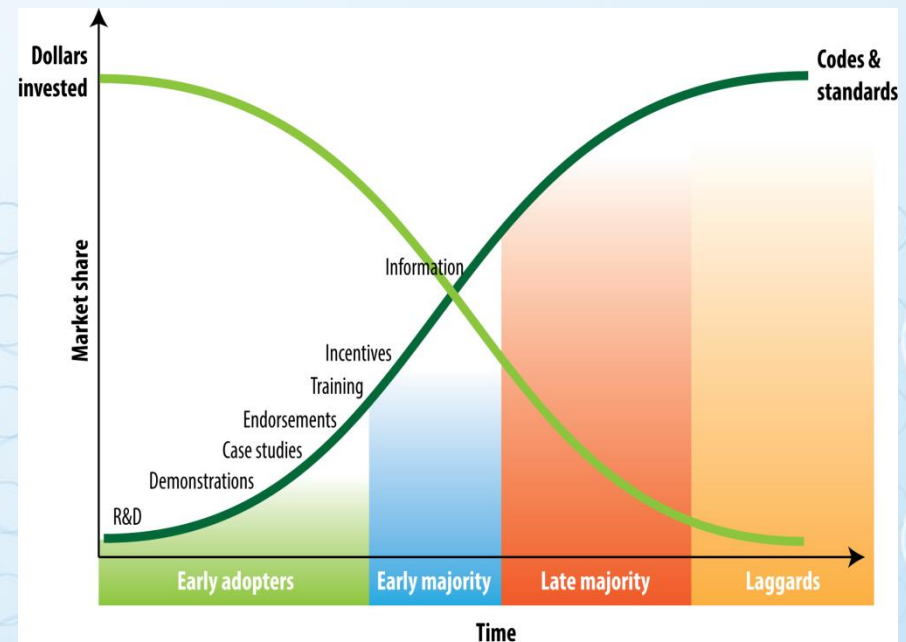


20 Years of Market Transformation

Steven Nadel (ACEEE)
ACEEE/CEE Market Transformation Symposium
April 2016

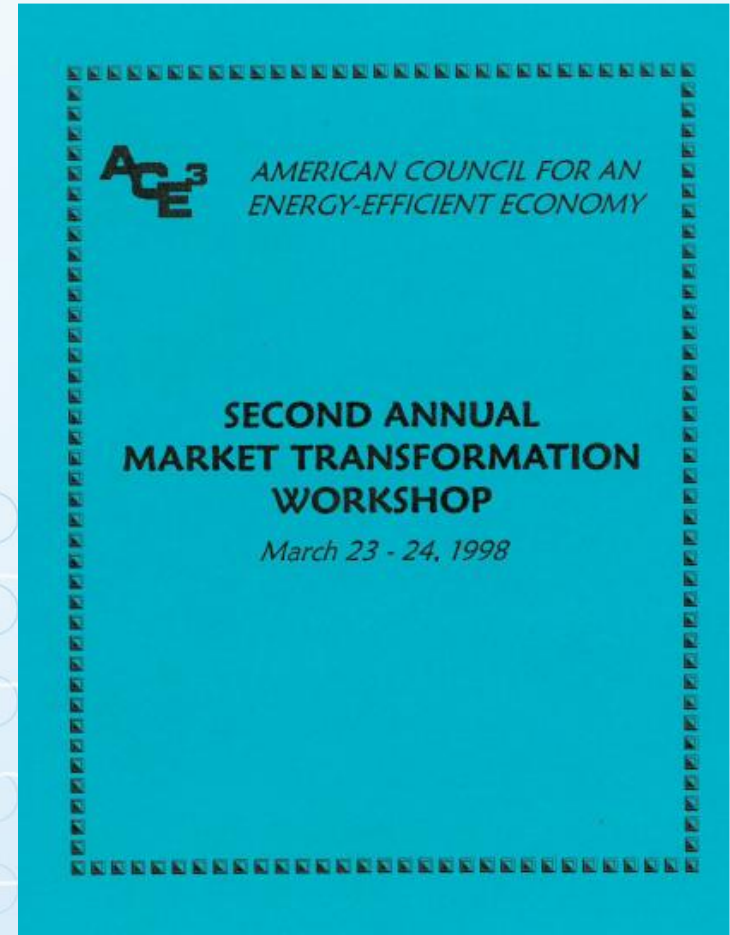


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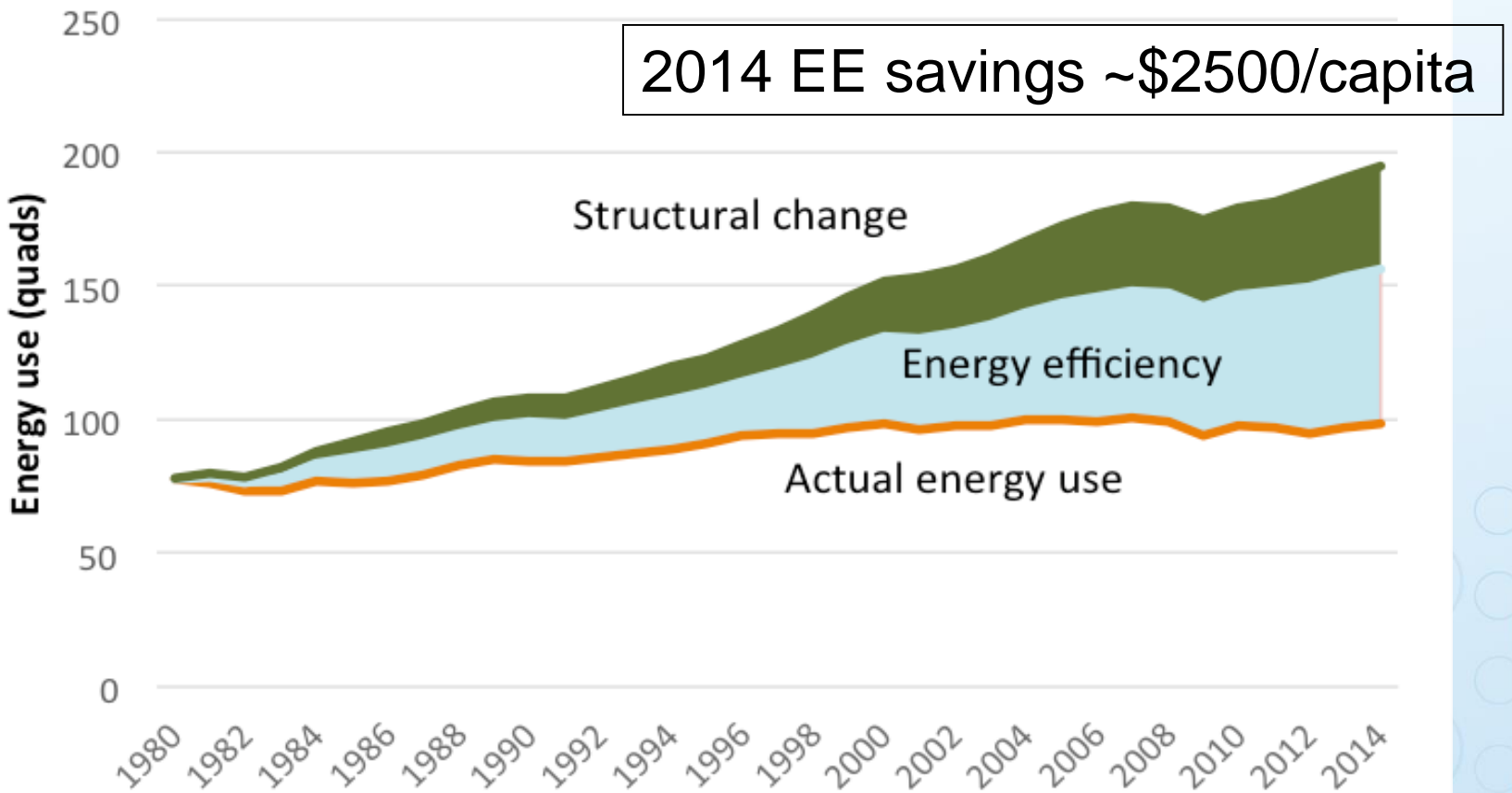


Source: NEEA

20th Market Transformation Symposium



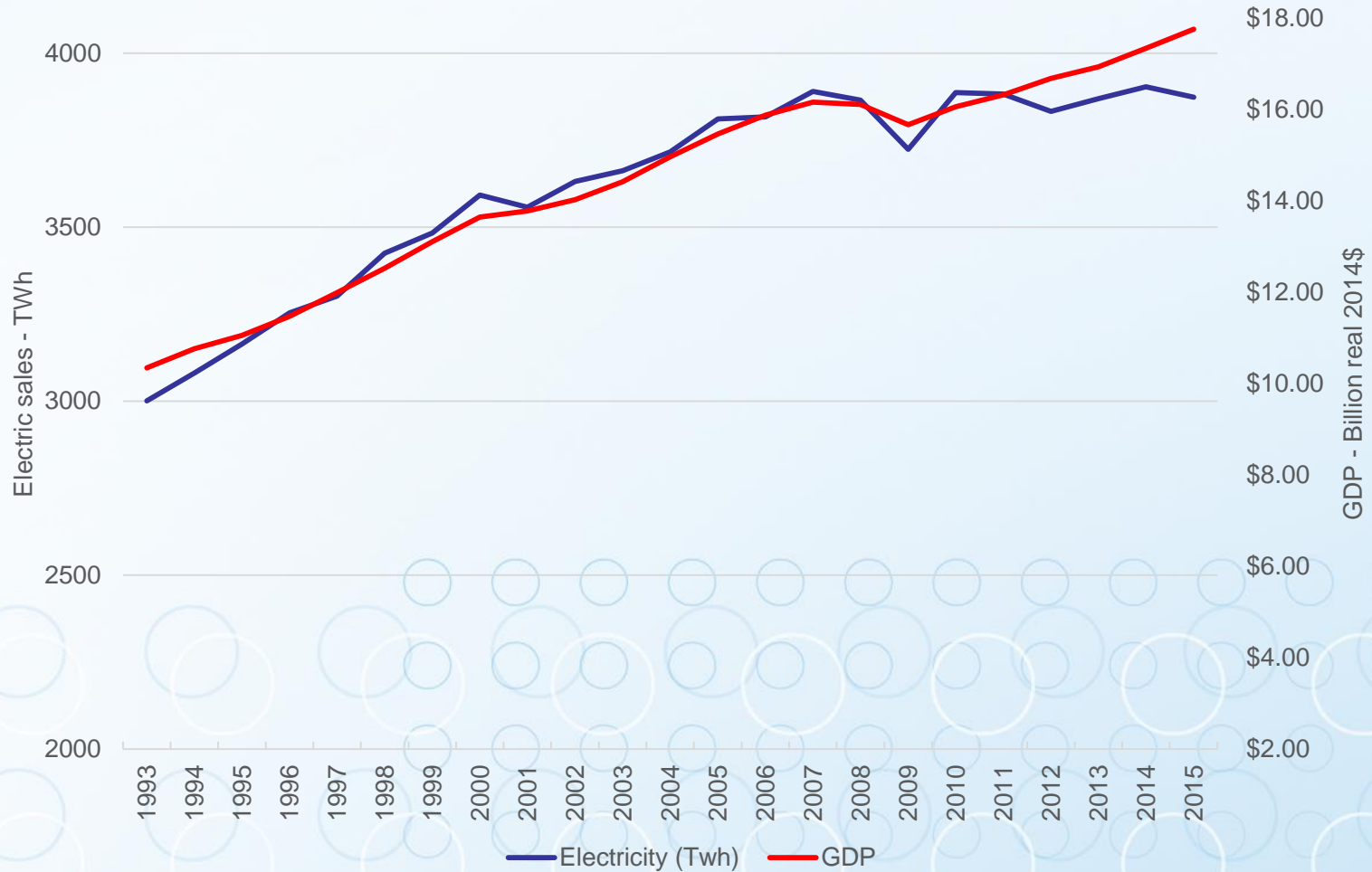
U.S. Energy Use Since 1980



Utility Energy Efficiency Spending



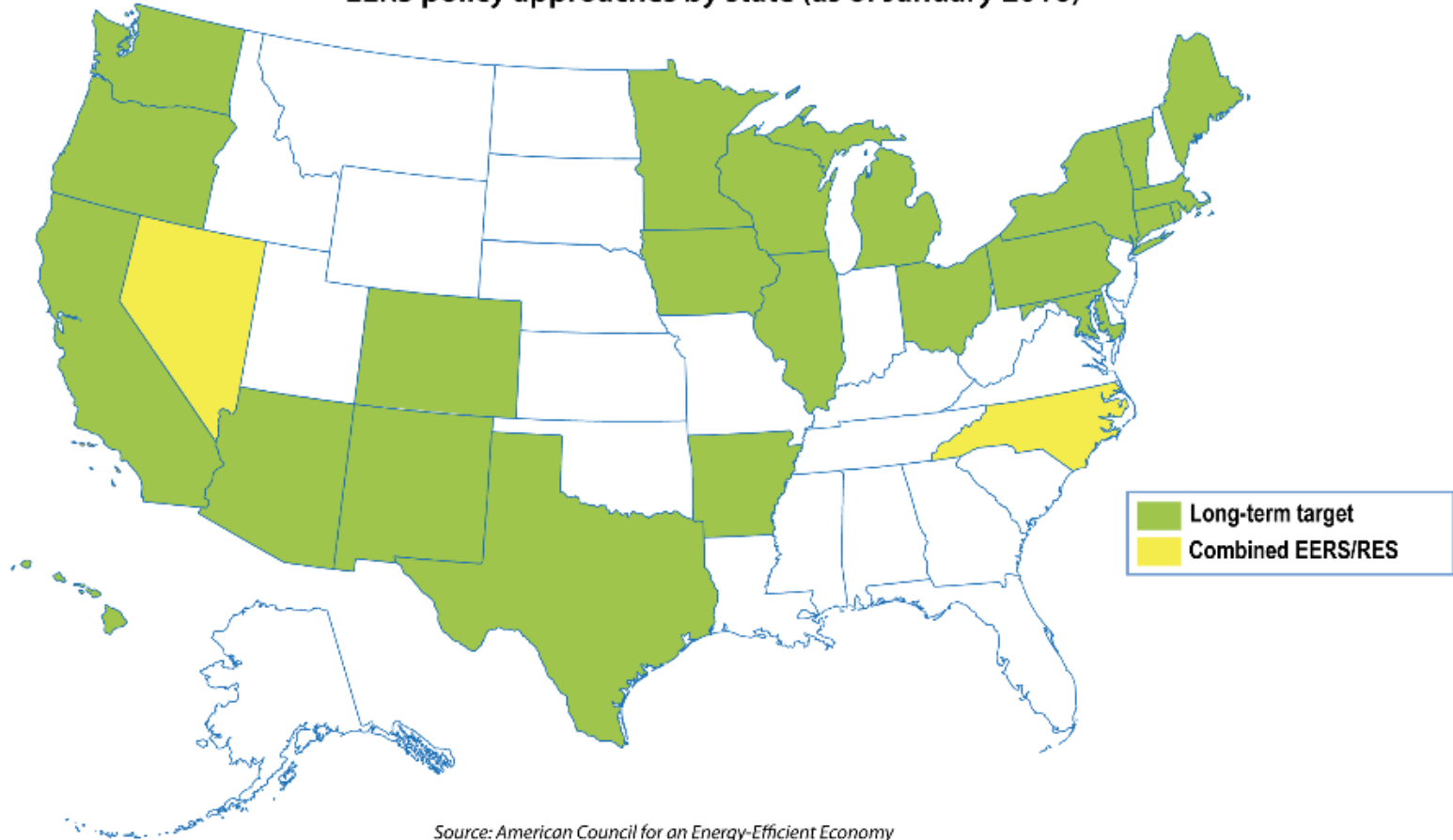
Electricity Use Flat Recently



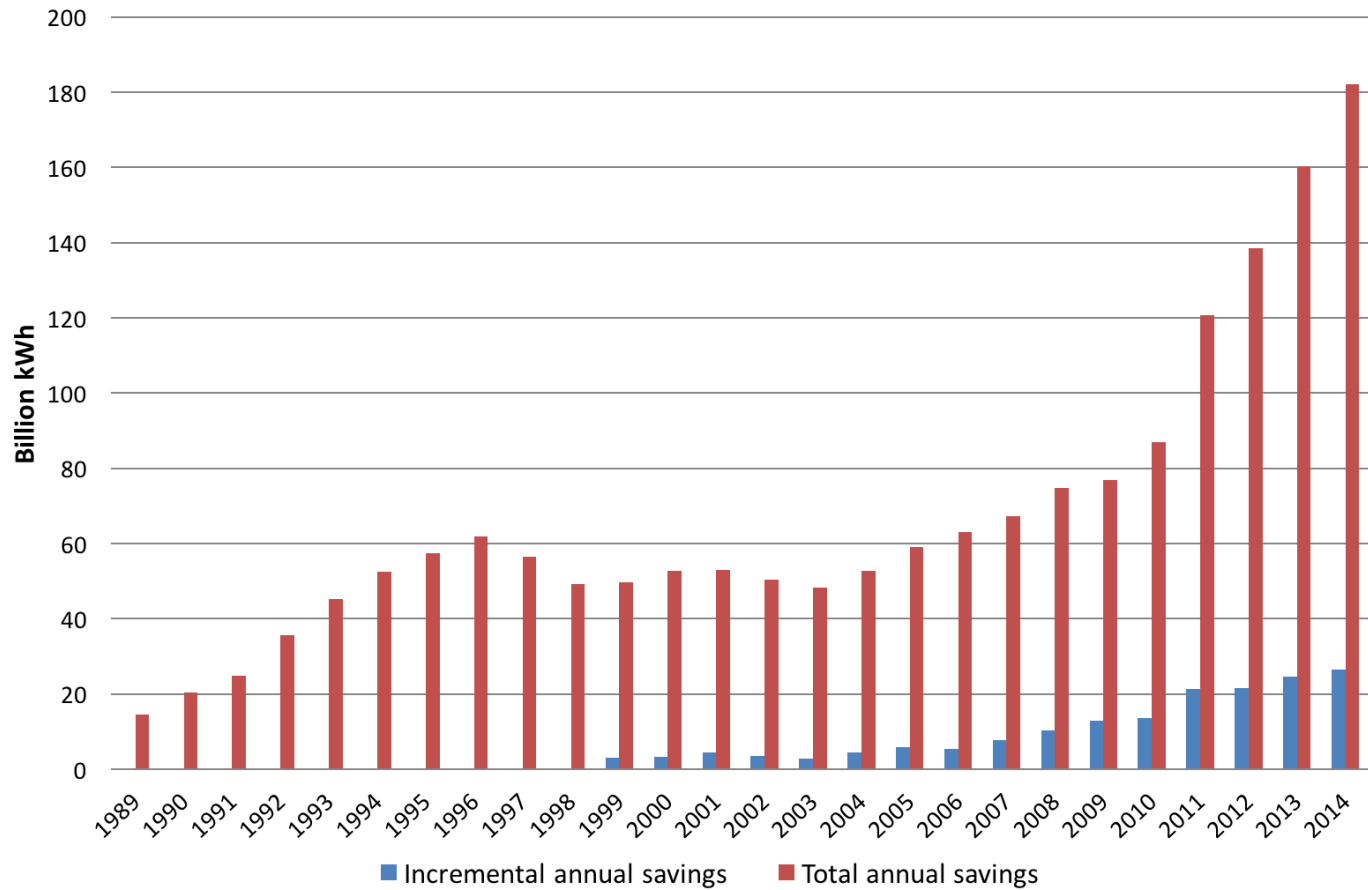
Source: ACEEE analysis of data in EIA Monthly Energy Review

Current EERS Policy Status

EERS policy approaches by state (as of January 2016)



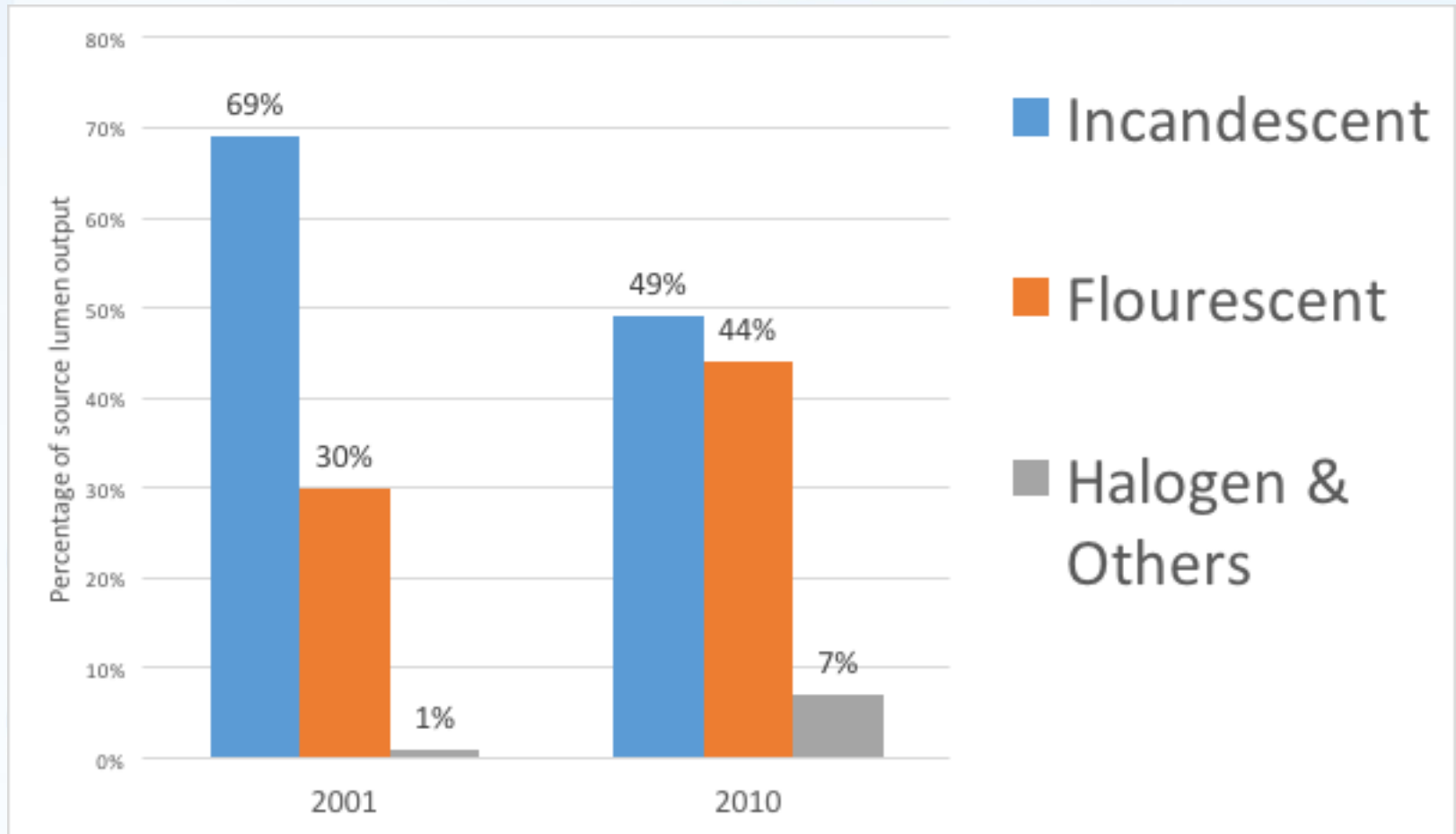
Savings from Utility EE Programs



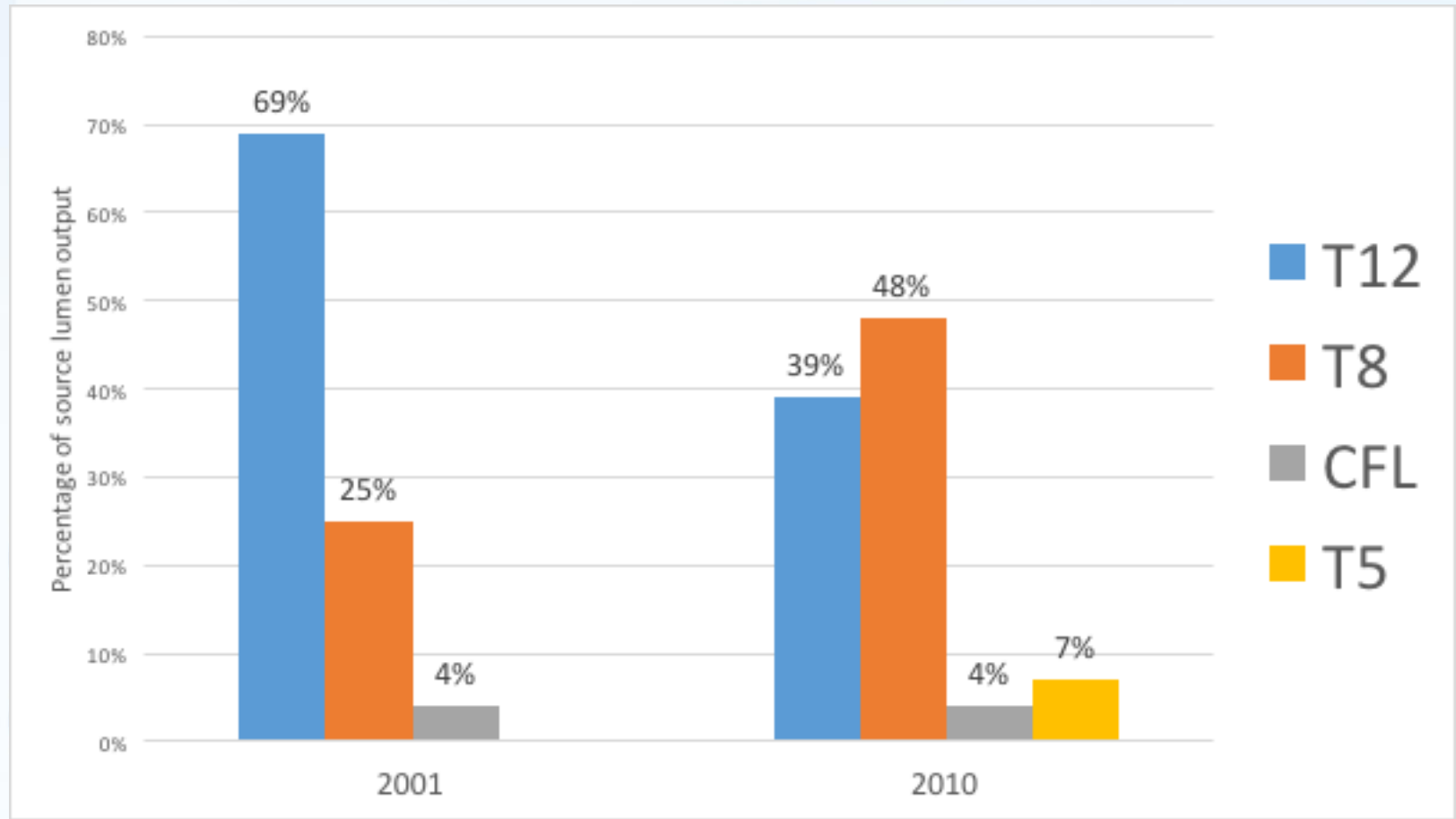
Total savings are 4.8% of total sales in 2014

Incremental savings are 0.7% of total sales in 2014

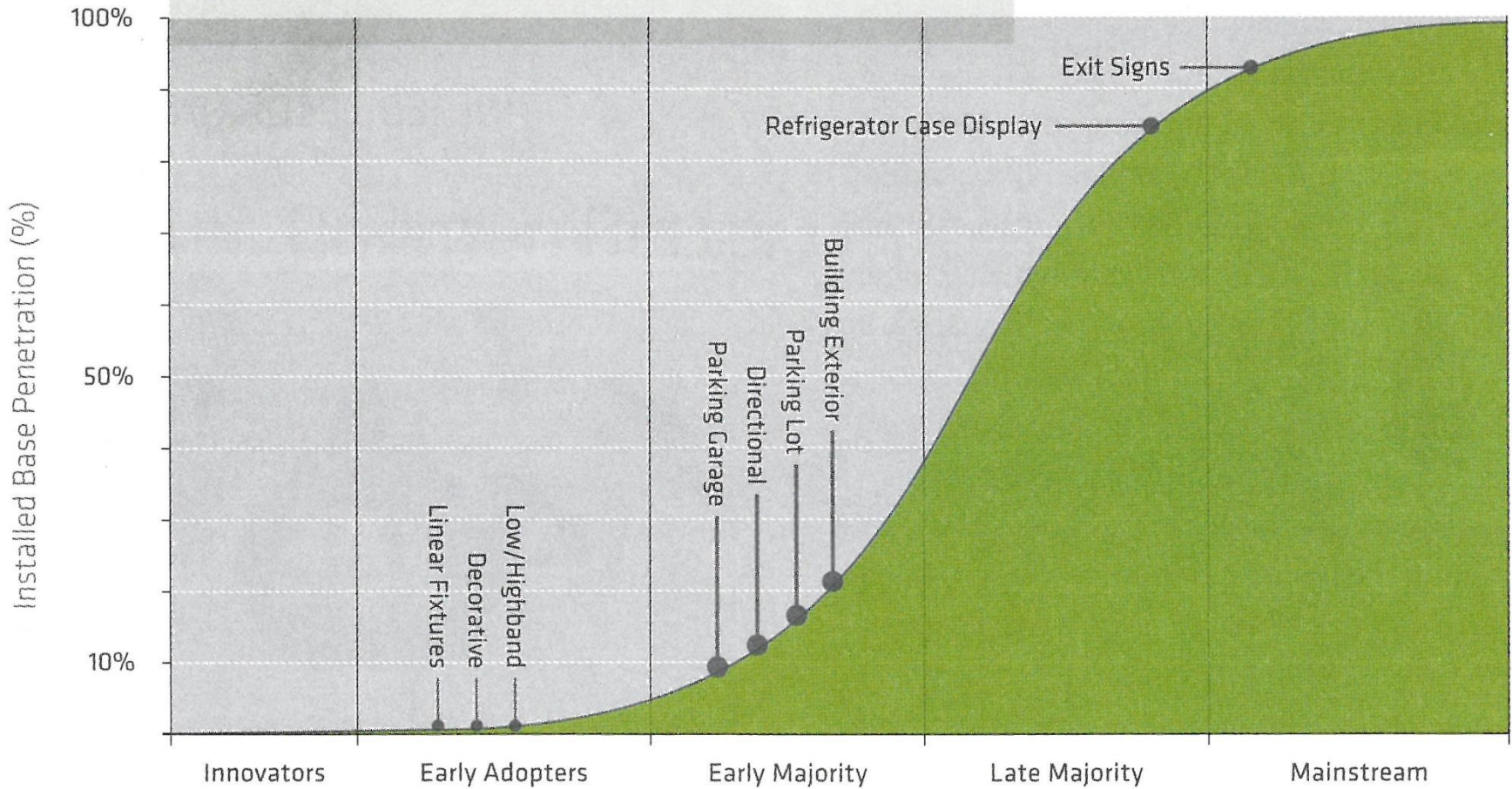
Residential Lighting (% of total lumen-hours/year)



Commercial Fluorescent Lighting (% of total lumen-hours/year)

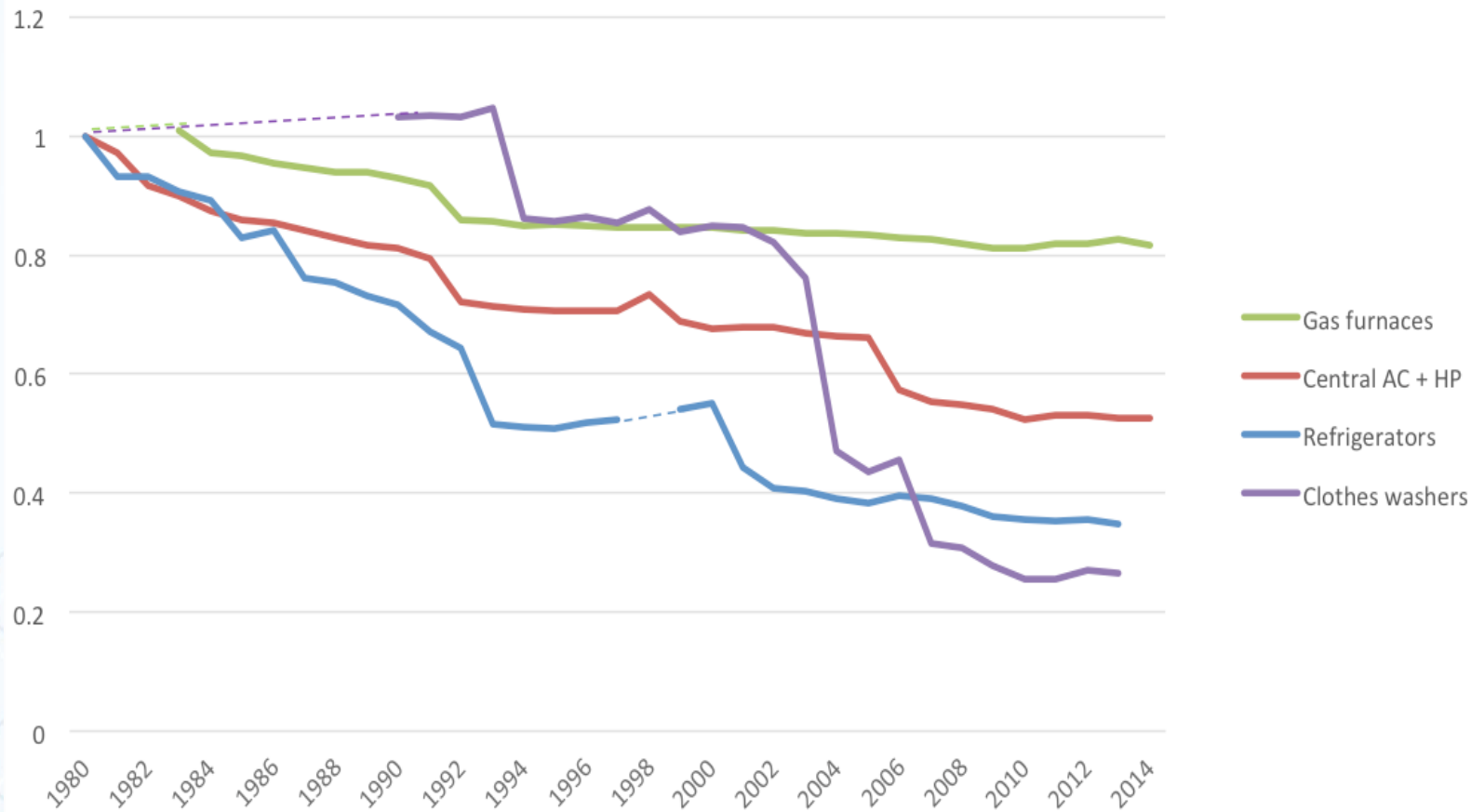


U.S. LED Installed Penetration

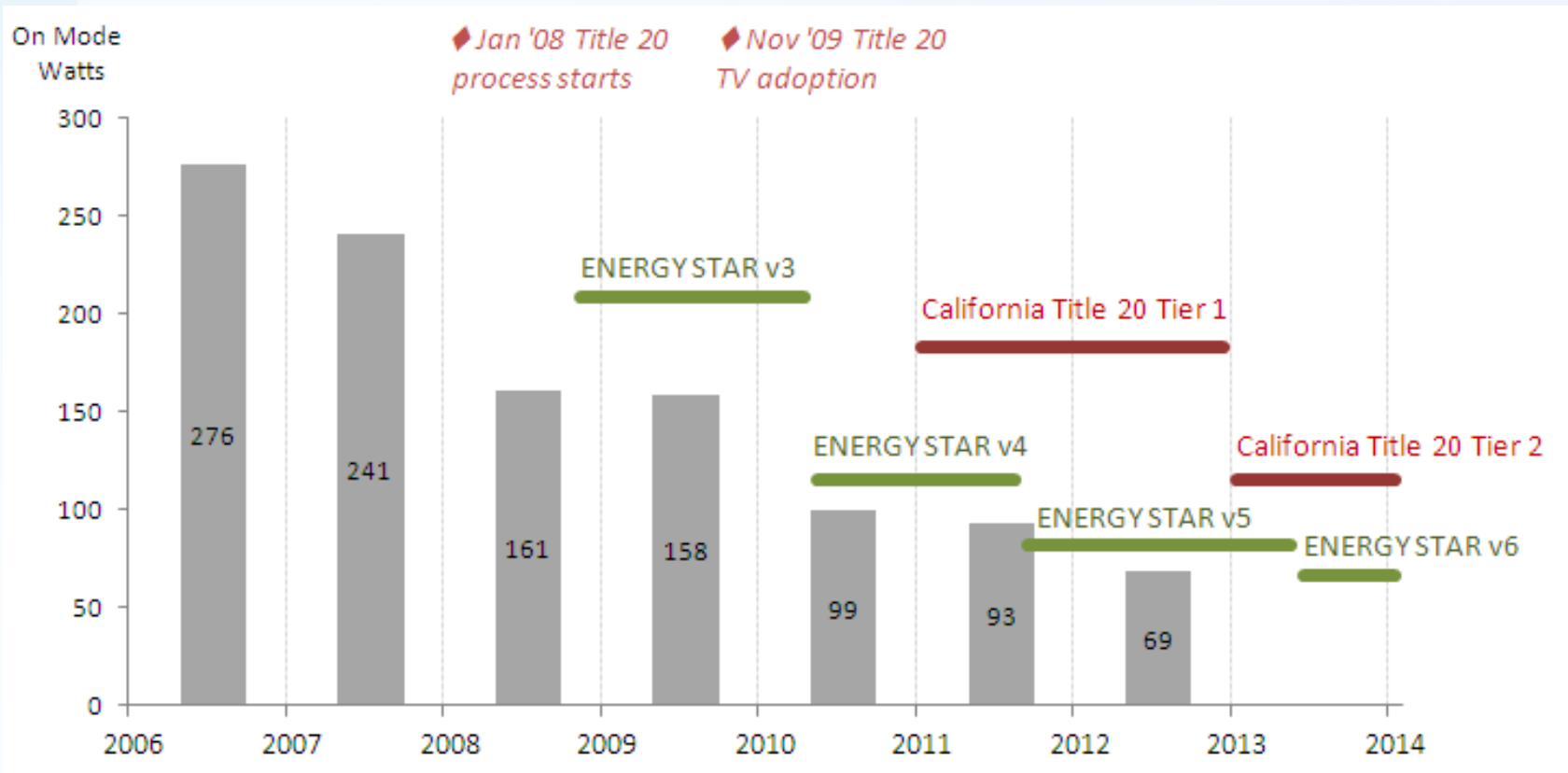


Source: Architectural SSL Magazine, Feb. 2016

Appliance Efficiency Trends



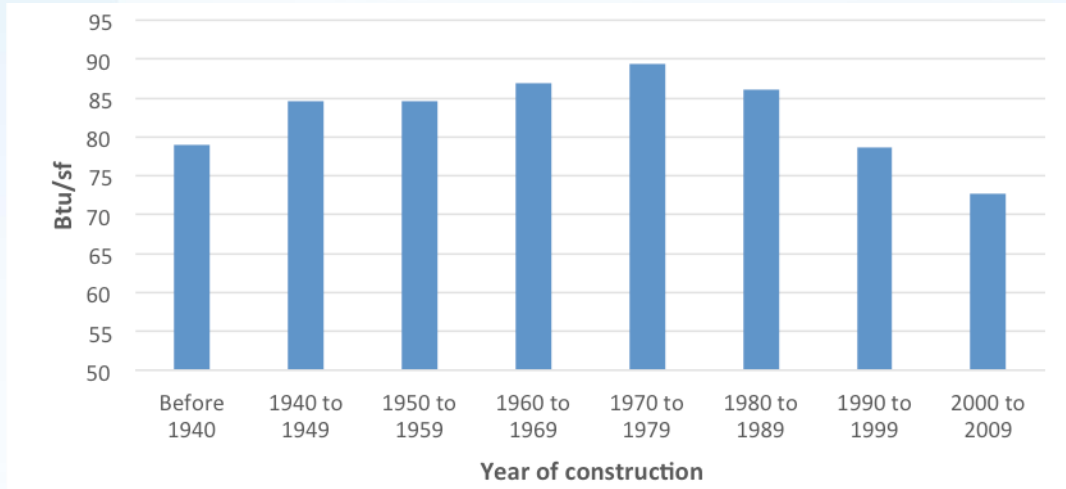
42 Inch TVs: Average Wattage Compared to ENERGY STAR and California Title 20 Levels



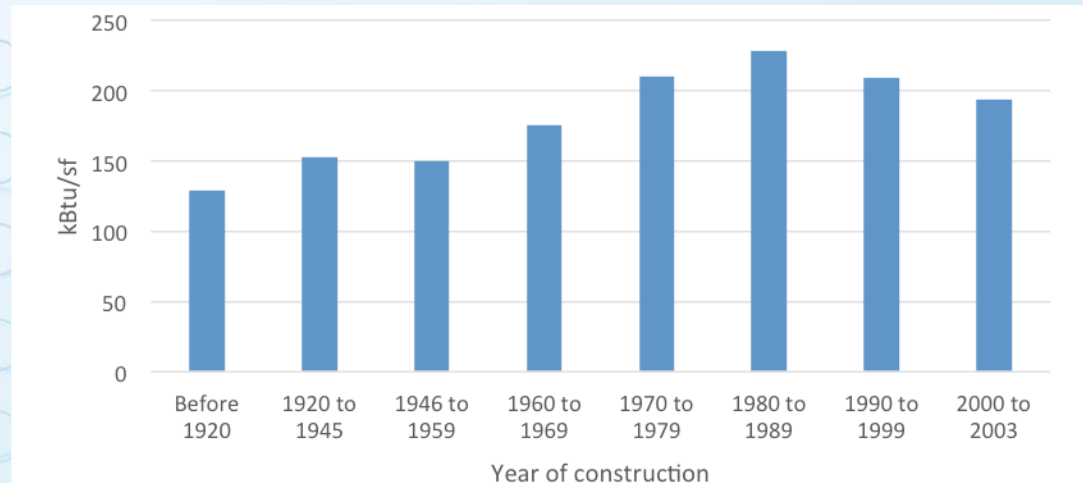
- Three-fourths reduction from 2006 to 2012
- Together, ENERGY STAR and Title 20 had synergistic impacts

New Construction Trends (Btu/sf of new homes & buildings)

Residential



Commercial

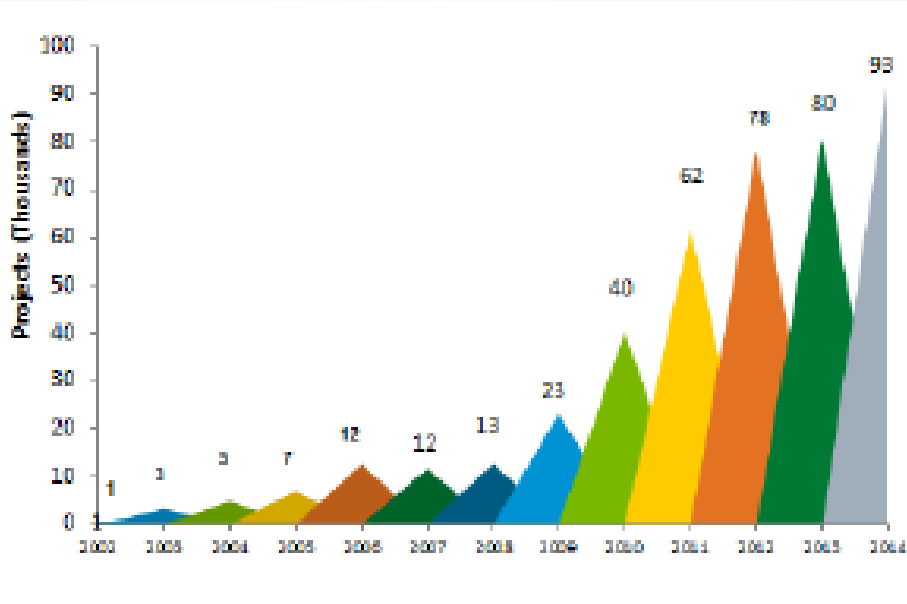


Cost per kWh of Some Successful Market Transformation Initiatives

Initiative	Measure Cost	Admin Cost	Total Cost
Energy Star office equip.	Low	\$0.0002	Low
New homes in NW	\$0.027	\$0.003	\$0.030
Electric motors in BC	\$0.011	\$0.0007	\$0.012
Efficient magnetic ballasts	\$0.014	\$0.0001	\$0.014
High-efficiency refrigerators	\$0.027	\$0.0001	\$0.028
		Per therm	
High-effic. furnaces in Wisc.	\$0.27	\$0.004	\$0.27

Some Markets Hard to Change

Home Performance with Energy Star



About 1% of homes/year

Source: DOE

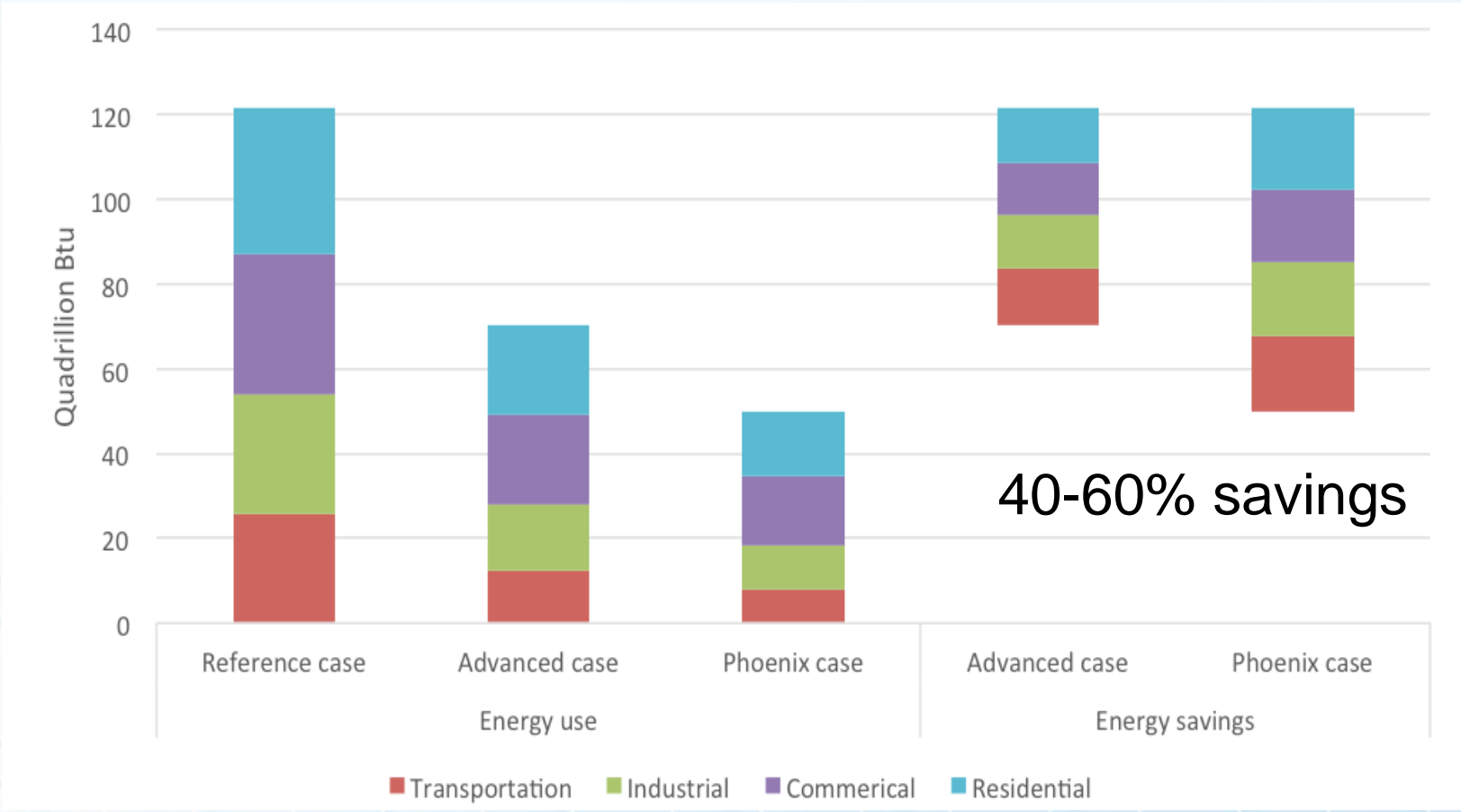
Heat Pump Water Heaters



About 1% of electric water heater shipments

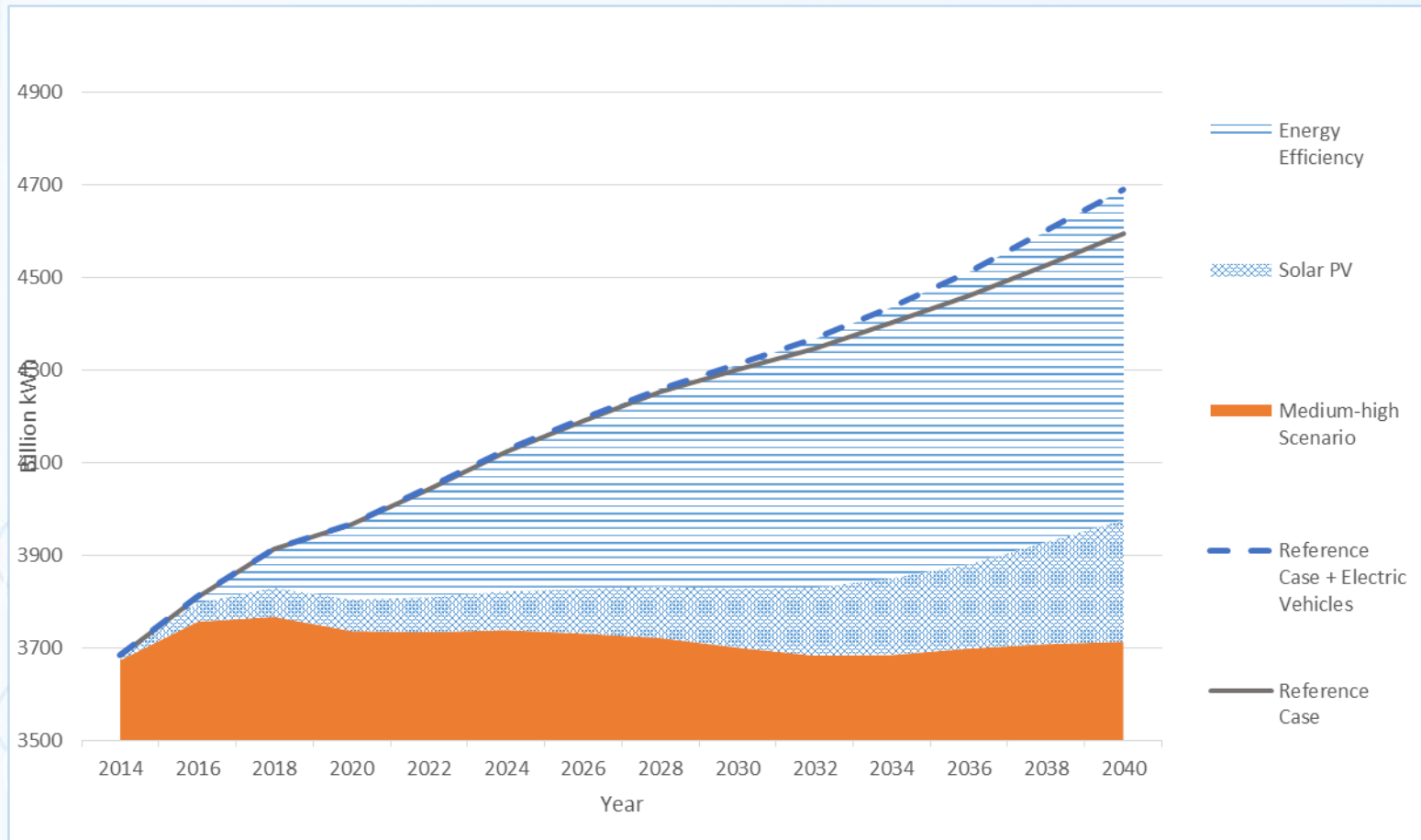
Source: EPA

U.S. 2050 Savings Potential



Source: ACEEE, Long-Term Efficiency Potential, 2012

Contributions in Medium-High Change Case

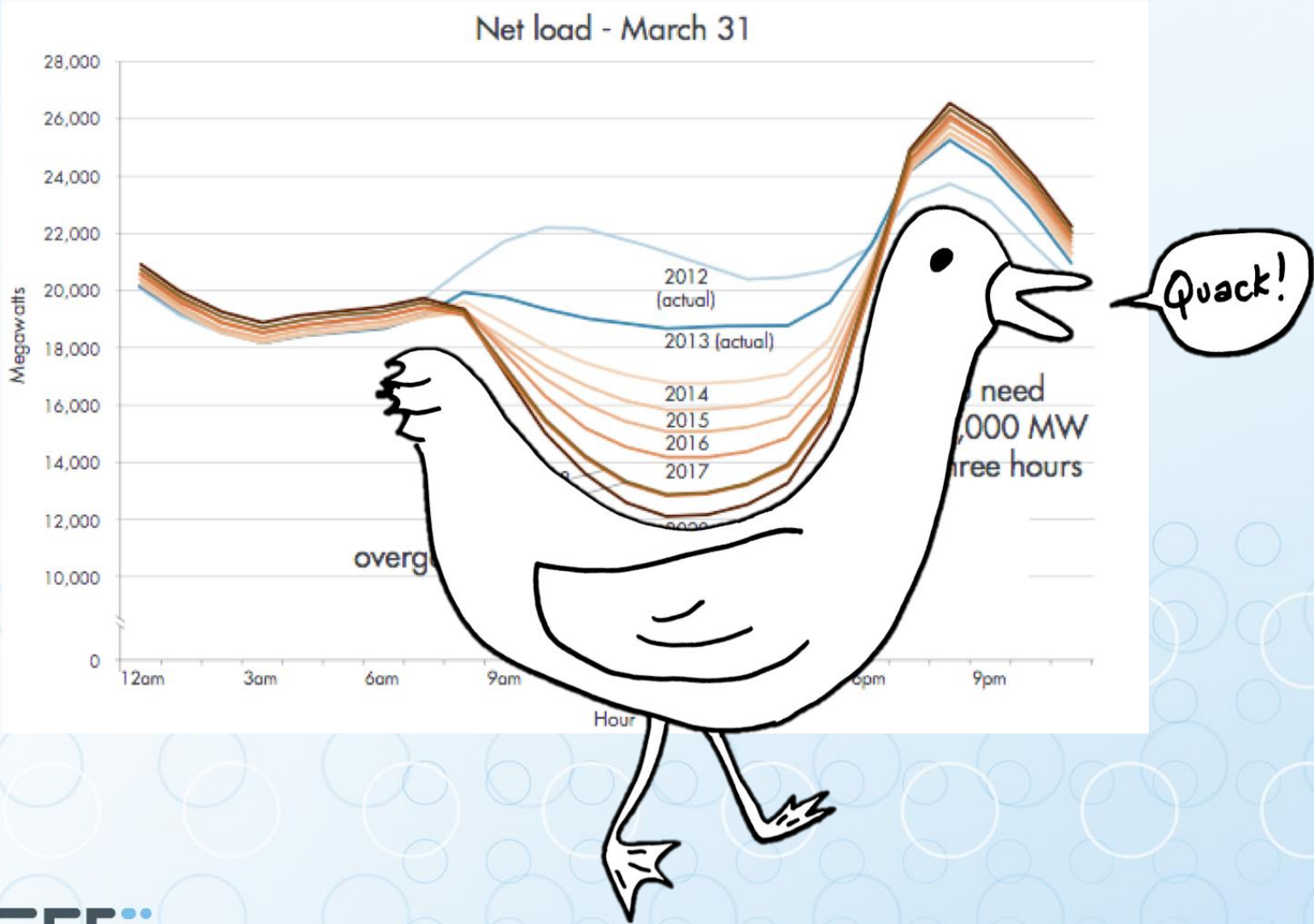


ACEEE New Horizons: Top Dozen Measures

Large reductions in miscellaneous plug loads	3.4%
Conservation voltage reduction	2.1%
New construction programs	1.9%
Comprehensive commercial retrofits	1.7%
Smart manufacturing	1.6%
High efficiency residential air conditioners and heat pumps	1.5%
Combined heat and power systems	1.3%
Advanced commercial lighting design and controls	1.3%
High efficiency heat pumps replacing electric resistance furnaces	1.2%
Smart commercial buildings	1.2%
Residential LEDs targeted at current incandescent applications	1.1%
Residential retrofits	1.0%

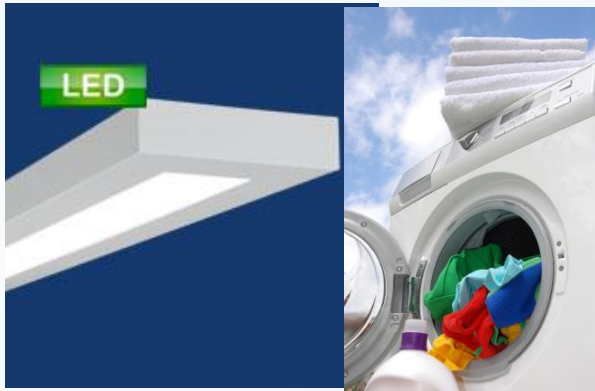
Savings are percentage of total electricity demand in 2030
(above values are from medium scenario in ACEEE analysis)

Load Shapes are Changing

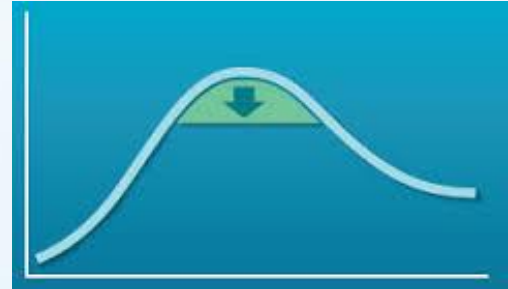


Integration – Reducing Silos

EE



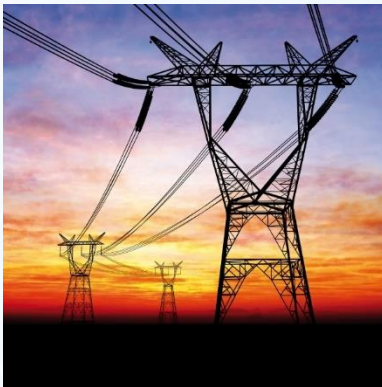
DR



DG



T&D



Storage

EV



Conclusions



- Much progress over past 20 years
 - Interactions of programs & policies
- Some markets are challenging
- Much remaining efficiency potential
- Utility industry changing
- Strategies can learn from the past but need to continue to evolve
 - Successful MT approaches often low-cost and can give good “bang for buck”

Contact Information

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