The Efficiency Boom: Cashing In on the Savings from Appliance Standards

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Appliance Standards Awareness Project

PEPDEE
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Outline

- Overview of appliance and equipment standards
- Savings from existing standards
- Savings from potential future standards
- Comparison to other studies

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About ASAP

- The Appliance Standards Awareness Project (ASAP) is a coalition group dedicated to advancing cost-effective energy efficiency standards for appliances and equipment. ASAP works at both the state and federal levels and is led by a Steering Committee with representatives from consumer groups, utilities, state government, environmental groups, and energy-efficiency groups.

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NAECA 1987

- Manufacturers and efficiency supporters negotiated consensus agreements to set standards for a variety of residential appliances and HVAC equipment
- Standards apply to “manufacture” or “import” of products

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Subsequent Laws

- 1988 amendments added ballast standards
- EPAct 1992 added fluorescent lamps, incandescent lamps, electric motors, commercial HVAC equipment, and plumbing products
- EPAct 2005 added 15 additional products
- EISA 2007 added 6 products
- Nearly all of these were based on consensus agreements

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Federally Regulated Products

NAECA 1987	EPAct 1992	EPAct 2005	EISA 2007
Refrigerator-freezers	Fluorescent lamps	Ceiling fan light kits	Incandescent lamps
Freezers	Incandescent reflector lamps	Dehumidifiers	Additional motors (e.g. large)
Room air conditioners	Electric motors (1-200 hp)	Compact fluorescent lamps	Walk-in coolers and freezers
Central AC & heat pumps	Commercial AC & HP	Torchiere lighting fixtures	Metal halide lighting fixtures
Furnaces & boilers	Comm'l furnaces/boilers	Large comm'l AC & HP	External power supplies
Water heaters	Comm'l water heaters	Comm'l clothes washers	Furnace fans*
Clothes washers	Showerheads	Distribution transformers	
Clothes dryers	Faucet aerators	Exit signs	
Dishwashers	Toilets	Comm'l ice makers	
Ranges & ovens	Small electric motors*	Comm'l refrigerators/freezers	
Direct-fired space heaters		Mercury vapor lamp ballasts	
Pool heaters		Traffic signals	
Fluorescent lamp ballasts		Pre-rinse spray valves	
		Comm'l unit heaters	
		Battery chargers*	
		Large comm'l refrigeration*	

*** DOE rulemakings. Only include rulemakings that are underway or completed.**

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Savings from Existing Standards

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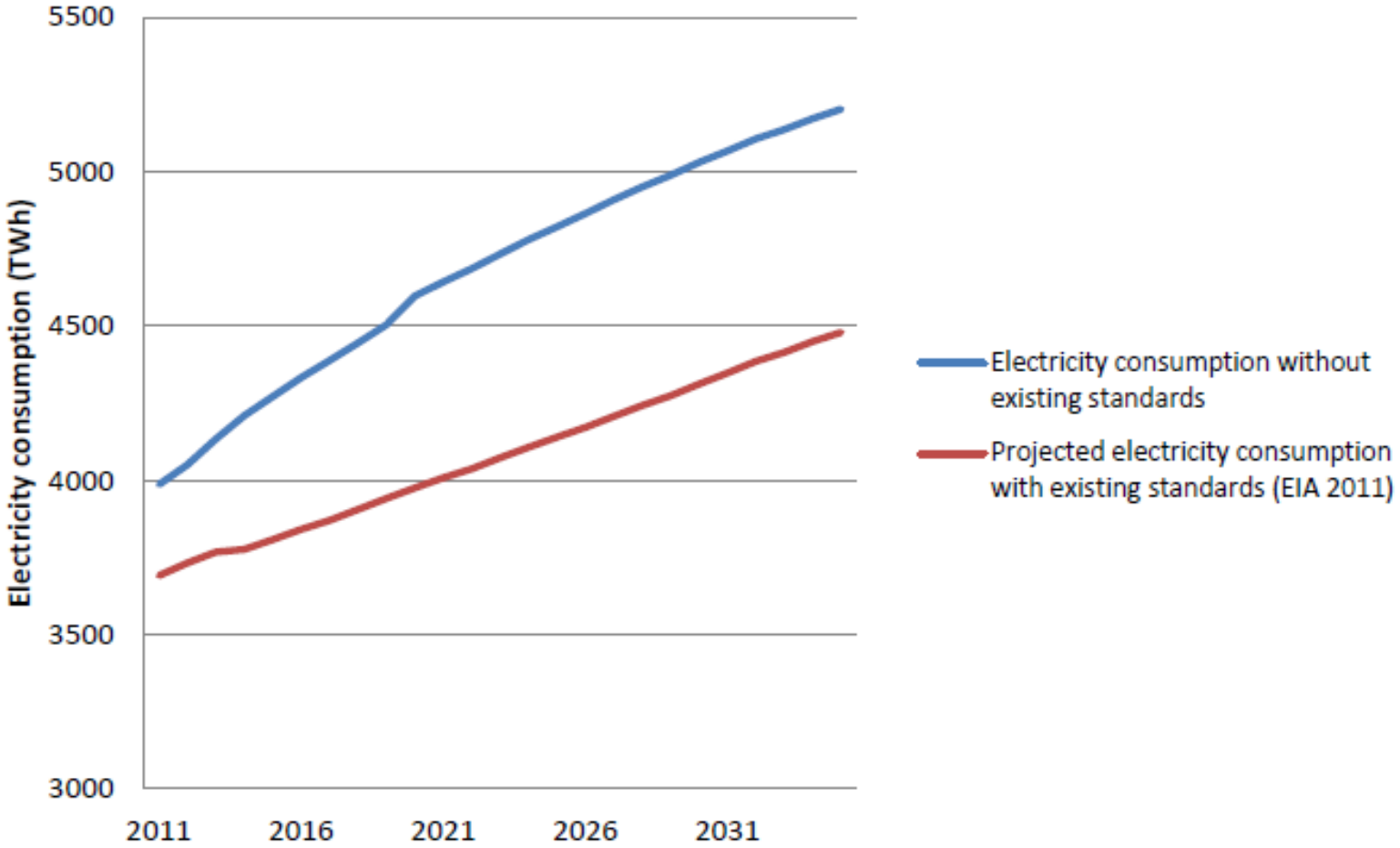
Electricity Savings from Existing Standards



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Energy Savings and Net Present Value from Existing Standards

	Groups of Standards	Cumulative Energy Savings through 2035 (quads)	NPV of Purchases through 2035 (billion 2010$)
Legislation	NAECA 1987 & 1988	29.3	$215
	EPAct 1992	49.8	$340
	EPAct 2005	19.3	$123
	EISA 2007	28.5	$141
DOE Rules	1989-2008	49.0	$213
	2009-2011	27.5	$77
	Total	**203.6**	**$1,109**

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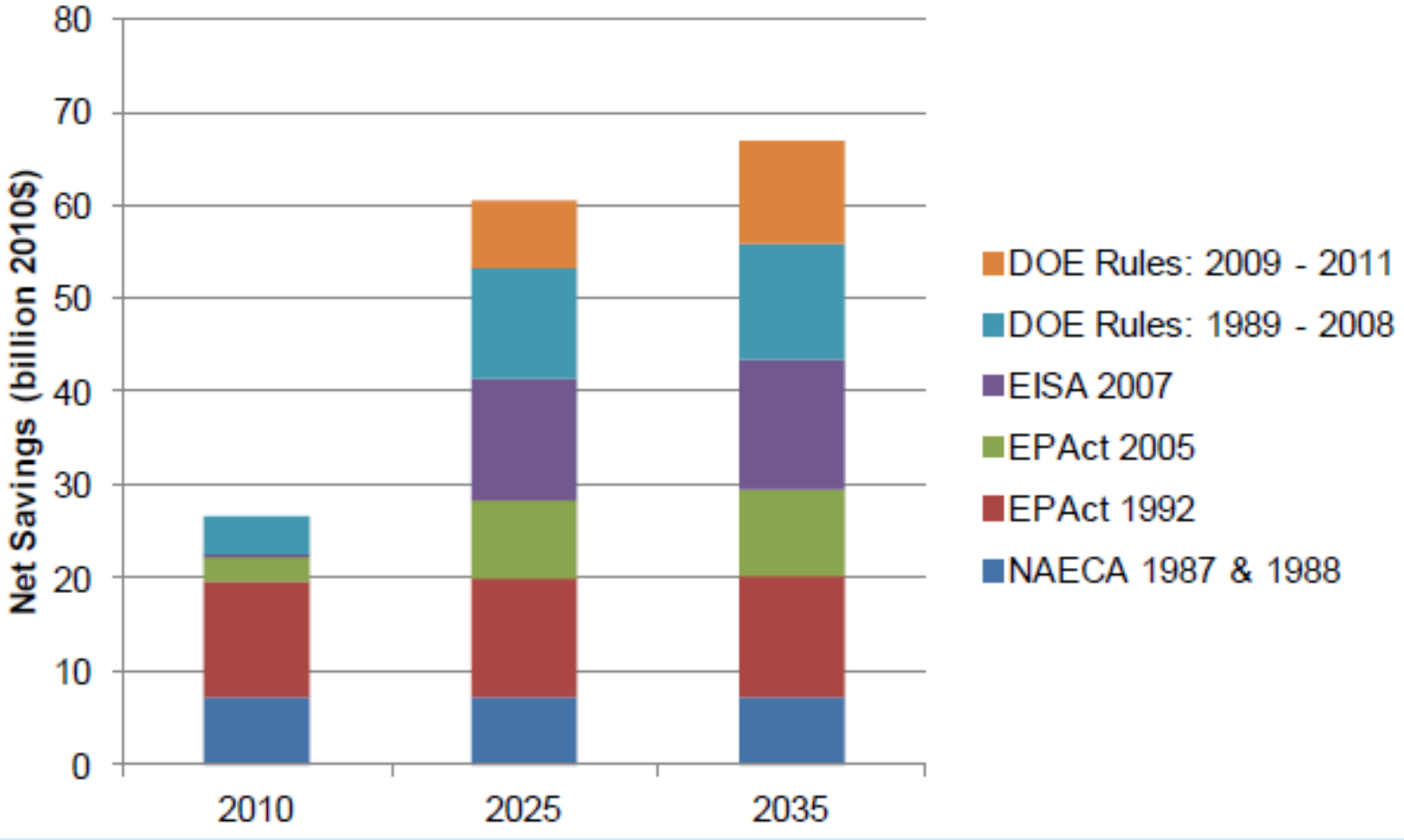
Net Economic Savings from Existing Standards



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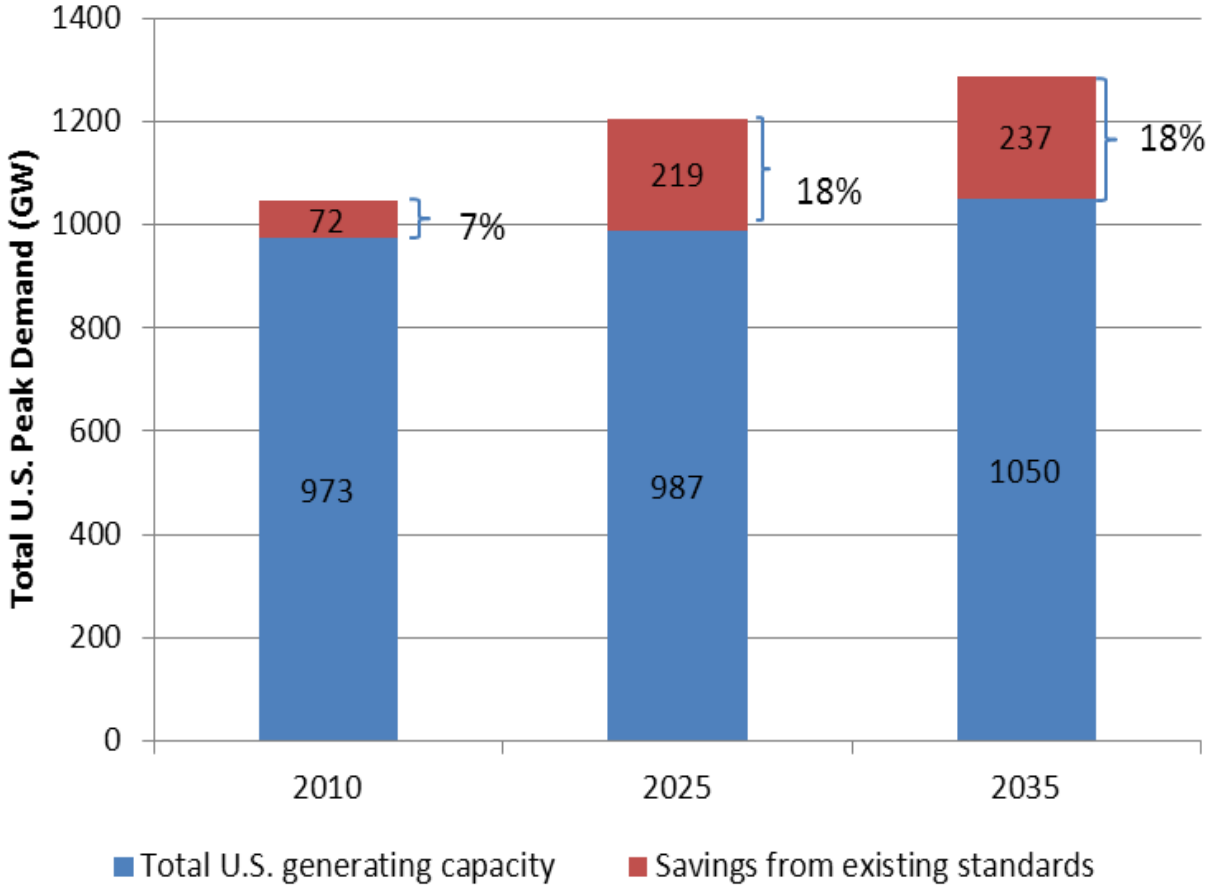
Peak Demand Savings from Existing Standards



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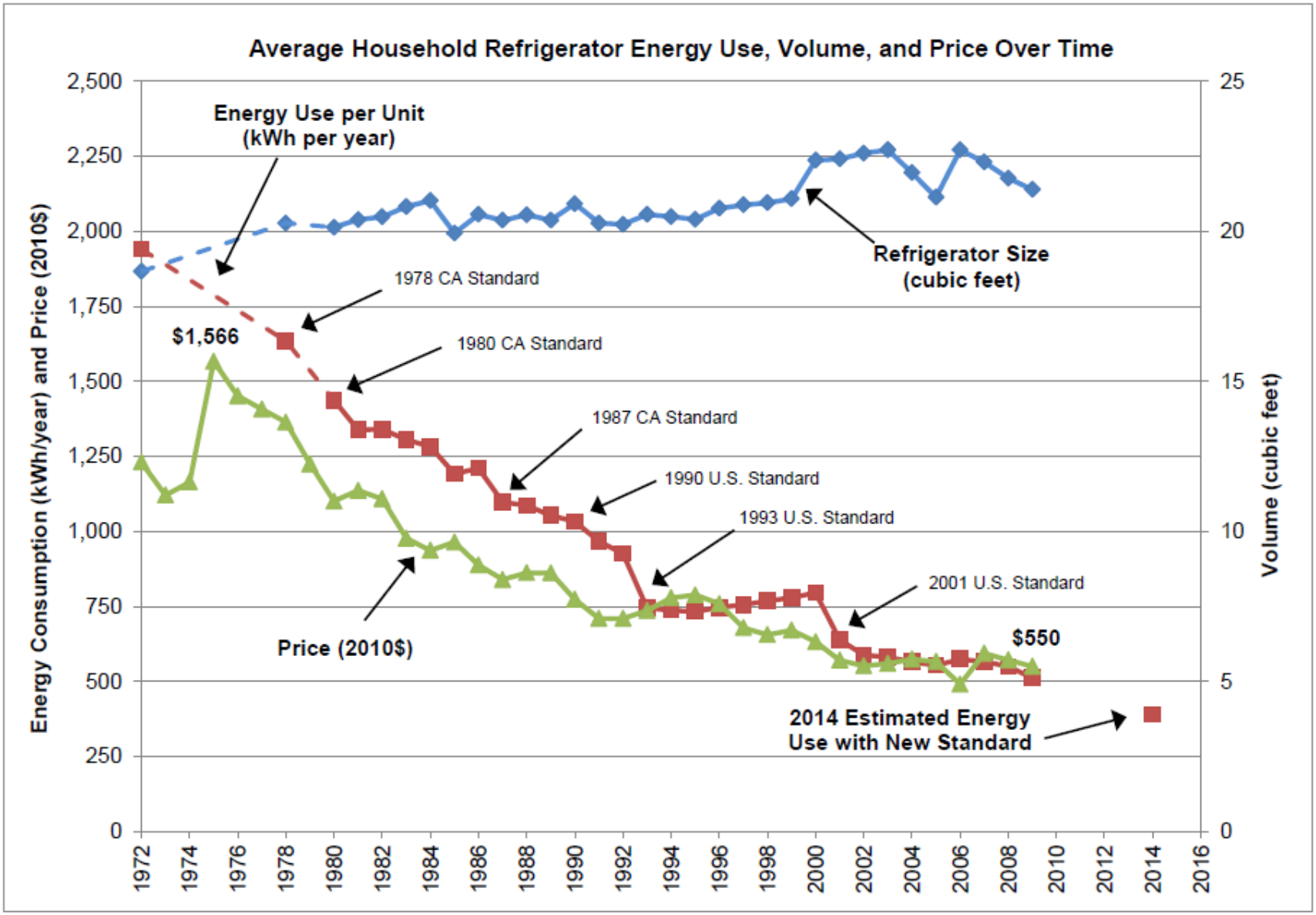

Sources: Association of Home Appliance Manufacturers (AHAM) for energy consumption and volume; U.S. Census Bureau for price

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Savings from Potential Future Standards

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34 Products Evaluated

Residential	Commercial/Industrial	Lighting
▪ Air handlers ▪ Battery chargers ▪ Boilers (natural gas) ▪ Clothes washers ▪ Computer equipment ▪ Dishwashers ▪ External power supplies ▪ Faucets ▪ Game consoles ▪ Microwaves ▪ Set-top boxes ▪ Televisions ▪ Toilets ▪ Water heaters	▪ Air-cooled AC ▪ Automatic icemakers ▪ Clothes washers ▪ Distribution transformers ▪ Electric motors ▪ Fans and blowers ▪ Furnaces ▪ Pre-rinse spray valves ▪ Pumps ▪ Refrigeration equipment ▪ Walk-in coolers and freezers ▪ Unit heaters ▪ Urinals	▪ Candelabra & intermediate base incandescent lamps ▪ General service fluorescent lamps ▪ HID lamps ▪ Incandescent reflector lamps ▪ Luminaires ▪ Metal halide lamp fixtures ▪ Outdoor lighting fixtures

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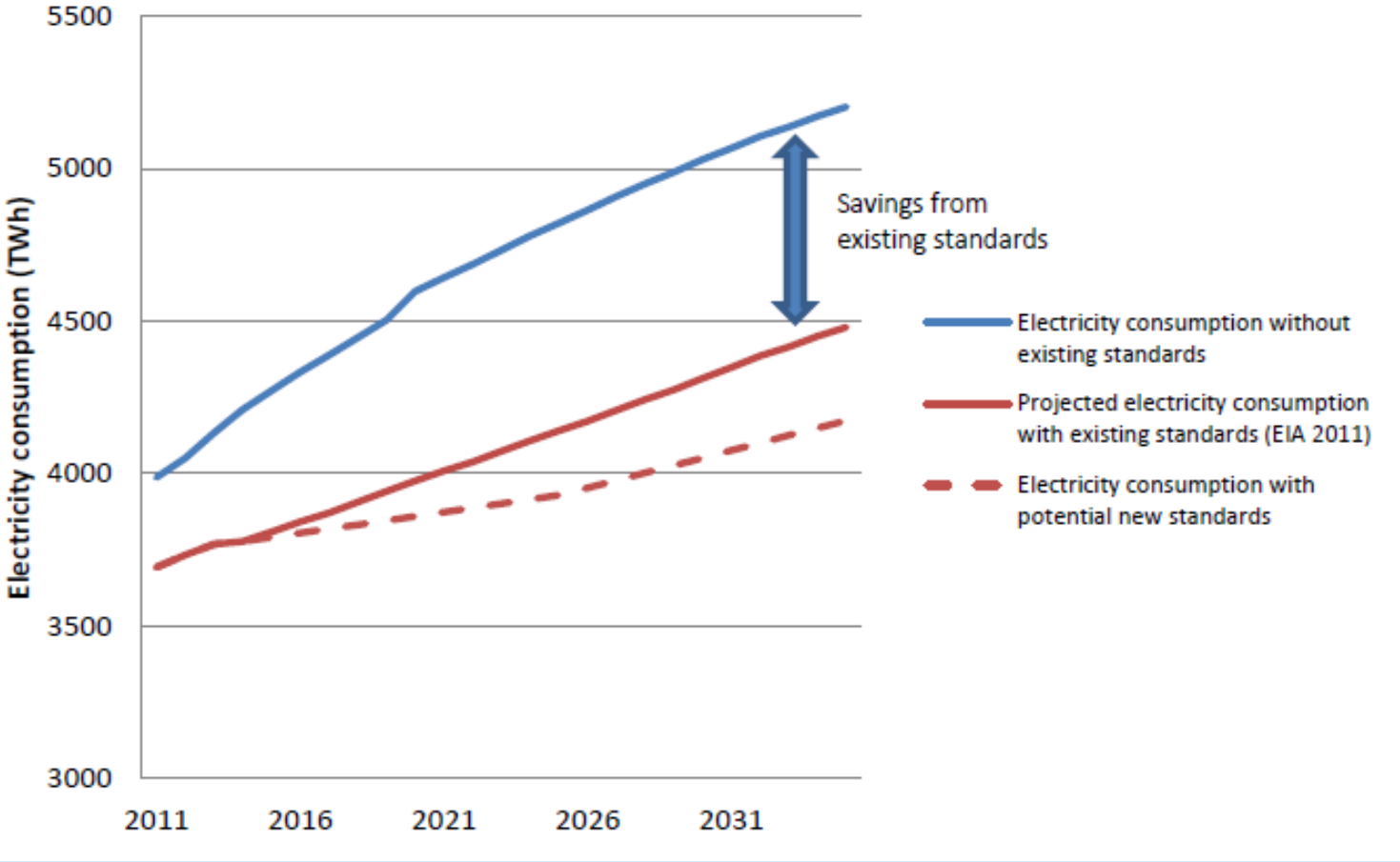
Electricity Savings from Potential Future Standards



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Potential Future Standards- Key Results

- NPV for consumers of more than $165 billion
- Annual electricity savings in 2035 would equal 7% of projected electricity consumption in that year
- Annual natural gas savings in 2035 would be enough to heat 8% of all natural-gas-heated homes
- Peak demand savings in 2035 equivalent to 6% of projected generating capacity
- Avoided CO_2 emissions in 2035 equivalent to annual emissions of 49 coal-fired power plants

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Potential Savings from Near- and Later-Term Standards

	Annual Savings in 2035				Cumulative Savings through 2035 (quads)
	Electricity (TWh)	Peak Demand (GW)	Natural Gas (TBtu)	Water (billion gallons)	
Standards due by Jan. 1, 2013	100	20	40	230	14
Feb. 2013-Dec. 2015	210	50	200	200	27
Total	**310**	**70**	**230**	**430**	**42**

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Top Ten Products- Potential Energy Savings

Product	Cumulative Energy Savings through 2035 (quads)
Residential electric water heaters	4.1
Incandescent reflector lamps	3.9
Residential air handlers	2.9
Walk-in coolers and freezers	2.4
Distribution transformers	2.3
Outdoor light fixtures	2.3
Set-top boxes	2.3
Electric motors	1.9
Computers and monitors	1.7
Candelabra & intermediate base incandescent lamps	1.3

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Comparison to Other Studies

- LBNL: Energy and Economic Impacts of U.S. Federal Energy and Water Conservation Standards Adopted from 1987 through 2010 (2011)
  - Savings of $28 billion in 2010
  - NPV of $851-$1,103 billion
- IEE: Assessment of Electricity Savings in the U.S. Achievable through New Appliance/Equipment Efficiency Standards and Building Efficiency Codes (2011)

Thank you!

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