Row, Row, Row your Commercial Lighting Program Simply Down the (Mid)-Stream?

Amy Buege and Luke Scheidler, Itron
Kevin Grabner, Navigant

ABSTRACT

Energy Efficiency Programs that focus on the sales of high efficiency light bulbs to commercial customers come in a variety of shapes (CFLs, LEDs, Linear Fluorescents, etc.), sizes and delivery methods. The varied delivery methods of these commercial programs each have pros and cons when it comes to ease of customer participation, cost and complexity to administer, and ability to effectively evaluate.

This paper will focus on the transition of one utility's commercial high efficiency linear fluorescent and LED lighting efforts from a downstream program to a midstream lighting program. Specifically, this paper will address the impact this transition had on: 1) participant and trade ally program awareness, participation, and satisfaction, 2) the volume of lighting measures sold through the program, 3) the ease of program implementation and fulfillment, and 4) the relative difficulty and accuracy of evaluating program impacts. Additional scope will focus on the types of commercial customers participating via the downstream versus midstream channels and whether the new program delivery method has affected which segments of the commercial sector participate in the program.

Introduction

Energy Efficiency Programs that focus on the sales of high efficiency light bulbs to commercial customers come in a variety of shapes (CFLs, LEDs, Linear Fluorescents, etc.), sizes and delivery methods. The varied delivery methods of these commercial programs each have pros and cons when it comes to ease of customer participation, cost and complexity to administer, and ability to effectively evaluate.

This paper examines one utility's transition of their non-residential incentive program for LED and linear fluorescent bulbs from a downstream multi end-use downstream program to a midstream lighting distributor focused program and provides insights on the results of this transition. Currently, few utilities across the US offer commercial upstream or midstream lighting programs, although due to the success of programs such as the one analyzed for this paper, this may begin to change. The purpose of this paper is to present the experience and lessons learned of one utility as they transitioned to a midstream rebate approach for commercial lighting rebate programs.

Description of Utility Programs

The utility included in this case study serves a large metropolitan area that is surrounded by significant suburban and rural communities. This utility offers their non-residential customers a variety of energy efficiency programs that target a wide spectrum of end-uses. One of these programs is a downstream program which began in 2008 and provides downstream incentives for business customers who upgrade their facilities with energy efficient equipment.

Through this program, pre-determined incentives are made available to the utilities commercial and industrial customers for common energy efficiency measures to facilitate the implementation of cost-effective energy efficiency improvements. Eligible projects must involve new equipment installed at an existing facility that results in a permanent reduction in electrical[1] energy usage (kWh). Eligible measures in this program include items such as energy-efficient indoor and outdoor lighting, HVAC equipment, refrigeration, commercial kitchen equipment, variable speed drives, and compressed air equipment.

To participate in the downstream program, a customer submits an application with project documentation, including project specification sheets and copies of dated invoices for the purchase and installation of the program measures. The program implementer reviews submitted applications and, if the project is approved, sends an incentive check to the customer within 4 to 6 weeks. The utility primarily leverages the relationship between the account manager and/or lighting contractor and their customers to promote the program.

Another relatively new program offered by this utility is a midstream lighting program that provides instant[2] incentives commercial end-users to increase the market share of energy efficient lighting products sold to this market. The program was designed to provide an expedited, simple solution to business customers interested in purchasing efficient lighting by providing instant discounts at the point-of-sale, as opposed to having to submit individual customer applications as is required by the downstream program. The midstream lighting program was launched as a pilot in June of 2010 and was a full scale program starting in June of 2011.

The midstream lighting program offers pre-determined cash incentives and marketing support for select bulb types that reduce the input wattage of a lighting system but do not require re-wiring of the light fixture. The program is open to distributors selling directly to commercial and industrial end-use customers[3], as well as contractors, within the utility service territory and leverages the relationship between lighting distributors and their customers to promote the program. As an electrical distributor trade ally, no pre-authorization of customer sales is required. The distributor reports bulb sales during a specified period of time, complete with bulb type, customer information, quantity sold, and the value of the incentives paid[4]. Distributors are reimbursed for the incentives passed on to customers based on the type and number of bulbs sold.

Program Transition

Since its inception, the downstream program has incentivized a wide variety of lighting measures including bulbs, ballasts, fixtures, lighting controls, illuminated signage, and fixture delamping. In 2012, select bulb-only measures were transitioned to the midstream lighting program, which had previously included only standard, specialty and high-wattage CFLs. linear fluorescent bulbs, LEDs, high intensity discharge (HID) bulbs, and cold cathode FLs (CCFLs)

[1] Utility is an electric-only utility so program focus primarily on electric savings.
[2] Point-of-sale.
[3] The program targeted lighting distributors whose customer base is predominantly end-users, as opposed to those distributors who sell mostly to contractors.
[4] Due to the nature of the upstream program, distributors are not able to report on the percentage of program bulbs installed or the prior bulb type that the program bulb is replacing. As a result, evaluation activities have focused on estimating a 3-year installation rate curve and the level of free-ridership amongst program bulb purchasers.

were transitioned out of the downstream program in 2012, the downstream program did continue to offer incentives on a wide variety of other lighting measures after the transition.

Table 1 below shows the lighting measures incentivized through the downstream and midstream programs in 2011 (pre-transition) and 2012 (post-transition). The measures highlighted in bold were the measures moved from the downstream to the midstream lighting program. As this table shows, while linear fluorescent bulbs, LEDs, high intensity discharge (HID) bulbs, and cold cathode FLs (CCFLs) were transitioned out of the downstream program in 2012, the downstream program did continue to offer incentives on a wide variety of other lighting measures after the transition.

Table 1. Lighting measures incentivized through the downstream and midstream lighting programs in 2011 and 2012

	2011	2012
Downstream Program	High Wattage CFLs **Cold Cathode FLs** Hardwired CFL Fixtures **Interior**/Exterior **Metal Halide Lamps** Metal Halide Integral Ballast Lamps **Linear Fluorescent Lamps** Linear Fluorescent Lamps + Ballast Linear Fluorescent Fixtures Delamping Bi-Level Fixtures **LED Lamps** LED Fixtures Exterior LED and Induction Fixtures LED Signs (Exit, Display) Occupancy Sensors Daylighting Controls Photocells Timeclocks Sensor Controlled Wall-pack Fixtures	High Wattage CFLs Hardwired CFL Fixtures Interior/Exterior Metal Halide Lamps Metal Halide Retrofit Kits and Fixtures Linear Fluorescent Lamps + Ballast Linear Fluorescent Fixtures Delamping Bi-Level Fixtures DLC LED Fixtures Exterior LED and Induction Fixtures LED Signs (Exit, Display) Occupancy Sensors Daylighting Controls Photocells Timeclocks Sensor Controlled Wall-pack Fixtures
Midstream Program	Standard CFLs Specialty CFLs High Wattage CFLs	Standard CFLs Specialty CFLs High Wattage CFLs **Cold Cathode FLs** **Metal Halide (HID) lamps** **Linear Fluorescent lamps** **LED lamps** LED Trim Kits

*Items in **Bold** moved from the downstream to the midstream program.

Rationale of Transition

The utility included in this case study had several reasons for transitioning bulb-only measures from their downstream program to their midstream lighting program. The first rationale was that the downstream program at this utility was a large multiple end-use[5] program, which accounted for 62% of the utility's overall non-residential energy efficiency program energy savings in the year prior to the transition. While lighting measures made up a large percentage of the overall downstream program savings (84%), the majority of these lighting savings were from linear fluorescent fixtures (47%) and linear fluorescent bulbs + ballasts (18%). The sales of LED and linear fluorescent bulbs accounted for less than 7% of the total lighting savings (5% of program-wide savings). These bulbs types were essentially "lost in the weeds" as a small measure category dwarfed by other larger program measures. Within a large program, such as the downstream program, it was hard for these smaller lighting measures to be a focus. Transitioning these measures to the midstream lighting program allowed for a concentrated effort to be directed towards maximizing the performance of a previously underperforming[6] large-potential product category.

A second rationale was, at the same time LED and linear fluorescent bulbs were not a focus of the downstream program, the new midstream lighting program was having difficulty enrolling lighting distributors in a program focused solely on standard and specialty CFLs. Because these bulb types were not a high sales volume market for most commercial and industrial lighting distributors, the utility was having a hard time convincing them to become involved with such a program. Increasing the offerings of the midstream lighting program to include LED and linear fluorescent bulbs was an asset to the program, as once reluctant distributors were significantly more interested in program participation with these bulb types added to the mix of program qualified bulbs.

A third rationale was to minimize the paperwork burden experienced by some customers to participate in a program that was offering minimal incentives ($1 per bulb for linear fluorescents). Feedback from customers indicated that many felt it was not worth the effort to complete and submit a long application form for what could amount to a small incentive payment. The midstream program design consolidates the paperwork burden to a relatively small group of distributors, but each have a significantly larger stake in the game – distributors can invoice for thousands of bulbs at a time, whereas a single consumer is likely to purchase between a handful and a couple of hundred (68% of end-user transactions across a single program bulb types are for 30 or fewer bulbs).

And finally, the utility hoped that transitioning these bulbs to the midstream lighting program would allow them to expand the reach of this program, and thus allow for deeper program penetration, by utilizing the existing relationships lighting distributors have with a large percentage of the target market of end-users (i.e. commercial and industrial customers purchasing light bulbs within the utility's service territory) and the contractors selling to these end-users. The downstream program was primarily marketed by account managers and retrofit contractors and therefore the population of utility customers who purchased their lighting through stock and flow distributors was often missed entirely. The midstream lighting program

[5] Including lighting, HVAC, refrigeration and commercial kitchen equipment, VSD, and compressed air equipment.
[6] Although the incremental cost of the high efficiency bulbs is often very minimal (compared to a say a high efficiency HVAC unit), many customers will tend to go with their status quo and buy whatever they are used to.

currently has relationships with upwards of 70% of lighting distributors within the utility's service territory.

Impact of Change

The transition of LED and linear fluorescent bulb sales from the downstream program to the midstream lighting program impacted both of these utility programs in a variety of ways. The section below describes the impact this change had on the volume of high efficiency incentivized bulbs sold by the utility, end-user and lighting distributor participation in and satisfaction with this utility's energy efficiency lighting programs, the cost of program implementation, and the evaluability of energy efficient light bulb program sales.

Program Bulb Sales

The transition of LEDs and linear fluorescent bulbs from the downstream program to the midstream lighting program was followed by a significant increase in the volume of program bulb sales. Table 2 below shows the volume of LED and linear fluorescent bulb sales in the years before and after the transition, as well as the percent increase in sales between the two program years. As this table shows, LED sales increased almost 150%, and linear fluorescent bulbs sales increased over 200%. It should be noted here that a portion of the increase in LED sales is most likely attributable to the reduction in price and the increase in acceptance and availability resulting from the relatively recent introduction of LEDs into the marketplace.[7]

Table 2. LED and linear fluorescent bulb sales in the 2011 downstream program and 2012 midstream lighting program

Bulb Type	2011 Downstream Sales	2012 Midstream Sales	Percent Increase
LED bulb	81,860	202,433	147%
Linear FL	148,926	503,627	238%
Total	230,786	706,060	206%

The midstream lighting program experienced a significant increase in program bulb sales from the pre-transition year to the post-transition year primarily due to the inclusion of the LED and Linear FL bulbs (across all midstream lighting measures sales increased from around 600,000 bulbs the year prior to the transition, to over 1.3 million bulbs the year after the transition, an increase of greater than 200%). Comparatively, transitioning LEDs and Linear FL bulbs out of the lighting portion of the downstream program resulted in less than a 1% drop in the downstream program lighting measure sales.

End-User Participation

Figure 1 andFigure 2 below show the distribution of LED and linear fluorescent bulb sales by business type in the 2011 downstream program versus the 2012 midstream lighting program.

[7] While it is difficult to disaggregate the effects of the growing LED market from the effects of the program transition, it is clear that the LED market is, and will continue to, expand rapidly. Navigant Research estimates that shipments of LED products will expand at a compound annual growth rate of 44.3% through 2021 (http://www.navigantresearch.com/newsroom/led-lamp-shipments-to-reach-nearly-1-3-billion-units-by-2021).

While total bulb sales for both LEDs and linear fluorescent bulbs increased considerably for the majority of business types, the data are presented as a percentage of total bulb sales in each bulb category to identify business types that were served better (or worse) by the midstream lighting program. For LEDs, there are notable increases in the percent of program bulbs sold to the following business types: apartment/condo, hotel/motel, industrial, and offices, and a decrease in the percentage going to retail/service businesses. It should be noted that although sales to retail/service decreased drastically on a percentage basis, total sales volumes were nearly identical in the 2011 downstream and 2012 midstream lighting programs. Thus, the percentage decrease is more a function of higher sales to other business types than reduced sales to retail businesses. This indicates that the midstream lighting program may be more effective at selling LEDs to a wider variety of business types, as opposed to the downstream program, where sales were overwhelmingly skewed to the retail/service sector.

The midstream lighting program appears to be more effective at increasing LED sales in most business types. This is potentially due to the fact that LEDs, like CFLs, are typically purchased for specific applications and are not often purchased in extremely large quantities (as opposed to linear fluorescent bulbs). End-users purchasing relatively low quantities of bulbs are presumably less likely to apply for incentives due to the large paperwork burden relative to the incentive received. This assertion is further supported by data presented in the "Distributor Participation" section, below.

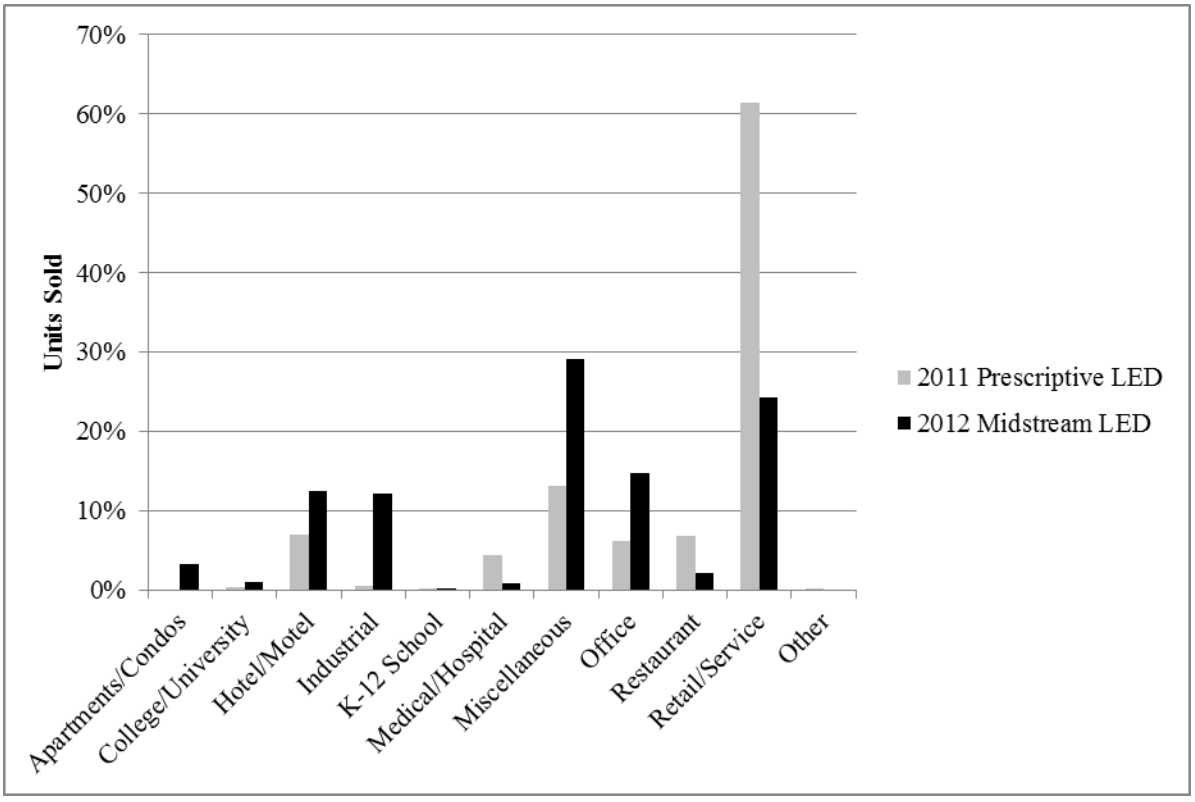

Figure 1. Distribution of LED bulb sales by business type in downstream vs midstream lighting programs.

For linear fluorescent bulbs, Figure 2 shows small increases in the percent of bulbs sold to apartments/condos and industrial businesses, and a large increase in the percent sold to offices. Linear fluorescent bulb sales percentages dropped substantially for medical/hospital and

retail/service businesses, while smaller decreases were seen for college/university and "other" businesses.[8] On a percentage basis, the midstream program does not appear to be more effective at reaching particular customer segments for LF sales. As described above, many of the businesses that purchase linear fluorescent bulbs purchase large quantities of bulbs, which makes applying for a downstream incentive more worthwhile due to the large incentive received. The large percentage increase in the office business type in the midstream program could be due to the program reaching more small businesses that purchase smaller quantities of bulbs. While several business types saw a reduction in sales on a percentage basis, total LF sales increased dramatically for the industrial, office, and retail segments.

For both bulb types, there is a large increase in the Miscellaneous[9] category due to the fact that business type was collected as part of the downstream application process, whereas business type was not collected from program participants in the midstream program and thus was extracted whenever possible[10] from the business name of the participant.

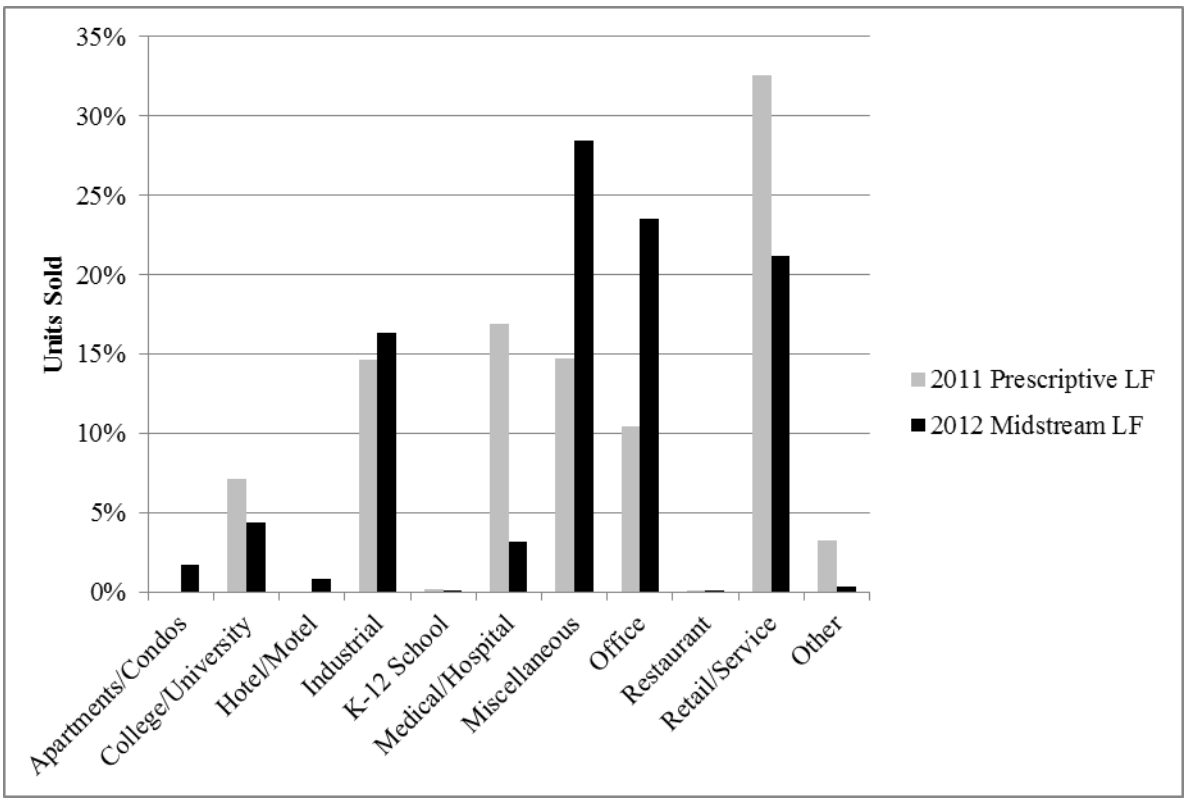

Figure 2. Distribution of linear fluorescent bulb sales by business type in downstream vs midstream lighting programs.

[8] The "other" category includes garages and warehouses.

[9] Note that the downstream program assigns apartments and condos to the miscellaneous category, so sales between the two programs cannot be compared for this business type.

[10] The evaluation team was able to extract an estimate of business type based on customer name recognition (for example, 'Verizon Wireless' is a retail store) for approximately 70% bulbs sold through the midstream lighting program.

Distributor Participation

In 2012, midstream lighting program sales came from a total of 75 unique distributors (out of the 84 unique distributors enrolled) which is a significant increase in the number of distributors participating in the program prior to the transition (only 18 distributors sold bulbs through the midstream program in 2011). Additionally, in 2012 the percentage of enrolled distributors who actually sold program bulbs was 88%, up from 46% prior to the transition. Due to the nature of the midstream lighting program, distributors are critical to its success. In-depth interviews conducted with distributors as part of the evaluation of the midstream lighting program suggested that the addition of LEDs and linear fluorescent bulbs made the program more attractive to them. The interviews revealed that LEDs, in particular, were an important offering in 2012 and will likely be even more important in future years. All ten distributors interviewed sold LEDs through the midstream lighting program; seven of the ten said that the inclusion of LEDs was a very or somewhat important reason why they participated in the program. These distributors noted the growing popularity of LEDs among their customers. One distributor said he participated because LED rebates were no longer available through the downstream program, and he wanted to continue to offer the rebates to his customers.

The inclusion of linear fluorescent bulbs was slightly less important to the five interviewed-distributors who sold linear fluorescent bulbs; two of five said the inclusion of linear fluorescent bulbs was very or somewhat important to their participation. One of the distributors who participated in 2012 due to the inclusion of linear fluorescents noted that LEDs will be more relevant to his customers in the future.

Two distributors who said that the inclusion of LEDs and linear fluorescent bulbs was "not at all" important in their decision to participate in the midstream program went on to say that "the additional categories made the program infinitely more effective in terms of impact it had on the market" and "it was definitely a big driver of our sales." This response indicates that although they still would have participated in the program had these bulbs not been included, these bulb types were important to their level of program participation.

Sales data from the 2011 downstream program and the 2012 midstream lighting program support the idea that the inclusion of LEDs and linear fluorescent bulbs in the midstream lighting program was correlated with increasing sales of high efficiency bulbs for participating distributors and the assertion that a midstream lighting program is more effective at reaching a wider range of customers (especially those wishing to purchase a smaller number of bulbs).

Table 3 below shows total LED and linear fluorescent bulbs sales, the number of transactions, and the number of bulbs per transaction across all distributors who sold these bulb types through both the downstream and midstream lighting programs.[11] As this table shows, the total number of bulbs sold by these distributors through the midstream lighting program was considerably higher than in the downstream program (three times greater for LEDs and nearly 16 times greater for linear fluorescent bulbs). Both the average number of bulbs per distributor and the average number of transactions per distributor also increased dramatically. The average number of bulbs per transaction, however, decreased by over 70% for LEDs and over 80% for linear fluorescent bulbs, indicating that the midstream program seemed to capture a larger number of "small" transactions that were likely lost in the downstream program.

[11] There were 26 distributors who sold LEDs and/or linear fluorescent bulbs through both the 2011 downstream program and the 2012 midstream lighting program.

Table 3. Sales summary of LED and linear fluorescent bulbs for distributors participating in both the 2011 downstream and 2012 midstream lighting programs

	Downstream Program		Midstream Program	
	Total	Avg per Dist	Total	Avg per Dist
Number LEDs Sold	42,732	1,858	131,544	5,262
Number of LED Transactions	227	10	3,435	137
Avg LEDs per Transaction	188	215	38	59
Number LFs Sold	27,112	1,937	424,350	22,334
Number of LF Transactions	42	3	1,870	98
Avg LFs per Transaction	646	1,215	227	230

Program Costs and Incentives

The incremental cost of expanding a midstream lighting program to include additional bulb types is quite minimal. Because the measures incentivized through the midstream lighting program are pre-approved, there is only a minimal amount of information that needs to be captured and submitted by distributors for incentive processing (bulb type, basic customer information, quantity sold, and total incentive value). Individual distributor sales records are aggregated and submitted in batches to the midstream lighting program implementer at regular intervals throughout the program year, which makes for a streamlined and relatively low-cost invoice review and approval process. On the other hand, program costs for the downstream program are reduced in the absence of LED and linear fluorescent program bulb sales, as hundreds of individual applications for these transactions no longer need to be reviewed by program staff. The non-incentive program costs are therefore reduced considerably, while the incentive costs remain unchanged (the incentives paid per bulb are independent of the program delivery channel). For this particular case study the incentive per linear fluorescent bulb remained consistent between the two programs, and the incentive per LED was reduced from $10 to $8; however this reduction in LED incentive was likely driven by the price of LEDs coming down in the market between the two program years and thus a reduction in the required incentive to achieve a desired final incentivized sale price.

Distributor and End-User Satisfaction

Increasing sales was a key reason for participation in the midstream lighting program for many distributors. Six of the ten interviewed said that the primary reason they got involved with the program was to grow their sales and to pass the savings along to their customers, and overall, the distributors we interviewed were satisfied with the sales the program generated. The average rating using a scale that ranged from zero ("very dissatisfied") to ten ("very satisfied") was 7.3. In addition, eight out of ten distributors said the sales either met or exceeded their expectations. The two distributors who said their expectations were not met were the only ones that were dissatisfied with their program sales. These distributors saw value in the rebates but had internal challenges incorporating the program into their sales process. One distributor said:

> *"We know there is opportunity out there; we just haven't yet cracked the code on how to offer this most effectively to our customers"*

Another commented:

> *"We sold a lot of products that qualify but we were having difficulty getting everything together, getting our different branches and sales people on board to follow the process, to receive the incentive"*

The utility and the program implementers have strived to improve the midstream lighting program in the 2013 program year and to address these problems. Program changes include developing a standardized list of pre-approved products that is regularly updated and readily available on-line and developing clear and concise program literature that explains the efficient bulb options and their advantages in order to educate sales staff.

An examination of the factors that end-users consider when purchasing lighting makes clear the importance of distributors being fully trained on how to most effectively make use of program educational and incentive information. As part of the midstream lighting program evaluation, end-users were surveyed on what factors they consider when purchasing lighting for their business. The responses show that price is a key factor in their purchase decisions, but not the only one. The top response given by end-users was the needs of the particular situation (35%), followed by price (28%) and energy efficiency (16%). Since there is an energy efficient option for nearly every situation, it is important that distributors make their customers aware of the options available so they do not simply purchase what is already in the fixture, which was the response of 16% of end-users. Nine percent of respondents indicated they rely on recommendations from sales representative to determine which lighting product to purchase which is an additional opportunity to make use of program marketing and educational materials.

Despite the availability of utility discounts on a wide variety of lighting products in the 2012 midstream lighting program, 27% of end-users who purchased discounted bulbs also purchased incandescents for their business. These customers were asked why they purchased incandescent bulbs instead of LEDs. The responses are shown in Table 4, below. The largest portion of respondents (42%) indicated that LEDs are still too expensive. The next largest group (21%) could not find the specific discounted LED bulb type that they required. Both of these barriers are likely the result of LEDs being a relatively immature technology and should decrease over time in part due to the influence of the utility programs in the marketplace.

Table 4. End-user reasons for purchasing incandescents instead of LEDs in 2012 midstream program

How significant were the following factors in your decision to purchase incandescent bulbs instead of LEDs?	% of Respondents
Do not like the way LEDs look in a fixture	9%
Could not find the type of bulb I needed as a LED	21%
Do not like the quality or brightness of light LEDs produce	9%
LEDs are too expensive	42%
Unfamiliar with LEDs that replace incandescents	13%

End-user awareness of the options, costs, and benefits seems to be an issue for some end-users who purchase linear fluorescent bulbs. Just over one-third of end-users surveyed (34%)

reported purchasing standard efficiency linear fluorescent bulbs for use in their business since June of 2012. When asked why they did not purchase high efficiency fluorescent bulbs instead, approximately one-third (32%) said the cost of high efficiency linear fluorescents was a significant reason for why they purchased standard efficiency bulbs. An equal percentage (32%) said a lack of familiarity with high efficiency linear fluorescent bulbs was a significant reason. These end-users are missed opportunities for the program. With the incentive, the price of the high efficiency bulb is the same as the standard efficiency bulb. Distributors could use some additional training to ensure they are making their customers aware that an energy efficient linear fluorescent bulb option exists and that it will not cost them more.

Evaluability of Program

As mentioned previously, one significant benefit of moving the LED and linear fluorescent bulb sales from a large multiple end-use downstream program to a smaller midstream lighting specific program is that the sales of these two technologies are no longer "lost in the weeds" as a small measure category dwarfed by other larger program measures. This becomes evident in program evaluation where resources for a large program evaluation are often allocated across program measures based on the percent of program savings the measure accounts for. This was certainly the case for LEDs and linear fluorescent bulbs within the downstream program. In their last year in downstream program, only 8% of the LED and linear fluorescent bulb sales made it into the net-to-gross (NTG) analysis, which was too small a percentage to allow for a measure specific estimation of NTG to be calculated for these bulb types. Within the midstream lighting program, the sales of these bulb types made up 54% of the total measures sold and thus detailed evaluation results (including installation rate and NTG) were estimated individually for each of these bulb types.

One drawback of transitioning these measures to a midstream lighting program is the loss of participant information (such as utility account number and business type[12]) that in a downstream program is captured on the program application. The point-of-sale nature of a midstream program, and thus the lack of a formal participant application, means that the amount of participant data collected is significantly reduced which can be problematic for evaluation purposes. Many evaluation efforts rely on participating customer surveys which are difficult in the absence of reliable customer name and telephone number data. Additionally, the lack of business type information on participants' means that critical impact estimation parameters, such as Hours-of-Use, Peak Coincidence Factors, and Energy and Demand Interactive Effects are more often assigned to program participants based on a "Miscellaneous" categorization as opposed to the actual business type occurring at the participating facility. Working with distributors to create a process that would allow them to capture, at a minimum, customer telephone numbers along with the program bulb sales data, would significantly aid in the evaluability of these types of programs. Currently, a number of distributors participating in the midstream program that paper is focused on are already doing this and they report it is adds very little incremental effort to their participation.

[12] This data was not captured by the program included in this case study, however the authors of this paper believe a portion of this data is being captured by a program offered in another service territory.

Barriers to Transition

Currently, nationwide very few utilities offer commercial upstream or midstream lighting programs. However, due to the success of programs such as the one analyzed for this paper, this may begin to change in the future. One of the primary barriers to the transition of a lighting program from a downstream to midstream delivery is having a strong tie to the electrical lighting distributor market (either on the part of utility staff or the program implementation team). As more of these programs get off the ground, it is anticipated that these relationships, especially with national lighting distributors, will continue to grow and will facilitate future growth of such programs.

Conclusions and Recommendations

In conclusion, the transition of non-residential LED and linear fluorescent bulb sales from a downstream program to a midstream lighting program for this utility had numerous upsides, including:

- Increased program bulb sales,
- Concentrated effort directed towards maximizing the performance of a previously underperforming large-potential product category,
- Reduced implementation costs,
- Reduced upfront costs and paperwork burden for program participants,
- Increased reach of the program to a wider variety of end-users, as well as to end-users purchasing smaller quantities of program bulbs, and
- Ability to focus evaluation efforts on bulb type specific estimates of impact parameters, such as installation rate and NTG.

Based on lessons learned by this utility, the following recommendations are proposed to any utility considering making such a transition of their non-residential light bulbs focused program offerings:

- Communicate clearly with distributors about program reporting requirements and set up easy to use templates that work within their existing information system,
- Create clear, easy to follow program reporting requirements that includes the customer contact information required for program evaluation purposes,
- Make sure the midstream lighting program is staffed (either on the utility or implementation side) with a individual with strong ties to the electrical lighting distributor market, and
- Create a comprehensive database of program qualified bulbs prior to the start of the program year so that distributors are not faced with uncertainty regarding program bulb status.