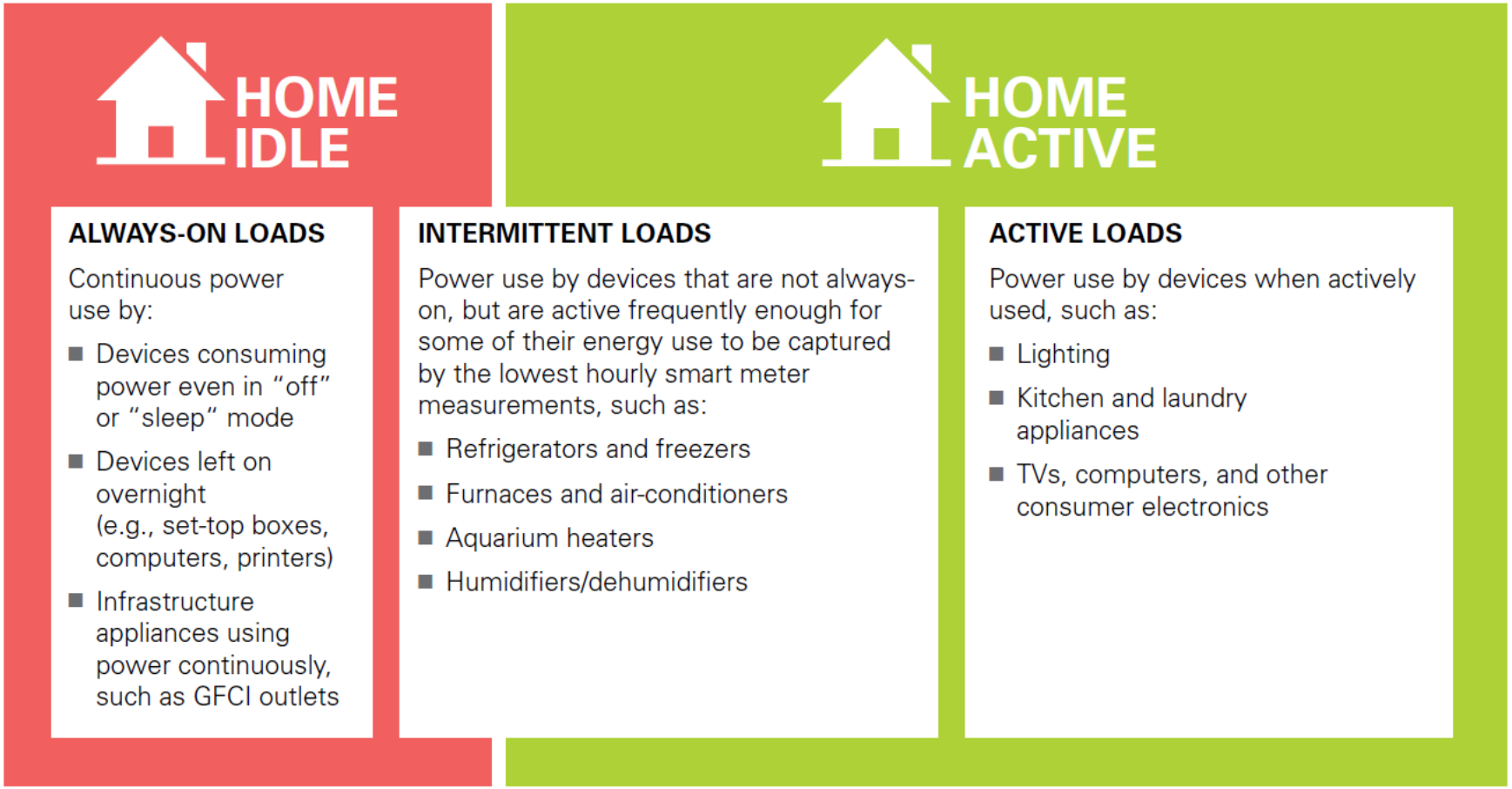
HOME IDLE LOAD - NRDC STUDY

PIERRE DELFORGE - MAY 12, 2015

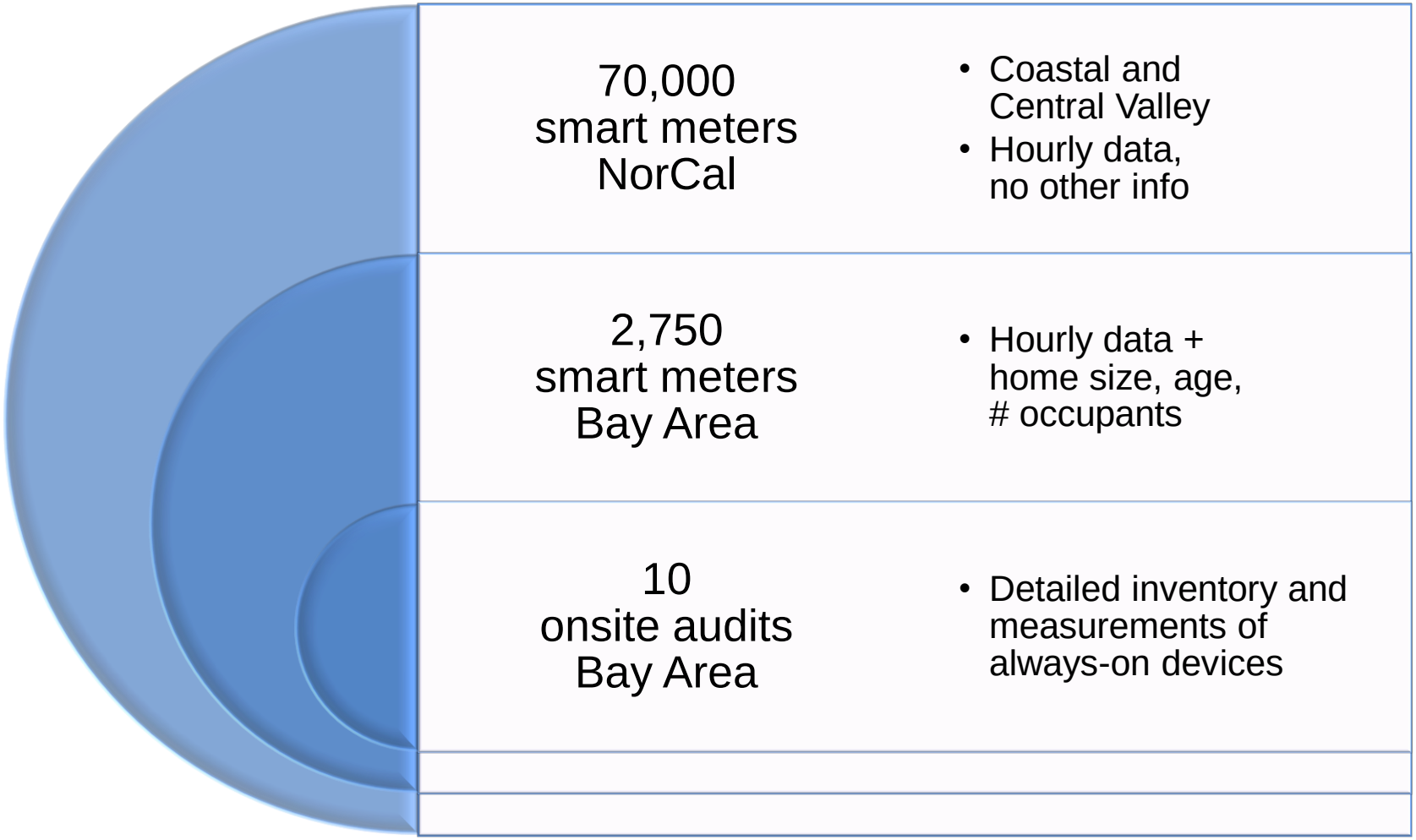
Why Home Idle Load?

- Growing number of devices
- More are going digital:
  - Displays, digital controls, connectivity…
- Smart meters offer a great new tool for large scale analysis

What is Home Idle Load?

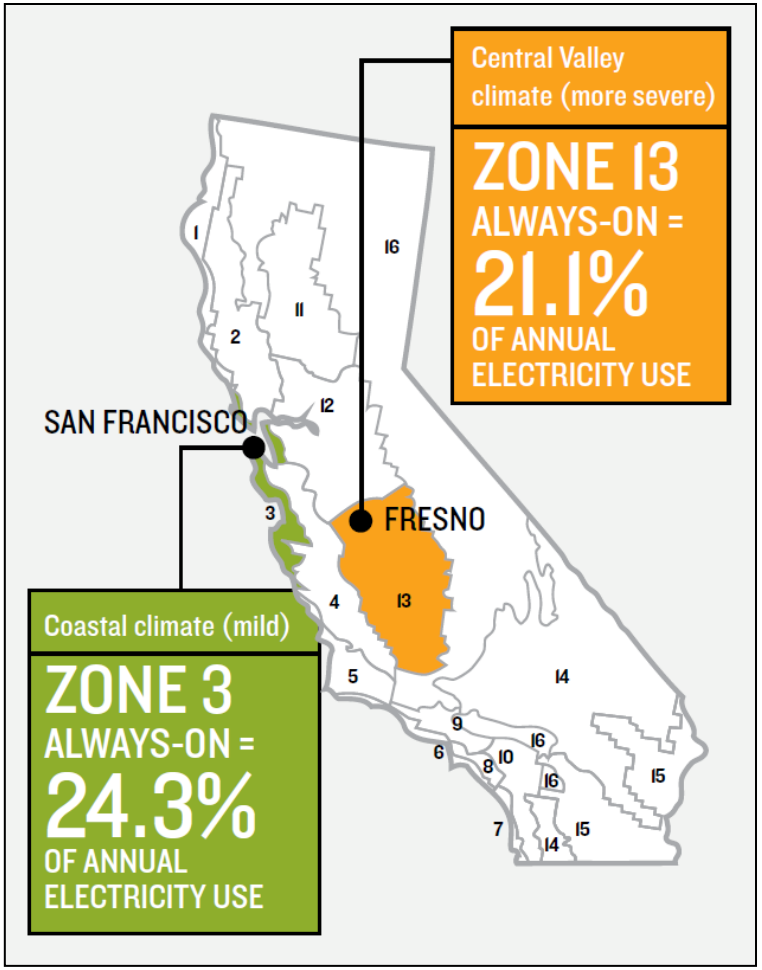


Study based on three sources of data

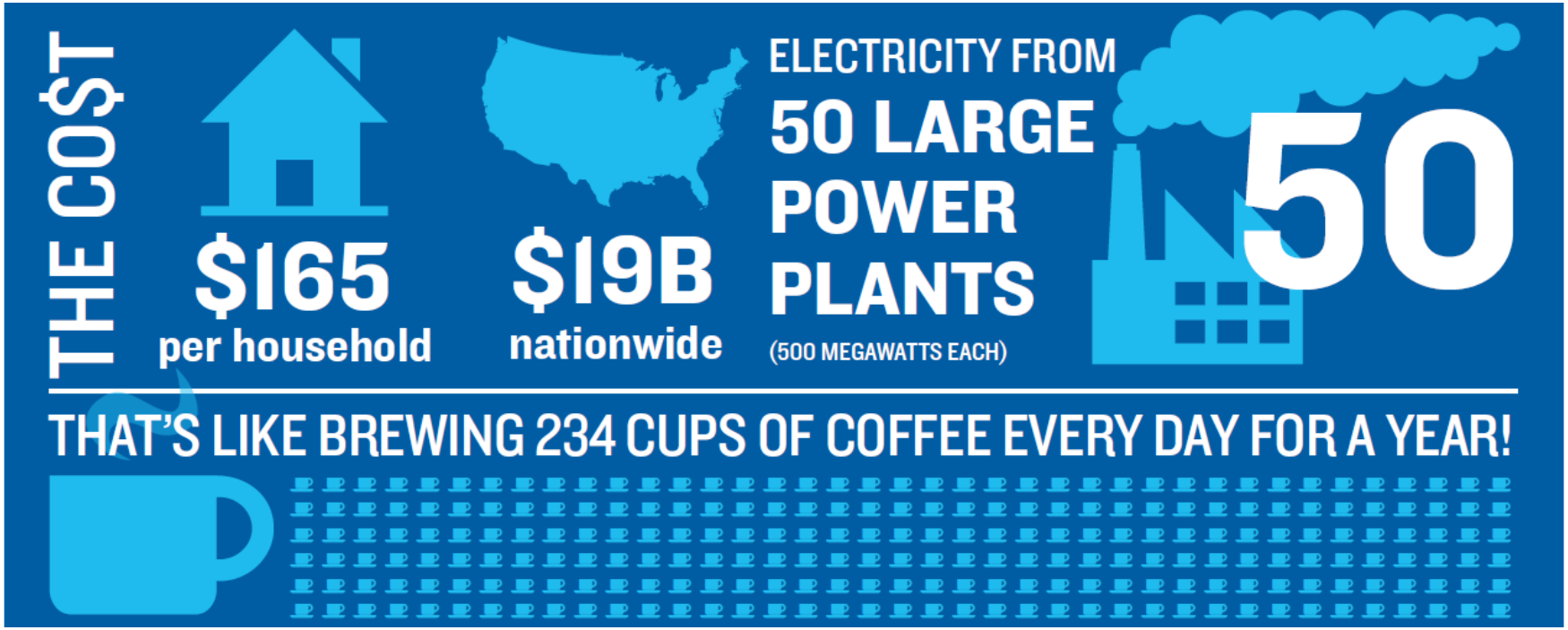


Findings: 23 percent of CA residential use

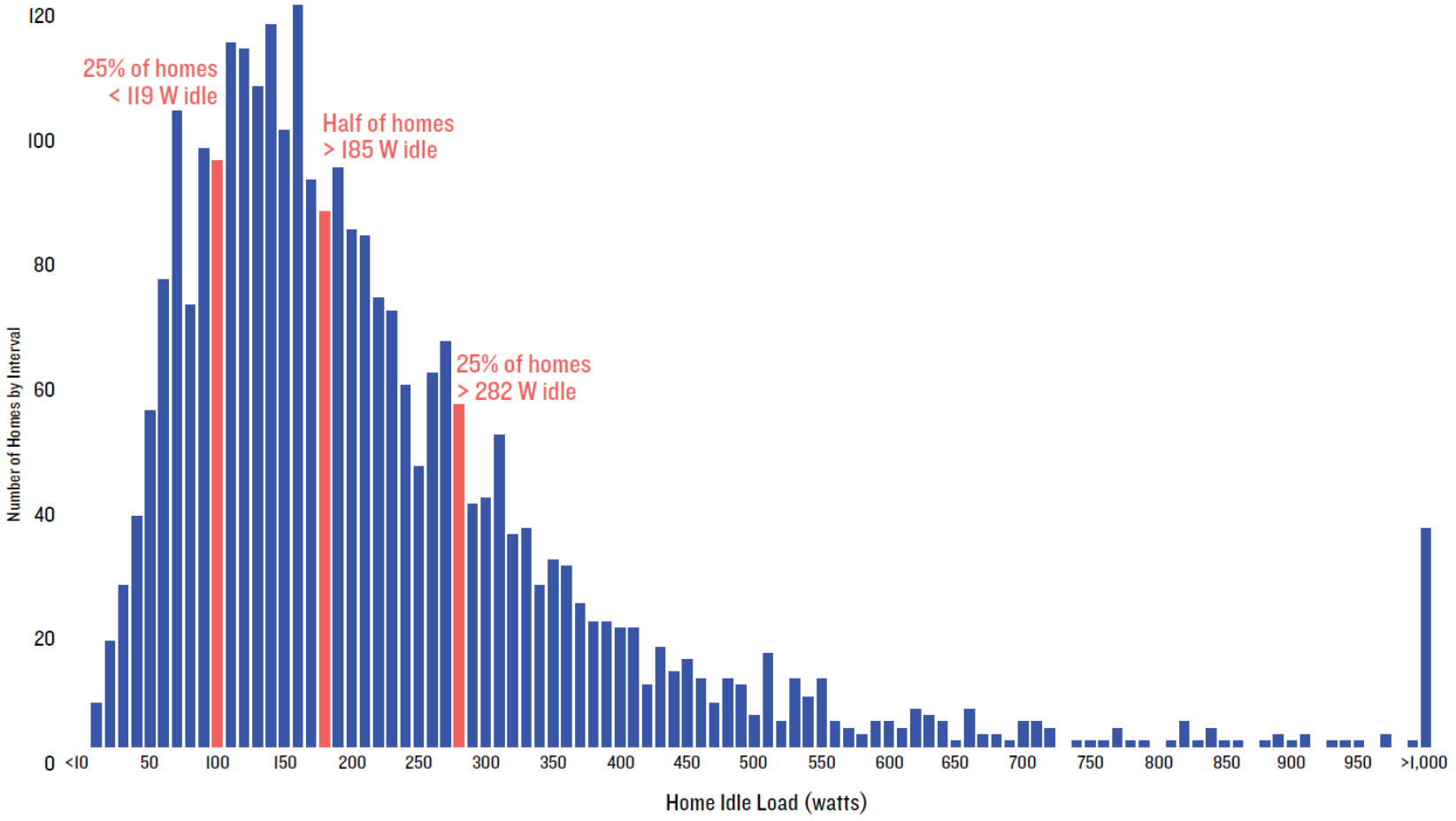
- Always-on load represents 23 percent of residential electricity use in CA
- Little variation between climates and socio-economic regions



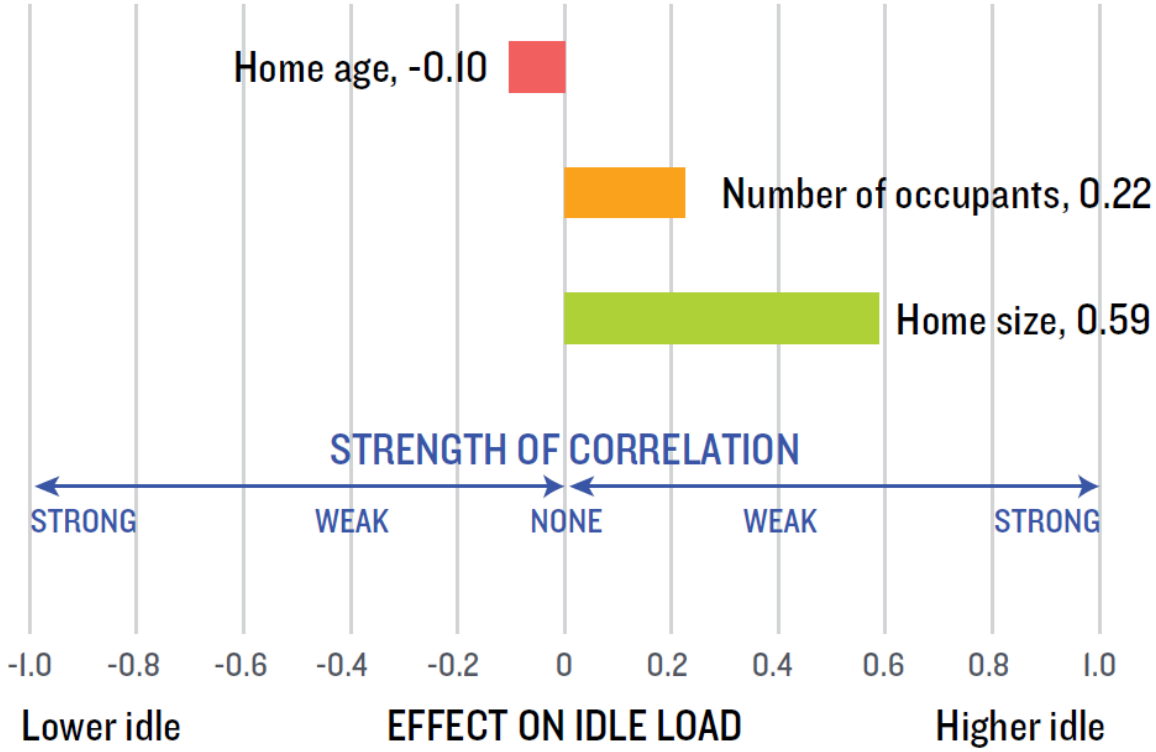
65 devices per home, 6-7 billion nationally, add up to big power plants and bills



Large range of idle loads

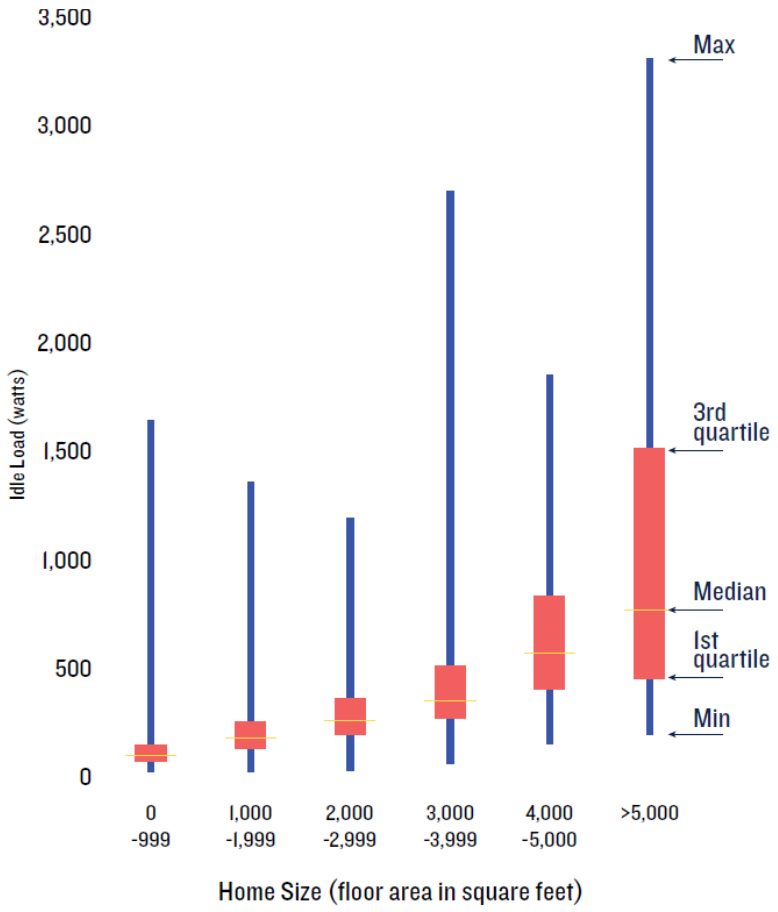


Limited correlations with home age and number of occupants, moderate with home size

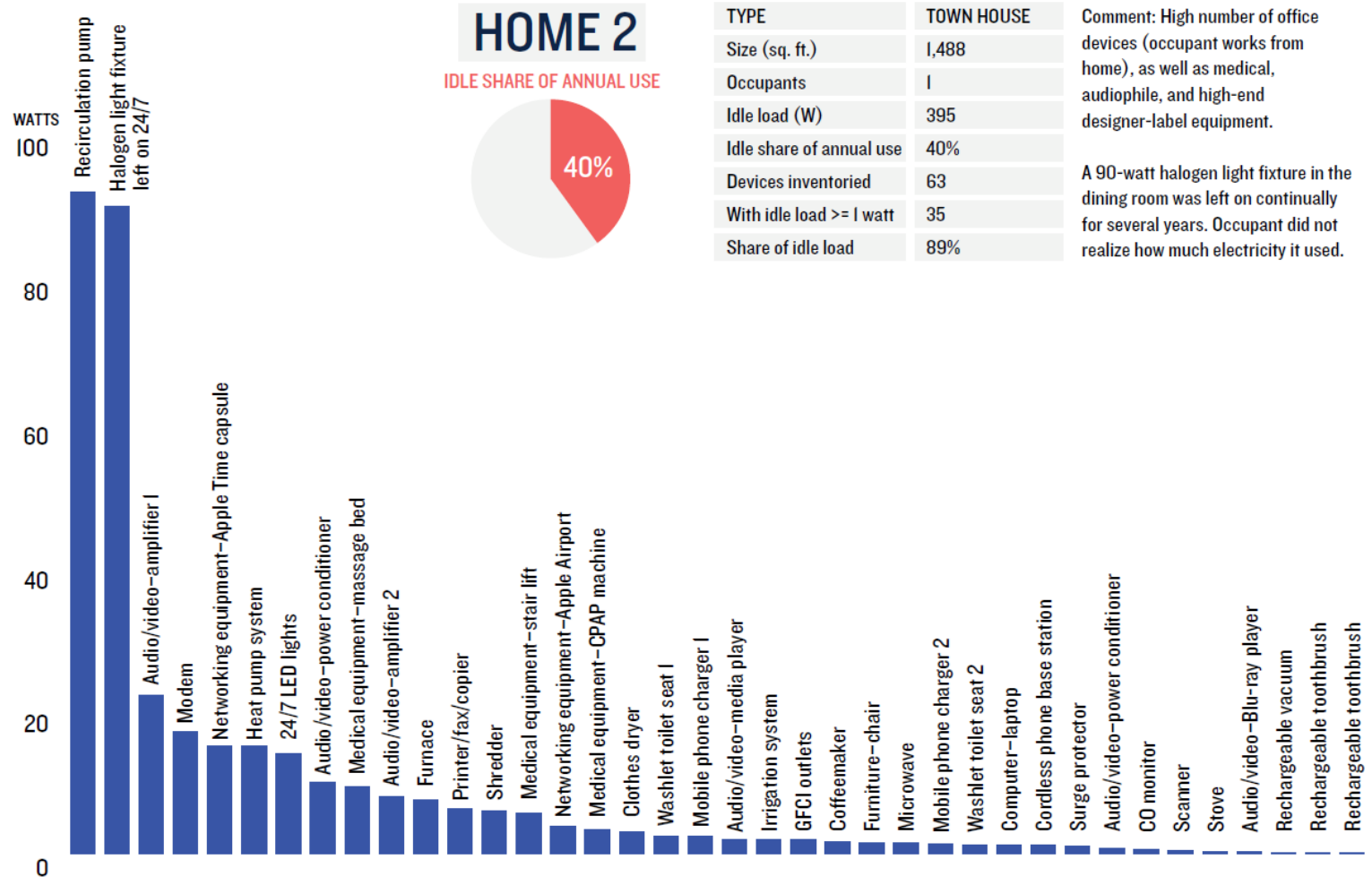


Wide range of idle load between homes of similar sizes

- Suggests significant opportunities for reductions in homes with highest idle load
- If all homes reduced their idle load to the level that a quarter of the homes already achieve, idle energy would be reduced by **42 percent** on average across all homes, and total residential electricity consumption would be cut by **14 percent**.



Idle load of one of 10 Audited Homes



HOME 2

IDLE SHARE OF ANNUAL USE

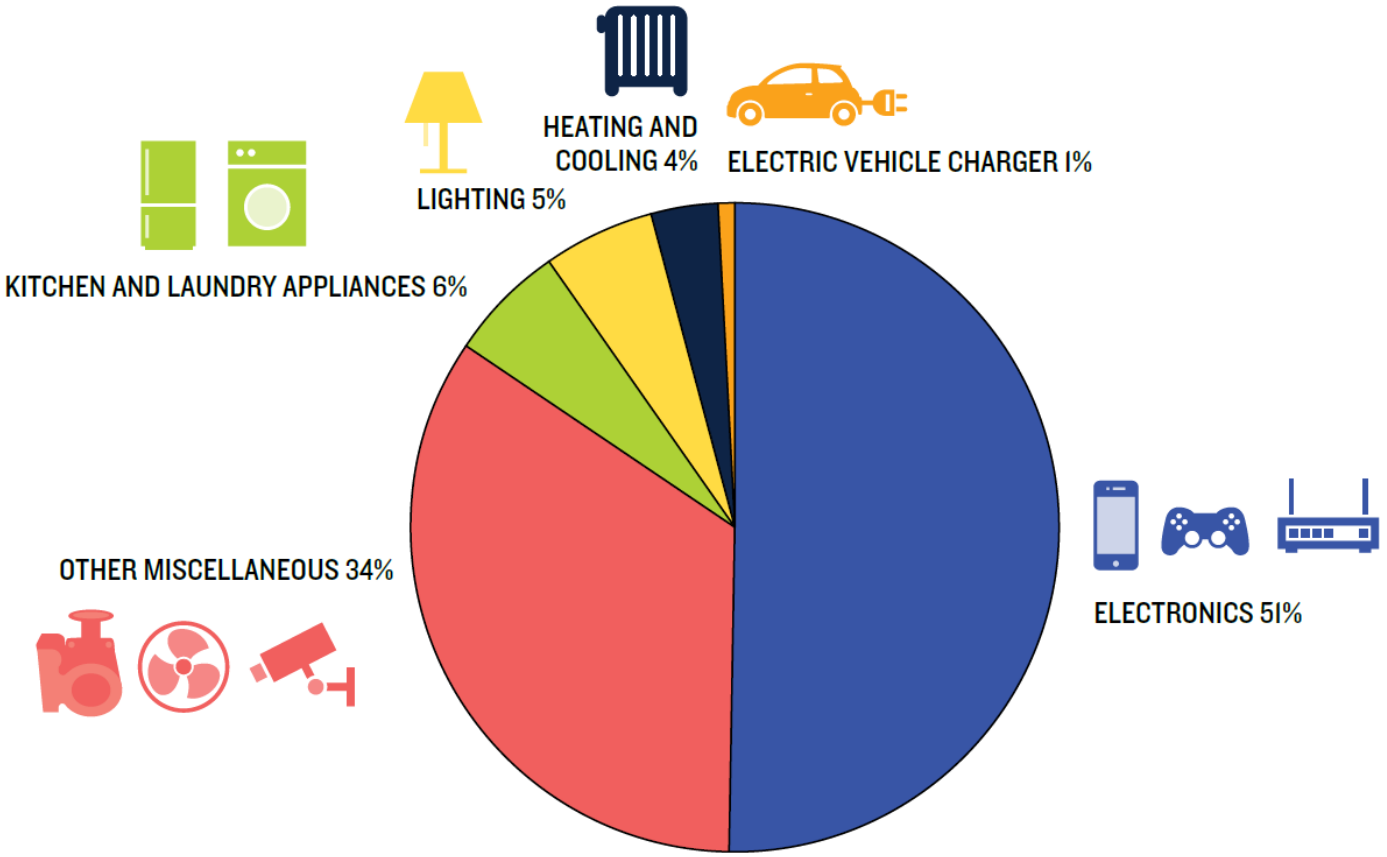
TYPE	TOWN HOUSE
Size (sq. ft.)	1,488
Occupants	1
Idle load (W)	395
Idle share of annual use	40%
Devices inventoried	63
With idle load >= 1 watt	35
Share of idle load	89%

Comment: High number of office devices (occupant works from home), as well as medical, audiophile, and high-end designer-label equipment.

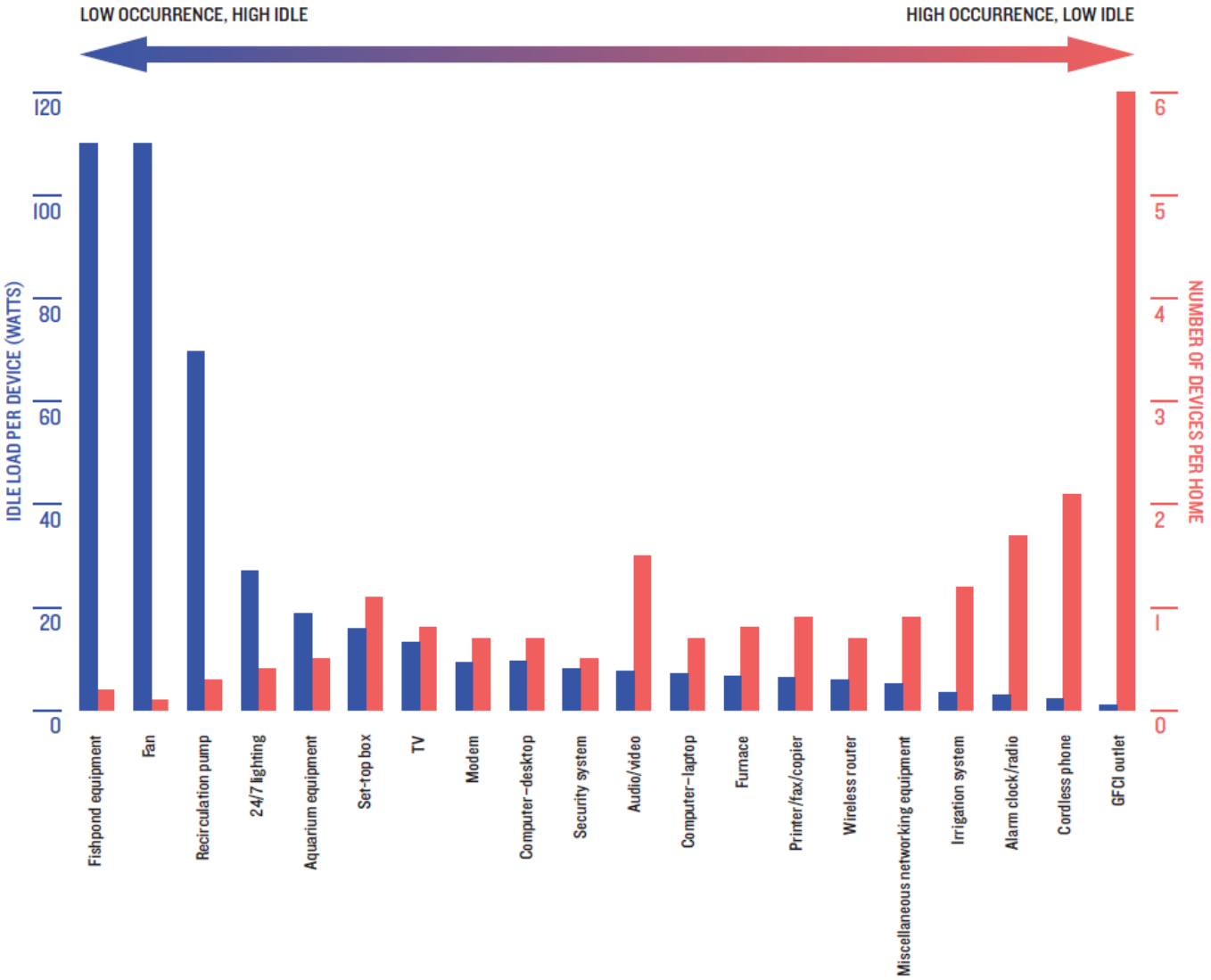
A 90-watt halogen light fixture in the dining room was left on continually for several years. Occupant did not realize how much electricity it used.

Traditional appliances responsible for only 15% of idle load, electronics for roughly half, and miscellaneous electrical loads (MELS) for one third

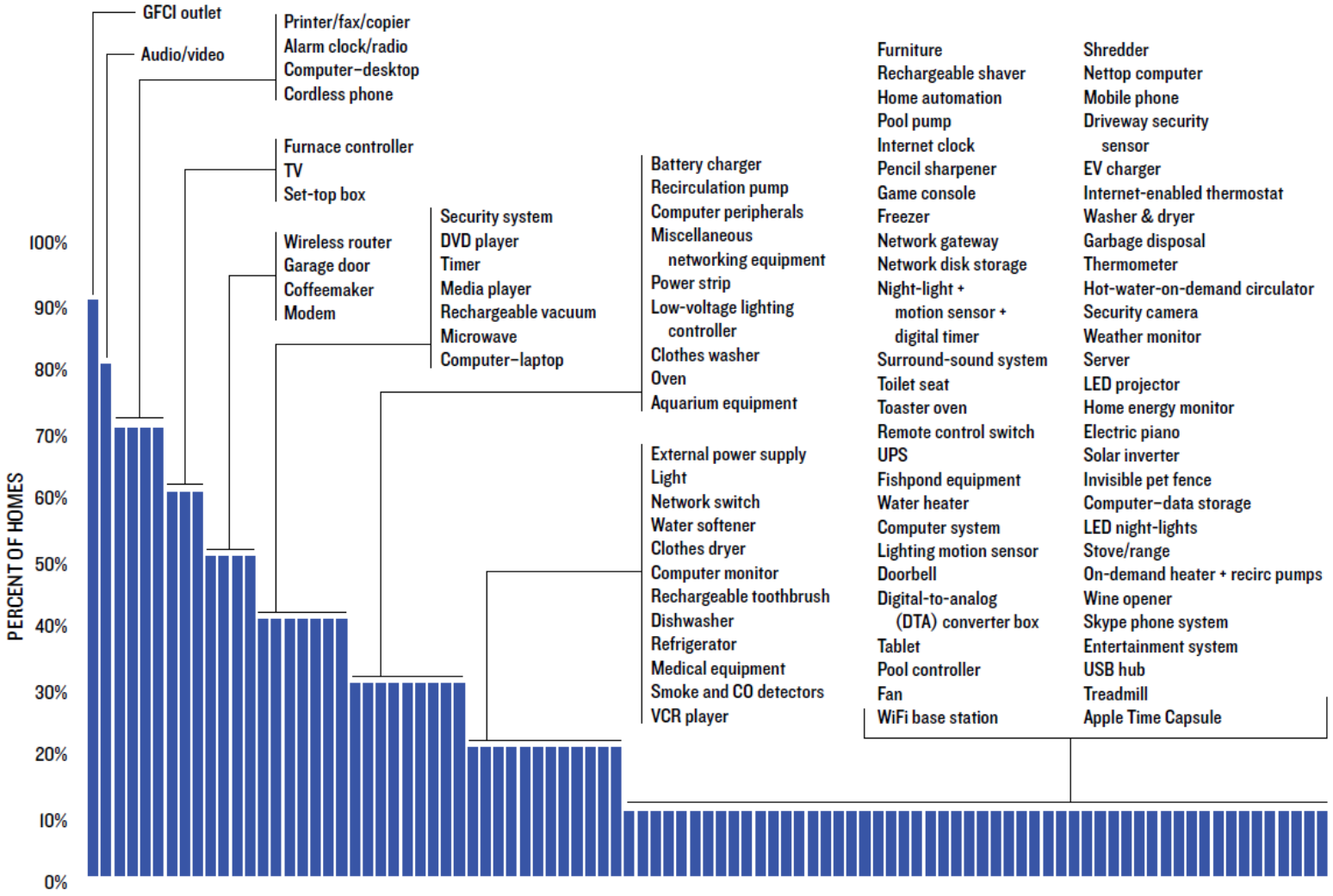
Idle load by major product category in 10 homes audited



Top 20 idle load spectrum: from high-power low-occurrence to low-power high-occurrence



Huge variety and number of idle devices: majority found in just one of the 10 homes audited



What's to do?

Consumer action	• Self-help information and action guides to reduce idle load • Buy Energy Star devices where applicable
Manufacturer action	• Design all products for low standby/sleep power • Power management strategies (e.g. smart sleep) to minimize on time
Utility programs	• Idle load info on bills, compare with peer groups • Targeted programs using energy data analytics
Product labeling	• Allow consumer choice when shopping • Allow market forces to deal with idle energy hogs
Efficiency standards	• Mandatory idle load limits for all products • Like food safety and car safety standards

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Further research opportunities

- ❑ Extend geographic coverage of research
- ❑ Extend onsite audit sample size
- ❑ Assess builder-installed vs. plugged-in-by-occupant loads
- ❑ Refine intermittent loads estimate (60-min vs. 60-sec data)
- ❑ Beyond always-on: “mostly-on” electricity waste
- ❑ Natural gas idle loads
- ❑ Commercial buildings…

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THANK YOU!