消費者委員會
CONSUMER COUNCIL

Green Consumerism

Electricity use in the home

Prof. WONG Yuk-shan, Chairman
Consumer Council

17 November 2016, EMSD Summit – Imaginovate HK

Contents

About the Council

Council's role and objectives

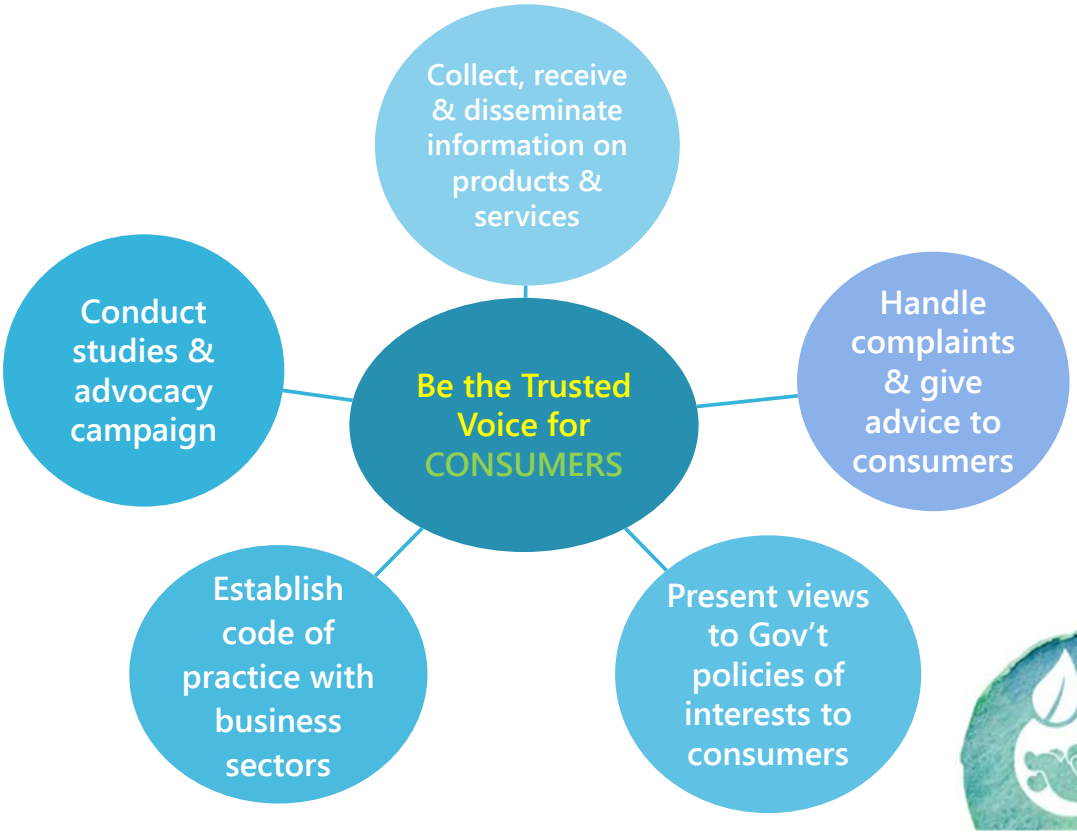
Vision

- Be the trusted voice in striving for consumer betterment towards safe and **sustainable consumption** in a fair & just market

Mission

- Act as advocate for consumer interests
- Facilitate constructive discussion & promulgation of pro-consumer policies
- See to empower consumers to help themselves

Functions of the Council



The Council's vision embraces the UN's definition of Sustainable Consumption

Consumer Council's Vision

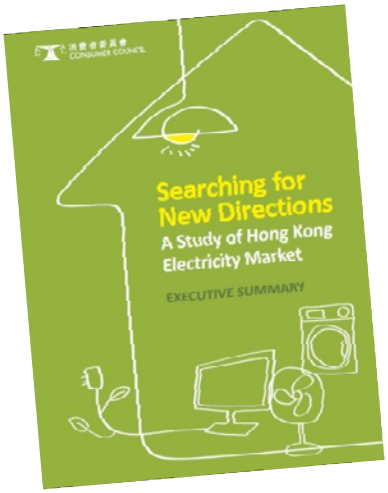
Be the trusted voice in striving for consumer betterment towards safe & sustainable consumption in fair & just market

UN Definition of Sustainable Consumption & Production

SCP is a holistic approach to minimising the negative environmental impacts from consumption & production systems while promoting quality of life for ALL

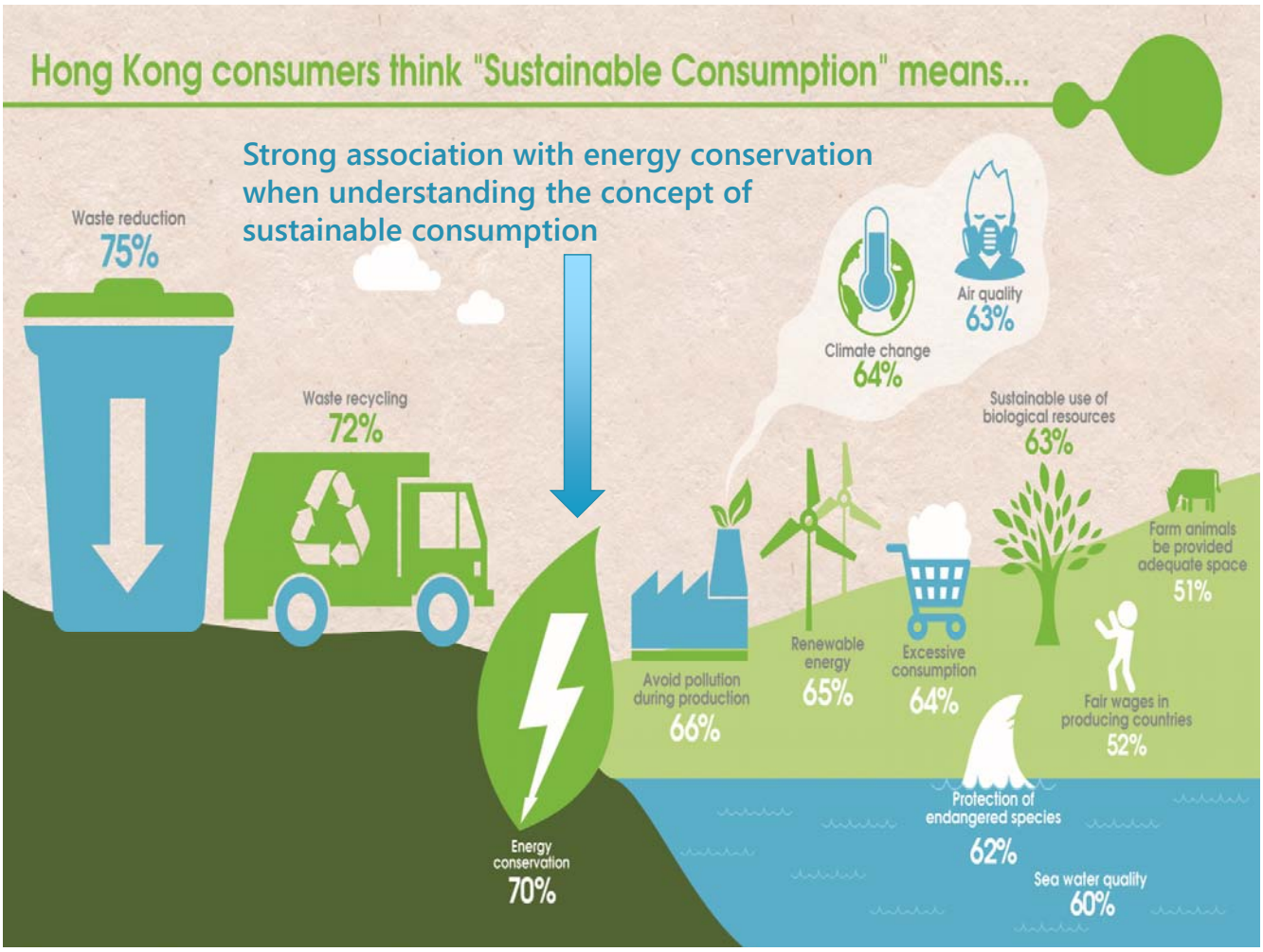
- Improving quality of life without increasing negative environmental impact
- Decoupling economic growth from environmental degradation
- Applying life-cycle thinking
- Guarding against rebound effect

Council's major reports on sustainability



- Council published study of HK electricity market in December 2014. Study reviewed and responded to government's consultation on Electricity Market in June 2015
- Sustainable Consumption for a Better Future in February 2016

Consumer Attitudes to Sustainable Consumption

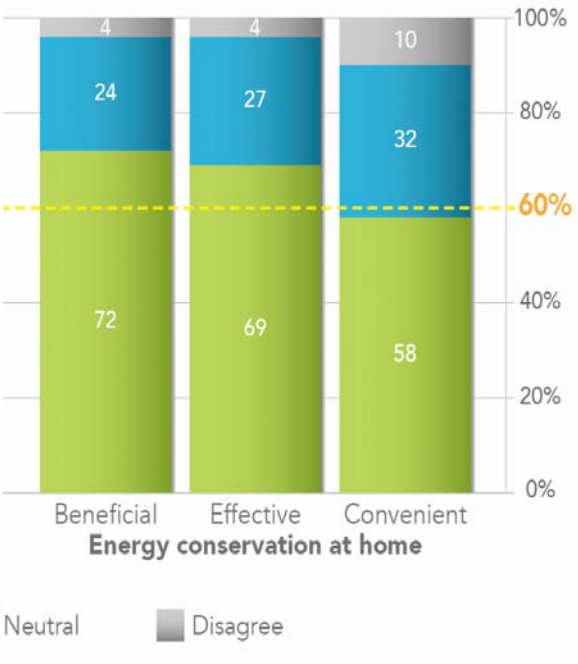


Attitudes towards energy saving at home

☺ Benefits & Effectiveness

😐 Convenience to support actions

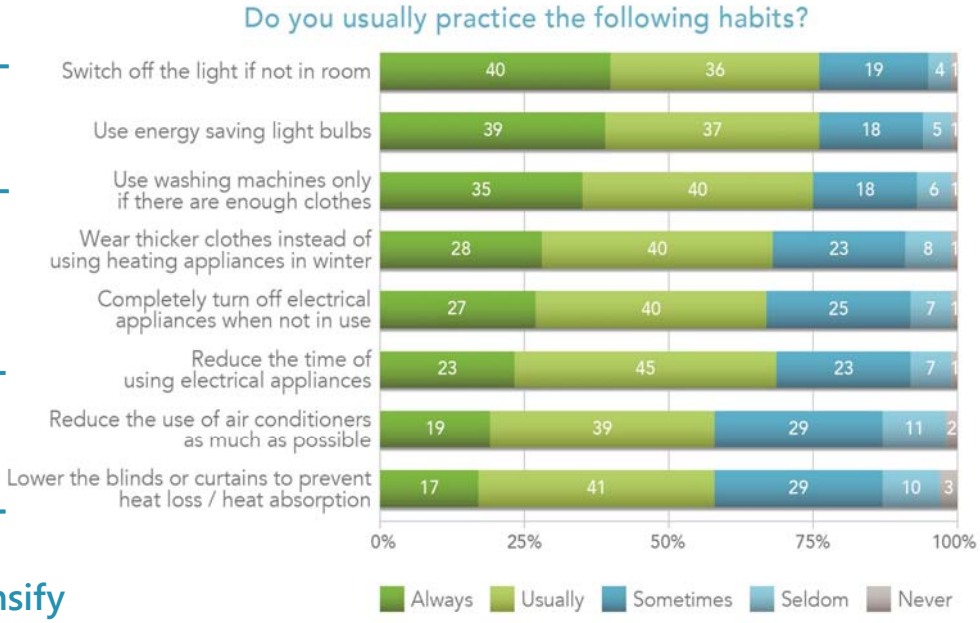
Need Help to Convert Belief into Action



Consumers said they already embraced certain energy saving behaviours

Behaviour practised more

Less practised for those require more efforts

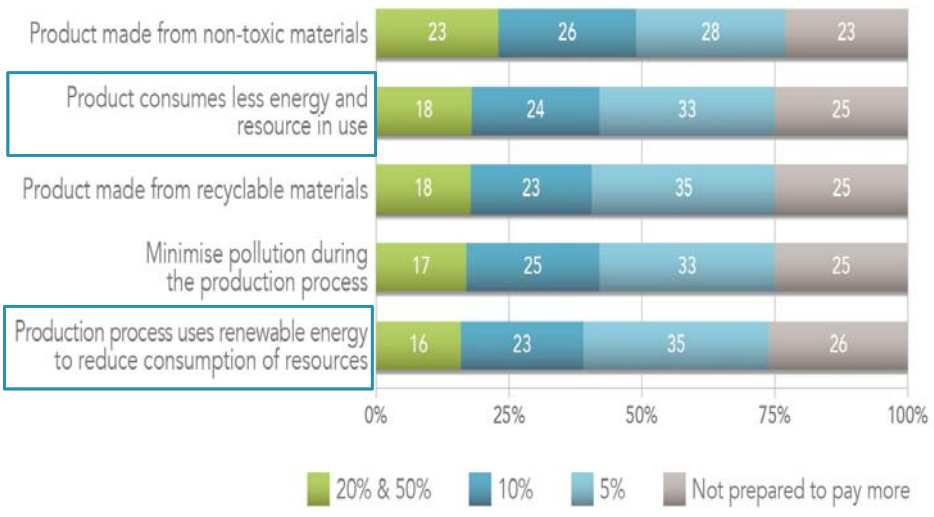


Remarks: The sum of the percentages may not equal to 100 due to rounding

Rooms to intensify Energy Saving behaviour

Willingness to pay for energy efficient products

Large majority (around 75%) prepared to pay price premium for energy efficient products

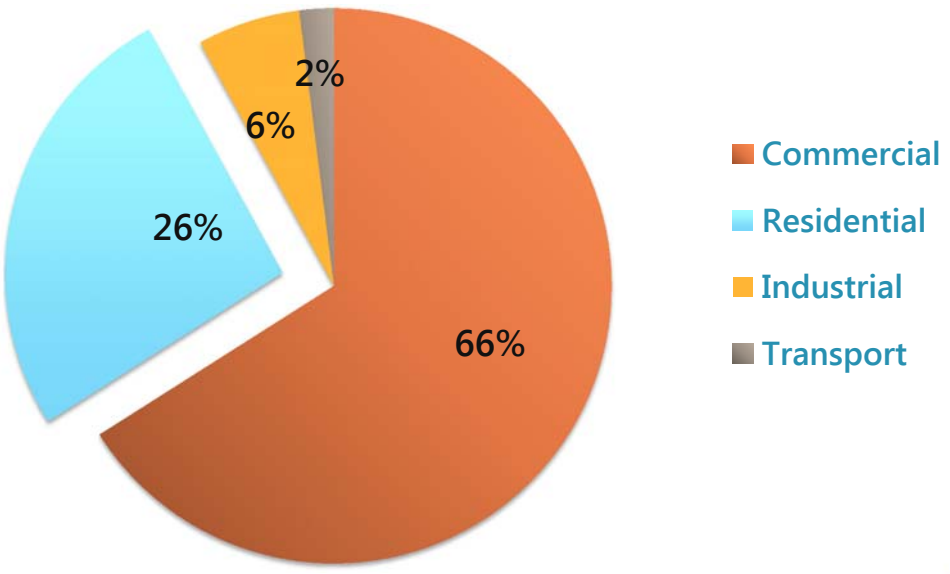


Remarks: The sum of the percentages may not equal to 100 due to rounding

Hong Kong consumers....

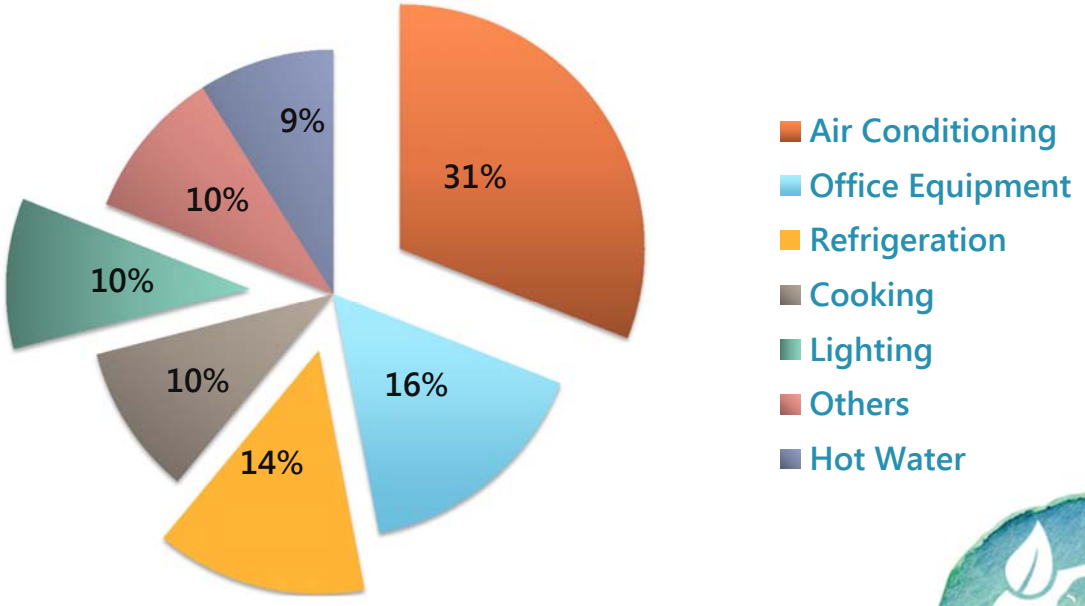
- ...understand energy conservation is a major component of sustainable consumption
- ...believe in its benefits and effectiveness but do not find it so convenient
- ...undertake 'easy' energy saving actions, but not those that reduce comfort or are inconvenient
- ...are prepared to pay a price premium for energy efficient goods

Households used 26% electricity in 2013



Source: Hong Kong Energy End-use Data 2015, EMSD. Data relate to 2013.

Air-conditioning, refrigeration and lighting account for 55% of domestic electricity use



Source: Hong Kong Energy End-use Data 2015, EMSD. Data relate to 2013.

Waste electrical appliances fill landfills Cause heavy metal pollution

- 70,000t Waste Electrical and Electronic Equipment (WEEE) produced Hong Kong annually

- Public consultation (2010) Mandatory Producer Responsibility Scheme (PRS) on WEEE
- Regulate washing machines, refrigerators, air conditioners, television sets and PCs
- Treatment and Recycling Facility ready by mid-2017, annual capacity 30,000t

Reducing the Environmental Impacts of Consumers' Energy Service Needs

Regulations to reduce electrical demand

- Energy Efficiency (Labelling of Products) Ordinance
- Building Energy Code: minimum standards for new and major retrofit building services (lifts, central air conditioning, communal lights)
- Energy Audit Code: 10 yearly building inspections. But more needs to done to enable comparison

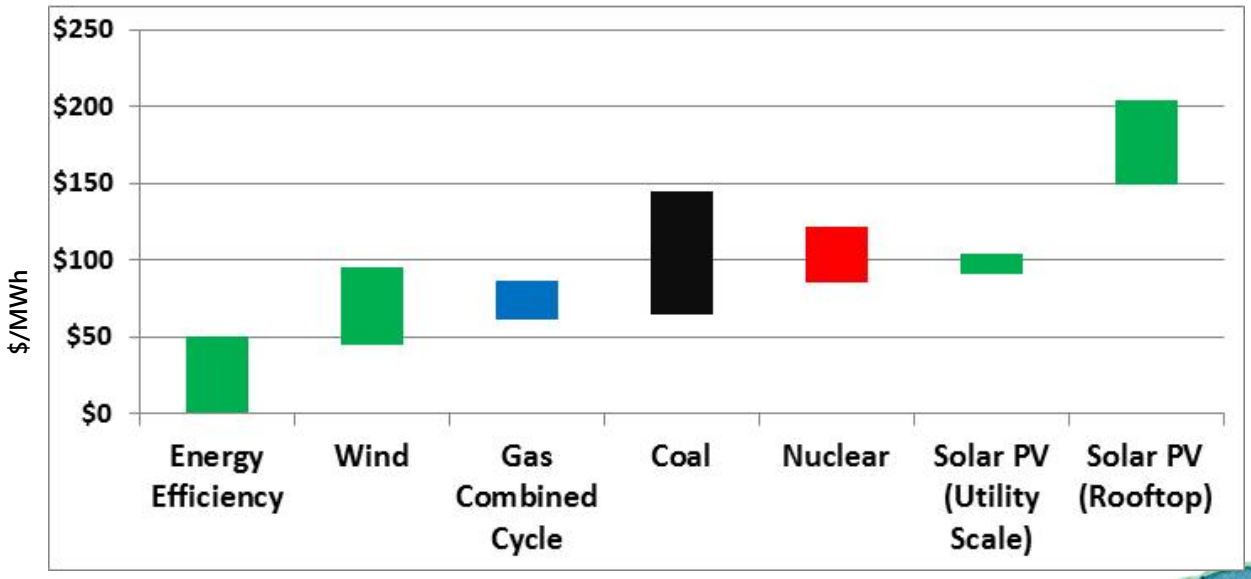
Engage customers about their energy use

- Benchmark their energy use with similar family
- EMSD's benchmarking tool is useful, but better if data could be supplied directly by utilities
- CLP and Opower are doing this on a small scale but could be expanded to everyone

But Hong Kong needs to decarbonise electricity use more aggressively

- Achieved through measures taken by business
  - the energy sector, and
  - electrical appliance industry
- Changes in the consumer demands
  - consumer information
  - smarter devices

Energy efficiency is much better value than renewables



Source: Lazard 2014.

Trends in consumers' use of electricity

Growth in consumer demand for energy services

- Improved living standards: air conditioning, more screens, appliances
- Transportation shifting from fossil fuel to EV
- Population growth

Smarter use of electricity

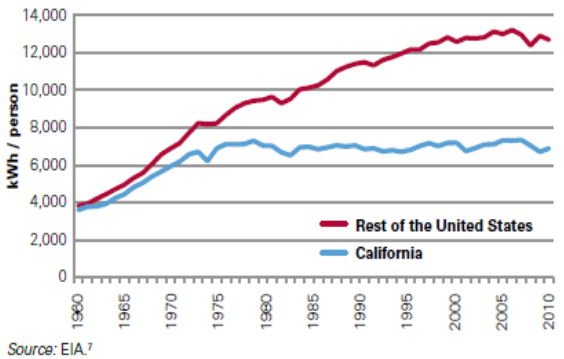
- Night time EV charging
- Introduction of smart devices that help stabilise and moderate electricity demand

Smart homes offers great opportunity to improve sustainability….but also risks

- Security: sensors detect presence of intruders and family
- Power management: AI optimises cooling & light
- Resource efficient: better food stock control
- Improving safety: elderly people's health & mishaps monitored and reacted to
- But personal data needs to be kept secure and private

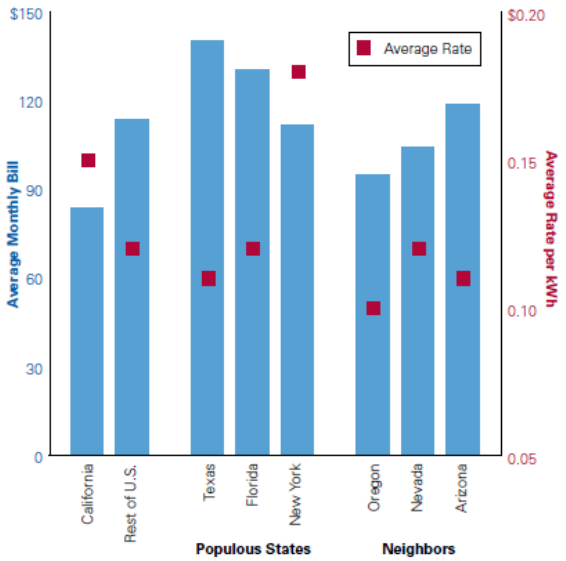
But we can learn from others: In California power costly but bills low

Figure 1: California Per Capita Electricity Consumption vs. Rest of the Nation



Source: EIA.[7]

Figure 2: Comparison of Residential Electric Bills and Rates



Source: U.S. Energy Information Administration (2011)

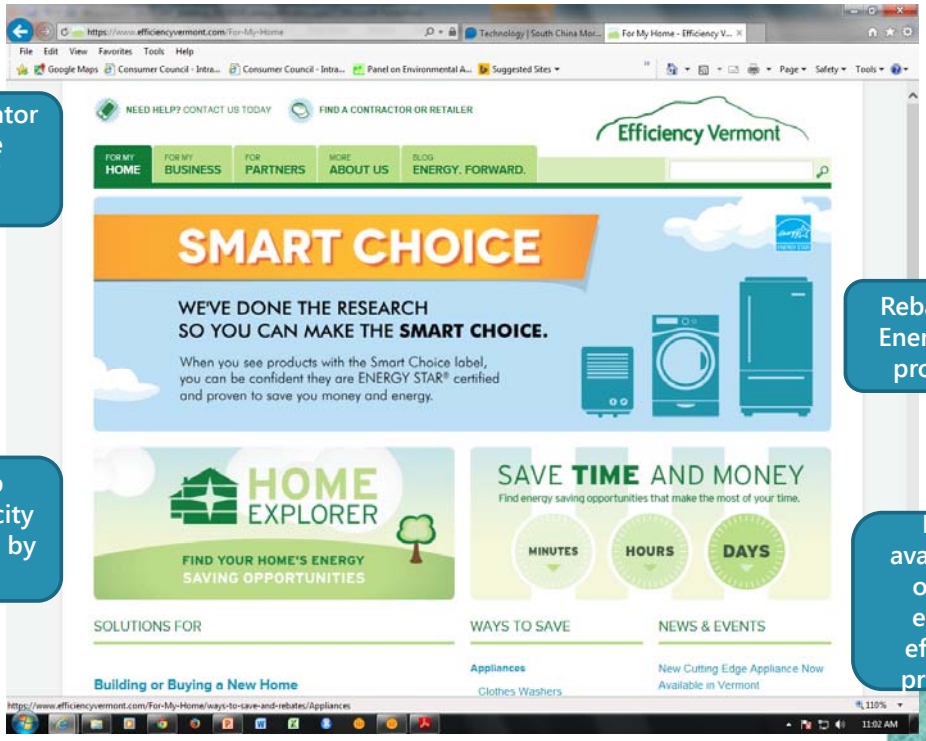
California's utility regulator mandates utilities to reduce demand

- *Demand response* – specific targets for reducing electricity demand & peak demand. Budget of $3.1bn 2010-12 – LEDs, HVAC upgrades
- *Innovation* - Cool Roofs, Shade Trees
- 1 million low income households provided free energy efficiency
- *Decoupling plus* – tariff can be increased to overcompensate IOUs for reducing consumer energy use (more than meets the Capex component of tariff)
- *Renewable Portfolio Standard* – IOUs have to increase share of renewables 1% per year to 20% by 2020

Efficiency Vermont – energy saving utility funded from consumer electricity bills

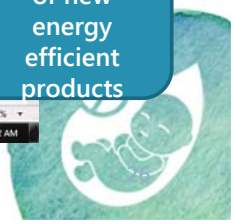
Zip-Code locator for reliable installers / retailers

Tool to help reduce electricity use on a room by room basis

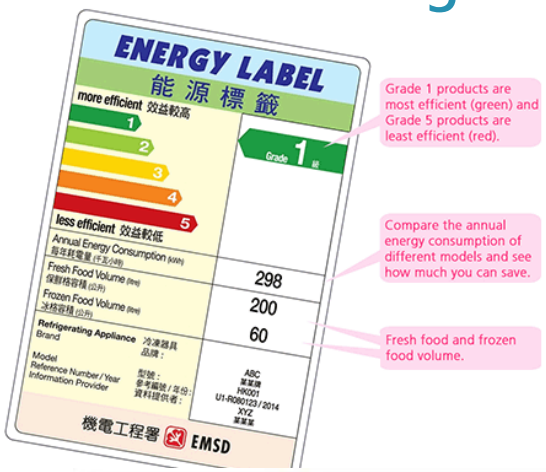


Rebates on Energy Star products

Local availability of new energy efficient products



Good energy labels are an effective means of informing and changing behaviour



- Labels need to be simple and intuitive to understand.
- Consumers are too busy to absorb lots of complex information
- Keep point of sale information simple and relevant

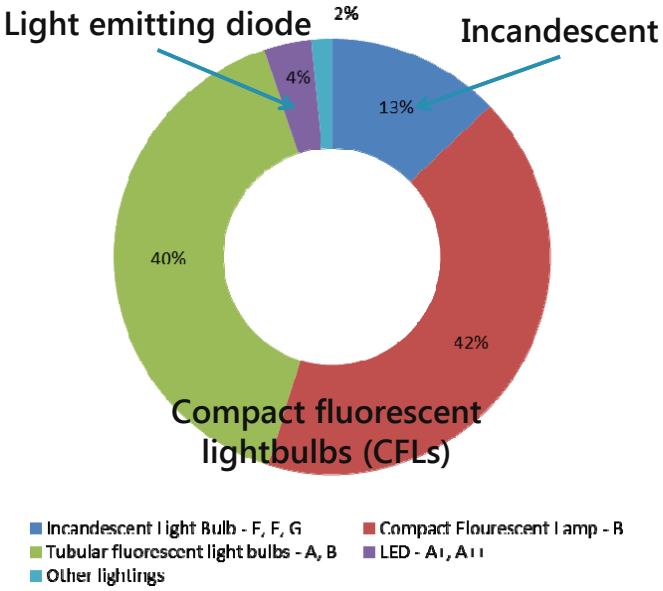
- Information that can't be included on label could use
- QR codes to access websites

Labels have to be updated to keep up with efficiency changes and remain discriminating

Hong Kong		European Union	
HK MEELS Ver 2015	**Fridge Energy Consumption Index**	**EU Energy Label fridge grade Ver 2014**	**Energy Efficiency Index (EEI)**
1 (68%)	≤ 35	A+++ (<1%)	< 22
		A++ (40%)	22 - < 33
2	35 - ≤ 44	A+ (56%)	33 - < 42
3	44 - ≤ 55	A	42 - < 55
4	55 - ≤ 69	B	55 - < 75
5	> 69	C	75 - < 95
		D	95 - < 110
		E	110 - < 125
		F	125- < 150
		G	> 150

* greyed out cells are no longer found in the market, average EEI in 1970s = 100

Labels have to embrace emerging technologies like LED



Estimate of market shares in HK 2013

- HK lighting label only covers fluorescent lights
- EU label covers all the light technologies
- Incandescent lights still account for 13% of HK sales and use five times more energy, banned in many nations
- CFLs four times more efficient
- LEDs eight times more, but still rare in HK

Improvements to mandatory energy labels

Product class	HK	EU	China	Singapore
AC contactors			✓	
AC electric fans			✓	
Air conditioners	✓	✓	✓	✓
Automatic rice cookers			✓	
Clothes dryers				✓
Computer monitors			✓	
Dehumidifiers	✓			
Dishwashers		✓		
Electric motors		✓		
Heaters and water heaters		✓	✓	
Household induction cookers			✓	
Household tumble driers		✓		
Lighting*	✓	✓	✓	✓
Local space heaters		✓		
Ovens and range hood		✓		
Refrigerating appliances	✓	✓	✓	✓
Residential ventilation units		✓		
Solid fuel boilers		✓		
Televisions		✓		✓
Tyres		✓		
Vacuum cleaners		✓		
Washing machines	✓		✓	
Water chillers			✓	
TOTAL	5	16	16	5

- Broaden range of products
- HK currently applies mandatory labels to 5 products classes, less than other economies*
- Regularly review the thresholds to ensure they help identify excellence
- Support innovation by labelling new technologies
- Reward 'smart' controls that automatically switch off

* Third phase of MEELS will add another four categories and expand coverage of washing machines; Only CFL lights are included under lighting

Consumers have a major role to play in making HK more sustainable

- Consumers wish to live more sustainably, many are trying already
- Not everyone's highest priority
- Information easy to understand, relevant and discriminating
- Some energy efficiency needs funding support
- Update product standards

- Tomorrow's home technologies will not be the same as today's

消費者委員會
CONSUMER COUNCIL

Thank you for listening