Market Lift Assessment: FINAL Report

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Part of the Residential Evaluation Program Area

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Table of Contents

Executive Summary 1
- Introduction 1
- Market Lift Design 1
- Main Findings 4
  - Results under Alternative Study Design 5
  - Insights from In-Depth Interviews 6
- Conclusions, Recommendations, and Considerations 6

Introduction 9
- Overview of Recent Efforts 9
- Market Lift Model 10
- Overall Study Goals 11
- Background and Incentive Structure 11
- Market Lift Design and Methodology 13
- Evaluation Methodology 13

Findings 15
- Market Lift Calculations 15
  - Pre-Lift Period 15
  - Market Lift Results 16
  - Net Sales Change Over Gross Sales Change and NTG 19
- Challenges with Initial Study Design 19
- Change of Comparison Area Mid-Stream and Issues with Program Activity Comparison Area 20
- Unsuitable Non-Program Activity Comparison Area 20
- Results under Alternative Study Design 21
- Key Insights from In-Depth Interviews 22

Conclusions, Recommendations, and Considerations 32

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Executive Summary

Introduction

This report summarizes the findings of an evaluation of the Massachusetts (MA) Market Lift Initiative, a new program approach in MA geared toward increasing sales of compact fluorescent lamps (CFLs) by rewarding participating retailers for increasing sales over a pre-established baseline. These designs are desirable from a programmatic perspective because retailers are rewarded only for sales above a baseline and, as such, Program Administrators can claim full savings for the lift achieved. NMR, as a subcontractor on the Cadmus-led MA Residential Research Area evaluation team (the Team), performed this evaluation and developed this report for the Massachusetts Program Administrators (PAs) and Energy Efficiency Advisory Council (EEAC) Consultants. In addition, DNV GL explored how suppliers felt about Market Lift approaches, and Cadmus performed Quality Control by reviewing the report.

Market Lift Design

The MA Market Lift initiative ran for six months, from September of 2013 through February of 2014. Massachusetts was one of three states that took part in a coordinated demonstration program of Market Lift facilitated by the Northeast Energy Efficiency Partnerships (NEEP).[1] Vermont and Oregon were the other two states involved, and the program design differed slightly between the efforts (MA utilized a different retailer than Vermont and Oregon, and the incented bulb types were different in each area).[2]

Massachusetts worked with one retail store chain and an associated CFL manufacturer to implement the program. The retail partner instituted the program, with the manufacturer taking the lead on data collection and delivery. The implementation contractor computed the Market Lift achieved and the associated incentive payments every two months over the six-month period, utilizing a tiered incentive structure that paid increasing incentives for higher levels of achieved Market Lift on promoted CFL sales.[3]

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1 For more information on the design, methodologies, and outcomes of all three programs, see "Northeast Energy Efficiency Partnerships *Residential Lighting Market Lift Pilot Final Report.*" Delivered July 3, 2014.

2 The different programs were autonomous and the design/results in VT and OR did not influence the MA program.

3 In MA, the Market Lift effort included only CFLs, while the broader Residential Lighting Program included LEDs and fixtures as well.

Market Lift programs provide retailers or manufacturers with incentives for increasing the sales of promotional CFLs[4] over a baseline (or pre-lift period) of historical and comparison-area sales. Net Market Lift is calculated as the difference between the sales increases in participating stores and those in comparison stores. The design differs from more traditional lighting incentive programs in some important ways, including:

- The necessity of collecting baseline (pre-lift period) bulb sales information from a set of participating and comparison stores, and
- Incentivizing sales above these combined baselines.[5]

A potential advantage of Market Lift over traditional incentive programs is that Program Administrators can claim full savings for the "lift" of bulb sales achieved over the pre-lift period.[6] In contrast, traditional CFL promotion programs have seen increased levels of free ridership, which lower program-attributed (net) savings.[7] Market Lift programs also provide the PAs and evaluators with a more extensive dataset than traditional programs, including sales information from baseline periods and comparison areas. MA maintained the bulb markdowns that had already been in place but also provided payment to the retailer for any additional sales (the achieved "lift") using a tiered incentive structure. The price of the bulbs on the shelves, then, could differ from the normal markdown incentive, since the retailer could choose to use Market Lift payouts for that purpose.

The program managers and the implementer had initially planned to select comparison stores within MA and were in negotiations with a retailer whose structure would have allowed for such a design. However, this retailer ultimately declined to participate, and the retailer that did participate did not have a sufficient number of stores in MA to make an in-state comparison feasible. This retailer also had a policy that all products within a particular state needed to have the same shelf price. To allow for possible varying prices, the retailer's stores in two other states (a neighboring Northeastern state and a Southern state) were used as comparison area stores. The Market Lift initiative included two bulb types: the standard 13W and 23W CFLs being sold by the retailer.

Prior to settling on the Northeastern and Southern state comparison stores, a Western state was chosen because it had the same CFL price as MA, a similar program structure, and comparable demographics and store traffic. However, a natural disaster in that state during the lift period resulted in it being dropped as a comparison area because bulb sales increased rapidly due to construction and repair of

4 Market Lift efforts to date have generally focused on CFLs, but this report includes a discussion of the applicability of the design to LEDs and other retail products.

5 Some Market Lift models provide incentives only for sales above combined baselines, although in MA the traditional markdown incentives remained in place, with Market Lift incentives provided in addition.

6 Market Lift programs theoretically provide incentives to a retailer or manufacturer only for the increase (or "lift") in efficient bulb sales over what is already occurring through the markdown incentives.

7 NMR, DNV-KEMA, Cadmus, and Tetra Tech. 2011. "Appendix G: Estimating the Net-to-Gross Ratio for the 2009-2010 Massachusetts Energy Star Lighting Program: Delphi Panel Response Summary," In *Massachusetts ENERGY STAR® Lighting Program: 2010 Annual Report: Volume 3.* Delivered to the PAs and EEAC consultants on June 13, 2011.

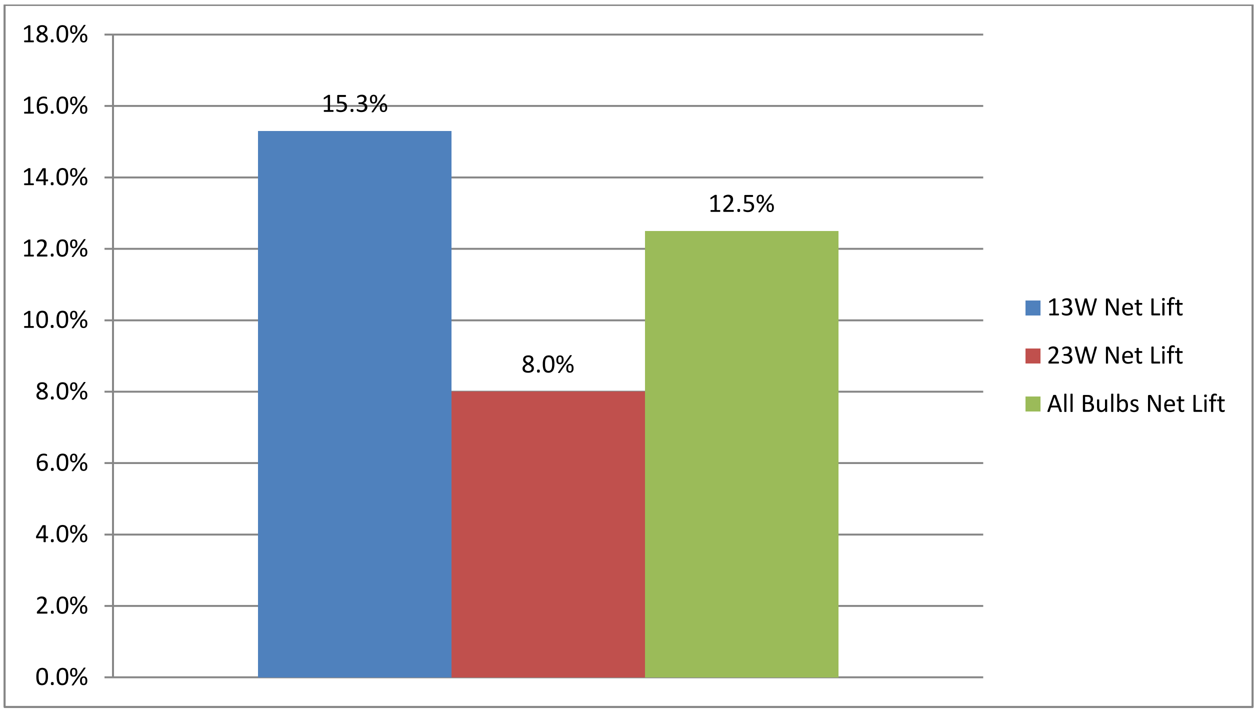
affected homes. The PAs and the implementer therefore decided to replace this state with a Northeastern state that had a history of markdowns for efficient bulbs similar to that of MA. The Southern comparison state had not historically had utility incentives for efficient light bulbs (a non-program activity comparison area). The retail partner negotiated with the implementer to weight the two comparison areas equally when calculating the comparison to MA. Market Lift was calculated as the average of the change in sales in the comparison areas in the lift period over the pre-lift period subtracted from the change in sales in MA in the lift period over the pre-lift period. Thus, the final lift calculations utilize percentage changes in each area, so differences in sales volumes do not disproportionately affect lift measurements.

$$(MA\ Lift - Prelift) - \frac{(Comp1\ Lift - Prelift) + (Comp2\ Lift - Prelift)}{2}$$

Main Findings

As shown in Figure 1, the net lift achieved for MA stores for the 13W CFL bulbs over the entire lift period was 8,405 bulbs (15.3%), and the net lift achieved for 23W CFLs over the entire lift period was 2,705 bulbs (8%). The net lift achieved for MA stores for both 13W and 23W CFLs over the entire lift period was 11,110 bulbs (or 12.5% over pre-lift period). (The Market Lift efforts in Oregon and Vermont also showed an increase in sales during the program period over sales during a baseline. [8])

Figure 1: Summary of Net Market Lift Results



Market Lift programs often pay only for the increase in promoted CFLs sold over the pre-lift period in comparison to other areas, although the MA program continued to pay the base incentive and then a bonus for the lift achieved. In any case, the Team believes that the most accurate NTG estimate for the effort is 100% because all of the CFLs sold through the Market Lift initiative were additional sales above what was already occurring through the program. The retailer was paid a total incentive of $12,797, or $1.15 per additional bulb, for the net Market Lift that was achieved, which is on top of the $0.75 (13W) or $1.00 (23W) per bulb average markdown incentive. However, the evaluation team did find a small error in the implementer's calculation of the baseline for the 23W CFLs for both the treatment and comparison area stores. Fixing this error would change the net lift achieved for both bulb types to 9.8%

8 Northeast Energy Efficiency Partnerships *Residential Lighting Market Lift Pilot Final Report.* Delivered July 3, 2014.

or 9,145 bulbs, the net sales change over gross sales change to 28.3%, and the incentive payments to $11,336.[9]

Results under Alternative Study Design

The Team also calculated net lift and the net sales change over the gross sales change under an alternative study design based on issues of seasonality in purchasing. Consumer demand for light bulbs differs by season, and the seasonality in demand was different in the treatment area than in the non-program activity comparison area, most likely because of different latitudes. If the demand for light bulbs during fall/winter months is significantly higher than that in spring/summer months in MA but not in comparison areas, the current approach could overestimate the lift. To alleviate seasonality issues, the Team computed average monthly pre-lift period sales using only the sales from the same six months as the lift period from the prior year (as opposed to a full-year pre-lift period).[10]

Table 1 shows a summary of net Market Lift results under the alternative research design, as well as with the implementer's lift calculation fixed. The use of a six-month pre-lift period decreases the net lift from 12.5% to 3.2% for the combined 13W and 23W CFLs, the decline being due to the effects of seasonality on purchasing.

Table 1: Market Lift Results under Alternative Designs

	Program Comparison Area	Non-Program Comparison Area	Pre-lift period	Lift (Net)
Original	Yes	Yes	12-month	12.5%
Original (Error Fixed)*	Yes	Yes	12-month	9.8%
Alternative Calculation	Yes	Yes	6-month	3.2%

Although the Team does not report in detail on other alternative study designs and their influence on lift results (as the current program design was agreed to in advance by the retailer, the PAs, and the implementer), we note throughout the report several potential issues with the non-program activity comparison area as a reliable comparator to MA. When calculating results without utilizing this non-program area, net lift increased substantially. These results provide support for the argument that an in-state comparison approach is ideal for a Market Lift program in order to control for external factors and differing program histories. Barring that possibility, an area with a similar incentive history to the program area is preferable to a non-program area. The Team discusses this conclusion in more detail throughout the report, particularly in the Conclusions, Recommendations, and Considerations sections.

9 To the Team's knowledge, the incentive payment to the retailer has not been corrected.

10 The Team also explored the influence on lift results of dropping the non-program activity comparison area, which brought about an increase in achieved lift. We do not report those specific results in detail but refer to them in an attempt to inform potential changes to the program design moving forward.

Insights from In-Depth Interviews

The Team conducted several in-depth interviews (IDIs) with individuals experienced with Market Lift programs, including PAs/Program Managers, Implementation contractors, and consultants involved in the MA initiative as well as lift programs outside MA. DNV GL also completed a series of interviews with manufacturers and retail buyers as part of the MA Lighting Market Assessment[11] and included questions on these interviewees' perspectives on Market Lift, which the Team includes here. The major themes that came through in all of these interviews are listed below and expanded upon in detail in the section entitled Key Insights from In-Depth Interviews:

- Choosing appropriate comparison areas is critical.
- A major challenge in implementing Market Lift programs is securing retail partners.
- Market Lift programs can be costly to implement, particularly in areas with a history of lighting programs.
- Educational events and end caps are worth the added cost.
- A key factor in choosing appropriate retailers/manufacturers is their data collection capabilities.
- Those who had participated in Market Lift efforts thought that LEDs could be a viable candidate for Market Lift, but program administrators believe that lift until now has not been necessary for LEDs due to low levels of both free ridership and sales. In addition, the rapidly decreasing prices for LEDs could make them a problematic candidate product for a Market Lift approach.
- Only one of the 17 manufacturer and retailer buyers interviewed as part of the Lighting Market Assessment had participated in a Market Lift effort; none of those who did not participate planned to do so in the future.
- The manufacturer and retailer buyers interviewed—including the one that had actually tried Market Lift—did not view Market Lift as a viable strategy for CFLs moving forward because of what they perceive to be the complexity, cost, data collection requirements, and risk associated with the design.
- Some interviewees who had participated in Market Lift said it could be successful on a larger (regional or national) scale, but it would require the right partner and more visibility.

Conclusions, Recommendations, and Considerations

The lack of manufacturer and retailer interest in pursuing new Market Lift efforts places the future of such programs in doubt. The substantial disapproval toward Market Lift voiced by manufacturers and retailer buyers (as well as the claim from the one manufacturer who had participated that they would not do so in the future) makes a compelling case for the lack of viability of the approach moving forward. While it does make sense that retailers and manufacturers would favor the standard upstream approach, in which incentives are guaranteed, the right Market Lift structure (particularly one like the current MA design in which normal incentives are maintained) could still be attractive to at least some potential partners.

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11 NMR, Cadmus, DNV GL, and Tetra Tech. *Lighting Market Assessment Work Plan.* Final delivered to the PAs and EEAC Consultants on January 24, 2014.

Should the MA PAs and EEAC consultants choose to continue pursuing Market Lift as a program strategy in the future, and if they are able to find willing and qualified manufacturer and retailer partners, the Team offers the following recommendations and considerations:

Recommendation 1: Stress the Continuation of Incentives in Negotiations with Retail Partners

One of the concerns that retailers have with Market Lift is that, in areas with a history of markdowns, they fear losing incentives by signing onto a Market Lift contract. However, the MA Market Lift initiative was designed specifically so that retailers could maintain their previous incentives, but *also* be rewarded for any lift achieved. This dual-incentive structure is absolutely vital to retailers and manufacturers who simply will not take on the risk of a market lift design unless they are assured of incentives of some sort for what they perceive to be risky decisions to stock, market, and discount energy-efficient bulbs. As such, the preservation of previous incentives on efficient bulbs must be emphasized in negotiations.[12]

Recommendation 2: Focus on Manufacturers' and Retailers' Data Collection Capabilities

The manufacturer partner in the MA initiative played a large role in data provision and collection efforts. Without the manufacturer, the retail partner would not have been able to participate in the initiative, as it does not collect the level of data required to calculate lift. Future efforts should take into account the capabilities of a particular retailer in collecting and providing data, and consider continued reliance on a manufacturer partner for retailers unable to meet the data requirements.

Recommendation 3: Increase In-Store Events and Field Support

Only one participating store in MA held an educational event (collaboratively produced by the PA's vendor and the retailer) during the lift period, but it led to an immediate upsurge in CFL sales. Program managers and implementers outside MA noted the same finding: that in-store events were influential in increasing sales of program bulbs (a finding that likely applies to other program designs, not just market lift). The concurrent lift efforts in Oregon and Vermont also found great value of field support in helping retailers sell more products.[13] Should the program continue in MA, the Team recommends more of these events (and potential in-store field support) as a means of boosting sales.

Consideration 1: Utilize In-State, In-Store Comparison Group with a Market Share Lift Calculation

An ideal quasi-experimental design for the Market Lift initiative would require a large number of stores in MA to be randomly allocated to treatment and control groups and for the sales data of both efficient and inefficient light bulb categories to be collected from all stores. The lift would then be measured as the change in market share of efficient light bulbs for the treatment area stores over the pre-lift period

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[12] Providing incentives for the lift achieved as well as maintaining prior markdowns does make this type of Market Lift design very costly. The benefit of utilizing retailers' expertise and minimizing free ridership must be weighed against the added costs of implementation.

[13] This field support included in-store assistance with signage, training, stocking, and product displays. Northeast Energy Efficiency Partnerships *Residential Lighting Market Lift Pilot Final Report.* Delivered July 3, 2014.

minus the change in market share of efficient light bulbs for the comparisons area stores over the pre-lift period.[14] The current lift calculation relies on estimating percentage change to determine Market Lift incentives, but does not use this market share approach because of the limited number of bulb types the participating retailer offered and the retailer's policy that products must have the same shelf price at all in-state locations.

Given the reality of the lighting market, the Team understands the difficulties in trying to implement a perfect quasi-experimental design. In any case, should MA wish to update the design of its Market Lift program moving forward, these programmatic changes would allow for a clearer attribution of the effort.

Consideration 2: Conduct Cost-Effectiveness Analyses

Implementing the Market Lift initiative in MA was costly, and in order to evaluate the success of the program, the increased CFL sales achieved need to be weighed against increased implementation costs. The Team suggests considering cost-effectiveness analyses moving forward in order to answer the question definitively of whether observed increases in CFL sales and net savings justify the additional program costs. Such analyses are out of the current scope of work, but would be helpful in future efforts.

Consideration 3: Rename or Rebrand Market Lift

Interviews with individuals trying to negotiate with retailers on Market Lift efforts indicated a strong aversion to the approach, particularly from large chain retailers. It may be that the current name or branding of the design immediately sends up a red flag for retailers who have heard negative perspectives on Market Lift. Renaming or rebranding the approach, particularly for those that do not drop markdown incentives and should therefore be desirable to retailers, could help achieve greater retailer cooperation.

[14] It should be noted that utilizing an in-state, in-store comparison group and a market share calculation could still lead to a conservative estimate of lift, given the influence of program factors other than in-store promotion and price discounts, which also work to drive sales of efficient bulbs.

Introduction

This document presents an evaluation of the Massachusetts (MA) Market Lift initiative, developed for the MA ENERGY STAR® Lighting Program Administrators[15] and the Energy Efficiency Advisory Council consultants. NMR, as a subcontractor on the Cadmus-led MA Residential Research Area evaluation team (the Team), performed this evaluation and developed this report for the MA Program Administrators (PAs) and Energy Efficiency Advisory Council (EEAC) Consultants. In addition, DNV GL explored how suppliers felt about Market Lift approaches, and Cadmus performed Quality Control by reviewing the report.

Overview of Recent Efforts

The MA Market Lift initiative was a six-month program running from September of 2013 through February of 2014. Market Lift programs have recently come into some prominence in the field of residential lighting; outside the MA initiative, efforts have also been implemented in Vermont, Oregon, and New York. The MA, Vermont, and Oregon efforts, in fact, were part of a coordinated demonstration of the Market Lift program design that was facilitated by the Northeast Energy Efficiency Partnerships (NEEP).[16] Each of these three programs demonstrated increases in sales volume during the program compared to sales during baseline periods (achieved "lift"), although none of them attained lift for every incented bulb type during every reporting period.[17]

Compared to stores in comparison areas, stores in MA increased sales in two of the three reporting periods for both bulb types offered through the program, with these increases ranging from 12% to 35%. Although Oregon and Vermont utilized a retailer with smaller baseline sales than MA, both states saw sales increases during many of their reporting periods. The stores in Oregon achieved lift for one of the supported bulb types in six of the twelve half-month program periods and for the other bulb type in five of the periods. The Vermont program had sixteen half-month reporting periods and achieved lift (ranging from 4% to 128%) in nine of these periods.[18] Although such evidence suggests that Market Lift can be quite successful as a program design, the Team argues throughout this report that the lack of retailer and manufacturer interest in participating in these programs—which can be complex, costly, and very risky from the retailer perspective—along with the challenges in identifying the correct baseline, make this a challenging approach to implement.

[15] The Team uses *PAs* when referring exclusively to the MA Program Administrators but uses *program administrators* when referring more generally to companies or organizations that may sponsor lighting incentive programs.

[16] Northeast Energy Efficiency Partnerships *Residential Lighting Market Lift Pilot Final Report.* Delivered July 3, 2014.

[17] The programs and lift results in other states were autonomous and did not influence the program design, results, or agreements made in MA.

[18] Northeast Energy Efficiency Partnerships *Residential Lighting Market Lift Pilot Final Report.* Delivered July 3, 2014.

Market Lift Model

Market Lift programs operate by providing participating retailers or manufacturers with incentives for increasing the sales of promotional bulbs—generally compact fluorescent lamps (CFLs) in the programs offered to date—over a baseline (or pre-lift period) of historical sales that is agreed to in advance. The design differs from more traditional lighting incentive programs in a number of ways, including the following:

- The necessity of collecting bulb sales information from a carefully selected set of comparison or control stores
- The level of risk taken by participating retailers/manufacturers (i.e., if they do not reach sales goals, they do not receive bonus incentive payments)
- The need to establish baselines based on historical bulb sales data for both participating and control stores
- Incentivizing sales above these baselines in a manner that is agreed upon with participants in advance, and
- Allowing retailers flexibility in pricing, merchandizing, and marketing.

The model has several potential advantages over traditional incentive programs, most notably allowing program administrators to claim full savings for the "lift" of bulb sales achieved over the baseline rather than using evaluation to net increased sales against those likely to have occurred without the program. As such, Market Lift programs have no free ridership[19] and a NTG ratio of 100%. Further, by placing the responsibility for increased sales on the retailer or manufacturer, Market Lift programs leverage these entities' significant expertise in marketing, promoting, and selling products. They also provide the program administrators and evaluation teams with a rich set of sales data; unlike traditional programs, Market Lift programs provide data from both promotional *and* baseline periods to more thoroughly evaluate the impact of the program.

While Market Lift programs theoretically provide incentives to a retailer or manufacturer for the increase (or "lift") in bulb sales over a baseline of non-program sales, the MA Market Lift initiative was a hybrid program. Because a longstanding CFL markdown program was already in place in MA, PAs and implementers found it necessary to maintain the existing markdown component and then further incent the retails to achieve additional Market Lift. Without the promise of markdown incentives, no retailers would participate. As such, the MA program design differed slightly from programs conducted in areas without a history of markdown programs and in which Market Lift was the only program running during the lift period. Nevertheless, the retailer was tasked with increasing bulb sales—CFLs specifically—over a pre-lift period with markdown incentives for those bulbs. The goal was for the retailer to use its expertise in marketing, promoting, and selling CFLs to achieve lift.

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19 The current NTG ratio for standard CFLs in MA is 43% (57% free ridership) and 60% for specialty CFLs (40% free ridership).

Overall Study Goals

The goal of this evaluation was to review the results of the MA Market Lift initiative with a focus on its strengths and weaknesses, major challenges and successes, and viability as a model for efficient products moving forward; as well as to estimate increased sales from the program. More specifically, the evaluation sought to accomplish the following:

- Review the planning and implementation of the Market Lift effort
- Gain insights from those involved with the effort in order to make recommendations for potential future Market Lift efforts in MA
- Gain insights from those involved with Market Lift efforts in *other* areas to make recommendations for potential future Market Lift efforts in MA
- Estimate the change in promoted CFL sales over time in MA against those of comparison areas
- Assess the extent to which Market Lift is viable for CFLs and replicable for light-emitting diodes (LEDs) and other initiatives or technologies
- Assess whether and to what extent the Market Lift initiative was designed and implemented in a way that ensured the ability to establish the sales that are attributable to the effort
- Make recommendations, if needed, for possible revisions to the program design and implementation to improve the evaluability of the approach and its net impacts, and
- Develop criteria for when Market Lift may be appropriate along with procedures for its design and implementation.

Background and Incentive Structure

The MA Market Lift initiative ran for six months, from September of 2013 through February of 2014, with the MA participating retailer and manufacturer. The implementer computed the Market Lift achieved and the associated incentive payments (which were previously agreed upon by the implementer, participating retailer/manufacturer, and MA PAs) every two months over the six-month period. The retailer negotiated these two-month incentive payment periods in order to have incentives delivered throughout the program as opposed to one lump sum at the conclusion. This enabled the retailer to use funds as necessary throughout the span of the program. Table 2 shows the negotiated retailer incentive amounts per CFL for each tier level of Market Lift achieved.

Table 2: Incentive Payment Structure

Tier Level	Minimum Net Lift	Incentive Per CFL
Tier 1	10%	$0.75
Tier 2	15%	$0.80
Tier 3	20%	$0.85
Tier 4	25%	$0.90
Tier 5	30%	$1.00

As stated, the normal markdown incentives on both bulb types were maintained. For 13W 4-packs, this markdown was $3 (bringing the shelf price down to $1.99 per package), and for 23W 6-packs, the markdown was $6 (bringing the shelf price down to $3.99 per package). In order to further facilitate the retailer's ability to achieve sales increases, as part of the lift program the PAs provided $15,000 at the outset of the program and an additional $5,000 midstream to further reduce shelf prices. These funds were separate from the incentives provided for achieving lift, and were earmarked primarily for marketing efforts.[20] These incentives were not part of the normal markdown program. Table 3 shows pack pricing for both the normal markdown period as well as Market Lift periods.

Table 3: MA Shelf Prices during Market Lift Period

CFL Wattage	Bulbs per Package	Markdown Incentive	Package Price with Markdown	Package Price from 9/2/13 to 1/31/14	Package Price from 2/1/14 to 2/28/14
13W	4	$3	$1.99	$1.59	$0.99
23W	6	$6	$3.99	$3.39	$1.99

To further illustrate how Market Lift incentives differed from the normal markdown program, and demonstrate how program costs to the PAs differed depending on the level of lift achieved, Table 4 shows the per-bulb incentives paid out for the normal markdown program and each lift period. It is important to note that not all of the program costs or incentives were passed on to the consumer. As with the markdown program, Market Lift incentives paid to the retailers could go to marketing, administration, profit, or other areas. As such, the per-bulb incentives shown in Table 4 do not mirror the shelf prices in Table 3. The per-bulb incentives provided by the Market Lift program compared to the markdown program also do not represent a full cost-effectiveness analysis, as they do not consider substantial other costs borne by the PAs, such as PA administrative costs and evaluation costs.[21]

Table 4: Per-Bulb Incentives Paid out for Market Lift and Markdown

CFL Wattage	Markdown Incentive Per Bulb	Market Lift Incentive Per Bulb: Period 1	Total Market Lift and Markdown Incentives Per Bulb: Period 1	Market Lift Incentive Per Bulb: Period 2[22]	Market Lift Incentive Per Bulb: Period 3	Total Market Lift and Markdown Incentives Per Bulb: Period 3
13W	$0.75	$0.75	$1.50	$0	$0.90	$1.65
23W	$1.00	$0.90	$1.90	$0	$0.85	$1.85

[20] Northeast Energy Efficiency Partnerships *Residential Lighting Market Lift Pilot Final Report.* Delivered July 3, 2014.

[21] As the Team will discuss, an appropriate NTG for the Market Lift program is 1.0. As the current NTG for the markdown program is .43, a higher incentive for lift bulbs is justifiable.

[22] The program did not achieve lift in Period 2.

Market Lift Design and Methodology

Following an extremely lengthy, complicated, and difficult period of negotiations conducted over several months with a number of potential retail partners, only one retailer participated in the MA Market Lift initiative. Although the program managers and the implementer initially planned to select comparison stores within MA, the participating retailer did not have a sufficient number of stores in MA to make an in-state comparison feasible. Instead, the retailer's stores in two other states were used as comparison area stores. Further, while the original calculation of lift was to be based on a market share approach, in which the sales of promotional CFLs would be compared to those of inefficient bulbs, the retail partner for the study did not sell any incandescent bulbs and offered only a small selection of CFL and LED bulbs in its stores. For that reason, the Market Lift initiative targeted the two standard 13W and 23W CFL bulbs being sold by the retailer[23] and calculated the change in sales during the promotional period in the participating and comparison stores for these bulbs only.

As discussed, there was a drastic change in comparison areas that happened midstream during the program. The Western state originally chosen as the ongoing program comparison area had similar bulb prices to MA, a comparable program structure, and similar demographics and store traffic. Unfortunately, a natural disaster occurred in that state during the lift period, resulting in increased bulb sales due to construction and repair efforts which would skew the results. As a result, the area was replaced with the Northeastern comparison area, which was also similar to MA in markdown program activity. The second (Southern, non-program activity) comparison area had not historically had program incentives on CFLs.[24] In negotiations, the retail partner specified that it wanted to weight the two usable comparison areas equally against its own baseline. Massachusetts agreed in order to be able to move forward with the program. The Market Lift and retailer payment calculation relied on a difference-in-differences approach: average percentage change in sales in comparison areas over their own baselines subtracted from the percentage change in sales in MA over its baseline.

Evaluation Methodology

As part of the evaluation activities, the Team reviewed the implementer's lift calculations, making any necessary corrections. The Team also conducted a lengthy series of in-depth interviews with a wide range of individuals including those involved in designing and running the MA program, those who had implemented Market Lift efforts elsewhere, and retailers/manufacturers who had either participated in

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23 13W CFL bulbs were sold in four-pack packaging during the pre-lift and lift periods. 23W CFL bulbs were sold as a four-pack for the majority of the pre-lift period before being sold as a six-pack at the end of the pre-lift period and during the entire lift period.

24 An anomaly also occurred with the Southern (non-program activity) comparison area where the manufacturer provided discounts to change over stock due to labeling and pack sizing changes. The manufacturer was changing its labeling and pack size for CFLs and, wanting to move stock off the shelves, offered deep cuts for the four-pack bulbs in the non-program activity comparison area. In MA, the manufacturer shipped the four-packs to another state overnight and immediately began offering the new product. As a result, MA was competing with the four-pack discount prices, which were lower than the MA prices. Further, there was a national lighting push by the retailer that also lowered the shelf price of the promotional bulbs, but was implemented differently in different states; those with utility programs did not get the additional markdown.

lift programs or who had refused to do so. Based on the findings of these activities the Team presents results under alternative study designs and calculation methods, and ultimately provides recommendations and considerations for potential changes to the current study design and methodology should the program continue.

Findings

This section outlines the overall findings of the evaluation efforts, including the calculations of net Market Lift, as well as the key findings from an extensive series of in-depth interviews. No weighting of the pre-lift period or lift period data was necessary, as all changes were calculated as percentages.

Market Lift Calculations

The calculation of Market Lift was defined as the average of the change in comparison-area sales during the lift period over the pre-lift period subtracted from the MA change in sales in the lift period over the pre-lift period:

$$(MA\ Lift - Prelift) - \frac{(Comp1\ Lift - Prelift) + (Comp2\ Lift - Prelift)}{2}$$

As seen in the lift formula, comparison-area lift is calculated as the average percentage lift in the two comparison areas. The incentive payments were calculated and paid out over two-month periods—a design which was negotiated by the retailer to improve cash flow, thus enabling them to use funds as necessary throughout the total six-month program span.

Pre-Lift Period

The initial program design called for the computation of average monthly pre-lift sales of each bulb type—that is, 13W or 23W CFLs—over a two-year period. However, large changes in programmatic activity in both MA and the program activity comparison area in the two years prior to the Market Lift initiative made a two-year pre-lift period unfeasible. The program instead used a one-year period from September of 2012 through August of 2013 to compute the average monthly pre-lift sales for each bulb type in MA and the comparison area stores.[25]

[25] Although lift is reported in two-month periods to allow for progress payments to retailers.

Market Lift Results

As shown in Table 5, which displays the Market Lift results for 13W and 23W CFLs individually, the net lift achieved for MA stores for the 13W CFL bulbs over the entire lift period was 8,405 bulbs (or 15.3%). The gross lift[26] for 13W CFLs for the entire period was 9,980 bulbs (or 18.2%) (Table 5).The gross and net lift achieved for MA stores for 23W CFLs over the entire lift period was 26,409 bulbs (78.4%) and 2,705 bulbs (8%), respectively (Table 5). The relatively small net lift was due to the fact that the comparison area stores greatly increased their sales of 23W bulbs over their own pre-lift periods during the Market Lift period.

Table 5: Summary Market Lift Results 13W and 23W CFLs

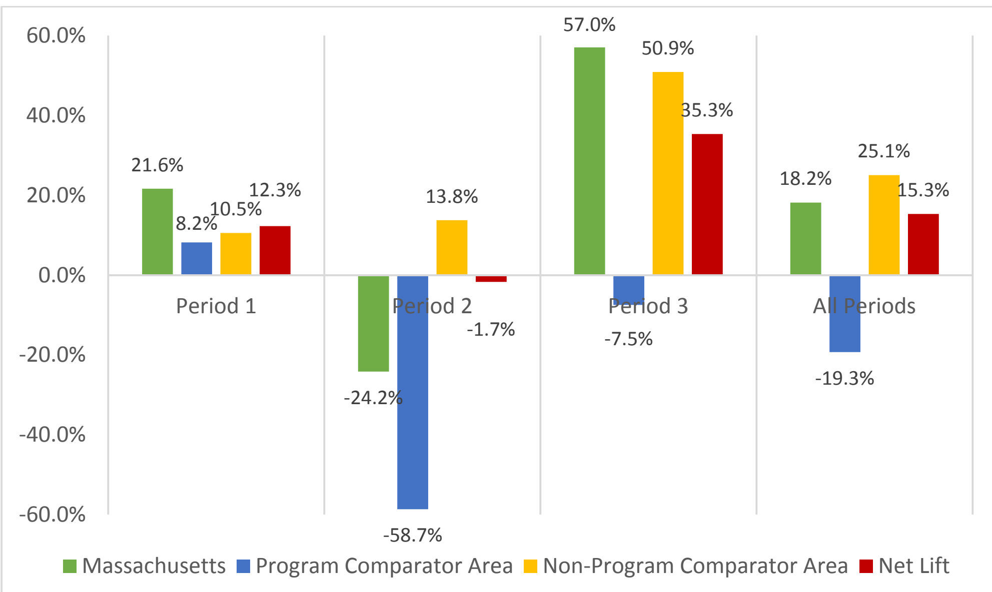
Bulb Type	Lift Period	1	2	3	All
	Start Date	9/2/2013	11/4/2013	12/30/2013	9/2/2013
	End Date	11/3/2013	12/29/2013	2/28/2014	2/28/2014
13W	Base (Lamps)	18,321	18,321	18,321	54,964
	Gross Lift (Lamps)	3,963	-4,433	10,451	9,980
	Gross Lift (%)	21.6%	-24.2%	57.0%	18.2%
	Net Lift (Lamps)	2,247	-318	6,475	8,405
	Net Lift (%)	12.3%	-1.7%	35.3%	15.3%
	Incentive Tier	Tier 1	None	Tier 5	-
	Incentive $	$1,686	$0	$6,475	$8,161
23W	Base (Lamps)	11,226	11,226	11,226	33,677
	Gross Lift (Lamps)	8,030	4,568	13,810	26,409
	Gross Lift (%)	71.5%	40.7%	123.0%	78.4%
	Net Lift (Lamps)	2,977	-2,575	2,303	2,705
	Net Lift (%)	26.5%	-22.9%	20.5%	8.0%
	Incentive Tier	Tier 4	None	Tier 3	-
	Incentive $	$2,679	$0	$ 1,957	$4,636

26 Gross lift is calculated simply as the increase in sales in MA during the lift period over the pre-lift period, not factoring in any changes in comparison areas.

Along with reporting the summary Market Lift results in Table 5, the Team also presents the results graphically by CFL wattage for both MA stores and comparison area stores for each two-month period. As shown in Figure 2, in the first two-month period, the retailer's MA stores increased their sales of 13W CFLs by 3,963 bulbs (21.6%) over the pre-lift period, and the retailer's comparison area stores increased theirs by an average of 9.3% (8.2% for the program activity comparison area stores and 10.5% for the non-program activity area stores), which resulted in a net lift of 2,247 bulbs (12.3%) for the period for this bulb type (21.6% - 9.3% = 12.3%). Net lift was negative in the second two-month period as a result of MA stores not increasing their sales over the pre-lift period, whereas the non-program activity comparison area did have an increase.[27] In other words, although the program activity comparison area saw a huge decrease from its pre-lift period in Period 2 (-58.7%), when averaged with the increase in the non-program activity comparison area (13.8%), MA's net lift was only slightly negative (-1.7%).

Net lift was highest in Period 3, with MA stores increasing sales of 13W CFLs by 10,451 bulbs (57%) over the pre-lift period, compared to an average 21.7% increase in comparison areas. This resulted in a Period 3 net lift of 6,475 bulbs or 35.3% over the pre-lift period.

Figure 2: Percent Change in Sales over Pre-lift period and Net Lift – 13W CFL Bulbs

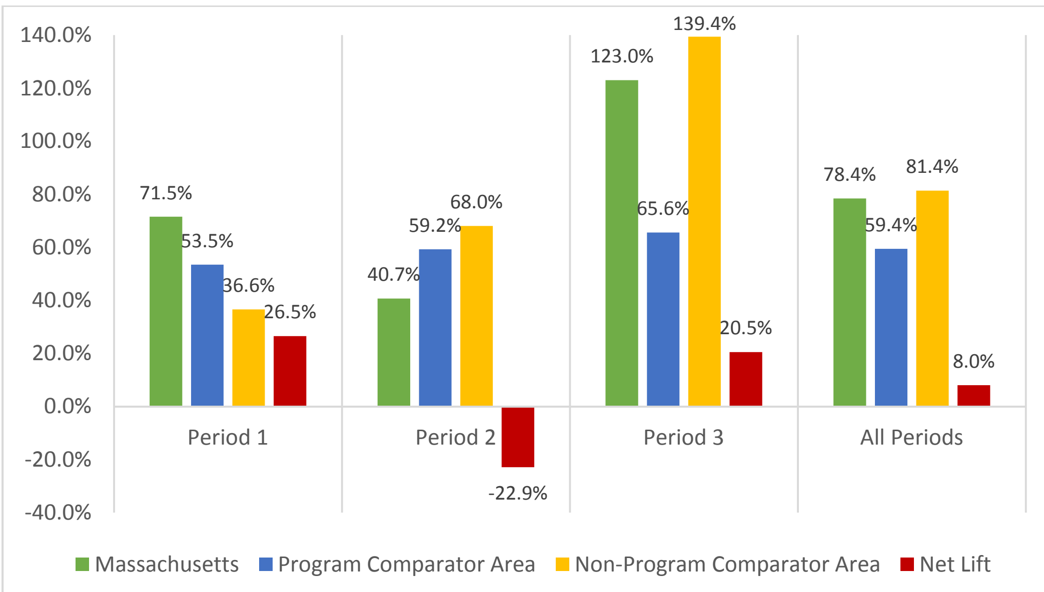


27 Stores in both MA and the program activity comparison area experienced some sell-through of the program bulbs (at almost identical periods) during the second lift period, which contributed to the negative lift during those months.

Figure 3 presents the percent change in sales over the pre-lift period for 23W CFLs in MA and the comparison areas as well as the net lift per period. In the first two-month period, the retailer's MA stores increased their sales of 23W CFLs by 8,030 bulbs (71.5%) over the pre-lift period. The retailer's comparison area stores increased their sales of 23W CFLs by an average of 45% (53.5% for the program activity comparison area stores and 36.6% for the non-program activity comparison area stores), which resulted in a net lift of 2,977 bulbs or 26.5% for the period.

As with 13W CFLs, 23W CFLs showed a negative net lift in the second two-month period as a result of the comparison area stores increasing sales over their pre-lift periods at greater rates than MA stores. The third two-month period, however, retained a positive net lift of 2,303 bulbs (20.5%), with MA stores increasing sales of 23W CFLs by 13,810 bulbs (123%) over the pre-lift period (increased sales in the comparison areas during that same period resulted in a lower net lift).

Figure 3: Percent Change in Sales over Pre-lift period and Net Lift - 23W CFL Bulbs



Net Sales Change Over Gross Sales Change and NTG

Table 6 summarizes the lift results for the MA stores for both bulb types combined as computed by the implementer. The gross and net lift achieved for MA stores for combined 13W and 23W CFLs over the entire lift period was 36,389 bulbs (41.1%) and 11,110 bulbs (12.5%), respectively. This results in a sales change ratio (net sales change over gross sales change) of 30.5% (=11,110/36,389). However, in terms of NTG, Market Lift programs only incentivize bulbs sold above the pre-lift period (i.e., every bulb sold above the pre-lift period was a result of the program), and, as such, the Team believes 100% is the most accurate NTG estimate. The retailer received a total incentive of $12,797 for the net Market Lift that was achieved.[28]

Table 6: Summary Market Lift Results All Bulbs Combined

Bulb Type	Lift Period	1	2	3	All
	Start Date	9/2/2013	11/4/2013	12/30/2013	9/2/2013
	End Date	11/3/2013	12/29/2013	2/28/2014	2/28/2014
All	Base (Lamps)	29,547	29,547	29,547	88,641
	Gross Lift (Lamps)	11,993	135	24,261	36,389
	Gross Lift (%)	40.6%	0.5%	82.1%	41.1%
	Net Lift (Lamps)	5,224	-2,893	8,778	11,110
	Net Lift (%)	17.7%	-9.8%	29.7%	12.5%
	Incentive $	$4,365	$0	$8,433	$12,797
Net Sales Change/Gross Sales Change					30.5%
NTG[29]					100%[30]

Challenges with Initial Study Design

One of the significant challenges of implementing a Market Lift program (discussed further in the Key Insights from In-Depth Interviews section) is in identifying comparison area stores that provide the ideal non-Market Lift program counterfactual to the treatment area stores. As discussed, even when significant time and effort is put in to pick the most appropriate comparison area, events out of the PAs' and implementer's control can ultimately impact results considerably. In this section, we outline what we believe were unintended shortcomings of the existing study design. In the following section, we lay out an alternative design and its effect on Market Lift results.

[28] The evaluation team found a small error in the implementer's calculation of the baseline for the 23W CFLs for both the treatment and comparison area stores. Fixing this error would change the gross market lift achieved for both bulb types to 34.6% or 32,151 bulbs and net market lift to 9.8% or 9,145 bulbs, the net sales change over gross sales change to 28.3%, and the incentive payments to $11,336.

[29] Market Lift programs only provide incentives for sales above the pre-lift period (i.e., net sales), so the value for the effort is 100% by default.

[30] While the Team recommends this NTG for the Market Lift effort, the overall NTG for MA lighting will need to incorporate both the Market Lift portion and the standard upstream incentive portion.

Use of a 12-Month Pre-Lift Period

The Market Lift initiative ran for six months, from September of 2013 through February of 2014. Insofar as consumer demand for light bulbs differs by season and the seasonality in demand is different in the treatment area than in the comparison areas (because of their latitude), the current approach (which uses a full year of pre-lift data) would be subject to a seasonality bias. For example, if the demand for light bulbs during fall/winter months is significantly higher than that in spring/summer months in MA but not in comparison areas, the current approach could overestimate the lift. The pre-lift sales data show substantial increases in bulb purchases during the fall and winter months in MA and the program activity comparison area, but not in the non-program activity comparison area, thus resulting in a biased comparison.[31]

Change of Comparison Area Mid-Stream and Issues with Program Activity Comparison Area

The need to change the comparison area due to the unexpected natural disaster in the Western state highlights a major issue with this type of program: the need for clear protocols when anomalies occur in the comparison areas. In general, there is always a potential for complications when comparing two states with active and fluctuating programs, creating significant threats to the internal validity of the project. While the Team recognizes the decision to change comparison areas midstream was an attempt to preserve the project (and was therefore one of necessity and not choice), a Market Lift approach should approximate an experimental design as much as possible. It may not be worthwhile to attempt to “salvage” a project if it jeopardizes the experimental design, which may have been the case here.

Unsuitable Non-Program Activity Comparison Area

The participating retailer was reluctant to compare their sales in MA just to those in a state with a similar level of program support, and they negotiated to have MA sales compared to a blend of sales from a program and a non-program area. However, a review of pre-lift and Market Lift data raises some concerns about the appropriateness of the non-program activity area as a comparison area to MA, including:

- Seasonality – As mentioned above, the data indicate seasonality in sales of light bulbs in MA but not in the non-program activity comparison area.

- Deep Discounts and Program-like Promotions – There was a significant increase in sales of 13W and 23W CFLs during the lift period in the non-program activity comparison area compared to its pre-lift period. The implementer found out that CFL prices were deeply discounted in this area during the lift period in order to move old product, but the same discounts were not applied in MA. Further, a national lighting push by the retailer also brought the CFL prices down, but these discounts were not provided in states which already had utility discounts (like MA and

[31] The non-program (Southern) activity comparison area, located at a different latitude than MA, also has less variation in the amount of daylight in winter and summer than MA.

the program activity comparison area). These discounts and promotions in the non-program activity comparison area only serve to complicate comparisons with MA in that some of the increases in sales were due to discounted prices.[32]

- Low Socket Saturation – As the awareness of energy efficiency increases over time, households will begin to fill sockets with energy-efficient bulbs. Because they are likely starting with low levels of socket saturation, sales of energy-efficient light bulbs in areas with no prior program support are likely be higher in 2013 than in states like MA with a long history of program support that has contributed to high socket saturation.[33] The higher saturation in MA and longer CFL lifetime would also contribute to lower sales in MA and potentially higher sales in comparison areas for CFLs. This could partially account for the increase in sales from the pre-lift period to the lift period in the non-program activity comparison area.

These issues highlight the challenges inherent in identifying appropriate comparison area(s). In the following section the Team demonstrates how Market Lift results shift under an alternative study design that accounts for the described seasonality issues. The Team does not report how the results also shift when addressing the other issues highlighted above (i.e. dropping the problematic non-program activity comparison area) because the program design and comparison areas were agreed upon ahead of time by all necessary parties. We do note however in the Conclusions, Recommendations, and Considerations section, however, how the program design could be improved in the future, particularly in terms of choosing appropriate comparison areas.

Results under Alternative Study Design

Using the pre-lift and Market Lift data for the treatment and comparison area stores, the Team computed net Market Lift and net sales change over gross sales change under an alternative research design that accounts for the seasonality issues with the use of a 12-month pre-lift period in the existing study design. The Team computed the average monthly pre-lift period sales using only the sales from the same six months in the previous year (as opposed to the entire year) as the lift period: September of 2012 through February of 2013.

32 The degree to which the discounts and promotions in non-program areas may be attributable in part to activities in program areas extends beyond the scope of this evaluation. However, the actions of the retailer in non-program areas certainly suggests that retailers are willing to provide their own resources (that is, put products on sale, hold promotional events) to move efficient lighting in the absence of incentives from efficient lighting program administrators.

33 This theory builds from evidence suggesting that socket saturation increases rapidly until about 25% of sockets are filled with energy-efficient bulbs; then saturation continues to increase, but at a much slower rate.

Table 7 shows a summary of Market Lift results under the alternative research design and with the correction to the implementer's initial calculations (which contained a small error in the calculation of 23W bulb packs). The use of a six-month pre-lift period reduces the net lift from 12.5% to 3.2% and gross market lift from 41.1% to 17.6%. The decline in lift is due to the fact that the average monthly CFL sales in MA from September through February were higher than those from March through August during the pre-lift period (the previously discussed influence of seasonality on bulb purchasing).

Table 7: Market Lift Results under Alternative Design

	Program Comparison Area	Non-Program Comparison Area	Pre-lift period	Lift (Gross)	Lift (Net)	Net Change Over Gross Change
Original	Yes	Yes	12-month	41.1%	12.5%	30.5%
Original (Error Fixed)*	Yes	Yes	12-month	34.6%	9.8%	28.3%
Alternative Calculation	Yes	Yes	6-month	17.6%	3.2%	18.2%

* These calculations correct the small error in the implementer's calculation of the pre-lift period for the 23W CFLs bulbs for both the treatment and comparison area stores.

Key Insights from In-Depth Interviews

Along with the computation of lift and net sales change over gross sales change under the actual and alternative program designs, the Team also conducted a series of in-depth interviews (IDIs) with a wide variety of individuals experienced with Market Lift programs. Interviewees included the implementation contractors for the MA effort, the MA Program Administrators (PAs) who had overseen the effort, the MA manufacturer partner, implementation contractors and program managers who had run or were running lift efforts in other areas, negotiating but non-participating retailers, as well as high level manufacturer and retailer buyers taking part in supplier interviews for the Lighting Market Assessment.[34] The numbers of interviewees falling into these categories are shown in Table 8.

[34] NMR, Cadmus, DNV GL, and Tetra Tech. *Lighting Market Assessment Work Plan.* Final delivered to the PAs and EEAC Consultants on January 24, 2014.

Table 8: Interviewee Categories and Numbers

	MA	Outside MA
Program Administrator/Program Manager	4	2
Implementation Contractor	5	3
Participating Manufacturers/Retailers	2	1
Consultant	3	2
Manufacturers and Retailer Buyers[35]	17	

The purpose of these interviews was to obtain information on the challenges of implementing the program, their perceptions of the successes of the program design, the viability of the approach moving forward (particularly for CFLs and LEDs or other efficient products), and what could be done to improve potential Market Lift efforts in the future. Below, we outline the major topics that emerged in those interviews.

Importance of Appropriate Comparison Areas

A consistent theme throughout the interview process was the importance of the choice of comparison area stores in a Market Lift design. The calculation of Market Lift is based on the increase in sales of promotional CFLs during the lift period over sales in the pre-lift period in the participating stores versus that same potential increase (or decrease) in comparison area stores. As such, the incentives that the participating retailer receives, and the perceived success of the program in general, are highly dependent on CFL sales in comparison areas. For example, retailers could very successfully market and sell the promotional CFLs, leading to significant sales increases in the lift period over the pre-lift period (gross lift), but if events outside the control of the participating retailer led to similar sales increases in the comparison area stores, net lift would be minimized or lost entirely. This situation occurred twice throughout the MA initiative—first with the initial Western state comparison area that was replaced as a result of a natural disaster, and again with the unexpected sales increases in the non-program activity comparison area (that was not changed or adjusted for). With that said, it is also true that if there was a substantial drop in sales in the comparison states, then net lift in MA would have increased (a result which would likely not have called the study design into question).

Clearly, choosing an appropriate comparison area or set of comparison areas is a complicated process, with a number of potential variables to be considered, including level of program activity, store demographics, product availability, seasonality, purchase habits, latitude, and store/chain size, among many others. As part of the MA initiative, the implementer and PAs conducted background research on foot traffic and store area demographics. They prioritized stores selling similar amounts of CFLs to the

35 Supplier interviews were completed by DNV GL as part of the Lighting Market Assessment. These interviewees are not broken down by the MA/outside MA location designation, as the manufacturer and retailer buyers have nationwide locations and service territories (and therefore participate in programs both inside and outside MA).

MA stores. Ultimately, the participating retailer pushed for the inclusion of the non-program activity comparison area under the assumption that the sole reliance on an area with a similar history of markdown programs would hurt its ability to achieve lift. Unfortunately, utilizing the non-program activity comparison area had the opposite effect. As a key member of the MA initiative indicated, "Getting an isolated control group that people are happy with is difficult—it's really difficult. You can't anticipate the future and so many things change in the market that I think a lot of care has to be taken in how we pick the control group."

The initial design of the program also called for an in-state, in-store comparison group utilizing different MA locations of the same retailer. Such a design would have addressed many of the potential problems described above. However, two factors led to that design being abandoned: 1) the retailer's policy that products must be the same price at all in-state locations and 2) the lack of an appropriate in-state sample (i.e., too few locations).[36] The Team believes that an ideal design for Market Lift is to utilize randomly chosen comparison stores from the same retailer within the same state. Barring that possibility, a potentially successful alternative is using stores from a similar state with a similar current program and program history. However, it may be that there are simply too many unknowns to control for when utilizing out-of-state comparison areas. If random assignment from the same retail chain in the same state cannot be achieved, Market Lift, as currently conceived, may not be worth attempting. The PAs might consider developing protocols to account for when changes or recalculations of the comparison area sales will occur.

Program Challenge – Difficulty in Securing Retail Partners

One of the most common challenges brought up by implementers, program managers, and evaluators is the difficulty in finding and securing retailers to participate in the effort. This was especially notable in areas with long lighting program histories, like MA. For example, one retailer that had been willing to sign on to Market Lift programs elsewhere would not sign on to the MA initiative. The reservations that retailers had in regard to participating in Market Lift programs tended to boil down to four key issues:

- Unwillingness to share bulb sales data (Market Lift programs require significant data sharing—not only for the promotional period, but also the pre-lift period)
- Legal concerns including indemnification (as described below)
- Fear of losing previous incentives through long-standing markdown programs by participating in Market Lift (a preconceived notion that prevents them from considering participating), and
- Not wanting to take on the added responsibility for increasing sales over the pre-lift period

In other words, trying to recruit retailers was very challenging. As a spokesperson for one of the non-participating retailers explained, this often came down to legal issues:[37]

36 The original retailer that was in discussions to participate did have enough locations to make an in-state comparison feasible, but this retailer dropped out of negotiations before reaching agreement.

37 We have retained the interviewee's use of *utilities* rather than *program administrators*, though we recognize that the term *utility* is not accurate to describe all the program administrators in MA.

> It really came down, from a legal perspective, to how were we going to participate in a program with multiple utilities and make sure that all of the accountabilities and the necessary legalities were covered. Each utility had its own legal departments, and its own expectations, and its own policies. We were somewhat leery when you have that many moving parts as how best to come to some mutual standard agreement that we could all work from. Some of the utilities had policies that spoke directly to and/or countered some of our own legal policies and, unfortunately, there just wasn't any room for negotiation on either side because it was something written into the policies that was non-negotiable. Every so often we come across a group that might not be willing to indemnify us in any shape or size. That was really the key [the indemnification clause] for a couple of these utilities. So that was [a] real sticking point because that's written in our policy: that if we were going to alter language as part of our standard template, we were going to have to take that up to the very highest levels of our counsel, with no guarantee that that would have been approved. It probably would have taken weeks and weeks and weeks just to get through it. It was a game changer, unfortunately.

Further, despite substantial outreach and negotiating by the MA PAs, and the fact that the MA Market Lift initiative was designed in such a way that retailers would *not* lose the incentives they had received in the past but would be rewarded for sales increases, many retailers were still unwilling to sign on to the stipulations of the initiative. One program manager running a lift initiative in a state outside MA went so far as to say that he believed a group of retailers had intentionally "boycotted" all Market Lift proposals. Even with significant efforts on the part of the MA PAs and implementers to reach out to retail chains, the majority of calls, letters, and emails went unanswered.

The NEEP Market Lift report, which also focuses on the issues inherent to securing partners to participate in this novel program design, concludes that acquiring early involvement of major stakeholders (like program planners, implementers, and evaluators) can be extremely valuable in guiding program design.[38] In particular, the authors focus on the importance of early manufacturer and implementer guidance on eligibility of products to incentivize, suitable incentive levels and tiers, and the selection of the baselines. As discussed, the only way the MA retailer was able to participate was as a result of manufacturer involvement in data collection and delivery. These results point to the impact of early stakeholder engagement in countering the issues of retailer participation.

Program Challenge – Costly

Along with the inherent challenges associated with acquiring retail partners, interviewees also consistently mentioned cost as another challenge of the MA Market Lift initiative. Compared to more traditional MA lighting programs, such as the markdown programs that lower the price of efficient bulbs on stores' shelves, the Market Lift initiative was more costly. As described in the Overview of Recent

[38] Northeast Energy Efficiency Partnerships *Residential Lighting Market Lift Pilot Final Report.* Delivered July 3, 2014

Efforts section, in order to attract any retailers, the MA initiative required being run in tandem with the normal markdown program. This challenge was laid out very clearly by one of the PAs involved with running the initiative in MA:

> The added cost of Market Lift is not cheap to run. The way we ran it in MA was really the only way we were able to incentivize retailers. In MA the law says we have to do all cost-effective energy efficiency. So it's really, really hard to say from any sort of standpoint that we should stop offering our incentive program. If a retailer doesn't believe that our Market Lift model could beat our current incentive program, that's saying our incentive program is the best on the market right now. This was the hybrid alternative that we thought was appropriate to test.

In other words, the added cost reduces the program's cost-effectiveness. While the program in MA did show increases in CFL sales over the pre-lift period as a result of the lift initiative, the benefits of these sales increases should be weighed against the added cost of implementation.

The program cost was also consistently cited as a negative by manufacturers and retailer buyers participating in the supplier interviews. Although 16 of these 17 interviewees had not thus far participated in Market Lift programs (and had no plans to do so), they cited the perceived cost of implementing the program as one of the key barriers to participation. As one manufacturer explained:

> We purposely have not [participated in Market Lift]. Running these programs, there's a cost to it. We're reducing our wholesale price with the idea of achieving back the top line sales. And if we are basically putting up the cost of both the marketing and the product markdowns, and fronting that on the hopes of one day being able to receive it back once baseline and above is achieved, it's too much risk. It's too much work. And, really, I haven't seen it presented in such a way that it makes up for the risk that we're taking.

Program Challenge – Too Risky

Exemplified by the quote above, manufacturers and retailer buyers continually cited what they saw as the untenable level of risk as a reason for not participating or intending to participate in Market Lift efforts. Although the MA Market Lift initiative posed less of a risk than other efforts (since the retailer was able to maintain their normal markdown incentives), in general, Market Lift programs pay only for bulb sales achieved over a baseline. As such, if the retailer is unable to achieve a boost in sales during the lift period, they risk receiving no incentives. Furthermore, if the strategy that the retailer uses to attain lift adds costs (i.e., increased marketing/outreach, using their own resources to lower the shelf price of lift bulbs) the program could actually end up costing substantially more than it pays out. One manufacturer described the situation as follows:

> The reality is, the way that the program was structured, the risk—all the risk—is put on the retailer. And no retailer I knew was going to lay out $100,000 in pre-investment

> hoping to get something back from somebody else. Now that's simplifying the situation, I understand that. But we had a series of meetings at the corporate level, and it was just a whole lot of, "You want me to do what? You want me to invest and sell above a baseline at a discounted price that I hope to get back, provided the sales projections that the manufacturer, in conjunction with the retailer, put together as a promotion? But if I don't achieve that, I don't get my money back?" If I'm going to invest in strategies that allow me to increase revenue, why wouldn't I work with a partner who guarantees incentives?

Program Challenge – Complexity of Design

Along with the previously discussed issues of the cost and risk associated with Market Lift from the retailer and manufacturer perspective, these interviewees also agreed that Market Lift programs were more complex than other incentive programs. A markdown program offers pre-determined incentives by bulb type, and manufacturers and retailers only need to report program sales of that bulb type. In Market Lift programs, the partner needs to track sales during the program period and the pre-selected baseline period. Likewise, the payout structure is not straightforward, relying on a lift in sales over a baseline that must also take into account potential sales increases in areas that the partner has no control over, at least among potential retailers who are too small to operate in potential comparison areas. The following quotes come from manufacturer and retailer buyers who cited these complexity issues:

> 1) The RFP was 15 pages long. In my humble opinion, that's far too complex to work with on a retail level with my customers. We decided not to participate, and there were a couple of reasons why. It had a requirement that you had to exclude at least 10% of the stores in a given state from the program. It adds to the level of complexity that is extremely hard to execute. And it has all kinds of various payback levels and it's just an extremely unusual and complex approach to a utility rebate program.
>
> 2) We don't appreciate it. It's complex enough, and it just makes it very hard, and it puts us at a very uncomfortable position with our retailers when you just can't shut incentives on and off on a daily, monthly basis.

Program Challenge – Data Collection Requirements

Not only were Market Lift programs cited by manufacturers and retailers as being more complex and costly than traditional lighting programs, but the extensive data collection and reporting requirements were also referenced as a reason to forego the design. As cited in the NEEP Market Lift report, non-disclosure agreements (NDAs) are necessary for collecting the historical and program sales data required for Market Lift calculation, but the dialogue around those agreements can be very time-intensive. Further, one retailer indicated that even if they wanted to participate in the Market Lift program, they did not have baseline sales data, so they did not qualify. Interviewed manufacturers often stressed their inability to obtain the data necessary to fulfill the Market Lift reporting requirements:

1) If I'm not doing business with a retailer, it's very difficult for them to give me their information or for me to get their sales information. I'm not aware of too many retailers I'm not doing business with who would be willing to share their sales numbers with me. So that was the first barrier.

2) The paperwork was really extensive. It just came to a point where we tried to justify whether we should actually spend the time doing it. And we couldn't come to a place where we saw that the benefit was going to outweigh the cost. It was a very, very intense paperwork process.

In other words, if a manufacturer wants to take part in a Market Lift program with one of their retail partners, but the program reporting design necessitates collecting bulb sales information from another retailer to be used as a comparison group (as some Market Lift programs do), there is a very low likelihood of finding a non-participating retailer willing to share their sales information. Of course, this barrier can be addressed by utilizing comparison stores from the participating retailer—the design adopted by the Massachusetts program—but the size and structure of a retailer does not always allow for that design.

Ultimately, the feelings expressed toward Market Lift by the manufacturers and retailers interviewed as part of the MA Lighting Market Assessment (who for the most part had not participated in this type of program design) were decidedly negative. These interviewees expressed little interest in participating in such a design in the future, and did not think it was a viable program approach moving forward. As one lighting manufacturer concluded:

I participated in a conference call, amongst other utility program managers like myself at other manufacturers, and there was an uproar—literally an uproar—in the reaction to what that model was, that Market Lift program. And I would encourage whoever has any influence into creating incentive programs to reevaluate what those incentive programs are, certainly not a Market Lift strategy.

Educational Events and End Caps are Worth Added Cost

As opposed to the lighting manufacturers and retailers who had not participated in Market Lift programs, interviewees who had participated in lift programs (from different areas of the country and with different roles in their respective programs) stressed the usefulness and importance of in-store events and end caps[39] in moving promotional bulbs. The MA data support this perspective, as the single highest week of promotional CFL sales during the lift period immediately followed the one in-store event sponsored by the program (retailer and vendor in collaboration). Similar spikes in promoted bulb sales occurred in other Market Lift programs following in-store educational or promotional campaigns, and participants in Oregon and Vermont pointed to the usefulness of in-store field support, as cited in

39 End caps are displays located at the end of aisles facing the main "corridors" of a store. Retailers typically stock sale or promotional products on end caps, as shoppers will pass them without having to enter an aisle.

the NEEP report. As noted earlier, these events are not specific to Market Lift programs and can be implemented in the traditional design.

Importance of Retailer's/Manufacturer's Data Collection Capabilities

As stated above, among the many program challenges associated with Market Lift programs is the fact that they generally require more data collection and data sharing than traditional lighting programs. This is because of the need to collect detailed bulb sales information (at least for promotional bulbs and ideally for all bulb types) for the pre-lift and lift periods not just for the participating retailer, but also for an entire set of comparison areas. Many retailers simply do not have the capability to collect and share that amount of data. Indeed, this was the case with the MA retailer, who was able to participate only because the CFL manufacturer signed on to fulfill all necessary data requirements. Interviewees involved in the MA initiative had high praise for the manufacturer partner, who was described as "available, timely, and precise in all data collection activities." Interviewees from other areas also stressed the importance of working with retailers or manufacturers who were capable of fulfilling the extensive data requirements of Market Lift. An implementer from another area also indicated that a manufacturer was brought on to fulfill the data collection requirements of the effort because the retailer was unable to provide the necessary data.

Even when utilizing a manufacturer who has the capabilities to fulfill the extensive data requirements of the Market Lift design, the time and effort necessary to do so may be more than what the partner had originally anticipated when determining the scope and budget. One manufacturer interviewee who had taken part in a Market Lift effort expressed the unlikelihood of participating again. "It was very difficult to manage. We had to have weekly team meetings. It required a lot of data to be reported. And it's probably not something we'll ever do again. It was much more involvement required than we would've ever anticipated."

Viability for LEDs and other Technologies

One of the key issues that the Team wished to explore with interviewees familiar with Market Lift programs was the extent to which they believed the program could be viable for LEDs. A fairly recent addition to the lighting market, LEDs address many of the shortcomings of CFLs (i.e., warm-up time, mercury content, brightness) and have very high levels of customer satisfaction.[40]

Interviewees who had participated in Market Lift programs had fairly positive feelings about the likelihood of LED sales increasing through a Market Lift program, and therefore see the product as a viable candidate for the program design. Indeed, most program managers and implementers that the Team interviewed believed (or had been specifically told) that retailers would rather run a Market Lift program on LEDs than on CFLs because they believed they would have more success increasing sales of a bulb that already had high levels of customer satisfaction. However, given that the feature that makes Market Lift programs desirable from the program perspective is the ability to increase net savings

40 NMR. *Massachusetts Consumer Survey Results Winter 2012.* Final delivered to the PAs and EEAC Consultants on May 30, 2013.

through reduced free ridership,[41] many on the implementation side thought it would take time before LEDs could actually be utilized in lift programs. That is, at the time of the Market Lift initiative, there was no attributable free ridership on LEDs in MA. As such, there would be no benefit to running a Market Lift program on them. When and if the attributable free ridership rate on LEDs increases, it is likely that they will become a viable candidate.

Manufacturers and retailers who had not participated in lift programs, however, were more divided in their feelings about LEDs being a viable product for the design. While these interviewees almost unanimously criticized the program approach for CFLs, some did think that the ability of Market Lift programs to increase the awareness and educational aspects of products could be a benefit for a newer technology like LEDs. For example, one manufacturer stated, “If it were a Market Lift for LED products, I would be willing to participate, yes. It needs to increase awareness to get better market share.” Nonetheless, many manufacturers and retailers who did not participate in lift had the opposite sentiment:

> No, for the same reasons, and even more so. Because the cost of LEDs, as much as [it has] decreased over time, to invest in promoting and offering discounts on something that just seems so flighty and not a significant savings and not significant in terms of making sure that you're even going to be compensated back for the marketing efforts that have happened. I would shy even more away from doing such a program with LEDs.

Interviewees also tended to share the sentiment that Market Lift programs are likely not as viable for other emerging technologies (i.e., products other than light bulbs) for this same reason—lift programs are best implemented on products with high free ridership (although there may be alternatives to Market Lift for programs with high free ridership, including possibly stocking incentives for distributors). Nonetheless, the interviewees communicated that lift does seem appropriate for technologies that are currently efficient, but in which there is a desire to move the market more quickly or substantially. White goods[42] were often cited as being particularly viable candidates for lift efforts moving forward, particularly by interviewees running programs outside of MA. “White goods are where we could see this being really applicable. I’m not sure that it would be successful in terms of more expensive products like HVAC. Maybe water heaters, but the white goods are where I would see this being really successful.” A similar feeling was echoed by a manufacturer who had not participated in lift: “It works great for appliances, but it doesn’t work great for lighting.”

Market Lift on a National Level

A question of interest to both the Team and those interested in the viability of Market Lift more generally is whether this type of program design could work on a broader scale such as the regional or even national level. Programs implemented thus far have been focused on individual states or programs.

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[41] Since Market Lift programs pay only for the net increase in sales above a pre-established baseline, program sponsors are able to claim 100% of savings on the bulbs that are incentivized.

[42] White goods are large pieces of household equipment, like refrigerators and washing machines.

While interviewees expressed great interest in the possibility of Market Lift programs expanding, they also voiced some doubt about the possibility from the perspective of the retailer, who for the most part (especially for large national chains) have not taken much interest in Market Lift. Those who have implemented programs and are familiar with lift calculations also question what could be used as a control group if the program were to be run nationally. Overall, most interviewees were positive about the possibility of implementing regionally or nationally, but admitted that lift programs would need to gain more traction and visibility as viable approaches before they would become feasible at a national level or with a national chain. As one MA PA noted:

> I do [think it could work on national level]. There were national events that occurred throughout our Market Lift initiative. You can see the increase in sales in the control states as well as in MA—so that's why you have control states—but if they had a way to be incented to do it all over the place, I think they could be very successful with their strategies. They're not thinking, "We need to increase the sales in MA"; they're thinking, "We need to increase the sales everywhere." They do recognize certain states, like CA, MA, NY, as their flagship states that sell the most bulbs and move the most product, so there's something there in terms of their recognition of us. It was a very interesting process talking to them, seeing how they think. If we increased the program budget, if we had a lot more dollars to spend, I think we could go after a bigger retail partner and see if they were interested in it. But it would have to be the right partner. I think that price is still the thing the consumer's most sensitive to.

Conclusions, Recommendations, and Considerations

Ideally, a Market Lift effort would be self-evaluating, with the comparison area serving as a perfect baseline or counterfactual for the Market Lift area—a type of quasi-experimental design. Because the program pays only for the net increase in sales above a pre-established baseline, program sponsors are able to claim 100% of the savings on the promoted bulbs sold above that pre-lift period, thereby eliminating free ridership. The accuracy of the estimate of net Market Lift achieved by the program, then, depends on the extent to which the change in the comparator areas serves as the appropriate counterfactual for the treatment area.

The Market Lift program design is a contentious one, with many in the lighting field vehemently denying the viability of the approach moving forward. Given that those who would need to be recruited for future Market Lift efforts (i.e. retailer buyers and manufacturers) have such negative feelings toward Market Lift, the design is likely to continue being a difficult one to implement.

However, we offer the following recommendations and considerations should the MA PAs and EEAC consultants choose to continue pursuing Market Lift as a program strategy in the future:

Recommendation 1: Stress the Continuation of Incentives in Negotiations with Retail Partners

One of the main concerns that retailers have with Market Lift efforts in general is that in areas with a history of incentive or markdown programs, they fear losing those incentives by signing onto a Market Lift contract. Certainly, if retailers are expected to take on the responsibility for increasing CFL sales when CFLs are less expensive at a retailer down the street, then the value proposition of Market Lift is nonexistent. However, the MA Market Lift initiative was designed specifically as a hybrid program in which participating retailers would maintain their previous bulb incentives but *also* be rewarded for any lift achieved on CFL sales. This dual-incentive structure should make the program very desirable to potential retailers, but the preservation of previous incentives must be emphasized in negotiations. Indeed, the dual-incentive structure is critical to retailers and manufacturers operating in states like MA, who will not take on the risk of increasing sales over a baseline unless they are assured of markdown incentives. As mentioned previously, however, providing incentives for the lift achieved as well as maintaining prior markdowns makes this type of Market Lift design very costly. The additional net bulb sales achieved must be weighed against the added costs of implementation.

Recommendation 2: Focus on Manufacturers' and Retailers' Data Collection Capabilities

The manufacturer partner in the MA initiative played a significant role in all data provision and collection efforts. Without the manufacturer, the retail partner would not have been able to participate in the initiative, as they do not collect the level of data required to calculate lift. Future Market Lift efforts must take into account the capabilities of a particular retailer in collecting and providing data, and consider continued usage of a manufacturer partner for retailers unable to meet the data requirements.

Recommendation 3: Increase In-Store Events and Field Support

Although only one participating store in MA held an educational event during the lift period, it led to an upsurge in CFL sales immediately following. Interviews with Market Lift program managers and implementers outside MA detailed the same finding—that in-store events were influential in increasing sales of program bulbs (a finding that is applicable to most, if not all, program designs). Further, one of the main findings from the NEEP Market Lift report was that participating retailers placed great value on in-store field support (including measures like in-store assistance with signage, training, and stocking practices) provided in the Oregon and Vermont efforts.[43] Should the program continue in MA, the Team recommends more of these events as a means of boosting sales and increasing in-store field support. Moreover, the Team believes that this knowledge could also apply to regular incentive/markdown programs, and that in-store events may encourage increased efficient bulb sales generally.

<u>Consideration 1</u>: **Utilize In-State, In-Store Comparison Group with a Market Share Lift Calculation**

The PAs and EEAC consultants planned the Market Lift program to focus on retailers with ample store locations in MA such that both the treatment and control stores would be within the state. However, MA could not find a willing retailer that fit this description, and the size of the participating retailer for the initiative as well as the bulb types offered in their stores required a deviation from the ideal program design, making the effort a quasi-experimental design, but an imperfect one. Since the retailer did not have a sufficient number of stores in MA, the comparison area stores were selected from the retailer's stores in two other states. Further, since the only types of bulbs offered by the retailer were CFLs and LEDs, a market share-based approach was untenable. Instead, the absolute change in the number of CFL bulbs over the pre-lift period in MA and comparison area stores was used to compute the lift.

The first comparison area was a state that had a similar history of running programs as MA and the second comparison area was a state that had not historically offered program incentives on CFLs. The analysis of the sales data from the treatment and comparison area stores showed that the calculation of net lift was sensitive to the selection of the comparison areas because the trends in bulb sales in those areas were very different from one another.

An ideal quasi-experimental design for the Market Lift initiative would require a large number of stores in MA to be randomly allocated to treatment and control groups and for the sales data of both efficient (Category A) and inefficient (Category B) light bulb categories to be collected from all stores. The lift would then be measured as the change in market share of efficient light bulbs for the treatment area stores over the pre-lift period minus the change in market share of efficient light bulbs for the control area stores over the pre-lift period:

$$(\Delta\left(\frac{Cat.\ A}{Cat.\ A+Cat.\ B}\right)_{Treatment} - \Delta\left(\frac{Cat.\ A}{Cat.\ A+Cat.\ B}\right)_{Control})$$

43 Northeast Energy Efficiency Partnerships *Residential Lighting Market Lift Pilot Final Report.* Delivered July 3, 2014.

Although the current lift calculation does use percentages to determine incentive levels, it does not use the market share approach. The limited number of bulb types offered by the participating retailer (CFLs and LEDs only) and their policy that products must have the same shelf price at all in-state locations made the market share calculation unviable. The Team understands that the demographics of the current participating retailer did not allow for either an in-state comparison group or a market share-based lift calculation. The Team also recognizes that the realities of the residential lighting market often make it impossible for programs to be designed exactly as the implementer or evaluator would recommend. In any case, should MA wish to update the design of its Market Lift program moving forward, these programmatic changes would allow for a clearer attribution of the effort. It may be that only retailers with sufficient numbers of MA stores to allow for an in-state comparison should be considered for future Market Lift efforts.

Consideration 2: Consider Cost-Effectiveness Analyses

The added cost of implementing the Market Lift program in MA (which already has a markdown program in place) was substantial. The Team has suggested that in order to evaluate the success of the program, one must weigh increased efficient bulb sales against increased implementation costs. Though it is beyond the scope of the current evaluation, the Team suggests considering full-fledged cost-effectiveness analyses moving forward in order to answer the question definitively of whether the observed increases in CFL sales/net savings justify the added program costs.

Consideration 3: Rename or Rebrand Market Lift

Interviewees, particularly those who had implemented or were in the process of implementing Market Lift programs, continually stressed the difficulty in securing retailer partners to participate in their initiatives. One interviewee even suggested that larger chain retailers had intentionally boycotted any proposals mentioning Market Lift. Given the desirable aspects of Market Lift programs that do not drop markdown incentives currently in place (like the MA effort) from the retailer perspective, it is worth considering renaming or rebranding the strategy to avoid the negative connotations that so many retailers appear to share toward the term *Market Lift*.