

The Rising Tide: The Latest on LED Replacement Bulbs

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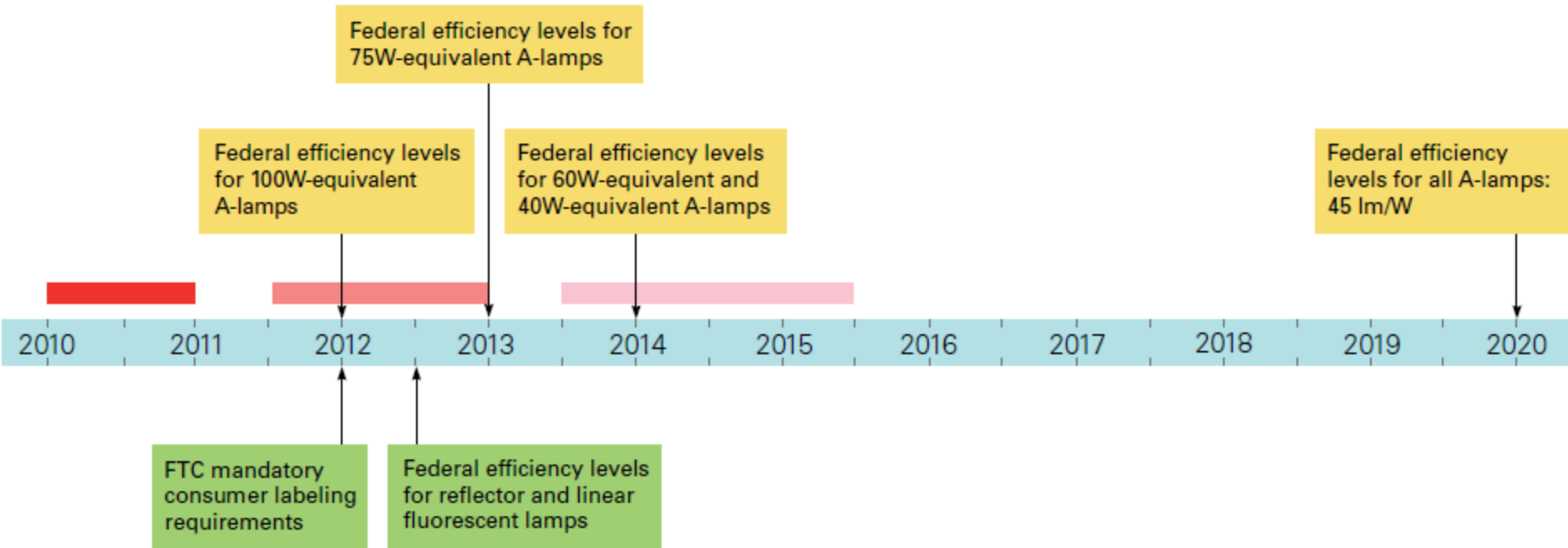


A Decade of Change

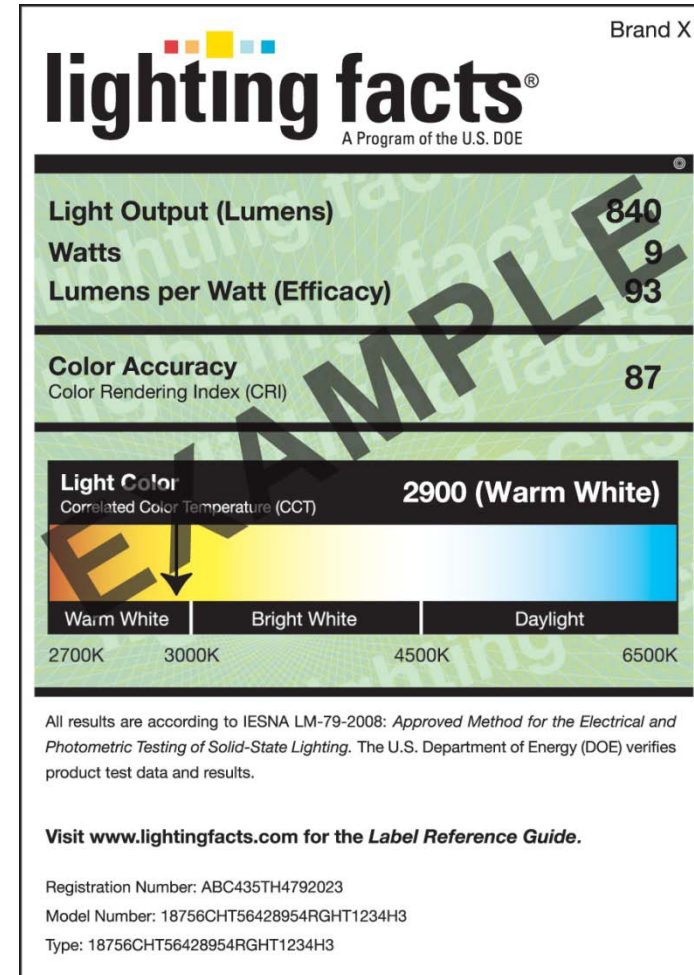
40W-equivalent and 60W-equivalent LED A-lamps reach the market

75W-equivalent LED A-Lamps projected to reach the market

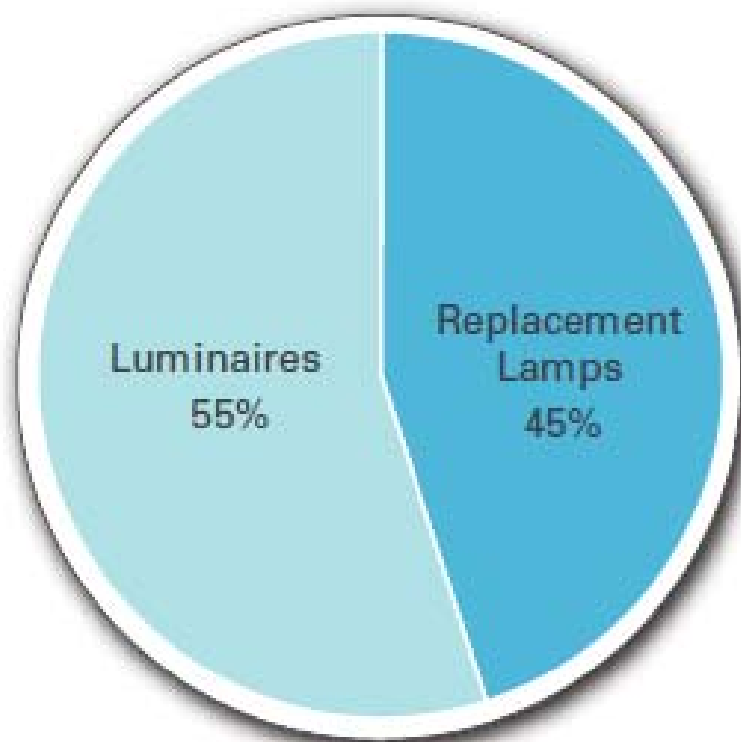
100W-equivalent LED A-lamps projected to reach the market



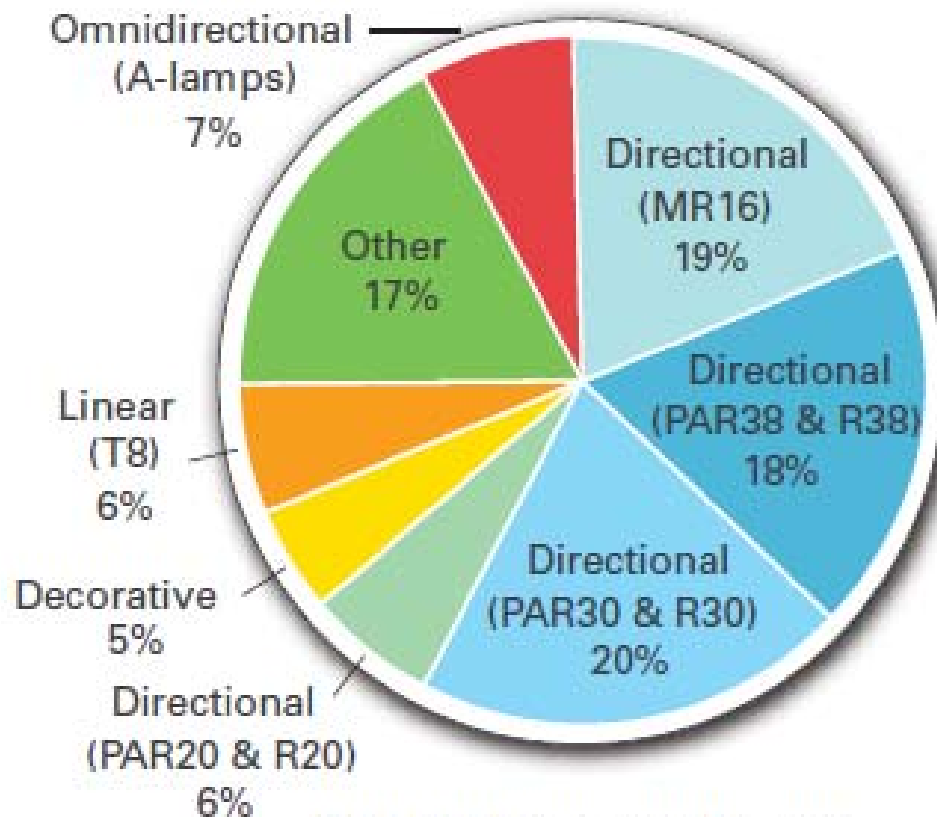
- Draws from the Lighting Facts database to gain insight into the changing industry
 - DOE-administered truth-in-labeling program for SSL
 - Products tested to LM-79 and independently verified
 - Key performance metrics tracked for a variety of product types
 - Largest database of its kind (over 3,000 registered products)
 - Valuable source of information on the state of the LED market
- Snapshots published twice a year; first two editions focus on replacement lamps
- Fall 2011 edition will focus on luminaires



	Analysis	Sample Size		September 2011
		September 2010	May 2011	
A-Lamps	LED product performance	32	66	116
	Non-LED product performance	35	70	
	Cost analysis	NA	80	
	Performance projections	NA	66	
Reflector Lamps	LED product performance	163	416	674
	Non-LED product performance	30	96	
	Reflector lamp subtype analysis	NA	416	
Linear Lamps	LED product performance	23	55	112
	Non-LED product performance	3	23	
Total number of LED products analyzed		218	537	



2,074 Total Products



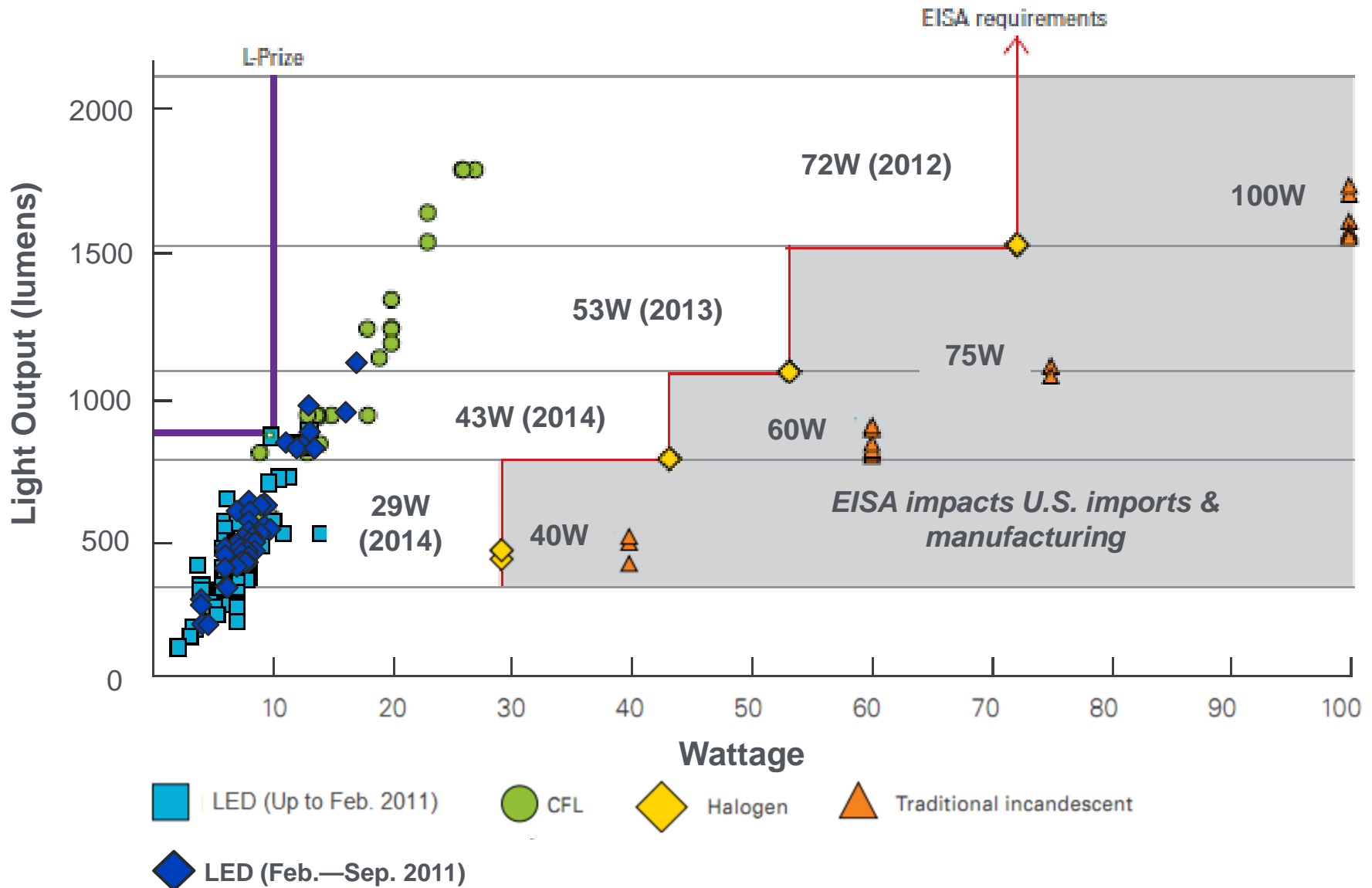
933 Replacement Lamps

- Energy Independence and Security Act of 2007
- Medium screw-base, general service lamps
- Affects most A-lamps; some types are exempt

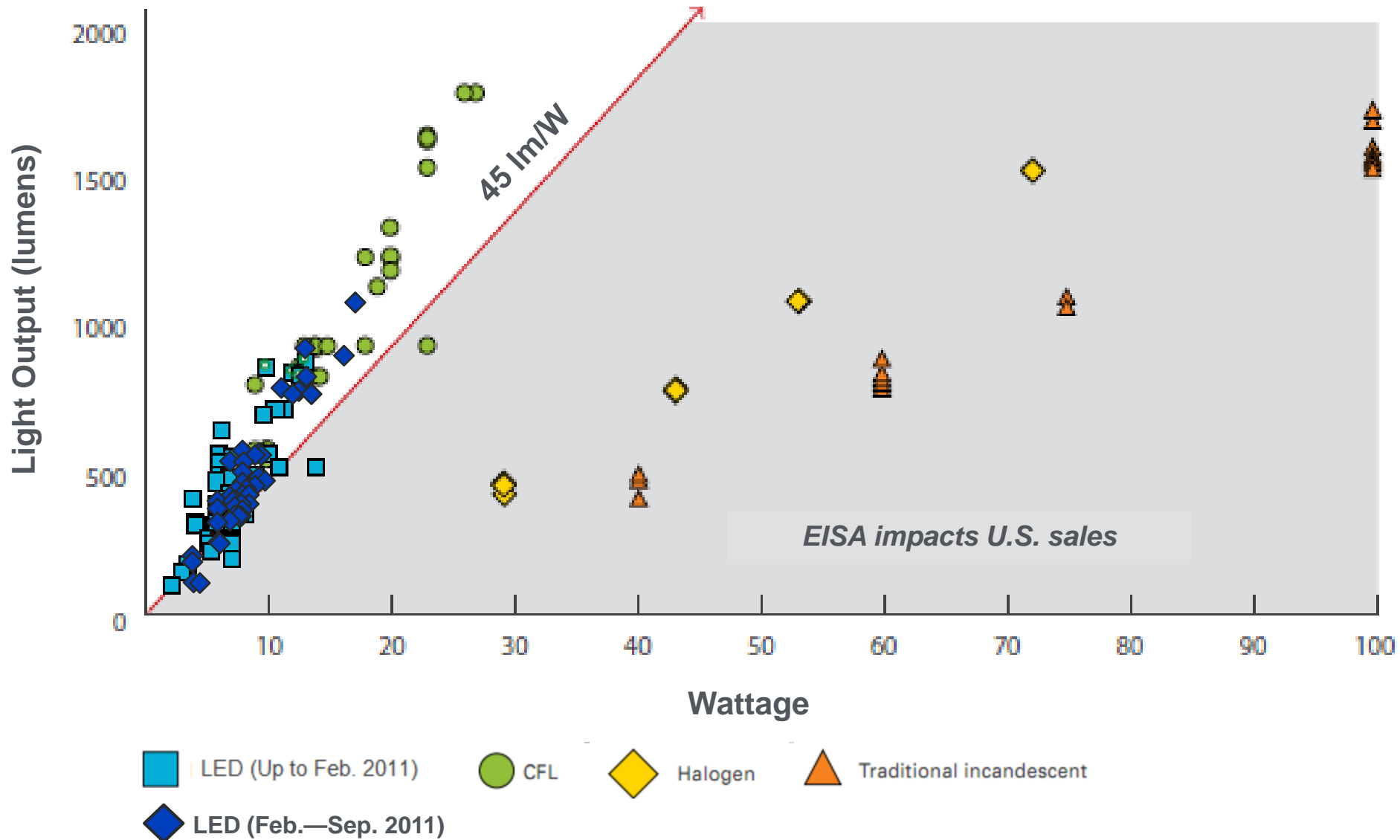


Typical Lamp Wattage	Rated Lumen Ranges	Maximum Allowed Wattage after EISA	Lamp Efficacy after EISA (lm/W)	Effective Date
100	1490–2600	72	21–36	1/1/2012
75	1050–1489	53	20–28	1/1/2013
60	750–1049	43	17–24	1/1/2014
40	310–749	29	11–26	1/1/2014
All Lamps	All Lamps		45	1/1/2020

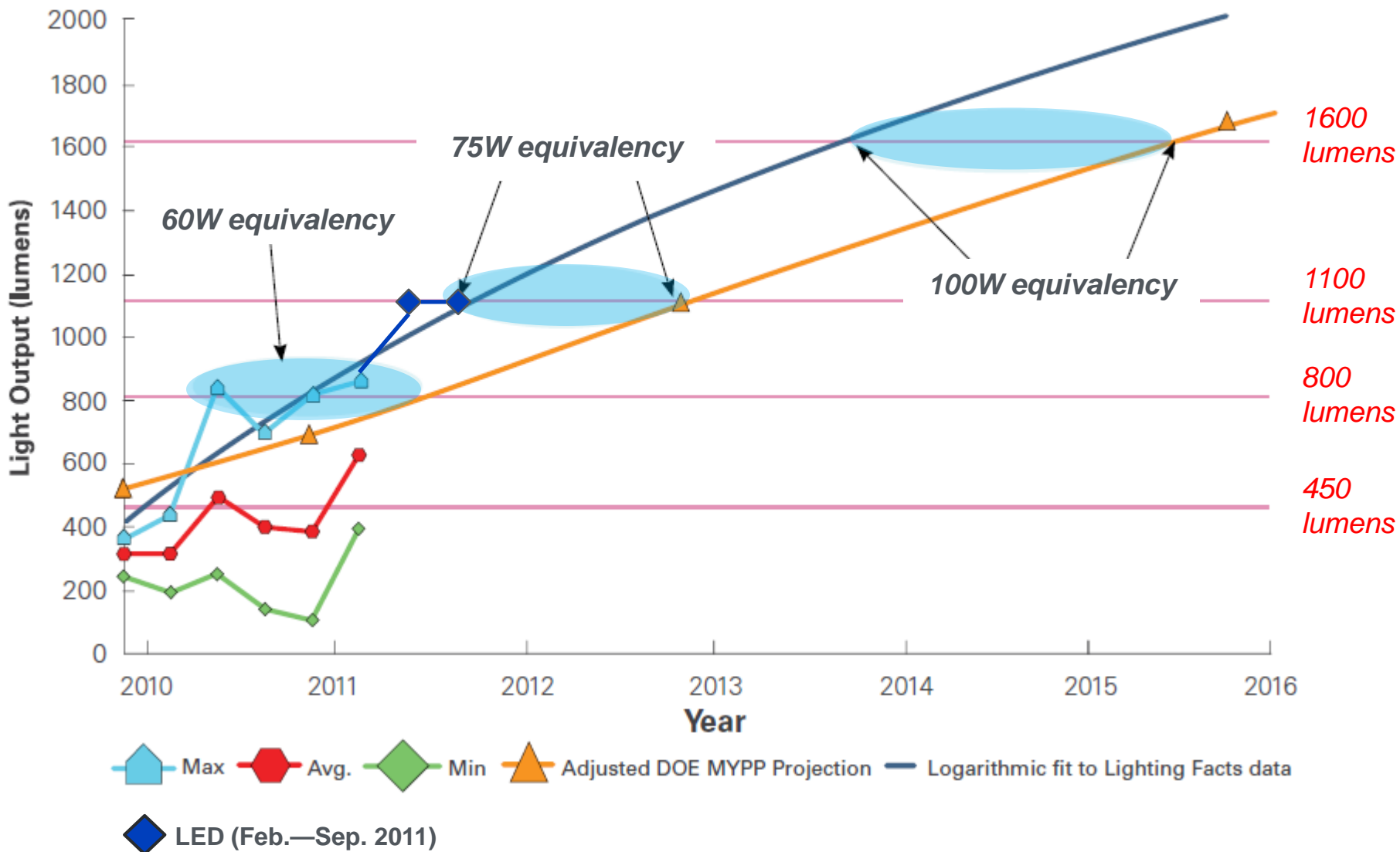
A-Lamp Performance Compared to EISA, 2012-2019



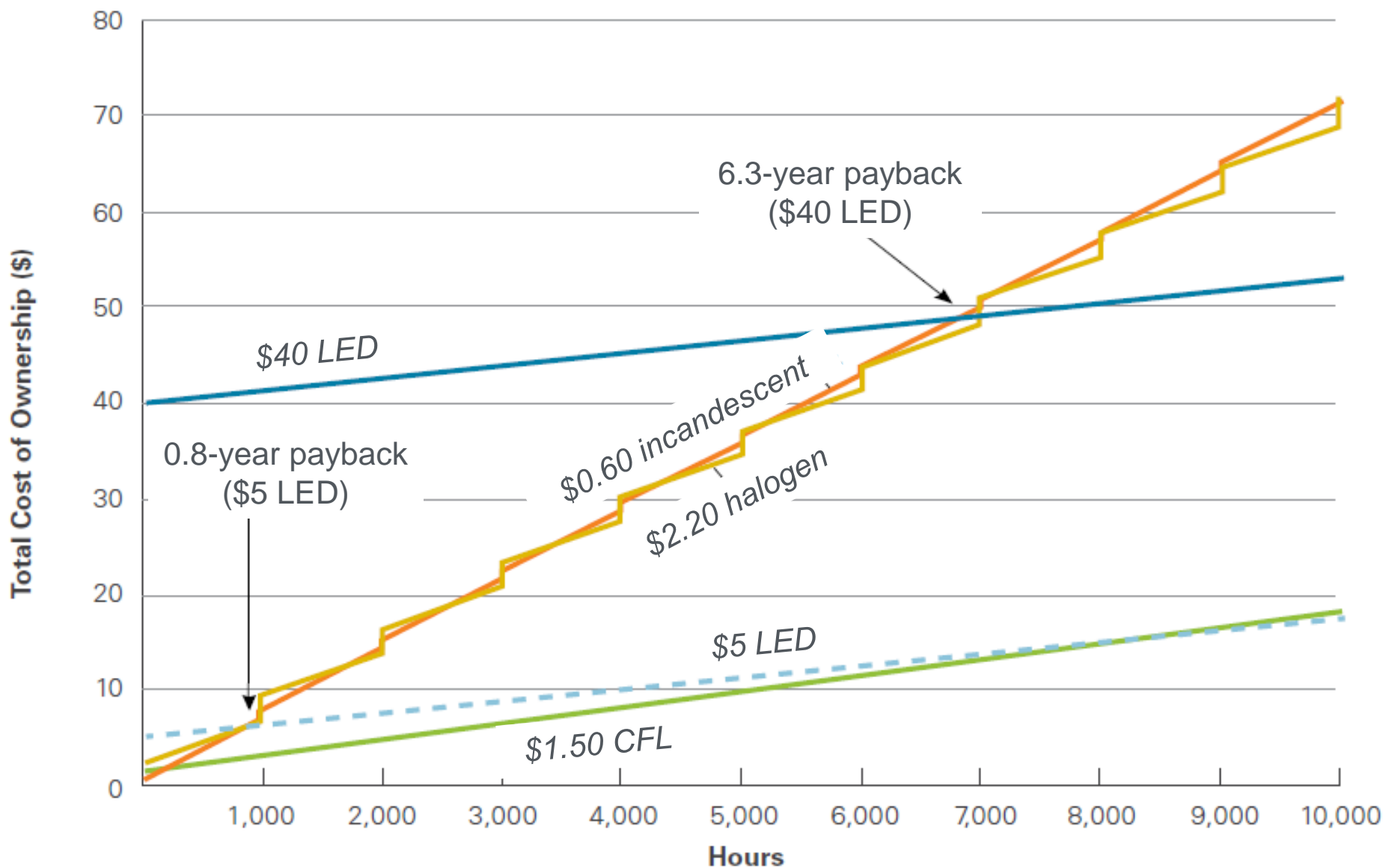
A-Lamp Performance Compared to EISA, 2020



LED A-Lamp Performance Trends and Projections



Payback of 60W-Equivalent LED A-Lamp Replacements



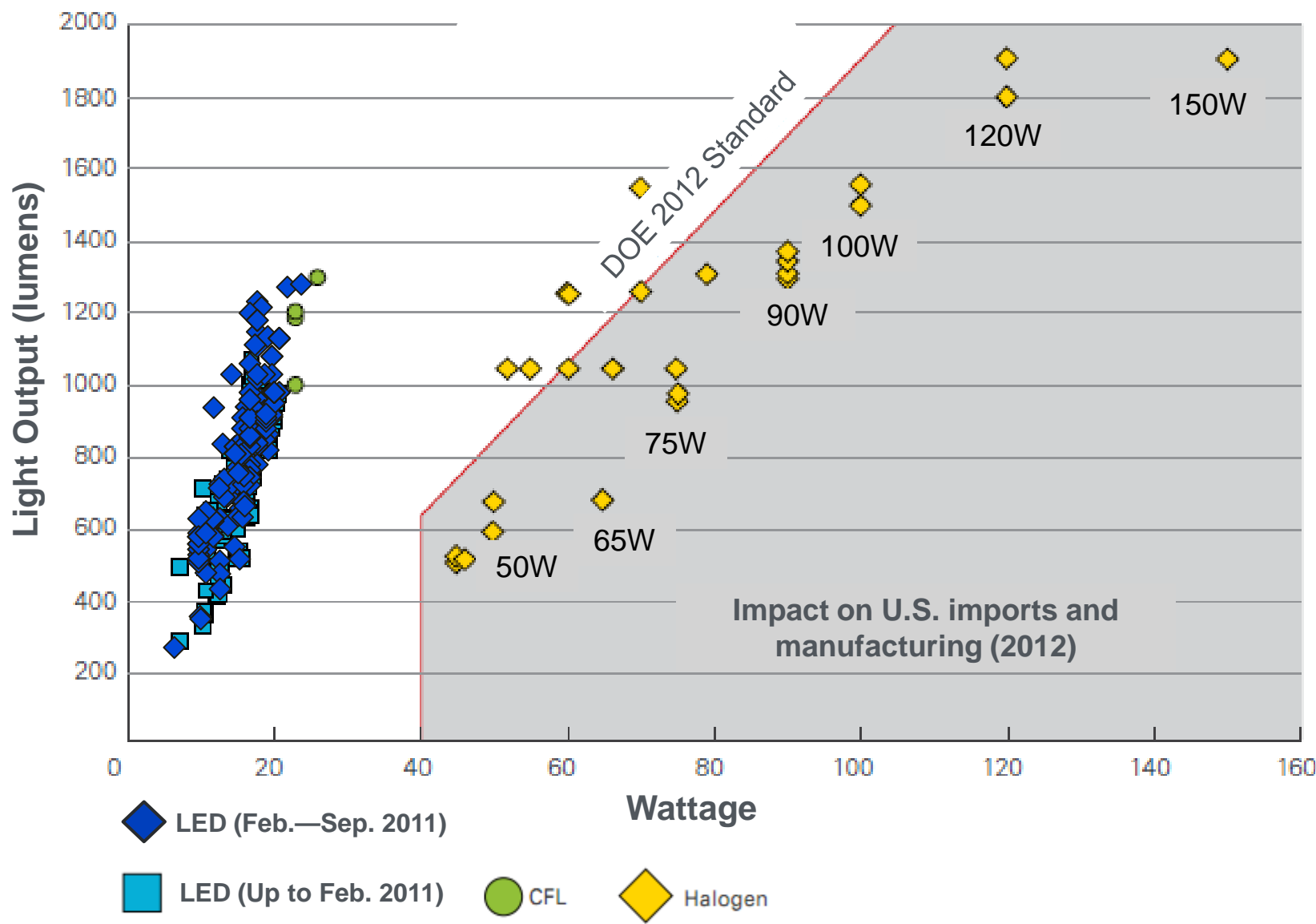
DOE Energy Conservation Standards, Incandescent Reflector Lamps

- Effective date: July 14, 2012
- Does not apply to LED lamps
- Several lamp types are exempt:
 - MR16s
 - ER30, BR30, BR40, and ER40 lamps rated $\leq 50W$
 - BR30, BR40, and ER40 lamps rated at 65W
 - R20 lamps rated at 45W or less

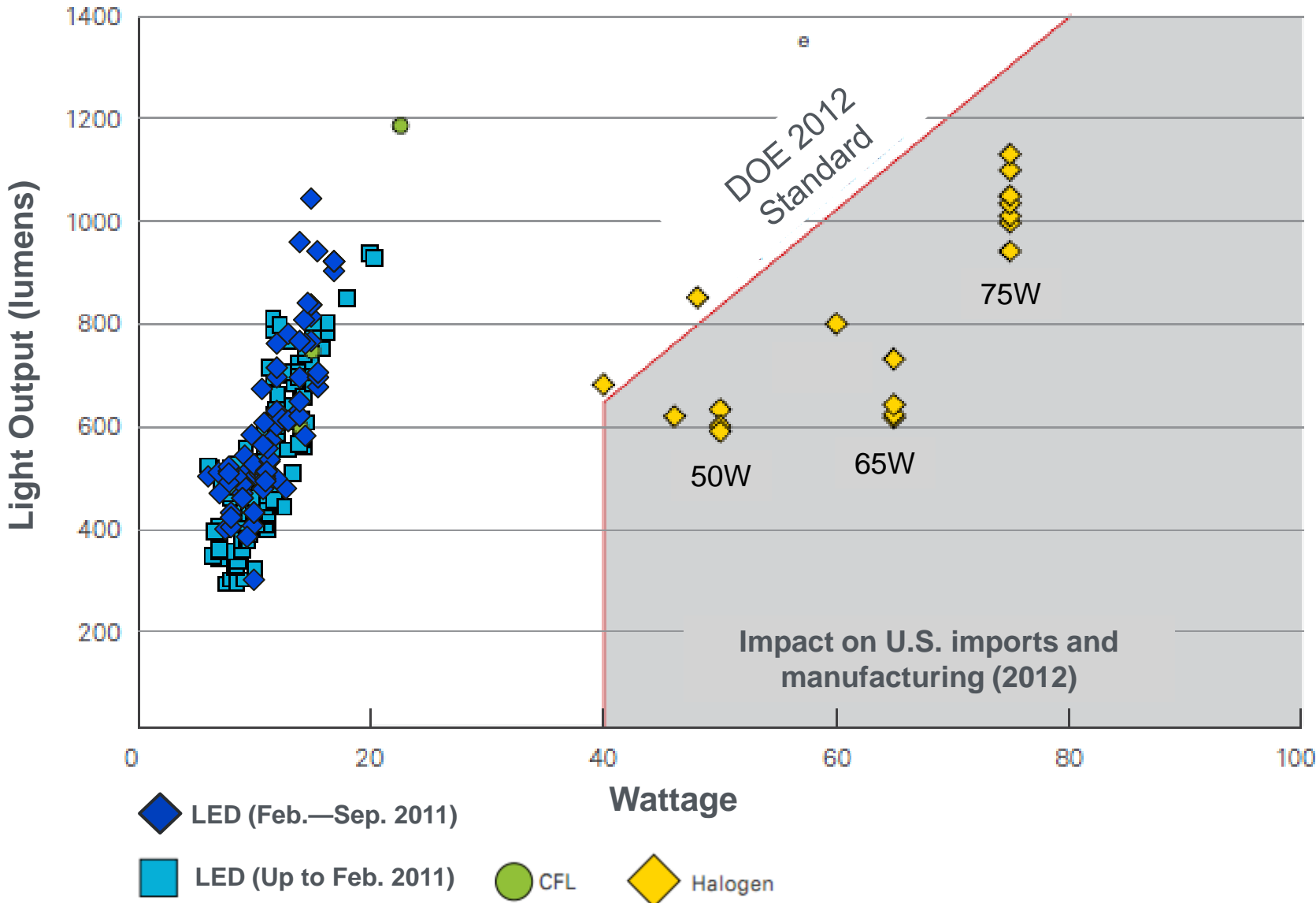


Lamp Spectrum Type	Lamp Diameter		Lamp Voltage	
	ANSI*	Inches	<125 V	$\geq 125 V$
Standard Spectrum	>20	>2.5	$5.9 * P^{(0.27)}$	$6.8 * P^{(0.27)}$
	≤ 20	≤ 2.5	$5.0 * P^{(0.27)}$	$5.7 * P^{(0.27)}$
Modified Spectrum	>20	>2.5	$5.0 * P^{(0.27)}$	$5.8 * P^{(0.27)}$
	≤ 20	≤ 2.5	$4.2 * P^{(0.27)}$	$4.9 * P^{(0.27)}$

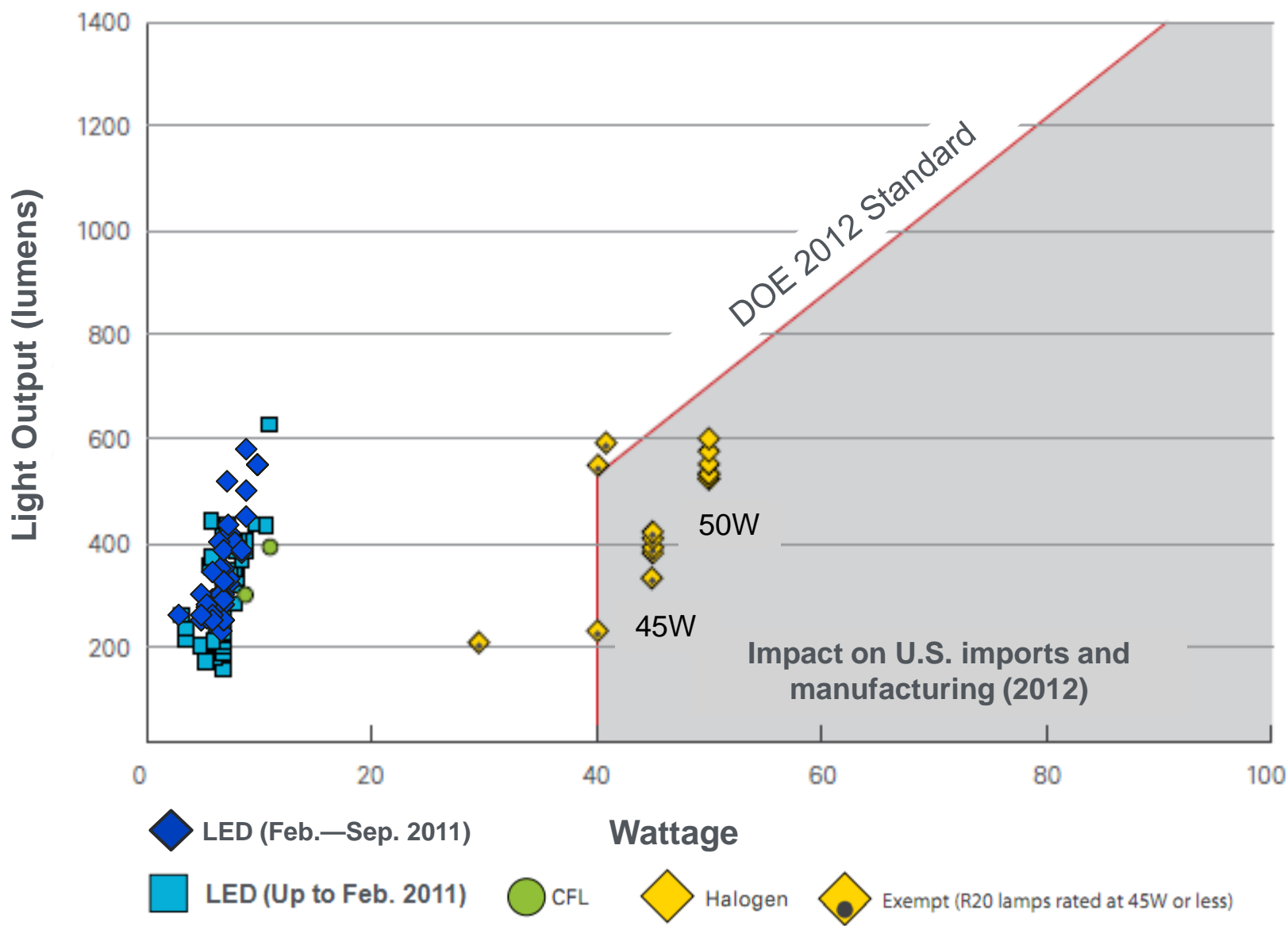
Performance of Incandescent Reflector and LED Replacement Lamps, PAR38/R38



Performance of Incandescent Reflector and LED Replacement Lamps, PAR30/R30



Performance of Incandescent Reflector and LED Replacement Lamps, PAR20/R20



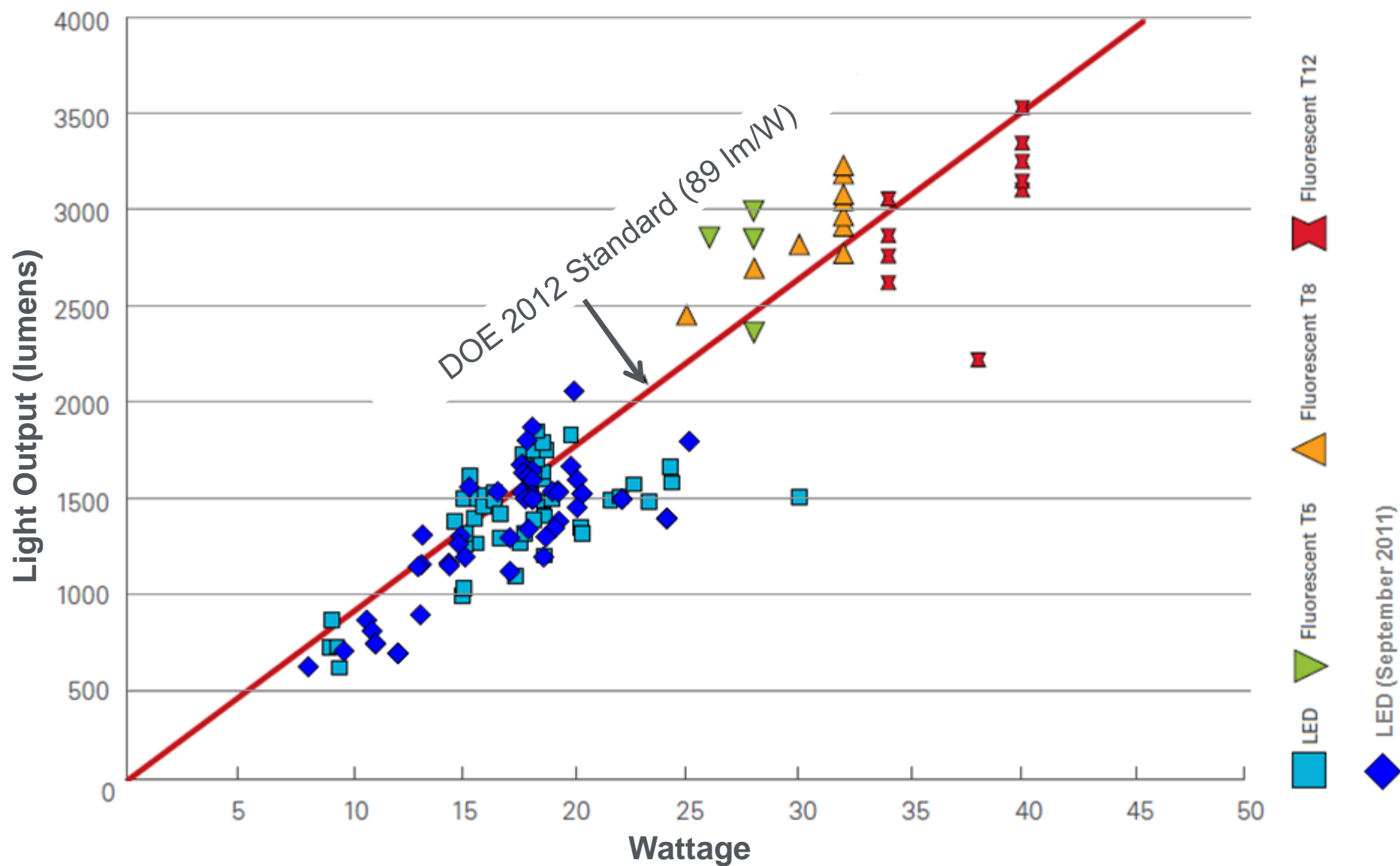
DOE Energy Conservation Standard for General Service Fluorescent Lamps

- Effective date: July 14, 2012
- Does not apply to LED lamps

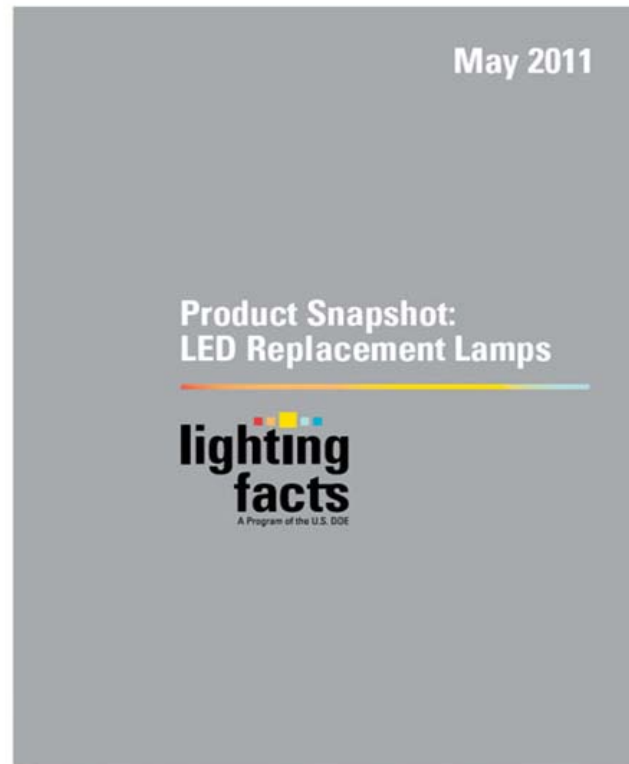


Lamp Type	Minimum Lamp Efficacy (lm/W)	
	CCT _≤ 4500K	4500K < CCT _≤ 7000K
2-Foot U-Shaped	84	81
4-Foot Medium Bi-Pin Based	89	88
4-Foot Mini Bi-Pin Based Standard Output	86	81
4-Foot Mini Bi-Pin Based High Output	76	72
8-Foot Slimline	97	93
8-Foot High Output	92	88

Performance of Four-Foot Linear Fluorescent and LED Replacement Lamps



- Find the complete May 2011 Product Snapshot (including data sources and assumptions) at: www.lightingfacts.com/productsnapshot
- Stay tuned for the next edition!



Thanks for your attention!

For questions and comments, please contact:

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