

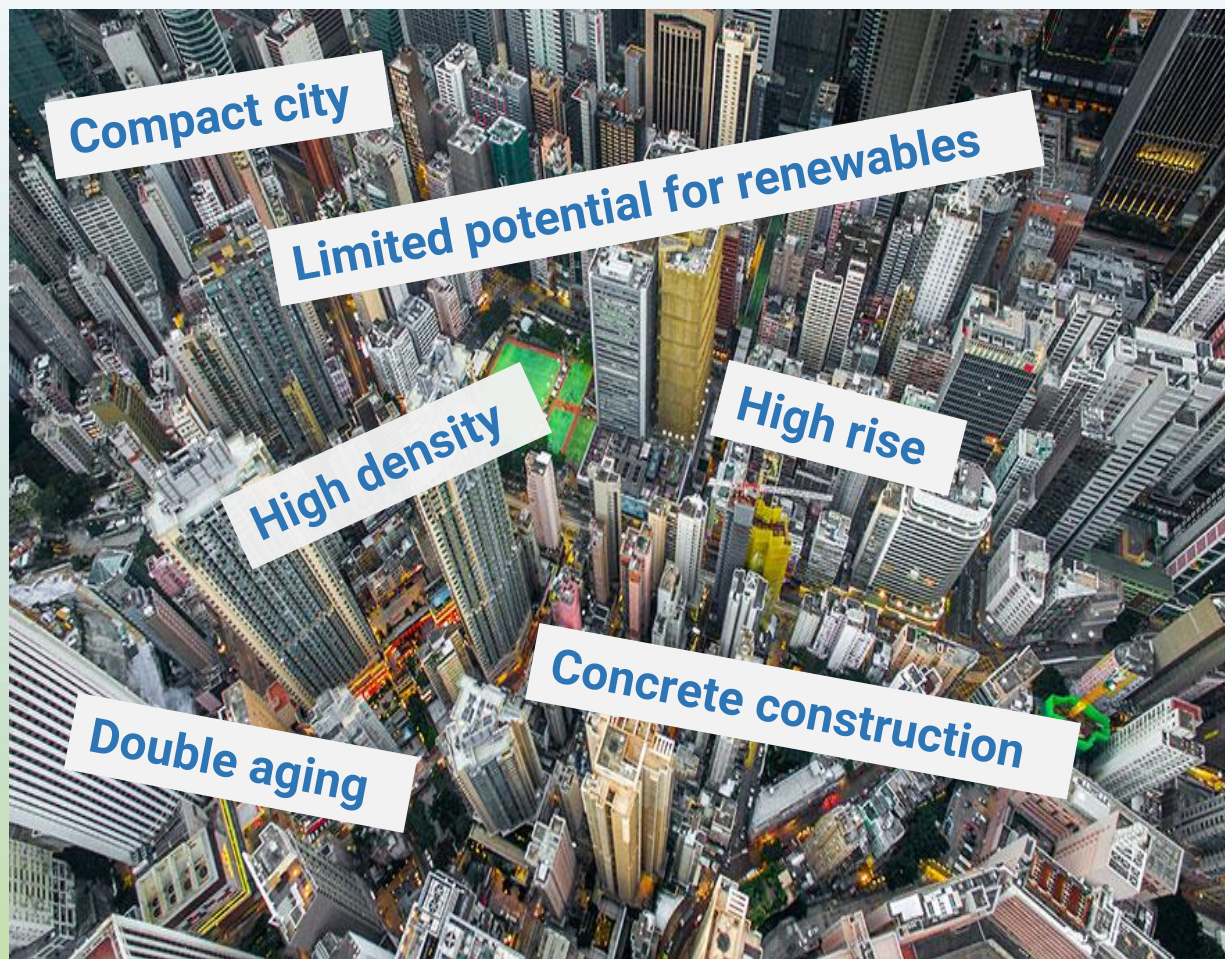


Advancing Net Zero

Feasible ?



Advancing Net Zero !!??



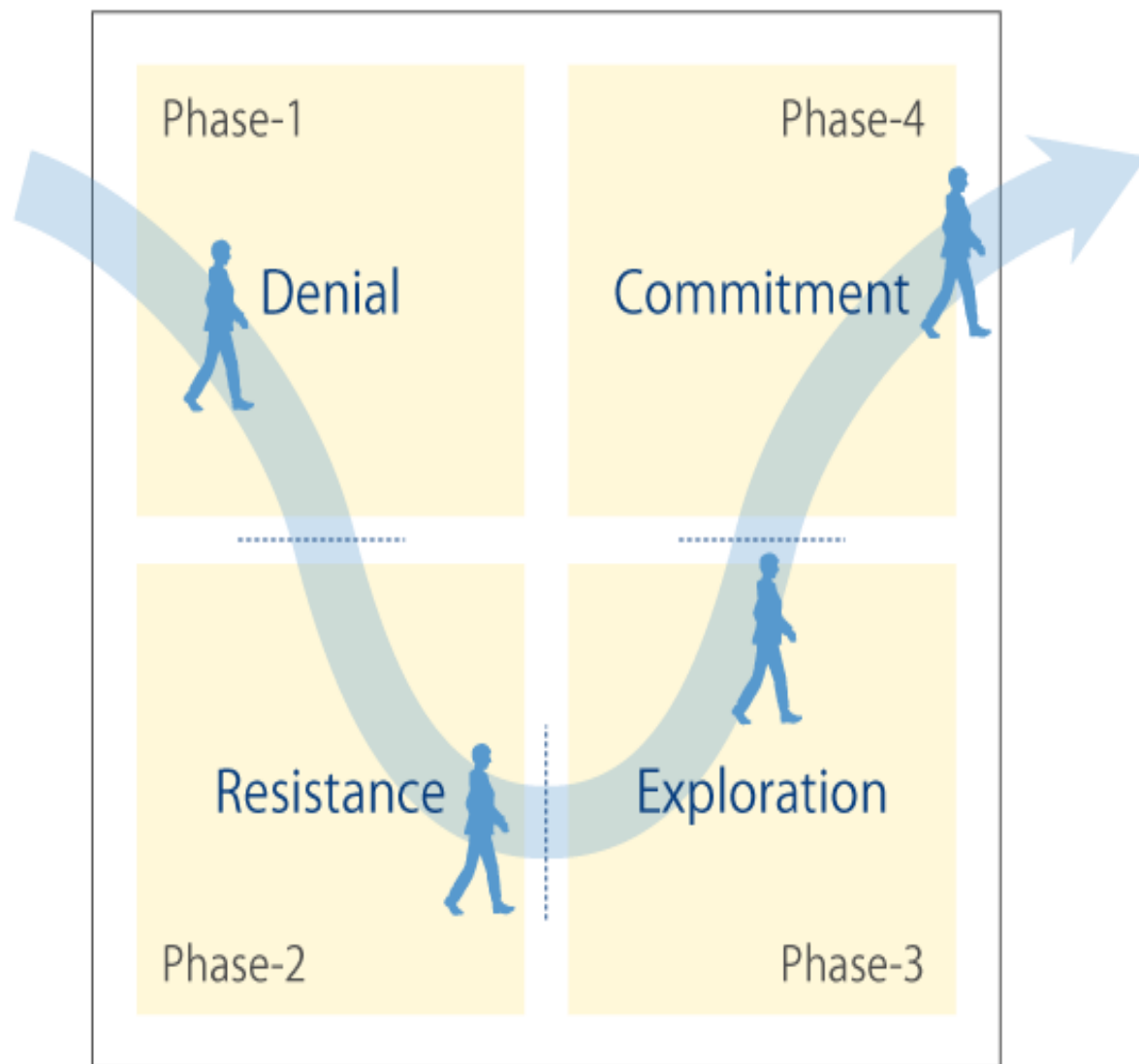


Then Why ??

- 1 If we decided to go for it , others cannot say " No"**
 - 2 High density cities are model for future cities**
- Hong Kong can be a good reference for others**



Transition Curve™



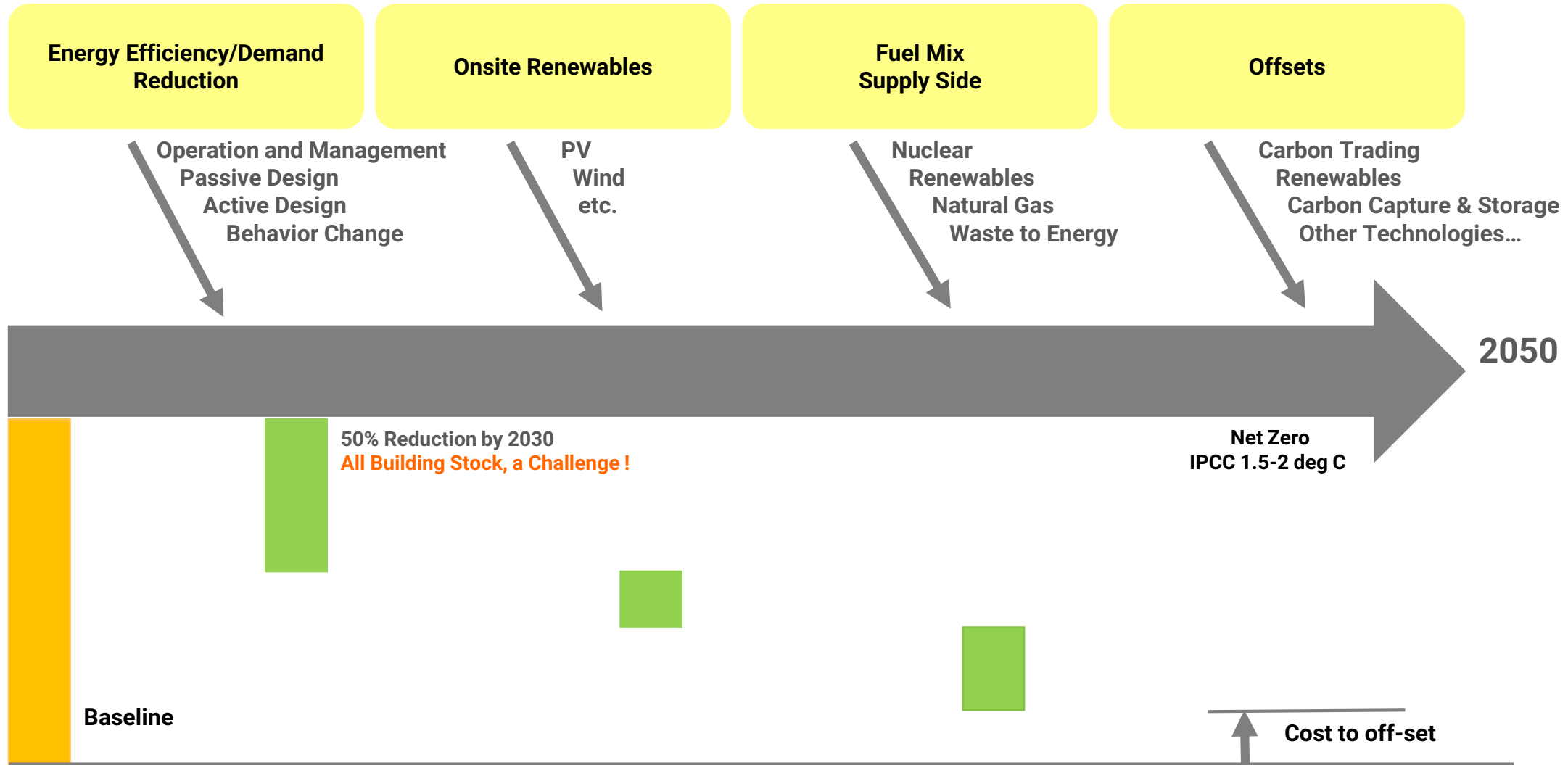
**We Know the urgency &
We Know the challenges**

Now

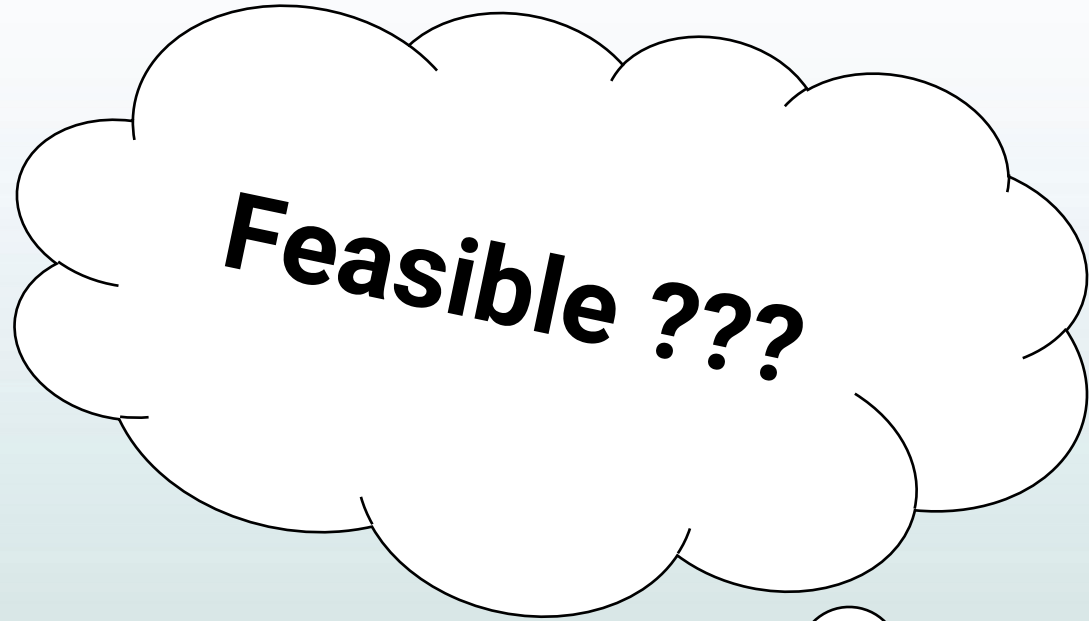


How ?

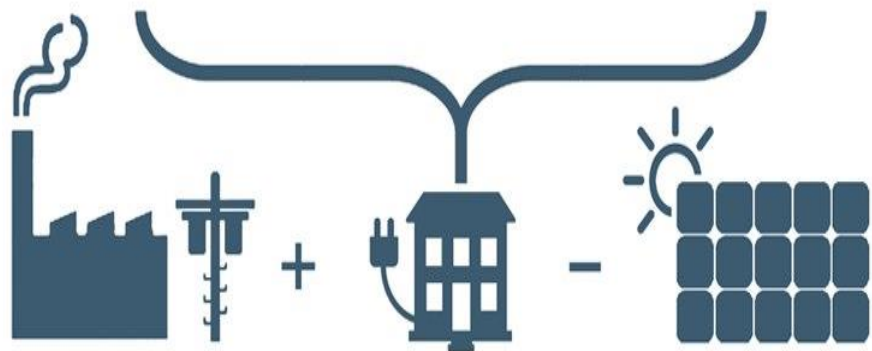
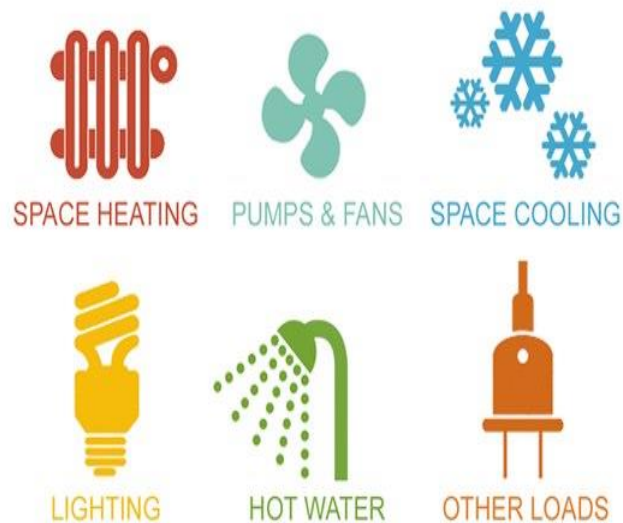
Advancing Net Zero (ANZ) – what’s in it



Not to scale



Reduce carbon intensity of buildings



Reduce consumption

- Behavior change
- Operational practices
- Passive means

Enhance efficiency

- Replacement
- Retro-fitting
- Retro-commissioning

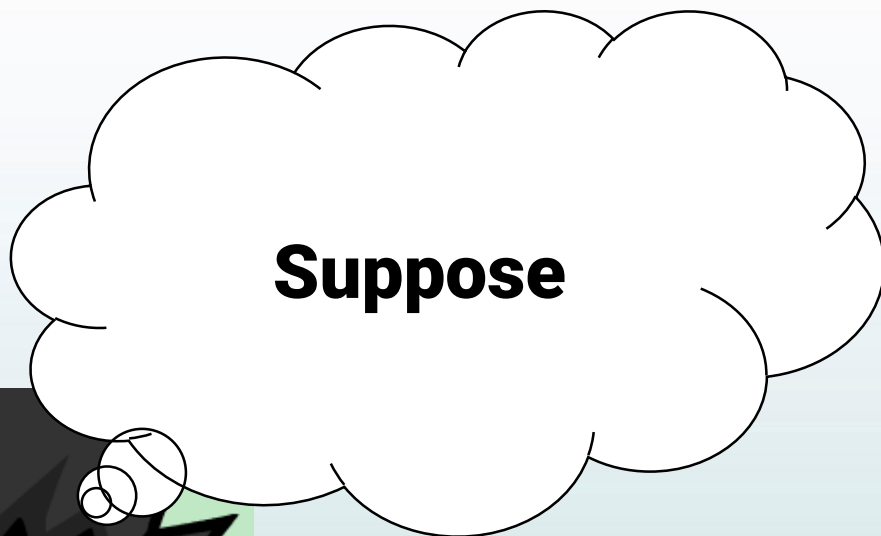
Decarbonize electricity supply

Renewables

- PV
- Solar

Demand

Supply



Suppose



If

Energy intensity reduced by 50%

&

Carbon intensity of electricity supply reduced by 80%



Carbon intensity will be reduced by 90%

A lot of buildings have reduced by 20-50% with proven technologies and we have 30 more years to go ...



Opportunities

Technology advancements

- PV
- HVAC equipment
- Façade
- Carbon capture and storage

Innovative retro-fitting (MEP)

- Radiant cooling
- Valve less chilled water system
- De-centralize systems

Innovative retro-fitting (Bldg.)

- Facade
- External shading

Policies and regulations
Behavior change

.....

Decarbonize electricity supply

CLP targeted for 80% reduction

Tightening CLP's clean energy and decarbonisation targets over time



Clean Energy Targets

In terms of renewable and non-carbon emitting energy share of our generation portfolio



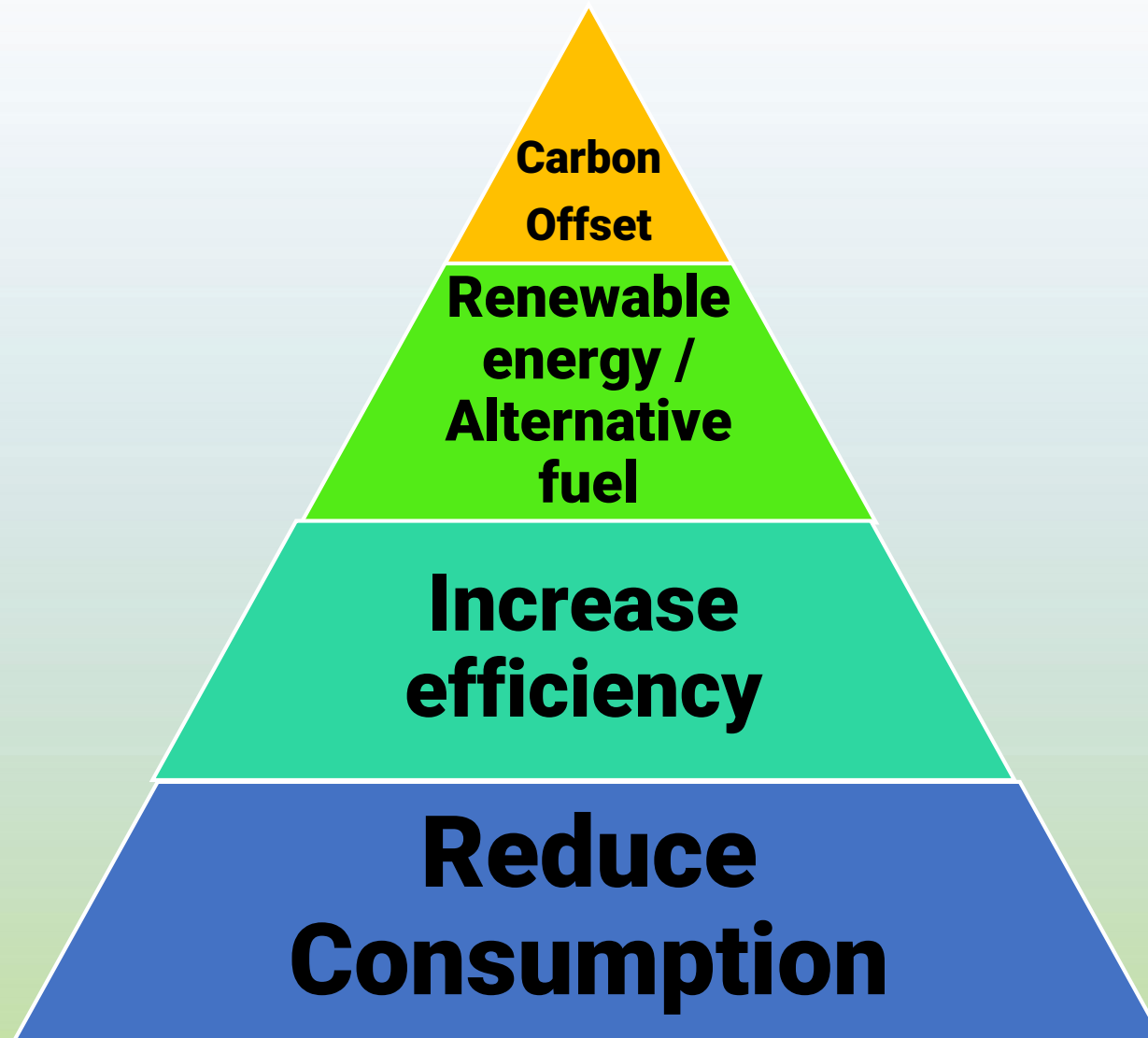
Decarbonisation Targets

In terms of carbon intensity

Settle for “Feasible” or going for “better”



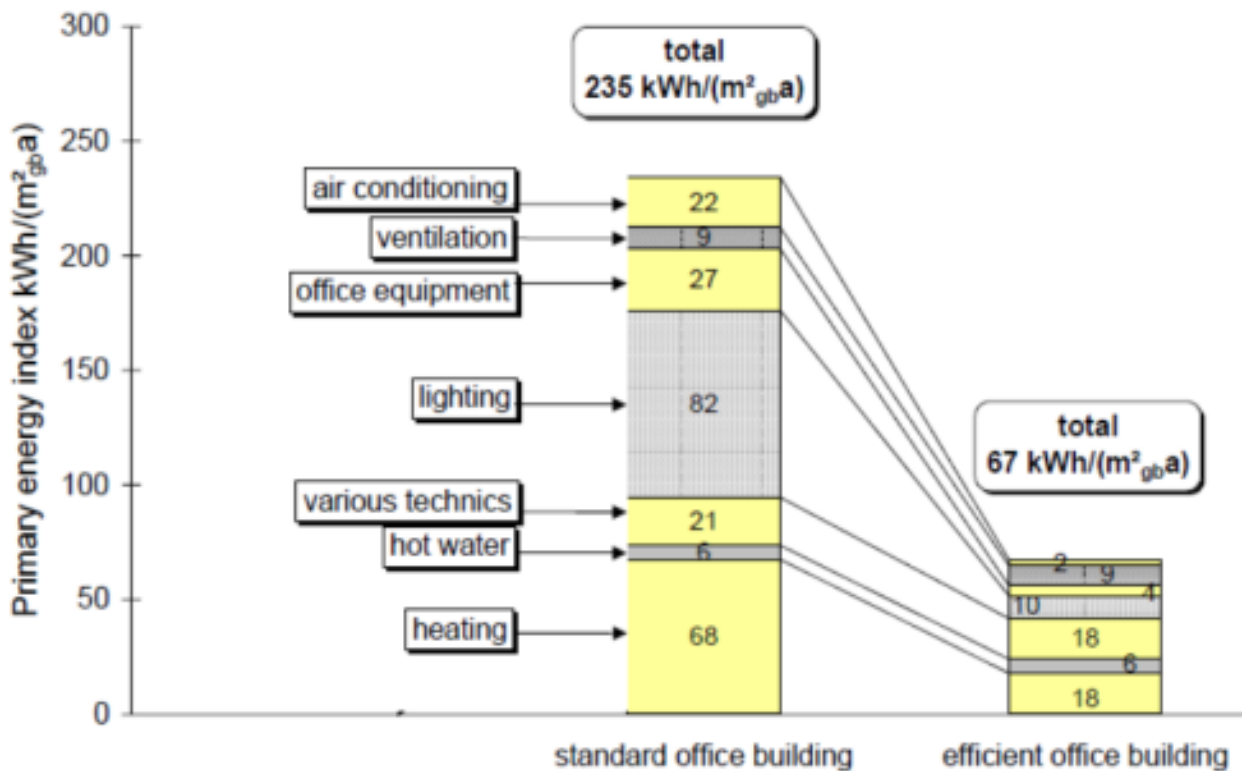
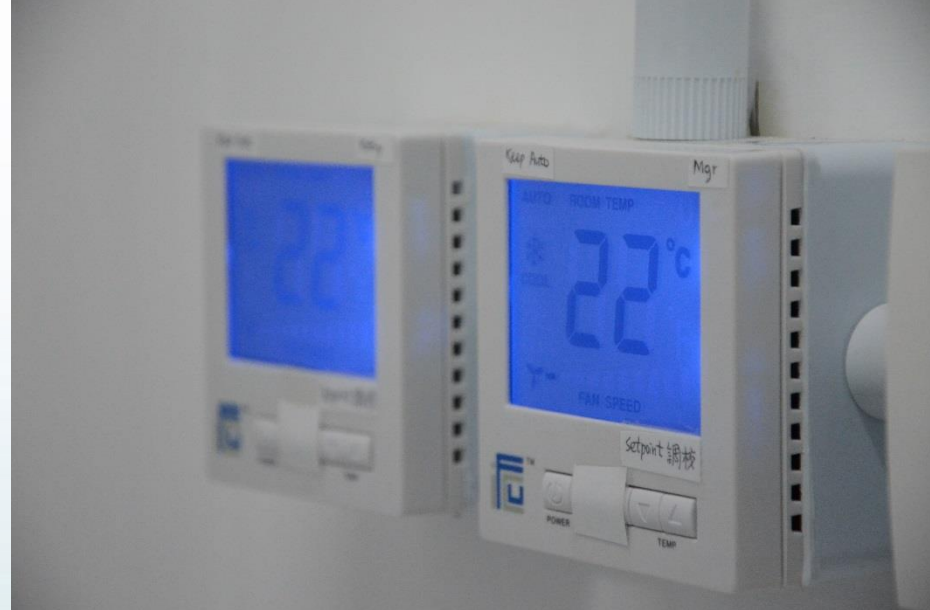
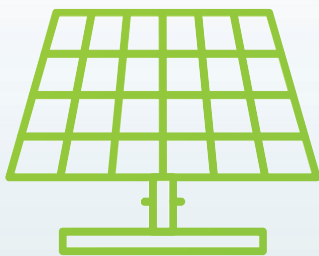
**Increasing
Priority**



Technologies make ANZ possible

70% difference !!

With today's practices and technologies



Building Services Products

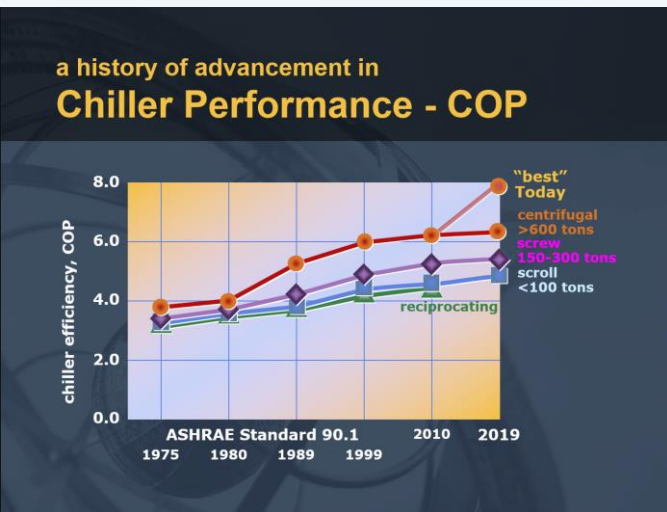
Energy Efficiency ↑ with generations

But Cost ↓ with generations

Lighting



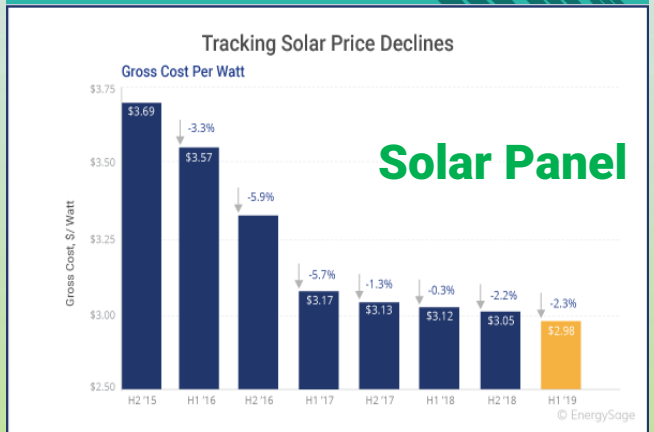
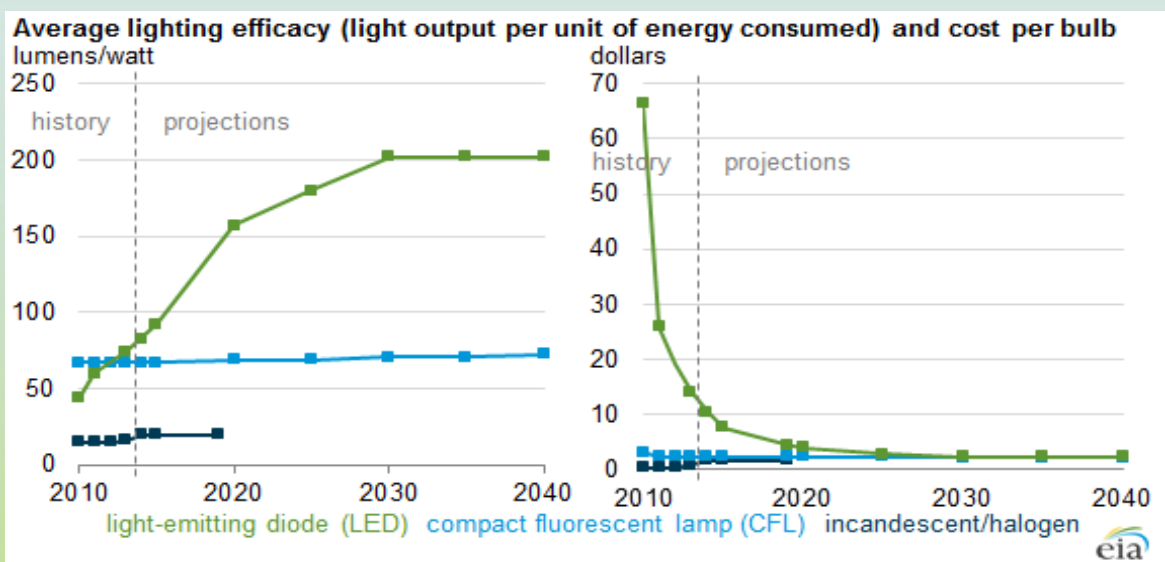
Air Conditioning



Tracking Solar Panel Efficiency

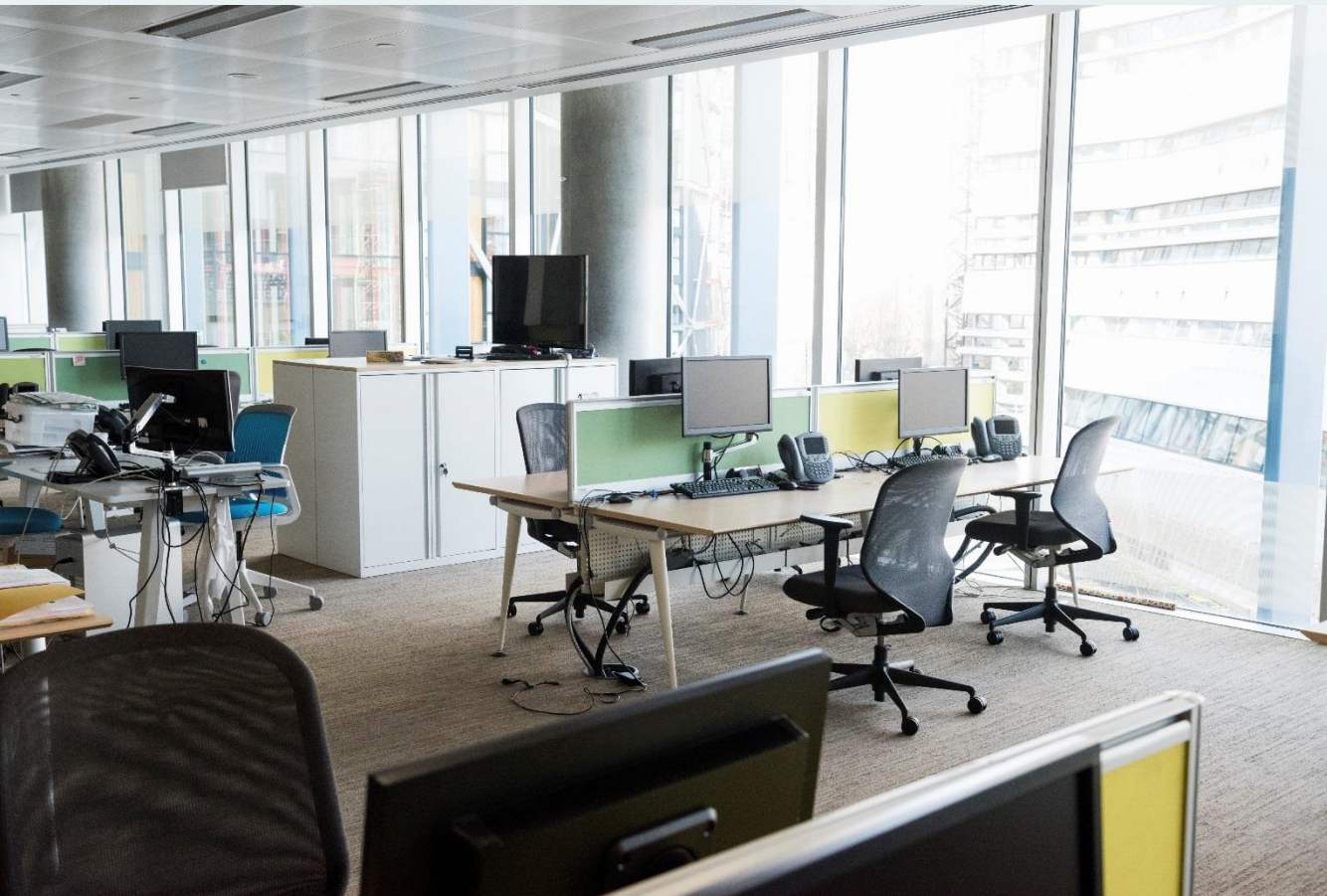


implication of development in Variable Speed Drive



Office Equipment

- Computer Monitor
- Printer



CRT



Touchscreen



LED



LCD

60-70 % difference

Power Consumption Comparison Between LED, LCD, CRT & Plasma:

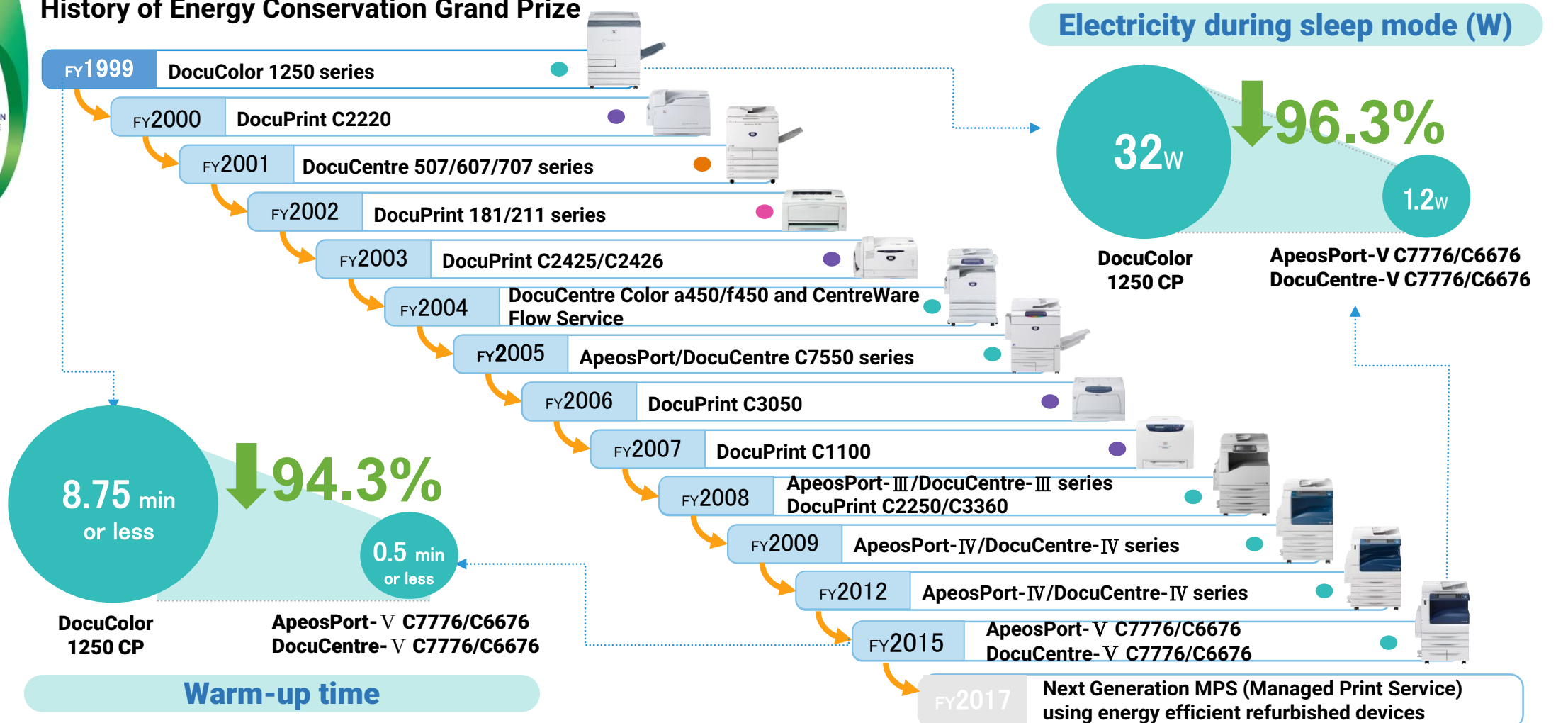
Screen Size	LED	LCD	CRT	Plasma
15 inches	15	18	65	---
17 inches	18	20	75	---
19 inches	20	22	80	---
20 inches	24	26	90	---
21 inches	26	30	100	---
22 inches	30	40	110	---
24 inches	40	50	120	---
30 inches	50	60	---	150
32 inches	55	70	---	160
37 inches	60	80	---	180
42 inches	80	120	---	220
50 inches	100	150	---	300

* Results may vary significantly, results assume displays are calibrated for energy saving performance.

Office Equipment

Printer - Energy Saving Performance (Fuji Xerox)

History of Energy Conservation Grand Prize



Fuji Xerox: Zero Carbon in Hong Kong's Operation



Visible Green Initiatives 看得見的環保

Driving to fulfill our "Zero Landfill" commitment, Fuji Xerox (Hong Kong) commits to be a "Good Company" in the community of Hong Kong. For every compliment we received, we will purchase carbon offset* of no less than 80 kg in support of a wind or solar farm project for promoting renewable energy. This will help to create a Greener living planet and sustainable environment for next generation.

富士施樂(香港)有限公司致力成為香港的優秀企業並推動及履行「零堆填」承諾。我們將為每一個讚揚購買有關風能或太陽能光伏項目不少於80公斤的碳抵消數額*，以協助推廣可再生電力，為下一代創造更美好的環境和可持續發展的未來。



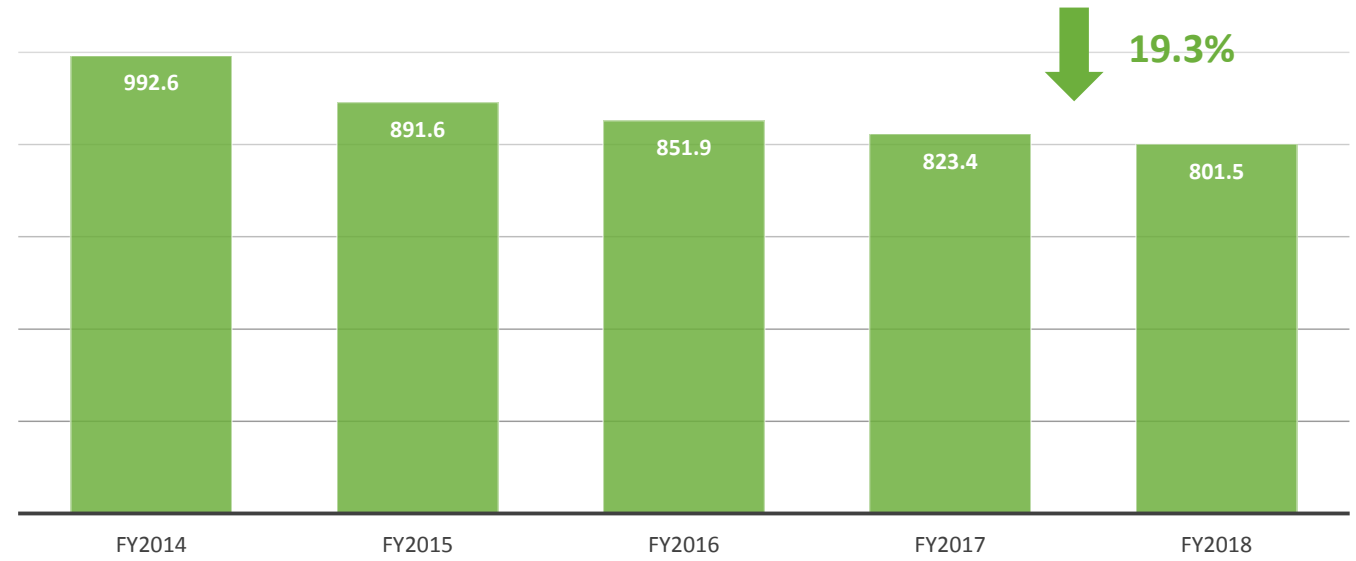
Welcome to join our Visible Green Initiatives by donating HK\$20 by cheque or cash. In return, we will present an acknowledgement certificate and a souvenir for you.

歡迎以支票或現金捐贈港幣20元參與富士施樂(香港)「看得見的環保計劃」，我們將送上碳抵消證書及紀念品以示謝意。

* For the total carbon offset and purchase amount, please refer to Fuji Xerox (Hong Kong) Sustainability Report. 有關碳抵消數額及購買金額，請參閱富士施樂(香港)可持續發展報告。

Carbon Emissions

(Tonnes CO₂-e)



Upgrade server systems



Zone lighting devices



Switch from desktop computers to more energy efficient laptops



Implement "earth hour" during lunch every day



Adopt energy efficient lighting devices and electrical appliances in offices



Conduct "computer-off" checks



Carbon Credit Certificate

THIS CERTIFICATE IS PRESENTED TO
Fuji Xerox (Hong Kong) Limited
who has purchased 802 metric tons of CO₂e offsets from
Thorn 1 Wind Farm
On 20th July 2019

CLP 中電

Mr. Geert Peeters
Lead and Compliance & Sustainability Officer
CLP (Hong Kong) Ltd.

CERTIFICATE NO:
CLPCC00003450510
www.clpcarboncredits.com



Data Centre

PUE	DCiE	Level of Efficiency
3.0	33%	Very Inefficient
2.5	40%	Inefficient
2.0	50%	Average
1.5	67%	Efficient
1.2	83%	Very Efficient

Office of the Government Chief Information Officer

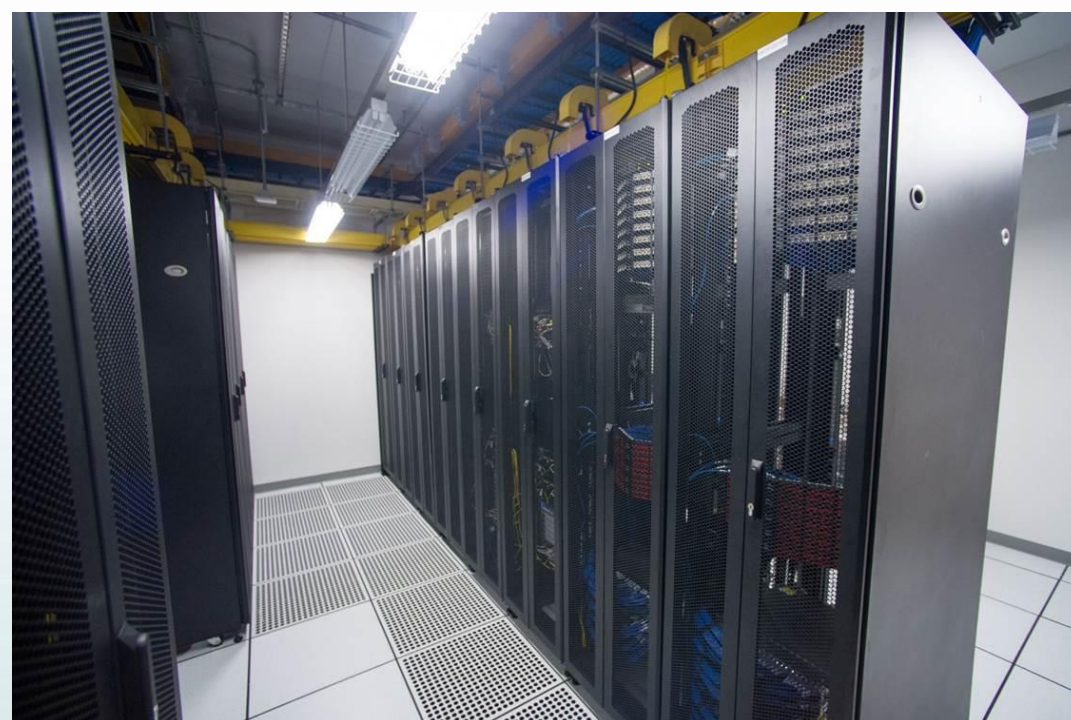
GREEN DATA CENTRE PRACTICES

Version : 3.0

July 2016

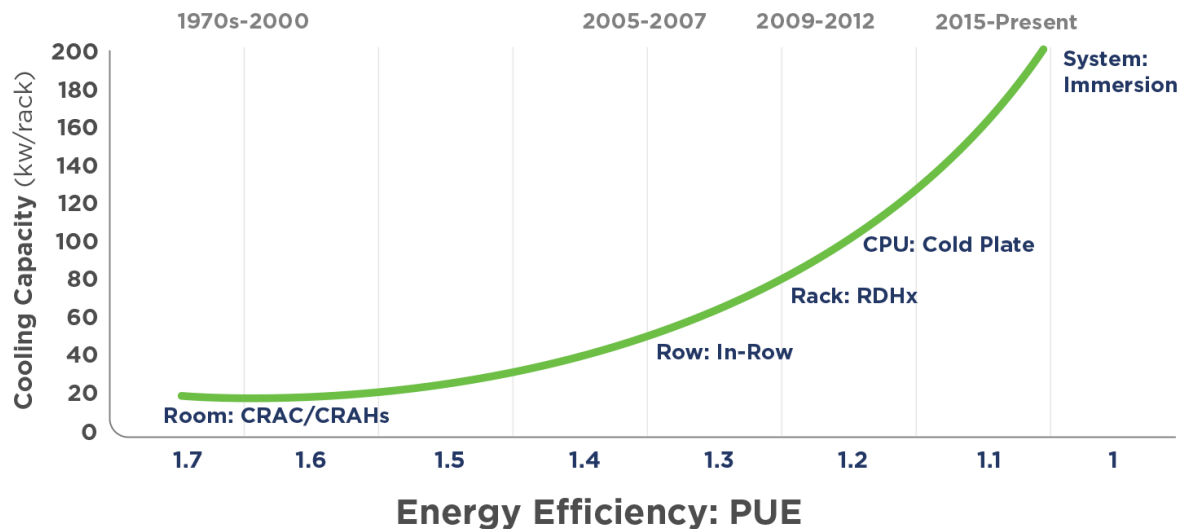
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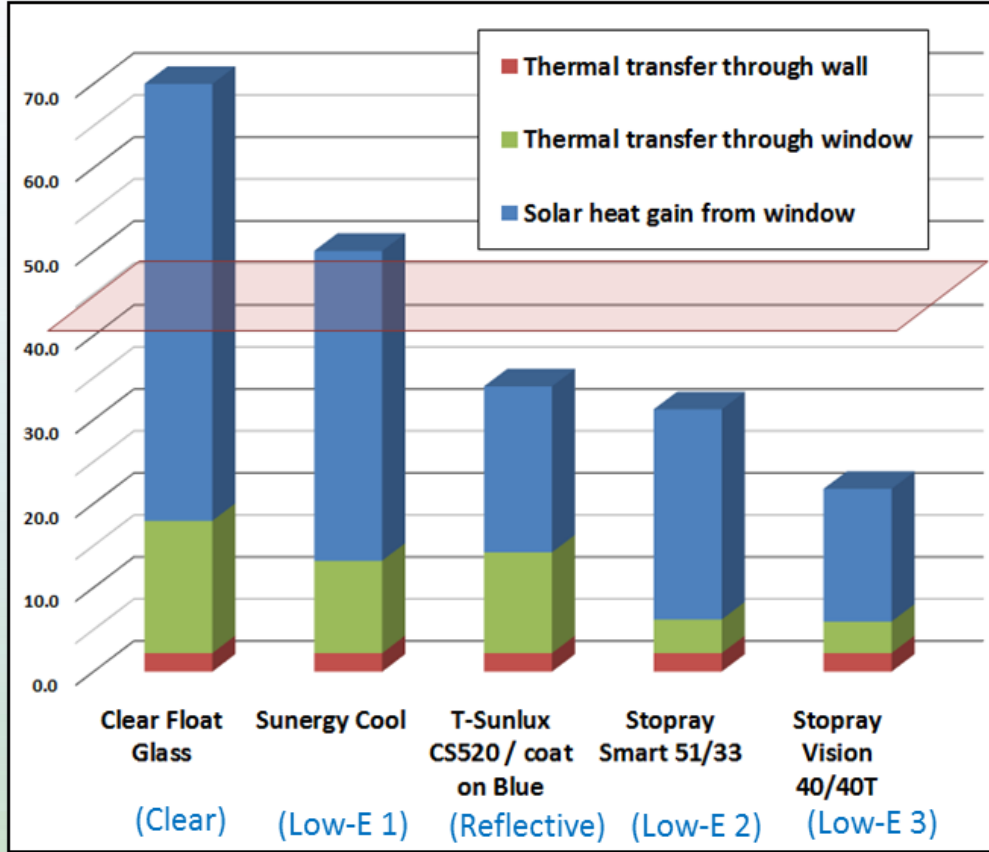
Immersion is the Next Generation

The evolution of data center cooling leads to immersion



Power usage effectiveness (PUE) is a ratio that describes how efficiently a computer data center uses energy; specifically, how much energy is used by the computing equipment (in contrast to cooling and other overhead)

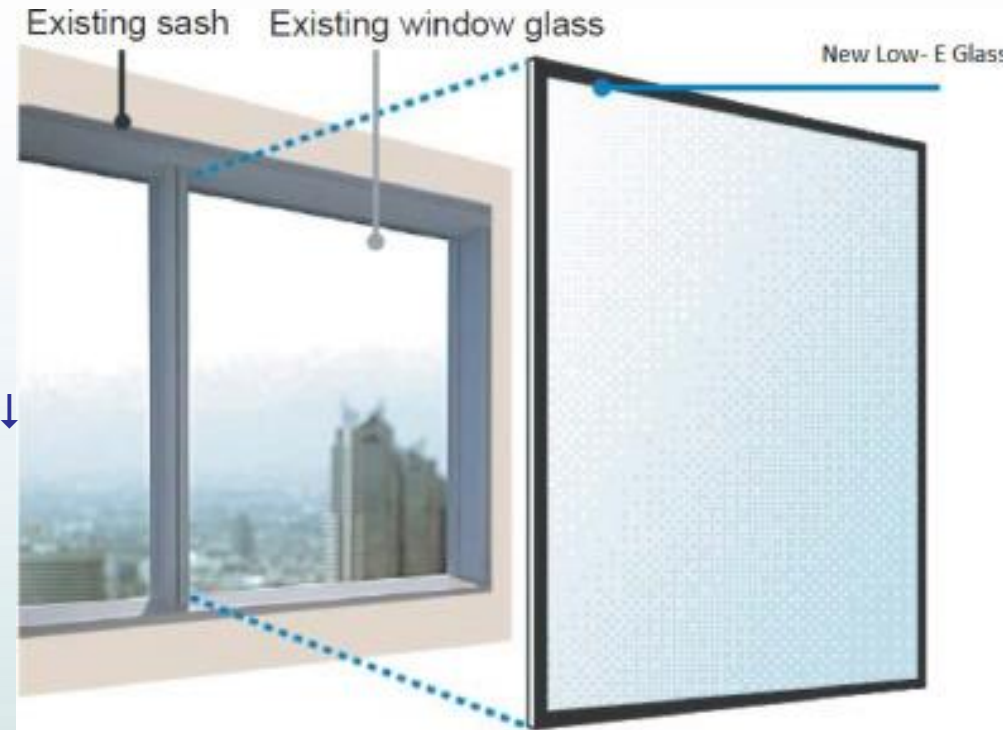
Building Façade - Glazing



Item	LT	U	SC	Thermal transfer through wall	Thermal transfer through window	Solar heat gain from window	OTTV
Clear Float Glass	88	6.30	0.95	2.2	15.8	626	80.6
Sunergy Cool	50	4.40	0.56	2.2	11.0	36.9	50.1
T-Sunlux CS520/coat on Blue	12	4.80	0.30	2.2	12.0	19.8	34.0
Stopray Smart 51/33	50	1.60	0.38	2.2	4.0	25.0	31.2
Stopray Vision 40/40T	40	1.50	0.24	2.2	3.8	15.8	21.8

Comparison of Energy Efficiency

- Lighting Transmittance ↑
- Thermal Transfer ↓
- Performance ↑



THE WAY FORWARD

30 years to go



- 2-3 rounds of major replacement/retro-fitting/renovation
- Technological advancement
- Regulations
- Behavior change
- Market drivers
-