

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

Wednesday, July 15, 2020

1:00PM – 3:00PM

Teleconference Meeting

**Attendees and Meeting Notes**

**Meeting Materials**

- [July 15<sup>th</sup> NEI Working Group Meeting Page](#)
- [July 15, 2020 NEI Working Group Agenda](#)
- [Next Steps for Economic Impact Reporting \(Guidehouse and Opinion Dynamics Presentation\)](#)
- [Quantifying and Monetizing NEIs in Illinois: Research Update \(Guidehouse and Opinion Dynamics Presentation\)](#)

**Attendees (by webinar)**

Celia Johnson, SAG Facilitator

Greg Ehrendreich, Midwest Energy Efficiency Alliance (MEEA) – Meeting Support

Ali Al-Jabir, Brubaker & Associates, Inc., on behalf of IL Industrial Energy Consumers

Matt Armstrong, Ameren Illinois

Jean Ascoli, ComEd

Jordan Berman-Cutler, ComEd

David Brightwell, ICC Staff

Ann Collier, Opinion Dynamics

Erin Daughton, ComEd

Leanne DeMar, Nicor Gas

Kevin Dick, Delta Institute

Nick Dreher, MEEA

Gabriel Duarte, CLEAResult

Brian Eakin, Navigant

Jim Fay, ComEd

Jason Fegley, Ameren Illinois

Scott Fotre, CMC Energy

Aimee Gendusa-English, Citizens Utility Board (CUB)

Kevin Grabner, Guidehouse

Sophie Gunderson, Guidehouse

Randy Gunn, Guidehouse

Vince Gutierrez, ComEd

Dave Hernandez, ComEd

Hannah Howard, Opinion Dynamics

Katherine Johnson, Johnson Consulting

Cheryl Jenkins, VEIC (IL-TRM Administrator)

Jim Jerozal, Nicor Gas

Darnell Johnson, Urban Efficiency Group

Lalita Kalita, ComEd

Anna Kelly, Power Takeoff

Aaiysha Khursheed, Opinion Dynamics

Maddie Koolbeck, Slipstream

Ryan Kroll, Driftless Energy

Monique Leonard, Ameren Illinois  
Marlon McClinton, Utilivate  
Anna McCreery, Elevate Energy  
Samarth Medakkar, MEEA  
Jake Millette, Michaels Energy  
Abby Miner, IL Attorney General's Office  
Fernando Morales, Ameren Illinois  
Chris Neme, Energy Futures Group, representing NRDC  
Rob Neumann, Guidehouse  
Victoria Nielsen, Applied Energy Group  
Randy Opdyke, Nicor Gas  
Patricia Plympton, Guidehouse  
Christina Pagnusat, Peoples Gas & North Shore Gas  
Michael Pittman, Ameren Illinois  
Reine Rambert, MEEA  
Zach Ross, Opinion Dynamics  
Andrea Salazar, Michaels Energy  
Kyle Schultz, Opinion Dynamics  
Ellen Steiner, Opinion Dynamics  
Jacob Stoll, ComEd  
Mark Szczygiel, Nicor Gas  
Ted Weaver, First Tracks Consulting, on behalf of Nicor Gas  
Bridget Williams, Guidehouse  
Fred Wu, Aiqueous  
Brian Yeung, Slipstream  
Ethan Young, Guidehouse  
Angie Ziech-Malek, CLEARresult  
Matthew Zwerling, U.S. EPA  
Chris Vaughn, Nicor Gas

### **Meeting Notes**

Follow-up items are indicated in red and summarized at the end of the meeting notes.

### **Opening and Introductions**

*Celia Johnson, SAG Facilitator*

Purpose of the July 15<sup>th</sup> meeting:

1. To finalize next steps for economic impact reporting.
2. To update Working Group participants on Non-Energy Impact (NEI) research.
3. To discuss feedback and next steps on potentially incorporating NEI research results in utilities' EE portfolio cost-effectiveness tests for 2022-2025.

### **Next Steps for Economic Impact Reporting**

*Brian Eakin, Guidehouse & Zach Ross, Opinion Dynamics*

- [Zach Ross] Three potential options for annual analysis (most to least detailed) – IMPLAN, Spreadsheet tool, Deemed values. Were presented in March meeting & memo in May. Proposal was presented as a hybrid approach with 1/cycle IMPLAN update and annual spreadsheet or deemed approach to minimize complexity and expense.
- Chris Neme: Agree with Zach's approach, makes sense. Periodic lower cost with 1/cycle update.

- Ted Weaver (comment shared on webinar): I also agree with Zach's approach. This is how Nicor has implemented its internal IMPLAN work over the past two plan cycles.
- Zach Ross: The evaluation teams will work together to implement with details for annual evaluation plans.

## **Non-Energy Impact (NEI) Research Updates**

*Ann Collier, Opinion Dynamics & Patricia Plympton, Ethan Young and Sophie Gunderson, Guidehouse*

### **[Ann Collier]: Ameren Illinois Research Update**

Recap overview of NEIs – societal, participant, utility. Mostly will be talking about public health benefits (societal) today.

- Societal NEIs: finalize approach and begin analysis
- IQ participant NEIs: pretest of draft instrument with small sample, making sure we can make it successful effort. Will review results, make changes after pretest. Guidehouse using same instrument. Will resume when programs resume [post-COVID].
- Commercial participant NEIs: screening questions preparation, including standard, custom and instant incentive programs. Short battery of questions about what may have changed since upgrades. Will use to develop first estimates. Determine next steps at a later date. Will field those surveys this fall and anticipate results by EOY.
- Utility NEIs: submitted data request re arrearages and other analytics. Will begin analysis this fall.

*[Question:] Were questions created keeping HIPPPAA in mind and was there any NEI education or awareness provided to the subgroup that could help them provide the information that you are looking for? Demographic/target population will they have the information to be able to respond to those questions?*

*[A] Happy to answer. Long history of asking residential respondents about changes in health and economic status for purpose of NEI research, so we looked to that body of work to design research and survey questions. Quite confident that we have structured in a way that is answerable for most respondents. Asks about period of time since they received upgrade – “as you think about the past year...” Can make sure you have a copy of the survey instrument that was circulated. On commercial side as well, questions will be thinking about time since upgrade, have you noticed changes in employee productivity? Has anyone mentioned seeing tasks, reduced eye strain. Etc. Looked to prior literature to make sure we had the most common kinds of impacts that have been reported in other parts of the country. Short survey will help to “ground truth” that and make sure of what is out there so we can do a more focused in the future.*

*[Question:] More specific to IQ market – in that space many times the questions may be answerable by typical population, there may be education issues about connecting the dots between the upgrade and the health impacts*

questions. Health impact questions not connectivity between those points, may be skeptical about answering the questions.

[A] That's the number one thing we hope to get out of the pretest, to turn on our listening and see if they are struggling to understand, questioning the introduction script and purpose of survey. These will help answer the questions you present. We want to make sure it is a positive survey experience for the respondents.

### **[Patricia Plympton]: ComEd Research Update**

- Will be talking about participant and utility NEIs and about NEIs and cost effectiveness.
- Participant research: similar to what ODC has planned for Ameren Illinois. Similar state with surveys. Will be refreshing with results of cognitive test and update questions based on feedback regarding things that have changed due to COVID. Want to make sure questions are appropriate for customers. Will be starting with MF building owners and operators later this year when implementation restarts. Developing survey questions for business program evaluation surveys.

[Chris Neme] On last bullet, screening questions will identify what programs have deeper dive on NEIs?

[A] Several years ago we did some NTG batteries, will use those surveys again and update. Look for O&M and increased productivity issues.

[Chris Neme] Have you identified which programs?

[A] Yes, and will follow-up.

- Utility research: We have been working with departments at ComEd to tease out data to analyze for financially related categories to income eligible program: carrying cost of arrearages has already been identified. Subsequent data poll will add additional 4 categories listed on slide. We can proxy with values from secondary research if we can't obtain primary info.

[Chris Neme] When you say the cost of arrearages is \$0.43, what does that mean? Per what?

[A] For programs analyzed, how much bad debt was reduced by ComEd customers participating in program. Not as robust a sample as we liked. Hope to refine that cost, but it is "unlikely" to be able to obtain. That's the carrying cost of arrearages for those two programs we looked at.

[Chris Neme] Annual savings per household?

[A] Yes.

[Ted Weaver] Can you say that again – is it annual savings or lifetime savings per household?

[A] Annual, I think – can colleagues provide more detail?

*[Ted Weaver] Unclear what the units are though – per what, and does it apply per year or per lifetime.*

*[Chris Neme] Appears that programs did not have a material effect on the amount of arrearages.*

*[A] For the data set we looked at for ComEd, this is the result we obtained. It is six times lower than the average of two other states we looked at. We have hypotheses and are exploring. Happy to share theories as a sidebar.*

- Some bullets ComEd shared last month or so about NEIs and cost effectiveness. Intention is to not have NEIs alone justify program measures. Will use agreed upon results from evaluator NEI research. Honing in on a set of values to meet the intentions of FEJA to use in TRC analyses. Full presentation that ComEd made is on SAG website. [see [June 16 SAG Meeting page](#)]

*[Chris Neme] Want to understand better what the last bullet means – NEIs alone not justifying program measures. Not just about whether it is TRC cost effective or not, but if that is what it means then I'm fine. Otherwise if something is 0.9 without NEIs and 1.2 with, then we won't pursue? Is TRC without NEIs the screen?*

*[Jim Fay] Bullet means ComEd's first goal is to hit our statutory savings targets. Not referring to any screening criteria. Primacy of meeting targets. If including measures that have NEIs then we wouldn't include those.*

*[Chris Neme] So if measure doesn't help the way that first two bullets then if measure was above one with or without NEIs wouldn't pursue it. It has to meet broader portfolio objectives first.*

*[Jim Fay] Yes that's what it means.*

*[Ali Al-Jabir] Clarification – is the bottom line for ComEd that once NEIs are quantified that you will use them to determine overall portfolio cost-effectiveness?*

*[Jim Fay] These NEIs will be reflected in portfolio TRC. ComEd has traditionally been well above 1.0 and we presume these will increase it further. We have in the past filed TRCs with and without NEIs. We haven't talked about it explicitly yet, but will probably want to look at both with and without again to see the incremental impact of NEIs on the portfolio.*

*[Ali Al-Jabir] Does Ameren have a position on how they will use NEIs in evaluation of programs?*

*[Fernano Morales] No position to share from Ameren IL at this time.*

*[Ted Weaver] I'm having trouble following timelines here – it sounds like some research is underway that will take a while to get finished. For utility and participant NEIs, can we come to an agreement what we are going to use for*

*planning – seems like research won't be available in time. Can we make a decision on what to do for planning without it? Secondary source? Is that discussion today or a follow up? Would like to have values to move forward. How does this help us move forward with values everyone is comfortable with so we can do planning?*

*[Patricia Plympton] Makes sense why confused as to research vis a vis Plan 6. We won't have survey & research results in time for plan 6. We can provide secondary research values for participant NEIs. ComEd believes we will be able to get utility NEIs for drafting Plan 6. Will have a slide about that coming up.*

### **[Ann Collier]: Ameren Illinois Societal Research Update**

- Review of flow chart of methodology for developing societal NEIs. Savings results > reduced generation > AVERT > COBRA. Result: monetized values for outputs – health benefits with sensitivity ranges for high/low estimates.
- Key item from last call was need for both electric and gas. We have spoken with EPA and come up with an approach. ODC is monetizing benefits from both electric & gas portfolio. Peer reviewed EPA tools. Adding in estimates of NH<sub>3</sub> and VOCs that electric EE isn't expected to effect, so this will provide a valuable and more comprehensive approach.
- Customizing to Illinois – documentation shown on slide. Teams working with EPA to get customized discount rate files to value future benefit streams. Capturing societal benefits of gas programs. Confident this is the best available approach to determine for gas. Spent a lot of time talking last time about the approaches to capture CPAS and have a detailed slide on that. At a high level, we agree. Don't want to leave benefits on the table. EPA tools have some limitations that don't get us too far into that future stream of savings but we are maximizing them to the extent that EPA recommends. Will continue to stay in the loop with both teams on how we can keep capturing future benefits. Can provide national results and Illinois specific as well.

*[Kevin Dick] Are we capturing avoided methane from natural gas reduction?*

*[Ann Collier] I don't believe methane is captured. If there is a question, we can follow-up.*

*[Ted Weaver] There are huge greenhouse gas impacts, but methane doesn't have a major health impact as far as I know. Other than the safety issue if it is leaking, etc.*

*[Darnell Johnson] These societal NEIs will follow the same standard as with the ComEd NEIs addressed previously?*

*[Jim Fay] They would be the same – regardless of NEI if it moves a measure from below TRC of 1 to above, that by itself doesn't mean it will be incorporated. Most important question is does it help meet our savings goals?*

*Additional NEIs aren't enough by themselves to include something in portfolio. Has to help meet statutory goals.*

- Scale at which we model the societal health benefits – running these tools at the portfolio level. First year savings input for portfolio. Working on scaling that down to individual programs. Patricia will have some of that later with her team. Intent isn't to parse it down to individual measures. Think about at program & portfolio level.
- Review of modeling – AVERT is electric only. Presuming that fossil fueled generation is what is reduced, not nuclear – no adjustment to generation mix. Will be reviewing EPA emissions inventory to capture emissions from sectors. Combine those two tools to inputs for COBRA v4.0. Discount rates brought in here. Will be using historical baseline. EPA doesn't recommend using these tools to go too far beyond baseline because of uncertainty in future markets and demographics. Trying to work around some of those issues.

*[Chris Neme] Can you clarify what the discount rate is for?*

*[Ann Collier] Future benefits for ~5 years for health benefits.*

*[Chris] How are you addressing multi-year effects?*

*[A: jump two slides ahead]*

- Societal CPAS methodology: EPA tools model short run changes (5 years). We will only really capture first 4-5 years of CPAS trajectory from program years. Will be dependent on EPA to release updated versions of tools and keep counting more and more benefit years as we can. Want to trust EPA judgement on uncertainty. Want to truncate the benefits analysis at EPA recommended endpoint. Happy that it captures more than first year savings, but it does exclude “out years” of CPAS. Guidehouse slides will get into some of what that means and we can discuss more when we get there.

*[Chris Neme] If results can be seen for every year separately for 19, 20, 21, 22 – when you look at those 4 years is there much variation across the years?*

*[A] Haven't run full analysis yet, and we can look at that to see what the implications are.*

*[Chris Neme] We know the average EUL is 11-12-year range, so if the limitation of the EPA tool is first 4 years of 11 that seems problematic. What do we do about it? Make some extrapolation but to do that we would want to know if there is a trend for the years, we can get data. If there is a downward trajectory, then what happens if that continues. If it is flat, we might look at it differently. Might help us.*

*[Ted Weaver] Could normalize this somehow. There are life cycle streams. If you saved a bazillion kWh in the first year, 2018, I think the way I understand is that you save that many kWh on generation system. Model then says what is the present value of those future savings to the first year. So, the limitation*

*isn't on the health impacts going on into the future it's just on the ability to model electricity savings? Is that right?*

*[A] Limitation is on the baseline against what we are evaluating savings – baseline is fully confident for 5 years.*

*[Patricia Plympton] Chris – as you said, average EUL is 10-11 years for electric. We have been exploring and working with ComEd to look at full amount of CPAS and bound it in a reasonable way to not overstate the health benefits. Understand that the marginal emission rate decreases over time. In conversations to do that. Have discussed with EPA. EPA routinely works on these projections, but different departments at EPA. When we asked could we reasonably apply some kind of upper bound on what we thought the marginal emission rates at the end of the CPAS term and they were okay with that, but it is a work in progress.*

- [Ann Collier]: Gas emission reductions: details on approach on slide. Going to produce state level estimates and we will turn them in to county level – distribute from share of commercial sector employment and share of gas homes in territory. Other option is equal distribution across counties, which is faster but other approach is more accurate.

#### **[Patricia Plympton]: ComEd Societal NEI Research Update**

- Refinements to reflect program level CPAS. Health benefits for entire US and IL residents. Discount rate customized by EPA to TRM discount rates. Work in progress. Ethan is leading our research.
- [Ethan Young]: Building off of discussion previously a few minutes ago. Already touched on some of it. In response to stakeholder feedback, refined our emission impacts. Program level CPAS can vary in direction depending on measures. Longer CPAS has longer health benefits. Figures compare CPAS from MF retrofit and small business – SB tapers off more quickly than income eligible MF. Expect health benefits will follow that same sort of curve.

*[Patricia Plympton] One of the reasons we are pursuing this, trying to bound the marginal emission rate over time. Because there is a lot of area under that curve.*

*[Ethan Young] That's right. Under the AVERT modeling, may be overstating emission changes past 5 years. Working with EPA to come up with how to reasonably bound what emissions changes we expect to see 2023 and beyond.*

- Under our approach, estimate societal NEIs each year from 2018-2043, for a total of 25 modeling runs. (Model flowchart shown on slide.) Analysis repeated 25 times at portfolio level. EPA and stakeholders have found there are linear impacts of kWh on emission reductions and emission reductions on human health at the level of emission reductions we are seeing for EE. So, we can apply this to program level CPAS curves.

*[Chris Neme] Seems to only be true to the extent you can work out a process with EPA.*

*[Ethan Young] Yes, uncertainty. We are working on more robust approaches to bound those benefits.*

*[Ted Weaver] Are you doing this for portfolio or programs?*

*[Ethan Young] Should be a uniform health per kWh benefit for each year from the modeling that can be distributed across the program savings for each year. We will provide more detailed documentation about this approach for more digestion.*

*[Chris Neme] Not sure you answered Ted's question – understand there is a relatively linear relationship. 100 kWh of savings in one program has a different “die off” rate than another. So, measures from program 1 in 2020 might have 50 kWh left in 2030 but program 2 might only have 10 left. If emission profile changes over time, wouldn't that mean that the savings persisting in any year, the lifetime emission reductions for a kWh could be different program to program.*

*[Ethan Young] Next slide could help show this. Savings taper down over time under annual health benefit estimation – unique value for each year savings. Those are applied to CPAS savings.*

*[Chris Neme] NPV of savings could be different.*

*[Ethan Young] Yes, we are discounting everything back to 2018 to address that*

*[Chris Neme] Weighted average for portfolio then? [Ethan Young: Yes]*

*[Ted Weaver] Lifecycle benefits of the health impacts and lifecycle benefits of savings. We put that in for each program with a different pattern, but we calculate the right benefits for each. Is that right?*

*[Chris Neme] Lifetime value for each program could be different – could theoretically have different \$/kWh per program.*

*[Ted Weaver] We're just calculating marginal cost; this would give the same answer at the portfolio level.*

*[Patricia Plympton] We can do some side by side sensitivity analysis to take another look at program-by-program compared to portfolio. We will add that as an action item.*

- For the purposes of this presentation we estimated some societal NEIs for 4 programs. National monetized benefits from \$71-160 million depending on sensitivities. Majority are from reduced mortality (99% of benefit).
- Maps showing outputs for different reductions. Majority of benefits are east of Mississippi river.

- For just state of Illinois – estimated values per county. Accrue mostly to central and eastern IL. About \$4.4 million in health benefits in IL at low sensitivity. \$10 million at high sensitivity. Dense population municipalities.
- Small business programs are 99% of benefit – which is in line with the savings of that program compared to others tested.

*[Chris Neme] Clarifying question – 70-160 million across US. Is that one year of implementation?*

*[Ethan Young] Yes, lifetime for measures installed in 2018.*

*[Chris Neme] How many first year MWh? 250 million?*

*[Jim Fay] Budget was maybe \$40 million for those programs which makes 250 MWh sound about right? If variation between programs isn't large, maybe we could apply these at program level.*

- [Patricia Plympton] What Ethan showed for 4 programs, we rolled up to one slide. National and IL level.
- Next slide is values that are possible to use some values for draft Plan 6 – MD and MA values for annual savings per household.

*[Chris Neme] NPV of those could be ~9-10X that value?*

*[Patricia Plympton] Not my area but we can try to look at what that would be for lifetime*

*[Chris Neme] We need that for TRCs for lifetime savings.*

*[Patricia Plympton] Will add as an action item.*

*[Ted Weaver] So this looks a little different from last time – it was 3 states.*

*[Patricia Plympton] Revised memo will have these in there – a Rhode Island source and MA source were both National Grid.*

*[Ted Weaver] Confused by the thermal comfort piece. Are those direct dollars or imputed?*

*[Patricia Plympton] Working back from how we monetize – hospitals keep track of patients reporting too cold, hypothermia, too hot, heat exhaustion or heat stroke – sick because of too hot or too cold. That's how we calculated that.*

- Next slide still working on utility NEIs to analyze. Two states with discrete analyses, adjusting for 2018 and landing at about \$18. Will need to estimate lifetime.
- TRCs for MF and Small Biz programs with and without societal NEIs at high and low estimates. TRCs for participant and utility NEIs. Utility NEI category definitely moved TRC values. Participant values are significant impact much more so than societal.

- All-in TRC values (purple slide) more significant for some programs than other – due to participation levels in programs for sure.

### **Next Steps for Incorporating Non-Energy Impacts**

- Will continue to quantify utility NEIs. Create AVERT inputs for Plan 6 programs. Will calculate COBRA and do secondary research.

*[Ali Al-Jabir] Societal NEI values – big difference for national benefits compared to IL specific – will you do both?*

*[Jim Fay] We haven't looked at that range yet or discussed a value to use.*

*[Ali Al-Jabir] When do we decide what values we are going to use for the Plans?*

*[Patricia Plympton] Celia mentioned we can have an interim Working Group meeting before December if it would be useful.*

*[Ted Weaver] Could you go back to the participant and utility secondary research / MD and MA table. As I read this participant NEIs, \$197 per household per year. We take a NPV. If this is combined electric and gas, it would allocate among those or ComEd and Nicor would both use this and add up? [A: Allocate, yes] For utility NEIs is this a joint number since MA is mostly joint utilities? [A: don't know particulars, we can get back to you on that]. These all come from income eligible retrofits [A: yes] – should we apply this to just income eligible programs. [A: Yes, we think that is the most responsible way to use these values.]*

- We developed responses to the two memos of feedback we got – addressing several statements we pulled out.
- Objection to subjective/speculative monetization. We have excluded those – only what is reproducible, quantifiable and readily monetizable. Based on our research.
- Concern about including NEIs expanding scope of programs. Covered ComEd intentions on how to use these values earlier today.
- Concern about non-standard practice. Currently 26 states using monetized NEIs as shown in DSESP of March this year. Other alternative methods also used by other states.

*[Ali Al-Jabir] 26 states and DC listed there. Can you comment on how many use the same modeling recommended here, and getting same impacts, or is range of NEIs substantially different?*

*[Patricia Plympton] At a high level, there is very little that is consistent between how utilities for their own purposes monetize NEIs. It's very state specific.*

*[Ali Al-Jabir] Are they all using this EPA modeling or are they substantially different?*

*[Patricia Plympton] Also in our memo. There are different categories.*

*[Ali Al-Jabir] Does the memo specify which states use these EPA models?*

*[Patricia Plympton] Specifically a utility in Washington used these tools. Focus on Energy in Wisconsin as well. California has their own tools.*

- [Sophie Gunderson]: Sharing initial responses to Nicor Gas questions/feedback.
  - There is ongoing research on societal and participant NEIs. Adapt approach for gas utilities – as noted before by Ameren IL we will use EPA peer-reviewed gas emission rates and discount rate. Participant recommend use secondary research from MassSAVE until survey results are available for programs then allocate to utilities based on investment levels.

### **Closing & Next Steps**

*Celia Johnson, SAG Facilitator*

- If there are any remaining questions on the latest NEI research results presented on July 15, reach out to the evaluation teams.
- SAG Facilitator will check on where utilities are with regard to reviewing the latest NEI study information and the timing for decisions on the next EE Plans. A follow-up Working Group meeting will be scheduled, if needed.
- The next Working Group meeting is scheduled on Dec. 8, 2020 to discuss preliminary results from NEI studies.