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International Energy Advisory Council

CITY OF SYDNEY ENERGY EFFICIENCY MASTER PLAN CASE STUDY

Sustainable Sydney 2030

Sustainable Sydney 2030 is the vision and strategic plan for the City of Sydney to make Sydney a green, global and connected city by 2030 and was adopted by the Council in 2008.

Key Energy and Climate Change Targets in Sustainable Sydney 2030

1. The City will reduce greenhouse gas emissions by 70% below 2006 levels by 2030
2. The City will meet 100% of electricity demand by local generation by 2030

Source: City of Sydney (2008)

In 2006, 80% of Sydney's greenhouse gas emissions came from coal fired power plants and the 70% reduction in greenhouse gas emissions could not be delivered without replacing coal fired centralized energy generation with energy efficiency measures and low or zero carbon decentralized energy generation. Therefore, the 100% local electricity demand would need to be met principally by decentralized energy - 70% from trigeneration and 30% from renewable electricity generation by 2030.

Green Infrastructure Plan

A key objective in Sustainable Sydney 2030 was to prepare a Green Infrastructure Plan. Central to achieving this was the objective to develop a Green Infrastructure Plan comprising five Master Plans as follows:

Decentralized Energy Master – Trigeneration
Decentralized Energy Master Plan – Renewable Energy
Decentralized Energy Master Plan – Advanced Waste Treatment
Decentralized Water Master Plan; and
[Energy Efficiency Master Plan](#)

In addition, a Climate Change Adaptation Strategy would support and take into account the Green Infrastructure Plan as climate change mitigation and adaptation should be integrated holistically since the green infrastructure that a city needs to function must also be resilient and adaptable to climate change.

Energy Efficiency Master Plan

Sustainable Sydney 2030 included a target to reduce greenhouse gas emissions from energy efficiency by 14% below 2006 levels by 2030 and the Decentralized Energy Master Plans were based on this.

As part of a review of the Decentralised Energy Master Plans it was considered that further reductions in greenhouse gas emissions could be delivered by improvements to existing policies and programs plus new policies and programs. The review also identified that 2030 energy consumption would increase by a further 6% beyond the energy consumption originally forecast in Sustainable Sydney 2030 (2006 levels) increasing the importance of new policies and programs.

Based on the detailed work previously carried out on the Decentralized Energy Master Plans the Energy Efficiency Master Plan established that energy efficiency could reduce energy consumption in the building sector by 31% and greenhouse gas emissions by 42% below 2006 levels by 2030. The reduction in energy consumption is more than double the reduction in energy consumption from the energy efficiency measures identified in Sustainable Sydney 2030, primarily due to the impact from improved existing and new energy efficiency policies and programs and reductions in energy consumption already delivered despite a growing city.

Benefit/cost analysis and social cost of greenhouse gas abatement in the Master Plan show that energy efficiency can reap many benefits for society using technologies that are economically viable today. In addition, emerging technologies could increase energy efficiency beyond what is shown by this Master Plan by 2030.

The Decentralised Energy Master Plans show that by 2030 decentralized renewable energy will be a predominant part of the energy mix which would improve supply-side efficiency and further reduce greenhouse gas emissions. However, all energy – no matter the source – should be used efficiently and making energy efficiency a top priority will make it much easier to supply all of the City’s electricity, heating and cooling demands from decentralized renewable energy.

The Energy Efficiency Master Plan was adopted by the City of Sydney Council in 2015.

Summary of Energy Efficiency Savings in the Building Sector				
Source: City of Sydney (2015)				
2006 Baseline (18,473 TJ)		2030 Forecast (TJ)	2030 Saving pa (TJ)	2006-2030 Change (TJ)
Future without Energy Efficiency Master Plan	At 2006 Efficiency levels	23,305	-4,833	+26%
Future with Energy Efficiency Master Plan	Existing Policies & Programs	16,585	6,720	-36%
	New Policies & Programs	19,364	3,941	-21%
Total Reduction in Energy Consumption		12,644	5,829	-31%

Summary of Greenhouse Gas Emissions Savings in the Building Sector

Source: City of Sydney (2015)

2006 Baseline (4.75 MtCO _{2-e})		2030 Forecast (MtCO _{2-e})	2030 Saving pa (MtCO _{2-e})	2006-2030 Change (MtCO _{2-e})
Future without Energy Efficiency Master Plan	At 2006 Efficiency levels	5.26	-0.51	+11%
Future with Energy Efficiency Master Plan	Existing Policies & Programs	3.65	1.6	-34%
	New Policies & Programs	4.38	0.88	-19%
Total Reduction in Energy Consumption		2.77	1.98	-42%

The above tables show significant opportunities to reduce the amount of energy required per unit of floor area across building sectors within the City of Sydney local government area. Both existing and new policies and programs can make significant contributions to reducing energy intensity on par with best practice benchmarks in Australia.

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