

Marketing Effectiveness – EE “Gateway”

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ABSTRACT

Evaluating marketing effectiveness, to date, has generally focused on customer response rates for a single program. Our recent findings reveal that evaluating marketing effectiveness across two or more programs, or in light of a sequence of promotional activities, is more effective in many cases. Preliminary analysis indicates that the value proposition of improved marketing effectiveness even steeply discounted for “provability” is fewer than 3 cents per kWh, making marketing effectiveness a readily cost effective acquisition strategy for efficiency. As utilities begin to promote behavioral /feedback programs (e.g., energy reports, real time displays), and technologies emerge which naturally gather and provide feedback and tips to customers, it is natural to begin to wonder what the potential leverage effect might be for these behavioral programs, in combination or in sequence. In our findings, energy reports tend to encourage participation in some energy efficiency (EE) programs more so than others. Knowing more precisely which sequences, or combinations, are more effective provides energy managers insight to effectively implement their programs. We can begin to explore new notions of sequential promotion (e.g., identify the number of direct mail follow-up pieces that maximize participation), and which EE programs cross-sell effectively. This paper explores the interrelationship between various EE programs across three states in Duke Energy’s service territory, and examines the “gateway” effect of participation within one program that leads to participation in another. More importantly we view this effect across programs and time, providing study results of the best “gateway” programs, optimal lag time between program solicitations, diminishing returns of repetitive solicitations and the effectiveness of sequential promotion.

Introduction

Evaluating marketing effectiveness has generally focused on customer response rates for a single program. Our recent findings reveal that evaluating marketing effectiveness across two or more programs, or in light of a sequence of promotional activities, is more effective in many cases.

The term EE “gateway” is used to describe the phenomenon that if a customer participates in one EE program, it is likely for them to participate in another EE programs that follows. Specifically, we reviewed marketing effectiveness from a cross-sell perspective, by measuring how interest in program A leads to interest in program B. This is not evaluating marketing effectiveness in a traditional marketing setting.

The most accurate way to measure such effectiveness is through experimental design. A treatment group and a control group should be selected before the sequence of campaigns begins and other exogenous variables are introduced. In reality, marketing campaigns are constrained by timing and budget, and most consideration is given to achieve high response rates or kWh achievement for individual programs independently. Even if we don’t have control of the order or timing of campaigns and no experimental design is set up in advance, treatment and control groups can still be constructed

with good campaign data. However, it does require careful consideration when developing comparisons over time, and unconditional or overall participation or take rates to conditional take rates.

In this paper we examine two cases based on campaign data from Duke Energy. First, we examine whether CFL initiatives have higher “gateway” effect than other EE programs. We specifically looked at the case in Ohio. Next, we examine whether audit related programs have higher “gateway” effects than other EE programs.

Are CFLs a Free “Gateway” to DR programs? – An Example in Ohio

CFLs have been considered a free “gateway” drug to EE programs promoting awareness and interest in energy conservation. As the low hanging fruit of EE, many utilities began CFL campaigns early before the market transformed. On the other hand, most CFL marketing involved a coupon or give-away and minimum effort from a customer perspective¹ when compared to marketing demand response (DR) programs, or home audit or behavioral type programs. By nature, CFL marketing differs from other EE programs, as it appears to have attracted either “true EE adopters” or those open to EE messaging in early phases and consumers searching for freebies later on. Industry observation and research also reveals that CFL coupon redeemers are somewhat different from DR participants.

Few studies examine the correlation between marketing of CFLs and later adoption of other programs or technologies. Furthermore, quantifying the impact of CFL marketing not only sheds light on marketing effectiveness and market transformation over time but also on future marketing strategies. In this section we specifically look at these questions:

- How much of the impact resulted from CFL offers as a tool to broadcast EE messages compared to the impact resulting from early CFL adopters?
- How effective are CFL marketing campaigns in cross-selling DR programs?
- How many times is a customer exposed to CFL offers before adoption occurs?

How much of the impact resulted from CFL offers as a tool to broadcast EE messages compared to the impact resulting from early CFL adopters?

Most “gateway” effects come from CFL solicitations as an instrument to broadcast EE messages. These marketing campaigns spread the concept of saving energy and money to promote awareness of energy efficiency and conservation. CFL solicitations have different effects from CFL participation, since people who actively redeem CFL coupons can be a mix of true advocates and purely rebate or coupon driven. Based on multiple years of CFL redemption data, this does not always lead to DR participation. For example, only 2-3% of CFL redeemers accept follow-up DR offers, as compared to a 9% overall DR acceptance rate in OH, achieved over time.

How Effective Are CFL Marketing Campaigns in Cross-selling DR Programs?

If we expand the definition of “CFL marketing” to include customers who received CFL offers and not just those who took CFLs, we find about 9.3% participate in a DR compared to the market average of 9.5%. Note that this is an average number over multiple years and while the market may have transformed, multiple forces including averaging over a long time period minimizes our ability to see effects from early ramp-up, diminishing returns, and stronger or less successful campaigns. As this

¹ Notable exceptions do exist however, particularly www.onechange.org which by virtue of the high level of engagement, generate significant levels of follow up offer participation from CFL campaigns.

is desirable, in order to control for unique characteristics of each campaign, and disaggregate the marginal or incremental effect of each CFL campaign from the overall effect, multiple constraints should be considered:

- CFL exposure should occur before DR solicitation.
- The time difference between CFL exposure and DR offer should be relatively fixed. We attribute the effectiveness to the most recent CFL campaign(s), more specifically, campaigns that occurred within the year.

Of course, the most accurate way to measure effectiveness is to perform a full experimental design, however, this method provides an accurate approximation. We reviewed each campaign at each time period individually. The conditional DR participation rate of each campaign at each time data point is calculated as:

$$\frac{\# \text{ of accepted DR offers } |_{\text{exposed to CFL}(i) \text{ within 1 year}}}{\# \text{ of customers exposed to CFL}(i) \text{ within 1 year}}$$

Marginal “gateway” effects from each additional CFL campaign exhibit diminishing returns over time. Figure 1 shows a graph of conditional participation or take rate at each time period associated with a CFL campaign. Based on this graph, marginal “gateway” effects from CFLs are highest in early phases, and over time exhibit a downward trend. The first five campaigns “gateway” effect produced a 36%-52% DR take rate, which is 4 to 6 times more effective than overall DR offers. This said, early CFL campaigns gave EE adopters options to experiment with new EE technology and increase awareness and interest in EE programs.

The marginal “gateway” effect from the last 2 CFL campaigns drops to near zero as the variable of time has a significant impact. There are several possible reasons:

- Different Audience: Both campaigns offer a free give-away where customers call or mail a coupon to get free bulbs. Comparing earlier CFL campaigns with coupons or other intake methods, requires minimal involvement and attracts a much broader audience than EE adopters
- Saturated Market: The market may have been saturated by CFL promotions, meaning true EE adopters would have already participated.

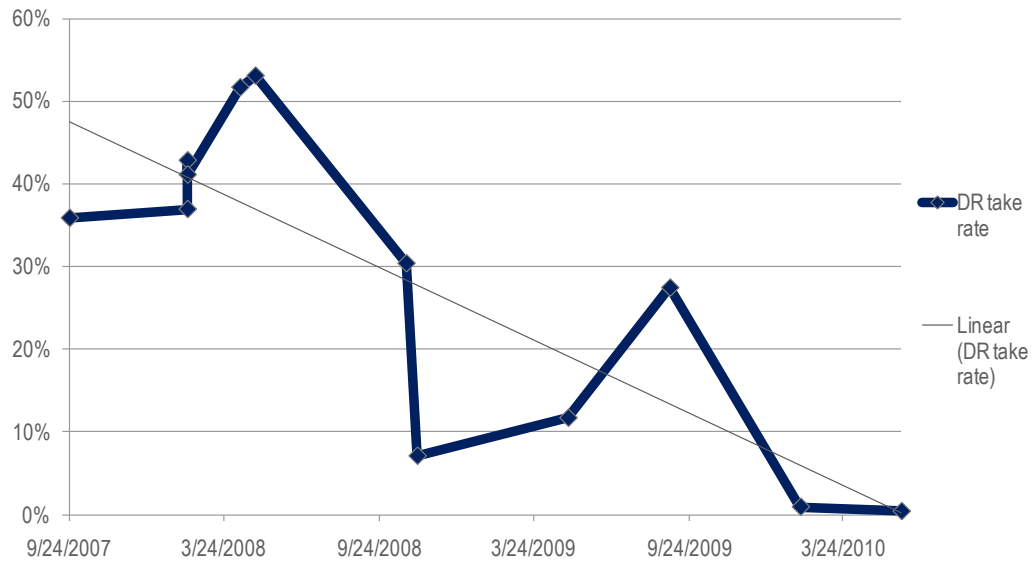


Figure 1. Percentage Take Rate of DR Offers after CFL Exposures

How many times is a customer exposed to CFL offers before adoption?

There are also diminishing returns with repeated CFL solicitations. Figure 2 shows the “gateway” effect along with the number of CFL marketing campaigns. The value of each data point is calculated based on # of accepted DR offers divided by the total # exposed to CFL solicitations. A polynomial equation is fitted to the data, which is a concave curve, meaning the effect increases with diminishing velocity until customers are exposed to six to seven CFL campaigns, then the effect decreases with accelerating velocity beyond the seventh campaign. CFL campaigns are effective at inception to spread the concept of saving energy and money to promote awareness of energy efficiency and conservation, with diminishing response over time. As demonstrated below, this research identifies that the maximum number of CFL campaigns producing the “gateway” effect should not exceed seven.

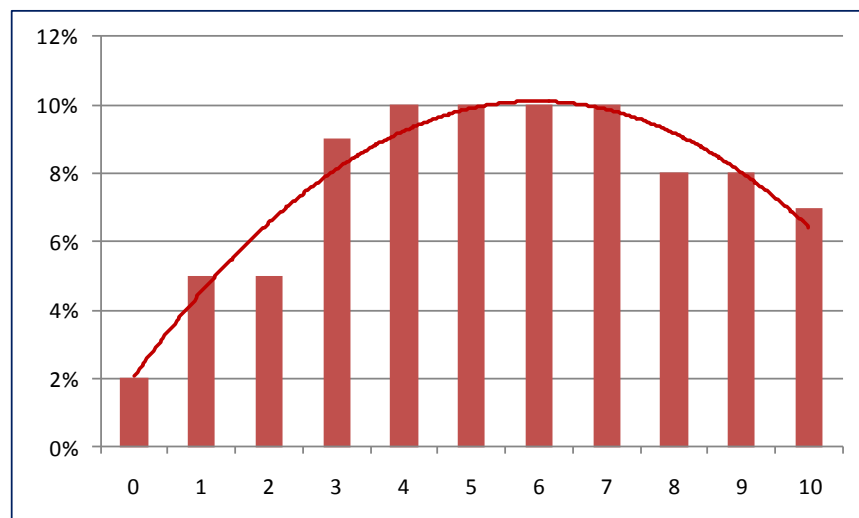


Figure 2. Distribution of DR Participants Compared to Number of CFL Exposures

How Effective Is An Onsite Audit Program in Driving DR and CFL Participation?

Home Energy House Call (HEHC) is a free in-home energy assessment offered by Duke Energy designed to help customers learn how their home uses energy and how they can save on their monthly bills. After customers sign up and schedule an appointment, an auditor will visit their house, collect information related to house structure and customer behavior, and install direct measures that goes with a free EE starter kit. Customers receive a customized recommendation report two days later. The unique face-to-face interaction with customers, providing real time responses and recommendations regarding energy efficiency has made HEHC an effective “gateway” program, while promoting interest in energy efficiency and conservation, and producing sequential participation in other programs.

How Effective Is An Onsite Audit Program in Cross-selling DR Programs? An Example in OH

HEHC significantly increases participation in DR programs based on data in OH. The fact that HEHC impact significantly increased DR acceptance suggests that offering DR *after* customers complete an audit may be a productive strategy. Customers who are interested in an audit are also more likely to be relatively more open to EE and may be more receptive to DR technology. Figure 3 shows the difference between the overall DR offer acceptance rate and the conditional acceptance rate if preceded by an audit program. HEHC as a precursor almost doubled the acceptance rate of DR offer.

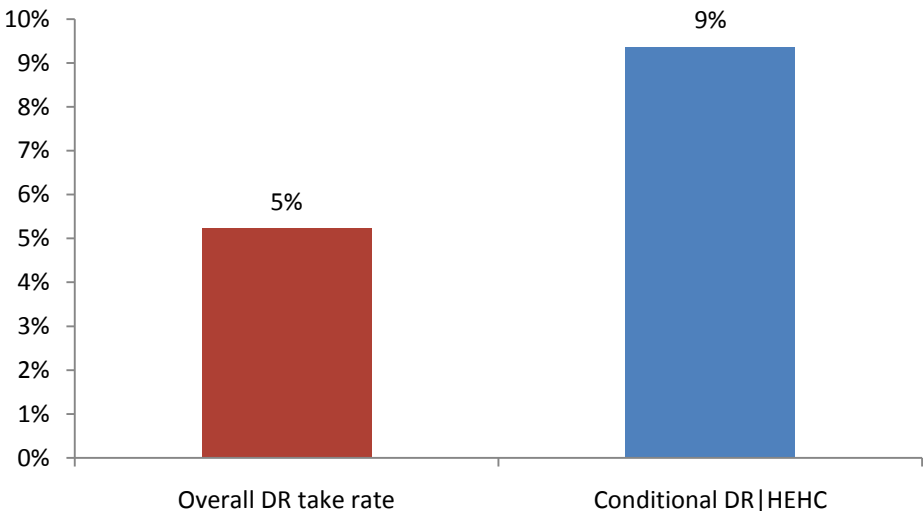


Figure 3. Overall DR Take Rate Compared to Participants Primed by Onsite Audit Program (HEHC) in OH

How Effective Is An Onsite Audit Program in Promoting CFLs?

Onsite audit programs also significantly increase the redemption of CFLs. 49% of HEHC participants accepted CFL offers, compared to a 43% overall CFL redemption rate in OH; 46% compared to 53% in NC and 50% compared to 57% in SC. This “gateway” effect is more significant in the early phase when the CFL market was immature, producing CFL redemption rates that doubled or tripled if primed by HEHC. Figure 4 shows the comparison between overall CFL redemption rates compared to conditional rates of HEHC participants. During the home visit, auditors installed low cost measures including CFLs, low flow shower heads, and faucet aerators. Auditors answered questions or concerns about the CFLs and the face-to-face communication was much more effective in promoting

customer interest and confidence. This effect is less significant after the market is mature. Figure 5 shows the comparison prior to 2009. Note the overall CFL redemption rate increases after the market is transformed and Duke Energy offered free CFLs as opposed to the discount coupon prior to 2009.

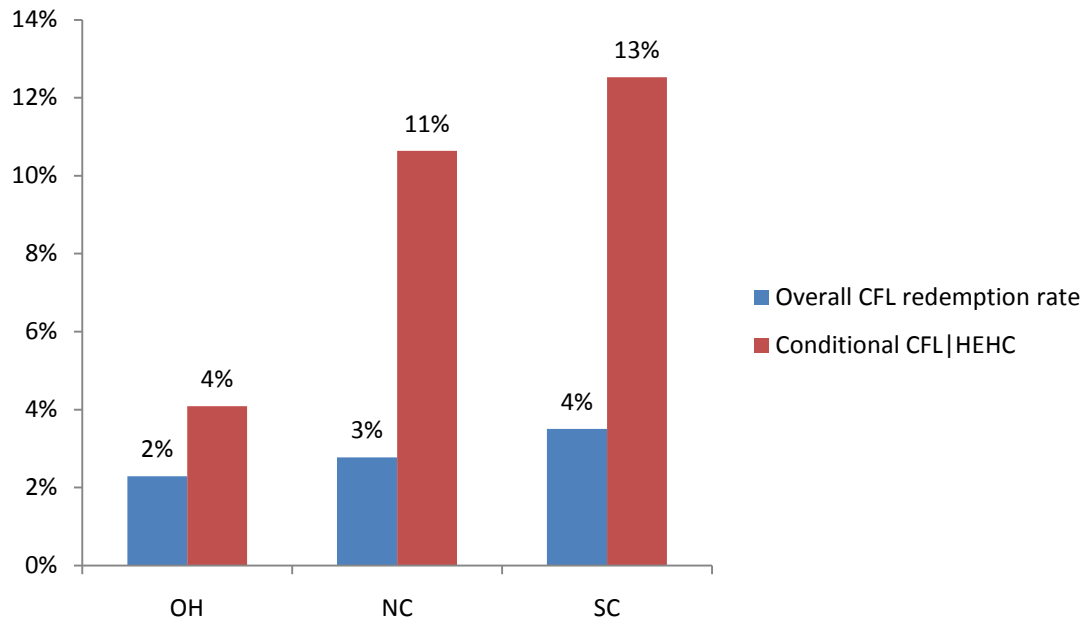


Figure 4. Overall CFL Redemption Rate Compared to Participants Primed by HEHC in OH, NC, SC Prior to 2009

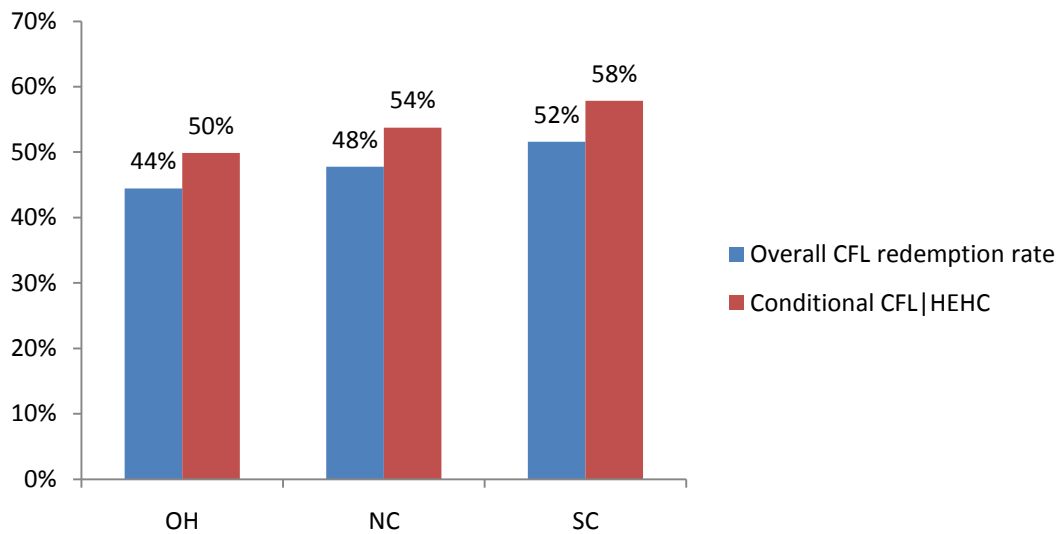


Figure 5. Overall CFL Redemption Compared to Participants Primed by HEHC in OH, NC, SC After 2009

How Effective Are Onsite Audit Programs in Promoting Other EE?

We reviewed the “gateway” effect from onsite audits to other EE participation rates. This analysis is based on HEHC process evaluation study in OH, NC and SC. Customer surveys were conducted and over 200 complete responses were collected. The surveyed customers were asked whether they took follow up action per the auditor’s recommendation, and whether they installed or adopted any EE measures beyond the recommendation. Figure 6 shows the percentage of follow up action across 3 states: OH, NC, and SC. Overall, more than half of HEHC participants would be expected to follow the recommendation or go beyond and adopt EE technologies outside the recommendation. Over 60% surveyed in OH performed the recommendations found in their onsite audit, 53% in SC and 39% in SC respectively.²

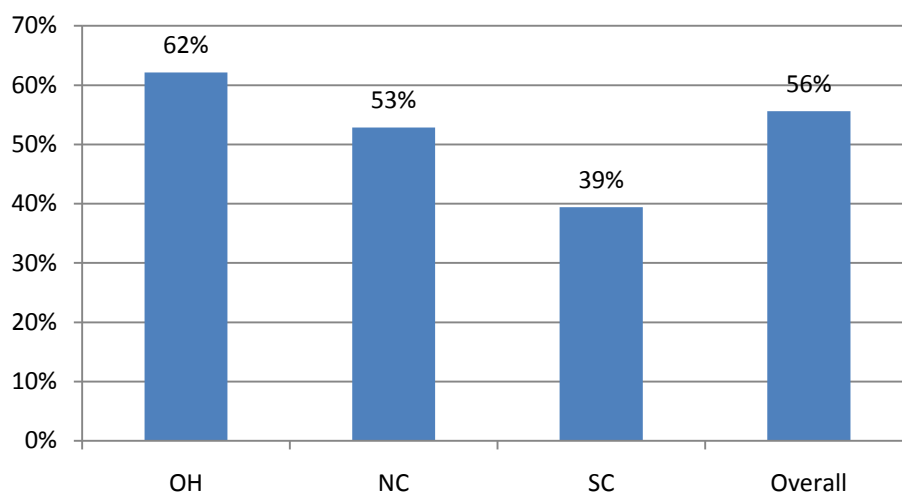


Figure 6. Percentage of Customers who Performed Recommendations

How Effective Are Offsite Audit Programs in Driving DR and CFL Participation?

Another quasi-audit program is the Personalized Energy Report (PER). By filling out and mailing a survey with 30 questions about home infrastructure and behavior, customers receive a customized energy report with analysis of their current usage and possible ways to be more energy efficient. Incentives include an energy starter kit with free CFLs. There is no appointment required and therefore, no onsite audit. PER employs a “pull” strategy as the customer has to be motivated to fill out a survey and trigger information exchange.

How Effective Are Offsite Audit Programs in Cross-selling DR Programs? An Example in OH

PER significantly increases acceptance of DR programs. This analysis is based on data in OH where PER significantly increased DR acceptance suggesting that offering DR after customers complete an energy survey is effective. Customers who took the time to fill out a survey and request more information about their energy use are more likely to be true EE adopters and more receptive to DR technology. Figure 7 shows the difference between overall DR offer acceptance rate and conditional acceptance rate if primed by PER. PER almost doubles the acceptance rate of DR offer. The effect is twice that prior to 2009, and 1.66 times after 2009. These rates are similar even after the market matures suggesting that engagement can continue to pay dividends after the program ends.

² See the evaluation work of Duke Energy’s evaluation contractor, TecMarket Works.

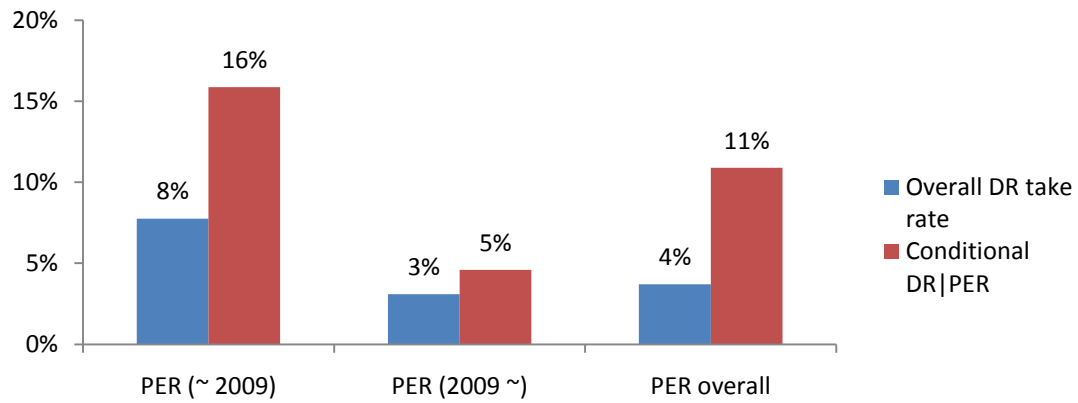


Figure 7. Overall DR Take Rate Compared to Participants Primed by Offsite Audit Program (PER) in OH

How Effective Is Offsite Audit Program in Promoting CFLs?

Compared to HEHC, PER has a less significant “gateway” effect in promoting CFLs. The effect of PER comes from 2 channels: CFL as an incentive and information about CFLs in the report. In order to encourage customers to fill out a survey, Duke Energy provided three free CFLs and other low cost measures in the early phase and six free CFLs and other low cost measures in the later phase. CFLs are recommended in the report, with information about benefits and FAQs addressing common concerns. Both channels lead to a doubling effect in the early phase similar to HEHC in OH, but this effect is diluted in the later phase, dropping off to near zero. As a result of data constraints, the comparison of NC and SC is based on data after 2009, which shows a small increase in OH, by 3% and 1% in NC and SC respectively.

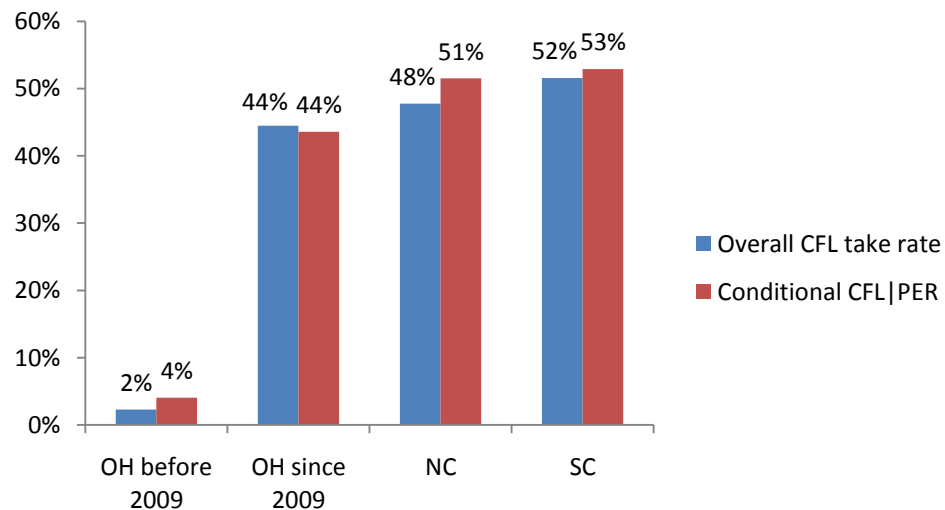


Figure 8. Average CFL Redemption Rate Compared to Participants Primed by PER in OH, NC, and SC

Conclusion

In general, when CFLs are delivered via coupon or free mail offers they appear to be more effective in driving “gateway” effects in early phases when saturation is low and markets have yet to be transformed. The “gateway” effect from CFLs was significant in this early phase. Over time, CFL adopters are mixed including EE advocates and as well as adopters whose focus may differ. As a result, “gateway” effects also diminish over time. Stand alone CFL campaigns do not appear to single-handedly increase participation in other EE programs. However, we are currently exploring the possibility that online CFL redeemers may be more open to other online offers. On the other hand, audit type programs clearly exhibit persistent “gateway” effects over time. They are especially powerful if followed by DR offers. Audit programs also appear to accelerate CFL adoption, again with diminishing returns over time.

Lessons Learned

As mentioned earlier, the best way to accurately measure the “gateway” effect is through experimental design and construction of a treatment group coupled with comparable control group. Unfortunately, time and resources may not be available to implement this methodology. In reality, the order of campaigns is mostly random, with little consideration about correlation between various program offerings. This risk is mitigated by a robust campaign data management system that makes it possible to construct treatment and control groups without experimental design. Furthermore, there are data issues related to data quality and how the campaign data is tracked.

Duke Energy has a robust campaign management system that captures detailed and rich campaign information at the individual account level. This enables us to leverage existing information in the billing system and make inferences with a data cleaning process to eventually derive insights as described in this paper. To improve the existing system, we listed the major challenges related to data that can possibly bias the results and make the analysis difficult. We recommend careful handling of these data issues in order to measure campaign success more accurately.

Consistently, there are challenges to link campaign solicitations and participants. In most marketing campaigns, especially direct mail, there is a group who receive the offer and another group who actually accept the offer. With multiple campaigns, the second group is often a subset of the first group. One notable exception we recently experienced with is an internet CFL offer is that customers forwarded it to friends and family. At a minimum, researchers would like to know which campaign a customer responds to. For example, if there is a CFL campaign at the beginning of year, then another in summer, it is important to know whether the customer who participated in August responded to the first or second campaign or the combination of the two.

A dump of campaign data without real time tracking can be misleading. In some cases, the vendor tracking the data may only load data once a week, once a month, or in extreme cases once a year. If a fixed participation date is assigned to a group of participants as opposed to their actual participation date then important information on timing would be lost. This also obscures the true “gateway” effect because the order of participation becomes unreliable.