



ISSUES PAPER

Review of the Commercial Building Disclosure Program

*Prepared for
The Department of the Environment and Energy
30 January 2019*

The Centre for International Economics is a private economic research agency that provides professional, independent and timely analysis of international and domestic events and policies.

The CIE's professional staff arrange, undertake and publish commissioned economic research and analysis for industry, corporations, governments, international agencies and individuals.

© Centre for International Economics 2019

This work is copyright. Individuals, agencies and corporations wishing to reproduce this material should contact the Centre for International Economics at one of the following addresses.

CANBERRA

Centre for International Economics
Ground Floor, 11 Lancaster Place
Majura Park

Canberra ACT 2609
GPO Box 2203
Canberra ACT Australia 2601

Telephone +61 2 6245 7800
Facsimile +61 2 6245 7888
Email cie@TheCIE.com.au
Website www.TheCIE.com.au

SYDNEY

Centre for International Economics
Level 7, 8 Spring Street
Sydney NSW 2000

Telephone +61 2 9250 0800
Email ciesyd@TheCIE.com.au
Website www.TheCIE.com.au

DISCLAIMER

While the CIE endeavours to provide reliable analysis and believes the material it presents is accurate, it will not be liable for any party acting on such information.

Contents

Executive summary	1
1 The Commercial Building Disclosure Program	5
Overview of the CBD Program	5
Background and context	1
Review of the CBD Program	4
2 Proposed approach to the review	5
Approach to reviewing the CBD program	5
How we will gather information	8
Timing of review and opportunities for input	9
3 Review of the CBD Program	10
Does the CBD Program provide useful information?	10
The effectiveness of mandatory disclosure in improving energy performance	12
The cost of improving energy performance	18
4 Potential changes to the CBD program	20
Scope of the CBD Program	21
When should a BEEC be required?	22
What information should be disclosed?	22
Program administration	23
BOXES, CHARTS AND TABLES	
1 Terms of Reference	1
2 Review stages and opportunities for input	2
1.1 How NABERs ratings work	6
1.2 The evolution of the CBD Program	8
1.3 The Paris Climate Agreement	2
1.4 Energy use in commercial buildings	3
1.5 Energy use of non-residential buildings	3
1.6 Terms of Reference	4
2.1 The seven RIS steps	5
2.2 Questions for stakeholders — objectives of the program	6
2.3 Key steps in a CBA	7
2.4 Types of costs and benefits	7
2.5 Questions for stakeholders — analysis of the program	8

2.6	Questions for stakeholders — gathering information	8
2.7	Review stages and opportunities for input	9
3.1	Questions for stakeholders — usefulness of information	11
3.2	Evidence on the effectiveness of mandatory disclosure	12
3.3	Questions for stakeholders — studies on impact of disclosure	13
3.4	Share of BEECs achieving different star ratings	15
3.5	Average energy use and average star rating	15
3.6	Average energy use across different building sizes	16
3.7	Star rating after receiving a BEEC	17
3.8	Energy use change by initial star rating	17
3.9	Energy use and star rating across states and territories	18
3.10	Questions for stakeholder — motivation for improving energy performance	18
3.11	Questions for stakeholders — the cost of improving energy performance	19
4.1	Possible expansion areas	20
4.2	Questions for stakeholders — scope of the CBD Program	21
4.3	Questions for stakeholders — trigger requiring a BEEC	22
4.4	Questions for stakeholders — disclosure requirements	23
4.5	Questions for stakeholders — program administration	23

Executive summary

The Department of the Environment and Energy is reviewing the Commercial Building Disclosure (CBD) Program and its enabling legislation — the *Building Energy Efficiency Disclosure (BEED) Act 2010*. The CIE has been engaged to undertake this review.

The Terms of Reference (TOR) for the review are set out in box 1.

1 Terms of Reference

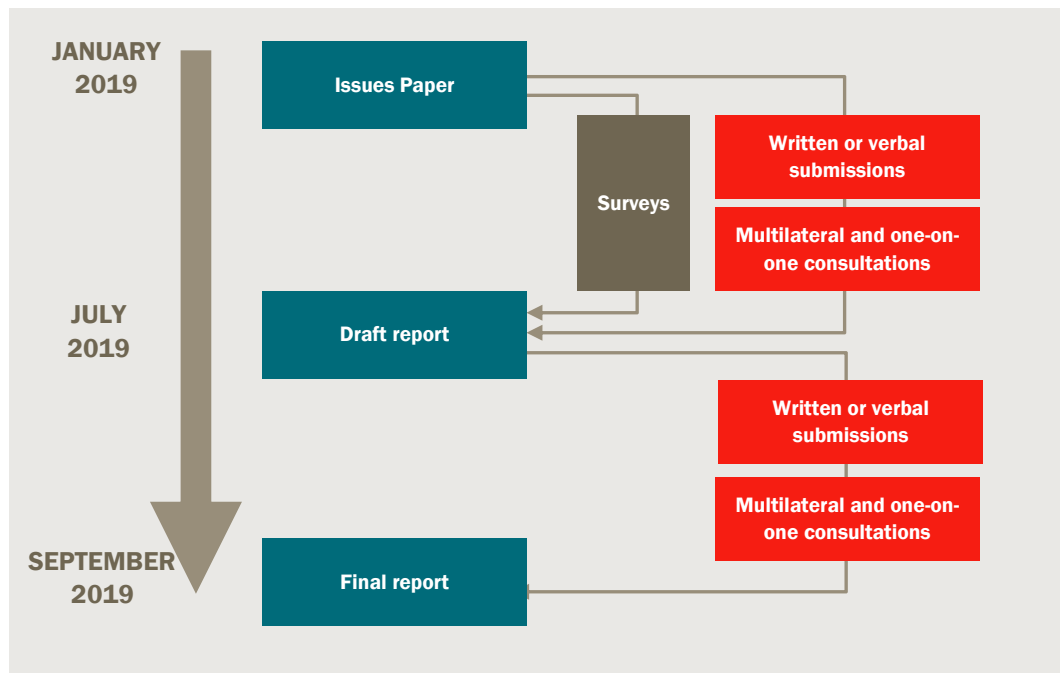
The review will assess and provide recommendations on:

- 1 Whether the CBD Program's objectives are clear, remain relevant and are being met.
- 2 Whether the CBD Program is the most effective, appropriate and least-cost way to achieve energy efficiency outcomes including the benefits and costs imposed on industry.
- 3 The effectiveness of the Program in promoting energy efficiency and emissions abatement, both in its own right and in the context of the current framework of energy efficiency measures.
- 4 The case for expansion of the Program to other high energy-using classes of buildings including shopping centres, data centres, hotels (and apartment accommodation), and office tenancies, including the most appropriate form of disclosure in each sector and cost benefit analyses of the preferred options.
- 5 The impact of changes made in response to the previous review, including lowering the mandatory disclosure threshold for commercial office buildings from 2000 square metres to 1000 square metres and the extension of the Tenancy Lighting Assessment to five years.
- 6 Whether operational elements of the Program are delivering the best outcomes for stakeholders and the Program's objectives, including the merits of the Tenancy Lighting Assessment and whether it should be continued or improved, and the merits of requiring periodic ratings instead of ratings triggered by property being offered for sale or lease.
- 7 Any legislative or regulatory changes required to improve the existing Program.

How we will conduct the review

The review is to be conducted over the period December 2018 to September 2019. A summary of key steps and opportunities for input are shown in chart 2. We are also conducting surveys of industry participants to gather quantitative input for the review.

2 Review stages and opportunities for input



Source: The CIE.

Summary of questions for stakeholders

- 1 Is the objective of the CBD program to improve the energy efficiency of Australia's large office buildings and to ensure prospective buyers and tenants are informed to sufficiently clear and appropriate?
- 2 Does the BEEC provide a sufficiently close alignment to the objective of the program? If not, how could it be improved?
- 3 Are there other costs and benefits we need to consider outside of those shown in table 2.4?
- 4 What other assessment criteria should we consider in assessing the effectiveness and efficiency of the program?
- 5 Are there other source of information on the energy use, costs of the CBD scheme and benefits of the CBD scheme that we should consider or that you have access to and can provide to the review?
- 6 Users of NABERS ratings could include: building owners/managers; investors (i.e. potential buyers); and tenants. Are there any other users of NABERS ratings?
- 7 How are NABERS ratings used?

- a) By building owners/managers?
 - b) By investors?
 - c) By tenants?
- 8 Does access to a building's NABERS rating provide useful information to prospective buyers/tenants over and above the information currently available through other means?
 - 9 Does access to a space's Tenancy Lighting Assessment rating provide useful information to prospective buyers/tenants over and above the information currently available through other means?
 - 10 Are there additional studies or literature on the impact of mandatory and voluntary disclosure in Australia and overseas that we should consider?
 - 11 For building owners/managers, what was the main motivation for improving base building performance?
 - 12 For tenants, what was the main motivation for improving the TLA rating?
 - 13 What are the types of activities that building owners and tenants have undertaken to improve their energy efficiency?
 - 14 What are the main ways that building owners/managers have improved their NABERS ratings as a result of the CBD Program?
 - 15 Have these changes generally achieved the expected energy savings?
 - 16 What are the main costs of implementing these measures? Are there any costs other than those identified above?
 - 17 Should the CBD Program be expanded to include:
 - a) Office tenancies?
 - b) Hotels?
 - c) Shopping centres?
 - d) Data centres?
 - e) Other building types?
 - 18 To what extent is there scope to improve the energy performance of these buildings?
 - 19 Are there any barriers preventing building owners/operators from improving energy performance without a mandatory disclosure requirement? Which of these barriers would mandatory disclosure requirements address?
 - 20 What minimum thresholds should apply to:
 - a) Office space?
 - b) Office tenancies?
 - c) Hotels?
 - d) Shopping centres?
 - e) Data centres?
 - f) Other building types (where relevant)?
 - 21 What exceptions and exemptions should apply?
 - 22 Currently, the requirement for a BEEC is triggered by sale or lease of office space covered by the CBD Program. What are the alternative triggers that could be used?

- 23 What are the barriers (including legal, logistical or other barriers) to these alternative triggers?
- 24 What is the most appropriate trigger for a BEEC for:
 - a) Office buildings?
 - b) Office tenancies?
 - c) Hotels?
 - d) Shopping centres?
 - e) Data centres?
- 25 For each building class under consideration to be included in the CBD Program, what information should be disclosed? What are the alternatives to a NABERS rating?
- 26 Would a NABERS rating (or alternative indicators) provide useful information to relevant stakeholders over and above the information already available?
- 27 How would the relevant information be used by stakeholders?
- 28 How should the information be disclosed? To whom?
- 29 What is the cost of obtaining a BEEC?
- 30 How could the administrative arrangements for the CBD Program be improved so that the Program operates more efficiently?

How to provide feedback

Feedback can be provided on this Issues Paper through written or verbal submissions by contacting:

- Phil Manners, Director, The CIE; or Hayden Fisher, Associate Director, The CIE
- Phone: 02 9250 0800
- Email: pmanners@TheCIE.com.au, hfisher@TheCIE.com.au

1 *The Commercial Building Disclosure Program*

Overview of the CBD Program

The Commercial Building Disclosure (CBD) Program requires information on the energy efficiency of a building to be made available to prospective tenants and purchasers of a property. It applies to commercial office space where more than 1000 square metres is offered for lease or sale simultaneously, except:

- new buildings where a certificate of occupancy (or equivalent) has either not yet been issued or was issued less than two years earlier
- buildings which have completed a major refurbishment for which a certificate of occupancy (or equivalent) was issued less than two years earlier
- strata-titled buildings
- mixed use buildings where total office space comprises less than 75 per cent by net lettable area
- spaces used for police or security operations; or where a rating cannot be assigned and an exemption has been granted.

Objectives of the CBD program

The stated objective of the CBD program is to “improve the energy efficiency of Australia's large office buildings and to ensure prospective buyers and tenants are informed.”¹

The changes to the CBD scheme to apply to small buildings have a stated objective to:

...facilitate a significant reduction in energy consumption and greenhouse gas emissions by smaller office buildings in Australia.²

How the CBD program works

The CBD Program requires provision of information in a Building Energy Efficiency Certificate (BEEC). A BEEC covers:

- a NABERS star rating (see box 1.1), which provides information on energy use, GHG emissions and a benchmark of how energy use compares to similar buildings in similar climatic locations

¹ Department of Environment and Energy web site, <http://cbd.gov.au/overview-of-the-program/what-is-cbd>.

² ACIL Allen Consulting 2016, *Improving the energy efficiency performance of small office buildings, Regulation Impact Statement*, p. 6.

- the lighting efficiency of the tenanted area through a Tenancy Lighting Assessment (TLA). This provides a measure of the energy required to light each of the areas of a building.

A BEEC is prepared by a CBD accredited assessor. There are currently 151 accredited assessors around Australia. In larger jurisdictions there are many assessors. However, in smaller jurisdictions such as Northern Territory and Tasmania there are only 1-2 accredited assessors. There are more accredited NABERs assessors, who can prepare this part of the BEEC.

1.1 How NABERs ratings work

NABERs ratings are based on historical information on energy use of a building.

- Energy use for the past 12 months is obtained. This is typically for a base building (covering heating and cooling, common areas etc) but can be for the whole building if there is not separate metering of the base building and other energy use
- The floor space and hours of service of a building are measured
- GHG emissions are estimated based on the energy type and the typical emissions intensity of energy used at different locations.
- A star rating is prepared based on the energy use of the building, compared to benchmark performance. The performance of a building is benchmarked to account for:
 - the climate where the building or workspace operates
 - the building’s operational characteristics (such as opening hours in shopping centres)
 - the level of services provided (such as heated swimming pool areas in hotels)
 - the energy sources it uses
 - its size and occupancy

The energy use of a building is a factual assessment. The star rating is a benchmark compared to other similar buildings and therefore requires some level of judgement.

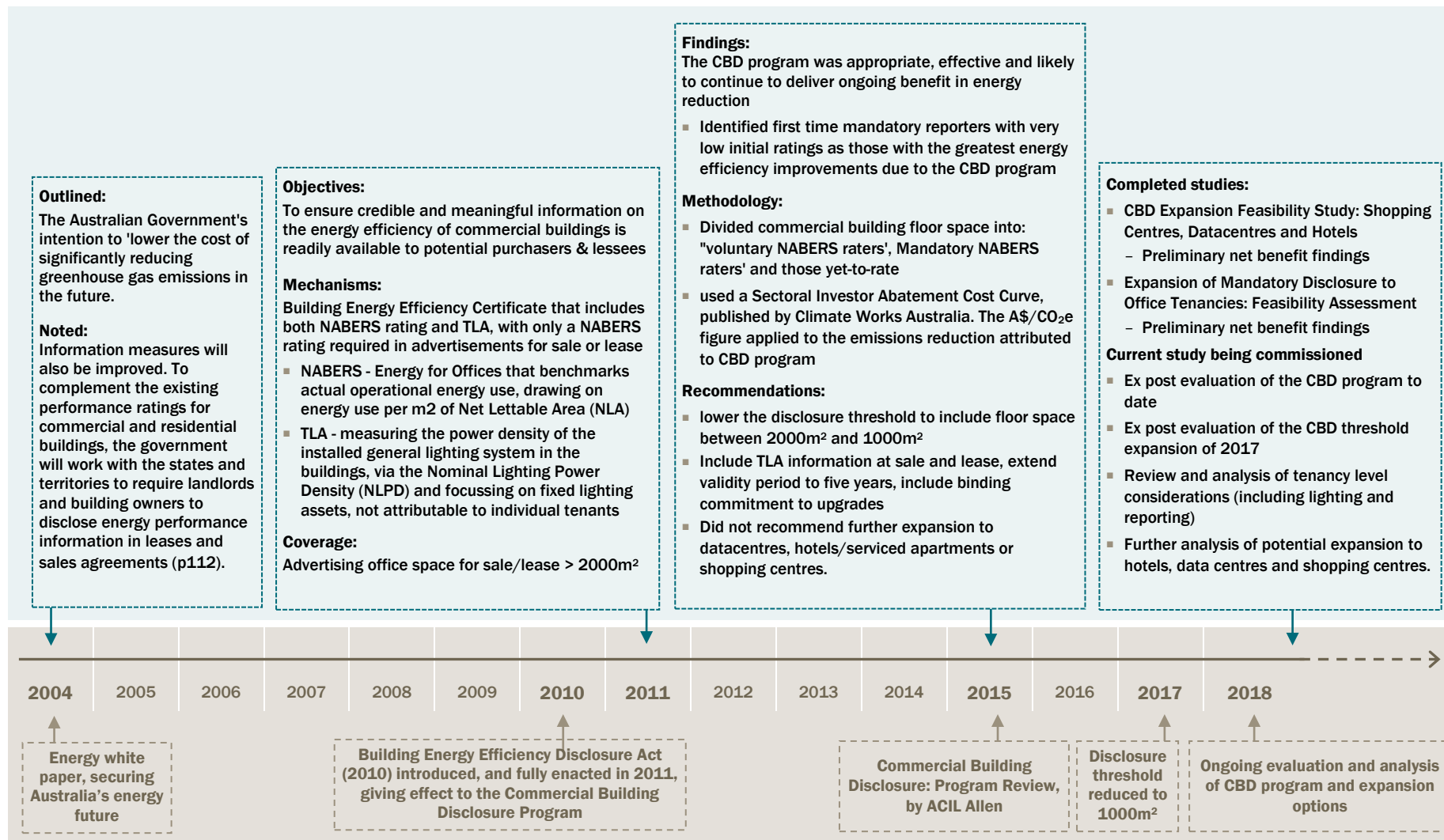
The evolution of the CBD program

An overview of the CBD scheme and its evolution over time is shown in chart 1.2. Effectively, the CBD Program focuses on overcoming information asymmetries, where sellers/lessors do not disclose a building’s energy performance to potential buyers/lessees. A number of significant changes were made to the CBD scheme following a previous review in 2015 by ACIL Allen Consulting.³

³ ACIL Allen Consulting 2015, *Commercial Building Disclosure: Program review*, prepared for Department of Industry and Science, <https://prod-cbd.energy.slicedtech.com.au/sites/prod.cbd/files/CBD%20program%20review%20final%20report.pdf>.

The CBD Program was intended as a complement to mandatory minimum standards set out in the National Construction Code (NCC). Whereas the NCC applies only to new buildings (and buildings undergoing major refurbishment), the CBD aims to encourage improved energy performance of existing buildings.

1.2 The evolution of the CBD Program



Source: CIE.

Background and context

Energy efficiency can be a low-cost approach to reducing greenhouse gas (GHG) emissions. In some cases, improving energy efficiency policies may provide a ‘win-win’ outcome by providing net private benefits to energy users, as well as reducing GHG emissions. This implies that there may be privately beneficial energy efficiency opportunities that are not adopted voluntarily due to a range of market and behavioural failures, including:

- Information asymmetries — this arises where the seller/lessee does not disclose the building’s energy performance to the buyer/lessee
- Split incentives — where the costs of actions to improve energy efficiency are borne by one party (typically the owner) but the benefits accrue to others, such as tenants
- Behavioural anomalies/failures — some studies suggest that behavioural anomalies contribute to sub-optimal energy performance, including:
 - misinformed consumers — this includes issues such as inattention, lack of sufficient expertise or because energy costs make up relatively small proportion of costs and therefore receive insufficient attention
 - systematic behavioural biases — in the face of the sheer complexity of understanding energy efficiency options, some owners/tenants may make sub-optimal decisions due to:
 - ... bounded rationality — cognitive limitations may mean that owners/developers have difficulty weighing up the energy saving benefits against cost and other factors such as design attributes and/or location; and/or
 - ... heuristic decision making — heuristics are mental short-cuts, which some owners/tenants may rely on to make decisions (examples include: repeating entrenched practices).

Improving energy efficiency can therefore make an important contribution towards achieving Australia’s commitments under the Paris Climate Agreement (see box 1.3).

1.3 The Paris Climate Agreement

The Paris Climate Agreement has been ratified by 168 of 197 Parties to the United Nations Framework Convention on Climate Change (UNFCCC), including Australia.⁴ It aims to limit global warming to less than 2 degrees Celsius and pursue efforts to limit the rise to 1.5 degrees Celsius.

The Paris Agreement requires all Parties to put forward their best efforts through 'nationally determined contributions'. Australia has committed to implementing an economy-wide target to reduce greenhouse gas emissions by 26 to 28 per cent below the 2005 level by 2030.⁵

The potential benefits of improving energy efficiency is reflected in various policy papers and plans including the following.

- The Commonwealth Government's *Energy White Paper* — this was released in April 2015, and sets out an energy policy framework for Australia. Increasing energy productivity to promote growth was one of the White Paper's three key themes.
- The National Energy Productivity Plan (NEPP) — as an integral part of the *Energy White Paper*, the Council of Australian Governments (COAG) Energy Council has developed the *National Energy Productivity Plan 2015 – 2030*, released in December 2015. The Work Plan for NEPP developed 34 measures to achieve a target of improving Australia's energy productivity by 40 per cent between 2015 and 2030 to:
 - boost competitiveness and growth
 - help families and businesses manage energy costs
 - reduce greenhouse gas emissions.⁶

Energy use in commercial buildings

Buildings that have been subject to mandatory disclosure cover 20 million square metres of floor space, and 11 PJ of energy use per year. This is equivalent to over one quarter of estimated energy use from stand-alone offices, 7 per cent of estimated non-residential building energy use (which includes education, public buildings, hospitals, retail and hotels) and 0.6 per cent of Australia's electricity and gas consumption. The program does not cover the energy use of offices outside of the base building (in most cases), does not cover very small buildings (less than 1000 square metres) and has a range of other exemptions.

⁴ United Nations Framework Convention on Climate Change website, http://unfccc.int/paris_agreement/items/9485.php, accessed 19 October 2017.

⁵ Department of the Environment and Energy website, <http://www.environment.gov.au/climate-change/publications/factsheet-australias-2030-climate-change-target>, accessed 8 November 2017.

⁶ COAG Energy Council 2015, *National Energy Productivity Plan 2015-2030: Boosting Competitiveness, managing costs and reducing emissions*, December 2015, p. 5.

1.4 Energy use in commercial buildings

	Square metres	Energy use	Share of Australia's electricity and gas consumption
	Million m2	PJ/year	Per cent
Australia energy consumption ^a	Na	6 146	Na
Australia's electricity and gas consumption ^a	Na	1 887	100.0
Commercial services electricity & gas consumption ^a	Na	294	15.6
Non-residential building energy use ^b	157	159	8.4
Stand-alone offices ^b	43	37	2.0
Buildings rated under CBD program ^c	20	11	0.6

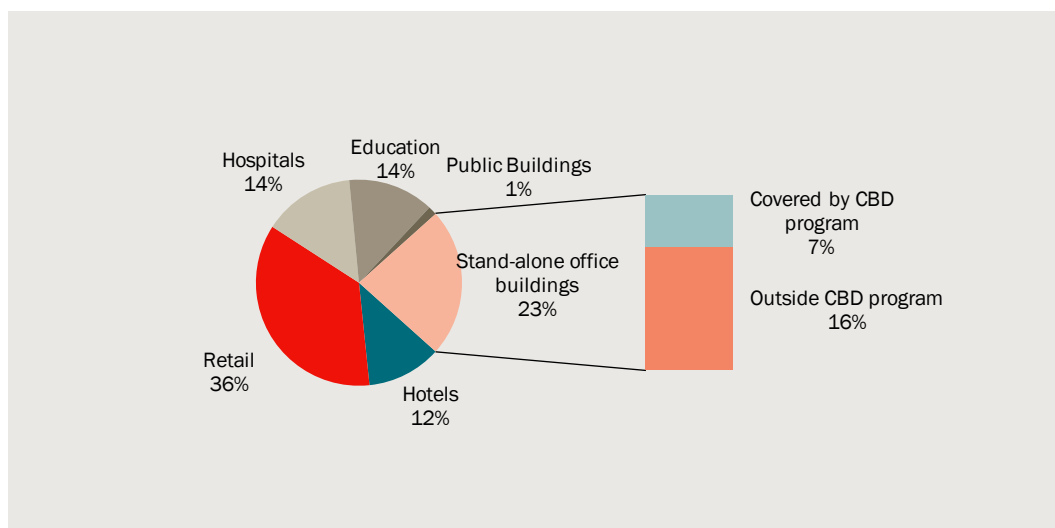
^a 2016/17 from Australian Energy Update 2018, Department of the Environment and Energy. Electricity and gas consumption excludes gas consumed in producing electricity; ^b Estimate for 2016/17 from pitt&sherry 2012, *Baseline energy consumption and greenhouse gas emissions in commercial buildings in Australia*; ^c Sum of annual energy use from latest BEEC for each building. Note that the timing of this measure is different for each building and for most buildings only includes base building energy.

Note: Commercial and services includes ANZSIC divisions F, G, H, J, K, L, M, N, O, P, Q, R and S. Primary and secondary includes ANZSIC divisions A, B, C, D, E and I.

Source: CIE analysis of CBD dataset;; . Australian Energy Update 2018, Department of the Environment and Energy.

The CBD program covers only a small part of non-residential building use, given that it largely focuses on the base building energy use of larger office buildings. Using past forecasts of non-residential building use by sector, and energy use covered by the CBD program, the comparisons of different building types is shown in chart 1.5.

1.5 Energy use of non-residential buildings



Note: pitt&sherry estimates are for 2017.

Data source: pitt&sherry 2012, *Baseline energy consumption and greenhouse gas emissions in commercial buildings in Australia*; CIE analysis of CBD dataset.

Review of the CBD Program

Commercial buildings are an important part of the nation's energy efficiency policy. Measure 9 of the NEPP Work Plan focuses on the potential to expand commercial building ratings and disclosure, including a review the CBD Program.⁷

The Terms of Reference (TOR) for the review are set out in box 1.6.

1.6 Terms of Reference

The review will assess and provide recommendations on:

- Whether the CBD Program's objectives are clear, remain relevant and are being met.
- Whether the CBD Program is the most effective, appropriate and least-cost way to achieve energy efficiency outcomes including the benefits and costs imposed on industry.
- The effectiveness of the Program in promoting energy efficiency and emissions abatement, both in its own right and in the context of the current framework of energy efficiency measures.
- The case for expansion of the Program to other high energy-using classes of buildings including shopping centres, data centres, hotels (and apartment accommodation), and office tenancies, including the most appropriate form of disclosure in each sector and cost benefit analyses of the preferred options.
- The impact of changes made in response to the previous review, including lowering the mandatory disclosure threshold for commercial office buildings from 2000 square metres to 1000 square metres and the extension of the Tenancy Lighting Assessment to five years.
- Whether operational elements of the Program are delivering the best outcomes for stakeholders and the Program's objectives, including the merits of the Tenancy Lighting Assessment and whether it should be continued or improved, and the merits of requiring periodic ratings instead of ratings triggered by property being offered for sale or lease.
- Any legislative or regulatory changes required to improve the existing Program.

⁷ COAG Energy Council 2015, *National Energy Productivity Plan: Work Plan*, pp. 7-8.

2 *Proposed approach to the review*

Approach to reviewing the CBD program

Logic of the scheme and rationale for the scheme

The Australian Government Guide to Regulation sets out seven steps for undertaking regulatory impact analysis (box **Error! Reference source not found.**). The first three of these are about identifying the logical flow from the problem to the need for government action and hence to the policy option.

2.1 The seven RIS steps⁸

1 *What is the problem you are trying to solve?*

The RIS requires you to explain the problem—and your objective—simply and clearly. A crisply defined problem offers scope for innovative, non-regulatory thinking.

2 *Why is government action needed?*

Ask yourself: is it a genuine priority? Is it government's job? Is the problem serious enough to justify government intervention? Will intervention work?

3 *What policy options are you considering?*

A RIS will reveal whether you've thought through all of the viable options, including the option of not regulating. Until you've analysed the problem from every angle, you may be overlooking a viable, low-impact alternative.

4 *What is the likely net benefit of each option?*

Policy interventions often come at a cost. The RIS obliges you to assess the benefit of your proposed intervention against the burden you impose. If that burden is greater than the benefit, you should look for alternatives or reconsider the need to intervene at all.

5 *Who will you consult about these options and how will you consult them?*

Transparency and accountability are not optional. The RIS encourages you to walk in the shoes of the people, business decision makers and community groups affected by your policy proposal.

⁸ Australian Government 2014, The Australian Government Guide to Regulation, p. 8..

6 *What is the best option from those you have considered?*

The RIS will help make clear whether your decision making processes are robust enough to cope with scrutiny. The public don't just need to know what you've decided; they want to know why and on what information and arguments your decision was based.

7 *How will you implement and evaluate your chosen option?*

Too often this question is left until the last minute. The RIS process ensures you give adequate and timely consideration to the real-world problems of making your policy work—and makes sure you will test its effectiveness and ongoing relevance.

The need for Government action is typically framed in terms of material reasons why the market would not allocate resources to the most valuable uses, termed 'market failures'. To date, the objectives of the CBD program have focused on achieving energy efficiency improvements through providing meaningful information to prospective buyers and tenants. This stated objective focuses on informational issues, rather than impacts from unpriced pollution (such as GHG emissions). However, the rating scheme used, NABERS, is developed to reflect GHG emissions, rather than energy costs. These will differ because costs and GHG intensity vary differently between different types of energy and different times of day of use.

2.2 Questions for stakeholders – objectives of the program

- 1 Is the objective of the CBD program to improve the energy efficiency of Australia's large office buildings and to ensure prospective buyers and tenants are informed to sufficiently clear and appropriate?
- 2 Does the BEEC provide a sufficiently close alignment to the objective of the program? If not, how could it be improved?

Cost benefit analysis

Cost benefit analysis (CBA) is a technique to systematically compare the costs and benefits of a Government program or project. As the Australian Government notes:

A CBA involves a systematic evaluation of the impacts of a regulatory proposal, accounting for all the effects on the community and economy, not just the immediate or direct effects, financial effects or effects on one group. It emphasises, to the extent possible, valuing the gains and losses from a regulatory proposal in monetary terms.

The goal of CBA is to provide the final decision maker with as much information about a regulatory proposal as is relevant in informing their decision. It provides an objective framework for weighing up different impacts and impacts that occur in different periods. This objectivity is supported by converting all impacts into present value dollar terms. However,

even when full quantification of impacts is not possible, CBA can still be useful in providing a clear decision-making framework.⁹

The key steps for CBA are set out in box 2.3.

2.3 Key steps in a CBA

- **Articulating the decision that the CBA is seeking to evaluate.** For example, in relation to the CBD program, the decision is whether and how to continue the program. The way in which the CBA is framed and the information requirements will differ depending on the decision being evaluated.
- **Establishing the base case** against which to assess the potential economic, social and environmental impacts of changes. The base case encapsulates the outcomes that would occur (or would have occurred) in the absence of the CBD program. This needs to consider the role of other programs, such as the National Construction Code and underlying factors such as changes in energy prices.
- **Quantifying the changes** from the base case resulting from the possible policy options being considered. The quantification should focus on key changes that will be utilised in the valuation stage, such as changes in energy use.
- **Placing values on the changes** and aggregating these values in a consistent manner to assess the outcomes. For example, for the CBD program, this involves measuring the reduction in costs that have occurred because of lower energy use.
- **Generating the Net Present Value (NPV) of the future net benefits stream**, using an appropriate discount rate, and deciding on the Decision Rule on which to assess the different options. The best decision rule is to choose the scenario that has the highest net benefits.
- **Undertaking sensitivity analysis** on a key range of variables, given the uncertainties related to specific benefits and costs.
- **Review and Monitoring** of impacts, benefits and costs to ensure transparency and accountability, and comparison against expectations.

For the CBD scheme, the main costs and benefits expected are shown in table 2.4.

2.4 Types of costs and benefits

Costs	Benefits
Costs of procuring BEECs for building owners	Reduced energy costs (lower costs across energy supply chain, which can be proxied by lower bills for commercial buildings)
Administrative costs for building owners	Reduced costs from GHG emissions
Administrative costs for Government	Positive changes in amenity of building from changes to improve energy efficiency

⁹ Australian Government 2016, *Cost benefit analysis Guidance note*, p.1, <https://www.pmc.gov.au/resource-centre/regulation/cost-benefit-analysis-guidance-note>.

Costs	Benefits
Cost of making changes to building to improve energy efficiency	Reduced pressure on the electricity grid
Negative changes in amenity of building from changes to improve energy efficiency	Improved comfort and health outcomes

Source: The CIE.

2.5 Questions for stakeholders – analysis of the program

- 3 Are there other costs and benefits we need to consider outside of those shown in table 2.4?
- 4 What other assessment criteria should we consider in assessing the effectiveness and efficiency of the program?

How we will gather information

We intend to gather information from a variety of sources.

- The Commercial Building Disclosure program maintains a register of energy use and star ratings for all Building Energy Efficiency Certificates (BEECs). To date, this covers more than 2300 unique buildings and over 7000 Building Energy Efficiency Certificates¹⁰
- NABERs collects data for other buildings that receive a voluntary rating
- Surveys of buildings covered by the CBD scheme and potential sectors to which the CBD scheme could be expanded. This would intend to gain better information particularly about the costs of changing energy efficiency
- Case studies of three buildings to understand the type of actions undertaken
- Consultation with those affected by the program and regulators involved in the program.

2.6 Questions for stakeholders – gathering information

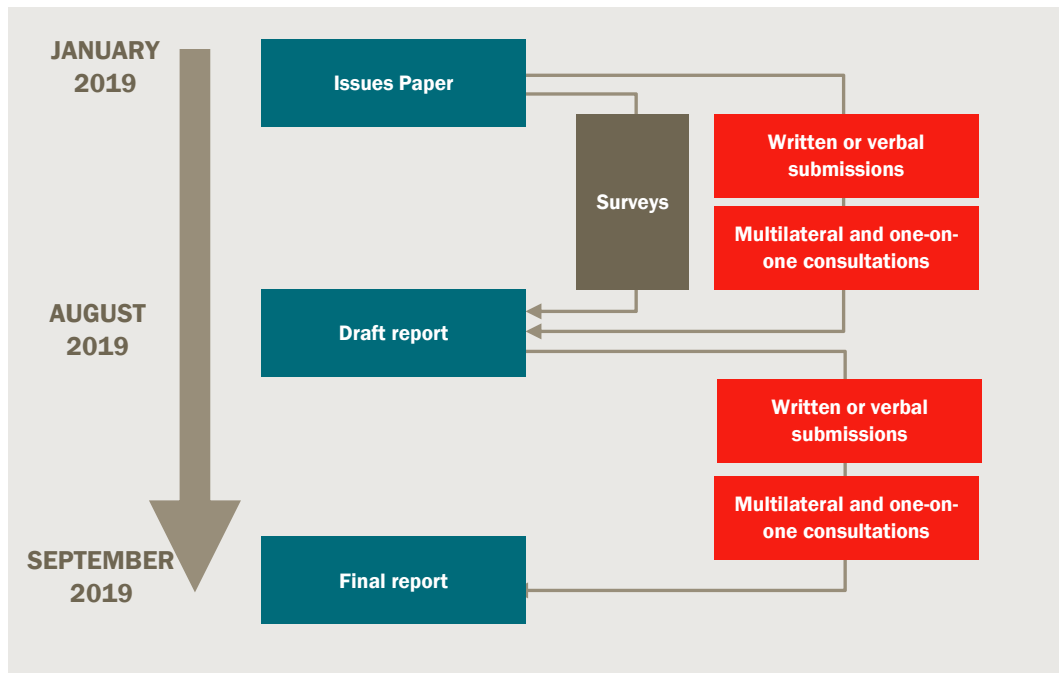
- 5 Are there other source of information on the energy use, costs of the CBD scheme and benefits of the CBD scheme that we should consider or that you have access to and can provide to the review?

¹⁰1010 CIE analysis of the CBD dataset, to end of December 2018.

Timing of review and opportunities for input

The major outputs of the review and opportunities for input into the review are shown in chart 2.7.

2.7 Review stages and opportunities for input



Source: The CIE.

3 *Review of the CBD Program*

Does the CBD Program provide useful information?

A building's energy use includes:

- energy used in the base building. This includes central heating and cooling systems, elevators and energy used in common areas and car parking areas
- energy used in individual office spaces, such as lighting, refrigeration and computing systems.

While energy use is generally divided up in this way between the office building owner and tenants¹¹, this is not universally the case. In some buildings there is no individual metering of spaces, for example. In other cases, computing systems may be housed in the basement and be part of the metering allocated to 'base building' energy use.

For a business that is leasing office space, it would typically be charged for its energy use in two ways:

- the business would be individually metered and have a contract with a retailer for the energy used in its individual office space
- a component of base building energy use would be billed as part of general outgoings charged to the business, or could be included in a gross rental charge

For a business purchasing an office space, they should be able to access information on costs for the building, including base building energy costs.

Decision-making is broadly aligned to the different components of energy use set out above.

- The building owner makes decisions for the whole building that impacts on base building energy use. This could include the way that central heating and cooling systems are operated, upgrades to these systems and common area lighting arrangements.
- The individual office user will make decisions about their own lighting, their computers, office fridges, etc.

Tenancy agreements will often include clauses about how environmental performance, including energy use, is to be managed between the owner and tenant.

In the short term (the length of the contract), the above arrangements can limit the incentives for a building owner to invest in capital to reduce energy costs, because the

¹¹ Bannister, P. 2012, *NABERS: Lessons from 12 Years of Performance Based Ratings in Australia*, Proceedings of the Twelfth International Conference for Enhanced Building Operations, Manchester, UK, October 23-26.

building owner incurs the cost of the investment, but the tenant receives the benefits from lower energy costs. In the longer term, this is not an issue, because an owner with lower energy costs could charge higher rents and still be attractive to tenants.

As with any cost, businesses are more likely to focus their effort on cost reduction where:

- the cost is a large share of the businesses cost
- the business is at sufficient scale that the cost makes it worthwhile to seek services to reduce the cost
- there is low cost information available on the relative performance of the business.

The extent to which access to a building's NABERS rating is useful to stakeholders depends on how this information is used. The main users of a NABERS rating could include: building owners/managers, investors (buyers) and tenants.

- For building owners/managers, a NABERS rating could have a range of uses (which could vary depending on the rating itself). A NABERS rating could be used:
 - to attract buyers/tenants (such as in marketing material)
 - to fulfil self-imposed corporate social responsibility requirements
 - to benchmark performance against other similar buildings.
- Investors (i.e. potential buyers) could use a NABERS rating to:
 - fulfil self-imposed corporate social responsibility requirements (such as meeting portfolio targets based on NABERS ratings)
 - to attract higher rents (i.e. there is some evidence that office space with higher NABERS ratings attract higher rents).
- Potential tenants could use a NABERS rating to compare office space options. The NABERS rating may be used:
 - as an indicator of future energy bills
 - as a general indicator of building quality
 - to fulfil self-imposed corporate social responsibility requirements.

3.1 Questions for stakeholders – usefulness of information

- 6 Users of NABERS ratings could include: building owners/managers; investors (i.e. potential buyers); and tenants. Are there any other users of NABERS ratings?
- 7 How are NABERS ratings used?
 - a) By building owners/managers?
 - b) By investors?
 - c) By tenants?
- 8 Does access to a building's NABERS rating provide useful information to prospective buyers/tenants over and above the information currently available through other means?
- 9 Does access to a space's Tenancy Lighting Assessment rating provide useful information to prospective buyers/tenants over and above the information currently available through other means?

The effectiveness of mandatory disclosure in improving energy performance

Previous studies on the effectiveness of mandatory disclosure of commercial building energy efficiency

Programs of mandatory (or voluntary) disclosure of building energy efficiency and energy use are implemented to 'allow owners and prospective buyers to incorporate this information into their investment decisions'.¹²

Mandatory disclosure programs for building energy use have been implemented internationally, with examples across all levels of government — supra-national (the European Union), national (for example, Australia) and sub-national (such as at the state level in the United States).

Following the implementation of these programs, there have been a range of studies that have considered various questions of effectiveness directly, as well as studies that seek to identify the causal pathway through which energy use disclosure affects decisions. While the international literature on the effectiveness of mandatory disclosure is not very comprehensive, a selection of these studies, and their findings, are summarised in table 3.2. We have categorised this selective literature review based on which part of the decision pathway they are related to, as well as providing a brief summary of their contribution to the 'evidence of effectiveness' of mandatory disclosure.

3.2 Evidence on the effectiveness of mandatory disclosure

Study reference	Country/region	Findings or insight offered
Energy efficiency results		
Meng, T. et al (2017) Estimating energy savings from benchmarking policies in New York City. <i>Energy</i> 133, 15 August, pp41-423	New York City	The study found that benchmarking and disclosure reduced energy consumption in New York buildings by 6 per cent over three years and 14 per cent over four year, relative to what would have occurred without benchmarking and disclosure.
Kim, S. and Lim, B (2018) How effective is mandatory building energy disclosure program in Australia. <i>IOP Conf, Series: Earth and Environmental Science</i> 140 (2018) 012106	Australia	The study compared energy use reductions across voluntarily rated buildings using the Green Star program compared to mandatory ratings through NABERS. After accounting for differences across the star rating systems, it was found that mandatory disclosure led to reductions in energy and carbon emissions.
European Commission (2016) Evaluation of Directive 2010/31/EU on the energy performance of buildings. Commission Staff Working Document	Europe	There were numerous findings made in relation to Energy Performance Certificates including:

¹² Hsu, D. (2014) How much information disclosure of building energy performance is necessary? *Energy Policy* 64, pp263-272

Study reference	Country/region	Findings or insight offered
		<ul style="list-style-type: none"> ▪ EPCs have positively influenced property valuation, both for the sale and rental market, hence effectively contributing to a demand driven market for energy efficiency in buildings ▪ There were challenges with limited control of EPCs and inspections ▪ Wider policy moves across EU need to be accounted for in assessing impact of EPCs – for example government subsidies of energy efficiency investments
Fuerst, F. and McAllister, P. (2011) Green Noise or Green Value? Measuring the Effects of Environmental Certification on Office Values. Real Estate Economics v39 1 pp45-36	United States	This study investigated the price effects of environmental certification on commercial real estate assets. The results suggest that, compared to buildings in the same submarkets, eco-certified buildings have both a rental and sale price premium.
Links with overall building sector and construction code		
Hewitt, et al. (2010) The future of energy codes, In: Conf proceedings of the 2010ACEE Summer Study on Energy Efficiency in Buildings, Asilomar; CA		Finding: 'building energy disclosure laws will greatly assist movement towards performance-based energy codes, rather than those based on prescribed energy efficiency measures.
Hsu, D. (2014) How much information disclosure of building energy performance is necessary? Energy Policy 64, pp263-272	United States: New York, Seattle, San Francisco	Study question: how much and what kind of information should be disclosed about building energy efficiency performance and to what purpose? Finding: 'Policy makers should focus on energy efficiency relative to current energy use, and not technical systems' as 'there is significant variation in energy use regardless of systems, and as such it may be cheaper to focus on operational efficiency than technical systems or upgrades'.
Noting the repeated game element of energy disclosure and the building sector		
Weil et al (2006) The effectiveness of regulatory disclosure policies. Journal of Policy Analysis and Management 25 pp155-181	United States	Finding: 'In order for disclosed information to be effective, both users and disclosers must make use of accurate and valid information in a repeated cycle of communication and action'. (From Hsu, 2014)
Bae et al. (2010) Information disclosure policy: do state data processing efforts help more than the information disclosure itself? Journal of Policy Analysis and Management 29 pp163-182	United States	Finding: 'States that engage in efforts to analyse and process the data achieve lower toxic risks than those that simply release the data (from HSU, 2014)

Note: Tokyo's mandatory reporting of energy use is associated with the emissions trading scheme and is required to purchase emissions permits if their use is higher than a regulated cap. Therefore, any assessments of the effectiveness of Tokyo's mandatory disclosure program would not be transferable to the current Australian context.

Source: The CIE.

3.3 Questions for stakeholders – studies on impact of disclosure

10 Are there additional studies or literature on the impact of mandatory and voluntary disclosure in Australia and overseas that we should consider?

2015 Review of the CBD program

In 2015, ACIL Allen Consulting conducted a review of the CBD program.¹³ This review had six key findings:

- The Commercial Building Disclosure program is an appropriate program that complements a suite of related government policies and programs, including the Emissions Reduction Fund (ERF).
- The CBD program has been effective in inducing positive behaviour change in relation to commercial building energy efficiency in affected buildings, resulting in significant benefits.
- The CBD program is expected to deliver further benefits in energy reduction and greenhouse gas abatement.
- CBD remains the principal Commonwealth Government program for driving energy efficiency improvements in the office sector.
- There are several viable options for the future funding of the CBD program.
- Future evaluations of energy efficiency programs would benefit from improved data relating to pay-offs of energy efficiency upgrades and workforce productivity improvements.

It recommended that

- The CBD program should continue.
- The focus for the CBD program should remain on office buildings.
- The CBD program should be expanded to include smaller office spaces
- The CBD program should continue to harness opportunities for further process and administrative efficiency improvements.
- There are clear opportunities to improve the TLA component of the CBD program

CBD Program data

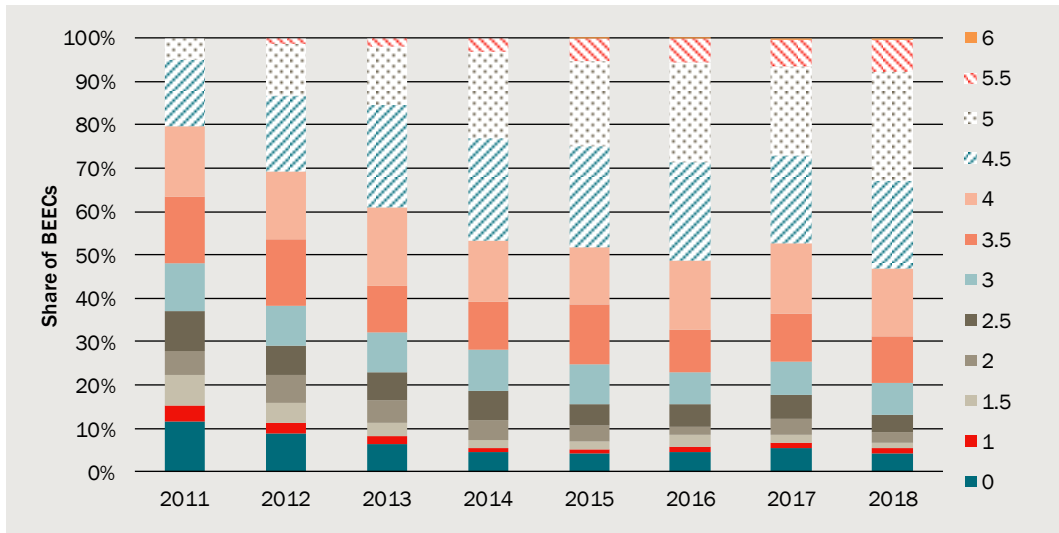
The CBD scheme makes public its data on the ratings and energy use achieved by buildings each time they obtain a Building Energy Efficiency Certificate (BEEC). This data shows substantial improvements in building performance over time.

- Since 2011, the share of buildings covered by the program achieving higher ratings has increased substantially (chart 3.4).
- The average star rating achieved across BEECs has increased by almost one star from 2011 to 2018, and energy use per m² of floor space has fallen substantially (chart 3.5).

¹³ ACIL Allen Consulting 2015, *Commercial Building Disclosure: Program review*, prepared for Department of Industry and Science, <https://prod-cbd.energy.slicedtech.com.au/sites/prod.cbd/files/CBD%20program%20review%20final%20report.pdf>.

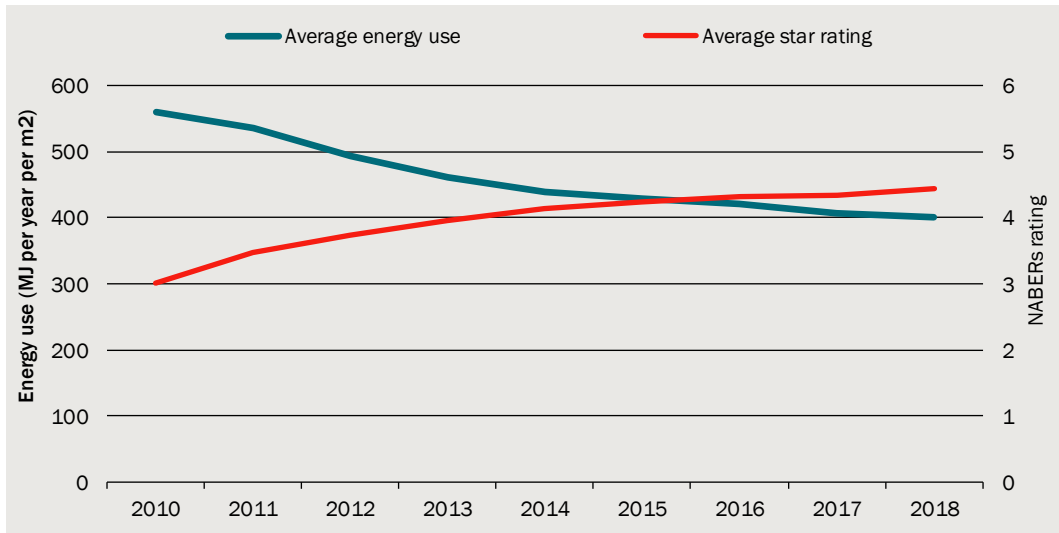
The changes in building energy use and star ratings will not be solely attributable to the CBD program. Other factors such as increasing electricity prices, Government requirements for higher star buildings, corporate sustainability objectives and other government programs will also have increased the energy efficiency of buildings.

3.4 Share of BEECs achieving different star ratings



Note: For base buildings only.
Data source: CBD dataset, CIE analysis.

3.5 Average energy use and average star rating



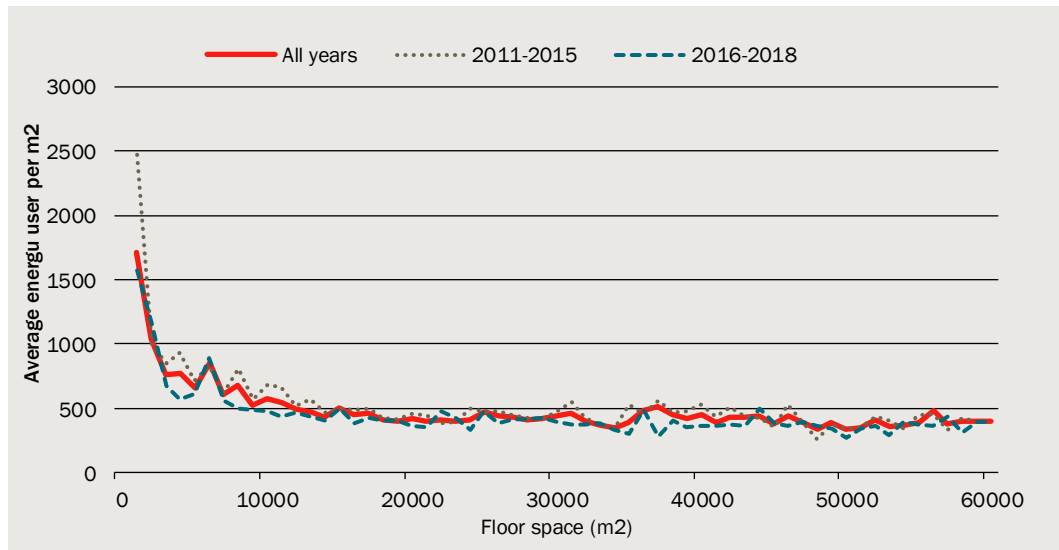
Note: For base buildings only. Averages are floor area weighted averages.
Data source: CBD dataset, CIE analysis.

Of even greater interest is the pattern of energy use and savings across different buildings.

- Buildings with less floor space have higher energy use per m2 (chart 3.6) and achieve lower star ratings. This supports the changes made to reduce the floor space threshold for mandatory disclosure in 2015.

- Buildings that achieve a low star rating in their first BEEC improve much more rapidly than other buildings (chart 3.7). A building that receives an initial rating of 0 to 1.5 stars subsequently improves by over 2 stars. A building that receives an initial rating of 1.5 to 3 stars improves by about one star. While a building that receives an initial rating of over 3 stars improves by less than half a star. This suggests the BEEC is conveying information that is acted on to reduce energy use subsequently.
- Tracking changes in individual buildings over time shows that there are substantial variations in the ratings achieved, and that energy use can go up and down fairly rapidly. This suggests that the CBD scheme is providing information that can allow energy use to be reduced fairly quickly, rather than requiring major changes such as building refurbishment.
 - our review of energy efficiency audits suggest many recommended changes are behavioural. It is also possible that in some situations changes made to improve NABERs rating shift energy use outside of the base building to improve NABERs ratings, but do not change energy use in total¹⁴
- The energy use for a building starting with a star rating of 1 to 1.5 falls by, on average, 160 MJ per m² from its first BEEC to the last recorded BEEC. The falls are smaller for buildings with higher initial ratings. The effects of the scheme therefore look to be particularly significant for buildings with high initial energy use.

3.6 Average energy use across different building sizes

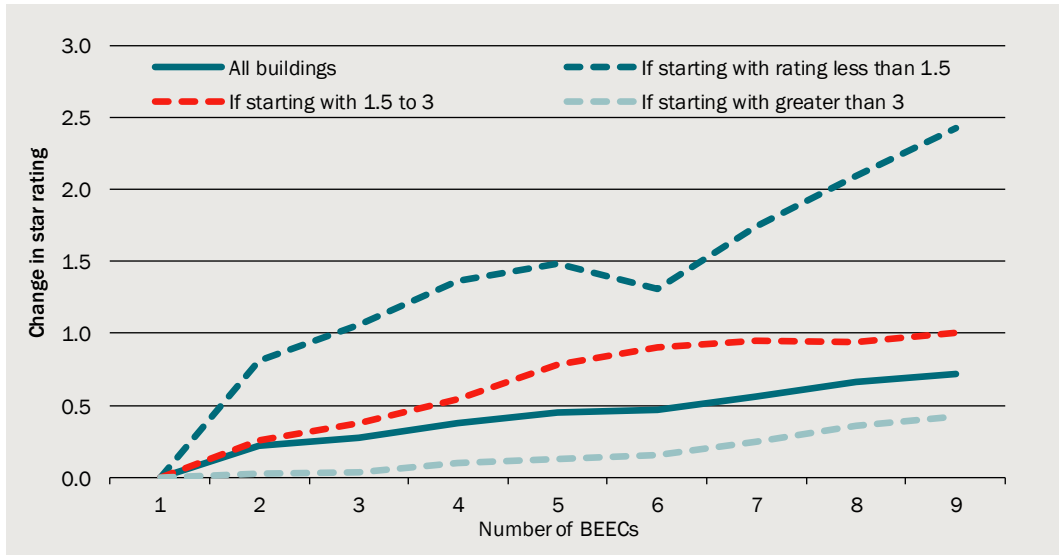


Note: For base buildings only.

Data source: CBD dataset, CIE analysis.

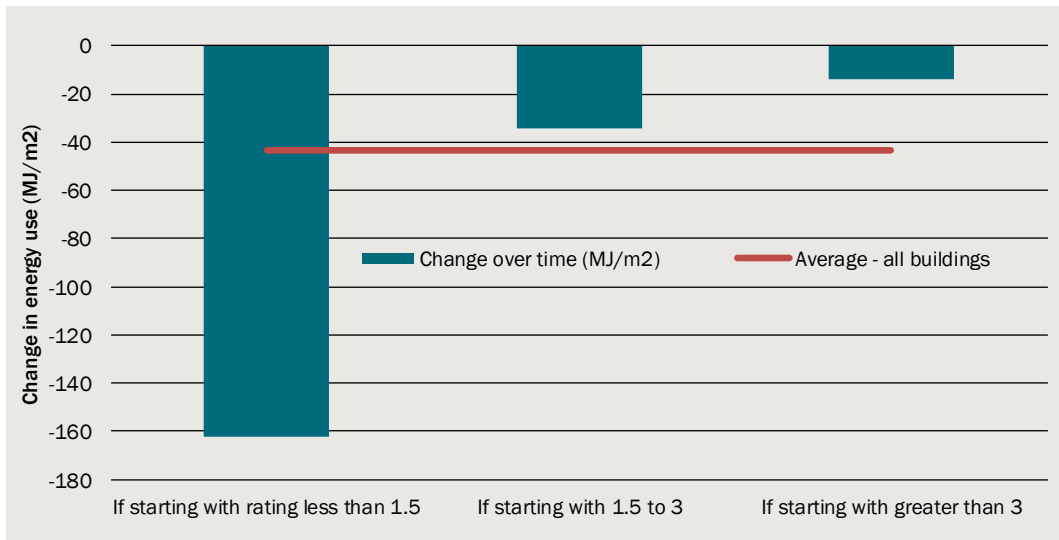
¹⁴ For example, energy efficiency audits we have reviewed showed that most activities were to reduce energy use, but some involved reducing energy use captured by the NABERs scheme.

3.7 Star rating after receiving a BEEC



Note: For base buildings only.
Data source: CBD dataset, CIE analysis.

3.8 Energy use change by initial star rating



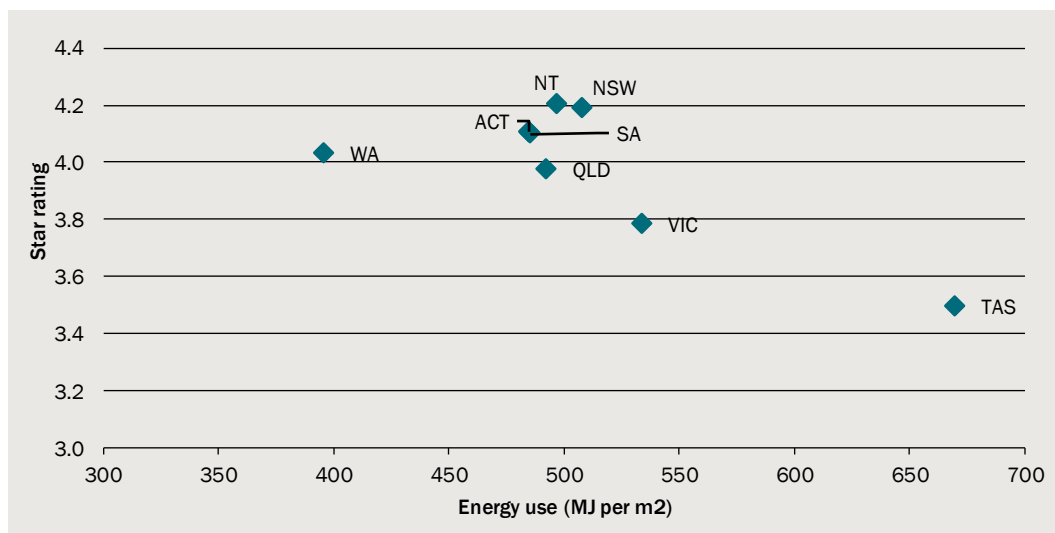
Note: For base buildings only. From first BEEC to last BEEC for each building.
Data source: CBD dataset, CIE analysis.

The star ratings provided for buildings are benchmarked for factors such as climate, energy sources, size and hours of occupancy (as discussed in box 1.1). Despite this, buildings with different characteristics do achieve systematically different star ratings. As discussed above, small buildings tend to achieve lower star ratings (and have higher energy use). Further, buildings that are rated for higher numbers of hours of use tend to achieve better star ratings, while also having higher energy use.

Across jurisdictions, there are different levels of performance in average star ratings achieved (chart 3.9). This is correlated with energy use, but there are variations, such as NSW achieving the second highest star ratings, while having higher energy use per

square metre than four other jurisdictions. These differences reflect the benchmarking process.

3.9 Energy use and star rating across states and territories



Note: Measures are averages weighted by floor space.

Data source: CIE analysis of the CBD dataset, covering all years.

The initial examination of data leads to a number of questions and issues, on which we are seeking stakeholder feedback, ranging from the motivations for improvements in energy efficiency to the types of actions taken.

3.10 Questions for stakeholder – motivation for improving energy performance

- 11 For building owners/managers, what was the main motivation for improving base building performance?
- 12 For tenants, what was the main motivation for improving the TLA rating?

The cost of improving energy performance

While there is good information on the impacts of participants in the CBD Program on energy performance, less is known on how those improvements have been achieved (and the associated cost), as well as the motivation for those changes.

There are numerous approaches to improving the energy performance of a building (and therefore the NABERS rating). This could include:

- refurbishments that improve the energy efficiency of the building fabric (such as glazing)
- installation of newer and more efficient equipment (such as HVAC equipment)?
- installation of more efficient lighting
- installation of energy saving technologies (such as timer switches)

- adjustments to building operations.

Each approach to improving the energy performance of a building will have different costs. These costs could include:

- the financial cost of purchasing and installing any new equipment
- the cost of engaging energy consultants to identify energy saving opportunities
- staff costs (i.e. the cost of staff time arranging for improvements to be made)
- loss of rental income (such as during major refurbishments).

3.11 Questions for stakeholders – the cost of improving energy performance

- 13 What are the main ways that building owners/managers have improved their NABERS ratings as a result of the CBD Program?
- 14 Have these changes generally achieved the expected energy savings?
- 15 What are the main costs of implementing these measures? Are there any costs other than those identified above?

4 Potential changes to the CBD program

There are a range of options for expanding of the CBD program, including:

- extending the classes of building covered by mandatory disclosure requirements
- changes to the minimum floor space threshold.

If the CBD Program was to be expanded, the issues that would need to be considered include:

- the floor space thresholds that would trigger the requirement to obtain a BEEC
- the trigger for requiring a BEEC (i.e. sale/lease or some other trigger)
- the information to be disclosed on a BEEC (e.g. a NABERS rating or some other information)
- how and to whom that information would be disclosed.

Table 4.1 sets out some key characteristics of for various building types that have been previously identified as potential areas for expansion.

4.1 Possible expansion areas

Metric	Hotels ^a	Shopping centres ^a (over 12000m ²)	Data centres ^a (co-location only)	Office tenancies ^b
Energy and rating information				
Energy use (2017, PJ/year)	11	9	7	8
Number of facilities	4 445	588	240	23 580
Rating tools available	NABERS, Green Star and others	NABERS and Green Star	NABERS and PUE	NABERS, TLA
Number of facilities with NABERS rating (2017)	4	150	11	200
Share voluntarily using NABERS (2017) ^c	<1 per cent	34 per cent	5 per cent	8 per cent
Leasing and sale frequency				
Share leased	Low (all rooms are 'leased' out to guests)	High	High	High
Turnover of leases	Low	High	Low	High
Turnover of sales	Very low (1 per cent)	Moderate (10 per cent)	High	Na

^a Uses floor area where reported, or number of facilities where floor area is not available. Estimate for 2016/17 for buildings covered by a disclosure scheme from Energy Consult and Energy Action 2018, *CBD expansion Feasibility study: Shopping centres, data centres and hotels*, prepared for Department of the Environment and Energy, May. ^b Energy Action 2018, *Expansion of mandatory disclosure to office tenancies*, prepared for the City of Sydney, September. ^c Uses floor area where reported, or number of facilities where floor area is not available.

Note: Data centres is for co-location data centres that lease out space. This is likely to be a small part of the overall data centre market.
Source: As noted above

Scope of the CBD Program

Currently, the CBD scheme applies to office buildings, when more than 1000 square metres are sold or leased. Measure 3.2.2 of the National Strategy on Energy Efficiency (2009) proposed the CBD Program be expanded to government operations and be considered for other building types. Measure 9 of the NEPP Work Plan (2015) focuses on the potential to expand commercial building ratings and disclosure. Expanding the CBD Program could include: expanding mandatory disclosure requirements to other types of buildings; and/or reducing the floor space threshold to which the Program applies.

Previous work for DEE has identified that there may be scope to expand the CBD Program to:

- Office tenancies
- Hotels
- Shopping centres
- Data centres [REF].

4.2 Questions for stakeholders – scope of the CBD Program

- 16 Should the CBD Program be expanded to include:
 - a) Office tenancies?
 - b) Hotels?
 - c) Shopping centres?
 - d) Data centres?
 - e) Other building types?
- 17 To what extent is there scope to improve the energy performance of these buildings?
- 18 Are there any barriers preventing building owners/operators from improving energy performance without a mandatory disclosure requirement? Which of these barriers would mandatory disclosure requirements address?
- 19 What minimum thresholds should apply to:
 - a) Office space?
 - b) Office tenancies?
 - c) Hotels?
 - d) Shopping centres?
 - e) Data centres?
 - f) Other building types (where relevant)?
- 20 What exceptions and exemptions should apply?

When should a BEEC be required?

As outlined previously, the requirement for a BEEC is triggered when office space greater than 1000 m² is offered for sale or lease (a NABERS rating remains current for one year, while a TLA remains current for five years). However, the sale or lease trigger may be less effective for other types of buildings that are sold or leased less frequently.

Alternatives could include: a time-based trigger, such as a requirement to obtain a BEEC annually or less frequently. However, previous legal advice has suggested that time-based triggers may not be possible under Commonwealth legislation [REF].

4.3 Questions for stakeholders – trigger requiring a BEEC

- 21 Currently, the requirement for a BEEC is triggered by sale or lease of office space covered by the CBD Program. What are the alternative triggers that could be used?
- 22 What are the barriers (including legal, logistical or other barriers) to these alternative triggers?
- 23 What is the most appropriate trigger for a BEEC for:
 - a) Office buildings?
 - b) Office tenancies?
 - c) Hotels?
 - d) Shopping centres?
 - e) Data centres?

What information should be disclosed?

Currently, a BEEC must disclose:

- either a NABERS base building or whole building rating; and
- a TLA.

There are NABERS tools (and some other rating tools) available for all of the building classes under consideration to be included in the CBD Program (see table 4.1 above). However, a NABERS rating may not be the most relevant metric in all cases.

In general, the most relevant metric will depend on how the disclosed information is used. For example, if the disclosed information is used as an indicator of future energy bills (compared to other properties), a NABERS rating — which is based on greenhouse gas emissions with adjustments made for the size of the building (and other factors) — may not be the most relevant indicator. By contrast, if the disclosed information is used mainly so that businesses can voluntarily reduce their greenhouse gas emissions (to satisfy self-imposed corporate social responsibility requirements), a metric based on greenhouse gas emissions may be more relevant.

4.4 Questions for stakeholders – disclosure requirements

- 24 For each building class under consideration to be included in the CBD Program, what information should be disclosed? What are the alternatives to a NABERS rating?
- 25 Would a NABERS rating (or alternative indicators) provide useful information to relevant stakeholders over and above the information already available?
- 26 How would the relevant information be used by stakeholders?
- 27 How should the information be disclosed? To whom?

Program administration

The CBD Program has a range of other administrative features, which may influence the effectiveness of the Program, as well as the costs incurred by Program participants. These include:

- the arrangements for certifying CBD assessors
- compliance and enforcement arrangements
- arrangements for obtaining exemptions (where necessary)
- the public disclosure of information.

4.5 Questions for stakeholders – program administration

- 28 What is the cost of obtaining a BEEC?
- 29 How could the administrative arrangements for the CBD Program be improved so that the Program operates more efficiently?



THE CENTRE FOR INTERNATIONAL ECONOMICS
www.TheCIE.com.au