

APEC Project Update Hong Kong, China

7 October 2021

**THE 57TH MEETING OF THE APEC EXPERT
GROUP ON ENERGY EFFICIENCY &
CONSERVATION**

HKC APEC Projects

A

Project In Progress

1. APEC Funded Project on Energy Intensity Reduction in the APEC Region's Urbanised Cities [EWG 08 2019A]
2. APEC Self-funded Project on APEC Workshop on District Cooling and/or Heating Systems (DCHS) [EWG 08 2019S]
3. APEC Funded Project on Capacity Building Workshop on Retro-commissioning (RCx) [EWG 09 2020A]

B

Project Proposal for Session 1, 2021

1. APEC Funded Project on Promoting Energy Efficient and Resilient Data Centre in the APEC Region

Energy Intensity Reduction in the APEC Region's Urbanised Cities [EWG 08 2019A] – In Progress

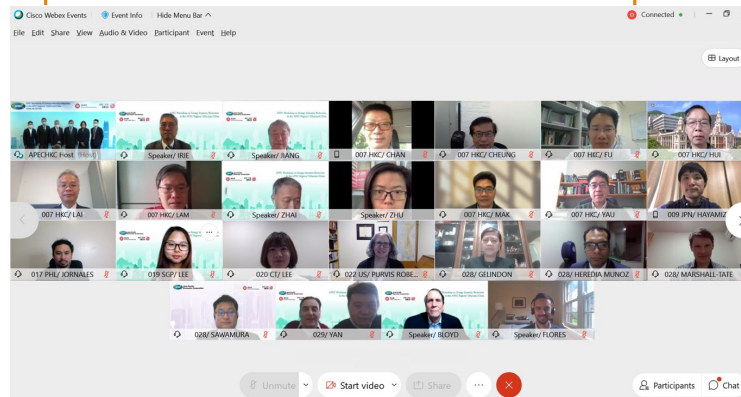
Project Status

Conceptual Study

- Conceptual study was completed and report was submitted on 24.8.2020.
- Energy intensity reduction performance in APEC member economies' urbanised cities was analysed.
- Seven cities in APEC region were shortlisted for the study.

Workshop

- Workshop was conducted on 23.3.2021
- over 100 participants from 12 APEC member economies and 7 organisations attended the Workshop



Final Study

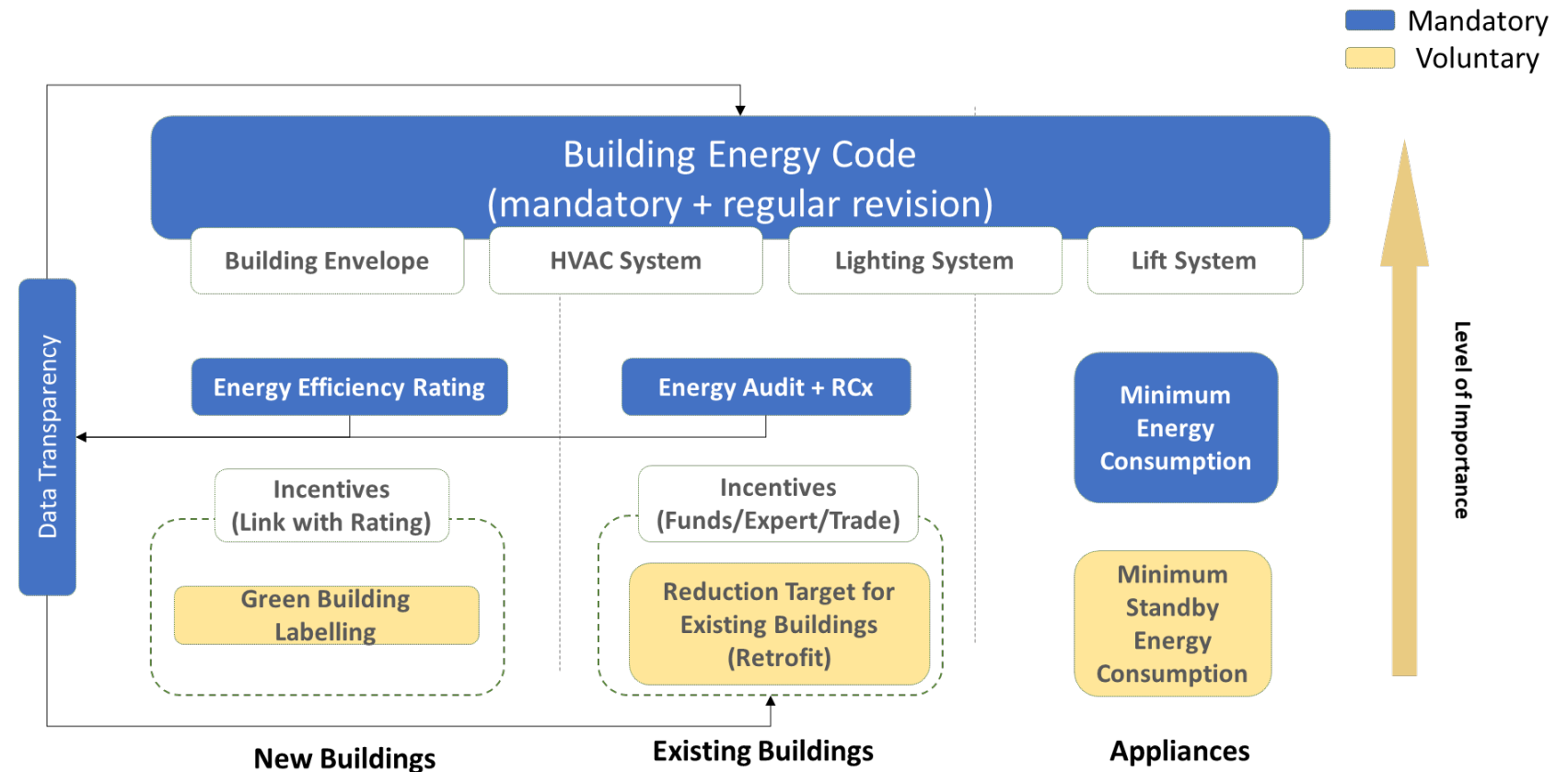
- Final Study Report is under circulation for comment by the selected economies and will be updated by this month.
- Key drivers to accelerate aggregated energy intensity reduction was highlighted in the report.
- A framework was recommended for policy makers

Key Drivers Identified for successful energy intensity reduction

Key Drivers
Building Energy Code and Policy
Green Building Standards
Data Disclosure to Public (Benchmarking)
Periodic Data Reporting (Energy Audit)
Reduction Target for Existing Building (Trade/Policy)
Appliances Energy Labelling
Government Leadership
Tenant Program

Recommended Policy Framework

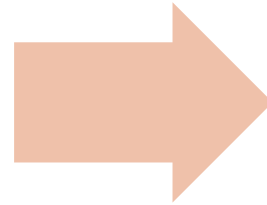
1. Building Energy Code as the mandatory foundation of the policy infrastructure.
2. Data Reporting and Data Disclosure.
3. Advanced Performance Target Supported with Incentives
4. Minimum energy performance shall be established to regulate the energy consumption for appliances.



Project Status

Workshop

- Workshop was conducted on 17.11.2020
- Supported collaboration of EGEDA and EGEEC
- over 110 participants from 15 APEC member economies and 16 organisations



Workshop Summary

- Workshop Summary was completed and submitted on 6.7.2021
- The deployment of DCHS is encouraged for its proven and cost-effective solution to reduce energy consumption and peak load cooling or heating demand.
- Technical suggestions for engineers and recommended frameworks are provided for policy makers.



APEC Capacity Building Workshop on Retro-commissioning (RCx) [EWG 09 2020A] – In Progress

Project Scopes

- Provide a platform for fostering the growing importance of RCx from the perspective of improving energy efficiency in driving progress toward meeting the energy intensity reduction goal of APEC and increasing employment opportunities and economic activities post COVID-19.
- Organize a capacity building workshop cum training to share retro-commissioning (RCx) guidelines and developments.

Project Objectives

- Share the experience and best knowledge-based practices of RCx in achieving APEC aspirational target of reducing aggregate energy intensity by 45 percent from 2005 levels by 2035 and Statement on COVID-19 by APEC Ministers Responsible for Trade.
- Build capacity by collaborating with policy-makers, experts, academia, international organisations, practitioners and related stakeholders in developing RCx implementation frameworks, guidelines, and training programmes in pursuing facilitative measures that will expedite economic rebound.

APEC forum:	EWG / EGEEC
Co-sponsoring economies:	Japan; Singapore; Thailand; The United States; Viet Nam
Expected Start Date:	May 2021
Project Completion Date:	June 2022
Project Cost:	USD 234,753

APEC Capacity Building Workshop on Retro-commissioning (RCx) [EWG 09 2020A] – In Progress

Call for Nomination Soon !

Tentative Agenda

Workshop on **20 Jan 2022**

20/01/2022 (HKT)	Sessions	Speaker / Moderator
13:30 – 17:25	Topic 1: Hong Kong China	Representative from Electrical and Mechanical Services Department, Hong Kong China
	Topic 2: The United States	Representative from the US Green Building Council
	Topic 3: China	Professor WEI Qing Peng, Professor, Tsinghua University
	Plenary Session & Discussion 1	
	Tea Break	
	Topic 4: Singapore	Prof. Lam Khee Poh Dean of School of Design and Environment National University of Singapore
	Topic 5: Japan	Representative from the Japan - Harunori YOSHIDA, Chairman of Building Services Commissioning Association
	Topic 6: (TBC)	(TBC)
	Plenary Session & Discussion 2	

Training on **21 Jan 2022**

21/01/2022 (HKT)	Sessions
10:00 – 16:00	Session 1: Environment and Machine - Current Actions and Future Plan on RCx Journey - Latest Development of Smart Technology on Energy Efficiency & RCx
	Session 2: Material - Data Management and Utilisation - Big Data Analytics and Modelling
	Session 3: Manpower - Capacity Building for RCx Professionals in The Industry - Professionalism and Readiness of The Industry in Adopting RCx
	Session 4: Method and Monetary - Strategies towards RCx Target - Successful Factor

Promoting Energy Efficient and Resilient Data Centres in the APEC Region [APEC Funded Project for Session 1, 2021]

Background

- New normal, including working from home, e-learning, e-commerce and e-shopping, has created the need for more use of IT and data centre services.
- In accordance with IEA Data Centre and Data Transmission Network Tracking Report in June 2020, the global internet traffic surged by almost 40% between Feb and Apr 2020. This growth comes on top of the rising demand for digital services over the past decade. However, rapid improvements in energy efficiency have helped limit energy demand growth from data centres and data transmission networks, which accounted for around 1% of global electricity use in 2019.
- Under “Digital Economy and Technology” of the APEC 31st Ministerial Meeting 2020, SOM instructs Senior Officials to accelerate the implementation of the APEC Internet and Digital Economy Roadmap (AIDER) and welcome the APEC Roadmap on Digital Financial Inclusion.

Project Scope

- Analyse the energy efficiency and resilience policies, international guidelines and standards, practices and the deployment of I&T technologies for the data centre enable the “Digital Economy and Technology”.
- Organize a capacity building workshop to share policies, standards, guidelines, best practices and advance technology for the deployment of green data centre.

Status

- Responded to PMU’s QA.

APEC forum:	EWG / EGEEC
Co-sponsoring economies:	People’s Republic of China; Indonesia; Singapore; Thailand; the United States
Expected Start Date:	<i>October 2021</i>
Project Completion Date:	December 2022
Project Cost:	USD 276,944

THANK YOU!

APEC Workshop on District Cooling and/or Heating Systems (DCHS) [EWG 08 2019S]

From a technical perspective, engineers and designers can consider adopting the following measures when planning and designing DCHS:

- Make use of diversified cooling and heating load and frequency of load occurrence profile in optimising the equipment configuration
- Improve the central plant efficiency through Combined Cooling, Heating & Power (CCHP) and heat recovery technology, such as heat pump
- Trim down peak cooling load and optimise equipment installed capacity, increase system resilience and reduce plant operation cost by adopting thermal storage, in particular for districts with peak and off-peak electricity tariff
- Integrate renewable energy, such as photovoltaics technology, to offset carbon emission
- Adopt seawater cooling to increase the overall DCHS COP, as well as to reduce heat island effect by reducing heat rejection in the ambient air
- Ring pipe network design with leakage detection to prevent a single point of failure and ensure reliability of the system

The frameworks and regulations to be considered are summarised below:

- Mapping heating and cooling demand and DCHS block load annual profile to identify the viability of adopting DHCS
- Public-Private Partnership with design, build, operation and transfer model has been proven to be useful to engage service providers
- Establish and improve regulations and standards on technical design through data feedback from existing plants
- Transparent tariff scheme in terms of maximum demand charge, variable energy charge with reward and penalty to encourage continuous energy saving from end-users as well as to ensure a more stable return temperature from end-users
- Provide training and share experiences to the stakeholders involved, including designers, service providers, operators and maintenance personnel.