

## MEMORANDUM

To: Massachusetts Program Administrators (PAs) and Energy Efficiency Advisory Council (EEAC) Consultants

From: Lisa Wilson-Wright, Lynn Hoefgen (NMR) and Bryan Ward (Cadmus)

Subject: Net-to-Gross Estimates Based on Saturation Differences in Massachusetts and New York

Date: April 2, 2015

This memorandum describes the steps taken to develop a 2013 NTG value based on the differences in CFL and LED saturation in Massachusetts (MA) and New York (NY). The evaluation team conducted on-site lighting saturation surveys in both states in 2013 and 2015. In 2012 NYSERDA ended its support for standard CFLs, other than selling through bulbs supported in 2011, and had limited support for specialty CFLs and LEDs through 2014.

**This method leads to NTG estimates for 2013-2014 of 66% for CFLs, 96% for LEDs, and 72% for CFLs and LEDs combined.**

This approach has the following advantages: It is not being dependent on respondent recall; NY discontinued support for standard CFLs in 2012, potentially showing what would have happened Massachusetts if it had done the same thing; and NY is demographically relatively similar to MA, thus making it a good comparison area. Disadvantages include the following: The sample sizes for NY are relatively small; there is possible non-response bias, and more so in NY because of lower response rates; and, while NY is comparable to MA, it is not the same as MA.

The following table shows saturation levels in MA and NY in the beginning of 2013 and the beginning of 2015, and the change in saturation, for both CFLs and LEDs. Saturation of both CFLs and LEDs began at a slightly higher level in MA in 2013, and by 2015 was substantially higher for both bulb types. NY actually saw a decline in CFL saturation from 2013 to 2015.

Bulb Type	All CFLs		LEDs	
	MA	NY	MA	NY
2013	28%	26%	2%	1%
2015	32%	22%	6%	3%
Difference in percentage points	4%	-4%	4%	2%

n (number of visits): MA 2013—150; MA 2015—354; NY 2013—127; NY 2015—101

This NTG estimate is based on the following formula:

$$NTG = \frac{\text{MA market purchases 2013 and 2014} - \text{MA market purchases 2013 and 2014}}{\text{assuming a similar change in Saturation and Storage as in NY from 2013 to 2015}} \div \text{Massachusetts Program Sales 2013 \& 2014}$$

The data and calculations are shown in the following table.

A	B	C	D	E	F
1	<b>Starting Numbers</b>	<b>CFLs</b>	<b>LEDs</b>	<b>CFLs + LEDs</b>	<b>Source/comment</b>
2	all bulbs found installed (not just CFLs & LEDs) in 2013	106,219,747	106,219,747	106,219,747	from the 2013 MA saturation study
3	all bulbs found installed (not just CFLs & LEDs) in 2015	127,131,355	127,131,355	127,131,355	from the 2015 MA saturation study
4	CFLs/LEDs found in storage in 2013	6,149,387	198,367	7,597,443	from the 2013 MA saturation study, weighted to 2015 because of lower number of sockets in 2013
5	CFLs/LEDs found in storage in 2015	10,875,951	817,645	11,693,596	from the 2015 MA saturation study
6	MA measured saturation count 2013	35,596,779	2,542,627	38,139,407	from the 2013 MA saturation study, weighted to 2015 because of lower number of sockets in 2013
7	MA measured saturation count 2015	40,682,034	7,627,881	48,309,915	from the 2015 MA saturation study
8	MA market-level sales 2013-2014	19,183,408	6,554,943	25,738,351	from the 2014 and 2015 MA saturation studies
9	MA program-supported sales 2013-2014	12,150,020	2,671,733	14,821,753	MA program data
10	MA DI bulbs	1,599,270	751,400	2,350,670	MA program data
11	<b>Calculated Numbers</b>	<b>CFLs</b>	<b>LEDs</b>	<b>CFLs + LEDs</b>	<b>Source/comment</b>
12	MA measured saturation count 2013	35,596,779	2,542,627	38,139,407	weighted to 2015 because of lower number of sockets in 2013
13	MA counterfactual saturation count 2015	30,511,525	5,085,254	35,596,779	based on change in NY saturation (-4% for CFLs, to 24%; +2% for LEDs, to 4%)
14	MA measured CFLs/LEDs in storage 2013	6,149,387	198,367	6,347,754	weighted to 2015 because of lower number of sockets in 2013
15	MA counterfactual CFLs/LEDs in storage 2015	7,852,589	860,423	8,713,012	from 2015 NY on-sites weighted to MA
16	counterfactual saturation/storage difference (# of bulbs) 2013 vs. 2015	-3,382,052	3,204,683	-177,369	CFLs: C12+C14-C13-C15; LEDs: D12+D14-D13-D15; CFLs & LEDs: E12+E14-E13-E15
17	actual estimate of bulbs burned out 2013-2015	12,957,175	25,426	12,982,601	CFLs based on previous NMR estimate of burnouts each year; LEDs=1% of all LEDs installed
18	MA counterfactual market-level sales 2013-2014	9,575,123	3,230,109	12,805,233	CFLs: C16+C17; LEDs: D16+D17; CFLs and LEDs: E16+E17
19	<b>NTG</b>	<b>66%</b>	<b>96%</b>	<b>71%</b>	CFLs: (C8-C10-C18)/C9; LEDs: (D8-D10-D18)/D9; CFLs & LEDs: (E8-E10-E18)/E9