

## THE SUMMARY CASE FOR AN EFFICIENT BUILDING SCHEME

This Paper summarises the case for an Efficient Building Scheme to drive deep, fast, low-cost greenhouse gas emissions cuts in buildings, and outlines how it would work.

In the current global financial crisis, the Efficient Building Scheme would stimulate economies and deliver significant social and environmental benefits.

The Efficient Building Scheme could reduce greenhouse gas emissions in our cities by more than **50% before 2020** as well as stimulating jobs growth and innovation, and health and productivity benefits.

The Efficient Building Scheme is a simple, low cost carbon accounting mechanism that would drive emissions cuts in buildings of **50 to 100% immediately**, using existing technology and knowledge. It has been developed as a complementary carbon trading scheme that works by providing an incentive to maximise energy efficiency improvements in buildings at the first opportunity to intervene, while at the same time imposing shortfall charges for inaction.

This proposal has been developed by Lend Lease, Lincolne Scott and Advanced Environmental, with legal advice from Freehills, in response to the failure of existing measures to unlock the potential greenhouse gas savings from significantly increasing the efficiency of buildings.

### Why the building sector should not be ignored

**The building sector is a significant emitter of greenhouse gas emissions.** If upstream emissions from heat and electricity are included, emissions from buildings total 40% of global greenhouse gas emissions<sup>1</sup> and up to 80% of total greenhouse gas emissions in our cities and towns<sup>2</sup>.

**The building sector provides more potential for quick, deep and cost effective greenhouse gas mitigation than any other industry<sup>3</sup>,** according to analysis by a range of authorities including the IPCC, McKinsey and Vattenfall. Buildings can provide deep and rapid cuts in greenhouse gas emissions through design, technology systems and generation using today's skills and technology, and the potential of the entire industry to deliver globally significant reductions is important and powerful. High value carbon credits of US\$25 per ton of carbon dioxide equivalent (tCO<sub>2</sub>-e) could realistically achieve a carbon zero position in commercial office buildings at nil cost and, based on the McKinsey cost curves, energy efficiency in buildings represents an estimated cost negative abatement of US\$45 billion to the United States economy, and \$5.2 billion to the Australian economy.;

**Including the building sector will deliver a raft of co-benefits,** including skills, jobs and technology innovation growth, as well as improve our health and increase productivity of workers. Studies consistently show productivity increases of around **10%** and decreased sick days of around **40%** in buildings which have been measured at producing less greenhouse gas emissions. By driving demand management, the need for investment in energy infrastructure would also be reduced.

### Why energy efficiency will not be driven by energy price increases of Emissions Trading Schemes?

The perception that buildings will be affected by energy price signals that will flow from Emissions Trading Schemes and will therefore take action to introduce energy efficiency initiatives is wrong for 3 reasons: energy costs are generally such a small percentage of costs, big business can negotiate cheaper prices in the contestable market, and developers and builders do not pay the electricity bills – those who occupy the building do,

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<sup>1</sup> Stern Review on the Economics of Climate Change – Annex 7e (2006)

<sup>2</sup> President Bill Clinton, Cities & Climate Change <http://www.c40cities.org>

<sup>3</sup> Intergovernmental Panel on Climate Change (IPCC) "Working Group III contribution to the IPCC Fourth Assessment Report" (2007)

### Other complementary measures have failed

Other complementary measures including 'Energy Efficiency Trading Certificate' schemes and 'Tradable White Certificate' schemes used to date are initiated on a voluntary basis and provide a small incentive, resulting in little impact in changing behaviour across the real estate and construction sector.

Tradable White Certificate schemes have been used in the European Union in parallel with their Emissions Trading Scheme, to reward investments in initiatives to cut operational energy. However, there is little evidence that these schemes have unlocked the significant energy efficiency opportunities known to be in buildings (new and existing), particularly in the commercial property sector. This can perhaps be explained by the fact that White Certificate schemes typically do not reward the more significant energy efficiency gains that come from changes to a building structure, including façade, and smart passive design or alternative energy generation which can collectively achieve cuts of 100%. Instead, these schemes only focus on operational energy improvements which are limited to cutting emissions by approximately 25%; the cost of proving up the project often outweighs the benefits generated by the certificates in all but the very largest facilities; and the split incentive (principal-agent) barriers often neutralise the financial benefits of participation. Consequently, to date these schemes have enjoyed very low participation by the non-residential sector - often less than 1%. A recent United Nations report showed that of 4000 Clean Development Mechanism projects, just 10 were buildings.

As an example to demonstrate the failure of Tradable White Certificates, if the chiller in an air-conditioning system in a university campus building is at its end-of- life and requires replacement, Tradable White Certificates would promote the replacement of this chiller with a new one. This would typically deliver a 10% efficiency gain, whereas consideration of an alternative, more efficient heating and cooling solution such as integrated passive design would deliver a 30% efficiency gain, or a fundamental new design solution such as 100% passive ventilation – i.e. no chiller, would result in a 100% greenhouse gas emission cut.

### Why won't the market determine where least cost abatement occurs?

This argument overlooks the basic nature of the industry, commonly referred to as split incentives or principal agent. That is, in almost every commercial development the entity responsible for developing the building is not the owner, let alone the tenant. So there is no financial incentive for a developer to invest in energy efficiency and little incentive for an owner. Consequently uptake of energy efficiency and greenhouse gas emissions reduction initiatives has been poor.

### Why will an Efficient Building Scheme be the most effective policy instrument?

An Efficient Building Scheme is uniquely placed to drive through the split incentives and unlock the significant abatement opportunities at the design, construction (of a new building) or refurbishment (of an existing building), and operation phases of a building, enabling developers and owners to make a competitive financial return on their investments in efficiency and greenhouse gas emissions reduction initiatives.

By dictating the quantity of abatement to be achieved through an aggressive trajectory, but not how it is achieved, an Efficient Building Scheme will also unlock innovation in the real estate and construction sector.

For industry players committed to doing the right thing there would be a financial return. But, unlike other policy measures, an Efficient Building Scheme – like an Emissions Trading Scheme - would provide a 'carrot' and a 'stick', through permits for inaction which would stimulate the *whole* sector to upgrade and significantly improve the performance of existing buildings.

Finally, the Efficient Building Scheme uniquely addresses the failures of other complementary schemes by ensuring no problems of additionality, double counting or perverse incentives. It avoids double counting by operating on the basis of a parallel yet fungible scheme with a complementary register stapled onto an Emissions Trading Scheme.

## How would an Efficient Building Scheme work?

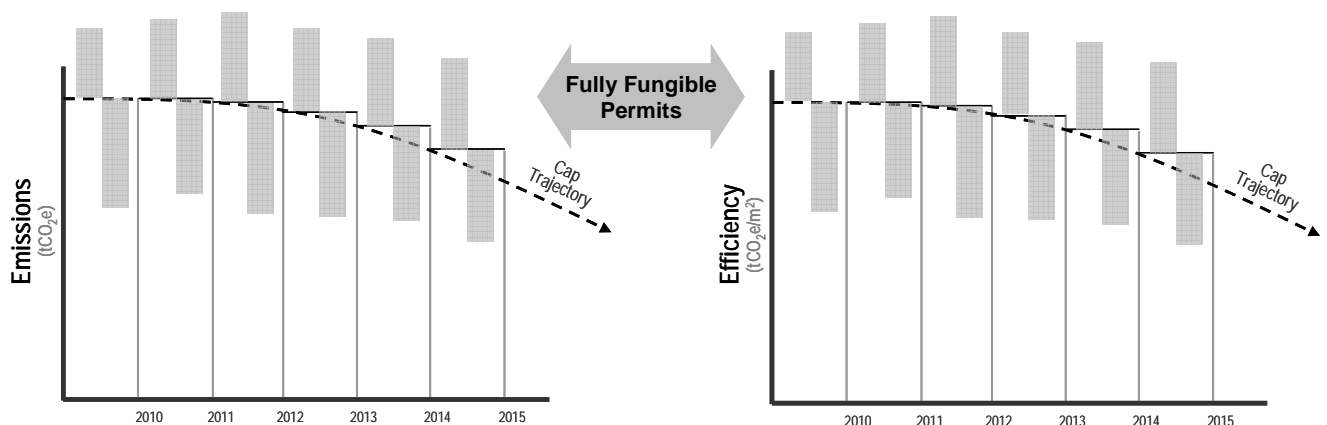
An Efficient Building Scheme could easily and effectively be stapled to an Emissions Trading Scheme without compromising it or requiring it to be re-designed.

An Efficient Building Scheme would be identical to an Emissions Trading Scheme except that it recognises energy efficiency improvements, rather than emissions avoided.

Simply put, it would treat one tonne of greenhouse gas emissions (tCO<sub>2</sub>e) that is not emitted because energy is not used in the same way that a conventional Emissions Trading Scheme treats one tonne of tCO<sub>2</sub>e that is not emitted due to a change in energy generation.

The main benefit of such a scheme is that by being stapled to an Emissions Trading Scheme, an Efficient Building Scheme will put the same value on greenhouse gas emissions avoided through energy efficiency gains as it does on greenhouse gas emissions not emitted due to a change in energy generation. By so doing it will provide a competitive return on investments in emissions reduction initiatives, which will drive significant greenhouse gas abatement through energy efficiency improvements.

An Efficient Building Scheme (EBS) in which efficiency is 'capped-and-traded' using price-linked permits, would work like this:



**STEP 1:** Each year a building owner calculates the total greenhouse gas emissions for each building – including both onsite fuel consumption and emissions from purchased electricity – using fuel bills and official greenhouse gas coefficients. An owner or developer who builds or refurbishes a building can also be rewarded for energy efficient design through deemed savings for major energy efficiency in the building at the point of construction or refurbishment.

**STEP 2:** The total emissions are divided by net lettable area (NLA) to derive efficiency (or 'emissions intensity') figures in tonnes of greenhouse gas per square metre (tCO<sub>2</sub>e/m<sup>2</sup>), to address perverse incentives for large, inefficient buildings.

**STEP 3:** The emissions intensity figures are compared to a predetermined cap (also 'trajectory' or 'threshold') set in advance by the governing body and the building's avoided emissions (below the cap) or excess emissions (above the cap) are calculated.





**STEP 4:** Permits are allocated or acquitted respectively.

The methodology presented provides a total annual transaction cost estimated at less than US\$350 per building. This enables universal adoption of the scheme with a likely 50 fold reduction in transaction costs compared to other Kyoto mechanisms.

An Efficient Building Scheme is the best solution because it will:

✓	Drive improvements in energy efficiency in the building sector by assigning equal priority and value to energy efficiency and other forms of emissions reduction, and enabling two-way trading of fully fungible efficiency permits.
✓	Unlock captive value by driving major refurbishments to improve the energy efficiency of the vast majority (98%) of building stock: existing buildings which hold the lowest cost abatement opportunities in the world.
✓	Ensure significant energy efficiency improvements by depreciating inefficient buildings and appreciating green buildings through an ongoing obligation to acquit permits for inefficient buildings according to a sliding cap when factored into the building's net present value.
✓	Slow inflation in energy prices by simultaneously reducing abatement costs while also mitigating growth in demand.
✓	Address low non-residential building sector participation in existing international efficiency schemes (less than 1%, e.g.: GGAS, CDMs, JETS).
✓	Facilitate a Return On Investment for developers and owners which will drive investment in energy efficiency improvements in new and existing buildings.
✓	Provide for low risk long-term investment decisions through permit price stability and reducing the need for complex regulation of offset limits.
✓	Correct 'rebound effect' where costs savings from increased energy efficiency result in increased consumption.
✓	Reduce future dependence on overseas offsets by unlocking lowest cost domestic abatement opportunities.
✓	Drive innovation by engaging a greater share of business in finding least-cost greenhouse gas abatement solutions, without prescribing those solutions.
✓	Activate faster abatement opportunities than development of new low-carbon energy infrastructure, with an immediate boost to emissions abatement.
✓	Deliver significant co-benefits in health and productivity including the better well-being and reduced sick-leave shown in occupants of green buildings.
✓	Promote a new highly skilled workforce through employment opportunities created by demand for green building design, refurbishment and performance monitoring
✓	Ensure a more equitable abatement solution by providing greater coverage of diffuse emissions by small and medium emitters as well as large emitters.
✓	Facilitate future coverage of the emerging trend toward distributed power-generation.
✓	Incentivise small-scale, mass-market implementation of wind, solar and other renewable solutions.

How you can build a better climate change solution?

-  Tell us if you can suggest any improvements to the Efficient Building Scheme
-  Tell your Government and local authorities about the Efficient Building Scheme
-  Tell your local media about the Efficient Building Scheme
-  Tell anyone who'll listen about the Efficient Building Scheme!

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