestone for NSW Health to review and evaluate its performance in managing building energy use. However, NSW Health did not review its performance.

NSW Health has substantial data on building energy use and costs, but has not compiled it into useful information to monitor progress, and to manage and review performance.

NSW Health is yet to develop energy efficiency KPIs, targets and benchmarks to monitor performance over time and across similar facilities. Information on building energy use, cost and emissions alone is not sufficient.

To illustrate what is possible, we have examined NSW Health's performance in managing building energy at whole-of-health, LHDs level, and for the ten hospitals using some of the measures used in South Australia and Victoria for which we could obtain data.

The Office of Environment and Heritage advised that these calculations are similar to its preliminary results from a process that is underway to develop an energy performance benchmark for hospitals, and illustrate the potential usefulness of the benchmarking tool to NSW Health once it is finalised. The Office of Environment and Heritage's preliminary results were not robust enough to compare hospitals across classes and regions that deliver a range of different services.

Exhibit 14: Energy efficiency measures used in Victoria and South Australia

The Victorian Department of Health and the South Australian Department of Health and Ageing have adopted the following energy efficiency measures to monitor and report on their performance.

Energy use	Vic	SA
• per separation	✓	✗
• per bed day	✓	✓
• per square metre	✓	✓
• per FTE	✗	✓

Source: Audit Office of New South Wales research.

Between 2008–09 and 2011–12, NSW Health reduced its energy use and emissions by two per cent and improved its energy efficiency (see Appendix 2). Energy use:

- per separation reduced by nearly ten per cent
- per bed day reduced by four per cent
- per FTE reduced by over nine per cent.

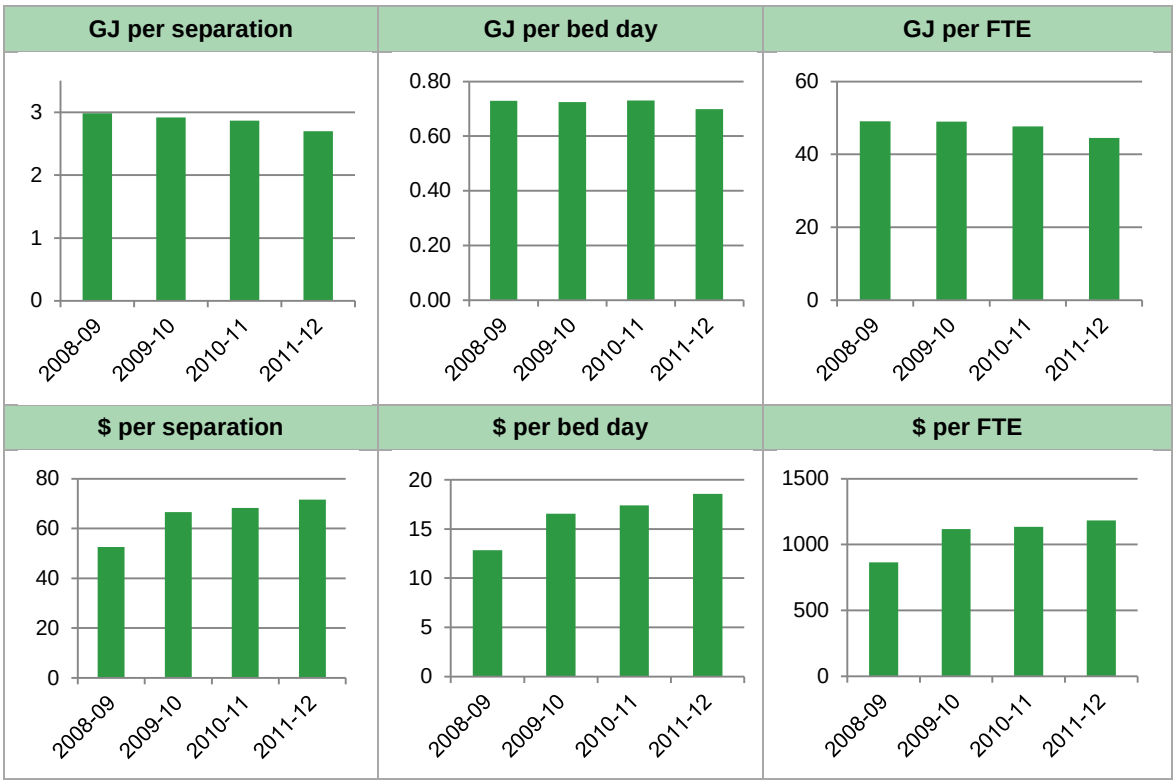
Emissions per unit of output and per FTE have also reduced at similar rates.

NSW Health improved its energy efficiency, but its cost per unit of output increased

However, building energy cost increased by 47 per cent and the cost of energy per unit of output (that is, per separation and bed day) and per FTE has also increased. Energy cost:

- per separation increased by 36 per cent
- per bed day increased by over 44 per cent
- per FTE increased by nearly 37 per cent.

Exhibit 15: NSW Health energy efficiency and energy cost per business output and per FTE



Source: Audit Office of New South Wales analysis based on NSW Health data.
Note: Where data was incomplete/not available, estimates were made based on prior years' trend.

NSW Health may need to make faster, smarter and larger investments in energy efficiency or achieve savings in other areas to address the rise in energy cost, and curb its emissions.

Monitoring these trends and comparing performance to other Australian jurisdictions is useful in assessing the level of improvement made or needed. Exhibit 16 shows that NSW Health compares well to other jurisdictions on some measures but not others. Comparison with other jurisdictions needs careful interpretation given the differences in operating environments.

Exhibit 16: Energy efficiency in other jurisdictions 2010–11 and 2011–12

	2010–11				2011–12			
	GJ per separation	GJ per bed day	GJ per m^2	GJ per FTE	GJ per separation	GJ per bed day	GJ per m^2	GJ per FTE
Vic	2.91	0.64	1.78	-	Data is not yet published			
SA	-	0.74	1.08	40	-	0.68	1.02	37
NSW	2.86	0.73	-	48	2.70	0.70	-	45

Source: Audit Office of New South Wales research.

There are wide variations in energy efficiency across LHDs and the top ten hospitals

We also examined the performance of LHDs (see Appendix 3), though only for 2011–12 as LHDs were established in May 2011. Our analysis showed wide variations in energy efficiency and the cost per unit of output across LHDs:

- in metropolitan LHDs, Illawarra Shoalhaven had good energy efficiency results compared to others and the Nepean Blue Mountains had the lowest energy cost per unit of output
- in rural/regional LHDs, Northern NSW and Mid North Coast had good energy efficiency results compared to others and the lowest cost per unit of output.

Some of the variations in the performance of LHDs can be explained by a number of factors, including the geographic location of the LHD, the design, size and age of its facilities, and the energy intensive technology used for diagnoses and treatments. Some will also reflect LHDs with better energy management than others.

LHDs do not have access to the performance data of all districts and the total for NSW Health to compare their performance to others and set improvement targets. Such comparisons are also useful for NSW Health to target investments, review practices and monitor performance.

The energy efficiency and cost per unit of output also varied across the ten hospitals with the highest energy use (see Appendix 4). In 2011–12, Gosford and John Hunter hospitals had good overall energy efficiency and cost per unit of output results compared to others. However, between 2008–09 and 2011–12:

- Concord and the Royal North Shore hospitals recorded the highest improvement in energy efficiency (the Ministry of Health advised that data for the Royal North Shore hospital may be skewed due to large scale construction activities)
- Concord and Westmead hospitals recorded the lowest increase in the cost of energy per unit of output.

The ten hospitals do not have access to the performance data of similar hospitals to compare their performance and to help them set improvement targets.

Performance trends at all levels should be compared on a rolling three years basis as practices generally do not change substantially in short periods. Significant variations in performance should be reviewed to inform decisions, identify better practices and prioritise resources.

The six case study hospitals highlighted some of the factors that impact on hospitals' performance and should be considered when comparing performance:

- new hospitals with sustainable design features are more energy efficient and have lower emissions, for example, John Hunter and Orange hospitals
- the use of solar energy and cleaner technologies such as cogeneration reduces energy cost and emissions, for example, Orange and Mt Druitt hospitals
- inland facilities have higher energy use due to air-conditioning required to cope with the hotter summers and colder winters, which suggests that climate zones impact on energy use and should be part of a benchmarking tool, for example, Deniliquin and Orange hospitals
- investment in energy efficiency helps facilities manage energy cost and reduce emissions, for example, Westmead and Mt Druitt hospitals
- energy use in large hospitals often includes commercial tenants and/or research and medical facilities attached to them which they do not control, for example, Westmead, Prince of Wales, John Hunter and Orange hospitals
- large hospitals use more energy intensive equipment for diagnoses and treatments than smaller hospitals, for example, Westmead, Prince of Wales, John Hunter and Orange hospitals
- the definition of what constitute a hospital site/facility varies across hospitals.

Appendix 5 provides data on the performance of the six case studies.

NSW Health does not have a robust energy management information system and quality assurance procedures

Improving the completeness and accuracy of data

NSW Health's current energy management information system is not robust. Also NSW Health does not have quality assurance procedures to assure the quality and timeliness of information on building energy use. Data on energy use and cost is collected from a variety of sources, including the State Contracts, a Health contract and energy bills for franchise accounts.

The current environmental information management system has limited capabilities in that:

- it only captures data on electricity usage and cost for all sites
- electricity data is entered via direct feeds from providers for sites on State Contracts, but entered manually by the LHDs for other sites
- it cannot provide detailed information down to a facility level by other fuel type
- it is not integrated with other management information systems, for example, finance, HR.

The management system does not capture data on any other fuel besides electricity. Data for the following fuels is entered manually by the LHDs:

- gas for large sites on the Health contract
- diesel, gas and LPG on State Contracts
- gas, LPG, diesel and coal for well over 2,000 small franchise accounts, not on a State or a Health contract.

The use of manual data entry is an inefficient use of resources and a potential source of errors. We recognise that at present some retailers may be unable to provide information electronically to avoid manual data entry.

Also, sites on franchise accounts may be paying higher energy prices than those on contracts. If so, bundling them under contracts would save NSW Health time and money.

NSW Health advised that since June 2012, small sites are being progressively transitioned to State Contracts to capture all data and achieve more competitive prices. Gas and other fuel data will continue to be entered manually by the LHDs until it can be sourced electronically from providers. NSW Health also advised that a new asset management system (IBMTRIRIGA) will replace the current system and will be implemented by mid-2015.

Health facilities can capture better information through the use of sub-meters. Sub-meters enable energy managers to:

- understand patterns of energy usage
- identify areas for improvement and inform investment decisions
- measure the impact of investment on usage patterns
- accurately recover costs from commercial tenants and other facilities co-located with a medical facility.

NSW Health does not know the extent of use of sub-meters across LHDs, the sites that would benefit the most from using them and the cost involved.

The cost of sub-meters ranges from $2,000 for a stand-alone unit to $500,000 for a fully interfaced smart system in a large hospital. Financing the cost of sub-meters through the Treasury Loan Fund is possible only if it is bundled with energy saving initiatives.

NSW Health advised that all new facilities will have sub-meters installed. The new Orange hospital has already over 50 sub-meters installed.

NSW Health does not yet have benchmarks to measure environmental performance of hospitals

Benchmarks

The Government's Sustainability Policy requires health facilities to use benchmarks in measuring their environmental performance.

NSW Health does not yet have benchmarks to measure the environmental performance of its existing facilities but is piloting benchmarks for new hospitals.

The National Australian Built Environment Rating System provides a rating of existing buildings' energy efficiency on a scale from one to six stars. The system is managed nationally by the Office of Environment and Heritage, on behalf of the Australian, State and territory governments.

The Office of Environment and Heritage has been developing an energy benchmarking tool for NSW hospitals that is based on the National Australian Built Environment Rating System methodology to provide a rating of existing hospitals' energy efficiency of one to six stars. The Office of Environment and Heritage advised that:

- the tool was piloted in selected NSW hospitals but the preliminary results were not robust enough to be rolled out across NSW Health
- this project had stalled, but work has now recommenced in partnership with NSW Health to refine the tool so it can be used to benchmark hospitals across NSW
- the energy efficiency benchmarking tool will be completed by June 2014.

A benchmarking tool for hospitals will deliver energy efficiency measures, targets and benchmarks to monitor performance across existing hospitals with similar levels of activity and same geographic regions, as well as over time.

NSW Health could pilot the draft benchmarking tool in the top 20 hospitals to assist in refining and finalising the tool. The LHDs that we have visited are supportive of this action.

Exhibit 17: South Australia Health trial of draft benchmarking tool for hospitals

In 2011–12, South Australia Health trialled the draft benchmarking tool for hospitals across 69 health sites. The results of this trial are being reviewed to inform both the refinement of the tool and the development of a departmental policy for possible future use of the rating tool.

Source: Annual Report of the Department of Health and Ageing SA 2011–12.

While the energy benchmarking tool will rate the actual environmental impact of an existing building, Green Star rates the potential environmental impact of new buildings at the design and construction stages. Green Star was developed by the Green Building Council of Australia. Appendix 6 outlines the key differences between the National Australian Built Environment Rating System and the Green Star.

NSW Health Engineering Services and Sustainable Development Guidelines, TS11 for new health facilities, require projects greater than $10 million to undergo the Green Star Healthcare rating process to achieve a minimum of four stars. However, the guidelines do not:

- require independent certification of new facilities to this rating
- set energy efficiency targets and benchmarks for hospital design and construction
- require budgeting for energy efficiency in initial project costing.

TS11 guidelines also require an evaluation of new hospitals within two years of occupancy. Such studies are useful to verify that new buildings operate as per design specifications and to monitor the thermal performance of facilities as they age. The TS11 requirements for such studies:

- focus on clinical performance issues
- do not apply to refurbished/redeveloped sites
- are not consistently applied in all new facilities
- do not address energy performance.

LHDs are of the view that:

- solutions implemented in new facilities often cost them a lot more in the long run than they should
- current consultation, feedback and follow up processes at the design and construction stages of facilities are not working well in relation to energy efficiency.

Exhibit 18: The new Narrabri, Queanbeyan and Auburn hospitals

The Narrabri hospital moved to a new facility in 2011. In 2012, energy consumption at the new site was more than double that of the old site in 2009 (4,863 gigajoules compared to 2,337 gigajoules).

Also, Auburn and Queanbeyan hospitals are both new hospitals that opened around the same time in 2009. Yet, a recent study found that electricity usage per bed day at the 55 bed Queanbeyan hospital was:

- 30 per cent higher than the average for new hospitals
- 54 per cent higher than Auburn hospital.

An energy audit conducted in February 2012 identified initiatives that could reduce energy consumption at the new Queanbeyan hospital by 42 per cent. The optimisation and configuration of the building management system to control energy use at the site led to a 16 per cent drop in electricity consumption.

Source: Audit Office of New South Wales based on NSW Health data.

NSW Health is piloting energy performance benchmarks for new hospitals

NSW Health commissioned a study of the sustainability performance of NSW public hospitals. The study recommended in February 2012 a set of energy performance targets and benchmarks for new hospitals. These are being piloted at Port Macquarie Base Hospital expansion for adoption as benchmarks in new hospitals.

4.2 Does NSW Health report on its building energy use and is its public reporting meaningful?

The Government's Sustainability Policy requires NSW Health to report annually to the Office of Environment and Heritage through the online system for comprehensive activity reporting on its building energy use and cost by type of facility and fuel.

Reporting on energy use is not informative

The quality of the data reported through the online system has improved. However:

- some LHDs (structured as Area Health Services prior to May 2011) have not reported every year and some report late
- use of manual data entry is a potential source of error
- some reported data are estimates
- NSW Health does not have formal quality assurance procedures to ensure LHDs report valid information.

The Government's Sustainability Policy also requires NSW Health to report on its building energy use in its annual report. NSW Health reports on building energy use in its annual report, but this does not show progress against targets or allow tracking performance over time.

Exhibit 19: Public reporting in New South Wales compared to other jurisdictions

Reported measures	NSW	Vic	SA
Total energy use	✗	✓	✓
Energy use over time	✗	✓	✓
Energy efficiency measures	✗	✓	✓
Progress against target	✗	✗	✓
Consumption by fuel type	✗	✓	✗

Source: Audit Office of New South Wales research.

LHDs are not required to report to the Ministry of Health on any aspect of building energy use.

Recommendations

The Ministry of Health should:

- by June 2014, have all small sites, including franchise accounts, on State Contracts or similar contracts to secure competitive energy prices and electronic access to data from providers
- by December 2013, develop quality assurance procedures for data on building energy use
- by June 2014, review the extent to which sub-meters are being used for monitoring energy use in hospitals to identify gaps and develop funding options
- review performance in managing building energy use at each interim target
- by June 2014, give LHDs, relevant specialty health networks and hospitals access to performance information so they can compare their performance to others and set improvement targets in their implementation plans
- by June 2014, work with the Office of Environment and Heritage to develop a benchmarking tool for NSW hospitals and adopt it for monitoring performance
- by June 2014, review the NSW Health Engineering Services and Sustainable Development Guidelines TS11 and include a requirement for all new and refurbished facilities to :
  - use the benchmarks once finalised for monitoring performance
  - be independently certified to a minimum four star Green Star rating
  - have a budget for energy efficiency in initial project costing
  - implement evaluations of thermal performance at 18 months post-occupancy
- by June 2014, start progressively to monitor and report:
  - on the performance of existing, new and refurbished facilities against respective KPIs, targets and benchmarks
  - trends in energy use, cost and efficiency on a rolling three years basis, including in annual reports.

The Office of Environment and Heritage should by June 2014 finalise the energy efficiency benchmarking tool for NSW hospitals.

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Appendices

Appendix 1: About the audit

Audit objective

This audit examined how well NSW Health manages its building energy use in public hospitals.

Audit criteria

In answering the audit objective, we addressed the following audit criteria:

1. NSW Health is improving its building energy use in a cost-effective way and is meeting targets
2. NSW Health plans well to improve its building energy use
3. NSW Health reports on and reviews/evaluates its building energy use performance.

Audit scope

The audit focused on:

- building energy use since 2008, at system, district and hospital levels
- stationary energy (electricity, natural gas, LPG, diesel and coal)
- public hospitals, especially the top ten hospitals, but also review smaller hospitals.

The top ten hospitals are: Westmead, Royal Prince Alfred, Prince of Wales, John Hunter, St George, Gosford, Concord, Liverpool, Royal North Shore and St Vincent's.

The audit examined the role of the Ministry of Health in planning and monitoring improvements in building energy use across the public health sector. It also examined the planning and actions taken to improve building energy use at selected hospitals that were used as case studies.

Audit approach

We acquired subject matter expertise through:

- interviews with relevant staff in the Ministry of Health
- examination of relevant data and documents, including legislation, policies, guidelines, reports, strategies, reviews
- discussions with representatives of key stakeholders, including the Office of Environment and Heritage and NSW Treasury
- participation in relevant conferences
- research into better practices
- comparisons with other approaches in New South Wales and other jurisdictions, where relevant and appropriate.

Fieldwork visits

We had discussions with relevant officers in the Ministry of Health and met with the relevant staff in the following LHDs:

- Hunter New England
- Murrumbidgee
- South Eastern Sydney
- Western Sydney.

We also selected six hospitals of different size, age, location as case studies for examination and appreciation of local issues. These were:

- Westmead
- Prince of Wales
- John Hunter
- Orange
- Mt Druitt
- Deniliquin.

Audit selection

We use a strategic approach to selecting performance audits which balances our performance audit program to reflect issues of interest to parliament and the community. Details of our approach to selecting topics and our forward program are available on our website.

Audit methodology

Our performance audit methodology is designed to satisfy Australian Audit Standards ASAE 3500 on performance auditing, and to reflect current thinking on performance auditing practices. Our processes have also been designed to comply with the auditing requirements specified in the *Public Finance and Audit Act 1983*.

Acknowledgements

We gratefully acknowledge the co-operation and assistance provided by the NSW Ministry of Health, the NSW Office of Environment and Heritage and NSW Treasury. We also wish to thank our liaison officers, and staff in the selected LHDs and hospitals that participated in interviews and provided material relevant to the audit.

We were also assisted by discussions with a range of stakeholders and external bodies including:

- Department of Finance and Services
- Department of Education and Communities
- State Property Authority
- Energy Efficiency Council
- Institute of Hospital Engineering, Australia
- Victorian Auditor-General's Office
- Department of Health, Victoria
- Department of Treasury and Finance, Victoria
- Queensland Health
- Department of Public Works, Queensland
- Federal Department of Climate Change and Energy Efficiency
- Spotless
- Energetics
- Building IQ.

Audit team

Our team leader for the performance audit was Henriette Zeitoun, who was assisted by Bettina Ocias. Sean Crumlin provided direction and quality assurance.

Audit cost

Including staff costs, printing costs and overheads, the estimated cost of the audit is $328,385.

	Cost				Consumption				Emissions			
	$	$ per separation	$ per bed day	$ per FTE	GJ	GJ per separation	GJ per bed day	GJ per FTE	Tonnes of CO_2-e	Tonnes of CO_2-e per separation	Tonnes of CO_2-e per bed day	Tonnes of CO_2-e per FTE
2008-09	81,785,026	52.58	12.84	864.38	4,641,335	2.98	0.73	49.05	921,253	0.59	0.14	9.74
2009-10	106,443,045	66.57	16.56	1117.55	4,662,562	2.92	0.73	48.95	953,743	0.60	0.15	10.01
2010-11	111,108,632	68.18	17.39	1134.64	4,666,330	2.86	0.73	47.65	936,984	0.57	0.15	9.57
2011-12	120,445,980	71.58	18.56	1182.25	4,539,499	2.70	0.70	44.56	906,593	0.54	0.14	8.90
Change over the last four years	**47.3%**	**36.1%**	**44.5%**	**36.8%**	**-2.2%**	**-9.6%**	**-4.0%**	**-9.2%**	**-1.6%**	**-9.0%**	**-3.4%**	**-8.6%**

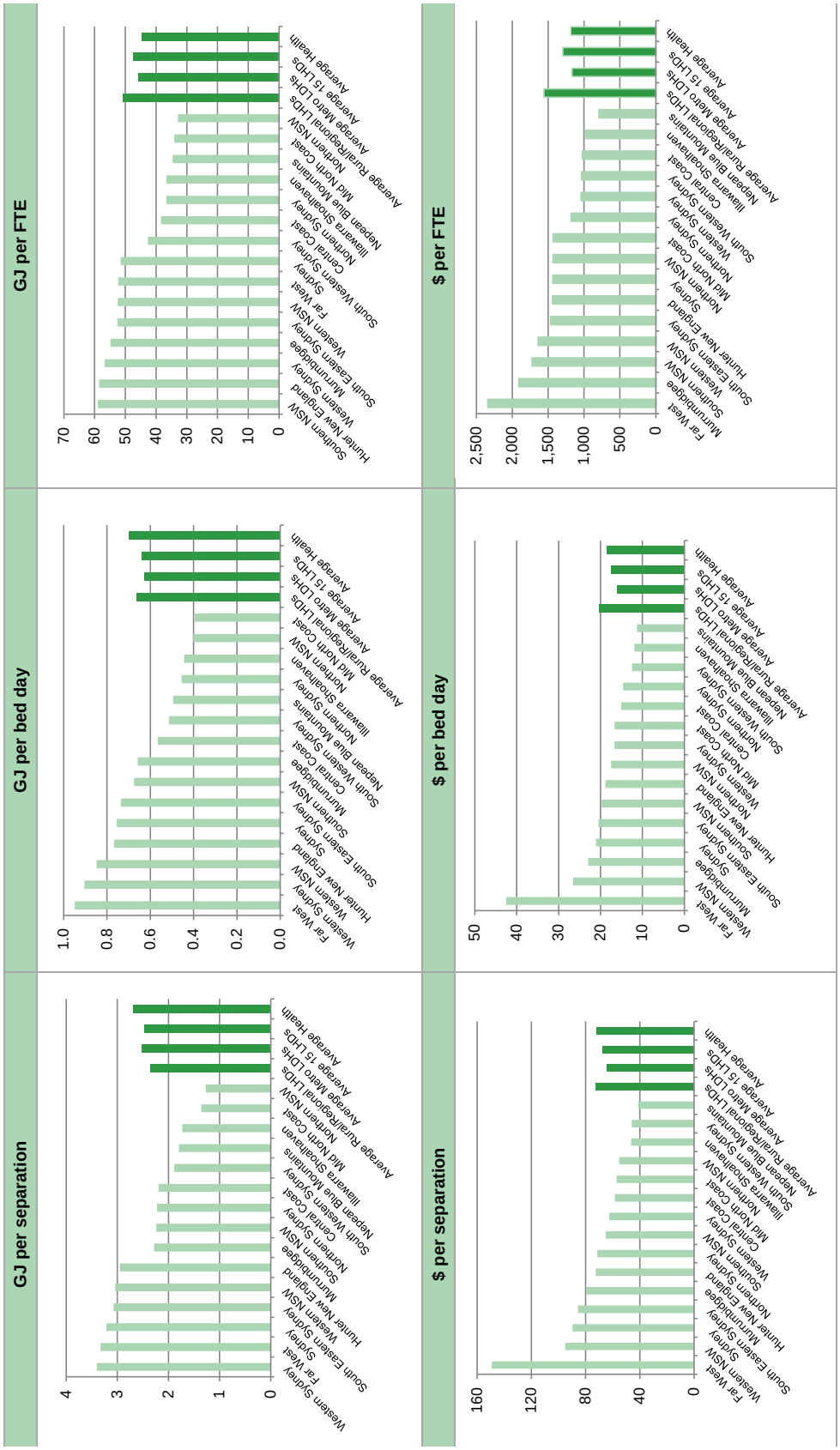
Source: Audit Office of New South Wales analysis based on NSW Health data.
Note: Where data was incomplete/not available, estimates were made based on prior years' trend.

Local Health Districts	Cost				Consumption				Emissions			
	$	$ per separation	$ per bed day	$ per FTE	GJ	GJ per separation	GJ per bed day	GJ per FTE	Tonnes of CO_2-e	Tonnes of CO_2-e per separation	Tonnes of CO_2-e per bed day	Tonnes of CO_2-e per FTE
Western Sydney	9,588,652	62.60	16.65	1,044	521,040	3.40	0.90	56.7	93,374	0.61	0.16	10.2
South Eastern Sydney	13,329,181	85.67	20.50	1,465	478,368	3.07	0.74	52.6	101,049	0.65	0.16	11.1
Sydney	12,716,985	89.62	21.09	1,436	455,737	3.21	0.76	51.5	98,465	0.69	0.16	11.1
South Western Sydney	8,979,967	45.86	12.47	1,036	370,014	1.89	0.51	42.7	80,073	0.41	0.11	9.2
Illawarra Shoalhaven	4,588,402	46.42	11.91	983	170,818	1.73	0.44	36.6	35,250	0.36	0.09	7.6
Central Coast	4,517,214	58.45	15.08	1,023	169,569	2.19	0.57	38.4	34,606	0.45	0.12	7.8
Nepean Blue Mountains	2,830,542	41.16	11.32	793	123,628	1.80	0.49	34.6	26,306	0.38	0.11	7.4
Northern Sydney	8,852,140	71.42	14.65	1,180	275,460	2.22	0.46	36.7	65,724	0.53	0.11	8.8
TOTAL METRO LHDs	**65,403,083**	**64.42**	**16.00**	**1,169**	**2,564,634**	**2.53**	**0.63**	**45.8**	**534,847**	**0.53**	**0.13**	**9.6**
Hunter New England	15,115,859	72.56	18.87	1,439	615,214	2.95	0.77	58.6	118,446	0.57	0.15	11.3
Western NSW	7,860,296	95.04	26.52	1,641	251,504	3.04	0.85	52.5	45,684	0.55	0.15	9.5
Murrumbidgee	5,224,494	79.67	22.94	1,910	149,771	2.28	0.66	54.8	27,037	0.41	0.12	9.9
Northern NSW	5,405,347	55.29	17.49	1,434	124,097	1.27	0.40	32.9	30,280	0.31	0.10	8.0
Southern NSW	3,043,957	65.32	19.73	1,723	104,209	2.24	0.68	59.0	15,761	0.34	0.10	8.9
Mid North Coast	3,908,963	57.08	16.63	1,433	92,953	1.36	0.40	34.1	21,852	0.32	0.09	8.0
Far West	1,256,190	149.14	42.50	2,343	28,055	3.33	0.95	52.3	5,642	0.67	0.19	10.5
TOTAL RURAL and REGIONAL LHDs	**41,815,106**	**72.36**	**20.37**	**1,558**	**1,365,803**	**2.36**	**0.67**	**50.9**	**264,702**	**0.46**	**0.13**	**9.9**
TOTAL15 LHDs	**107,218,189**	**67.30**	**17.46**	**1,295**	**3,930,437**	**2.47**	**0.64**	**47.5**	**799,549**	**0.50**	**0.13**	**9.7**
TOTAL NSW Health	**120,445,980**	**71.58**	**18.56**	**1,182**	**4,539,499**	**2.70**	**0.70**	**44.6**	**906,593**	**0.54**	**0.14**	**8.9**

Source: Audit Office of New South Wales analysis based on NSW Health data.

Note: Where data was incomplete/not available, estimates were made based on prior years' trend.

Energy efficiency and energy cost per output in LHDs in 2011–12



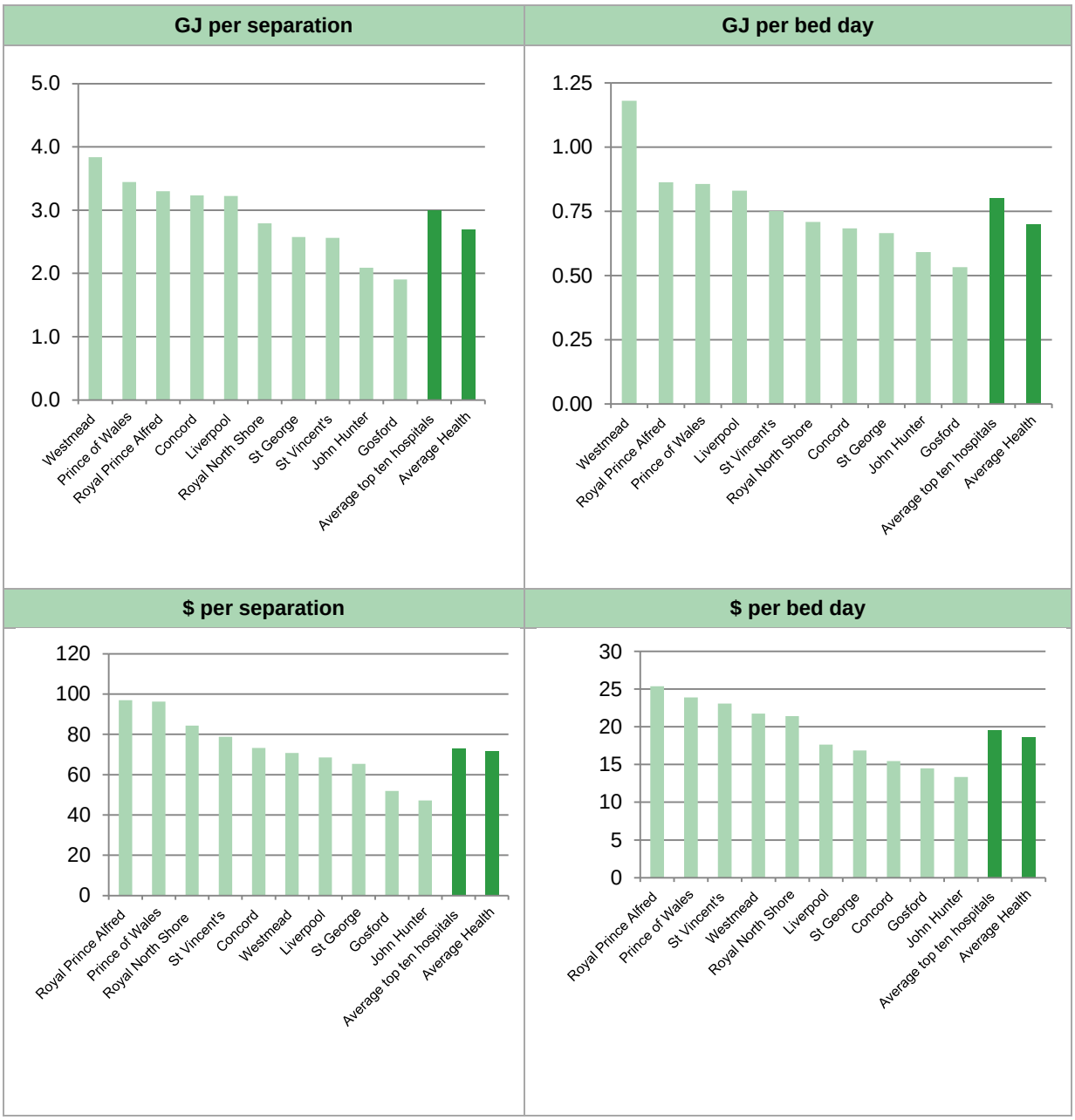
Source: Audit Office of New South Wales analysis based on NSW Health data.
Note: Where data was incomplete/not available, estimates were made based on prior years' trend.

Appendix 4: Builiding energy use in the top ten hospitals

	Cost			Consumption			Emissions		
	$	$ per separation	$ per bed day	GJ	GJ per separation	GJ per bed day	Tonnes of CO_2-e	Tonnes of CO_2-e per separation	Tonnes of CO_2-e per bed day
Westmead									
2008-09	6,393,314	57.70	17.07	458,227	4.14	1.22	92,017	0.83	0.25
2009-10	8,324,424	73.49	22.47	456,947	4.03	1.23	92,973	0.82	0.25
2010-11	8,417,925	72.17	21.26	460,595	3.95	1.16	93,351	0.80	0.24
2011-12	8,511,750	70.71	21.75	462,167	3.84	1.18	91,573	0.76	0.23
Change over the last four years	**33%**	**23%**	**27%**	**1%**	**-7%**	**-3%**	**0%**	**-8%**	**-5%**
Prince of Wales									
2008-09	3,877,927	68.64	16.40	226,789	4.01	0.96	46,507	0.82	0.20
2009-10	5,182,304	90.97	21.97	217,250	3.81	0.92	46,299	0.81	0.20
2010-11	5,296,799	90.25	22.22	213,096	3.63	0.89	44,984	0.77	0.19
2011-12	5,736,223	96.20	23.91	205,403	3.44	0.86	44,093	0.74	0.18
Change over the last four years	**48%**	**40%**	**46%**	**-9%**	**-14%**	**-11%**	**-5%**	**-10%**	**-7%**
John Hunter									
2008-09	2,340,054	32.46	8.85	141,559	1.96	0.54	32,835	0.46	0.12
2009-10	3,190,915	42.48	12.13	143,289	1.91	0.54	34,479	0.46	0.13
2010-11	3,332,875	43.81	12.45	150,175	1.97	0.56	35,316	0.46	0.13
2011-12	3,639,255	47.17	13.36	161,138	2.09	0.59	35,989	0.47	0.13
Change over the last four years	**56%**	**45%**	**51%**	**14%**	**6%**	**11%**	**10%**	**2%**	**6%**
Royal Prince Alfred Hospital									
2008-09	4,399,447	64.50	16.60	228,448	3.35	0.86	54,008	0.79	0.20
2009-10	6,299,316	91.32	23.74	238,340	3.46	0.90	55,930	0.81	0.21
2010-11	6,423,905	92.10	23.14	235,726	3.38	0.85	54,661	0.78	0.20
2011-12	7,072,441	96.97	25.36	240,728	3.30	0.86	54,667	0.75	0.20
Change over the last four years	**61%**	**50%**	**53%**	**5%**	**-1%**	**0%**	**1%**	**-5%**	**-4%**
St George Hospital									
2008-09	2,460,720	48.08	12.37	147,617	2.88	0.74	29,583	0.58	0.15
2009-10	3,185,297	60.15	15.67	142,639	2.69	0.70	28,980	0.55	0.14
2010-11	3,343,962	61.90	16.00	146,812	2.72	0.70	29,110	0.54	0.14
2011-12	3,630,127	65.31	16.85	143,283	2.58	0.66	28,418	0.51	0.13
Change over the last four years	**48%**	**36%**	**36%**	**-3%**	**-11%**	**-10%**	**-4%**	**-12%**	**-11%**
Gosford Hospital									
2008-09	1,638,587	36.09	9.67	92,079	2.03	0.54	19,525	0.43	0.12
2009-10	2,253,149	47.83	13.46	92,612	1.97	0.55	20,018	0.42	0.12
2010-11	2,339,989	48.55	13.44	92,967	1.93	0.53	19,713	0.41	0.11
2011-12	2,563,953	51.88	14.51	94,131	1.90	0.53	19,832	0.40	0.11
Change over the last four years	**56%**	**44%**	**50%**	**2%**	**-6%**	**-2%**	**2%**	**-7%**	**-3%**
Concord Hospital									
2008-09	2,719,109	62.31	13.50	201,642	4.62	1.00	32,789	0.75	0.16
2009-10	3,283,986	72.15	15.67	161,566	3.55	0.77	30,339	0.67	0.14
2010-11	3,240,148	71.67	15.31	143,523	3.17	0.68	28,531	0.63	0.13
2011-12	3,368,300	73.20	15.47	148,851	3.24	0.68	28,252	0.61	0.13
Change over the last four years	**24%**	**17%**	**15%**	**-26%**	**-30%**	**-32%**	**-14%**	**-18%**	**-20%**
Liverpool Hospital									
2008-09	3,172,802	40.48	12.01	213,854	2.73	0.81	48,555	0.62	0.18
2009-10	3,653,018	43.51	13.68	194,847	2.32	0.73	43,291	0.52	0.16
2010-11	4,563,519	52.49	16.48	221,839	2.55	0.80	47,897	0.55	0.17
2011-12	4,853,249	68.51	17.66	228,321	3.22	0.83	48,733	0.69	0.18
Change over the last four years	**53%**	**69%**	**47%**	**7%**	**18%**	**3%**	**0%**	**11%**	**-4%**
Royal North Shore Hospital									
2008-09	3,034,036	62.30	15.18	163,687	3.36	0.82	36,126	0.74	0.18
2009-10	4,268,512	85.90	20.68	162,877	3.28	0.79	37,811	0.76	0.18
2010-11	4,436,941	83.16	20.34	161,681	3.03	0.74	38,096	0.71	0.17
2011-12	4,733,816	84.33	21.41	156,691	2.79	0.71	36,925	0.66	0.17
Change over the last four years	**56%**	**35%**	**41%**	**-4%**	**-17%**	**-13%**	**2%**	**-11%**	**-8%**
St Vincent's Hospital Darlinghurst									
2008-09	2,214,724	58.24	17.15	105,479	2.77	0.82	24,182	0.64	0.19
2009-10	2,905,745	75.49	22.37	107,426	2.79	0.83	24,962	0.65	0.19
2010-11	2,767,388	71.90	20.60	97,755	2.54	0.73	23,430	0.61	0.17
2011-12	3,081,437	78.76	23.07	100,314	2.56	0.75	23,319	0.60	0.17
Change over the last four years	**39%**	**35%**	**35%**	**-5%**	**-8%**	**-8%**	**-4%**	**-6%**	**-7%**
Average for metro LHDs (2011-12)		**64.42**	**16.00**		**2.53**	**0.63**		**0.53**	**0.13**
Average for rural/regional LHDs (2011-12)		**72.36**	**20.37**		**2.36**	**0.67**		**0.46**	**0.13**
Average for the 15 LHDs (2011-12)		**72.36**	**20.37**		**2.36**	**0.67**		**0.46**	**0.13**
Average NSW Health (2011-12)		**71.58**	**18.56**		**2.70**	**0.70**		**0.54**	**0.14**
Average for top ten hospitals (2011-12)		**72.91**	**19.48**		**3.00**	**0.80**		**0.64**	**0.17**

Source: Audit Office of New South Wales analysis based on NSW Health data.
Note: Where data was incomplete/not available, estimates were made based on prior years' trend.
Westmead and Prince of Wales hospitals include the Children's hospitals.

The top ten hospitals energy efficiency and cost per output in 2011–12



Source: Audit Office of New South Wales analysis based on NSW Health data.

Note: Where data was incomplete/not available, estimates were made based on prior years' trend.

Westmead and Prince of Wales hospitals include the Children's hospitals.

Appendix 5: Building energy use in the six case study hospitals

	Cost			Consumption			Emissions		
	$	$ per separation	$ per bed day	GJ	GJ per separation	GJ per bed day	Tonnes of CO_2-e	Tonnes of CO_2-e per separation	Tonnes of CO_2-e per bed day
Westmead									
2008-09	6,393,314	57.70	17.07	458,227	4.14	1.22	92,017	0.83	0.25
2009-10	8,324,424	73.49	22.47	456,947	4.03	1.23	92,973	0.82	0.25
2010-11	8,417,925	72.17	21.26	460,595	3.95	1.16	93,351	0.80	0.24
2011-12	8,511,750	70.71	21.75	462,167	3.84	1.18	91,573	0.76	0.23
Change over the last four years	**33%**	**23%**	**27%**	**1%**	**-7%**	**-3%**	**0%**	**-8%**	**-5%**
Prince of Wales									
2008-09	3,877,927	68.64	16.40	226,789	4.01	0.96	46,507	0.82	0.20
2009-10	5,182,304	90.97	21.97	217,250	3.81	0.92	46,299	0.81	0.20
2010-11	5,296,799	90.25	22.22	213,096	3.63	0.89	44,984	0.77	0.19
2011-12	5,736,223	96.20	23.91	205,403	3.44	0.86	44,093	0.74	0.18
Change over the last four years	**48%**	**40%**	**46%**	**-9%**	**-14%**	**-11%**	**-5%**	**-10%**	**-7%**
John Hunter									
2008-09	2,340,054	32.46	8.85	141,559	1.96	0.54	32,835	0.46	0.12
2009-10	3,190,915	42.48	12.13	143,289	1.91	0.54	34,479	0.46	0.13
2010-11	3,332,875	43.81	12.45	150,175	1.97	0.56	35,316	0.46	0.13
2011-12	3,639,255	47.17	13.36	161,138	2.09	0.59	35,989	0.47	0.13
Change over the last four years	**56%**	**45%**	**51%**	**14%**	**6%**	**11%**	**10%**	**2%**	**6%**
Orange									
2008-09	-	-	-	-	-	-	-	-	-
2009-10	-	-	-	-	-	-	-	-	-
2010-11	564,466	27.25	8.62	14,429	0.70	0.22	4288.56	0.21	0.07
2011-12	1,214,627	52.73	12.27	31,741	1.38	0.32	9346.02	0.41	0.09
Mt Druitt									
2008-09	436,841	38.04	12.43	35,317	3.08	1.01	4,801	0.42	0.14
2009-10	528,895	36.79	14.59	37,402	2.60	1.03	4,543	0.32	0.13
2010-11	515,983	41.65	14.55	35,949	2.90	1.01	4,660	0.38	0.13
2011-12	529,918	39.84	14.17	32,629	2.45	0.87	4,872	0.37	0.13
Change over the last four years	**21%**	**5%**	**14%**	**-8%**	**-20%**	**-13%**	**1%**	**-12%**	**-5%**
Deniliquin									
2008-09	121,488	43.02	12.70	3,290	1.17	0.34	969	0.34	0.10
2009-10	155,089	52.52	17.21	3,388	1.15	0.38	1,108	0.38	0.12
2010-11	170,243	60.31	18.71	3,383	1.20	0.37	1,103	0.39	0.12
2011-12	165,846	60.91	17.75	3,303	1.21	0.35	1,094	0.40	0.12
Change over the last four years	**37%**	**42%**	**40%**	**0%**	**4%**	**3%**	**13%**	**17%**	**16%**

Source: Audit Office of New South Wales based on NSW Health data
Note: Where data was incomplete/not available, estimates were made based on prior years' trend.
Westmead and Prince of Wales hospitals include the Children's hospitals. Orange hospital includes all units of Orange Health Services.

Appendix 6: Key differences between Green Star and NABERS

	Green Star	National Australian Built Environment Rating System
Environmental Impact	Potential	Actual
Rates	Design	Performance
When	Design phase and/or as-built	When in use
Who developed	Green Building Council Australia	NSW Office of Environment and Heritage
Where	Available Australia wide	Available Australia wide
What	• Office • Multi-unit residential • Retail • Healthcare • Education • Industrial	• Office • Residential • Hotel • Retail
Ratings are based on	• indoor environment quality • energy • water • management • transport • materials • land use and ecology • emissions • innovation	• indoor environment quality • energy • water • waste
Certifiable Ratings	4, 5 or 6 stars	1 to 6 stars

Source: National Australian Built Environment Rating System and Green Star.

Performance Auditing

What are performance audits?

Performance audits determine whether an agency is carrying out its activities effectively, and doing so economically and efficiently and in compliance with all relevant laws.

The activities examined by a performance audit may include a government program, all or part of a government agency or consider particular issues which affect the whole public sector. They cannot question the merits of government policy objectives.

The Auditor-General's mandate to undertake performance audits is set out in the *Public Finance and Audit Act 1983*.

Why do we conduct performance audits?

Performance audits provide independent assurance to parliament and the public.

Through their recommendations, performance audits seek to improve the efficiency and effectiveness of government agencies so that the community receives value for money from government services.

Performance audits also focus on assisting accountability processes by holding managers to account for agency performance.

Performance audits are selected at the discretion of the Auditor-General who seeks input from parliamentarians, the public, agencies and Audit Office research.

What happens during the phases of a performance audit?

Performance audits have three key phases: planning, fieldwork and report writing. They can take up to nine months to complete, depending on the audit's scope.

During the planning phase the audit team develops an understanding of agency activities and defines the objective and scope of the audit.

The planning phase also identifies the audit criteria. These are standards of performance against which the agency or program activities are assessed. Criteria may be based on best practice, government targets, benchmarks or published guidelines.

At the completion of fieldwork the audit team meets with agency management to discuss all significant matters arising out of the audit. Following this, a draft performance audit report is prepared.

The audit team then meets with agency management to check that facts presented in the draft report are accurate and that recommendations are practical and appropriate.

A final report is then provided to the CEO for comment. The relevant minister and the Treasurer are also provided with a copy of the final report. The report tabled in Parliament includes a response from the CEO on the report's conclusion and recommendations. In multiple agency performance audits there may be responses from more than one agency or from a nominated coordinating agency.

Do we check to see if recommendations have been implemented?

Following the tabling of the report in parliament, agencies are requested to advise the Audit Office on action taken, or proposed, against each of the report's recommendations. It is usual for agency audit committees to monitor progress with the implementation of recommendations.

In addition, it is the practice of Parliament's Public Accounts Committee (PAC) to conduct reviews or hold inquiries into matters raised in performance audit reports. The reviews and inquiries are usually held 12 months after the report is tabled. These reports are available on the parliamentary website.

Who audits the auditors?

Our performance audits are subject to internal and external quality reviews against relevant Australian and international standards.

Internal quality control review of each audit ensures compliance with Australian assurance standards. Periodic review by other Audit Offices tests our activities against best practice.

The PAC is also responsible for overseeing the performance of the Audit Office and conducts a review of our operations every four years. The review's report is tabled in parliament and available on its website.

Who pays for performance audits?

No fee is charged for performance audits. Our performance audit services are funded by the NSW Parliament.

Further information and copies of reports

For further information, including copies of performance audit reports and a list of audits currently in-progress, please see our website www.audit.nsw.gov.au or contact us on 9275 7100.

Performance audit reports

No	Agency or Issues Examined	Title of performance Audit Report or Publication	Date Tabled in Parliament or Published
231	Ministry of Health NSW Treasury NSW Office of Environment and Heritage	*Building energy use in NSW public hospitals*	4 June 2013
230	Office of Environment and Heritage - National Parks and Wildlife Service	*Management of historic heritage in national parks and reserves*	29 May 2013
229	Department of Trade and Investment, Regional Infrastructure and Services – Office of Liquor, Gaming and Racing Independent Liquor and Gaming Authority	*Management of the ClubGRANTS scheme*	2 May 2013
228	Department of Planning and Infrastructure Environment Protection Authority Transport for NSW WorkCover Authority	*Managing gifts and benefits*	27 March 2013
227	NSW Police Force	*Managing drug exhibits and other high profile goods*	28 February 2013
226	Department of Education and Communities	*Impact of the raised school leaving age*	1 November 2012
225	Department of Premier and Cabinet Division of Local Government	*Monitoring Local Government*	26 September 2012
224	Department of Education and Communities	*Improving the literacy of Aboriginal students in NSW public schools*	8 August 2012
223	Rail Corporation NSW Roads and Maritime Services	*Managing overtime*	20 June 2012
222	Department of Education and Communities	*Physical activity in government primary schools*	13 June 2012
221	Community Relations Commission For a multicultural NSW Department of Premier and Cabinet	*Settling humanitarian entrants in NSW* *services to permanent residents who come to NSW through the humanitarian migration stream*	23 May 2012
220	Department of Finance and Services NSW Ministry of Health NSW Police Force	*Managing IT Services Contracts*	1 February 2012
219	NSW Health	*Visiting Medical Officers and Staff Specialists*	14 December 2011
218	Department of Family and Community Services Department of Attorney General and Justice Ministry of Health NSW Police Force	*Responding to Domestic and Family Violence*	8 November 2011
217	Roads and Traffic Authority	*Improving Road Safety: Young Drivers*	19 October 2011
216	Department of Premier and Cabinet Department of Finance and Services	*Prequalification Scheme: Performance and Management Services*	25 September 2011
215	Roads and Traffic Authority	*Improving Road Safety: Speed Cameras*	27 July 2011

No	Agency or Issues Examined	Title of performance Audit Report or Publication	Date Tabled in Parliament or Published
214	Barangaroo Delivery Authority Department of Transport NSW Treasury	*Government Expenditure and Transport Planning in relation to implementing Barangaroo*	15 June 2011
213	Aboriginal Affairs NSW Department of Premier and Cabinet	*Two Ways Together - NSW Aboriginal Affairs Plan*	18 May 2011
212	Office of Environment and Heritage WorkCover NSW	*Transport of Dangerous Goods*	10 May 2011
211	NSW Police Force NSW Health	*The Effectiveness of Cautioning for Minor Cannabis Offences*	7 April 2011
210	NSW Health	*Mental Health Workforce*	16 December 2010
209	Department of Premier and Cabinet	*Sick leave*	8 December 2010
208	Department of Industry and Investment	*Coal Mining Royalties*	30 November 2010
207	Whole of Government electronic information security	*Electronic Information Security*	20 October 2010
206	NSW Health NSW Ambulance Service	*Helicopter Emergency Medical Service Contract*	22 September 2010
205	Department of Environment, Climate Change and Water	*Protecting the Environment: Pollution Incidents*	15 September 2010
204	Corrective Services NSW	*Home Detention*	8 September 2010
203	Australian Museum	*Knowing the Collections*	1 September 2010
202	Industry & Investment NSW Homebush Motor Racing Authority Events NSW	*Government Investment in V8 Supercar Races at Sydney Olympic Park*	23 June 2010
201	Department of Premier and Cabinet	*Severance Payments to Special Temporary Employees*	16 June 2010
200	Department of Human Services - Ageing, Disability and Home Care	*Access to Overnight Centre-Based Disability Respite*	5 May 2010
199	Department of Premier and Cabinet NSW Treasury WorkCover NSW	*Injury Management in the NSW Public Sector*	31 March 2010
198	NSW Transport and Infrastructure	*Improving the performance of Metropolitan Bus Services*	10 March 2010

Performance audits on our website

A list of performance audits tabled or published since March 1997, as well as those currently in progress, can be found on our website www.audit.nsw.gov.au.

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