

GE Consumer & Industrial

□ Consumer Smart Grid Solutions □

California Energy Commission Workshop

Dave McCalpin
GE C&I Chief Marketing Officer

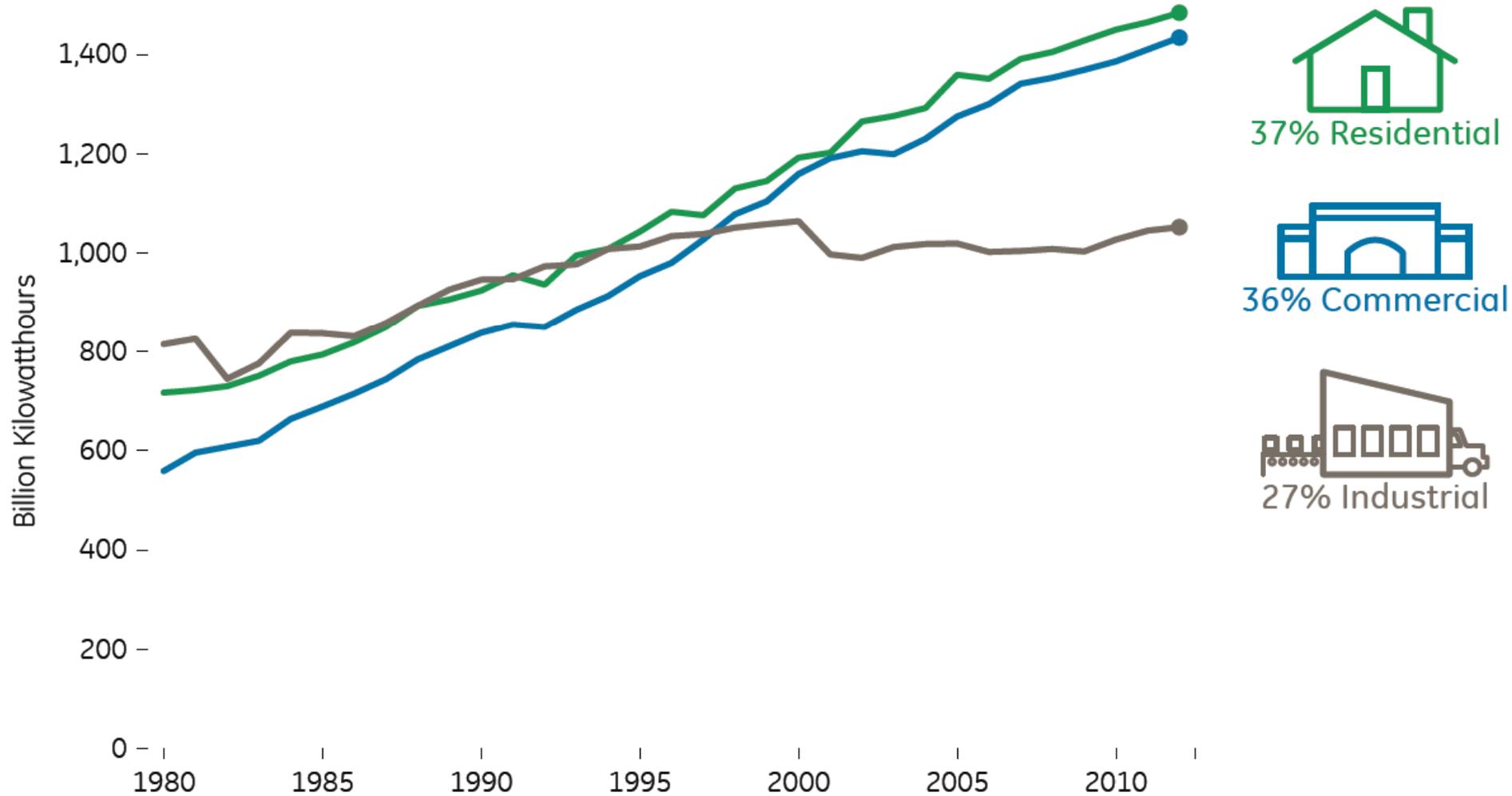
□

GE Consumer & Industrial

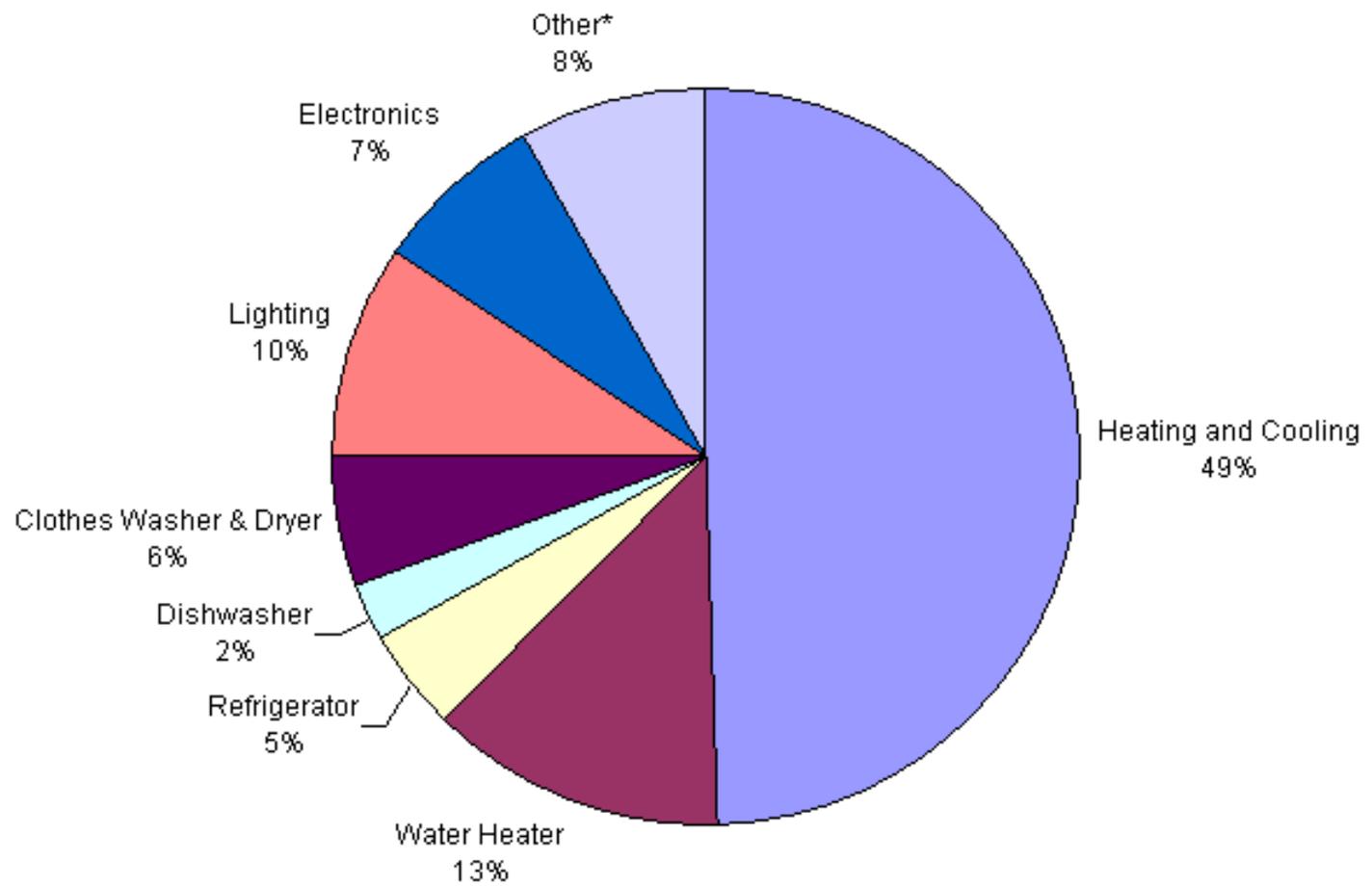


World Class Manufacturer of Consumer Products:
Lighting, Appliances, Electrical Distribution Equipment

2012 Demand

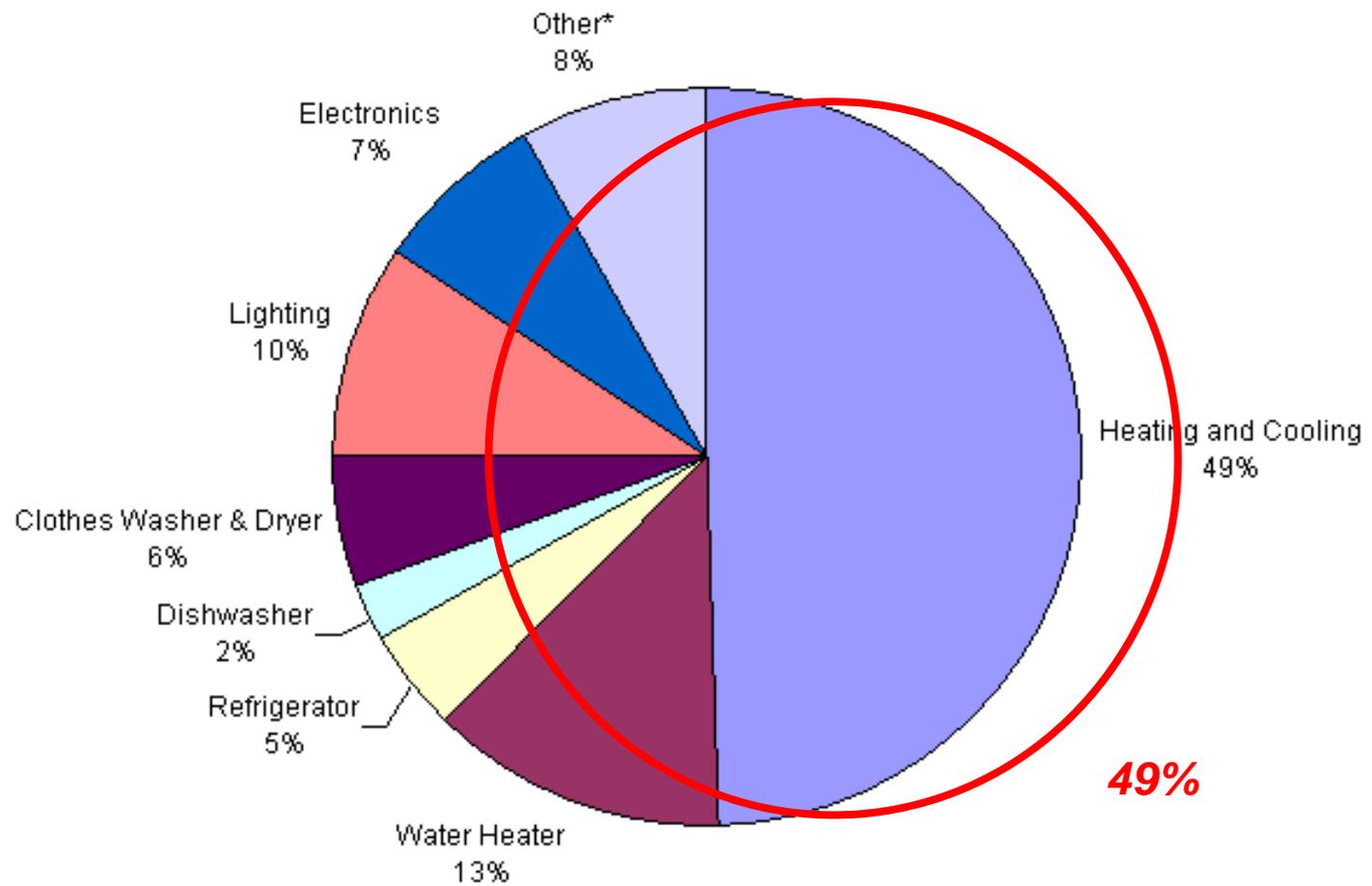


Appliances & Lighting as % of Household Energy Usage



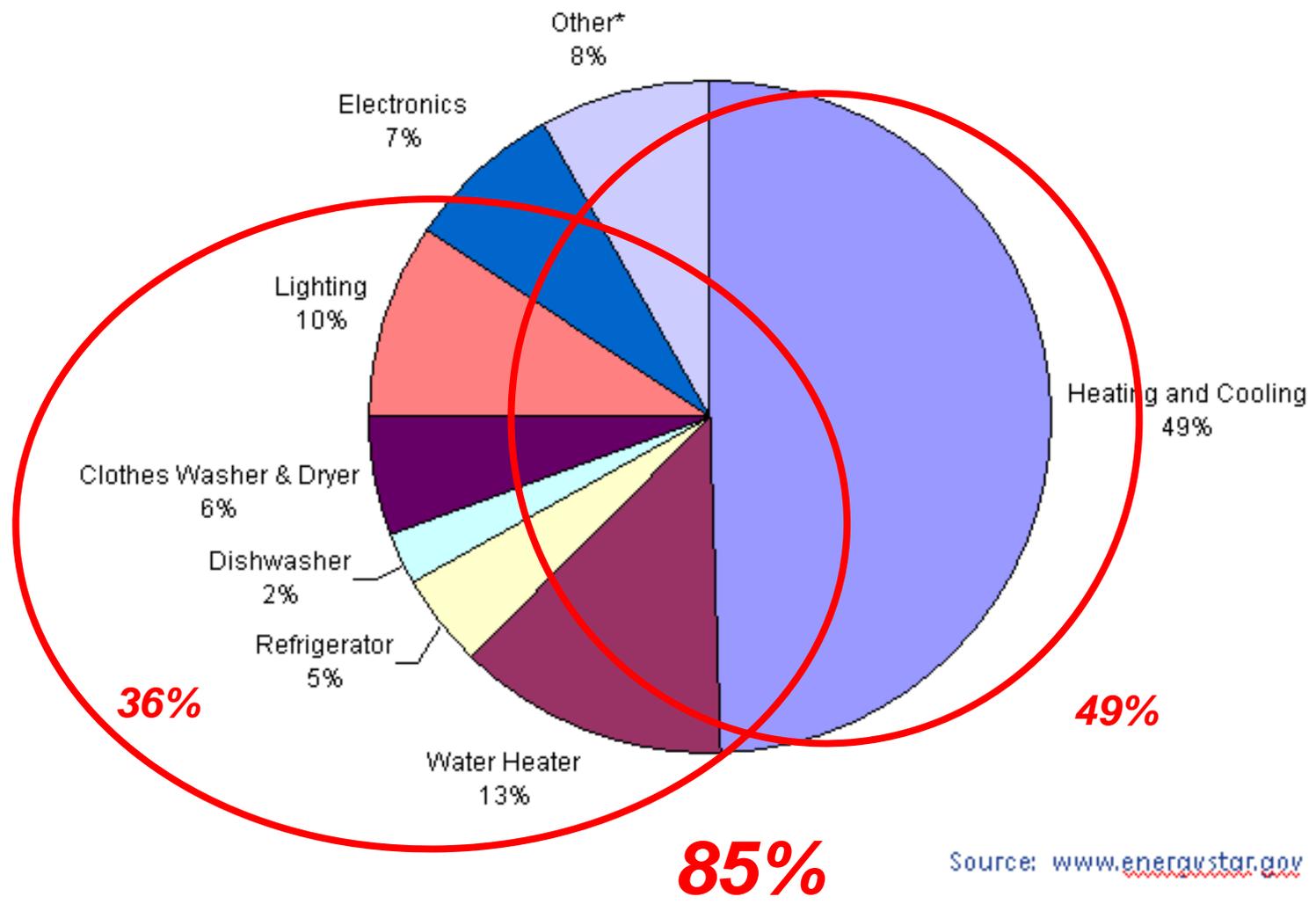
Source: www.energystar.gov

Appliances & Lighting as % of Household Energy Usage



Source: www.energystar.gov

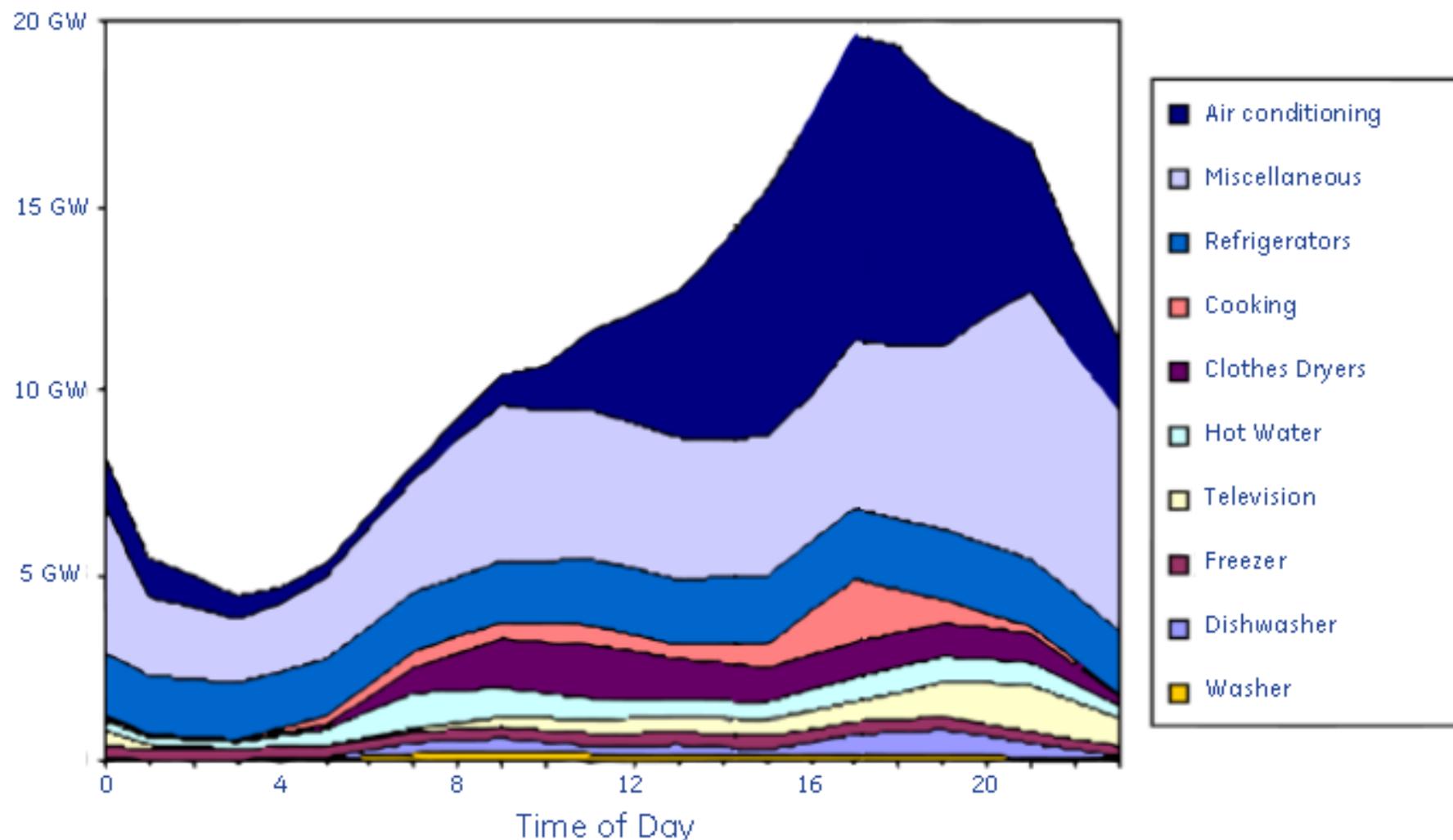
Appliances & Lighting as % of Household Energy Usage



Source: www.energystar.gov

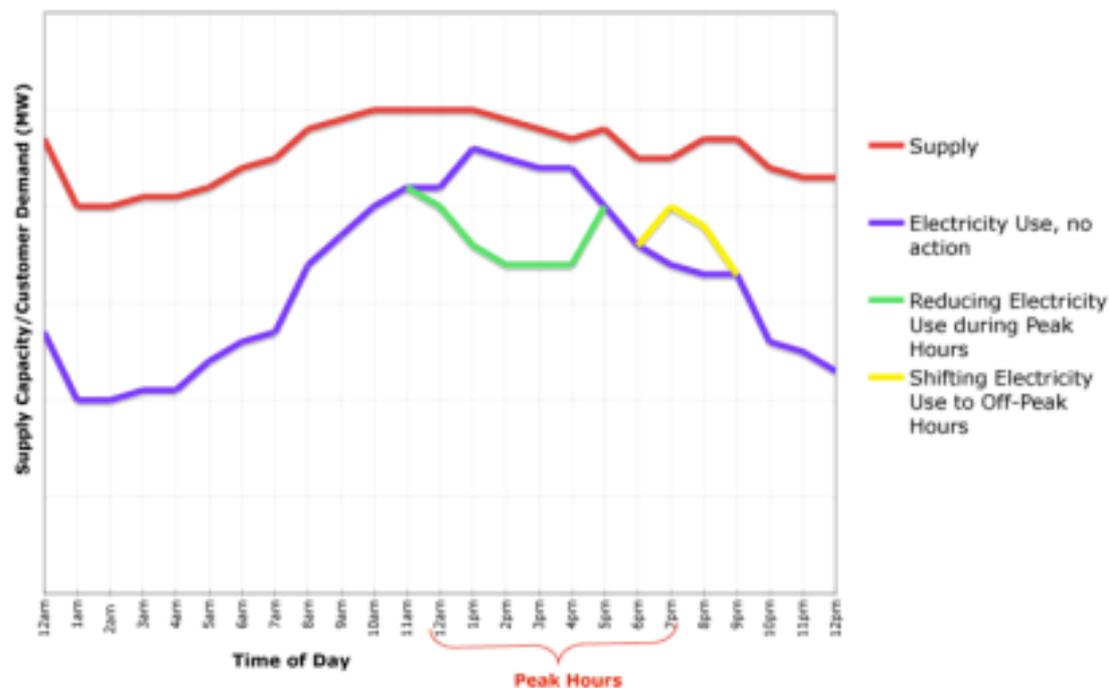
Residential Summer Loads - California

Demand



Data: Lawrence Berkley National Lab 2002
NL -47992 Electricity Use in California
R. Brown, J. Koomey

Smart Appliances Concept



Peak Pricing

DR Enabled Appliances

Load shed off peak

Energy Efficiency

Good progress has been made on product efficiency.

Average Energy



68W



Refrigerator

Peak Power



10 x 68W

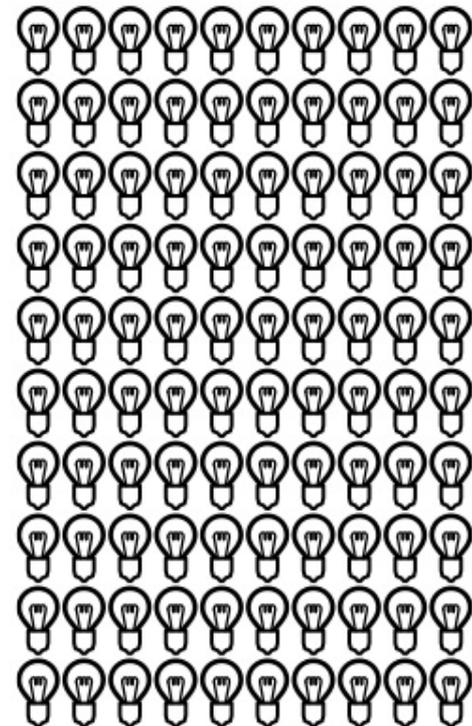
Energy Efficiency

New solutions needed to address peak loads.

Average Energy



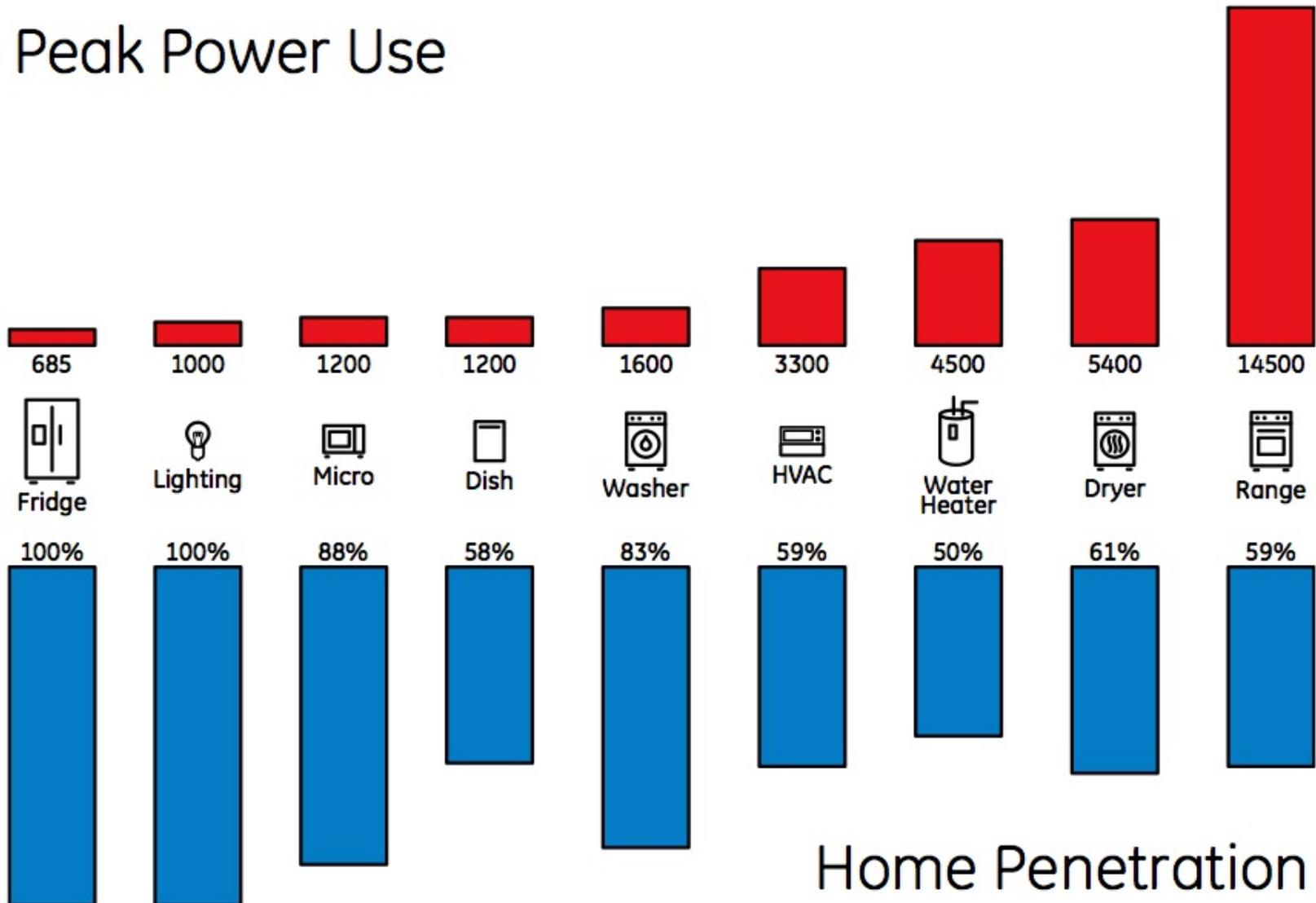
Peak Power



100 x 100W

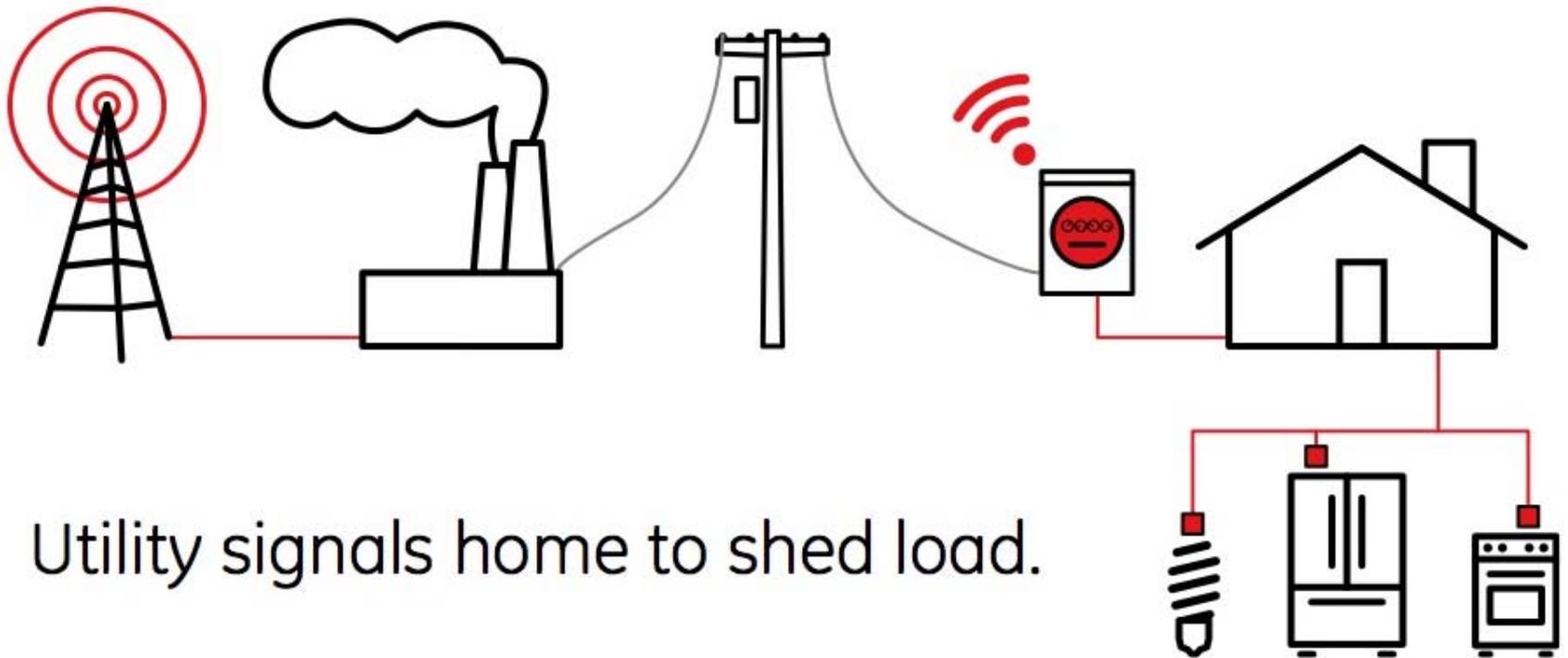
Peak Potentials

Peak Power Use



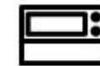
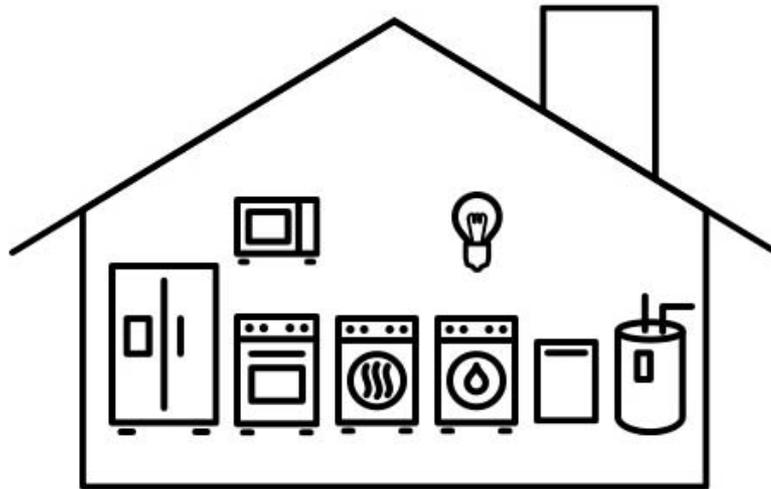
Home Penetration
Electric Products Only

Manage the Load



GE Smart Home

Smart Grid + C&I DSM Enabled Products



Appliance Peak: 30 kW

Desired Shed: 20%

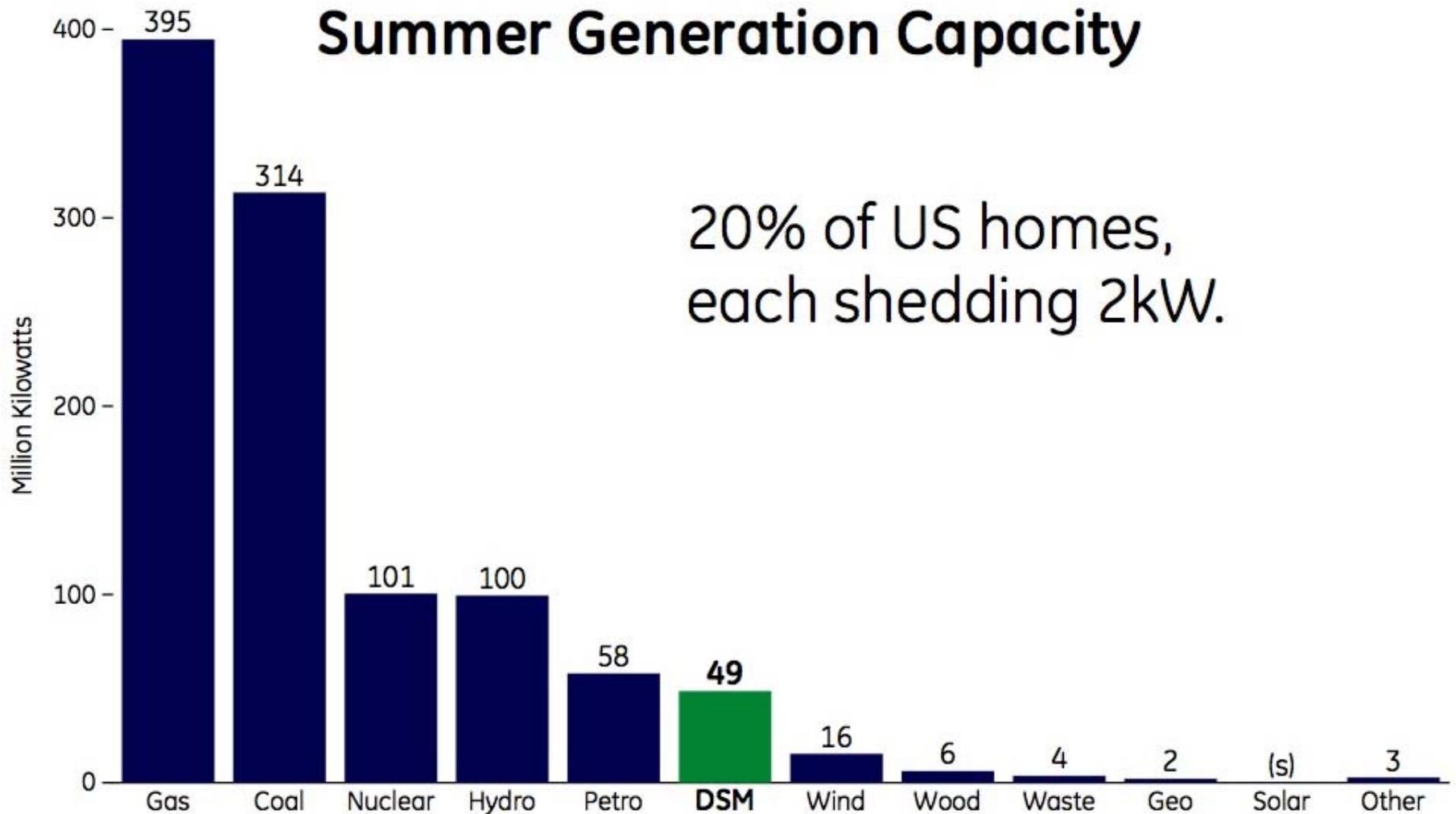
Load Reduction: 2 kW minimum

HVAC Peak: 3.3 kW

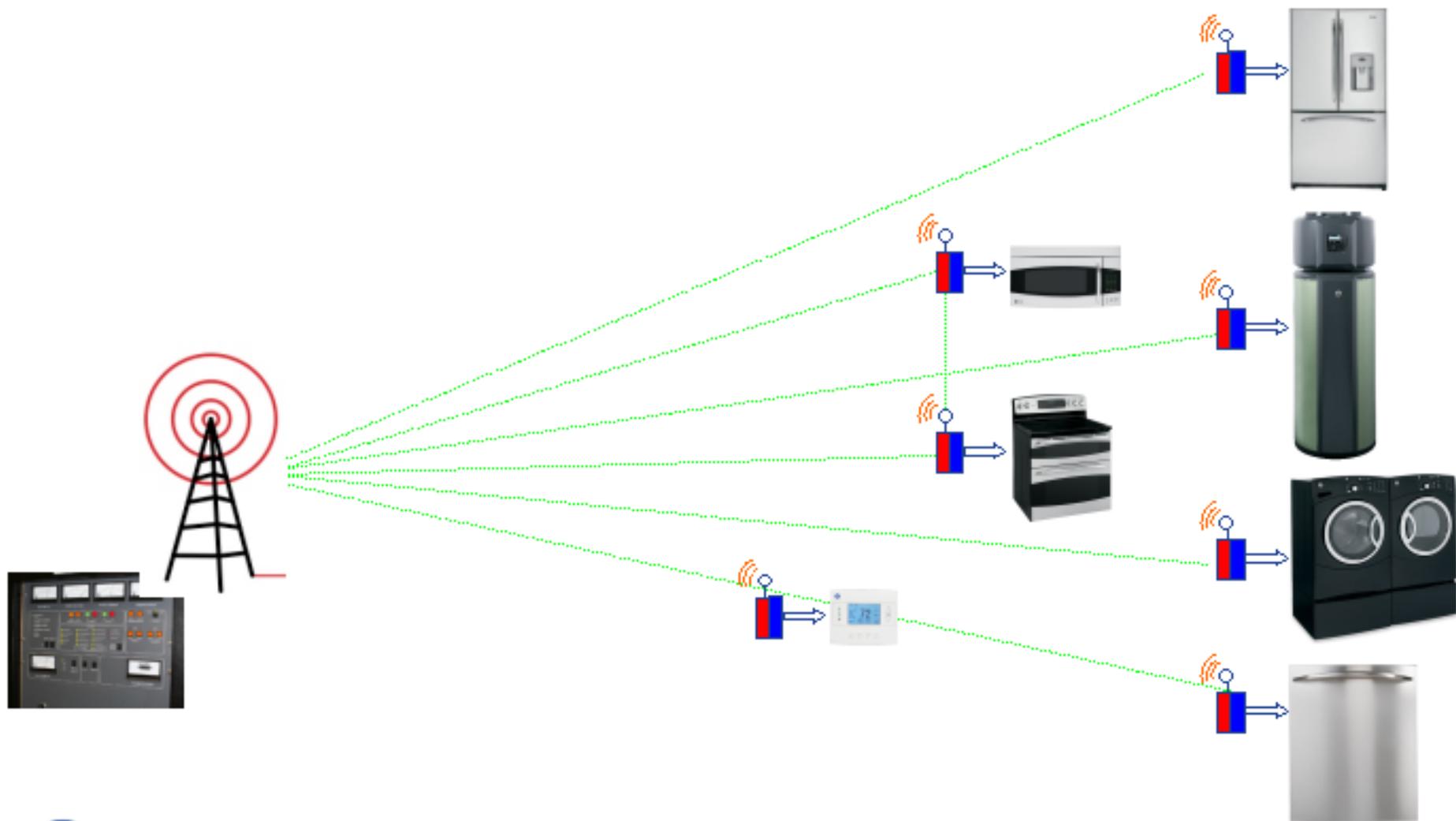
Assumptions: 50% in use

Impact

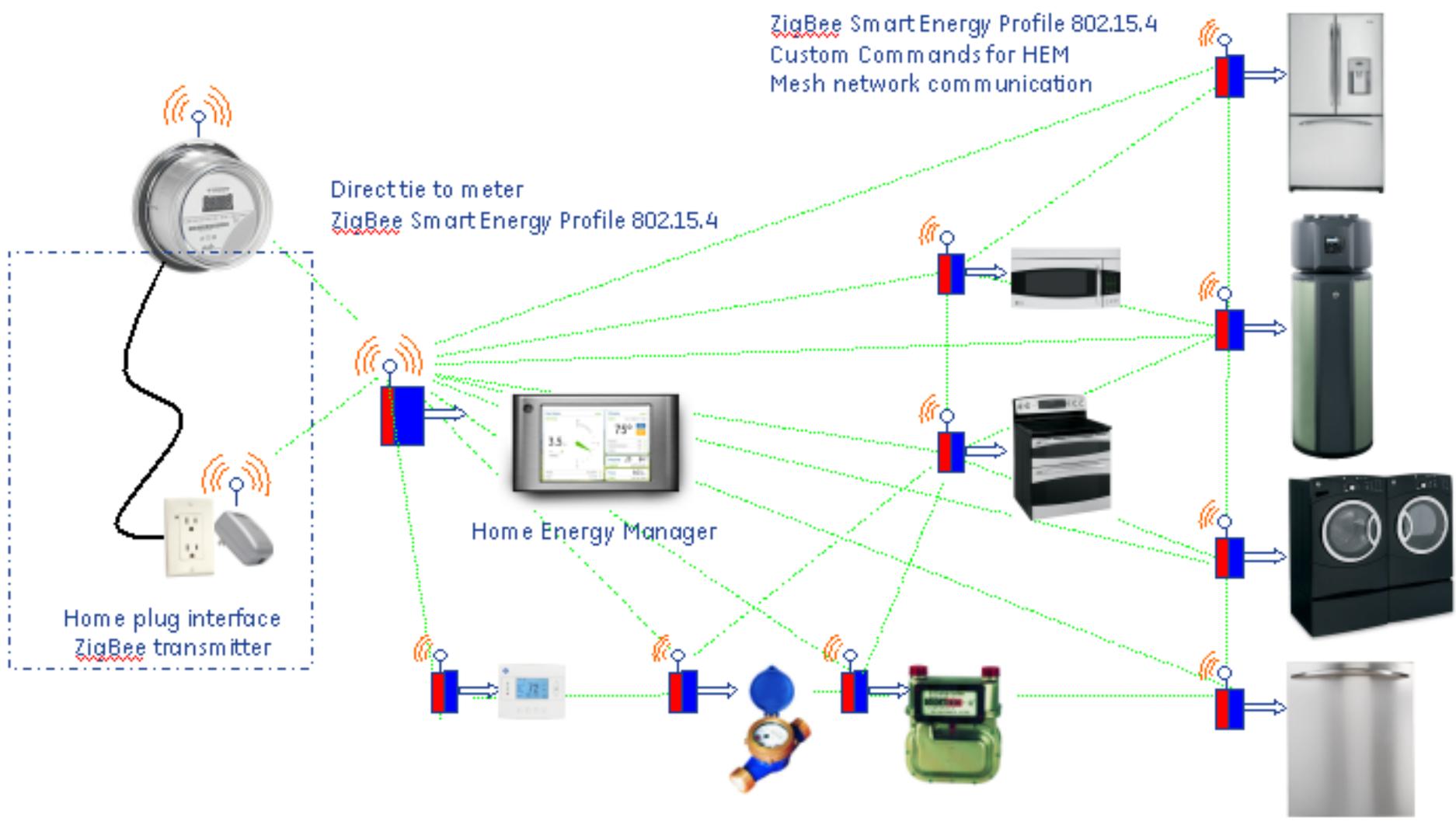
Summer Generation Capacity



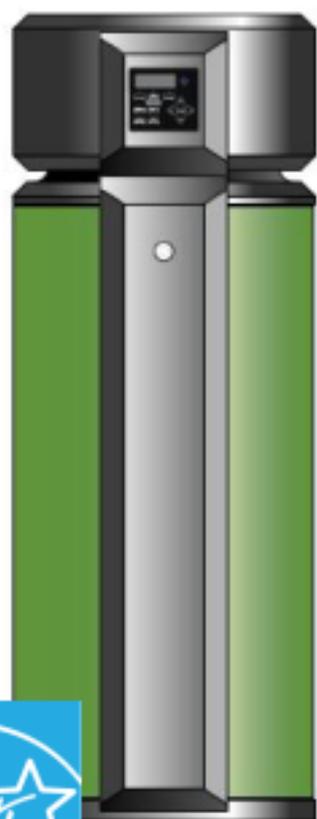
Smart Appliance Communication – FM/RDS



Smart Appliance Communication – Zigbee/Homeplug



Hybrid Heat Pump Water Heater- 2009



Designed to Help Save

- Energy savings with Ef rating of over 2.0 vs .93 with a standard electric water heater.
- Save ~ 2500 kWh per year (uses 2300 KWH per year vs. standard 50 gallon 4800 kWh per year)
- Save ~ 50 % on your energy bill tied to water heating, over **\$250/year** on a national average*
- Help avoid carbon emissions by ~50 % tied to water heating.*

Convenience

- Similar installation as a standard water heater
- 50 gallon capacity

Quality of Life

- Electronic control precisely gives you the temperature of water
- During periods of high usage can revert to the standard water heater mode for fast recovery

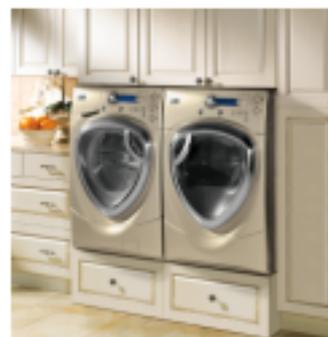
*compared to 50 gallon standard electric water heater



Imagination at work

ecomaginationSM

Potential Appliance Load Shift/Shed



Level 1 (Lowest) Price	Heat Pump & Back up Resistance Heaters	All Cycles Available
Level 2 Price	Heat Pump only	Cycle Shift Auto Selected
Level 3 Price	Tank Temperature Shift	Reduced Temperature Dry

GE C&I Products – for Pilot Programs



Appliances Available July 2009



Energy Manager/Thermostats – Available Late 2009, Early 2010

LG&E Pilot Program



- 46 DR Appliances installed in 15 homes in Louisville
- 7 months of field experience
- Initial surveys completed
- 2 Focus Group sessions completed;
- Initial data collection has started (load shed)

	Number Installed
Washer	9
Dryer	9
Dishwasher	9
Range	5
MWO	5
BM	4
SxS	5
all Ref	9
Module	

Consumers Benefiting on Utility Bills
Loads Shedding as Expected

Thank You!