NextGrid: Utility of the Future Study
Ratemaking Working Group Meeting
July 30, 2018
9:00-1:00pm
Location: Main Hearing Room, Illinois Commerce Commission
160 North LaSalle, Suite C-800
Chicago, Illinois 60601

WebEx Information:
Meeting number (access code): 802 393 082
Meeting password: JMc8MEn8

Meeting Notes Summary

<u>**Attendee List:**</u>
Working Group Leaders:
Ken Costello, Principal Researcher, *National Regulatory Research Institute*
Carl Pechman, *Director, National Regulatory Research Institute*
Kathryn Klein, *Senior Research Associate, National Regulatory Research Institute*

Working Group Members:
<u>In Person</u>
Mark Templeton, *Abrams Environmental Law Clinic at the University of Chicago Law School*
Jim Blessing, *Ameren Illinois*
Sarah Reynolds*, Ameren Illinois*
Leonard Jones*, Ameren Illinois*
Anastasia O'brien, *Commonwealth Edison Company*
Lawrence Kotewa, *Elevate Energy*
Rob Kelter, *ELPC*
Erin M. O'Connell-Diaz, *Future Forward Inc.*
Kristin Munsch, *Illinois Citizens Utility Board*
Robert Stephens, *Illinois Industrial Energy Consumers*
Patricia Sharkey, *Midwest Cogeneration Association*
Paul Centolella, *Paul Centolella & Associates*
Christopher Villarreal, *Plugged In Strategies*
Philip R. O'Connor, *PROactive Strategies Inc.*
Ross C Hemphill, *RCHemphill Solutions LLC*
Mary J. Stephenson Schroeder, *Stephen Schroeder Ltd.*
Christopher Townsend, *The NextGrid Coalition*

James Gignac, *Union of Concerned Scientist*
Jeff Deyette, *Union of Concerned Scientist*
Laura Micheli, *Uptake*
Rebecca Stanfield, *Vote Solar*
Will Kennedy, *Vote Solar*
Paul Alvarez, *Wired group*
Jeff Orcutt, *Chapman Energy Strategies LLC*
Scott Vogt*, Commonwealth Edison Company*
Martin Montes*, Commonwealth Edison Company*
Chris Foley*, Commonwealth Edison Company*
Chad Newhouse, Commonwealth Edison Company
Kristine Full, Commonwealth Edison Company
Anne Zehr, *Whitt Sturtevant LLP*

WebEx
Julie Vahling, *AARP IL*
Glenn Rippie, Commonwealth Edison Company
Evan Nort, *Charge Point*
Danny Waggoner, *Advanced Energy Economy Institute*
Brad Fults, *Progressive Energy Solutions LLC*
Louis Harris, Illinois Citizen
Ron Tabaczynski, *Building Owners and Managers Association*
Mike Munson, *Building Owners and Managers Association*
Alexander Rozenblat, *Eligo Energy LLC*
Cheryl Dietrich, *NextEra Energy Resources LLC*
Gerard T. Fox, *Retail Energy Supply Association*
Katie Bell, *Tesla*
Ryan Ellen*, Ameren*
Chris Shee*, Park Hill*
Ladeene Freimuth, *Gridwise Alliance*
Chris Skey, *Clark Hill PLC*
Julie Soderna*, Citizens Utility Board*
Ken Johnson, *Johnson Blumberg and Associates*

Absent
Ellen Balfrey, *Apex Clean Energy*
Tom Wolf, *BP America Inc.*
Kevin Borgia, *Cypress Creek Renewables*
Kevin Dick, *Delta Institute*
Teresa Ringenbach, *Direct Energy*

Christie Hicks, *Environmental Defense Fund*
Thomas Ashley, *Greenlots*
Matthew Glavin, *Illinois American Water*
Mark Denzler, *Illinois Manufacturers' Association*
Matthew McCaffree, *Itron*
Leah Scull, *Midwest Energy Efficiency Alliance*
Toba Pearlman, *Natural Resources Defense Council*
Janice Dale, Karen Lusson, *Office of the Illinois Attorney General*
Farrokh Rahimi, *Open Access Technology International, Inc.*
Amy Heart, *Sunrun*
Andrew Barbeau, *The Accelerate Group*
Karl McDermott, *University of Illinois*
Daniel J. Foley, *GlidePath*

Members of the Public and Non-working groups Members:
<u>In Person</u>
Martin Fuche

<u>WebEx</u>
Lynnea Johnson, *University of Illinois, NextGrid Lead Facilitator Team*
Dr. Sauer, *University of Illinois, NextGrid Lead Facilitator*
George Gross, *University of Illinois, NextGrid Lead Facilitator*
Juliette Homer, *Pacific National Northwest Laboratories*
Joy Nicadao-Cuyugan, *Illinois Commerce Commission*
Jim Zolnierek, *Illinois Commerce Commission*
Terrance Garmon, *Illinois Commerce Commission*
Katharine McErlean, *Illinois Commerce Commission*
Scott Struck, *Illinois Commerce Commission*
Gwenda Johnson
Mike Waters

Agenda/Meeting Materials
- (9:00-9:15am) Welcome and introductions
- (9:15-9:35am) Economics of Modern Rate Design: Efficient Pricing & Equitable Rates—Paul Centolella, Paul Centolella & Associates LLC
- (9:35-10:00am) Using Peer Benchmarking in Distributor Performance Evaluation—Paul Alvarez, Wired Group
- (10:00-10:20am) Flipping the Switch for a cleaner grid—James P. Gignac, Union of Concerned Scientists
- (10:20-10:40am) Assessing Cost Shifts—Becky Stanfield, Vote Solar
- (10:40-11:00am) Break

- (11:00am-12:00pm) Open Discussion of ratemaking issues—Review of questions for paper outline
- (12:00-1:00pm) Discussion of Standby Use of Distribution Resources—Cost Recovery and Rate Design (Patricia Sharkey, Environmental Law Counsel, P.C.)
- (1:00-1:30pm) Public Comment Opportunity

Meeting Notes

(Action items are indicated in red font.)

[Economics of Modern Rate Design: Efficient Pricing and Equitable Rates, Paul Centolella, Paul Centolella & Associates, LLC]
- 3 big challenges:
  - Remain affordable,
  - Ensure reliability and resilience, and
  - Environmental sustainability
- Demand is shifting from a behavioral response to semi-autonomous
- Dispatch of millions of distributed devices becomes computationally intractable
- Smart devices will anticipate Demand Response (DR) events & increase baseline use to earn incentives, making demand response programs increasingly ineffective
- Zonal/hourly RTO Demand settlements and flat rates conceal distributed value
- Efficient integration of demand & DER requires dynamic or market-based rates that communicate Time-, location-, & product-specific Marginal cost and value
- Effective participation model requires engaging consumers and smart technology
- Given natural monopoly cost cannot be recovered at marginal cost rates, retaining the efficiency created by marginal cost pricing requires recovering residual t&d costs in rates that have a minimal impact on usage patterns
- Marginal Cost: the cost of a very small additional unit of short-run output
- Social costs: efficient markets would internalize environmental impacts (externalities)
- Time Varying vs. Market-Based Rate Options
  - Time varying rates: Time of use, critical peak rebates, and critical peak prices can reduce peak demand
  - Market Based Rates: Real time pricing can provide more accurate and efficient pricing
- Steps in Developing More Efficient Dynamic Rates
  - Give consumers notice of high price periods and access to smart tech to automate Real Time Pricing (RTP) response
  - Block and Index Rate offers Predictable Bills for Typical Use & Efficient Prices for Incremental Use
  - Work with RTOs to Reduce Socialization of Supply Costs
  - Unpack Marginal costs of delivering energy using variable distribution rates
  - Evaluate developing distribution level markets with distribution locational marginal pricing

- Equity Principles:
  - Bonbright's Perspective: equity in three dimensions (horizontal (equals treated equally), vertical (unequals treated unequally), and anonymous (no ratepayer demands can be uneconomically diverted away from an incumbent by a potential entrant))
  - Gradualism/ transitional perspective: seeks to ameliorate impacts on customers who have made significant investments in reliance on continuation of prior rate designs
  - Social justice:
    - Time varying rates tend to benefit Low Income Customers
- Bottom Line: engage demand and DER: introducing Variable time, locational and product specific margin cost based rate components. Consumer control: Block, index, and subscription prates give consumers simple, predictable bills, and access to smart technology and notice of high prices enables consumers to impact system costs with their impacts on marginal costs reflected in incremental bill adders or rebates.

Comments:
- Ideas seemed very complicated, could we achieve the same goal by getting everyone smart thermostats?
  - (Paul Centolella): smart technologies (all together) can have a significant impact on the bottom line, but you still have to give customers a price signal to get a response
  - (Rob Kelter) It still seems complicated—smart thermostats are key
  - (Paul Centolella) the beauty of my approach is that you give consumers a predictable bill for consumers that is also real-time
- When you talk about volumetric pricing, don't you want to send price signals to reduce consumption on a time basis?
  - (Paul Centolella) you want to encourage consumers to reduce consumption where it is efficient to do so, want to hit the sweet spot (societal marginal costs)
  - (Patricia Sharkey) talking about being more granular than Kilowatt Hours
  - (Paul Centolella) Where you have volumetric rates that are above societal costs, that discourages environmentally efficient outcomes
- Do you think it's important to have accurate costs before going more granular
  - (Paul Centolella) want to start by reflecting cost—there may be places where you're beginning to be restraints, want to send signal to customers to reduce demand when energy is not available. Haven't addressed how to allocate by customer class because it's a question of equity, not things that Economists can say much on.
  - (Chris Townsend) should customers be charged for facilities they use by class in order to take the step to dynamic pricing?
  - (Paul Centolella) where possible, good. There are a number of costs that have to be allocated, there you're talking largely about residual costs, and largely about equity.
- Talked about affordability as the goal, don't know if we've effectively defined this. Also, saw concept of adding distribution losses into the rate base, this hits me as odd in this market.

- Affordable: want the market to be as efficient as it can be. This will help the competitiveness of the region. Let's pursue all objectives as efficiently as possible. In terms of distribution losses, I'm talking about wanting to address the delivered costs of energy in a market.
- Where has this worked?
  - Examples of real time pricing, some broadly labeled as transactive energy. For example, real-time thermostat where customers could choose between more savings and comfort. You often see these tariffs for industrial customers: ex. GA Power industrial tariff.

[Using Peer Benchmarking in Distributor Performance Evaluation, Paul Alvarez, Wired Group]
- What are customers getting for their money?
  - Despite Grid investment, O&M spending is increasing
  - Despite grid investment System Average Interruption Duration Index (SAIDI) is increasing
- Peer Comparison: better metric might be to remain in top quartile in SAIDI through 2019
- When you see increasing O&M, what do Illinois specific numbers look like in comparison? To what do you attribute these trends?
  - We'd have to pull up the dataset, part of it may be that there is interest in capital investment in the grid, there may be some legitimate reasons for these investments as well
- History-based targets don't remain relevant in changing circumstances, peer-based targets do remain relevant in times of change
  - Even better metric: maintain top quartile JD Power & Associates satisfaction score among similar utilities"
- Other benefits of peer comparisons for setting targets, measuring performance
  - Reduces performance manipulation opportunities
  - Improves administrative efficiency
  - Broad adoption will raise all IOU's performance over time in a manner similar to competition

Questions
- (Ken Costello) 1. How do you use benchmarking information? Benchmarking presumes that target is the optimal level. 2. From your experience, what is the best use of this information for regulators?
  - This is a starting point, people shouldn't be using this for penalties or incentives yet.
- We've been working on standby rates for co-generation. One of the real difficulties is that they're in different markets (lots of variability). There's a lot of underlying impacts. How do you actually get past Ken's apples to oranges comparison?
  - Data shows that there is a correlation between customer density and O&M spending per customer. I'm suggesting we look at these characteristics. Those things that you do

see changes in the data, utilize peer-grouping (only compare similar utilities). How do you identify those correlations, you can adjust for those differences.

[Flipping the Switch for a cleaner grid, James P. Gignac, Union of Concerned Scientist]
- *Flipping the Switch for a Cleaner Grid* report is available on the NextGrid Working Group 7 Google Drive
- Union of Concerned Scientists (UCS) is interested in moving peak load from afternoon to the solar peak during the middle of the day
- Interested in Time-Varying Rates: overall "bucket" of options, including:
  - Time of Use Rates (on peak, off peak tiers)
  - Real-Time Pricing (e.g. hourly pricing)
  - Critical Peak Pricing (or rebates)
- Illinois has hourly pricing, but it's only used by about 1% of customers, these are opt-in programs
- Would suggest Illinois add TOU option for customers
- TOU could be valuable for IL bcs Real-Time Pricing has too much variability—TOU may be easier for customers to utilize
- Minnesota created a pilot project with TOU using three tiers, including seasonable variation—not a perfect model. Was developed through a stakeholder process.

Questions
- (Carl Pechman) Are there any studies that look at efficiency impacts of TOU vs. real time rates? Do we get most of the way there with TOU?
  - Yes. You can look at it a couple different ways: you're going to convey only a small fraction of the information available with a TOU. You can get a peak reduction, whether or not that's the right time is a different question. The ideal would be to find a way to convey the most important information with TOU. If you can automate, and take advantage of real-time pricing, that would also help to optimize pricing signals.
- If we're talking about TOU should you increase the TOU ratio to increase costs?
- Think they're trying to make TOU revenue neutral. Don't believe it's a market price reference, just allow companies to recover cost.
- Is this only residential customers?
  - Yes
- A number of industrial rates already utilize TOU rates. For industrial, it's not really an option to not use energy. For real time pricing, it seems like it's about being able to interrupt use.
- If you see industrial without shiftable load, they may buy blocks for the load that's not shiftable and then adhere to real time pricing around that load
- What proportion of rates are TOU?
  - The rates are all bundled in, there is a fixed charge
- (Ken Costello) is this opt-in or opt-out?

- o Opt-out. There's a Colorado pilot that's opt-in, that will require additional recruitment/marketing cost

[Assessing Cost Shifts, Becky Stanfield, Vote Solar]
- What principles should drive rate design decisions in Illinois?
  - o Rate design should make the choices to customers makes to minimize their own bill consistent with the choices they would make to minimize system costs
  - o Advance the goals of PUA and FEJA
  - o Based on analysis, not hype
  - o Gradualism: Avoid sudden, drastic changes that sow confusion among customers or market actions, or result in bill shock
- Two often intertwined questions to unpack:
  - o Are Distributed Generation customers paying their "fair share" of grid costs?
  - o Are Distributed Generation customers fairly compensated for their exports for the grid?
- Within the residential class, customers are very different
- Distributed Generation (DG) load factors are pretty similar to residential class as a whole
- Are DG customers paying their fair share for distribution services?
  - o This is Relative to Cost of Service (COS), not how much they were paying before Distributed Generation
    - ▪ COS studies often demonstrate that DG customers are less costly to serve.
    - ▪ Analysis shows that many DG customers in a given territory are larger users, and therefore are, on the whole and on the average, contributing more to system costs than average residential customers,
  - o Relative to COS, not how much they were paying before Distributed Generation
- Value of DG exports
  - o Separate process set out in statute—3% trigger for study to determine compensation effective post- 5% penetration
  - o Data transparency is critical: hosting capacity analysis, etc.
- DER value streams
  - o Fuel cost
  - o Plant O&M – fixed
  - o Plant O&M—variable
  - o Generation capacity
  - o Reserve capacity
- Topical resources:
  - o NARUC electric utility cost allocation manual
  - o NARUC rate design manual
  - o SEIA Rate Design Principles
  - o Joint Paper: Guidance for utility commissions on TOU Rates

Questions/ Comments

- (Carl Pechman) Is the marginal cost of service study or the embedded cost of service study the appropriate avenue? Is there a marginal cost of service study available?
  - (Ameren) There was a cost of service study prepared in the late 1990's
  - (ComEd) said the same was true for them
- (Ken Costello) This reminds me of value of solar tariffs. What's your position on that type of tariff?
  - I'm talking about identifying and valuing those value streams for Illinois.
- You mentioned the Illinois process, should this be part of the google doc?
- Information is available on the website right now.
- (Carl Pechman) we'll link this proceeding on the google drive
- In a case like this, is a marginal cost approach proper?
  - (CA) over the course of this working group, we've reiterated different costs studies, our challenge is in trying to explain the value of different studies, and that we choose the study appropriately.
- (Carl Pechman) Please provide write-ups on presentations by August 15th
- Valuing exports is a different inquiry than ensuring that everyone is paying their fair share of distribution cost.
- Rebates can be part of the process,
  - WGM Will send relevant papers to be posted on the google drive
- Can't talk about rates without considering the benefit of taking demand off the grid (avoided costs). Avoided costs for the distribution system is the benefit.
- A misperception about avoided costs: avoided by someone to be paid by someone else. If you're going to include that in a value stream, who's going to pay it? It doesn't come from a utility because a utility recovers all costs from customers.
  - We can disagree about that
- One of the themes that runs throughout is granularity. One thing I'd suggests is to consider whether granularity is a principle. We've been learning as we operate in a competitive environment, what these system costs are, as we move towards more DG, and who should pay what, it is a question of granularity. We're moving beyond the point where averages are good enough)
- Comment about marginal cost vs. embedded costs are more appropriate. Marginal costs have been used in states to address DG as an avoided cost.

[Open Discussion of Ratemaking issues]
- Economic incentives vs. efficiency? TOU for all, or opt-in/out. If TOU is opt-in, customers with better load shape will opt-in, so all the wonky load shapes will be fixed cost, will increase costs.
- There is data about customer use. If all you do is curtail during peak periods, you do see some takeback in the following period. More sophisticated option would be pre-cooling before high-price period to increase the comfort band (for AC), that reduces "snap back" after the peak period as well

- Don't throw the baby out with the bathwater, there's a universal rebate, so if customers participates actively in reducing consumption, they receive a rebate.
  - WGM will write-up this program for the google drive
- Ideally what you want is a structure that reduces the difference between costs. If we can see some of that response, we can alleviate constraints, and reduce all costs. The MD approach makes it more difficult to transition to a real-time price.
- State of Ohio has a similar proceeding—should standard option be a TOU rate? One other principle is for rates to better reflect wholesale price—if a pricing scheme represents system peaks, this helps with a gradual approach towards reflecting wholesale price.
- One thing we need to be clear about is the need for information and data—cost of service studies, etc. We're adopting a forward-looking approach, want to make sure we're not constrained here to data that exists. New data will be necessary, don't be constrained by what's already here.

[Discussion of Standby Use of Distribution Resources—Cost Recovery and Rate Design]
- Neither ComEd nor Ameren have standby tariffs.
- The result of not providing maintenance opportunities is a system that charges a customer for limited grid use as if it's a full-time customer. This is discouraging DG in Illinois. Pat has provided examples in the notes (included on the google drive) that address these issues.
- Why is distribution different that generation? Propose a cost of service study to examine this issue.
- (Carl Pechman) summary: Commonwealth doesn't have a separate standby rate. Pat is suggesting that the co-gen (co-generation) customers differ in terms of the costs they impose on the system vs. a standard industrial customer. As a consequence, it makes sense to evaluate whether or not the standard industrial customers are justified by the cost studies of whether a specific cost study is warranted for co-gen customers.
- That's correct.
- Every customer has a different load profile, if we separate everyone out, there would be a million different customer groups. We have a 2019 rate setting docket that seems like a more appropriate venue for this discussion. The way we allocate cost today is on a 9 hour peak demand. When you're talking about value-streams for a co-gen plant, I'd say it's more on energy avoidance, not on distribution.
- I think there's an information gap that needs to be filled. What we can see is the energy generation and transmission are very low, and the distribution costs are what are so high. If we did believe demand response is a good thing, we'd want people to reduce load on the grid. I've been told distribution is very different. The issue raised today is that portions of a distribution systems are dedicated to specific customers. Those charges should be borne by the self-generator. As we get further from the generator to the transmission system, we see shared layers. Where the load is substantially different—the co-gen may take up 1/20 of the system. We need data, to make those more granular decisions.

- This may represent a different rate class in a cost of service study
- (Carl Pechman) Have either Commonwealth or Ameren considered whether or not the current rates appropriately value the benefits of other systems such as co-gen?
- Think CHP customers are getting a pretty fair deal. If they use on-peak energy they're charged for it, if they use off-peak energy, they're paid for it.
- Costs will go somewhere, if we get a shorter on-peak window, it will go somewhere
- If co-gen allows customers to get on pre-existing lines, or reducing load, there is value. In NY, NYSERDA (New York State Energy Research and Development Authority) was working to get enough CHP (Combined Heat and Power) to offset a 50 MW system, and they were able to do it. There are 7,000 MW in potential CHP, this offsets costs that a customer would otherwise be paying.
- If that's the case, system planners need to plan for that
- So are outages proved
- There are two types: planned and outages
- (Carl Pechman) have either C or A—how close are you to operating the system under "emergency limits". How much capacity are you using? If the CPH weren't there, what kind of system would you have?
- Depends on customer expectations for reliability
- Depends if CHP is operating continuously or there are small outages regularly. Depends on how cost of service studies are done.
- There's an important discussion here about equitable cost recovery, if costs are avoided, someone else will be paying for it. If you've done the Marginal cost components right, you will still have some residual costs that will not be recovered through this. Because companies are allowed to recover some percentage of costs.
- These have existed in the past, and do exist in other areas. I'm not trying to invent something new.
- I think the question is why standby is different. You see that a huge part is distribution charge—and the effect is to discourage self-generation.
- As I understand it, these riders are non-coincident. Whenever you're highest peak is, you'll be billed for that. Maybe there's a halfway point for everyone.

[Public Comment Section]
(No public comments provided after the notice was given by Ken Costello)

Next Steps
- Next Meeting: Thursday, September 13th, 1:00-4:00pm