Australian Government

Department of the Environment, Water, Heritage and the Arts

Mandatory Disclosure of Commercial Office Building Energy Efficiency

Regulation Impact Statement

19 June 2009

The Allen Consulting Group

This consultation regulation impact statement was prepared by the Allen Consulting Group for the Department of the Environment, Water, Heritage and the Arts on behalf of the government jurisdictions and key stakeholders party to the National Framework for Energy Efficiency (NFEE).

Disclaimer

The information provided in this document is considered to be true and accurate at the time of distribution.

The views and opinions expressed do not necessarily reflect those of the Australian Government, the Minister for the Environment, Heritage and the Arts or the Minister for Climate Change and Water or the government jurisdictions party to NFEE.

While reasonable efforts have been made to ensure that the contents of this document are factually correct, the Commonwealth or the government jurisdictions party to NFEE do not accept responsibility for the accuracy or completeness of the contents, and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this consultation regulation impact statement.

Contents

Executive Summary

Mandatory disclosure of commercial building energy efficiency was proposed in December 2004 under the Stage One implementation plan of the National Framework for Energy Efficiency (NFEE) — a joint initiative of the Commonwealth, State and Territory Governments under the Ministerial Council on Energy (MCE).

This Regulation Impact Statement (RIS) assesses options for improving the energy efficiency of the commercial office building sector in Australia. It has been commissioned by the Department of the Environment, Water, Heritage and the Arts on behalf of State and Territory Governments to assess the proposal under the NFEE to introduce a national scheme for the mandatory disclosure of the energy efficiency at the point of sale or lease for office buildings above certain size thresholds.

The rationale for government intervention

This RIS found a number of factors in the market for commercial office space in Australia that impede the take-up of economically feasible energy efficiency improvements:

- there are information asymmetries between building owners and prospective tenants or buyers, where tenants and buyers are placed at a disadvantage in understanding the energy efficiency performance of premises on the market;
- split incentives occur in the market, where those in the best position to affect change have little or no incentive to do so; and
- organisational failures exist, where there are information asymmetries and split incentives within firms which mean that low or no cost opportunities are not taken-up.

Existing measures do not currently address these problems. The Carbon Pollution Reduction Scheme will assist in reflecting environmental costs of energy use, but will not address information failures in the market. This RIS therefore focuses on potential options which will address these barriers.

Assessment of options

Consistent with the COAG guidelines for best practice regulation, this RIS provides an assessment of the 'problem' requiring government action, the objective of government action, and three options for change (compared with the status quo option of no further government intervention). The following options are assessed in this RIS from which the preferred option was chosen (Option 1(a) with a 2000 m^2 threshold).

Option 1(a) — Mandatory disclosure of energy efficiency at the point of sale and lease.

Under this Option property owners would have to report a National Australian Built Environment Rating System (NABERS) Energy star rating, tenant lighting details and energy efficiency guidance to buyers or tenants, where the property meets certain criteria. Two permutations of the size of properties to which obligations would apply are assessed (either Net Lettable Area [NLA] larger than 2000 m^2 or larger than 5000 m^2).

This option also includes the consideration of two additional sub-options:

- *Option 1(b):* tenants of properties over 2000m^2 be required to conduct annual NABERS Energy tenancy assessments; and
- *Option 1(c):* owners of new buildings be required to disclose an energy efficiency rating through using a NABERS Energy simulation protocol (similar to the modelling requirements of a NABERS Energy Commitment Agreement).

It should be noted that neither of these sub-options were supported by the economic analysis.

Option 2 — Industry code of practice.

This Option is similar to Option 1, except that there is no explicit regulation. Instead, the industry (in this case, representing building owners) develops an industry code of practice, which participants can voluntarily adopt. By signing up to the code, building owners are making a commitment to provide energy efficiency information in sale or lease transactions.

Option 3 — Mandatory minimum energy efficiency standards.

This Option moves away from an information approach to addressing the problem, instead mandating that building owners meet minimum energy efficiency standards within a stated timeframe. Where applicable, the triggers would be the same as for Option 1(a) — mandatory disclosure. That is, where the NLA is greater than 2000 m^2 or greater than 5000 m^2.

The recommended approach — mandatory disclosure of energy efficiency at the point of sale or lease (buildings with NLA over 2000m^2)

This RIS concludes that the recommended approach by governments should be a requirement for mandatory disclosure of NABERS Energy base building ratings, tenant lighting details and energy efficiency guidance for buildings being sold or leased over 2000m^2 NLA. The analysis found that this scheme — Option 1(a) (over 2000 m^2) — is the most cost effective option to address the identified problems in the market.

The impact analysis of options found that this scheme would cost $18.7 million over 10 years (NPV). These costs include costs to building owners of purchasing energy efficiency information and costs to government of administering the scheme. The costs also include time costs for building owners in providing information for assessments on their property.

The estimate of costs is low considering the scope of the scheme, reflecting the low cost nature of information tools in comparison to other regulatory options. The key costs incurred are those relating to the production of the information itself, as the scheme does not mandate upgrades or increased energy efficiency *per se* (though the intention of requiring the provision of the information is to encourage these indirectly).

The assessment of benefits of the scheme considered both direct and indirect impacts:

- *direct benefits* of the scheme are to those tenants and/or prospective buyers who are able to use the disclosed ratings to choose a premise with a higher energy efficiency rating — the benefits achieved are through savings for these parties of occupying higher rated premises.
- *indirect benefits* of the scheme can be achieved through voluntary energy efficiency improvements, and associated greenhouse gas abatement, that may occur with a better informed marketplace.

Direct benefits of mandatory disclosure

The direct benefits of mandatory disclosure are assessed in this RIS using a break-even analysis. This approach sets a threshold point where benefits are sufficiently high to cover costs. It is important to note in this analysis that the break-even target is *not*:

- the expected total benefit of the scheme, *or*
- the target benefit for government to be satisfied that the scheme is a 'success'.

What the break-even analysis does is set a threshold specifically for the cost benefit analysis to test the reasonableness of the costs imposed against potential *direct* benefits.

The break-even point for direct benefits from mandatory disclosure is **3.9 per cent** of property transactions per year over the 10 year period of the scheme (when applied to buildings with NLA over 2000m^2). This means that *at least* this proportion of buyers or tenants need to use the information in their property decisions (that is, use the information to select a more energy efficient building). Sensitivity testing of this option concludes, with 90 per cent confidence, that the estimate of the break-even level of application by buyers and tenants is in the range of 2.6 to 4.9 per cent.

The low break-even point reflects the low costs of the scheme. The critical test for this analysis is whether this threshold is reasonable, given the nature of the information being provided. The analysis found that, while information disclosure is an indirect method to influencing behaviour (and thus its impact should not be overstated), there is sufficient evidence of growing interest in the market in 'green' performance to indicate that this threshold is certainly achievable.

Potential indirect benefits

This analysis shows that direct benefits from the scheme are likely to be sufficient to justify the costs of the scheme. There is also scope for benefits through a more informed market place. Problems of information asymmetry in markets often lead to adverse selection — where higher quality products are under supplied or driven out of a market because consumers cannot distinguish them from poor quality products. The provision of information can, where it is sufficient across a market, assist in the identification of higher quality products, and allow the market to provide a differentiated product. In the case of energy efficiency, information disclosure through ratings and reports on potential improvements in performance can assist in increasing awareness of energy efficiency opportunities within organisations — thereby addressing some organisational failures.

The potential for voluntary energy efficiency improvement through a more informed market is set out in the table below. This provides scenarios for potential voluntary improvement in energy efficiency. It shows that voluntary improvement in a relatively small proportion of the market results in benefits (through energy savings) in the range of $13.5 million to $54 million for Option 1(a) (over 2000 m^2). These incremental improvements can be achieved through low cost opportunities such as improved management, maintenance or behavioural change on the part of occupants. A key factor in this analysis is that as these improvements are voluntary — they should only occur where owners consider the improvement are cost effective for their property (that is, specific improvements are not mandated).

ES.1

POTENTIAL BENEFITS OF VOLUNTARY ENERGY EFFICIENCY IMPROVEMENT

	Proportion of building stock	>2000 m^2 NPV (millions) over 10 years
Improvement by ½ a NABERS Energy star rating	5 per cent	$13.5
	10 per cent	$27.0
Improvement by 1 NABERS Energy star rating	5 per cent	$27.0
	10 per cent	$54.0

Characteristics of the proposed scheme

Under the mandatory disclosure scheme recommended in this RIS, building owners would be required to disclose the energy efficiency of their building — expressed as a Building Energy Efficiency Certificate (BEEC), which would include:

- a National Australian Built Environment Rating System (NABERS) Energy star rating for the base building;

- brief guidance material that provides owners and tenants with information on energy efficiency investment opportunities (These opportunities are measured in potential star improvements and given a difficulty rating of high, medium or low that is dependent on cost and operational impact); and
- information on tenant lighting power density and controls.

The NABERS Energy rating tool is already available to building owners and tenants, with many of them making use of the tool on a voluntary basis.

Mandatory disclosure will require that when a commercial office building with a NLA greater than 2000 m^2 or any part of such a building that is greater than 2000 m^2 NLA, is to be sold, leased or sub-leased, an appropriate energy efficiency certificate for the building must be disclosed.

Figure ES.1 illustrates the central requirements of the mandatory disclosure proposal.

Figure ES.1

GRAPHICAL OVERVIEW OF THE CENTRAL REQUIREMENTS FOR MANDATORY DISCLOSURE

Source: Allen Consulting Group illustration, data sourced from Mandatory Disclosure Regulation Document

The scheme will apply to three main scenarios:

1. when a whole building with an NLA above the threshold is sold;
2. when a whole building with an NLA above the threshold is leased or subleased; and
3. when a part of a building with an NLA above the threshold is leased or subleased.

Table ES.2 summarises the types of energy efficiency information required depending on the scenario under which mandatory disclosure is applied.

Table ES.2

OVERVIEW OF ENERGY EFFICIENCY RATING REQUIREMENTS FOR OPTION 1

Whole building >2000m^2 NLA	Sale	Lease	Sublease
Base building rating	✓*	✓*	If available
Tenancy lighting details	✓ (for all tenancies in building)	✓	✓
Base building guidance	✓	✓	If available
Tenancy guidance	✓ (for all tenancies in building)	✓	✓
Part building > 2000 m^2 NLA	**Sale**	**Lease**	**Sublease**
Base building rating	× (Strata titles excluded)	✓*	If available
Tenancy lighting details	✓	✓	✓
Base building guidance	× (Strata titles excluded)	✓	If available
Tenancy guidance	✓	✓	✓

Note: *When a building has inadequate metering to obtain a base building rating a whole building rating must be disclosed.

Complementarity with a Carbon Pollution Reduction Scheme

An information-based scheme such as mandatory disclosure can complement price-based policy tools where information works to address market failures. Where information asymmetries exist, price signals in the market (such as new taxes or subsidies) can have limited effectiveness. Where higher prices are used to provide an incentive to change behaviour, information asymmetries can block this incentive if they do not allow consumers to act on the price signal. Research commissioned by the Australian Sustainable Built Environment Council (ASBEC) supports this conclusion, indicating that energy efficiency improvements in the building sector will support the CPRS, and lower the cost of the scheme because investments in energy efficiency will lower the cost of permits in the scheme (due to lower demand) (ASBEC 2008).

On this basis, mandatory disclosure can complement the Carbon Pollution Reduction Scheme. Analysis in this RIS suggests that a carbon price is unlikely to place significant cost pressures in the commercial office building sector within the next 10 years, if the Carbon Pollution Reduction Scheme commences with a low to moderate carbon price trajectory.

Assessment of other options

Proposal for annual tenancy assessments (Option 1(b))

The proposal to require annual tenancy assessments is not recommended because of the high costs that it would impose on tenants, with insufficient ability for costs to be offset with energy savings. This option would impose a cost of $101.2 million over ten years (NPV) when applied to tenancies greater than 2000 m^2. Offsetting these costs would require voluntary investment in energy efficiency improvement to 24 per cent of the building stock. The ability of tenants to offset the assessment costs annually would diminish over time as lowest cost energy efficiency improvements are implemented. The likelihood of voluntary action to offset assessment costs will therefore reduce over time, making it more likely that tenants would pay assessment costs (as required) but not act on the assessment information to achieve energy savings.

Reducing the frequency of the assessment period from 12 to 36 months would lower the cost of assessment, and set a more realistic break-even target for energy efficiency savings. The benefit of this approach is that it includes (in a more cost effective manner) those long term tenants, which are not receiving information through engaging in sale or lease transactions. That said, there are likely to be more efficient information-based approaches that would have a similar impact, without as high a regulatory burden.

Proposal to require modelling under a NABERS Energy simulation protocol for new buildings (Option 1(c))

This RIS also assessed the option of requiring that new buildings be rated under a NABERS simulation protocol. This requirement would apply to all buildings sold within 12 months of construction, and therefore not able to be rated using the normal NABERS method.

Analysis of this option found that it adds an additional $14.8 million in costs to building owners (for properties larger than 2000 m^2). While the total quantum of these costs is not large, the actual costs to individual owners are significant (around $40 000), for a simulation of energy efficiency which is not necessarily a better indicator than the lower cost assessments that can be undertaken 12 months after occupation. The cost effectiveness of this option is therefore lower than requiring a NABERS Energy assessment 12 months after occupation.

It is also worth noting that the energy efficiency of new buildings is typically higher than that of existing building stock, because of requirements in the Building Code of Australia and because the cost of investment in energy efficiency design and equipment is significantly lower for new construction, compared with investing in improvements in existing buildings.

Industry-lead voluntary disclosure (Option 2)

This RIS also assessed the option of implementing an industry-lead code of practice for disclosure of energy efficiency performance at the point of sale or lease. The assessment found that, while there is already some voluntary action being taken by industry, a code would have a positive impact on disclosure (compared with the current practice), though this impact would be less than for mandatory disclosure. Further, it is likely that there would be positive bias in disclosure on a voluntary basis, in favour of better performing buildings. Such as scheme would therefore have lower benefit for buyers and tenants, as it would provide less information with which to compare properties, and would have reduced impact on the information in the market, compared with mandatory disclosure.

Minimum standards of energy efficiency for existing buildings (Option 3)

As an alternative to an information-based tool, this RIS also assesses the option of imposing a more stringent regulatory requirement than mandatory disclosure — minimum standards for energy efficiency for existing buildings.

Mandatory minimum performance standards would impose the highest cost on building owners of all options, with benefits from energy savings not offsetting costs within a 10 year timeframe of the minimum standard being achieved. As such the net cost of the option would be $334 million for properties larger than 2000 m^2 or $277 million for properties larger than 5000 m^2.

Chapter 1

The nature and extent of the problem

Best practice regulation aims to address market failures at minimum cost to consumers and industry. In order to make a case for government intervention, a RIS must first establish the problem that the proposed regulations are seeking to address. This is necessary in order to develop appropriate options — whether regulatory or non-regulatory — that can directly address the problem, and establish an objective framework, within which the relative performance of options can be compared.

In accordance with COAG guidelines for best practice regulation[1], this chapter:

- presents evidence on the magnitude (scale and scope) of the problem;
- documents relevant existing regulation at all levels of government, and demonstrates that it is not adequately addressing the problem;
- identifies the relevant risks and explains why it may be appropriate for government to act to reduce them; and
- presents a clear case for considering that additional government action may be warranted, taking into account existing regulation and any risk issues.

This chapter considers the extent to which there is a need for government intervention to improve the energy efficiency of commercial office buildings.

This assessment suggests that an option which focuses on provision of information at transactions may provide a benefit to market participants. Alternatively, mandatory minimum standards may be a viable option where the requirement for market signals is removed and regulation sets standards for performance (effectively assuming that the market is not able to achieve those standards through the willingness to pay of consumers).

1.1 The commercial office market in Australia

For the purposes of this analysis, commercial office buildings are taken as being defined by the NABERS Energy Protocol, which states:

> Office Building: As defined by the NABERS Energy Protocol i.e., as a place in which business, clerical or professional activities are conducted. A typical office also includes areas that are not technically considered "office" spaces but support the people carrying out those tasks. This includes meeting rooms, kitchenettes, storage spaces, computer rooms, and speciality areas such as child minding.
>
> New office building: A recently constructed office building which is not in a stage where it can be rated under NABERS Energy.[2]
>
> Existing office building: A building which is at a stage where it can be rated under NABERS Energy i.e., which has been occupied for more than 12 months. (DEWHA 2008)

[1] '*Best Practice Regulation – A Guide for Ministerial Councils and National Standard Setting Bodies (COAG October 2007*. RISs developed under the COAG guidelines are reviewed by the Office of Best Practice Regulation (see http://www.obpr.gov.au)

[2] One of the data inputs to a NABERS rating is 12 months worth of energy expenditure data. Buildings that have not been occupied or operational for 12 months will not have the associated data, and are treated differently.

The size of the commercial office property market in Australia is not known exactly, however, there are good data on the number of buildings and the floor space of commercial office buildings in the major built-up areas in and around the capital cities. Currently, there are over 21 million square metres of commercial office property in major Australian business centres, spread across 3980 buildings (Property Council of Australia 2008). Of this, around 19 million square metres are accounted for by 2170 buildings with NLA of greater than 2000m^2, and just over 16 million square metres are accounted for by 1174 buildings with Net Lettable Area (NLA) of greater than 5000m^2 (Property Council of Australia 2008).

Information on sales of commercial properties for 2002 shows that owner-occupiers make up less than one per cent of the market, however, it is not known the extent to which this applies to the commercial office property market in more recent years (IBISWorld 2008). There is also not currently reliable data on the proportion of commercial office stock that have been built (or redeveloped) to be compliant with energy efficiency requirements in the BCA. However, given the relatively short time since these requirements were introduced, it is expected that it remains a low, but growing, proportion.

As an aid to comparison, a 5000m^2 building encompasses an area a little over two-thirds the size of a standard soccer field or would comprise eight storeys of floor space measuring 25 metres by 25 metres. A 2000 m^2 property would comprise a little over three of these floors.

1.2 Current measures and ratings of energy efficiency for commercial office buildings

Research suggests that the commercial building sector (of which office buildings are one component) has experienced sustained growth in energy use in the 15 years to 2006 (87 per cent growth between 1990-91 and 2005-06). This trend is likely driven by strong economic conditions, expanded working hours in the services sector and greater use of energy-intense equipment, such as computers, and fixtures, such as air-conditioning and feature lighting.

This growth in energy *use* does not necessarily correlate with lower energy efficiency *performance* — energy efficiency is a measure of the ratio of inputs to outputs, therefore efficiency can improve while use increases. Growth in energy use does indicate, however, that efficiency is more important for that sector, as the potential gains from higher efficiency are increased at higher rates of energy use.

Understanding the potential problem in relation to energy efficiency requires an assessment of current performance. The actual energy efficiency performance of the commercial office building stock may be determined by assessing current building energy efficiency ratings, as well as identifying where there are minimum standards for performance (such as through building regulation).

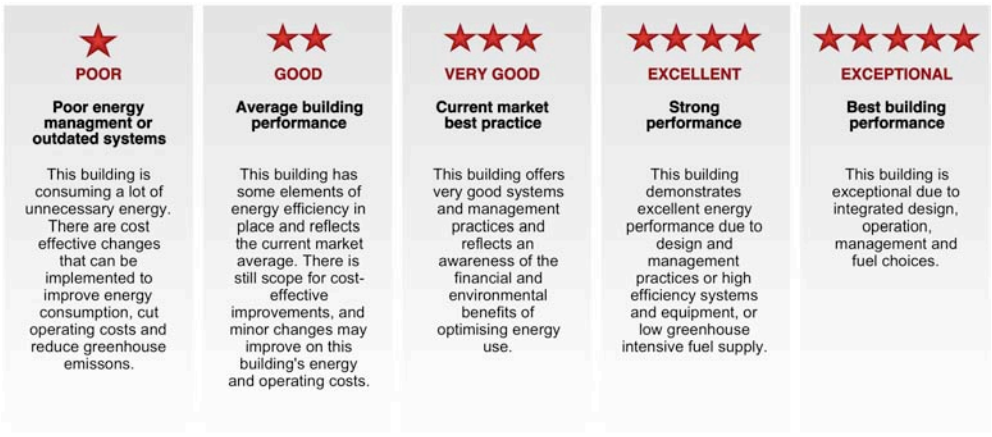
NABERS Energy rating tool

The NABERS Energy assessment tool is the most extensively used rating tool in the commercial office property market in Australia. It was previously known as the Australian Building Greenhouse Rating (ABGR). The Commonwealth, NSW, Victorian, WA, SA and ACT Governments have adopted NABERS Energy targets in their procurement policies for office accommodation.

The NABERS Energy scheme benchmarks the actual operational energy use of existing commercial office buildings, measuring energy use per m^2 of NLA. This energy efficiency measure is given a greenhouse conversion factor, taking into account regional variations in the greenhouse intensity of the energy supplied to the building. The NABERS Energy benchmark requires 12 consecutive months of a building's energy efficiency and greenhouse performance, which is compared against the benchmarks to award star ratings. Figure 1.1 provides details on the 5 star ratings under NABERS.

Figure 1.1

NABERS ENERGY BANDWIDTHS



Source: NSW DECC

Among office tenants, research suggests that 61 per cent have some level of awareness of NABERS (Colliers International 2008). A recent survey of building owners found that 26 per cent of organisations were reporting using NABERS (then ABGR) ratings (Jones Lang LaSalle 2008). NSW DECC advise that:

> The NABERS ratings are actively promoted through advertising, media relations and other marketing initiatives, supported by funding from states across Australia. It is also promoted through third party initiatives, such as the CitySwitch and Building Tune-up programs, and by building and portfolio owners who publicise their ratings.

Indicators of energy efficiency of the commercial office building stock

Measuring the current energy efficiency of commercial office buildings requires a significant proportion of buildings to have undergone energy efficiency assessment. Unfortunately, in Australia, while the proportion of rated stock is growing each year, a majority of buildings are currently not rated for energy efficiency. Those that are rated, are predominantly large and higher grade quality buildings (that is, Premium, A or B grade buildings). Even in the large end of the market, a majority of buildings have not yet been rated for the energy efficiency:

- for properties between 2000m^2 and 5000m^2 in size, only 13 per cent of properties have had a NABERS assessment.
- in the over 5000m^2 category, it is estimated that up to 70 per cent of properties have not had *at least one* NABERS assessment in the period from 1999 to 2007.

Assessment of a sample of reported NABERS Energy star ratings conducted between 2004 and 2008 found an average rating from 2.8 stars (without adjustments for green power) for a first assessment, and 3 stars for a second assessment. These figures were derived from averaging data from buildings which have been voluntarily rated under NABERS Energy. Industry best practice is currently defined as a rating of 3 stars under NABERS Energy. This was determined in 1999 when the scheme was established. However, a more recent survey of ratings indicates that a performance of 4 to 4.5 NABERS stars is a more accurate indication of 'best practice', with several buildings achieving this performance level. It is reasonable to estimate that industry (on average) is lagging at least one to one and a half stars behind current best practice – this equates to a 20 to 30 per cent lag in energy efficiency between the an average building and industry best practice.

Determining performance based on currently rated buildings is likely to result in a positively biased result. There are strong incentives for owners of high quality, better performing buildings to invest in an energy efficiency rating to promote the energy efficiency performance of their building in the market. This observation is supported by research by the Warren Centre which found that disclosing a NABERS rating to tenants is *positively correlated* with a higher NABERS rating (by 0.5 stars) (Warren Centre 2009).

Another benchmark for a 'good' or desirable minimum energy efficiency standard is the star rating achieved by new or redeveloped buildings that comply with the Building Code of Australia's (BCA's) minimum energy efficiency standards (discussed further below). The compliance standards in the BCA do not directly translate to NABERS star ratings, because the BCA standards are design based, whereas NABERS ratings are derived from actual occupation, and operations in a commercial building over a 12 month period. Estimates of the approximate NABERS rating associated with a BCA compliant building are shown in Table 1.1. A simple average across the jurisdictions gives an average of 3 stars — the same as the current industry best practice.

Table 1.1

IMPLIED NABERS RATINGS OF BCA COMPLIANT BUILDINGS

City	Raw NABERS score	Minimum adjusted rating*	Maximum adjusted rating*
Adelaide	4.0	2.5	3.0
Brisbane	4.0	2.5	3.0
Canberra	4.0	2.5	3.0
Darwin	4.0	2.5	3.0
Hobart	5.0	3.5	4.0
Melbourne	3.5	2.0	2.5
Perth	3.5	2.0	2.5
Sydney	4.5	3.0	3.5

Source: (Team Catalyst 2008)
Note: *The raw NABERS score is adjusted for the difference in scope between the BCA requirements and the NABERS criteria. This includes adjustments for estimated ABGR stars compensated for ventilation, car parks, external lighting, lifts (within NABERS, but not BCA, scope), discrepancy between simulated and measured (that is, design versus operational energy efficiency), and gross floor area (BCA) versus net lettable area (NABERS) measurements.

1.3 The potential for energy efficiency improvement — the energy efficiency 'gap'

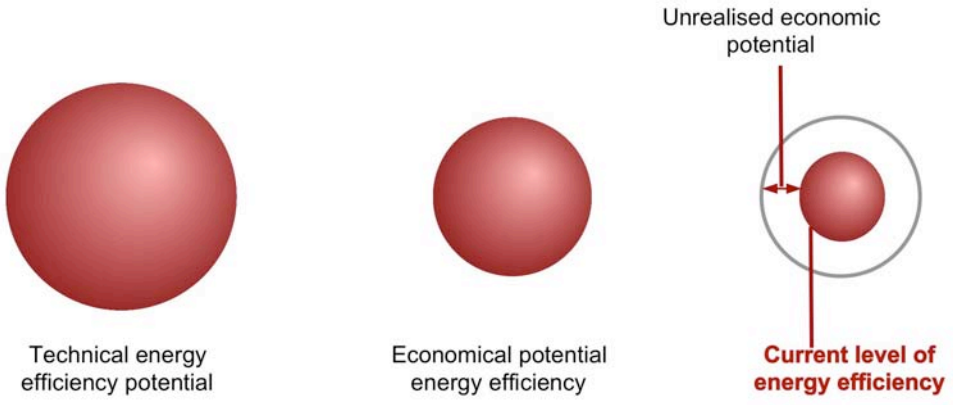
Where the benefits of higher energy efficiency out-weigh the costs, or are likely to be recouped in a short period, economic theory suggests that these performance improvements will be implemented (in the absence of market failures). Evidence suggests, however, that these low or zero cost options are not always implemented — what is known as the 'energy efficiency gap'. The Productivity Commission defines the energy efficiency gap as 'the gap between actual energy efficiency and the level of energy efficiency believed to be achievable and affordable'. (PC 2006, p.xxvi).

It is estimated that current technologies can produce energy savings of 60 to 70 per cent (NFEE 2003). However, not all current technologies are currently *economically* feasible (see Figure 1.2). As noted in the NFEE concept report:

> ...while there is scope for improvement, it is difficult to say what the optimal level of efficiency is for existing buildings. If the cost of improving buildings is greater than the cost of reducing the same level of emissions elsewhere in the economy, then it will not be optimal. Importantly, the cost of reaching a given level of energy efficiency will differ between buildings and, hence, the optimal level of energy efficiency (NFEE 2008).

Figure 1.2

TECHNICALLY FEASIBLE, ECONOMICALLY FEASIBLE AND CURRENT ENERGY EFFICIENCY



Source: (NFEE 2003)

There is a range of improvements that can be made within the commercial office property market. Energy efficiency technologies in the built environment commonly include efficient heating, ventilation and air conditioning (HVAC), motor systems, efficient lighting systems and (for new buildings) insulation. Industry estimates put the economically feasible abatement potential in the building industry at 30-35 per cent (Centre for International Economics 2008).

A carbon abatement cost curve for Australia recently produced by McKinsey & Company, demonstrates that the potential abatement from building energy efficiency improvements can be achieved at negative cost (McKinsey & Company 2008). This study identified that the building sector has the lowest average cost of abatement — the sector could reduce 60Mt of CO2e per annum by 2030 at a negative cost of $130 per tonne.

The fact that investments in these improvements are not being made by all businesses suggests barriers to investment in energy efficiency improvement. As the McKinsey study notes:

> Most of these positive- return (or 'negative-cost') opportunities are energy-efficiency measures related to improvements in buildings and appliances. Many can be categorised as market failures arising from misaligned incentives, for example, those between builders and tenants, where it benefits the tenant but not the builder to install insulation or energy-efficient lighting. (McKinsey & Company 2008, p.6)

Consultations for this RIS heard views that there are potentially considerable energy savings available immediately through improved maintenance of building systems (e.g. HVAC, hot water boilers) with no additional costs or requirements for capital investment. In this context, facility management practices and maintenance programs were considered to play a critical role in the delivery of 'quick wins' as well as contributing to ongoing energy efficiency and cost savings.

If this is the case, then the Australian economy has an opportunity to reduce energy usage and greenhouse gas emissions in an economically efficient manner, by taking advantage of these 'no regrets' opportunities. In light of Australia's commitment to reducing greenhouse gas emissions, a failure to exploit these 'no regrets' opportunities would mean the cost of abatement would shift onto other activities — most likely at higher cost. This naturally raises the question of why, if these opportunities are both technically *and* economically feasible, industry is not already adopting these initiatives?

1.4 Market failures which influence energy efficiency performance

The preceding discussion highlights the potential gains in energy efficiency for commercial office buildings in Australia. In order to determine the best course of action for government to address a problem, RIS analysis needs to identify:

- first, whether market failures exist, and
- second, whether there is a need for government intervention to address the market failures

Market failures are typically considered to fall within the following three categories:

- Public goods — public goods are those which are non-rivalrous and non-excludible, which significantly limits the incentive for private providers to supply these goods, resulting in an undersupply or no supply at all without government intervention — public goods are *not* relevant for this RIS
- Externalities — Externalities are those benefits (or costs) that are consumed by (or incurred by) third parties outside of the market. As such, these benefits or costs are not accounted for in the market demand-supply decision, and lead to a potential under-supply or over-supply in the market — externalities are *marginally* relevant for this RIS
- Information asymmetry — Information asymmetries occur when one party in the market, usually the buyer, does not have sufficient information about the good they are considering purchasing, or the actions of the seller, to make a decision in their best interest — information asymmetries are *highly* relevant for this RIS.

Information asymmetries are the most relevant type of market failure for this RIS. The Productivity Commission, in its assessment of the private cost effectiveness of improving energy efficiency, concluded that the most important barriers to the adoption of privately cost-effective energy efficiency improvements are:

- a failure in the provision of information, and
- the different incentives facing those who take decisions about installing energy-efficient products and those who might benefit from using them (known as split incentives, which often occur in the presence of information asymmetries) (PC 2005, p.xx).

The role of information asymmetries, and their impact, is discussed in detail in the following sections.

Information asymmetries in the commercial office market

Information asymmetries in a market occur where there may be insufficient information for all parties in the market, or where one party has an information advantage over another. Market failure occurs were conditions, such as cost, time or accessibility, result in continued lack of, or asymmetric, information. Market failure can arise as a result of this because of a lack of transparency of value, quality and performance. Providing this information can often come at a cost — and individuals may need to pay for this information over and over again.

There are three aspects of information provision to consider for this RIS:

- Do new tenants or prospective buyers of property have sufficient information to make judgements about energy efficiency performance of premises?
- If energy efficiency gains are beneficial, why do some buyers or tenants not seek sufficient information on energy efficiency to inform their decisions?
- What are the motivations of building owners to not provide information on energy efficiency?

Is there sufficient information in the market place?

There are number of different ways that prospective tenants or buyers of property judge the quality of premises on the market. These include their own observations, information provided through real estate agents and other forms of professional advice. In this scenario, it is most favourable for qualities of premises to be directly observable — often amenities such as lifts, toilets, location, size are all easily observable and comparable. Other qualities, may only be partial observable. For some sorts of information there will be search costs or professional fees incurred, which may deter some parties from investing in the information (in this instance the individual or firm will make a judgement as to the value of the information to them, compared with the cost of obtaining it).

In the case of energy efficiency of commercial buildings, there is evidence to suggest that this characteristic is not readily observable for tenants and buyers. Research comparing design qualities against energy efficiency performance found that there was very weak correlation between 'good' design features[3] and energy efficiency performance, other than for very poorly designed buildings. The research concluded that buildings with high design scores (meaning the fundamental design parameters were 'right') were still capable of poor NABERS Energy performance. (Bannister, no date)

This research suggests that, even when tenants or buyers have some level of knowledge about the quality of building design, this is not a substitute for actual energy efficiency performance ratings (such as through NABERS Energy ratings). As previously reported, a majority of the current commercial office building stock in Australia has never had a NABERS rating conducted, which indicates an important information gap for tenants and buyers.

Why building tenants or prospective owners may not seek information on energy efficiency

The above discussion highlights the need for energy efficiency ratings to determine energy efficiency performance, and the lack of this type of information in the market. The important next question in the analysis is, if this information is valuable, why has there not been more pressure from buyers and tenants in the market for this information to be provided?

There are a number of reasons why tenants and prospective buyers may not seek energy efficiency information:

- Tenants who are looking at different offices may feel that they can obtain a good idea of the energy efficiency of the building based on the newness of the building, and/or through one or two visual aspects (such as whether or not there is double glazing, or the orientation of the facade). As a result, a formal energy efficiency assessment may be seen as being of little additional value to them, except as a way of confirming what they already believe. Unfortunately, research reported above suggests that, in this case these quality aspects may be providing an inaccurate perception of the energy efficiency of a premises.
- NABERS Energy ratings need to be initiated by the building owner, as energy data is required for the assessment. A tenant who has limited time to make a decision may not be able to negotiate access to the information necessary for building energy efficiency from several potential lessors. As a result, while the tenant may value the information, and may even be willing to pay for that information (through a formal NABERS assessment), they may not have the opportunity to demonstrate that willingness to pay.

[3] In this study the 'good design' scale was derived by applying basic features such as good quality chillers, HVAC design and aspect.

- Finally, some tenants may not value this information — particularly if they do not know about the potential savings associated with improved energy efficiency. They may simply be prepared to sacrifice energy efficiency for a better street location, nicer view or a pre-existing fit out that suits their needs. Tenants cannot always get the perfect rental, and often need to compromise. Individuals are also limited in their ability to obtain and process complex information and to handle uncertainties in decision making. This concept is known as bounded rationality, and is used to explain why people may not behave in the way that is expected. The Productivity Commission observes that individuals, given bounded rationality, may follow 'rule-of-thumb' routines when arriving at a decision, such as:
  - purchasing the same make or brand of a good that a competitor, family member or friend purchases (following the pack)
  - purchasing the same make or brand of good as previously (relying on past experience)
  - using simplified selection criteria that focus on key features and overlook more technical and (to them) seemingly less important considerations, such as energy efficiency.

In practice, it is likely that each of these factors has some influence — there will be some tenants and buyers who have no interest in energy efficiency, while others do value the information but have difficulties accessing it. A global survey of commercial building occupiers conducted in September 2008 by Jones Lang LaSalle and CoreNet Global found that 82 per cent of respondents consider green building ratings in building selection, but 64 per cent cited limited to no availability of sustainable solutions. The same study found that 42 per cent of respondents reported being willing to pay up to 10% more rent to occupy a sustainable building. These findings suggest an emerging understanding of the financial benefits of energy efficiency improvement.

Why building owners may not supply information on energy efficiency

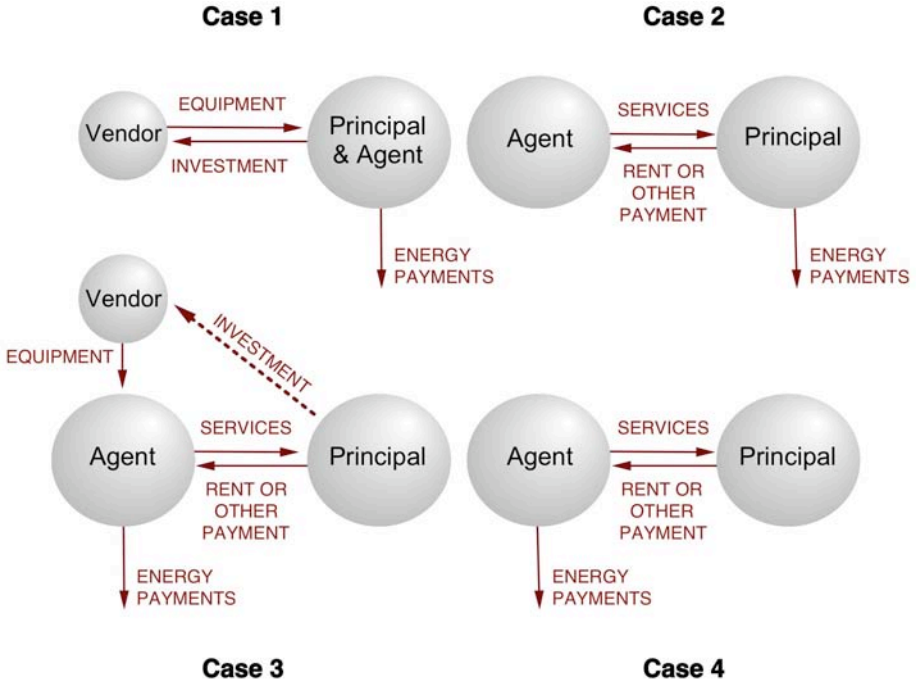
Data on energy efficiency assessment activity suggests that only a small proportion of commercial office buildings in Australia have an energy efficiency rating. Energy efficiency ratings on commercial base buildings must be conducted by the property owner (as they require data on energy consumption). Tenants and prospective buyers, therefore, rely on sellers or landlords to invest in energy efficiency information. Low take-up of assessments may be because the seller or landlord considers that the investment will not increase the return from the sale or lease (that is, an assumption that higher energy efficiency does not raise the purchase price or rent). In this case, the problem may not be an under-supply or lack of demand for energy efficiency information, but a problem from both sides in achieving a complementary level of information provision.

Such an outcome may be due to split incentives in the market. Split incentives can exist where, for example, the incentives facing a builder (to choose a technology with low capital costs) diverge from the incentives facing the user (to choose the technology with lower running costs). This is an example of the classic economic 'principal-agent' problem (also see Figure 1.3):

> [I]f the potential adopter is not the party that pays the energy bill, then good information in the hands of the potential adopter may not be sufficient for optimal diffusion; adoption will only occur if the adopter can recover the investment from the party that enjoys the energy savings. Thus, if it is difficult for the possessor of information to convey it credibly to the party that benefits from reduced energy use, a principal/agent problem arises (Jaffe and Stavins 1994).

Figure 1.3

FOUR PRINCIPAL AGENT PROBLEMS



Note: principal-agent problems in the commercial building sector can take on different forms depending on who pays for the equipment and who pays the energy bills. From an end-user perspective, Case 1 is not a principal-agent problem as principal and agent are the same entity. Case 2 shows an efficiency problem as the agent selects and uses the technology while the principal pays for the energy use. In Case 3 and Case 4, the end user does not pay the energy bill which produces a usage and efficiency problem (case 3), as well as a usage problem (Case 4) (Murtishaw and Sathaye 2006) and (International Energy Agency 2007), quoted in (NFEE 2008).
Source: (International Energy Agency 2007), quoted in (NFEE 2008).

While these problems may be acute where information asymmetries are present, they may exist even where both parties have the same information. For example, both landlord and tenant could benefit from installing insulation or a solar hot water system, if they could agree on a rent adjustment that makes both better off. Yet frequently this does not happen because of difficulties and risks in negotiating the rental adjustment. However, the importance of split incentives as a market failure needs to be kept in perspective. To the extent that energy costs are important, it will become worthwhile for both parties to sort out a new contract. And as energy costs become more important, this incentive will grow.

The impact of asymmetric information — adverse selection

The lack of information, or the existence of barriers and costs associated with obtaining that information, can lead to sub-optimal market outcomes. In order to achieve an efficient outcome, markets rely on all parties having sufficient (but not necessarily perfect) information to make decisions in their best interests. In some cases, information is not just imperfect, but is asymmetric. Information asymmetries occur when one party in the market, usually the buyer, has less information than another – usually the seller).

This information asymmetry problem can create a situation of 'adverse selection'. Adverse selection occurs when a buyer is not able to differentiate between high quality and low quality goods in the market at the time of purchase, and perhaps also not until a significant period of time after purchase. In the presence of this uncertainty, high quality products can be driven out of the market and lower quality products tend to attract a disproportionate level of patronage because errors in judgement or decisions made on observable factors (e.g. price) work in its favour.

This phenomenon is known as the 'market for lemons', first noted by Akerlof, who explained how the pressure of competition, in the presence of information asymmetries, may cause quality to deteriorate to such low levels that the market may fail to exist (Akerlof 1970). This concept is most commonly described using the example of a used car market, where there are both good quality cars and poor quality cars ('lemons'). Purchasers know that there is a risk that they will purchase a lemon, but they have no reasonable means of separating the lemons from the high quality cars until they have driven the car for several months after purchase (in the absence of any other third party assistance). This scenario can lead to a less than efficient social outcome because:

- buyers do not have sufficient information to make a rational informed decision about quality of a good, and therefore risk inadvertently purchasing a 'lemon'
- as a result, consumers will offer a price which is less than what they would be willing to pay for the high quality product, as they are uncertain as to the quality of the product that they will receive
- this, in turn, drives higher quality goods out of the market (as the price is too low to make a positive return for a 'quality' product).

The result is that consumers, by offering a lower price given the risk of purchasing a 'lemon', inadvertently increase their chances of purchasing a 'lemon', as at the lower price fewer 'quality' products will be offered for sale. At the extreme, *only* the lowest quality products will be sold, and all higher quality products will be removed from the market. Warranties can alleviate, but not totally correct, this problem because they themselves suffer from enforcement costs. These problems (and transaction costs) are a fact of life. But that does not mean policymakers should not continuously explore options for reducing these costs and their impacts. Coordinated action and transparency can reduce cost duplication and the ability of 'lemons' to attract normal prices.

Adverse selection is most common for those products where it is difficult for consumers to ascertain quality at the time of purchase (and even for some period after purchase), and where they do not have sufficient prior experience on which to base their decision. There are a number of characteristics of commercial office building energy efficiency that increase the risk of adverse selection in the market for commercial office space:

- energy efficiency is a difficult attribute to identify without specialist advice
- properties tend to be large, one-off or low frequency investments where the purchaser cannot rely on significant previous personal experience to determine the quality of the good. Even if the occupier is a tenant rather than a buyer, they still incur costs associated with moving, such as removalists, shutting down the business over the period of the move, updating letter heads, business cards, signage, and so on.

In markets where there are information asymmetries, adverse selection can drive down the amount of energy efficiency 'premium' achievable — essentially making it more difficult to achieve higher rents or a higher price that reflect the investment made in energy efficiency improvements. This can occur where potential buyers and tenants are unable to differentiate on energy efficiency grounds — that is, where information on energy efficiency information is not provided or not available for tenants or buyers.

Where adverse selection occurs, there is a greater risk to the return on investment from energy efficiency improvements. For instance, if an investor had an opportunity to invest in energy efficiency improvements, but had limited ability to signal the quality of this property over and above others in the market, the investment is less likely to take place. As research notes, for adverse selection:

> The risk of opportunism is highest when only infrequent, expensive transactions are conducted, such as buying a second-hand car or house. Car dealers and residential estate agents in such situations have strong incentives to maximise their returns at the expense of either purchasers or sellers. Even if the car or property dealers are honest, sellers and purchasers have no way of knowing because only repeated experience will provide them with appropriate information. This information gap tends to drive quality out of the market, because sellers of quality second-hand cars have to accept the low-quality price because purchasers have no effective means of discriminating. (Ball, Lizieri et al. 1998)

A quantitative test of the presence of adverse selection could be conducted if data allowed a test for the correlation between energy efficiency and price (be it rent or purchase price), holding all other factors constant (as energy efficiency is likely to be correlated with other quality factors, such as building age, which may raise prices). Unfortunately there is insufficient data on energy efficiency across the commercial office sector in Australia for this analysis to be conducted, as only a relatively small proportion of the commercial office market have had energy efficiency assessments conducted. This factor alone, however, provides an indication of the available information on energy efficiency in the market, and therefore the scope of consumers to make informed choices on the basis of energy efficiency. Currently, this choice is limited to very large properties, with purchasers or tenants of properties less than 5000m^2 having very limited capacity to compare properties on the basis of energy efficiency (or even to use energy efficiency as one of several factors in their decision).

There is currently no organised commercial tenant body in Australia, in any jurisdiction, which exacerbates the information asymmetry problem. Residential tenants have a number of advocacy and stakeholder groups that can represent their interests in the market, as well as tribunals that will hear disputes between tenants and landlords at a relatively low cost to both parties. In contrast, commercial tenants do not have a similar representative body. In addition, agreements between tenants and lessors are usually negotiated through lawyers on either side, and not centrally lodged or noted by a jurisdictional regulator, as is the case with residential leases. As a result, there is no 'industry body' that can undertake information and awareness campaigns for commercial office tenants. At the same time, commercial office tenants are difficult to isolate as a stakeholder group for consultation purposes. This can mean that their interests may not be adequately represented or reflected in policy development — a risk that must be managed.

1.5 Non-market barriers — Organisational failures

There is evidence to suggest that there are number of non-market barriers to the take-up of economically feasible energy efficiency improvements. A number of these barriers can be characterised as organisational barriers — problems within the decision making process or management arrangements within firms, which limit the firm's capacity to make sound judgements on the financial benefits of energy efficiency improvements.

Research by the Warren Centre sought information from firms on a range of organisational characteristics, and tested these against energy efficiency performance. The study found the following important relationship between management and organisational factors and energy efficiency:

- Buildings perform better where all members of the building management chain feel they can influence building energy efficiency.
- Buildings perform better when the manager reports a higher level of energy efficiency knowledge.
- Buildings perform better when there is an energy efficiency training program in place.
- Sites where managers were conservative about the implementation of efficiency measures tended to perform poorer than sites where managers were prepared to accept some risk in efficiency outcomes.
- Managers who considered that they had a greater level of energy efficiency skills were generally found to operate buildings more efficiently. (Warren Centre 2009)

This research also found that incentive structures within organisations have an influence on building performance — higher levels of management are more likely to be motivated by policy than building managers, who are more likely to be motivated by their own environmental concerns.

In many ways these organisational failures are information asymmetries at an organisational level rather than at a market level. There are often split incentives within an organisation, where the party making the decision has no, or very little, sensitivity to cost, or has higher priorities over cost in an organisation. Much of energy efficiency performance is behavioural — such as very basic actions like turn off lights or computers. Attitudes within organisations therefore have a significant influence on energy use.

These issues need to be managed at an organisational level, though would be supported through measures that address information asymmetries at a market level.

1.6 Can current initiatives address the problem?

Rather than introducing new regulation, it may be possible to address the market failure through stronger compliance or implementation arrangements around existing regulatory tools or initiatives. The following section provides a description of current initiatives to address the problem.

National Framework for Energy Efficiency

The Commonwealth, State and Territory governments are committed to improving energy efficiency, and have set up the National Framework for Energy Efficiency (NFEE) as a means of:

> unlock[ing] the significant but un-tapped economic potential associated with the increased uptake of energy efficient technologies and processes across the Australian economy. It aims to achieve a major enhancement of Australia's energy efficiency performance, reducing energy demand and lowering greenhouse gas emissions (NFEE 2008).

The focus of NFEE is the demand side of energy efficiency, based around the assumption that energy consumers are not fully aware of the potential benefits available to them from improved energy efficiency.

State and territory government initiatives

All States and Territories have adopted the BCA energy efficiency provisions applying to new commercial buildings. Beyond this, the Commonwealth Government and all States and Territories have set, or are planning to set, minimum standards for their government property portfolios according to either NABERS Energy or Green Star (Green Building Council Australia) rating tools. Victoria has extended this to also cover all major projects in the State. In addition, a number of local governments in Victoria and South Australia are using planning controls to set standards for commercial buildings.

Some states and territories have implemented, or are planning to implement, voluntary initiatives to encourage new building owners to achieve higher energy efficiency standards than those mandated in the BCA and/or to improve the performance of existing buildings, including:

- Green Buildings Tune Ups Program (South Australian Government) — provides $2 million over four years for projects to improve the performance of commercial buildings, as part of a broader agreement to improve the sustainability of the built environment.

- Resource Smart Commercial Buildings Program (Sustainability Victoria) — aims to deliver greenhouse gas and water savings through specific support initiatives, while also building the capacity of the broader market to improve existing building performance in Victoria over the longer term.
- Green Business Program (New South Wales Government) — provides $30 million over five years for projects that will save water and energy in business operations in NSW – activities which are eligible for funding include projects which improve the efficiency of buildings and appliances.
- Commonwealth Green Building Fund (Commonwealth Government) — provides $90 million over four years to help Australian businesses implement cost saving energy efficiency measures through retrofitting and retro-commissioning of existing commercial office buildings.

Industry initiatives

Industry-led programs operate in the majority of states, the most notable of which is the CitySwitch Green Office initiative. CitySwitch Green Office (previously known as the 3CBDs) is a national tenant energy management program coordinated through the Council of Capital Cities Lord Mayors and run in partnership between the cities of Sydney, North Sydney, Parramatta, Melbourne, Perth, Adelaide and Brisbane and state government agencies (representing approximately 70 per cent of Australia's office space).

CitySwitch signatories commit to achieve and maintain an accredited 4 stars or higher NABERS Energy tenancy rating. The program was established in 2005 and, to date, 57 organisations covering more than 600 000 m^2 of commercial office space have committed to the program.

Another notable program is *Grow Me The Money*. This program is a joint initiative between the Victorian Employers' Chamber of Commerce and Industry and the Environment Protection Authority Victoria with funding from the Victorian Government. The program is designed to improve the environmental impact of Victorian businesses through providing assistance to businesses interested in reducing their water and energy use and waste production.

In addition to these programs, there are a number of voluntary building rating schemes, including:

- Green Star (Green Building Council of Australia) — a capability rating program for office buildings based on a scale of 4-6 stars. Ratings can be performed on office design, office as built, office interiors and existing office buildings. Design ratings can be performed when the majority of the design is complete. 'As built' ratings are performed when the building is complete and before occupation. The program was established in 2004 and, to date, 135 projects have been certified with a Green Star rating.
- Office Quality Grade Matrix (Property Council of Australia) — determines quality according to a number of parameters, including lift speed, security, amenities and parking. Buildings are rated as Premium or Grades A, B, C or D. The revised guidelines published at the beginning of 2006 now stipulate that for a new commercial office to be considered 'premium' or 'A-grade', it must achieve a minimum 4-star Green Star and 4.5-star NABERS Energy (previously ABGR) rating.

- Sustainable Design Scorecard (City of Port Phillip and Moreland City Council in Victoria) — voluntary tool developed to assess the environmental impact of commercial, industrial and retail buildings in the respective council areas.

Building Code of Australia

New energy efficiency standards for commercial and public buildings were introduced from 1 May 2006 into the Building Code of Australia (BCA) (Building Commission 2005). All states and territories have adopted the BCA, albeit with some variations within legislation. The BCA does, however, only apply to new buildings and refurbishments of existing buildings (where a development approval is required). The extent to which these requirements apply to the commercial building stock is therefore limited.

These energy efficiency measures use performance-based provisions to ensure that commercial and public buildings achieve minimum levels of efficiency. The measures are designed to reduce the use of artificial heating and cooling, improve the energy performance of lighting, air conditioning and ventilation, and reduce energy loss through air leakage. The standards apply to:

- all classes of commercial and public buildings
- buildings being refurbished, altered or extended
- new buildings.

Compliance with the BCA can be achieved by complying with the 'deemed-to-satisfy' requirements in the BCA or by developing an alternative solution, which demonstrates that the proposal meets the relevant BCA performance requirements.

Carbon Pollution Reduction Scheme

The Commonwealth Government has committed to establish a national Carbon Pollution Reduction Scheme. The current proposal, as outlined in the Carbon Pollution Reduction Scheme Green Paper (DCC 2008), is for a cap and trade scheme where the Government sets a cap on the annual emissions across the economy, and issues permits to polluters in line with the annual cap. The trading of permits allows emitters who need more permits than they have on hand, to buy additional permits from those who are prepared to sell their excess permits at the prevailing price, and therefore live with a lower emissions output.

A key impact of the scheme will be an increase in energy bills across the economy as the energy industry passes on the costs associated with the purchase of emissions permits. In relation to the office building sector, this is likely to result in an increase in demand for energy efficient buildings, fit-outs and office equipment as the share of energy costs, as a proportion of total costs, increases. The extent of the price response will depend on the price of traded permits and the degree to which emitters can pass on such costs. A carbon price is unlikely to place significant cost pressures in the commercial office building sector within the next 10 years, if the scheme commences with a low to moderate carbon price trajectory.

1.7 Is there a rationale for further government intervention?

The discussion in this chapter has provided evidence of current information asymmetries in the commercial office market, and the lack of current measures which directly address these market failures. The analysis has also highlighted how organisational factors have an impact on decisions within firms, which ultimately impact on energy use.

Bringing this information together, it is important for a RIS to conclude whether there is a case for government intervention to address the identified problem, over and above what is currently occurring.

Under best practice regulation guidelines, government intervention can be justified when:

- there is an inherent failure in the market's ability to deliver fair and equitable outcomes, and
- the benefits from correcting the failure are greater than the costs associated with doing so.

The mere presence of information asymmetries, or externalities, does not *automatically* justify government intervention. Market failures are an everyday event; buyers are rarely as informed as sellers, and most transactions have consequences for third parties. For example, the Wallis Inquiry noted that:

> There is nothing unusual about asymmetry of information available to a supplier and a consumer. Many products or services are complex, difficult to compare, have considerable importance for the well-being of their customers or are provided over a period of time.[4]

Furthermore, in the context of consideration of professional regulation, the Productivity Commission has noted that:

> The need for government regulatory intervention does not immediately follow from the identification of information deficiencies: information deficiencies are pervasive yet most markets continue to function reasonably efficiently. … it is not generally efficient to eliminate all negative externalities or promote infinitely large quantities of positive externalities. In many cases, externalities do not create significant problems (Productivity Commission 2000).

Assessing the need for government regulation requires the identification of the potential cost of not addressing the problem. For this RIS, this would be the impact of a decision based on incomplete information or a decision that has negative consequences for third parties (where externalities are present).

In broad terms, government intervention might be justified where the potential harm is significant (for example, where the nature of the risks posed by a particular transaction would have serious consequences). In assessing the significance of the harm,[5] there must be consideration not only of the potential consequences, but also:

- whether or not the impacts are reversible
- whether the risk is involuntary or voluntary
- the likelihood of that harmful outcome occurring.

---

[4] Financial System Inquiry 1996, *Discussion Paper*, Canberra, p. 97.

[5] The significance of the harm can refer to significant harm to a few people or moderate harm to a large number of people.

In this case, unequal access to information on commercial building energy efficiency has the potential to give rise to situations or outcomes that are sub-optimal, including but not limited to:

- tenants and buyers being unable to demonstrate their preference (and willingness to pay) for more energy efficient accommodation
- tenants or buyers being misled as to the energy efficiency of a commercial office building — something that may not be discovered until after committing resources to relocating, or fitting out the space
- owners of more energy efficient buildings being unable to differentiate their product in the market from less energy efficient buildings, and a further reduction in the incentive for building owners to upgrade or improve building energy efficiency
- spillovers to the environment and to society in general from greenhouse gas emissions associated with expenditure on energy (such as reduced air pollution, reduced stress on energy infrastructure, and so on) that could have been avoided through investments in energy efficiency improvements to commercial office buildings. These spillovers are over and above the private gains associated with better choice and more efficient resource use. These 'spillover' benefits are a 'bonus' for the purposes of this RIS and are not called on to estimate the full set of costs or benefits from energy efficiency disclosure. Nevertheless, their existence highlights the potential for public and private co-benefits from more efficient resource use.

In addition, the information asymmetry type of market failures identified above are exacerbated by complexity in the market. As observed by Golove and Eto in the context of organising energy efficiency across a chain of players, small imperfections can combine to create a substantial market failure:

> An intriguing illustration of the magnitude question [of the energy efficiency gap] examined from the point of view of transaction costs suggests that market barriers can sometimes accumulate and reinforce one another …. the idea of chains of market barriers refers to small imperfections, any of which individually represents an insignificant distortion to efficiency, but which in combination are of a magnitude sufficient to be considered a market failure. … The chain of market barriers phenomenon explicitly recognizes that there are series of decisions, actions, and transactions between the production of goods and their ultimate sale to the end user (Golove and Eto 1996).

Existing measures in the market (and potential future measures in the case of the CPRS) either do not directly address these information asymmetries (such as the CPRS and minimum standards) or are limited in scope (such as voluntary measures which are most effective for those parties in the market who have an existing interest and knowledge of the issues). On this basis, there is a rationale for government to consider alternative options to address the problems identified. These options are explored in the following chapters of this RIS.

Chapter 2

Objective of government action

Prior to assessing options to address the identified problems, it is important to establish the objectives of government action. It is important to establish the objective independent of any individual solution. The objective should be sufficiently broad to allow consideration of a range of alternative solutions.

The previous chapter established that:

- the current energy performance of commercial office buildings is lower than is technically feasible
- split incentives in the market present a barrier to buyers and tenants using energy efficiency performance in property decisions, therefore reducing incentives for energy efficiency investment by building owners.

Given these problems, the objective of government should be to improve the energy efficiency of commercial office buildings in Australia by addressing current market failures. This objective can be addressed by correcting the market failures which currently limit the ability of future energy users — buyers and tenants — from signalling their needs in the market and, in turn, establishing incentives for investment.

Chapter 3

Options that may achieve the government objective

As part of the RIS process, it is necessary to describe and consider the different options that can be used to achieve the stated objective. OBPR guidelines require that options considered represent the spectrum of regulatory approaches — including explicit regulation, co-regulation and non-regulatory approaches.

3.1 The base case — maintain current approach

Cost-benefit analysis seeks to estimate the incremental or induced impacts to stakeholders that can be directly attributed to the proposed options. In order to do so, it is necessary to have some idea of what would have happened if none of these options were exercised — effectively, if the current approach were maintained. In this assessment, the current approach includes not only a continuation of actions (that is, extrapolating the past into the future) but also reported future policies that can reasonably be expected to have an impact on the problems identified in chapter 2.

This RIS assesses options to improve the energy efficiency of commercial office buildings in Australia. This objective, however, is currently already being pursued through voluntary initiatives on the part of business (such as having assessments conducted, and voluntarily acting to improve energy efficiency in their premises). Industry representatives, such as the Property Council of Australia) have encouraged voluntary action through their own initiatives (for example, energy efficiency ratings incorporated into the Property Council of Australia's criteria for grading buildings). Voluntary action is also being driven, to a degree, by government initiatives, seeking to:

- improve knowledge about energy efficiency and the potential savings for business of energy efficiency improvements
- provide a means for comparing of energy efficiency and broader environmental performance (such as water efficiency) by developing and encouraging the use of assessment tools (such as NABERS Energy and Green Star)
- set standards for business by agreeing green leases as tenants in commercial office buildings.

There are also current and expected regulatory schemes which could improve energy efficiency in commercial office buildings. The most direct of these is the regulation of energy efficiency standards for new buildings, through the Building Code of Australia (BCA). This raises standards across the building stock (albeit at a slow rate). Second, the introduction of a carbon price through the proposed Carbon Pollution Reduction Scheme will set a price signal in the market for energy, which may increase incentives for energy purchasers (both building owner and tenants) to reduce their energy consumption through efficiency improvements.

More details on this suite of initiatives are provided in Appendix A of this RIS.

3.2 Option 1 — Mandatory disclosure of energy efficiency

The first option is the proposal put forward by the Australian, State and Territory Governments under NFEE for the mandatory disclosure of energy efficiency information at the time of sale or lease of commercial office property.

Regulated obligations

Under this option, building owners would be required to disclose the energy efficiency of their building — expressed as a Building Energy Efficiency Certificate (BEEC), which would include:

- a National Australian Built Environment Rating System (NABERS) Energy star rating for the base building
- a brief survey that provides owners and tenants with information on energy efficiency investment opportunities. These opportunities are measured in potential star improvements and given a difficulty rating of high, medium or low that is dependent on cost and operational impact; and
- a tenancy lighting rating.

The NABERS Energy rating tool is already available to building owners and tenants, with many of them making use of the tool on a voluntary basis — more information on the NABERS Energy tool is given in Box 3.1.

Box 3.1

NABERS ENERGY FOR OFFICES (FORMERLY ABGR)

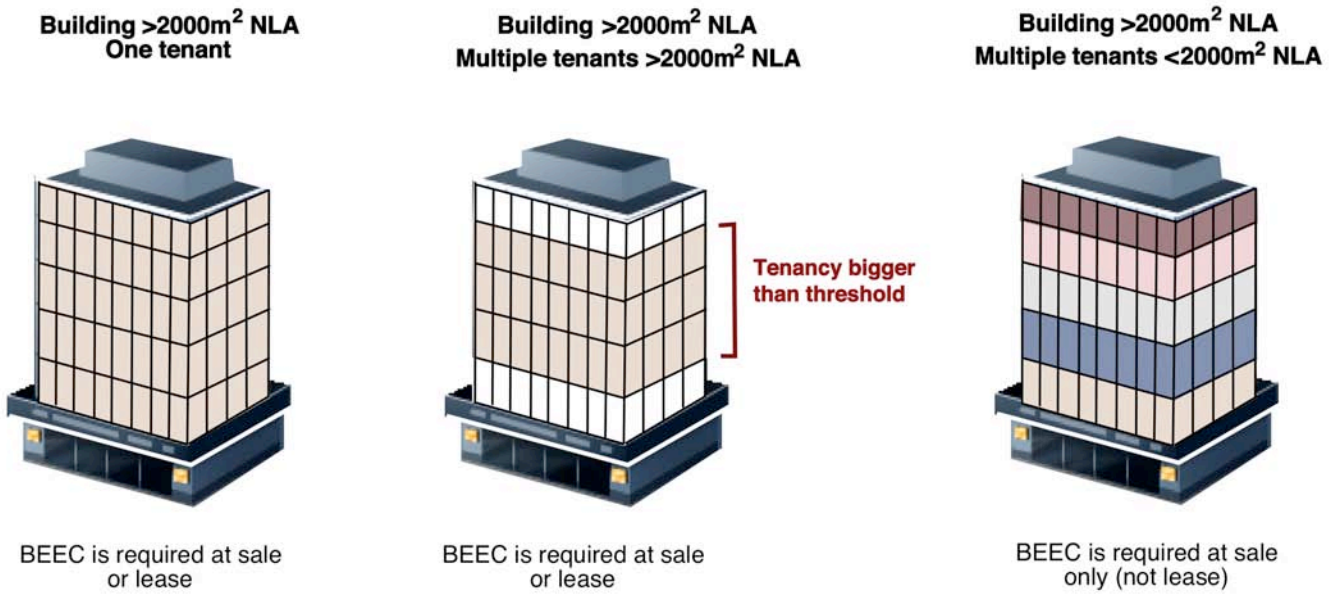
Source: (NABERS 2008)

Option 1 requires that when a commercial office building with a net lettable area (NLA) of 2000 m^2 or more, or any part of such a building that is greater than 2000 m^2 NLA, is to be sold, leased or sub-leased, an appropriate energy efficiency certificate for the building must be disclosed.

Figure 3.1 illustrates the central requirements of option 1.

Figure 3.1

GRAPHICAL OVERVIEW OF THE CENTRAL REQUIREMENTS FOR OPTION 1



Source: Allen Consulting Group illustration, data sourced from Mandatory Disclosure Regulation Document

The scheme will apply to three main scenarios:

- whole building sales — when a whole building with an NLA above the threshold is sold
- whole building leases — when a whole building with an NLA above the threshold is leased or subleased
- part building leases — when a part of a building with an NLA above the threshold is leased or subleased.

Table 3.1 summarises the types of energy efficiency ratings required depending on the scenario under which option 1 is applied.

Table 3.1

OVERVIEW OF ENERGY EFFICIENCY RATING REQUIREMENTS FOR OPTION 1

Whole building >2000m^2 NLA	Sale	Lease	Sublease
Base building rating	✓*	✓*	If available
Tenancy lighting details	✓ (for all tenancies in building)	✓	✓
Base building guidance	✓	✓	If available
Tenancy guidance	✓ (for all tenancies in building)	✓	✓
Part building > 2000 m^2 NLA	**Sale**	**Lease**	**Sublease**
Base building rating	× (Strata titles excluded)	✓*	If available
Tenancy lighting details	✓	✓	✓
Base building guidance	× (Strata titles excluded)	✓	If available
Tenancy guidance	✓	✓	✓

Note: *When a building has inadequate metering to obtain a base building rating a whole building rating must be disclosed.

In this RIS three sub-options under Option 1 are assessed:

- Option 1(a) is mandatory disclosure at sale or lease, as described above;
- Option 1(b) is a requirement for annual tenancy ratings (which is distinct from tenancy lighting assessments under the mandatory disclosure Option 1(a)); and
- Option 1(c) is the requirement that owners of new buildings enter into NABERS Energy simulation protocols.

These sub-options could be implemented together (as combined Option 1, or in parts).

It is important to note that, under Option 1, the thresholds for the size of property apply directly to leased space, as well as sold space. Therefore, small leased spaces *within* properties of 2000m^2 and 5000m^2 **would not** be captured under mandatory disclosure requirements (for example, a leased space of 1000m^2 in a 5000m^2 building **would not** require an assessment to be disclosed). The intent is therefore to capture only owners or tenants of large properties.

Tool for demonstrating compliance

This Option assumes that NABERS Energy is the most suitable tool for achieving compliance. It is noted, however, that modifications to the current NABERS Energy tool may be required in the event that this option pathway is to be pursued further. This matter is discussed in the Regulation Document.

Monitoring and enforcement

Mandatory disclosure will be enforced through civil penalties for non-compliance. A National Administrative Unit established by the Australian Government could have the overall responsibility for ensuring compliance and enforcement. More information on the enforcement and compliance mechanism for the scheme is explained in the Regulation Document. The scheme could enforce a maximum penalty of $100,000 for each offence of non-disclosure. More details on proposed monitoring and enforcement are provided in Chapter 7 of this RIS.

3.3 Option 2 — Industry managed energy efficiency disclosure scheme

Regulated obligations

This Option is similar to Option 1, except that there is no explicit regulation. Instead, the industry (in this case, building owners) develops an industry code of practice, which participants can voluntarily sign up to. While there is no regulated obligation to comply, it is anticipated that building owners accounting for around 40 per cent of the market share will participate in an industry-managed scheme.

The code of practice can be given government support in a number of ways, including:

- maintenance and dissemination of a list of businesses that have signed up to and complied with the code of practice;
- giving preferential treatment to businesses that comply with the code of practice, for example when it comes to tenders for goods and services; or
- information provision and promotion to consumers or final users so that businesses that have signed onto the code of practice can more easily differentiate themselves from those that have not.

Box 3.2 provides an example of industry quasi-regulation among financial institutions. Other examples of industry co-regulatory or quasi-regulatory options include codes of practice in relation to radiation safety, telecommunications, and building and construction.

Box 3.2

EXAMPLE: ELECTRONIC FUNDS TRANSFER CODE OF CONDUCT

The Electronic Funds Transfer Code was introduced in 1986 and originally applied to financial transactions effected through the use of a card and a personal identification number. Industry, consumer and government representatives contributed to the development of the code, which was endorsed by the Commonwealth, state and territory governments.

In 2002 the Code was expanded to cover all types of electronic funds transfers, including telephone and internet banking, credit card transactions and stored value facilities. The Code sets out rules on matters such as provision of information to users, liability for unauthorised transactions, complaint procedures, protection for users of stored value facilities and privacy.

While the Code is voluntary, a wide range of financial institutions have signed up to it.

Source: (OBPR 2007)

Under this Option, industry would administer a scheme whereby there was consistent reporting of base building energy efficiency using the NABERS Energy standard. Reporting would not be mandatory, but would be supported and encouraged by leading industry associations (such as the Property Council of Australia). This Option would build on existing efforts but provide a consistent approach (a single industry-backed scheme). Participation in the scheme would mean that owners would agree to have their buildings assessed, provide this information to prospective buyers or tenants, and update the information within a given timeframe.

3.4 Option 3 — Mandatory minimum energy efficiency standards

This Option moves away from an information approach to addressing the problem, instead mandating that building owners meet minimum energy efficiency standards within a stated timeframe. Where applicable, the triggers would be the same as for mandatory disclosure. That is, where the NLA is greater than 2000 m^2 or greater than 5000 m^2.

Building owners would be required to refurbish or upgrade buildings to a 3 star NABERS Energy star ratings — the rating for current industry best practice. At the same time, it is estimated that:

- the average rating for commercial office space currently ranges from 2 to 2.5 stars (Team Catalyst 2008); and
- the minimum energy efficiency standards required under the BCA translate to NABERS Energy star ratings of 2 to 4 (depending on the state or territory),[6] with an unweighted average star rating of 2.5 to 3 stars (Team Catalyst 2008).

This Option sets a standard for energy efficiency improvement, and requires building owners to meet this standard how they choose (that is, it does prescribe specific types of improvements. An alternative approach to mandatory minimum standards is a mandatory investment requirement, where governments:

- mandate energy efficiency audits (for a segment of the market)
- require that building owners invest in all energy efficiency opportunities with a pay-back period not greater than 3 years (or another terms as decided by government).[7]

This Option is consistent with the approach that has been adopted by the Victorian Government, through its Environment Protection Authority, to foster greater energy efficiency in the industry sector and amongst large energy and water users.

In the context of building energy efficiency, this Option was considered, but not progressed because:

[6] This is because the BCA minimum energy efficiency standards are based on building design principles, whereas the NABERS ratings are based on energy usage.

[7] The pay-back period is the length of time required for an energy efficiency saving investment to offset its initial investment cost through energy savings.

- unlike the experience in Victoria, there is no baseline of energy efficiency from audits already conducted. Therefore, there is no available information on the opportunities for energy efficiency improvement for the commercial office building sector (without which it is not possible to conduct a credible cost-benefit analysis, as the optimal pay-back period cannot be determined)
- principal-agent problems within the property market limit the applicability of this Option to specific central services.

Chapter 4

Impact analysis

This chapter assesses the costs and benefits of the options set out in Chapter 3, compared with the 'base case' option of no change to the current approach

4.1 The 'base case'

The purpose of a cost-benefit analysis is to identify the extent of the marginal regulatory impact — that is, the change that can be directly attributed to the proposed options. To do this, the base case must be established. The base case represents the outcome of no further action — essentially what would occur in the absence of any of the options being implemented.

In the context of mandatory disclosure, the base case establishes what could be achieved through continuation of current voluntary actions. The costs and benefits of a mandatory scheme should reflect the marginal change from the base case — the marginal change in the provision of energy efficiency information in property transactions from that provided through voluntary action.

The base case therefore needs to reflect the outcomes from current voluntary actions and expected future policy settings. This involves identifying:

- the future level of energy efficiency assessments that will be conducted
- the extent to which such assessment information may be provided in property transactions
- expected impact of this action, compared with options for change.

An estimate of the level of expected voluntary assessments is required for both the assessment of costs and benefits. For costs, where voluntary assessments are expected to occur, these are not included as costs of mandatory disclosure. Similarly, any benefits from voluntary actions should not be attributed to mandatory disclosure.

Estimating the base case requires:

- an estimate of expected future NABERS Energy assessments (by property size), using historical data and assumptions of future policy influence on voluntary actions
- an estimate of the proportion of these assessments which would be used in property transactions, using turnover data.

Expected future trend in voluntary NABERS Energy assessments

The NABERS Energy scheme has been in operation since 1999, and in its current form since 2002. Any building owner or tenant can invest in a NABERS Energy assessment, with the scheme providing whole building, base building or tenancy assessments. They can choose to use the information in the assessment in any number of ways, including:

- reporting the information (such as through corporate strategy or corporate social responsibility initiatives)
- using the information as a basis to improve the energy efficiency of their property
- providing the information to prospective buyers or tenants for the property (particularly where higher ratings are used as a positive characteristic of the property).

The base case for this RIS needs to identify both the extent to which NABERS Energy assessments are likely to be conducted voluntarily, and whether information from these assessments would be provided for prospective tenants and buyers without a requirement for mandatory disclosure.

An assessment of NABERS Energy data provides an indication of both:

- the total number of assessment conducted in the period since NABERS Energy was first introduced (1999-2007)
- the growth in the take-up of the scheme by building owners (that is, the number of buildings being rated for the first time in any given year.

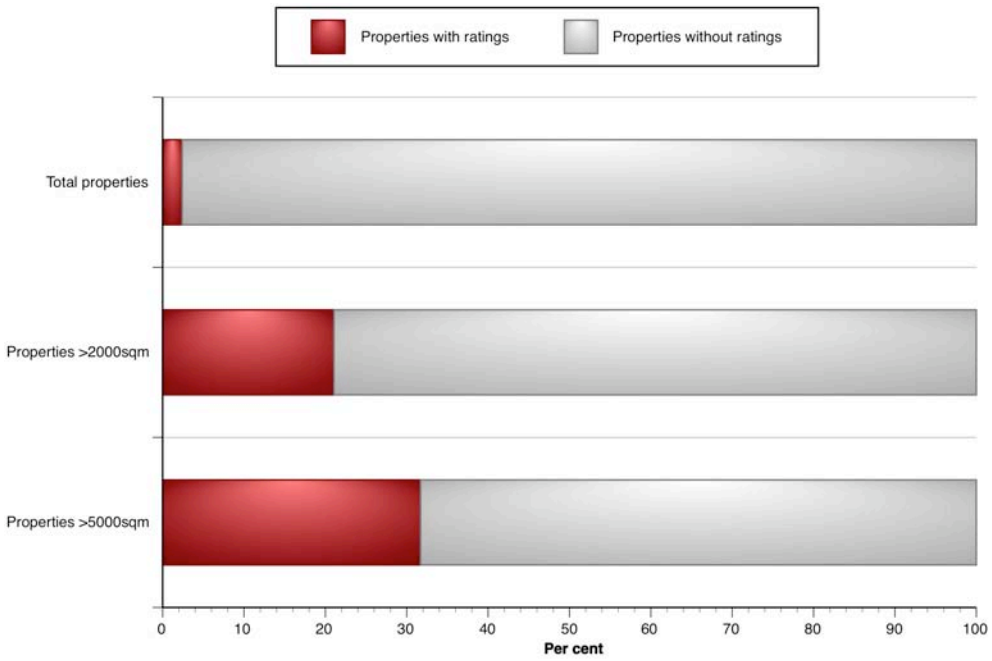
This second trend is important as it provides an indication of how awareness of energy efficiency has changed in the commercial office building sector, as opposed to the aggregate assessment numbers which included repeat assessments (some buildings have been assessed up to six times in this period). Trends in the uptake of assessments provide an insight into potential growth in interest in building energy efficiency from building owners.

The volume of future NABERS Energy assessments can be estimated by extrapolating from historical trends, and reflecting future policy influences (such as price signals or higher awareness).

Historical data on NABERS Energy assessments is available from 1999 to 2007, as aggregated national data. In this period, 1213 NABERS Energy assessments have been conducted, on 614 properties. Of these properties, 296 have had two or more assessments. Figure 4.1 shows the number of NABERS Energy rated properties as a proportion of the total number of properties.

Figure 4.1

NABERS ENERGY RATED PROPERTIES AS A PROPORTION OF TOTAL PROPERTIES

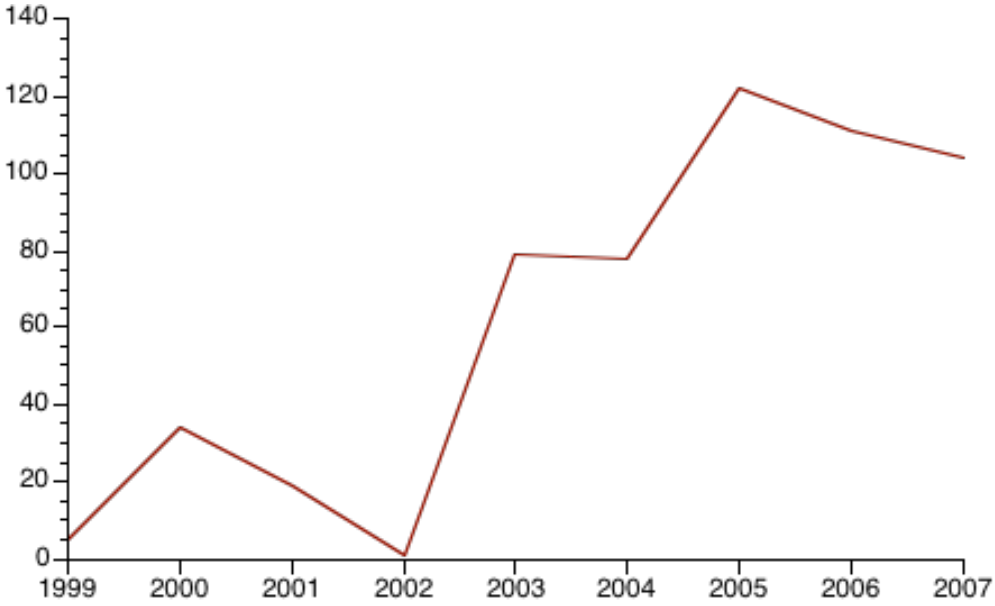


Source: NSW DECC unpublished data.

The overall number of assessments has been growing steadily across the period (1999-2007), driven to some degree by repeat assessments. The number of 'first time' assessments — and indicator of take-up from owners — shows more variation (Figure 4.2). These data show a drop in first time assessments in 2002, with a subsequent increase in assessments from 2002 to 2005. NSW DECC, who administer NABERS, report that the scheme changed to accreditation of assessors in 2002, with a period of transition accounting for the fall in first time assessments conducted in 2002. These data also show a fall in assessments conducted from 2005 to 2007, though the overall trend in assessments from 2002 remains positive.

Figure 4.2

NUMBER OF 'FIRST TIME' NABERS ENERGY ASSESSMENTS CONDUCTED, AUSTRALIA, 1999-2007



Note: New assessments are those conducted on a property for the first time. In this period renewal assessments were also conducted on properties, which are not represented in this analysis.

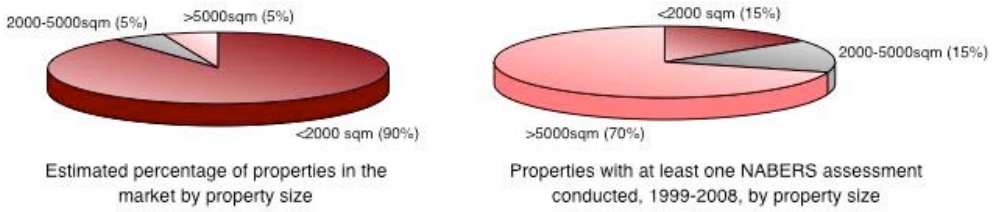
Source: NSW DECC unpublished data

The majority of total assessments conducted since 1999 have been for large properties greater than 5000m^2 in size. As shown in Figure 4.3, 75 per cent of total NABERS Energy assessments conducted since 1999 have been for properties over 5000m^2. That said, there remains significant scope for growth in assessments conducted across all property sizes.

Even in the over 5000m^2 category, it is estimated that up to **70 per cent of properties have not had *at least one* NABERS Energy assessment in the period from 1999 to 2007.** For properties between 2000m^2 and 5000m^2 in size, only 13 per cent of properties have had a NABERS Energy assessment. It is therefore reasonable to assume continued growth in assessments for both property size categories. Further, expectations are that awareness of energy efficiency will continue to increase with government awareness raising efforts (given the prominence of complementary climate change policies), which is likely to drive growth in demand from property owners for energy efficiency assessments.

Figure 4.3

COMPARISON OF TOTAL DISTRIBUTION OF PROPERTIES BY SIZE AND NABERS ENERGY ASSESSMENTS BY SIZE, 1999-2007



Source: NSW DECC data on assessments (unpublished), Jones Lang LaSalle data on properties (unpublished)

Expected impact of a carbon price

A future policy that needs to be recognised in the base case is the expected introduction of the Carbon Pollution Reduction Scheme (CPRS). It is expected that the resulting carbon price will increase the retail cost of both electricity and gas for commercial and residential property owners.

The CPRS will lead to higher energy costs for building owners and tenants. It could therefore, lead to greater awareness and interest in energy efficiency, where the costs of additional energy consumption increase. It will certainly lead to a higher return per dollar of energy efficiency investment — if that investment is made.

In practice, however, the impact of the CPRS on the commercial office building sector is likely to be minimal. This is due to the following three factors.

- It is quite feasible that the carbon price will remain within a range of $10-$40 per tonne CO_2e out to 2018, with the Australian government signalling a preference for an 'easing-in' period for obligations under the CPRS and a low start carbon price during the Kyoto period. The recent announcement of a revised start date of July 2011 and a fixed price of $10 per tonne CO_2e for the first year confirm this outlook. And uncertainty associated with the passage of he legislation continues to undermine planning around a future carbon price regime and its level.
- At these carbon price levels, the impact on energy expenditure for commercial office buildings will only be in the order of an additional $\$3/m^2$ in energy costs by 2018 (i.e. at $40 per tonne CO_2e).
- Energy costs only account for around 3-5 per cent of total occupancy costs in the commercial office building sector, making a small increase in these costs relatively insignificant for owners and tenants.

The price impact from CPRS is likely to be small, however, this RIS has factored in a small growth in assessment activity on the basis of a carbon price. It depicts a 1.4 per cent total growth in assessments from 2011 to 2019.

Expected provision of energy efficiency information in property transactions

The final element of the base case is to consider the extent to which energy efficiency information (in the form of NABERS Energy assessments conducted through voluntary action) may be provided to prospective buyers and tenants in transactions, in the absence of a requirement for mandatory disclosure of ratings.

Estimating this future trend requires a judgement of the incentive of property owners to provide assessment information to prospective buyers or tenants, without compulsion by government. Where assessments are conducted voluntarily, there should be incentives in favour of disclosure of energy efficiency information. This is because there is a likely positive bias in the stock of properties that have NABERS Energy ratings — properties being rated voluntarily are likely to have a higher energy efficiency performance than the average building stock. This is because:

- the investment in a NABERS Energy assessment can be recovered for those owners who are able to use the information to promote the energy efficiency credentials of their property, therefore there is lower incentive for property owners of less energy efficient buildings
- the Property Council of Australia's classifications of buildings requires all new or refurbished buildings seeking Class A and Premium ratings to achieve at least a 4.5 star NABERS Energy rating, establishing demand for assessments at the higher quality end of the market.

This RIS has therefore assumed that, under the base case, a majority of NABERS Energy ratings conducted would be disclosed by owners during property sales.

Turnover data provides an indication of how many transactions (sales and leases) for which this information could be provided. At the large end of the market (2000m^2 and above) the turnover of stock, both for sales and leases, is very low. Each year, on average:

- 8 per cent of properties in this size range are sold; and
- 6 per cent are leased.

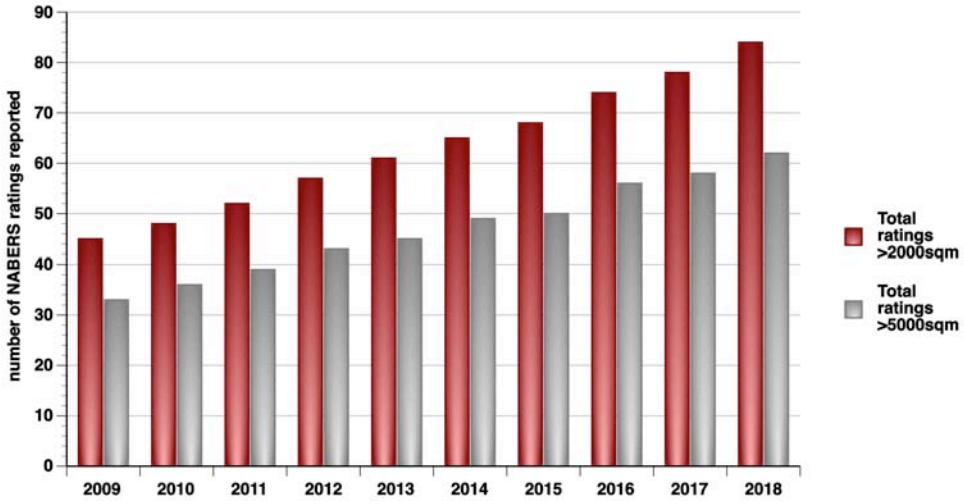
The average rate of sales remains the same for the 5000m^2 and above group; however, the turnover of leases drops even lower, with only 3 per cent of properties in this size range leased every year. Hence, in aggregate, 14 per cent of properties 2000m^2 and above or 11 per cent of properties 5000m^2 and above would require a NABERS Energy rating in any given year.

Applying these turnover rates to the expected volume of assessments conducted provides a trend of expected voluntary reporting of energy efficiency information in property transactions (Figure 4.4). These estimates provide an expected trend in the extent to which information on energy efficiency would be provided during negotiation or sale or lease, without mandatory disclosure.

In the following analysis of options, the costs and benefits of options are estimated *net* of this base case estimate of future voluntary assessment and provision of information in property transactions.

Figure 4.4

ESTIMATED NABERS ENERGY RATINGS INFORMATION VOLUNTARILY PROVIDED IN SALE AND LEASE TRANSACTIONS, 2009 TO 2018



Source: ACG analysis

4.2 Costs

The options assessed in this RIS each impose costs for business, through compliance requirements, and government, in administering and enforcing regulations.

This RIS assesses the costs of each option over a ten-year time period (2009-2018). Costs of options are assessed against the base case — that is, the costs estimated (in Net Present Value [NPV] terms with a 5 per cent discount rate applied) are those incurred over and above the base case. Options have been costed against two thresholds for property size: over 2000m^2 and over 5000m^2.

The method and underlying assumptions for the costing of options are provided in detail in Appendix B of this report. provides a summary of the types of costs quantified and key assumptions in the analysis. This table shows that the primary costs for building owners of mandatory disclosure (Option 1) or a voluntary scheme (Option 2) will be from purchasing energy efficiency assessments. A NABERS Energy star ratings requires a number of information inputs, including:

- area of office premises (m², preferably to PCA standards);
- occupancy (in hours per week);
- location;
- energy use of the premises over the last 12 months.

NABERS Energy assessors then use this information to benchmark the energy and greenhouse performance of a commercial office property, and assign it a star rating. The information gathering process varies across NABERS Energy assessors, but usually involves interviews with staff, verifying energy expenditure bills, and a survey of the premise.

Since the NABERS Energy star rating relies on actual expenditure on energy over a 12 month period, it cannot be assigned to new buildings that have not been occupied or operational for a 12 month period. Instead, building owners of new buildings can undertake a NABERS Energy simulation protocol (similar to the modelling requirements of a NABERS Energy Commitment Agreement), where an accredited assessor will generate a simulation of energy usage in a property, based on the plans or design of the building. The building owner then commits to achieving a particular NABERS Energy star rating within 12 months.

> Signing a Commitment Agreement requires the developer/owner to undertake a series of risk management and administrative steps designed to ensure the completed project will have taken all reasonable precautions to mitigate the risk of not achieving the rating committed to; and has marketed the brand name in a fair and equitable manner. These steps include notifying the design team, and future tenants; arranging for a building energy simulation analysis (mandatory for ratings > 4.0 star), and carrying out an independent design review as stipulated in the Commitment Agreement document (Team Catalyst 2008).

Accredited assessors conduct NABERS Energy assessments. Once accredited, assessors are able to set their own prices for assessments. For this impact analysis, the cost of assessments was estimated using the median of 48 quotes for assessments received by NSW DECC (who manage NABERS Energy). The estimates used were cleared by NSW DECC as being within a reasonable range. Less information is available about the cost of NABERS Energy simulation protocol. This is because the rating is simulation based, and the cost can vary considerably depending on the size of the building or the complexity of the building design. Estimates of the cost of the Energy Commitment Agreements are based on consultations with NSW DECC, DEWHA and NABERS Energy assessors.

The costs of a full base-building plus tenancy light and power assessment for properties greater than 2000 square metres is estimated to cost the property owner $5,919. This is the cost for:

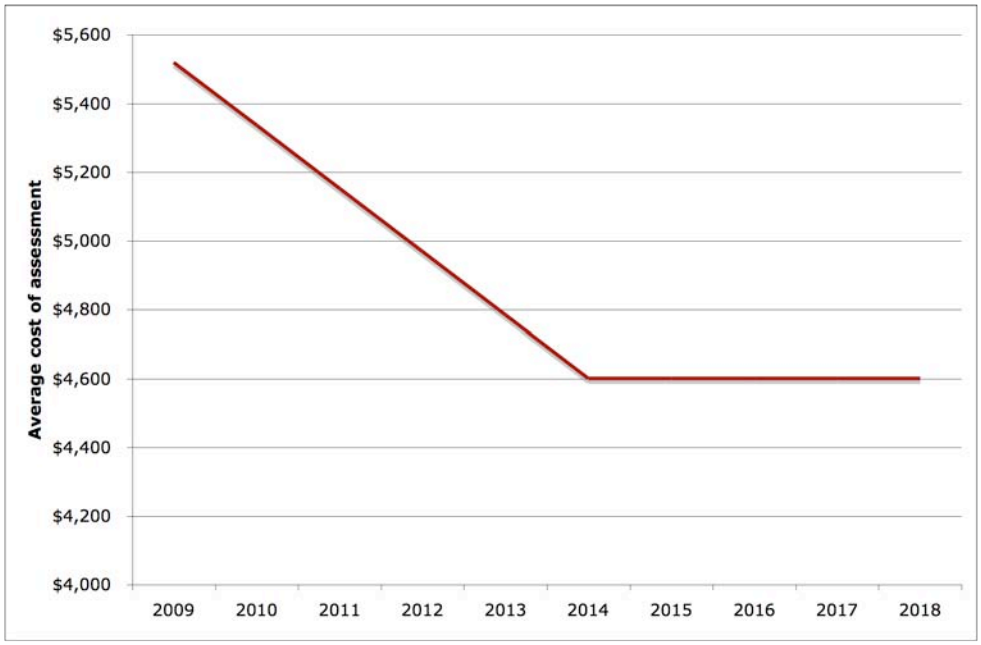
- a NABERS Energy base building assessment ($3,100)
- a tenancy lighting assessment and advisory report ($1,500)
- registration fee ($905)
- eight hours spent preparing information for the assessor ($414).

Under a mandatory scheme, it has been assumed that there will be an initial cost increase for assessments (20 per cent above the current average price for assessments). This growth in costs will result from an increase in demand for assessments without an increase in assessors. It has been further assumed that over the first five years of the program the number of assessors will grow to meet demand and the cost of assessments (in real terms) will return to historical levels. Figure 4.5 illustrates the change in time of the average cost of assessments for a mandatory scheme.

The potential impact of an increase in assessment costs is also included in sensitivity analysis at the end of this chapter.

Figure 4.5

ESTIMATED COST OF ASSESSMENTS



For Option 3, the primary cost is the cost of improving the energy efficiency of a building to meet mandatory minimum performance targets by 2018.

It is important to note that the costs of upgrades to buildings are **not** included as costs of mandatory disclosure. Decisions to upgrade buildings are an investment decision of the property owner, rather than being required as part of mandatory disclosure. Information disclosure acts to improve incentives in the market for this type of investment, but the decision to make improvements remains outside of the requirement to disclose information on energy efficiency.

Option 1: Mandatory disclosure (and sub-options)

Option 1 can be separated into three sub-options:

- Option 1(a) is mandatory disclosure at sale or lease
- Option 1(b) is a requirement for annual tenancy ratings (which is distinct from tenancy lighting assessments under the mandatory disclosure option 1(a))
- Option 1(c) is the requirement that owners of new buildings enter into NABERS Energy simulation protocols (as described in chapter 3).

These sub-options could be implemented together (as combined Option 1, or in parts).

A combined Option 1 incurs costs to business and government of:

- $134.7 million (NPV) for properties larger than 2000m^2
- $76.3 million (NPV) for properties larger than 5000m^2.

The majority of costs can be attributed to sub-option (b), where tenants would be required to conduct annual energy efficiency assessments. The costs of this sub-option are significant because assessments would be required annually. Costs of these assessments decrease significantly where they are required every 24 or 36 months.

Option 1(a) — requiring mandatory disclosure of NABERS Energy assessment information at sale or lease imposes costs of:

- $18.7 million where mandatory disclosure is required for sale and lease of properties over 2000m^2 in NLA
- $10.9 million where mandatory disclosure is required for sale and lease of properties over 5000m^2 in NLA.

Adding the requirement for owners of new buildings, who intend to sell them, to undertake NABERS Energy simulation protocols (Option 1(c)) increases the cost by $14.8 million where required for buildings over 2000m^2, and $7.8 million for required for buildings over 5000m^2. The cost of this Option is due to the small number of buildings that will be affected; the cost to individual owners of those buildings will be substantial (in excess of $35 000).

Option 2: Industry code of practice

Option 2 (industry code of practice) has the lowest cost of all options, due to the voluntary nature of industry participation in the scheme. The cost estimate assumes 40 per cent coverage of properties in the scheme; therefore costs of the scheme are lower than for a mandatory scheme. Option 2 imposes costs of:

- $3.4 million for sale and lease of properties over 2000m^2 in NLA
- $0.5 million for sale and lease of properties over 5000m^2 in NLA.

Costs in this Option are less than in Option 1(a), because a lower level of compliance is assumed. While it is not possible to know for certain what proportion of an industry will sign up to and comply with a voluntary code of practice, it is reasonable to assume some level of compliance in this instance, due to:

- current take-up of NABERS Energy assessments voluntarily by industry
- the marketing or promotional opportunities associated with a high NABERS rating
- nine organisations between them covering off 40 per cent of the market share of commercial office buildings (IBIS World 2008)
- an existing framework of industry defined and industry monitored building classifications (for example, the Property Council of Australia requires new buildings to have a 4.5 NABERS Energy star rating for premium and A grade buildings).

The level of compliance with or participation in the industry scheme is assumed to account for 40 per cent of the commercial office space *at minimum*. This is equivalent to the share of the market controlled by the major players. The value of costs to building owners under this Option is therefore 40 per cent of the corresponding value in Option 1.

The NABERS administration would continue to process and record NABERS Energy ratings, so the value of cost of administering the scheme would be 40 per cent of the corresponding for Option 1.

Option 3: Minimum energy efficiency standards

Option 3 (minimum energy efficiency standards) has the highest costs of all the options, as estimates of cost include upgrading the building stock by one star rating. This Option gives rise to between $576.7 and $693.6 million of costs to government and business, consisting of:

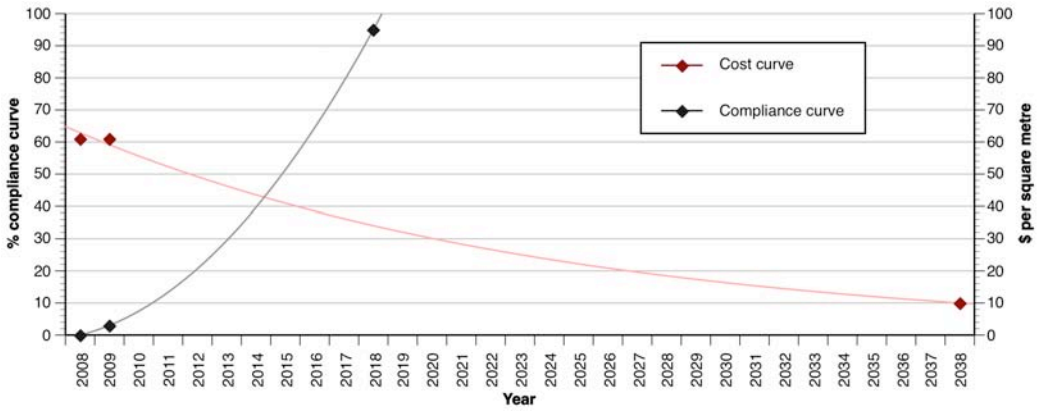
- $680.6 million ($567.4 million) in costs associated with upgrading the existing building stock from an average of 2 NABERS Energy stars to 3 NABERS Energy stars
- $8.5 million ($4.9 million) in assessment costs for property owners with properties of greater than 2000 m^2 NLA (5000 m^2 NLA), to demonstrate compliance with the minimum energy efficiency standard
- $4.4 million in establishment costs to regulators.

The *NFEE Mandatory Disclosure of Commercial Building Energy Efficiency: Concept Report* costs upgrading from a two to three star building at $61 /$m^2$. However this cost can be mitigated if equipment is replaced at the end of its useful life, at which time the cost of upgrading represents a 10 to 15 per cent premium (approximately $10/$m^2$). The maximum lifespan of any building equipment is 30 years. The cost curve for upgrading the energy efficiency of a building assumed for this analysis is illustrated in Figure 4.6.

Figure 4.6 also illustrates the compliance curve used in the analysis. It has been assumed that by the final year, the program will have achieved 95 per cent compliance and that rate of compliance increasing in later years as the cost of upgrades decreases.

Figure 4.6

COMPLIANCE AND COST CURVES



Source: ACG analysis

In consultations for this RIS, there was a range of views from stakeholders on whether this cost estimate is reasonable, with some stakeholders indicating it was too low and others reporting it was too high (particularly at the $\$61/m^2$ range, given that other research suggests that there are negative cost opportunities for the building sector).

In practice, it is likely that the cost of upgrading will vary significantly depending on:

- the starting point for upgrading, given that for some buildings an upgrade can be conducted at low cost because owners are starting from a low performance point (and therefore are yet to take advantage of the lowest cost, or negative cost, opportunities)
- the nature of the building itself — some buildings, by design, age or other characteristics, are limited in the number of potential low cost opportunities for upgrades.

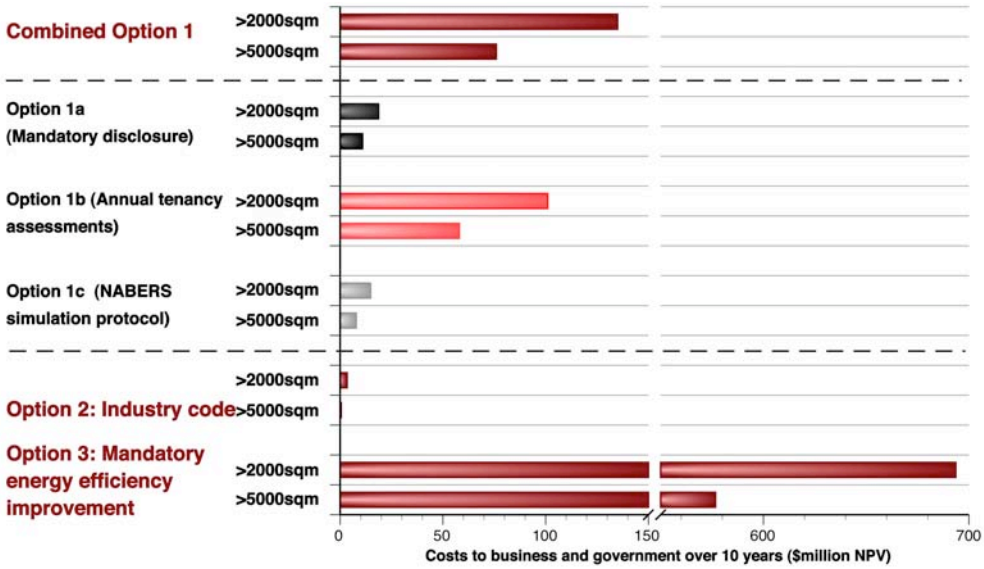
The cost of upgrades for improved energy efficiency, therefore, its likely to be a trajectory along which the building stock will be represented. For this analysis, where an average cost is needed, the use of the estimates above is within reasonable bounds for the options being assessed.

Comparison of costs across options

Figure 4.7 provides a summary of the costs of each option. The figure provides a comparison of the three options, as well as sub-options under Option 1. The costs of each of the sub-options that could be considered as part of Option 1 have been presented separately. Such that, to calculate the cost of Option 1(a+b), the costs from Option 1a and Option 1b, for the appropriate threshold, would be summed.

Figure 4.7

COMPARISON OF OPTION COSTS, 2009-2018 (NPV)



Source: ACG analysis

For a summary of the costing estimates used in these calculations please refer to Appendix B.

4.3 Direct benefits of Options 1 and 2

The options assessed in this report include two options to address the problem through information tools, and one explicit regulation approach.

The use of information tools by government seeks to address market failures that arise from information asymmetries or split incentives between buyers and sellers in a market. Information disclosure requirements typically have two key advantages compared with more intrusive government intervention.

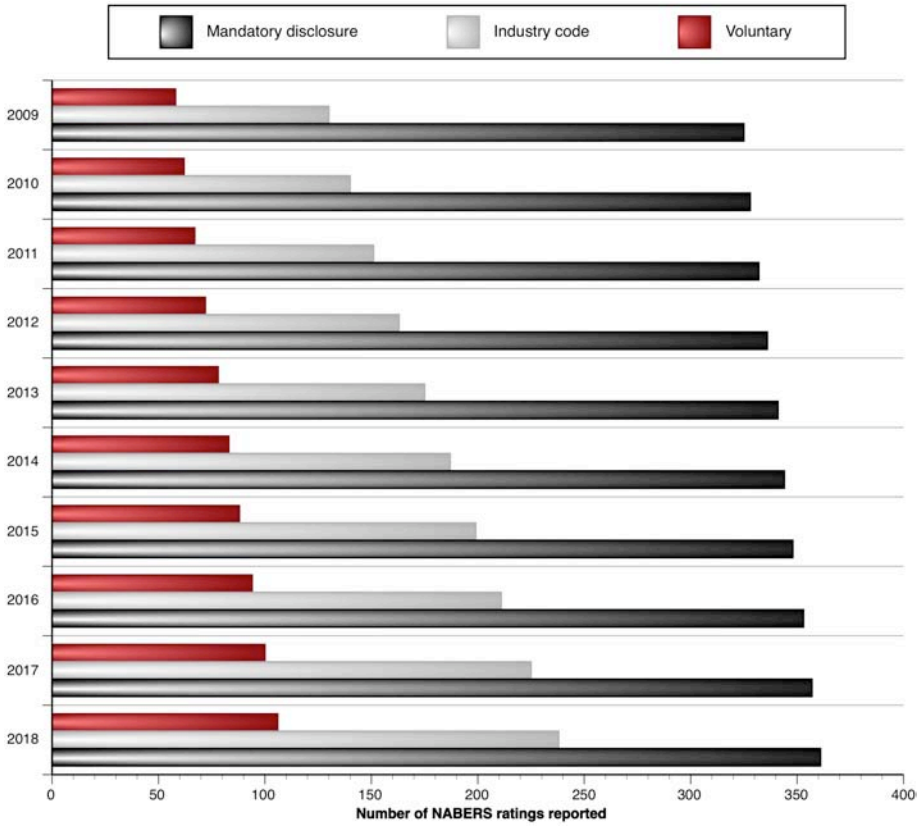
- Because they simply provide information to consumers, the final decision about whether to purchase a product remains with the consumer. This is in contrast to other regulatory options (such as product bans) that directly prevent consumers from making particular trade-offs or choices.
- Disclosure requirements do not prevent firms from providing new products or otherwise innovating. Nor do they prevent new firms from entering an industry, providing those firms meet disclosure requirements. And they do not preclude provision of additional information where this may be helpful and valued by consumers. (Productivity Commission 2005)

To be most effective, information disclosed to buyers should be easy to understand and interpret. Consumers are most likely to use the information when they understand how it relates to their decision and can use it to compare products on a like with like basis. In this context, star-ratings tools can prove useful for buyers or tenants where they can compare buildings using these measures. It is important, however, that consumers are aware of the implications for them for each point on the scale of the rating (i.e. what the savings for them would be for an addition 'star').

As discussed earlier, building owners currently provide energy efficiency information to buyers and tenants voluntarily. Estimates of how assessments would be provided in sale and lease transactions under mandatory disclosure or an industry code are provided in Figure 4.8. This figure shows an increase in assessment information provided in sales or lease transactions for both the industry code (Option 1) and mandatory disclosure (Option 2).

Figure 4.8

ESTIMATED NABERS ENERGY RATINGS INFORMATION PROVIDED IN SALE AND LEASE TRANSACTIONS, 2009 TO 2018



Source: ACG analysis

Increased provision of energy efficiency information in transactions can achieve benefits where:

- consumers use the information to inform their decision to buy or lease a property, and accrue direct energy savings by using the information (by choosing a more energy efficient property)
- greater disclosure of energy efficiency information in the market provides opportunities for owners to capture a premium for higher rated buildings, which provides an incentive for improvements in energy efficiency across the building stock (effectively addressing the problem of adverse selection in the market).

These types of benefits apply where information is used directly to either obtain a saving or provide an incentive for investment in energy efficiency upgrades. It is possible, however, to conceive that information disclosure can provide a benefit to buyers or tenants, even if they do not act on it directly. Box 4.1 provides further discussion on this concept. For this RIS analysis, these benefits have not been included in estimates, but they remain important to acknowledge in assessment of the broader benefits of information disclosure in the market.

Direct savings for buyers or tenants of choosing a more energy efficient property

Disclosure of energy efficiency information in property transactions through either a mandatory or voluntary scheme will most benefit those parties who value the information and will use the information in decisions. For this set of buyers and tenants, information with which to compare energy efficiency will provide benefits through savings on energy expenditure (where a higher rated building is chosen).

As discussed in Box 4.1, it is likely that the proportion of buyers or tenants who will accrue direct benefits will be low.

Box 4.1

WHY INDIVIDUALS MAY NOT ACT ON ENERGY EFFICIENCY INFORMATION

The analysis of benefits from information disclosure in this RIS focuses on where buyers or tenants are able to use information on energy efficiency to achieve savings (by choosing a higher rated property). It is likely that this scenario will only apply to a relatively small group of prospective buyers or tenants. Other parties may either not be able to use the information to achieve these benefits *or* they may use the information but not choose the higher rated property.

Buyers or tenant may be unable to use the information to achieve a saving where:

- they are not able to compare properties on a like-with-like basis and choose a more energy efficient option (for instance, where all properties of the size and location that they are seeking have the same rating)
- their preferences are such that they have minimal choice in the market, which may be the case with large organisations (in such cases energy efficiency performance may be achieved through other means, such as customising properties as part of sale negotiations)
- low vacancy rates in the market dictate that tenants and buyers have few options and are not in a position to compare a set of properties on the basis of energy efficiency performance.

Buyers or tenants may be in a position to compare properties on the basis of energy efficiency performance, but don't choose the more energy efficient option. Reasons for this may be:

- the potential energy efficiency savings are not sufficient to overcome other characteristics (i.e. location, amenities)
- decision makers within organisations do not place a high value on energy savings and therefore do not pursue them as an option in property choice.

These scenarios are different to where a buyer or tenant does not understand the ratings information correctly, or is not aware of its potential use as part of a property transaction.

A key conceptual question for analysis of mandatory disclosure benefits is — do consumer benefit from information disclosure even if they can not, or do not achieve a direct benefit from using the information?

For those buyers and tenants who are unable to use the information due to market characteristics, information disclosure has little to no benefit. These parties may wish to use the information but are unable to, and therefore derive little gain from disclosure. Conversely, those buyers or tenants who are able to use the information to compare properties, but choose not to purchase or lease the higher rated property *are* deriving a benefit from the information provided. These parties are able to use the information, along with other characteristics to make an informed choice, but there are other barriers or issues which prevented them from choosing the most energy efficient option (such as cost).

Break-even analysis of direct benefit to buyers or tenants

The analysis presented in this section is in the form of a break-even analysis. A break-even analysis identifies the minimum quantum of benefits needed for a regulatory proposal to provide a net positive outcome. A break-even analysis is attractive because it does not directly seek to value benefits, but tests the reasonableness of potential levels of benefit, compared with costs.

A break-even approach establishes the minimum benefits required to a least cover total costs. Where the break-even target can be exceeded, the option provides a net benefit to the community. Break-even analysis sets a level of benefit required, meaning an assessment can be made on the likelihood of this target being achieved. Where multiple options meet the break-even target, the option with the potential for the greatest level of benefit is the preferred option (as it provides the greatest benefit for investment by business and government).

The first component of the analysis is to determine the level of direct benefit for prospective tenants or buyers required to cover costs of the scheme. This level of benefit is measured as the direct saving resulting from a tenant or buyer choosing to rent or buy a property with a rating one star higher than other properties on the market. As Table 4.1 demonstrates, for Option 1(a) (2000m^2 or larger), if 3.9 per cent of transactions each year are influenced by mandatory disclosure the direct benefit will balance the cost of the scheme. This is equivalent to 114 transactions over the ten-year life of the program. Whereas, Option 2 only requires 1.8 per cent of transactions from those buildings participating in the voluntary scheme to be influenced by the disclosure of energy efficiency information to balance the cost of the scheme. This is equivalent to 21 transactions.

Table 4.1

LEVEL OF DIRECT BENEFIT NEEDED TO RECOVER COSTS

Option	>2000 m^2		>5000 m^2	
	% of transactions per year	Total number of transactions	% of transactions per year	Total number of transactions
Option 1(a)*	3.9%	114	3.3%	42
Option 1(a+c)^	7.0% (22%, 4%)	207	5.8% (14%, 3.2%)	74
Option 2	1.8%	21	0.3%	2

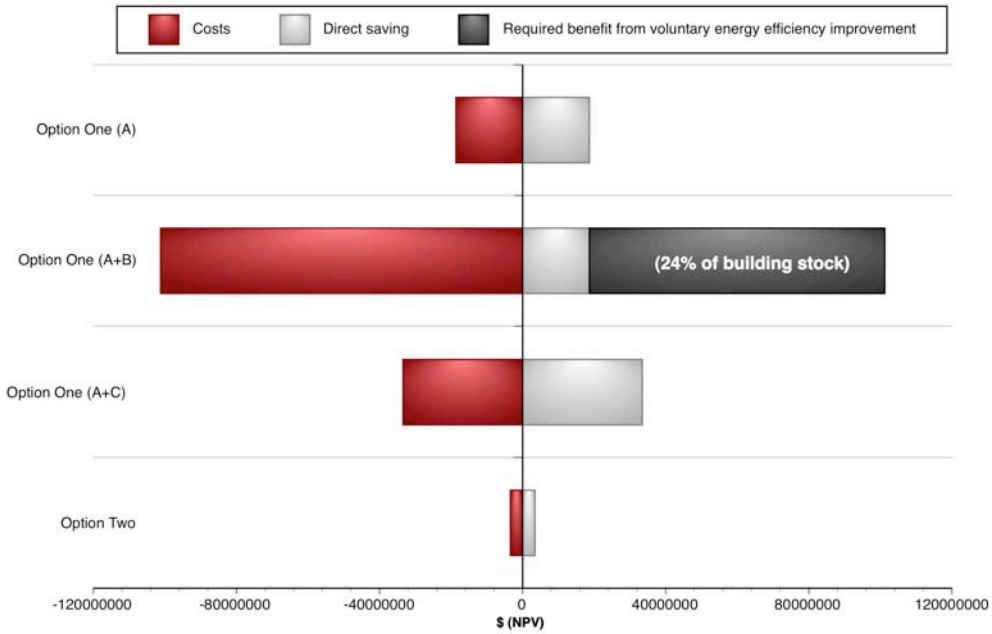
Note: *The level of direct benefit in Option 1(a) would also be expected in Option(a+b) however additional voluntary energy efficiency improvement motivated by the annual tenancy assessments would also be required to break-even for Option(a+b). ^The percentages in brackets for Option 1(a+c) denote the level of direct benefit required in the new building stock and in the existing building stock to break-even.

Source: ACG analysis

The direct benefit arises from decisions of buyers or tenants when purchasing or agreeing a new lease. Option 1(b) is a requirement for tenancy assessments. As such, this sub-option is not designed to influence the decision making process in property transactions. Benefits from these tenancy assessments can only be achieved through savings from voluntary energy efficiency improvements. The level of required benefit from energy efficiency improvement to reach the break-even point has been estimated. Figure 4.9 shows the minimum voluntary energy efficiency improvement required to cover the cost of adding this sub-option to mandatory disclosure.

Figure 4.9

BREAK-EVEN ANALYSIS OF OPTIONS ONE AND TWO – GREATER THAN 2000M^2



Note: Numbers in brackets denote the percentage of building stock that would have to improve by one star rating (through voluntary action) over the 10-year period, to offset costs.

Source: ACG analysis

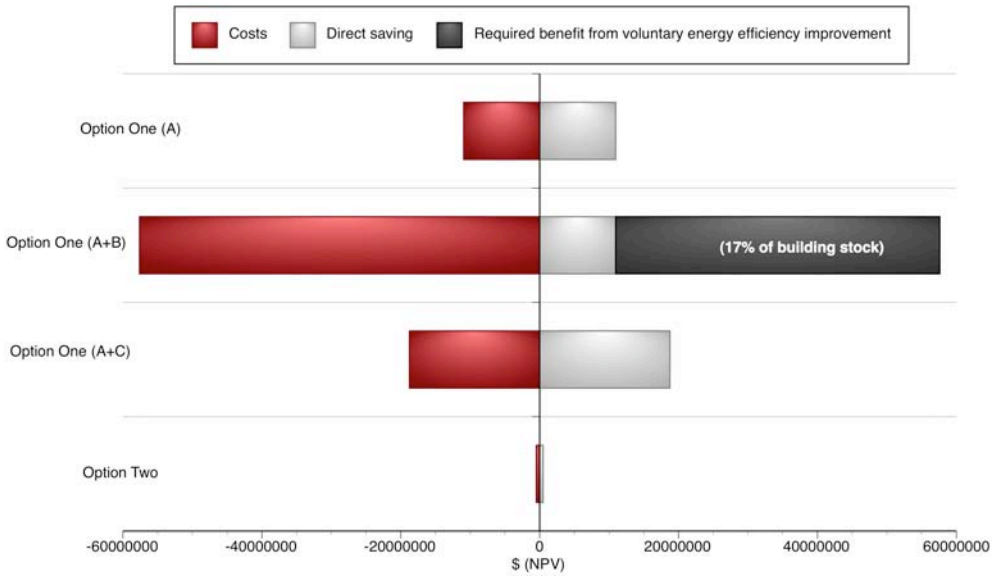
Results of the break-even analysis illustrate the relatively low cost of mandatory disclosure. The requirement for annual tenancy assessments imposes significantly higher costs than other options, with an unrealistic break-even target, meaning, if implemented, the proposal would likely impose a net cost. The requirement for NABERS Energy simulation protocol would impose a relatively small additional cost overall. However, as noted above, it would impose a large cost for individual new building owners, for minimal additional benefit.

Figure 4.10 provides the same analysis but with the threshold set at properties greater than 5000m^2.

This analysis shows that the break-even target for tenancy assessments is that 234 leased buildings increase their energy efficiency by one star. This target is lower than for the 2000m^2 or greater group, reflecting the improved opportunities for larger size properties to recoup costs of assessments through energy savings. The target for the 5000m^2 or larger group is still high (17 per cent of building stock), given that these savings would have to be achieved through voluntary action.

Figure 4.10

BREAK-EVEN ANALYSIS OF OPTIONS ONE AND TWO – GREATER THAN 5000M^2



Note: Numbers in brackets denote the percentage of building stock that would have to improve by one star rating (through voluntary action) over the 10-year period, to offset costs.

Source: ACG analysis

Is the break-even threshold reasonable and achievable?

The Consultation RIS presented a break-even threshold point where the costs of the scheme would be equal to the benefits — essentially the point where the scheme could be justified on net benefit grounds. In consultations we tested with stakeholders whether this target was reasonable. While stakeholders did provide some comments on the cost-benefit analysis in the RIS, few provided their judgement of the break-even target specifically (though several commented that it was very low).

It is important to note in this analysis that the break-even target is *not*:

- the expect total benefit of the scheme, *or*
- the target benefit for government to be satisfied that the scheme is a 'success'.

What the break-even does is set a threshold specifically for the cost benefit analysis to test the reasonableness of the costs imposed against potential *direct* benefits.

The tool being tested in an information tool — information tools by their nature are low cost but less direct methods of government intervention in markets. A low threshold is therefore appropriate in this instance as it would be inappropriate to overstate the direct benefit of information in the market.

The direct value of information for prospective buyers or tenants is contingent on:

- choice in the market — in tighter market conditions direct benefits through enabling choice will be reduced, and
- buyers or tenants understanding the information and placing a priority on energy efficiency.

While market conditions are currently tight, there is evidence to suggest that there is growing interest from property owners and tenants in energy efficiency (such as recently published research from Jones Lang LaSalle which reports growing interest, and higher yields for higher performing properties). In this environment, the low cost of the scheme is likely to be outweighed by these direct benefits in the marketplace.

In making a judgement about the most appropriate option it is necessary to consider the potential level of benefit that may be generated individually and overall. The options that target the greater than 5000m^2 population and the voluntary option have a lower cost but also target a smaller population and have less scope for generating benefits. On the other hand, some stakeholders suggested that the 1000m^2 threshold be considered for the mandatory schemes. At this threshold the population captured by the scheme would be significantly larger as would the scope to generate benefits. The individual benefits derived by each tenant or prospective building owners, however, would be diminished while the cost to each scheme participant would remain substantially unchanged. These competing issues must be balanced when assessing the option with the most acceptable break-even target.

4.4 Longer term indirect benefits of Options 1 and 2

In addition to the direct benefit of generated by the disclosure of energy efficiency information there are two types of longer term indirect benefits that are likely to flow from the program:

- voluntary improvement in the energy efficiency of commercial office buildings; and
- reduced greenhouse gas emissions.

Potential benefit through increased energy efficiency of commercial office buildings

A longer term benefit from disclosure of energy efficiency information is the voluntary improvement to the energy efficiency of the commercial office building stock. Such benefits can be achieved where investment in energy efficiency improvements are driven by:

- increased volume of information in the market leading to increased awareness of energy efficiency as a characteristic of commercial office buildings
- demand for higher energy efficiency increasing the premium for higher rated buildings, and thus the return on investment for energy efficiency improvements.

The potential impact resulting from voluntary energy efficiency improvement through a more informed market is set out in Table 4.2. This provides scenarios for potential voluntary improvement in energy efficiency performance. Its shows that voluntary improvement in a relatively small proportion of the total building stock (2000m^2 or larger) results in benefits (through energy savings) in the range of $13.5 million to $54 million. These incremental improvements can be achieved through low cost opportunities such as improved management, maintenance or behavioural change on the part of occupants. A key factor in this analysis is that as these improvements are voluntary — they should only occur where owners consider the improvement are cost effective for their property (that is, specific improvements are not mandated).

Table 4.2

POTENTIAL BENEFITS OF VOLUNTARY ENERGY EFFICIENCY IMPROVEMENT

	Proportion of building stock	>2000 /m^2 NPV (millions) over 10 years
Improvement by ½ a NABERS Energy star rating	5 per cent	$13.5
	10 per cent	$27.0
Improvement by 1 NABERS Energy star rating	5 per cent	$27.0
	10 per cent	$54.0

The level of potential improvement presented in the above table is more likely to be achieved under a mandatory scheme rather than the voluntary scheme because:

- a mandatory scheme will ensure that there is more information in the market
- a mandatory scheme will ensure a greater population across which to encourage voluntary energy efficiency improvement
- a voluntary scheme is likely to only attract the best performers (i.e. the most energy efficient buildings), as such there will be less scope for improvement.

Benefits through greenhouse gas abatement

In addition to the benefits associated with the reduction in expenditure on energy consumption there will be benefits to the environment through reduced greenhouse gas emissions. These emission savings are generated as a result of reductions in energy consumption at an individual level, and are estimated in Table 4.4.

Notably, for an accurate assessment of actual savings details of energy mix and emission intensity is required – and this can differ by building and location. Nevertheless, it can be useful to bear in mind the greenhouse gas emission 'spin-offs' that can be associated with actions resulting in energy efficiency improvement. While not explicitly valued in this study — apart from the added 'savings' associated with energy savings in an emissions trading environment — the notion of an environmental pay-off can be a strong additional motivating factor or source of 'psychic income' for many individuals and companies with a 'triple bottom line' orientation.

Importantly, these greenhouse 'savings' remain valid even in an emissions trading environment characterised by a 'cap and trade' approach (as proposed under the national CPRS). While, strictly speaking, the capped emissions pool under the CPRS means that unused emissions go back into the pool and are available for others to use, energy efficiency efforts are nevertheless a powerful ally of over-arching greenhouse objectives. The abatement they generate lowers the cost of further greenhouse action. Unlocking these savings makes more ambitious greenhouse targets more affordable in the future, and is therefore an important part of the longer term greenhouse solution. From a policy and individual perspective, it is important that individual action to save energy also gives (and receives) appropriate recognition of how this supports wider greenhouse and environmental objectives.

Table 4.3

GREENHOUSE GAS ABATED

	Proportion of building stock	>2000 /m^2 CO2e reduction (kt) over 10 years
Improvement by ½ a NABERS Energy star rating	5 per cent	95
	10 per cent	190
Improvement by 1 NABERS Energy star rating	5 per cent	190
	10 per cent	380

4.5 Benefits of Option 3 — Mandatory minimum energy efficiency standards

Minimum energy efficiency standards have a direct, quantifiable benefit — savings from energy expenditure attributable to a more efficient use of energy.

Under the option, building owners (and potentially also tenants) will benefit from the energy cost savings achieved through the operation of a better performing building. These benefits will accrue to building owners who own a building which is under the threshold point of 3 NABERS Energy stars and is required to be upgraded (i.e. for those owners with buildings already meeting the threshold, there is no change). The estimates of benefit are taken on the basis of a 1 star improvement in the building stock, based on estimates of the average building stock performance, though in practice some buildings will not require any upgrades, while others will require more than a 1 star improvement.

Benefits to owners and tenants are estimated using the $\$3/m^2$ saving estimate for upgrading by 1 star (as used in previous estimates for benefits for Options 1 and 2). Over the ten year period following the investment in the upgrade, benefits are estimated to be:

- $360 million for the 2000 m^2 or larger group
- $300 million for the 5000 m^2 or larger group.

As noted in Section 4.2 above, the costs of this measure are estimated to be:

- $694 million for the 2000 m^2 or larger group
- $577 million for the 5000 m^2 or larger group.

Hence, requiring mandatory minimum energy efficiency standards comes at a net cost of:

- $334 million for the 2000 m^2 or larger group
- $277 million for the 5000 m^2 or larger group.

These estimates are based on the aggregate estimate that a 1 star improvement will cost between $\$61/m^2$ and $\$35/m^2$ to implement. It is important to note that these estimates are based on a 10 year horizon, to be comparable with the other options in this RIS. In practice, benefits of improvements will likely continue to accrue beyond this period (though this will depend on the type of upgrades conducted, and the economic life of assets purchased).

The assessment of this option shows the net costs associated with a relatively blunt approach to mandatory minimum energy efficiency improvement. The costs of the scheme are high because the average costs factors in the potential that some building owners may be required to invest in energy efficiency improvements through moderate or high cost upgrades. It is reasonable to assume that, faced with a requirement to upgrade, owners will seek the lowest cost option for them. For some owners, these options will be incurred at a lower cost than that estimated for this option, but for others the costs will be higher (as discussed in the previous discussion on costs of this option). This means that, for some building owners, investing in upgrades *will* result in a direct net benefit through energy savings, because they are able to implement lower cost upgrades. For others, however, there will be a net cost (as they do not have a flexibility in this option to *not* invest in upgrades at a higher cost).

There are potentially other forms of a mandatory investment approach that would incur lower costs than this Option. For instance, an alternative approach would be to require mandatory investment where the pay-back period is below a defined threshold. This type of approach, linked to energy audit procedures, takes the economics and pay-offs of particular options into account. It recognises a menu of energy improvement options available in particular locations and specifically targets those offering the greatest economic pay-off (i.e. the 'low hanging fruit').

4.6 Comparison of benefits across all options

The preceding sections provide an analysis of the types of potential benefits from the options assessed in this RIS.

The analysis of Options 1 and 2 focused on the potential *direct benefit* of information in the market (savings for buyers or tenants), and the longer term *indirect benefits* of voluntary energy efficiency improvements that occur where the market is better informed about potential cost savings through higher energy efficiency performance.

The analysis of Option 3 focuses on potential benefit resulting from mandatory energy efficiency improvement, which is the direct cost savings through higher energy efficiency performance.

For Option 1 (and sub-options) and Option 2 the direct benefit analysis uses a break-even assessment, to test the reasonableness of the level of benefit need to recover costs of the option. This assessment was conducted against two building NLA thresholds — 2000m^2 and 5000m^2. The break-even assessment sets a target for benefits equivalent to costs — as it seeks to understand the require benefit to *at least* achieve a balance between benefits and costs. Lower cost options will, therefore, have smaller breakeven targets. The test is not to identify the option with the lowest break-even target, but to make a judgement about which option has the best balance of cost and benefits (that is, the option which has the great scope for benefits, but with costs that are still within reasonable limits).

Our analysis, of the Option 1 sub-options analysis found that:

- Option 1 (a) — mandatory disclosure — requires direct benefits to be realised in around 4 per cent of transactions each year for the 2000m^2 threshold, and 3.3 per cent of transactions each year for the 5000m^2 threshold.
- Option 1(b) — Combining mandatory disclosure with annual tenancy assessment — resulted in significant costs which would require a large (and potentially unrealistic) level of induced energy efficiency improvement (this is the case for both size thresholds).
- Option 1 (c) — Combining mandatory disclosure with NABERS Energy simulation for new buildings increases the break-even threshold to 7 per cent, the costs for which are concentrated on a small number of new building owners (this is the case for both size thresholds).

On this basis, Option 1 (a) is assessed as being the preferred approach within the Option 1 sub-options, because it sets a reasonable target for break-even benefit, without the additional costs incurred through the proposals in the (b) and (c) sub-options. Further, Option 1 (a) with a 2000m^2 NLA threshold is preferred because it presents greater scope for benefit (as it influences a larger proportion of the building stock), but its costs are still at a low level and within a reasonable range (i.e. only requiring a small proportion of direct benefit means that there is strong scope for a *net* benefit to be achieved — i.e. benefits to be greater than costs).

Comparing these results with Options 2 and 3:

- Option 2 is the lowest cost of all options, requiring only 1.8 per cent of transaction per year to realise a direct benefit
- Option 3 is the highest cost option, as it reflects the costs of upgrades through a mandatory energy efficiency improvement.

In this analysis, Option 3 has been discounted because if the high costs for building owners, and the potential low efficiency of the option (as it may not be the best approach to ensure that the lowest cost opportunities are taken-up).

Comparing Option 1 (a) with Option 2, Option 2 may appear to be the better option because it is lower cost. It is, however, also likely to be a lower impact option because, as it is a voluntary scheme:

- there will be fewer participants than in a mandatory scheme; and
- there is likely to be a bias in the participant group towards owners of higher performing buildings (as under the voluntary scheme there is little incentive for owners of poorly performing buildings to participate).

This factor is reflected in the assessment of indirect benefits in earlier sections. Option 1 (a), while higher cost than Option 2, will result in more information being provided to the market, and this information will not be biased towards better performing buildings. These factors make it significantly more likely to achieve the indirect benefits discussed above, and therefore make it the preferred option over Option 2.

4.7 Sensitivity analysis

There are a number of assumptions in this analysis that, in practice, may vary either side of the estimate used. It is therefore important to sensitivity test assumptions to ensure the robustness of the final estimates.

Key assumptions to sensitivity test are:

- *the costs of assessments* —depending on the availability of assessors there is the potential for mandatory disclosure to inflate assessment costs due to higher demand for assessments.
- *the rate of transactions* — the rate of transactions is dependent on market and as such is subject to change.
- *the annual benefit from energy efficiency improvements* — this amount is currently estimated at \$3/m^2.

- *the validity period for assessments* — the current proposal is for assessments no more than 12 months old when disclosed. Varying this amount may reduce costs for business.

Cost of assessments

The sensitivity of the results to possible increases in the price of NABERS Energy assessments during the initial years of the regulations is provided in Table 4.4. Such price increases may arise due to increases in demand for the services of NABERS Energy assessors that outstrip supply during the initial years. The sensitivity analysis was conducted for three different price scenarios as follows:

- constant – price constant over 10 year period
- low initial increase (central estimate — refer to Figure 4.5)
- high initial increase – price increases by 50 per cent of the 2008 price in 2009 and then declines back to the 2008 by 2014.

Table 4.4

COST OF ASSESSMENTS

	Constant (millions)	Low increase (millions)	High increase (millions)
Option 1a			
Total cost to owners (>2000m^2)	$17.9	$18.7	$19.7
Total cost to owners (>5000m^2)	$10.6	$10.9	$11.5
Option 1 (a+b)			
Total cost to owners and tenants (>2000 m^2)	$90.0	$101.2	$119.6
Total cost to owners and tenants (>5000 m^2)	$51.2	$57.6	$68.2
Option 2			
Total cost to owners (>2000m^2)	$3.1	3.4	$3.9
Total cost to owners (>5000m^2)	$0.3	$0.5	$0.8
Option 3			
Total cost to owners (>2000m^2)	$693.3	$693.6	$694.1
Total cost to owners (>5000m^2)	$576.5	$576.7	$577.0

Source: Allen Consulting Group analysis

The impact of price rises in the cost of assessment on the overall cost of the proposals is most severe for Option 1(a+b). For all other scenarios the variation in price between the constant price and the high increase is very moderate. As Table 4.5 demonstrates under the high increase scenario, Option 1(a) for the 2000m^2 or greater group, would require an extra 5 transactions over the ten-year life of the program to break-even.

Table 4.5

LEVEL OF DIRECT BENEFIT NEEDED FOR THE HIGHER INCREASE

Option	>2000 m^2 (Higher costs)		>2000 m^2 (Central estimate)	
	% of transactions per year	Total number of transactions	% of transactions per year	Total number of transactions
Option 1(a)	4.1%	120	3.9%	114
Option 2	2.1%	24	1.8%	21

Source: ACG analysis

Rate of transactions

Changes in transaction rates for sales and leases are usually a response to market conditions. Given the time period over which this program is being assessed there is likely to be some variation in the rates of sale and or leases. Therefore, sensitivity analysis has been conducted to determine the impact of a 10 per cent increase or decrease in total transaction rates. As Table 4.6 demonstrates, the impact on the break-even point of changes in transaction rates is very marginal.

Table 4.6

LEVEL OF DIRECT BENEFIT NEEDED UNDER ALTERNATIVE TRANSACTION RATES >2000m^2

	Option 1(a)		Option 2	
Transaction rate outside the CBD	% of transactions per year	Total number of transactions	% of transactions per year	Total number of transactions
90% of 2008 transaction activity	3.9%	105	1.8%	19
Central estimate	3.9%	114	1.8%	21
110% of 2008 transaction activity	3.8%	123	1.8%	23

Source: ACG analysis

Annual benefit from energy efficiency improvements

The average annual benefit of increasing the NABERS Energy rating of a building by one star is currently estimated at \$3/m^2. This estimate has been reported by multiple sources and is, therefore, considered reasonably robust. Nonetheless, given the central role this estimate plays the sensitivity of the results to this variable has been tested. The results of a sensitivity analysis are summarised in Table 4.7.

Table 4.7

LEVEL OF DIRECT BENEFIT NEEDED UNDER ALTERNATIVE ANNUAL BENEFITS >2000m^2

	Option 1(a)		Option 2	
Annual saving /m^2	% of transactions per year	Total number of transactions	% of transactions per year	Total number of transactions
$2	5.8%	171	2.7%	32
$3	3.9%	114	1.8%	21
$4	2.9%	85	1.4%	16
$5	2.3%	68	1.1%	13

Source: ACG analysis

Assessment validity period

In order to test the sensitivity of the results to changes in the validity period of NABERS Energy assessments, the results of a sensitivity analysis are provided for Option 1(b) in Table 4.8. This analysis has only been conducted for Option 1(b) because changing the validity period would only affect Option 1(b). Under the other proposals assessments are only required when the property is sold or leased. As office properties are generally only sold or leased once every 5-10 years they would require a new rating every time they were sold or leased.

Table 4.8

OPTION 1B SENSITIVITY ANALYSIS – VALIDITY PERIOD

	12 months (millions)	24 months (millions)	36 months (millions)
Total cost to tenants (>2000m^2)	$95.5	$39.5	$25.4
Total cost to tenants (>5000m^2)	$52.5	$20.7	$12.7

Source: ACG analysis

The cost impact on tenants would be significantly reduced if the validity period for mandatory tenancy assessments was increased to once every 24 or 36 months. With a 36 month validity period, the break-even proportion of the building stock that would be required to be voluntarily improved decreases:

- from 630 properties to 187 for the 2000 m^2 or larger group
- from 232 properties to 69 properties for the 5000 m^2 or larger group.

4.8 Combined sensitivity analysis — Monte Carlo analysis

In addition to varying different parameters and design features, it is instructive to examine the expected level of direct benefit represented as a percentage of total transactions each year required for the program to break-even under different combinations of factors.

Monte Carlo analysis makes it possible to vary all of the design parameters and assumptions discussed above simultaneously and explore the effect of their potential interactions on the program. This involves performing 10 000 simulations of the cost benefit model using different values, and combinations of values, for the assumptions adopted. This analysis makes it possible to determine the robustness of the results reported above.

Table 4.9

SENSITIVITY ANALYSIS: VARYING COMBINATIONS OF ASSUMPTIONS

Assumption/ design parameter	Minimum	Most likely	Maximum	Distribution
The costs of assessment	Constant	Low increase	High increase	Triangular
Annual benefit	$2	$3	$5	Triangular
Rates of transactions	90% of 2008 levels	2008 levels	110% of 2008 levels	Triangular

Note: The triangular distribution is a continuous probability distribution with a lower limit, mode and upper limit. The 'most likely' payback periods reflect observed average values for the target population.

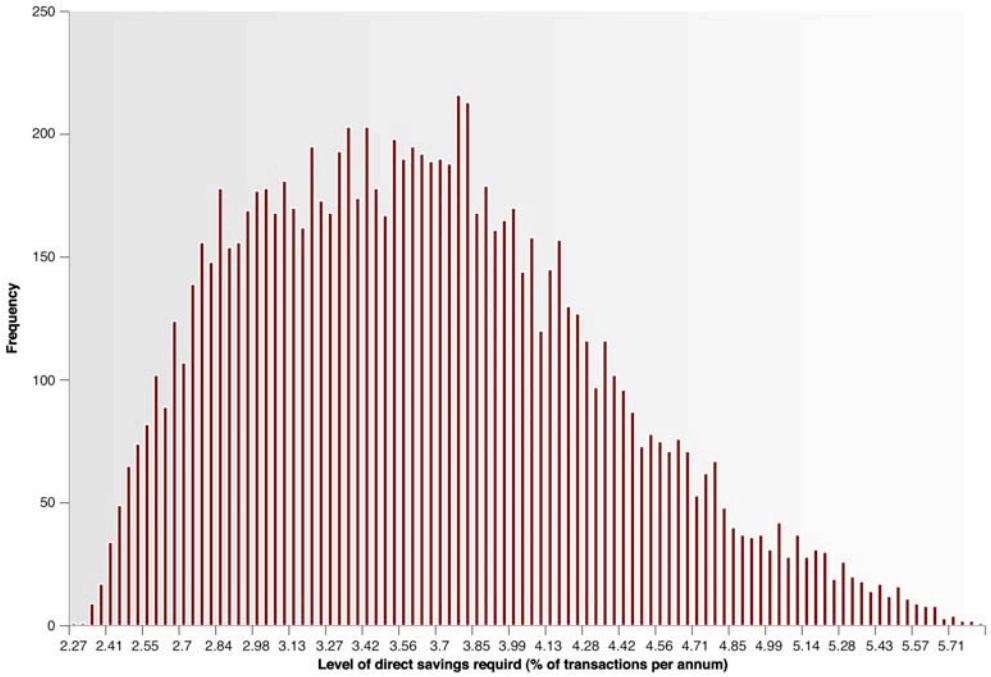
2000m^2 or larger group

The sensitivity analysis found that the mean number of transactions per year required for Option 1(a) for the 2000m^2 or larger group under the value ranges outlined in Table 4.9 to break-even was 3.6 per cent. The maximum required number of influenced transactions for the program to break-even was 5.9 per cent — and the likelihood of such a poor result is low.

Figure 4.11 provides a diagrammatic representation of the sensitivity analysis and highlights the robust nature of the central estimate for the program. Given the assumption range and best estimates, the analysis suggests a likely break-even point for the Option 1(a) between 2.6 per cent and 4.9 per cent.

Figure 4.11

SENSITIVITY ANALYSIS OF BREAK-EVEN REQUIREMENT FOR >2000m^2



Source: ACG analysis

Chapter 5

Conclusion and recommended option

5.1 The preferred option — Mandatory disclosure (Option 1(a))

The analysis shows that mandatory disclosure of energy efficiency ratings (under the NABERS Energy system) is the recommended policy option for governments. The costs of mandatory disclosure are $18.7 million over 10 years (NPV), a level which requires only a very modest application by buyers and tenants who receive the information in property transactions — 3.9 per cent of transactions over 10 years. While an industry code of practice also imposes very low costs, the capacity of this option to influence change is lower because it has smaller coverage of properties. Sensitivity testing of this option concludes, with 90 per cent certainty that the estimate of the break-even level of application by buyers and tenants is in the range of 2.6 per cent and 4.9per cent.

The best option for the application of a mandatory disclosure scheme would have the following parameters.

Mandatory disclosure required for properties 2000m^2 or greater in size.

It is recommended that mandatory disclosure (Option 1(a) in this RIS) should be applied to commercial office buildings with a NLA greater than 2000m^2. As described in Chapter 4, the impact assessment found that the additional benefit of applying mandatory disclosure to 2000m^2 threshold, compared with a 5000m^2 threshold, out weighed the additional costs.

Assessment of data on property size and turnover suggests that, even at a threshold of 2000m^2, turnover rates are low and the number of properties leased is lower (than for properties smaller than 2000m^2). At the 2000m^2 level the costs to building owners can be reasonably offset by a small response from consumers to the information provided at transactions. Assessment of a threshold of 5000m^2 or greater yielded lower costs ($10.9 million NPV over 10 years) but has a smaller impact for buyers and tenants.

It is likely that requiring mandatory disclosure at lower size thresholds will involve more costs, because of the higher turnover rates and number of properties, with a low capacity to offset costs with direct benefit from energy savings (because the savings are lower opportunities for smaller properties, but the costs of assessments are significant for smaller properties).

Assessment validity period

This RIS found that, because of low turnover rates at the property sizes tested, the validity period of assessments was not significant determinant of costs. That is, lengthening the period from 12 months does not reduce costs because turnover is around 10-15 per cent per year.

5.2 Assessment of the proposal for annual tenancy assessments (Option 1(b))

The proposal to require annual tenancy assessments is not recommended because of the high costs that it would impose on tenants, with insufficient ability for costs to be offset with energy savings. This option would impose a cost of $101.2 million over ten years (NPV) when applied to tenancies greater than 2000m^2. Offsetting these costs would require voluntary investment in energy efficiency improvement to 25 per cent of the building stock by one NABERS Energy star rating. The ability of tenants to offset the assessment costs annually would diminish over time as lowest costs energy efficiency improvements are implemented. The likelihood of voluntary action to offset assessment costs will therefore reduce over time, making it more likely that tenants would pay assessment costs (as required) but not act on the assessment information to achieve energy savings.

Reducing the frequency of the assessment period from 12 months to 36 months would lower the costs of assessment, and set a more realistic break-even target for energy savings. In this form, the proposal may reach those long term tenants which are not receiving information through mandatory disclosure (which only provides information in transactions). That said, there are likely to be more cost effective information-based approaches that would have a similar impact, without as high regulatory burden.

5.3 Assessment of the inclusion of NABERS Energy simulation protocol (Option 1(c))

Requiring new buildings to invest in a NABERS Energy simulation protocol adds an additional $14.8 million in costs to building owners (for properties larger than 2000m^2). While the total quantum of these costs is not large, the actual costs to individual owners are significant (around $40 000), for a simulation of energy efficiency performance that is not necessarily a better indicator than the cheaper assessments that can be done 12 months after construction. The cost effectiveness of this option is therefore lower than requiring a NABERS Energy assessment 12 months after construction. It is also worth noting that the energy efficiency of new buildings is typically higher than that of the building stock, because of requirements in the Building Code of Australia, and because investment in energy efficient design and equipment is significantly cheaper for new construction compared with investing in improvements in existing buildings.

5.4 Assessment of Industry-lead voluntary disclosure (Option 2)

This RIS also assessed the option of implementing an industry-lead code of practice for disclosure of energy efficiency performance at the point of sale or lease. The assessment found that, while there is already some voluntary action being taken by industry, a code would have a positive impact on disclosure (compared with the current practice), though this impact would be less than for mandatory disclosure. Further, it is likely that there would be positive bias in disclosure on a voluntary basis, in favour of better performing buildings. Such as scheme would therefore have lower benefit for buyers and tenants, as it would provide less information with which to compare properties, and would have reduced impact on the information in the market, compared with mandatory disclosure.

5.5 Assessment of minimum standards for energy efficiency (Option 3)

This RIS assessed the option of imposing a more stringent regulatory requirement than mandatory disclosure — minimum standards for energy efficiency.

This option would impose the highest cost on building owners of all options, with benefits from energy savings not offsetting costs within a 10 year timeframe of the minimum standard being achieved (the 20 years out to 2028). As such the net cost of the option would be $334 million for properties larger than 2000m^2 or $277 million for properties larger than 5000m^2.

Chapter 6

Consultation

6.1 Consultations conducted for this RIS

There are have been two distinct consultation phases in the development of this RIS:

- consultations with government and industry in for development of the Consultation RIS, which were primarily for information and data gathering purposes; and
- consultations with a broader range of stakeholders on the Consultation RIS, which were more extensive consultations seeking stakeholder input on the analysis in the Consultation RIS.

Revisions were made to the Consultation RIS (resulting in this Decision RIS), which reflect stakeholder comments. Details of the consultation processes and revisions are provided in this Chapter.

6.2 Stakeholder input in the development of the Consultation RIS

Consultations for the Consultation RIS focused on data gathering and collecting research to support assumptions. Table 6.1 provides a list of those individuals consulted in the development of the Consultations RIS, primarily to collect and advise on data on the property industry.

A Consultation RIS and Consultation RD on the proposed scheme were released for public comment on 18 December 2008. Information forums were subsequently held in each capital city during January and February 2009 and a special industry workshop was held in February 2009 to discuss the disclosure of tenancy energy efficiency.

Over 400 representatives from industry and government attended these events and over 40 written submissions were received on the consultation documents. A full list of submission received is provided at Appendix A of this RIS.

Table 6.1

INDUSTRY AND GOVERNMENT STAKEHOLDERS CONSULTED FOR DATA COLLECTION AND ANALYSIS

Name	Organisation	Issues discussed	Method of consultation
Matthew Clarke	New South Wales Department of Environment and Climate Change	Data on and background information about the NABERS scheme	In person and telephone
Paul Waterhouse	Property Council of Australia	Background information on the commercial property market.	In person and telephone
Tom Foster	Property Council of Australia	Building data	Telephone
Darren Davis	RP Data Information Services	Consultations on property data	Telephone
Nerida Conisbee	Jones Lang LaSalle	Consultations on property data, lease and sale turnover data.	Telephone
Matthew Khoo	Jones Lang LaSalle	Consultations on property data, lease and sale turnover data.	Telephone
Nora El-Fahkri	Knight Frank	Consultations on property data.	Telephone
Stephen Wilkinson	Real Estate Institute of Australia	Consultations on property data.	Telephone
Jennifer Beard	CB Richard Ellis	Consultations on property data.	Telephone
Rory McLeod	Colliers International	Consultations on property data.	Telephone

6.3 Nature of stakeholder feedback on Consultation RIS

Overall the consultations found broad support expressed for the proposal for mandatory disclosure, though there were some specific aspect of the proposed scheme which stakeholders had some concerns about. The main issues arising out of the consultation process related to:

1. the treatment of tenancies under the scheme, in particular the requirement of tenancy assessments, as proposed in the Consultation RD and Consultation RIS;
2. the availability of skilled practitioners and the administration of NABERS Energy;
3. the provision of rebates for the installation of sub-metering;
4. the cost estimates in the Consultation RIS;
5. the public display of BEECs;

6. the 2000 m2 threshold; and

7. the content of energy efficiency assessment reports.

As a result of this process a number of changes have been made to the scheme that was originally proposed in the Consultation Regulation Document. The two most significant changes are described below.

The Consultation Regulation Document proposed that NABERS Energy tenancy ratings be disclosed at the point of sale and lease in addition to NABERS Energy base building ratings. It also proposed the disclosure of separate energy efficiency assessment reports, which would be valid for seven years.

The following concerns were raised with respect to these two requirements:

- NABERS Energy tenancy ratings are generally a measure of tenant behaviour rather than the energy efficiency of the tenancy itself.
- There are significant legal, practical and technical barriers to obtaining the necessary energy use information from tenants in a timely manner prior to a sale or lease transaction.
- The configuration and area of tenancies can vary substantially from one tenant to the next.
- Tenancy energy efficiency is largely beyond the control of building owners, hence the disclosure of NABERS Energy tenancy ratings should be the responsibility of the tenant.
- Metering limitations could prevent building owners from obtaining tenancy ratings for older office buildings.
- Concern was raised about the usefulness of the information to be provided in energy efficiency assessment reports, the additional burden they created and whether the seven-year validity period is too long.
- Energy efficiency assessment reports should be more comprehensive if they are to be useful to potential purchasers and lessees.
- Specific expertise is required to produce accurate energy efficiency assessment reports and there is a general skills shortage in this area.

6.4 How stakeholder comments have been reflected in this Decision RIS

The most important way in which stakeholder comments have been reflect in this Decision RIS is through changes to the options for mandatory disclosure (Option 1 and sub-options).

In response to concerns listed above, the following refinements were made to Option 1 (Mandatory disclosure):

- the requirement for full tenancy assessments was removed from Option 1 (all sub-options) and replaced with a requirement for disclosure of tenancy lighting power density and lighting control details because tenancy lighting commonly transfers to the incoming tenants.

- the sub-option for mandatory disclosure with separate energy efficiency assessment reports (which was tested as Option 1(d) in the Consultation RIS) was removed. Option 1 (a) was adjusted to require guidance on potential energy efficiency improvements to be assessed concurrently and disclosed as part of BEECs. This will streamline the assessment process and ensure that the guidance provided is meaningful and up-to-date. BEECs will remain valid for 12 months, which means that the energy efficiency guidance will need to be updated on a more regular basis than was proposed for the separate energy efficiency assessment reports.

As a result of these changes, the number of sub-options assessed under Option 1 reduced from four to three.

The impact analysis in this RIS was revised to reflect stakeholder comments on the estimates for the cost of assessment, and changes to the composition of the options that impacted on the cost of assessment.

Stakeholder comments received included some concern that the estimates did not properly reflect the cost of very large buildings, and that there should be a greater reflection of the potential impact of assessment costs as a result of constrained supply of accredited assessors. The estimates in the Consultation RIS already reflected an increase in assessment costs in the first five years of the scheme (highest in year 1, reducing to year 5).

The costs used in this Decision RIS are higher than those in the Consultation RIS, reflecting:

- the new options including energy efficiency advice to be provided with all NABERS Energy assessments — estimates for these costs were provided by a sample of assessors, as advised by DEWHA
- Revised registration fees estimates, as advised by NSW DECC
- Advice from stakeholders on the potential cost for assessment of larger buildings.

Assessment costs there increased from \$3129 (2000m^2) and \$3392 (5000m^2) in the Consultation RIS to \$5919 (2000m^2) and \$6219 (5000m^2) in the Decision RIS.

Chapter 7

Implementation and review

The Best Practice Guide to Regulation specifies that a RIS should provide details on how the preferred option would be implemented and reviewed. This chapter provides details on how the proposed mandatory disclosure option is intended to be implemented and reviewed.

7.1 Implementation

The scheme will be implemented under Commonwealth legislation based on the corporations power of the Australian Constitution to ensure coverage of at least all constitutional corporations and the consistent application of the scheme across the States and Territories. In addition, there will be provision for voluntary participation for those not covered by the mandatory scheme, such as governments.

The scheme will apply to the sale or lease of existing buildings which have been occupied for more than 12 months and therefore have 12 months of energy use data for determining the applicable NABERS Energy rating. A small number of transactions will be exempt from the scheme, including short-term leases of less than 12 months duration.

If an office building has been substantially refurbished within the previous 12 months of an impending sale or lease, the scheme will allow the star rating to be modelled in accordance with the NABERS Energy simulation protocol.

A National Administrative Unit (NAU) will be created to oversee the delivery of the scheme. This unit will reside within an Australian Government department such as the Department of the Environment, Water, Heritage and the Arts (DEWHA). The unit is expected to be established through government program funding. Once established, the scheme will move towards full cost recovery.

The NAU will have overall responsibility for training, accreditation, auditing and quality control under the scheme. The NAU may engage other government agencies, including New South Wales Department of Environment and Climate Change, to perform some of these functions.

Given the national scope of this scheme, it will be important that the unit responsible for its delivery has appropriate governance and coordination processes, including strong linkages with NABERS Energy and any other tools accredited in the future. Formal governance of the NAU – for example, with respect to financial and human resources, and accountability and reporting mechanisms – will be delivered by the management structure of DEWHA as discussed above. However, appropriate oversight by the Australian, State and Territory Governments would facilitate the successful development and delivery of the mandatory disclosure scheme in a coordinated manner across Australia. In addition, there is a wide range of industry and other stakeholders with interests in the scheme, and both the scheme and the rating and assessment tools possess a degree of technical complexity that demands strong engagement with stakeholders at a technical level.

It is therefore proposed that the legislation/regulations would provide the discretion for the NAU to convene advisory committees, as it deemed necessary and appropriate. It is expected that, at a minimum, the NAU would create two committees, vis:

- A National Advisory Committee formed of State and Territory Governments, to advise the NAU on policy and broad administrative aspects of the mandatory disclosure scheme; and
- A Technical Advisory Committee, formed of industry stakeholders, to advise on technical and operational aspects of the mandatory disclosure scheme, including at the request of the National Advisory Committee.

It is not proposed that such committees would possess decision-making powers, as this could conflict with the proposed legal and governance structures for the scheme. However, it is intended that these committees would play a valuable advisory and coordination role, facilitating close and productive working relationships between all parties to the scheme, and thereby contributing materially to the scheme's success.

7.2 Interaction with existing regulation of the sector

For this RIS, the most relevant existing regulations are State and Territory disclosure obligations on tenancies, and regulation of building construction in the Building Code of Australia (the BCA).

As noted above, the scheme will be designed to ensure that it does not override any existing energy efficiency disclosure obligations relating to building sales or leases which are imposed by State or Territory law. As an example, s 11 of the *Retail Tenancies Act 1994* (NSW) requires particular disclosures, including some energy information, to certain retail tenancies. It is intended that such obligations will remain unchanged on the implementation of the Commonwealth scheme.

The scheme is complementary with the BCA, as it supports the improvement of energy efficiency improvement in existing building stock, in concert with the BCA which sets requirements for energy efficiency performance in new and redeveloped buildings. The scheme also complements the BCA because it provide disclosure of actual performance of buildings, compared with the BCA which sets standards to achieve this performance at the completion of construction — mandatory disclosure, therefore, is likely to provide a valuable measure of actual building performance compared with the objectives in the BCA (which should assist in determining the effectiveness of requirements in the BCA).

7.3 Timing

The cost-benefit analysis has assumed that the options came into effect from 1 January 2010 onwards. As a result, the net present values are calculated from 2010 to 2019. The exact timing of the implementation of the preferred option has not been finalised by the Council of Australian Governments. However, COAG gave an undertaking on 30 April 2009 that the measure would be implemented from 2010, subject to a favourable regulation impact assessment.

7.4 Review

The program will be monitored and reviewed by the NAU on an ongoing basis. A formal review of the national regime will be undertaken by 30 June 2013. This review will be able to use data collected by the NAU to assess the extent to which disclosure occurs, the performance of buildings were energy efficiency ratings have been conducted.

Appendix A

Submissions

Forty public submissions on the proposed scheme were received by DEWHA. A list of the respondents is listed below. An industry workshop on mandatory disclosure of tenancy energy efficiency was also held to seek additional industry feedback on the design of the scheme. The RIS and Regulation Document incorporate the outcomes of this extensive consultation process in the design of the proposed scheme. The submissions authorised for public viewing are available at: www.environment.gov.au/settlements/energyefficiency/buildings/submissions.

Table A.1 provides a list of organisations and individuals that provided submissions.

Table A.1

LIST OF RESPONDENTS

	Organisation
1.	Association of Consulting Engineers Australia
2.	Australian Institute of Architects
3.	Australian Institute of Refrigeration Air Conditioning and Heating
4	Australasian Energy Performance Contracting Association
5.	Big Switch Projects Ltd
6.	Brisbane Airport Corporation Ltd
7.	Brookfield Multiplex Ltd
8.	Chartered Institution of Building Services Engineers
9.	City of Sydney
10.	City of Ipswich
11.	Connell Wagner Ltd
12.	D & E Air Conditioning Ltd
13.	Davis Langdon Australia Ltd
14.	Dynalite Intelligent Light Ltd
15.	Ecolateral Pty Ltd
16.	Energy Conservation Systems Ltd
17.	Eureka Funds Management Ltd
18.	Exergy Australia Ltd
19.	Facilities Management Association of Australia
20.	George Floth Ltd
21.	Goodman Ltd
22.	Green Building Council of Australia
23.	Industry Superannuation Property Trust Ltd
24.	JG Service Pty Ltd
25.	Kingspan Insulated Panels Ltd
26.	Lend Lease Corporation, Lincolne Scott, Advanced Environmental Ltd
27.	Louise Rhodes
28.	Macquarie Assest Services Ltd
29.	Michael Shaw
30.	Mirvac Ltd
31.	Napier & Blakeley Ltd
32.	Nett Zero Pty Ltd
33.	Northorp Consulting Engineers Ltd
34.	Royal Institution of Chartered Surveyors
35.	Property Council of Australia
36.	The GPT Group Ltd
37.	Stockland Corporation Ltd
38.	Szencorp Group
39.	University of Queensland
40.	Urban Taskforce Australia

Appendix B

Impact analysis assumptions

B.1 General

Key assumptions:

- Options are assumed to come into effect on 1 January 2009.
- Net present value is measured over ten years — 2009 to 2018.
- The discount rate is 5 per cent.
- Costs associated with obtaining a NABERS Energy star rating are based on the median price of 48 quotes – figures supplied by the NSW Department of Environment and Climate Change. Figures are only available for whole building ratings and tenancy ratings. Costs for base building ratings are assumed to be equivalent to those for a whole building rating. Estimates for the different costs are as follows:
  - Whole building (>5000m^2): $3400
  - Whole building (>2000 m^2): $3100
  - Whole building (average): $2800
- Costs associated with conducting energy efficiency guidance and tenancy light and power assessments are based on discussions with DEWHA. It has been assumed that these requirements will add $1500 to the cost of a base-building assessment.
- Costs associated with entering a NABERS Energy simulation protocol are based on discussions with DEWHA, NSW DECC and an accredited NABERS assessor. Estimates of the cost vary considerably, based on the size of building, the complexity of the building design, and the assessment components that are included. As a result, costs can vary from as little as $15 000 to as much as $50 000. For the purposes of this analysis, a value of $35 000 was used. In addition to this, a registration fee of $4400 is also applicable.
- NSW DECC has provided the cost of certification, under a full-cost recovery regime. They estimate it will cost $905 per NABERS Energy base building rating. If EEAR is also included in the certificate, the costs are estimated to rise to $1065 per certificate.

B.2 Base Case

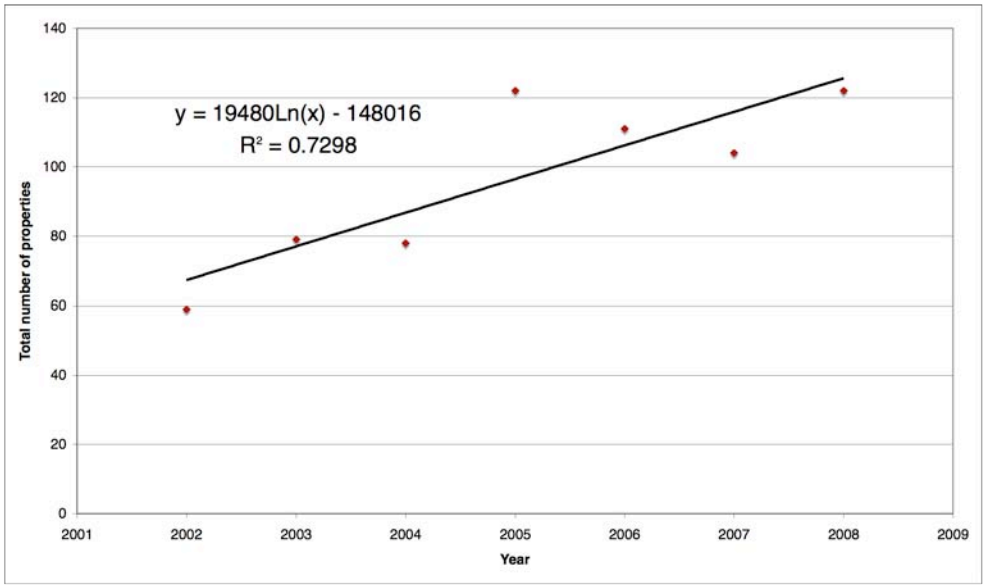
Key assumptions:

- Buildings that comply with the Australian Building Code (new buildings) and those with a Green Star (GBCA) or Property Council rating will require a NABERS Energy rating to comply with the regulations as the difference between these other schemes and NABERS Energy is significant enough that ratings or compliance is not transferable.

- The number of voluntary NABERS Energy ratings in the base year varies between 2 and 153, depending on the type of rating and the state in question, and is based on data supplied by the NSW Department of Environment and Climate Change on the number of NABERS Energy ratings between September 2007 and August 2008.
- The base case for comparison with Option 1(a) (mandatory base building ratings upon sale or lease) assumes that only a certain proportion of overall voluntary base building ratings are motivated upon sale or lease of a property. This proportion varies between 9 and 51 per cent depending on the size of the building and the state in question. The proportions are estimated as the ratio of the total number of properties sold and leased to the total stock of properties.
- Annual growth rates for the number of voluntary NABERS Energy ratings each year are calculated as the sum of:
  - the current growth rate
  - an incremental growth rate resulting from the demand induced by a future carbon price.
- The current growth rate is based historical NABERS Energy ratings data for new assessments from 2002 to 2008 that has been supplied by the NSW Department of Environment and Climate Change. The growth rate has been determined by fitting a logarithmic trendline to the data (see Figure B.1). A logarithmic trendline rather than a linear trendline has been selected because it is anticipated that the growth rate will decrease as the percentage of the building stock that has undergone an assessment increases.

Figure B.1

HISTORIAL GROWTH IN VOLUNTARY NABERS ENERGY RATINGS



Source: ACG analysis

- The incremental growth rate resulting from a future carbon price is based on the assumption that a one per cent increase in average total office occupancy costs per square metre per annum translates to a 0.2 per cent increase in the annual growth rate in the number of voluntary NABERS Energy star ratings.
- The impact of a future carbon price on average total office occupancy costs per square metre per annum is based on ACG projections for a likely future carbon price (high carbon price scenario) and the following assumptions:
  - 100 per cent pass through of the carbon price to energy consumers
  - commercial office buildings only consume electricity, i.e. no natural gas
  - average full cycle greenhouse gas coefficients for electricity generation vary from 0.13 to 1.31 kg of CO2-e per kWh depending on the state in question, based on National Greenhouse Accounts Factors (Dept of Climate Change 2008)
  - average commercial energy tariffs vary from 14.2 to 17.2 cents per kWh depending on the state in question, based on an assessment of prices offered by energy retailers in each state
  - the average annual electricity bill for a building with a 1.5 to 2 Star ABGR rating is $\$17/m^2$, based on figures in the Concept Report – value consistent across all states (NFEE 2008)
  - average total office occupancy costs per annum are $\$325/ m^2$, based on the lowest of two figures (the other is $780) quoted in the Concept Report – values consistent across all states (NFEE 2008)

B.3 Option 1

Building owners

Key assumptions:

- Building owners face the cost of the NABERS Energy assessment, the internal cost of time spent preparing information for the NABERS Energy assessment and the cost of certification.
- Disclosure of NABERS Energy ratings upon lease or sale of office properties does not, on average, influence rental yields for office properties.
- The number of properties affected by Option 1(a) varies between 200 and 2500, depending on the state in question, and is equivalent to the average number of properties sold and leased annually over the 10 years to 2007, based on data from the Jones Lang LaSalle (JLL) Sales and Leases Database, plus a growth rate (see below).
- JLL data on the number of office properties sold and leased annually is only available for the Canberra, Sydney, Brisbane, Adelaide, Melbourne and Perth CBDs. The number of non-CBD properties sold and leased annually is estimated by multiplying the CBD figure for each state by the ratio of the non-CBD to CBD building stock in each state. Figures for the CBD and non-CBD building stock were provided by the PCA from their internal database.

- The number of office properties sold annually in Tasmania (not available from the JLL database) is derived by multiplying figures for Hobart's building stock, taken from the PCA database, by the ratio of Adelaide CBD sales to Adelaide CBD building stock. Adelaide is chosen as it represents smaller cities such as Hobart. The number of office properties leased annually in Tasmania is estimated in the same fashion.
- The number of office properties sold and leased annually, as well as growth rates, in the Northern Territory (not available from the JLL database and not derivable as figures for NT's building stock are not available from the PCA data) are derived by applying a population ratio to the figures for Tasmania.
- The growth rate in the number of properties sold and leased annually varies by between 0.67 and 2.75 per cent, depending on the state in question, and is equivalent to the growth rate in the building stock, based on figures from the PCA database for the average growth rate of the building stock (square metres) over the last 18 years.
- The number of new properties that would trigger a NABERS Energy simulation protocol is assumed to be equivalent to the growth in the building stock over time.
- Costs associated with obtaining a NABERS Energy rating are as listed in Table B.2.
- Building owners (or their staff) spend, an average, eight hours preparing information for a NABERS Energy rating. This time is valued at the average hourly wage rate for employees in the Property and Business Services Sector plus a multiplier for on-costs. The average hourly wage rate is $29.58, based on ABS data (Cat. 6306.0). The multiplier for on-costs is 1.75, as advised by the Victorian Guide to Regulation (VCEC). The total value of time spent preparing information for a NABERS Energy rating is $414.11 per assessment.

Regulators

Key assumptions:

- The initial implementation and start-up of monitoring and enforcement is assumed to come to $5 million, equally distributed over four years. This is based on estimates from DEWHA.

Building tenants

Key assumptions:

- Assuming that mandatory disclosure encourages some building owners to invest in energy efficiency improvements on their properties, tenants in improved buildings will face savings in their energy bills.
- The average saving on energy bills from a one star increase in a building's energy efficiency is around $\$3/m^2$ annually, based on figures in the Concept Report (NFEE 2008). This figure is used to calculate the number of square metres required to be voluntarily upgraded by one star, as motivated by the proposed disclosure schemes, in order for the benefits under each scheme to balance the costs.

- The break-even number of square metres is expressed in terms of the number of properties required to be voluntarily upgraded by one star, where an average property size is determined using estimates for the number of properties and total floor space (in square metres) of the building stock.
- The break-even number of square metres is also expressed as a proportion of total building stock in square metre terms, based on PCA data taken from the Australian Office Market Report (July 2008). The stock of square metres for properties above 2000 and 5000 m^2 is not available separately for each state. State figures for the stock of square metres for properties above 2000 m^2 are estimated by multiplying the total stock of square metres in each state by the ratio of Australia's stock of square metres for properties above 2000 m^2 to Australia's total stock of square metres. The stock of square metres for properties above 5000 m^2 is calculated in a similar fashion.

B.4 Option 2

Key assumptions:

- Option 2 is equivalent to Option 1(a) (mandatory base building ratings upon sale or lease, with no obligations on tenants), but with a lower take-up rate due to the scheme being voluntary. The take-up rate is assumed to be 40 per cent in the first year of the scheme, with growth in participation marginally higher than that for the base case (assuming that the scheme has a positive impact on industry awareness, though the growth in the base case level already has an assumed level of growth in assessments from greater awareness).
- There are no costs to government under this option.

B.5 Option 3

Option three assumes that building owners of buildings with NLAs of greater than 2000 m^2 (or greater than 5000 m^2) will need to upgrade their NABERS Energy rating by one star. This is based on:

- a 3 star rating indicating current best practice; and
- the current commercial office building stock is estimated to have a rating of 2 stars on average.

Estimates of the current stock of commercial office space are taken from the PCA's Office Market Report. The PCA also provided a breakdown of office space across NLAs of greater than 2000 m^2 and 5000 m^2 at a national level. It has been assumed that this proportion holds across all states and territories. It has also been assumed that the average NABERS Energy rating of buildings with NLAs greater than 2000 m^2 and 5000 m^2 is the same as the average NABERS Energy rating for commercial office buildings in general — 2 stars.

It is further assumed that building owners will have ten years to comply with the requirement, and that compliance will grow non-linearly over the period. With the majority of building owners investing in the last few years of the ten-year compliance period. This growth in compliance is assumed to be correlated with improvements in the cost effectiveness of upgrading from 2 to 3 stars. Over the ten-year compliance the cost of upgrading drops from \$61 m^2 (NFEE 2008) to \$35 m^2. Figure 4.6 illustrates this relationship between rate and the cost per square metre of compliance.

As property owners comply with the mandatory minimum energy efficiency standards, they will also be required to undertake a NABERS Energy assessment to demonstrate compliance. The cost of the NABERS Energy assessment are assumed to be the same as in options one and two.

The benefit to tenants is calculated as a saving in energy expenditure, estimated to be \$3 for each square metre upgraded (NFEE 2008).

B.6 Summary of cost estimates

Table B.2 provides a full summary of the costs applied to each of the options considered in the cost benefit analysis.

Table B.2

SUMMARY OF COSTING ESTIMATES

Item	Cost per item	Applies to…
COSTS TO BUILDING OWNERS AND/OR TENANTS		
Assessment costs — base building and tenancy lighting rating		***Option 1 (all sub options a-c)***
NLA of 2000 m^2 or greater	***$5,919***	***Option 2***
NLA of 5000 m^2 or greater	***$6,219***	
Accredited NABERS assessor		
NLA of 2000 m^2 or greater	$4,600	
NLA of 5000 m^2 or greater	$4,900	
Time to prepare materials 8 hours of effort at average weekly earnings with a 75 per cent mark-up for overheads.	$414	
Registration fee	$905	
Assessment costs — tenancy lighting rating	***$1,367***	***Option 1 (all sub options a-c)***
		Option 2
Accredited assessor	$1,000	
Time to prepare materials 4 hours of effort at average weekly earnings with a 75 per cent mark-up for overheads.	$207	
Registration fee	$160	
NABERS Energy simulation protocol costs		***Option 1 (c)***
NLA of 2000 m^2 or greater	***$39,814***	
NLA of 5000 m^2 or greater	***$39,814***	
Accredited NABERS assessor		
NLA of 2000 m^2 or greater	*$35,000*	
NLA of 5000 m^2 or greater	*$35,000*	
Time to prepare materials 8 hours of effort at average weekly earnings with a 75 per cent mark-up for overheads.	$414	
Registration fee	*$4400*	
Cost of building upgrades		***Option 3***
Cost of upgrading from 2 to 3 NABERS Energy stars, per m^2	**$35-$61**	
COSTS TO REGULATORS		
Establishment costs	***$5,000,000*** *over first four years of the scheme*	***Option 1 (all sub options a-c)*** ***Option 3***

Source: Various. Refer to Appendix B

Appendix C

References

Akerlof, G. (1970). "The market for lemons: Quality uncertainty and the market mechanism." Quarterly Journal of Economics 84(3): 488-500.

Ball, M., C. Lizieri, et al. (1998). The Economics of Commercial Property Markets, CRC Press.

Centre for International Economics (2008). Market barriers in the commercial and residential building sectors. Centre for International Economics. Canberra**:** 1-21.

Colliers International. (2008). "Environment and workplace wellbeing key issues for Australian office tenants." Retrieved 21 October, 2008, from **http://www.colliers.com/Markets/Australia/News/0808OfficeTenantSurvey**.

DEWHA (2008). REQUEST FOR TENDER: REGULATORY IMPACT STATEMENT FOR THE MANDATORY DISCLOSURE OF COMMERCIAL OFFICE BUILDING ENERGY EFFICIENCY W. Department of the Environment, Heritage and the Arts. Canberra, AusInfo. **0708-1170**.

Golove, W. and J. Eto (1996). Market Barriers to Energy Efficiency: A Critical Reappraisal of the Rationale for Public Policies to Promote Energy Efficiency. Berkeley, University of California.

IBIS World (2008). Office Property Operators in Australia: L7713. Melbourne.

IBISWorld (2008). Office Property Operators in Australia. IBISWorld Industry Report. IBISWorld. Melbourne, IBISWorld**:** 1-72.

International Energy Agency (2007). Mind the gap - quantifying principal-agent problems in energy efficiency. Paris, International Energy Agency,.

Jaffe, A. B. and R. N. Stavins (1994). "The energy-efficiency gap - what does it mean?" Energy Policy **22**(10): 804-810.

Jones Lang LaSalle. (2008). "Costs of sustainability reporting increase." Retrieved 21 October, 2008, from **http://www.getesp.com.au/downloads/pr/Cost%20of%20sustainability%20reporting%20Feb%202008.pdf**.

Murtishaw, S. and J. Sathaye (2006). Quantifying the effect of the principal-agent problem on US residential energy use, Lawrence Berkeley National Laboratory.

NABERS. (2008). "Training Fact Sheet 2008." Retrieved 2 September 2008, 2008, from **http://www.nabers.com.au/downloadFile.aspx?file_id=235**.

NFEE (2003). Towards a National Framework for Energy Efficiency - Issues and Challenges. National Framework for Energy Efficiency. Canberra, AusInfo.

NFEE (2008). Mandatory Disclosure of Commercial Building Energy Efficiency: Concept Report. Canberra.

NFEE. (2008). "What is NFEE?" Retrieved 30 September, 2008, from **http://www.nfee.gov.au/about_nfee.jsp?xcid=62**.

OBPR (2007). Best Practice Regulation Handbook. Department of Finance. Canberra, Australian Government.

Productivity Commission (2000). Inquiry Report: Review of Legislation Regulating the Architectural Profession. Productivity Commission. Canberra, AusInfo.

Productivity Commission (2005). The Private Cost Effectiveness of Improving Energy Efficiency. Canberra.

Property Council of Australia (2008). Office Market Report, Property Council of Australia,.

Team Catalyst (2008). Review of ABGR as a Reporting Mechanism. Sydney, Team Catalyst.

Team Catalyst. (2008). "Team Catalyst Homepage." Retrieved 2 September 2008, 2008, from **http://www.teamcatalyst.com.au/index.html**.

Warren Centre (2009). Energy High Rise Project: Stage 1 Sydney, Australian Government Department of the Environment, Water, Heritage and the Arts.