

The Market Adoption Model reflects the most current data available to us. In this, the 2015 version of the MAM, we utilize the 2014 SATURATION DATA, and 2015 EPI program data for CFL and LED weights. The 'DATA SOURCES AND FORMULA' table (cell A22) has more complete details about the sources behind this instrument.

% Replacement Interface Explanation		
Interface	What makes interface unique	How the interfaces are identical
% Replacement Interface-Upstrm G (Upstream Program, Gross)	Delta Watt Calculation allows for the replacement of all efficient Bulbs	Savings Calculations. Starting Baseline predictions. Adjustable baseline predictions (until modified by the user). Upstrm G and Upstrm N baseline and program are identical until changed by the user.
% Replacement Interface-Upstrm N (Upstream Program, Net)	Delta Watt Calculation allows for the replacement of all bulbs.	
% Replacement Interface-DI (Direct Install, Gross)	Delta Watt Calculation allows for the replacement of incandescent and halogen bulbs.	

Scenario Logic	Locked Interface years (2014 in this version)	General Logic: Manipulable Years (2015-2023)	Treatment of Incandescent (2015-2023)	Treatment of Halogens (2015-2023)	Treatment of CFLs (2015-2023)	Treatment of LEDs (2015-2023)
Scenario	Locked Interface years (2014 in this version)	General Logic: Manipulable Years (2015-2023)	Treatment of Incandescent (2015-2023)	Treatment of Halogens (2015-2023)	Treatment of CFLs (2015-2023)	Treatment of LEDs (2015-2023)
Starting Baseline	Reflect lighting saturation based on most recent onsite visits	The Team constructed a prediction of what the lighting market would look like in the absence of any further program intervention. In this scenario it is hypothesized that incandescents and halogens will remain the baseline until well after EISA has outlawed them (long after 10/1/2012) and that CFL sales will gradually increase and LED sales will increase very slowly.	Considering the EISA legislation phase out (100w-2012, 75w-2013, 60w & 40w-2014) of incandescents (though the legislation does allow a sell through until 2020 when all bulbs sold must meet an efficacy of no less than 45 lumens/W) we begin to anticipate what consumers will have to replace these bulbs. The best indicator of future purchase that we have is past purchases but since past purchases have been made under a program scenario we looked to the point of sale data (which shows that non-program states have a higher rate of incandescent sales than do program states) and shelf stocking surveys (which show that incandescents of all wattages are still available for purchase) along with saturation studies (that show that incandescents are still being installed in empty sockets) ^{1,2,3} Given the evidence of the continued availability/purchase/use of incandescents we anticipate that incandescents will continue to be used (in the absence of program intervention) and will only be phased out when their availability is diminished.	Because EISA outlaws the manufacture of traditional incandescents, halogens (which are less expensive than either of the more efficient bulb options) have been becoming more popular among consumers and retailers ⁴ . We anticipate that in the absence of program and the declining availability of traditional incandescents, halogens, which are less expensive than CFLs and LEDs, will be purchased at a greater rate as EISA continues. Consumer's have displayed increased awareness over the past four years ⁵ . EISA also stipulates that the sale of inefficient bulbs will cease in 2020 but we have little confidence that this will be enforced (older bulbs have stopped functioning for EISA enforcement) - so we expect there to be a sell through period for halogens after 2020.	We see that there is a greater probability for a CFL to be replaced with a CFL and as incandescents become less available we expect CFL sales to increase but at a slow pace ⁶ . Retailers who once, but no longer, participated in programs relinquish some of their shelf space to incandescents giving further evidence that CFL sales, in the absence of programs, would be lessened. ⁷	LEDs are depicted as being purchased at a very slow pace—they are expensive and they do not have prominent shelf display. ⁸ In the absence of program support we anticipate that most consumers will not readily take to a bulb that they know little about and costs 10x as much as an incandescent and 5x that of a CFL, despite the long-term advantages of LEDs. ⁹
Adjustable Baseline	Reflect lighting saturation based on most recent onsite visits	Identical to the starting baseline until the user manipulates the values.	Identical to the starting baseline until the user manipulates the values.	Identical to the starting baseline until the user manipulates the values.	Identical to the starting baseline until the user manipulates the values.	Identical to the starting baseline until the user manipulates the values.
Adjustable Program	Reflects a program that has strong support for CFLs and beginning support for LEDs	The hypothetical program scenario assumes a program with aggressive CFL support until 2018 resulting in a faster rate of sales and eventually making CFLs the baseline as well as ramping up of LED support resulting in aggressive accumulation of sales and making LEDs the baseline in the later predicted years.	Program intervention has shown that supporting bulbs encourages the sales of efficient program bulbs in the place of less efficient options and that in the absence of CFL program support the CFL inventory will likely be replaced by incandescent bulbs—from this we depict a program that continues CFL support through 2018 and consequently decreases the incandescent rate of sales. ¹⁰	Program intervention has shown that supporting bulbs encourages the sales of efficient program bulbs in the place of less efficient options ¹¹ and that in the absence of CFL program support the CFL inventory will likely be replaced by incandescents ¹² —from this we depict a program that continues CFL support through 2018 and consequently keeps halogens sales at a low rate and does not allow halogen bulbs to become the new lighting baseline.	The program scenario depicts a hypothetical program that has continued CFL support until 2018—program support has made CFLs a popular lighting choice among consumers who report that, after incandescents, CFLs are the bulb most likely to be purchased. ¹³ The continued CFL support in this scenario moves CFLs towards being the baseline while incandescent and halogens are being purchased at a much lower rate.	Previous program evaluation has shown the success of the program in getting CFLs into consumers homes—in this program scenario we imagine that the program is in the beginning stages of LED support and will begin to aggressively support LEDs around 2015. ^{2,4,14} As the LED program begins to ramp up we anticipate LED sales rates to increase as prices go down and LED visibility increases (as happened with CFLs).

Data Sources and Formulas		
Input	Value	Source
Total number of bulbs sold in 100w, 75w, 60w, 40w categories that all preceding calculations are based on	44,000,000	2014 IRI national lighting sales tracker data—IRI data represents ~25% of the lighting market and the final bulb count was extrapolated.
Annual population growth	0.0031	American Community Survey reported growth over the past decade
CFL Sales weighting 100w category	0.19	Based on 2015 EPI program data
CFL Sales weighting 75w category	0.09	Based on 2015 EPI program data
CFL Sales weighting 60w category	0.64	Based on 2015 EPI program data
CFL Sales weighting 40w category	0.07	Based on 2015 EPI program data
LED Sales weighting 100w category	0.01	Based on 2015 EPI program data
LED Sales weighting 75w category	0.04	Based on 2015 EPI program data
LED Sales weighting 60w category	0.69	Based on 2015 EPI program data
LED Sales weighting 40w category	0.23	Based on 2015 EPI program data
Annual hours of use, Upstream	1054.5	2013 MOU study
Annual Hours of use, Direct Install	985.5	2013 MOU study
CFL Installation rate	0.73	MA saturation studies—savings are incorporated into later years so that the installation rate reaches 0.95
LED Installation rate	0.95	MA saturation studies
calculated number of bulbs	calculated	replacement percentage*total bulbs*(1+annual growth) ^{sales weighting} installation rate
number of CFLs allowed	calculated	If calculated CFLs is greater than the sum of the previous years less efficient bulbs*0.16 (previous years CFLs, then the max allowed number of CFLs will not the sum of last years less efficient bulbs and 0.16 of last years CFLs
Gross Delta Watts	calculated	(E wattage - I wattage)*(E count/I count)*(repeated for all LE wattages)
Net Delta Watts	calculated	(E wattage - I wattage)*(E count/I count)*(E count/I count)*(repeated for all LE wattages)
Energy Savings	calculated	calculated bulbs*delta watts/1,000,000*proportion of last years savings
Retail Stocking	considered	Shelf stocking surveys
Bulb Pricing	considered	CFL and LED cost analysis and Manufacturer interviews
Consumer response to bulb replacement	considered	Consumer lighting surveys
Rate of bulb replacement—locked years	variable	Based on most recent saturation studies (2014)
Rate of bulb replacement—changeable years	variable	Based on the users interpretation of the lighting market and it's future direction

Sources	
¹ EISA	
² http://www.energystar.gov/ia/products/lighting/cfls/40w/40w/40w/EISA_Background_PNAI_4-11_EPA.pdf	
³ MA-2: Saturation Stagnation and 3d NTG estimation from PDS, 2015	
⁴ MA-3F Lighting Market Assessment On-site Saturation, 2015	
⁵ MA-5B Lighting Market Assessment Shelf Survey and Pricing Analysis, 2014	
⁶ MA-2F Lighting Market Assessment Consumer Survey Findings Memo, 2015	
⁷ EPI 2015 Program tracking data	

The '% Replacement Interface-Gross' tab contributes to '% Replacement Bulb Counts', '% Replacement Delta Watts', and '% Replacement Prgrm Savings' and contains three scenarios.

The first scenario is the Starting Baseline (red)—this is not adjustable and reflects NMRs guess of how the market will respond to EISA based on current saturation, customer survey, shelf stocking, and supplier interview data.

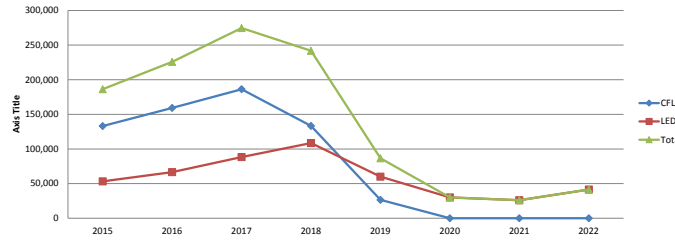
The second scenario is the Adjustable Baseline (yellow)—the bulb replacement values (columns N through S) are adjustable so that the user can manipulate the values to reflect how they anticipate customers will purchase bulbs to replace EISA category incandescents.

Delta Watts (column K and L) are calculated based on the saturation values in the table but are also adjustable in the event that the user wants to specify a certain Delta value.

The third scenario is the Adjustable Program (green)—the bulb replacement values (columns Y through AD) are adjustable so that the user can manipulate the values for the purpose of program planning and gaging which program changes could have the biggest impact.

Delta Watts (column AG and AH) are calculated based on the saturation values in the table but are also adjustable in the event that the user wants to specify a certain Delta value.

Program Induced Savings (MWh): Difference between savings generated by the Adjustable Program Scenario and the Adjustable Baseline Scenario



	Starting Baseline: Reference baseline—all cells locked											Adjustable Baseline: Values to be updated based on user assumptions and access to new data											Adjustable Program: Values to be adjusted to reflect program/planning assumptions										
	100 Watt incandescents	75 Watt incandescents	72 Watt halogen	CFLs (avg 23 Watts)	LEDs (avg 17 Watts)	other (avg xx Watts)	TOTAL Bulb Percentage	CFL Delta Watts	LED Delta Watts	100 Watt incandescents	75 Watt incandescents	72 Watt halogen	CFLs (avg 23 Watts)	LEDs (avg 17 Watts)	other (avg xx Watts)	TOTAL Bulb Percentage	CFL Delta Watts	LED Delta Watts	100 Watt incandescents	75 Watt incandescents	72 Watt halogen	CFLs (avg 23 Watts)	LEDs (avg 17 Watts)	other (avg xx Watts)	TOTAL Bulb Percentage	CFL Delta Watts	LED Delta Watts						
100 Watt Incandescent Group	2015	37%	0%	21%	27%	7%	2%	100%	65	52	2015	37%	6%	21%	27%	7%	2%	100%	65	52	2015	32%	2%	14%	39%	11%	2%	100%	68	43			
	2016	34%	5%	21%	29%	9%	2%	100%	65	50	2016	34%	5%	21%	29%	9%	2%	100%	65	50	2016	28%	1%	15%	40%	14%	2%	100%	67	41			
	2017	19%	5%	32%	31%	11%	2%	100%	59	44	2017	19%	5%	32%	31%	11%	2%	100%	59	44	2017	26%	1%	10%	46%	15%	2%	100%	69	37			
	2018	17%	3%	32%	33%	13%	2%	100%	58	42	2018	17%	3%	32%	33%	13%	2%	100%	58	42	2018	20%	0%	12%	48%	18%	2%	100%	67	33			
	2019	11%	2%	34%	35%	16%	2%	100%	56	38	2019	11%	2%	34%	35%	16%	2%	100%	56	38	2019	16%	0%	14%	42%	26%	2%	100%	64	33			
	2020	0%	0%	41%	37%	20%	2%	100%	49	32	2020	0%	0%	41%	37%	20%	2%	100%	49	32	2020	0%	0%	21%	44%	33%	2%	100%	49	22			
	2021	0%	0%	25%	47%	26%	2%	100%	49	23	2021	0%	0%	25%	47%	26%	2%	100%	49	23	2021	0%	0%	21%	44%	33%	2%	100%	49	22			
	2022	0%	0%	19%	50%	29%	2%	100%	49	19	2022	0%	0%	19%	50%	29%	2%	100%	49	19	2022	0%	0%	15%	44%	39%	2%	100%	49	18			
2023	0%	0%	0%	59%	39%	2%	100%	--	--	2023	0%	0%	0%	59%	39%	2%	100%	--	--	2023	0%	0%	2%	44%	52%	2%	100%	--	--				
75 Watt Incandescent Group	2015	45%	2%	2%	15%	25%	4%	2%	100%	51	42	2015	45%	4%	5%	15%	25%	4%	2%	100%	51	42	2015	34%	6%	4%	16%	29%	9%	2%	100%	50	39
	2016	41%	2%	2%	16%	27%	10%	2%	100%	51	40	2016	41%	2%	2%	16%	27%	10%	2%	100%	51	40	2016	30%	8%	1%	8%	36%	15%	2%	100%	52	35
	2017	33%	2%	2%	17%	29%	15%	2%	100%	49	37	2017	33%	2%	2%	17%	29%	15%	2%	100%	49	37	2017	20%	6%	1%	20%	33%	18%	2%	100%	47	33
	2018	25%	2%	2%	20%	31%	18%	2%	100%	47	34	2018	25%	2%	2%	20%	31%	18%	2%	100%	47	34	2018	18%	5%	0%	22%	33%	20%	2%	100%	46	31
	2019	19%	2%	2%	20%	33%	22%	2%	100%	46	31	2019	19%	2%	2%	20%	33%	22%	2%	100%	46	31	2019	15%	4%	0%	20%	35%	24%	2%	100%	45	29
	2020	10%	2%	0%	16%	40%	30%	2%	100%	44	23	2020	10%	2%	0%	16%	40%	30%	2%	100%	44	23	2020	9%	2%	0%	17%	40%	30%	2%	100%	43	23
	2021	0%	2%	0%	15%	45%	36%	2%	100%	37	15	2021	0%	2%	0%	15%	45%	36%	2%	100%	37	15	2021	0%	1%	0%	17%	42%	38%	2%	100%	36	16
	2022	0%	0%	0%	10%	50%	38%	2%	100%	35	11	2022	0%	0%	0%	10%	50%	38%	2%	100%	35	11	2022	0%	0%	0%	16%	44%	38%	2%	100%	35	14
2023	0%	0%	0%	0%	55%	43%	2%	100%	--	--	2023	0%	0%	0%	0%	55%	43%	2%	100%	--	--	2023	0%	0%	0%	6%	52%	40%	2%	100%	--	--	
60 Watt Incandescent Group	2015	55%	1%	3%	32%	7%	2%	100%	46	33	2015	55%	1%	3%	32%	7%	2%	100%	46	33	2015	47%	2%	1%	37%	11%	2%	100%	46	30			
	2016	51%	2%	4%	33%	8%	2%	100%	46	32	2016	51%	2%	4%	33%	8%	2%	100%	46	32	2016	44%	2%	1%	38%	13%	2%	100%	46	29			
	2017	40%	2%	13%	35%	8%	2%	100%	43	29	2017	40%	2%	13%	35%	8%	2%	100%	43	29	2017	32%	2%	6%	40%	18%	2%	100%	44	25			
	2018	25%	2%	24%	37%	10%	2%	100%	39	25	2018	25%	2%	24%	37%	10%	2%	100%	39	25	2018	20%	2%	10%	41%	25%	2%	100%	41	21			
	2019	15%	2%	26%	39%	16%	2%	100%	36	22	2019	15%	2%	26%	39%	16%	2%	100%	36	22	2019	9%	2%	17%	42%	28%	2%	100%	36	17			
	2020	4%	2%	20%	46%	26%	2%	100%	33	15	2020	4%	2%	20%	46%	26%	2%	100%	33	15	2020	0%	2%	21%	42%	33%	2%	100%	31	14			
	2021	0%	0%	10%	50%	38%	2%	100%	30	8	2021	0%	0%	10%	50%	38%	2%	100%	30	8	2021	0%	2%	7%	44%	45%	2%	100%	32	8			
	2022	0%	0%	4%	54%	40%	2%	100%	30	5	2022	0%	0%	4%	54%	40%	2%	100%	30	5	2022	0%	1%	4%	43%	50%	2%	100%	32	6			
2023	0%	0%	0%	55%	43%	2%	100%	--	--	2023	0%	0%	0%	55%	43%	2%	100%	--	--	2023	0%	0%	5%	40%	53%	2%	100%	--	--				
40 Watt Incandescent Group	2015	1%	48%	16%	29%	4%	2%	100%	28	22	2015	1%	48%	16%	29%	4%	2%	100%	28	22	2015	4%	38%	5%	37%	14%	2%	100%	30	19			
	2016	1%	39%	22%	30%	6%	2%	100%	27	20	2016	1%	39%	22%	30%	6%	2%	100%	27	20	2016	5%	31%	5%	41%	16%	2%	100%	30	17			
	2017	1%	35%	24%	30%	8%	2%	100%	27	20	2017	1%	35%	24%	30%	8%	2%	100%	27	20	2017	5%	28%	8%	41%	16%	2%	100%	29	17			
	2018	1%	30%	26%	32%	9%	2%	100%	26	19	2018	1%	30%	26%	32%	9%	2%	100%	26	19	2018	3%	24%	9%	43%	19%	2%	100%	29	15			
	2019	1%	25%	26%	34%	12%	2%	100%	26	17	2019	1%	25%	26%	34%	12%	2%	100%	26	17	2019	3%	20%	14%	45%	16%	2%	100%	27	14			
	2020	1%	13%	29%	36%	19%	2%	100%	24	15	2020	1%	13%	29%	36%	19%	2%	100%	24	15	2020	2%	13%	14%	45%	24%	2%	100%	26	12			
	2021	0%	0%	28%	40%	30%	2%	100%	20	10	2021	0%	0%	28%	40%	30%	2%	100%	20	10	2021	0%	0%	32%	40%	26%	2%	100%	20	11			
	2022	0%	0%	18%	45%	35%	2%	100%	20	8	2022	0%	0%	18%	45%	35%	2%	100%	20	8	2022	0%	0%	27%	45%	26%	2%	100%	20	10			
2023	0%	0%	8%	50%	40%	2%	100%	20	5	2023	0%	0%	8%	50%	40%	2%	100%	20	5	2023	0%	0%	22%	47%	29%	2%	100%	20	8				

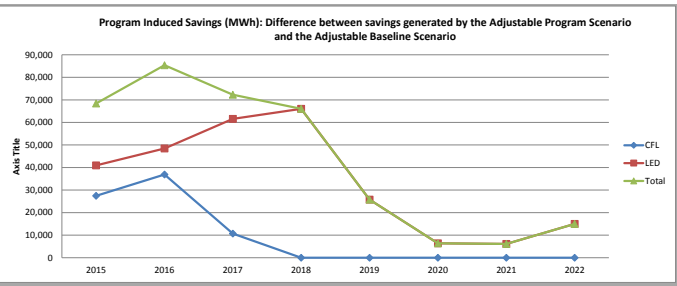
Instrument Instructions:

The "% Replacement Interface-Net" tab contributes to "% Replacement Bulb Counts", "% Replacement Delta Watts", and "% Replacement Prgm Savings" and contains three scenarios.

The first scenario is the Starting Baseline (red)-this is not adjustable and reflects NMRs guess of how the market will respond to EISA based on current saturation, customer survey, shelf stocking, and supplier interview data.

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	Starting Baseline: Reference baseline—all cells locked											Adjustable Baseline: Values to be updated based on user assumptions and access to new data											Adjustable Program: Values to be adjusted to reflect program/planning assumptions										
		100 Watt incandescents	75 Watt incandescent	72 Watt halogen	CFLs (avg 23 Watts)	LEDs (avg 17 Watts)	other (avg xx Watts)	TOTAL Bulb Percentage	CFL Delta Watts	LED Delta Watts			100 Watt incandescents	75 Watt incandescent	72 Watt halogen	CFLs (avg 23 Watts)	LEDs (avg 17 Watts)	other (avg xx Watts)	TOTAL Bulb Percentage	CFL Delta Watts	LED Delta Watts			100 Watt incandescents	75 Watt incandescent	72 Watt halogen	CFLs (avg 23 Watts)	LEDs (avg 17 Watts)	other (avg xx Watts)	TOTAL Bulb Percentage	CFL Delta Watts	LED Delta Watts	
100 Watt Incandescent Group	2015	37%	6%	21%	27%	7%	2%	100%	46	48	2015	37%	6%	21%	27%	7%	2%	100%	46	48	2015	32%	2%	14%	39%	11%	2%	100%	37	39			
	2016	34%	5%	21%	29%	9%	2%	100%	44	45	2016	34%	5%	21%	29%	9%	2%	100%	44	45	2016	28%	1%	15%	40%	13%	2%	100%	35	36			
	2017	19%	5%	32%	31%	11%	2%	100%	38	39	2017	19%	5%	32%	31%	11%	2%	100%	38	39	2017	26%	1%	10%	46%	15%	2%	100%	31	31			
	2018	17%	3%	32%	33%	13%	2%	100%	36	36	2018	17%	3%	32%	33%	13%	2%	100%	36	36	2018	20%	0%	12%	48%	18%	2%	100%	27	27			
	2019	11%	2%	34%	35%	16%	2%	100%	32	32	2019	11%	2%	34%	35%	16%	2%	100%	32	32	2019	16%	0%	14%	42%	26%	2%	100%	27	24			
	2020	0%	0%	41%	37%	20%	2%	100%	26	25	2020	0%	0%	41%	37%	20%	2%	100%	26	25	2020	0%	0%	20%	43%	31%	2%	96%	16	14			
	2021	0%	0%	25%	47%	26%	2%	100%	17	17	2021	0%	0%	25%	47%	26%	2%	100%	17	17	2021	0%	0%	21%	44%	33%	2%	100%	16	14			
	2022	0%	0%	19%	50%	29%	2%	100%	13	14	2022	0%	0%	19%	50%	29%	2%	100%	13	14	2022	0%	0%	15%	44%	39%	2%	100%	12	11			
2023	0%	0%	0%	59%	39%	2%	100%	--	--	2023	0%	0%	0%	59%	39%	2%	100%	--	--	2023	0%	0%	2%	44%	52%	2%	100%	--	--				
75 Watt Incandescent Group	2015	45%	4%	5%	15%	25%	4%	100%	46	41	2015	45%	4%	5%	15%	25%	4%	100%	46	41	2015	34%	6%	4%	16%	29%	9%	2%	100%	43	35		
	2016	41%	2%	2%	16%	27%	10%	100%	43	36	2016	41%	2%	2%	16%	27%	10%	100%	43	36	2016	30%	8%	1%	8%	36%	15%	2%	100%	47	29		
	2017	33%	2%	2%	17%	29%	15%	100%	40	31	2017	33%	2%	2%	17%	29%	15%	100%	40	31	2017	20%	6%	1%	20%	33%	18%	2%	100%	33	27		
	2018	25%	2%	2%	20%	31%	18%	100%	34	28	2018	25%	2%	2%	20%	31%	18%	100%	34	28	2018	18%	5%	0%	22%	33%	20%	2%	100%	29	25		
	2019	19%	2%	2%	20%	33%	22%	100%	31	24	2019	19%	2%	2%	20%	33%	22%	100%	31	24	2019	15%	4%	0%	20%	35%	24%	2%	100%	27	22		
	2020	10%	2%	0%	16%	40%	30%	100%	24	16	2020	10%	2%	0%	16%	40%	30%	100%	24	16	2020	9%	2%	0%	17%	40%	30%	2%	100%	22	16		
	2021	0%	2%	0%	15%	45%	36%	100%	6	10	2021	0%	2%	0%	15%	45%	36%	100%	6	10	2021	0%	1%	0%	17%	42%	38%	2%	100%	3	10		
	2022	0%	0%	0%	10%	50%	38%	100%	0	7	2022	0%	0%	0%	10%	50%	38%	100%	0	7	2022	0%	0%	0%	10%	50%	38%	2%	100%	0	9		
2023	0%	0%	0%	0%	55%	43%	100%	--	0	2023	0%	0%	0%	0%	55%	43%	100%	--	0	2023	0%	0%	0%	0%	55%	43%	2%	100%	--	--			
60 Watt Incandescent Group	2015	55%	1%	3%	32%	7%	2%	100%	30	30	2015	55%	1%	3%	32%	7%	2%	100%	30	30	2015	47%	2%	1%	37%	11%	2%	100%	27	26			
	2016	51%	2%	4%	33%	8%	2%	100%	29	29	2016	51%	2%	4%	33%	8%	2%	100%	29	29	2016	44%	2%	1%	38%	13%	2%	100%	26	25			
	2017	40%	2%	13%	35%	8%	2%	100%	26	27	2017	40%	2%	13%	35%	8%	2%	100%	26	27	2017	32%	2%	6%	40%	18%	2%	100%	22	20			
	2018	25%	2%	24%	37%	10%	2%	100%	22	23	2018	25%	2%	24%	37%	10%	2%	100%	22	23	2018	20%	2%	10%	41%	25%	2%	100%	18	16			
	2019	15%	2%	26%	39%	16%	2%	100%	19	18	2019	15%	2%	26%	39%	16%	2%	100%	19	18	2019	9%	2%	17%	42%	28%	2%	100%	14	12			
	2020	4%	2%	20%	46%	26%	2%	100%	12	11	2020	4%	2%	20%	46%	26%	2%	100%	12	11	2020	0%	2%	21%	42%	33%	2%	100%	11	9			
	2021	0%	10%	50%	38%	2%	100%	5	5	2021	0%	10%	50%	38%	2%	100%	5	5	2021	0%	2%	7%	44%	45%	2%	100%	5	5					
	2022	0%	0%	4%	54%	40%	2%	100%	2	3	2022	0%	0%	4%	54%	40%	2%	100%	2	3	2022	0%	1%	4%	43%	50%	2%	100%	3	3			
2023	0%	0%	0%	55%	43%	2%	100%	--	2	2023	0%	0%	0%	55%	43%	2%	100%	--	2	2023	0%	0%	5%	40%	53%	2%	100%	--	--				
40 Watt Incandescent Group	2015	1%	48%	16%	29%	4%	2%	100%	20	21	2015	1%	48%	16%	29%	4%	2%	100%	20	21	2015	4%	38%	5%	37%	14%	2%	100%	17	16			
	2016	1%	39%	22%	30%	6%	2%	100%	18	19	2016	1%	39%	22%	30%	6%	2%	100%	18	19	2016	5%	31%	5%	41%	16%	2%	100%	15	14			
	2017	1%	35%	24%	30%	8%	2%	100%	18	18	2017	1%	35%	24%	30%	8%	2%	100%	18	18	2017	5%	28%	8%	41%	16%	2%	100%	15	14			
	2018	1%	30%	26%	32%	9%	2%	100%	17	17	2018	1%	30%	26%	32%	9%	2%	100%	17	17	2018	3%	24%	9%	43%	19%	2%	100%	13	12			
	2019	1%	25%	26%	34%	12%	2%	100%	15	15	2019	1%	25%	26%	34%	12%	2%	100%	15	15	2019	3%	20%	14%	45%	16%	2%	100%	12	12			
	2020	1%	13%	29%	36%	19%	2%	100%	13	12	2020	1%	13%	29%	36%	19%	2%	100%	13	12	2020	2%	13%	14%	45%	24%	2%	100%	10	9			
	2021	0%	0%	28%	40%	30%	2%	100%	8	7	2021	0%	0%	28%	40%	30%	2%	100%	8	7	2021	0%	0%	32%	40%	26%	2%	100%	9	8			
	2022	0%	0%	18%	45%	35%	2%	100%	6	5	2022	0%	0%	18%	45%	35%	2%	100%	6	5	2022	0%	0%	27%	45%	26%	2%	100%	8	7			
2023	0%	0%	8%	50%	40%	2%	100%	3	3	2023	0%	0%	8%	50%	40%	2%	100%	3	3	2023	0%	0%	22%	47%	29%	2%	100%	6	6				

Instrument Instructions:

The '% Replacement Interface-DI' tab contributes to '% Replacement Bulb Counts', '% Replacement Delta Watts', and '% Replacement Prgm Savings' and contains three scenarios.

The first scenario is the Starting Baseline (red)—this is not adjustable and reflects NMRs guess of how the market will respond to EISA based on current saturation, customer survey, shelf stocking, and supplier interview data.

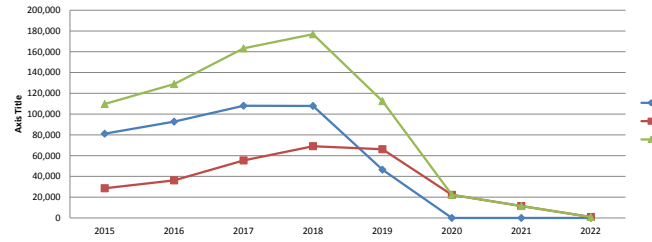
The second scenario is the Adjustable Baseline (yellow)—the bulb replacement values (columns N through S) are adjustable so that the user can manipulate the values to reflect how they anticipate customers will purchase bulbs to replace EISA category incandescents.

Delta Watts (column K and L) are calculated based on the saturation values in the table but are also adjustable in the event that the user wants to specify a certain Delta value.

The third scenario is the Adjustable Program (green)—the bulb replacement values (columns Y through AD) are adjustable so that the user can manipulate the values for the purpose of program planning and gaging which program changes could have the biggest impact.

Delta Watts (column AG and AH) are calculated based on the saturation values in the table but are also adjustable in the event that the user wants to specify a certain Delta value.

Program Induced Savings (MWh): Difference between savings generated by the Adjustable Program Scenario and the Adjustable Baseline Scenario



	Starting Baseline: Reference baseline—all cells locked										Adjustable Baseline: Values to be updated based on user assumptions and access to new data										Adjustable Program: Values to be adjusted to reflect program/planning assumptions												
	100 Watt incandescent	75 Watt incandescent	72 Watt halogen	CFLs (avg 23 Watts)	LEDs (avg 17 Watts)	other (avg xx Watts)	TOTAL Bulb Percentage	CFL Delta Watts	LED Delta Watts	100 Watt incandescent	75 Watt incandescent	72 Watt halogen	CFLs (avg 23 Watts)	LEDs (avg 17 Watts)	other (avg xx Watts)	TOTAL Bulb Percentage	CFL Delta Watts	LED Delta Watts	100 Watt incandescent	75 Watt incandescent	72 Watt halogen	CFLs (avg 23 Watts)	LEDs (avg 17 Watts)	other (avg xx Watts)	TOTAL Bulb Percentage	CFL Delta Watts	LED Delta Watts						
100 Watt Incandescent Group	2015	37%	6%	21%	27%	7%	2%	100%	65	71	2015	37%	6%	21%	27%	7%	2%	100%	65	71	2015	33%	6%	18%	32%	9%	2%	100%	66	71			
	2016	26%	5%	29%	29%	9%	2%	100%	61	67	2016	26%	5%	29%	29%	9%	2%	100%	61	67	2016	23%	5%	25%	34%	11%	2%	100%	61	66			
	2017	19%	5%	32%	31%	11%	2%	100%	59	65	2017	19%	5%	32%	31%	11%	2%	100%	59	65	2017	16%	5%	28%	36%	13%	2%	100%	58	63			
	2018	17%	3%	32%	33%	13%	2%	100%	58	64	2018	17%	3%	32%	33%	13%	2%	100%	58	64	2018	14%	3%	27%	37%	17%	2%	100%	58	63			
	2019	11%	2%	34%	35%	16%	2%	100%	56	62	2019	11%	2%	34%	35%	16%	2%	100%	56	62	2019	8%	2%	26%	38%	24%	2%	100%	55	60			
	2020	0%	0%	41%	37%	20%	2%	100%	49	55	2020	0%	0%	41%	37%	20%	2%	100%	49	55	2020	0%	0%	25%	41%	32%	2%	100%	49	54			
	2021	0%	0%	25%	47%	26%	2%	100%	49	55	2021	0%	0%	25%	47%	26%	2%	100%	49	55	2021	0%	0%	24%	47%	27%	2%	100%	49	54			
	2022	0%	0%	19%	50%	29%	2%	100%	49	55	2022	0%	0%	19%	50%	29%	2%	100%	49	55	2022	0%	0%	19%	50%	29%	2%	100%	49	54			
2023	0%	0%	0%	59%	39%	2%	100%	--	--	2023	0%	0%	0%	59%	39%	2%	100%	--	--	2023	0%	0%	0%	59%	39%	2%	100%	--	--				
75 Watt Incandescent Group	2015	45%	4%	5%	15%	25%	4%	2%	100%	51	56	2015	45%	4%	5%	15%	25%	4%	2%	100%	51	56	2015	43%	4%	5%	12%	27%	7%	2%	100%	52	57
	2016	41%	2%	2%	16%	27%	10%	2%	100%	51	56	2016	41%	2%	2%	16%	27%	10%	2%	100%	51	56	2016	39%	2%	2%	10%	31%	12%	2%	100%	52	57
	2017	33%	2%	2%	17%	29%	15%	2%	100%	49	54	2017	33%	2%	2%	17%	29%	15%	2%	100%	49	54	2017	31%	2%	2%	10%	37%	16%	2%	100%	51	56
	2018	25%	2%	2%	20%	31%	18%	2%	100%	47	52	2018	25%	2%	2%	20%	31%	18%	2%	100%	47	52	2018	23%	2%	2%	10%	41%	20%	2%	100%	50	55
	2019	19%	2%	2%	20%	33%	22%	2%	100%	46	51	2019	19%	2%	2%	20%	33%	22%	2%	100%	46	51	2019	17%	2%	2%	10%	43%	24%	2%	100%	49	54
	2020	10%	2%	0%	16%	40%	30%	2%	100%	44	49	2020	10%	2%	0%	16%	40%	30%	2%	100%	44	49	2020	7%	2%	0%	10%	49%	30%	2%	100%	45	50
	2021	0%	2%	0%	15%	45%	36%	2%	100%	37	42	2021	0%	2%	0%	15%	45%	36%	2%	100%	37	42	2021	0%	2%	0%	10%	50%	36%	2%	100%	38	43
	2022	0%	0%	0%	10%	50%	38%	2%	100%	35	40	2022	0%	0%	0%	10%	50%	38%	2%	100%	35	40	2022	0%	0%	0%	10%	50%	38%	2%	100%	35	40
2023	0%	0%	0%	0%	55%	43%	2%	100%	--	--	2023	0%	0%	0%	0%	55%	43%	2%	100%	--	--	2023	0%	0%	0%	0%	55%	43%	2%	100%	--	--	
60 Watt Incandescent Group	2015	55%	4%	3%	32%	7%	2%	100%	46	49	2015	55%	1%	3%	32%	7%	2%	100%	46	49	2015	50%	1%	2%	37%	8%	2%	100%	46	49			
	2016	50%	2%	4%	34%	8%	2%	100%	46	49	2016	50%	2%	4%	34%	8%	2%	100%	46	49	2016	45%	2%	3%	39%	9%	2%	100%	46	49			
	2017	40%	2%	13%	35%	8%	2%	100%	43	46	2017	40%	2%	13%	35%	8%	2%	100%	43	46	2017	35%	2%	10%	41%	10%	2%	100%	43	46			
	2018	25%	2%	24%	37%	10%	2%	100%	39	42	2018	25%	2%	24%	37%	10%	2%	100%	39	42	2018	20%	2%	20%	44%	12%	2%	100%	39	42			
	2019	15%	2%	26%	39%	16%	2%	100%	36	39	2019	15%	2%	26%	39%	16%	2%	100%	36	39	2019	10%	2%	20%	48%	18%	2%	100%	36	39			
	2020	4%	2%	20%	46%	26%	2%	100%	33	36	2020	4%	2%	20%	46%	26%	2%	100%	33	36	2020	2%	2%	20%	46%	26%	2%	100%	32	35			
	2021	0%	0%	10%	50%	38%	2%	100%	30	33	2021	0%	0%	10%	50%	38%	2%	100%	30	33	2021	0%	0%	10%	50%	38%	2%	100%	30	33			
	2022	0%	0%	4%	54%	40%	2%	100%	30	33	2022	0%	0%	4%	54%	40%	2%	100%	30	33	2022	0%	0%	4%	54%	40%	2%	100%	30	33			
2023	0%	0%	0%	55%	43%	2%	100%	--	--	2023	0%	0%	0%	55%	43%	2%	100%	--	--	2023	0%	0%	0%	55%	43%	2%	100%	--	--				
40 Watt Incandescent Group	2015	1%	48%	16%	29%	4%	2%	100%	28	30	2015	1%	48%	16%	29%	4%	2%	100%	28	30	2015	1%	45%	13%	33%	6%	2%	100%	29	31			
	2016	1%	39%	22%	30%	6%	2%	100%	27	29	2016	1%	39%	22%	30%	6%	2%	100%	27	29	2016	1%	36%	18%	35%	8%	2%	100%	27	29			
	2017	1%	35%	24%	30%	8%	2%	100%	27	29	2017	1%	35%	24%	30%	8%	2%	100%	27	29	2017	1%	32%	20%	36%	9%	2%	100%	27	29			
	2018	1%	30%	26%	32%	9%	2%	100%	26	28	2018	1%	30%	26%	32%	9%	2%	100%	26	28	2018	1%	25%	21%	37%	13%	2%	100%	26	28			
	2019	1%	25%	26%	34%	12%	2%	100%	26	28	2019	1%	25%	26%	34%	12%	2%	100%	26	28	2019	1%	20%	23%	39%	15%	2%	100%	25	27			
	2020	1%	13%	29%	36%	19%	2%	100%	24	26	2020	1%	13%	29%	36%	19%	2%	100%	24	26	2020	1%	10%	27%	41%	19%	2%	100%	23	25			
	2021	0%	0%	28%	40%	30%	2%	100%	20	22	2021	0%	0%	28%	40%	30%	2%	100%	20	22	2021	0%	0%	28%	40%	30%	2%	100%	20	22			
	2022	0%	0%	18%	45%	35%	2%	100%	20	22	2022	0%	0%	18%	45%	35%	2%	100%	20	22	2022	0%	0%	18%	45%	35%	2%	100%	20	22			
2023	0%	0%	8%	50%	40%	2%	100%	20	22	2023	0%	0%	8%	50%	40%	2%	100%	20	22	2023	0%	0%	8%	50%	40%	2%	100%	20	22				

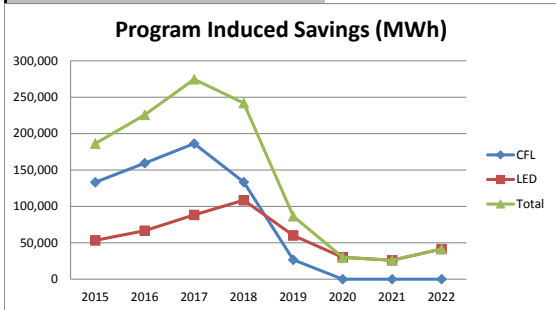
Based on the % Replacement Interface-UpstmG						
Delta Watts: Average Delta Watts based on four incandescent replacement categories (weighted by sales weighting)						
	CFLs			LEDs		
	Starting Baseline	Adjustable Baseline	Adjustable Program	Starting Baseline	Adjustable Baseline	Adjustable Program
2015	49	49	50	31	31	28
2016	49	49	50	30	30	27
2017	46	46	48	28	28	24
2018	43	43	46	25	25	21
2019	41	41	42	22	22	18
2020	37	37	35	16	16	14
2021	34	34	35	9	9	10
2022	34	34	35	6	6	8

Based on the % Replacement Interface-UpstmN						
Delta Watts: Average Delta Watts based on four incandescent replacement categories (weighted by sales weighting)						
	CFLs			LEDs		
	Starting Baseline	Adjustable Baseline	Adjustable Program	Starting Baseline	Adjustable Baseline	Adjustable Program
2015	34	34	30	29	29	25
2016	33	33	29	28	28	23
2017	29	29	24	25	25	20
2018	26	26	20	22	22	16
2019	23	23	18	18	18	13
2020	16	16	13	12	12	10
2021	8	8	8	6	6	6
2022	4	4	5	4	4	5

Based on the % Replacement Interface-DI						
Delta Watts: Average Delta Watts based on four incandescent replacement categories (weighted by Direct Install program sales weighting)						
	CFLs			LEDs		
	Starting Baseline	Adjustable Baseline	Adjustable Program	Starting Baseline	Adjustable Baseline	Adjustable Program
2015	49	49	50	46	46	46
2016	48	48	48	45	45	45
2017	46	46	46	43	43	43
2018	43	43	43	40	40	40
2019	41	41	40	38	38	38
2020	37	37	36	35	35	34
2021	34	34	34	32	32	32
2022	34	34	34	32	32	31

Based on the % Replacement Interface-UpstmG

Program Induced Savings (MWh): Difference between Adjustable Program Impact and Adjustable Baseline			
	CFL	LED	Total
2015	133,064	53,312	186,377
2016	159,300	66,513	225,813
2017	186,254	88,412	274,665
2018	133,290	108,547	241,836
2019	26,620	59,992	86,612
2020	0	29,998	29,998
2021	0	26,027	26,027
2022	0	41,415	41,415

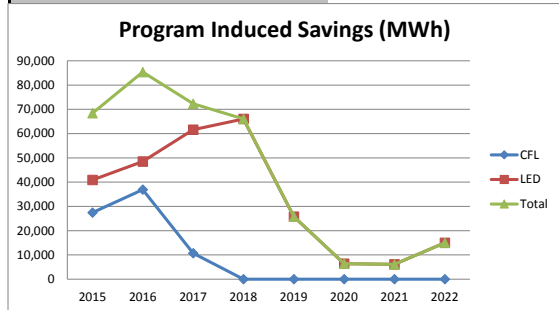


Annual Gross Energy Savings: Annual MWh savings based on scenario response to EISA

	CFLs			LEDs		
	Starting Baseline	Adjustable Baseline	Adjustable Program	Starting Baseline	Adjustable Baseline	Adjustable Program
2015	618,304	618,304	751,368	136,188	136,188	189,500
2016	628,727	628,727	788,027	149,889	149,889	216,402
2017	626,836	626,836	813,090	149,408	149,408	237,820
2018	622,287	622,287	755,577	157,605	157,605	266,151
2019	624,426	624,426	651,046	194,496	194,496	254,488
2020	551,145	551,145	479,032	216,798	216,798	246,796
2021	363,926	363,926	335,707	186,600	186,600	212,626
2022	269,502	269,502	259,712	142,193	142,193	183,608

Based on the % Replacement Interface-UpstmN

Program Induced Savings (MWh): Difference between Adjustable Program Impact and Adjustable Baseline			
	CFL	LED	Total
2015	27,465	40,917	68,382
2016	36,902	48,475	85,377
2017	10,713	61,584	72,297
2018	0	66,024	66,024
2019	0	25,794	25,794
2020	0	6,395	6,395
2021	0	6,117	6,117
2022	0	14,993	14,993

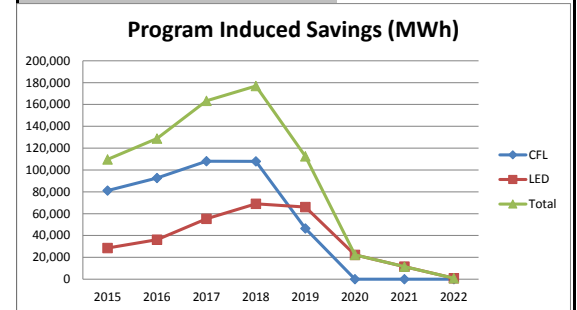


Annual Gross Energy Savings: Annual MWh savings based on scenario response to EISA

	CFLs			LEDs		
	Starting Baseline	Adjustable Baseline	Adjustable Program	Starting Baseline	Adjustable Baseline	Adjustable Program
2015	419,862	419,862	447,327	127,866	127,866	168,783
2016	416,945	416,945	453,847	137,468	137,468	185,943
2017	401,133	401,133	411,846	134,461	134,461	196,046
2018	377,796	377,796	340,371	138,692	138,692	204,715
2019	349,647	349,647	279,974	162,424	162,424	188,218
2020	247,896	247,896	179,246	163,095	163,095	169,490
2021	104,059	104,059	86,497	122,062	122,062	128,180
2022	48,996	48,996	46,862	88,307	88,307	103,300

Based on the % Replacement Interface-DI

Program Induced Savings (MWh): Difference between Adjustable Program Impact and Adjustable Baseline			
	CFL	LED	Total
2015	81,173	28,587	109,760
2016	92,709	36,144	128,853
2017	108,025	55,341	163,366
2018	107,875	69,038	176,912
2019	46,446	66,111	112,557
2020	0	22,219	22,219
2021	0	11,515	11,515
2022	0	926	926



Annual Gross Energy Savings: Annual MWh savings based on scenario response to EISA

	CFLs			LEDs		
	Starting Baseline	Adjustable Baseline	Adjustable Program	Starting Baseline	Adjustable Baseline	Adjustable Program
2015	575,679	575,679	656,851	196,680	196,683	225,270
2016	588,394	588,394	681,103	220,052	220,052	256,197
2017	583,954	583,954	691,980	226,394	226,394	281,735
2018	579,411	579,411	687,285	249,490	249,490	318,528
2019	581,367	581,367	627,813	332,399	332,399	398,510
2020	513,136	513,136	472,683	470,822	470,822	493,041
2021	338,828	338,828	326,471	606,932	606,932	618,447
2022	250,916	250,916	249,495	663,248	663,248	664,174