Improving sustainable housing in Queensland

Discussion paper
June 2008

A Smart State initiative
Foreword

Queensland's sustainable housing measures are an essential element of my government's Smart State agenda. They demonstrate our commitment to be innovative and proactive, and take a long-term approach to protecting the future of our state.

Queensland's population is predicted to be more than 5.5 million by 2026; therefore, our housing needs to become more water and energy efficient to cope with this demand. With our warm climate, we also need to take advantage and promote the unique aspects of Queensland homes and lifestyles. We have learned that home designs that are suitable in the cooler southern states are often not well suited to our climate and way of life. Home designs based on the traditional ‘Queenslander’ are re-emerging to reflect how we prefer to live—dining on the patio and having better indoor–outdoor connections to encourage cooling breezes. Through improved designs, we can reduce our reliance on artificial heating and cooling such as air-conditioners, which use high levels of energy.

My government is committed to addressing the community's widespread and growing concerns about the impacts of climate change and the built environment. A number of key initiatives, such as mandating 4-star energy efficiency in new commercial buildings and phasing out electric hot water systems in existing homes at the time of replacement from 2010, have already been announced in the ClimateSmart 2050 strategy. The measures presented in this discussion paper are intended to supplement these initiatives. These measures can provide substantial savings, with a predicted reduction of over 100 000 tonnes of greenhouse gas emissions per year, and a reduction in water usage by around 55 000 kilolitres per year. This is equivalent to removing 22 000 cars from Queensland roads and saving 22 Olympic swimming pools in water.

There are challenges ahead. By working collaboratively with other levels of government, the housing industry, councils and engaging with Queenslanders, we will find practical and cost-effective ways to make a real difference. Actions resulting from this discussion paper and your feedback will contribute to Queensland reducing its greenhouse gas emissions. The results will also help to secure our water and energy supplies.

Research shows us the potential dangers of taking insufficient action to reduce the effects of human activity upon our climate. The Queensland Government will continue to explore viable options for sustainable housing in the future and the sustainability performance of our buildings. This paper also identifies investigation areas that could influence the design of tomorrow's homes. These are important issues raised in this discussion paper. Your feedback will help to make our homes and our state a better place for future generations.

The Honourable Anna Bligh MP
Premier of Queensland

The Honourable Paul Lucas MP
Deputy Premier and Minister for Infrastructure and Planning
This paper provides Queensland residents with the opportunity to have their say on a range of suggested sustainable housing improvements. The proposed improvements will help make Queensland homes more comfortable to live in, use less water and energy, and they will assist residents to understand what sustainable housing features to look for as their lifestyles change.

The Queensland Government wants to make sure that sustainable housing improvements are practical and cost-effective for householders and industries. The improvements are designed to assist with reducing Queensland’s greenhouse gas emissions, manage water supply for a growing population, and inform social aspects of sustainable housing design.

How do I provide comment?
Your comments and suggestions will help Queensland Government to develop and finalise sustainable housing improvements. They will also provide guidance for future improvements to the sustainability of Queensland’s homes.

By completing and submitting the response form, you will assist Queensland Government in understanding community attitudes to the suggested sustainable housing improvements.

The response form can be found at the back of this document or can be downloaded from the Department of Infrastructure and Planning website at www.dip.qld.gov.au. You can also complete the form online at www.getinvolved.qld.gov.au.

Other ways to comment
Post your comments, ‘Attention: Improving sustainable housing in Queensland discussion paper’ to:
Department of Infrastructure and Planning
Building Codes Queensland
PO Box 15009 CITY EAST QLD 4002
Australia
tel 1800 153 262 free-call
fax +61 7 3247 3614

Reply paid envelopes are available on request.
In person delivery:
Department of Infrastructure and Planning
Building Codes Queensland
Level 3, 63 George Street Brisbane Qld 4000

Closing date for comments
Written comments on the discussion paper must be received by no later than Friday 12 September 2008.

How to find out more
For more information please contact:
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# Table of contents

1  **Sustainable housing for the unique Queensland environment**  4  
1.1  Why does Queensland need sustainable housing?  4  
1.2  What is sustainable housing?  4  
1.3  Water, energy, lifestyle changes and sustainable housing  5  
1.4  Queensland’s unique climate and regions  6  
1.5  How does Queensland compare?  6  
1.6  How can Queensland’s housing be made more sustainable?  7  

2  **Designing and building a sustainable home**  8  
2.1  What are the improvements?  8  
2.1.1  Require all new houses to be built to a 5-star (out of 10) energy equivalent rating, proposed from 1 January 2009  8  
2.1.2  Investigate requiring all new units to be built to a 5-star (out of 10) energy equivalent rating  14  
2.1.3  Investigate providing better recognition of outdoor-indoor areas in Queensland’s building standards  14  
2.1.4  Investigate developing a star rating for building materials  15  
2.1.5  Investigate preventing residential estate covenants that restrict the use of energy efficient design features and fixtures  16  

3  **Creating an efficient home through fixtures and fittings**  17  
3.1  What are the improvements?  17  
3.1.1  Require 4-star toilets, 3-star tap ware and 80% energy efficient lighting in new houses and units  17  
3.1.2  Electric hot water system phase-out from 2010  26  
3.1.3  Sustainability declaration at point-of-sale and point-of-lease  34  
3.1.4  Prevent the sale and installation of inefficient air-conditioners  38  
3.1.5  Investigate requiring photovoltaic (solar) energy to be installed on large houses  41  
3.1.6  Investigate requiring minimum energy star rating on swimming pool pumps  41  

4  **Where to next?**  42  

Appendix 1: Queensland’s climate zones  43  
Appendix 2: Comparison of interstate and overseas sustainable housing measures  44  
Appendix 3: Sustainability declaration  45  
Response form  49
1.1 Why does Queensland need sustainable housing?

Almost a quarter (23 per cent) of Australia’s total greenhouse gas emissions result from energy demand in the building sector, with housing being the dominant form in the built environment.

Queensland has 1.6 million existing homes and it is predicted that 33,000 new houses will be built each year until 2026. Improvements to sustainable practices in the housing sector provide great opportunities to significantly reduce the level of greenhouse gas emissions from the building sector.

Recent reports on how we can best respond to the climate change challenge, such as the McKinsey Report, confirm that the building sector—both commercial and residential—provides the lowest cost opportunities to reduce Australia’s greenhouse gas emissions. Opportunities to improve the energy efficiency of air-conditioning and residential hot water heating systems exist. Other major opportunities mentioned in the McKinsey Report include reducing energy consumption by improving lighting and mandating minimum energy-efficient, stand-by features in appliances. To view the McKinsey report visit www.dip.qld.gov.au/sustainablehousing. Figure 1 opposite shows the potential for greenhouse gas reduction from building reforms compared to the savings that are available in other sectors.

1.2 What is sustainable housing?

A sustainable home is designed and built to minimise its impact on the environment and can respond to people’s changing lifestyles and circumstances. A sustainable house uses as little energy and water as possible and is, most importantly, a home where Queenslanders can live comfortably, in harmony with our unique climate.

The concept of sustainable housing is not new. Since the early 20th century Queenslanders have recognised the features of sustainable homes that suit our unique climate. In 1916 the Queensland Worker’s Dwellings State Advances Act, which provided grants to low-income earners, offered suggestions on how to build sustainable homes. Homes built in this era could not rely on air-conditioners and other modern technology for cooling and heating. Instead, they relied on the position of rooms, natural ventilation and the use of lightweight building materials and eaves to make them more liveable during our hot summers.

The typical ‘Queenslander’—the classic ‘timber and tin’ home—has verandas and plenty of natural ventilation and, for many years, have exemplified a comfortably designed home for the unique Queensland climate. However, with advances to building materials, technologies and design, the look and feel of Queensland houses has changed over the years. In some cases, design practices have drifted away from some of the best sustainable housing design practices—those used in more traditional designs.

With our growing awareness of the need to protect against the possible effects of climate change, we now recognise that it is more important than ever for Queensland homes to be sustainable and built to suit our unique climate. If we consider the climate, our homes will be more comfortable to live in and we will use less energy and water, which will result in lower water and energy bills in the future.
1.3 Water, energy, lifestyle changes and sustainable housing

As mentioned earlier, a sustainable house uses as little energy and water as possible and can accommodate people’s changing lifestyle circumstances.

Private residences account for 76 per cent of water used in South East Queensland (SEQ). To help reduce household water use in new homes, water saving installations such as water-efficient shower heads and toilets, rainwater tanks that are internally plumbed to toilets and the cold water outlet for washing machines, are now required. These installations will decrease water consumption in new houses by up to 220 litres per household per day.

In existing homes under Level 6 water restrictions, residents in selected council areas have been asked to reduce their water consumption to 140 litres per person per day. Most residents have reduced their water usage to below this target, making them world leaders in water conservation.

In recent years, the amount of electricity used in a typical Queensland home has increased by an average of 10 per cent per year. This is due to an increased reliance on air-conditioners—a good reason to ensure that new homes are designed to capture cooling breezes. Queensland is seeking to make a real contribution to a national reduction in greenhouse gas emissions. The average Queensland home generates 11 tonnes of greenhouse gas emissions per year, which is the equivalent of operating two cars.

A sustainable home can be adapted to support people’s changing lifestyles and circumstances. As Queensland’s population continues to age, it is important that people are able to ‘age in place’ or remain in the same home for longer. Queenslanders are also choosing to live in smaller (one-to-two person) households, resulting in an increase in demand for unit-style dwellings. Catering for these demographic trends needs to be a key consideration when new homes are being designed and constructed.
1.4 Queensland’s unique climate and regions

The climatic conditions across Queensland range from hot and humid in the far north, to cool and temperate on the Darling Downs, to hot and arid in the west. Queensland rarely experiences an extremely cold climate, making it an attractive place to live. It is important to consider the climatic conditions of the area in which a home is to be built or renovated so that the design can provide maximum comfort for occupants while minimising energy running costs.

To assist owners in designing their homes for a region’s unique climatic conditions, Queensland has been divided into four key climate zones: tropical, sub-tropical, hot arid and warm temperate. To find out which region and climate zone your home is located in, refer to the map of Queensland in Appendix 1.

Key characteristics of each climate zone and region are contained in Table 1.

1.5 How does Queensland compare?

Responding to the challenge posed by climate change requires a united, international effort actioned at a local level by governments, the community and industry. The proposed improvement measures in this discussion paper will help Queensland join the worldwide cause in reducing the impact that people have on the environment.

Internationally, other governments, such as the United Kingdom, California and Spain, have introduced strict energy efficiency requirements for buildings. The United Kingdom and Californian governments have both expressed the intention to introduce laws requiring new buildings be designed as ‘carbon neutral’ (i.e. to have no net greenhouse gas emissions).
Energy performance standards for buildings in Australia are recognised to be lower than most in the developed world. Queensland's building laws differ from those of other Australian states, particularly in sustainable housing requirements. For example, the Australian Capital Territory requires the disclosure of energy performance of existing homes when they are being sold (not including appliances). Although this is not a requirement in Queensland, we have led the way in some aspects of sustainable housing, such as requiring greenhouse-efficient hot water systems and energy efficient lighting in new homes.

For more information on how the sustainable housing requirements in Queensland compare to other parts of Australia and the world, see Appendix 2.

### 1.6 How can Queensland’s housing be made more sustainable?

The Queensland Government is proposing a number of improvement measures that will help make new and existing Queensland homes more energy and water efficient, and become more adaptable to people's changing lifestyles.

As it will not be practical or cost-effective to install all of the proposed improvement measures into existing buildings, new and renovated homes will have different improvements to existing homes.

The proposed improvement measures for new and renovated homes will focus on improving designs so that houses are constructed with inherent features that will deliver sustainable outcomes for the life of each building. Designers of new homes will be encouraged to use more environmentally sensitive features such as better orientation of rooms, ceiling and wall insulation, natural ventilation, and indoor-outdoor connections provided by decks and patios. It is also proposed to increase the required energy-and water-efficiency ratings of fixtures such as light bulbs, tap ware and toilets.

For existing homes the improvement measures will include phasing-out the installation of electric hot water systems in gas reticulated areas from 1 January 2010. It is also proposed that owners of existing houses and units complete a sustainability declaration at point-of-sale and point-of-lease (rent). The declaration will assist in raising Queenslanders’ awareness of the benefits of sustainable housing features.
2 Designing and building a sustainable home

2.1 What are the improvements?

- Require all new houses be built to a 5-star (out of 10) energy equivalent rating, proposed from 1 January 2009
- Investigate requiring all new units to be built to a 5-star (out of 10) energy equivalent rating
- Investigate providing better recognition of outdoor–indoor living areas in Queensland’s building standards
- Investigate developing a star rating for building materials
- Investigate banning residential estate covenants which restrict the use of energy efficient design features and fixtures

2.1.1 Require all new houses to be built to a 5-star (out of 10) energy equivalent rating, proposed from 1 January 2009

What is an energy equivalent rating?

Under the Building Code of Australia, new houses and major renovations are required to be built to a minimum energy equivalent rating that measures the energy efficiency of the house's building shell. The building shell comprises the roof, walls, windows and floors. Energy dependent appliances, such as hot water systems, air-conditioners, lighting and fridges are not used to determine a house's energy equivalent rating because they are often changed during the life of the building.

The highest energy equivalent rating a building can achieve is 10-star, with 5-star considered to be energy efficient. The minimum energy equivalent rating for houses and units depends on the relevant climate zone in which the house or unit is located.

The building code divides Queensland into distinct climate zones that are used to set the appropriate design rules for the expected prevailing climate conditions. A climate zone is a region that is considered to have similar climatic characteristics across the entire area. The Building Code of Australia has divided Australia into eight climate zones. Queensland has four climate zones: Zone 1—tropical, Zone 2—sub-tropical, Zone 3—hot arid and Zone 5—warm temperate. Refer to Appendix 1 to find out which climate zone your home is located in.
Will a house energy rating tell me how large my energy bills will be?

A house energy rating is an excellent guide to how much heating or cooling may be needed to keep your home comfortable. Your actual heating and cooling bills will depend on your personal comfort preferences and whether you choose to install air-conditioning or heating appliances, and what types you select. There is a large range of appliances available and the most efficient types use a fraction of the energy needed by the least efficient.

Why aren't hot water systems or other appliances part of the star rating?

A hot water system and other major appliances often supplied with a house, such as washing machines, dryers and refrigerators, usually have a much shorter working life than the house itself. A house energy rating is based on those parts of the house that are least likely to be replaced—roofs, walls, windows and floors—and it is these features that can most efficiently and reliably deliver a comfortable indoor environment. However, it is still important to select energy efficient appliances to ensure your home's energy consumption remains as low as possible.

Current requirements

Since 2003, houses built in Queensland must achieve a minimum energy equivalent rating of 3.5–4-star, depending on the climate zone in which the house is located. Table 2 summarises the current minimum energy equivalent ratings required in Queensland’s climate zones.

<table>
<thead>
<tr>
<th>Climate zone</th>
<th>Current minimum energy equivalent rating requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1—Tropical</td>
<td>3.5-star</td>
</tr>
<tr>
<td>Region</td>
<td>Far north</td>
</tr>
<tr>
<td>Zone 2—Sub-tropical</td>
<td>3.5-star</td>
</tr>
<tr>
<td>Region</td>
<td>Sub-tropical coastal</td>
</tr>
<tr>
<td>Zone 3—Hot arid</td>
<td>3.5-star</td>
</tr>
<tr>
<td>Region</td>
<td>Western</td>
</tr>
<tr>
<td>Zone 5—Warm temperate</td>
<td>4-star</td>
</tr>
<tr>
<td>Region</td>
<td>Darling Downs</td>
</tr>
</tbody>
</table>
How do I design my house to comply with the energy equivalent rating?

The 5-star standard is a flexible standard—it is performance-based, which means that provided your house's design meets the benchmarked level, there are no restrictions on how this is done. Designers and builders can use their creativity in meeting homeowners' requirements of cost-effectiveness, functionality and aesthetics when designing and constructing 5-star homes.

In many cases, an architect or draftsperson will design homes in line with the minimum requirements of the Building Code of Australia for the relevant climate zone. In most cases, this method, known as 'deemed-to-satisfy', is suitable for the majority of home designs and climate zones.

However, there are instances where this method is not suitable for certain home designs or climate zones. In these cases, the architect or draftsperson can use a computer simulation program that will replicate the house design and analyse the predicted thermal performance of the house within a particular climate zone.

Furthermore, in situations where innovative tropical designs are proposed, designers and architects can have their designs approved by their peers through an industry peer review process involving an expert panel of design professionals. For more information on the Building Code of Australia and energy efficiency go to www.abcb.gov.au.

What does a 5-star home look like?

The features used to achieve a 5-star rating will differ across Queensland's four climate zones. A combination of design features influence the house's energy efficiency and no single feature alone can maximise its natural cooling and heating potential.

There are some common design principles across all the climate zones that need to be considered when designing a house. These are:

1. **Orientation—of the house on the block**
   - northern orientation for living rooms, with low-use rooms (garages, bathrooms and laundry) facing west
   - minimising east and west facing walls and windows.
2. Building shell—roof, external walls, ceilings and floors

- **roof**
  - well-insulated and ventilated roof spaces (whirlybirds and eave vents)
  - light-coloured roof (dark-coloured roofs may require more insulation and ventilation, such as whirlybirds and eave vents, to compensate for the additional heat absorbed by the dark colour)

- **walls, ceilings and floors**
  - wall and ceiling insulation
  - light coloured walls
  - rooms are insulated and sealed, especially if air-conditioned
  - treated glass in windows, such as glazing (where there is high sun exposure)
  - natural lighting (to reduce the need for artificial lighting)
  - floors sealed or insulated, depending on climate zone (colder areas require insulation).

3. **Ventilation**

- good natural ventilation via windows and doorways
- mechanical ventilation products that are energy efficient and promote air movement without heating or cooling the air, such as ceiling fans, whole-house fans and whirlybirds.

To find out about other design features that contribute to a 5-star energy equivalent house, go to [www.dip.qld.gov.au](http://www.dip.qld.gov.au). You will need to know the postcode or local council name for the area where your house is to be built; this will identify the climate zone of your home. Alternatively, you can refer to Table 3 and the illustrations on page 12.
In addition to the regional design features shown in Table 3, each property will have its own unique local climatic conditions, such as the position of shade trees, proximity to neighbouring houses and elevation. These local conditions will influence the appropriate design for indoor comfort. For example, in hilly areas, cool breezes often flow down valleys in the late afternoon through until early morning, making a nearby house cold. It would therefore be beneficial to use more dense building materials, such as concrete and bricks, or more insulation to maintain internal warmth.

The pictures below illustrate the design feature differences between older established houses compared to 5-star energy equivalent rated houses.

The design feature of a 5-star house compared to an established house

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**Table 3: Key design features for a 5-star energy equivalent rated house**

<table>
<thead>
<tr>
<th>Climate zone and regions</th>
<th>Characteristics of region</th>
<th>Regional design features</th>
<th>Example locations</th>
</tr>
</thead>
</table>
| **Zone 1 Tropical Region—Far north** | Hot and humid summer, warm winter | • Cyclone-proofed—strengthened and reinforced building frames and roofs  
• Lighter building materials, such as timber and metal  
• Wide eaves and awnings to shade the whole house  
• Ceiling fans and high ceilings | Cairns, Townsville, Innisfail, Bowen, Proserpine, Weipa, Cooktown |
| **Zone 2 Subtropical Region—Coastal** | Warm humid summer, mild winter | • Lighter building materials, such as timber and metal, with some denser materials for winter warmth, such as concrete and bricks  
• Wide eaves and awnings to shade eastern and western side of house in summer. Northern eave provides shade in summer, but also allows winter sun inside  
• Ceiling fans and high ceilings | South East Queensland, Hervey Bay, Bundaberg, Gladstone, Yeppoon, Rockhampton, Mackay |
| **Zone 3 Hot arid Region—Western** | Hot and dry summer, warm winter | • Insulated floors  
• Lighter building materials, such as timber and metal, with some denser materials for winter warmth, such as concrete and bricks  
• Wide eaves and awnings to shade eastern and western side of house in summer. Northern eave provides shade in summer, but also allows winter sun inside  
• Ceiling fans | Emerald, Roma, Longreach, Mt Isa, Charters Towers, Dalby, Charleville |
| **Zone 5 Warm temperate Region—Darling Downs** | Hot and humid summer, cool winter | • Denser building materials, such as concrete and brick  
• Insulated ceilings, floors and walls  
• Well-sealed doors and windows  
• Ceiling fans | Toowoomba, Warwick, Kingaroy, Stanthorpe, Oakey, Crows Nest |

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**Established house**

**5-star house**
Did you know?
5-star housing will reduce greenhouse gas emissions by around 7700 tonnes per year. This equates to a saving of over 85,000 tonnes by 2020 or taking 17,000 cars off the road.

5-star energy equivalent rated new homes.

Pros
Homes will be cheaper to cool and heat for the life of the building.

Cons
Initial construction costs will rise by less than 1 per cent, but the home will be more naturally comfortable to live in.

How this will help?
Building a 5-star home will provide homeowners with greater comfort and lower household running costs by reducing the use of air-conditioners and heaters—lowering greenhouse gas emissions.

How much will it cost and save?
It will cost less than one per cent of the construction cost to make a new Queensland home meet the 5-star housing requirement. Operational savings from reducing artificial cooling and heating are estimated to be around $200 per year, which means it will take around 4.5 to 5 years to recover the costs of complying with 5-star housing.

Have your say:
Should Queensland adopt 5-star housing from 1 January 2009?
Refer to section 2 of the response form at the back of this discussion paper.
2.1.2 Investigate requiring all new units to be built to a 5-star (out of 10) energy equivalent rating

In the coming year the Queensland Government will investigate raising the minimum energy equivalent rating requirements for new units in Queensland from 3.5–4-star (depending on climate zone) to 5-star. Achieving a 5-star energy equivalent rating in Queensland units is difficult with Building Code of Australia current method of compliance. The investigation will assess the viability of amending the current Australian building code to improve energy efficiency of units and better account for designs suitable for Queensland climate zones.

2.1.3 Investigate providing better recognition of outdoor–indoor areas in Queensland's building standards

Many Queenslanders enjoy an 'outdoor lifestyle' by using verandas and other covered outdoor living areas instead of staying inside air-conditioned rooms. In tropical and subtropical areas, where houses often have well designed decks, occupants tend to spend less time in air-conditioning.

This should be recognised as a unique feature of warm climate lifestyles and as an energy efficiency aspect of the Building Code of Australia. Currently, the code's energy efficiency software provisions assume that occupiers will use air-conditioners when the temperature reaches a certain level, and that they will continue to air-condition living spaces until midnight. However, this may not be the case in homes that have well-located outdoor living areas.

There may be important energy efficiency benefits in homes with well-located and designed outdoor living areas. Also, given that the use of air-conditioners is increasing in Queensland, the benefits of outdoor living are worth promoting. For new houses and major renovations it is also proposed to investigate requiring minimum specifications for eaves and roof insulation.

Have your say:

- Should Queensland move to 5-star energy equivalent rating for new units?

Refer to section 2 of the response form at the back of this discussion paper.

Have your say:

- Do you think well located outdoor–indoor areas such as decks and verandas lead to less use of air-conditioning?

Refer to section 2 of the response form at the back of this discussion paper.
2.1.4 Investigate developing a star rating for building materials

The materials used to build our homes can have significant health and environmental effects, often extending far beyond the specific context of their end use. Usually the environmental impact of materials used is determined by the processes adopted to extract, process and transport them to the building site.

Careful analysis and selection of building materials and the way they are combined can result in significantly improving the comfort, cost effectiveness and energy efficiency of a home.

It is proposed to investigate developing a star-rating system for building materials relative to the assessment of their life cycle (the energy and water used in the materials manufacture and lifespan as well as their potential for reuse). This system could be used as an information tool for industry and consumers.

A star-rating system for building materials will provide consumers with credible information that may help them to choose sustainable and less toxic building products. In addition, quantifying the life cycle impacts of building material may assist manufactures to improve the environmental and health performance of products.
2.1.5 Investigate preventing residential estate covenants that restrict the use of energy efficient design features and fixtures

Currently some developers and councils use residential estate covenants and body corporate or community title rules that restrict the use of energy-efficient household design principles and the installation of water and energy efficient fixtures. For example, homeowners may be restricted from using light colours on roofs and external walls, orientating the building (e.g. building garages on the western side of the house) and installing roof-mounted solar hot water systems.

There are currently over 35,000 body corporate schemes in Queensland, comprising more than 324,000 lots. This number has increased significantly in the past decade and will continue to rise with new housing and higher density living arrangements.

Have your say:

- Should residential estate covenants and body corporate or community title rules be allowed to prevent the use of energy efficient housing design features or the installation of efficient fixtures?

Refer to section 2 of the response form at the back of this discussion paper.
Improving sustainable housing in Queensland

3 Creating an efficient home through fixtures and fittings

3.1 What are the improvements?
- Better water saving fixtures and energy efficient lighting will be required in new houses and units
- From 1 January 2010, electric hot water systems in existing homes in gas-reticulated areas will be phased out at time of replacement
- A sustainability declaration will be required at point-of-sale and point-of-lease in houses and units
- Prevent the sale and installation of inefficient air-conditioners
- Require photovoltaic (solar) energy to be installed on large houses
- Require minimum energy star rating on swimming pool pumps

3.1.1 Require 4-star toilets, 3-star tap ware and 80% energy efficient lighting in new houses and units

Water efficient toilets and taps

Why is water important?
Conserving water is in everyone’s interest considering the current drought conditions and water storage levels.
For homeowners, conserving water is likely to mean saving money, since we pay for our water on a user-pay basis: the more you use, the more you pay. In addition, if you are also saving hot water (for example, in the shower) you will reduce your energy bill.

Benefits of water efficient taps and toilets

All taps and toilets (and other water products), are required by law to be labelled with Water Efficiency (Rating) Labels (WELS).
The label provides a zero to six-star rating of how efficient the item is in relation to water usage, with more stars being more efficient.
You should always try to select the most water efficient item. With prolonged droughts it is likely that the cost of water is going to increase, so any water-saving steps that you can take now will save you money and help reduce water consumption.
The labels for the different WELS products differ slightly; however, all share two key pieces of information:
- the star rating
- the water consumption or flow figures (e.g. 13.1 litres per wash).
WELS star ratings for toilets and tap ware

Do you know how much water a 4-star WELS rated toilet uses when it flushes or how much water flows from a 3-star WELS rated tap?

Refer to Tables 4 and 5 above for more information and a comparison of the star ratings.

How much you can save by being water-wise.

We calculated the average daily water consumption for two hypothetical families of four—one that is water wise and one that does not try to limit water usage.

We also calculated the amount of money the water-wise family can save each year, based on a water price of $1 per 1000 litres (example rate only—rates will vary across Queensland).

Table 6: Annual toilet flush savings

<table>
<thead>
<tr>
<th>Toilet (litre/flush)</th>
<th>Daily toilet water consumption</th>
<th>Savings per year*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water-wise family</strong></td>
<td>54 litre/day</td>
<td>$50</td>
</tr>
<tr>
<td><strong>Family that doesn't limit water usage</strong></td>
<td>192 litre/day</td>
<td>n/a</td>
</tr>
</tbody>
</table>

* Calculations are based on five days a week—weekends not included.

Potential water savings from taps depend on the use of the water.

Pros
Reducing the flow rate of the tap ware in handbasins offers potential for water savings.

Cons
There is limited scope to reduce water consumption if a tap is used to supply a set volume of water such as with washing machines. In these instances, low flow fixtures can be very slow to fill the required volume.

Did you know?

- An old-style single flush toilet (prior to WELS star ratings) can use up to 12 litres of water in one flush. More water efficient dual flush toilets average less than 4 litres.
- Having a 4-star WELS rated toilet will save 1376 litres a year, per average household compared to a 3-star WELS rated toilet.
- A 4-star WELS rated toilet costs approximately $25 more than a 3-star WELS rated toilet. (This price may vary depending on the range and style of toilet used).

WELS star ratings for toilets and tap ware

Table 4: Toilets WELS rating

<table>
<thead>
<tr>
<th>Star rating</th>
<th>Average flush volume*</th>
<th>Toilet classes with this rating in WELS data base</th>
</tr>
</thead>
</table>
| 1           | Not more than 5.5 litres | • Dual flush toilet—9 litre full flush/4.5 litre half flush  
|             |                       | • 6 litre single flush**                          |
| 2           | Not more than 4.5 litres | No models available                               |
| 3           | Not more than 4.0 litres | • Dual flush toilet—6 litre full flush/3 litre half flush  
|             |                       | • 4 litre single flush                            |
| 4           | Not more than 3.5 litres | • Dual flush toilet—4.5 litre full flush/3 litre half flush |
| 5           | Not more than 3.0 litres | • Dual flush toilet—4.5 litre full flush/3 litre half flush with integrated handbasin*** |
| 6           | Not more than 2.5 litres | No models available                               |

Table 5: Taps WELS rating

<table>
<thead>
<tr>
<th>Flow rate</th>
<th>0-stars</th>
<th>1-stars</th>
<th>2-stars</th>
<th>3-stars</th>
<th>4-stars</th>
<th>5-stars</th>
<th>6-stars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Litres per min</td>
<td>More than 16.0 litres</td>
<td>More than 12.0 litres</td>
<td>More than 9.0 litres</td>
<td>More than 7.5 litres</td>
<td>More than 6.0 litres</td>
<td>More than 4.5 litres</td>
<td>Less than 4.5 litres</td>
</tr>
</tbody>
</table>

Further information on WELS can be found at www.waterrating.gov.au.
Bathroom tap
The members of each family brush their teeth once a day.

Table 7: Annual tap water savings

<table>
<thead>
<tr>
<th>Tap litre/minute</th>
<th>Tap running time</th>
<th>Total litre/day</th>
<th>Savings per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water-wise family turns their water efficient tap off while brushing teeth.</td>
<td>Water efficient, 3-star tap (8 litres/minute)</td>
<td>Two minutes per family member</td>
<td>64</td>
</tr>
<tr>
<td>Family that doesn't limit water usage lets the tap run while brushing teeth.</td>
<td>Older style 0-stars tap (18 litres/minute)</td>
<td>Five minutes per family member</td>
<td>360</td>
</tr>
</tbody>
</table>

Table 8: Total savings on example

<table>
<thead>
<tr>
<th>Total litres / day used (tap and toilet)</th>
<th>Total savings per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water-wise family 118 litres</td>
<td>$158 and 158 410 litres (or 434 litres / day)</td>
</tr>
<tr>
<td>Family that doesn't limit water usage 552 litres</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Current requirements
New houses and units need to have 3-star, dual flush toilets. This requirement also applies to all household renovations involving building or plumbing approval.

There are no minimum requirements for tap ware in new homes and units.

There are also no minimum requirements for existing homes and units to have water efficient taps and toilets.

From 1 April 2008, landlords are able to pass on full water consumption costs to tenants where:
- the premises are individually metered
- the tenancy agreement states the tenant must pay for water
- the premises have installed 3-star dual flush toilets, tap ware and shower heads.

What can existing homes do to be more water efficient?

An existing 12 litre toilet bowl (pan) cannot have a modern dual-flush 6/3 (3-star) litre cistern (tank that sits above bowl at the back of the toilet) fitted, as water efficient cisterns require bowls that have lower flush volumes. Replacing your whole toilet can be very costly unless you are renovating your bathroom anyway. A more cost-effective option would be fitting a dual-flush 9/4.5 litre (1-star) cistern to your existing 12 litre pan.

Fitting a dual-flush, 9/4.5 litre (1-star) cistern, can save about 100 litre a day, and about $37 per year.

What rebates and assistance are available?

The Queensland Government and some local governments offer a number of rebate programs to assist in making homes more water and energy efficient.

The Home and Garden WaterWise Rebate Scheme, currently offered by the state government, provides rebates for water-saving devices that are not mandatory requirements imposed by state or local governments. Rebates are available for the following:

- rainwater tanks
- washing machines
- showerheads
- dual-flush toilet suites
- garden products
- swimming pool covers and rollers
- greywater systems.

The intent of the scheme is to provide incentives to owners and tenants of eligible residential properties in Queensland to become more water-efficient in their water use.

The Queensland Government’s rebates are intended to complement and build on existing local government rebate schemes. As the amount of local government rebates can vary between councils and shires, contact your local council for information.

For more information on Queensland Government rebates, visit www.nrw.qld.gov.au.
Improving sustainable housing in Queensland

Department of Infrastructure and Planning

Have your say:

Now that you know more about water efficient taps and toilets and how they can help you to save water and money, we would like to hear what you have to say.

- The Queensland Government is considering increasing the requirement for toilets in new homes and units to 4-star. What are your thoughts on this?

- The Queensland Government is considering introducing the requirement for tap ware in new homes and units to be a minimum of 3-star. What are your thoughts on this?

Refer to section 3 of the response form at the back of this discussion paper.

To help fight the drought and make home water conservation affordable and easy, the Queensland Government and local councils established the Home WaterWise Service. This subsidised service enables licensed plumbers to visit your home at a low cost to provide advice on water-saving strategies and install water-efficient devices to help you conserve water.

To find out more about the Home WaterWise Service, call 1300 968 728 or visit www.13plug.com.au.

The Home WaterWise Service is due to cease at the end of 2008 and be replaced by a new statewide ClimateSmart Home Service from 1 January 2009. Visit www.climatesmart.qld.gov.au or phone 1800 199 794 for more information on the new ClimateSmart Home Service.

Energy efficient lighting

Why is lighting important?

To respond to the climate change challenge, Queenslanders are being encouraged to match their water-saving efforts with energy savings to reduce the energy intensity of their lifestyles and achieve greenhouse gas savings.

The average Queensland household emits 11 tonnes of greenhouse gas a year, but there is potential to make a significant difference to these emissions through simple changes that do not compromise quality of life.

Eight per cent of household greenhouse gas emissions are attributed to lighting.

The Queensland Government’s ClimateSmart Living campaign is encouraging Queenslanders to install energy efficient lighting, such as compact fluorescent light (CFL) globes, in place of conventional incandescent globes. To find out more visit www.climatesmart.qld.gov.au.
Benefits of energy efficient lighting—compact fluorescent versus incandescent globes

Incandescent globes were the first form of electric lighting ever developed for use in the home. CFL globes are a more efficient lighting technology, with a typical CFL globe using around 80 per cent less electricity and lasting up to 15 times longer than an incandescent light globe.

Energy consumption is directly proportional to a globe's wattage. Energy efficient CFL globes generally use between 9 and 20 watts, while incandescent globes—commonly used around the home—use between 40 and 100 watts.

The cost of running a light is directly related to its wattage. The higher the wattage, the higher the running cost.

Did you know?
If every household in Queensland replaced just one incandescent light bulb with a CFL globe, the reduction in greenhouse gas emissions would be the same as taking more than 42 000 cars off the road.

### Table 9: Examples of running costs for incandescent and CFL globes

<table>
<thead>
<tr>
<th>Globe</th>
<th>Power</th>
<th>Approximate greenhouse gas emissions per year</th>
<th>Purchase price</th>
<th>Expected operating hours</th>
<th>Electricity running costs per year (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incandescent</td>
<td>75 watts</td>
<td>180 kilograms</td>
<td>$1.00–$1.20</td>
<td>1000–2000 hours</td>
<td>$12.30</td>
</tr>
<tr>
<td>CFL</td>
<td>15 watts (75-watt equivalent)</td>
<td>3.65 kilograms</td>
<td>$4.00–$10.00 (cheaper if buying a pack of 2 or 3 lights)</td>
<td>Around 8000 hours</td>
<td>$2.30</td>
</tr>
</tbody>
</table>

* The above prices and running costs are indicative only. Assuming an electricity price of 15 cents a kilowatt hour based on five hours of use per day each year.
Did you know?
A 50W halogen downlight used 3 hours a day will cost around $10 a year to run. If you had a room with eight halogens and ran them for 8 hours each day, lighting the room would cost you over $200 every year.

Availability, quality and installation
Compact fluorescent lighting now comes in a variety of colours, shapes, sizes and functions including:
- a ‘warm white’ similar in appearance to an incandescent light globe, suitable for use in living areas, kitchens and bedrooms
- a ‘cool white’, suitable for use in bathrooms, toilets and outdoors
- globe, coil and spiral shapes, and now bulbs suitable for reading lamps and chandelier lights. Also available with a glass cover that give them a similar appearance to incandescent light globes
- 9-watt (24-watt equivalent) to 18–20-watt (100-watt equivalent)
- downlight replacements (similar in shape to a halogen downlight).

CFL globes are generally available wherever conventional light globes are, with most hardware stores and major supermarkets stocking a good range. They are usually designed to fit into conventional bayonet- or screw-type light sockets. Specialist lighting stores will stock less-conventional globes for use in downlights and heritage light fixtures such as chandeliers.

Halogen lighting
Halogen lights are also a type of incandescent light. These are mainly used as downlights in homes. Halogens are also known as a ‘low-voltage’ light as they have transformers fitted to convert from the standard household 240 volts to 12 volts, but this does not mean that they also consume a low amount of energy.

Also, to achieve even lighting levels in a room, several halogen lights are required in the place of one incandescent or fluorescent light globe. Most low-voltage halogen globes used as downlights consume 50 watts each and an additional 15 watts for the transformer. As with incandescent light globes, a large proportion of the energy consumed by a halogen bulb is not used to produce light but rather it is lost in the form of heat.
Alternatives to halogen lights

- In a new home or renovation, you can get the look of downlights by installing mini-CFL downlight fittings. This will cost a bit more, but you will make a big difference to your energy bills and greenhouse gas emissions.

- If you have 50-watt halogen lights, downsize them to 20-watt or 35-watt halogen lights to save energy and lighting bills.

- Install a dimmer switch.

- Instead of halogen lights, consider alternatives such as floor and bench lamps fitted with CFL globes. (Note: If replacing low-voltage halogen lights, an electrician will be needed to convert the lights.)

- An emerging technology is LED downlights. These retail between $30 and $100 each but last up to 50,000 hours. They are currently available from specialist environment stores and online retailers. While they are currently quite expensive and the light output and quality may be less than halogen downlights, performance and price is improving.

For more information on energy efficient lighting visit www.climatesmart.qld.gov.au or call ClimateSmart Living on (07) 3227 8185.

What can existing homes do to be more energy efficient?

Lighting tips

- Remember, natural light is free and the most energy efficient lighting source.

- Turn lights off when you do not need them.

- Replace standard incandescent globes with energy-saving compact fluorescent globes, particularly in high-use areas, and make sure you use the lowest wattage light needed.

- Use programmable timers, daylight sensors or movement sensors to control outdoor and security lighting.

- Try solar-powered lights for outdoor garden lighting.
GreenPower
GreenPower is government-accredited renewable energy—sourced from solar, wind, hydro and biomass power stations—that is bought by energy suppliers on behalf of their customers.
By switching to GreenPower, you can immediately cut your household greenhouse gases by up to 70 per cent and be confident that you are helping to reduce greenhouse emissions and the impact of climate change.
To switch to GreenPower, simply call your electricity supplier. All you need to do is ask for their GreenPower product. Visit www.greenpower.gov.au to find out more.

What rebates and assistance is available?
There are no rebates currently available for energy efficient lighting however there will be assistance available such as the ClimateSmart Home Service from 1 January 2009.

ClimateSmart Home Service
The Queensland Government has announced a new service to help Queenslanders tackle climate change and reduce their greenhouse emissions around the home.
The new ClimateSmart Home Service, available from 1 January 2009, will improve energy efficiency in households across Queensland. The service will operate in a similar manner to the successful Home WaterWise Service.
For a $50 service fee, a qualified tradesperson will visit your home to conduct an energy audit, provide energy advice, install energy-saving tools such as a household energy monitor and a water efficient showerhead, and install 15 CFL globes.
Visit www.climatesmart.qld.gov.au or phone 1800 199 794 to find out more.

Free light bulbs
Did you know that switching to energy-saving bulbs might cost you no money at all?
Various companies that trade in carbon credits or work with other business partners offer households free or subsidised CFL globes. You ‘pay’ by signing over your energy savings to the company, to sell to industry. So keep an eye out for free bulb offers in shopping centres, and at fairs and home shows, or check with your local council or energy provider.
Pros
Phasing-out electric hot water systems is the most effective measure to reduce greenhouse gas emissions from the residential sector.

Cons
Greenhouse efficient hot water systems (solar, heat pump or gas) are more expensive.

Current and future requirements
New houses and units are required to install energy efficient lighting in 40 per cent of the fixed indoor lighting (by floor area, including garages).

The federal government announced on 5 June 2008 that they have fast-tracked the phase-out of inefficient light bulbs in Australia, bringing forward an import ban to November 2008.

The 12-month acceleration of the four-year phase-out, beginning with the introduction of a ban on imported incandescent globes from 2008, will result in cuts to greenhouse emissions of more than four million tonnes per year.

Retailers will then have a further 12 months to sell existing supplies before a retail ban comes into effect.

3.1.2 Electric hot water system phase-out from 2010

Why is the phase-out of electric hot water systems important?
The average Queensland household uses 27 per cent of its electricity to heat water. Using a greenhouse efficient hot water system—either gas, solar or heat pump—for water heating is one of the most effective ways of reducing household greenhouse gas emissions.

Replacing domestic electric hot water systems in Queensland with greenhouse efficient options is estimated to reduce total electricity demand by 3.6 megawatt hours and eliminate 3.7 million tonnes of greenhouse gas by 2020 (the equivalent of taking 720 000 cars off the road).

The phase-out of electric hot water systems from existing homes was announced as part of Queensland’s ClimateSmart 2050 strategy in June 2007, and is the first initiative of its kind in Australia. This follows action by the Queensland Government to ban the installation of electric hot water systems in all new houses (Class 1 buildings). This came into effect on 1 March 2006.
Potential greenhouse savings
All greenhouse efficient hot water systems provide significant reductions in household greenhouse emissions as shown in Figure 2 above.

How will it work?
The phase-out will be implemented in two stages. The first stage will commence from 1 January 2010 in gas reticulated areas and will require existing houses to install a greenhouse efficient hot water system when their existing system requires replacing.

A date has yet to be determined for the second stage, which will require houses located outside a gas reticulated area to install a greenhouse efficient hot water system when their existing systems requires replacing.

The Stage 1 implementation date of 1 January 2010 will provide sufficient time for industry to prepare for the increased demand for greenhouse efficient hot water systems and for licensed tradespeople to undertake appropriate installation training and prepare to provide back-up services (e.g. by acquiring temporary hot water systems).

It is important to remember that greenhouse efficient hot water systems do not need to be installed immediately and will only be required when the old electric hot water systems needs replacing. This requirement will only apply to houses (Class 1 buildings) and will not apply to existing units (Class 2 buildings). It will also not apply to houses serviced by a reticulated liquefied petroleum gas (LPG) network.
How do I know if I am in a gas reticulated area?

A house will be considered as being in a gas reticulated area if there is an existing gas network pipeline within 100 metres of the home's property boundary, there are no substantial obstacles such as railway tracks, main roads or highways and the pipe can be extended at no cost to the homeowner.

For example: Mrs Smith’s house is not connected to the natural gas network; however, there is a natural gas pipeline at the end of her street. Mrs Smith has contacted the phone hotline and received confirmation that the existing natural gas pipeline is within 100 metres of her property boundary and can be extended to her property by the gas network distributor—at no cost—as there are no substantial obstacles between Mrs Smith’s property and the existing pipeline. In this example, Mrs Smith would need to install an energy efficient hot water system as she is considered to be in a gas reticulated area.

Currently, 145,000 properties use reticulated natural gas in Queensland and approximately 500,000 properties are estimated to be within 100 metres of a natural gas pipeline. These properties could potentially access the natural gas network. Households located within a gas reticulation area will be able to choose which type of greenhouse efficient hot water system they install. For households not located within a gas network area, switching to a greenhouse efficient system will initially be voluntary.

A phone hotline will be made available so that plumbers, homeowners and other hot water installers can quickly ascertain if a property is in a natural gas reticulation area.

If your electric hot water system requires replacing after 1 January 2010 you would carry out the following three steps:

1. Phone the hotline to determine if your house is located in a gas reticulated area.
   a. If your house is in a gas reticulated area, you will need to replace your hot water system with a greenhouse efficient hot water system—solar, heat pump or gas (natural or LPG).
   b. If you are not in a gas reticulated area, you are not required to install a greenhouse efficient hot water system; however, if you want to still consider installing a gas hot water system—given the substantial household savings which can be achieved—ask the gas distributor how much it would cost for gas to be connected to your home.
      (Note: This does not apply to houses that were built from 1 March 2006 and required to have a greenhouse efficient hot water system.)
2. Pick which greenhouse efficient hot water system best suits your budget and household water needs.
3. Contact your chosen greenhouse efficient hot water system supplier to arrange installation.

Did you know?

By replacing an electric hot water system with a solar hot water system, total household greenhouse gas emissions can be reduced by over a quarter (or almost three tonnes—which is almost the same as taking one car off the road).
Will I be without hot water if the gas pipe requires extending?
No. Gas distributors and suppliers have advised they will be able to provide a temporary hot water system free of charge until the greenhouse efficient hot water system is installed.

How to choose your greenhouse efficient hot water system
The overall cost of your hot water depends on a number of factors, with the main two being:
- the type of system—storage or continuous flow
- the source of fuel used to power the system (e.g. solar, gas or electricity).

Storage or continuous flow?

**Storage water heaters:**
- heat and store water in an insulated tank ready for use throughout the day
- operate most economically on solar energy, natural gas or off-peak electricity. They can also run on LPG, peak electricity or solid fuels such as wood
- are available as either mains pressure or constant pressure.

**Continuous flow (instantaneous) water heaters:**
- heat water as required—they cannot run out of hot water
- are smaller than storage water heaters
- connect to the mains water supply and deliver hot water at a slightly reduced pressure
- may have electronic remote controls for precise temperature control
- are sized according to the number of hot water outlets likely to be used simultaneously
- operate most economically on natural gas, but can also use LPG or electricity.
Did you know?
Installing a gas, solar or heat pump water heater that uses a low-greenhouse-impact fuel is a great start for a healthier environment.

Gas or solar?
Choosing the correct fuel can make a significant difference to running costs and greenhouse gas pollution.

Natural gas:
- is suitable for storage and continuous flow systems
- is used in systems that are rated for their energy efficiency with energy rating labels—more stars mean better energy efficiency
- can be used in internal and external systems
- can be used in storage gas water heaters, which have smaller capacities than off-peak electric systems, as water can be reheated at any time of the day or night
- attracts rebates.

LPG:
- can be used in areas where natural gas is not available
- costs one-and-a-half to three times the price of natural gas or off-peak electricity
- attracts rebates.

Solar energy:
- can provide 86–95 per cent of your hot water free of charge
- is used with systems that incorporate a gas or off-peak electricity booster to supply adequate hot water during periods of low sunshine
- can be used with mains pressure and constant pressure systems
- attracts rebates.

Heat pumps:
- are highly efficient, using around 76 per cent less electricity than other electric water heaters. Heat is extracted from the atmosphere using a refrigerant gas and a compressor and used to heat water stored in a tank at ground level
- have lower running costs than normal ‘peak rate’ electric water heaters because of their high efficiency. When used in conjunction with a timer and the off-peak tariff, running costs are even lower
- attract rebates.
What rebates are currently available?

There are several rebates currently available to assist homeowners install a greenhouse efficient hot water system, as shown in Table 10.

Renewable energy certificates

Renewable energy certificates are a form of discount that apply to either solar or heat pump hot water systems. Renewable energy certificates apply regardless of whether the system is installed in a new or existing dwelling. The number of eligible renewable energy certificates varies depending on the model of the system. Manufacturers will offer renewable energy certificates either as a point-of-sale discount or as a cash refund later. Always confirm with your hot water supplier that the renewable energy certificates’ value has been deducted from the purchase price and get a copy of the certificates. Renewable energy certificates are subject to market fluctuations. Currently, a typical hot water system will attract around $1300 worth of renewable energy certificates for both solar and heat pump systems. More details on renewable energy certificates are available from the Office of the Renewable Energy Regulator by visiting www.orer.gov.au or calling (02) 6274 2192.

Gas hot water systems

Queensland’s Residential Gas Installation Rebate Scheme, administered by the Department of Mines and Energy, offers a $300 rebate to existing homeowners to replace their electric hot water system with a gas system. To be eligible, the applicant must be the property owner, the gas system must have a minimum 5-star rating, be purchased from a participating gas retailer and be installed by a licensed gasfitter. The rebate is limited to detached houses and some attached dwellings, such as town houses and terrace houses (not multi-unit dwellings). An additional $200 is available to applicants if they also install other gas appliances, such as stoves, ovens, space heaters and clothes dryers. This rebate is not subject to a household means test. The rebate is available until 31 August 2009, subject to available funds. More details on the rebate scheme are available from the Department of Mines and Energy by visiting www.dme.qld.gov.au or calling (07) 3247 3254.

Solar Hot Water Rebate Program

This federal government program offers a $1000 rebate to householders if they replace their existing electric hot water system with either a solar or heat pump system. To be eligible, your total household income last financial year must be less than $100,000, the dwelling must be the principal place of residence and the system must be installed by a suitably qualified tradesperson. The rebate is available until March 2012. More details on the program are available by visiting www.environment.gov.au or calling 1800 808 571.

### Table 10: Rebates currently available

<table>
<thead>
<tr>
<th>Type*</th>
<th>Renewable Energy Certificates (RECs)**</th>
<th>State or federal rebate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar—electric boost (340 litre)</td>
<td>$1300 (33 certificates)</td>
<td>$1000*</td>
</tr>
<tr>
<td>Solar—gas boost (340 litre)</td>
<td>$1300 (33 certificates)</td>
<td>$1000*</td>
</tr>
<tr>
<td>Heat pump (310 litre)</td>
<td>$1300 (33 certificates)</td>
<td>$1000*</td>
</tr>
<tr>
<td>Gas—storage (170 litre)</td>
<td>n/a</td>
<td>$300</td>
</tr>
<tr>
<td>Gas—continuous flow (20 litres/minute)</td>
<td>n/a</td>
<td>$300</td>
</tr>
</tbody>
</table>

1 The types of hot water systems shown would service an average household.
2 Amounts shown are for typical models of hot water systems and their eligible number of renewable energy certificates as at June 2008.
* Only available to households with an income under $100,000 for the last financial year.
What assistance will be available in the future?

The Queensland Government is currently developing a measure to offer assistance for low-income households to convert to greenhouse efficient hot water systems from 2010 to support this initiative.

A ClimateSmart Homes Rebate program is also being developed for remote areas of the state. Under this program, rebates will be available for greenhouse efficient hot water systems as well as replacing refrigerator seals, decommissioning energy inefficient refrigerators, and installing insulation and compact fluorescent light bulbs.

What you can do now?

The last thing you want is to be without hot water. With the rebates currently available, it might be worth investigating your hot water options now. Things to consider in your decision making will be:

- the size of your household
- the system's purchase and installation price
- the system's efficiency and running costs
- the system's life expectancy.

To find out if a gas pipeline passes by your property, Queensland residents can contact the Natural Gas hotline (free call) on 1800 007 427 or for more information visit www.natural-gas.com.au.

There are greenhouse efficient hot water systems available to suit houses of all sizes.
Table 11: How much will it cost?

<table>
<thead>
<tr>
<th>Type</th>
<th>Up-front cost</th>
<th>Installation cost</th>
<th>Discounts and rebates</th>
<th>Total cost (inclusive of installation) minus rebates and discounts</th>
<th>Time to install</th>
<th>Greenhouse savings (compared to electric)</th>
<th>Savings (per year)</th>
<th>Payback period (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solar</strong>—electric boost (340 litres)</td>
<td>$3400</td>
<td>$1250</td>
<td>$1300 (33 RECs)</td>
<td>$1000</td>
<td>$3350</td>
<td>$2350</td>
<td>up to 13 hrs</td>
<td>86%</td>
</tr>
<tr>
<td><strong>Solar</strong>—gas boost (340 litres)</td>
<td>$4590</td>
<td>$1650</td>
<td>$1300 (33 RECs)</td>
<td>$1000</td>
<td>$4940</td>
<td>$3940</td>
<td>up to 13 hrs</td>
<td>95%</td>
</tr>
<tr>
<td><strong>Heat pump</strong> (310 litres)</td>
<td>$3161</td>
<td>$532</td>
<td>$1300 (33 RECs)</td>
<td>$1000</td>
<td>$2393</td>
<td>$1393</td>
<td>4 hrs</td>
<td>76%</td>
</tr>
<tr>
<td><strong>Gas</strong>—storage (170 litres)</td>
<td>$997</td>
<td>$414</td>
<td>n/a</td>
<td>$300</td>
<td>n/a</td>
<td>$1111</td>
<td>4 hrs</td>
<td>68%</td>
</tr>
<tr>
<td><strong>Gas</strong>—continuous flow (20 litres/minute)</td>
<td>$1470</td>
<td>$411</td>
<td>n/a</td>
<td>$300</td>
<td>n/a</td>
<td>$1581</td>
<td>4.5 hrs</td>
<td>71%</td>
</tr>
</tbody>
</table>

1 The types of hot water systems shown would service an average household.

2 Installation cost assumes removal of the existing electric hot water storage system and replacement with a greenhouse efficient system by a suitably licensed tradesperson into the same location (as at June 2008). Cost can depend on access to the hot water system, the height of the house and pipe work required. For gas, it does not include the connection fee, which typically ranges from $500 to $1000 if there is no existing gas connection.

3 Renewable energy certificates (RECs) apply to solar and heat pump hot water systems installed in either new or existing houses or units. Manufacturers may offer renewable energy certificates as a point-of-sale discount or through a refund application. Renewable energy certificates are subject to market fluctuations and the amounts shown are for typical models of hot water systems and their eligible number of renewable energy certificates as at June 2008.

4 Queensland’s Gas Installation Rebate ($300) is available when replacing an electric hot water system in an existing home with a 5-star rated (minimum) gas hot water system (does not apply for units). The rebate is available until 31 August 2009, subject to available funds.

5 The federal Solar Hot Water Rebate ($1000) is available for solar and heat pump hot water systems when replacing an electric system in an existing home where total household income is under $100 000 for the last financial year. The rebate is available until March 2012, subject to available funds.

6 In some circumstances, such as no existing gas connection into the house, hot water can still be supplied to the household via a temporary miniature system (50 litres).

7 Calculation includes deducting the cost of the replacement electric hot water system (315 litres) at $1453.

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**Have your say:**

- Given the hot water needs of your home, what greenhouse efficient option—solar, heat pump or gas (either reticulated gas or bottled LPG)—would you most likely replace your electric hot water system with, and why?

Refer to section 3 of the response form at the back of this discussion paper.
3.1.3 Sustainability declaration at point-of-sale and point-of-lease

What is the improvement?
If you are going to sell or lease your property, you will need to disclose to the prospective purchaser or tenant the current level of sustainable features in the home in the form of a sustainability declaration. Examples of sustainable features are:

- energy—ceiling fan
- water—3-star dual flush toilets
- safety (mandatory)—smoke alarms
- security—secure mailbox with lock
- access—all locks keyed alike.

Refer to Appendix 3 for the full list of features contained in the sustainability declaration.

Why is a sustainability declaration important?
Homes with a higher number of sustainability features are cheaper to run and more energy efficient. They use less energy for heating and cooling, generate lower greenhouse gas emissions, and are more comfortable.

Research shows that the majority of people believe that homes with more sustainability features are worth more. From the passionately environmentally conscious to those who are more conscious of their cost of living, Queenslanders are now beginning to take small steps towards living more sustainable lives.

The Queensland Government sees this as a positive shift in consumer demand and with our homes responsible for over a quarter of our total carbon dioxide emissions, it is essential to increase sustainability in the home. Increasing interest in environmentally friendly homes will hopefully inspire more homeowners to make improvements, not only to make their homes more comfortable and less costly to run, but also pass on the benefits to potential buyers or lessors.
In national and international cities where similar declarations have been introduced, observers have noticed that prior to their introduction, location and environment, new bathrooms and kitchens, and plenty of storage were the strongest selling points that would add value to a property. They are now finding that an increased number of people are considering sustainable features when buying or leasing a home such as rainwater tanks and solar hot water systems—in some cases, this is a deciding factor.

**Benefits of a sustainability declaration**

The sustainability declaration will help people to identify a home's sustainability features when buying, renting or selling a home. The market demand for these features is driving down the price of sustainable housing products, such as double-glazing, while increasing the comfort and resale value of energy efficient homes.

**Compliance**

The sustainability declaration will be a mandatory requirement when selling or leasing a home. The declaration is self-assessable and will need to be completed by the property owner. The owner will be able to nominate a third-party representative (e.g. a family member or real estate agent) to complete the sustainability declaration if they are unable to complete the declaration themselves.

The declaration will list features that make your home more sustainable in five key areas—energy, water, safety, security and access. If the property has none of the features listed in the sustainability declaration, the property owner will simply tick the box in each section that indicates no features are installed. Apart from the mandatory safety features, there is no legal requirement to have any other sustainable features.

The sustainability declaration must be completed prior to a house going on the market for sale or lease as it will assist in the advertising of the property.

The sustainability declaration will form part of the contract for sale or lease.

It is envisaged that failure to have a sustainability declaration in place at time of sale or lease will be subject to an infringement notice.

---

**Case study 1**

Mrs Smith, a single, aged pensioner has decided to sell her home and move to a retirement village. Her son deals with all her financial affairs. They have decided to use a real estate agent. What will they need to do?

1. Complete the sustainability declaration—Mrs Smith's son will be able to do this for her as she has nominated him as a third-party representative.
2. Contact a local agent to place the property on the market for sale or lease and provide the agent with the completed sustainability declaration. The real estate agent will provide a copy to any prospective buyers on request and have one available at open inspections. The agent will also ensure the sustainability declaration forms part of the contract of sale.

**Case study 2**

Charlie and Monica have decided to rent their unit. They have decided to rent the property without the assistance of an agent. What will they need to do?

1. Complete the sustainability declaration themselves.
2. Advertise the property for lease.
3. Provide a copy of the sustainability declaration to perspective tenants on request and have one available at open inspections.
4. Ensure the sustainability declaration forms part of the contract of lease.

---

**Did you know?**

In 2006 the estimated health care costs associated with older people having falls was $115 million in Queensland. The lifetime cost of falls in Queensland is estimated to be $750 million, or twice as much as road trauma. Sustainable housing features, such as level-entry thresholds, step-free showers and slip-resistant flooring can decrease trips and falls in the home, thereby reducing this health cost.
What you can do now?

Even if you are not considering selling or leasing your home right now, you will be able to obtain the sustainability declaration as a stand-alone document. By finding out what the sustainability features are, you could make improvements that will lessen your home's greenhouse gas emissions and result in significant reductions to your household bills. A copy of the sustainability declaration can be found at www.dip.qld.gov.au.

If you are interested in improving the sustainable features of your home, there are rebates available from all levels of government.

What rebates are currently available?

Water rebates
Refer to the range of water rebates shown on page 20.

Hot water rebates
Refer to the range of hot water rebates shown on page 31.

Solar power rebate
The federal government provides up to $8,000 for a solar energy power system to be installed on the homeowner's principal place of residence. This rebate is only available to households with an income under $100,000 for the last financial year.

What assistance will be available in the future?

Queensland Government

ClimateSmart Home Service
Commencing January 2009, the ClimateSmart Home Service will assist homeowners to improve their energy efficiency. For $50, a qualified tradesperson will visit the home to provide advice and energy saving tools, including a smart energy monitor, 15 compact fluorescent light globes and a water efficient showerhead. This service will also include a home energy audit to help households further reduce their energy consumption. The program will operate similarly to the successful Home WaterWise Service, and will audit 260,000 homes across the state in its first two years. For more information on this service visit www.climatesmart.qld.gov.au.
Federal government

Green loans

From early 2009, up to $10,000 will be available for up to 200,000 homeowners to access low-interest ‘green loans’. The loan will cover a range of sustainable housing features, including the installation of solar energy power systems, rainwater tanks, greywater systems, insulation, shading devices, and greenhouse efficient hot water systems.

Each household will be able to pay back the loan at a maximum rate of two per cent of annual gross income, with a minimum of $300 to be repaid each year.

Householders will also be provided with a Green Renovation Pack and receive a household sustainability assessment report. The report will contain information on sustainable home improvements, with estimates of savings that could be made by installing the suggestions in the report.

Landlord insulation rebate

This will provide a rebate of 30 per cent towards the cost to install insulation for landlords of existing rental homes, up to a maximum of $500 per property. A commencement date is yet to be announced.

Rainwater tanks and greywater systems

This will provide a $500 rebate towards the cost of rainwater tanks and greywater products. Homeowners installing these products will also be able to claim other available state and council rebates. A commencement date is yet to be announced.

One-stop green shop

A new website will be developed for schools, businesses and householders as a central reference point on sustainable housing. A commencement date is yet to be announced.

Have your say:

- What are your thoughts on introducing a sustainability declaration for dwellings at the time of sale?
- Should a sustainability declaration be applied to rental properties at the time of leasing?
- Are there any other sustainable housing features that should be included in the sustainability declaration?

Refer to section 3 of the response form at the back of this discussion paper.
Did you know?
The running cost of air-conditioners varies between star ratings.

7 kilowatts air-conditioner (living room size):

On average a 1-star MEPS* rated air-conditioner costs $294 per annum to run compared to a 4-star MEPS* rated system of the same size which costs $205 per annum. By choosing a 4-star MEPS* rated system, you could save approximately $89 per year in running costs.

*MEPS—Minimum Energy Performance Standards

3.1.4 Prevent the sale and installation of inefficient air-conditioners

Why is this important?
Queenslanders are increasingly installing air-conditioning, or moving into air-conditioned new homes. Overall, more than 58 per cent of households now have an air-conditioner. For the environment and our energy grids, this trend is not good news. Growing use of air-conditioning is increasing energy consumption and greenhouse gas emissions from fossil-fuel-fired electricity generators, which must work harder to meet demand spikes on hot days.

Purchasing and running an air-conditioner can be a costly exercise. Good housing design and the use of insulation can reduce the need for an air-conditioner. However, if you have an air-conditioner or if you are considering buying one, you can reduce running costs significantly.

The proposed improvement does not discourage the use of air-conditioners but ensures that any sold will be energy efficient.

The more stars, the more energy-efficient an appliance is, and the more money you will save in running costs. An air-conditioner with a star rating of two needs more energy to function than an equivalent unit with a star rating of five.
Did you know?
An average air-conditioner uses the same amount of energy per hour as up to 30 standard portable fans.

How can you cool your home more energy efficiently?

The Queensland Government is encouraging Queenslanders to conserve energy in the same way they have conserved water. Using less energy (switching off appliances, using them for shorter durations) is one of the most simple and cost-effective ways that Queenslanders can cut greenhouse emissions.

In summer, there are many simple things people can do to ensure their homes stay cool and comfortable on hot days, rather than just turning on the air-conditioning.

Try:
- installing good external shading on windows, particularly those facing north and west—this can cut heat entering the home by 70–80 per cent
- installing insulation in ceilings and, where possible, walls
- sealing gaps around doors and windows to prevent hot air from getting in
- planting trees and shrubs to protect your home from summer sun and hot winds
- opening your home at night so when a cool change comes through, the cool air is let in
- on hot days, dressing appropriately, and using a fan to stay cool
- for homes with air-conditioners, closing off unused rooms.

If you are a household in the market for an air-conditioner, one of the most important things to look for with an air-conditioner is the star rating. You will also need to work out what size air-conditioner you require for the task and then choose the most efficient model that will perform the task.

For more information on choosing an energy efficient air-conditioner visit www.energyrating.gov.au
Factors to consider

Split systems consist of an outdoor unit that conditions the air, plus an indoor unit (or several) that blows the conditioned air into the house. They're less noisy and more efficient than cheaper window/wall units.

Inverter air-conditioners can vary their heating or cooling output to correspond to room conditions.

Airflow—The air-conditioner's fan circulates the cooled (or heated) air around the room. Ideally, you want a model with a wide airflow range: from very high to help the room cool down quickly, to very low so there's less noise and no unpleasant draught once you have the right temperature.

Efficiency—this tells you how many kilowatts (kW) of cooling or heating an air-conditioner provides per kW of electricity it uses. The more stars on the energy label, the more efficient it is and the lower the running costs and greenhouse gas emissions. Note that star ratings are different for heating and cooling.

In the energy rating label shown, the numbers in the blue and red boxes give the product's cooling and heating capacity. Heating is measured at an outside temperature of 7°C; some labels also show the capacity at 2°C in small print underneath. The higher the number of stars, the more efficient it is—blue stars for cooling, red for heating (efficiency is calculated by dividing the output capacity by the input power).

Noise—a noisy indoor unit may interfere with your conversation, entertainment or sleep. In addition, most local councils have noise restrictions relating to the use of air-conditioners: check before you buy, especially if the outdoor unit has to be installed close to your neighbour.

Current requirements

There are currently no minimum requirements on the sale and installation of energy efficient air-conditioners in Queensland.

Both the Victorian and Western Australian governments are considering banning the sale of air-conditioners that are not a minimum 1-star energy rating.
3.1.5 Investigate requiring photovoltaic (solar) energy to be installed on large houses

In the future, owners of new large homes, and home owners who intend installing a pool or air-conditioner, may be required to install photovoltaic (solar) energy as a way to offset the energy consumed in these houses. A large home would be defined by a specified floor area.

3.1.6 Investigate requiring minimum energy star rating on swimming pool pumps

Owners of new swimming pools may be required to fit a minimum energy star-rated pool pump (out of 6-stars)—pending star ratings for energy efficiency of pool pumps. This is currently being finalised through the federal government’s Minimum Energy Performance Standards. New pool pumps may also be required to be fitted with timers, and wired to interruptible supply or off-peak tariffs. This would save householders around 40 per cent on their pool pumping costs.

Have your say:

- Do you think new large houses and houses with pools or an air-conditioner should be required to install photovoltaic (solar) energy?

Refer to section 3 of the response form at the back of this discussion paper.

Have your say:

- Do you think a minimum energy efficiency rating should be mandated for new pool pumps?
- Do you think pool pumps should be wired to an off-peak tariff?

Refer to section 3 of the response form at the back of this discussion paper.
4 Where to next?

We encourage all Queenslanders to consider the information contained within this document and how the proposed measures could affect your interests. Let us know your views by completing the response form at the end of this discussion paper.

Comments on this discussion paper will be assessed by the Queensland Government for further consideration. Summary results of this analysis will be available from the Get Involved website: www.getinvolved.qld.gov.au.

Individual measures will be progressively announced by the Department of Infrastructure and Planning. Check the website for announcements or sign up to receive the free building and plumbing ‘Newsflashes’ at www.dip.qld.gov.au.
Appendix 1: Queensland’s climate zones

Source: Building Code of Australia 2008
### Appendix 2: Comparison of interstate and overseas sustainable housing measures

#### 2.0 Designing and building a sustainable home

<table>
<thead>
<tr>
<th></th>
<th>QLD</th>
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<td>Building Code of Australia</td>
<td>United Kingdom carbon neutral new houses from 2016, California, United Kingdom, Canada — 7-star houses</td>
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<td>5-star houses</td>
<td>5-star houses</td>
<td>5-star houses</td>
<td>5-star houses</td>
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<td>3.5–4-star houses</td>
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<td>3.5–4-star units</td>
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<td>3.5–4-star units (depending on climate zones)</td>
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#### 3.0 Creating an efficient home — through fixtures and fittings

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<tr>
<td><strong>3.1.1 Improved water and energy efficient (EE) lighting in new houses and units</strong></td>
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<td>3-star toilets</td>
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<td>EE lighting 40%</td>
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<td>2008 (where possible)</td>
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<td>2008 (where possible)</td>
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<td><strong>3.1.3 Sustainability declaration for existing houses and units</strong></td>
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<td>National Framework for Energy Efficiency (NFEE) — mandatory disclosure (energy only)</td>
<td>United Kingdom — Energy Performance Certificates since 2007</td>
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<td>Spain — photovoltaic (solar) energy on new houses over 500m² since 2006</td>
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<td><strong>3.1.6 Investigating requiring minimum energy star rating on swimming pool</strong></td>
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<td>n/a</td>
<td>A Minimum Energy Performance Standard is being developed for pool pumps — expected to be completed by the end of 2008</td>
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</table>

^ 5-star (out of 10) energy equivalence for new houses is determined under the Building Code of Australia. It considers the design of the dwelling's roof, walls, windows and floors.

* BASIX = Building Sustainability Index (NSW only). It covers the building's roof, walls, windows floors and also assesses a combination of the energy and water usage of appliances such as hot water systems, air-conditioners, fridges etc.
Appendix 3: Sustainability declaration

**Sustainability declaration**

The following measures and features are installed in the dwelling on Lot _____/RP _______ at __________________________________(address).

<table>
<thead>
<tr>
<th>Feature</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Greenhouse-efficient hot water (solar, heat pump or gas)#</td>
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<td></td>
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<tr>
<td>Energy-efficient lighting (CLFs/ fluorescent tube)#</td>
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<tr>
<td>(min. 50 per cent of fixed indoor light globes)</td>
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</tr>
<tr>
<td>5-star energy equivalent rated house (for building shell)##</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photovoltaic (solar) energy or other renewable energy system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas cook top and/or oven</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceiling fan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passive design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. insulation in the entire roof space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. pale or light color roof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. eastern and western windows shaded from the summer sun</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(by verandas or at least 600 mm eaves or window awnings)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. a covered deck or covered pergola attached to living area*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. mechanical ventilation such as whole-house fans and whirlybirds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum 4-star fixed air-conditioner with insulated room(s) or no air-conditioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None of the above features are installed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total number of energy features**

---

# Note: A greenhouse-efficient hot water system has been required to be installed in new houses since 1 March 2006 (not units). Energy-efficient lighting has been required in new houses and units since 1 March 2006.

## Note: This can be confirmed by an energy rating certificate or building approval.

* Note: A covered deck or pergola must be at least 3 m wide and 4 m in length.
Rainwater tank with mosquito-proof screens or flap valves

All dual flush toilets to be 3-star or AAA

All shower heads to be 3-star or AAA

Greywater treatment system (council approved)

3-star water efficient tap ware in bathroom basins, kitchen sink and laundry trough

None of the above features are installed

Total number of water features

^ Note: As part of Queensland's Water Savings Targets most new houses (not units) have been required to install a rainwater tank since 1 January 2007 in South East Queensland and from 1 July 2007 in the remainder of the state. Mosquito-proof screens or flap valves are required on every opening to a rainwater tank.

Dual-flush toilets and shower heads (either 3-star WELS rated or AAA rated) have been a requirement for new houses and units since 1 March 2006. Since 2007 all water efficient products must be badged using the WELS rating, AAA rating is not permitted.

* from 1 April 2008 for rental properties (houses and units), where the tenant is required to pay all water consumption charges, all toilets, shower heads and internal cold taps must be water efficient (minimum 3-star WELS rated).
**MANDATORY—all relevant features from this category must be ticked***

<table>
<thead>
<tr>
<th>Safety Feature</th>
<th>Ticked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoke alarms</td>
<td></td>
</tr>
<tr>
<td>Electrical safety switch</td>
<td></td>
</tr>
<tr>
<td>Pool fence that is properly maintained (if a pool or spa is on the premises)</td>
<td></td>
</tr>
<tr>
<td>Tempering device on the hot water system</td>
<td></td>
</tr>
</tbody>
</table>

**Total number of safety features**

*Note:* Smoke alarms and an electrical safety switch are required to be installed under Queensland law following this sale. Hot water systems installed (including replacement systems) after 1 April 1998 are required to have a hot water tempering device installed. Pool fencing is required to comply with laws applicable at the time of approval.

<table>
<thead>
<tr>
<th>Security Feature</th>
<th>Ticked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor lighting to illuminate each external entry to the house</td>
<td></td>
</tr>
<tr>
<td>House number clearly visible from the street</td>
<td></td>
</tr>
<tr>
<td>Deadlocks on all external doors</td>
<td></td>
</tr>
<tr>
<td>Secure mailbox with lock</td>
<td></td>
</tr>
<tr>
<td>None of the above features are installed</td>
<td></td>
</tr>
</tbody>
</table>

**Total number of security features**
Level entry—no step greater than 10 mm high at the front door

Wide doorways—at least 820 mm clear opening

Wide hallways—at least 1200 mm or greater

Hob less (step-free) shower(s), with slip-resistant flooring

Separation of pedestrian access from vehicle access

All locks keyed alike

Safe egress for occupants in an emergency

None of the above features are installed

Total number of access features

Vendor/lessor

Signature

Print name
Please indicate how strongly you agree or disagree with each of the following initiatives, by placing a tick in the appropriate column against each initiative. If you are unsure, or believe you need more information about the initiative, please indicate this in the last column.

<table>
<thead>
<tr>
<th>2.0 Designing and building a sustainable home</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Don't know/ Need more information</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.1 Energy efficiency in new houses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An increase in the current star rating for new houses to 5 out of 10.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.2 Energy efficiency in new units</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An increase in the current star rating for new units from 3.5 or 4-star (depending on where you live) to a 5-star (out of 10).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.3 Queensland building standards</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improving building regulation requirements for new houses to recognise indoor/outdoor living spaces such as decks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.4 Building materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish star rating system for building materials, relative to their life cycle assessment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.5 Residential covenants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preventing residential estate covenants and body corporate or community titles from restricting the use of energy efficient housing design features and fixtures.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 3.0 Creating an efficient home through fixtures and fittings

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Don't know/Need more information</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.1</td>
<td>Water and energy saving fixtures and fittings</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Increase the energy efficient lighting requirement for all new houses and units.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Require energy efficient lighting to be installed in all newly renovated home areas.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>All new or renovated homes to have a minimum 4-star (out of 6) dual flush toilets.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>All tap ware installed in new or renovated homes to be minimum 3-star rated (out of 6).</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3.1.2</td>
<td>Phase-out of electric hot water systems</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Phase-out all electric hot water systems in houses located outside gas reticulated areas (at the time of replacement).</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3.1.3</td>
<td>Sustainability declaration</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Completion of a sustainability declaration to be compulsory at the time a property is being sold.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Completion of a sustainability declaration to be compulsory at the time a property is leased or rented.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Completion of a sustainability declaration to be voluntary at the time a property is being sold.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Completion of a sustainability declaration to be voluntary at the time a property is leased or rented.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3.1.4</td>
<td>Air conditioner</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>All air-conditioners sold and installed in Queensland to have at least a 4-star energy efficiency rating.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3.1.5</td>
<td>Solar power</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>Compulsory installation of solar energy for new large houses and new houses which have either a pool or air-conditioner.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3.1.6</td>
<td>Star rating for pool pumps</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>All new swimming pools to be fitted with a minimum energy star-rated pump.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
How well do you think you currently understand each of the following rating systems?

<table>
<thead>
<tr>
<th>Rating System</th>
<th>Not very well</th>
<th>Well</th>
<th>Very well</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>The star rating system used to calculate energy efficiency for Queensland homes, which has a maximum 10-star rating.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The star rating for appliances and fixtures under the Water Efficiency Labelling Scheme (WELS) (out of 6).</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The star rating for electrical appliances under the Minimum Energy Performance Standards labelling scheme (out of 6).</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Of all of the initiatives considered in this paper, which do you think is most important?

________________________________________________________________________

________________________________________________________________________

Why do you say that (please explain)?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Are there any other actions or building design measures you believe the Queensland Government should take to encourage individuals to use less non-renewable resources, such as water and energy? Please describe these.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Please indicate how strongly you agree or disagree with each of the following statements about energy use and global warming.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Don’t know/Need more information</th>
</tr>
</thead>
<tbody>
<tr>
<td>People are over-reacting to the ‘threat’ of global warming.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Global warming is a serious threat to our lifestyle.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>There is a great deal we as individuals can do to reduce our reliance on non-renewable energy sources such as water and energy.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The changes we can make to our energy use are unlikely to have much effect on global warming overall.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Thank you very much for your feedback. To assist us in analysing the responses we get from this survey, please complete the following questions about yourself.

<table>
<thead>
<tr>
<th>Your gender</th>
<th>Male ☐</th>
<th>Female ☐</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Your age</th>
<th>Under 18 years ☐</th>
<th>18–24 years ☐</th>
<th>25–34 years ☐</th>
<th>35–44 years ☐</th>
<th>45–54 years ☐</th>
<th>55–64 years ☐</th>
<th>65–74 years ☐</th>
<th>75 and over ☐</th>
</tr>
</thead>
</table>

Optional:
- Name
- Postal address
- Email address
Every drop counts
Water and energy are precious commodities. To reduce water consumption and minimise the release of volatile organic compounds (VOCs) into the atmosphere, this document has been printed on Sovereign paper, using the Waterless Printing technique and soya-based inks.

The Department of Infrastructure and Planning is working with Climate Friendly to measure and offset unavoidable emissions associated with a road show throughout Queensland that will promote this discussion paper.