8. Steps: Use of ICT to make Programmes smarter

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There are special grants available to government departments for 'smart' initiatives that lead to reduced costs for business and government.

What projects would you put forward?

What would be useful for the following 'actors'?

- Regulator/policy maker
  - Assist compliance (monitoring, verification, enforcement)
  - Include Future Proofing

- Industry
  - Ease product entry to market

- Consumers
  - Identify products to suit their needs

- **Good Practice Case Studies follow**

- **An essential component of a SMART standards and labelling programme**

- **Online systems can:**
    - Aid transparency

    - Include automated checking

    - Be part of a formal declaration

    - Facilitate getting products on to the market more quickly

    - Accommodate product innovation

Vietnam's Online Registration System

- \>1000 enterprises

- 21 Categories of products

- \>1000 applications/year

- Prior to automated online system, use of written registrations, Excel, with associated issues.

Vietnam's Online Registration System

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Status Reporting

Tinh trạng hồ sơ

■ Số bản ghi

Loại sản phẩm

Tải về   In

	Loại sản phẩm	Bản thảo	Đã gửi	Đã phê duyệt	Bị trả lại	Bị từ chối	Bị thu hồi	Hết hạn	Không sử dụng	Bị hoãn	Tổng
1	Máy biến áp phân phối	3	0	0	0	0	0	0	0	0	3
2	Bóng đèn huỳnh quang compact	15	0	0	0	0	0	0	0	0	15
3	Bóng đèn huỳnh quang dạng ống	0	0	0	0	0	0	0	0	0	0
4	Chấn lưu	1	0	0	0	0	0	0	0	0	1
5	Quạt điện	4	0	0	0	0	0	0	0	0	4

Program Impact Assessment Tool

Điều hòa không khí	1540	4820	11580	16504
Máy giặt gia dụng				
Nồi cơm điện				
Động cơ điện				
Ti vi				
Máy photo				
Máy in				
Màn hình				
Thiết bị đun nước				
Tổng	1540	4820	11580	16504

Tải các bảng

Lượng tiết kiệm hàng năm

Legend:
- Máy biến áp phân phối
- Bóng đèn huỳnh quang compact
- Bóng đèn huỳnh quang dạng ống
- Chấn lưu
- Quạt điện
- Tủ lạnh / Máy làm lạnh
- Điều hòa không khí
- Máy giặt gia dụng
- Nồi cơm điện
- Động cơ điện
- Ti vi
- Máy photo

▲ 1/2 ▼

Y-axis: Tiết kiệm năng lượng GWh/năm
X-axis: Năm
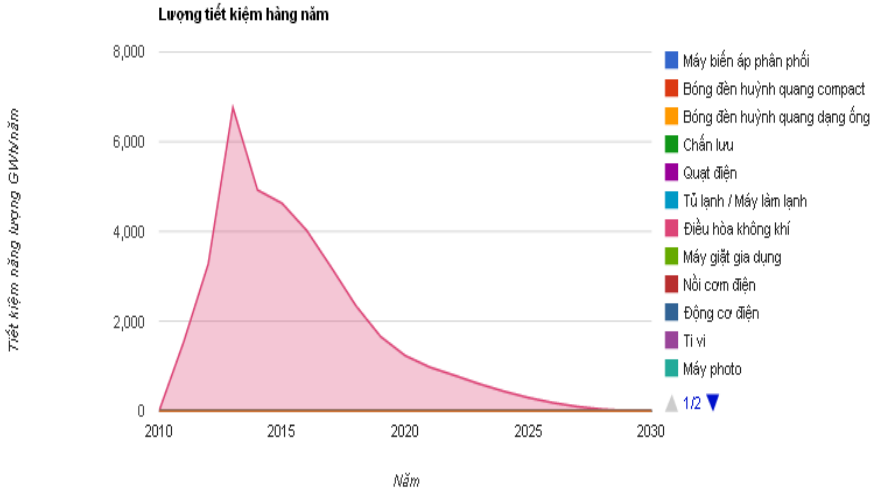
Refrigerator/Freezers

Brand Name		Type	Capacity (Litres)		Cost Calculator	
4 Selected ▾		All ▾	All ▾		Electricity Cost	4000 Dong/kWh
Model name/Number - type in all or part of the model number if known (optional)			Results per page		Show Energy Costs for	10 years
			20 ▾		**Recalculate Costs**	
			Search			

Help on headings **Search for a different product type** **Download CSV**

Search Results

10 Year Running Cost (000,000s Dong)	Brand	Model	Country of Manufacture	Type	Configuration	Defrost Type	Total Volume (litres)	Claimed Energy Consumption (kWh/month)	Star Rating
26.4	AKITO	S002	Vietnam	Combined Refrigerator and Freezer	Upright (vertical)	Frost Free	10	55	5
27.36	KENDO	S002	Vietnam	Combined Refrigerator and Freezer	Chest (horizontal)	Cyclic	28	57	5
27.36	KENDO	S003	Vietnam	Combined Refrigerator and Freezer	Chest (horizontal)	Cyclic	28	57	5

Source:
http://registration.nhanna ngluong.com/Publish

- Fewer mistakes in the application forms and data as there is an automatic checking of data on entry

- Improvements in collecting real market data

- Easier to identify models for check testing based on very high or incorrect claims

  - Helped identify labels that needed to be regraded – e.g. fans and washing machines

Australian registration system
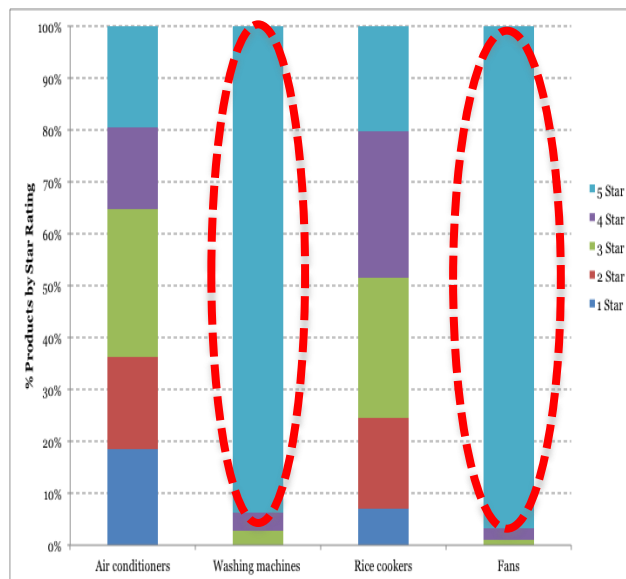
- Background – Australia, NZ, long history of S&L, E3

- Australian (E3) registration database
    - Register products, easier for manufacturers
    - Useful for effective compliance
    - Enables a consumer information port (website, and mobile)

Australian app – lighting example

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BEE Product Database - Portal

Source: Bureau of Energy Efficiency http://www.beestarlabel.com/Home/Searchcompare

BEE Product Database – Product selection, extract

Model			ALL
EER			ALL
Nominal marketing capacity			ALL
star rating			ALL

Export to PDF

S.No	Brand Name	Type	Model Number	EER (W/W)	Nom. Marke. Cap. (Ton)	Coling Cap. (W)	Power Cons. (W)	Approval Date	Valid Till Date	
1	HITACHI	Split air conditioner	RAU518HSDG	3.4	1.5	5410	1590	19-12-2013	31-12-2015	
2	HITACHI	Split air conditioner	RAU318KSD	3	1.5	5200	1735	26-12-2013	31-12-2015	
3	HITACHI	Split air conditioner	RAU312KSDC	3.09	1.0	3371	1090	26-12-2013	31-12-2015	
4	HITACHI	Cassette air conditioner	MRAG518HSD	3.2	1.5	5400	1685	27-02-2012	27-02-2015	
5	HITACHI	Split air conditioner	RAU318KSD-CH	3	1.5	5200	1735	26-12-2013	31-12-2015	
6	HITACHI	Split air conditioner	RAU318KSD-GD	3	1.5	5200	1735	26-12-2013	31-12-2015	
7	HITACHI	Split air conditioner	RAU324HSDA	3	2.0	6950	2320	24-12-2013	31-12-2015	
8	HITACHI	Split air conditioner	RAU318KSDC	3.09	1.5	5275	1705	26-12-2013	31-12-2015	
9	HITACHI	Window air Conditioner	RAV322HSD	2.8	2.0	6160	2200	26-12-2013	31-12-2015	

- **Benefits to:**
  - Regulators
  - Manufacturers
  - Consumers

QR Data Flow in China (CEL)
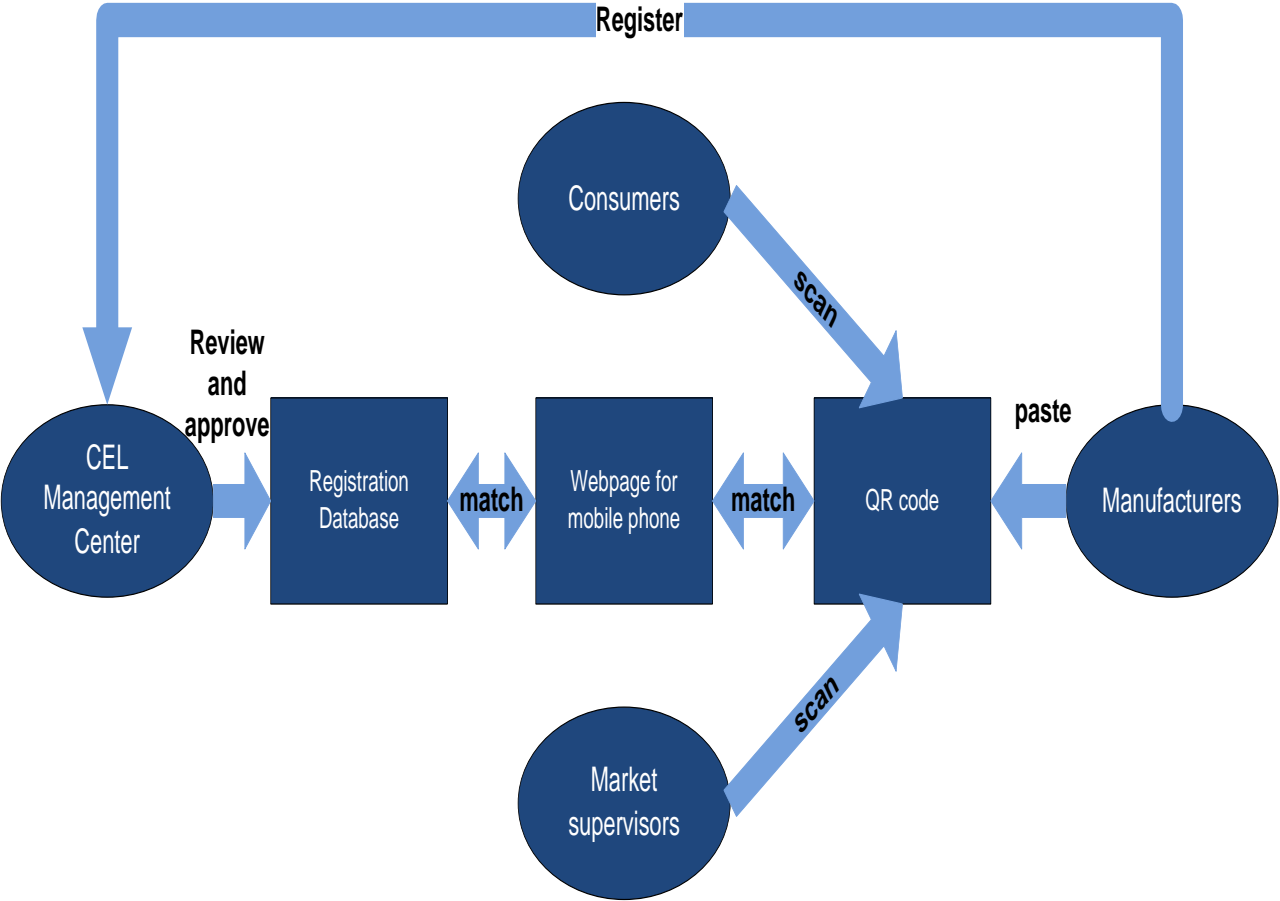
- Consumer can use any QR code scanning APP to access QR CEL
- CNIS has developed a specialised APP to help consumers get more information on energy efficiency

Need for the mobile app

- Impact assessment of India's labeling programme carried out in 2014, identified the following requirements:
  - Increased consumer awareness
  - Informed & Smart decisions by Consumers
  - Consumer feedback mechanisms
  - Market surveillance mechanisms

- Mobile app will provide real-time information

- Easy and improved access to product data

- Supported by US Department of Energy and CLASP under SEAD initiative

Bureau of Energy Efficiency

Key features of the mobile App

- Multi platform mobile app focuses on all products covered under the S&L scheme

- Presents data in a format which is credible, comprehendible and readily accessible

- The app is linked with BEE's registration database and is updated on a daily basis

- Provides a platform to receive real time feedback

Bureau of Energy Efficiency
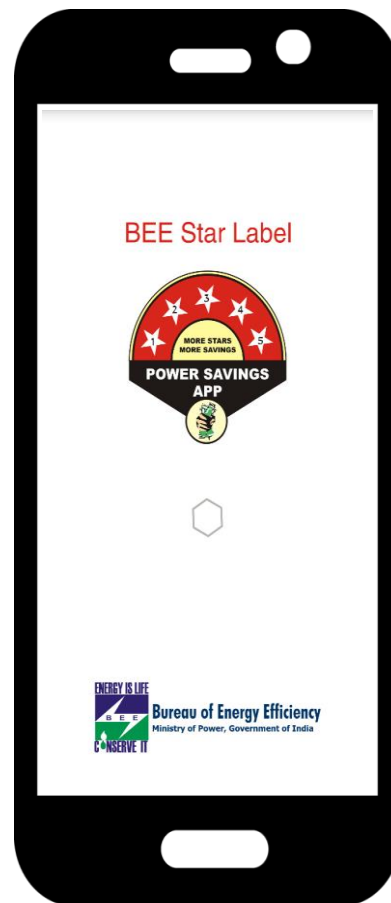
- The App provides energy and cost savings of the labeled appliance using 1 Star as the basis

Bureau of Energy Efficiency

Filter and Settings
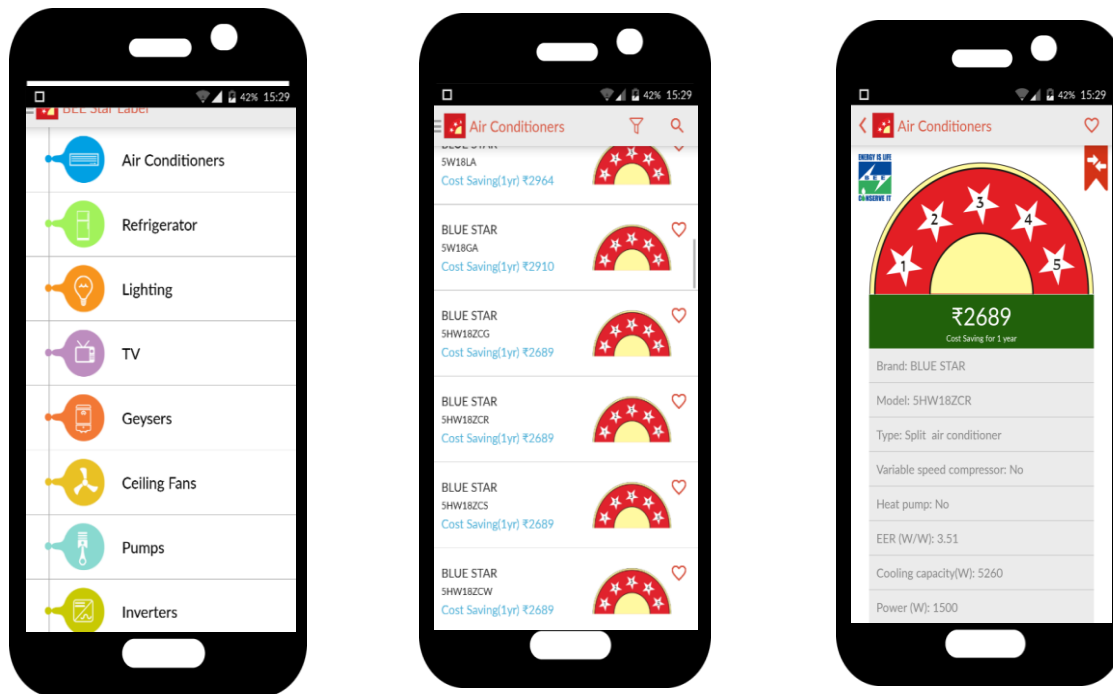
- Allows users to filter products, change the settings and compare products

Consumer Feedback
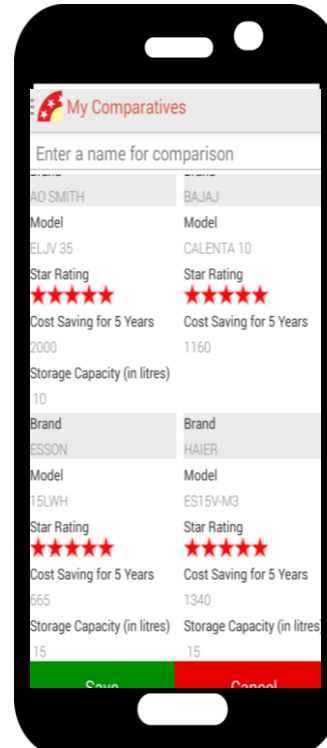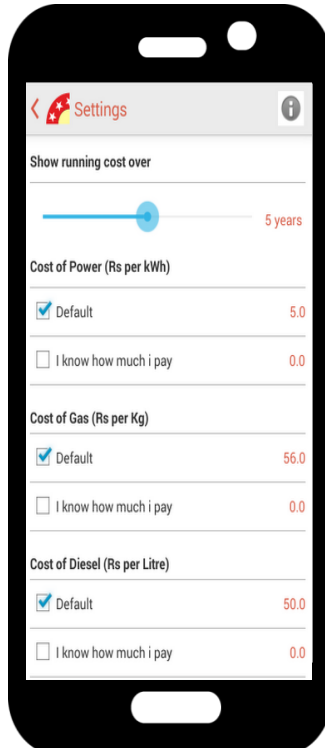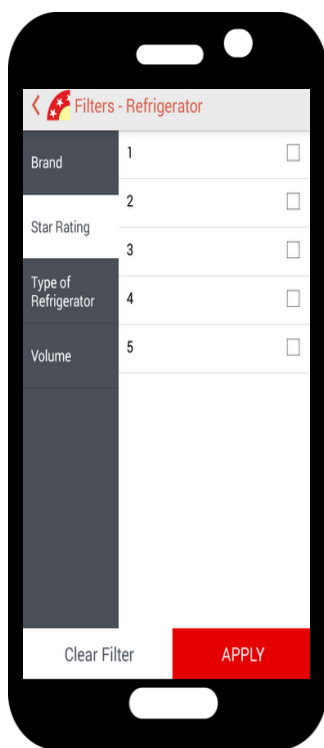
- Users can provide product specific or generic feedback

Bureau of Energy Efficiency
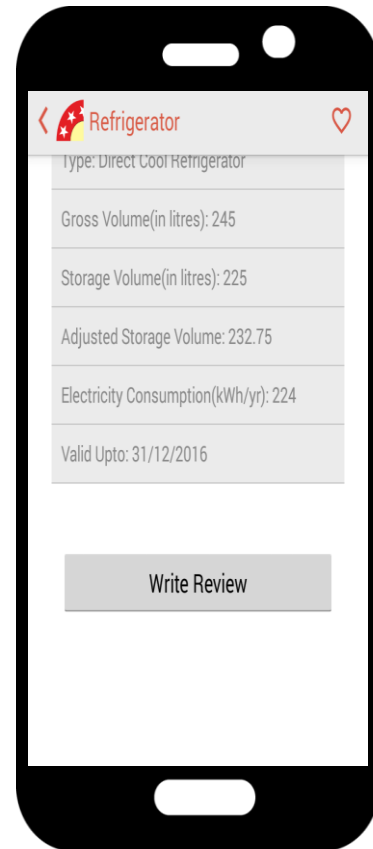
Download the app

- The app can be downloaded at android playstore

- Keywords for searching the app are "BEE Star label", "star rating", "5 star" etc.

Download from:

Bureau of Energy Efficiency

Brief introduction to the world of digitalisation
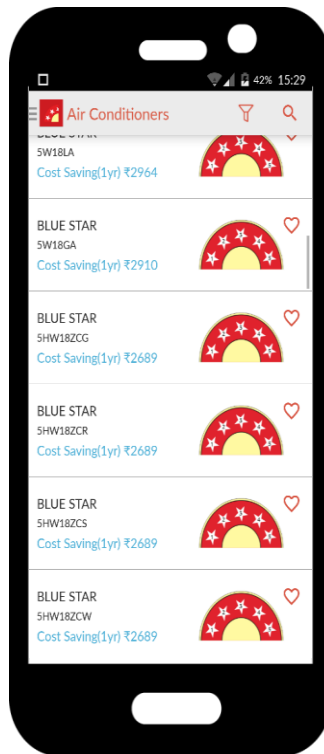
- **Digitalisation** comprises:
  - **Data:** digital information
  - **Analytics:** the use of data to produce useful information and insights
  - **Connectivity:** exchange of data between humans, devices and machines through digital communications networks.

- Offers great potential to manage energy supply, distribution and usage more efficiently – particularly better matching of supply-demand at national or local level and improved management.

- But consumes extra energy (c. 4% of global energy demand) in:
  - Data centres
  - Digital communication networks and equipment
  - Connected devices

- Almost all appliances and equipment will be 'connected' in our lifetime
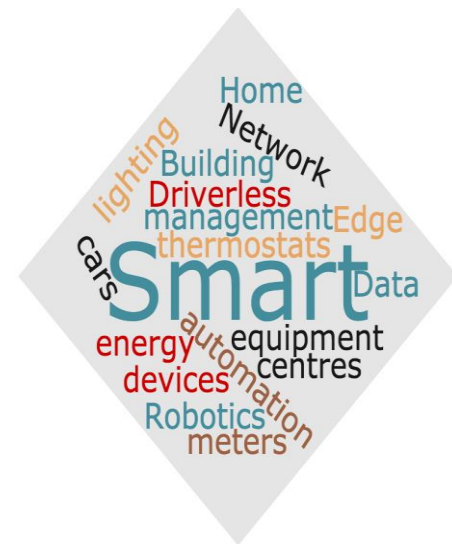
Smart Thermostats

- A digital thermostat to control heating and coolir

- Controlable via wi-fi connection to phone, tablet,

- Learns householder behavior

- Provides consumer feedback on energy use

- Increasingly popular – the 'poster boy' of smart devices!

- Energy Star specification based on energy saving potential

Energy Aware Devices

- "Energy Aware" devices (EAD) estimate (or measure) their own energy consumption and communicate this to users.

- Larger appliances already collect and communicate maintenance and billing information to third parties.

- Modern cars display fuel consumption data.

- Almost zero additional cost!

- Potential uses include:
  - **Facilitate efficient user behaviour** by providing actual energy use information.
  - **Improve monitoring, verification and evaluation**, by comparing actual energy use to estimates and by highlighting circumvention technologies.
  - **Inform better policy making and program evaluation** through collecting large quantities of device energy data.

- Policies that currently encourage EAD include Energy Star, South Korea & EU Energy labelling

Home Energy Management Systems (HEMS)

Home Energy Manager
The central nervous system for the net zero energy home helps homeowners optimize energy consumption.

Solar Photovotaic
3 kW to 4 kW solar array on the roof to meet energy requirements of the home.

Small Wind
Supplementary renewable generation.

Smart Meter
A communication gateway between the Smart Grid and the home.

Energy Efficient Lighting
High efficiency CFL, LED and OLED lighting.

Geothermal Heat Pumps
Reduces HVAC and water heating energy requirements by 30%.

Demand Response Appliances
High efficiency Energy Star Appliances shed load from the grid and help consumers save money during peak demand.

GE Heat Pump Water Heater
Uses less than half the energy of a conventional electric water heater.

Energy Storage
Battery storage for backup power and peak loads.

GE Water Filtration
Filters, conditions and monitors home water usage.

imagination at work

Home Energy Management System (HEMS)

- A computer-based system installed in buildings that controls and monitors the building's major mechanical and electrical equipment (heating, cooling, lighting, etc)

- Connects appliances and equipment, sensors, smart meters, renewable energy sources.

- Can maximise efficiency of local renewable energy use, reduce peak loads, react to time of use pricing, automatically control energy using equipment (see Smart Thermostats)

- HEMS growing in popularity, but more often seen in commercial buildings (BEMS). Many HEMS systems on market, but still niche.

Summary considerations

If you have budget, for 'smart' initiatives, consider the benefits to the following actors:

- Regulator/policy maker
  - Assist compliance (monitoring, verification, enforcement)
  - Link to registration data
  - Access to energy data
- Industry
  - Provide additional contact with potential purchases
- Consumers
  - Identify products to suit their needs
  - Better monitor and manage energy consumption
- Utilities
  - Reduce costs and improve system reliability

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