
Household refrigerators: Monitoring efficiency changes in Europe and Australia over the last 10 years

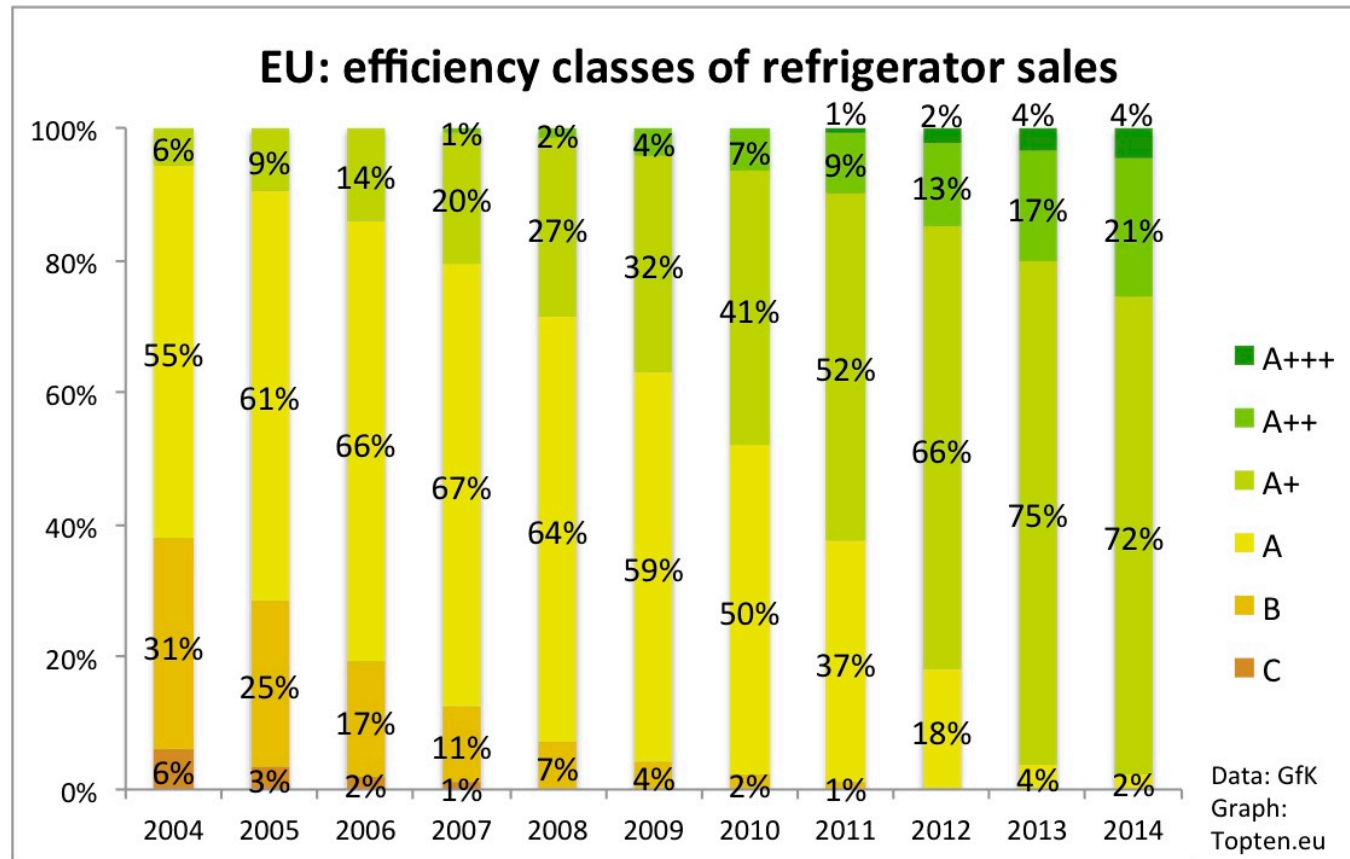
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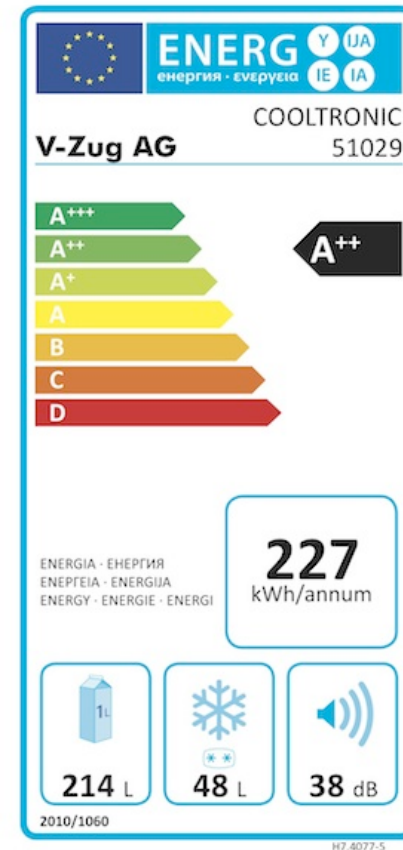


Market monitoring: our definition



Description of the market – NOT compliance verification

Energy Labels: basis for tracking market changes



Market Monitoring in Australia

Mandatory product registration since labelling began in 1986 (at State level first, now national, and with New Zealand)

- Each product is registered with technical specifications
- Good part of the database is publicly accessible
- It is used for
 - consumer information tools (showing efficiency and running costs online and on mobile app)
 - assessing the market when revising Labels and MEPS

Additionally: **market monitoring based on sales data**

- AUS purchases GfK data (now: 1993 – 2014)
- NZ: suppliers must provide sales data for annual report

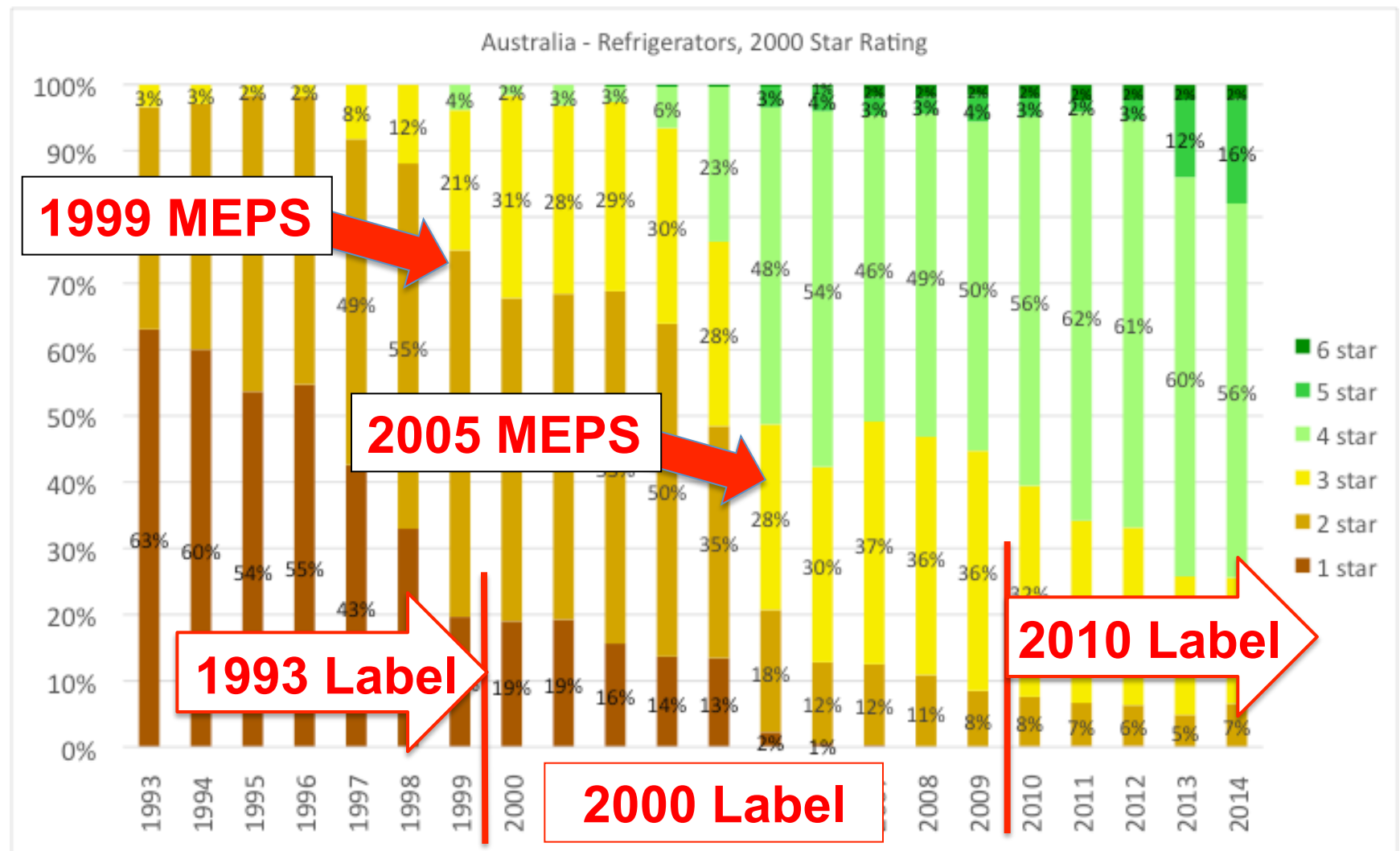
Tech details + sales information = highly accurate analysis

(No) Market monitoring in Europe

- **Today** policy decisions are often taken based on partial / outdated data, which is not comparable. Energy savings may be missed due to sub-optimal policies.
- **A products database is planned for 2016**
- Systematic market monitoring can (better with sales info)
 - Support policy design decisions (MEPS, Labels)
 - Allow for policy evaluation
 - Start policy revisions on time
 - provide stock and consumption information (sales needed)

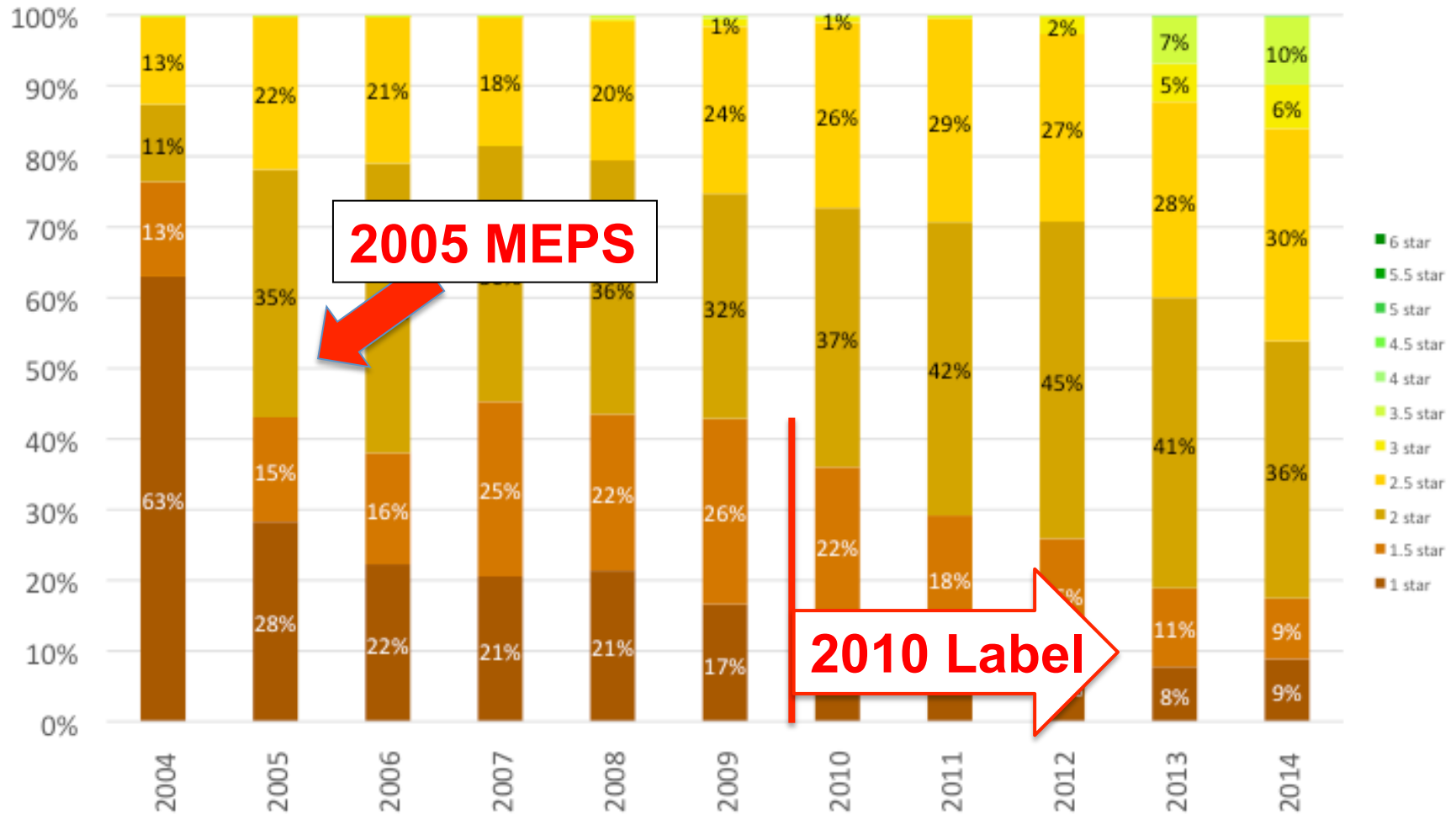
Our paper shows the **potential of sales-based market monitoring**

AUS results: Energy efficiency, 2000 label system

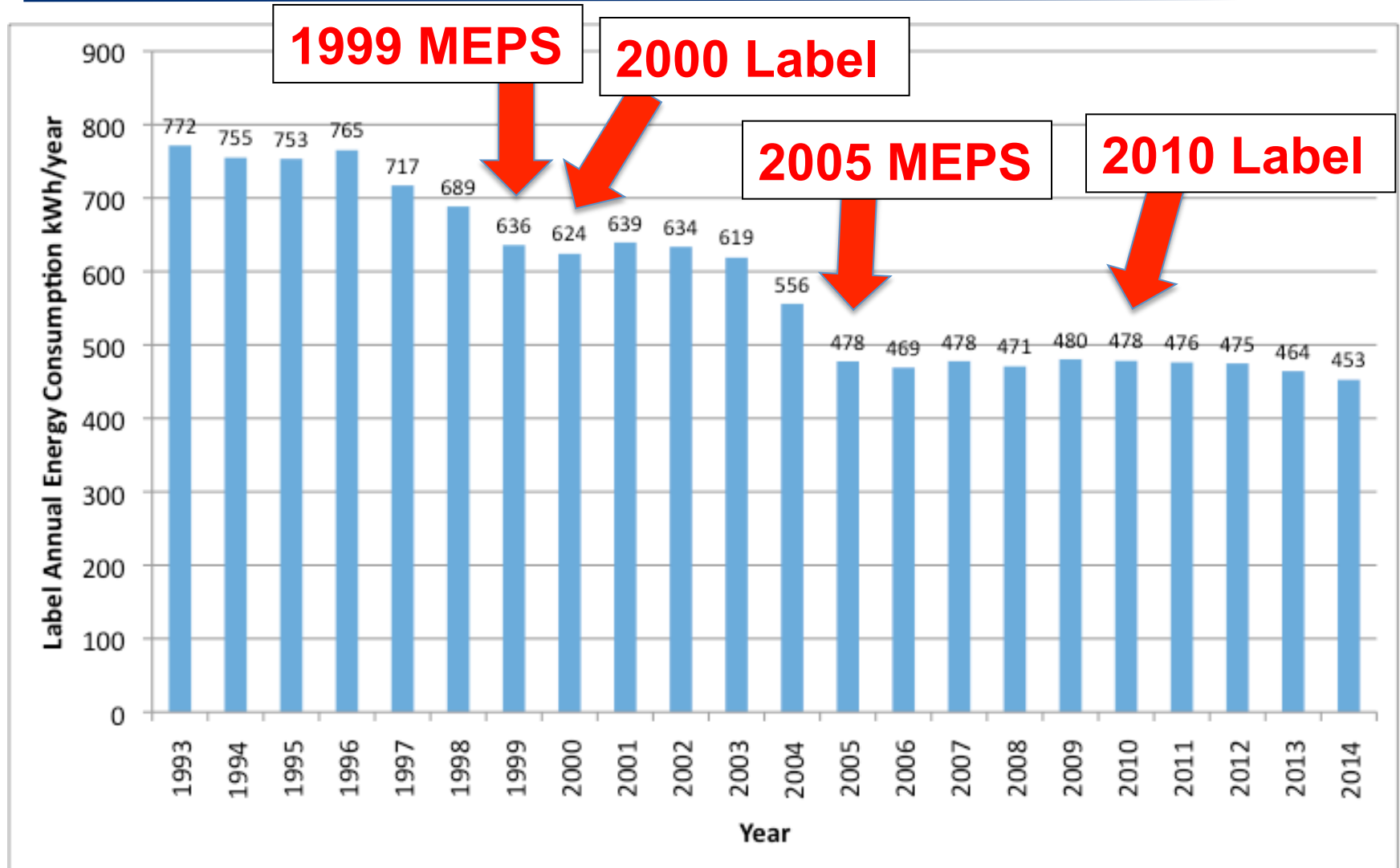


Australian efficiency trends: 2010 label system

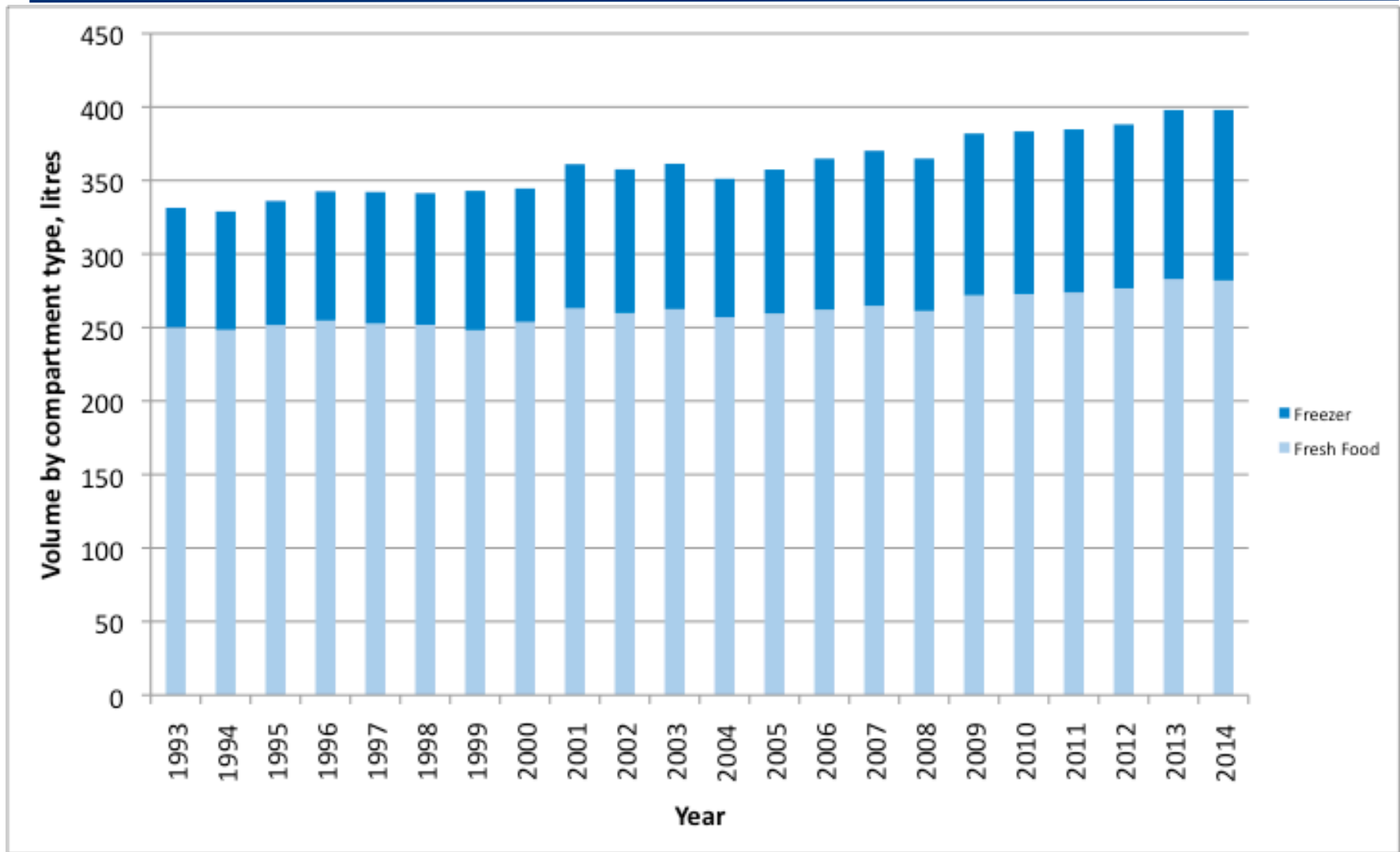
Australia - Refrigerators, 2010 Star Rating



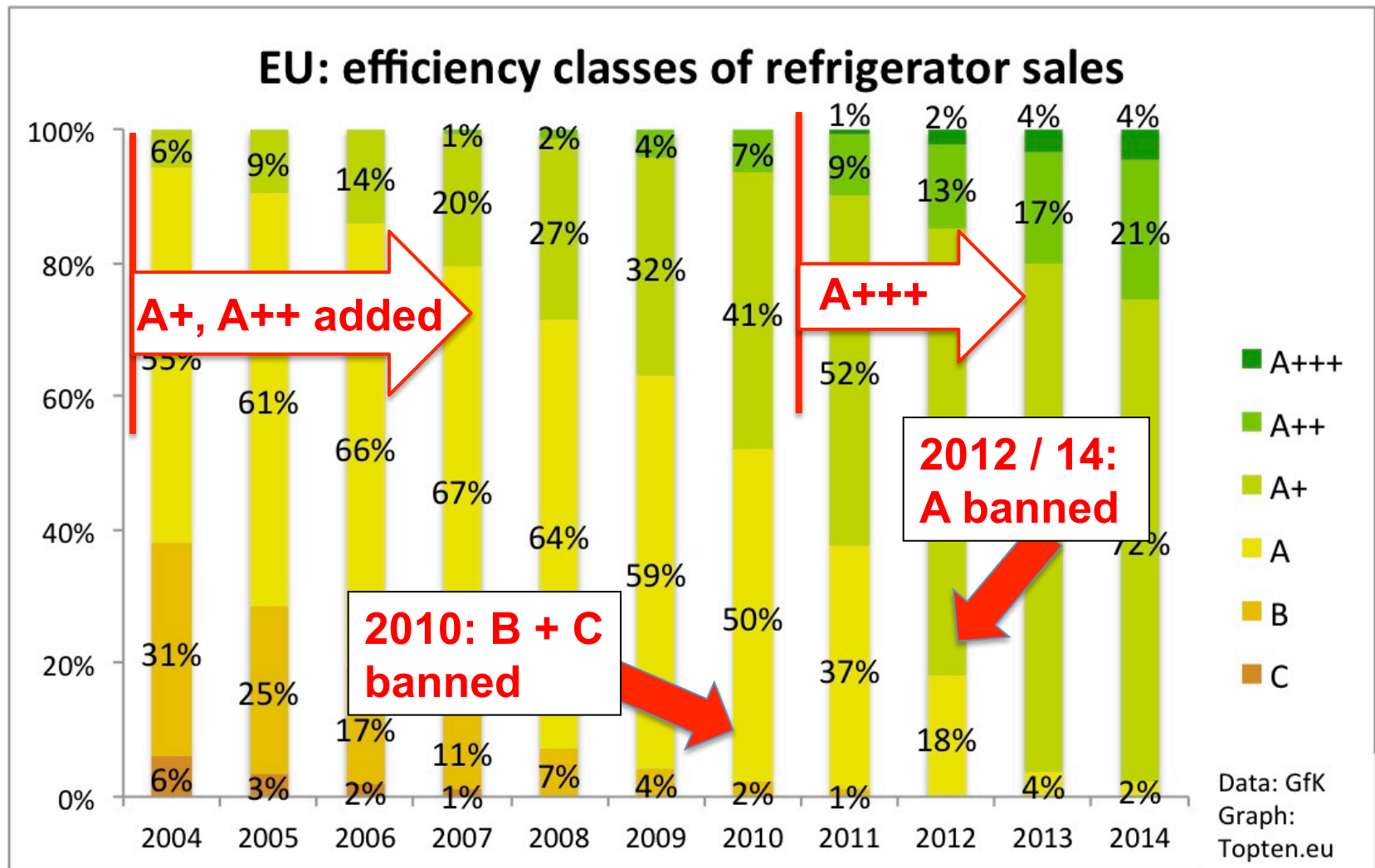
AUS: 41% energy reduction (kWh/year), 21 years



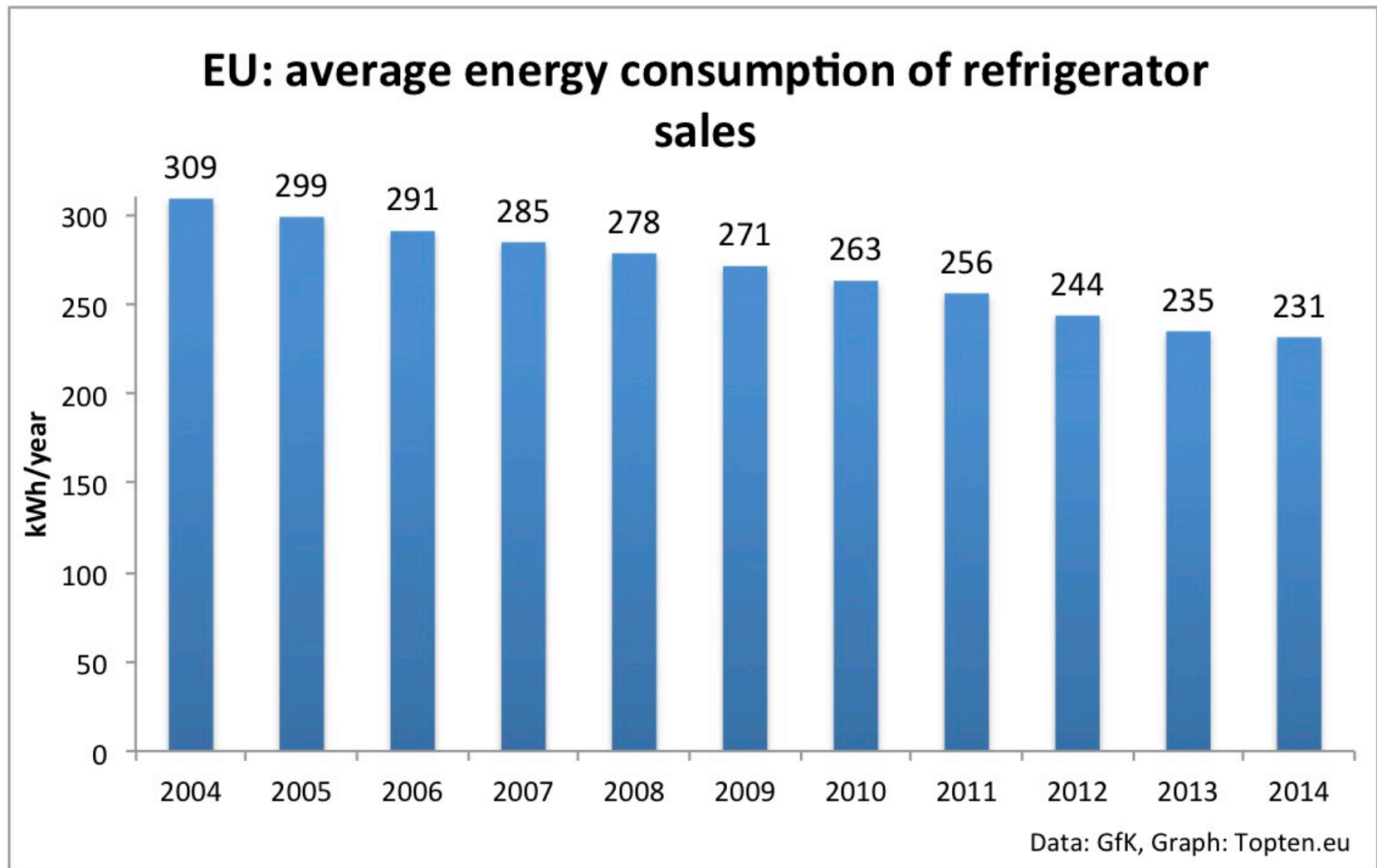
AUS: 23% volume increase in 21 years



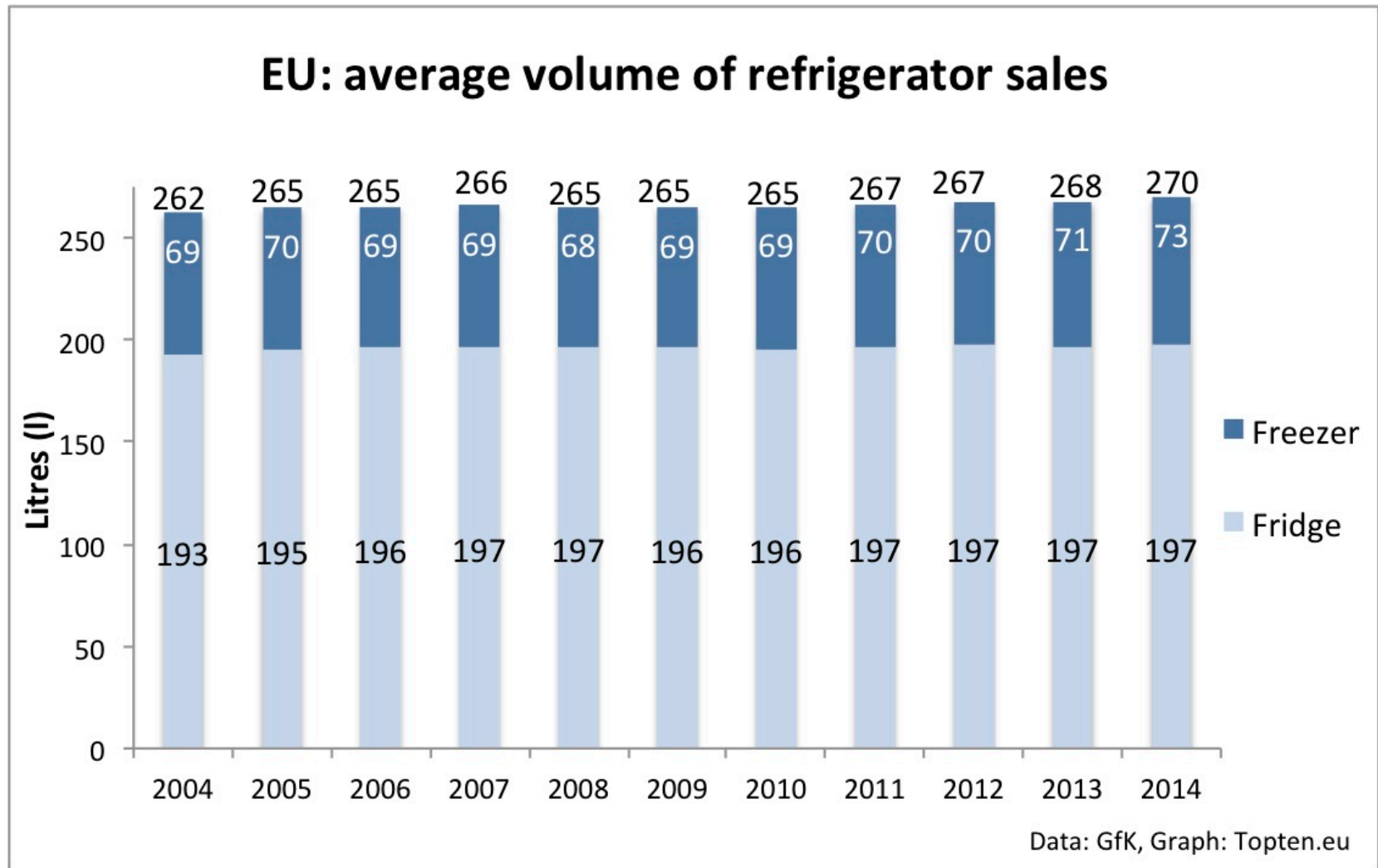
EU results: 34% efficiency improvement



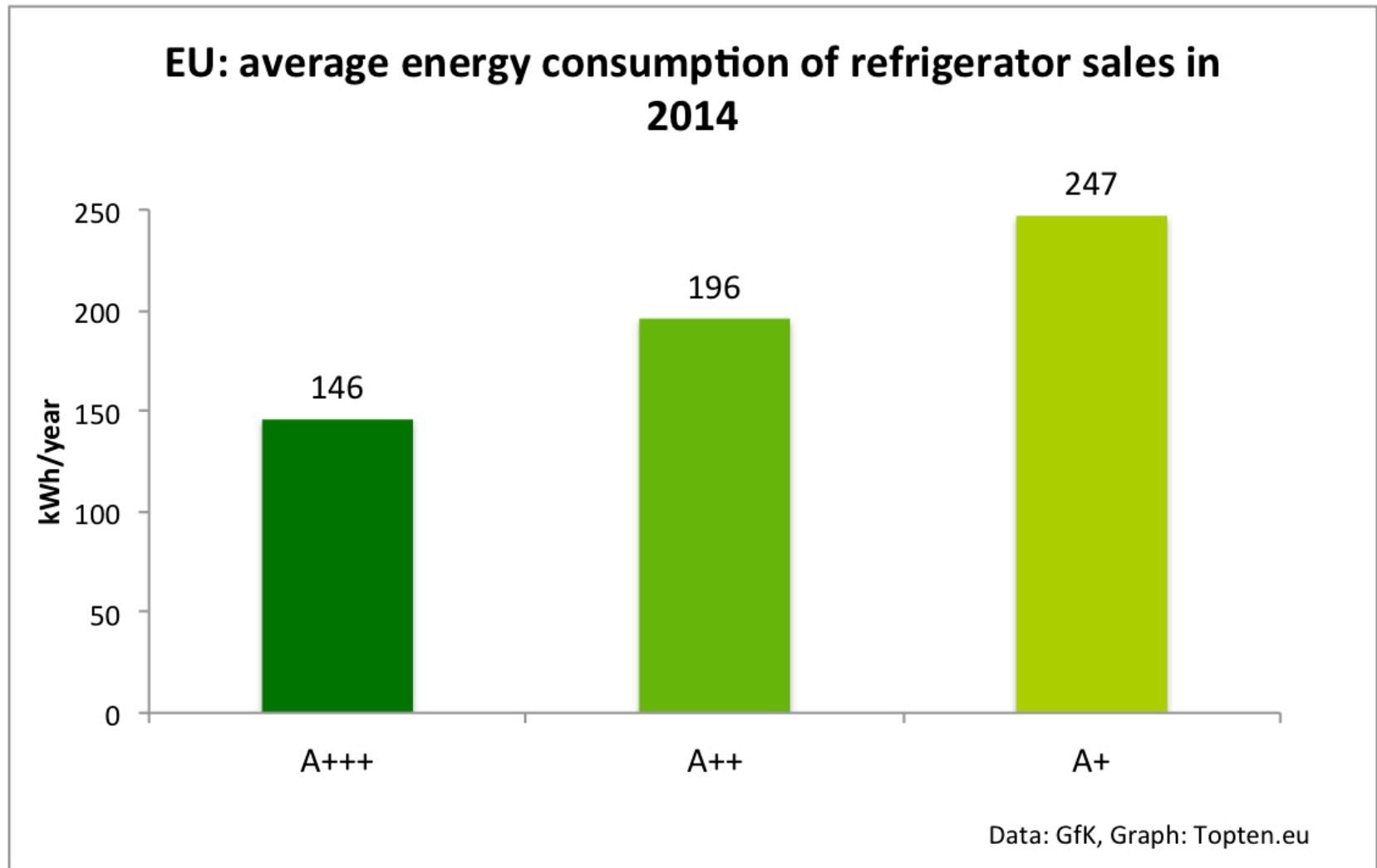
EU: 25% energy reduction in 10 years



EU: volume has not changed a lot



EU: A+++ saves 40% energy over A+



Refrigerators: Key conclusions

In AUS and EU labels and MEPS have supported

- **Efficiency improvements**
- **Energy reduction** at comparable rate (30% / 25%)

Australia / New Zealand:

- Gold standard of market monitoring
- Market survived Label rescales and very ambitious MEPS

Europe:

- Big saving potential: **A++ as 2014 MEPS** would have lead to nearly **10 TWh/year of savings** (estimate incl. freezers)

Differences in market trends AUS – EU

- **AUS MEPS** have a big impact –
 - because they are very stringent
- **The Label** seems to have a bigger impact in EU
 - despite unpopular A+ classes
- **Size increase** in AUS
 - despite a formula that is not favouring large refrigerators ($V_{adj}^{0.67}$)
- **Lower energy consumption** in EU
 - despite missing market monitoring & Label rescales

➔ Our market monitoring does not provide (all) explanations, but allows for differentiated discussions.

EU: recommendations for revision

- **New, ambitious A to G Energy Label** with empty top classes
- **Announce future, ambitious MEPS:** applying learning curves to LCC calculations gives more realistic results. The saving potential is huge.
- **Simplify the EEI formula to remove misleading features,** so that efficiency improvements translate more directly into energy savings:
 - Remove 'correction factors' for extra features (tropical compressors, frost-free function, inbuilt models, chill compartment)
 - One reference line (or, as in AUS, curve) for all categories is enough

Conclusion: Europe needs market monitoring

Mandatory product registration with public database

- Products overview & 'model' definition
- Market surveillance
- Consumer information tools, digital labels

Sales-based market monitoring

- **Sales** information is needed for unbiased analysis
- Yearly publication of a report – **public basic facts**
- It can start **now**
- **The data is there and does not cost a fortune:**
professional market research companies have it

Thank you for your attention

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AUS: model distribution in Label classes

