REVIEW OF SOUTH AFRICA'S APPLIANCE ENERGY CLASSES AND IDENTIFICATION OF THE NEXT SET OF ELECTRICAL EQUIPMENT FOR INCLUSION IN THE NATIONAL STANDARDS AND LABELLING PROJECT: NEW ELECTRICAL APPLIANCES

Industry Stakeholder Workshop: Televisions

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Energy Efficient Strategies

KEVIN LANE OXFORD LTD

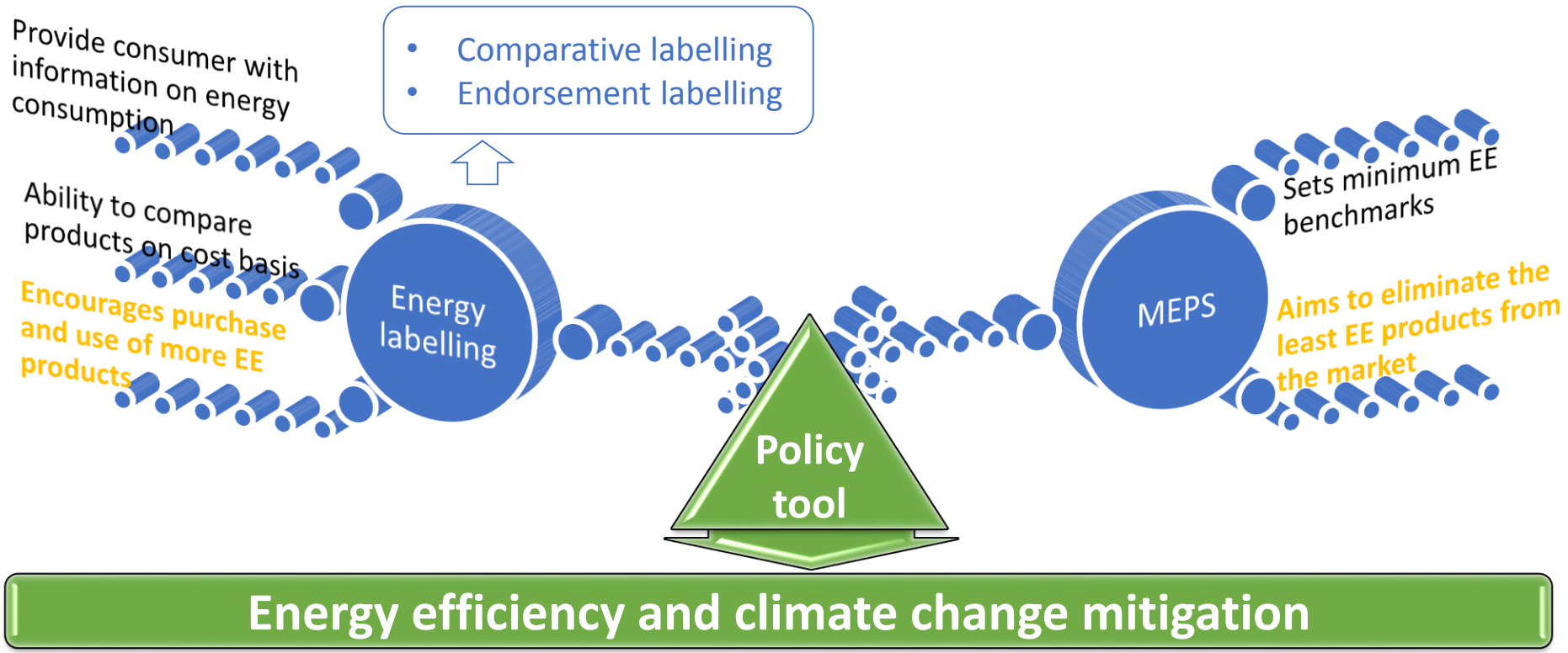
URBAN-ECON Development Economists

Agenda

1. Policy tools considered
2. Scope of work and boundaries
3. Screening process
4. Methodology
5. International MEPS trends
6. SA analysis
7. Recommendations
8. Open discussion

1. Policy tools considered

Energy labelling and MEPS



Policy options to improve energy efficiency

- Two main policy options considered are energy labelling and Minimum Energy Performance Standards (MEPS)
- These are typically enacted through government legislation and regulations
- When is labelling most effective?
  - When consumers purchase products and pay the energy bills
  - When products are on display at purchase and can be compared
  - Where there is a wide range of energy efficiency on the market
- Labelling creates *market pull* to encourage suppliers to offer more efficient products to the market

Policy options to improve energy efficiency

- When is MEPS most effective?
  - When product purchasers do not pay energy bills (can be different parts of a company, landlord and tenant)
  - When products are not on display for sale (purchased on specifications or from catalogues)
  - When there is a significant range of efficiency available (internationally) but this is not always present on the local market
- MEPS is a *market push* to ensure that all products offered for sale meet a minimum efficiency level

2. Scope of work and boundaries

Study objectives (as per TOR)

1. To identify a new set of electrical equipment (residential or commercial) to which compulsory minimum energy efficiency MEPS and/or labelling could be introduced
2. To recommend timelines for implementation of improved and new minimum energy performance levels for the next set of electrical equipment
3. To conduct an impact assessment analysis of the proposed mandatory requirements for each appliance on consumers, retailers, South African manufacturers, and importers
4. To quantify the potential energy and greenhouse gas emission savings that could be achieved through new MEPS and/or labelling over a 10 and 30-year period

Project Scope (UNDP and DOE)

1. **Purpose:**
   - Identify new electrical appliances that could be considered for a Standards & Labelling Programme
2. **Key considerations:**
   - 4-10 products (residential and commercial)
   - Must include distribution transformers
   - Main goal – reduce electricity usage and GHG emissions
3. **Approach:**

3. Screening

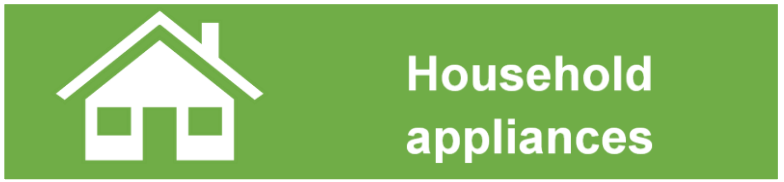
Screening process

All lights, appliances	• **List all lights and appliances products** • MEPS and labelling in 75 countries	**96**
0. Scope	• **Boundaries - Remove products out of scope** • Products covered by MEPS in SA already • Remove any non-electric products	**72**
1. MEPS elsewhere	• **Globally regulated products** • At least two countries/economic blocks • EU MEPS/Ecodesign counted as one	**24**
2. Energy Savings	• **Likley future energy savings from new MEPS** • Efficiency range, sales, usage levels and power • Relative significant future potential energy savings	**9**
3. Ease of adoption	• **Check for adoption, implementation and operation issues** • Relevant test procedures in place, ideally SAN (or IEC, ISO) • MVE issues, especially any verification issues	
4. Other barriers	• **SA appropriate - technical or other barriers** • Technologies, increased purchase costs, rate of market change, local manufacturing impacts	

Shortlisted electric equipment

Heating and cooling equipment

Chiller systems



Household appliances

None

Office equipment and electronics

Computers
Televisions
External Power Supplies

Other equipment (mostly commercial and industrial)

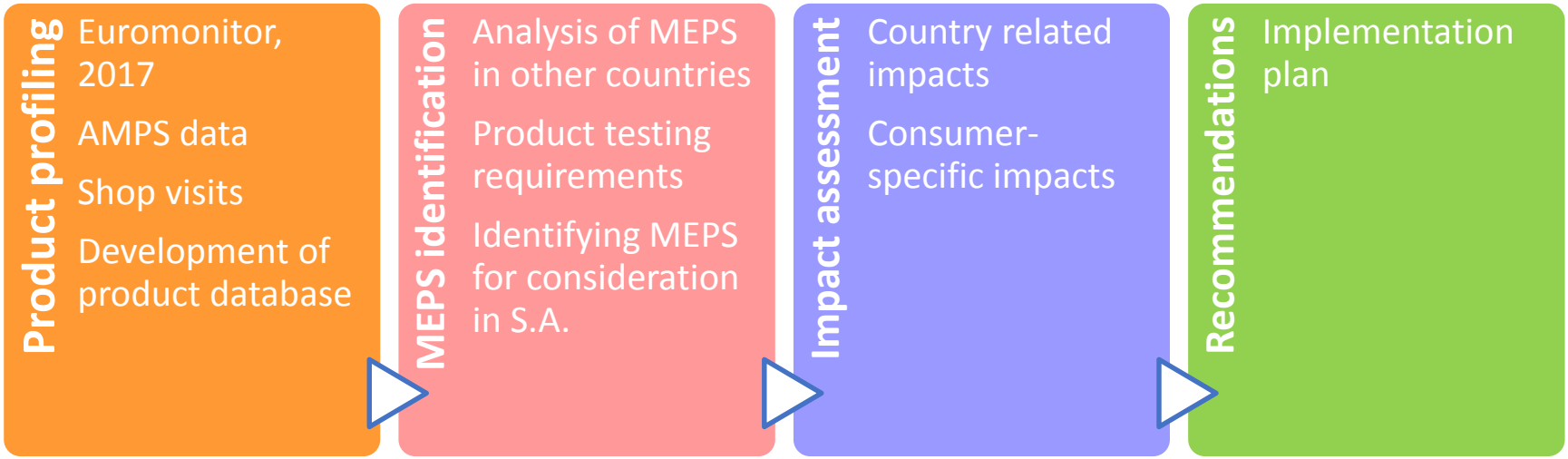
Motors - 3 Phase
Pool Pumps
Refrigerators – Commercial
Distribution Transformers

Note: Large ACs (>7.1kW) to be covered in a separate study

4. Methodology

Methodology

1. Data sources:
   - In-house developed database of electric appliances (web crawling, brochures, etc.)
   - Euromonitor, 2017
   - AMPS data
   - Shop visits
2. Approach:



Data sources

- International MEPS programs
- International sales data
  - Euromonitor, 2017
- AMPS data, 2011-2016
- Information from regulator (NRCS)
  - LOA data
  - Levies data
- **Field data collection**
  - Online shops
  - Shop visits

In-house product database:

- 15 brands, 350 models of TVs
- Supplier and contact info
- Model description
- Power specifications
- Dimensions, price details

Supplier	Common brands	Types of TVs supplied	Power specifications	Description	Price
1) Sinoprima (Manufacturer)	Sinotec	Android 4K TV (Model STL-50G2AUM) 50" UHD SMART ANDROID TV	- Power Supply AC 100-240V~ 50/60Hz - Power Consumption tbc - Standby Consumption 0.5W	- operates on Android 7.0 - built-in wireless LAN - maximum sound output 2 x 10W - box dimensions 1240x145x759	approx. R6 600
		Android 4K TV (Model STL-50U4BUM) 50" UHD SMART ANDROID TV (U4)	- Power Supply AC 100-240V~ 50/60Hz - Power Consumption TBC - Standby Consumption <0.5W	- box dimensions 1468 x 185 x 868	-
		Android 4K TV (Model STL-55G2AUM) 55" UHD SMART ANDROID TV	- Power Supply AC 100-240V~ 50/60Hz - Power Consumption tbc - Standby Consumption 0.5W	-	approx. R7 600
		Android 4K TV (Model STL-58G2AUM) 58" UHD SMART ANDROID TV	- Power Supply AC 100-240V~ 50/60Hz - Power Consumption tbc - Standby Consumption 0.5W	- box dimensions 1465 x 185 x 865	approx. R11 000
		Android 4K TV (Model STL-65G6AUM) 65" UHD SMART ANDROID TV	- Power Supply AC 100-240V~ 50/60Hz - Power Consumption 200W - Standby Consumption 0.5W	- box dimensions 1600 x 240 x 988	-
		Digital 4K TV (Model STL-55N86UG) 55" UHD DIGITAL LED TV	- Power Supply AC 100-240V~ 50/60Hz - Power Consumption 135w - Standby Consumption <0.5W	- CEC and MHL compatibility - box dimensions 1340x177x875	approx. R7 600
		Digital LED TV (Model STL-43E3000G) 43" FHD LED TV (With DVB-T2)	- Power Supply AC 100-240V~ 50/60Hz - Power Consumption 100W - Standby Consumption <0.5W	- a type of blue ray player - box dimensions 1060(L)x138(W)x635(H)	approx. R5 600

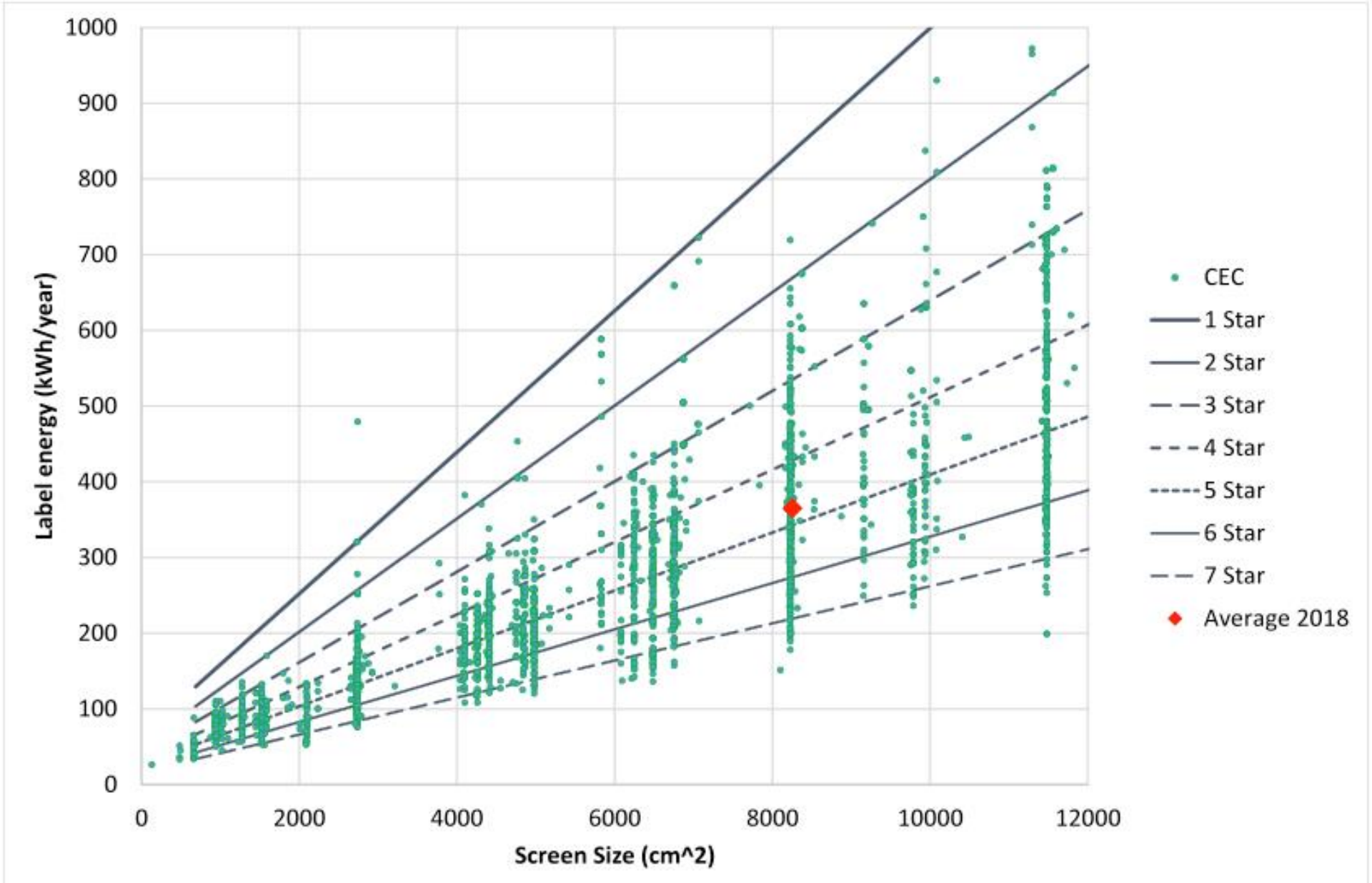
Supplier	Supplier type	Contact details	Status	Source
Sinoprima	Manufacturer (Sinotech)	011 238 9300	Key contact person (Isabell) not available - only back 09 April Isabell@sinoprima.co.za	https://www.sinoprima.co.za/product/55-uhd-digital-led-tv/
Atlas Appliances	Trading - Hisense TVs only	011 452 5959 admin@atlasappliances.co.za	Very hesitant to disclose any info - Director in Umhlanga, indicated as the key contact person, only back next week	http://atlasappliances.co.za/jshopping/category/view/36
Hisense Co. Ltd	Distributor	011 100 3429 sales@hisense.co.za marketing@hisense.co.za		http://www.hisense.co.za/products/electronics/tvs?swoof=1&paged=1&rea
LG Electronics South Africa	Supplier	0800 545 454		http://www.lg.com/za/tvs/all-tvs
Altech UEC	Electronic manufacturing facility	031 508 2800 info@uec.co.za	Localised Television manufacturer, provides branded TVs High value TVs from 32", 40", 42", 49", 55" and 65"	http://www.uec.co.za/Products

5. International MEPS trends

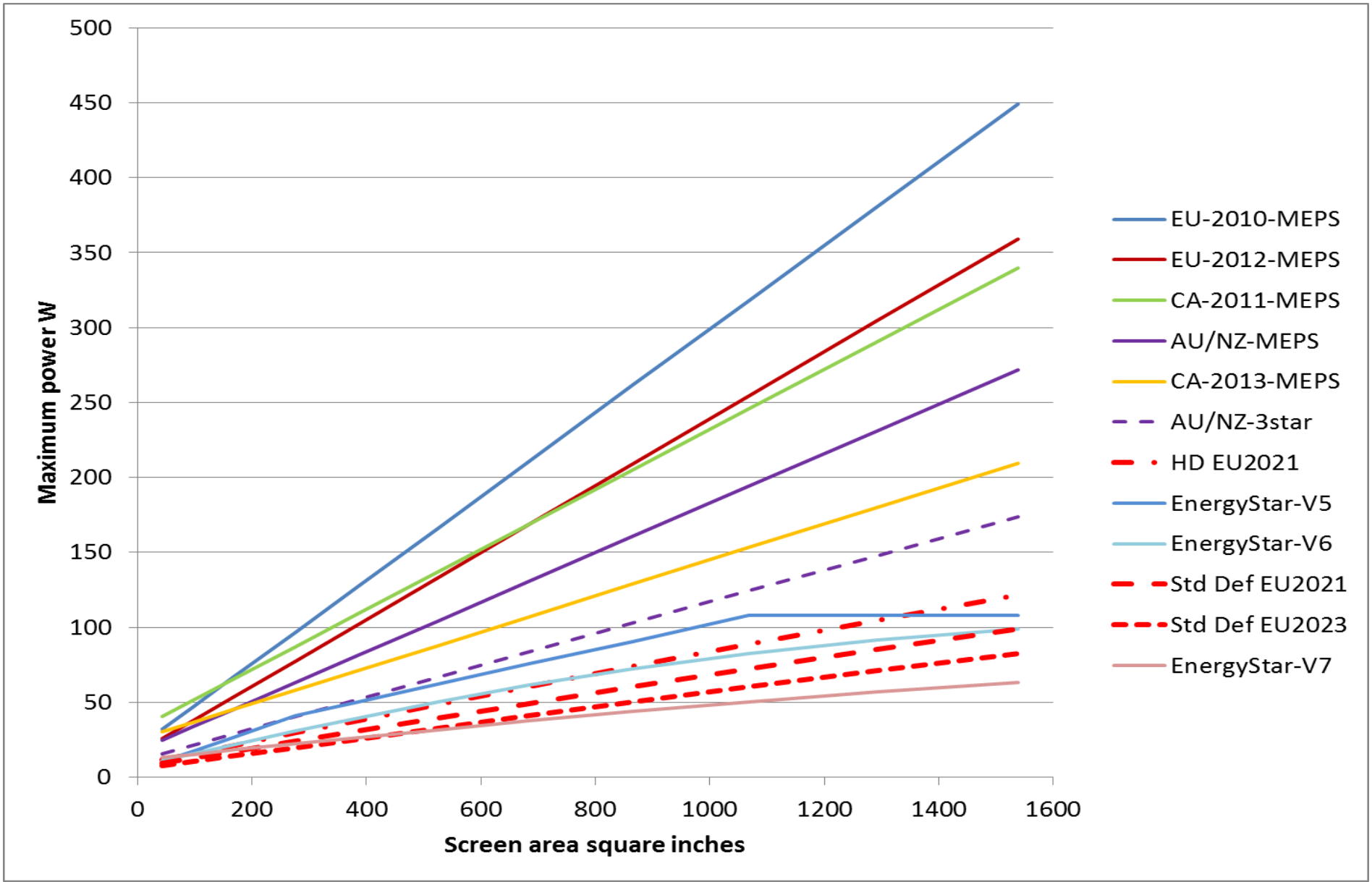
International Review of MEPS for televisions

- A range of countries have introduced MEPS in the past 10 years
  - Most have been left behind by market improvements
- Most stringent regulation in force is currently in California
- SEAD has been doing work to encourage global alignment of efficiency metrics
  - SEAD recommends Energy Star approach to defining efficiency
- Most countries also have energy labelling with MEPS

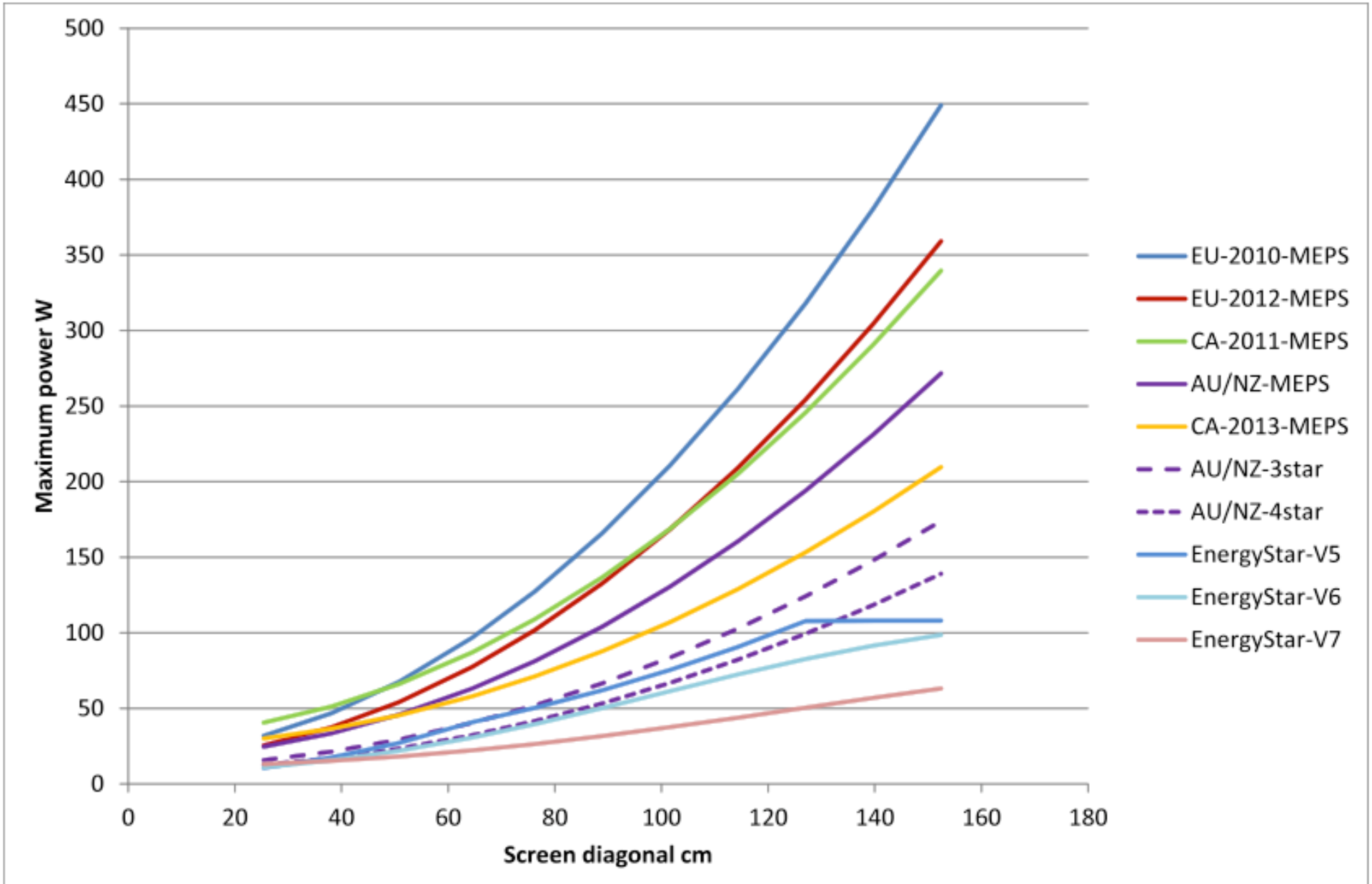
Australian labelling and market spread 2018



Comparison of television MEPS requirements

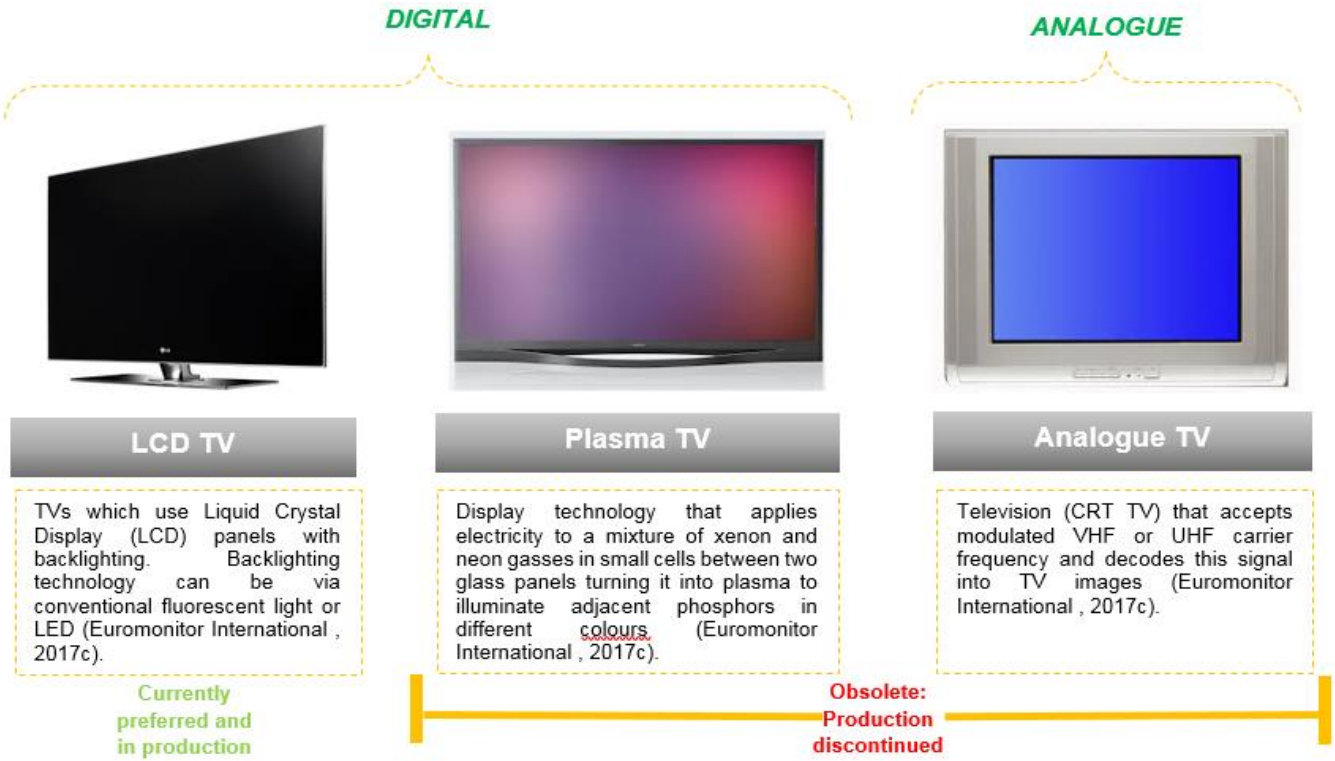


Comparison of television requirements



6. SA analysis

Product Overview

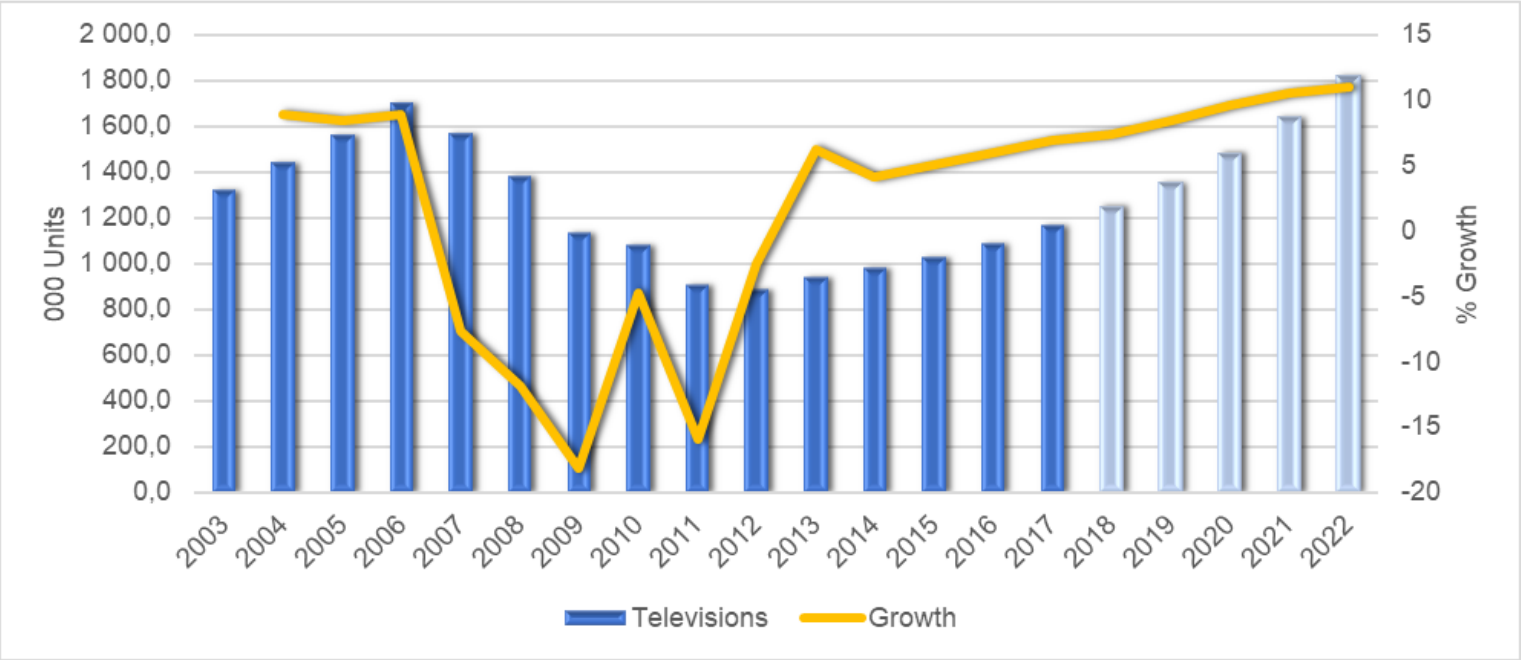


- Major transition to flat screen and digital broadcasts over past 10 years
- CRT and plasma - disappeared
- Increase in size

- Rapid efficiency improvement during 2007 - 2015 (20%/year), but this has slowed in recent years
- Most common and most efficient technology - LED backlight

Market overview – demand in SA

- Very common appliance:
  - Mostly household (>15 million hh), some commercial
- 1.16m TV units sold in 2017
- Fast growth projection @ CAGR of 9.4%
  - LSM 5-7 to drive the demand



Market Overview - supply in SA

- 15 globally recognised brands
- LCD TVs dominate the market
  - Majority have standby power of ≤ 0.5W
  - Maximum power consumption range: 30W – 767W
  - Some models are already EE rated (B, A, A+, A++)
- Local manufacturers/assemblers and importers are present
  - Hisense, Samsung, LG, Sinoprima (local assembly)
  - Local assembly dominating the market
- Pricing:
  - Price range: R1 500 – R150 000

Brand	2017 Market Share	Change in Market Share (2010 & 2017)
Samsung	37.1%	▲15.2%
LG	26.7%	▲10.4%
HiSense	20.1%	▲ 5.3%
Sinotec	1.6%	▲ 1.1%
Sharp	1.5%	▲ 1.5%
Philips	1.3%	▲ 1.3%
Others	11.7	▼ 1%

Source: Euromonitor, 2017

Impact Analysis – Assumptions

- Average product life: 10 years
- Annual sales: 1.16 million units
- BAU base case - AU/NZ 3 star
- Proposed MEPS - AU/NZ 4 star (slightly weaker to MEPS in Energy Star V5.0)
- The annual hours of operation:
  - Residential: 1 825
  - Commercial: 2 200

Sector	Type	Representative Diagonal	Area	Energy consumption			Market share
				BAU	MEPS	Standby	
Residential	Small	24-inch	1669 cm^2	38.6W	30.9W	0.5	30%
Residential	Medium	40-inch	4273 cm^2	81.3W	65.0W	0.5	40%
Residential	Large	59-inch	9614 cm^2	168.8W	135.0W	0.5	20%
Commercial	Large	55-inch	8375 cm^2	148.5W	118.8W	0.5	10%

Impact Analysis – Energy Savings

$$Annual\ energy\ consumption = (P_{scenario} * \frac{Hours\ of\ usage}{1000}) + (0.5 * \frac{8760 - Hours\ of\ usage}{1000})$$

- **Individual savings:**

Sub-sec	Rep diagonal (cm)	Area (cm^2)	Typical energy consumption (W)			Hours of usage per year	Annual energy consumption (kWh)		Annual energy savings (kWh)
			BAU	*MEPS*	*Standby*		*BAU*	*MEPS*	
Res S	62.5	1669	38.6	30.9	0.5	1825	74	60	14
Res M	100	100	81.3	65.0	0.5	1825	152	122	30
Res L	150	150	168.8	135.0	0.5	1825	312	250	62
Com L	140	140	148.5	118.8	0.5	2200	330	265	65

- **Total annual MEPS savings - 40.4 GWh:**
  - Residential - small: 4.9 GWh
  - Residential - medium: 13.8 GWh
  - Residential - large: 14.3 GWh
  - Commercial - large: 7.6 GWh

Impact Analysis – Cost implications

COMPARISON OF 65" TELEVISIONS		
Brand and model	*Brand X (Model X)*	*Brand X (Model Y)*
Description	*65" Super UHD TV*	*65" OLED TV*
EU energy efficiency class	*A+*	*A*
Annual energy consumption	*155kWh*	*214kWh*
Retail price	*R29,049*	*R39,799*
COMPARISON OF 55" TELEVISIONS		
Brand and model	*Brand X (Model A)*	*Brand X (Model B)*
Description	*55" Super UHD TV*	*55" OLED TV*
EU energy efficiency class	*A+*	*A*
Average Power Consumption	*106W*	*112W*
Retail price	*R16,271*	*R23,373*

- TV prices are based on many aspects e.g. size, design, technologies, internet connectivity, brand name, features etc
- Efficiency does not appear to be a major determining factor of TV prices
  - There are cases where an energy efficient TV can cost less than an equivalent inefficient model
- **More energy efficient TV ≠ more expensive unit**

7. Recommendations

Recommendations for Televisions

- **Option 1:**
  - Most stringent existing MEPS level currently in operation: equivalent to those in California in 2013
- **Option 2:**
  - MEPS level equivalent to 3 stars under the Aus/NZ labelling scheme
  - Modest impact
- **Option 3:**
  - MEPS level equivalent to 4 stars under the Aus/NZ labelling scheme
  - Moderate impact
- **Option 4 (recommended):**
  - MEPS levels comparable to Energy Star V5.0 (roughly similar to Option 3)
- **Option 5:**
  - MEPS levels comparable to Energy Star V6.0
- **Energy labelling also recommended in parallel**

7. Discussion and questions?

Thank you

Elena Broughton
E-mail: elena@urban-econ.com
Tel: +27 12 342 8687
Website: www.urban-econ.com

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