SEAD | SUPER-EFFICIENT EQUIPMENT AND APPLIANCE DEPLOYMENT INITIATIVE

Governments Working Together to Save Energy.

Towards increased international cooperation: lessons learned from the SEAD data access project

21st Century Energy Efficiency Standards and Labelling Programmes Workshop
IEA Headquarters, Paris, France
15-16 December 2015

www.superefficient.org

CLEAN ENERGY MINISTERIAL
Accelerating Transition to Clean Energy Technologies

ipeec International Partnership for Energy Efficiency Cooperation

SEAD | SUPER-EFFICIENT EQUIPMENT AND APPLIANCE DEPLOYMENT INITIATIVE

The SEAD Initiative

Governments working together to save energy


Australia


Brazil


Canada


Chile


European Commission


Germany


India


Indonesia


Japan


Korea


Mexico


Russia


South Africa


Sweden


United Arab Emirates


United Kingdom


United States

- *China is an observer to the SEAD Initiative*

Accelerating the pace of market transformation to more energy efficient products through technical analysis and assistance, sharing of information and best practice, and joint activities.

CLEAN ENERGY MINISTERIAL

ipeec

SEAD

Operating Agent

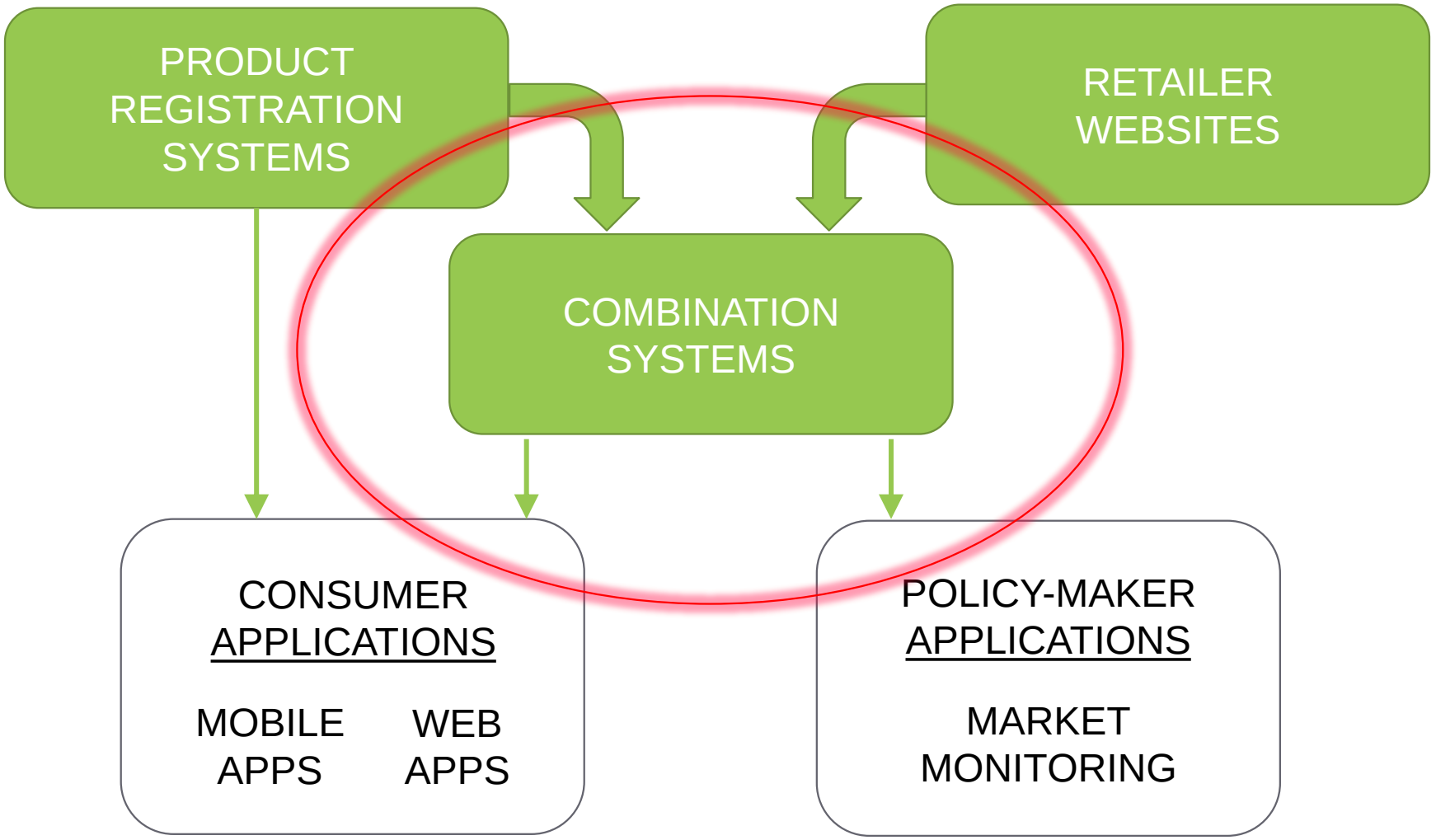
clasp

Technical Analysis

BERKELEY LAB

Collaborator

4E


PRODUCT REGISTRATION SYSTEMS
RETAILER WEBSITES
COMBINATION SYSTEMS
CONSUMER APPLICATIONS
MOBILE APPS
WEB APPS
POLICY-MAKER APPLICATIONS
MARKET MONITORING

SEAD ENERGY EFFICIENCY DATA ACCESS PROJECT: FINAL REPORT

September, 2013

SEAD | Super-efficient Equipment and Appliance Deployment

SEAD Energy Efficiency Data Access Project: Final Report

Alex Katzman
Michael McNeil
Brian Gerke

TVs 93 Room ACs 66

BERKELEY LAB
LAWRENCE BERKELEY NATIONAL LABORATORY

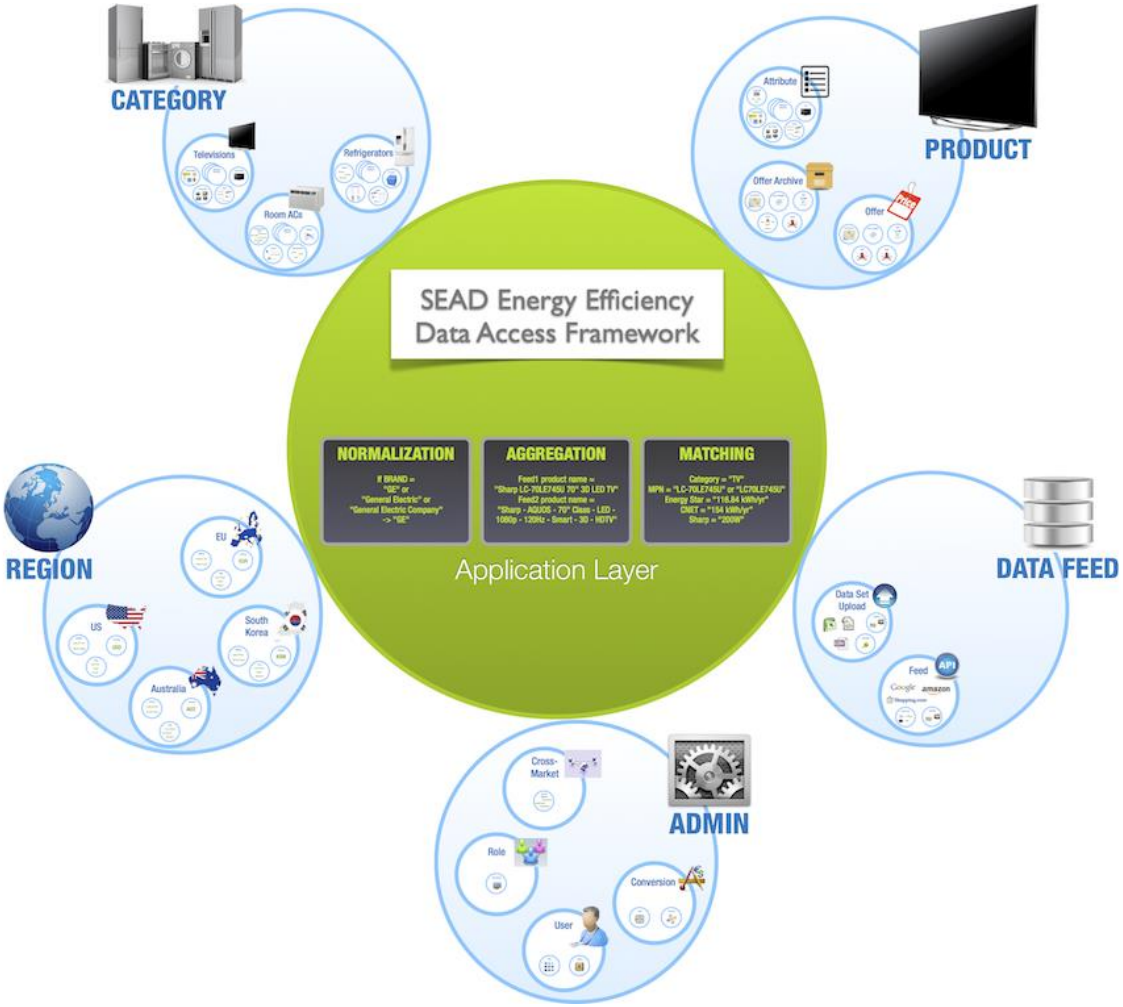
enerVee

September 2013

…defined the SEAD global data access framework and data standards for appliances

SEAD energy efficiency data access **framework**

SCHEMATIC DIAGRAM



SEAD global category **data standard**

CLASSIFICATION	ENERGY	CERTIFICATION	PRICING	MARKETING
Region	Operating Power	Product Rating	Offer Count	Name
Category	Standby Power	Certifying Authority	Min Price	Description
Manufacturer	Annual Power	Test Procedure	Max Price	Image
Brand			Mean Price	
GTIN			Median Price	
MPN			MSRP	

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SEAD product-specific data standards

TELEVISIONS					
Screen Technology	Functions Available	Screen Size	Resolution	Aspect Ratio of Screen	3D Ready

TELEVISIONS EXAMPLE					
LED	Digital	81 cm	1366 x 768	16:9	No

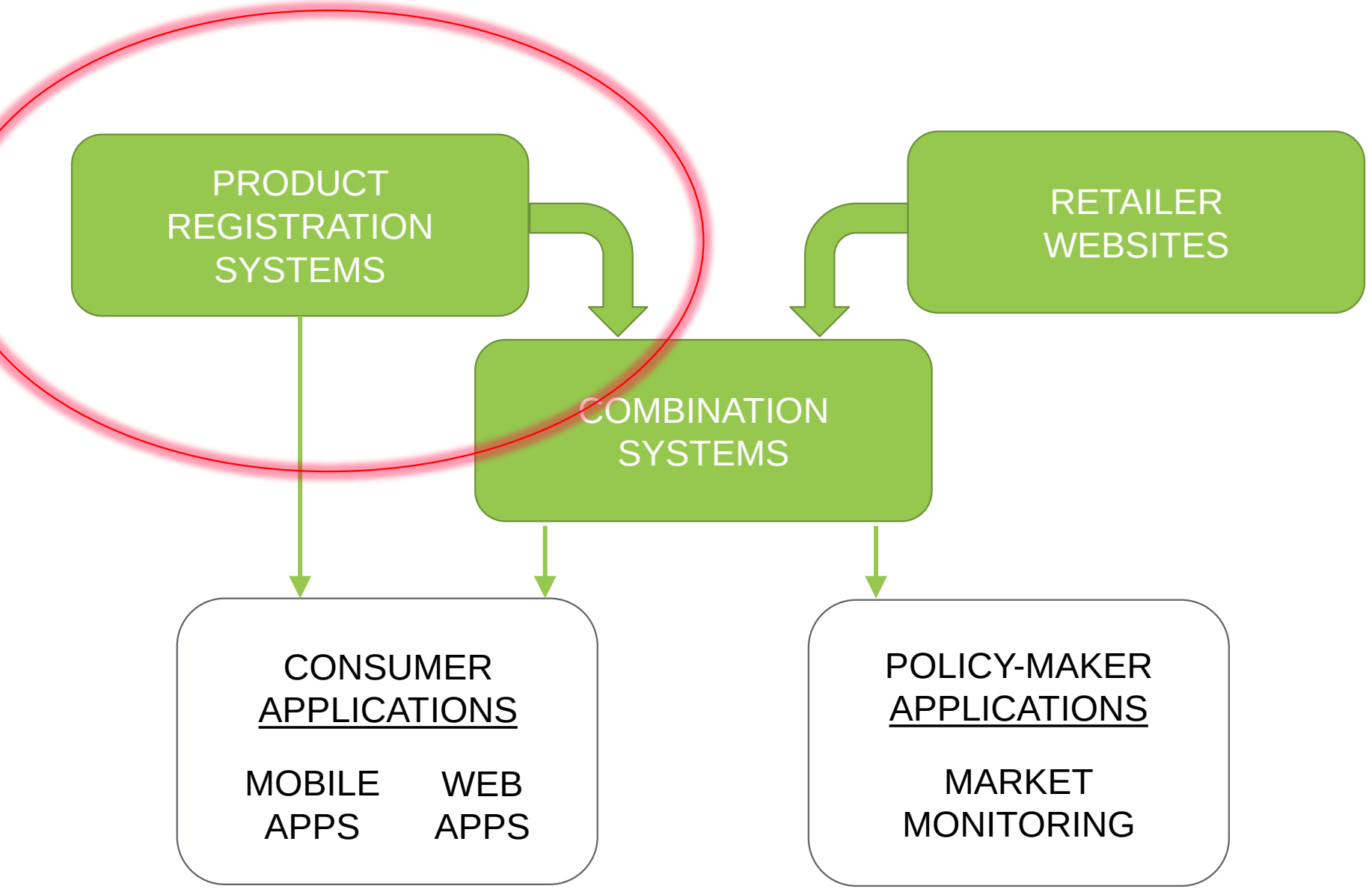
ROOM AIR CONDITIONERS							
Cooling Capacity	Refrigeration Method	Condenser Cooling	Heat Transfer Fluid	Type	Cooling/ Heating	Refrigerant	Variable speed drive/ multi-speed compressor

ROOM AIR CONDITIONERS EXAMPLE							
10,000 btu/hr	Electrically driven	Air cooled	Air	Window	Cooling	N/A	N/A

Recommendations for certification data sets

- Capture individual product MPNs (model numbers) and UPC/EAN for each certification record to enable easy linking with retail data
- Normalize Manufacturers/Brands at an international level to simplify cross-market matching and trend analysis across countries
- Explicitly declare usage assumptions and test procedures used within each of the certification data files
- Use common syntax for units of measurement at an international level and include a unit of measurement with each numeric attribute

Source: “BENEFITS OF A CROSS-COUNTRY DATA FRAMEWORK FOR ENERGY EFFICIENCY” presented at EEDAL 2013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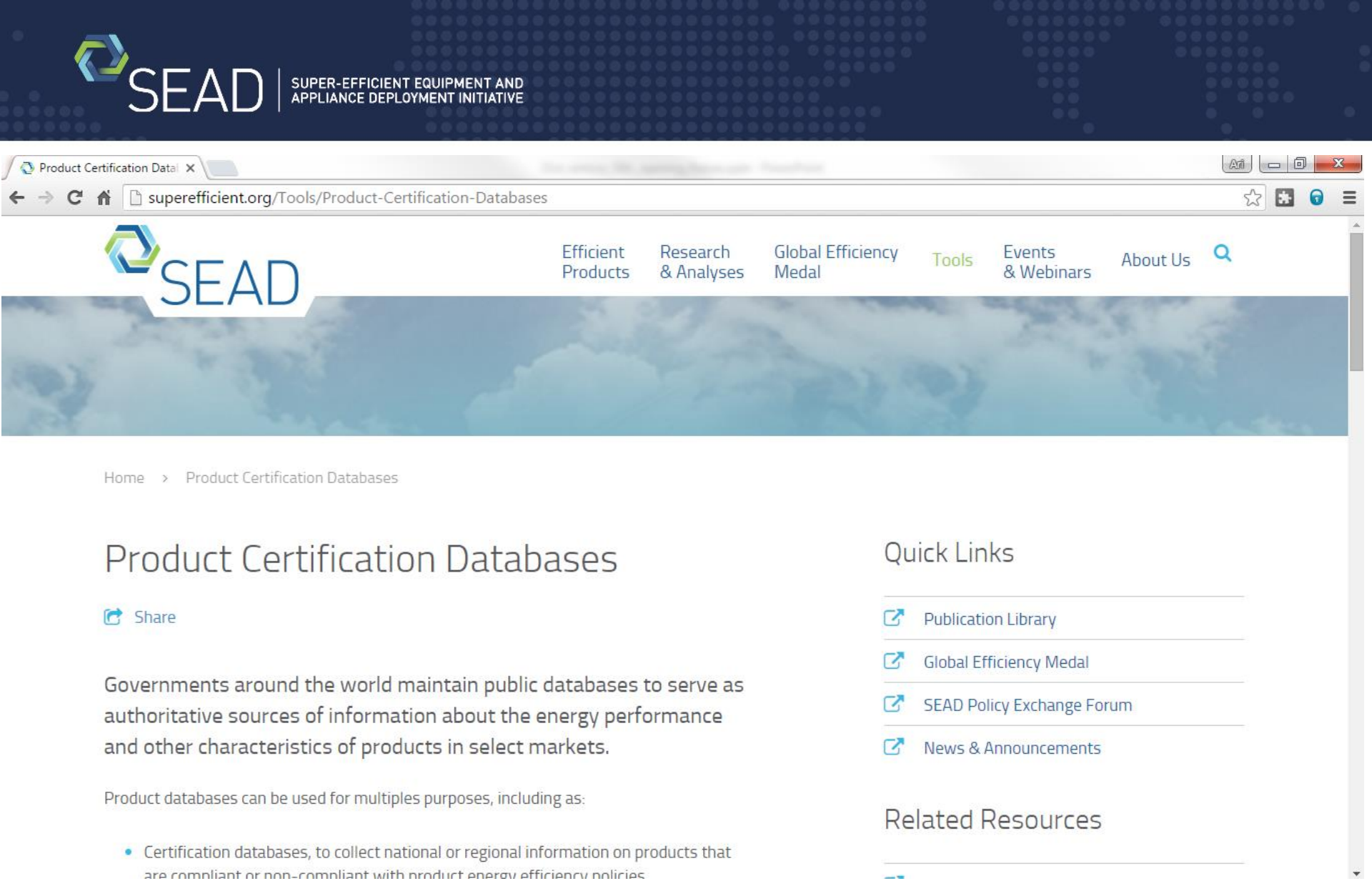
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SUPER-EFFICIENT EQUIPMENT AND APPLIANCE DEPLOYMENT INITIATIVE
Product Certification Data
superefficient.org/Tools/Product-Certification-Databases
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Product Certification Databases
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Governments around the world maintain public databases to serve as authoritative sources of information about the energy performance and other characteristics of products in select markets.
Product databases can be used for multiples purposes, including as:
Certification databases, to collect national or regional information on products that
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Related Resources

Product Certification Databases

Listed on superefficient.org

- Australia and New Zealand Energy Rating product lists
- California Appliance Efficiency Database
- Canada searchable product lists
- China Energy Label product database
- Taiwan (Chinese Taipei) certified products database
- Hong Kong labeled products database
- India Star Label product database
- Japan product database
- Philippines labeled and certified product lists
- Singapore Database of Registered Goods
- Thailand Label No. 5 products database
- U.S. DOE Compliance Certification Database
- U.S. EPA ENERGY STAR Qualified Product Finder

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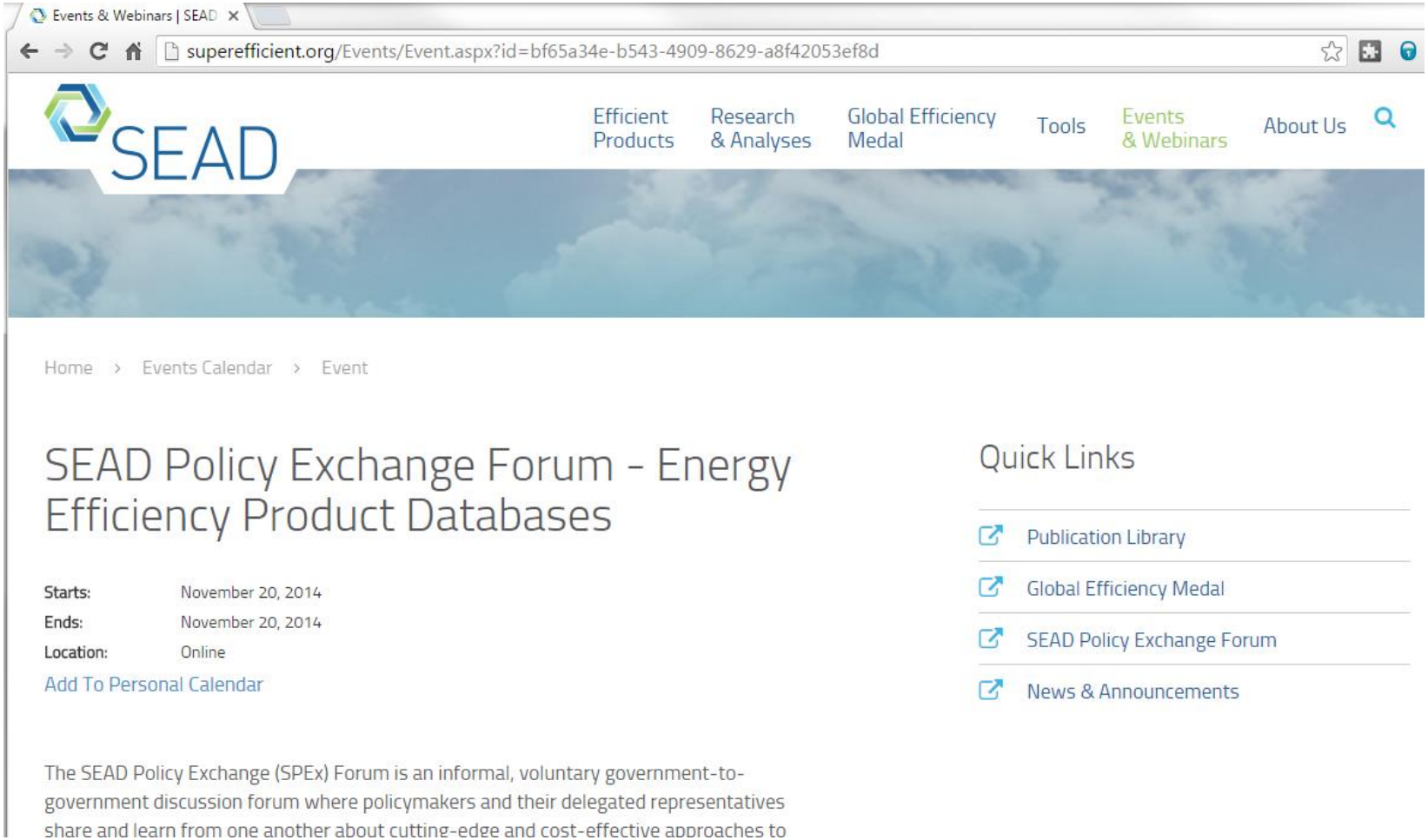
SEAD Policy Exchange Forum

November 2014



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SEAD Policy Exchange Forum

November 2014

- **Leveraging Product Databases to Improve the Effectiveness of Appliance Energy Efficiency Policies and Programs**: Background and Motivation for the Topic - Ari Reeves, CLASP
- **Presentation on the Chinese Energy Label Database** - Jayond Li, CLASP China
- **India Star Rating Product Database** Saurabh Diddi, Bureau of Energy Efficiency, India
- **Energy Rating Label Data and Mobile App** - David Pearson, Department of Industry, Australia
- **Energy Star Products Database** - Kathleen Vokes, Environmental Protection Agency, United States

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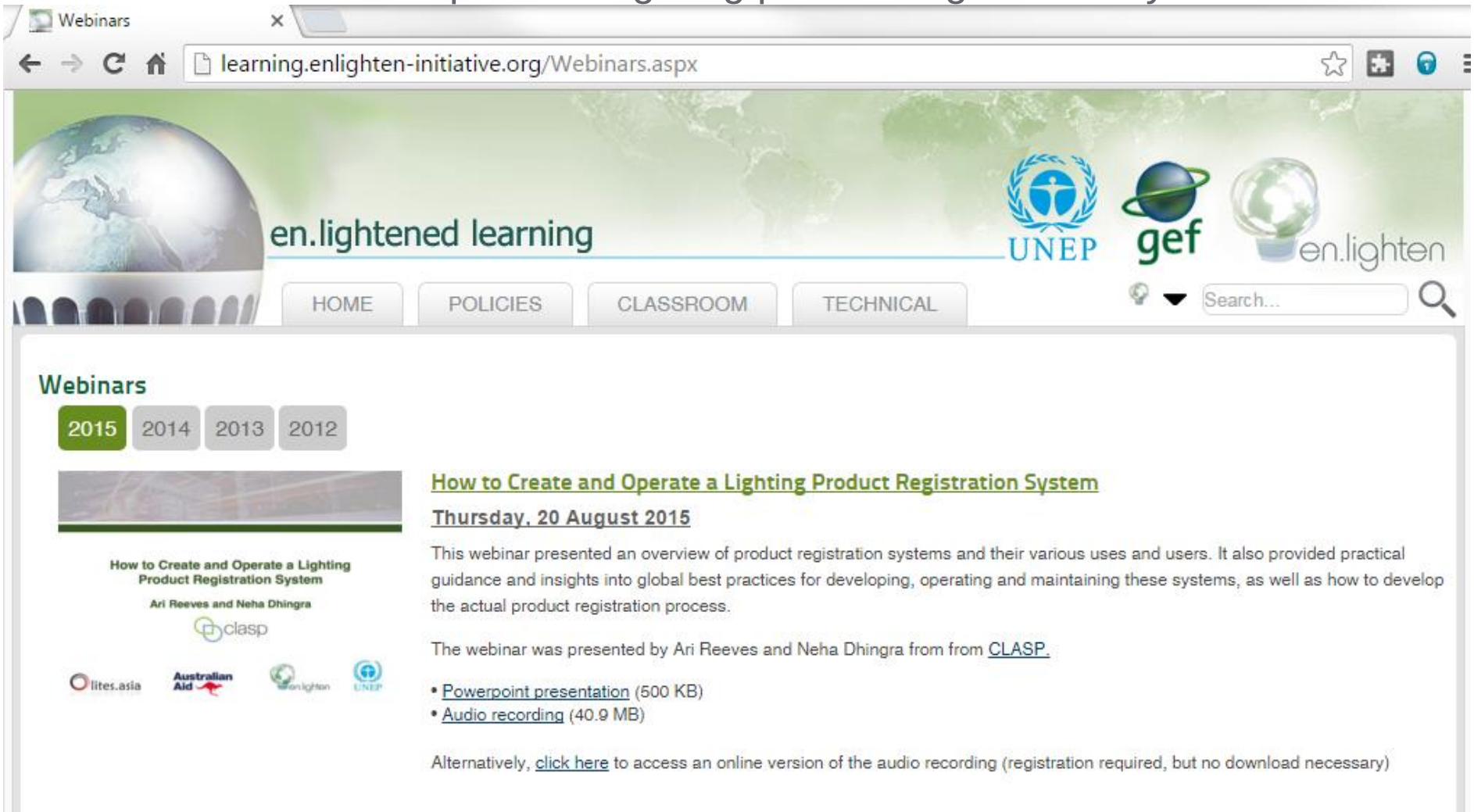
UNEP en.lighten webinar:

How to create and operate a lighting product registration system



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UNEP en.lighten guidance note:
Developing lighting product registration systems

[forthcoming]

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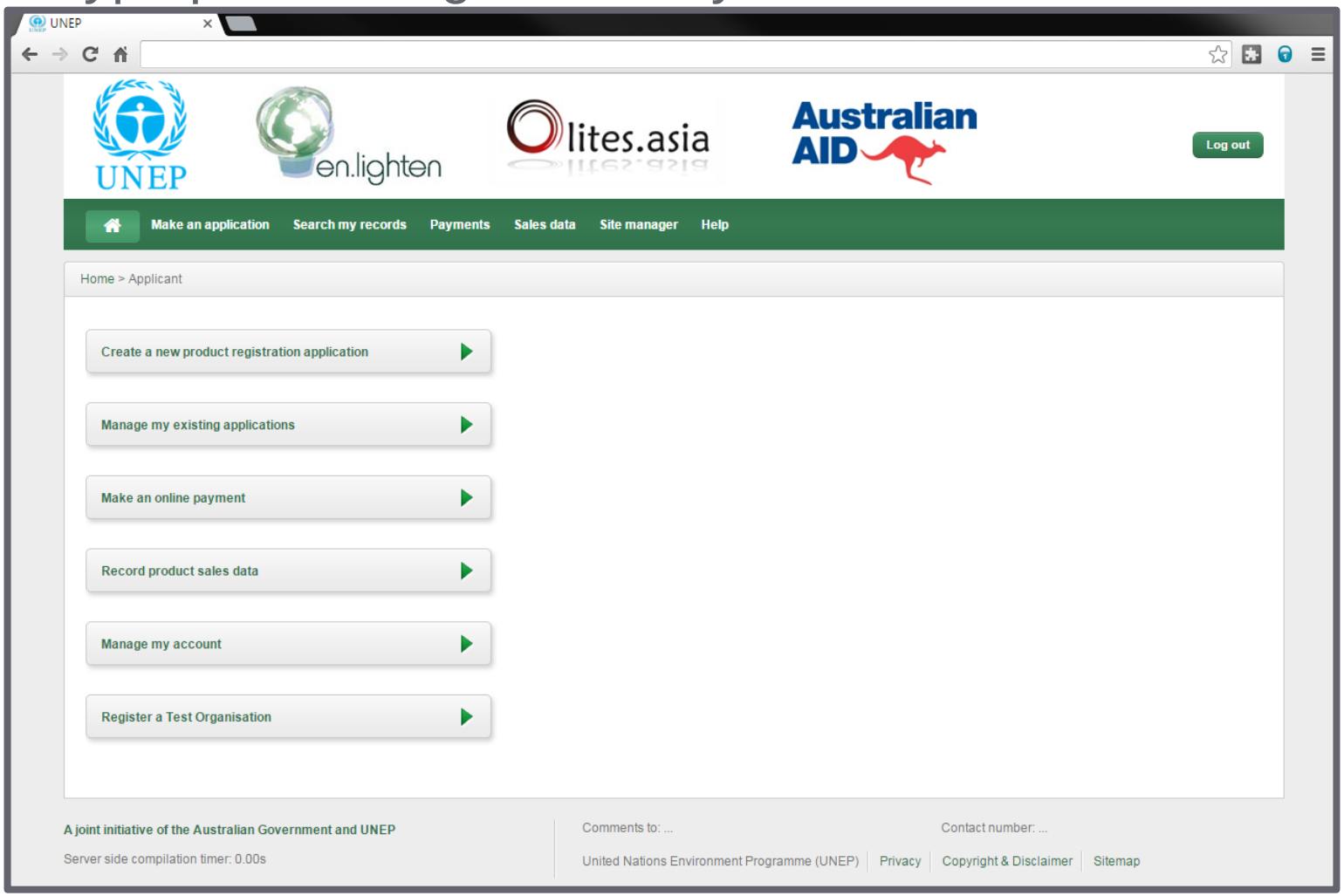
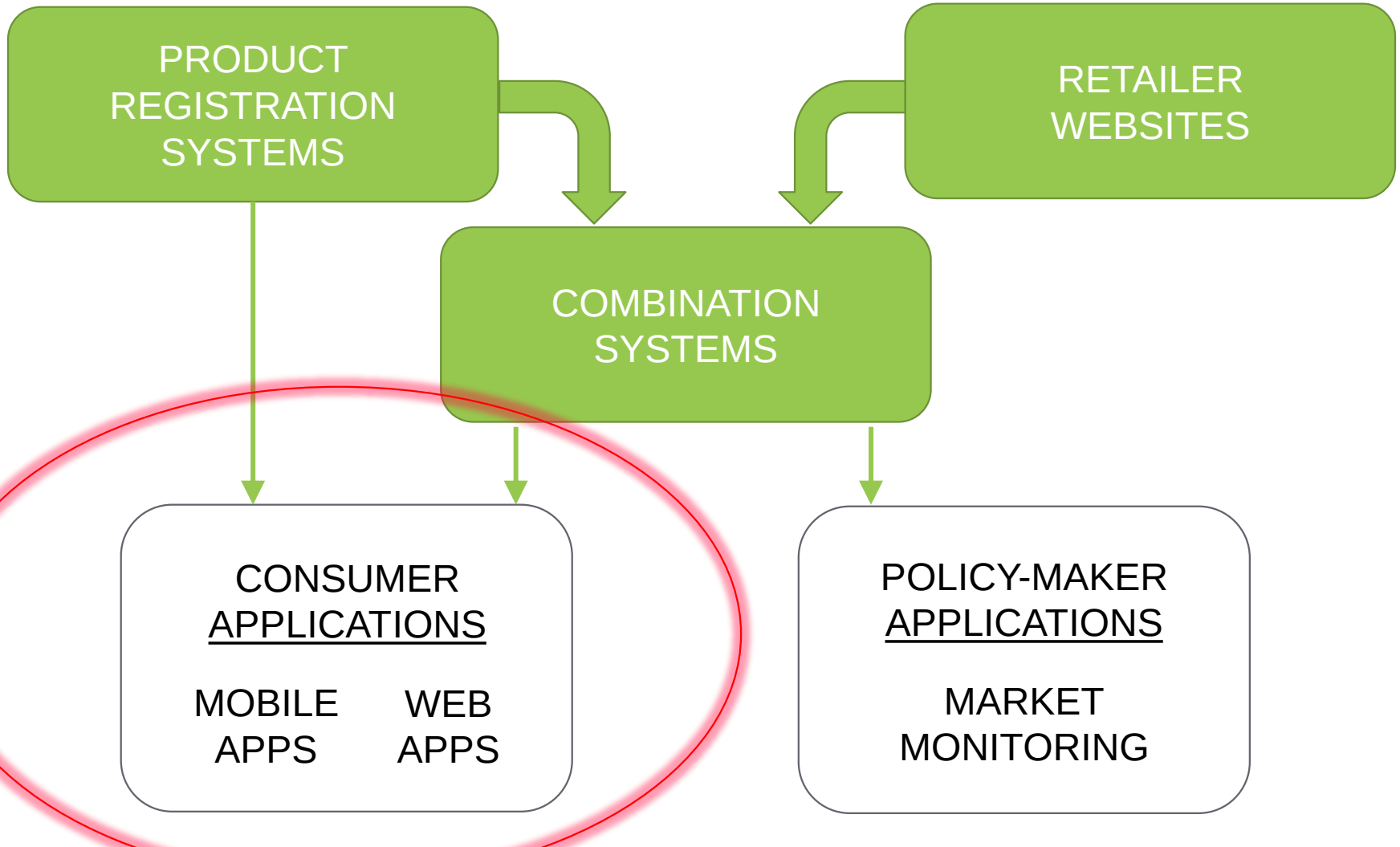
UNEP en.lighten resource:

Prototype product registration system

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Energy Rating Mobile App

superefficient.org/Tools/Energy-Rating-Mobile-Apps

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Home > Energy Rating Mobile Apps

Energy Rating Mobile Apps

Share

Mobile apps can be used to put product efficiency data into the hands of shoppers, helping them make better, more-informed purchasing decisions. SEAD is aware of several such apps. Please tell us if you know of others.

Name	Energy Rating
Where	Australia and New Zealand
Released	June 2014 (v.1.1)
Platforms	iOS, Android, Blackberry, Windows phone
	Enables shoppers to estimate running (operating) costs and compare models in several

Quick Links

- Publication Library
- Global Efficiency Medal
- SEAD Policy Exchange Forum
- News & Announcements

Related Resources

- IEA 4E Mapping and Benchmarking Annex

Energy Rating Mobile Apps

Listed on superefficient.org

- Energy Rating / Australia & New Zealand
- ECOGator / Europe
- Label No.5 / Thailand
- Lampguiden / Sweden
- Star Label / India
- Energy Label / China

Web apps for consumers

Combining government and retailer data

Service	Country Coverage
Enervee	United States
ENERGY STAR	United States

https://enervee.com/televisions/

enervee

search products ▾ state: MD ▾ support

Enervee | Televisions

Save on your bill with **energy-saving televisions.**

Shop energy-smart to cut your energy cost, find the lowest price and help the planet.
Click on the **Search & Filter** button to find the model that is right for you.

GET 3X SAVINGS WITH OUR CURATED EFFICIENT HOLIDAY DEALS

Sears: TVs, Washers, Dryers, Refrigerators
Best Buy: TVs, Washers, Dryers, Refrigerators

869 of **869** Televisions

SEARCH & FILTER

MODEL	ENERVEE SCORE	REVIEWS	ENERGY SAVINGS	PRICE
 Vizio VIZIO E48C2 ENERGY STAR® for: • 48" LED • 1080p • 1920 x 1080	100	65 REVIEWS ★★★★½	UP TO $44	$430
 Samsung SAMSUNG UN5… ENERGY STAR® Most Efficient 2015 for: • 54" LED • 1080p • 1920 x 1080	100	771 REVIEWS ★★★★½	UP TO $56	$850

ENERGY STAR. The simple choice for energy efficiency.

New ME Clothes Washers Page

LG
WT7700H*A

Volume (cu. ft.)	5.7
Annual Energy Use (kWh/yr)	150
Annual Water Use (gallons/yr)	5381

Low $1,094.00 - High $1,329.99 at 4 Online stores

Retail Locations
Pricing
Product Specs

CLICK FOR PRODUCT DETAILS

Features

- Super Large 5.7 cu. Ft Capacity
- Direct Drive Motor 10 Year Manufacturer's Limited Warranty
- ColdWash™ Technology
- 6Motion™ Technology
- Fast & Clean TurboWash™ 2.0 Technology
- AAFA certified Allergiene ™ Cycle with Steam
- Smart TagOn™ Technology
- Slam Proof Lid

Samsung
WF56H91**C*

Volume (cu. ft.)	5.6
Annual Energy Use (kWh/yr)	130
Annual Water Use (gallons/yr)	4593

Low $1,439.10 - High $1,439.10 at 1 Online stores

Features

- SuperSpeed
- Powerfoam
- Self Clean+
- Crystal Door
- VRT Plus

EPA

ENERGY STAR. The simple choice for energy efficiency.

New ME Clothes Washers Page

- Online Information to Facilitate Research

Find Online Clicking on the "Go" link below will take you to web sites external to the energystar.gov domain. EXT

BEST BUY	Best Buy	WM8000HWA white	Online Only Variable Shipping	$1,224.99 Go
		WM8000HVA graphite steel	In Stock Variable Shipping	$1,294.99 Go
LOWE'S	Lowe's	WM8000HWA white	In Stock Free to store	$1,219.00 Go
		WM8000HVA graphite steel	In Stock Free to store	$1,294.00 Go
sears	Sears	WM8000HVA graphite steel	In Stock Free to store	$1,599.99 Go
THE HOME DEPOT	The Home Depot	WM8000HWA white		$1,222.20 Go
		WM8000HVA graphite steel		$1,294.20 Go

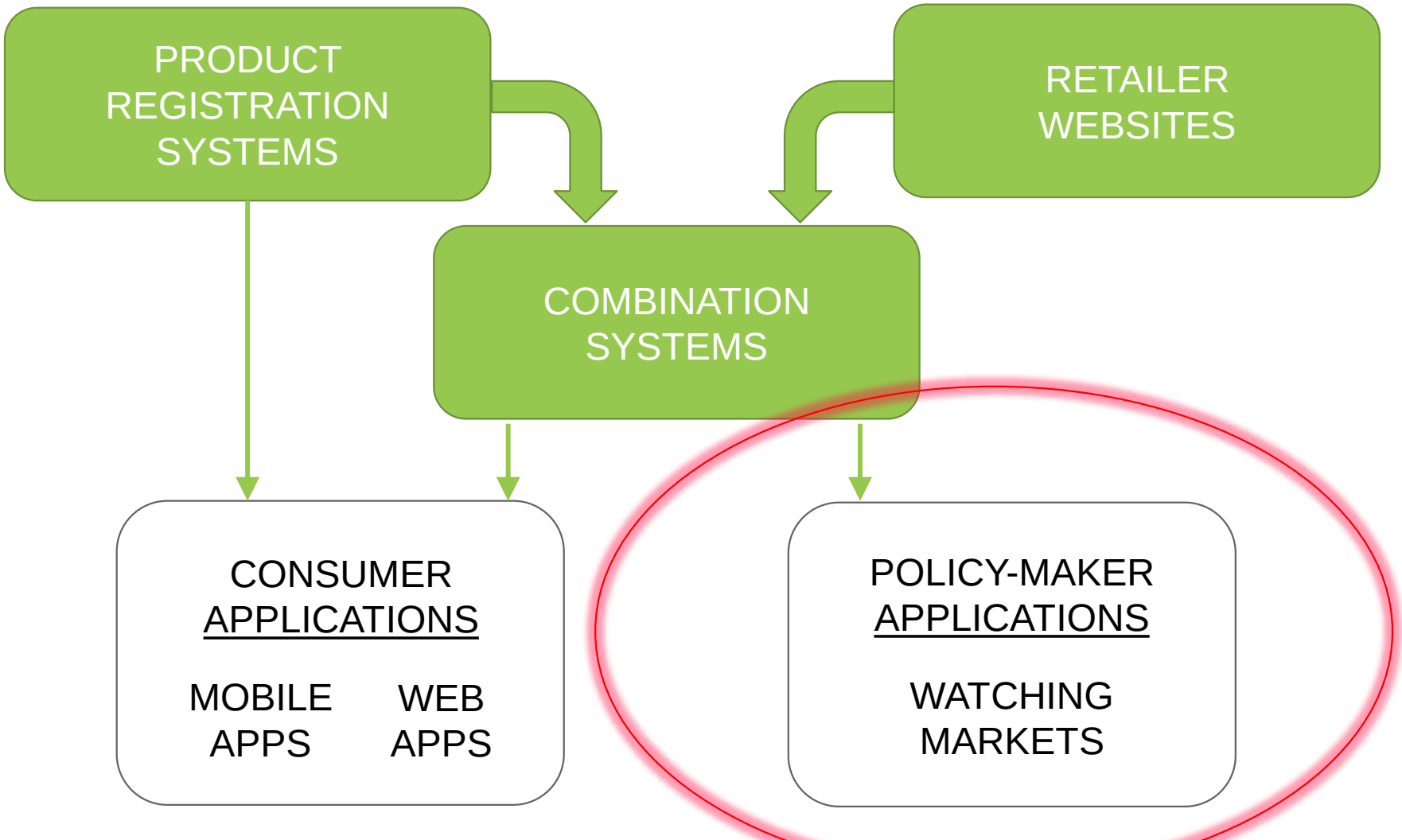
EPA

ENERGY STAR Price and Location Feature

Rollout plan

US EPA's experience with the SEAD Global Data Framework and Data Standards for Appliances

- **Generally useful, but there are still challenges:**
  - Capturing UPC at time of certification
  - Normalizing brand names
  - Use of wildcards in model numbers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WEB APPS
POLICY-MAKER APPLICATIONS
WATCHING MARKETS

Policy-maker applications

- Deciding when to revise policies
- Selecting near-term energy performance levels and future targets
- Program evaluation
- Market monitoring and verification
- And more…

Web-scraping tools for policy makers
(selected)

Service	Country Coverage
Enervee	United States, Sweden, Australia, South Africa
Big2Great	Sweden, Norway
CLASP	China
LBNL	United States

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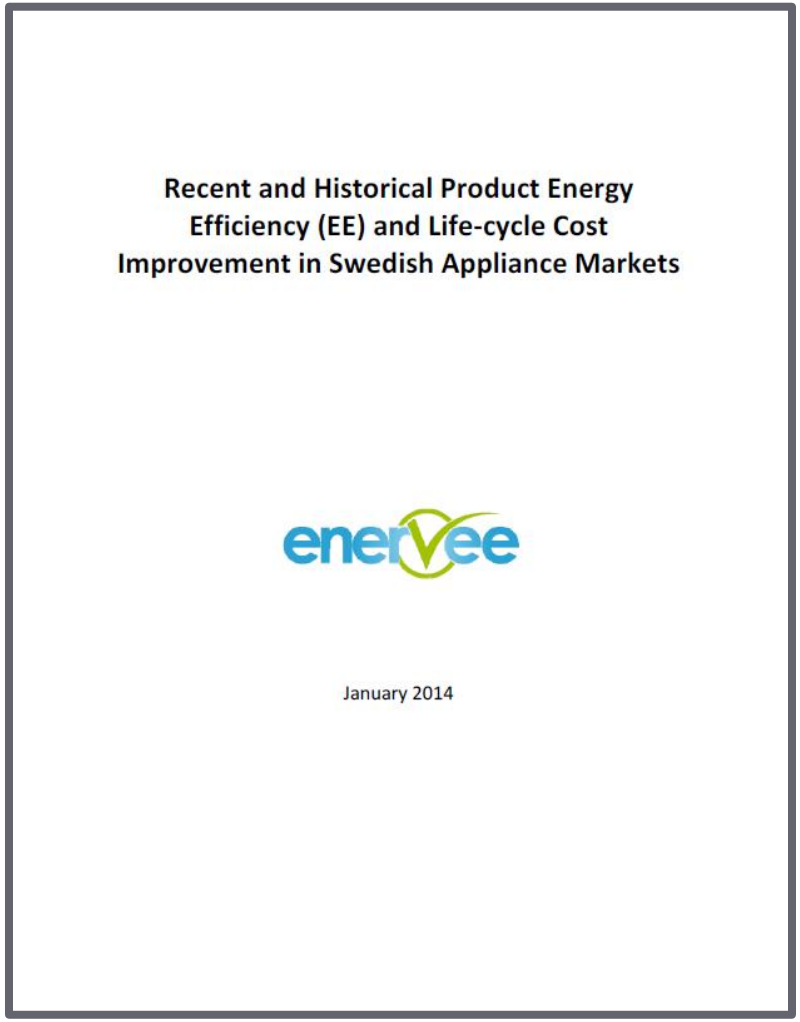
Sweden Energy Agency

January 2014



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SEAD webinar

February 2014

What analysis can be done with high-resolution product data?

Robert Van Buskirk

Lawrence Berkeley National Laboratory

February 5, 2014

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CLASP policy-maker summary

February 2014

clasp

improving the environmental & energy performance of appliances we use every day

FEBRUARY 2014

Driving more ambitious energy efficiency policies

NEW TECHNIQUES FOR FORECASTING ENERGY PERFORMANCE IMPROVEMENT RATES

It is widely recognized that energy efficiency policies must be more ambitious to meet governments' energy and carbon reduction targets.

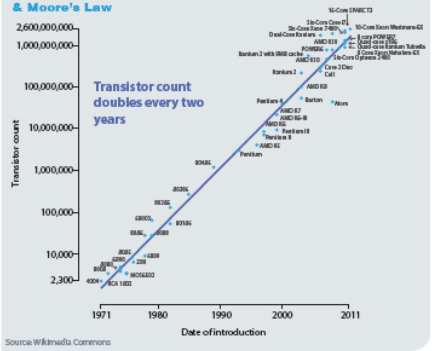
Current policies set short-term efficiency targets based on known technologies. But what long-term efficiency improvements are possible?

CLASP, with technical support from LBNL, is developing empirical methods to find out. With the right data, we can measure historical rates of efficiency improvements with precision, and project trends into the future.

While the basic technical concepts behind this research—policy-induced innovation, technology learning curves, and productivity-driven price trends—are well established in the academic literature, their application to long-term energy efficiency technology targets is completely new.

We have identified some of the key parameters that may determine how these trends vary between products, countries, and time periods. Governments can use this knowledge to set more ambitious policies and obtain greater cost-effective energy savings.

Figure 1. Microprocessor Transistor Counts 1971-2011 & Moore's Law



Source: Wikimedia Commons

Moore's Law describes the exponential growth, seen here, in the number of transistors per computer central processing unit (CPU).

Could there be a "Moore's Law" for appliance energy efficiency as well?

If so, growth rates will vary by product because of variations in the underlying technologies that make efficiency improvements possible. Growth rates will also vary between economies.

How policy makers could use this groundbreaking research

- To set long-term achievable and cost-effective efficiency targets
- To create more ambitious policies by identifying opportunities for additional energy savings
- To develop policies more quickly, more easily, and with stronger technical foundations
- To determine what payback period (or discount rate) is implied by market trends in a given country

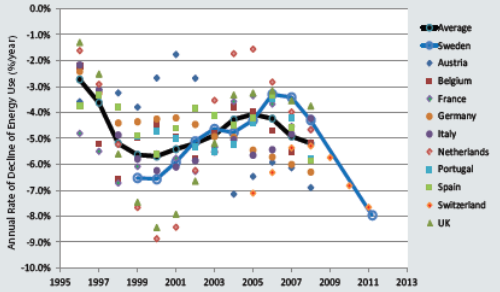
LEARN MORE

Intrigued? Want to learn more? Contact Ari Reeves at CLASP: areeves@clasponline.org.

Case study: Domestic refrigerator energy use in Europe

The figure below is taken from a recent report commissioned by the Swedish Energy Agency. It shows estimates of the annual rates at which refrigerator energy use has decreased for each of 11 countries in the European Union. Since energy efficiency policies for refrigerators came into force after 1995, the rate of refrigerator energy use has decreased by around 5% per year. **Can this rate of progress be increased to obtain more energy savings faster?**

Figure 2. Annual Rate of Decline of Median, Feature-Adjusted Refrigerator Energy Use



Source: Enervee Corporation. "Recent and Historical Product Energy Efficiency (EE) and Life-cycle Cost Improvement in Swedish Appliance Markets." Swedish Energy Agency. Forthcoming.

We have identified some key parameters that may determine the rate of long-term progress in energy efficiency. The economic drivers that catalyze more rapid, long-term market transformation include:

- Greater product durability (longer lifetimes);
- More rapid decreases in quality-adjusted appliance prices;
- Increased productivity of appliance and equipment production; and
- Acceptance of longer economic payback periods on upfront investments in more energy-efficient products.

Policies designed to activate these drivers and to minimize life-cycle cost for consumers are likely to maximize efficiency improvement rates over the long term.

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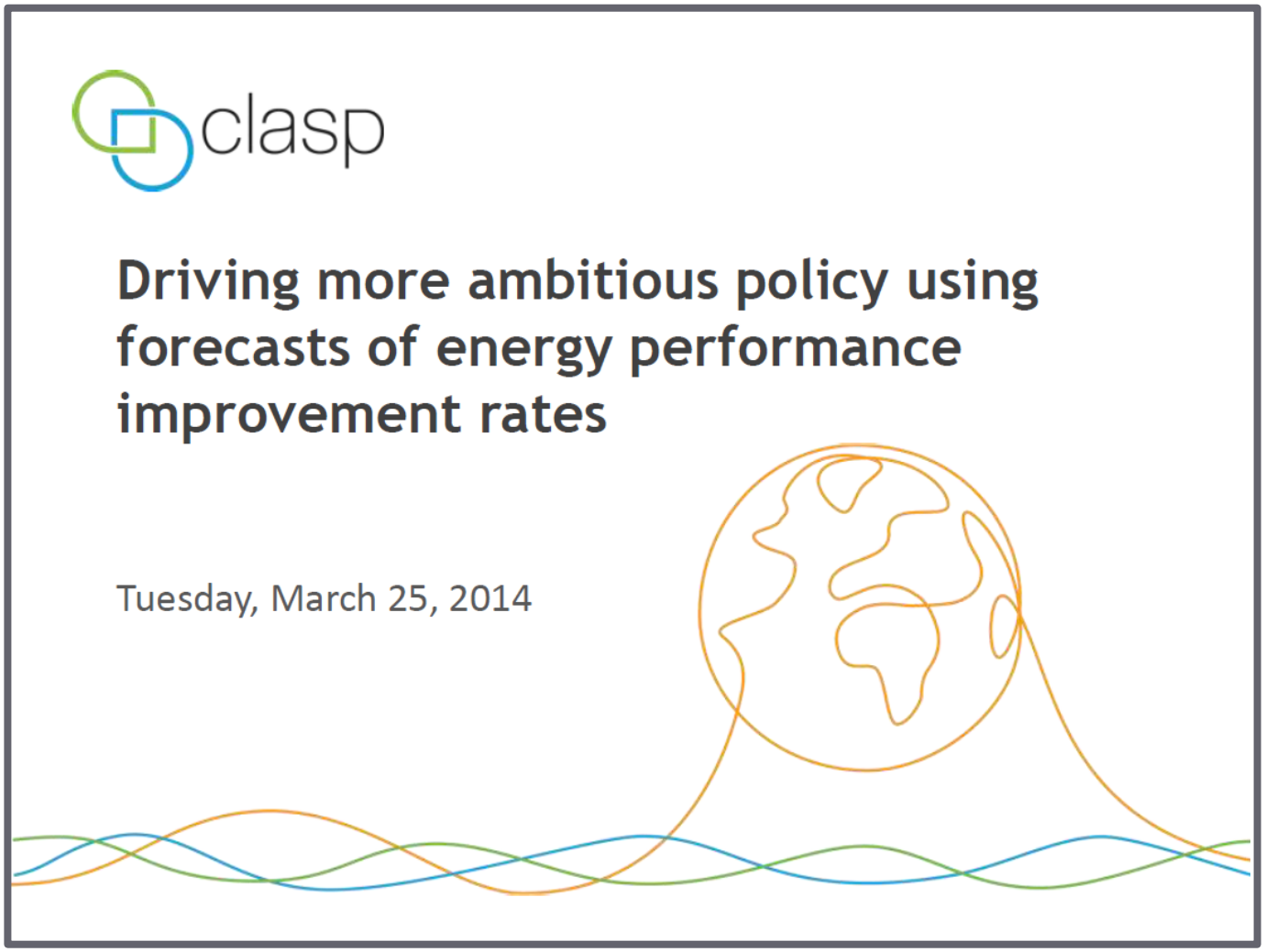
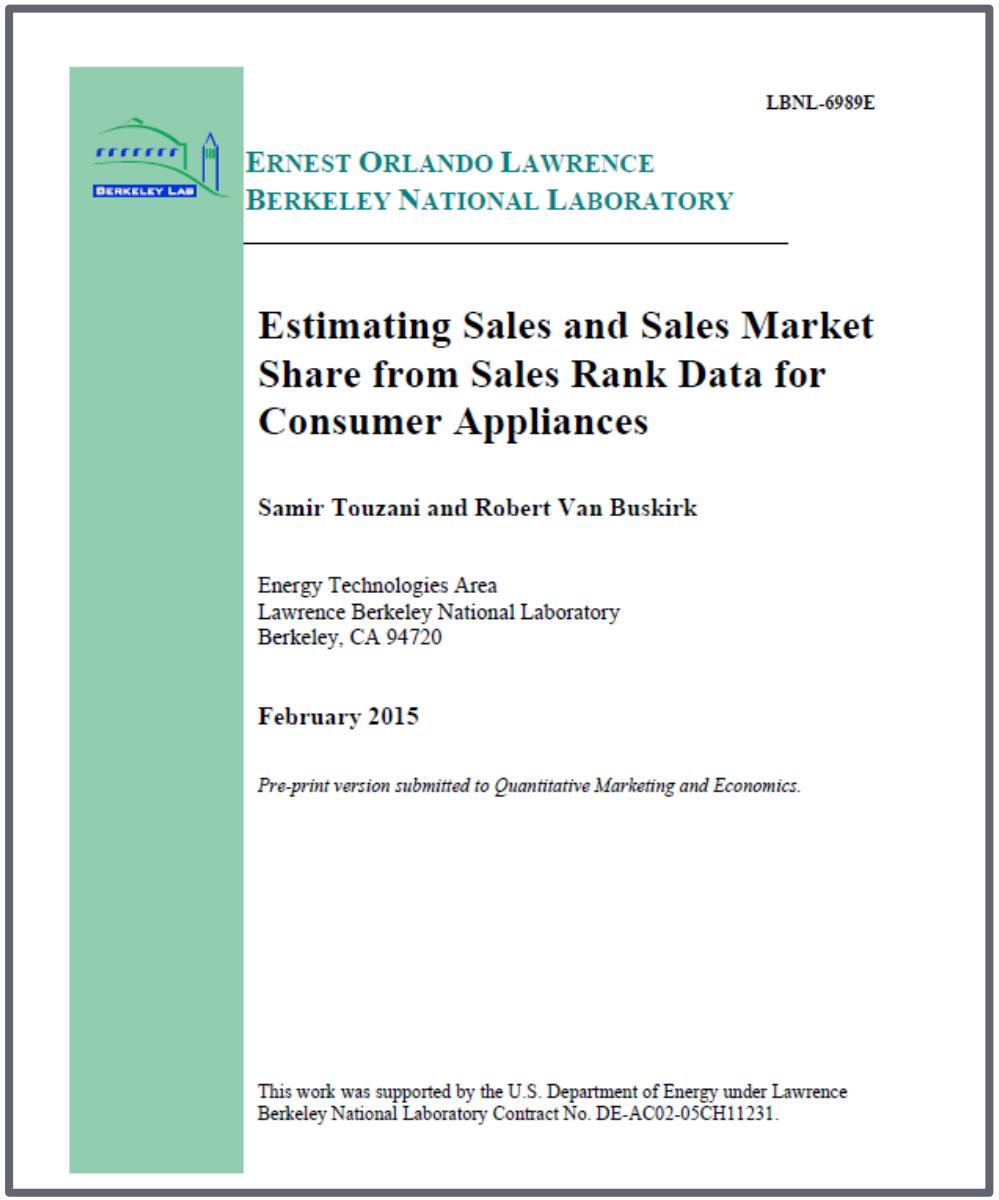
CLASP webinar

March 2014



LBNL report

February 2015



LBNL-6989E

ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY

Estimating Sales and Sales Market Share from Sales Rank Data for Consumer Appliances

Samir Touzani and Robert Van Buskirk

Energy Technologies Area
Lawrence Berkeley National Laboratory
Berkeley, CA 94720

February 2015

Pre-print version submitted to Quantitative Marketing and Economics.

This work was supported by the U.S. Department of Energy under Lawrence Berkeley National Laboratory Contract No. DE-AC02-05CH11231.

Key questions – **consumers**

- Are consumers more likely to choose more energy-efficient products when they have access to better info?
- What info is necessary, and how should it be presented?

Key questions – **policy-making**

- Can this info help me do my job more effectively—cheaper, faster, more accurately—than traditional methods?
- Can this info be used within existing rule-making processes? Are process changes needed to take full advantage?

Key questions – **compliance programs**

- Can the info in product registries be used to improve monitoring, verification, and enforcement?
- Does data on availability, location, and price hold additional value for MV&E? If so, how much?

Thank you!

Ari Reeves

Senior Manager, Global Best Practices

CLASP -- on behalf of the SEAD Initiative

areeves@clasp.ngo

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