

PLANNING & ENVIRONMENT COMMITTEE**11 SEPTEMBER 2008****7****IMPROVING SUSTAINABLE HOUSING IN QUEENSLAND - DEPARTMENT
INFRASTRUCTURE & PLANNING DISCUSSION PAPER****Maree Grenfell : 8/27/3-: #1782660****RECOMMENDATION:****That Council:**

- 1. Resolve to make a submission on the Department of Infrastructure & Planning Discussion Paper “Improving Sustainable Housing in Queensland” in accordance with the comments documented in the attachment.**

INTRODUCTION:

The Department of Infrastructure and Planning (DIP) have released a discussion paper - *Improving Sustainable Housing in Queensland*, which contains measures to improve the sustainable design and performance of both new and existing homes. The aim of these measures is to reduce greenhouse gas emissions, improve water security for the residential sector and provide householders with ongoing savings.

In conjunction with the discussion paper, DIP is hosting a series of state wide information sessions. A community consultation session was held in Cairns at the Mercure Hotel Harbourside on 3 September.

BACKGROUND:

Improvements to sustainable design and practices within the housing sector provide numerous opportunities to reduce the level of greenhouse gas emissions in the building sector.

The building sector is responsible for 23% of Australia’s greenhouse gas emissions as a result from energy demand.

Sustainable improvements within the building sector have been identified as providing the lowest cost opportunities to reduce Australian greenhouse gas emissions (McKinsey Report). In Queensland it has been identified that:

- the population will be more than 5.5 million by 2026
- there are 1.6 million existing homes and 33 000 new homes will be built *each year* until 2026

In recent years, a typical home in Queensland has increased its electricity consumption by 10% per year. This is largely due to an increased reliance on air conditioning. The average Queensland home generates 11 tonnes CO₂ each year which is the equivalent of operating two cars.

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 home is one which is built or renovated to provide maximum comfort for its occupants while minimising the use of non renewable resources including energy running costs.

In summary the types of sustainable design elements and fixtures that the discussion paper proposes involves; better orientation of rooms for passive solar design, increased ceiling and wall insulation, natural ventilation and breezeways and an increased energy/water efficiency of light globes, tap ware and toilets.

For existing homes the measures will include phasing out of the installation of electric hot water systems in gas reticulated areas from January 2010. Another proposal is a point of sale sustainability declaration for houses and units which outlines energy, water, safety, security and access features. These proposed measures are documented in full in Attachment 1.

COMMENT:

It is important for Cairns Regional Council to contribute comment and support for "Improving Sustainable Housing in Queensland".

The improvement measures identified in the discussion paper bring Queensland into line with energy efficiency requirements across Australia. For example NSW, VIC, ACT, SA & WA all require new houses to build to a 5 star energy equivalent rated design. These requirements vary internationally with some being more stringent. For example, the UK has specified carbon neutral houses from 2016 and California & Canada currently require 7 star energy equivalent rated design for new houses.

Improving sustainability in Queensland's homes can positively impact the local and global community. The benefits include:

- future proofing houses from increased running costs
- more comfortable and liveable houses
- increased health of occupants – more ventilation, less pollution
- supporting diversified industries of renewable and sustainable technologies

Sustainable house design features can reduce a building's reliance on artificially cooling and heating an interior space. The installation of energy and water efficient fixtures can reduce energy and water consumption while fulfilling the same task. The benefits of a house using natural systems to retain a comfortable internal temperature and lighting are to increase the future security of homes to remain affordable in the scenario of increased operational costs of water and energy. If such resources become less available it is likely price rises will be imminent.

A report commissioned in 2007 by Victoria's Department of Sustainability and Environment discovered that new houses use more energy than existing houses even with increased energy efficiency requirements. New houses however are using less energy for heating, cooling and hot water which is the aim of energy efficiency ratings.

The growth in emissions is from lighting and electric appliances which are becoming more efficient but increasingly large and numerous. Houses are being built with an average of 30% larger floor area than existing houses. Such statistics suggest that there may be value in restricting the size of houses for the sake of affordability and energy/resource consumption.

The same report indicated that without the 5 star energy rating system in Victoria (since 2004), energy use would be 33% higher than for existing houses. This indicates the success of the energy rating system even with its issues of not impacting on appliance use.

From a sustainability viewpoint the measures contained in the *Improving Sustainable Housing in Queensland* are a good starting point. The upfront costs of incorporating the measures are paid back in short term time frames (less than 5 years) except for replacing hot water systems.

In cases such as installing renewable energy systems, it is important for the State and Federal Government to provide rebates, subsidies or financial incentives (such as "green loans") in an equitable manner across the population to facilitate uptake.

CONSIDERATIONS:

Corporate and Operational Plans:

The recommendation relates to the following in the CCC Corporate Plan:

Strategies:

- 4.2 - Recognition of the Natural Environment as an Integral Part of our Regional Identity & Fundamental to our High Quality of Life
- 4.4 - Stronger Community Leadership Through the Adoption, Maintenance & Promotion of Coordinated Environmental Management Frameworks or Programs by Key Organisations
- 4.6 - More Energy Efficient Developments
- 5.3 - Wiser Use of Water By All Members of the Cairns Community

Statutory:

n/a

Policy:

Progressing with initiatives to reduce greenhouse gas emissions, water consumption and non renewable resource consumption is in line with CRC's Protection of the Natural Environment policy and the Carbon reduction Policy.

Financial and Risk:

n/a

Sustainability:

Improving sustainable housing in Queensland benefits the triple bottom line of the community;

- Financial savings for the wider community through the elimination of energy waste and a reduction in energy bills;
- A reduction of environmental impacts associated with non renewable resource use
- A reduction of community health impacts associated with non renewable resource use

CONSULTATION:

Department of Infrastructure and Planning
Sustainable Homes Program – Department of Public Works Qld.
Cairns Water

OPTIONS:

That Council:

Makes a submission on Department of Infrastructure & Planning Discussion Paper "Improving Sustainable Housing in Queensland" in accordance with the issues raised in the attachment;

or

Makes a submission on Department of Infrastructure & Planning Discussion Paper "Improving Sustainable Housing in Queensland" in accordance with the issues raised in the attachment with amendments;

or

Does not make a submission on the Department of Infrastructure & Planning Discussion Paper "Improving Sustainable Housing in Queensland".

CONCLUSION:

It is important for Council to encourage the Queensland State Government in improving sustainable housing in Queensland, by commenting on the discussion paper by way of submission before the closing date, 12 September.

ATTACHMENT:

1. Cairns Regional Council Submission –

Improving Sustainable Housing in Queensland – table of measures, descriptions, costs benefits and issues.

Maree Grenfell
Sustainability Officer

Peter Boyd
Manager Planning Strategies

Peter Tabulo
General Manager Planning & Environment

ATTACHMENT:**1. Cairns Regional Council Submission –**

Improving sustainable housing in Queensland – table of measures, descriptions, costs benefits and issues.

In May 2007 ICLEI (Local Governments for Sustainability) and the Building Commission identified a nine point agenda to accelerate the uptake of sustainable building designs. Legislation it seems is just part of the picture:

1. **Provide incentives to build sustainability** – financial incentives to stimulate sustainable design uptake in houses
2. **Eliminate worst practice** – embed sustainability into State Planning frameworks and minimum performance standards
3. **Consistency** – align planning tools for sustainability with building approval tools
4. **Demonstrate benefits** – accessible case studies
5. **Show leadership** – Government Departments and LGA's to sustainably retrofit offices and facilities
6. **Provide education, training and resources** – package of assistance for builders and developers to learn about sustainable design
7. **Encourage owners and occupants to demand sustainable buildings**
8. **Networking** – regular forums for planners, sustainability Officers, State Officials and industry representatives on sustainable building
9. **Adapting to climate change** – Educate the building sector on adaptation strategies in building design and material selection.

Cairns Regional Council supports the investigation and implementation of improving sustainability of housing in Queensland. The benefits of sustainable house design, resource efficient fixtures and features and the communication of sustainability as valuing adding to a home are numerous. It is in the best interest of the Australian community to reduce our environmental impact, secure our homes from the future price increases of energy and water and build naturally comfortable homes for various stages of our lifecycle.

A report commissioned in 2007 by Victoria's Department of Sustainability and Environment discovered that energy related emissions of the average new dwelling (with 5 star energy rating) are nearly 6% higher than the average emissions of existing dwellings. Apparently new houses are using less energy for heating, cooling and hot water.

The growth in emissions is from lighting and appliances which are becoming more efficient but increasingly large and numerous. Houses are being built with an average of 30% larger floor area than existing houses. Such statistics suggest that there may be value in restricting the size of houses for the sake of affordability and energy/resource consumption. Perhaps a standard such as greenhouse gas emissions per m² could be investigated in addition the measures proposed.

From a sustainability viewpoint the measures contained in the *Improving Sustainable Housing in Queensland* are a good starting point. The upfront costs of incorporating the proposed measures are paid back in short term time frames (less than 5 years) except for replacing hot water systems.

Perhaps a further investigation could extend to established homes as well as new homes via a requirement for sustainability initiatives to be included as part of renovations, building extensions etc .

In cases such as installing renewable energy systems, it is important for the State and Federal Government to provide rebates, subsidies or financial incentives (such as “green loans”) in an equitable manner across the population to facilitate uptake.

number	Improvement	Description	Cost/ saving	Environ benefit	Current	Comments
2.1	Designing and building a sustainable home					
2.1.1	Require all new houses to be built to a 5 star (out of 10) energy equivalent rating, proposed from 1 January 09	<p>Under the BCA new houses & major renovations are required to be built to a minimum energy equivalent rating which measures the energy efficiency of the building envelope.</p> <ul style="list-style-type: none"> - An energy equivalent rating measures the efficiency of the house's building shell which comprises the roof, walls, windows and floors (these features can most efficiently and reliably deliver a comfortable indoor environment). - An energy equivalent rating does not include hot water systems, air conditioners, lighting, fridges or appliances. - The building code divides Australia into climate zones for energy ratings and Cairns region is in Zone 1 – Tropical. - A house energy rating provides a guide as to how much heating or cooling may be required to keep a house comfortable. - A combination of design features influence a house's energy efficiency – the 5-star standard is flexible and there are many ways to achieve this 	<p>Cost @ \$1000 (or 1% of construction cost)</p> <p>Saving est. to be @ \$200 per year in reduced artificial cooling</p> <p>Payback period is 4 – 5 years</p> <p>The value of homes in the ACT with 5 stars or more grew by over 15% in the last six months in comparison with those with a low energy rating which only grew by 2.2%.</p>	GHG emissions reduced by 7700 tonnes per year	In Qld the current legislative requirement for new homes in the tropical zone is 3.5 stars	<ul style="list-style-type: none"> - Brings Cairns in line with energy efficiency standards required for other Australian states - Reduces reliance on air conditioning for cooling which: <ul style="list-style-type: none"> o Increases liveability of homes/ natural comfort o Future proofs homes against future electricity price increases. o Increases knowledge of architects, draftspersons and public in the principles of energy efficient design for the tropics - Estimated to cost less than one % of construction cost to build 5-star home and operational savings est. to be \$200 p year (4.5 to 5 yr payback). This is a good return rate when compared to other investment options - Demands on electricity infrastructure reduced especially in peak times - For tropical climate zone, energy rating software should take into account outdoor living spaces and openings and not penalise for openings which maximise natural ventilation - Inclusion of air conditioners in the energy rating could add to estimated energy use. Some homes without air conditioners are penalised based on assumptions of air con use in current energy rating software

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		<p>performance based standard.</p> <ul style="list-style-type: none"> - The common design principles include consideration of the following for the climate; building and room orientation, building shell (materials, insulation, colours & gaps), ventilation 				
2.1.2	Investigate requiring all new units to be built to a 5 star (out of 10) energy equivalent rating	<p>The Queensland Government will investigate raising the standard for energy efficiency in new units from 3.5 stars to a 5 star energy equivalent rating.</p> <p>This investigation will assess the viability of amending the current Australian Building Code to improve energy efficiency of units in Queensland climatic zones.</p>	The investigation will scope the costs and operational savings potentials	GHG emissions will be reduced from units/multi residential sector – the investigation will quantify potential savings	<p>In Qld the current legislative requirement for new units in the tropical zone is 3.5 stars</p> <p>The Douglas Shire Planning Scheme Amendment 2 – Sustainable Development Code which requires new multi residential and commercial buildings to meet a 5-star energy equivalent rating</p>	<ul style="list-style-type: none"> - Good practice to investigate more thoroughly before implementation - The number of units & multi residential housing are expected to increase due to the preference for medium density living - Reduce GHG emissions from this sector - Relevant for greenhouse contribution in Cairns - due to tourism there is a high % of units - A mandatory 5-star energy equivalent rating for units, would bring the Cairns region in line with the current requirement of the Sustainable Development Code which is applicable for the former Douglas Shire area.
2.1.3	Investigate providing better recognition of outdoor – indoor	Outdoor living areas and verandas are a traditional design feature of houses in tropical regions.	Financial costs are not associated with this	Less air conditioner use = less GHG	Currently outdoor living areas do not impact on a	<ul style="list-style-type: none"> - The reduction of artificial cooling associated with promoting the design of and use of outdoor living areas is certainly worth investigating

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	areas in Queensland's building standards	<p>When houses have this design feature the occupants are less likely to spend as much time in air conditioned rooms. For this reason they use less electricity and contribute less in the way of GHG.</p> <p>The incorporation of this design feature into a house should be recognised by energy rating software as an energy efficiency aspect of the BCA.</p> <p>Energy rating software contains built in assumptions which imply that occupants will air condition when the building is above a certain temperature regardless as to whether an outdoor living area is included in the design.</p>	measure		higher energy efficient house rating.	<ul style="list-style-type: none"> - There are potential health benefits for occupants to spend more time outside than inside - The benefits potentially extend to greater shading of areas close to the house – less heat load and heat transference inside - The width and angle of eaves should be investigated along with this measure to ensure that if outdoor areas are encouraged they are shaded from sun and provide adequate shelter from rain - There are potential conflicts of increasing outdoor living areas in house design and the smaller block size which is part of the affordable housing debate – how can space for outdoor living increase while block size and available outdoor space decreases? In addition house size is still on the increase. - Another limitation on outdoor space is the mandatory requirement for rainwater tanks which are also installed close to the house and outside living areas - Assuming that outdoor living areas are used over an indoor air conditioned space is problematic because it is still relying on a generalised assumption
2.1.4	Investigate developing a star rating for building materials	<p>Life cycle analysis of building materials can illustrate a holistic environmental impact of the processes to extract, process, transport and dispose of the material.</p> <p>Materials used to build our homes can have significant impacts on human</p>	An analysis of building materials for a star rating could result in cost effectiveness being one of	Quantifying the life cycle impacts of building materials may assist and encourage manufacturers	<p>There is no current star rating system for building materials.</p> <p>There are voluntary</p>	<ul style="list-style-type: none"> - A star rating system for building materials on life cycle performance provides consumers with information to make educated decisions - A star rating system provides manufacturers with a reason to be accountable for the holistic sustainability of their product

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		<p>health and the environment.</p> <p>Analysis of building materials has the potential to influence our purchasing decisions hence improving comfort, cost effectiveness, energy efficiency and environmental impact.</p> <p>The proposal is to investigate a star rating system for building materials relative to their life cycle assessment.</p>	the indicators for an increased rating.	to improve the environmental & health performance of materials.	services which have started to rate materials but no legislated requirements to do so.	<ul style="list-style-type: none"> - A star rating system for building products is an effective way to encourage reporting on the production, operation and disposal - The values on which building materials are rated should be circulated for discussion before implementation
2.1.5	Investigate preventing residential estate covenants that restrict the use of energy efficient design features and fixtures	<p>Currently some developers and councils use residential estate covenants and body corporate or community title rules that restrict the use of energy efficient house design principles.</p> <p>Such covenants include restricting the use of light coloured rooves and roof mounted solar hot water systems.</p>	Covenants that restrict energy efficient design and/or fixtures, can end up costing the occupants more money on operational costs than if energy efficient designs options installed.	Benefits could include a reduction in GHG emissions & water consumption ...	n/a	<ul style="list-style-type: none"> - Preventing covenants which are contrary to energy efficiency & water efficiency makes sense from a financial and environmental perspective - Values of energy inefficient aesthetics need to be challenged
3.1	Creating an energy efficient home through fixtures and fittings					
3.1.1	Require 4-star toilets, 3-star tap ware and 80% energy efficient	A sustainable building is designed and built to reduce its impact on the environment.	Water Toilets - A 4 star dual flush	Water Toilets - A 4 star toilet	Water New houses & units are	<ul style="list-style-type: none"> - Utilising water and energy efficient fittings and fixtures makes good sustainable sense when the nature and

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	lighting in new houses and units	<p>Designing a home and installing fixtures which reduce the amount of water and energy consumed while performing the same task makes good sustainable sense.</p> <p>This measure requires all new houses and units to install 4 star (out of 6) dual flush toilets and 3 star (out of 6) tap ware fro bathroom basins, kitchen sinks and laundry tubs.</p> <p>The second part of this measure proposes that 80% of lighting in new houses and units is energy efficient. Eight % of household GHG emissions are attributed to lighting.</p>	<p>toilet could save an average family of four @ \$50 pa. A 4 star toilet costs @ \$25 more tan a 3 star toilet.</p> <p>The payback period would be 6 months.</p> <p>Tap ware – e.g. For an average family using a 4 star bathroom tap to clean their teeth in comparison with an unrated bathroom tap @ \$73 would be saved.</p> <p>Energy CFL globes cost about 5 times as much as an incandescent globe. They cost @ 5 – 6 times as</p>	<p>could save an average family of four 138 litres of water per day = 50,370 litres pa.</p> <p>Tap ware – a 3 star rated tap uses 8 litres p minute compared with an unrated tap which uses 18 litres p min.</p> <p>Energy A typical CFL globe uses 80% less electricity and lasts 15 times longer than an incandescent globe. This results in a reduction of GHG emissions associated with lighting.</p>	<p>currently required to have 3 star dual flush toilets.</p> <p>The DSC Sustainable Development Code requires multi-residential units to have AAA water conservation rating. This is equivalent to the proposed 3 star WELs rating.</p> <p>There is no Federal minimum requirement for tap ware.</p> <p>Energy New houses and units are required to have 40% energy efficient lighting.</p>	<ul style="list-style-type: none"> - quality of the task is not compromised - The pay back period for water efficient dual flush toilets, tap ware and energy efficient lights are within 1 year making a very good rate of \$ return - Installation of water and energy efficient fixtures secures homes against future price rises of water and electricity - In line with the increase of CFL lighting, measures involving recycling these globes and mercury content are important to consider - When replacing fixtures such as toilets in established homes the same water efficiency requirements for new homes should apply.

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			much to run. For example a 75w incandescent globe costs \$12.30 to run each yr while a 75w equivalent CFL globe would cost \$2.30			
3.1.2	Electric hot water system phase-out from 2010	<p>The average Queensland household uses 27% of its electricity to heat water.</p> <p>Phasing out electric hot water systems is the most effective measure to reduce GHG emissions from the residential sector.</p> <p>Replacing domestic electric hot water systems in Queensland with greenhouse efficient options is estimated to reduce total energy demand by 3.6 megawatt hours and mitigate 3.7 million tonnes of CO2 by 2020.</p> <p>The first stage will begin in Jan 2010 with the phase out commencing in gas reticulated areas. It will require existing houses (class 1 buildings) to replace electric hot water systems with a greenhouse efficient option when their existing system needs replacing.</p>	<p>The operational savings per year of installing a solar system or a heat pump in comparison with an electric hot water system is up to @ \$250.</p> <p>Based on up front purchase price a greenhouse efficient hot water system pays itself back in b/w</p>	3.7 million tonnes of CO2 by 2020.	<p>The phase out of electric hot water systems from existing homes was announced as part of Queensland's ClimateSmart 2050 strategy in June 2007.</p> <p>Installation of an electric hot water system in a new house is not allowed and this was introduced in March 2006.</p>	<ul style="list-style-type: none"> - The solar hot water rebate is currently means tested which restricts home owners earning over \$100,000 from applying. From a sustainability perspective it would be beneficial for this rebate to receive maximum uptake given the huge potential GHG emissions savings - It would help low income earners to receive an even higher rebate - The comparative cost of solar hot water systems are still prohibitive to many home owners - Are there any plans to investigate this measure for introduction in units?

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		The second and further stages are still being determined.	4.4 years for a heat pump and 10 years for solar.			
3.1.3	Sustainability declaration at point-of-sale and point of lease	<p>A sustainability declaration is a form which discloses a home's sustainability features when buying, renting or selling a home.</p> <p>The thinking behind this measure is that a home with a higher number of sustainable design features are cheaper to run – they use less energy to heat and cool, generate less GHG emissions and are more comfortable.</p> <p>There has been a recent shift in consumer demand for sustainable houses and consumers equate sustainable design features with greater value.</p> <p>This factor has potential to shift market demand which will in turn result in decreased GHG from the housing sector. It will also increase the marketability of sustainable homes.</p>	There is no cost for this measure	Reduction of GHG, water consumption, non renewable resource use in the housing sector	None required.	<ul style="list-style-type: none"> - Provides transparency of sustainable design features for tenants and future home buyers - Provides a holistic inventory of features which contribute to a lower operating cost and increased liveability associated with sustainable home design - Improves the marketability of homes with sustainable design features which ensures the recouping of installation costs - The value of homes in the ACT with 5 stars or more grew by over 15% in the last six months in comparison with those with a low energy rating which only grew by 2.2%.
3.1.4	Prevent the sale and installation of inefficient air conditioners	<p>More than 58% of households in Queensland now have an air conditioner.</p> <p>Growing use of air conditioning is increasing electricity consumption and associated GHG emissions from fossil fuels. Electricity demand on hot days is becoming problematic for electricity suppliers.</p>	On average a 4 star rated air conditioner costs \$205 pa to run compared with a 1 star air conditioner which costs \$294.		No minimum requirements currently in place.	<ul style="list-style-type: none"> - Encourages manufactures to design and build energy efficient models - Energy Australia just announced that their recent price rise of 8.5% (average \$100 pa for homes) is due to an increased demand on the electricity grid by air conditioners. This illustrates the benefit of preventing inefficient air conditioners from entering the market. - Maybe there needs to be legislation preventing the import of energy

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		<p>Good housing design can reduce the need for air conditioning by using passive means to cool a house. Prohibiting the sale of inefficient air conditioners can reduce electricity consumption and operating costs.</p> <p>This measure is investigating the option of at least 4 star energy efficiency rating for all air conditioners sold and installed in Queensland.</p>				inefficient goods in Australia.
3.1.5	Investigate requiring photovoltaic (solar) energy to be installed on large houses	Large houses with large energy requirements (due to air conditioning, or swimming pools) may be required in the future to install photovoltaic (solar) systems to offset or contribute to some of the electricity requirements.	?	Reduction of GGE	n/a	<ul style="list-style-type: none"> - need to define what is a large house - seems fair to set a threshold of reasonable energy consumption and over this require renewable energy contribution - renewable energy contribution could extend to % Green Power purchase
3.1.6	Investigate requiring minimum energy star rating on swimming pool pumps	<p>The Queensland Government is currently investigating a star energy rating for pool pumps.</p> <p>In addition, timers for pool pumps and off peak tariffs for pool pumps are also being investigated.</p>	Electricity associated with pool pumps cost home owners about \$200 per quarter and contribute to GHG emissions.	Reduction of GHG	n/a	<ul style="list-style-type: none"> - Pool owners should be encouraged to use off peak tariffs for pool pumps. Off peak tariffs mean the associated electricity costs less and uses electricity when demand is at its lowest - Important to educate pool owners in ways they can reduce electricity consumption