The Present and Possible Future CFL Market

Northeast Energy Efficiency Partnerships
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Purpose and Outline

- Provide a context to better understand:
  - the issues surrounding promotion of CFLs
  - Current conditions and upcoming impacts that will affect the CFL market
- Enable discussion to better plan CFL programs to achieve energy savings

- Outline of Presentation
  - Issues in Promoting CFLs
  - Understanding the Market
  - Potential impacts of EISA
  - Future market possibilities
  - Recap and Discussion

CFLs Have Delivered for Energy Efficiency Programs

Program	Share of total DSM savings from CFL Programs
NYSERDA	84%
Wisconsin Focus on Energy	64%
Pacific Gas and Electric	62%

Source: D&R International, based on contact with ENERGY STAR Partners.

Key Issue Faced in Promoting CFLs

- Higher energy savings goals
- Declining support for CFLs

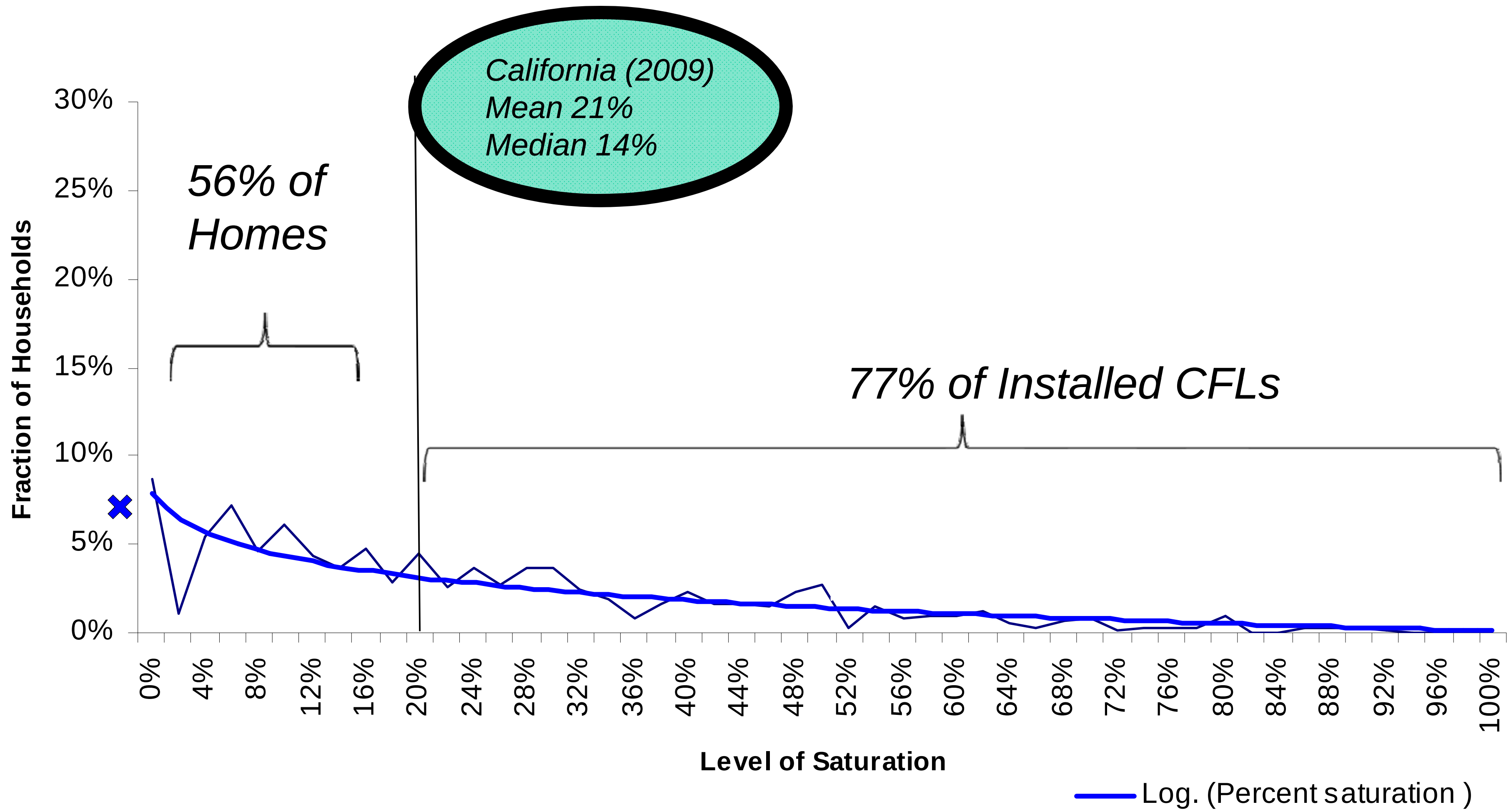
- Root Causes
  - Understanding of the state of the market
  - Focus on sales and market transformation rather than saturation
  - Poor or absent definitions of "Market Transformation"
  - Attempting to infer saturation from sales or from inventory data from too small or biased samples

Misconceptions about CFLs

- Consumers already have high socket saturation.
- CFL saturation will increase as consumers install stored CFLs
- Savings from general service CFLs have already been captured.
- Most of the remaining savings potential will come from specialty sockets
- The market for general service CFLs is transformed.
- EISA will transform the market for CFLs.
- LEDs will fill the market where CFLs cannot.

Do consumers already have high socket saturation?

CFL Ownership Distribution – Mature Market



Source: "Residential Lighting Metering Study – Preliminary Results", KEMA, February 2009

Won’t stored CFLs fill remaining sockets?

Stored CFLs – Mature Markets

Number of CFLs Installed	Socket Saturation	CFLs Stored	Incandescent Lamps Stored
0	0%	0.17	6.61
1-10	2.5% - 25%	1.97	6.69
More than 10	>25%	6.75	7.15

- *Failed lamps in low saturation homes are more likely to be replaced with incandescents*
- *CFL "adopters" have not abandoned incandescents*

Sources: "Residential Lighting Metering Study – Preliminary Results", KEMA, February 2009 [California]

Aren’t most general service sockets filled with CFLs already?

Aren’t most of the remaining savings potential from specialty sockets?

Remaining Socket Potential - Mature Markets

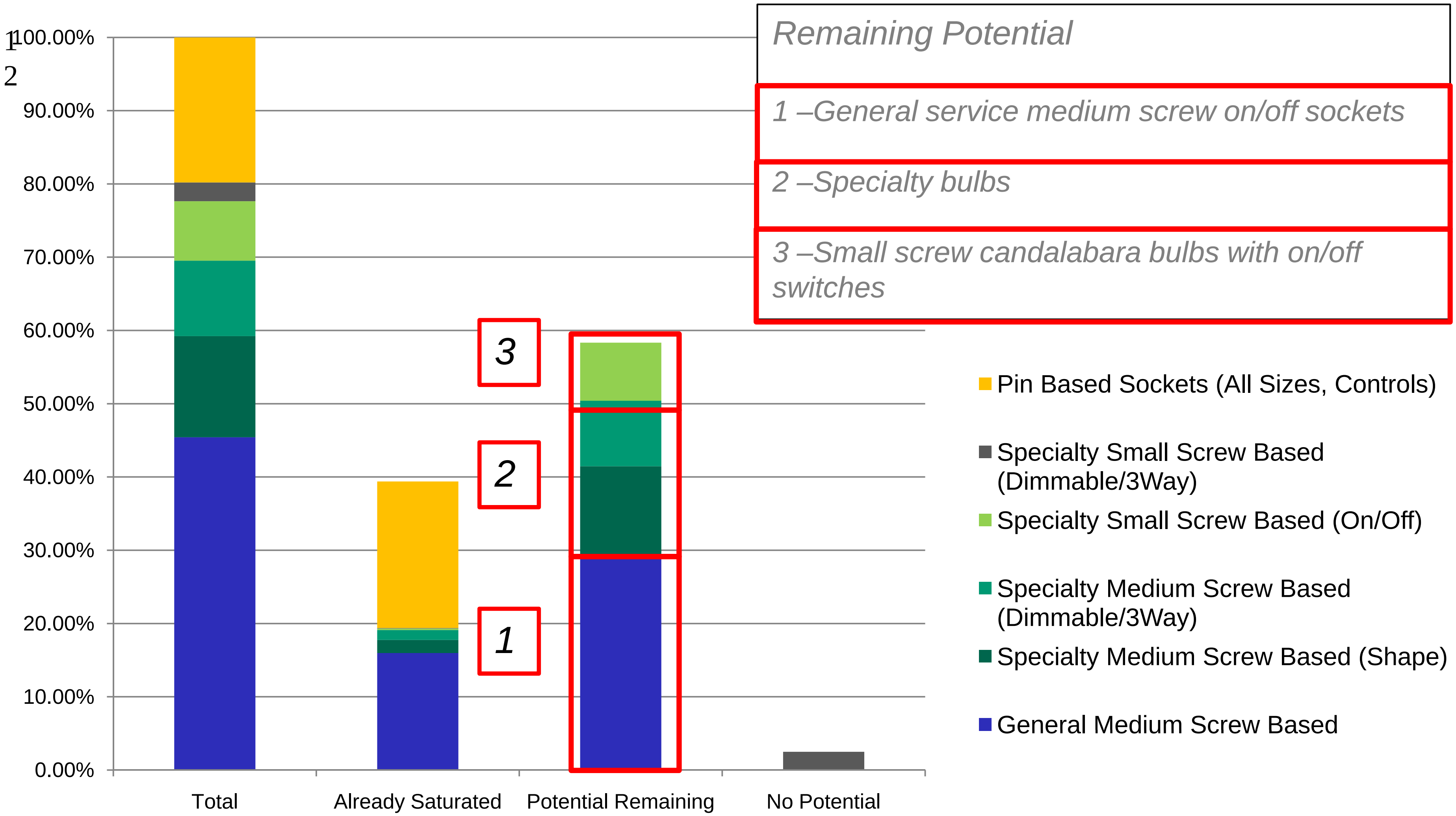
Control Type	Percent of Sockets
On/Off	85%
Dimmer	12%
3-Way	3%

Base Type	Percent of Sockets
Medium Screw	69%
Pin	19%
Small Screw	10%
Other	2%

Lamp Type	Percent of Sockets
Incandescent	55%
CFL	20%
Other Fluorescent	12%
Halogen	8%
Other	5%

Sources: "Residential Lighting Metering Study – Preliminary Results", KEMA, February 2009 [California]

Remaining Socket Potential - Mature Markets



Sources: "Residential Lighting Metering Study – Preliminary Results", KEMA, February 2009 [California]

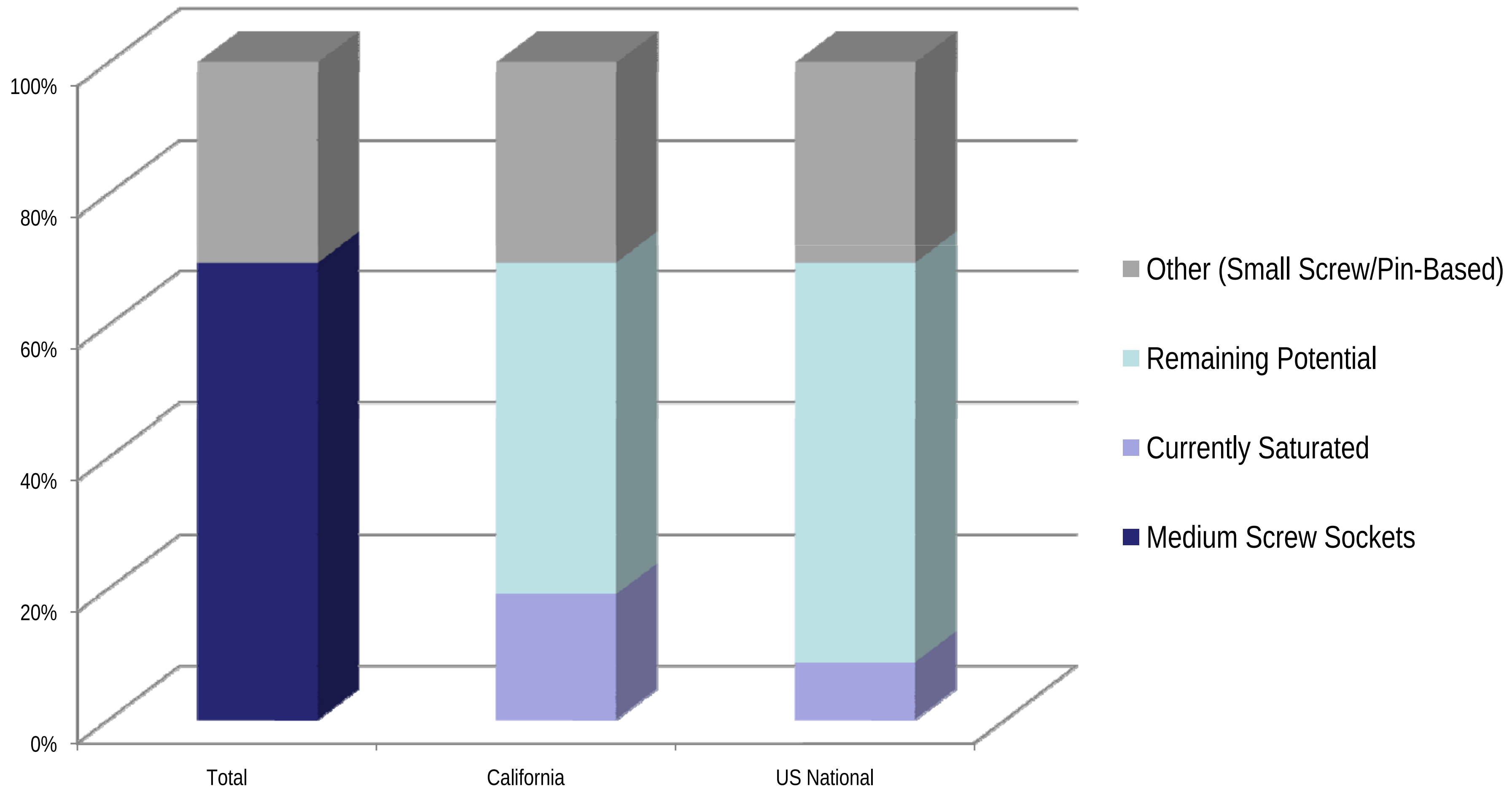
Remaining Socket Potential - Mature Markets

Socket, Shape Control	Percent of All Sockets	Current CFL Socket Saturation	Remaining Potential Compared to Current Saturation
Medium Screw, General Service (A/Globe), On/Off	45 %	16%	184%
Medium Screw, Specialty Size, On/Off	13.8%	1.8%	671%
Medium Screw, All Sizes, Dimmable/3-Way	10.3%	1.4%	654%
Small Screw, All Sizes, On/Off	8.1%	0.19%	4075%
Small Screw, All Sizes, Dimmable/3-Way	2.6%	0.07%	Negligible.
Pin-Based, All Sizes, All Controls	20%	15%*	Negligible.
All Sockets	100%	21% (33% fluorescents)	-

**Pin-Based sockets contain 75% fluorescent lamps (CFL or other) and 25% halogen. ENERGY STAR did not evaluate remaining potential for this group.*

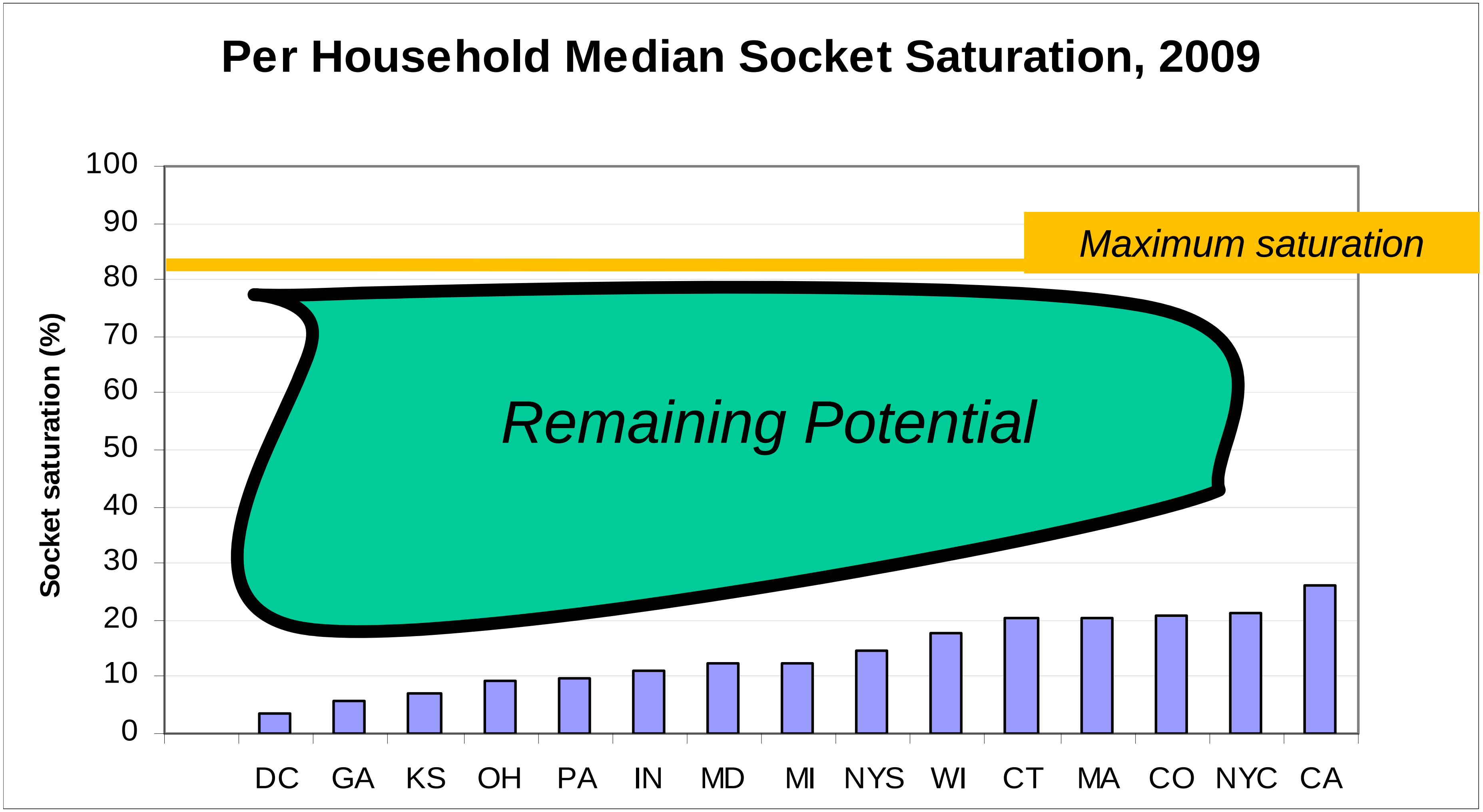
Sources: "Residential Lighting Metering Study – Preliminary Results", KEMA, February 2009 [California]

Remaining Potential – National 2009



Sources: "Residential Lighting Metering Study – Preliminary Results", KEMA, February 2009 [California] National – D&R International.

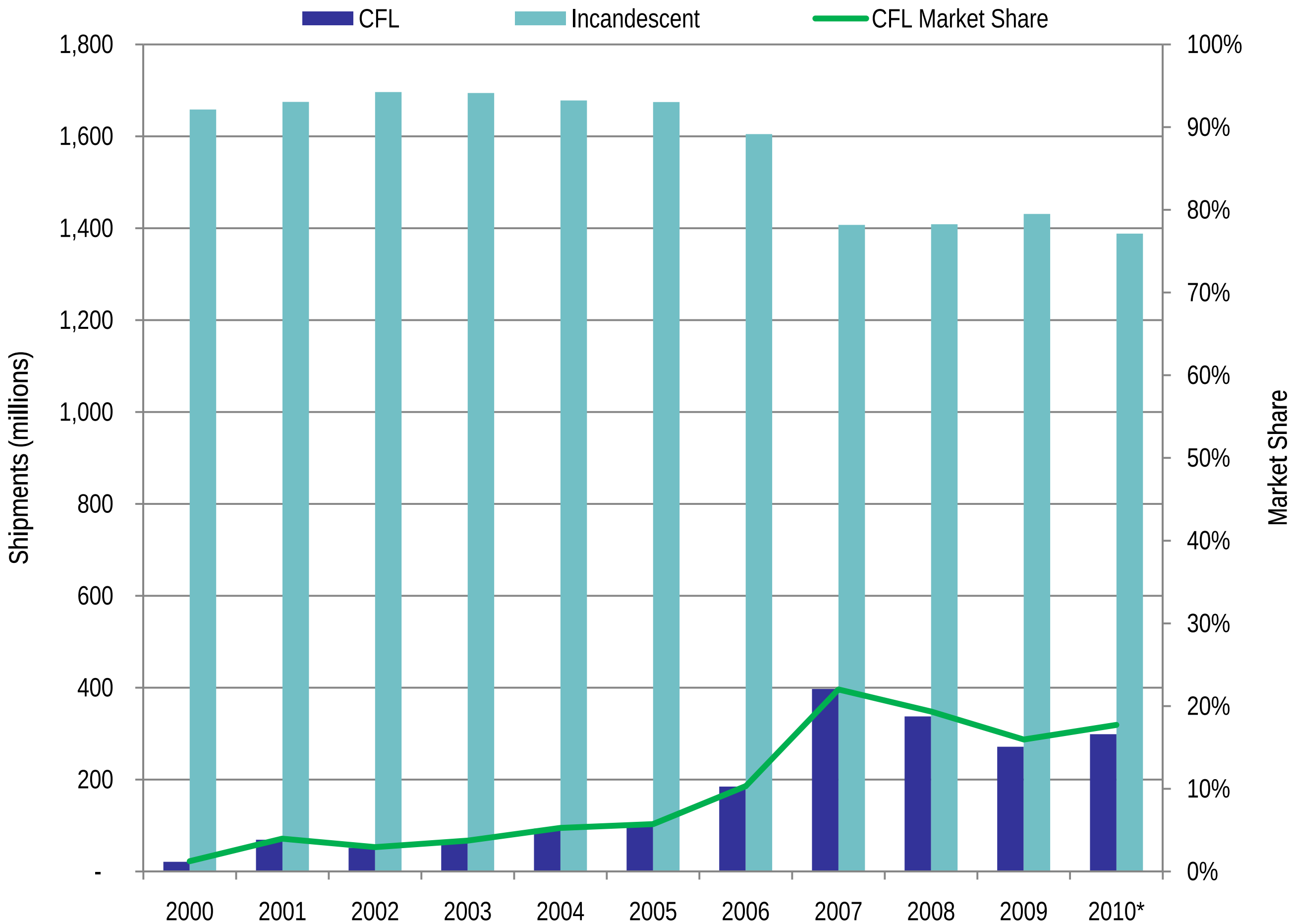
Remaining Potential – Select States



Source: "Preliminary Results of The Multistate CFL Modeling Effort" (DRAFT), Nexus Market Research, November 22, 2009. Posted to Connecticut Energy Efficiency Fund Website.

Isn’t the CFL market already transformed?

Shipments and Market Share



- Shipments
  - From 2007 Peak
  - Down 15% in 2008
  - Down 32% in 2009
- Market Share
  - 2007 – 22%
  - 2008 – 19%
  - 2009 – 16%
- Influences
  - Recession
  - Criteria Change
  - 2007 Initiatives

Sources:

D&R International; Department of Commerce; "U.S. Lighting Market Characterization, Volume 1: National Lighting Inventory and Energy Consumption Estimate" 2002, Navigant Consulting; U.S. Census Bureau.

Won’t EISA complete the market transformation?

EISA Coverage Continued

Tier	Major Wattage Type	EISA Rated Lumen Ranges	Effective Date
1	100w and 150w	1490-2600 (~90w – 150w)	1/1/2012
	75w	1050-1489 (~75w – 90w)	1/1/2013
	60w	750-1049 (~60w – 75w)	1/1/2014
	40w	310-749 (~30w – 60w)	1/1/2014
2	All	All	1/1/2020

- *Lamps Excluded by EISA*
  - *3-Way --Reflector --Globes>5” --decorative --candelabra*
- *Modified Spectrum – Lower Efficiency*
- *DOE may institute standards for excluded lamps should their sales increase significantly.*

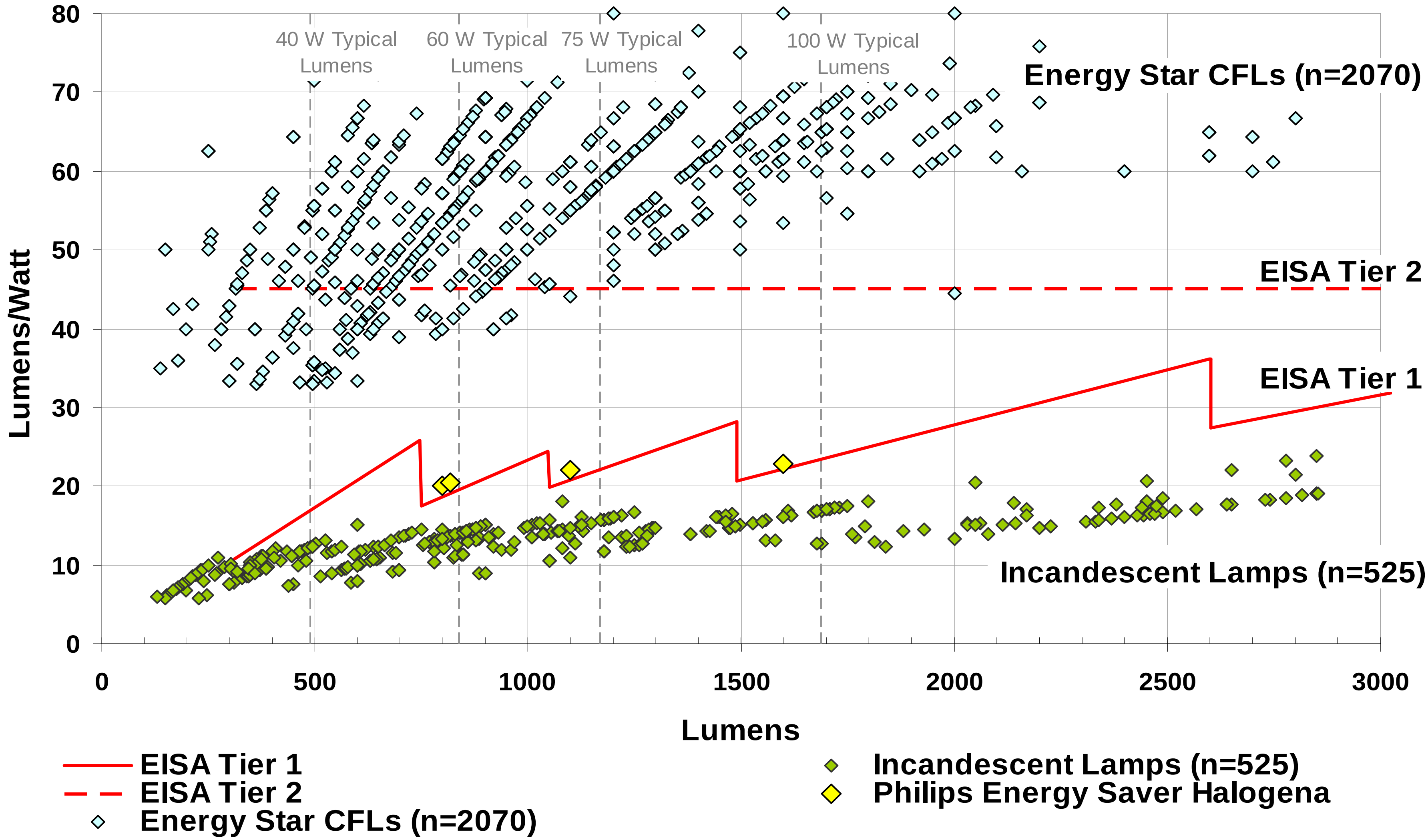
More than half the market not impacted until 2014/2015*

US General Service Incandescent Market Share by Wattage, 2006

Inc. Wattage	> 100W	100W	75W	60W	40W	25W
% of US market	1%	21%	19%	46%	12%	1%
EISA Effective	2012	2012	2013	2014	2014	

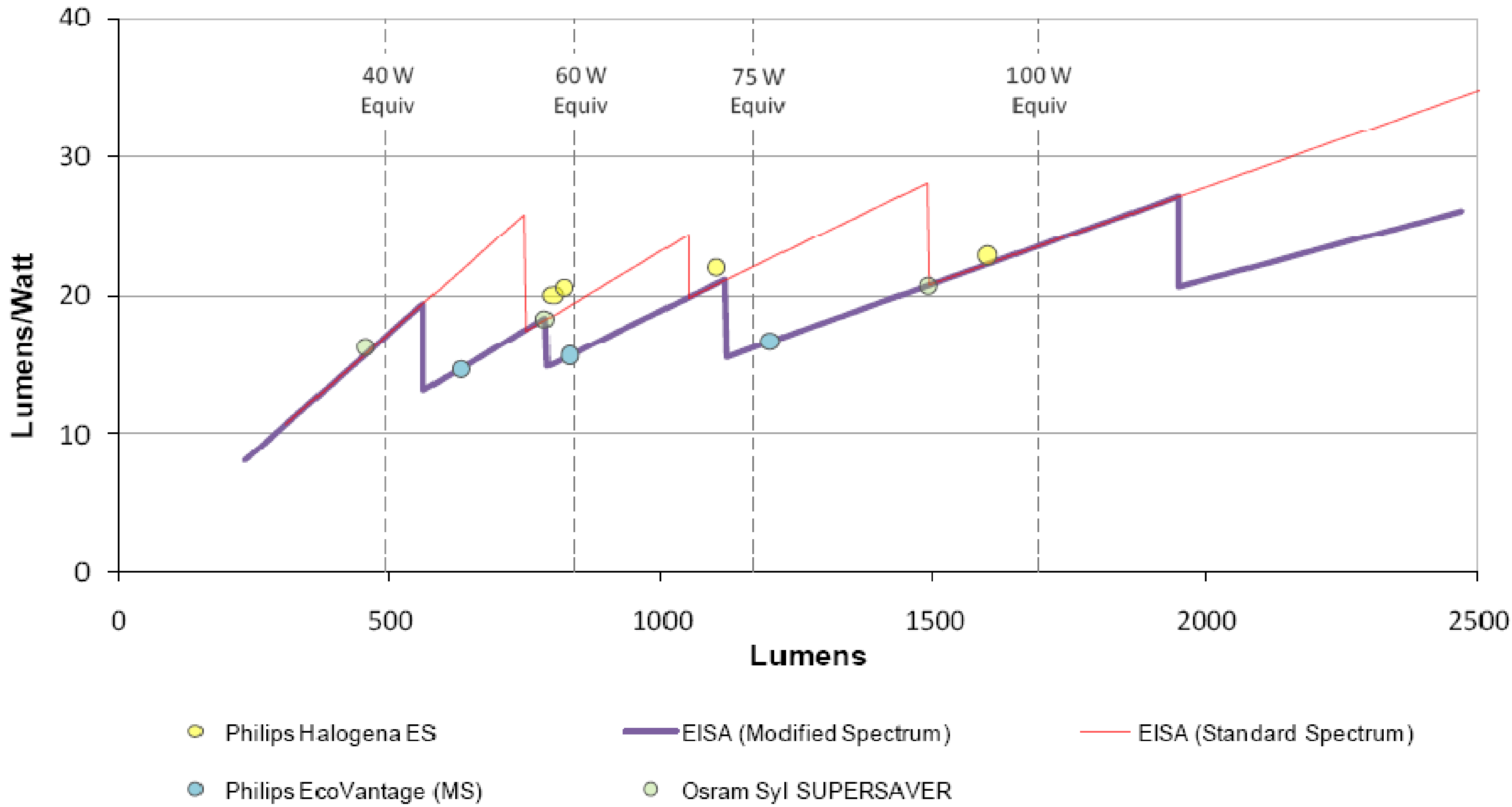
**2015 because EISA only applies to <u>manufacturing and imports</u> so retailers or speculators can stockpile and continue to sell after the effective date.*

EISA Coverage Continued



Sources: "EISA and Future Residential Lighting Programs", Ecos Consulting, March 2009

Modified spectrum bulbs loophole



Source: "Prospects for Residential Lighting Programs in Light of Federal Lamp Standards"", Southwest Energy Efficiency Conference. Presentation by Chris Calwell. , Ecos Consulting, Nov. 2009

EISA Impacts Take Away

- Doesn't ban incandescent technology outright.
- Phased approach starting in 2012 (2011 in CA).
- 60 Watt bulbs likely not impacted until end of 2014.
- Impacts manufactured and imported lamps, not sales.
- Some loopholes do exist.

- What does this mean?
  - Impacts may not automatically push market to CFLs
  - Impact may only affect a percentage of sockets

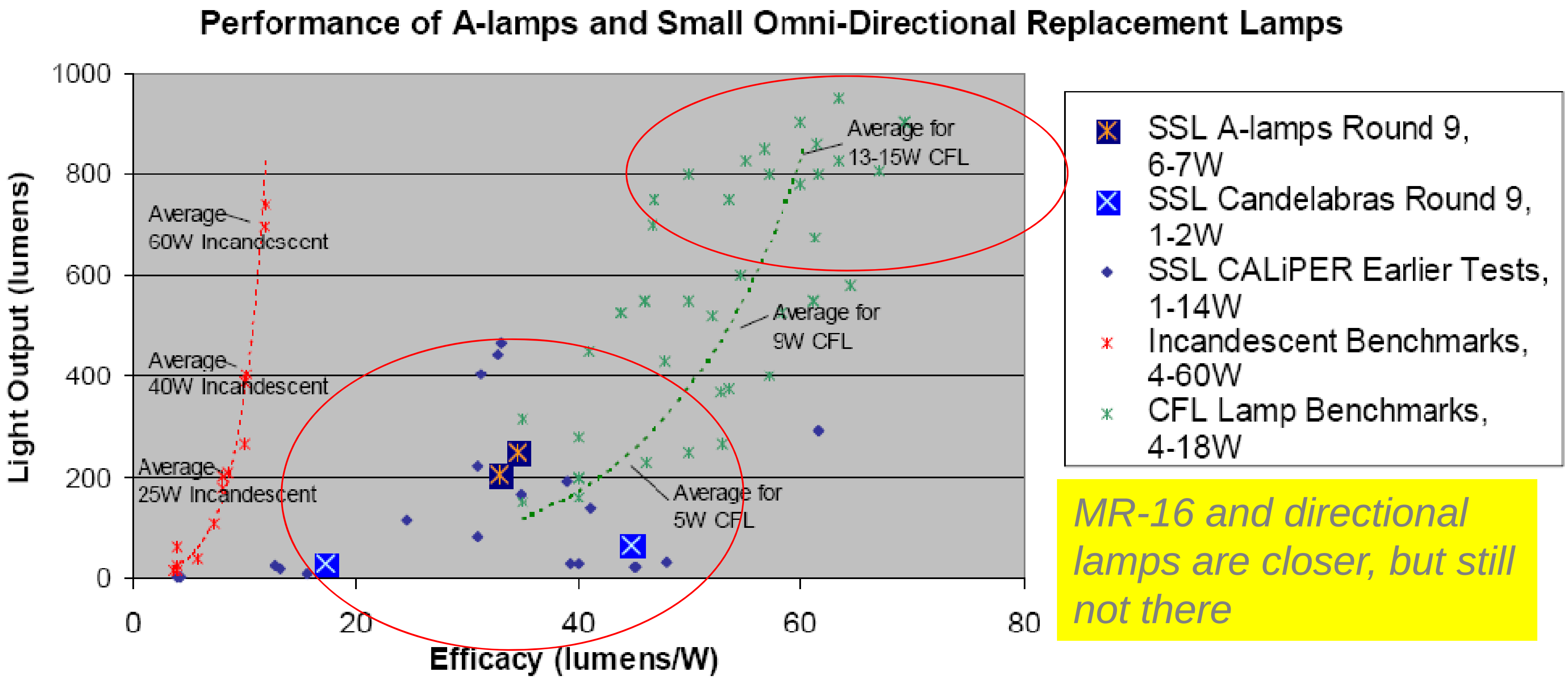
Will LEDs Help Out?

ENERGY STAR Integrated LED Replacement Lamp Criteria

- *Final Criteria* — *December 3, 2009*
- *Effective Date* — *Aug. 31, 2010*

- *Expect few products at first with momentum building in 2011 as the technology matures, as was the case for SSL Luminaire program*
- *First cost will be big barrier – price points on some products are $50/unit*
- *Current non-ENERGY STAR products could damage market*

Current LEDs Have a Way to Go



MR-16 and directional lamps are closer, but still not there

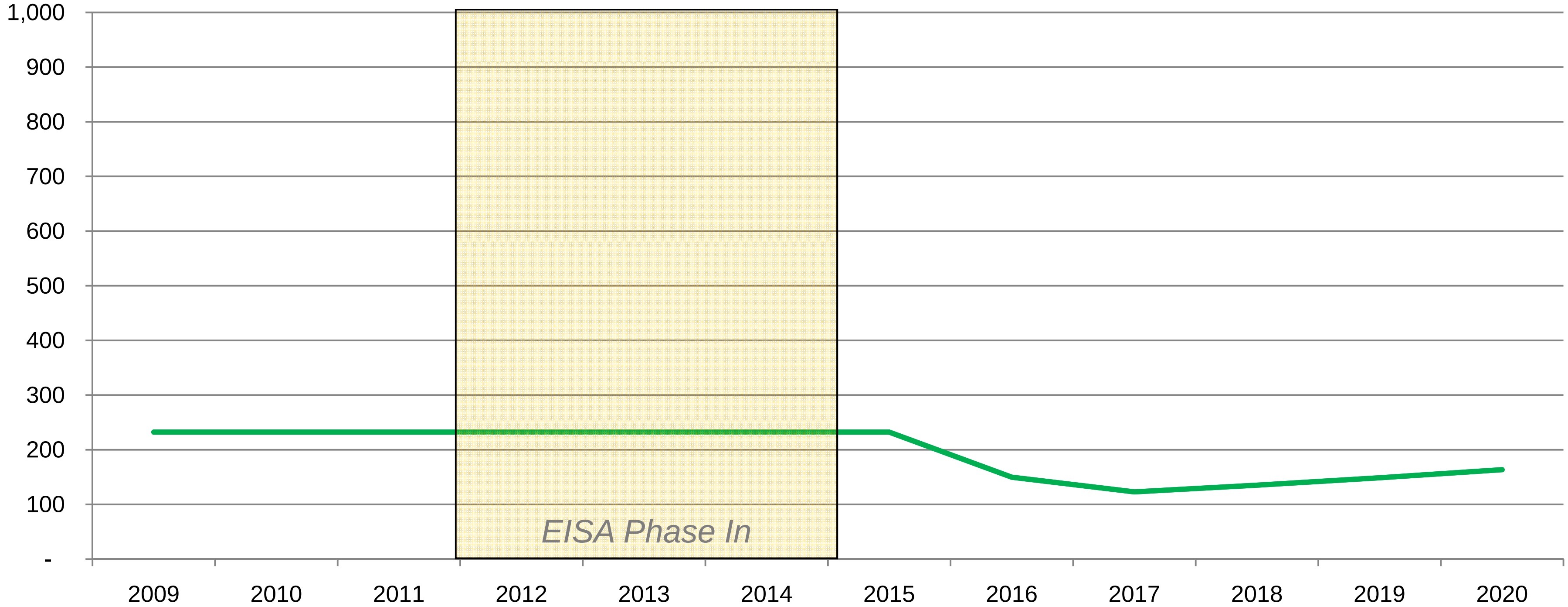
Benchmark values are based on CALiPER benchmark tests, surveyed ratings, and averaged manufacturer ratings for incandescent and CFL lamps. Values are based on initial output, not average life-time output.

As measured by the DOE CALiPER Program Cycles 1-9
http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/caliper_round-9_summary.pdf

Possible Future Markets Through 2020

- EISA Impact
  - Adherence
  - Competing products
- CFL Market Status

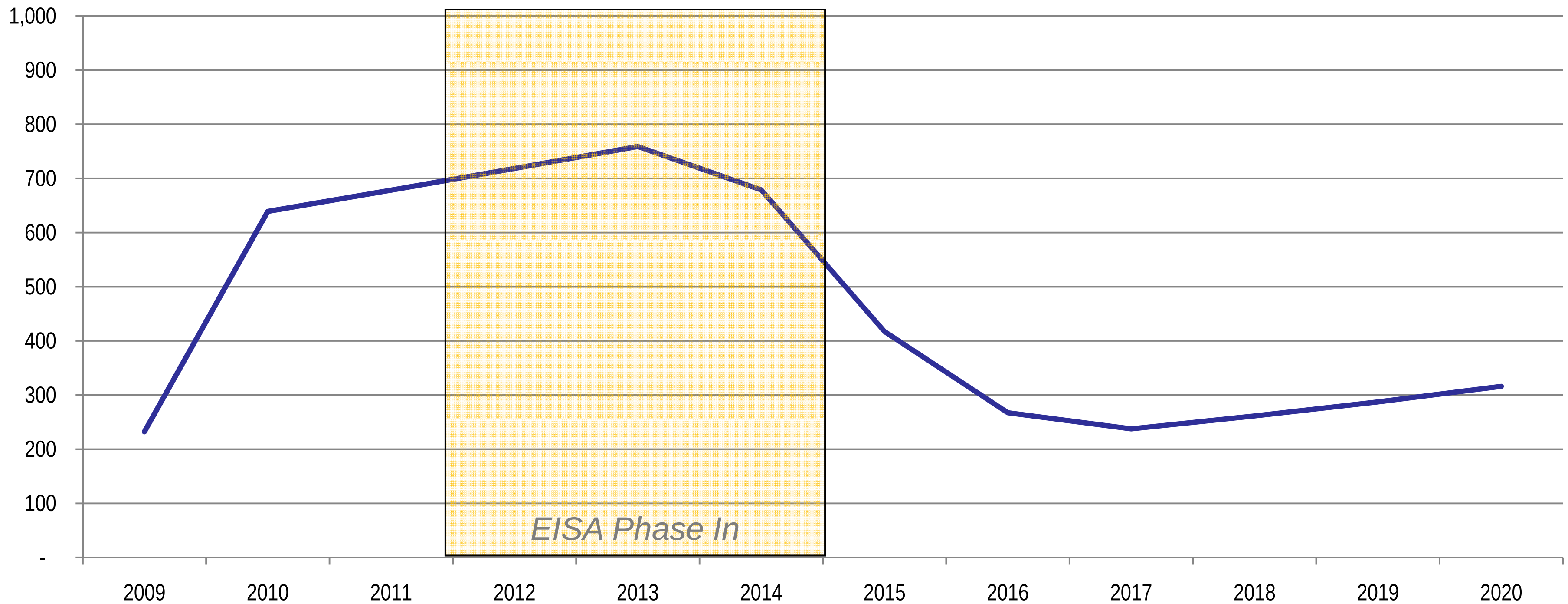
A Worst Case Scenario



- No Market Growth.
- No EISA Impact.
- Competing Products Capture Potential Sockets.

Saturation in 2015	30%
Sockets Filled in 2015 (million)	1,457
Sales to 2015 (million)	1,626

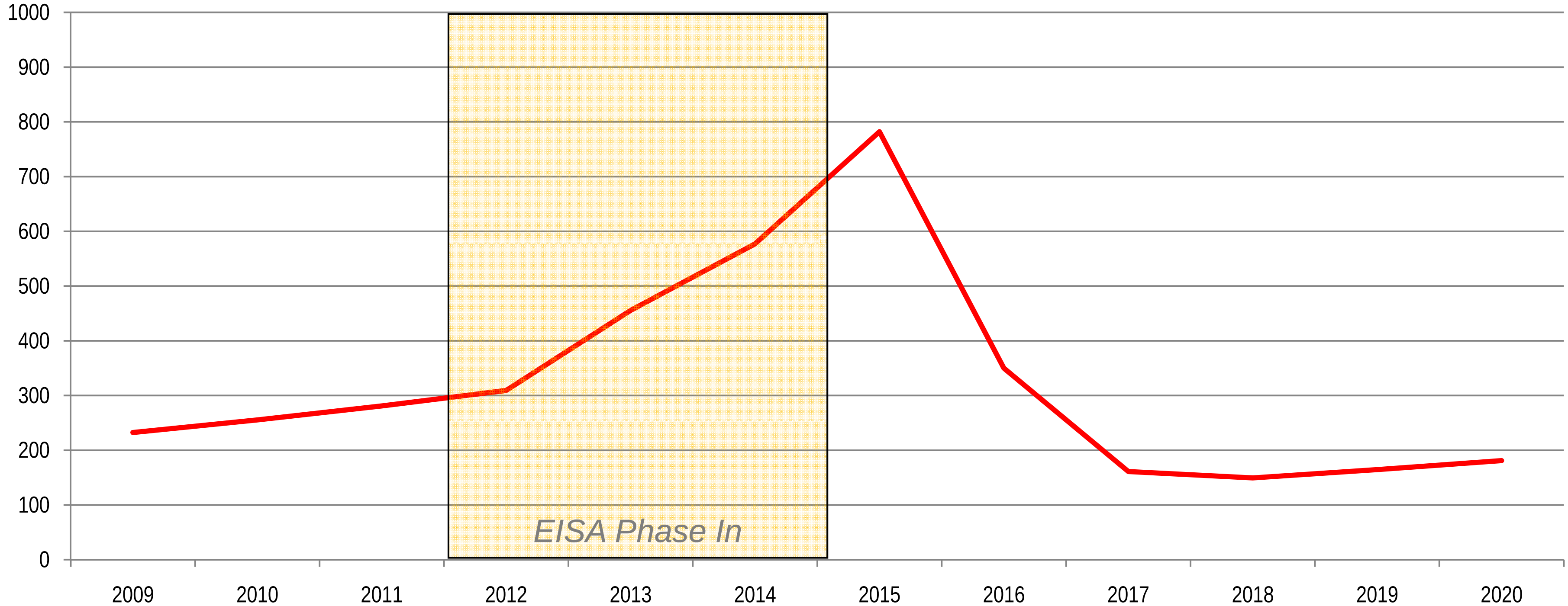
A Best Case Scenario



- 5 Year Drive to 60% Saturation
- EISA Impact Bypassed.

Saturation in 2015	60%
Sockets Filled in 2015 (million)	2,951
Sales to 2015 (million)	4,123

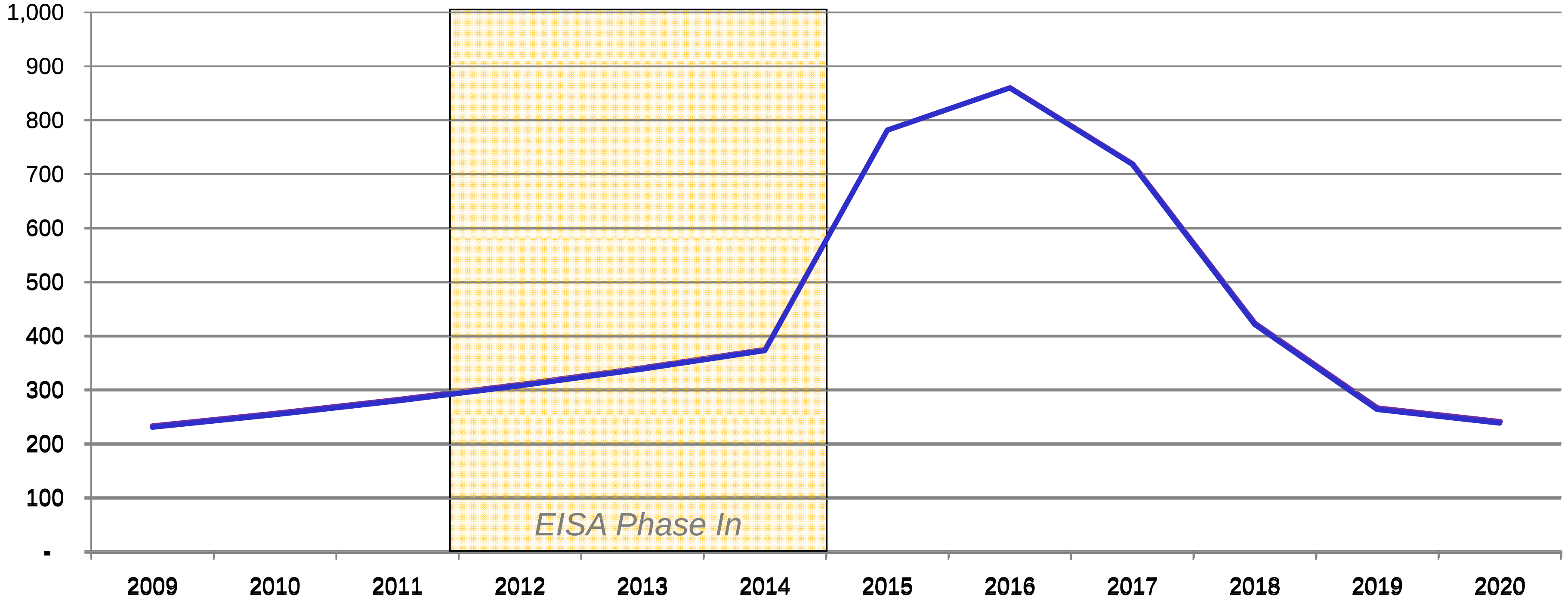
An In-Between Scenario



- 10% Market Growth
- Half EISA Impact
- Competing Products Competitive After 2015

Saturation in 2015	47%
Sockets Filled in 2015 (million)	2,292
Sales to 2015 (million)	2,892

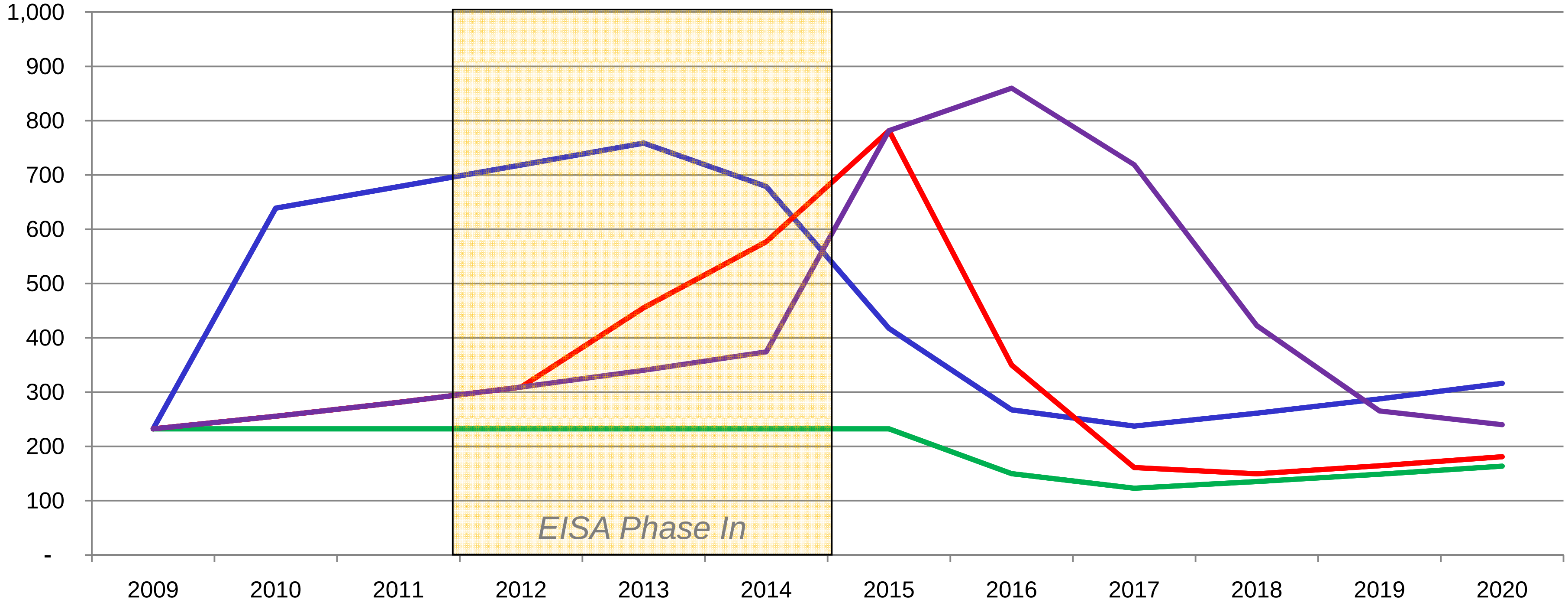
A Delayed Scenario



- 10% Market Growth
- Half EISA Impact
- Impact Delayed Until 2015
- Saturation Capped at 60%

Saturation in 2015	43%
Sockets Filled in 2015 (million)	2,086
Sales to 2015 (million)	2,574

Where will we actually end up?



	Worst Case	In-Between Case	Best Case	Delayed Case
Saturation in 2015	30%	47%	60%	43%
Sockets Filled in 2015 (million)	1,457	2,292	2,951	2,086
Sales to 2015 (million)	1,626	2,892	4,123	2,574

Savings Potential

	Worst Case	In-Between Case	Best Case
Saturation in 2015	30%	47%	60%
Sockets Filled in 2015 (million)	1,457	2,292	2,951
Additional Sockets Filled (million)	(832)	-	659
Additional Annual Savings Potential (billion kWh)	(28)	-	22
Sales to 2015 (million)	1,626	2,892	4,123

Recap

- 70% or more of socket potential remains.
- Mostly general service CFLs,
  significant fraction requires specialty CFLs.
- Unit sales are falling and market share stagnant
  (3 of every 4 purchases are incandescent).
- Don’t count on EISA to fully impact the market:
  - Full retail impact delayed until 2014/2015.
  - Competing products already on the market.
- Competitive LEDs replacement lamps still several years off.
- More sockets = more savings potential.

Key Issue Faced in Promoting CFLs

- Higher energy savings goals
- Declining support for CFLs

- Root Causes
  - Understanding of the state of the market
  - Focus on sales and market transformation rather than saturation
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Are low net-to-gross ratios an obstacle?

- Almost certainly in some states
- Findings from multi-state study may cause some rethinking:
  - Programs in most if not all states had at least some positive net impact in 2008.
  - Wide range in the NTGR across states, ranging from quite low (<0.5) to quite high (>1), many are in between.
  - In some but not all cases there are clear characteristics of the program that help to explain these differences across states
- Results like Efficiency Vermont's might also affect the discussion:
  - VT reversed precipitous decline in sales by aggressively expanding retailer network and reinstating advertising, in store POP and a geographically targeted campaign.

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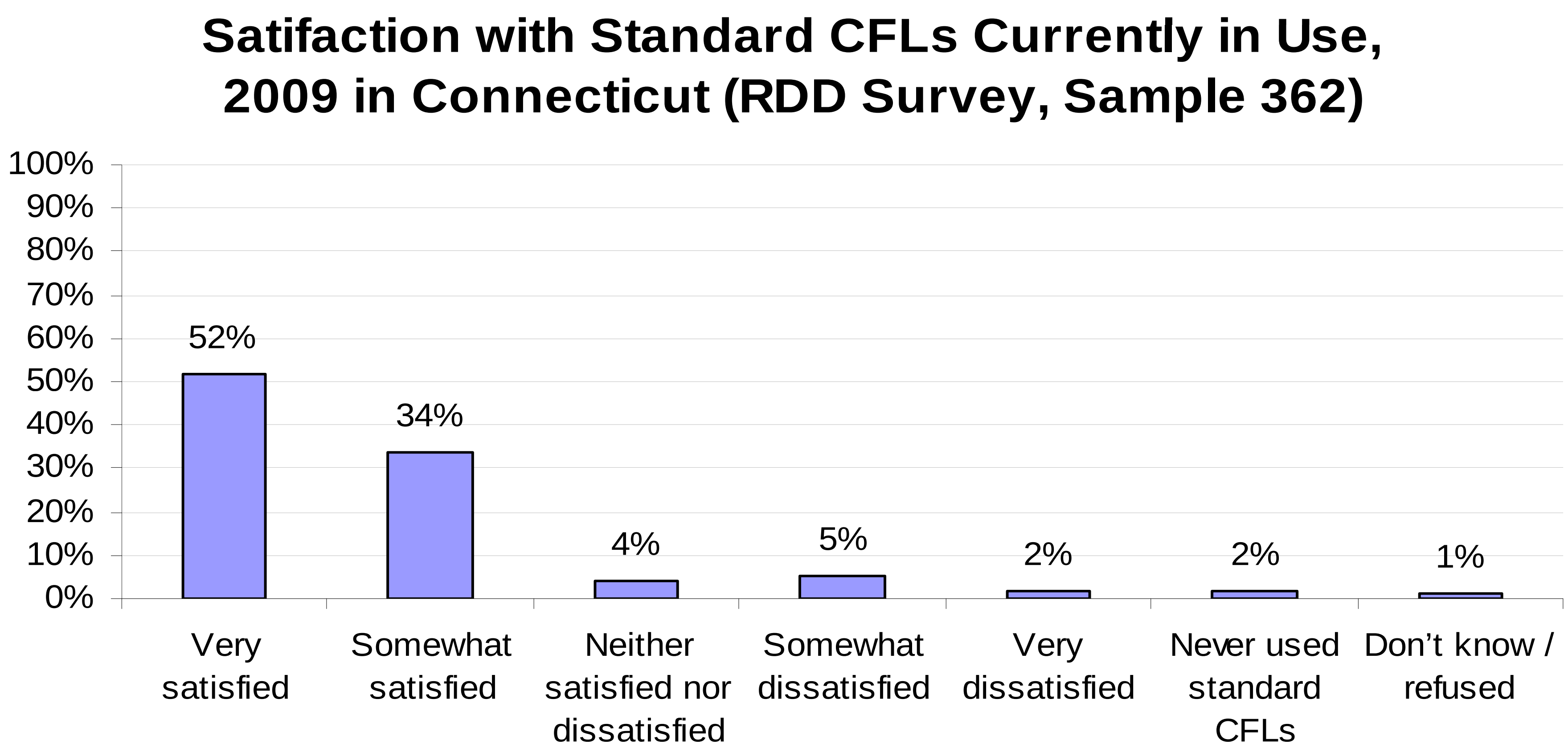
Rationales for Assumptions

- Full saturation = 60%
  - Technical potential is 80% of all sockets
  - 70% remains in mature markets, more in other markets
  - More than 50% of potential sockets are general service/on-off
- 10% unit sales growth probably optimistic; unit sales mostly declining
  - 3 of 4 lamps purchased are incandescent since 2007
  - Prior CFL sales are shrinking demand
- 50% EISA impact
  - EISA compliant incandescents already available and some are already cost competitive

Consumers Generally Satisfied With CFLs



Source: Nexus Market Research, "The Market for CFLs in Connecticut" (DRAFT). Connecticut Energy Conservation Management Board, Connecticut Light & Power, The United Illuminating Company. Submitted by: Nexus Market Research. November 24, 2009. Table 3-21, pg. 40.