

# SINGAPORE

## ENERGY EFFICIENCY GOALS

### 1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Singapore ratified the Paris Agreement in Sep 2016, formalising its pledge to reduce emissions intensity by 36% from 2005 levels by 2030, and to stabilise emissions with the aim of peaking around 2030. This pledge builds on its existing commitment to reduce greenhouse gas emissions by 16% from the business-as-usual level by 2020, which Singapore is on track to meet. Improving EE will remain our key strategy for reducing emissions and achieving our pledge across the industry, transport, buildings, household, waste, and water sectors. We will work with the manufacturing sector industries to achieve EE improvement rates of around 1-2% per annum.

### 2. ENERGY EFFICIENCY STRATEGY

Singapore's geographical constraints limit the extent of alternative energy deployment. Therefore, Singapore has identified energy efficient as a key strategy to mitigate greenhouse gas emissions. It also helps to improve competitiveness, energy security, and environmental sustainability. To improve its energy efficiency, Singapore has increased its capabilities, raised awareness across the major energy-consuming sectors of its economy, and addressed sector-specific barriers using incentives or regulatory measures.

Since April 2013, the Energy Conservation Act (ECA) has been introduced to mandate energy efficiency requirements and energy management practices of large energy users in Singapore. Its main requirements include the appointment of energy managers, reporting of energy use, and submission of energy efficiency improvement plans. In March 2017, enhancements to the Act were announced to take effect from 2018 to help Singapore achieve its pledge under the Paris Agreement. These include strengthening the measurement and reporting requirements for greenhouse gas emissions, requiring companies to undertake regular energy efficiency opportunity assessments and introducing minimum energy performance standards for common industrial equipment and systems.

#### FUNDING

Not applicable.

#### LINKS

Enhancements to Energy Conservation Act:

<http://www.nea.gov.sg/corporate-functions/newsroom/news-releases/enhancements-to-the-energy-conservation-act>

### 3. ENERGY EFFICIENCY ACTION PLAN

The Sustainable Singapore Blueprint 2015 outlines Singapore's vision and plans for a more liveable and sustainable Singapore. It includes plans to raise solar penetration rates and grow capability in green buildings.

The Climate Action Plan, launched in July 2016, comprises two publications that set out Singapore's plan to mitigate the effects of climate change while meeting its obligations under the Paris Agreement. In particular, the first publication, "Take Action Today, for a Carbon-Efficient Singapore", sets out four key strategies on how Singapore intends to reduce greenhouse gas emissions and increase energy efficiency.

#### FUNDING

Singapore's climate change efforts are funded domestically and by the government.

#### LINKS

List of EE programmes in Singapore: <http://www.e2singapore.gov.sg/>

Publications to mitigate climate change and increase energy efficiency:

<https://www.nccs.gov.sg/resources/publications>

Sustainable Singapore Blueprint: <https://www.mewr.gov.sg/Data/Editor/Documents/Press%20Release%20-%20Annex%20A.pdf>

Publication "Take Action Today, for a Carbon-Efficient Singapore":

[https://www.nccs.gov.sg/sites/nccs/files/NCCS\\_Mitigation\\_FA\\_webview%2027-06-16.pdf](https://www.nccs.gov.sg/sites/nccs/files/NCCS_Mitigation_FA_webview%2027-06-16.pdf)

## 4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

Singapore ratified the Paris Agreement in Sep 2016, formalising its pledge to reduce emissions intensity by 36% from 2005 levels by 2030, and to stabilise emissions with the aim of peaking around 2030. This pledge builds on its existing commitment to reduce greenhouse gas emissions by 16% from the business-as-usual level by 2020, which Singapore is on track to meet.

#### LINKS

Singapore's ratification of the Paris Agreement:

[https://www.mfa.gov.sg/content/mfa/overseasmission/geneva/press\\_statements\\_speeches/2016/201609/press\\_20160921.html](https://www.mfa.gov.sg/content/mfa/overseasmission/geneva/press_statements_speeches/2016/201609/press_20160921.html)

## 5. SECTORAL ENERGY EFFICIENCY TARGETS

Singapore does not have any sectoral energy efficiency improvement goals.

## 6. LEAD ENERGY EFFICIENCY INSTITUTIONS

Energy Efficiency Programme Office ("E2PO"), established in 2007.

#### INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

Various agencies under the E2PO are in charge of energy efficiency policies under their respective sectors.

## STAFF AND BUDGET

No information.

## BUDGET USE

No information.

## LINKS

E2PO objectives and members:

[http://www.e2singapore.gov.sg/About\\_Esup2/supPO/Objective\\_and\\_Members.aspx](http://www.e2singapore.gov.sg/About_Esup2/supPO/Objective_and_Members.aspx)

Overview of E2PO:

[http://www.e2singapore.gov.sg/data/0/docs/Energy\\_Efficiency\\_Opportunities\\_for\\_Businesses.pdf](http://www.e2singapore.gov.sg/data/0/docs/Energy_Efficiency_Opportunities_for_Businesses.pdf)

## 7. OTHER ENERGY EFFICIENCY AGENCIES

The National Climate Change Secretariat (NCCS) was established in July 2010 to develop and implement Singapore's domestic and international policies and strategies to tackle climate change. NCCS is part of the Strategy Group which supports the Prime Minister and his Cabinet to establish priorities and strengthen strategic alignment across Government. It is also the secretariat for the Inter-Ministerial Committee on Climate Change (IMCCC), which enhances Whole-of-Government coordination on climate change policies. As increasing energy efficiency is one of the key climate change strategies, this entails working closely with the agencies who are involved in the E2PO.

## LINKS

NCCS: <https://www.nccs.gov.sg/about-nccs>

## 8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

Awareness is promoted through several programmes, including:

- The Home Energy Auditor (HEA) and the Life Cycle Cost Calculator (LCCC), which are mobile applications developed to improve information on high energy-consuming appliances and their lifetime costs.
- There are also posters in schools, retail stores, community spaces and housing states to raise household awareness on energy saving habits
- A "Resource Efficiency Guide for New Homeowners" is also made available to new homeowners to provide information on a typical household's energy consumption profile and tips on energy efficient appliances
- Campaigns are also held in schools to cultivate energy efficient habits among students.
- BCA has implemented outreach programmes, including: a public online portal; roving green building exhibitions; and new social media (Facebook). The BCA has also partnered with the Green Mark

Champion, CDL, to hold the BCA-CDL Green Sparks Competition 2010 in order to stimulate innovation among the youth on retrofitting existing buildings.

- The BCA organises an annual International Green Building Conference (IGBC) as a platform in the building sector to gather for knowledge sharing and collaborations.

## LINKS

Energy efficiency initiatives in Singapore:

[https://www.iitk.ac.in/ime/anoops/FOR%20-%2016/PPTs/Day%20-%205%20-%20Singapore/Mr.%20Kok%20Kiat%20Ang%20-%2019%20-%20Singapore%27s%20Energy%20Efficiency%20Efforts%20\(for%20circulation\).pdf](https://www.iitk.ac.in/ime/anoops/FOR%20-%2016/PPTs/Day%20-%205%20-%20Singapore/Mr.%20Kok%20Kiat%20Ang%20-%2019%20-%20Singapore%27s%20Energy%20Efficiency%20Efforts%20(for%20circulation).pdf)

LCCC website: [http://www.e2singapore.gov.sg/Households/Saving\\_Energy\\_At\\_Home/LCC\\_Calculator.aspx](http://www.e2singapore.gov.sg/Households/Saving_Energy_At_Home/LCC_Calculator.aspx)

## 9. ENERGY EFFICIENCY AWARENESS RAISING

Energy Efficiency National Partnership (EENP) - Introduced by NEA, EMA and EDB in 2010, the EENP serves as a platform to help companies reduce energy consumption by conducting relevant courses and workshops as well as providing energy efficiency- related resources, incentives and recognition. It is a voluntary partnership programme for companies that wish to be more energy efficient, thereby enhancing their long-term business competitiveness and reducing their carbon footprint. Since 2011, a National Energy Efficiency Conference is held annually to provide partners with opportunities to learn and exchange energy efficiency technologies and best practices. As of May 2017, 246 companies have joined as partners. The EENP Awards also accords recognition to companies and individuals who excel in the areas of energy management through annual national awards.

## LINKS

EENP: [http://www.e2singapore.gov.sg/Programmes/Energy\\_Efficiency\\_National\\_Partnership.aspx](http://www.e2singapore.gov.sg/Programmes/Energy_Efficiency_National_Partnership.aspx)

## 10. GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The Singapore Certified Energy Manager (SCEM) programme aims to equip energy managers with technical skills and competence to manage energy services within a facility. Currently, there are two certifiable training levels namely the Associate SCEM course that is targeted at diploma level candidates, and the Professional SCEM course that is targeted at degree level candidates. The SCEM training grant partially funds the cost of SCEM training cost at Professional Level.

The BCA academy also offers a variety of energy efficiency/management courses.

The IEA and EMA launched the inaugural Singapore-IEA Energy Efficiency Training Week for Asia-Pacific in Singapore in July 2017

## LINKS

Energy efficiency-related courses supported by the government:

- <http://www.e2singapore.gov.sg/Training/Courses.aspx>

- <https://www.bcaa.edu.sg/what-we-offer/courses?CourseCategory=19f324c2-3230-6ef1-b0a0-ff0000a28c6c&SearchText=energy>
- <https://www.iea.org/topics/energyefficiency/e4/e4trainingweeks/eetwsoutheastasia2017/>

## 11. PRIVATELY OPERATED TRAINING

The Sustainable Energy Association of Singapore (SEAS) offers energy efficiency courses such as the SCEM, Energy Management System Foundation and Energy Management System Advanced Lead Auditor to help firms and organisations address and reference energy management issues on a global standard.

### LINKS

Energy efficiency courses by Sustainable Energy Association of Singapore:

[http://www.seas.org.sg/index.php?option=com\\_events&view=trainingprogrammes&Itemid=113](http://www.seas.org.sg/index.php?option=com_events&view=trainingprogrammes&Itemid=113)

## 12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

In 2014, government announced the commitment of S\$100million to fund two initiatives in energy research and development (R&D), specifically in building energy efficiency and research on green data centres - the "Building Energy Efficiency Research Development and Demonstration Hub" and the "Green Data Centre Research Hub Programme".

The Energy National Innovation Challenge (Energy NIC) was established by the National Research Foundation (NRF) in Feb 2011 to bring about significant changes in Singapore's energy landscape in a whole-of-government effort. Under the National Research Foundation's 2015 Strategic Plan, the Energy NIC has been allocated S\$300 million to harness Singapore's R&D base to increase energy efficiency, reduce carbon emissions and increase energy options. NCCS and NRF have jointly commissioned a series of Technology Roadmaps and earlier Technology Primers to accelerate research to deployment of energy efficiency and low carbon technologies in Singapore.

### LINKS

News release of government funding for energy R&D: <http://www.eco-business.com/news/govt-invest-s100m-research-energy-efficiency/>

Energy NIC: <https://www.nrf.gov.sg/programmes/national-innovation-challenges>

## ENERGY EFFICIENCY MEASURES

### 13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

Agencies monitor and evaluate the progress of the EE programmes and activities under their purview.

### 14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

EMA collects energy data under Electricity, Gas and Statistics Act. NEA collects energy use and GHG emissions data of energy-intensive users in the industrial sector under the Energy Conservation Act.

### 15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

No information.

### 16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

#### **Carbon tax from 2019**

##### OBJECTIVE

A carbon tax will enhance Singapore's existing and planned mitigation efforts under the Climate Action Plan, and stimulate clean technology and market innovation. Currently, emitters in Singapore do not face a cost to release greenhouse gases (GHGs), which contribute to climate change and impacts today's and future generations. The carbon tax will provide a price signal on GHG emissions to incentivise emitters to factor in the costs of their GHG emissions in their business decisions, and encourage companies to improve on energy efficiency and innovate.

##### OUTLINE

In 2017, the Singapore Government announced the intent to implement a carbon tax on the emission of greenhouse gases from 2019. The tax will generally be applied upstream, for example, on power stations and other large direct emitters, rather than electricity users. The expected tax rate is between \$10 and \$20 per tonne of greenhouse gas emissions. Details are pending the results of industry consultation.

##### LINKS

Carbon pricing: <https://www.nccs.gov.sg/climate-change-and-singapore/domestic-actions/reducing-emissions/carbon-pricing>

Public consultation regarding carbon tax: <https://www.nccs.gov.sg/public-consultation>

### 17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

- **Mandatory Energy Management Practices under the ECA – Apr 2013**
- **Enhancements to the ECA – Jun 2017**

## OBJECTIVE

To help companies adopt more energy-efficient processes, so that Singapore can achieve its pledge under the Paris Agreement to reduce emissions intensity by 36% from 2005 levels by 2030, and stabilise GHG emissions with the aim of peaking around 2030.

## OUTLINE

### Mandatory Energy Management Practices under the ECA

Energy-intensive users in the industrial sector that consume 54TJ or more of energy annually in at least two out of the three preceding years have to comply with the following requirements:

- Appoint at least one certified energy manager.
- Monitor and report energy use and GHG emissions annually.
- Develop an energy efficiency improvement plan and update the plan annually.

### Enhancements to the ECA

- Large industrial facilities are required to submit a monitoring plan for NEA's approval and an enhanced GHG emissions report based on the approved monitoring plan. In addition, facilities have to adopt specified methodologies, in line with international best practices and internationally recognised protocols such as the World Resources Institute's Greenhouse Gas (GHG) Protocol, International Standards Organisation (ISO) and the Intergovernmental Panel on Climate Change (IPCC) guidelines.
- New industrial facilities and major expansions with potentially large energy consumption will be required to review the facility design for energy efficiency and report the energy performance of key energy-consuming systems using measured data. Existing facilities under the ECA will be required to strengthen their energy management practices by implementing a structured energy management system and conducting periodic energy efficiency opportunities assessments.
- Minimum Energy Performance Standards (MEPS) will also be introduced for common industrial equipment and systems starting with MEPS for motors from 2018.

## LINKS

Enhancements to the ECA: <http://www.nea.gov.sg/corporate-functions/newsroom/news-releases/enhancements-to-the-energy-conservation-act>

## **Incentives and grants**

### OBJECTIVE

Encourage uptake of energy-efficient equipment and technologies

### OUTLINE

- Energy Efficiency Fund (E2F) – This fund supports the energy efficiency efforts at industrial facilities, namely efficient design of new facilities, conducting of energy assessments, and adoption of energy

efficient equipment and technologies. E2F provides up to 50% co-funding for industrial companies to review the design of their new facilities to integrate energy and resource efficiency improvements as well as to carry out periodic energy assessments to understand their energy consumption patterns and identify potential energy improvement opportunities. For companies that would like to replace their existing equipment with more energy efficient ones, up to 30% of the project costs could be subsidised.

- Energy Efficiency Financing Programme: To encourage industrial and manufacturing facilities to adopt energy-efficient equipment or technologies, a third-party financier pays for the cost of energy efficiency projects and the energy savings are shared among all stakeholders.
- The One-Year Accelerated Depreciation Allowance Scheme: This tax incentive scheme allows capital expenditures on qualifying energy-efficient equipment to be written off within one year instead of three.
- The Investment Allowance (IA) Scheme: This tax incentive scheme encourages companies to replace old energy-consuming equipment with more energy-efficient equipment by allowing an additional 30% of investment allowance to be deducted from the companies' taxable income.

## LINKS

Energy Efficiency Fund: [http://www.e2singapore.gov.sg/Incentives/Energy\\_Efficiency\\_Fund.aspx](http://www.e2singapore.gov.sg/Incentives/Energy_Efficiency_Fund.aspx)

List of other programmes to incentivise energy efficiency in industry: [https://www.spring.gov.sg/NewsEvents/Events/Documents/SS\\_ISO50001/7-Industrial%20EE%20Programmes-NEA.pdf](https://www.spring.gov.sg/NewsEvents/Events/Documents/SS_ISO50001/7-Industrial%20EE%20Programmes-NEA.pdf)

## SME Energy Efficiency Initiative

### OBJECTIVE

In 2013, the Singapore government launched the SME Energy Efficiency Initiative as one of the solutions to assess, monitor and improve the energy performance of small and medium enterprises (SMEs).

### OUTLINE

Developed by SPRING Singapore and led by SEAS, this S\$17 million-dollar initiative brings together existing government grants to help SMEs reduce their energy costs, increase productivity, and promote energy efficiency. The grant provides funding for Energy Audit, Energy Monitoring System, Energy Efficiency Project Implementation and Energy Efficiency Thought Leadership.

## LINKS

SME Energy Efficiency Initiative: <http://www.seas.org.sg/SME3/index.php/about-smeee-initiative/>

## 18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

Since the transport sector accounts for a substantial and growing share of total energy use and carbon emissions, the government supports energy efficiency through various measures, including: investing in new mass rapid transit (MRT) lines, upgrading existing facilities, central bus planning, bus priority schemes, tightening quality of service standards, and enhancing commuter information.



## Land Transport Master Plan (LTMP) 2013

### OBJECTIVE

By 2030 the key objectives are the following:

- Length of cycling paths: 700 km
- Modal share of journeys made via public transport during peak hours: 75%
- Length of rail network to double to 360 km
- 80% of households within a 10-min walk from MRT stations

### OUTLINE

Beyond Land Transport Master Plan (LTMP) 2013, the Land Transport Authority (LTA) has embarked on the Walk Cycle Ride (WCR) SG strategy to build a car-lite Singapore that is so well-connected that commuting needs can be met without having to own a car. The commuting experience is more than just getting from point A to B and it becomes a meaningful part of the day and the community

### LINKS

LTMP: <https://www.lta.gov.sg/content/ltaweb/en/about-lta/what-we-do/ltmp2013.html>

WCR SG: <https://www.mot.gov.sg/Transport-Matters/Public-Transport/Walk-Cycle-Ride-SG/>

## Other energy efficiency initiatives in the transport sector

### OBJECTIVE

Incentivise energy efficiency in transport sector.

### OUTLINE

- Managing car ownership and usage by limiting the growth of vehicle numbers through the Vehicle Quota System (VQS), refining the Electronic Road Pricing (ERP) system with the ERP 2.0 which is a satellite-based ERP system, and further developing Intelligent Transport System (ITS) solutions.
- Testing new technologies such as the Diesel Particulate Filter (DPF), diesel-hybrid buses, vehicle emission test laboratory and electric cars.
- Developing a Green Framework for the Rapid Transit System (RTS). The Green Mark provides a systematic and structured approach in evaluating and rating the environmental performance of the RTS for existing and future lines.
- Vehicle Emissions Scheme (VES). VES will take over from Carbon-Emissions Vehicle Scheme (CEVS) from 1 Jan 2018 onwards and include emissions of harmful air pollutants on top of carbon dioxide.
- Fuel Economy Labelling Scheme (FELS). Since 2012, any passenger and light-goods vehicles sold in Singapore has to show a Fuel Economy Label that provides information on its fuel efficiency to help

buyers make better decisions. Fuel economy labels will be re-designed to help potential vehicle buyers make informed decisions in choosing cleaner, more fuel-efficient cars in 2018.

- The BlueSG: Singapore's First large-scale Electric Vehicle Car-sharing Scheme. 1,000 shared electric vehicles and 2,000 charging points to be deployed across all HDB towns by 2020. The first phase of the scheme will be launched in 2H 2017 with 125 Bluecars and 200 charging points. This lays the foundation for nation-wide EV charging infrastructure (20% of charging points opened to public).

## LINKS

Transportation schemes to encourage energy efficiency:

<https://www.lta.gov.sg/content/ltaweb/en/roads-and-motoring.html>

<http://www.e2singapore.gov.sg/Transport.aspx>

Fuel-efficient technologies for vehicles:

<https://www.lta.gov.sg/content/ltaweb/en/roads-and-motoring/transport-options-for-motorists/encouraging-green-vehicles/adopting-fuel-efficient-technologies.html>

## 19. BUILDING ENERGY EFFICIENCY INITIATIVES

### **BCA Green Mark Scheme**

#### OBJECTIVE

The Building and Construction Authority (BCA), a statutory board under the Ministry of National Development, spearheads energy efficiency improvements in the building sector.

The BCA Green Mark scheme is a green building rating system launched in 2005 to promote sustainability in the built environment and raise environmental awareness among developers, designers and builders.

#### OUTLINE

It is a benchmarking scheme that evaluates a building on its environmental impact and performance. There are four ratings under this scheme – Platinum, Gold Plus, Gold and Certified. Since 2008, all new and existing buildings with a gross floor area of 2000 m<sup>2</sup> that are undergoing major retrofitting must minimally meet the Green Mark Certified standard.

#### LINKS

BCA Green Mark scheme: [https://www.bca.gov.sg/greenmark/green\\_mark\\_buildings.html?p=building](https://www.bca.gov.sg/greenmark/green_mark_buildings.html?p=building)

### **Public Sector Sustainability Plan**

#### OBJECTIVE

The public sector will continue to take the lead charting Singapore's strategies for a more carbon-efficient and being a good steward of our resources. Under the Public Sector Sustainability Plan, launched by MEWR in 2017, the Government aims to achieve electricity savings of 15.0% by FY2020 from the baseline electricity consumption

in FY2013. Thus far, agencies have committed electricity saving measures that will collectively lead to 15.2% electricity savings by FY2020. These include “hardware” improvements, such as replacing or upgrading air-conditioning systems and lightings, and “software” actions, like promoting organisational habits that minimise electricity consumption.

The annual energy savings from the Government’s committed measures amount to 290 GWh. This is sufficient to power 50,000 households for an entire year.

## OUTLINE

Each ministry is required to submit reduction targets and management plans to meet the targets. In addition, new public sector buildings with an air-conditioned area equal or exceeding 5,000m<sup>2</sup> are required to attain the BCA Green Mark Platinum Standard - the highest rating possible. Existing large and mid-sized public sector buildings are required to achieve BCA Green Mark GoldPlus and Gold respectively via retrofitting by 2020.

## LINKS

Public Sector Sustainability Plan:

[http://www.e2singapore.gov.sg/Programmes/Public\\_Sector\\_Taking\\_the\\_Lead\\_in\\_Environmental\\_Sustainability.aspx](http://www.e2singapore.gov.sg/Programmes/Public_Sector_Taking_the_Lead_in_Environmental_Sustainability.aspx)

## Green Building Masterplan

### OBJECTIVE

In its third and latest Green Building Masterplan launched in September 2014, BCA set out ambitious plans accelerate the green building agenda and continue to meet the national target of greening 80% of the buildings in Singapore by 2030. The existing incentives include the following:

### OUTLINE

- S\$50 Million Green Mark Incentive Scheme for Existing Buildings and Premises – Launched in 2014, this is targeted to encourage small and medium enterprises (SMEs) tenants and building owners, or building owners with at least 30% of SME tenants to adopt energy efficiency improvement measures. The scheme co-funds up to 50% of the retrofitting cost for energy improvements, or up to S\$3 million for building owners and S\$20,000 for tenants.
- Building Retrofit Energy Efficiency Financing (BREEF) Scheme – Introduced in 2011 to offer financing aid through an energy performance contract arrangement to offset high upfront costs of energy efficiency retrofits. With the scheme, applicants can obtain financing from participating financial institutions and service the loans through energy savings.
- Green Mark Gross Floor Area Incentive Scheme – To encourage private sector to achieve higher-tier Green Mark ratings, additional floor area will be granted for private developments with Green Mark Platinum or Gold plus from April 2014 to April 2019.
- S\$5 Million Green Mark Incentive Scheme, Design Prototype – Valid from Dec 2014 to Dec 2018, this aims to encourage developers and building owners to strive for greater energy efficiency in buildings

at the design stage, by providing funding support to engage consultants to during the design phase for green buildings.

- S\$100 Million Green Mark Incentive Scheme for Existing Buildings - For building owners of existing private commercial developments to implement energy efficient solutions and to conduct energy audit in their existing buildings

## LINKS

Green Building Masterplan: <https://www.bca.gov.sg/Professionals/Technology/technology.html>

## Building energy codes and standards

### OBJECTIVE

To improve energy efficiency of buildings, with regular review to make sure they are in line with international standards.

### OUTLINE

Singapore's building codes and standards have been regularly updated to encourage improvement in energy efficiency of buildings. Currently, building owners are required to conduct energy audits on their air-conditioning systems every 3 years to ensure that they are operating at the designed efficiency levels. Since 2013, Singapore abolished the British Standards and adopted the Eurocodes, one of the world's most technically advanced design standards, as its building codes to raise the standards of the building industry. Since 2014, all new buildings are mandated to register 28% improvement in energy efficiency compared to code compliant building while existing buildings are to register 25% improvement in energy efficiency.

## LINKS

Minimum green mark standard for existing buildings:

[https://www.bca.gov.sg/envsuslegislation/others/minimum\\_standards.pdf](https://www.bca.gov.sg/envsuslegislation/others/minimum_standards.pdf)

BCA building code: [https://www.bca.gov.sg/Newsroom/pr25032013\\_EC.html](https://www.bca.gov.sg/Newsroom/pr25032013_EC.html)

## 20.ENERGY EFFICIENCY COOPERATION

### COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Cooperation with the International Energy Agency (IEA), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, and the United Nations Environment (UN Environment): Sustainable Building and Climate Initiative (SBCI) have been initiated to facilitate the transfer of technologies, policies, and exchange of the best practices in energy efficiency as well as other aspects of sustainable development.

- Sustainable Energy Association of Singapore (SEAS) and the Institution of Engineers Singapore (IES) for the Singapore Certified Energy Manager Programme.

- Cooperation with the Singapore Green Building Council (SGBC): SGBC-BCA Green Individual Award recognises the contributions of professionals and individuals who have been leading the green building movement in Singapore.

#### BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

Singapore actively participates in multilateral forums on energy such as the APEC Energy Working Group, ASEAN, and the East Asia Summit (EAS) Energy Cooperation Task Force (ECTF).

Singapore joined IEA as an association country in 2016. Singapore and IEA organised a 5-day EE Training Week in 2017 as the first activity under the Singapore-IEA Regional Training Hub launched in October 2016 at the Singapore International Energy Week by Minister for Trade and Industry (Industry) Mr S Iswaran and IEA Executive Director Dr Fatih Birol. The Regional Training Hub taps on Singapore's strategic location to provide the region with greater access to IEA's expertise and training programmes.

Singapore also hosted several EE workshops under the Singapore Cooperation Programme (SCP) and participated in workshops. See more details in Singapore's 2nd Biennial Update Report (BUR).

#### LINKS

Singapore's 2nd Biennial Update Report: [http://www.nea.gov.sg/docs/default-source/energy-waste/climate-change/second-biennial-update-report-\(16-dec-2016\).pdf](http://www.nea.gov.sg/docs/default-source/energy-waste/climate-change/second-biennial-update-report-(16-dec-2016).pdf)

## 21. OTHER ENERGY EFFICIENCY EFFORTS

Household sector:

- Under the ECA, registrable household appliances that are sold in Singapore must show the mandatory energy label, which displays the energy rating of an appliance by the number of ticks (from 1 to 5, with 5 being the most energy efficient). This Mandatory Energy Labelling Scheme currently covers household refrigerators, air conditioners, clothes dryers, televisions, and lamps.
- Household refrigerators, air conditioners, clothes dryers, and lamps supplied in Singapore must meet the Minimum Energy Performance Standards (MEPS).
- Launched in 2012, the HDB Greenprint programme aims to guide greener HDB town development, and create sustainable homes. Under the programme, features such as solar panels, rainwater harvesting system, retrofitted lifts with energy regeneration system that reduced energy consumption by 20% and retrofitted LED street lights which halved the energy consumption have been introduced.

#### LINKS

Mandatory Energy Labelling Scheme: <http://www.e2singapore.gov.sg/Households.aspx>

HDB Greenprint programme: <http://www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint>