



Study Update and Public Comment Session Meeting Summary

August 15, 2018

1:00-3:00 pm

Location: Room 3002, Electrical and Computing Engineering Building (ECEB)
306 N. Wright Street
Urbana, IL 61801

WebEx Information: www.webex.com or 1-415-655-0002

Meeting number (access code): 808 887 865

Meeting password: 2zF777At

[Note: descriptions of comments and discussion are condensed summaries and paraphrases]

Attendee List

NextGrid Project Team:

In Person:

- Pete Sauer, *University of Illinois, NextGrid Lead Facilitator*
- George Gross, *University of Illinois, NextGrid Lead Facilitator*
- Lynnea Johnson, George Gross, *University of Illinois, NextGrid Lead Facilitator*
- Marty Cohen, *NextGrid Senior Study Consultant*
- Terrance Garmon, *Illinois Commerce Commission*
- Katharine McErlean, *Illinois Commerce Commission*

WebEx:

- Dr. Govindarasu, *Working Group 3 Co-Leader*

Public

In-Person:

- Mike Rikaski
- Chris Foley, *ComEd*
- Mike Abba, *Ameren Illinois*
- Mark Kelly, *Caterpillar*

WebEx:

- Phillip Roy, *ComEd*
- Pete Colarelli, *Exxon Mobil Corporation*
- *14 people attended via WebEx

A sign in sheet was posted but no one signed it.

Agenda Item I: Welcome and Overview

Dr. Gross welcomed everyone to the new electrical engineering building, is happy to put the building to use for important public meetings such as this one, opened the meeting under the Open Meetings Act, took attendance, reviewed meeting agenda, welcomes public comments, and if there is a need for clarifications, will take comments.

OMA Opening Remarks:

Pursuant to the Illinois Open Meetings Act, I am calling to order today's meeting of NextGrid Study Update and Public Comment Session.

Before I begin with introductions, I want to make a few preliminary remarks. First, because this is being conducted as an Open Meeting, members of the public are invited to observe this meeting and, at the appropriate time in our agenda, participate by making comments – regardless of whether they are participating in person, on the telephone, or by WebEx. To facilitate the discussion, we request that members of the public who are interested in making a public comment fill out a speaking card and hand it to Katharine McErlean. If you are participating by WebEx, you may indicate your desire to make a comment by clicking on the hand icon and announce your name prior to making your comments. And if you are participating by telephone, you may send an email to ICC.NextGrid@illinois.gov, and we will attempt to call you on at the appropriate time. More details about the public comment period will be provided when we reach that part of the agenda.

Second, minutes are being taken but there will be no verbatim transcript of this meeting. [Members of the public may record the meeting, but I ask that this be done without interrupting our speakers.]

Finally, before we begin, I will take attendance. Let's conduct a roll call, indicating your name and organization, starting with people in the room. [Roll is taken.] Now, individuals participating by WebEx. [Roll is taken.] Any individuals participating by telephone. Any other individuals I have not called on? [Roll is taken.] See attendee list above.

Agenda Item II: Introduction of NextGrid Lead Facilitator by Gr. Gross, University of Illinois (See Presentation):

- Dr. Gross is starting his 26th year. Would like to discuss why we are doing this NextGrid study and what we would like to accomplish. The origin of the NextGrid study came from the transition team under Governor Rauner. University of Illinois submitted a proposal and is the Lead Facilitator.
- GridWise Alliance- a stakeholder group of all the people who plan build and operate grids in North American and the United States. They are there to educate the public, lobby, and bring about the modern grid. In 2017, Illinois came out as the second state. Happy to be in that position. We love California because we can learn from them.
- Developments in renewable energy- information and data will play a major role in meeting the demands of the customers. Half of the electricity, 1.5 times, being exported to other neighboring nations. Neighboring regional transmission organizations, southwestern power pool- able to provide a sizeable portion of electricity just with wind.

- Chart of notable achievements with renewable energy in various parts of the world. Illinois has developed quite a few wind resources along with neighboring state Iowa. 37% of wind power. Notable achievements all over the world. Everywhere in the country getting more electricity generated by renewable resources, with marked renewable standards. Site two, California, will have 50% by 2030 and by 2035 Hawaii is planning to have a 100%. California has recently implemented an energy storage directive by 2025 and operating by 2024.
- Disturbance events- the events change the nature of the business. Very little doubt, in terms of decreasing price, we see with solar and wind game changing. Deeper and deeper penetrations of wind. The band response using load to implement curtailments. Do not need to go after very expensive electricity, very valuable tool in terms of establishing supply and demand.
- Battery storage systems, prices are decreasing, storage is a non-generator, non-load, as an idle system. We don't define it by something it is not. It's a special resource and have to recognize its capabilities and nature.
- Distributed energy resources- Connect to the grid, the transmission grid. FERC is answering that call in distributed battery storage resources, and implementation of aggregation of DERs in California. Still a proposed rule making coming and FERC has only 4 commissioners.
- New Microgrid- shown to have tremendous resilience.
- New electrification push in terms of EVs.
- After announcement of Tesla 3 reservations: Mr. Musk sold 325,000 vehicles. New load and requires us to have a charging infrastructure for this to become important.

NextGrid Process Overview:

- To address the work we are doing created 7 groups. Way to compartmentalize the work. There is a lot of overlap. By in large finished, might have 1 or 2 meetings outstanding at this point.

Lead Facilitator Key Responsibilities:

- Working with ICC staff, Working Group Leaders, Senior Study Consultants in terms of implementing the process of this study. Very much a customer-oriented study, a study that wants to involve all the stakeholders. We are soliciting input because we want to reflect in our report how stakeholders and customers view the future grid. We are identifying opportunities and challenges.
- University of Illinois is monitoring every working groups meetings unless have to be at another place at the same time.
- University of Illinois is compiling the reports. We have begun looking at the drafts. We would like to get the report done by the end of the year. We will put the draft report out and invite your participation. University of Illinois will put in the linkages in each chapter. Each Working Group presents a draft. We work very closely with the working groups and provide guidelines.
- What is within the scope of the activities. Very much involved in having collaboration in these groups because of overlap in the areas. Also worked to have a wide diverse representation present at these meetings.

- Stress the consumer orientation of this study, we are very keen to solicitate stakeholder input, would like to sure each stakeholder is heard. This is not a consensus building type of study, going to reflect agreement and disagreement.
- Key deliverable- is the final report. Want the report to reflect the insights that we gained form discussion with stakeholders, working group members, and point out needed polices need to move in certain directions, list areas of agreement and disagreement. The desire is to bring about higher efficiencies in the system, take advantage of new digital technologies, and maintain customer choice, and possibly lower cost.
- Our process will produce better educated electricity consumers. We invite you to access what is available on the NextGrid website. We want to go beyond the smart grid.

Professor Sauer opens the floor for questions. No questions are received.

Agenda Item III: Introduction of the Working Group Leaders presentation by Professor Sauer:

- **University of Illinois Electrical and Computer Engineering, Power and Energy Systems areas of study include:** Bioengineering, Acoustics Circuits, Signal Processing Communications, Control Computer Engineering Electromagnetics, Sensing Microelectronics, Photonics Nanotechnology Power, and Energy Systems
- UIUC People on the Project:
 - George Gross, Professor of ECE
 - Peter W. Sauer, Grainger Professor of ECE
 - Alejandro Domínguez-García, Associate Professor ECE
 - Subhonmesh Bose, Assistant Professor ECE Rizwan Uddin, Head of Nuclear, Plasma and Radiological Engineering
 - Joyce Mast, Program Administrative Assistant
 - Lynnea Johnson
- NextGrid Project is roughly 18 months, started last summer, will present final draft report to ICC sometime in October and will be posted for public comment. After revisions, ICC will hopefully publish the report by the end of the year.
- Working groups are scheduled by Katharine and Terrance. Each working group goes to those 7 topics listed, designed to be representative to everything we care about. Do include overlap and as facilitators, will organize overlap. Key deliverables are the final report. Includes recommendations of opportunities and the challenges.
- **The working group leaders are:**
- WG 1: New Technology and Grid Integration lead by Dr. Mohammad Shahidehpour at IIT.
- WG 2: Metering, Communications and Data lead by Matt Olson from Burns&MacDonnell.
- WG 3: Reliability, Resiliency and Cyber Security co-lead by Dr. M. Govindarasu from Iowa State University and Dominic Saebeler from the Illinois Commerce Commission.
- WG4: Customer and Community Participation lead by Marty Cohen from Cohen and Assoc.
- WG5: Electricity markets lead by Lynn Kiesling from Purdue University.

- WG6: Regulatory and Environmental Policy Issues lead by Mary Gade from Gade Environmental Group.
- WG 7: Ratemaking co-lead by Carl Pechman and Ken Costello from NNRI.

Agenda Item IV: Progress Report of Working Groups 1,2,3,4,5,6,7 by Marty Cohen, NextGrid Senior Study Consultant and Working Group 4 Leader (See presentation):

- What we are doing in Illinois is a collaborative process to address very complicated issues, regulatory, social, environmental and we are doing it in a collaborative way. Only state that is doing it this way.
- Doing it in a collaborative fashion is the most productive and most difficult with so many different stakeholder and different opinions.
- Schematic shows the seven different working groups, interconnected much like the grid. We are talking about a future and there is only one future. We don't know when but its underway. Start with a radial grid with one-way power flows, pretty much the same it has been for 100 years. With new policies, innovation and markets, the grid is changing. Imagine a future in which you as a residential customer have solar panels on the roof, you have battery storage in the basement, a EV in the garage, and you have smart thermostat, home technology that can respond to real time conditions on the demand side including pricing. You may have the opportunity to leave the grid. There will be a whole range of customers who will be empowered to decide how to interact with the energy system for their own benefits. These are profound implications and will be significant for every customer transacting with various ways.
- Seven working groups: seem to be best way to divide up the substance. Approximately 4-6 meetings each. Presentations, reading reference material from Working group leaders, participants, drafts of outline, draft reports and redrafts, different exercises in meetings and between meetings to elucidate all these issues outline much of the activities that took place. Intent was not to forge consensus but to dig into issues, describe areas of agreement and disagreement, and through that we believe to be a valuable process to keep Illinois in forefront of grid modernization and creation of markets to benefit customers and system as the whole.
- WG 1: New Technology and Grid Integration:
 - observational, descriptive, policy elements, projective of technology. Do have an idea of tech being developed and project impacts but don't know when it will occur. WG 1 has a draft report on website and is subject to change. I encourage you to read it.
- Opened the floor to Questions- No received.
- WG 2: Metering, Communications and Data:
 - Looks at metering, communications and data. What is metering and what does DERS impacts have on the grid? What data is collected, how can it be used, what frequency, when collected, stored and how often and how can customers use the data for DERS and for personal benefit and what kinds of data do customers want? Group look at communications- data has to be communicated. Must be secure, cost effective and beneficial to all customers. Whole range of ways for communications in proprietary networks and rules and regulations are significant impacting interconnection.

WG 3: Reliability, Resiliency and Cyber Security presentation by Dr. Govindarasu (see presentation):

- Good afternoon, thanks for the opportunity to present our work in this meeting on Reliability, Resiliency and Security for the future grid.
- The working group took a holistic approach included four thematic items 1) technology, 2) process, 3) people, and 4) regulation and compliance. All these different elements are interrelated.
- The working group discussed the themes across different meetings, with some members, some outside experts, jump start discussions, collected inputs and developed Work Group Draft Report.
- Draft Work Group Report overview- itemized report into a matrix on each thematic areas, challenges, opportunities and potential action items. There is a chart and accompanying narrative. For example, when it comes to technology focus on information technology, IT, paradigms and internet of things how they interact in operations technologies. Please refer to draft report.
- Chart on Technology: IT and OT. Synchronize, what are potential solutions, holistic framework. Ability for attribution. For example- IOT, cloud computing, AI machine learning, big data, blockchain, brings opportunities and challenges.
- People- how do we double the work force in a sustainable manner and forming partnerships with other industries. Those things are explicitly brought out.
- Process- risk based approaches. NIST framework for cyber security. How those things can be leveraged in creating effective process in the future grid. Talk about various metrics. And collaboration among various stakeholders and information sharing.
- Regulation and Compliance: Distribution infrastructures: Articulates different viewpoints. Intellectual content. Costs associated with various things.
- Outline of TOC for WG 3 Draft Report: End have cross cutting issues of all 7 working groups.
- Cross Cutting topics- for example IT technologies- applies WG 1 ,2 and 3. Overall had good discussions, based on discussions we drafted WG 3 draft report and after receive feedback from lead facilitatory or right now would be happy to take those input and change the document. Thank you.

Presentation by Marty Cohen, NextGrid Senior Study Consultant overview of WG 4,5,6 and 7:

- WG 4, 5, 6 and 7 are under way of drafting.

WG4: Customer and Community Participation:

- Covered a broad set of issues, how all customers and communities can benefit from emerging changes in the way energy is used, produced, managed, for individual customer and system.
- Focused on 4Es. 1)Engagement, 2) empowerment, 3) equity and 4) education.
- Discussed brining benefits of DERS to everyone including individuals that don't participate in these markets such as system benefits whether they choose to participate in new technologies or not.
- Discussed concerns of concerns of large industrial customers, differences and similarities to small volume customer. Discussed competition as a corner stone of policies.

- Innovative pricing enabled by smart technology, impact of new technologies with system and individual benefits.
- Requires good regulatory policy and planning.
- Looked at needs of low income customers, affordability is paramount, access at terms they can afford.
- Currently, sorting through suggested edits to the WG 4 initial draft. Final report will look quite different. Will be reflective of all view that come up in the working group. A lot of ideas conflict with each other.

WG5: Electricity Markets:

- WG 5 is on markets lead by Lynne Kiesling.
- Illinois made a commitment moving to a market approach to energy.
- Discussed opportunities for markets to deliver benefits to customers are abound and how to do that are subject to great discussion. Need new technologies to allow them to operate in a seamless function.

Dr. Gross Comment: Big problem is don't have legislation that allows for retail markets

WG6: Regulatory and Environmental Policy Issues:

- Lead by Mary Gade who is a former director at the EPA.
- Discussed a range of very interesting presentations, one noted from Tom Skilling, about climate and grid resiliency in the face of these changes.
- Environmental impact of distributed resources and coordination of environmental policies are also increasingly important issues.

WG 7: Ratemaking:

- For a lot of people that is what it comes down to. What am I going to pay? How are rates set? How will they change as roles change?
- Lead by Carl Pechman and Ken Costello, couple of the country's best experts on these issues.
- Discussed issues related to rate making.
- In Illinois have had a range of setting different rates. Ameren and ComEd use Formula rate making method. It is one way, not the only way. WG 7 is taking a deep dive into options as we move forward, to establish a revenue requirement, set rates in traditional way- cost plus formula or through performance metrics. Broad set of subjects.

Agenda item VI: Next steps for NextGrid

- Updates, Introductory chapter is a very rough draft and is posted to the website, we welcome comments to any drafts as they are posted. Dr. Gross and Dr. Sauer will be compiling a draft report. As always please feel free to reach out and give comments.
- If you want to submit a comment, please visit the NextGrid website.

Agenda Item VII: Public Comments Session:

Discussion:

Q1: When will all the remaining drafts be posted?

- Working groups reports are expected to be published in September. Everyone is working to give the report to University of Illinois with sufficient time to make the end of the year deliverable., That date has not been fixed.

Agenda Item VIII: Closing Remarks

Adjourn.