

**Illinois Energy Efficiency Stakeholder Advisory Group  
Non-Energy Impact Working Group**

Tuesday, December 8, 2020

10:00 am – 12:00 pm

Teleconference Meeting

**Attendees and Meeting Notes**

**Meeting Materials**

- Meeting page: [December 8, 2020 NEI Working Group Meeting](#)
- [December 8, 2020 NEI Working Group Agenda](#)
- [ComEd Non-Energy Impacts Research Update \(Guidehouse\)](#)
- [Quantifying and Monetizing NEIs for Ameren Illinois: Research Update \(Opinion Dynamics\)](#)

**Attendees (by webinar)**

Celia Johnson, SAG Facilitator  
Greg Ehrendreich, Midwest Energy Efficiency Alliance (MEEA) – Meeting Support  
Matt Armstrong, Ameren Illinois  
Bob Baumgartner, Leidos  
Erin Daughton, ComEd  
Leanne DeMar, Nicor Gas  
Sagar Deo, Guidehouse  
Amanda Dwelley, ILLUME Advising  
Deb Dynako, Slipstream  
Jim Fay, ComEd  
Jason Fegley, Leidos  
Omayra Garcia, Peoples Gas & North Shore Gas  
Jean Gibson, Peoples Gas & North Shore Gas  
Kevin Grabner, Guidehouse  
Sophie Gunderson, Guidehouse  
Grace Halbach, Guidehouse  
Hannah Howard, Opinion Dynamics  
Jim Jerozal, Nicor Gas  
Katherine Johnson, Johnson Consulting  
Lalita Kalita, ComEd  
Aaiysha Khursheed, Opinion Dynamics  
Maddie Koolbeck, Slipstream  
Monique Leonard, Ameren Illinois  
Bruce Liu, Nicor Gas  
Cheryl Miller, Ameren Illinois  
Abigail Miner, IL Attorney General's Office  
Fernando Morales, Ameren Illinois  
Jennifer Morris, ICC Staff  
Chris Neme, Energy Futures Group, on behalf of NRDC  
Victoria Nielsen, Applied Energy Group  
Randy Opdyke, Nicor Gas  
Michael Pittman, Ameren Illinois  
Zach Ross, Opinion Dynamics  
Julia Sander, Leidos

Kyle Schultz, Opinion Dynamics  
Cynthia Segura, Metropolitan Mayors Caucus  
Ellen Steiner, Opinion Dynamics  
Shannon Stendel, Slipstream  
Noel Stevens, Opinion Dynamics  
Jacob Stoll, ComEd  
Mark Szczygiel, Nicor Gas  
Ted Weaver, First Tracks Consulting, on behalf of Nicor Gas  
Bridget Williams, Guidehouse  
Fred Wu, Aqueous  
Ethan Young, Guide house  
Angela Ziech-Malek, CLEAResult  
Christina Pagnusat, Peoples Gas & North Shore Gas  
Patricia Plympton, Guidehouse  
Chris Vaughn, Nicor Gas

### **Meeting Notes**

Follow-up items are indicated **in red**.

### **Opening & Introductions**

*Celia Johnson, SAG Facilitator*

The purpose of the December 8<sup>th</sup> meeting:

1. To update the Working Group on societal Non-Energy Impact (NEI) analysis for ComEd; to provide an update on next steps for utility and participant NEIs; and share timing for NEI research in 2021.
2. To update the Working Group on societal NEIs for Ameren Illinois; discuss initial findings from participant NEI research; and share plans for 2021.

### **ComEd Non-Energy Impact Research Update**

*Patricia Plympton and Ethan Young, Guidehouse*

#### **NEI Research Status Update:**

- Completed Societal and Utility NEIs; working on Participant NEI review. Internal review currently on completed portions.
- Will be sharing an update on next steps for Participant research.

#### **Societal Non-Energy Impacts:**

- Made quite a bit of progress. In July presented updated methodology. In Oct presented updated methodology for gas & ComEd. Reports submitted to gas utilities in Oct. – final ComEd report going this month. One final analysis update in November to updated AVERT baseline files. Slight decrease in societal NEI estimates (decrease of 15 to 22% depending on year)
  - Most recent analysis - \$431-550M annual; 27 to 35 cents per kWh. Will provide tables and guidance for program planning. If redesign is needed, can provide guidance to use additional annual estimate tables to complete value for redesigned programs

*[Chris Neme] In past discussions, one issue with EPA tool was that it had confidence only in characterization of emission profiles through 2025. Most EE measures have lives longer than that. The original estimates only covered part of the life of the measure. Do these represent an adjustment to that?*

*[Ethan Young] Correct. The EPA forecast was only confident for 5-year period. We did additional research to generate emission projections to revise past 5-year period to 25 years in order to be able to capture as much of the marginal generation unit changes and emission reductions over time as possible.*

*[Chris Neme] That's NPV over measure life – those are levelized lifetime costs?*

*[A: Yes]*

- To illustrate the societal NEI influence on TRCs, produced TRCs for SB and MF programs using societal and excluding societal. Including for SB and MF increased TRCs as shown on slide.
- Conducted same exercise on selected Income Eligible programs – including Societal NEIs had slight increase in TRCs but not as much as in SB and MF.
- As mentioned, we are drafting a societal NEI report and providing info on the theories and methodologies and the resulting findings. Will be posted to SAG this month with a 15-day comment period, then Final posted after review period.

#### **Utility Non-Energy Impacts:**

- ComEd provided data set after data set as we tried to tease out the utility NEIs. Reductions in arrearages, calls and collections, disconnects and reconnects, payment plan and bill assistance participation, late payments. Also analyzed bill reductions.
- This did not yield a lot of statistically significant results. Of 24 metrics, only 6 were significant and only 4 were monetizable. We found some unexpected results based on other utility NEI analyses. Hypothesis was that the small sample size and lots of noise were responsible. Therefore, we do not recommend utility NEIs be included in program cost-effectiveness tests.

*[Chris Neme] You looked at 24 metrics and only found data that was significant for 6. Of the other 18 metrics, was it that the data weren't good enough or for some of them you could draw a conclusion of no material difference?*

*[Patricia Plympton] We gave a lot of thought to why we saw the results we saw. It's a combination of quite a few factors. Some pile on each other – sample size and trouble finding a matched pair, doesn't lend itself to significant and meaningful results.*

*[Sagar Deo] One example: When we looked at reduction in customer calls and collections, we noticed the data set had lots of categories – calls were categorized in the call center data. 243 different categories of calls. None of them were specific for transaction related calls. We had to use judgement to filter out the categories that seemed the most appropriate to use. 68 categories got included. Because of not having a specific billing related call category introduced noise to the analysis. Didn't see a strong enough signal. Similarly, for transactions – data from accounting department. Pre*

and post analysis. Around 50 transaction types, had to judge which were specific to the analysis. The big reasons for the noise was this. We talk about this in the report as well.

[Chris Neme] I think it will be important to draw the distinction between the conclusion that the data was too messy/noisy to draw conclusions on the one hand and cases on the other hand where there is good data but no impact. Were any of the 18 in that latter category? Important to distinguish where there was enough data and a reasonable confidence interval to show no impact.

[Patricia Plympton] We will be clear about where the final analysis is on what categories of data and why the results showed up.

[Chris Neme] Important because it may be that the utility might need to change how they track things in those departments to make the data more analyzable in the future.

[Patricia Plympton] While this set of NEIs is smaller than societal or participant, part of why we made the call we did to not analyze additional data sets, if there were changes in categorization and tracking, we could expand the number of years and participants/nonparticipants. If we increase the power of the data sets and increase clarity, might be able to have more metrics land in the significant and monetizable bucket.

#### **Participant Non-Energy Impacts:**

- Presentation includes both Income Eligible and Business programs
- **Income Eligible Participant NEIs:** Beginning in Q1 next year, after we use the language coming out of ODC's cognitive pretest which will be talked about, we will start to invite participants to take the pre-participation survey and then will circle back 12 months later to see what has changed.
  - We expect early findings from those surveys in Q3 2021. Will also do owner/operator surveys of running their buildings and follow up with them 12 months later. Will report those early findings also in Q3 2021.
  - We'll have members of households who have asthma or arthritis. Based on what we can find numbers on how many completes and when we follow up, we'll have that result.

[Chris Neme] Is part of the reduced MF building O&M also changes in tenant turnover?

[Patricia Plympton] Yes. We've seen in the literature. Buildings with EE upgrades put in their marketing and makes people more comfortable, wouldn't have the same reasons to leave.

- **Business Participant NEIs:** In coordination with Opinion Dynamics on their Ameren research. Expect to find impacts through interviews with decision makers and company staff that are cognizant of the nature of the business looking at increased productivity, reduced downtime, reduced O&M that isn't already in TRM, and adding that hasn't been part of other surveys of this type are how the company is positioning itself in its own marketing and outreach. How participation is helping meet sustainability/climate goals. Likely not monetizable but we are casting a wider net with the business research.

- Also looking at several other ComEd business programs. Haven't decided which of these listed makes the best candidate for NEI research. Besides the initial 4 listed which ODC is also using.
- For some of these NEIs, they are more established in the literature than others. Lighting measures are probably the most studied.
- These are the NEIs we expect to find for lighting – productivity, downtime, errors, morale, safety, revenues.
- Slide 16 – overview of NEIs associated with business program measures (high level list). Increase revenues is across the board, because improvement of equipment and less maintenance and downtime. Direct result in revenues from that.

*[Chris Neme] For networked lighting controls, they have NEIs beyond the effect of change in lighting to include tracking customer flows in stores, hospitals tracking where all the wheelchairs are, to the extent they are used for those purposes. A whole category for a growing technology and growing in ComEd portfolio.*

*[Patricia Plympton] We'll make sure we focus on that as we develop survey questions. Another is circadian lighting – it doesn't save energy but there have been a lot of NEIs included. We're at the very beginning of this research and we're open to ideas.*

*[Chris Neme] What about actual O&M maintenance costs – if LED lasts longer, less janitorial or whatever is being hired to replace lights. Those are already in TRM?*

*[Patricia Plympton] Yes, that's my understanding. One of the few NEIs that is already in there. There are other O&M issues not in TRM.*

*[Chris Neme] I think life of fixture is in there – avoided purchase of the replacement fixture. But don't know that the maintenance is included in that. Labor cost savings not sure that is in the TRM.*

*[Jim Fay] How would you approach this research?*

*[Patricia Plympton] Across the country, we're seeing an uptick in companies that are incorporating business practices that reduce enviro footprint and help climate change. We'll have a battery of questions to ask – probably to someone in marketing and communications – whether they are participating in any business network agreements and whether they plan to use participation as part of that.*

*[Jim Fay] I hope we can also identify opportunities for ComEd to engage customers who do have those goals. How we can connect to them to advance their goals and advance our program goals as well.*

#### Next steps:

- ComEd Societal NEI Research Report – draft coming soon; will be posted on the SAG website and circulated to the Working Group for comment
- ComEd Utility NEI Research Report – draft coming soon; will be posted on the SAG website and circulated to the Working Group for comment

- There may be a need for a Q1 2021 NEI Working Group meeting to further discuss business NEI research.

## **Ameren Illinois Non-Energy Impact Research Update**

*Kyle Schultz, Ellen Steiner, and Aaiysha Khursheed, Opinion Dynamics*

Agenda for meeting:

- Summary of Opinion Dynamics' NEI work
  - Ongoing and work-to-date for Ameren Illinois
- Overview of initial findings from participant NEI cognitive pre-tests
- Overview of societal NEI analysis and results
- Plans and timing for NEI research in 2021

### **Income Qualified Participant NEIs:**

- When we shared the draft of the IQ NEI survey, there were concerns from stakeholders about potential sensitivity of responding to health and economic wellbeing. We therefore conducted a pre-test on clarity, language, reliability, etc. This doesn't require a large sample – we did 10 cognitive pretest interviews with 2019 IQ participants over the phone. We weren't just listening to what they said, but tone of voice, silence, etc. This yielded quite a bit of information and will really improve the survey.
- Survey respondents were generally comfortable sharing answers, but some were interested in WHY Ameren Illinois was asking the questions and the objectives for the data. It will be important to craft language to answer about the "why" question. ODC also wondered if people could confidently report on missed school or work of spouse/child. They were confident on that. Two sections will require revisions – employment and thermal stress – to make sure we get right questions to the right people.
- Employment was complex and in flux. From 10 people we got interesting responses that will enable us to make sure the questions are comprehensive. Options for thermal stress didn't have "cool" or "warm" which made people sometimes wonder how to answer. Didn't know how to translate to our possible answers. Employment trying to identify school aged individuals and the number of workers – found where an 18-year-old that was in school and had a job got skipped.
- Survey will be revised to address the challenges we uncovered. Will also work with Guidehouse. Will revisit timelines and sampling in Q1 and hope to field the survey then.

### **Societal Health NEIs:**

- Estimated NEIs for reduction in generation and gas consumption and the subsequent emission changes – then from that to health benefits and then monetization.
- Recap of AVERT and COBRA tools from EPA. At the time of analysis, we used AVERT 2.3; since conducting it they have released a new version. Used COBRA 4.0 which is the most up to date version currently.
- Estimated lifetime savings for electric and gas portfolios. As stakeholders have mentioned, there are a lot of long measure lifetimes. Want to estimate benefits from

savings accruing over lifetime. Savings estimates are consisted with CET and include interactive affects.

*[Chris Neme] I understand the shape of the savings and that these are persisting savings. Electric makes sense at the top. I'm confused about the gas one with some years where savings go up with regard to previous years. How is that possible?*

*[Kyle Schultz] Gas savings include electric interactive effects.*

*[Zach Ross] Big one is lighting measures expiring, losing the negative gas penalty. Also, a couple of measures – HVAC related for example – with baseline shifts 10 years out related to insulation depending on base efficiency of the heating system.*

*[Chris Neme] When you are thinking about the NEIs for the electric portfolio – the impact ought to be associated with the electric savings and maybe that's how you defined it.*

*[Kyle Schultz] We haven't produced these values for use in cost-effectiveness testing; that's a next step.*

*[Zach Ross] You are suggesting that if we are doing single-fuel TRC tests for Ameren, that the heating penalty impact should be associated with the electric side it is properly associated with those measures?*

*[Chris Neme] Yes. I appreciate that most cost-effectiveness testing for Ameren is multi-fuel. But if you are coming up with factors of avoided costs associated with reduced emissions for gas and electric, not sure that makes sense.*

*[Zach Ross] Good points – we are still working with Ameren to incorporate into tests.*

*[Ted Weaver] Did Guidehouse include interactive effects?*

*[A: No, we did not]*

*[Chris Neme] Interactive effects should probably be included.*

*[Ted Weaver] It could be a rounding area in terms of dollars.*

*[Patricia Plympton] We anticipated this might come up; will plan to include it.*

- We used AVERT which relies on historical data and was available to a 2018 baseline to 2022 with the version available when we did the analysis. Used EPA avoided emission factors to forecast future emission reductions after 2022 (to 2042).
- Because AVERT can't measure natural gas emission reductions, we used an emission reduction factor as shown on slide.
- COBRA runs completed for electric, non-res gas, and res gas portfolios. Applied model runs to each subsequent savings year. Method of reduction input differed by portfolio for res and non-res gas. Selected counties in AIC service territory. For 2023-28 selected counties with non-zero reductions from 2018-2022 results.
- Once we had model results from COBRA runs, created a benefit \$/kWh or therm factor. Benefits vary linearly with impacts and we can apply to each year as shown in table to the right. Also produced nation and IL-only benefit factors so we can look at benefits

nationally and just in IL. Discount benefit factors with AIC discount rate. Apply emission factor adjustment to forecast decrease in emission intensities.

- Benefit factors over time for electric and gas programs. Gas is split to non-res and res. Annual different is from annual discount rate and secondly changing emission and health baselines. In the case of just electric, also a result of change in emission intensity.

*[Chris Neme] This is the low estimate. Is the plan to use an average of high and low?*

*[Kyle Schultz] We present both high and low. Have not finalized how they will be used in C/E testing.*

*[Chris Neme] Is ComEd using low, high, or average?*

*[Ethan Young] Average.*

*[Chris Neme] I expect Ameren will be higher than ComEd because PJM grid is not as clean as MISO for ComEd.*

*[Kyle Schultz] Emission reductions are associated with the total lifetime of measures in the portfolio. Over lifetime will save 152 tons of PM2.5 and SO2, NOx, NH3 and VOC. Expect \$92-207 in national health benefits, 15% in IL.*

*[Jennifer Morris] Why is gas separated by sector but not electric?*

*[Ethan Young] There are different emission factors for each gas portfolio type. For electric a kWh is the same regardless of sector.*

*[Jennifer Morris] Why would it be different for res and non-res?*

*[Ethan Young] Back to slide 15 – they are quite similar except for NOx and ammonia. Not sure exactly why. I think it is completeness of combustion, but not entirely certain. It's what EPA uses and recommends.*

*[Chris Neme] I assume it depends on what equipment is burning the gas – would it be a tech specific thing rather than sector – but maybe EPA doesn't break it out that way.*

*[Ethan Young] Correct. EPA breaks it out that way.*

*[Zach ROss] We can look at this a bit more. EPA broke it out this way and we can look more into why.*

*[Chris Neme] There is potentially an important distinction between indoor emissions i.e. unvented water heater or cooktop vs outside vented.*

*[Noel Stevens] These emissions are reflective of generation, not participant. There would be a separate NEI associated with the participant. Kyle's analysis is reduced by the kWh or therms consumed.*

*[Ethan Young] Doesn't specifically differentiate where gas is combusted but COBRA is an EPA tool and these are EPA emission factors – they are consistent with what's in COBRA.*

*[Chris Neme] Important to document it. I expect this is all emission to outdoors and these don't reflect the indoor air quality.*

- Results are broken out by portfolio and geography, as well as low and high estimates. Uncertainty on PM2.5 exposure to premature mortality and non-fatal heart attacks. 98% of benefits from avoided mortality, electric is 98% of national benefit and 96% of IL.

### **2021 Activities:**

- Some are continuing from 2020.
- We talked about the participant NEI research with the cognitive pretest. We hope to make the updates to the survey and field the surveys. For Utility NEI work, waiting on data from AIC. Goal is to examine pre-and post- for customers who participated in IQ compared to comparison group.
- On the C&I screening assessment, in process of data collection and hope to analyze in early 2021.

### **Closing and Next Steps**

*Celia Johnson, SAG Facilitator*

#### **Next steps:**

- ComEd Societal NEI Research Report – draft coming soon; will be posted on the SAG website and circulated to the Working Group for comment
- ComEd Utility NEI Research Report – draft coming soon; will be posted on the SAG website and circulated to the Working Group for comment
- 2021 NEI Working Group Plan and Schedule is in development. There may be a need for a Q1 2021 NEI Working Group meeting to further discuss business NEI research. SAG Facilitator will follow-up with evaluation teams for feedback.