

ASSESSING THE NETWORK EFFECT OF ISEIF'S PUBLIC EDUCATION EFFORTS: EXTENDED LOCAL RESEARCH

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**SOCIAL IMPACT
RESEARCH CENTER**

A **HEARTLAND ALLIANCE** PROGRAM

Report Information

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Introduction

Substantial upgrades to Illinois's aging power grid began in 2012 after the passage of the Energy Infrastructure Modernization Act in 2011. Over the past 6 years, tremendous investments have been made in the electrical system in much of the state. Commonwealth Edison (ComEd), the electrical provider in northern Illinois, and Ameren, the provider in central and southern Illinois, have made progress toward building out an enhanced electric system with innovative digital technologies like smart substations, smart switches, and smart meters that detect problems on the electric grid that intend to improve reliability, service, and greater control over consumer electricity use. ComEd has already completed much of the buildout in northern Illinois, and Ameren is scheduled to continue the work in the coming years.

Part of the investment made by the Act was the creation of the Illinois Science and Energy Innovation Foundation (ISEIF), a nonprofit organization intended to help consumers across the state understand and benefit from the new digital electrical system. To do this, ISEIF has funded grantees to conduct public education and outreach to inform the public of their role in the new system. This research project investigated the impact of some of those educational efforts with the intention to answer research questions related to the network effect of ISEIF-funded public education.

This study was originally intended to be a two-phase project. Phase one queried a convenience sample of past attendees of ISEIF grantee educational events throughout the state on how they had used information gained through those events and how they had shared that information with others. Phase two would then take that basic understanding of how attendees had shared information and poll the general public on how the information had actually spread via a random sample survey, which would give a snapshot of the network effect of ISEIF's educational efforts.

In the first year of research, data collection posed a huge challenge. Because public education events are relatively low touch and relationships between attendee and presenter are typically not developed beyond the event itself, recruitment of past attendees proved very difficult (despite the offer of incentives and phone options). However, the small amount of information collected did point to the need for further investigation. Interviewees generally seemed to confuse or conflate different sources of information, not remembering where they heard different facts, and feeling unsure of who they should trust. Researchers inferred that participants would not be able to differentiate between information gained via ISEIF-funded education, ComEd, and third party energy suppliers, which would muddy the learnings of a random sample survey aimed at measuring the network effect of grantee public education events. For that reason, researchers extended phase one to focus more energy on recruitment and additional data collection from event attendees at current events. The individuals recruited would then be queried at two points in time to ascertain impact of the presentation on knowledge retention and sequent actions, including sharing of information with others.

Research Partners

To conduct this research, ISEIF partnered with the Loyola University Chicago Center for Urban Research and Learning and the Social IMPACT Research Center.

The **Center for Urban Research and Learning** (CURL) at Loyola University Chicago creates innovative solutions that promote equity and opportunity in communities throughout the Chicago metropolitan region. CURL was founded in 1996 as a unit within Loyola University Chicago, a private university

founded in 1870. CURL is considered a leading national model of university-community based research, and it is an integral part of an international network of programs conducting participatory research projects. CURL has been awarded over 23 million dollars and has established over 80 partnerships with community and city agencies to best meet community needs and pursue community-driven research. CURL promotes equity and opportunity through building, supporting, and conducting collaborative research, education, and policy efforts. These partnerships connect Loyola faculty and students with community and nonprofit organizations, civic groups, and government agencies. Such collaborations link the skills and wisdom present within every community with the specialized knowledge and academic discipline of a vital urban university. Thus, the knowledge of both those within the community and those within the university are valued and integrated in partnership to address community needs and to enrich the academic experience.

The **Social IMPACT Research Center** is a program of Heartland Alliance, the leading anti-poverty organization in the Midwest. IMPACT is a research and evaluation resource working throughout Illinois, the Midwest, and the nation, conducting research on poverty, workforce development, homelessness, human services, and related issues. The entities that IMPACT works with depend on their research to help them make decisions strategically, raise the profile of an issue, show a need for their services, demonstrate effectiveness, better target their program or investments, raise money, improve their policies or programs, or track progress over time. No matter the type of work or methods used, IMPACT has an approach and values that come to bear on each project: intentionally and exclusively conduct applied research; customize every project and tailor methods to the client's interests, research questions, and implementation context; act as partners and collaborators with clients; and communicating research findings with expertise.

Grantee Partners

Researchers partnered with three of ISEIF's grantees to collect data from event attendees.

The **Citizens Utility Board (CUB)** (<https://citizensutilityboard.org/>), created by the Illinois General Assembly in 1983, is a nonprofit, nonpartisan organization with a clear mission: to represent the interests of residential utility customers across the state. The statute directs CUB to carry out that mission by intervening in ratemaking proceedings before the Illinois Commerce Commission (ICC), in the courts and before other public bodies and by providing consumers with information and assistance regarding their utility companies.

Elevate Energy (<https://www.elevateenergy.org/>) is a non-profit organization with a mission to design and implement efficiency programs that lower costs, protect the environment, and ensure that the benefits of energy efficiency reach those who need them most. Elevate provides a full-service approach, which includes an energy assessment, guidance for cost-effective solutions, access to financing options, construction oversight for quality assurance, and follow-up through annual savings reports.

Faith in Place (<https://www.faithinplaceaction.org/>) is a nonprofit organization, founded in 1999 (incorporated in 2004) in Chicago, IL, as a project of the Center for Neighborhood Technology. Faith in Place empowers Illinois people of all faiths to be leaders in caring for the Earth, providing resources to educate, connect, and advocate for healthier communities. FiP employs outreach staff to work across the state, with offices located in Chicago, the North & West Suburbs, Lake County, and Central Illinois, in four program areas: Energy & Climate Change, Sustainable Food & Land Use, Water Preservation, and

Advocacy. FiP's goal has been to gather religious leaders in the Chicago region in dialogue, prayer, and action on issues of environmental sustainability.

Research Questions

This project aims to answer the following research questions:

What is the impact of the presentations on the participants, particularly related to information about the smart meter? What did they learn and what subsequent actions did they take?

What is the network effect of ISEIF-funded educational events, particularly around knowledge about smart meters? How did participants share the information that they learned?

Methods

Recruitment

Researchers attended 9 educational events between May 2017 and February 2018 throughout the city and nearby suburbs. Events fell into three 'type' categories: general presentation, utility bill clinic, and house party. Researchers recruited attendees from these events by sharing flyers about the research and collecting contact information from willing attendees. Researchers then followed up with attendees to schedule focus groups or interviews via phone and/or email. Unsurprisingly, participation and follow-through was more common with more engaged audiences – people who had engaged with staff one-on-one in clinics, or pre-existing common interest groups who had a guest speaker attend one of their regular meetings. Less engaged audiences, such as a group of strangers attending a presentation in a public space, did not follow through on data collection activities as often, even if willing to share contact information with researchers.

Event Types

General presentation

These events follow a lecture-style presentation format, usually with visual aids and handouts, with some participant interaction. Some events were held in public spaces, such as libraries, and were open to the public (and advertised by the hosting locale and presenting organizations/ISEIF grantees). Some events were held in more targeted environments, with more targeted audiences – e.g., in a school with an already-established parent group. Presentations covered information related to understanding utility bills, being more energy efficient, and saving money by switching billing plans or cutting back on use. Information about the smart grid and smart meters was typically shared as background information, related to how attendees could utilize new pricing programs and better monitor their electrical usage and conserve energy, thus saving money. Presentations were sometimes co-hosted by two organizations (ISEIF grantees), who split speaking time and each covered different topics. Presenters usually shared PowerPoint presentations that walked attendees through reading utility bills, illustrated the switch over to a smart grid, and shared information on different billing and payment options offered by utility companies, among other things. Presenters also allowed time for questions and provided resources for attendees. Attendance size at these events varied greatly, with anywhere from 3 to 30 or more attendees (particularly if presenters were visiting speakers at an already established large group, such as a senior lunch gathering).

Researchers attended 4 presentations with an estimated¹ total of 50 attendees. Of these, the researchers were able to collect contact information from 23 attendees for research recruitment; of which 12 attendees later participated in initial data collection and 6 participated in follow-up data collection.

Utility bill clinic

Clinics are a much more interactive event type, with attendees sitting down one-on-one with organization (grantee) staff. Attendees usually bring their utility bills to talk through with staff, and discuss utility use habits and needs for their household. Staff then share more targeted information for that attendee around opportunities for conserving energy, water, etc., and saving money on corresponding bills. These events are also often held in public spaces such as libraries or public service offices, and sometimes sponsored and advertised by local public officials. Similar to the general presentations, the same general background information about the smart grid and smart meters emphasized the pricing program opportunities consumers have to monitor their electricity usage and hopefully save money on their bills. Since attendees could bring any utility bills for assistance, it is quite possible that for some, smart meters were never discussed -- they could have focused more time on gas bills, for instance. These events also varied widely in size.

Researchers attended 4 clinics with a total of 100 attendees,² and collected contact information from 62 attendees for research recruitment; 31 attendees later participated in initial data collection and 24 participated in follow-up data collection.

House party

As the name indicates, house parties are gatherings hosted by a homeowner, in their home. Homeowners invite friends and neighbors to attend the party and receive information from the presenting organization and a partner energy efficiency assessor. The homeowner also receives an energy efficiency assessment and door-blow test³. Organizational staff and partner share information in a similar style as general presentations, but are more focused on energy efficiency and saving money on corresponding bills than other utilities. Again, smart meter and grid information is presented for context to the broader conservation conversation.

Researchers attended one house party with about 10 attendees and collected contact information from 6 attendees for research recruitment; 4 attendees later participated in initial data collection and 4 participated in follow-up data collection.

Data Collection

Human Protections

This study did not undergo review by an institutional review board because this study does not fit the definition of research involving human subjects. Participants who had attended events served as field experts and underwent little to no risk in sharing reflections about their experience. Researchers still conducted informed consent with all participants to ensure they all know the study's purpose, their role

1 This estimate of attendance is based on the researchers' notes.

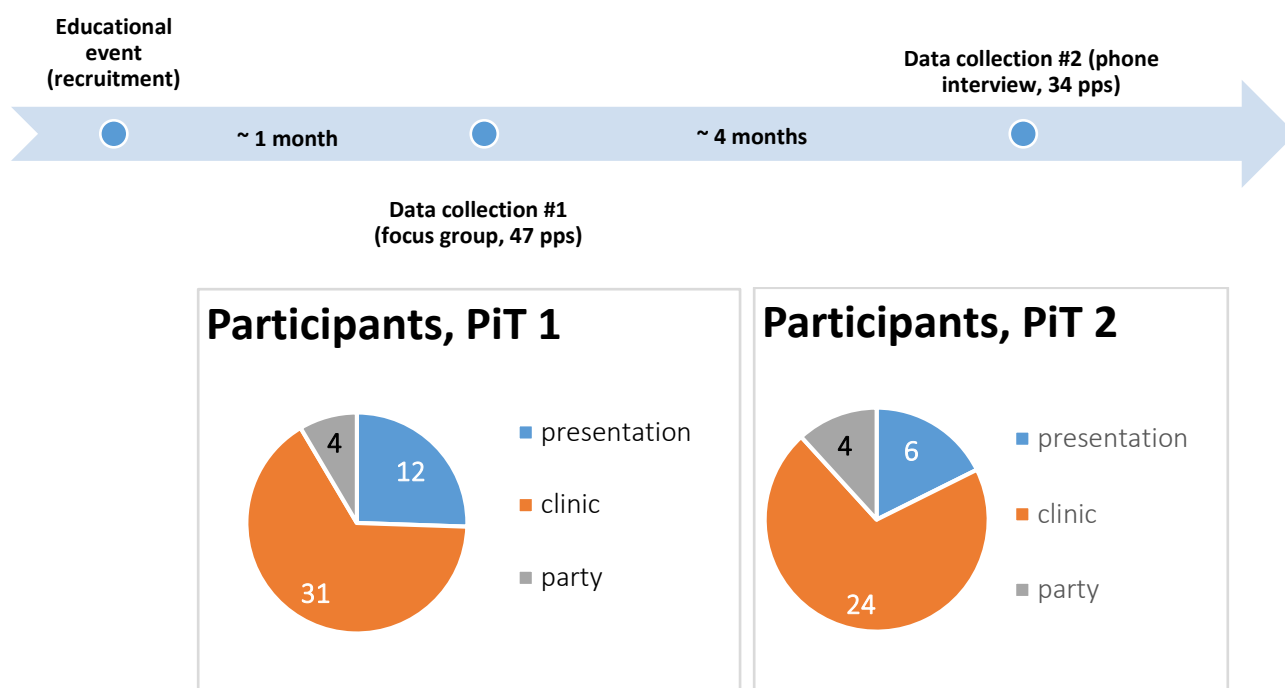
2 This attendance figure is based on sign-in sheets numbers reported by grantees.

3 The door-blow test allows for identification and measurement of air leaks through a house.

in it, any potential risks, and their rights as participants. Informed consent form is included in Appendix 1.

Focus Groups and Interviews

Researchers collected data from participants at two points in time following the educational event they attended. This was intended to provide some insight on change over time in knowledge gains and behavior change. We recognized that participants could forget some of the details of what they learned over time, and conversely, we could see more behavior change as more time went by just by virtue of having more chances to do things differently or share information with others. On average, researchers conducted the first point in time data collection a little over a month after the attended event (average 41 days). There was an average of 4 months between data collection point one and two. Researchers provided \$25 grocery store gift cards as incentive to participate in the research. An open-ended survey was utilized at both the Time 1 focus groups and interviews and the Time 2 interviews and both were audio recorded and transcribed. As previously mentioned, 12 of these participants had attended general presentations at first data collection and 6 at second, 31 attended utility bill clinics at first data collection and 24 at second, and 4 attended house parties at both first and second data collection.



Point in Time 1

Researchers collected data from 47 participants at the first data collection point in time. Most data collected for PiT1 were via focus groups. Six focus groups were held between June 2017 and April 2018. Five of the focus groups were held in English, and one in Spanish. Focus groups were held at the same location as the educational event and were between 2 and 10 people in size. Focus groups took between 30 minutes to an hour. Participants who were unable to attend focus groups or who needed translation were given the option of a phone interview. One participant was interviewed over the phone in Spanish.

In the focus group, participants discussed their experience in the educational event, what they learned, and any behaviors that they had changed since the event. Focus group questions are included in Appendix 2.

Point in Time 2

Researchers collected data from 34 participants at the second point in time, with 14 people being unreachable or uninterested in continuing their participation. Data were collected at the second point in time via phone interviews. Interviewees were asked the same questions as focus group attendees in order to assess any change over time. Phone interviews were conducted in English or Spanish, and took anywhere from approximately 5 minutes to 20 minutes.

Description of Sample

48⁴ individuals, an equal number of women and men, participated in the study, and of those, 34 participated in a second interview. They ranged in age from 20 to 86, with a median age of 64. They were recruited from 9 education events, which occurred in 5 Chicago communities: Little Village, Grand Blvd, Clearing, Edgewater and Albany Park; and 2 suburbs: Niles and Skokie. Eight individuals' (17%) first language was Spanish (primarily attendees from the Faith in Place education event in Little Village) – their interviews and focus group were conducted in Spanish.

Data Analysis

The data was analyzed in two ways. First, utilizing line by line coding, identifying major themes related to knowledge attainment and use of information by the participants. Additionally, the Time 2 data themes were quantified and the resulting case-level data was combined with gender, age, location of event, and type of event in an SPSS dataset for further quantitative analysis.

Data Limitations

In considering the findings, the limitation of the data need to be kept in mind. Those individuals who shared their contact information, participated in focus groups and interviews at Time 1, and then participated in the subsequent interviews at Time 2 could vary in intent and interest from those who did not. Secondly, the sample size allows for very limited data analysis, and an inability to conduct any multi-variate analysis.

Findings

Themes presented at Time 1 Focus Groups and Interviews

Around one month after attending an educational event, we contacted 48 people who attended an event at one of eight different locations. We conducted seven in-person focus groups and six phone interviews with these 48 attendees. Point in Time 1 conversations were helpful to document the initial responses of attendees and their experiences of educational events. The most prevalent themes

⁴ One respondent only participated in an interview 4 months after the event, and so was only counted as a second point in time participant.

respondents described during focus groups and interviews included: saving money on utilities; the smart meter; and better understanding their bill. Here we break out these themes as they pertain to our two main research questions around knowledge retention and subsequent action.

Event Knowledge Retention

Saving money on utilities: During Point in Time 1, in all of the focus groups and almost all of the interviews, participants said they remembered hearing about how they could save money on their utilities at the educational event they attended. Some of these recollections included general statements and suggestions for using energy more efficiently. As one respondent said, they learned how to “get the most bang for your buck in terms of keeping the envelope on a house tight” (House Party participant). The following quotes reflect more of these responses:

Using a fluorescent light bulb instead of an ordinary incandescent will save you money, using an LED will save you even more than a fluorescent. They cost more at the beginning, the price is coming down slowly, but you get the same amount of light for a lot less energy. So, the sooner you can switch over the bigger of favor you'll do yourself (Utility Bill Clinic participant).

We talked a lot about home insulation and where you lose a lot of your heat. And he showed us some cool techniques that they use including like the door vacuum and the infrared meter to find out where the cold air is coming in, I definitely remember that...That was definitely one big take away, it was some of the big places where you lose energy in the house (House Party participant).

Bill analysis: In seven focus groups and interviews, participants discussed learning information about their utility bills, including how to analyze their bills to ensure they were receiving the best rates. One respondent explained the individualized attention she received at an event when a representative examined her bill, “the lady was looking at the megahertz [sic], she was comparing the price of a megahertz in one company to the price of a megahertz [sic] in another company. She wanted to see which one was more expensive and which one was more convenient for us” (General Presentation participant). Another respondent said they learned that, “if you actually break down your bills for electric, gas, etc. you'll find that more than 50 percent of the bill is delivery and service fees” (Utility Bill Clinic participant). In the following quotes, participants explain what they learned and how it has changed the way they view their bills,

Those workshops are good because sometimes we don't understand the bills that well. For example, we don't know how they charge the megahertz [sic] we just look at numbers. That's where they helped us understand our bills and realized we were being overcharged. It was good. I hope they continue doing workshops. There were people who spoke Spanish so that was very helpful as well (General Presentation participant).

Basically just going through the different kinds of bills that people get for their utilities and trying to break down what are indicators that you maybe have a utility alternative supplier and you might be being charged more than you should be, as that applies to, you know, electricity and gas... I've definitely thought about the way that I approach my bill. I'm trying to be more analytical. Yeah, I'd say that's the biggest thing (General Presentation participant).

If nothing else, [the event] just kind of reinforces that you have to be aware of what you're paying, with all your utility bills, not just electric or gas or telephone or water (Utility Bill Clinic participant).

During a focus group of utility bill participants, a couple respondents described not seeing any “appreciable differences” after switching to a smart meter, even when being more conscious of the peak time hours. Within the same focus group another respondent added another frustration with peak time hours alerts,

Where they compare you to your neighbors... You have to take their word for it that your neighbors are equipped the same way you are. If your neighbor has a washer and dryer in the apartment or home and you go out to a laundromat to wash your clothes, it has to show up some kind of way. And how they said they figure that is beyond me. So, it's really pretty much useless information (Utility Bill Clinic participant).

Smart meter: Similarly, in all of the focus groups and all but one interviewee said they remembered at least one piece of information about the smart meter. Responses were overwhelmingly positive and ranged from understanding the smart meter as offering more control during blackouts, to appreciating the convenience of tracking energy usage. Participants described learning about how as consumers they could track their usage behavior and participate in peak and hourly pricing programs, which in turn could impact the amount of energy they used. The following quotes offer some examples of what respondents learned at an event:

Everywhere in Chicago, the roll out of the smart meters is complete. And that instead of being a one-way communication which was how the estimated bill needs to work, you know they would just come out, check it every now and again, this is a two-way communication so that there's kinda real time data being used to gather your billing (General Presentation participant).

The takeaways on smart meters were how it gives us kind of greater control in terms of potentially doing hourly pricing and the advantages of that. And that, kind of related to the broader understanding of how the grid works, that you know, if we're able to reduce our consumption during key time it'll help keep some of those older power plants and other sources off the grid (House Party participant).

I remember that the presenter told me about the smart meter that it has some benefits for its clients...they told me that we would get notifications from ComEd telling us to turn off all electric appliances and that if we turned them off during a specific period of time that it would help us lower our utility bill (Utility Bill Clinic participant).

Respondents also recalled discussing energy saving programs that were available, in part, because of smart meter technology. For instance, one respondent said,

Yeah so I think the biggest conversation I had was, we have a lot of individuals living in the home and we obviously use a lot of electricity but during the day most of us are gone. So that's when peak times take place. So, we were considering changing to like the hourly charge instead of having the standard fee but we're still on the fence on whether or not we should do it. Because we heard others who did it and then it didn't really change their bill. (Utility Bill Clinic participant).

You can shut off your electricity, you know, during the peak hours, which, I think is from 2-5 (General Presentation participant).

Unfortunately, some focus group participants misunderstood the capabilities of smart meters in general. They conflated ComEd's pricing programs which incentivize customers to use less electricity at certain times – facilitated by smart meters and smart thermostats – with the idea that the smart meters allow ComEd to turn off their power or their appliances without their permission. In the following quotes, two respondents express their hesitations:

When [peak savings time] first came out, my mother who had a stroke, she was living in the house and I wasn't about to let anybody shut my electricity off in the middle of summertime. And they said well we're only going to turn your air conditioner off, well, I've got an energy efficient air conditioner, an energy efficient furnace, my whole house I did the most I could (Utility Bill Clinic participant).

I did not like the fact that they could be in control of my electric, this smart meter. Where if you tell them or give permission they can automatically turn it down. Well, Big Brother. I don't like that. And I opted that I'm not gonna do it...I want to be in charge I don't want anybody flipping the switches and turning down my electric (Utility Bill Clinic participant).

One respondent said the workshop did not impact their thoughts on the smart meter because they had previously seen a video on TV that outlined the alleged dangers of the smart meter. This respondent said the smart grid gave off harmful radiation and would "go into your house" through the walls and shared this information with the group at the event they attended (General Presentation participant). In a different focus group, another respondent said, "we aren't interested in having [a smart meter] because we've heard that it's more expensive (General Presentation participant).

Action and Behavior Changes

Modified utility plan or usage behavior: Most focus groups and interviewees discussed changing at least one thing about their energy plan or behavior after attending an educational event or workshop. For instance, some respondents said they signed up for the hourly pricing model and the peak energy usage program after the clinic. One participant said they switched back to their original energy provider after learning at the workshop that they were being charged more money per kilowatt-hour with their current provider.

Participants also shared how the educational event encouraged them to limit their energy usage by paying more attention to their appliances. Respondents reported being more judicious about using their air conditioner and dishwasher during the day. Some respondents said they even bought smart devices like a Nest or a Smart Thermostat to help them track and control their energy usage. In the next quote, a participant explained how they had become more aware of their utility usage and behavior:

I feel like being cognizant as an hourly pricing customer, like I've definitely made changes that have certainly saved me money, just based on the data that ComEd has sent me. And that I'm a lot more cognizant about – like I didn't realize about when the peak energy usage, like I was definitely under the impression that it would be when everyone was home at the end of the day, then during 1-5pm. And so definitely been more cognizant in checking my usage of the dishwasher and the washing machine off peak hours and then being really obsessed when I

noticed that the off peak hours are 'it's like 2 cents right now!' and being excited. Sort of weird that I'm excited (General Presentation participant).

In an effort to make their homes more energy efficient, participants in almost every focus group discussed signing up for an in-home consultation. Some referred to ComEd's consultation services, and some to ISEIF grantees' services. In the next quote, a respondent who hosted a house party event that doubled as an in-home assessment admitted they were distracted during the lecture portion of the house party but found the walk-through more beneficial for them. They said: "I had a baby with me at the time, so I was a little distracted during the presentation... the most I got out of the day was doing the walk-through and doing the actual energy assessment, I think that was the most useful" (House Party participant). Another participant who attended the house party said: "one of the benefits of having that party is that you can get a free home estimate on insulation which I thought was kind of brilliant." Another respondent said: "I learned about the home inspection, they come out, and I signed up for that, the next month they're coming out," (Utility Bill Clinic participant). In one case, a focus group participant suggested that they would like someone to come to their place to confirm they had a smart meter and how it worked. They said, "If someone could come out and look and tell us if we have [a smart meter] or not, or to at least explain to us why they are better, that would be great" (General Presentation participant).

During these initial focus groups, respondents also raised several concerns regarding their experiences with in-home consultation services:

I signed up with the electric company and they came out and changed all the lightbulbs in my house and weather sealed everything up for me, I was like okay this is the winner I'm really gonna have a great bill. (laughs) And then to see that my bill was worse than it was before, I was like well what is going on? (Utility Bill Clinic participant)

Well, when the guy came to my house and was looking around and he says, 'LED, LED, LED, here's your pipes, they're all covered,' he put all the information in the meter and said, 'we can save you 7 dollars a year'... No I mean it's funny. 7 dollars a year by replacing my shower head with a low flow shower head. So I told them I said well hey put it in I'll see how it works, well it doesn't work very good because it's like spitting against a snowstorm, so I politely took it down and put it in a box and put my old one back up there. (Utility Bill Clinic participant).

I also signed up to get in contact with someone who would come replace my light bulbs with energy saving ones. No one has called me yet though. It was supposed to be a free service, but they haven't gotten in contact with me (Utility Bill Clinic participant).

Several participants explained their future plans concerning the information they learned and how it could influence their behavior. For instance, a participant of a Utility Bill Clinic said "I haven't had time to get the ComEd notification program. I'm going to get in contact with them, so I can receive those notifications." Another respondent said they were more aware of windows and doors that could leak but likely would not use the information until they purchased a home. Similarly, another participant echoed:

I don't have a house yet, so I feel like most people at the meeting [house party] were homeowners or – yeah were all homeowners. So, it's definitely stuff that down the line when I

own a home will be very useful... Yeah most definitely, I think that'll be a big thing to a) look for before buying a house and just to, I guess, to make the house energy efficient. Like what steps that need to be taken (House Party participant).

One respondent said they were looking to change their insulation but had not done so yet. In terms of sharing information with other people, a couple respondents described being isolated from other people with little probability of having a conversation around what they learned at the educational event they attended. As one focus group respondent said, "half your neighbors you don't even know anymore, unlike when we were kids."

Knowledge sharing: People from each focus group and all the interviews reported sharing at least one piece of information they learned at the educational event or workshop with at least one other person. Respondents reported sharing information with family, friends, neighbors, and in one case, with a Facebook friend, especially information related to saving money on their utilities.

In three of the focus groups or interviews, participants specifically shared information about how to analyze their energy bills. The following quotes highlighted some of these conversations:

I told the seniors at my church about it. I was like, if you guys can't figure out that bill call up these CUB people. They'll get somebody to help you figure out what's going on with your bill (Utility Bill Clinic participant).

My daughter, I told her. You know, she lives by herself and we've discussed this, we discussed my bill and all that stuff (Utility Bill Clinic participant).

I told my neighbor because when they [alternative energy providers] came and knocked she fell for it. And I did too. But I mentioned to her what I learned...I told her how they were over charging us and she switched [back] (General Presentation participant).

Other respondents said they shared information about reducing energy usage more generally. One respondent said "I've definitely talked to a lot of people about the refrigerators and LED bulbs. I talked to my realtor about that" (House Party participant). Another House Party participant also reported sharing information they learned at the educational event about saving energy: "If it ever comes up in a conversation. I feel like I have a little bit of knowledge I can shoot people, and I have a couple times. And then the day of [the educational event] I always usually, whoever I talk to afterwards I always talk about it with them." This respondent highlighted the higher likelihood of respondents sharing information they learned at an educational event, soon after having attended. Having perhaps the greatest reach, in the next quote, a real estate agent described how they shared information with clients after the educational event:

One of the things I do with both clients and consumers is after they buy a property I send them kind of all of that information. They get links to Elevate Energy, to ComEd's resources, you know, so that when they move into their new home they can make it as energy efficient as possible especially with the low hanging fruit. So on the work side, I've been doing my best to spread the word (House Party participant).

Respondents also discussed sharing information regarding the smart meter with someone else. One respondent said:

I talked to my neighbor about the smart meter and he started talking to me about, well, before there were smart meters they charged \$4 and some odd cents a month to read your meter. So, when the smart meter came, that should have gone away because they don't have to send a man out there to read it. But there's a charge on there yet, which is still up in \$4 range I think (Utility Bill Clinic participant).

In the next quote, a participant described how they shared information about the smart meter on Facebook:

A friend posted on Facebook about her utility bills being really really high when she was out of town... [I explained] that they're not estimated anymore because of the smart meter, and I encouraged her to get in touch with CUB and see if there were things that were going on in the building in that you know she was being charged for common areas or something accidentally (General Presentation participant).

One respondent said they did not share information about the smart meter because a fellow house party participant said it had not saved them any money.

A couple participant conversations with family and friends also included discussions about in-home consultations. One participant said they shared the “nuts and bolts” of what they learned during a walk-through at her home after the educational event. At a focus group, one respondent said: “I shared with my family, and also got connected with a neighbor or two and just kinda shared information because they also had recently had the energy audit” (Utility Bill Clinic participant). Within the same focus group, a participant imparted other tips to get the most out of the in-home consultation:

I have a trick for you man, if you help them change the lightbulbs, they'll let you change everywhere even the closets, otherwise they do not. Otherwise it's only light bulbs that are on two hours a day at least. They won't change all of them, but if you help them, they'll let you change everything. They'll let you choose the shape of the bulb, whatever you want (Utility Bill Clinic participant).

Themes presented at Time 2 Focus Groups and Interviews

Even four to seven months after participating in some type of educational event, Time 2 interview evidence indicated that respondents were receptive to the information discussed at the educational event they attended. All 34 respondents interviewed reported remembering at least one piece of information from the event they attended. The information respondents recalled were, again, varied and included themes on utility savings, the smart meter, usage plans, and bill analysis.

Quantifying the 34 second-contact interviews combined with the theme analysis allowed us to take a closer look at the variations of responses in both knowledge attainment and subsequent use of that knowledge. In this section, we will first describe the responses and then examine how they vary by type of education event. Again, we break out the findings by our two research question topics: knowledge retention and subsequent actions taken.

Event Knowledge Retention

When participants were asked to list the most important items they learned, similar to findings from Point in Time 1, the most cited information participants recalled from the educational event they attended was related to saving on their utilities. Just over 60% reported more than one item.

Items participants reported important items they learned from the presentations (n=34)		
	Number	Percentages
Saving money	13	38%
Bill analysis/monitor usage	12	35%
Information about smart meter	13	38%
Peak hour pricing	11	32%
Solar Energy	2	6%
About different suppliers	11	32%
Home Assessments	8	27%

How many did they report (n=34)		
	Participants	Percentages
One item	14	41%
Two	8	24%
Three	8	24%
Four	1	3%
Five	3	9%

As one person recalled, “most of the discussion focused on the ways we can save energy” (Utility Bill Clinic participant). Respondents mentioned hearing information about LED light bulbs and the availability of in-home consultations. As one Utility Bill Clinic participant said, “They could have

somebody come out from the electric company and go over our entire house and show us where we could cut back on electric use.” Others recalled learning about strategic fan positioning within the home, possible basement and attic energy leaks, energy efficient doors and windows, unplugging appliances when not in use, and smart power strips.

Another common item that respondents mentioned was learning about the usefulness of routinely checking electricity and gas bills to see if they were being overcharged or if they had an alternative supplier.

They walked us through our bills, specifically electricity and I think gas if I'm remembering correctly. And kind of helped us understand what parts of our bill were affected by our usage vs. what we're billed in automatically (General Presentation participant).

I actually I met with an energy advisor and she gave me excellent information. And as a result of it I found out that I was at an alternative provider that was charging me a lot more. I think I had gotten in with that provider as a special offer to get free airline miles and then I just kind of let it ride for a while and ended up being charged too much and so as a result of that meeting with an advisor I immediately switched, and I find the whole area of there being multiple providers named NICOR to be unconscionable and confusing and a real stain on Illinois that it allows this (Utility Bill Clinic participant).

And last, two participants said they learned something concerning the increasing use of solar powered energy.

Specific learning about smart meters: While 38% identified smart meter as one of the most important items of information that they learned from the presentations, a much larger number (74%) of respondents remembered hearing at least one piece of information regarding the smart meter during the event they attended. Most of those reported learning new information.

How many items did people report learning something about smart meters (n=34)

	Number	Percentages
Didn't know anything, didn't learn anything	9	26%
Nothing new, knew already	7	21%
Learned 1 new item	13	38%
Learned 2 new items	5	15%

What did people learn specifically about smart meters (n=34)

	Number	Percentages
Confirmed what I already knew	9	26%
Don't remember anything about SM	6	18%
Learned SM could help monitor Energy Usage	4	12%
Could help you use less energy	6	18%
Was all new information	10	29%
Would save money	3	9%
Confused/technical misinformed	7	21%

The information participants retained concerning the smart meter varied significantly from one respondent to another. For instance, some respondents said they remembered hearing that smart meters “were easier to operate,” and “they are better than the old ones” but they could not remember any other specific information. One respondent vaguely remembered hearing about the smart meter at the event they attended, although they admitted, “I wasn’t all that interested in hearing about [the smart meter] I already had” (Utility Bill Clinic participant).

In contrast, several participants had a more extensive understanding of the smart meter and added information about how the smart grid worked without probe from the interviewer. They were receptive to the smart meter because they said it facilitated information about their household energy usage, which in turn, made them better informed consumers. For instance, one respondent said the smart meter allowed their electric company to “measure the power at real time rather than just cumulative power” (Utility Bill Clinic participant). Another respondent understood the various alternative rate programs: “... there are some programs that you can join to if you have a smart meter ... know using energy at different times of day, ...you can get a different rate (Utility Bill Clinic participant).” Another respondent explained how they were glad to learn that with the smart meter, reporting outages by phone or via the app was no longer necessary since the smart meter sent this information automatically.

Others respondents’ recollection about smart meters were not as positive. For instance, one respondent described how smart meter facilitated programs were mainly beneficial for customers who “aren’t home all day,” (Utility Bill Clinic participant) and as a result, they did not believe they could benefit from the available pricing programs.

Confusion about smart meters: Similar to comments at Time 1, some respondents were hesitant about giving utility companies “control” of their energy usage patterns and mentioned some undesired

consumer trade-offs in terms of what they believed were increased delivery charges. In the following quote, one respondent explains these concerns:

I'm not gonna let anybody get in control of my meter because once you let them get in control of it uh they can do anything they want even though they say they won't and what I told the girl at the time uh I'm here in the house by myself so my electric usage is very low and-and from what I was—uh from what I read if you let them have control of your meter uh you will save anywhere between 2 and 12 dollars a year but my question to her was, and she couldn't answer it is, if they shut my air conditioner off, when, when it's hot like, smart meters is supposed to do, are they going to uh reimburse me for the uh the delivery charge for electricity? Because that's-that's-that's the big thing on the-the utility bills is the delivery and service charges are usually 50-60 percent of the total bill each month and that's-that's the main reason I went there and uh voiced my opinion (Utility Bill Clinic participant).

In the following quote, one respondent reflected on some negative feedback from other consumers at the educational event they attended: “Some people were complaining because they thought it was a way for ComEd to infringe on their freedom to choose” (Utility Bill Clinic participant). Another respondent recalled hearing a similar complaint at a research focus group they previously attended as part of the current project: “Other people at the meeting weren't too happy about ComEd knowing how much—you know how they use their electricity like it's a secret” (Utility Bill Clinic participant).

Actions and Behavior Changes

Most event participants reported using the information they learned at events either to make a change within their utilities, their homes, or their behavior concerning energy consumption. For instance, one respondent described how attending the educational event “has propelled me, might I say, to kind of put up of a more emphasis on energy conservation within my family” (Utility Bill Clinic participant). Some changes were not directly related to the smart meter per se.

Actions (n=34)		
	Number	Percentages
Monitoring usage with Hourly Pricing Program	4	12%
Changing usage based on monitoring	4	12%
Starting to use more energy efficient devices.	19	56%
Had a <i>home assessment/in house consultation</i>	10	29%
Nothing Different yet, but plan to	2	6%
Switched to an another supplier of electricity	5	15%

Some participants described watching less TV, lowering the refrigerator temperature, changing a showerhead, and using small space heaters instead of their furnace whenever possible to save energy. Others reported shutting off their computer, disconnecting their washing machine when not in use, and purchasing new energy efficient surge protectors. One respondent said they purchased a Nest Thermostat for their family for Christmas, another recycled their refrigerator. As a result of home audits, a number of respondents had all their light bulbs changed out and dramatically saw a decrease in their usage. Five individuals (15%) switched suppliers. In four of these cases, they returned to ComEd, reporting that they had gone to another supplier thinking they would get lower rates and that had not been the case.

A number of respondents said that they were going to take action, or were going to take more actions. One respondent said they felt “more confident as I knew what was available on the market.” Another one said they would like to do “an electrical upgrade” to buy a more energy efficient TV, refrigerator, and stove. For some, making upgrades to be more energy efficient was an investment they were not financially ready to make. For some, even a power strip was out of reach: “It was a little bit out of my budget at the time, but I was definitely intrigued by the explanation of that technology and it seems really cool. I just wasn’t in a financial position to make that investment” (General Presentation participant).

Shared knowledge: The vast majority (79%) of respondents report that they shared what they learned in the presentations with others or planned to, and just under a third specifically shared or planned to share information about the smart meters.

Sharing information (n=34)		
	Number	Percentages
Shared any information with others	27	79%
Haven’t yet but plan to	2	6%
Specifically shared about Smart Meters	11	32%
Haven’t yet about SM but plan to	3	9%

Interviewees also said they shared information they had learned at the educational event with friends, neighbors, and family, including grandparents, nieces, in-laws, and children. Respondents said they talked to people about the possibility of drafts in their homes and told others about the energy saving benefits of using LED lights. One respondent, who had not scheduled an in-home consultation themselves, told someone about the option of having a consultation, “I told my neighbor about ComEd changing the light bulbs because he was talking about that. So, I told him not to buy them (Utility Bill Clinic participant).

Several respondents said they told someone else about what they had learned regarding the smart meter. According to at least three of these participants, their family or friends had begun using the smart meter as a result of this shared information. However, sharing information about the smart meter with others was not a priority or major topic of conversation for most event participants. As one respondent said, “As far as the smart meter goes, it’s not something that has come up a ton in conversation. I think I mentioned that in the last survey. So, I don’t feel like at this it has necessarily come up at all yet in like just conversation” (General Presentation participant).

One respondent, a real estate agent who participated in an educational event to keep informed on new technologies and programs, said she and her colleagues routinely shared any such information they learned with clients (Utility Bill Clinic participant).

A couple participants who had not talked with anyone about the smart meter said discussing the smart meter was not as appealing as talking about saving money on electricity by using LED lights or unplugging appliances, for instance. Others explained they would discuss the smart meter when “the occasion [arose],” they would at some point send a group text to neighbors about things they learned at the event. Finally, one respondent said she needed to “read up on it” before sharing any information concerning the smart meter with others.

Variations in Responses

For most items in which there were sufficient responses to conduct an analysis, we found little difference between the responses of individuals who attended presentations as compared to those who attended utility bill clinics. However, on two items, we found a significant, or near significant, difference. Utility bill clinic participants were more likely to remember information about saving money on utility bills and were more likely to share information with others.

Items in which there are variations in responses by type of educational event

	Presentation Participants N=10	Utility Bill Clinics Participants N= 24	Significance (Pearson Chi Square)* *chi square of < .05 is considered significant and that difference between groups did not happened because of chance.
Remembered info about saving money on utility bills	10%	50%	.029
Shared info with others	37%	63%	.055

Conclusion

Contrary to our earlier research, knowledge retention was not problematic. We found that people retained a strong message on general utility savings and shared that information. However, participants were less likely to remember and share information regarding smart grid technology. In fact, we found some confusion about smart meter and smart grid technology. This could be because there was a less specific emphasis during the public education presentations themselves regarding smart grid technology. In addition, some participants noted that for complex information about the smart grid, receiving handouts could have been helpful.

On the whole, utility bill clinic participants were significantly more likely to remember information about saving money and were more likely to share information with others. Although it is unclear why this was the case, it could be due to the utility bill clinics' self-selection by individuals actively seeking information about their utility bills. It is also possible that the utility bill clinic model was a better vehicle for transmitting information, or both.

Most event participants reported using the information they learned at events either to make a change within their utility plans, their homes, or their behavior concerning energy consumption. Most changes were not directly related to the smart meter per se. However, for a few, making upgrades to more energy efficient appliances was an investment they were not financially ready to make. For some, even a power strip was out of reach.

It seems that most interviewees shared information with people within their networks such as close friends, neighbors, and especially family, including grandparents, nieces, in-laws, and children. Of note were two respondents who used professional and organizational networks: a real estate agent who frequently participated in an educational event (in this case a Utility Bill Clinic), to keep informed on new technologies and programs to share with colleagues and clients; and a member of a neighborhood organization who shared information on the neighborhood list serve.

Appendix 1: Informed consent



Assessing the Network Effect of ISEIF's Public Education Efforts

Introduction: You are being asked to participate in a study to help the Illinois Science & Energy Innovation Foundation (ISEIF) understand the impact of education efforts about Smart Meters. The research is being conducted by the Social IMPACT Research Center at Heartland Alliance and the Center for Urban Research and Learning (CURL) at Loyola University Chicago. **Please read this form carefully.**

Information about the focus group:

1. What is the process of a focus group?

The focus group will look like an informal group conversation. The focus group will last for 60 minutes and during that time, Researchers will ask questions about Smart Meters and participants will share their thoughts. The Researchers will take notes during the focus group and audio record the conversation so that they do not forget anything. Trained Researchers are the only people will access to the audiotapes and they will transcribe the files. All transcripts will be stored securely with NO identifiable information. At the end of the study, the audio files will be destroyed, but the transcription will be kept and stored securely with NO identifiable information.

2. Do I have to participate in the focus group?

Participating in the focus group is voluntary. If you do not want to participate in this focus group, you do not have to. If you decide to participate, you are free to ask questions or withdraw at any time without penalty. If you decide to participate, it is up to you how much you want to share. Whether or not you decide to participate in the focus group will have no impact on your relationship with Loyola, Heartland Alliance, Faith in Place, or any other organization involved in this study.

3. What are the risks of the focus group?

Researchers will make every effort to keep your identify and answers private. However, there is always a chance that someone outside of the research team could accidentally learn what you said. Do not share highly personal information that you would prefer to keep private.

4. What about my confidentiality?

If you agree to participate in this study, the information you share with us will be kept private. If a report is published, your individual responses will NOT be connected to you by name.

5. Will I be compensated for my time?

You will receive a \$25 gift card for participating in the focus group. If you participate in the focus group, you will be asked to also take part in a follow-up phone call with the Researcher at a later date, and receive another \$25 gift card.

6. Why do I have to sign this form?

By signing this form, you acknowledge that you agree to participate in the focus group.

Please complete this form if you agree with the following statement:

I consent (agree) to participate in the Focus Group.

First Name: _____ Last Name: _____

Signature: _____

Date: _____ Age: _____

If you have additional questions, please contact:

- Lindy Carrow (312) 870-4957 lcarrow@heartlandalliance.org
- Teresa Neumann (773) 508-8521 tneumann1@luc.edu

Appendix 2: Focus group and interview questions

Questions for Smart Meter Research

1. What are some of the most important things you remember from the presentation (on #/#/#, by _____)?
2. What do you remember learning about Smart Meters?
3. How do you think you will use what you learned? Or, have you already used what you learned? *How?*
4. Have you shared anything you learned with others? *What information? With whom?*
5. Have you talked with anyone about Smart Meters since the presentation? *Please explain.*