



Building a Smart and Sustainable Singapore

TECHNICAL EXPERT MEETING – MITIGATION

9 MAY 2017

LINDA SIOW, NATIONAL CLIMATE CHANGE SECRETARIAT, STRATEGY GROUP

PRIME MINISTER'S OFFICE, SINGAPORE

Outline

- Background
 - Singapore's Approach to Mitigation
- Singapore as a Smart Nation and Living Lab
 - Solar Nova Programme
 - Smart Homes
 - Urban Mobility

Singapore: Small Island Urban City-State



- Small land size: 719km²
- High urban density
- No natural resources
- Limited alternative energy options



Whole-of-Government Approach

Inter-Ministerial Committee on Climate Change (IMCCC)

Chair: Deputy Prime Minister Teo Chee Hean

IMCCC Executive Committee

**International
Negotiations Working
Group**

**Long-Term Emissions &
Mitigation Working
Group**

**Resilience Working
Group**



STRATEGY GROUP
PRIME MINISTER'S
OFFICE



Ministry of the Environment
and Water Resources



MINISTRY OF FOREIGN AFFAIRS
SINGAPORE



MINISTRY OF
TRANSPORT
CONNECTING SINGAPORE



MINISTRY OF FINANCE
SINGAPORE



National
Environment
Agency
Safeguard • Nurture • Cherish

Land Transport Authority



Building and Construction Authority



Overview of Mitigation Efforts

Power generation

- Adopt more efficient technologies
- Encourage solar test-bedding and research

Households

- Mandatory Energy Labelling Scheme (MELS)
- Minimum Energy Performance Standards (MEPS)

Buildings

- Green Mark Certification for 80% of buildings by 2030
- Improve energy efficiency of building tenants

Waste and water

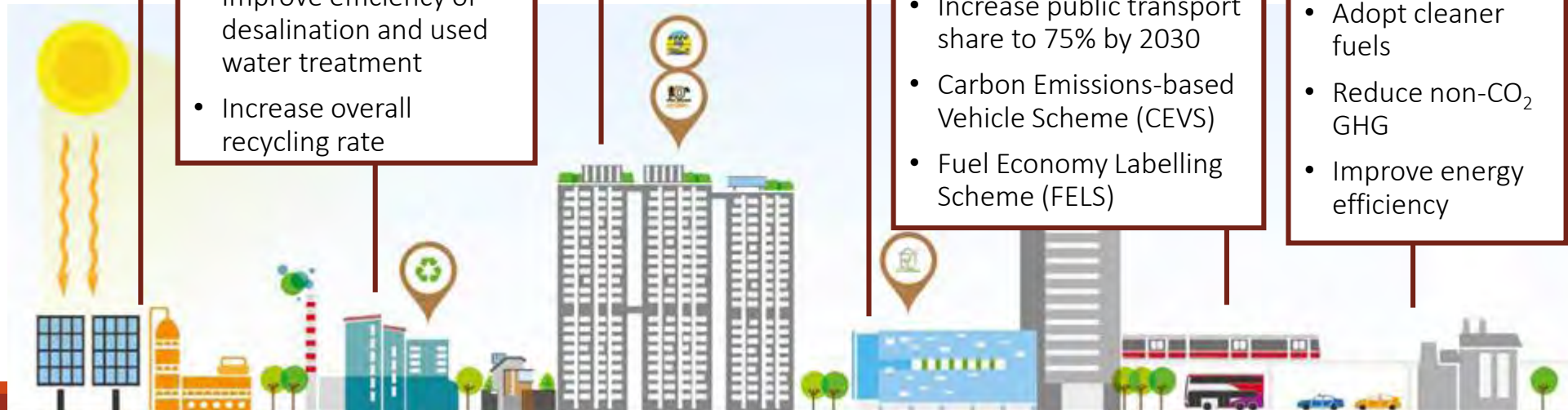
- Improve efficiency of desalination and used water treatment
- Increase overall recycling rate

Transport

- Increase public transport share to 75% by 2030
- Carbon Emissions-based Vehicle Scheme (CEVS)
- Fuel Economy Labelling Scheme (FELS)

Industry

- Adopt cleaner fuels
- Reduce non-CO₂ GHG
- Improve energy efficiency



Singapore as a Living Lab



Solar Nova

- Accelerates solar deployment through promoting and aggregating solar demand across government agencies
 - Singapore does not have space for large solar farms; panels are deployed on individual rooftops
- Innovative business model where private sector installs, owns and operates solar systems
 - Electricity sold to government agencies through a power purchase agreement
 - First tender of 76MWp awarded in Dec 2015 for deployment on 831 public housing blocks and 8 government facilities
- Supported by Solar Energy Research Institute of Singapore (SERIS)
 - Technical feasibility studies
- Test-bed on floating solar panels on reservoirs



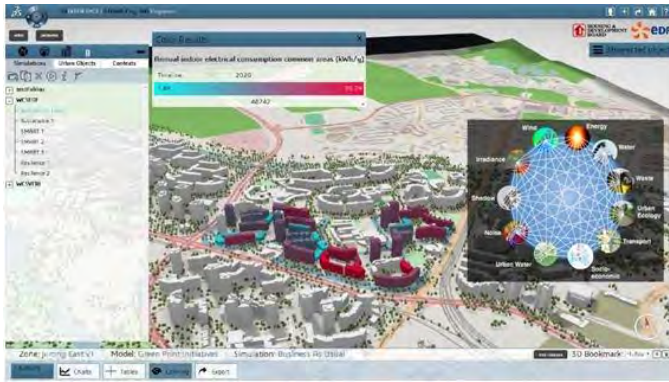
Smart Homes

- ~80% of Singapore's population live in public housing, i.e. Housing & Development Board (HDB) flats
- Smart HDB Town Framework leverages Information and Communication Technology to make HDB towns and estates more liveable, efficient, sustainable and safe
 - Smart Planning
 - Smart Environment
 - Smart Estate
 - Smart Living



Punggol Eco-Town

- Emerging town with many new developments in the pipeline
- Opportunities to test and implement urban solutions



3D Simulation Modelling



Home Energy Management Systems



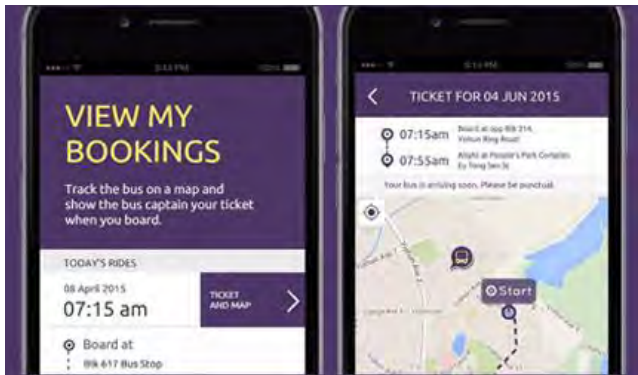
Smart Fans



Smart Lighting

Urban Mobility

- Singapore aims to be a car-lite nation, with a target of 75% public transport modal share



Beeline SG



Autonomous/
Self-Driving Vehicles



Electric Vehicle Car-
Sharing Test-Bed



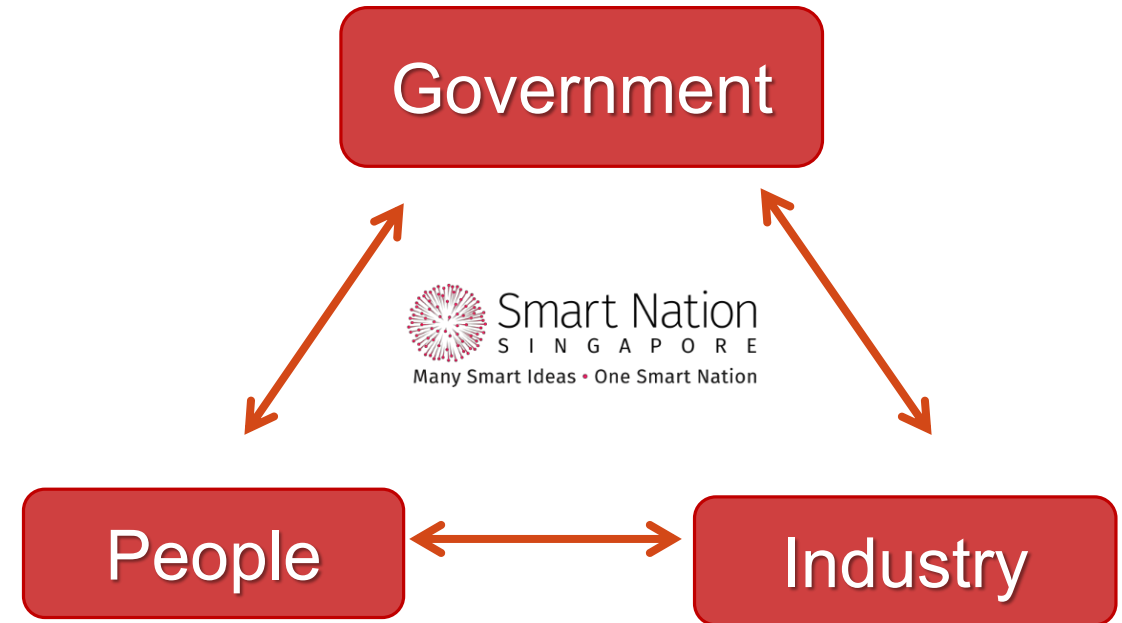
Transport Apps

Smart Nation



“Our vision is for Singapore to be a **Smart Nation**. A nation where **people live meaningful and fulfilled lives, enabled seamlessly by technology, offering exciting opportunities for all.**”

– Prime Minister Lee Hsien Loong at the launch of the Smart Nation initiative on 24 Nov 2014



Thank You!