How Standards & Conformance Support National Energy Efficiency Objectives:

THE SINGAPORE EXPERIENCE

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Our National Quality Infrastructure

Build Trust in Singapore Products, Services and Enterprises to Drive Economic Growth

Key Outcomes

- Quality Products
- Excellent Organizations
- Market Opportunities
- Safety, Health & Social

QUALITY & EXCELLENCE FRAMEWORK: 3 PILLARS

STANDARDS
- Int’l & SG Standards
- Biz Excellence Standards
- Measurement Standards @ A-STAR

CONFORMANCE
- Accreditation
- Testing & Inspection*
- Certification*
- Calibration*

REGULATIONS
- Consumer Product Safety
- Weights & Measures
- Regulatory requirements by other regulators

* Private sector

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Current State in Singapore

Committed to reduce our Emissions Intensity by 36% by 2030

Ranked 113 of 140 countries for carbon emissions per GDP$

- Accounts for <0.2% of annual global carbon emissions

Limited alternative energy sources

- >90% of electricity generated from natural gas.
  Aim to increase solar deployment to 350MWp by 2020

Energy efficiency across sectors is a key strategy

- No subsidies for energy costs

Based Singapore Energy Statistics 2015

Measures such as the Energy Conservation Act, Greenmark, and solar deployment support EE.
Standards are a Policy Option for EE

SG deploys a range of tools including mandatory regulations, capability-building, research test-bedding to support EE.

Voluntary standards is also a policy tool to achieve national objectives in EE.

SPRING brings together industry, regulators, academia, consumers to identify, develop and promote EE standards

We use international standards where applicable. Where none are available, we develop national standards, taking into account local needs & current technology

EXAMPLES

Regulators use EE standards to define:

a) Best practices so organisations can institutionalise procedures, and tools to track, analyse & improve EE

b) Minimum energy performance of equipment used in

c) Test methods of home appliances

d) Green Mark Assessment Criteria to speed up pace of green building development
Examples of S&C Supporting EE Policies

**HOUSEHOLDS**

- NEA stipulates minimum energy performance for certain products.
- NEA uses ISO/IEC standards for ACs, refrigerators, clothes dryers, TVs, lamps.
- NEA uses SAC accredited labs & labs accredited by SAC’s MRA partners.

**BUILDINGS**

- BCA promotes green buildings through the Greenmark.
- The Greenmark refers to EE standards for building services & equipment, mechanical ventilation, ACs, lighting etc.
- BCA appoints assessors to certify buildings to the Greenmark.

**INDUSTRIAL**

- IDA supports green data centres in line with our Smart Nation initiative.
- IDA has identified three product certification bodies for green data centres.

**TRANSPORT**

- LTA promotes the use of green vehicles.
- Electric vehicle charging system.
- Two product certification bodies and two labs accredited for testing of electric vehicles.

**EMA is encouraging the deployment of Solar PV**

- E.g. we have adopted IEC standard on Photovoltaic module safety qualification which is certified by 2 accredited labs and one product certification body.

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Case Study: Benefits of the BCA Greenmark

- Stipulates minimum EE requirements for new installations and replacements of systems and equipment in buildings, and the criteria for determining compliance
- Covers ACs, heat rejection equipment, water heaters, motor drives & lighting

Promotes sustainable design & operation of building services and equipment

Reduce carbon footprint

Implemented in more than 1,000 commercial & residential buildings

**CITY SQUARE MALL** adopted SS 530. SS 530 impacted the usage and maintenance of chillers most significantly.

Projected annual savings of $320,000 in electricity bills and ROI of >400% in the first year.
Thank You

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National Standardization Programme

Taskforce on Marketing & Communication

Secretariat (provided by SPRING)

12 Standards Committees
- Building & Construction
- Chemical
- Electrical & Electronics
- Information Technology
- Biomedical
- Gen Eng & Safety
- Food
- Management Systems
- Manufacturing
- Silver Industry (Elderly)
- Environment
- Energy

1,600 Standards Partners - Public-Private Partnership -

Private (60%)
Public (40%)

Secretariat (provided by SPRING)
Singapore Accreditation Programme

“One Test/Certification by a Competent Body Accepted Worldwide”

Global Mutual Recognition Arrangement (MRA) on Accreditation

Ensure confidence in technical competency & integrity of service providers

Singapore Accreditation Council

Key Platforms

Calibration & Testing Laboratories  Certification Bodies  Inspection Bodies

Key Industries

Biomed  Chemical  Food  Logistics  Healthcare  Construction  Manufacturing

Key Outcomes

Increase SME market opportunities  Ensure level playing field for SMEs  Promote regulatory acceptance

Reduce costs & time to market  Accredited CABs offering services to SMEs  Over 80% of regulated areas use accreditation
### Examples of S&C for EE in Key Sectors

**HOUSEHOLDS**
- Common international terminology
  - Self-ballasted LED lamps for general lighting services by voltage
  - **Self-ballasted lamps for general lighting services – Performance requirements**
    - **awaiting public comments**
  - One accredited lab and two product certification bodies for the above standards

**BUILDINGS**
- EE performance for building equipment
- Indoor lighting
- Air-conditioning & mechanical ventilation
- Central chilled water system energy efficiency

**INDUSTRIAL**
- Energy management systems
- Energy audits
- Green data centres
- 4 accredited Certification Bodies (CBs) & 6 companies certified by SAC accredited CBs for ISO 50001

**TRANSPOSE**
- Electric vehicle charging system
- Two accredited product certification bodies for electrical vehicle charging system
- Two labs accredited for testing of electric vehicles

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### Clean Energy Standards

- Photovoltaic module safety qualification (SS IEC 61730:2015)
Case Study: Benefits of Adopting ISO 50001

By adopting an ISO 50001 compliant energy management system, organizations can ...

- Make better use of existing energy consuming assets
- Promote EE through the entire supply chain
- Provide integration with other organizational management systems

AVNET ASIA adopted ISO 50001 and undertook energy conservation measures including,
1. Retrofitting centralised aircon systems
2. Warehouse automated lighting system
3. Motion sensors

Projected energy savings of 19,557 KWh (12% of the baseline consumption) per month (Annual cost saving of $60,000)