

# **Process Evaluation 2.0: What It Is and How It Can Be Leveraged to Advance the Energy Efficiency Industry**

*Courtney Henderson, Project Manager, ILLUME Advising LLC, Truckee, CA  
Anne Dougherty, Founder, ILLUME Advising LLC, Tucson, AZ*

## **ABSTRACT**

It is a pivotal moment in energy program evaluation. With movement toward EM&V 2.0, it is clear that evaluators and utilities alike are interested in more advanced and innovative evaluation approaches. As an industry, we have an opportunity to redefine what process evaluations entail, and to conduct research that is more meaningful to programs, and ultimately, the customers who experience these programs.

Promoting this shift in process evaluation is particularly important given that energy efficiency programs are steadily reaching saturation within the market. In addition, customers increasingly expect personalized experiences, prompting our industry to move beyond traditional customer segmentation to customization. To deliver evaluation results that remain relevant and meaningful, we must re-tool how we design and conduct process evaluations.

In this paper, the authors will explore the following questions: (1) What does EM&V 2.0 look like for process evaluation methodologies?; (2) How can advanced and innovative process evaluation methods be promoted and leveraged to better inform programs and serve customers?; and (3) What are the benefits that accrue when these methodologies are used?

This paper begins by presenting a theoretical approach to Process Evaluation 2.0, including an overview of innovative methodologies that are used in other industries and could be leveraged within energy research. The authors discuss specific case studies; for example, the use of customer journey mapping to improve the customer experience. Next, specific evaluation examples, along with lessons learned, are provided. In the last section, the paper discusses potential applications of these methodologies to energy programs.

## **Introduction**

Historically, energy efficiency evaluation research has been biased heavily toward impact evaluation – mainly, identifying actual energy savings resulting from efficiency programs. This is not surprising, given that energy programs have savings goals they must meet, and that most ratepayer programs go through independent Evaluation, Measurement, and Verification (EM&V) processes to ensure these savings are realized.

Over the past decades, evaluation research within the energy industry has become increasingly robust. In addition to measuring savings, evaluators began using process evaluation methodologies to provide deeper insight into how and why (or why not) specific energy goals were met. Process evaluation methodologies that became heavily used included customer surveys, in-depth interviews, and case studies. For example, customer surveys can be

used to assess specific efficiency actions that customers have taken; in-depth interviews can be used to assess trade allies' engagement with specific utility programs and their motivations for promoting program rebates to their customers; and case studies can be used to more fully understand the life cycle of a program.

Despite these gains, process evaluation research continues to suffer from a relative lack of attention to innovative, up-and-coming methodologies, and often receives less attention than outcomes evaluation research. By contrast, outcomes evaluation methodologies have received extensive attention during the past several years. In 2014, the term "EM&V 2.0" was coined. Numerous evaluators, utilities, and efficiency organizations have since sought to redefine the energy efficiency evaluation landscape, by leveraging new technologies and methods of measuring savings. In their 2015 paper, Goldberg et al, describe the changing EM&V landscape, highlighting two primary advances ushering in a new era for outcomes evaluation. Specifically, they discuss how advanced data analytics, such as cloud-based platforms, and improved data collection tools and data availability, such as smart meters and smart thermostats, can be used to provide real-time information and more accurate savings measurements (Goldberg et al. 2015).

Rogers et al (2015) similarly discuss how new information and communications technologies are changing the energy efficiency landscape. In their paper, study authors discuss new tools for gathering and analyzing energy data, including smart meters and the smart grid, and describe how sophisticated computing, such as the Internet of Things and advanced control systems, are enabling "*responsive, adaptive, and predictive capabilities*" when it comes to energy efficiency EM&V (Rogers et al. 2015).

It is clear that the landscape of outcomes evaluation is changing and innovating rapidly. Yet we have not seen that same growth within process evaluation and the methodologies to support those evaluations. The next sections of this paper describe benefits to placing importance on innovation within process evaluations; case studies highlighting specific methodologies that could be used; and applications within energy efficiency.

### **An Alternative Process Evaluation Model**

The energy efficiency industry has an opportunity to draw from other industries in developing a new and embedded process evaluation model. An embedded model of evaluation research is one in which evaluation activities are embedded within the day-to-day management of programs. Embedded research can provide results that are more timely, meaningful, and relevant to programs and participants of those programs (Henderson and Dougherty 2015).

More importantly, embedded research focuses on methods that provide real-time, adaptive feedback that maximize value while minimizing cost. Working toward "quick hits" and adaptive market feedback, these methods can be invaluable in supporting programs in critical design revisions. In many ways, this embedded evaluation is more market and customer-centric, prioritizing and valuing the efficacy of programs in delivering savings, enhancing customer satisfaction, and improving customers' perceptions of their program administrators. Such work is meant to be formative and confirmatory at once.

The authors draw upon the social sciences, public health, and consumer product and technology sectors to identify and demonstrate how specific methodologies, such as customer

journey mapping, ethnography, and real-time approaches, could be better leveraged to move toward this model of evaluation. Innovation within energy efficiency process evaluation has the potential to enhance program design, improve customer experience, and increase program participation. Doing so is not necessarily more costly or time-consuming, but the focus and emphasis is certainly different than traditional process evaluation models, as will be seen in the following sections.

## **Benefits to Alternative Models**

The benefits to moving toward a Process Evaluation 2.0 model are numerous. Specifically, more robust and innovative process evaluations would enable approaches described below enable evaluators to: (1) understand the real-world contexts in which customers make energy decisions; (2) enhance participant experience; (3) engage vulnerable populations; and (4) lead to real-time evaluation results. Each of these is discussed in more detail below:

- **Understand the real-world contexts in which customers make energy decisions:** By understanding constraints that participants face in their daily lives, the energy industry can design programs that are more customer-friendly. Historically, programs were often designed without fully considering the range of barriers that customers face when trying to participate in energy efficiency programs within the context of their daily lives. By using methodologies such as ethnography or photo voice, evaluators can develop a richer understanding of what works, and what doesn't work, for participants in a real-world context. The implications of this are vast: programs can be better designed for ease of participant use, simplicity (fewer hurdles means participants will be more likely to participate), and enhanced participant engagement.
- **Enhance participant experience.** By enhancing the program experience, participants will be more likely to continue an energy efficiency journey. In other words, participants will be more likely to become repeat program participants. This can result in greater participation in other energy efficiency offerings or programs and/or the achievement of deeper savings per participant.
- **Engage vulnerable populations.** Traditional process evaluation approaches are not always adequate for capturing the needs, perspectives, and experiences of vulnerable populations. The social sciences have recognized that "representative" datasets may not actually be that representative of marginalized populations and that standard surveys may have difficulty capturing these populations (Nowaowski, Sumerau, and Mathers 2016). Within the energy industry, marginalized populations may include low-income populations, and populations whose primary language is not English, among other customer segments. Innovative methodologies, such as photo voice, can give voice to these populations, ensuring their interests are adequately captured in evaluation research and that programs are designed to appropriately meet the unique needs of these populations. These methods are significantly more engaging for customers and therefore introduce an element of fun and novelty. Unlike a standard survey, these approaches are more relatable.

- **Lead to real-time evaluation results.** Instead of waiting until the end of a program cycle to determine if energy and program participation goals are being met, evaluators can conduct ongoing assessments, similar to a continuous improvement approach. Real-time evaluation can help evaluators identify program implementation issues and make changes in real-time. For example, evaluators could determine how, and why, goals are (or are not) being met. Changes can then be made in program implementation in relatively short order to set a program on the right trajectory to meet its targets.

### **Methods to Support a Process Evaluation 2.0 Model**

The following section highlights four different methodologies and approaches that could be used to support a Process Evaluation 2.0 model. These include: (1) customer journey mapping; (2) ethnographic methods; (3) participatory visual and digital methods; and (4) continuous improvement and real-time feedback approaches.

### **Customer Journey Mapping**

An outcome-centric approach to evaluation (i.e., a focus on energy savings or the number of participants in a program) can lose sight of the subjective experiences of participants in energy programs. As an industry, we have an opportunity to shift our programs and research to a more customer-centric model that focuses on understanding how participants engage with, and move through, energy efficiency programs.

Journey mapping, originating in the consumer product and technology industries, offers an opportunity to think more creatively about the participant experience. In his 2010 article in the Harvard Business Review, Richardson provides an example of using journey mapping to understand a customer's journey in researching, buying, setting up, and using a home theatre system. In this article, this process is described as, "*one of the most frustratingly complicated customer experiences in the consumer electronics realm.*" However, journey mapping can provide insight into the home theatre journey, with information on customer emotional factors, actions, motivations, questions, and barriers. Richardson goes on to note that understanding these customer experiences is best done "*if grounded in customer research, preferably including in-depth ethnographic-style interviews and in-context observations. Surveys and focus groups tend to gloss over too many details that are critical to really understanding the experience*" (Richardson 2010).

Journey maps tell the story of the participants' experience, from initial contact or entry into a program, through the entire process of engagement. Journey maps capture key touch points that participants have with a program, and how they perceive and interact with those touchpoints. In addition, journey mapping research can capture customer emotions, motivations, and experiences related to each of these touchpoints (Dwellely 2016).

This customer-centric approach has several uses, including: (1) to identify pain points that participants experience, and opportunities to improve those pain points; (2) to improve overall participant satisfaction; (3) to help align stakeholder needs; and (4) to ensure programs are designed to achieve both deep and broad levels of participant engagement. In addition, journey mapping research can lead to embedded evaluation research that measures success metrics beyond those that have traditionally been measured.

Journey mapping is gaining popularity within energy research. Despite this, journey maps can fail to capture information resulting from direct contact with customers. This type of interaction is a critical part of journey mapping in order to ensure we, as researchers, do not simply depict information that we already know. Instead, journey maps must be attuned to customer motivations, emotions, and experiences; not simply transactions that occur between customers and the program they are participating in. Effective journey mapping requires that we conduct primary research with customers to create the maps. They are, in effect, a form of deliverable that summarizes information collected through careful qualitative research (as well as other inputs).

## **Ethnographic Methods**

Ethnographic methods, originating in the field of anthropology, provide unique, qualitative insight into program participants' everyday lives and experiences. These methods are commonly used in the social sciences and public health, and are particularly useful in informing program design and evaluation research that considers the real-world context in which people live out their lives. Design anthropology is an *"emerging field of applied anthropology which tries to bring a deeper understanding of ordinary human beings to the professionals who design the products, services and policies for those people. Design anthropologists ask how cultural contexts, social practices, embedded meanings and social relationships affect the way in which human beings interact with material objects, services and policies in everyday life"* (Hale 2016). Ethnographic and anthropological methods provide rich, qualitative data that can help program designers and evaluators understand how customers assign meaning and value to different choices and behaviors within the context of their everyday circumstances. These differ from traditional process evaluation qualitative methodologies, such as interviews and ride-alongs, in that they "dive deeper" and can uncover issues that may not be captured using these traditional methods. For example, ethnographic and anthropological methods can shed light on cultural influences, decision-making processes, and program participation barriers. Observational research and multi-site work is critical to understand these types of issues, which likely would not be uncovered during standard survey research. To understand these types of issues, researchers must understand the social and cultural context in which programs operate. Ethnographic methods are particularly suited to providing these types of insights. While different barriers are inevitably at play within different social structures and contexts, it is important that we, as energy evaluators, consider and research these issues with the weight that they deserve.

An example from public health will help illustrate this point: an Indian organization was interested in assessing barriers that women face in accessing reproductive healthcare services, to improve delivery of those services. The researchers began by using ethnographic and observational methods to understand family structure and cultural influences on healthcare access. In addition, researchers conducted in-depth interviews to understand how women access services within their villages and at healthcare centers. Ethnographic methods revealed that women face a multitude of barriers in accessing health services. For example, women must receive permission from their husbands to use available services and to leave the home to access those services. This finding has tremendous implications for the program, and would not

be easily discovered with traditional survey research. Instead of targeting marketing efforts to women, the program most move toward engaging husbands in healthcare decision-making processes (Henderson 2014).

### **Participatory Visual and Digital Methods**

Participatory visual and digital methods, such as photo voice, have also been used within the social science and public health sectors, most often in community-based participatory research, and could be leveraged within the energy industry. The photo voice methodology was developed in 2000 and involves a collaborative photography approach, wherein participants take photographs and then discuss the meaning of these to foster change – either at the individual or community level. According to Kovacic et al., the *“photo voice approach is increasingly being utilized to study health disparities and health outcomes...because of the need to consider many different personal and community factors”* (Kovacic et al. 2014).

Photo voice is also a powerful tool for engaging low-income or vulnerable populations that might otherwise be missed by traditional research and evaluation approaches. Further, prior studies have demonstrated that the use of photo voice as a research tool can result in individuals and communities that are more educated about health issues, and more empowered to act, whether through individual behavior change or community level initiatives (Catalani and Minkler 2010).

Again, an example from the public health field is illustrative. In their study, Kovacic et al. used photo voice to identify how minority children view the influence of environment on their health. Participating youth were each provided a camera, and asked to take photographs related to a health issue. Thereafter, participants in the study shared those photographs in a group setting and discussed them in detail to identify different health themes that the photographs portrayed. The authors conclude by stating that, *“Photo Voice is an excellent approach to understand the lived experiences of and sustainably partner with community members of at-risk communities dealing with complex environmental health issues.”* Use of photo voice enabled study authors to identify needs for future health education and promotion programs, in addition to helping build a collaboration with the community in which the researchers sought to work (Kovacic et al. 2014).

Within energy efficiency, one could imagine that photo voice could be used to engage low-income communities or marginalized populations that can be difficult to reach with traditional survey or interview methods. By providing something to the community (namely, collaboration and capacity-building) in which one might want to conduct energy-related research, the community may be more receptive to energy-related interventions and research. Use of photo voice may also help document unanticipated energy-related issues within a community that a utility or evaluator could not have necessarily foreseen.

### **Continuous Improvement Approaches and Real-Time Feedback**

Continuous improvement approaches have long been used in the healthcare and industrial sectors. Such approaches include ongoing efforts that lead to some type of improvement in the program design, model, or delivery. According to the Health Services and

Research Administration (HRSA), quality improvement (QI) is defined as, “*systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups*”. HRSA goes on to delineate the difference in using a QI perspective: an organization or system is viewed as “*how things are done*”, whereas healthcare performance is defined by “*efficiency and outcomes of care*” (HRSA 2011). Within the healthcare field, such approaches have been used to improve a myriad of issues, ultimately leading to improved patient care, improved population health, and reduced costs (National Learning Consortium 2013). To parallel this in the energy industry, most of the post-hoc process evaluations that are standard in our industry tend to follow an organization or system approach to process evaluation as opposed to examining efficiencies and outcomes as it relates to the experience of the customer.

There are two key components from the continuous improvement approach that could be leveraged more strongly within the energy industry, including: (1) continuous actions; and (2) a focus on how things are implemented and the impact on the customer, opposed to a focus on programmatic outcomes. Quality improvement approaches identify changes that need to be made within a program or organization on a continual basis, to better serve program participants and improve program delivery. The result is that changes can be made in “real-time”, as opposed to once a program has concluded. Conducting such changes in real-time will, inherently, change the way that process evaluation research is viewed. For example, it may be necessary to conduct process evaluations alongside program implementation under a separate contract and different regulatory constraints, as opposed to coupling process research with impact evaluation, as is traditional. Indeed, holding process evaluation research to the same regulatory cycles and standards can be a disservice to process evaluation practice, and to programs.

## **Applications of Alternative Models in Energy Efficiency**

In this section, we describe applications of the methodologies within energy efficiency. These mini case studies provide real-world examples of how these methodologies can be applied to move toward more robust process evaluations.

### **Case Study 1: Using Customer Journey Maps to Improve the Overall Customer Experience and Move Beyond a Siloed Program Experience**

Increasingly, customers expect a personalized experience while participating in energy efficiency programs. Other sectors have caught onto this, as described in the earlier consumer electronics example. When it comes to energy efficiency then, it should not be surprising that customers expect a personalized experience. After all, customers are making some type of investment – whether in a new technology, appliance or device for their home, through participation in a home audit, or in a variety of other ways – and they expect that investment to receive customized attention.

During 2016, the study authors conducted research aimed at improving the overall customer experience for customers of a Midwestern utility (Dwellely 2016; Dougherty 2017). Ultimately, there were several goals of this research, including to identify pain points that

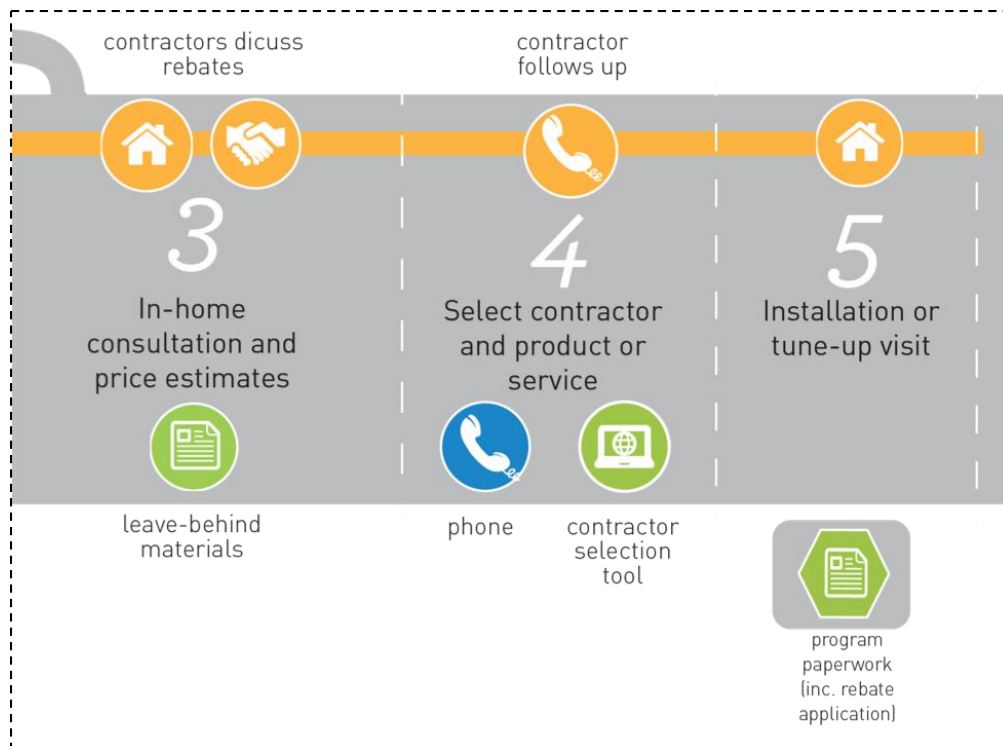
customers experienced during their program participation; to improve overall customer satisfaction; and to identify opportunities for customer engagement after program participation (i.e., through participation in additional efficiency programs and offerings). Journey mapping research was conducted across a variety of different programs, but for the sake of illustration, we will describe how this type of research was conducted for a home audit program.

Researchers began by identifying key program phases and touchpoints. It is important to note that this differs from traditional process mapping, in which program processes and/or procedures are outlined. Instead, phases that customers experience during program participation are delineated, including the identification of any program touchpoints during each phase of program participation. For example, customers must first learn about a home audit offering – this can happen through a variety of touchpoints, such as from direct-to-customer marketing done by the utility (i.e., emails, bill flyers, etc.), from home auditors or installers, or through home shows, among others. The identification of these customer experience phases and touchpoints is critical to understanding the path that customers take on their journey in a program.

Researchers also identified gaps in knowledge about the participant experience in conjunction with identifying customer experiences and program touchpoints. For example, let's say that our home audit program conducts direct-to-customer marketing (i.e., via emails). In addition, the program has a network of independent home auditors, who conduct the home audits for customers. However, the program may not fully understand how these home auditors are marketing to customers. This seems a simple example, but matters can also quickly become complicated. Let's take the example further, and say that the program relies on independent auditors to conduct home assessments for customers. However, these auditors may also be installers, who could subsequently install recommended home upgrades, or they may only function as installers. Customers who use those who only function as installers then need to use someone different to perform their home upgrades. Journey mapping research can shed light on these relationships, and how customers navigate them.

Journey mapping is also useful for enhancing overall customer experience; identifying opportunities for customers to continue their efficiency journey beyond participation in a single program; and improving savings opportunities. Journey maps can be informed by a variety of data collection techniques, such as in-depth customer or trade ally interviews, and ride-along and ethnographic research. Figure 1, below, depicts a portion of a sample journey map.





**Figure 1.** Sample Journey Map

Finally, it is important to note that journey mapping research is a highly collaborative effort – evaluators, utility program staff, and implementation staff had detailed and ongoing conversations throughout the course of this research. This differs from much of traditional process evaluation, in which evaluators provide results either at an interim point or at the conclusion of their research. Key conversations revolved around understanding customer touchpoints, identifying pain points and frustrations, discussing identified opportunities for improvement, and assessing those opportunities for feasibility, cost, and time implications.

### **Case Study 2: Using Ethnographic Methods to Understand Customer Language and Behaviors**

Originating in the anthropological sciences, ethnography is used to make observations from the point of view of the subjects being studied. These methods are commonly used throughout the social sciences and public health to provide unique insight into customers' everyday lives and experiences. Yet ethnographic methods are infrequently used in energy research. If leveraged properly, these approaches can provide evaluators with a unique opportunity to gain insights into everyday customer experiences, and to understand how customers ascribe meaning to different choices, values, and energy decisions.

In 2010, Dougherty et al. published a study describing one of the largest ethnographic studies within the energy field to-date. In that study, authors conducted 136 two-hour in-home visits within the state of California to understand how customers make decisions about their household's energy use and to identify cultural influences on those decisions. (Dougherty, Mitchell-Jackson, and Wellner 2010). Interviews were conducted by trained ethnographers, representing a variety of customer demographics and geographic differences.

As study authors note, their use of ethnography revealed *“subtleties to energy positive behavior adoption that have been otherwise unobserved in any quantitative studies.”*

Respondents used story-telling to describe how they use energy throughout their homes, in addition to discussing motivations and barriers they have faced in adopting energy efficient behaviors. With these methodologies, study authors could examine subtle distinctions in words and the meanings that customers attribute to these, within the context of the customer’s everyday lives. These types of insights are critically important for painting a full picture of a customer’s life experience related to energy. As an example, study authors found that program messages delivered by implementers often did not resonate with customers, due to different meanings and cultural contexts. This type of finding would likely not have been captured by traditional process evaluation strategies, such as quantitative surveys or in-depth interviews.

Further, ethnography is not as costly as one might think. Similar qualitative methods, such as focus groups, often have more direct costs associated with these methods. Whereas the emphasis on ethnography is on the expertise and talent of the researcher, the data collection method and approach is, in and of itself, unique.

### **Case Study 3: Using Ongoing, Real-Time Feedback**

The ability to deliver real-time feedback is critical to move toward more robust process evaluation. Such feedback allows program administrators to make changes during program implementation, instead of waiting until the end of a typical program cycle. This helps to direct resources where they are needed most (for example, by not continuing to direct resources to a program component that is not working). It can also result in improved customer engagement, and the achievement of desired savings levels.

For example, the authors are working closely with a Midwestern utility to embed real-time feedback to utility program administrators for an energy usage feedback application. To support the team in gaining immediate feedback on their actions, the team has developed a tracking and targeting dashboard that integrates the actions of participants in to a master database of potential participants. This allows for real-time and on-going participant and non-participant comparisons, the ability to identify and understand underserved markets, and to better forecast potential market adoption based on the attributed of existing participants and how they compare to non-participants.

Further, this dashboard captures key performance indicators for a wide range of activities, including monitoring online, social media, and other forms of feedback from media sources. By linking media outcomes to population outcomes, the team is able to provide after action reviews that dive deep into the effectiveness of marketing on an on-going basis. By integrating real-time insights, the evaluation team can help steer the program toward greater savings while also identifying and mitigating risks in the market.

### **Proposed Model**

We propose that, to move toward a Process Evaluation 2.0 model, new and innovative methods from other industries should be leveraged more strongly. Continually assessing programs offers the opportunity to make changes throughout the program implementation period. Doing so requires a strong commitment from program staff, implementers, and

evaluators and flexibility on the part of all parties. Changes that are made mid-stream must be able to be captured by evaluators. Ultimately, such a model can lead to more effective programs, that engage customers in unique ways, are more cost-effective, and achieve desired results.

The methodologies described within this paper could all be integrated into real-time process evaluation research. Given the many benefits of using these methodologies, we now outline a model for integrating these into a Process EM&V 2.0 model.

- **Integrate Customer Life Contexts into Program Design:** The use of the methodologies proposed in this paper can help evaluators and program designers understand how customers experience energy and energy decisions within a broader context. These methodologies can reveal insights to help program designers create programs that meet customers “where they are” in their lives, as opposed to programs designed without fully considering a broader context.
- **Focus on Engaging the Customer in New Ways.** Use advanced technologies and real-time data to enhance customer engagement. For example, customers can now be given feedback about their energy use, in real-time, via smart thermostats. New engagement strategies must be designed in a way that is meaningful to the customer. The use of the methodologies described herein can help evaluators and program staff understand what is truly meaningful to customers.
- **Focus on the Customer Energy Journey.** Instead of designing programs and evaluation strategies that focus solely on a customer’s experience within a single program, identify ways to further a customer’s efficiency journey. In short, a customer’s engagement with their utility should be viewed as a continuum. Evaluation research provides an opportunity to identify ways of furthering a customer’s engagement along that continuum. This has the potential to result in greater and deeper savings for utilities.
- **Remove Process Research from Impact Evaluation Limitations.** Instead of holding process research to impact evaluation cycles, timelines, and regulatory structures, conduct process research that is embedded within programs.

## Conclusions

Energy evaluation research has undergone a transformation in recent years, with more data readily available with enhanced technology, such as smart meters, and sophisticated computing. Great gains are being made in evaluators’ research, particularly as it relates to key outcomes, such as measuring savings more accurately and in real-time. However, our field still has an opportunity to enhance and redefine what process evaluations entail.

In this paper, we have described several methodologies that could be more strongly leveraged within energy evaluation research to move toward a real-time Process Evaluation 2.0 model. If applied, we could see numerous benefits. Our research could be made more meaningful to programs by identifying and understanding the life context in which participants make energy decisions and take energy behaviors. This would surely result in programs that are better designed from a customer engagement point-of-view. Enhancing the program experience may also result in greater participation, and ultimately, energy savings. The use of

innovative methodologies employed in the social sciences, such as photo voice, could help us to better understand, and engage, marginalized populations that may unlikely to be captured with traditional process evaluation strategies. Lastly, program changes could be made in “real time”, in response to anything uncovered during implementation that might affect customer engagement, or ultimately, savings goals. In short, the methodologies proposed herein could help our industry move toward a model for Process Evaluation 2.0.

## References

Catalani C, Minkler M. (2010). PhotoVoice: a review of the literature in health and public health. *Health Education and Behavior*; 37:424-451.

Dougherty A. (2017). Understanding the customer journey in creating world class customer experiences. AESP National Conference. Orlando, FL. February 13-16, 2017.

Dougherty A, Mitchell-Jackson J, Wellner P. (2010). Ethnographic inquiry in energy: exploring meaning-making and sociality in language use, program participation, and behavior choice. ACEEE Summer Study on Energy Efficiency in Buildings. Available at: [https://illumeadvising.com/files/2016/08/2010\\_Ethnography.pdf](https://illumeadvising.com/files/2016/08/2010_Ethnography.pdf) Last accessed 3 April 2017.

Dwellely A. (2016). Mapping the customer journey: pathways to satisfaction and deeper savings. Behavior, Energy, and Climate Change Conference. Baltimore, MD. October 20-22, 2016.

Hale T. (2016). Meeting the yeti: learning about design ethnography and teaching anthropological habitus in a student-led project on disconnection. *Annals of Anthropological Practice*. 40(2): 207-218.

Henderson, C. (2014). Non-permanent contraceptive methods in India: exploring the inter-play of ethics, policy, and cultural influences. Available at: <http://gradworks.umi.com/37/20/3720553.html> Last accessed 8 April 2017.

Henderson C, Dougherty A. (2015). Learning from public health: embedded evaluation and its applications to energy efficiency. International Energy Program Evaluation Conference. Long Beach, CA. August 11-13, 2015.

Goldberg M, Marean M, Puckett C, Godin C, Todd W, Bodmann S, and Kelly K. (2015). The changing EM&V paradigm: a review of key trends and new industry developments, and their implications on current and future EM&V practices. Prepared for the NEEP Regional Evaluation, Measurement & Verification Forum. Available at: <http://www.neep.org/sites/default/files/resources/NEEP-DNV%20GL%20EMV%202.0.pdf> Last accessed 1 April 2017.

Kovacic M, Stigler S, Smith A, Kidd A, Vaughn L. (2014). Beginning a partnership with photovoice to explore environmental health and health inequities in minority communities. *International Journal of Environmental Research and Public Health*; 11(11): 11132-11151.

Miller W. (2014). ETA seminars, Berkeley Lab. Available at: <https://eetd.lbl.gov/news/events/2014/05/29/emv-20-what-s-the-future-of> Last accessed 3 April 2017.

National Learning Consortium. (2013). Continuous quality improvement (CQI) strategies to optimize your practice. Developed by Health Information Technology Research Center.

Nowaowski A, Sumerau J, Mathers L. (2016). None of the above: strategies for inclusive teaching with “representative” data. Teaching Sociology. Available at: <https://jsumerau.com/wp-content/uploads/2015/03/Teaching-Sociology-2016-Nowakowski-0092055X15622669.pdf> Last accessed 13 April 2017.

Richardson A. (2010). Using customer journey maps to improve customer experience. Harvard Business Review. Available at: <https://hbr.org/2010/11/using-customer-journey-maps-to> Last accessed 13 April 2017.

Rogers E, Carley E, Deo S, Grossberg, F. (2015). How information and communications technologies will change the evaluation, measurement, and verification of energy efficiency programs. American Council for an Energy Efficient Economy. Report IE1503. Available at: <http://aceee.org/research-report/ie1503> Last accessed 2 April 2017.

U.S. Department of Health and Human Services, Health Resources and Services Administration. (2011). Quality improvement. Available at: <https://www.hrsa.gov/quality/toolbox/methodology/qualityimprovement/> Last accessed 5 April 2017.