



Australian Government

Department of the Environment and Energy

Filling out the energy efficiency indicators template: Australia

Terry Bradley July 2018



Current Data Sources

- The main source for the macroeconomic data is the Australian Bureau of Statistics (ABS).
 - All of the population statistics and the industry gross value added (GVA) statistics are sourced from the ABS.
 - Temperature adjustment indicators are sourced from the Australian Bureau of Meteorology (BOM).
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Current Data Sources

- Aggregate energy production and consumption estimates are prepared by the Department of the Environment and Energy, and published in the annual Australian Energy Statistics (AES).
 - a. The Australian Petroleum Statistics Survey (APS) collects and publishes upstream and downstream oil industry data.
 - b. The Clean Energy Regulator (CER) collects data on industry production and consumption of energy products. This very large dataset is the main data source for compiling our annual energy statistics.
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Current Data Sources

- Additional information on the output of energy intensive energy users is sourced from the Australian Department of Industry.
 - Statistics for the transport industry are sourced from the Australian Bureau of Infrastructure, Transport and Regional Economics (BITRE)
 - Data for the residential and commercial sectors generally come from baseline studies and/or industry liaison. For many of Australia's submissions these data have been estimated using statistical techniques.
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Current Data Sources

- The sources mentioned cover a significant majority of the data used for Australia's submission.
 - Complementary data and information from many other sources are used to confirm and reconcile the data provided in these submissions.
 - This is also true of much of the data that are used to produce the Australian Energy Statistics more generally (which feed into these submissions).
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Data Quality

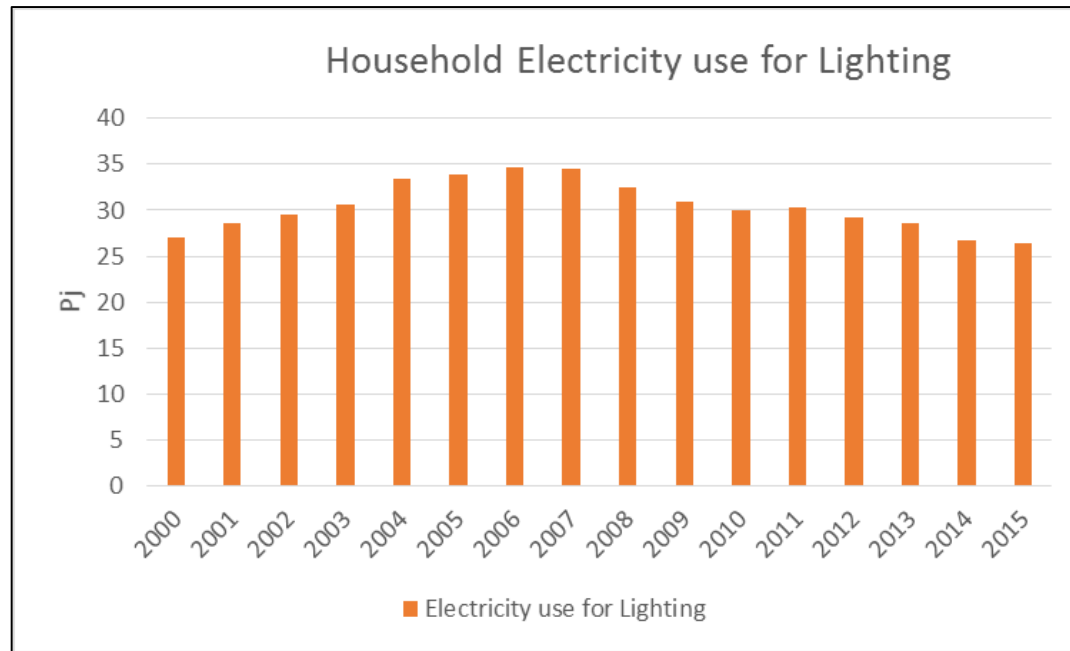
- The data sources that feed into Australia's submission are of varying quality.
 - In particular, some of the information provided by Australia is not current.
 - The residential sector for example relies on historical studies of household gas and electricity consumption that are updated using growth indicators. As well as being potentially out of date, this provides only a "top down" view of consumption.
 - Some of the data are also only partial and inconsistent with our national statistics.
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Data Quality

- Although there are well-known weaknesses in the data, Australia appreciates the value of these submissions.
 - Australia will continue to look for ways to improve the data quality.
 - ***Important note on data quality key dimensions***
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The Value of the Data for Policy Analysis

- In 2008 Australia phased out incandescent lights leading to a fall in lighting energy use in households. Without this level of detail in the data it would not be possible to see the success of that policy.



The Value of the Data for Policy Analysis

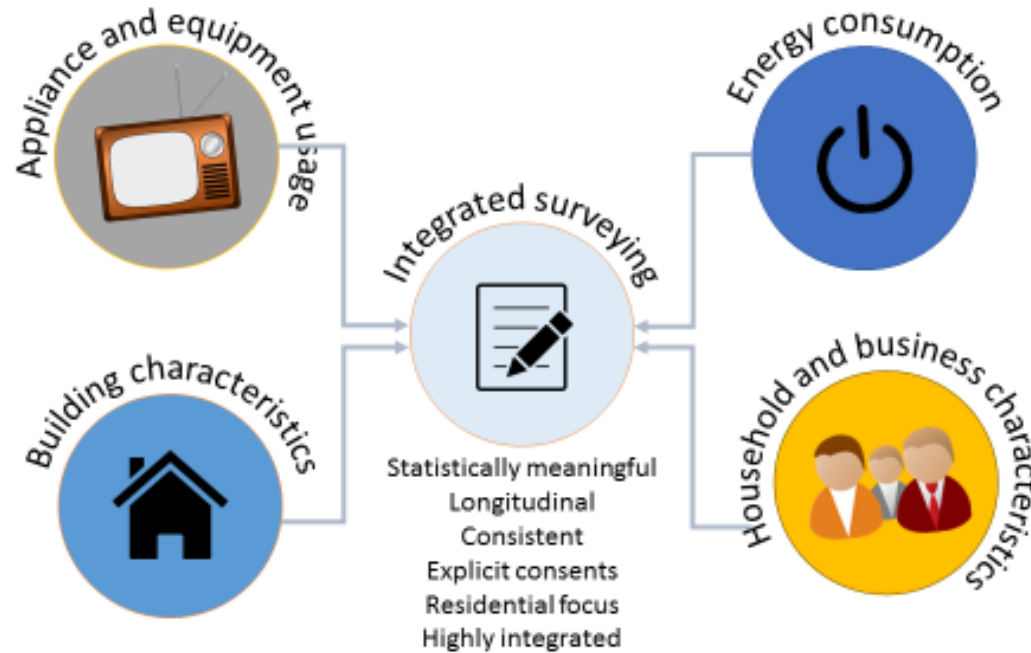
- Energy use data referenced in the previous slide is firstly based on a household energy use survey carried out by the Bureau of Statistics in 2012.
- Lighting energy use is modelled using floor area and an assumption on the number of lights per unit of floor area.
- The model was created by a consultant engaged by the Department to carry out the Australian residential energy baseline study

<http://www.energyrating.gov.au/document/report-residential-baseline-study-australia-2000-2030>

The Energy Use Data Model (EUDM)

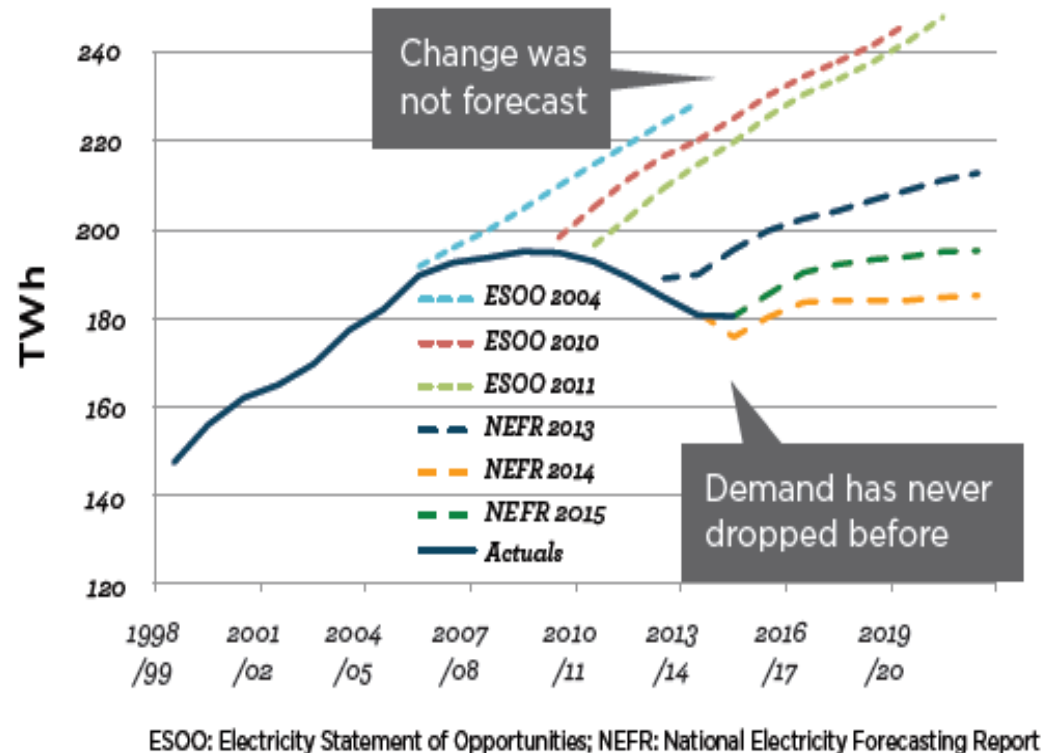
- Bringing together existing and new datasets and value-adding analysis.
 - Making as much data as possible public for the energy market and researchers
 - Providing protected datasets to selected key players for policy and market forecasting purposes.
 - Online platform providing access to:
 - a. Extensive public datasets from many sources
 - b. Searchable and downloadable with extensive meta-data and processes to maintain these datasets over time.
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The Energy Use Data Model (EUDM)



The Energy Use Data Model (EUDM) Drivers

- 'Top down' forecasting models stopped working around 2007 - electricity demand started to decouple from population and GDP growth.
- Lack of data and transparency of consumer energy use meant changing demand trends were **not predicted**, resulting in significant forecasting errors.
- This led to poor infrastructure planning and was one of the key drivers of **energy price increases**.
 - Infrastructure development is slow – investment planning occurs at least 5 years before the new capacity is needed so forecasting errors have long-lasting impacts.



The Energy Use Data Model (EUDM)

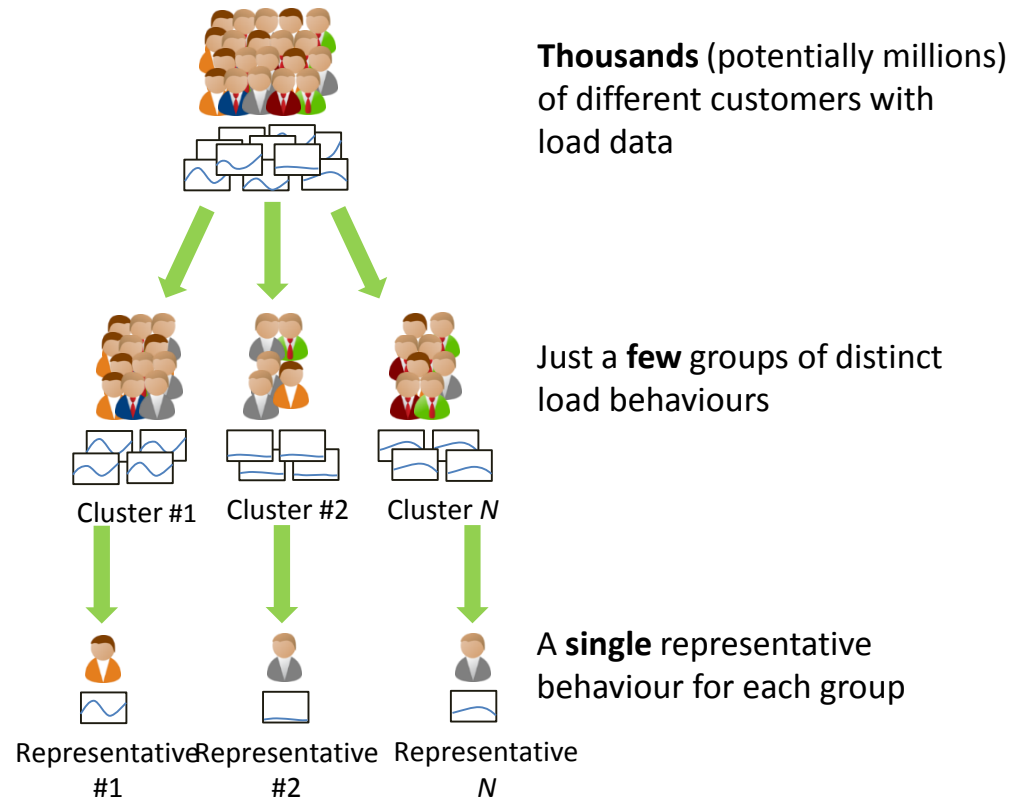
Pilot

- Downloadable access to over 100 energy use datasets, many of which are new or have never been easily accessible before. For example:
 - a. Zone substation data from all networks around Australia over the past 10 years, providing locational regional demand profiles for the first time.
 - b. New surveys linking demographic information with smart meter data
 - New research adding value to these datasets
 - a. Estimates of air conditioner and PV loads on all zone substation data nationwide – to support improved forecasting.
 - b. Tools to cluster meter data to identify representative consumer load profiles
 - c. Analysis of meter data against building data to provide new evidence on cost-effective building improvements
 - d. Evidence of survey methodologies to increase response rates for energy use data from Australian households.
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The Energy Use Data Model (EUDM)

Identifying representative behaviours

- Clustering consumers by their load profile reveals the myriad different ways energy is used in households.
- Combining these results with demographic information from EUDM household surveys allows us to explain the differences for the first time.
- Creating an 'archetype' behaviour for each group also allows for fine grained analysis without breaching any privacy constraints.



The Energy Use Data Model (EUDM)

Priorities

- Filling gaps
 - a. What consumers are actually paying, especially in the small business and commercial sector
 - b. How costs are impacting consumers and affecting choices (switching)
 - c. Further integration of large and small business data
 - Meter data
 - a. Clustered and by location, linked to PV and heating and cooling
 - b. Linked to consumer types – household types and businesses by industry activity.
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QUESTIONS

