Municipal Utilities Moving Forward

MPUA Annual Conference
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Presentation of Patricia Taylor
Manager, Regulatory Policy & Business Programs
American Public Power Association
American Public Power Association (APPA)—the Basics

• We are the national service organization (trade association) for the U.S.’s 2,000 electric utilities owned by units of state/local government
• State associations and joint action agencies are important members of our Association
• Together, public power utilities serve 49 million people in 49 states and 5 territories
• Located in Crystal City/National Landing (Arlington), VA
APPA Leadership and Staff

• Board sets APPA policy direction; composed of Board members from all regions of the US and its territories
• Decosta Jenkins (Nashville Electric Service) is Chair; Jolene Thompson (American Municipal Power/OMEA) is Chair Elect; Colin Hansen (Kansas Municipal Utilities) is Vice Chair
• APPA has 69 staffers doing everything from lobbying to education to coordinating mutual aid
APPA Purpose and Vision

• **Purpose**
  – *Partner with members* to promote public power, helping community-owned utilities deliver superior services through joint advocacy, education, and collaboration.

• **Vision**
  – Shape the future of public power to drive a new era of community-owned electric service.
Moving Public Power Forward

• To help our member utilities across the country deal with industry changes, APPA developed its “Moving Public Power Forward” strategic initiative
• APPA is helping public power utilities prepare for a new era in electricity through
  – Research
  – Education
  – Advocacy
  – New tools & technologies
Moving Public Power Forward

• Our Goal: Make public power utilities the *trusted energy advisors* in their communities
• As community owned and controlled, not-for-profit public power utilities, we have built-in advantages
• But we need to capitalize on our strengths, and be nimble about it
Is Moving Public Power Forward for me?

Yes!

• Arm yourself with information to strategize, innovate, and evolve
• Embrace change or ignore it and risk losing out on opportunities
Don’t Underestimate How Fast Technological Change Can Happen

Easter morning 1900: 5th Ave, New York City. Spot the automobile.

Easter morning 1913: 5th Ave, New York City. Spot the horse.

Source: US National Archives.

Source: George Grantham Bain Collection.

https://www.businessinsider.com/5th-ave-1900-vs-1913-2011-3
Don’t Underestimate the Pace at which A New Service Offering can Outcompete an Incumbent

Landline Phones Are a Dying Breed
% of U.S. household with and without a working landline telephone*

- Landline phone
- Cell phone only

* based on the CDC's biennial National Health Interview Survey of 15,000+ U.S. households

Source: CDC

Don’t Underestimate the Power of Consumer Preference to Drive Change
Do Embrace Change as the New Normal

- Across the country, we see rapid changes in our industry:
  - New technologies
  - New competitors
  - New ways of living
  - New customer choices and expectations

- “Business as usual” will not be enough in this new environment; we need to anticipate what customer needs/wants will be and move first to supply them
  - “I skate to where the puck is going to be, not to where it has been.” Wayne Gretzky
Electric Utility Industry Outlook—

• Lack of clarity in federal energy policies—some states/cities stepping into the breach
• More distributed generation (DG)
• Expanded use of new technologies: storage, Electric Vehicles (EVs), and smart meters
• Increasing industry complexity—many new players (can be partners or competitors)
• Flat (or even declining) load growth in most regions due to increased energy efficiency (EE) and demand response (DR)—but EV & electrification push could offset…
Electricity Utility Industry Outlook (cont’d)

• Customer expectations are increasing; lower tolerance for outages
• Need for new investment to make grid smarter, more reliable
• Cyber/physical security concerns must be addressed or we will face the consequences
• Workforce challenges like turnover is an issue
• Low level of knowledge by public and many policy makers of how we do what we do—leads to unrealistic expectations
What More and More Customers Will Want
(Commercial and Industrial)

- Industrial and commercial customers increasingly want green/sustainable energy to meet corporate goals
- Following the lead of Apple, Google, Facebook, Walmart
- They are entering into direct contracts with suppliers and aggregating their loads to buy renewable power supplies, often “disintermediating” utilities who cannot help them meet their goals
- Doing on-site solar, EV charging, EE measures at their facilities
What Some Retail Customers Already Want (and More Will Want in the Future)

• Increasingly, retail customers want to:
  – Use technology to control their electric usage
  – Tell Siri or Alexa to pay their electric bill
  – Invest in their own onsite power and storage facilities, so they never experience an outage

• What makes economic sense for individual retail customers might not add up to a sustainable distribution system for all in the community, unless someone (why not us?) manages this to maximize benefits to all customers
What We Need to Do to Respond?

• Public power utilities have to up our game — we need to work together through joint action to anticipate and manage this change, provide these retail-level services, and partner with third parties with the necessary products and skills to do it—and we will need to leverage technology to make this possible

• Working together will
  – Reduce costs
  – Speed deployment
  – Result in better solutions
Joint Action—in all its Forms--Will be Vital

• Joining together with other public power utilities, joint action agencies, state associations and allied organizations to procure diverse generation resources, develop DG, DR and EE offerings for retail customers, and leverage technology will be a must.

• MPUA can help with education, advocacy and new retail service offerings.

• Allied organizations such as Hometown Connections provide expert/specialized services that supplement utility staff and allow public power utilities to stay current in increasingly complex environments.
How Can Public Power Pivot to Meet Retail Service Challenges?

• We must recalibrate our thinking
• We need to redefine our relationships with our retail customers, thinking beyond just “keeping the lights on and the beer cold”
• Can no longer stay in our “comfort zone”--on our side of the meter, providing basic electric service and sending bills; we must diversify the menu of products and services and tell our customers who we are!
But We Need to Do More Than Just Get Their Attention--We Need to…

- Develop new rate designs to meet increased levels of DERs and avoid subsidization across customer classes
- Help retail customers manage their usage through EE and DR by investing in the necessary technologies
- Handle flat and even decreasing demand for electricity from traditional loads
- Develop and support new loads—e.g., EVs
- Incorporate storage to support increased use of renewables and better align demand and supply (Batteries? EVs? Even the humble water heater?!)
Public Power Forward: Association Member Toolbox

- Policy research/analysis for members: what are DOE, states, other utilities/sectors doing on DG, DR, EE?
- Provide options/case studies/best (and not-so-best) practices; share the lessons learned!
- Make sure federal and state policymakers and thought leaders understand public power’s views
- Communication toolkits: to educate member communities and retail customers on these issues
- Find it all at [www.publicpower.org/index.php/public-power-forward](http://www.publicpower.org/index.php/public-power-forward)
- *Cities participating in MPUA power pools are APPA members and have access to member only content and services.*
Public power advances restoration work on Virgin Islands

December 20, 2017

Bonds and Financing

Lawmakers urged to ease advance refunding bond repeat transition

The American Public Power Association and the Large Public Power Council have joined with a large group of stakeholders in

MEMBER UTILITIES
Access the many benefits that come from being a public power utility member

ELECTRICITY CUSTOMERS
See how public power delivers you and your community safe and reliable electricity

POLICYMAKERS
Understand the policy implications of local and national issues on public power

REPORTERS & RESEARCHERS
Learn the reasons for public power's continued success through reports and statistics.
Electric Vehicle (EV) Trends

- EVs are getting more cost competitive
- Global and US EV sales are increasing
- EV range is improving
- EV model availability is increasing
- Charging infrastructure build out continues to be a priority
- International pressure is helping drive the market
- Market barriers include higher upfront cost, limited knowledge and awareness, charging infrastructure availability, and range anxiety
EV Program Options

- Deploy charging infrastructure
- Education and awareness
- Electrify fleets
- Evaluate rate design and payment options
- Pilot vehicle-grid integration technologies
- Provide incentives
- Understand EV adoption and grid impacts
- MO Example: Kirkwood Electric has EVs in fleet, chargers in town, and charging station rebates for homes and businesses
APPB EV Resources

- Nissan Rebate
- Creating an Electric Vehicle Blueprint for Your Community
- Understanding the U.S. Plug-In Electric Vehicle Market
- Public Power EV Activities Tracker
- EPRI Interoperability of Public Electric Vehicle Charging Infrastructure
- Electric Vehicle Interest Group
- Demonstration of Energy & Efficiency Development (DEED) Program
- Coming! EV Fleets Resources

https://www.publicpower.org/topic/electric-vehicles
Energy Storage Overview

• Covers a range of technologies
• Costs continue to come down (particularly for batteries)
• Economics are highly variable and based on numerous factors
• Increasingly paired with solar and other renewables
• US in 2018: 760.3 MWh interconnected/44.9% more than 2017, arriving at a total of 1,966.6 MWh (SEPA 2019 Utility Energy Storage Market Snapshot)
• MO Example: **City Utilities of Springfield** partnered with NorthStar Battery to deploy a lead acid battery system
Front of the Meter Energy Storage Values

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Service</th>
<th>Description</th>
<th>Typical Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reliability</strong></td>
<td>Microgrid Support</td>
<td>Backup power to help a microgrid operate in island-mode.</td>
<td>Batteries &amp; Flywheels</td>
</tr>
<tr>
<td></td>
<td>Variable Resource Integration</td>
<td>Helps reduce ramp rates, mitigating adverse effects of increased renewable penetration.</td>
<td>Batteries &amp; Compressed Air</td>
</tr>
<tr>
<td></td>
<td>Black Start</td>
<td>ANCIILLARY SERVICE: Ability to restart generators following an outage.</td>
<td>Batteries</td>
</tr>
<tr>
<td></td>
<td>Voltage Support</td>
<td>ANCIILLARY SERVICE: Real and reactive power need to match demand for electricity to remain flowing.</td>
<td>Batteries</td>
</tr>
<tr>
<td></td>
<td>Frequency Regulation</td>
<td>ANCIILLARY SERVICE: Helps frequency to remain stable to match generation with load.</td>
<td>Batteries &amp; Flywheels</td>
</tr>
<tr>
<td></td>
<td>Spinning or Non-Spinning Reserve</td>
<td>ANCIILLARY SERVICE: Come online when there is an unexpected outage. Spinning reserves can respond immediately, while non-spinning reserves can respond in under 10 minutes.</td>
<td>Flywheels &amp; Compressed Air</td>
</tr>
<tr>
<td><strong>Load Management</strong></td>
<td>Resource Adequacy</td>
<td>PEAK MANAGEMENT: Storage capacity developed to defer investment in new generation, such as a peaker plant.</td>
<td>Batteries &amp; Pumped Hydro</td>
</tr>
<tr>
<td></td>
<td>Distribution Deferral</td>
<td>PEAK MANAGEMENT: Upgrades to distribution infrastructure to meet load growth can be delayed or avoided.</td>
<td>Batteries</td>
</tr>
<tr>
<td></td>
<td>Transmission</td>
<td>PEAK MANAGEMENT: Upgrades to transmission infrastructure to meet load growth can be delayed or avoided.</td>
<td>Batteries</td>
</tr>
<tr>
<td></td>
<td>Asset Optimization</td>
<td>PEAK MANAGEMENT: Storage can increase system load factor.</td>
<td>Batteries, Compressed Air, &amp; Pumped Hydro</td>
</tr>
<tr>
<td></td>
<td>Energy Arbitrage</td>
<td>Electricity can be purchased during periods of low prices and sold back during periods of high prices.</td>
<td>Batteries &amp; Pumped Hydro</td>
</tr>
</tbody>
</table>

Table from APPA’s *Understanding Energy Storage*
## Behind-the-Meter Energy Storage Values

<table>
<thead>
<tr>
<th><strong>Customer</strong></th>
<th><strong>Utility</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bill savings</td>
<td>• Deferral or avoidance of infrastructure investments</td>
</tr>
<tr>
<td>• Increased Distributed Generation Self-Consumption</td>
<td>• Reduced payments to wholesale power suppliers</td>
</tr>
<tr>
<td>• Resiliency</td>
<td>• Reduced need for curtailment of intermittent renewable energy resources</td>
</tr>
<tr>
<td></td>
<td>• Demand response</td>
</tr>
<tr>
<td></td>
<td>• Increased system and localized load factor</td>
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<tr>
<td></td>
<td>• Increased system efficiency</td>
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<td></td>
<td>• Increased service offering opportunity, such as being a storage aggregator or owner</td>
</tr>
</tbody>
</table>
APPA Energy Storage Resources

• Coming! Energy Storage Tracker
• Behind-the-Meter Energy Storage
• Understanding Energy Storage
• Demonstration of Energy & Efficiency Development (DEED) Program
Blockchain 101

• Blockchain and bitcoin are not synonyms
  – Bitcoin is a cryptocurrency that leverages blockchain technology
• Key attributes of blockchain
  – Distributed ledger
  – Consensus mechanisms/no central authority
  – Privacy
  – Smart Contracts
Blockchain Landscape

• June 2019 EPRI Report *Program on Technology Innovation: Blockchain—U.S. And European Utility Insights Market Intelligence Briefing Report*

“Findings indicate that blockchain is gaining traction across the utility sector, but much remains to be defined from both technical and business application perspectives. Many utilities still are in the early stages of familiarizing themselves with the technology and investigating relevant applications.”
Blockchain Examples

- Energy sector use case examples:
  - Demand response, distributed energy resources (DER), energy trading platforms, and carbon tracking and registries
- Public power examples:
  - Sacramento Municipal Utility District – DEED Project “Coordinating EV Charging with Renewable Electricity Generation using Blockchain Incentives”
  - Silicon Valley Power – Testing blockchain for tracking CO₂ credits for EV charging
Grid Security

- As we invest in new technologies, we must ensure that we keep our IT and OT systems hardened against cyber threats.
- We already possess substantial amount of data regarding our customers, and will have lots more as we invest in smart meters, sensors, next generation thermostats, DR-controllable water heaters and A/C units, etc.
- All it takes is one messy breach to get your utility’s name in the papers, and not in a good way.
Grid Security

• Must earn and keep the customers’ trust by protecting them, their information, and their electric service
• APPA has a free Public Power Cybersecurity Scorecard
• Join APPA and other public power utilities in participating in GridEx – Free, online exercise November 13-14
• MO Examples:
  – MPUA – Cyber security monitoring services and have hosted cybersecurity exercises
  – 24 public power utilities in MO have participated in APPA cybersecurity efforts!
  • Nixa Electric Department – Participated in onsite assessment and cyber tech pilot
Finally--We Need To Tell Our Customers *Who We Are.* Why?

- Our research shows most public power retail customers under age 55 do not know their utility is community-owned and not-for-profit!
- Competition is all around — public power business model is under threat by both traditional and new competitors
- Customers want convenience and one-stop shopping for their energy needs
- You need to win customer loyalty and keep it
Another Reason: Sellout Efforts

Free electronic copies of our new **sellout guide**, which covers:

- Benefits of public power
- Preventing a sellout attempt from emerging
- Communicating the value of public power
- Anticipating and responding to a sellout threat
- Preparing for a sellout evaluation
- Determining the value of your utility
- Communicating with stakeholders during a sellout evaluation
- Costs and risks of selling your public power utility
- Includes case studies, resources
Communicating the Value of Public Power in Your Communities—3 Rules

• Emphasize we are “public power” (sounds better than “munis”), are owned by the community and are part of it, not a large corporation—we are the “real deal”
• Stay on your customers’ radar screens—be in the news and online (website, Facebook and Twitter at a minimum) and be social—post at least 2-3 times a week (pretty much all the time if there is an outage or other emergency!)
• Connect with the community--support local initiatives, host an event, join in the Public Power Day of Giving, Public Power Week, invite people to visit you, and go to the schools
MO Example – Lebanon keeps customers up to date during an outage

An incident with a dump truck on Elm Street has created a power outage in the Durham Road and Elm Street area. Officials estimate the outage could last from 6 to 8 hours. Traffic is being detoured down Durham Road and Sockeye Drive. Please avoid this area.

The intersection of Bland and Elm Street is without power. Please remember that an intersection with a down signal light should be treated as a four-way stop.

POWER OUTAGE UPDATE: The Lebanon Agricultural Legacy Center, located behind the Cowan Civic Center, will be open as a cooling center during the duration of the power outage in the Elm and Durham area. Please avoid the west end of Elm Street at this time.

POWER OUTAGE UPDATE: 10:48 a.m.: Power has been restored in the Elm and Durham Street areas. Thank you for your patience and thank you to our electric department team for quickly working to come up with a solution. The traffic detour will remain while crews replace a pole.

#PublicPower  www.PublicPower.org
Moving Public Power Forward Through Joint Action

• Joint action at all levels—local/state/joint action/federal--will help us all move forward—we need to share the learnings
• We need to demonstrate our continuing value to the communities we serve (remember, memories are short…)
• Public power has a great opportunity if we stay true to our ideals and roots while adapting our mindsets and services to this new era!
Sampling of Additional APPA Offerings

Reports
• Value of Solar Primer
• Community Solar A-Z
• Leadership in Rate Design
• Rate Design Options for Distributed Energy Resources
• Value of the Grid
• Creating a Smart City Roadmap
• Distributed Energy Resources and Public Power

Engineering Programs
• Reliable Public Power Provider (RP3)
• Smart Energy Provider Program
• Cybersecurity and Preparedness

Media & Communications
• Communications Templates

Education
• Customer Connections Conference, Oct 27-30
• Cybersecurity Summit, Nov 18-20
• Public Power Forward Summit, Nov 21-22

https://www.publicpower.org/public-power-forward
Thank you!

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