COMMUNITY CHOICE PARTNERS
SECURING YOUR COMMUNITY'S ENERGY FUTURE

To: Keene Ad-hoc Community Power Committee
CC:
From: Samuel Golding, President, Community Choice Partners, Inc. (advisor to Community Power New Hampshire)
Date: 28 August 2020
RE: Community Power New Hampshire: joint action update

Keene Ad-hoc Community Power Committee —

Thank you for inviting me to speak at the September 4th, 2020 meeting of the Keene Ad-hoc Community Power Committee.

By way of introduction, I am the former managing director of the consultancy which created opt-out municipal aggregation and have spent the last ten years helping to evolve the governance and operating models of Community Power Aggregations.

I look forward to providing an update regarding the status and implementation timeline of the Community Power New Hampshire [1] joint action initiative and hope that your Committee decides to join the initiative to share a mutually-advantageous degree of operational services, unbiased staff management and streamlined regulatory engagement with other Community Power Aggregations on a statewide basis.

In brief, Community Power New Hampshire municipalities and/or advisors are currently:

- Drafting an Electric Aggregation Plan;
- Concluding negotiations with qualified respondents to an RFI solicitation for legal services to finalize the Joint Action Agreement required to establish the power enterprise;
- Responding to inquiries from municipalities interested in joining the Community Power New Hampshire initiative;
- Responding to inquiries from municipalities interested in additionally forming regional Community Power Aggregations (joint action initiatives wherein multiple municipalities with similar policy objectives create a single Community Power Aggregation together);
- Preparing written comments in response to draft Community Power rules prepared by NH PUC staff, as follow-up to our discussions at the August 20th stakeholder session;
- Preparing data requests for submission in the Statewide Data Platform Docket (DE 19-197), following on direct testimony submitted on August 17th and the technical session on August 27th.

To provide additional context for our discussion, and to inform your Committee's approach to implementing Community Power Aggregation in the broader context of the evolution of the power market in general, I have included three resources herein:

1. July 2019: my strategy memo to Governor Sununu regarding SB 286;
2. July 2020: my presentation "*The Waking Giant: Community Power Market Design*";

[1] Website online: http://www.communitypowernh.org/

3. August 2020: my testimony submitted by our Local Government Coalition in the Statewide Data Platform Docket.[2]

Each of these is summarized in the sections below.

Memo to Governor Sununu

I wrote this 3-page memo explaining why Governor Sununu should sign SB 286 into law at the request of bill author Clifton Below, City Councilor of Lebanon. It informed subsequent fruitful discussions between the two of us and the Office of Strategic Initiatives.

The memo provides a concise strategic overview of how Community Power, if properly designed and implemented, could bridge long-standing gaps in how New Hampshire's power sector is governed and operated — and modernize the industry in the process.

Community Power Testimony (Statewide Data Platform Docket)

This testimony expands upon the subjects laid out in the aforementioned strategy memo. It analyzes the design and performance of New Hampshire's market, the authorities and business model of Community Power Aggregators, and the role of Community Power New Hampshire in catalyzing long overdue structural market reforms. In brief, it characterizes:

- The current state of public confidence in the utility industry;
- The extent and performance of the competitive retail market in New Hampshire;
- The barriers to retail market innovation originating from the utilities' continued control over the retail value chain (e.g. metering, data management, customer services, consolidated billing, profile construction, etc.);
- Recent controversies regarding utility investments in the retail value chain that structurally foreclose market-driven innovation in favor of utility-controlled innovation — and related observations regarding New Hampshire's default service and retail regulation practices in contrast to the goals of the Electric Utility Restructuring Act;
- The structure, performance metrics and governance frameworks used in fully restructured competitive retail markets — which have taken care to "quarantine the monopolies" by relying on market frameworks that transfer control of these functions to non-utility entities and enable nimble, market-based decision-making regarding rule changes;
- The full statutory authorities and consequent natural role of CPAs in terms of animating and unifying the retail market (by re-integrating transactions across horizontal segments of the power sector, etc.) and advancing the market framework called for under the Electric Utility Restructuring Act; and
- The anticipated expansion and sophistication of the competitive retail market due to the rapid progress of the Community Power New Hampshire joint-action initiative.

Attachments included in this testimony include CPNH's article published in the NH Municipal Association's Town & City Magazine (May/June 2020), and the agenda for our June 2020 joint action summit. Subsequently, this testimony was also sent to the Community Power rule making email list to inform the August 20th stakeholder session and was refenced multiple times over the course of the discussion.

[2] Consolidated testimony online: https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-197.html

"The Waking Giant: Community Power Market Design"

This 45-minute presentation was hosted by the Municipal Sustainability Energy Forum. It was designed to be accessible to a general audience, highlighted Community Power New Hampshire as a model for other states to emulate, and over 140 people from 30 states registered for the event. The recording and slide deck are available to view online:

- Recording: https://bit.ly/30lvuWJ
- Slide deck: https://app.box.com/s/2aobbx8r9jg8po57hascu8axjhwjq0da

As a related aside, I am happy to report that other states are already recognizing SB 286 and Community Power New Hampshire as a superior approach to Community Power Aggregation.

Most notably, Connecticut has already opened a proceeding to study Community Power (docket 20-05-13) at the request of the People's Actions for Clean Energy and Eastern CT Green Action, whose petition pointed to New Hampshire as "*the most useful model*" and invited me to participate in the proceeding along with the Institute for Local Self-Reliance (whose work has highlighted my Community Power design advice).[3]

Thank you again, and I look forward to our discussion,

Samuel V. Golding

President, Community Choice Partners, Inc.
Mobile: 415.404.5283
Email: golding@communitychoicepartners.com

[3] The petition and our motions for party status is online here:
https://app.box.com/s/c92cczzzvc32uk3euacipfthq6w387vw
Docket 20-05-13 is online here:
http://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/e8346c68c372bd928525857500458723?OpenDocument

Memo to Governor Sununu

COMMUNITY CHOICE PARTNERS
SECURING YOUR COMMUNITY'S ENERGY FUTURE

July 17, 2019

The Honorable Chris Sununu
The Governor of the State of New Hampshire
N.H. State House
107 North Main Street
Concord, NH 03301

Re: SB 286-FN-Local, Relative to Aggregation of Electric Customers by Municipalities and Counties

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Dear Governor Sununu,

I write in support of enacting SB 286. After reviewing the proposed bill and related materials, and interviewing local stakeholders, I have concluded that — in comparison to the states that currently allow[1] or are considering enabling[2] Community Choice Aggregation — New Hampshire has put forward the most technically expert conception of this policy framework to date.

By way of introduction, I am the former Managing Director of the consultancy Local Power, Inc., which co-wrote the original enabling legislation in Massachusetts and California, have worked to evolve the governance and operating models of Community Choice agencies for a decade, and advise on utility and community partnerships more broadly.

In contrast to more limited conceptions of Community Choice, SP 286 is best viewed as a key strategic initiative to support both the modernization of New Hampshire's electric grid and its competitive retail power market — because its proponents:

1. Have demonstrated a clear view of how to tackle the underlying IT infrastructure and regulatory barriers that are currently holding back private-sector innovation in the retail electricity industry;
2. Intend Community Choice initiatives to work collaboratively with utilities and other stakeholders to enhance New Hampshire's Grid Modernization decision-making process; and
3. Understand how Community Choice initiatives should thereafter 'fill gaps' in the retail value chain, by working with the private sector to accelerate customer adoption of new technologies and services.

Now more than ever before, it is a strategic imperative that governance becomes nimbler and more operationally-informed in order to address how technology is changing in the power sector. SB 286 would set this process in motion for New Hampshire. Its proponents intend to use Community Choice as a vehicle to educate local elected officials, businesses and citizens on how to remove barriers to private-sector innovation — from an operational, 'real world' perspective. For a number of reasons, this is the '*missing link*' that has held back the evolution of the power industry.

The 'technical' part is not hard to explain at a conceptual level. Every day, more and more customers have technologies that can intelligently shift electricity usage to lower-priced wholesale market intervals (smart thermostats, water heater controls, batteries and the like). But if you have ever tried to actually

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[1] Community Choice markets: Massachusetts, New York, New Jersey, Rhode Island, Ohio, Illinois and California

[2] Community Choice under consideration: Virginia, Arizona, New Mexico, Oregon, Maryland, and Connecticut

use the data from your utility meter to do something like this, you will know that it is impossible. Almost all customers in Liberty and Eversource territories lack interval meters, and while Unitil was an early adopter of interval meters, the design of their communications architecture has imposed severe constraints. The quality and availability of data is not reliable, and the time interval of the data supplied isn't aligned with wholesale requirements. This has prevented retailers from providing innovative products to all but the largest customers. **There are few enabling services for the majority of customers, because New Hampshire lacks the IT infrastructure required to support an advanced market.**

Like many states, New Hampshire is about to tackle this 'Grid Modernization' challenge. **What should concern you is the fact is that, despite all the accompanying fanfare, investments in Advanced Metering Infrastructure across the country have largely built a '*bridge to nowhere*.'** As the industry is currently structured, none of the stakeholders involved in the design process have demonstrated the requisite motivation, technical knowledge, customer-oriented culture and sense of urgency required to actually animate an innovative retail market.

We know how we got here. State regulatory commissions and utility practices evolved over a century when electricity usage patterns were predictable, centralized infrastructure could be administered in a siloed, top-down fashion, and there was no Internet. **Procedurally and culturally, the decision-makers involved in Grid Modernization initiatives invariably adopt incremental approaches that produce '*one step forward, two steps back*' results — because what we need is actually a '*systems thinking*' re-design that incorporates consumer preferences, local infrastructure and private sector innovations.** It is a costly mistake that has been repeated time and again, creating missed opportunities and market distortions. It is not necessarily anybody's fault, but after so many years, it has become clear that we need to involve stakeholders who want to fix the market from a competitive, operational point of view.

Simply put, everything has changed in the power industry except how we allow ourselves to make decisions — and evolving beyond the '*institutional and cultural inertia*' that defines regulated decision-making is our biggest challenge. I urge you to consider SB 286 within this context:

- The power industry — Grid Modernization efforts in particular —is caught in a '*catch-22*':
  - Utilities, regulators consumer advocates, etc. lack situational awareness regarding new technologies, third-party services and the infrastructure and products different communities and customer groups actually want — that is not their job.
  - Similarly, it is not the job of innovative companies to inform the regulated process governing IT infrastructure decisions — few, if any, invest the time and resources required to participate.
  - The consequent '*knowledge gap*' in the decision-making process leads to Grid Modernization schemes that fail to support an advanced retail market — structurally and for years.
- SB 286 has been designed to bridge this gap, by relying on Community Choice initiatives to:
  - Leverage private-sector partners to rapidly educate local officials and stakeholders throughout the state on what the '*front lines*' of the competitive retail electricity business requires in practice;
  - Collaborate across technology vendors, utilities, energy suppliers, regulators, policy-makers, civic and business associations, and customers to identify regulatory, business process and IT infrastructure "*bottlenecks*" that preclude advanced retail services; and
  - Work together to share new information and remove barriers, so that innovative technologies, services and market competition function seamlessly to satisfy customer expectations.

No other state has '*connected the dots*' in such a profound fashion, and the potential benefits for New Hampshire are already becoming apparent. Consider these three recent examples:

1. Unitil deployed Advanced Metering Infrastructure that has proven operationally insufficient and been under-utilized by retail customers as a consequence;
2. Eversource deployed an outdated Automated Meter Reading system incapable of communicating interval usage, and is now facing cost-recovery protests by consumer advocates as a consequence;
3. **Liberty Utilities is already working with the City of Lebanon on interval meter, dynamic retail pricing, and distribution grid integration pilots — and future collaborations with "Lebanon Community Power" (under SB 286) would strengthen their broader Grid Modernization efforts.**

Looking ahead, after the intelligent data infrastructure and business processes have been put in place, customers will need to be educated on the new opportunities and offered innovative products. Most people do not want to spend an inordinate amount of time reviewing energy supply contracts and technology performance agreements line by line, every few months. **All customers want the convenience of trusted vendors offering convenient services in a functioning marketplace, and it is our responsibility to create it**.

Proponents of SB 286 have a clear view of how properly-designed Community Choice programs will play a key enabling role in making this vision a reality for New Hampshire — by simultaneously:

1. Working with innovative private-sector partners to expand market access — lowering barriers to contracting opportunities while ensuring that customers are treated fairly;
2. Working with utilities and technology firms to deploy the right 'block and tackle' IT infrastructure, business services and retail products — so new technologies and services deliver customer benefits;
3. Working with wide range of public and private stakeholders to ensure that the market structure continues to evolve and embraces new technologies — under a nimble, flexible mode of governance.

The power industry must keep up with the times. Customer adoption of new technologies can create immense value for society, provided that governance affords the flexibility to do so. Conversely, uninformed and inflexible governance will steer the market into inefficient and unstable outcomes. **SB 286 would ensure that New Hampshire takes the right path — and would provide critical leadership for other states evaluating how best to modernize their electricity grids and competitive retail markets.**

Please reach out directly if I can assist your staff in further evaluating this opportunity. I am available to meet at the State House, via phone (415) 404-5283 or via email golding@communitychoicepartners.com

Samuel V. Golding

President
Community Choice Partners, Inc.

Community Power Testimony

(Statewide Data Platform Docket)

THE STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISISON

DE 19-197

Electric and Natural Gas Utilities

Development of a Statewide, Multi-use Online Energy Data Platform

Testimony of Samuel Nash Vautier Golding

On behalf of
Local Government Coalition

August 17, 2020

Table of Contents

I. Introduction and Qualifications

Q. Mr. Golding, would you please state your name, business address, and occupation?

A. My name is Samuel Nash Vautier Golding. My business address is 12 S. Spring Street, Concord, NH 03301. I am president of Community Choice Partners, Inc., a consultancy that specializes in the design and operation of power enterprises operating in competitive markets and is dedicated to maximizing democratic, informed decision-making in the energy industry. Our clients reflect the diversity of the energy industry and have included: city and county governments, municipal and investor owned utilities, Community Power Aggregation ("CPA") agencies, energy technology and software companies, labor unions and electrical contractor associations, and a variety of consumer advocate, environmental and social justice nonprofits.

Q. Please describe your formal education and relevant professional experience.

A. I received an undergraduate degree in International Political Economy from Colorado College in 2006. I entered the utility industry in 2007 and assumed responsibilities that focused on evaluating the performance of demand-side management programs, conducting electricity and natural gas demand-side management and demand response potential studies at the utility and state territory levels, tracking hundreds of distributed energy resource technologies and customer-facing smart grid applications emerging across organized electricity markets, and contributing to 'Utility of the Future' strategies. These experiences revealed the limitations of utility operations and state regulatory governance models in terms of responsibly managing technological change and maximizing public benefits.

In 2011, I became the managing director of the consultancy that originally created Community Choice Aggregation ("CCA"), and later founded Community Choice Partners in 2013. Based on my professional experience operating and designing CCA agencies, I created

the "CCA 2.0" and "CCA 3.0" maturity models for the California CCA industry (which delineate specific structural improvements to CCA operations and joint action governance models, respectively) and helped to educate and align industry stakeholders in this capacity in California.[1]

In New Hampshire, I am informally advising a coalition of municipalities that are forming the "Community Power New Hampshire" Joint Action enterprise ("CPNH") as a means to extend sophisticated power agency operations, unbiased advice and regulatory intervention support to all Community Power Aggregations that launch throughout the state. My activities supporting the development of this initiative and market over the last year have included, in addition to direct work products: discussions and correspondence with the Governor's Office of Strategic Initiatives and Office of Consumer Advocate, legislators, regulatory professionals, local elected officials and staff; presentations to local energy committees, the Conservation Law Foundation's Municipal Roundtable, and Clean Energy New Hampshire's Local Energy Solutions conference; and briefings to Commission staff regarding the drafting of CPA market rules as well as participation in technical workshops and stakeholder meetings to discuss related matters.

Q. Have you prepared a summary of your qualifications and experience?

A. Yes. Exhibit 1 to my testimony summarizes my qualifications and experience.

Q. Have you previously submitted testimony in regulatory proceedings?

A. I have previously submitted testimony to the California Public Utilities Commission on behalf of the Utility Consumers Action Network (UCAN), a ratepayer advocacy nonprofit, in regard to San Diego Gas & Electric's Electric Procurement Revenue Requirement forecast,

[1] For example, refer to my "Community Choice 2.0 & 3.0 Tutorial Workshop" agenda: https://app.box.com/file/433445758440

with a focus on the inaccuracies in utility forecasting caused by market settlement cost shifts stemming from the inappropriate withholding of customer usage data from Community Choice Aggregators by the utility on an operational basis (Application 20-04-014).

Q. Describe your involvement in DE 19-197 up until this point.

A. I have participated actively in technical sessions and in informal conversations with stakeholders throughout this docket process. In addition, I facilitated Q&A calls for parties during which two vendors presented on their relevant experiences in other organized electricity markets. These were recorded and sent to the docket list, [2] along with a separate recording that one of the vendors had previously made for the docket list.[3]

Q. Please summarize any additional electric regulatory experience.

A. In New Hampshire, I participated in the PUC's informal workshop regarding rule drafting for Community Power Aggregation (a proceeding for which has yet to formally open), and have facilitated bilateral calls between the CPNH coalition, PUC staff, OCA, utilities, and other stakeholders regarding the rule drafting process, with a particular focus on utility data sharing and related matters.

I am also party to Case Number 14-01211 in New York (Proceeding on Motion of the Commission to Enable Community Choice Aggregation Programs), where I submitted descriptions of Community Choice operating and governance models during the initial rule drafting process, and in Docket No. 20-05-13 (Study of Community Choice Aggregation) in Connecticut, which recently opened and where I participated in the first technical workshop. In the California market, I have prepared regulatory filings for the County of Los Angeles (A.14-

[2] Recordings available online: https://transcripts.gotomeeting.com/#/s/38ee31a47a913e07d9059f4bc737a3bf03b154fca86543a82f293e6cc3fc2960
[3] Recording available online: https://app.box.com/s/qjkbae4skxpzxhrwkktxp1z50xvv7mhl

05-024) and for the ratepayer advocate nonprofit UCAN (R.17-06-026), both on the subject of the expansion of the Community Choice industry and corresponding market. I also protested SCE Advice Letter No. 3781-E, on the grounds that restricting access to interval usage data degrades the accuracy of Community Choice forecasting capabilities, and independently submitted to the Commission the compilation "*Energy Risk Management Policies of Community Choice Aggregators*" and the report "*The Theory and Evolution of Community Choice in California*". [4] The latter included a detailed description of Community Choice operating models along with a summary of deficient utility business processes and data access barriers that jeopardize the innovative potential and financial competitiveness of Community Choice agencies.

II. Overview of Testimony

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide the Commission with context regarding the current state of the competitive retail market and the new Community Power Aggregation market that will soon launch in New Hampshire, along with relevant insights regarding how fully restructured markets rely on market frameworks for governance and operations in practice, such that the Commission may make an informed decision in this docket, particularly in regard to how best to structure governance of the statewide data platform to align with electric utility restructuring mandates under RSA 374-F.

[4] Refer to: Samuel Golding, "The Theory and Evolution of Community Choice in California", 11 June 2018. Available online: http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/Community%20Choice%20Partners_DraftGreenBookComments.pdf; and Samuel Golding, "Energy Risk Management Policies of Community Choice Agencies", 11 July 2018. Available online: http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/Community%20Choice%20Partners_CustomerChoiceSupplementalComments.pdf.

Q. Please summarize your testimony.

A. My testimony characterizes: the current state of public confidence in the utility industry; the extent and performance of the competitive retail market in New Hampshire; the structure, performance metrics and governance framework used in fully restructured competitive retail markets; my observations regarding New Hampshire's default service practices in relation to the goals of the Electric Utility Restructuring Act; recent controversies regarding utility investments in the retail value chain that structurally foreclose market-driven innovation in favor of utility-controlled innovation; the statutory authorities, business model and political drivers of CPAs and how they are naturally aligned with the development of market frameworks as called for under RSA 53-F; and the anticipated expansion and sophistication of New Hampshire's CPA market due to the rapid progress of the Community Power New Hampshire joint-action initiative.

My testimony concludes by recommending that the Commission adopt a market framework for governing the statewide data platform, for the sake of facilitating a number of reforms necessary to begin aligning New Hampshire's market structure, operational practices and utility infrastructure investment decisions with the Electric Utility Restructuring Act.

III. Detailed Discussion of the Issues and Proposed Conditions

Q. How does the establishment of a statewide, multi-use online energy data platform relate to The Electric Utility Restructuring Act (RSA 374-F)?

A. SB 284 was authorized by the Legislature explicitly "in order to accomplish the purposes of electric utility restructuring under RSA 374-F" [5] The purposes of RSA 374-F[6] include:

[5] Available online: https://legiscan.com/NH/text/SB284/id/2012441/New_Hampshire-2019-SB284-Amended.html
[6] Available online: http://www.gencourt.state.nh.us/rsa/html/XXXIV/374-F/374-F-mrg.htm

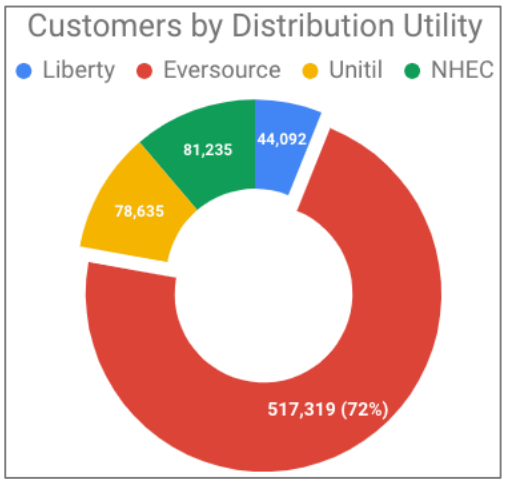
(1) The "development of competitive markets for wholesale and retail electricity services", "a more efficient industry structure and regulatory framework", and "unbundling of prices and services" as a means to these ends;

(2) Consistency with part II, article 83 of the New Hampshire constitution, specifically that "Free and fair competition in the trades and industries is an inherent and essential right of the people and should be protected against all monopolies and conspiracies which tend to hinder or destroy it.", a corresponding reliance on competitive markets to provide "incentives to operate efficiently and cleanly", "new and improved technologies " and "appropriate price signals", so as to "improve public confidence in the electric utility industry"; and

(3) The incorporation by reference to fifteen "interdependent policy principles" that were "intended to guide the New Hampshire public utilities commission" — including that the "commission should adapt its administrative processes to make regulation more efficient and to enable competitors to adapt to changes in the market in a timely manner. The market framework for competitive electric service should, to the extent possible, reduce reliance on administrative process."

I recommend that the Commission consider the statewide data platform as the backbone of the market framework called for under The Electric Utility Restructuring Act. Expansive, reliable and transparent data interchange and analysis must be sufficient to facilitate the nimble decision-making and rule changes necessary to not unduly delay innovation in market operations, and also sufficient in terms of tracking the range of metrics that the Commission and others should rely upon to analyze and support the performance of the market going forward.

Q. How would you characterize the current state of public confidence in the electric utility industry?



A. While it is difficult to provide a definitive or comprehensive answer, I can offer relevant observations regarding Eversource, which is the largest distribution monopoly in the state, as shown in the graph to the right:

I found it notable that 300 people reportedly gathered last year to celebrate the rejection of Eversource's Northern Pass Transmission project by burning a wooden effigy of a transmission tower. This is a picture from that event, published in the Union Leader:[7]

I would also direct the Commission to the article "This Means War", published in December 2019 by Don Kreis, who leads New Hampshire's Office of Consumer Advocate ("OCA").

The article pertains to Eversource's investment in retail electric meters and refers to testimony of Paul Alvarez of The Wired Group, a consultancy hired by the OCA. It reads, in part:

> "We have a theory about why Eversource made such an imprudent choice, and it is not pretty. By 2013, when [Eversource] made the decision to install meters that could not provide interval usage data, it was clear that such data presented several types of

[7] Union Leader, "16-foot effigy of transmission tower burned to celebrate demise of Northern Pass," 18 August 2020. Available online: https://www.unionleader.com/news/business/energy/16-foot-effigy-of-transmission-tower-burned-to-celebrate-demise-of-northern-pass/article_f3d3e94d-2ffc-598e-8ea6-8f958cfc8e77.html

economic harm to [Eversource]," Alvarez testifies. "For example, research indicates that the time-varying rates AMI meters make possible can reduce both system peak demand and energy use. "[Eversource] profits increase when the Company invests in the transmission and distribution infrastructure required to satisfy system peak demand, biasing the Company against time-varying rates and peak-time rebate programs," Alvarez continues. "[Eversource] profits decrease when energy sales volumes fall between rate cases, biasing the Company against the conservation potential offered by AMI meters." Disallowing that $42 million investment as imprudent would send a message to utility shareholders everywhere that in New Hampshire we expect investor-owned utilities to act in the best interests of their customers if they expect a return on their investment."[8]

Mr. Alvarez also publishes "Customer Value Rankings" annually that compare "the benefits customers receive from utilities … to the funds utilities spend, and for which customers must pay".[9] According to a 2017 study published in The Electricity Journal, which was authored by Mr. Alvarez and the National Renewable Energy Laboratory, Eversource's subsidiary Public Service Company of New Hampshire scored relatively low in the ranking: 85th out of 102 utilities surveyed.[10] (The utility also came in 91st out of 105 in terms of customer satisfaction in a related survey.[11])

[8] Don Kreis, "This Means War," IndepthNH.org. 21 December 2019. Available online: http://indepthnh.org/2019/12/21/electric-rate-cases-in-nh-this-means-war/
[9] Available online: http://www.utilityevaluator.com/customer-value-rankings.html
[10]Paul Alvarez and Sean Ericson, "Measuring distribution performance? Benchmarking warrants your attention", The Electricity Journal (31, 2018). Available online: https://nebula.wsimg.com/aeda0aa942afd82b7b05f3bc8bdfd83c?AccessKeyId=490265DE4F8DABB7CA08&disposition=0&alloworigin= 1
[11]The Wired Group, "2018 Customer Satisfaction Survey". Available online: https://nebula.wsimg.com/e63753ee4a7d49577733972d88958b86?AccessKeyId=490265DE4F8DABB7CA08&disposition=0&alloworigin=1

It is also relevant to note that Eversource's subsidiaries Western Mass Electric Company and Connecticut Light and Power ranked even lower in terms of customer value, at 99th and 97nd, respectively. Most recently in Connecticut, the utility has come under what appears to be severe criticism due to widespread outages during Tropical Storm Isaias, to the extent that one of the longest-serving state representatives called for a breakup of the utility, explaining that "Eversource has become a multi-state conglomerate... It's proven that it's gotten too big to deliver reliable service".[12]

On the basis of these observations, I believe it is reasonable to conclude that public confidence in New Hampshire's largest utility, at least, may not be very high.

Q. Would you refer to New Hampshire's current market as "fully restructured"?

A. No. In the USA, the only market that has fully restructured is ERCOT in Texas. There are a number of additional organized electricity markets, particularly in Europe and Oceania, that have fully restructured as well.

Q. How would you characterize New Hampshire's current market?

A. I would characterize it as partially restructured. Horizontal separation of transmission, generation and supply from distribution and retail has been accomplished, and distribution utilities no longer own wholesale generation (though it took until 2019 for Eversource to complete its generation divestiture despite the fact that the Legislature enacted the Electric Utility Restructuring Act in 1996, i.e. the first restructuring act in the nation).

However, utilities have not been quarantined to operating the distribution grid, and instead remain integrated within the retail market in ways that I believe structurally disadvantage

[12] Ridgefields' HamletHub, "State Rep. John Frey Calls for Eversource to be Dismantled", 10 August 2020. Available online: https://news.hamlethub.com/ridgefield/life/67277-state-rep-john-frey-calls-for-eversource-to-be-dismantled

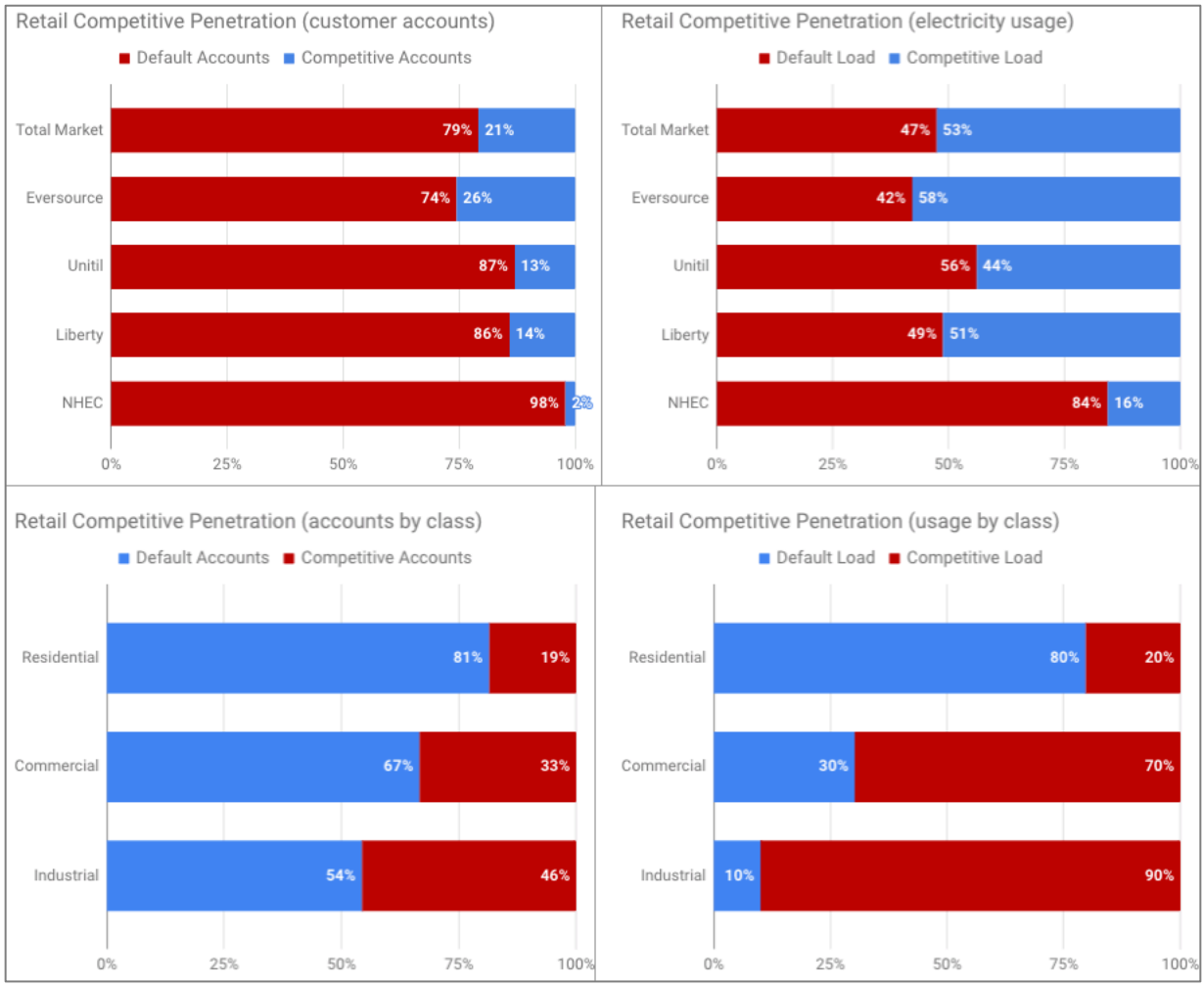
retail competition and foreclose retail innovation and choice in services for the majority of customers.

Moreover, it appears that almost all decision-making is still carried out through administrative procedures and not through a transparent and responsive "market framework" that would "enable competitors to adapt to changes in the market in a timely manner" as called for under RSA 374-F.

The lack of a holistic, responsive and market-based decision-making framework means that decisions regarding the functionality of the retail market remain heavily, and almost certainly unduly, mediated by the monopoly distribution utilities.

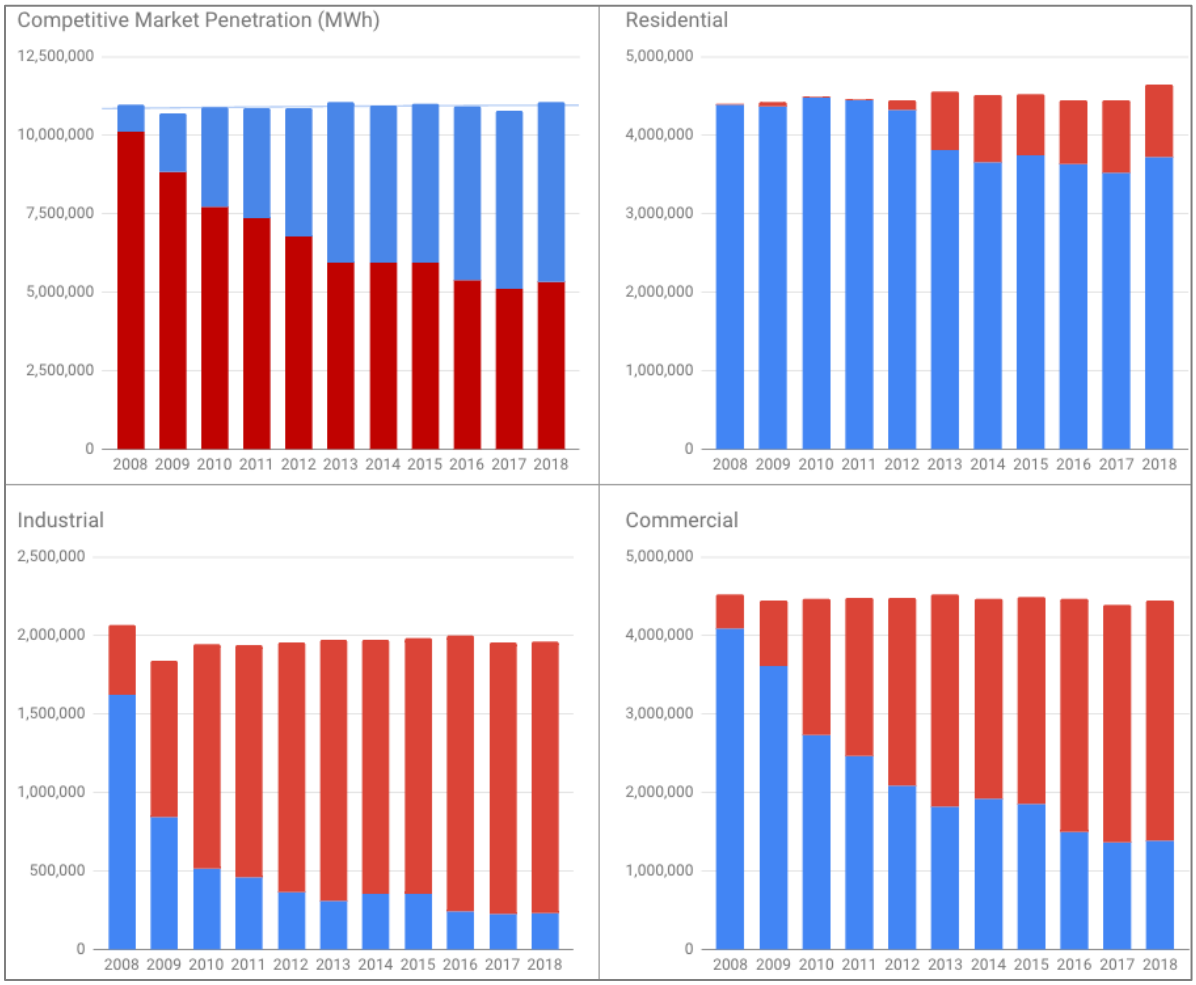
Q. What is the current state of retail market competition in New Hampshire?

A. Approximately four out of five customers remain on default service provided by the distribution utilities, while the customers on competitive supply account for about half of total electricity usage. Based on EIA 861 datasets from 2018, I have prepared the following graphs to show the penetration of retail market competition by utility:



There are also 143 registered aggregators listed on the Commission's website.[13] These entities do not take title to power, but rather act as energy advisors and brokers to customers. Despite this, New Hampshire's competitive retail market appears to have seen little growth since approximately 2013. The graphs below, prepared based on EIA 861 datasets for 2008 through 2018 along with more recent quarterly migration reports for Eversource specifically, show the extent of the competitive retail market overall and by customer sector:

[13] Website available online: https://www.puc.nh.gov/Consumer/Aggregators.html


Competitive Market Penetration (MWh)
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2,500,000
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2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018
Residential
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2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018
Industrial
2,500,000
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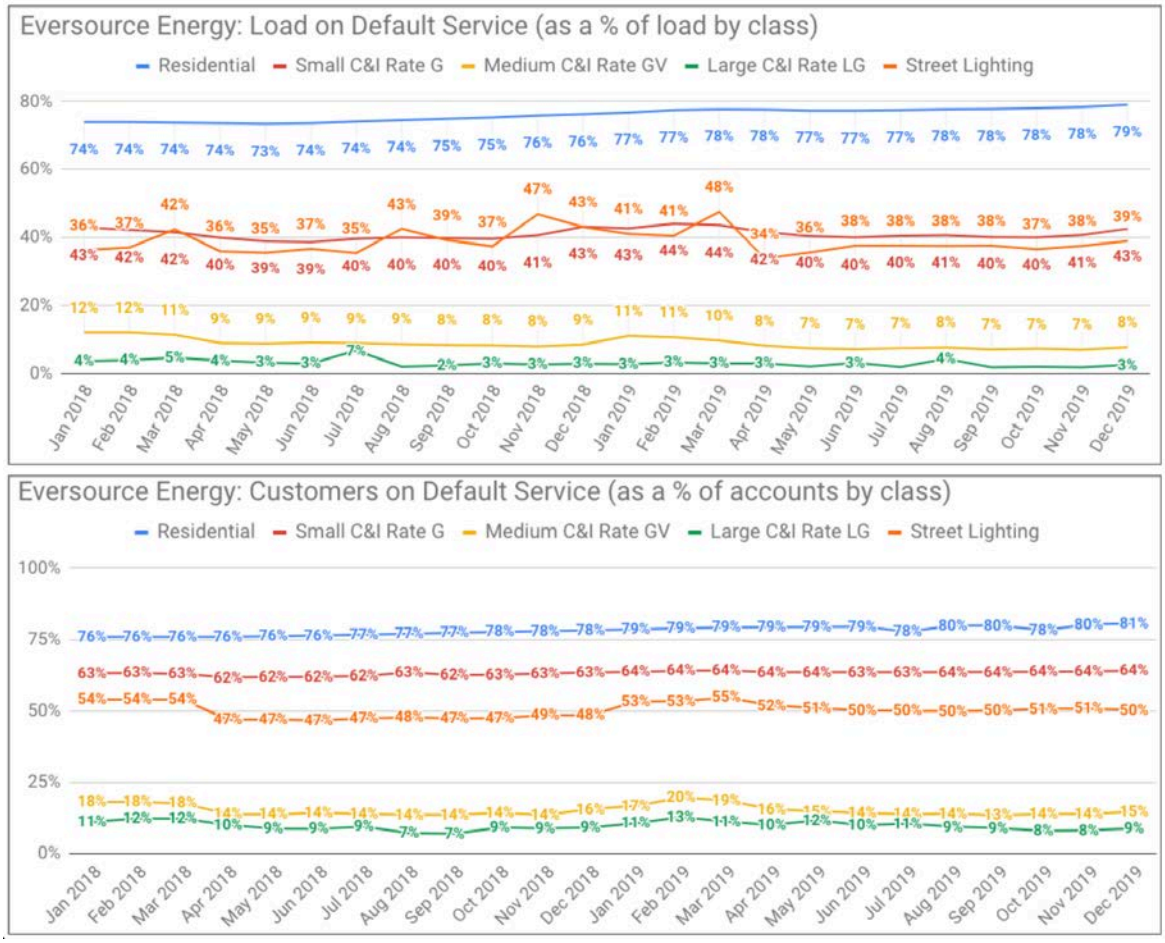
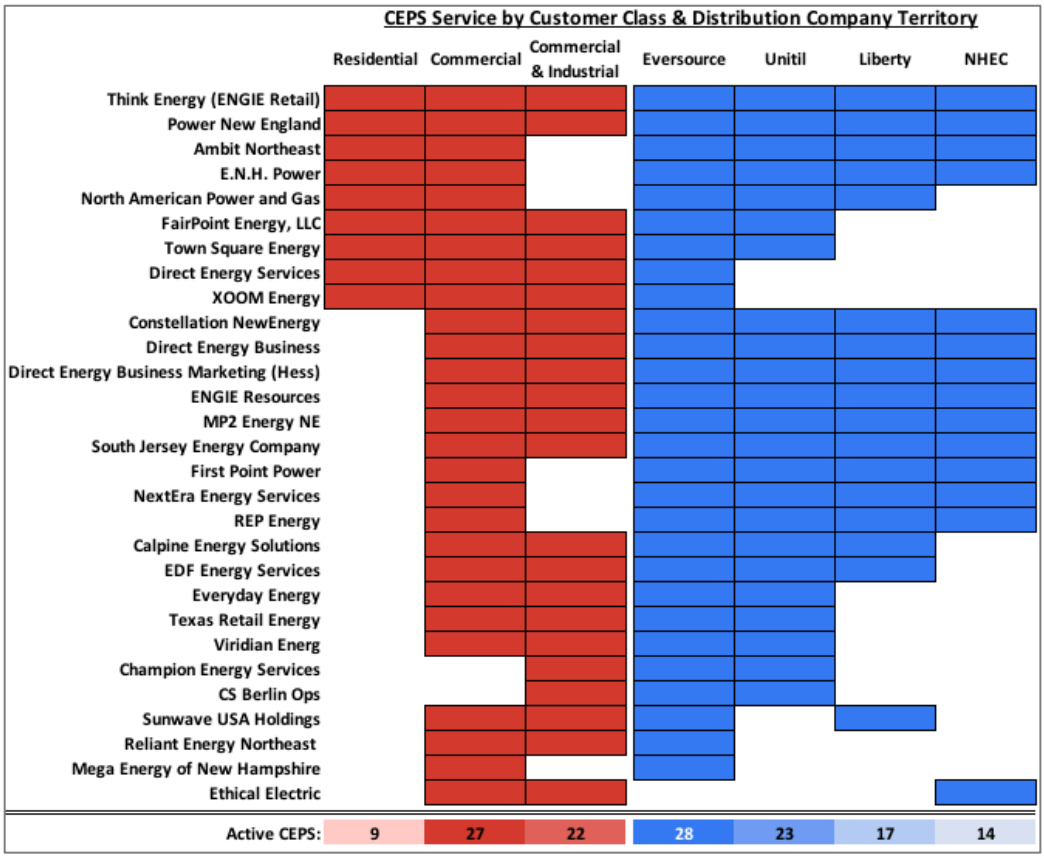
1,500,000
1,000,000
500,000
0
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018
Commercial
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

1



Competition appears weak within the small commercial class and particularly anemic in the residential sector. The table below, based on data from the PUC's website,[14] shows the 29 Competitive Electric Power Supplier ("CEPS") actively offering service to different customer classes across the four distribution utility territories open to customer choice:

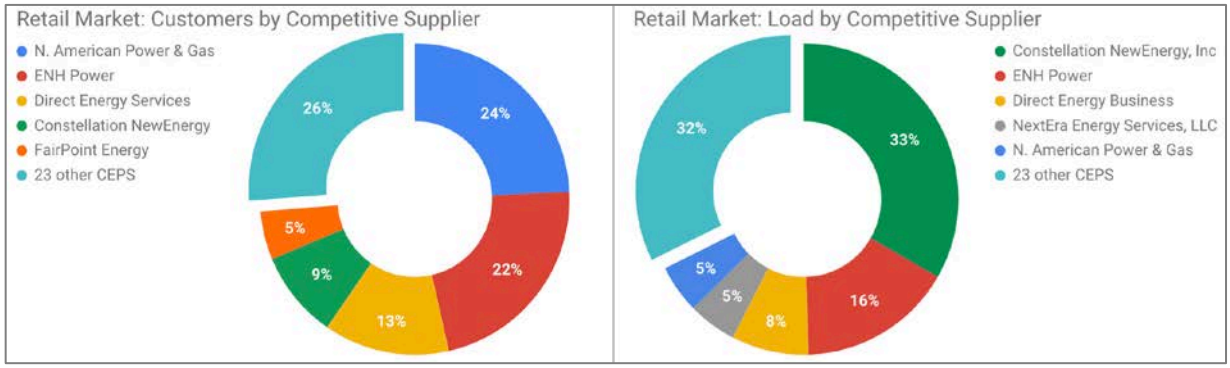
[14] Website available online: https://www.puc.state.nh.us/Consumer/Residential%20Suppliers.html

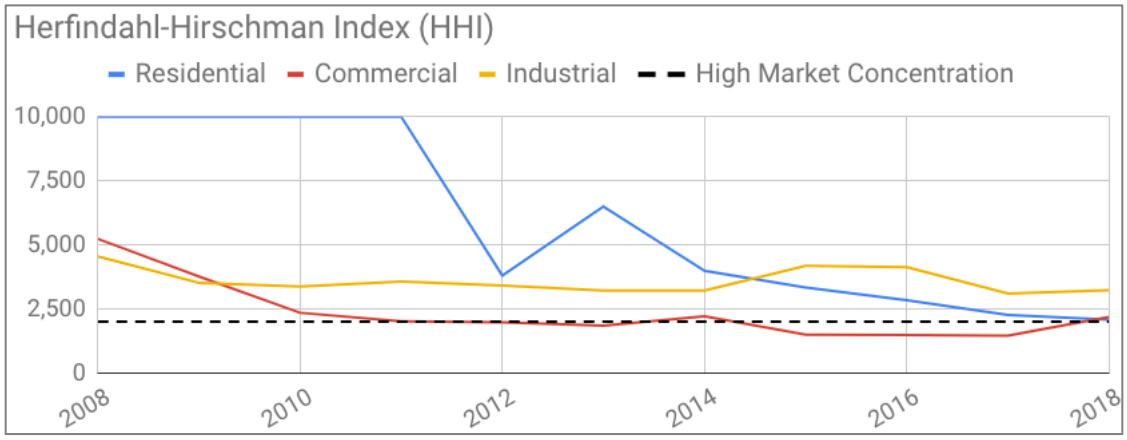


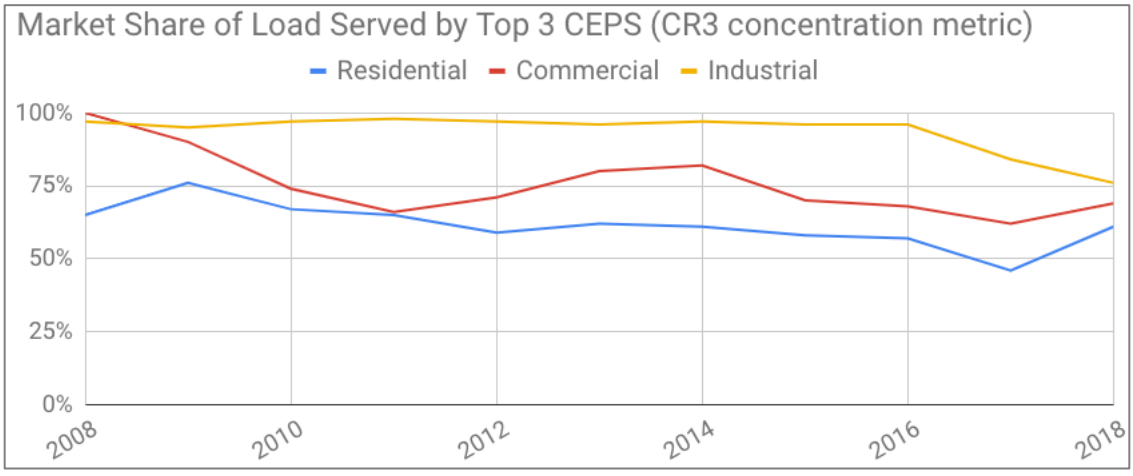
Apparently, out of the 29 CEPS currently offering service in New Hampshire, only 9 offer service to residential customers and only 4 of those serve all four distribution utility territories. Only 2 CEPS offer service to all customer classes across all utilities.

Based on EIA 861 datasets, the charts below show the market share of the 28 CEPS serving customers in 2018 along with two metrics to measure market power and concentration: the Herfindahl-Hirschman Index (HHI score) and concentration ratio of the 3 largest CEPS based on their percentage of load served (CR3). Note that 2018 market share and CR3 are calculated

relative to the active retail market (i.e. excluding customers on default service from the baseline).[15]

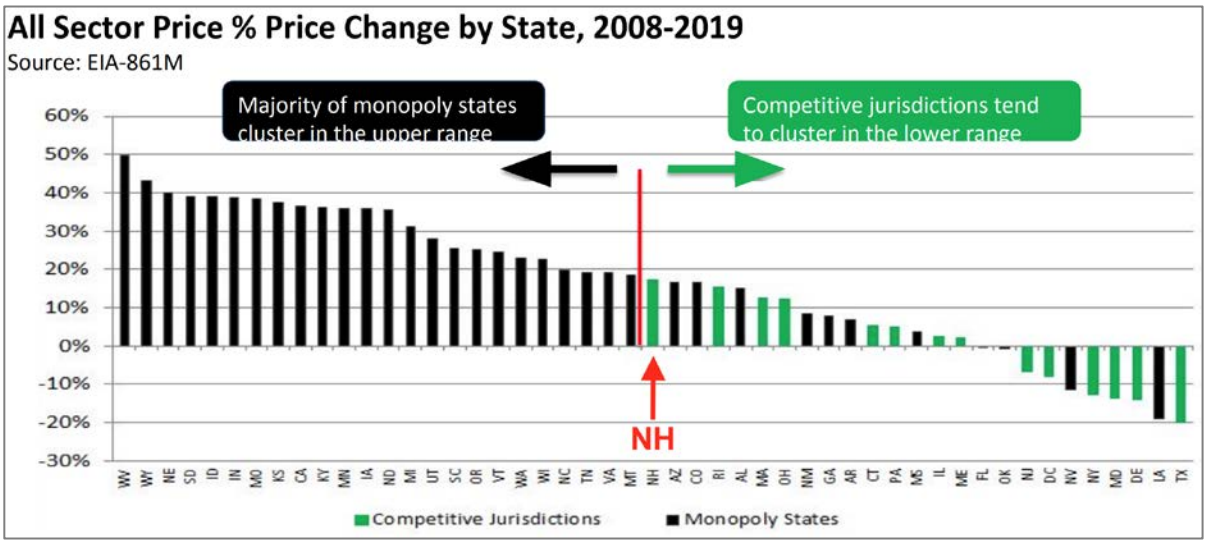






[15] Also note that Constellation NewEnergy and Constellation Energy Services were combined in certain years, as they were formally combined in 2017. See online here: https://www.puc.nh.gov/Regulatory/Docketbk/2016/16-869/LETTERS-MEMOS-TARIFFS/16-869_2017-09-05_CES_NOTICE_MATERIAL_CHANGE.PDF

In terms of the market's overall performance relative to other states in terms of price changes, the chart below is taken from the Retail Energy Supply Association (based upon EIA 861 data and covers the period 2008 through 2019):

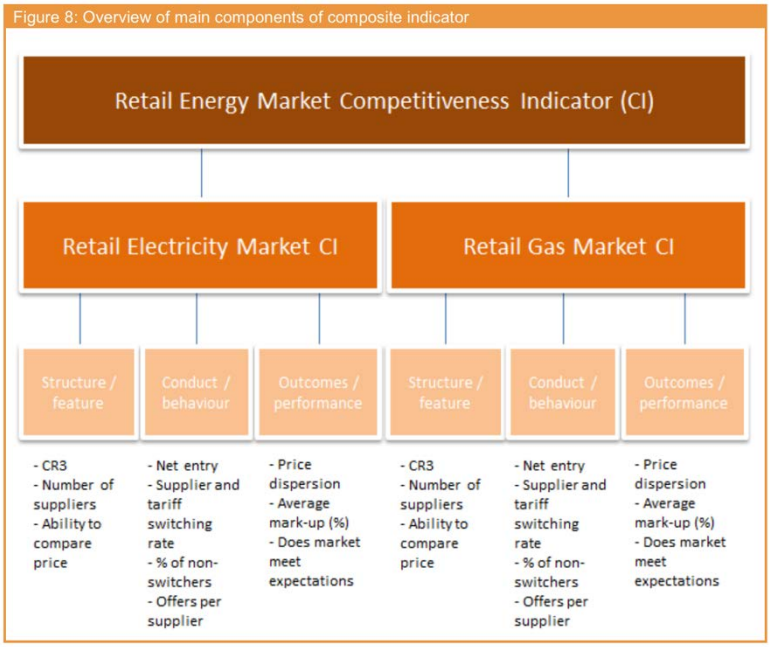


Q. What other metrics are used to track the maturity of retail energy markets?

A. The Texas ERCOT market tracks the number of retailers and number of products offered, distinguishing between residential and non-household sectors, retail price trends compared to their last regulated rate, unique visitors to the "Power to Choose" website (a one-stop shopping portal), and the number and tenor of complains overall and by retailer. These are reported to their Legislature in annual "Scope of Competition in Electric Markets in Texas" reports.[16]

European state regulators have been collaborating for over a decade to harmonize market structures that promote retail competition and have developed more granular metrics to do so that take into account the diversity of member state market structures and enabling infrastructure (e.g. smart meters). Below is a useful, if somewhat dated, high-level graphic in this regard:

[16] Website available online: https://www.puc.texas.gov/industry/electric/reports/scope/Default.aspx



[17]

The Council of European Regulators (CEER) developed a joint roadmap and framework to evolve and harmonize mature retail energy markets across states by 2025. Their annual "self-assessment reports" summarize key market properties, metrics and gap analyses across states. The "8 key properties critical for a well-functioning market" identified are described as:[18]

- **Low concentration within a relevant market** where, in general, a high number of suppliers and a low market concentration are seen as one of the indicators of a competitive market structure.
- **Low market-entry barriers** in order to facilitate market entry and growth for new market actors (i.e. suppliers and third parties) as well as innovation (including demand response).

[17] IPA Advisory Limited, "Ranking the Competitiveness of Retail Electricity and Gas Markets: A proposed methodology," Agency for the Cooperation of Energy Regulators. 4 September 2015. Available online: https://www.acer.europa.eu/en/Electricity/Market%20monitoring/Documents_Public/IPA%20Final%20Report.pdf
[18] "CEER Roadmap to 2025 Well-Functioning Retail Energy Markets: 2018 Self-Assessment Status Report", Council of European Energy Regulators. 30 October 2019. Available online: https://www.ceer.eu/documents/104400/-/-/89206356-85ff-9977-1ba9-3a8262fe00e3

- **A close relationship between wholesale markets and retail prices** to ensure that consumers receive correct price signals, which is an important incentive for demand response. In addition, the mark-up between wholesale and retail prices reveals whether consumers are paying a fair price.
- **A range of offers, including demand response**. In a well-functioning market retailers' ability to offer a significant number of commercial options is coupled with consumers' ability to compare the offers and take informed decisions.
- **A high level of awareness and trust**, which is an important precondition for consumer participation.
- **The availability of empowerment tools** such as a verified price comparison tool, historical consumption data and a standardized supplier switching process.
- **Sufficient consumer engagement** where switches, renegotiations and prosumers are assessed on a yearly basis. In general, a well-functioning market is one in which a significant number of consumers engage with the market on a regular basis.
- **Appropriate protection**: In well-functioning retail energy markets, consumers enjoy an appropriate level of protection and there are specific measures to protect those defined as vulnerable customers

The 25 metrics used to track progress within each of the 8 key properties above are summarized in the table below:[19]

[19] "CEER Roadmap to 2025 Well-Functioning Retail Energy Markets: 2018 Self-Assessment Status Report", Council of European Energy Regulators. 30 October 2019. Available online: https://www.ceer.eu/documents/104400/-/-/89206356-85ff-9977-1ba9-3a8262fe00e3

Metric #	KEY PROPERTY	HARMONISED DEFINITIONS OF METRICS
1	Low Concentration within a relevant market	Herfindahl-Hirschman Index
2	Low market entry barriers	Time needed and cost of accessing well-functioning wholesale markets and licencing/balancing regimes
3		Percentage of consumers connected to "bundled" DSOs
4		Percentage of consumers with regulated energy prices
5		Number of common standards for consumer data & for DSO-supplier contract or existence of data hub
6		Availability of time-of-use metering and – where applicable – additional fee paid by the consumer to be able to have time-of-use prices vs. traditional metering
7	Close relationsship between wholesale markets and retail prices	Correlation between wholesale and retail energy prices
8		Mark-up between wholesale and retail energy prices
9	A range of offers, including demand response	Availability of a variety of pricing and billing options
10		Availability of value added services for implicit demand response and self-generation
11		Availability of online offers
12		Availability of contracts guaranteeing the origin of energy
13		Availability of explicit demand response offers
14	High level of awareness and trust	Percentage of consumers knowing they can switch supplier
15		Percentage of consumers who know that DSOs are responsible for the continuity of supply and, where applicable, of metering
16		Percentage of consumers trusting the energy market
17	Availability of empowerment tools	Percentage of consumers having access to at least one independent and verified PCT
18		Percentage of consumers having access to online historical consumption info
19		Percentage of consumers having access to standardised supplier switching process (and its duration)
20	Sufficient consumer engagement	Supplier switching rate
21		Percentage of inactive consumers
22		Percentage of prosumers
23	Appropriate protection	Time between notification to pay and disconnection for non-payment
24		Percentage of disconnections due to non-payment
25		Percentage of suppliers using min standards for key info in advertising and bills

Q. How are fully restructured markets governed in practice?

A. Fully restructured markets rely on a market-based institutional decision-making framework to replace retail regulation (administrative regimes) wherever appropriate to do so.

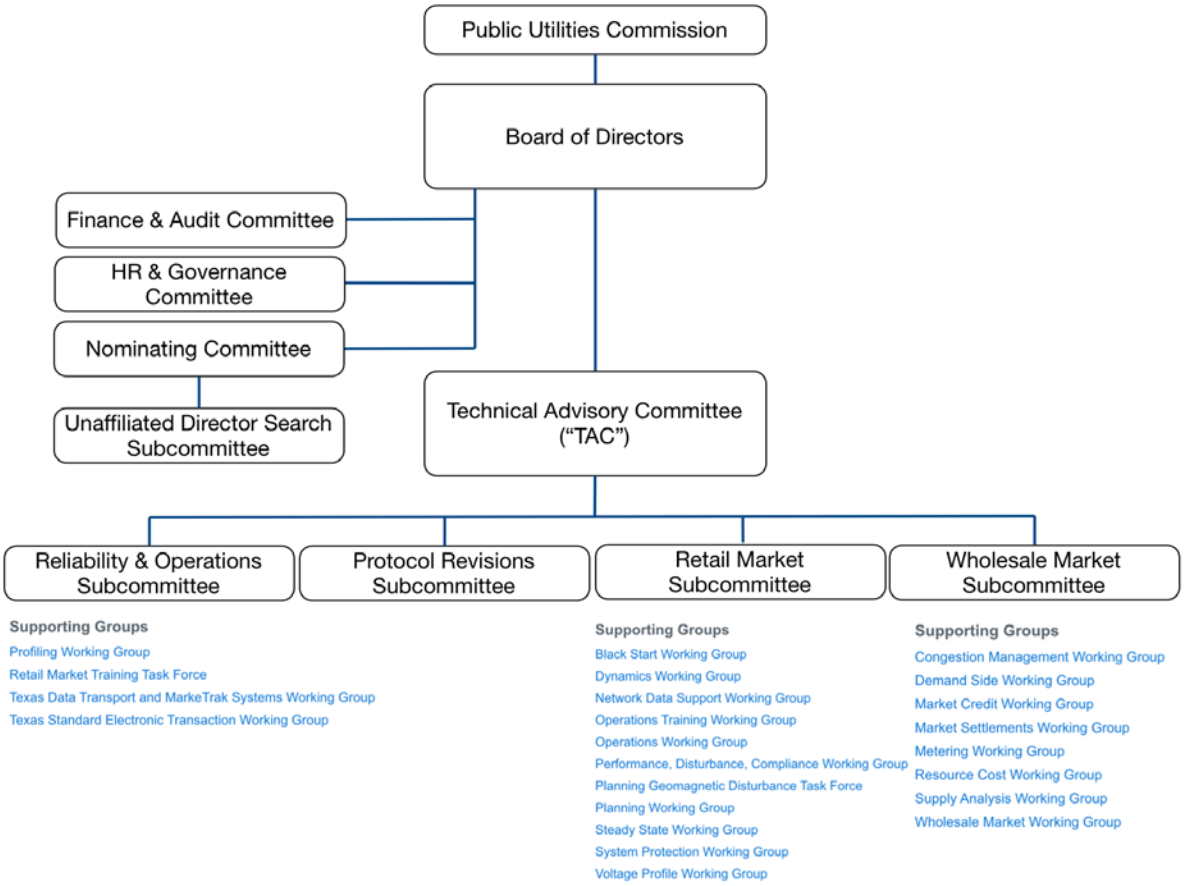
Governance is structured as a participatory process within which market participants act in a collaborative fashion, overseeing the necessary business processes and change management protocols to ensure that the functions previously performed by distribution utilities are carried out by non-utility entities in an optimal fashion. Data sharing and transparency is, of course, a necessary and foundational component of a market-based governance regime (more so than under political regimes e.g. retail regulation).

The Texas ERCOT market provides an example of a market framework governance regime:

- The ERCOT Board of Directors is a "16-member "hybrid" board consisting of: independent members (unaffiliated with the power industry), consumers and representatives from industry market segments"[20] that meets every month.
- The Technical Advisory Committee (TAC) is similarly constituted and "makes recommendations to the board regarding ERCOT policies and procedures and is responsible for prioritizing projects through the protocol revision request, system change request and guide revision processes."[21]
- There are four main subcommittees that report to the TAC (Protocol Revisions, Reliability and Operations, Retail Market and Wholesale Market), and a number of working groups and task forces that form as needed to inform decision-making on more targeted issues.

I have prepared the organization chart below based on a survey of ERCOT's website, which provides substantial training materials, meeting notices and records, committee and subcommittee governance documents and membership lists, and a complete set of market rules and operating procedures (such as guides for commercial operations, data transport, load profiling, etc., and Standard Electronic Transaction "swimlanes", which are reference documents outlining the business process lifecycle for retail market transactions):

[20] Website available online: http://www.ercot.com/committee/board
[21] Website available online: http://www.ercot.com/committee/tac



Below is a table showing the current Technical Advisory Committee members representing each "customer segment":[22]

Consumer	Residential: Shawnee Claiborn-Pinto – OPUC Residential: Eric Goff Commercial: Phillip Boyd – City of Lewisville Commercial: Chris Brewster – City of Eastland Industrial: Garrett Kent – CMC Steel Texas Industrial: Bill Smith – Air Liquide
Cooperative	John Dumas – Lower Colorado River Authority Clif Lange – South Texas Electric Cooperative Roy True – Brazos Electric Power Cooperative Michael Wise – Golden Spread Electric Cooperative
Independent Generator	Bob Helton – Engie North America Ian Haley – Luminant Generation Colin Meehan – First Solar Bryan Sams – Calpine Corporation
Independent Power Marketer	Kevin Bunch – EDF Trading North America Jeremy Carpenter – Tenaska Power Services

[22] Document available online:
http://www.ercot.com/content/wcm/key_documents_lists/27308/2020_Segment_Representatives.TAC.June.doc

	Clayton Greer – Morgan Stanley Resmi Surendran – Shell Energy North America
Independent Retail Electric Provider	Bill Barnes – Reliant Energy Retail Services Eric Blakey – Just Energy Texas Sandy Morris – Direct Energy Shannon McClendon – Demand Control 2
Investor Owned Utility	Walter Bartel – CenterPoint Energy Collin Martin – Oncor Electric Delivery Keith Nix – Texas-New Mexico Power Company Richard Ross – AEP Service Corporation
Municipal	Dan Bailey – Garland Power and Light Jose Gaytan – Denton Municipal Electric Alicia Loving – Austin Energy David Kee – CPS Energy

The key takeaway is that governance over the market framework must be structured in a manner to leverage and be responsive to the collective insights and requirements of market participants, which are naturally focused on assessing and removing barriers to operational efficiencies. This type of governance regime, in my opinion, is the foundation upon which market rules and enabling infrastructure investment decisions should be made in order to successfully promote decentralized coordination and market-based innovation.

Q. What are the key functional characteristics of a "fully restructured" market?

A. Broadly speaking, the purpose of any market is to allow entities that compete with one another to offer customers new products and services that efficiently balance supply and demand and create surplus value for society. Successful markets ensure that competitors have low barriers to entry, that common information and communication technology supports broad-based market innovation, that customers are both free to choose new products and services and protected from predatory behavior, and that particularly vulnerable customers are provided relief from acute hardship.

In the electric power sector, utilities perform a network function (connecting supply and demand) by operating the physical platform (the distribution grid) that delivers power to, from

and across retail customers. It is both a natural monopoly and a horizontal segment, in that it is the bridge between the wholesale power grid and retail customers, within which unchecked monopoly power could easily foreclose retail market competition; consequently, it is a service regulated by the state.

This physical platform must be complemented with a market platform that facilitates transactions between the wholesale generation market, the distribution utility, and the non-utility entities that serve retail customers and manage portfolios of distributed energy resources.

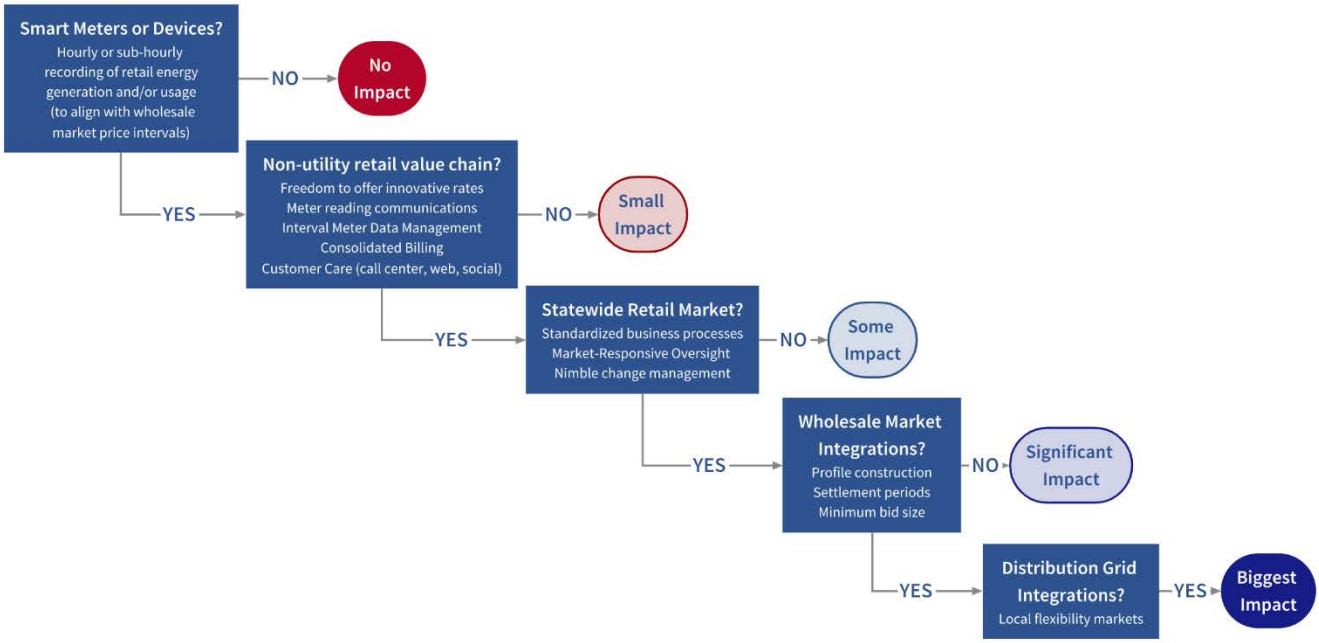
The generic objective of the market platform is to ensure that non-utility entities have low barriers to entry and are able to engage in "permissionless" innovation — particularly valuable in the current context of rapid technological change[23] — competing against one another to induce retail customers to choose new products and services that accurately reflect system costs and risk drivers, and which balance supply and demand more cost-effectively in relation to wholesale market dynamics and network constraints — and to do so in standardized fashion, regardless of which distribution utility happens to serve a given customer.

The practical process of such retail product innovation[24] requires non-utility entities to perform a linear and inter-related sequence of steps across the "retail value chain", which refers to the infrastructure and business processes that span customer-facing functions (metering, data management, rate structures, billing and customer engagement) and flow into wholesale market and network integration functions (e.g. settlement profile construction, non-utility consolidated billing protocols, interconnection standards, ADMS / DERMs integrations, etc.).

[23] Refer to Lynne Kiesling and Michael Giberson, "The need for electricity retail market reforms," Regulation. Fall 2017. Available online: https://www.cato.org/sites/cato.org/files/serials/files/regulation/2017/9/regulation-v40n3-4.pdf.

[24] For a list of innovative retail products, refer to page 25 of this report: Dr. Philip R. O'Connor, "Restructuring Recharged," Retail Energy Supply Association. April 2017. Available online: https://www.resausa.org/sites/default/files/RESA_Restructuring_Recharged_White%20Paper_0.pdf.

To illustrate these concepts, I have prepared a simple diagram[25] showing the inter-related nature of the retail value chain, market structure and system integrations along with the impact on retail product innovation. It is a "hierarchy of barriers" to be read from left to right:



Any barrier or non-alignment in the different functions that comprise the retail value chain will foreclose (preclude or raise the cost of) market innovation, as a problem in one step will cause unintended consequences or fully block progress in other steps. Thus, in a restructured market, monopoly power is carefully "quarantined" such that distribution utilities are "wires only" network companies that have little to no direct role in or control over the retail value chain and thus do not engage directly with customers, apart from receiving outage calls and interconnection requests.

In unbundling these functions from distribution utility service, regulators may choose to standardize enabling infrastructure directly through regulated (that is, socialized) investments.

[25] Based upon a similar diagram in the 2017 NordREG report "Flexible demand for electricity and power: Barriers and opportunities", available online: http://norden.diva-portal.org/smash/get/diva2:1167837/FULLTEXT01.pdf.

Smart Meters and data platforms are a prime example of such common, market-enabling infrastructure. For example, regulators in the Texas ERCOT market chose to direct distribution utilities to deploy AMI smart meters that record retail customer usage in 15-minute intervals, which aligns with the wholesale market price intervals. The interval data generated is sent by distribution utilities directly to the market operator for load settlements each trading day and also posted to the Smart Meter Texas[26] data platform for use by each customers' retailer (without requiring separate customer authorizations, as the market operator tracks customer switching) for load forecast submissions to the wholesale market operator and other such applications, as well as to various non-utility entities (with explicit customer authorization).

In Europe, CEER has established frameworks and guiding principles regarding the management of customer data for the purpose of encouraging competitive retail markets,[27] and various European countries have established data platforms similar to ERCOT in terms of data interchange and business processes, such as Denmark's Energinet data hub:

> "The purpose of the data hub is to ensure uniform communication methods and standardized processes for market participants in a non-discriminatory, objective and transparent way so as to create relatively low market entry barriers. All metering data an all necessary information for settlement purposes, e.g. electricity taxes and network tariffs, are collected in the data hub. Furthermore, the process of, for example, supplier switching, is handled in the data hub. The detailed requirements, rights and obligations of the relevant market participants in terms of the data hub, and thereby also the

[26]Website available online: https://www.smartmetertexas.com/aboutus
[27] Council of European Energy Regulators, "CEER Advice on Customer Data Management for Better Retail Market Functioning", 19 March 2015. Available online: https://www.ceer.eu/documents/104400/-/-/dbcc2cb1-5035-3a5e-6ba8-59de0d60915c

functionalities of the data hub, are set in regulations issued by Energinet within the framework of the Danish Electricity Supply Act."[28]

Alternatively, markets may establish standardized technical requirements for such infrastructure and processes for non-utility entities to adhere to in the provision of services. For example, the Australian Energy Market Operator has established "Meter Data Management Procedures"[29] and a "Guide to the Role of the Metering Coordinator".[30]

I have prepared the following table, based off of the Brattle Group's 2018 report "International Experiences in Retail Electricity Markets," to show how various organized electricity markets rely on market entities or regulated utilities to perform select retail value chain functions:[31]

[28] Council of European Energy Regulators, "Roadmap 2018 Self-Assessment Status Report", at p. 22/74available online: https://www.ceer.eu/documents/104400/-/-/89206356-85ff-9977-1ba9-3a8262fe00e3.
[29] AEMO, "MSATS PROCEDURE: MDM PROCEDURES", 1 December 2017. Available online: https://www.aemo.com.au/-/media/Files/Electricity/NEM/Retail_and_Metering/Market_Settlement_And_Transfer_Solutions/2017/MSATS-Procedures-MDM-Procedure-V33.pdf.
[30] AEMO, "GUIDE TO THE ROLE OF THE METERING COORDINATOR", 1 December 2017.Available online: https://www.aemo.com.au/-/media/Files/Electricity/NEM/Retail_and_Metering/Accreditation/Guide-to-role-of-Metering-Coordinator.pdf.
[31]The Brattle Group, "International Experiences in Retail Electricity Markets: Consumer Issues", The Australian Competition and Consumer Commission. June 2018. Available online: https://brattlefiles.blob.core.windows.net/files/14257_appendix_11_-_the_brattle_group_-_international_experiences_in_retail_el___.pdf.

Status of Enabling Market Services for Residential Customers

Residential Customer Retail Value Chain:	Billing	Metering	Meter Reading	Credit & Collections	Outage Reporting
United States of America					
Illinois	Stalled	Utility	Utility	Stalled	Utility
New York	Competitive	Utility	Utility	Competitive	Utility
Pennsylvania	Stalled	Utility	Utility	Stalled	Utility
Texas	Competitive	Utility	Utility	Competitive	Unknown
Europe					
France	Competitive	Utility	Utility	Competitive	Unknown
Germany	Competitive	Competitive	Competitive	Competitive	Unknown
Great Britain	Competitive	Competitive	Competitive	Competitive	Utility
Italy	Competitive	Competitive	Competitive	Competitive	Unknown
Netherlands	Competitive	Competitive	Competitive	Competitive	Unknown
Oceania					
Australia (VC)	Competitive	Utility	Utility	Competitive	Utility
Australia (rest of NEM)	Competitive	Competitive	Competitive	Competitive	Utility
New Zealand	Competitive	Competitive	Competitive	Competitive	Unknown

Competitive
Stalled
Utility
Unknown

Fully restructured markets naturally rely on competitive entities to provide default service to customers, though the extent to which regulatory oversight over how the competitive market sets the default rates varies by jurisdiction. The table below is also based off of the aforementioned Brattle Group report:

Market Survey: Oversight of Default Supply Prices

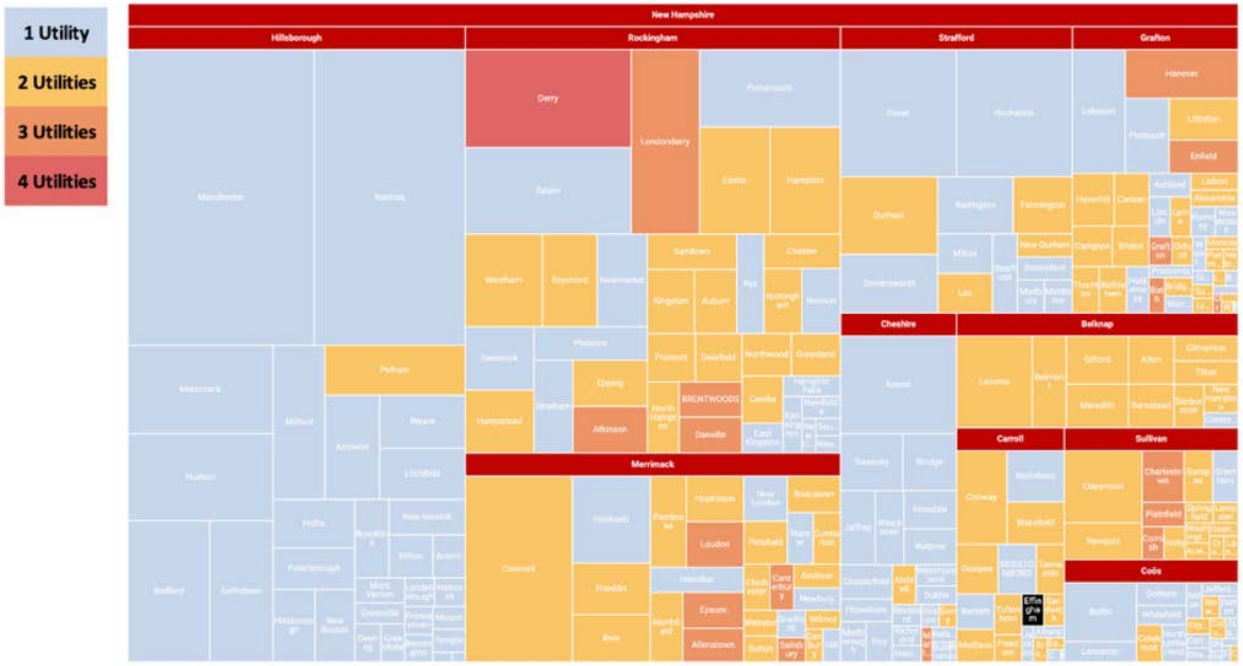
Market	Transitioning	Regulators
Texas*	United Kingdom	Pennsylvania**
Australia (NEM)	Italy	New York***
Germany	Netherlands	Illinois***
New Zealand		France

*Competitive Retailers provide default supply
**Distribution Utilities provide default supply
***Default Supply transitions to Market / Community Power
(customers may opt-back to Regulators / Distribution Utilities)

Q. How would you characterize New Hampshire's current retail market structure?

Each distribution utility has been left responsible for default retail service, and therefore left in control of the retail value chain for most customers in their respective territories; each has differential capabilities and business processes in regard to the retail value chain (i.e. metering, meter reading, meter data management, billing systems, customer information management systems, call centers, local program administration, load forecasting and settlement profile construction, etc.).

The retail market remains operationally fragmented as a consequence, balkanized by utility territory instead of unified across the natural boundaries of the state. To visualize this aspect of the market structure I have prepared the heat map graphic below, in which each rectangle is a municipality sized by number of housing unit and grouped by county (i.e. under the red headings). As context, 116 of New Hampshire's 246 municipalities (47% of municipalities, and 42% of the population) are served by two or more distribution utilities:



On an individual utility basis, my impression is that there are a number of long-standing and inter-related inefficiencies that have reinforced one another in maintaining this administrative and structural regime. My general observations are as follows:

- Universal service has long-accustomed distribution utilities in general to view customers on an aggregate basis, and to allocate their resources accordingly — investing in metering, billing, customer care systems and associated staffing resources designed to manage the vast majority of customers as large, homogenous groups that do not require differential and customized retail services.
- This aggregate approach to customer portfolio management appears reinforced by the manner in which distribution utilities have been relied upon to provide default electricity supply to customers: under a nonselective wholesale portfolio strategy that simply procures fixed-price, load following supply for customer classes under short-term (e.g. 6-month) contracts. This strategy transfers all market price and swing risk throughout the contract term onto suppliers, which must price and embed the risk as a premium into supply costs (i.e. without regard to how retail customers could be engaged and incentivized to shift usage to lower-price market intervals and outside of capacity-constrained periods e.g. by using devices such as smart thermostats, water heater switches, storage systems, etc. coupled with predictive intelligence to shape demand).
- The distribution utilities' retail value chain has continued to be largely aligned with this nonselective procurement strategy: the utility is charged for electricity regardless of the market price or customer usage is at a given moment, passes through these charges to customers in a similar fashion, and has little incentive to modernize its retail value chain

(meters, communications, data management, billing and customer information systems, etc.) or associated wholesale processes (profile construction, load forecasting, market settlements, etc.). The usage of most default service customers is not individually recorded on an hourly or sub-hourly basis, but once a month — the utility load forecasting and settlement relies on statistically-derived load "profiles" that approximate what customers within a class are using, in aggregate and on average within a given hourly, and calibrated with upstream measurements of actual electricity flow (i.e. at substations).

- In this fashion, the current regime reinforces an unnatural separation of horizontal segments (wholesale and retail) that are actually highly interdependent, should be treated as such, and which require common enabling infrastructure and a market framework to reconnect in order to for market participants to allocate capital and manage costs more efficiently. This continued separation has foreclosed market driven innovation in promoting and integrating customer technologies,
- In this fashion, regulated utility default service appears to function in a way that *maintains* the unnatural separation of interdependent horizontal segments, and thus *elevates* risk, cost and capacity investments for customers. In essence, all customers pay more because certain customers are fundamentally driving up costs — above the level they otherwise would, if they were more actively engaged and provided with innovative retail services and technologies to assist them in modifying their usage to minimize wholesale cost/risk and infrastructure investments for peak generation, transmission and distribution network capacity (for themselves, and thus the entire customer portfolio).

The procurement strategy and retail value chain dynamics described above ignore the customer value that could be created on an individual retail customer and portfolio basis through a unified and competitive market framework. In my opinion, these structures, along with the administrative decision-making process and general perspective held by most stakeholders involved in those processes, collectively poses high barriers to the development of a competitive retail market in New Hampshire to serve the remaining four-fifths of customers.

Q. Have distribution utilities' recent investment decisions in the retail value chain hindered or supported the development of a competitive retail market?

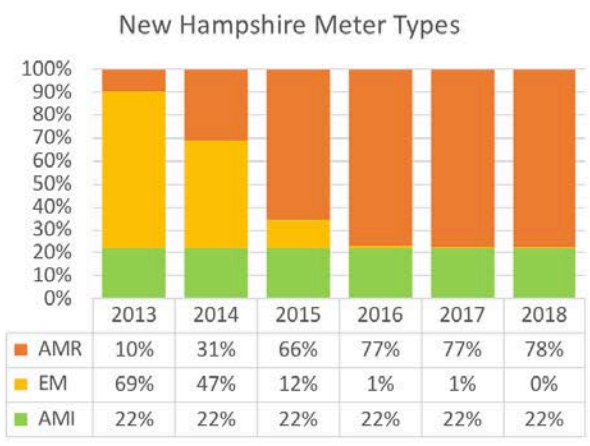
A. I believe that distribution utilities' recent investment decisions in the retail value chain have hindered the development of a competitive retail market.

To take one example, Eversource is currently defending its decision to upgrade its retail customer meters and associated data management, billing and customer information systems. They have done so in a manner that precludes the collection and dissemination of hourly or sub-hourly retail meter usage data, which the competitive market needs in order to cost-effectively create innovative retail products that reflect cost-risk drivers on the wholesale market and other horizontal segments of the electricity industry (e.g. generation, transmission and distribution network capacity constraints). Based off of their investment decision, the competitive market for most customers is constrained to settling load based on generic, class-average profiles, which forecloses innovation that would otherwise help individual customers (and thus in aggregate, the state as a whole) help to manage their energy costs and risks.

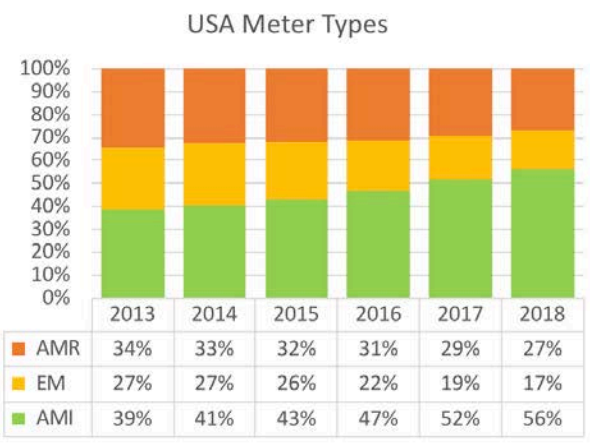
What I find most notable in this process is that, as Commission staff noted, Eversource began these upgrades based on its own internal evaluation and only informed the Commission

after the infrastructure deployment had commenced.[32] In response to criticism that they should have installed a "smart meter" system capable of supporting interval data collection and thus market innovation, Eversource defended their decision by claiming that other investor owned utilities had made similar decisions that year (in 2012), and cited a Green Tech Media news article that "concluded that AMI or smart meter deployment was on a downward trend, due to a lack of stimulus funding to help cover the costs of AMI deployment."[33]

As context, I have prepared the following tables based on EIA 861 data showing the installation of smart meters ("AMI") compared to the meters Eversource installed ("AMR") to replace electro-mechanical meters ("EM") over the period 2013 through 2018 — in New Hampshire and for the country overall:



	2013	2014	2015	2016	2017	2018
AMR	10%	31%	66%	77%	77%	78%
EM	69%	47%	12%	1%	1%	0%
AMI	22%	22%	22%	22%	22%	22%



	2013	2014	2015	2016	2017	2018
AMR	34%	33%	32%	31%	29%	27%
EM	27%	27%	26%	22%	19%	17%
AMI	39%	41%	43%	47%	52%	56%

Eversource's decision stands in contrast to the direction of its peers across the industry — notwithstanding their cherry-picking of examples and a speculative news article to the contrary.

[32] DOCKET NO. DE 19-057, "Direct Testimony of Richard Chagnon", 20 December 2019. At p. 31-32. Available online: https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-057/TESTIMONY/19-057_2019-12-23_STAFF_TESTIMONY_CHAGNON.PDF

[33] Docket No. DE 19-057, "Rebuttal Testimony of Penelope McLean Connor", 3 March 2020. At pp. 17-18. Available online: https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-057/TESTIMONY/19-057_2020-03-04_EVERSOURCE_REBUTTAL_TESTIMONY_CONNER.PDF

Regarding the impact this decision had on the development of retail product innovation, Eversource defended its decision by stating: "Further, it was reasonable to move forward with the AMR initiative because it takes time for new rates to incent behavior and it was unclear at the time whether the ultimate solution could be more dynamic than time-varying rates ("TVR"). Today, Eversource can accomplish peak load reduction without TVR, and with the maturation of demand management programs, such rates are not necessary to support customer participation in these programs."[34]

What this situation demonstrates to me is that, under New Hampshire's current governance framework, a monopoly distribution utility was allowed to unilaterally decide to invest in infrastructure that structurally foreclosed competitive retail market customer engagement and product innovation in favor of retail products and programs controlled by the utility directly — which necessarily must be governed through administrative proceedings.

I consider this to be anti-competitive behavior, carried out in the most structural way imaginable and without knowledge or permission of the Commission or market participants who should rightly have been fully engaged throughout the evaluation process.

Q. Do you expect that Community Power Aggregators will help to fully implement RSA 374-F?

A. Yes, I expect Community Power Aggregators ("CPAs") will play a critical role in fully implementing RSA 374-F, both directly in carrying out their functions in the market and by advocating for rule changes and utility investment decisions that support the creation of a unified, innovative and competitive retail market.

[34] Ibid., at p. 4.

Under RSA 53-E, CPAs can become the default provider of competitive electricity service to retail electric customers. The retail value chain functions naturally fall within that responsibility, and my understanding is that CPAs have unique statutory authority to assume direct control or meaningful oversight of these functions:

- Electricity meter specifications and ownership, the alternate use of comparable intelligent monitoring devices, and the associated Information and Communications Infrastructure (ICT);
- Technical and business process requirements to use data in market operations (profiling, forecasting and settlements) and capacity cost allocations;
- Customer Information Systems (CIS) and customer care functions (apart from reporting outages and responding to interconnection requests, which would remain within the distribution utilities' natural domain);
- CPA consolidated billing;
- Local programs.

CPAs are competitive energy agencies that are overseen by communities. To perform their core operational functions, CPAs integrate different service providers and advisors that have evolved insights, platforms and institutional capacity in competitive markets, and employ a limited number of expert staff and independent advisors to ensure sufficient oversight and strategic direction. CPAs are thus a mechanism to rapidly expand the scope of competitive third-party expertise operating within a given market, to transfer such knowledge to the communities involved, and to bring these perspectives to bear on decision-making at the local and state levels.

The business model of a CPA is that of an aggregator,[35] which "acts as an intermediary between electricity end-users and [distributed energy resource] owners and the power system participants who wish to serve these end-users or exploit the services provided by these [distributed energy resources]."[36]

The business model of an aggregator is predicated on maximizing customer value, which requires considering and optimizing how individual customers use energy and the value they place on different products to meet their underlying needs (the customer's total energy value chain), creating new retail products, executing on customer engagement and education, facilitating project financing and development, and thereafter intelligently managing the customer relationship and integration of distributed energy resources into retail, wholesale and network markets to maximize the creation of value.

This task is beyond the capacity of any one enterprise, particularly given factors such as: the size and diversity of a CPAs customer portfolio, the pace at which technologies and consumer preferences are evolving, increasing opportunities for distributed energy resources, onsite storage and fuel-switching (e.g. beneficial electrification) that entail complex valuations and technology configurations, and so on.

As a consequence, the natural role of a CPAs is to position itself as a form of 'network manager' and 'aggregator of aggregators': connecting its customers to innovative companies that specialize in engaging customers and offering new technologies and enabling services, and then facilitating the necessary 'behind the scenes' processes and transactions required to integrate

[35] Note that this term is a generic industry term, not to be conflated with the specific definition under PUC 2000.
[36] Scott Burger et al., "A Review of the Value of Aggregators in Electricity Systems", MIT CEEPR. January 2016. Available online: http://ceepr.mit.edu/files/papers/2016-001.pdf

these assets into portfolio risk management, power market operations, and system planning (and monetize them to the maximum degree possible).

CPAs are also naturally incentivized to lower wholesale cost and risk by unlocking retail demand flexibility and the intelligent management of distributed energy in new ways (i.e. in ways that incumbents are either unwilling or unable to do), because CPAs launch with no pre-existing assets and must therefore construct a wholesale book and portfolio strategy aligned with their retail usage profile.

Thus, active management of the CPA's retail cost / risk profile unlocks a source of competitive advantage, creating new value for individual customers and the aggregation overall. The practical process of doing so creates mutually beneficial relationships between the CPA and the third-party innovators relied upon to create new customer products:

- CPAs are able to capture a portion of the customer value created, strengthen customer relationships and brand recognition, lower costs and risks for the customer base overall (customer portfolio value) and gain competitive insights into evolving technology applications and market dynamics in ways that far exceed their internal capacity.
- Innovative energy companies gain new market opportunities, and a partner that has both the political legitimacy, technical knowledge and financial incentives to help the market function more efficiently over time. For example:
- CPAs are able to make decisions locally and rapidly to refine products and operations in response to market feedback and evolving dynamics;
- CPAs also can work over the longer-term with utilities, regulators and other stakeholders to modernize infrastructure, market processes and regulations.

In both cases, CPAs bring a valuable operational perspective that understands the types of competitive services that customers and communities want, and the evolving state of the commercial landscape.

CPAs can also create new value by leveraging their customer, community and inter-governmental knowledge and relationships to accelerate market opportunities and drive down transaction costs in unique ways. For example, by electrifying entire public transit fleets, or adopting reach codes and educating contractor networks to speed adoption of new technologies, and in numerous other ways that reflect local preferences.

The 'network manager' role of CPAs also leads to value creation on the grid infrastructure side of the business, as CPAs are naturally incentivized to aggregate grid-edge assets and encourage the development of new transactions and products with distribution utilities to manage local grid constraints and reduce stress on grid assets (to defer replacements and expansions).

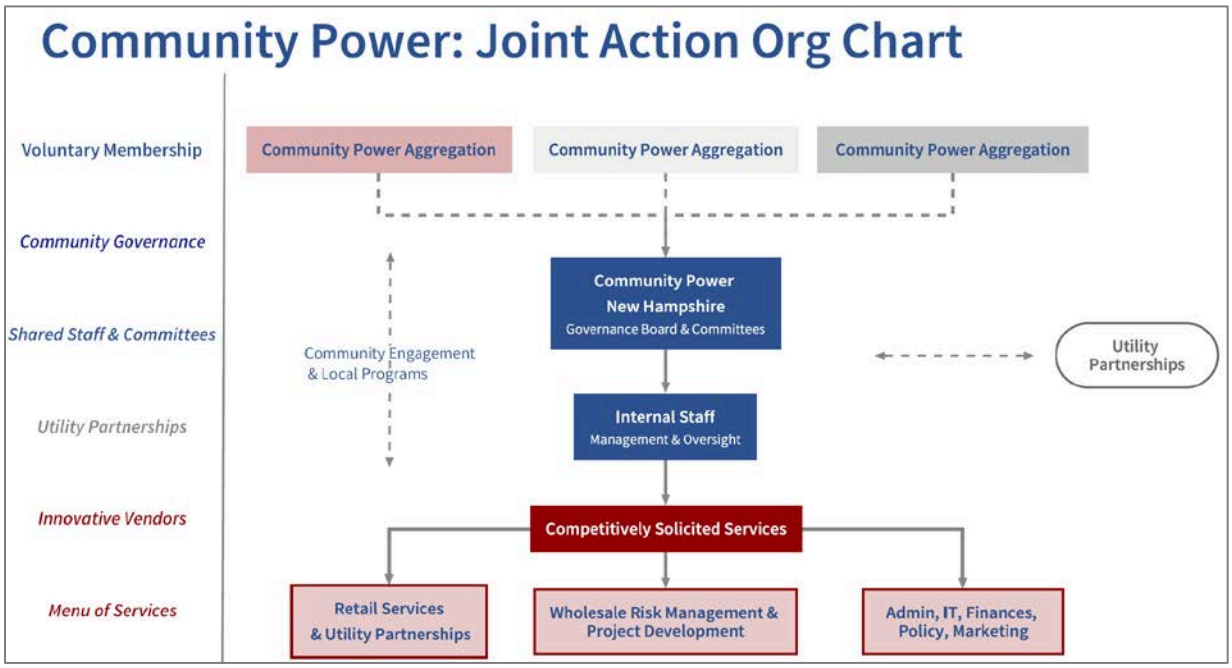
Lastly, aggregators naturally seek economies of scale and scope in order to lower the transactional costs associated with all of the above aforementioned activities. This encourages the formation of Joint Powers Authorities (also allowed under RSA 53-E), wherein multiple CPAs join together to share various services and programs deployed over their combined territories.

In these ways, the statutory authorities, business model and political drivers of CPAs are naturally aligned with the development of market frameworks as called for under RSA 53-F.

Q. On what timeline and manner do you expect the Community Power Aggregation market to develop in New Hampshire?

A. Assuming that the Commission authorizes the full authorities of CPAs enabled by RSA 53-E in market rules, I expect Community Power service to expand relatively rapidly in New Hampshire, both in terms of customers served and in extent of geographic territories, and in a manner that encourages operational and political coordination across individual CPAs for the explicit purpose of modernizing New Hampshire's competitive retail market.

Within that context, I have been informally advising a group of municipalities since December 2019 regarding the "Community Power New Hampshire"[37] initiative (CPNH) to establish an independent Joint Action Authority to provide shared services and political coordination on a statewide basis. Below is a high-level operating model diagram:



[37] Website available online: http://www.communitypowernh.org/

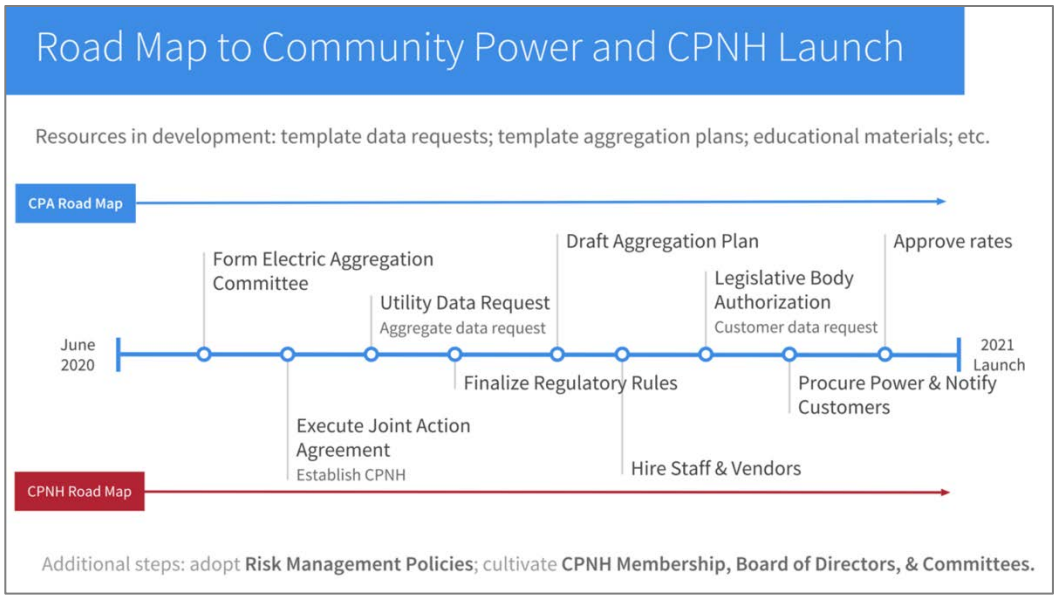
I have attached an article published in New Hampshire Municipal Association's Town & City magazine,[38] along with the agenda for CPNH's June 5th 2020 Community Power Summit that convened over 80 representatives from 30 municipalities interested in the initiative. These representatives were primarily local energy committee members, local elected officials and staff, and we estimated that the combined default supply load from the municipalities in attendance accounted for approximately 25% of the load currently served by distribution utilities. The following graphic and CPA market forecast table were based on an informal survey of attendees:

		Default Service Metrics (estimates based on downscaling 2018 / 19 actuals)			
Anticipated CPA Launch	**Municipalities**	**CPA Accounts**	**CPA MWH / yr**	**% Statewide Default MWh**	**CPA Supply Receipts**
2021	10	82,437	754,588	15%	$69,969,716
2022	7	33,482	302,118	6%	$27,589,655
TBD	14	24,109	216,710	4%	$20,006,927
Total	**31**	**140,028**	**1,273,416**	**25%**	**$117,566,299**

[38] Community Power New Hampshire, "Community Leaders Join Together to Develop Community Power New Hampshire", NHMA Town & City Magazine. May/June 2020. Available online: https://www.nhmunicipal.org/town-city-article/community-leaders-join-together-develop-community-power-new-hampshire.

Most recently, four municipalities have taken the lead in drafting a Joint Powers Agreement to establish CPNH as an independent entity and have issued a request for legal services to finalize the draft agreement by mid-September 2020.[39]

The joint action agency intends to launch member CPA programs in "early 2021" and provides the following high-level process and timeline for participating communities in their online FAQ:[40]



Q. How does the establishment of a statewide, multi-use online energy data platform relate to Community Power Aggregations authorized under SB 286?

A. My testimony has explained how the statutory authorities, business model and political drivers of CPAs are naturally aligned with the development of market frameworks as called for under RSA 53-F — and how the CPA market should be expected to grow rapidly and in an operationally-coordinated fashion under the Community Power New Hampshire joint action

[39] Website available online: https://lebanonnh.gov/bids.aspx?bidID=143
[40] CPNH, "COMMUNITY POWER SUMMIT FAQ & GUIDELINES," July 2020. Available online: http://www.communitypowernh.org/uploads/1/3/1/3/131383190/community-power-faq_june-30-2020.pd f

enterprise. Consequently, I urge the Commission to fully anticipate and leverage the role of CPAs in terms of helping to govern the design, implementation and evolution of the statewide data platform.

Q. How should the statewide, multi-use online energy data platform be governed?

A. The energy industry as a whole, particularly the electricity industry, is now in a period of rapid, system-wide and fundamental technological transformation that is arguably rendering administrative approaches to retail regulation outdated, inefficient and unable to meet the challenge of accelerating market distortions and shifting consumer choice expectations. A market framework that creates a continuous process of rapid, decentralized coordination to manage the complexity of these challenges is clearly warranted going forward.

Based on my evaluations of New Hampshire's current retail market structure, the state has a long way to go in seeing through The Electric Utility Restructuring Act (RSA 374-F) to completion. I believe that New Hampshire as a whole can make relatively rapid progress in establishing a unified, modern and competitive retail electricity market — provided that the Commission directs stakeholders work together in a market framework that elevates the role of market participants, and does not continue to provide monopoly utilities with undue influence over the operational data interchange protocols, business processes and retail customer value chain infrastructure investments upon which retail competition succeeds or fails in practice.

A sensible, if not necessary, first step in making meaningful progress in this regard is the establishment of a market framework that aligns with the purposes of the Electric Utility Restructuring Act — specifically, the guiding principal therein that the "commission should adapt its administrative processes to make regulation more efficient and to enable competitors to

adapt to changes in the market in a timely manner. The market framework for competitive electric service should, to the extent possible, reduce reliance on administrative process."

The backbone of any such market framework is expansive, reliable and transparent data interchange — the establishment of which is the focus of this proceeding — sufficient to facilitate the nimble decision-making and rule changes necessary to not unduly delay innovation in market operations, and also sufficient in terms of tracking the range of metrics that the Commission and others should rely upon to analyze the performance of the market.

When designing the governance framework, I urge the Commission to consider how customers and municipalities are the best judges of how to meet their own requirements and preferences in the market, but that they are often not able to be fully informed or engaged in the decision-making process. They should be freely supported by a competitive industry in this capacity — e.g. Community Power Aggregators, CEPS, brokers, innovative distributed energy aggregators, etc. — that understands how to meet their requirements better than distribution utilities do. Further, competitive market entities have incentives and technical abilities that are more aligned with retail market innovation compared to distribution utilities. Therefore, the governance framework should be primarily designed to fully engage and leverage these market stakeholders in the decision-making process.

In that context, I would also urge the Commission to fully consider how CPAs are unique in terms of their local control governance, democratic legitimacy, technical knowledge and default customer base responsibilities in terms of both wholesale risk management and retail value chain functions. They have both the incentives and the authority to meaningfully contribute to the Commission's complex task of seeing through the Electric Utility Restructuring Act to its completion.

In support of this recommendation, my testimony has provided several examples of how fully restructured markets have created nimble governance frameworks reliant upon market participants and customer representatives to continuously reform and evolve operating rules and data exchange procedures. I would recommend that the Commission look to how the Texas ERCOT market has structured its governance, specifically their Technical Advisory Committee (TAC) charter, customer representative segments and subcommittee protocols, which I have attached for reference. Additional governance [41]materials are available online. The Commission could implement a similar market-based framework in this proceeding, giving due consideration to the elevated role that market participants, and CPAs in particular, should be expected to play within this governance framework. The Commission should also consider employing a hearing officer, when necessary, in elevating any governance matters to the Commission to resolve.

Q. Does this conclude your testimony?

A. Yes.

[41] Website available online: http://www.ercot.com/committees

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MOTIVATION

Community	Adaptation
Collaboration	Resilience
Bipartisanship	Affordability
Effectiveness	Innovation

CAPACITY

- Awareness
- Originality
- Teamwork
- Leadership

EXPERTISE

- Agency Design
- Agency Operations
- -Risk Management
- -Origination
- -Distributed Energy
- -Retail Products
- -Regulatory Affairs
- -Compliance
- -Budgeting
- -Change Management
- Board Engagement
- Public Engagement
- Industry Connections

PROFILE

Political Economist, analyst and executive management consultant.

Architect of Community Choice agency governance and operating models, utility partnerships, regulatory strategies and market reforms.

Educator recognized as an industry expert, technologist & strategist.

Advisor to Community Choice agencies, Investor Owned Utilities, public power, municipalities, public advocates, labor and civic groups, and technology firms.

EXPERIENCE

- **Community Choice Partners, Inc.**
  Principal Consultant & Founder 2013- Present

  Architect of Community Choice "2.0 & 3.0" maturity models.

  Advisor to executives and senior staff on agency design and operational realignments, key performance indicators, vendor assessments, staffing plans and culture, regulatory intelligence and strategies, public relations and political campaigns, and stakeholder education.

- **Local Power, Inc.** 2011 - 2013
  Managing Director

  Consultancy that created Community Choice Aggregation.

  Responsibilities included managing projects, staff, and daily operations, in addition to consulting on financial modeling, Distributed Energy and customer-facing smart grid applications.

- **KEMA, Inc.** 2007 - 2011
  Senior Energy Analyst

  Global leader in Smart Grid and utility management consulting.

  Responsibilities included tracking hundreds of emerging technologies, Distributed Energy forecasting for states and utility territories, supporting grid integration simulations and 'Utility of the Future' management consulting teams.

EDUCATION

Bachelor of Arts, International Political Economy 2006
Colorado College
Study Abroad: Fudan University & Maastricht University
Thesis: "*Retreat from Kyoto*", analyzing why and how Federal energy policy became increasingly undemocratic over a period of 40 years.

SELECT PROJECT QUALIFICATIONS

UTILITY CONSUMER ACTION NETWORK

Nonprofit "utility watchdog" in San Diego. Lead expert in Phase 2 PCIA workshops and proceeding. Analysis of utility retail value chain barriers, cost shifting implications, and mitigating solutions re: structural market reform.

Q1 2019 — ONGOING

IBEW LOCAL 11 & NECA LOS ANGELES

Local labor union & electrical contractors association. Engaged to educate broad range of stakeholders in Los Angeles on CCA 2.0 & 3.0 design and the PCIA reform risk through reports, meetings and board presentations. Initial focus on "South Bay" and "West Side" cities that subse-quently joined the Clean Power Alliance. Work products received endorsements from: a Governor of the California Independent Grid Operator (CAISO), the former Assistant General Manager of the Northern California Power Agency (NCPA), the Chair of the Democratic Party Environmental Caucus, the California Alliance for Community Energy (CACE), the Executive Director of 350.org, the Sierra Club Angeles Chapter, and other civic organizations.

Q3 2016 — Q1 2017

COUNTY OF LOS ANGELES

Drafting and submittal of "PCIA Homework" filing to CPUC. Summarized extant PCIA methodology, methodological flaws that would have to be reformed prior to further growth of CCA industry, and a variety of related issues (e.g. IRP coordination, POLR, CAM). Recommended procedural steps for CPUC along with CCA 2.0 & 3.0 design strategies for the industry to manage near-term risks. Subsequent recognition for correctly identifying 'over the horizon' issues that are challenging the industry at present.

Q1 2016

CITY OF SAN DIEGO

Subcontractor to the Protect Our Communities Foundation. Correctly identified that San Diego was sufficiently large to trigger the reformation of the PCIA (an 'industry first'). Recommended a partial enrollment strategy to manage regulatory risk, and provided CCA energy and financial proforma forecasts accompanied by CCA 2.0 design advice. **Q4 2013 — Q4 2014**

LONG BEACH ENERGY RESOURCES DEPT

Engaged by municipal utility staff to support their CCA feasibility study effort. Review of bid submissions, scope of work negotiations with multiple contractors, regular project management support, analytical peer review, education for city staff on CCA issues and assistance in coordination with operational CCAs, public power entities and SCE over the course of the project.

Q2 2018 — Q4 2019

EAST BAY COMMUNITY ENERGY

Expert review and advice in the selection of a portfolio manager to assist in the launch and early-stage operations of the CCA; strategy discussions to evolve front-office structures and risk management capabilities.

Q4 2017

SONOMA CLEAN POWER

Technical, financial and strategic consulting services during Phase 2 and 3 (full enrollment) through staff onboarding: load & revenue forecasting; customer data analytics (CCA INFO Tariff and utility EDI data); power supply contract management; procurement support including forecasting of open energy and capacity positions; validation of invoiced PPAs and CAISO wholesale market pass-through costs (charge codes); a variety of monthly, quarterly and annual compliance reports (EIA, CAISO, CEC and CPUC); select regulatory intelligence, business process streamlining & CCA staff tutorials; and program financial "proforma" modeling (for internal budgeting & to support creditworthiness assessments of the agency as a counterparty to suppliers).

Q4 2013 — Q4 2014

DISTRIBUTED ENERGY ASSESSEMENTS

2011 to 2013

SAN FRANCISCO PUBLIC UTILITIES COMMISSION
CALIFORNIA ENERGY COMMISSION (PIER)
CITY OF BOULDER, COLORADO

2007 to 2010

UTILITIES: PG&E, SCE, SDG&E, SoCalGas (CA); HECO, MECO, MELCO (HW); XCEL ENERGY, PRPA (CO); NIPSCO (IN).
STATES OF RHODE ISLAND, CONNECTICUT & MISSOURI
CALIFORNIA PUBLIC UTILITIES COMMISSION

CONFIDENTIAL CLIENTS

CCA Agency: CPUC proceeding survey and strategic advice on DER services & utility Grid Modernization

Q2 2019 — ONGOING

Investor Owned Utility: community partnership advice for markets in which CCA is not enabled

Q2 2019 —ONGOING

SPEAKING ENGAGEMENTS

The Waking Giant: Community Power Market Design (webinar)**.** Municipal Sustainable Energy Forum. 15 July 2020.

Community Power: Design Insights for New Hampshire (panelist). Clean Energy NH's Local Energy Solutions Conference. 15 Nov 2019.

Impacts and Opportunities of Extending the Day Ahead Market to the Energy Imbalance Market (moderator) and **Aligning Transmission with Local Capacity Needs** (panelist). Infocast 11th Annual Transmission Summit West. 22-23 Oct 2019.

Community Power Design for New Hampshire. Conservation Law Foundation's Municipal Roundtable. 18 Sept 2019 & City of Lebanon Energy Action Committee. 29 Aug 2019.

Deep Decarbonization: Reforming Governance (webinar). Municipal Sustainability Forum. 23 July 2019.

Actionable Reforms to Governance and Operational Models to Rapidly Decarbonize Across Different Market Structures. Presentation at the National Renewable Energy Laboratory, workshop on "*Maximizing DER Value for All Stakeholders*". 30 May 2019.

Community Choice: Insights for Utility & Community Partnerships. CCA CEO panel + Q&A for the Board and Executives of an Investor Owned Utility. Q2 2019.

Meeting RPS Requirements in the Customer Choice Era. Panel with Monica Padilla and Amanda Singh. Infocast California Renewable Energy Procurement Summit. 30 April 2019.

Requirements to Operate a Community Choice Agency (presenter), **Data Analytics: Best Practices and a Vision for the Future** (moderator) and **Load Profiling and Other Fundamentals of Effective Procurement** (moderator). Infocast CCA Summit in San Francisco. 28-30 Dec 2018.

Community Choice Aggregation 101. Presentation to the American Public Power Association (at the CEO's request). 6 Sept 2018.

Emerging Opportunities in California. Panelist at The Business of Local Energy Symposium CCA Conference. 4 June 2018.

Energy & Community Choice Aggregation. Panelist with Nick Chaset, Pradeep Gupta and Don Bray. Association of Bay Area Governments (ABAG) General Assembly. 31 May 2018.

Community Choice 2.0 & 3.0 Insights. Interview for the Stratton Report. 15 May 2018.

CCA 2.0 and 3.0 Tutorial Workshop. Organizer of 8-hour workshop at the Infocast CCA Summit. 24 April 2018.

Community Choice Aggregation — Power to the Community. Panel with Ted Bardacke and Julia Pyper (Greentech Media) at the UCLA & USC Energy Innovation Conference. 16 April 2018.

Community Choice Aggregation: Best Practices, Lessons Learned & Distributed Energy Integration (webinar). Municipal Sustainability Forum. 30 Nov 2017.

What's your view of the PCIA exit fee debate and how does this relate to Community Choice 2.0 and 3.0? Interview for the Stratton Report. 15 Nov 2017.

Strategic Insights from Deconstructing CCA & IOU Economics. Presentation at the Infocast Community Choice Energy Summit. 14 Nov 2017.

LA Cities Meetup: CCA 2.0 & 3.0 Program Design Options + LACCE Review. Workshop presentation for the City of Santa Monica. 2 Nov 2017.

Expert Panel: Debate on California's Energy Future & Community Choice. Panel with Matthew Marshall and Gerry Braun. Municipal Sustainability Forum. 22 May 2017.

Executive Briefing: The Community Choice Aggregation Market. Panel with Mark Fillinger and Amanda Rosenberg. Solar Power Finance & Investment Summit. 21 March 2017.

Expert Panel: Updates on Community Choice Aggregation Structures in US, CA and NY Panel with Neil Alexander. Municipal Sustainability Forum. 18 April 2017.

Community Choice Aggregation: Program Design Evolution and Outlook (webinar). Municipal Sustainability Forum. 17 Jan 2017.

SELECT PUBLICATIONS & ANALYSES

Community Power Design for New Hampshire. The Conservation Law Foundation's Municipal Roundtable. 18 September 2019.

Bill is step toward true community energy. The Concord Daily. Community Choice Partners, Inc. 23 July 2019.

SB 286-FN-Local, Relative to Aggregation of Electric Customers by Municipalities and Counties. Strategy memo to the New Hampshire Governor's Office of Strategic Initiatives. Community Choice Partners, Inc. 17 July 2019.

Understanding the Community Choice Energy (R)evolution in California. LinkedIn article. Community Choice Partners, Inc. 15 Oct 2018.

Energy Risk Management Policies of Community Choice Agencies. Comments to the California Public Utilities Commission "Customer Choice En Banc". Community Choice Partners, Inc. 2018.

The Theory and Evolution of Community Choice in California. Comments on the California Public Utilities Commission "draft Green Book". Community Choice Partners, Inc. 2018.

Protest Letter to SCE Advice Letter No. 3781-E. Comments to the California Public Utilities Commission. Community Choice Partners, Inc. 2018.

Advanced Energy Services: Interviews with Five Leading Portfolio Management Companies. South Bay Clean Power initiative. Community Choice Partners, Inc. 2017.

CCA Financial Strategy and Regulatory Risk Analysis. South Bay Clean Power initiative. Community Choice Partners, Inc. 2017.

CCA 2.0 & 3.0 Business Plan. South Bay Clean Power initiative. Community Choice Partners, Inc. 2017.

Response of the County of Los Angeles to Optional Homework Assignment in Preparation for the March 8 Workshop on PCIA Reform. Comments to the California Public Utilities Commission. Community Choice Partners, Inc. 2016.

CCA 2.0 as a Service: Bid in Response to RFP 15-001. Submission to Redwood Coast Energy Authority. Community Choice Partners, Inc. 2016.

San Luis Obispo Renewable Energy Secure Community. California Energy Commission, Public Interest Energy Research (PIER). Local Power, Inc. 2013.

CleanPowerSF (various reports and proforma results). San Francisco Public Utilities Commission. Local Power, Inc. 2013.

Boulder's Energy Future: Localization Portfolio Standard – Electricity and Natural Gas. City of Boulder, Colorado. Local Power, Inc. 2011.

Fast Automated Demand Response to Enable the Integration of Renewable Resources. Lawrence Berkeley National Laboratory and KEMA, Inc. 2012.

Assessment of the Benefits and Costs of Seven PIER-Supported Projects. California Energy Commission. KEMA, Inc. 2010.

Review of Energy Efficiency Program Savings Estimations in Annual Reports and Measurement and Evaluation Studies. California Energy Commission. KEMA, Inc. 2010.

Missouri Statewide DSM Market Potential Study. Missouri Public Service Commission. KEMA, Inc. 2010.

Colorado DSM Market Potential Assessment. Xcel Energy. KEMA, Inc. 2010.

Connecticut Electric Residential, Commercial, and Industrial Energy Efficiency Potential Study. Connecticut Energy Conservation Management Board. KEMA, Inc. 2010.

Platte River Authority Climate Action Plan. Platt River Power Authority. KEMA, Inc. 2009.

Pacific Gas & Electric SmartAC™ 2008 Residential Ex Post Load Impact Evaluation and Ex Ante Load Impact Estimates. PG&E. KEMA, Inc. 2009.

Final Report: Pacific Gas and Electric SmartAC™ Load Impact Evaluation. PG&E. KEMA, Inc. 2008.

2004/2005 Statewide Express Efficiency and Upstream HVAC Program Impact Evaluation. CPUC, CEC, PG&E, SCE, SDG&E, SoCalGas. Itron and KEMA, Inc. 2008.

COMMUNITY POWER SUMMIT

"By Communities, For Communities"

Friday, June 5th, 2020

1 PM to 4 PM

Dear Community Leaders of New Hampshire,

Thank you for accepting this invitation to join your fellow community leaders, and town, city, and county staff and officials for this three hour online interactive workshop on Community Power.

The Community Power Law (RSA 53-E) enables local governments (cities, towns, and counties) to become the default electricity providers for their residents and businesses – to offer innovative customer services and local programs, to competitively procure electricity supply, and to work with regulators, utilities, and businesses to modernize our electricity system. Community Power Aggregations (CPAs) represent an enormous opportunity for our communities and our state as a whole, and it is you, our state's local and community leaders, that are now equipped with the authority and the tools to lead the evolution of our electricity system.

In this workshop, we will come together to learn about Community Power and efforts to establish Community Power New Hampshire (CPNH), a locally governed public power nonprofit to provide enabling services to participating CPAs. We look forward to collaborating with you in leading the development of New Hampshire's Community Power marketplace.

Sincerely,

CPNH Organizing Group

www.communitypowernh.org

COMMUNITY POWER SUMMIT SCHEDULE

12:45 PM — 1:00 PM: ***log-in early for assistance using the online platform (optional)***

1:00 PM – 1:40 PM: ***Welcome | Breakout Group Introductions | Context***

1:40 PM – 2:10 PM: ***Keynote by Girish Balachandran, CEO of Silicon Valley Clean Energy | Q/A***

2:10 PM – 3:40 PM: ***CPNH Joint-Action: Panel Discussion & Breakout Groups | Report Back***

3:40 PM – 4:00 PM: ***Road Map to Community Power and CPNH Launch | Adjourn***

COMMUNITY POWER SUMMIT PURPOSE

1. Build understanding of Community Power and CPNH Joint Action
2. Foster peer-to-peer engagement and relationship building
3. Hear new insights and concerns to inform the organizational design of CPNH
4. Assess which resources should be prioritized and developed to enable Community Power implementation for participating communities

ZOOM VIRTUAL MEETING GUIDELINES & TIPS

- You can control whether you see all the participants or just the speaker by going to the top right corner of your Zoom screen and toggling between Gallery View and Speaker View.
- **Please mute your microphone when you are not speaking.** You can find the microphone by hovering over the bottom of the screen with your cursor. The microphone will be on the far-left side. Click on the microphone icon and it will toggle between Mute and Unmute.
- **If you want to speak or ask a question, please type an asterisk (*) into the Chat box.** We will use these asterisks to create a "stack" of participants who would like to speak. We will call on participants in the order that they sent an asterisk.
- You can **find the Chat by hovering over the bottom of the Zoom screen** and looking for the Chat icon. Click on the icon and a Chat area will appear on the right side of your Zoom screen. To send an asterisk to the Chat, go to the bottom of the Chat area (where it says "To: Everyone"), type an asterisk (*) and hit Return.

COMMUNITY POWER SUMMIT AGENDA

Welcome | Breakout Group Introductions | Context

1 PM – 1:40 PM

The Summit will begin with a short summary of "*How to Use Zoom*" and "*Guidelines for Participating in Virtual Meetings*."

We will then set the stage with an overview of the Summit Agenda & Purpose, along with a review of the opportunities Community Power presents to democratize energy governance, lower energy costs, spur decarbonization and local renewable energy development, and harness market competition to drive innovation in electricity markets.

Afterwards, all participants will be divided into random breakout groups of five and be asked to:

1. Briefly introduce themselves;
2. Share a 60-second story of one energy project their community is proud to have implemented (or looks forward to implementing).

We will then regroup before transitioning to our keynote speaker.

Keynote by Girish Balachandran, CEO of Silicon Valley Clean Energy | Q&A

1:40 PM – 2:10 PM

Girish Balachandran
Chief Executive Officer

SILICON VALLEY CLEAN ENERGY

Silicon Valley Clean Energy (SVCE) is redefining the local electricity market in Santa Clara County, California, by providing its residents and businesses with new renewable and carbon-free clean energy choices at competitive rates. For the thirteen communities that govern SVCE, the community-owned agency serves as the official electricity provider — on a mission to reduce dependence of fossil fuels by providing carbon-free, affordable and reliable electricity and innovative programs at-scale across all communities.

As the Chief Executive Officer, Girish Balachandran develops and implements strategies to empower the Silicon Valley Clean Energy (SVCE) team and community to achieve its ambitious decarbonization goals. Girish leads the passionate employees of SVCE as they creatively solve challenges in the electric supply, built environment and transportation sectors. Girish has more than 29 years of experience in California utilities, including serving as the General Manager of Riverside Public Utilities (RPU) and Alameda Municipal Power (AMP) and previously working for the City of Palo Alto Utilities.

- *Participants who have questions are invited to type their questions, or to type an asterisk ("*") into the Zoom Chat during the presentation.*
- *After the Keynote, participants who have indicated they have a question for the speaker by typing an asterisk ("*") into the Zoom Chat will be called upon to ask their question.*
- *We will follow-up to answer any questions left unaddressed (due to time constraints).*

DE 19-197 ATTACHMENT 2 to Testimony of S. Golding

CPNH Joint Action: Panel & Breakout Group Discussions | Report Out

2:10 PM – 3:40 PM

CPNH JOINT ACTION PANEL DISCUSSION (45 minutes)

The communities of Hanover, Lebanon, Nashua, and Cheshire County are leading an effort to establish CPNH as a new, locally governed public power nonprofit to provide enabling services to Community Power Aggregations through a voluntary and flexible membership structure.

Representatives from these communities will provide an update on the status of CPNH development in a panel discussion format.

Joint Action Panelists

Julia Griffin is the Town Manager of Hanover, a position she has held since 1996. Prior to that, she was City Manager for the City of Concord. As Hanover staff for the Sustainable Hanover Committee, she spends considerable time working on sustainability and renewable energy programs for the Town and its residents.

Clifton Below is serving his 3rd term on the Lebanon City Council where he serves as Assistant Mayor and Chair of the Lebanon Energy Advisory Committee (which acts as the Lebanon Electric Aggregation Committee pursuant to RSA 53-E:6). He served as a Public Utilities Commissioner for the State of New Hampshire (2005-2012) and in the state legislature as a Representative and Senator (1992-2004) where he always served on the energy committees.

Mr. Below is the primary author of SB286 (the Community Power Law) and co-authored RSA 374-F (the "*Electric Utility Restructuring Act*").

Rod Bouchard is Assistant County Administrator for Special Projects & Strategic Initiatives for Cheshire County. He serves as senior manager for operational issues with Cheshire County. Mr. Bouchard has over 40 years of experience in information technologies with firms such as AT&T's Advanced IP division, Intel On-line Services, The Hartford Insurance Group, and Computer Systems Research of Avon, CT (where he was a principal partner).

Doria Brown is the Energy Manager for the City of Nashua, where she works on energy efficiency projects, greenhouse gas accounting, and energy procurement.

Prior to her work with the City of Nashua, Ms. Brown was the Sustainability Specialist at Worthen Industries, where she helped to implement the manufacturing company's sustainability programs.

Ms. Brown graduated from Franklin Pierce University with a BS in Environmental Science (concentrating in Hydrology and Chemistry), enjoys working in the industry and thinks that *"It's an amazing time to be in Energy in New Hampshire!"*

JOINT ACTION BREAKOUT GROUPS (45 minutes)

Following the Panel Discussion, attendees will be divided into twelve separate Breakout Groups:

- Each breakout group will have approximately 6-8 participants.
- The Facilitator will open the breakout group by reading aloud the purpose of the breakout group:

  "To facilitate engagement and discussion among participants, and to collect comments, questions, and feedback. Not all questions will be answered during the breakout session, but questions will be recorded and collected for follow up after the Summit."

  The facilitator will be responsible for ensuring each participant has opportunity to contribute to each discussion question (including themselves), and for keeping the group on-track and on-time.
- Each Breakout Group will include a "CPNH Affiliate and Note-Taker" (who has been involved with the organizing of CPNH). This person will answer questions about CPNH (to the best of their ability at this early stage) and will take notes.

Discussion Questions for Participants

1. What is your name, affiliation, and in one sentence, one thing you would like your community to achieve through Community Power? *(5 minutes)*
2. What unanswered questions or concerns do you have about Community Power or about CPNH? *(10 minutes)*

(We will follow-up to address any unanswered questions, which will also inform CPNH's next steps.)

3. Is your community interested in participating in CPNH? *(25 minutes)*
   a. What's your understanding of how the organization would function in practice?
   b. What level of participation would your community expect to contribute to CPNH's governance, oversight of staff & operations, legislative affairs, other committees, etc.?
   c. What resources should CPNH committees prioritize developing and sharing to enable participating member communities to implement Community Power?
   d. What's the best way for communities to collaborate prior to the formal launch of CPNH?
4. Facilitator invites each Breakout Group Member to share any closing thoughts? *(5 minutes)*

Roadmap to Community Power & CPNH Launch | Adjourn

3:40 PM – 4 PM

Following the Breakout Groups, CPNH affiliates will share one key takeaway from the discussions with collective group.

We will conclude the Summit with a roadmap from today through the launch of CPNH and the first-mover Community Power Aggregations, next steps, and closing remarks.

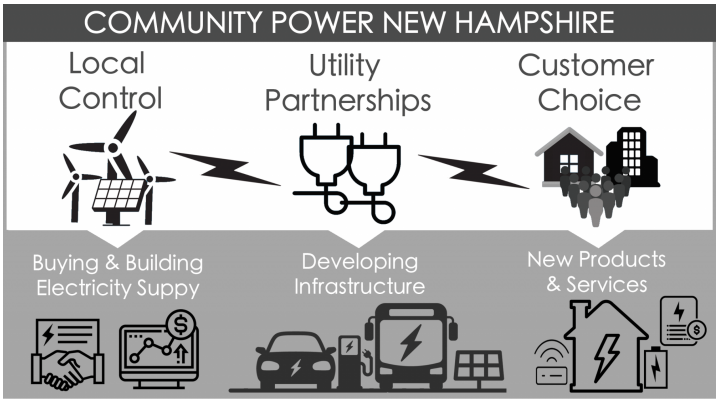
Post-Summit, attendees will receive:

1. Additional follow-up materials;
2. Responses to any questions left unaddressed (due to time constraints).

Community Leaders Join Together to Develop Community Power New Hampshire

This article is authored jointly by a coalition of community representatives and supporting partners working to form Community Power New Hampshire

New Hampshire's Community Power law (SB 286; RSA 53-E) became effective October 1, 2019. It authorizes local governments (cities, towns, and counties) to become the default electricity provider for their residents and businesses — to offer innovative customer services and programs that communities want, to competitively procure electricity supply, and to work with regulators, utilities and competitive businesses to modernize our electrical grid and market infrastructure.



Unlocking the full range of municipal authorities enabled by RSA 53-E could be a game changer for our communities, local infrastructure and the competitive retail electricity market. Successful implementation requires coming up to speed on industry best-practices, navigating complex regulations, coordinating across utilities, and contracting for an array of sophisticated services. That takes a level of expertise and scale beyond the capacity of many municipal governments — now more than ever, given the COVID-19 crisis and our economic outlook.

We believe that joining together to launch Community Power programs is the surest way to create a more coordinated, competitive, decarbonized, and locally governed electricity sector. That's why our group — representing energy committees, town managers and sustainability staff, elected officials, city energy managers, county administrators, and regional planning commissions — is developing Community Power New Hampshire (CPNH).

CPNH is being designed as a new joint action legal entity — governed by communities to serve communities under a voluntary and flexible membership structure — to clear the way for cities, towns, and counties across New Hampshire to launch Community Power programs in 2020 and 2021. Each community will help oversee the enterprise, while controlling their individual electricity rates, program services and policy goals. Once formed, CPNH will competitively enlist best-in-class service providers to support the launch of initial Community Power Programs and provide new members with a menu of services. As CPNH grows, all members will benefit from greater economies of scale, proven best-practices and expert regulatory and policy engagement — all of which supports the evolution of our statewide competitive retail market.

To guide the design of CPNH, we have identified the following goals for Community Power Programs (CPPs), some of which may be prioritized over others by different communities:

1. Strengthen local control and choice: CPPs may craft their own energy portfolios and evolve them over time, set rates for their customers, and allocate surplus revenues for their community.
2. Control and reduce cost: CPPs will have access to competitive rate offerings relative to their utility's de-fault energy service, and the ability to better manage electricity cost drivers (e.g. capacity costs).
3. Accelerate decarbonization through renewable energy: CPPs may procure renewable energy by purchasing Renewable Energy Credits, contracting with existing renewable energy generators, or enabling construction of new renewable energy systems.
4. Stimulate competitive, local markets to benefit customers and communities: CPPs will enable market-driven innovation in customer services and distributed energy technologies (including dynamic and real-time pricing options, onsite generation,

HR REPORT: Proposed "Card Check" Union Election Bills – Historical Context for an Old Proposal

NHARPC CORNER: Rail Trail Planning in New Hampshire Enhancing Transportation, Recreation, Economies, and Health

TECH INSIGHTS: Is Your IT Ready to Support Remote Work?

energy storage, electrification of transportation and heating sectors, and energy efficiency).

5. Modernize infrastructure to strengthen markets and energy resiliency: CPPs may further enable retail market innovation, Smart Cities and energy security for critical facilities through the targeted deployment of advanced meters and communications, distributed energy technologies and microgrids — working in partnership with distribution utilities and others to modernize our shared infrastructure and regulations.
6. Enhance local and regional coordination: CPPs may collaborate on electrifying transportation, streamlining permitting for innovative technologies, and removing other barriers to progress — working together with Regional Planning Commissions, counties, and other partners and coordinating with the Public Utility Commission and Legislature.

CPNH development activities are organized into the four working groups listed below. We're working together upfront to leverage our collective re-sources, minimize staff time and avoid duplicative overhead — and invite local governments interested in Community Power to join and support any area of interest:

Governance Agreement

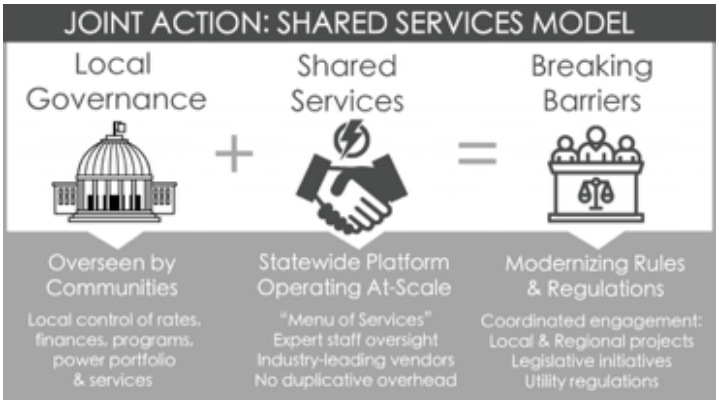
Municipal attorneys are reviewing a Joint Powers Agreement (authorized by RSA 53-A), a contract among local governments to create CPNH. Over the coming months, we will work together to refine the details including the process by which additional local governments may join CPNH.

Regulatory and Legislative Engagement

The Public Utilities Commission is considering a rulemaking process that will affect Community Power programs. Coordination with electric distribution utilities is an important part of Community Power, and the process for enabling the full range of authorities granted by RSA 53-E needs to be clarified by the Commission. CPNH organizers are already actively engaged in this regulatory process.

Operating Model Design

CPNH will likely rely on expert staff for oversight along with competitive service providers for operations, including: (1) active management of a diversified portfolio of wholesale energy contracts and participation in ISO New England electricity markets, and (2) retail customer services including meter communications, data management, call centers and billing.



Careful thought will be given to how CPNH's in-house expertise and contracted services will evolve with the market over time.

Community Engagement

Municipalities across New Hampshire, seventy of which have Local Energy Committees, are interested in how Community Power could offer meaningful control over their energy future.

We believe CPNH is the most efficient and pragmatic way to secure that objective and invite other communities to join our initiative. Over the coming months, we will provide toolkits and templates, and work with partners like NHMA, Clean Energy NH and Regional Planning Commissions to spread the word.

Learn more about CPNH and how to join via our website: **www.CommunityPowerNH.org**.

Save the Date: CPNH will host a virtual Community Power Summit on Friday June 5th.

NH Community Power coalition members:

Town of Bristol: Paul Bemis, Bristol Energy Committee

Town of Harrisville: Mary Day Mordecai , Ned Hulbert, Planning Board

Town of Hanover: Julia Griffin, Town Manager; April Salas, Sustainability Director

City of Lebanon: Clifton Below, Assistant Mayor; Tad Montgomery, Energy and Facilities Manager

City of Nashua: Doria Brown, Energy Manager

Cheshire County: Rod Bouchard, Assistant County Administrator / Special Projects and Strategic Initiatives

Community Power NH supporting partners:

Dori Drachmann, Co-founder, Monadnock Sustainability Hub

Dr. Amro M. Farid, Thayer School of Engineering at Dartmouth

Samuel Golding, President, Community Choice Partners

Jill Longval, Rockingham Planning Commission

Henry Herndon, Clean Energy NH

New Hampshire Municipal Association
25 Triangle Park Dr.
Concord, NH 03301
603.224.7447
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Electric Reliability Council of Texas
Technical Advisory Committee
Procedures

TAC Approved: May 29, 2020

Effective as of June 1, 2020

ERCOT
Technical Advisory Committee Procedures

These Technical Advisory Committee (TAC) Procedures are based upon incorporated provisions of the ERCOT Bylaws. Upon amendment of the ERCOT Bylaws, these Procedures should be reviewed to ensure consistency with any Bylaws revisions.

I. FUNCTIONS OF TAC

A. Duties

The TAC shall make recommendations to the Board as it deems appropriate or as required by the Board and perform any other duties as directed by the Board. TAC shall have the authority to create subcommittees, task forces and work groups, as it deems necessary and appropriate to conduct the business of TAC. TAC shall review and coordinate the activities and reports of its subcommittees.

B. Studies

The TAC shall itself, through its subcommittees, or through ERCOT staff, make and utilize such studies or plans as it deems appropriate to accomplish the purposes of ERCOT, the duties of its subcommittees and the policies of the Board. Results of such studies and plans shall be reported to the Board as required by the Board.

C. Prioritization of Projects Proposed by the Market

The TAC shall be responsible for setting the priority of projects approved through the NPRR, SCR and guide revision processes. TAC may delegate the responsibility for recommending the priority of market projects to one of its subcommittees.

II. MEMBERSHIP

A. Qualifications and Appointment

TAC Representatives, as defined in the ERCOT Bylaws Section 3.1, TAC Representatives, shall be elected or appointed according to the provisions of the ERCOT Bylaws and procedures established by the ERCOT Board. An Entity and its affiliates that are Members of ERCOT shall have no more than one representative on TAC.

B. Term of Representatives

TAC Representatives shall be selected annually in December of each year for service in the following calendar year.

C. Membership

The TAC shall be comprised of Representatives of Members from each Market Segment as defined in the ERCOT Bylaws: Independent Retail Providers (and Aggregators), Independent Generators, Independent Power Marketers, Municipals, Cooperatives, Investor Owned Utilities, and Consumers. The Corporate Members of each Segment are responsible for electing or appointing their Representatives to TAC. In addition, the ERCOT Chief Operating Officer (COO) or the ERCOT CEO's designee shall be an ex-officio, non-voting member of TAC. If a Member elects to

engage a consultant to represent them at TAC and/or TAC subcommittees, such consultant shall disclose the Entity or Entities it is representing at each meeting.

D. Vacancies
Vacancies shall be filled in the manner prescribed by the ERCOT Bylaws.

III. CHAIR AND VICE-CHAIR

A. Qualifications and Appointment
As provided in the ERCOT Bylaws, the Chair and Vice-Chair shall be elected by TAC and confirmed by the ERCOT Board.

B. Duties
The Chair shall be responsible for setting the agenda and presiding over all TAC meetings. The Chair shall also report to the Board on behalf of TAC. The Vice-Chair shall act as Chair at TAC meetings in absence of the Chair.

C. Election Process
ERCOT staff will open the floor for nominations for the Chair. Once nominations have been closed, TAC Representatives will cast votes on the nominations for Chair. If there is more than one nomination, ballots will be used for casting votes. Each TAC Representative will be allowed one vote. The candidate receiving a simple majority (51%) of TAC Representatives voting will be elected. If no simple majority is reached, ERCOT staff will identify the two candidates receiving the most votes and conduct another vote. Votes will be conducted until either a simple majority of the TAC is reached or an acclamation of TAC. Following election of the Chair, the Chair election process will be utilized for selecting the Vice-Chair.

IV. MEETINGS

A. Quorum and Action
As provided in the ERCOT Bylaws: Fifty-one percent (51%) of eligible, Seated Representatives of TAC shall constitute a quorum required for the transaction of business; and abstentions do not affect calculation of a quorum. Each voting member represented on TAC may designate, in writing, an Alternate Representative who may attend meetings, vote on the member's behalf and be counted toward establishing a quorum. Each voting member represented on TAC may designate in writing a proxy who may attend meetings and vote on the member's behalf, but shall not be counted toward establishing a quorum. If the TAC Representative wishes to designate an Alternate Representative or proxy, a notification of the designation of such Alternate Representative or proxy must be sent to ERCOT and shall be valid for the time period designated by the TAC Representative. TAC Representatives may participate in the meeting via telephone, but may not vote via telephone and participation via telephone shall not count towards a quorum.

ERCOT
Technical Advisory Committee Procedures

B. Meeting Schedule

The TAC and its subcommittees shall meet as often as necessary to perform their duties and functions.

C. Participatory Voting:

As provided in the ERCOT Bylaws, each Segment may choose to utilize "Participatory Voting" as follows:

If a Segment chooses to engage in Participatory Voting, each TAC Representative elected to serve and present at the meeting shall be required to vote the decision of the majority of Corporate Members of their Segment in attendance at a TAC meeting. A Corporate Member may delegate an employee or agent other than the Member representative to vote on its behalf for purposes of Participatory Voting. If a Corporate Member of a Segment using Participatory Voting is unable or does not wish to attend a TAC meeting, such Member may deliver a written proxy, at any time prior to the start of the meeting to a Participatory Voting delegate of any Member of the same Segment. A Corporate Member delegate in attendance at a TAC meeting may give written proxy to a Participatory Voting delegate of any Member of the same Segment during such meeting. If the consumer Segment chooses to utilize "Participatory Voting", each consumer type (retail, commercial and industrial) with representative(s) present shall each have equal voting strength in determining how the TAC Representatives of the Segment shall vote.

D. Notification

As provided in the ERCOT Bylaws, all meetings of the TAC shall be called by the Chair and all such meeting notices shall be sent in writing (including e-mail or fax) to each member at least one week prior to the meeting. All agenda items requiring a vote of TAC must be noticed for a vote with supporting documentation published at least one week prior to the meeting. Material that becomes available less than one week prior to the meeting may be considered if a majority of the TAC agrees to consider the additional material. An emergency meeting of the TAC may be held with less than one week notice if a majority of the members of TAC consent to the meeting. Any ERCOT Member may request notification of TAC meetings.

E. Conduct of Meetings

The Chair shall preside at all meetings and is responsible for preparation of agendas for such meetings. In the absence of the Chair, the Vice-Chair or another TAC Representative shall preside at the meeting. The Chair, or the presiding Member, shall be guided by Appendix A, ERCOT Meeting Rules of Order, in the conduct of the meetings. ERCOT staff shall be responsible for recording minutes of TAC meetings and distributing such minutes and other communications to all members of TAC and any other parties who express an interest in receiving such information. TAC meetings and TAC subcommittee meetings may be attended by any interested observers; provided, however,

persons may be excluded from portions of TAC meetings and TAC subcommittee meetings where third party confidential information is presented or discussed (e.g., confidential vendor or bid information and generation unit information). Participants shall disclose the Entity or Entities they are representing at each TAC and/or TAC subcommittee meeting.

F. Voting

In matters determined by the Chair to require a vote of TAC, or when any TAC Representative requests a vote on an issue, each TAC Representative shall have one vote. As provided in the ERCOT Bylaws, an act of TAC requires affirmative votes of: (i) two-thirds of the Eligible Voting Representatives of TAC; and (ii) at least 50% of the total Seated Representatives. For purposes of voting on TAC, TAC representatives shall not have their votes included in the total number of votes from which the requisite percentage of affirmative votes is required for action if: (i) they are not present and have not designated a proxy, or (ii) they abstain from voting.

G. Electronic Mail Voting

In matters determined by the Chair to require a vote of TAC which are urgent or otherwise require action prior to the next meeting, a vote via electronic mail (e-mail vote) may be utilized. A request for an e-mail vote can only be initiated by the Chair or Vice Chair. An e-mail vote is permitted provided a notification is distributed to the TAC distribution list that includes a detailed description of the issue or proposition and accompanied by supporting documentation. For e-mail votes, a quorum of Standing Representatives must participate in the vote. Participation requires casting a vote or abstaining. Votes shall be submitted to ERCOT for tallying by the close of two Business Days after notification of the vote. Votes are tallied in the same manner as a regular meeting. The final tally shall be distributed to the TAC distribution list and posted on the ERCOT website.

V. SUBCOMMITTEES

A. Duties

Subcommittees shall make recommendations to TAC as they deem appropriate or as required by TAC and shall perform any other duties as directed by TAC.

B. Alternate Representatives and Proxies

Each Standing Representative of a subcommittee may designate in writing an Alternate Representative who may attend meetings, vote on the Standing Representative's behalf and be counted toward establishing a quorum. Each Standing Representative of a subcommittee (except for the Protocol Revision Subcommittee (PRS)) may designate, in writing, a proxy who may attend meetings and vote on the member's behalf, but shall not be counted toward establishing a quorum. If the Standing Representative wishes to designate an Alternate Representative or proxy, a notification of the designation of such Alternate Representative or proxy must be sent

to ERCOT and shall be valid for the time period designated by the Standing Representative. Alternate Representatives, if not employed by the voting member thereby represented, must be confirmed in writing by such member (signed by a duly authorized representative of the member).

C. Chair and Vice Chair

Unless otherwise directed by TAC, the Standing Representatives of each subcommittee shall elect a Chair and Vice-Chair from the subcommittee's standing membership for a term of one year on a calendar year basis. The Chair and Vice-Chair shall be confirmed by TAC. Each Chair shall be responsible for setting the agenda and presiding over respective subcommittee meetings. The Chair shall also report on subcommittee activities and present recommendations to TAC. The Vice-Chair shall act as Chair at subcommittee meetings in the absence of the Chair.

D. Meetings and Notification

The subcommittee Chair is responsible for calling meetings as often as necessary for the subcommittee to perform its duties and functions. Meeting notices shall be sent to each Standing Representative, the subcommittee distribution list, and posted on the ERCOT website at least one week prior to the meeting, unless an emergency condition requires a shorter notice.

In addition, subcommittee meetings are attended by ERCOT Staff person(s) who coordinate ERCOT support of the meeting, including meeting arrangements, meeting minutes, and ERCOT Staff participation in the meeting.

E. Appeal Procedures

Any Entity that demonstrates it is affected by a TAC subcommittee decision (including but not limited to those listed in Protocol Section 21, Revision Request Process) may appeal the TAC subcommittee vote to TAC utilizing the following process:

1. Any appeal (including requested relief) must be submitted to ERCOT (RevisionRequest@ercot.com) within seven days after the date of the TAC subcommittee vote.
2. Appeals shall be heard at the next regularly scheduled TAC meeting that is at least seven days after the date of the requested appeal.
3. The appropriate TAC subcommittee Chair or Vice-Chair shall designate a TAC subcommittee advocate to defend the TAC subcommittee vote prior to the TAC meeting.
4. ERCOT shall notify the TAC and the relevant TAC subcommittee of the appeal and the TAC subcommittee advocate.
5. The appealing party and the TAC subcommittee advocate shall provide a position statement to ERCOT prior to the TAC meeting. Any other interested Entity may also provide a position statement to ERCOT prior to the TAC meeting. Position

statements should be submitted to ERCOT by no later than 1700 Central Prevailing Time on the day prior to the TAC meeting.

6. ERCOT will distribute all position statements to the TAC.
7. The TAC Chair or Vice-Chair will allocate a designated amount of time on the agenda for consideration of the appeal allowing for the appealing party, TAC subcommittee advocate, and any Entities providing position statements to address the TAC on the TAC subcommittee vote.
8. An appeal of a TAC subcommittee vote does not require a motion by the TAC. TAC shall vote on the appealing party's requested relief after consideration of the appeal. If the TAC vote fails to grant the appealing party's requested relief, the appeal shall be deemed rejected by TAC unless at the same meeting TAC later votes to recommend approval of, defer, remand or refer the issue. The rejected appeal as well as any other TAC votes shall be subject to appeal pursuant to ERCOT Board Policies and Procedures, Section VIII. Appeal Procedures.
9. The TAC Chair or Vice-Chair may override any deadline in this Section for good cause shown.

An expedited process may be utilized for appeals of (a) TAC subcommittee votes related to decisions on items designated as Urgent; or (b) any other TAC subcommittee vote that the TAC Chair or Vice-Chair designates as urgent. Such appeals must be submitted to ERCOT (RevisionRequest@ercot.com) within 48 hours after the end of the relevant TAC subcommittee meeting and shall be heard at the next regularly scheduled TAC meeting.

F. Working Group/Task Force

1. Comments or Revision Requests. Working groups and task forces must obtain approval from the governing TAC subcommittee (or TAC if the working group or task force reports directly to TAC) prior to submitting to ERCOT for official posting of new Revision Requests or comments on Revision Requests when the governing TAC subcommittee (or TAC if the working group or task force reports directly to TAC) is not the next approval authority of such new Revision Requests or comments.

2. Chair and Vice Chair. Participants at working group and task force meetings will offer nominations for Chair and Vice Chair which will be subject to approval by TAC or the governing TAC subcommittee.

G. Standing TAC Subcommittees

There shall be four standing TAC subcommittees with representatives as follows:

1. Retail Market Subcommittee (RMS); Reliability and Operations Subcommittee (ROS); and Wholesale Market Subcommittee (WMS)

ERCOT
Technical Advisory Committee Procedures

Membership: Membership shall consist of one to four Standing Representatives from each Segment elected or appointed by the voting members of the respective Segment, with the exception of the Consumer Segment. The Consumer Segment shall consist of three subsegments (Residential, Commercial, and Industrial). The number of Standing Representatives for each Segment shall be determined by the TAC members representing that Segment. Standing Representatives, if not employed by the voting member thereby represented, must be confirmed in writing by such member (signed by a duly authorized representative of the member). These will be the voting members of the subcommittee. ERCOT shall appoint appropriate staff member(s) to attend and participate in the subcommittee meetings. A Member entity and its affiliates that are also ERCOT Members shall have no more than one representative per TAC subcommittee as it pertains to Section V. G. 1.

Quorum: At least one Standing Representative from each of four Segments and a majority of the Standing Representatives must be present at a meeting to constitute a quorum. Standing Representatives may participate in the meeting and vote via telephone, but participation via telephone shall not count towards a quorum.

Votes: Each Segment shall have a Segment Vote of 1.0 except the Consumer Segment, which shall have a Segment Vote of 1.5. Segment Votes shall be equally divided into Fractional Segment Votes among the Standing Representatives, designated Alternate Representatives and proxies of each Segment that cast a vote. The Consumer Segment Vote shall be equally divided into a Fractional Segment Vote of 0.5 for each of the three subsegments. The Fractional Segment Vote for each subsegment of the Consumer Segment is allocated to the Standing Representatives, designated Alternate Representatives, and proxies of the subsegment casting a vote. For the Consumer Segment, if no Standing Representative from a subsegment is present at a meeting, the Consumer Segment vote is allocated equally to the subsegment(s) that cast a vote. If a representative from a subsegment abstains from a vote, the fraction of the Consumer Segment Vote allocated to such representative is not included in the vote tally.

Voting: Only Standing Representatives, their designated Alternate Representative, or proxy may vote. A motion of the subcommittee passes when a majority (unless a two-thirds vote is required for the motion as prescribed in Appendix A, ERCOT Meeting Rules of Order) of the aggregate of the Fractional Segment Votes are (i) affirmative, and (ii) a minimum total of three. The results of all votes taken will be reported to TAC, whether or not the vote passed.

Abstentions: In the event that a voting member, their designated Alternate Representative, or proxy, is not present during a roll call vote, or abstains from voting, that member's fractional vote will be reallocated equally among the remaining voting members of that Segment; except for the Consumer Segment.

E-Mail Voting: An e-mail vote is permitted provided a notification is distributed to the subcommittee distribution list that includes a detailed description of the issue or proposition. A request for an e-mail vote can only be initiated by the Chair or Vice Chair. A quorum of Standing Representatives must participate in the e-mail vote. Participation requires casting a vote, or abstaining. Votes shall be submitted to ERCOT for tallying by the close of two Business Days after notification of the vote. Votes are tallied in the same manner as a regular meeting. The final tally shall be distributed to the subcommittee distribution list and posted on the ERCOT website.

2. Protocol Revision Subcommittee (PRS)

The PRS is mandated by the ERCOT Protocols.

Membership: Membership shall consist of two Standing Representatives from each Segment. Each Standing Representative may designate in writing an Alternate Representative who may attend meetings, vote on the Standing Representative's behalf and be counted toward establishing a quorum. However, Standing Representatives at PRS may not assign proxy

Quorum: In order to take action, a quorum must be present. A quorum is defined as at least one Standing Representative in each of at least four Segments.

Votes: At all meetings, each Segment shall have one Segment Vote. The representative of each Voting Entity, present at the meeting and participating in the vote, shall receive an equal fraction of its Segment's Vote, except for the Consumer Segment which shall be divided into three subsegments (Residential, Commercial, and Industrial) that receive one third of the Consumer Segment Vote. Within each Consumer Segment subsegment, the representative of each Voting Entity casting a vote shall receive an equal fraction of its subsegment's vote. For the Consumer Segment, if no representative from a subsegment casts a vote, such subsegment's fractional vote is allocated equally to the subsegment(s) that cast(s) a vote. For purposes of counting votes in the Consumer Segment, an abstention shall not be considered as a cast vote.

Voting Entities: Entities entitled to vote (Voting Entities) are ERCOT Corporate Members, ERCOT Associate Members, and ERCOT Adjunct Members. Voting Entities must align themselves each calendar year with a Segment for which they qualify or, for Adjunct Members, a Segment to which they are similar. Voting Entities that align themselves with a Segment must be aligned with that same Segment for all TAC subcommittees, and remain aligned with that Segment for the entire calendar year. For each Subcommittee that is part of Section V. G. 2., a Member entity and its affiliates that are also ERCOT Members must designate one Segment in which to participate and vote for the Subcommittee term

regardless of the Segment for which the entity or its affiliate qualifies. Once the designation is made an entity and its affiliates may not vote in another Segment for one calendar year in that Subcommittee; provided, however, that if due to changed circumstances Members subject to such designation become no longer affiliated, the Members no longer affiliated shall each, upon notifying ERCOT, thereafter be eligible to participate and vote in the Subcommittee in a Segment for which it is eligible. If multiple affiliates attend a meeting, the Corporate Member shall designate the Voting Entity.

If Alternate Representatives are not employed by the voting member thereby represented, they must be confirmed in writing by such member (signed by a duly authorized representative of the member). Voting Entities must be present at the meeting to vote as they are not allowed to vote via the telephone or to designate a proxy.

Voting: Only one representative of each Voting Entity present at the meeting may vote. Voting Entities may be represented by a direct employee, or may file a letter of agency designating an individual not directly employed by the Voting Entity to vote on its behalf. Agents holding letters of agency for more than one Voting Entity may vote on behalf of only one Voting Entity at any particular meeting.

A motion of the subcommittee passes when a majority (unless a two-thirds vote is required for the motion as prescribed in Appendix A, ERCOT Meeting Rules of Order) of the aggregate of the fractional Segment Votes are (i) affirmative, and (ii) a minimum total of three. The results of all votes taken will be reported to TAC, whether or not the vote passed.

Abstentions: In the event that a representative of a Voting Entity abstains from a vote, the Segment Vote is allocated among the members casting a vote. Abstentions within the Consumer Segment shall be addressed as described above.

E-Mail Voting: An e-mail vote is permitted provided a notification is distributed to the subcommittee distribution list that includes a detailed description of the issue or proposition. E-mail votes for PRS are primarily conducted for administrative purposes. A request for an e-mail vote can only be initiated by the Chair or Vice Chair. For e-mail votes, each Standing Representative shall have one vote and a quorum of Standing Representatives must participate in the vote. Participation requires casting a vote or abstaining. The affirmative votes of eight Standing Representatives shall be the act of the subcommittee by e-mail vote. Votes shall be submitted to ERCOT for tallying by the close of two Business Days after notification of the vote. A PRS e-mail vote on a request for Urgent Status shall be submitted to ERCOT for tallying within 48 hours. The final tally shall be distributed to the subcommittee distribution list and posted on the ERCOT website.

ERCOT
Technical Advisory Committee Procedures

VI. VOTING AT REMOTE MEETINGS FOR TAC AND TAC SUBCOMMITTEES UNDER EXTENUATING CIRCUMSTANCES DECLARATION

Under extenuating circumstances (an emergency or public necessity, including but not limited to an imminent threat to public health or safety, or a reasonably unforeseen situation) and after consulting with the TAC Chair and Vice Chair, the ERCOT General Counsel may declare that remote voting is permitted for TAC and TAC Subcommittee duties and functions. A notice will be sent to all ERCOT Members and a Market Notice will be sent to all Market Participants when such a declaration begins and when the return to normal meeting procedures resumes. Any such meeting must use conference telephone or other similar communications equipment, or another suitable electronic communications system, including videoconferencing technology or the Internet, or any combination, if the telephone or other equipment or system permits each person participating in the meeting to communicate with all other persons in the meeting. Participation in a meeting shall constitute presence in person at such meeting, except where a person participates in the meeting for the express purpose of objecting to the transaction of any business on the ground that the meeting is not lawfully called or convened. In such meetings, TAC and TAC Subcommittees may vote via such electronic communications system. If necessary as determined by the Chair and Vice Chair, validation of the votes taken via such electronic communications system will be conducted after the meeting.

VII. AMENDMENT

These Procedures may be amended upon motion by any member of TAC and approval of that motion by vote of TAC, provided such amendment may not be in conflict with the ERCOT Bylaws, Board Procedures, or Board resolutions. The ERCOT Board may, upon its own motion, amend these Procedures upon reasonable notice to the TAC membership.

ERCOT
Technical Advisory Committee Procedures

Appendix A, ERCOT Meeting Rules of Order

Introduction:

These rules of order provide parliamentary procedure at all TAC and TAC Subcommittee meetings and are intended to ensure order and fairness in the decision making process. The minimum quorum to convene a meeting shall be as described in the TAC Procedures for each respective stakeholder group. Robert's Rules of Order shall guide stakeholder meetings in all areas not addressed by the ERCOT Protocols, ERCOT Bylaws, TAC Procedures, subcommittee charters, or these rules. Any conflicts between these rules and Robert's Rules of Order shall be determined in favor of these rules.

Main Motions

Main motions are used to present new business, such as action to be taken on Revision Requests, concepts, and methodologies.

Main Motion Examples:

YOU WANT TO:	YOU SAY:	2ND?	DEBATE?	AMEND?
Endorse "X" methodology	I move to endorse "X" methodology	Yes	Yes	Yes
Take action as defined in Protocol Section 21 on an NPRR (e.g., recommend approval, reject, defer decision, refer or remand)	I move to recommend approval of NPRR	Yes	Yes	Yes

Secondary Motions

Secondary motions address procedural issues and assist with the order and management of the meeting. They are applicable to pending main motions and discussion items equally.

Secondary Motion Examples:

YOU WANT TO:	YOU SAY:	2ND?	DEBATE?	AMEND?
Close the meeting	I move to adjourn	Yes	No	No
Take break	I move to recess for	Yes	No	Yes
Lay aside temporarily	I move to table/defer	Yes	Yes	Yes
Return to a previously tabled item	I move to remove from the table the item regarding*	Yes	Yes	Yes
Stop debate and vote	I call the question*	Yes	No	No

Limit or extend debate	I move that debate be limited/extended to*	Yes	No	No
Refer to another stakeholder group	I move to refer the motion/discussion to	Yes	Yes	Yes
Modify the wording of a motion	Will you accept a friendly amendment to	No	No	No
Modify the wording of a motion	I move to amend the motion to	Yes	Yes	Yes
Withdraw motion	I withdraw my motion	No	No	No
Reconsider a previous motion	I move to reconsider	Yes	Yes	Yes
Ask a question on the rules	Question on the rules/point of order	No	No	No
Suspend the rules of Notice	I move to waive notice for*	Yes	Yes	No

** Requires a two thirds vote in favor for approval.*

Motion Descriptions:

Table:
This motion postpones a discussion item indefinitely or for a specified time. If a time is specified the group may return to the discussion item prior to the expiration of the specified time with the adoption of a motion to *take from the table*. If no time to return to the item was specified the chair may direct the return to the item at their discretion.

Call the question:
This motion closes debate and is applicable only to the immediately pending motion. Once adopted, no further debate is allowed and a vote on the pending question must immediately be conducted. If a *motion to call the question* is adopted while an amendment is pending, then a vote is taken immediately on the amendment. Once the vote on the amendment is complete, then debate on the main motion may continue. To be applicable to a main motion, a *motion to call the question* must be adopted while the main motion is immediately pending. This motion requires a two thirds vote in favor for approval.

Limit/Extend debate:
The *motion to limit debate* requires that all debate regarding a particular pending motion be completed before the expiration of a specified amount of time. The allotted time for discussion may be extended through a *motion to extend debate*. The chair must immediately conduct a vote on the pending motion at the expiration of time. This motion requires a two thirds vote in favor for approval.

Refer:
The Chair may, without objection by any voting member, direct any discussion item to any working group or task force of the subcommittee, or request review by any other TAC Subcommittee. If adopted, this motion requires the Chair to take this action per the direction of the motion.

Friendly Amendment:
This is a request to revise the language of a pending motion and is directed at the mover and second of a pending motion. If accepted by the mover and the second, the pending motion is amended without the need for action by the group. If the friendly amendment is opposed by either the pending motion mover or the second, then the pending motion remains in its original form. If the friendly amendment is accepted by the mover, but opposed by the main motion second, and the second is withdrawn, the Chair may solicit an alternate second. If an alternate second is provided, the pending motion is amended without the need for action by the group. This motion has the same class and rank order as the more formal *motion to amend*. A pending motion may also be amended through the formal amendment process (see "Amend" below).

Amend:
If adopted, this motion revises the language of the pending motion regardless of opposition by the pending motion mover or second. This motion itself requires a second and is adopted by a vote of the group per TAC Procedures.

Waive Notice:
The usual course of business for TAC and TAC Subcommittees is to post and distribute a meeting agenda indicating items upon which respective groups will be voting at least one week in advance. Adoption of a *motion to waive notice* authorizes a vote upon items with insufficient notice. This motion requires a two thirds vote in favor for approval.

Withdraw:
This is a unilateral action by the mover or the second of a pending motion. If the mover withdraws, the pending motion is terminated. If the second withdraws, then the motion remains as a properly laid motion without a second for which any other member may second. A *withdrawal* by either the mover or the second ceases to be available once the Chair has begun the vote on the motion or while a *motion to call the question* is pending.

Reconsider:
This motion renews consideration of a particular item or motion previously considered during the current meeting. The mover of a *motion to reconsider* must be a member that voted on the prevailing side of the motion to be reconsidered, and must clearly identify the motion or action to be reconsidered. Once a *motion to reconsider* has been adopted by the committee, any member may move to void, amend or, reinstate the motion or decision that is reconsidered. If a *motion to reconsider* has been adopted regarding a particular item, but no further action is then taken, the previous motion or decision remains in effect as if the *motion to reconsider* had not been adopted. For the purposes of this paragraph, a meeting held over multiple days shall

be considered as a single meeting if it is held by the same stakeholder group and the days of the meeting are contiguous.

ERCOT TAC Representatives – 2020

Consumer	Residential: Shawnee Claiborn-Pinto – OPUC Residential: Eric Goff Commercial: Phillip Boyd – City of Lewisville Commercial: Chris Brewster – City of Eastland Industrial: Garrett Kent – CMC Steel Texas Industrial: Bill Smith – Air Liquide
Cooperative	John Dumas – Lower Colorado River Authority Clif Lange – South Texas Electric Cooperative Roy True – Brazos Electric Power Cooperative Michael Wise – Golden Spread Electric Cooperative
Independent Generator	Bob Helton – Engie North America Ian Haley – Luminant Generation Colin Meehan – First Solar Bryan Sams – Calpine Corporation
Independent Power Marketer	Kevin Bunch – EDF Trading North America Jeremy Carpenter – Tenaska Power Services Clayton Greer – Morgan Stanley Resmi Surendran – Shell Energy North America
Independent Retail Electric Provider	Bill Barnes – Reliant Energy Retail Services Eric Blakey – Just Energy Texas Sandy Morris – Direct Energy Shannon McClendon – Demand Control 2
Investor Owned Utility	Walter Bartel – CenterPoint Energy Collin Martin – Oncor Electric Delivery Keith Nix – Texas-New Mexico Power Company Richard Ross – AEP Service Corporation
Municipal	Dan Bailey – Garland Power and Light Jose Gaytan – Denton Municipal Electric Alicia Loving – Austin Energy David Kee – CPS Energy

Electric Reliability Council of Texas

RETAIL MARKET SUBCOMMITTEE PROCEDURES

TAC Approved
May 24, 2018

Effective as of June 1, 2018

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ERCOT
Retail Market Subcommittee

Subcommittee Structure

The structure of the subcommittee is included in the Technical Advisory Committee Procedures, Section V, Subcommittees. The Retail Market Subcommittee (RMS) will follow the election process as described in the Technical Advisory Committee Procedures, Section III, Chair and Vice-Chair, C, Election Process.

Scope

The Retail Market Subcommittee (RMS), reporting to the Technical Advisory Committee (TAC), evaluates, and reviews issues related to the operation of the retail market in the ERCOT Region and makes recommendations for improvement, when deemed appropriate, to TAC. The RMS will be responsible for monitoring Public Utility Commission (PUCT) rulings as they apply to Retail Markets and Retail Market Participants and ensure that PUCT requirements are reflected in the ERCOT Market Guides and Protocols. The guiding principle behind the work of the RMS is to help ensure an efficient and nondiscriminatory retail market for all Market Participants.

The functions of this subcommittee include oversight of, but are not limited to:

- Retail transactions and business processes
- Retail market testing
- Retail Reports and Extracts
- Data Transport
- Retail Metering
- Market Participant communication needs for retail operations issues
- Load Profiling
- Retail Market Training

The subcommittee will also promptly prepare and submit a revision request for any issues identified that require a change to the ERCOT Protocols and Guides. The subcommittee shall communicate with other TAC subcommittees, and shall report back to the RMS on a regular basis. Furthermore, the subcommittee will review Nodal Protocol Revision Requests for effects on the retail market.

The subcommittee will report to TAC on a regular basis or as otherwise directed by TAC. The subcommittee will continually evaluate subcommittee functions to identify those that could potentially be performed by ERCOT and submit any recommended changes to TAC. The subcommittee chair will normally attend TAC meetings.

Standing and Ad Hoc Working Groups

In order to discharge its responsibility, the subcommittee may form standing working groups and temporary or ad hoc working groups with representation of each working group being appointed or approved by the subcommittee. The members of the working group shall elect from amongst themselves a chair and vice chair, subject to confirmation by the RMS, for a one-year term on a calendar year basis or until the working group is no longer required. The subcommittee will direct these working groups, make assignments and retire the working groups as necessary.

All subcommittee working groups are responsible for reporting planned activities/projects and results to the subcommittee for review and to submit any budget requirements to the subcommittee to be forwarded to TAC for approval. All working group actions are subject to subcommittee review. Materials submitted by working groups that require RMS approval will be submitted to RMS members for review one week prior to the scheduled RMS meeting.

2020 RMS Goals

TAC Approved June 24, 2020

1. Align Retail Market Subcommittee Goals with TAC goals and the strategic vision of the ERCOT Board of Directors.
2. Maintain rules that support Retail Market processes and promote market solutions that are consistent with PURA and PUC.
3. Collaborate with WMS to ensure the incorporation of demand response and load participation in the Wholesale market including participation in the ERCOT annual demand response survey.
4. Support ERCOT's initiatives to develop retail processes for integrating or transitioning Load into ERCOT as needed.
5. Explore and implement Retail Market enhancements, process improvements, cost efficiencies, and evaluate lessons learned from previous events.
6. Maintain market rules that support open access to the ERCOT retail market.
7. Continue to work with ERCOT to develop Protocols and other market improvements that support increased data transparency and data availability to the market.
8. Assess and develop Retail Market training initiatives that may include ERCOT's Learning Management System's (LMS) online modules and Instructor Led Market Training courses and/or webinars.
9. Assess and improve communications and notifications processes for all Market Participants including ERCOT.
10. Work with ERCOT staff and Transmission and Distribution Service Provider staff to address issues and facilitate improvements to market rules pertaining to load profiling as reflected in the ERCOT Protocols and the Load Profiling Guide.
11. Monitor Retail Load Profiling Annual Validation.
12. Support retail system testing and implementation and continue to monitor performance post-implementation.
13. Support ERCOT's Summer preparedness efforts including Mass Transition drill and associated workshops.

ERCOT RMS Representatives – 2020

Consumer	Chris Brewster – City of Eastland Shawnee Claiborn-Pinto – OPUC
Cooperative	Christian Powell – Pedernales Electric Cooperative Connie Hermes – South Texas Electric Cooperative Daniel Kueker – Brazos Electric Power Cooperative Frank Wilson – Nueces Electric Cooperative
Independent Generator	John Schatz – Luminant Generation Angela Ghormley – Calpine Corporation
Independent Power Marketer	John Moschos – Tenaska Power Services Emily Black-Huynh – EDF Trading North America
Independent Retail Electric Provider	Eric Blakey – Just Energy Norm Levine – Direct Energy Kyle Patrick – Reliant Energy Retail Services Amir Khan – Chariot Energy
Investor Owned Utility	Jim Lee – AEP Service Corporation Debbie McKeever – Oncor Electric Delivery Diana Rehfeldt – Texas-New Mexico Power Company Kathy Scott – CenterPoint Energy
Municipal	Wayne Callender – CPS Energy Timothy Crabb – City of College Station Robert Heimer – Austin Energy David Werley – Bryan Texas Utilities

Electric Reliability Council of Texas

RELIABILITY AND OPERATIONS SUBCOMMITTEE PROCEDURES

TAC Approved
March 23, 2017

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ERCOT
Reliability and Operations Subcommittee

Subcommittee Structure

The structure of the subcommittee is included in Section V. of the Technical Advisory Committee (TAC) Procedures.

Scope

The Reliability and Operations Subcommittee (ROS), reporting to the TAC, evaluates and reviews ERCOT system studies and is responsible to review operations of ERCOT in relation to system security, Operating Guides application, and emergency operations. The ROS will be responsible for monitoring Public Utility Commission (PUCT) rulings as they would apply to Market Participants responsible for reliability and ensure that PUCT requirements are reflected in the Operating Guides and Protocols. The ROS performs such other duties as it deems appropriate and makes recommendations to TAC. It is the TAC's expectation that the subcommittee chairs will coordinate with each other, particularly on issues being addressed in one subcommittee that may have an impact on or require input from another subcommittee.

The primary functions of ROS are the development, review and maintenance of Operating Guides, Planning Guides, and other planning criteria and the review of ERCOT reports and operations related to the reliable operation of the ERCOT System. The ROS will perform ERCOT Protocol required review of Ancillary Service provision and commercially significant constraints. The ROS will periodically review ERCOT reports and procedures relating to planning assessment, Partial Blackout or Blackout restoration procedures, coordination of protective relay settings, operational communication facilities, operating reserve obligations, emergency operations, abnormal system conditions, transmission interconnections to generation, coordination of Outage schedules and other activities as they apply to reliability and operations. The ROS will review ERCOT Protocol revisions as they may impact ERCOT System reliability and operations.

The subcommittee will report to the TAC on a regular basis or as otherwise directed by the TAC. The Subcommittee chair will normally attend TAC meetings.

Standing and Ad Hoc Working Groups

In order to discharge its responsibility, the subcommittee may form standing working groups and temporary or ad hoc task forces with representation on each working group being appointed or approved by the subcommittee. The subcommittee chair, with subcommittee approval, will appoint the chair for each working group to the shorter of a one-year term on a calendar year basis or until the working group is no longer required. The subcommittee will direct these working groups and make assignments as necessary.

Black Start
Dynamics
Network Data Support

Operations Training
Operations
Outage Coordination
Performance, Disturbance, and Compliance
Planning
Resource Data
Steady State
System Protection
Voltage Profile

The Subcommittee may form other standing working groups and temporary or ad hoc task forces on an as needed basis.

All subcommittee working groups are responsible to report planned activities/projects and results to the subcommittee for review and to submit any budget requirements to the subcommittee to be forwarded to TAC for approval. All working group actions are subject to subcommittee review.

Working Group/Task Force Comments or Revision Requests

ROS Working Groups and Task Forces shall submit Revision Requests and comments per paragraph (F) of Section V, Working Group/Task Force Comments or Revision Request, of the TAC Procedures.

Electric Reliability Council of Texas

WHOLESALE MARKET SUBCOMMITTEE PROCEDURES

TAC Approved
May 25, 2017

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ERCOT
Wholesale Market Subcommittee

Subcommittee Structure

The structure of the subcommittee is included in Section V. of the TAC Procedures.

Scope

The Wholesale Market Subcommittee (WMS), reporting to the Technical Advisory Committee (TAC), evaluates, and reviews issues related to the operation of the wholesale market in the ERCOT Region and make recommendations for improvement, when deemed appropriate, to TAC. The WMS will be responsible for monitoring Public Utility Commission (PUCT) rulings as they apply to Wholesale Markets and Wholesale Market Participants and ensure that PUCT requirements are reflected in the ERCOT Market Guides and Protocols. The guiding principle behind the work of the WMS is to help ensure an efficient and nondiscriminatory wholesale market for all Market Participants.

The functions of this subcommittee include, but are not limited to:

- Provide input into changes to Ancillary Services provisions of the Protocols
- Provide policy input into evaluations of Resource adequacy in the ERCOT Region
- Involvement in the Settlement rules review and compliance process at the QSE level
- Review and comment on Settlement metering standards and guides
- Monitor of Ancillary Service market operation, Competitive Constraints and congestion
- Review/monitor the dispatch process and dispatcher behavior

The subcommittee will also promptly prepare and submit a revision request for any issues identified that require a change to the ERCOT Protocols. The subcommittee shall communicate with other TAC subcommittees, and shall report back to the WMS on a regular basis. Furthermore, the subcommittee will review Nodal Protocol Revision Requests for effects on the wholesale market.

The subcommittee will report to TAC on a regular basis or as otherwise directed by TAC. The subcommittee will continually evaluate subcommittee functions to identify those that could potentially be performed by ERCOT and submit any recommended changes to TAC. The subcommittee chair will normally attend TAC meetings.

Standing and Ad Hoc Work Groups

In order to discharge its responsibility, the subcommittee may form standing work groups and temporary or ad hoc work groups with representation on each work group being appointed or approved by the subcommittee. The subcommittee chair, with subcommittee approval, will appoint the chair for each work group to the shorter of a one-year term on a calendar year basis or until the work group is no longer required. The subcommittee will direct these work groups and make assignments as necessary.

All subcommittee work groups are responsible to report planned activities/projects and results to the subcommittee for review and to submit any budget requirements to the subcommittee to be forwarded to the TAC for approval. All work group actions are subject to subcommittee review.

Electric Reliability Council of Texas

PROTOCOL REVISION SUBCOMMITTEE PROCEDURES

December 1, 2011

ERCOT
Protocol Revision Subcommittee

Purpose

These procedures are intended to define the roles of participants in the Protocol Revision Subcommittee (PRS), the process for addressing revisions requests, and the relationship with the Technical Advisory Committee (TAC) and other TAC Subcommittees.

Subcommittee Structure

The structure of the PRS is included in Section V. Subcommittees, of the TAC Procedures. The PRS will follow the election process as described in the Technical Advisory Committee Procedures, Section III, Chair and Vice-Chair, C, Election Process.

Scope

The PRS, reporting to the TAC, is responsible for reviewing and recommending action on formally submitted Nodal Protocol Revision Requests (NPRRs) and System Change Requests (SCRs) ("Revision Request"). PRS may refer Revision Requests to working groups or task forces that it creates or to existing TAC subcommittees, working groups or task forces for review and comment on the Revision Requests; however, the PRS shall retain ultimate responsibility for the processing of all Revision Requests. The PRS is also responsible for assigning a recommended priority and rank for any Revision Requests and guide revisions that require an ERCOT project for implementation.

The procedure and timeline for addressing Revision Requests is detailed in Protocol Section 21, Revision Request Process.

Urgent Revision Requests

Protocol Section 21.5, Urgent Nodal Protocol Revision Requests and System Change Requests, defines Urgent Revision Requests. Revision Requests meeting the criteria will require special processing by the PRS. The following addresses the procedure the PRS will follow when presented with a Revision Request for which Urgent status is requested.

1. If a submitter requests Urgent status, the complete Revision Request is forwarded to the e-mail distribution list of the PRS and Urgent status will be considered at the next regularly scheduled PRS meeting or, if PRS leadership deems necessary, a special meeting of the PRS.

2. If the PRS acts to grant the Revision Request Urgent status, the Urgent Revision Request will be considered on an urgent timeline as outlined in Protocol Section 21.5.

TAC

The PRS shall communicate and submit a PRS Report to TAC for all Revision Requests submitted to and reviewed by the PRS according to the timeline described in Protocol Section 21.

1. The PRS shall respond to clarifying questions from TAC, relating to the PRS Report.

2. The PRS shall respond to a Revision Request that has been remanded to PRS from TAC with an amended PRS Report.

Emergency and Special Meetings

Emergency and special meetings will be called at the discretion of the PRS Chair or Vice-Chair to facilitate discussions related to Revision Requests and/or guide revisions.

2020 PRS Goals
TAC Approved June 24, 2020

- Process NPRRs and SCRs in accordance with Protocol Section 21, Revision Request Process.
- Review the Business Case for each NPRR and SCR that requires an ERCOT project for implementation to ensure that it provides adequate justification for the project.
- Assign a recommended priority and rank for each NPRR, SCR, and guide revision that requires an ERCOT project for implementation.
- Consider requests and assignments from the ERCOT Board and TAC in a timely and diligent manner.
- Review Other Binding Documents (OBDs) annually for elimination or incorporation into Protocols/Market Guides.
- Review aging projects at least annually and make recommendations if additional actions are needed.

"The Waking Giant: Community Power Market Design"

Presentation for the Municipal Sustainable Energy Forum

Recording online at: https://bit.ly/30lvuWJ

The Waking Giant

Community Power Market Design

COMMUNITY CHOICE PARTNERS
SECURING YOUR COMMUNITY'S ENERGY FUTURE

Presentation to the Municipal Sustainable Energy Forum
15 July 2020

Samuel Golding

Presentation Description

Recording online: https://bit.ly/30lvuWJ

Interest in Community Choice Energy continues to grow across the USA, driven primarily by bipartisan public support to decarbonize the economy through sensible infrastructure investments as well as the rapid pace of technological change that is increasingly disrupting energy market operations.

The utility industry was not designed to tackle these complex challenges. A consensus is emerging that governmental decision-making fundamentally has to become more locally-informed and nimble — able to manage rapid changes in energy technologies, market-driven innovation and consumer preferences across multiple sectors of the economy — and that state regulators and monopoly utilities are ill-equipped to tackle these sorts of novel challenges in a democratic, equitable and stable fashion. From a practical perspective, municipal governments and communities will be critical partners in terms of exercising effective oversight and doing the work required at a local and regional level — but empowering them to do so requires structurally reforming how the utility industry functions.

In short, a major barrier holding back the energy transition is that everything is changing — except for how we allow ourselves to make decisions! That's a problem of our own making, and it can be fixed: by passing new laws and by leveraging the real-world insights of markets that have begun the process of structural reform. Based on the experience of both established and emerging Community Choice markets, this webinar will:

- Survey how the Community Choice industry is evolving and expanding across the USA;
- Summarize the most important best practices and lessons learned to-date;
- Explain how Community Choice can overcome key structural barriers holding back progress in the power sector.

Most importantly, attendees will gain an understanding of:

- The specific authorities that new Community Choice legislation must enable, in order to overcome structural barriers holding back progress;
- How Community Choice governance and operating models should be designed to take full advantage of these new authorities; and
- How to unite communities across entire states under Joint Action governance structures, for two practical purposes: to first provide the political coordination required for new legislation, and to subsequently rapidly evolve the entire statewide market by ensuring every municipality that adopts Community Choice has access to unbiased advice and industry-leading services.

Fitting these pieces together will provide stakeholders with a high-level roadmap to use and adapt in their state — in order to set in motion the scale of reforms necessary to manage decarbonization in a stable and cost-effective manner.

About the Presenter:

Samuel Golding is a political economist who founded Community Choice Partners, Inc. to enhance local decision-making and accelerate decarbonization through Community Choice power agencies and utility / municipal partnership initiatives. Mr. Golding has engaged with utility regulators on the subject of market design in California, New York, and New Hampshire, worked on the City of Boulder's municipalization campaign, and consulted on governance strategy and power agency design in vertical and restructured markets for multiple Community Choice agencies, Investor Owned Utilities, municipal utilities, city and county governments, state agencies, labor unions and environmental / social justice nonprofits. He was previously employed as the Managing Director of Local Power Inc., the consultancy that created the original Community Choice law, as well as for KEMA, Inc. (now DNV GL) a world leader in utility management and Smart Grid consulting, where he focused on Distributed Energy forecasting and Utility of the Future models. Mr. Golding also volunteers on the Sierra Club California Energy and Climate Committee and is an expert advisor to the new "Community Power New Hampshire" initiative.

Presentation Agenda

1 **Overview of Community Power**

There is actually a method to the madness!

2 **What are we trying to fix?**

A discussion on how to think, not just what to think

3 **Why do these problems exist?**

My attempt to simplify without oversimplifying

4 **How to create a market**

Ditto

WARNING: THIS PRESENTATION CONTAINS NO ACRONYMS

Community Power

“A name with many meanings”

What is “Community Power”?

Generic description

“It's a municipal authority that allows local governments to become the default provider of electricity services and supply to their residents and businesses.”

“Utilities continue to own and operate the distribution grid.”

Business perspective

“We acquire a massive customer base — at no cost, in a structurally uncompetitive market — hire talent from more competitive markets, and then out-compete the state-regulated monopoly utility.”

Customer perspective

“The community designs and approves the program, and then all customers are automatically enrolled — but remain free to switch back to utility default supply or an alternate competitive supplier if they choose.”

Public advocate perspective

“This is our chance to quarantine the monopoly and work with new talent that actually wants to democratize, decarbonize & modernize the industry.”

What is “Community Power”?

“An experiment in whether democracy is still the worst form of government, apart from all the rest.”

“Government is the combination of a people of a country to effect certain objects by joint effort.”

“The legitimate object of government, is to do for a community of people, whatever they need to have done, but can not do, at all, or can not, so well do, for themselves — in their separate, and individual capacities.”

“The best framed and best administered governments are necessarily expensive; while by errors in frame and maladministration most of them are more onerous than they need be, and some of them very oppressive.”

“In all that the people can individually do as well for themselves, government ought not to interfere.”

Key drivers of Community Power

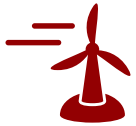
Pro-market & anti-monopoly, pro-democracy & anti-regulation ... American as apple pie

Local Control

Americans prefer democracy over state-regulated monopolies

Lower Costs

Out-competing state-regulated monopolies is easy



Decarbonization

Americans also support building infrastructure

Market Innovation

Faster, harder, better, stronger ... than state-regulated monopolies

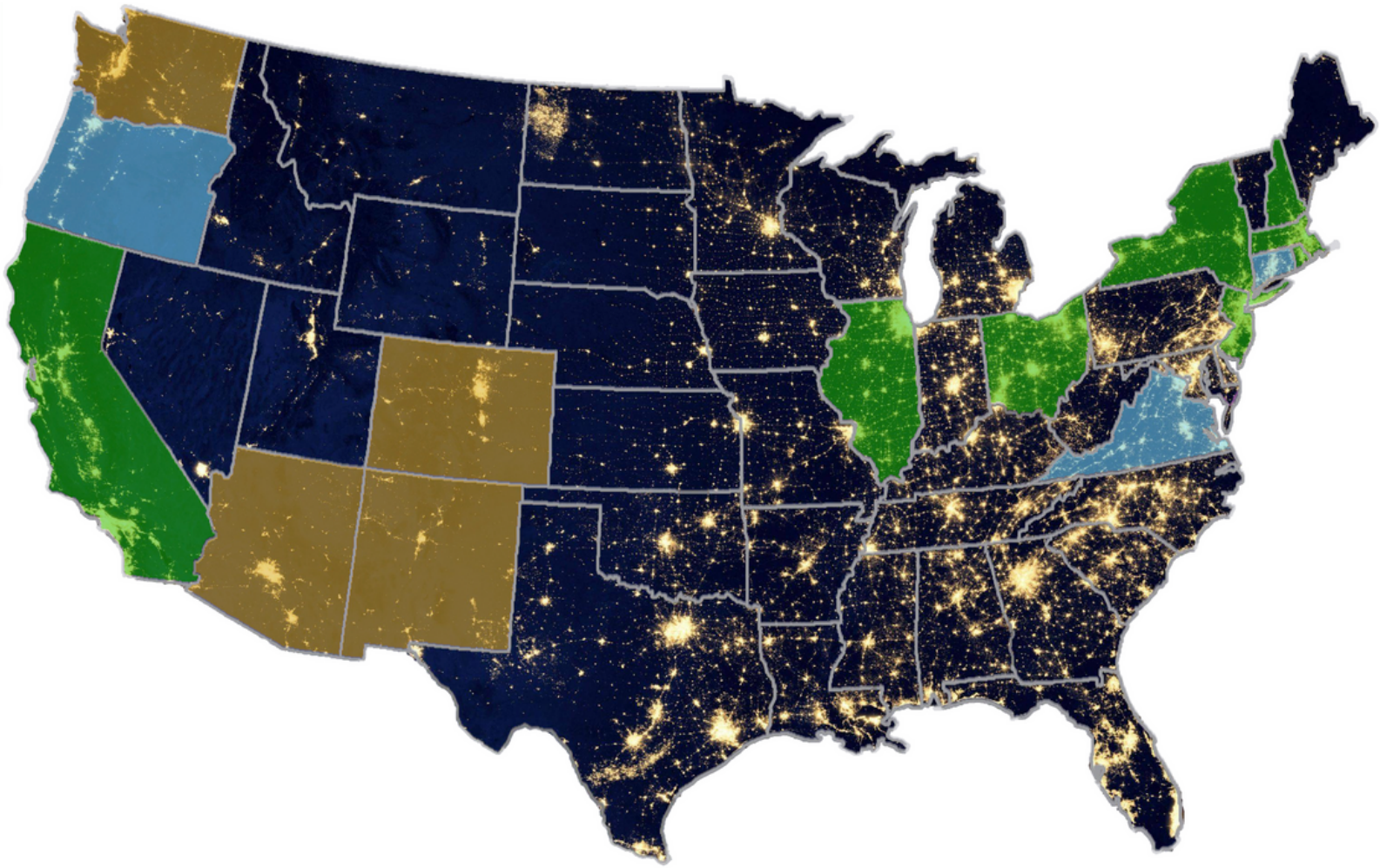
Equity & Economic Development

(the aforementioned activities create a lot of surplus value)

Where is Community Power?

AUTHORIZED

- **New Hampshire** 2019
- **New York** 2016
- **Illinois** 2009
- **New Jersey** 2003
- **California** 2002
- **Ohio** 1999
- **Rhode Island** 1999
- **Massachusetts** 1997



INTERESTED (low barriers)

- **Connecticut**
- **Virginia**
- **Oregon**

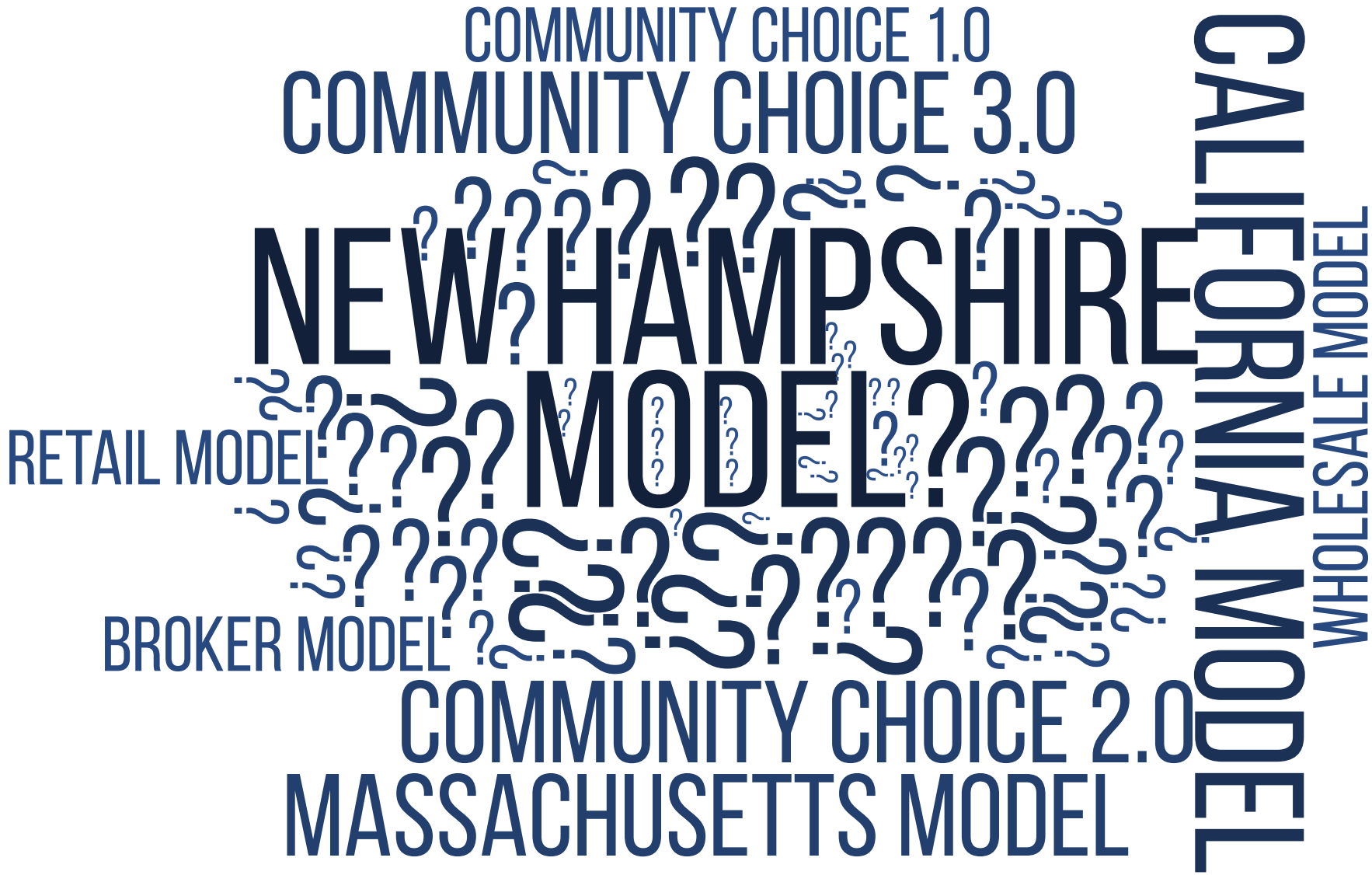
INTERESTED (high barriers)

- **Washington**
- **New Mexico**
- **Colorado**
- **Arizona**

“What's the best Community Power model?”

1. The “Massachusetts Model”?
2. The “California Model” ...or the “New Hampshire Model”?
3. The “Broker Model”... or the “Wholesale Model” ...or the “Retail Model”?
4. The “Community Choice 1.0 Model”? Or “2.0”... wait, what's the “3.0 Model”?

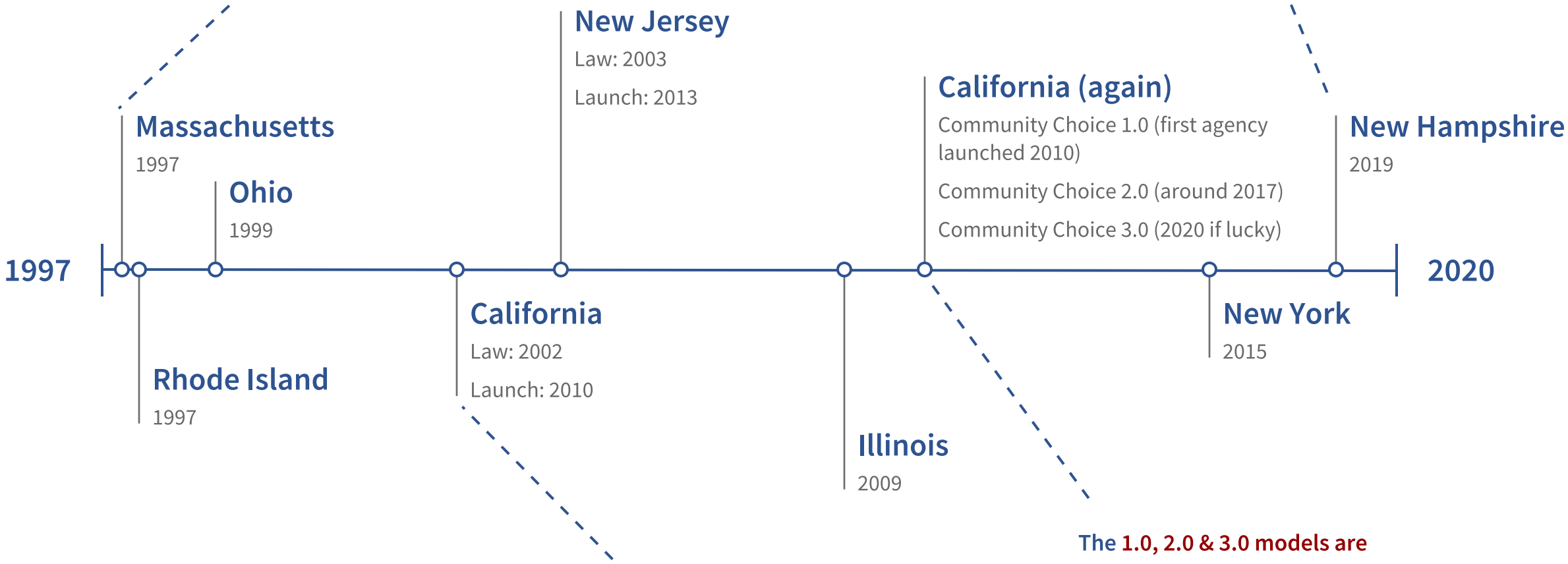
"Which model is the best one???"



It was an evolution...

The "New Hampshire Model" is our most recent
(It's a compilation of all the lessons that
the industry learned the hard way)

The "Massachusetts Model" focuses on wholesale (supply)
(RI, OH, NJ, IL and NY mostly do as well)



The "California Model" first focused on wholesale (supply)
& began evolving into retail (customer) services

The 1.0, 2.0 & 3.0 models are
California-specific maturity models
(to guide their evolution)

Design Axiom: form and function are intertwined

Community Choice models were designed to achieve specific goals... that expanded over time

Industry Goals in 1997

Save money

Don't think too hard

Corresponding models

These are all the same thing: broker model, wholesale model, Massachusetts model

Industry Goals in 2020

Decarbonize the (entire) economy

Market animation: create new value, equitably

Manage risk & complex technological change

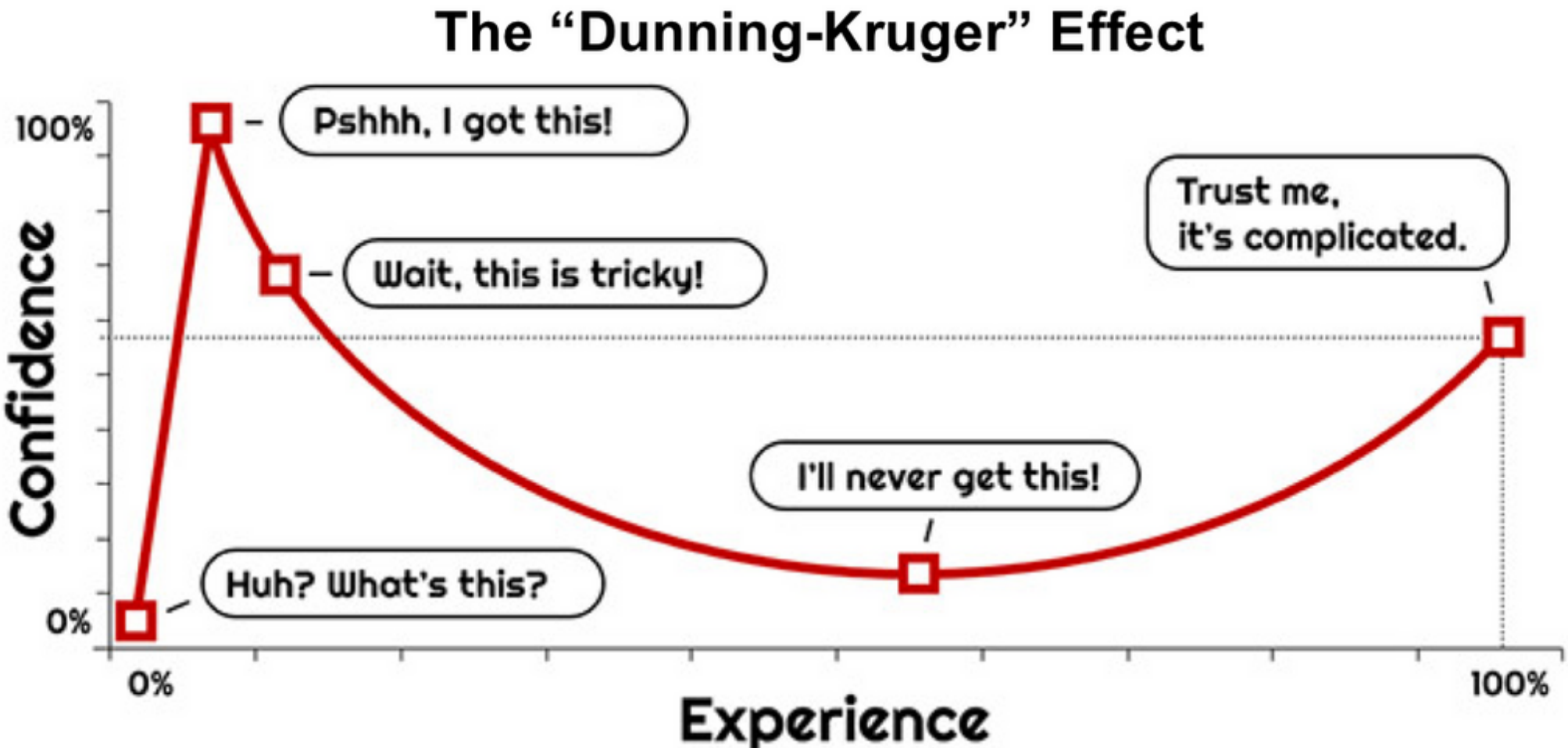
Corresponding models

California Model (1.0 to 2.0 to 3.0 evolution)

New Hampshire Model (it's better than 3.0)

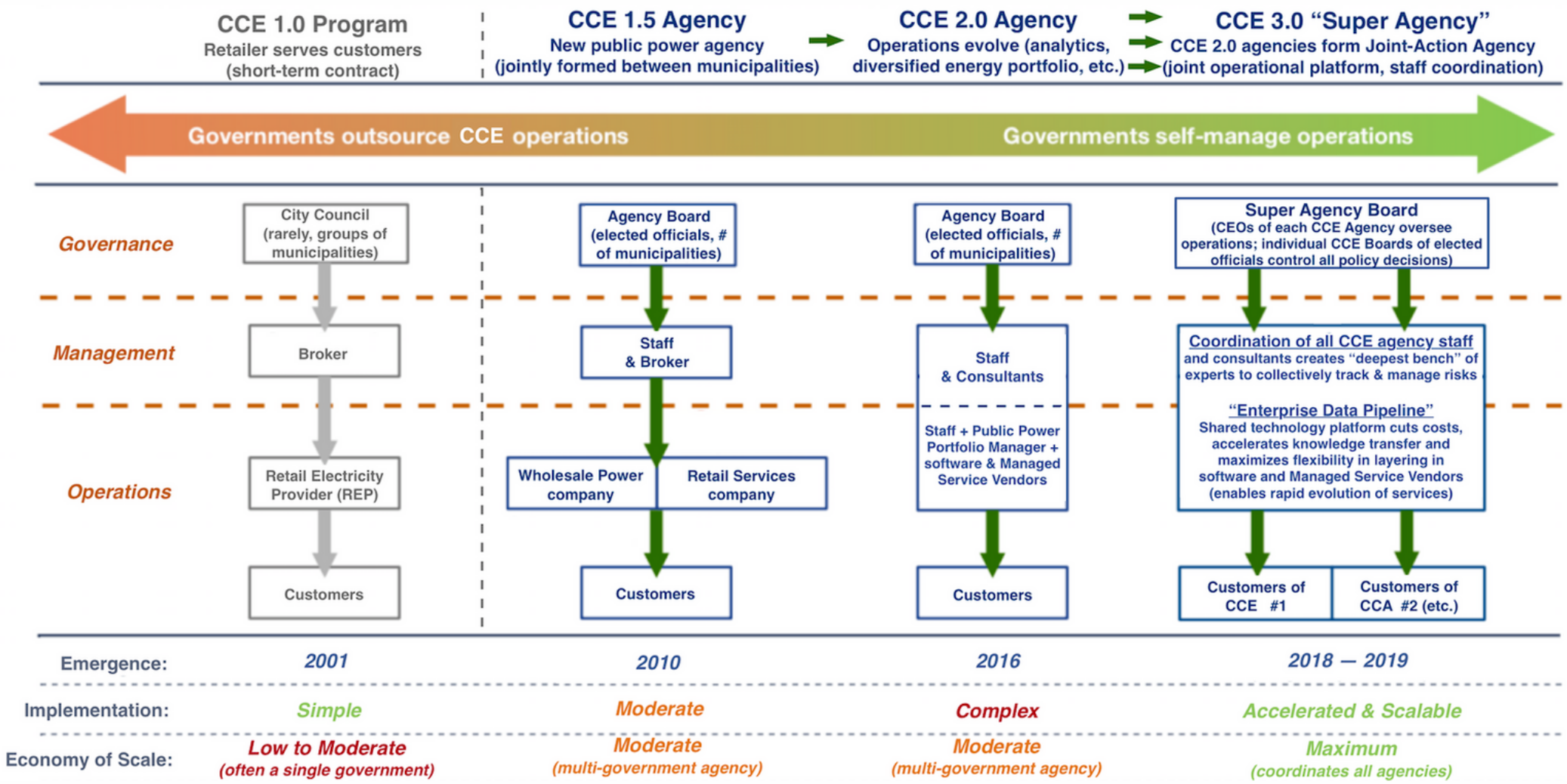
23 years of learning the hard way

This is the most important slide



California's (in progress) Evolution

I recommend you avoid this process by not making the same mistakes



Community Leadership through Joint Action Power Agencies

“The strength of the wolf is the pack”

Vermont Public Power Supply Authority

- **Board of Directors:**

  12 municipal utilities

- **Services for members:**

  Retail customer services, wholesale power supply, financial / budgeting, admin / IT, legislative & regulatory support, etc.

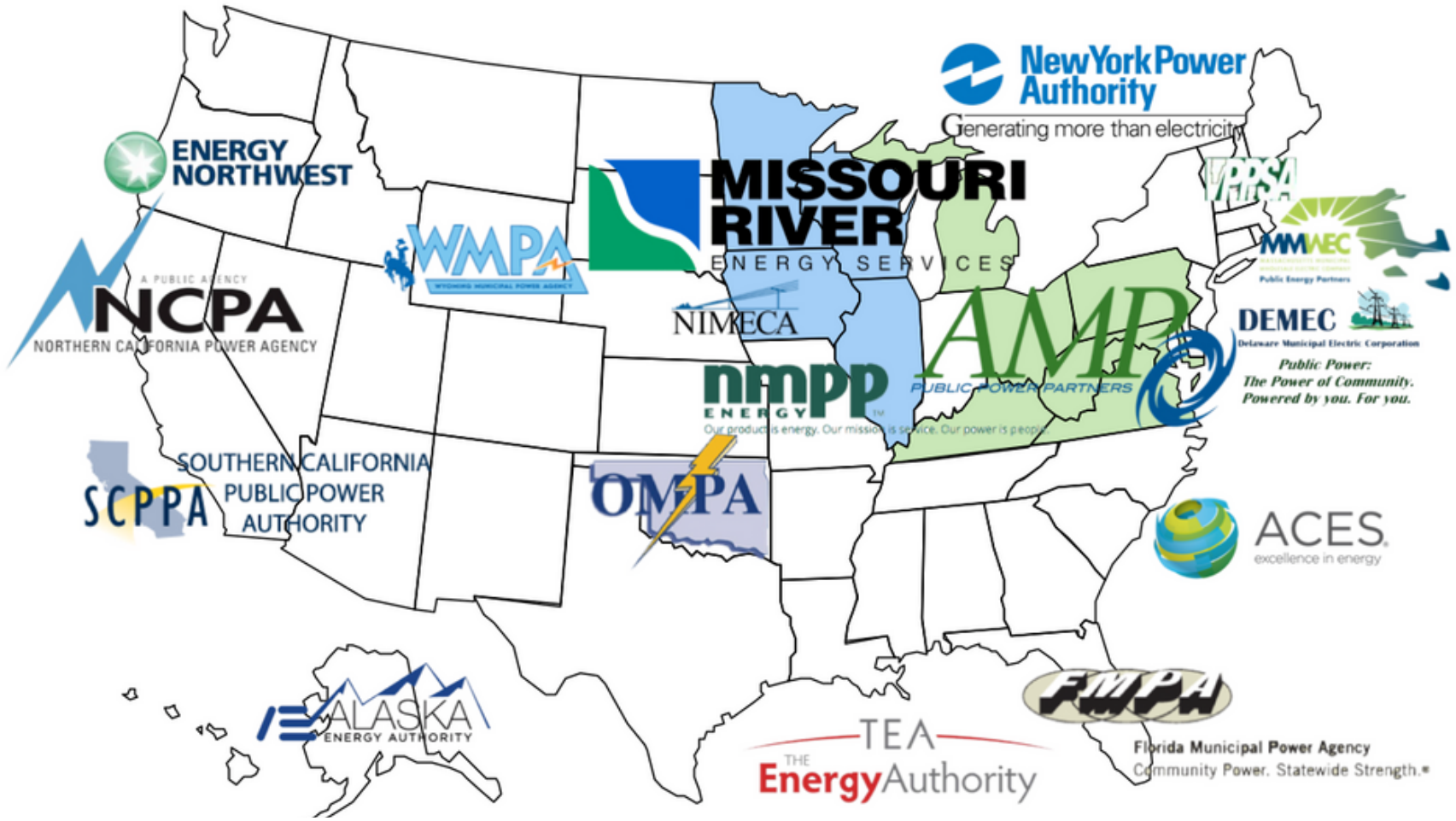
- **Joint Owner of Hometown Connections**

  National non-profit utility services organization

  Formed by 5 public power joint action agencies

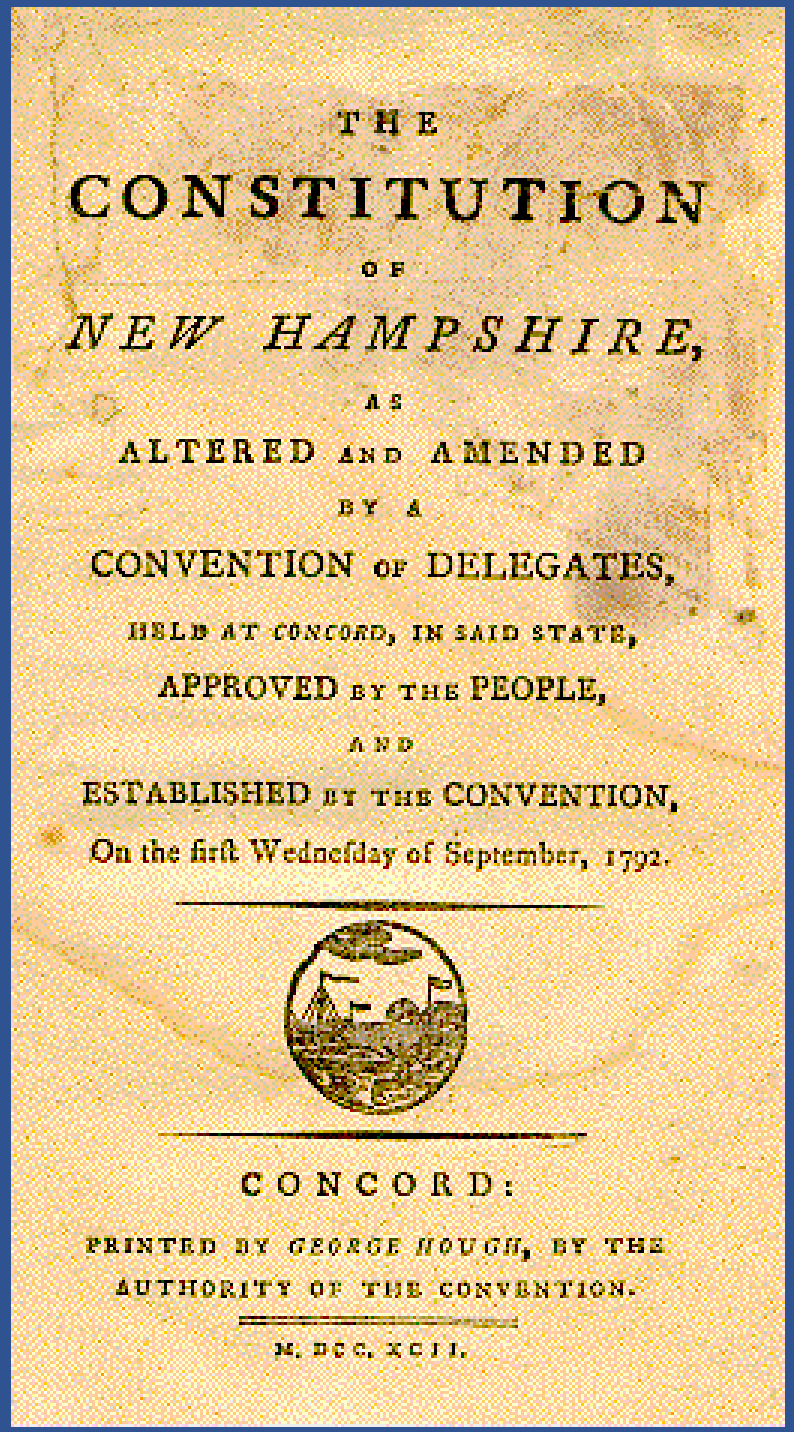
Public Power Joint Action Agencies

Over 70 joint action agencies have formed in the past ~50 years



Community Power New Hampshire

“By Communities, For Communities”



THE
CONSTITUTION
OF
NEW HAMPSHIRE,
AS
ALTERED AND AMENDED
BY A
CONVENTION OF DELEGATES,
HELD AT CONCORD, IN SAID STATE,
APPROVED BY THE PEOPLE,
AND
ESTABLISHED BY THE CONVENTION,
On the first Wednesday of September, 1792.

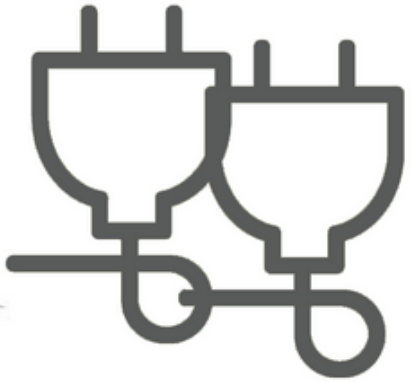
CONCORD:
PRINTED BY GEORGE HOUGH, BY THE
AUTHORITY OF THE CONVENTION.
M, DCC, XCII.

*"Free and fair **competition** in the trades and industries is an inherent and essential right of **the people** and **should be protected against all monopolies and conspiracies** which tend to hinder or destroy it."*

HOW DOES COMMUNITY POWER WORK?

Community Power

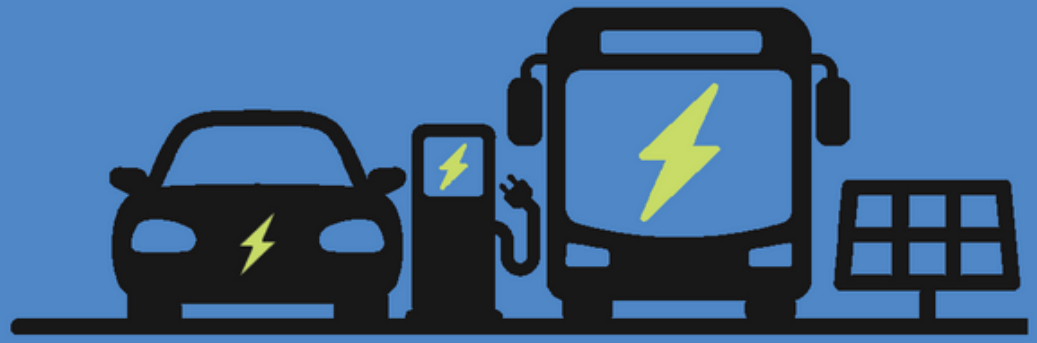
Utility Partnerships



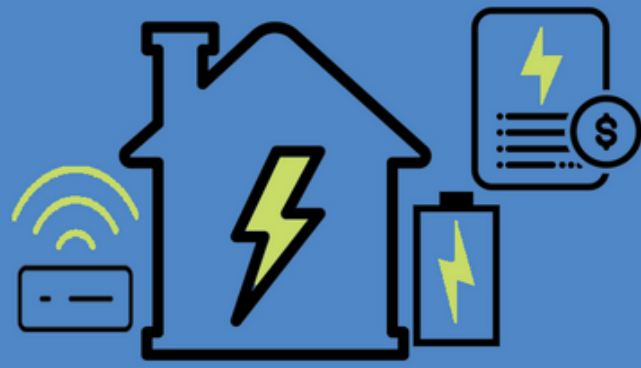
Community Power

Managing Electricity Portfolio Costs & Risk

Building Infrastructure (Grid Modernization)



Enabling Innovation in Technologies & Services



HOW DOES JOINT-ACTION WORK?

Local Control

Statewide "Shared Services"

Coordinated Legal Reforms

Governed by Communities

Local control of rates, finances, programs, power portfolio & services

Unified Operations for all Communities

Expert staff oversight
Industry-leading vendors
No duplicative overhead
United across utility territories

Modernizing Rules & Regulations

Retail market liberalization
Utility Business Models
GridModernization
& Market Rules

Joint Action Summit

- **86 Participants: 1 County, 5 Cities, 23 Towns**

  6 elected officials, ~17 staff, +50 energy committee members

  All 10 counties represented

- **Aggregate Electric Load: ~1,200,000 MWh/year**

  Smallest to largest: ~4,000 to ~260,000 MWh/year

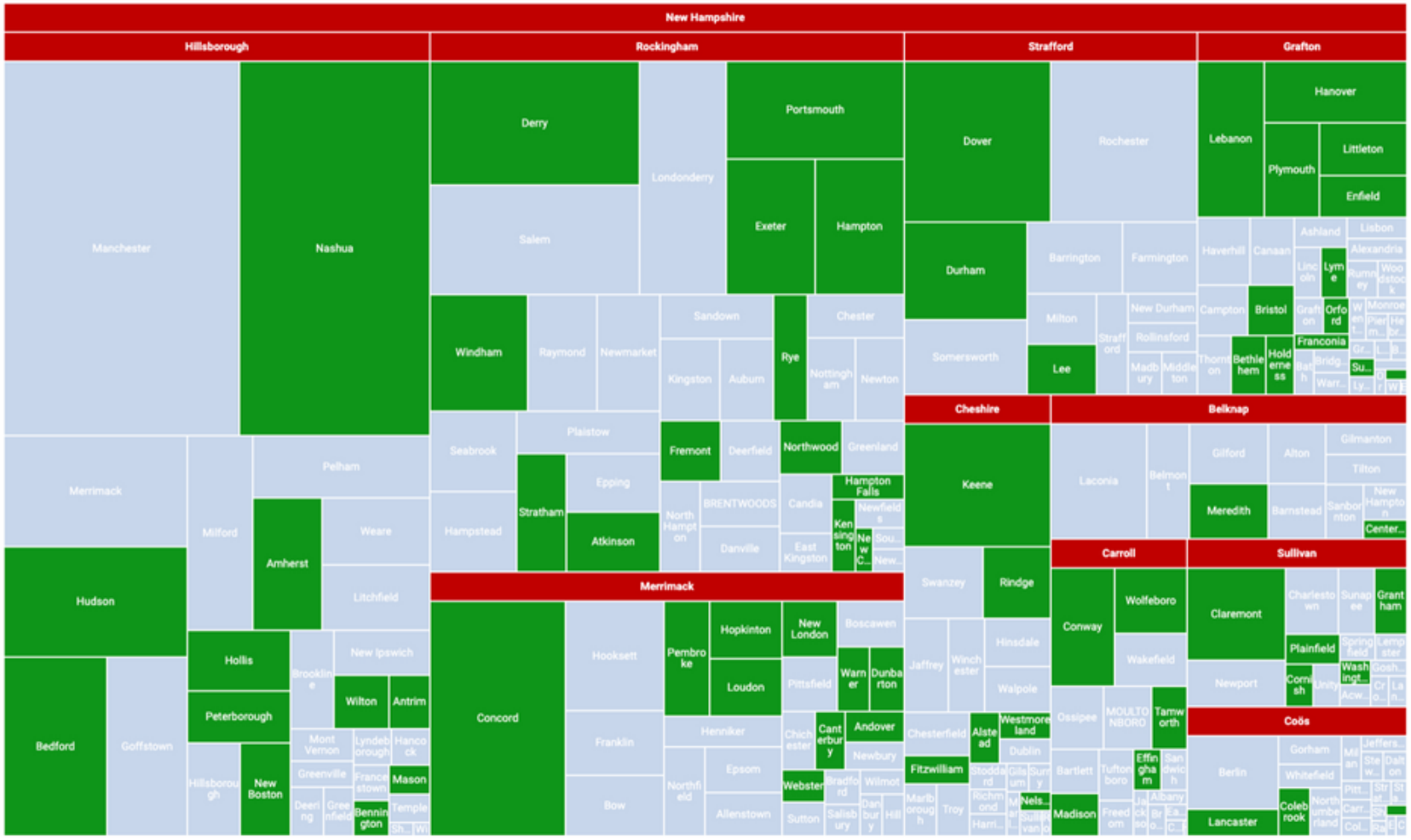
- **Electricity Supply Value: ~$110 Million/year**

  Smallest to largest: $320,000 to ~$21 Million/year

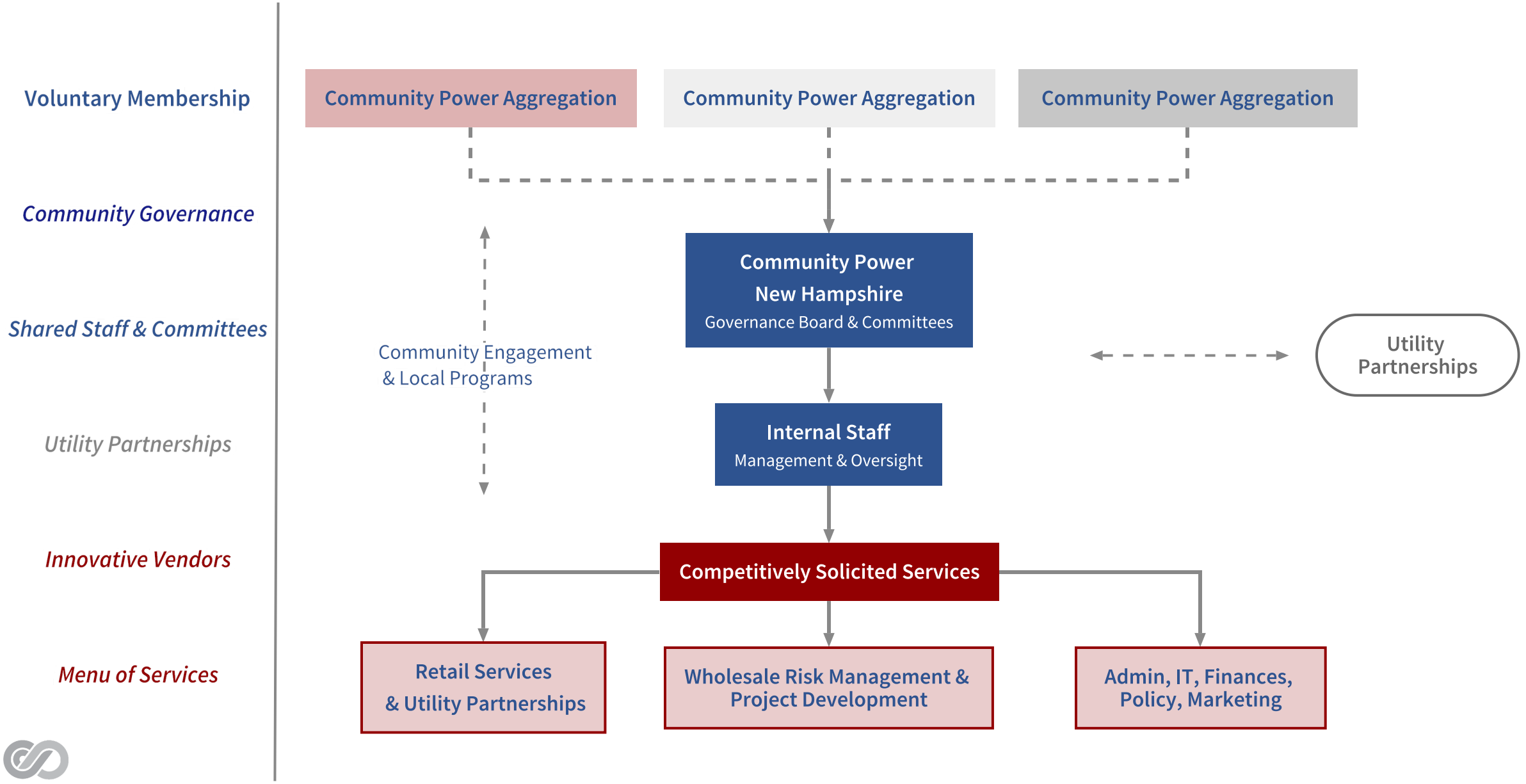
- **Represents ~25% of statewide utility load!**

Municipalities with Local Energy Committees

Municipalities are sized by housing units & vertically grouped under counties (red headings)
Green boxes show local energy committees (71 in total, covering ~30% of municipalities)

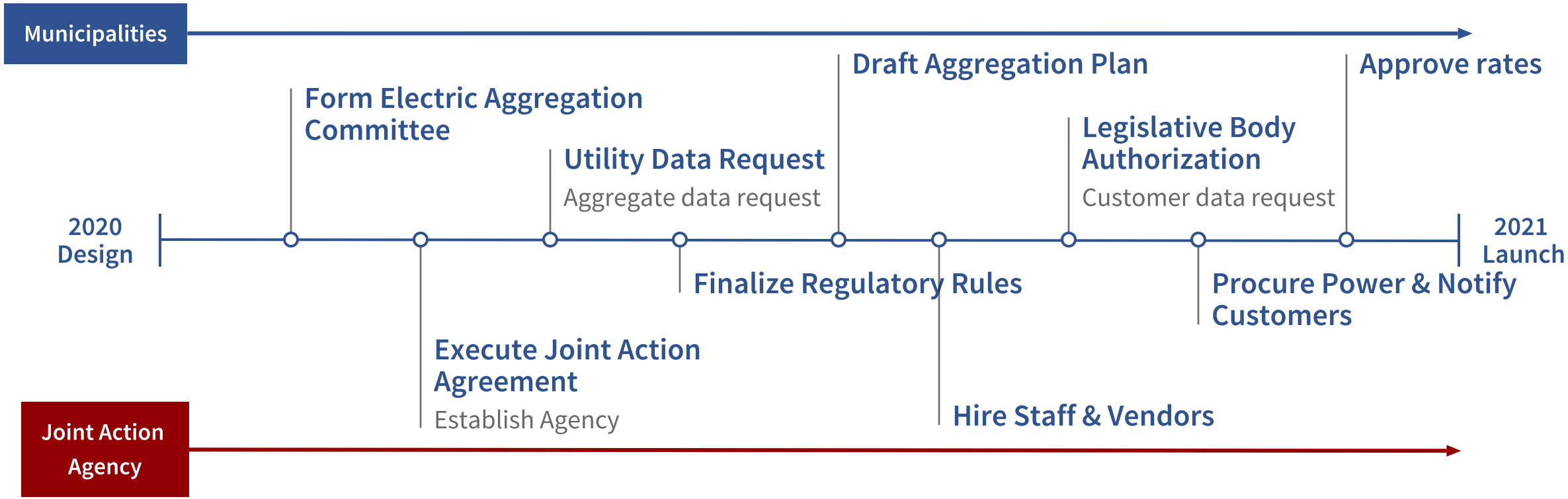


Community Power: Joint Action Org Chart



Launch Timeline

This is easy once you know how to do it

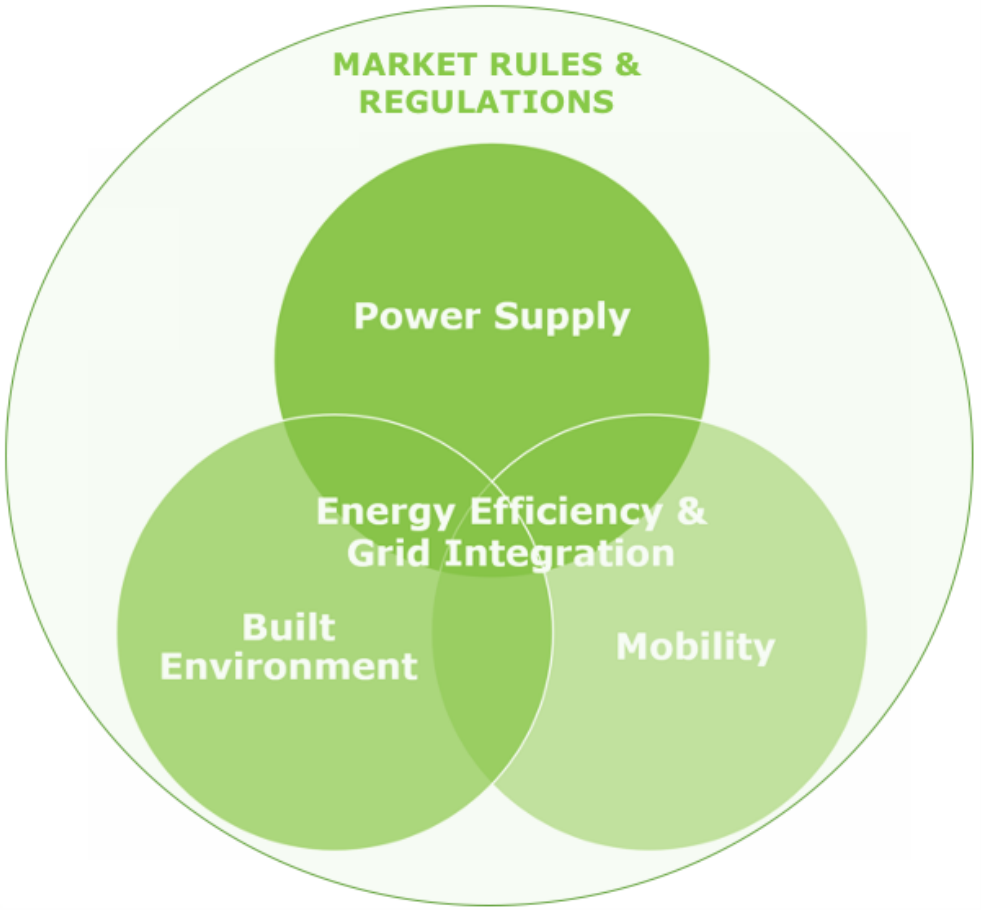


Additional steps: adopt **Risk Management Policies**; cultivate **Membership, Board of Directors, & Committees.**

Why are we doing this?

“The solution must be commensurate to the challenge.”

Primary Goal: we want to decarbonize the economy



- Procure sustainable, affordable & carbon-free supply
- Electrify the built environment & mobility
- Promote efficiency & utility grid integration
- Remove market barriers (regulations & law)

Coordination Challenge: we want to decarbonize the economy

All our infrastructure must change, in close coordination with the power sector

- **Multi-Sectoral Decarbonization…**

  Electricity + heating & transport fuels + buildings + industry

  Logistical challenge across planning & operations

  Increases reliance on renewables, electric vehicles, rooftop solar (etc.)

  Exacerbates volatility & “unknown unknowns”

- **…requires Decentralization**

  New customer technologies and services

  Utility “Grid Modernization”

  Planning: community / regional coordination

  Market innovation & customer education

  Cost / benefit increasingly local (one size does not fit all)

  Oversight: needs to be locally-informed & nimble

- **Municipalities are key to success!**

  Unique authorities: rights of way, land use, zoning (etc.)

  Pragmatic culture: bi / nonpartisan, pro-business, collaborative & solution oriented

  Strong relationships: local civic & business stakeholders, regional coordination, transportation & economic planning, admin & enterprise agencies, emergency preparedness, legislative / political relationships

- **Community Power is the missing link!**

  It combines all this with competitive power expertise

Grid Challenge: we cause unintended consequences

The power sector was NOT designed to manage fundamental, widespread & **rapid technology change**

1 **It was designed in the early 1900s**

Based on outdated technology assumptions by people who are now dead

2 **Regulations change more slowly than technology**

State regulation forces systems-thinkers to operate in silos (which used to work OK)

3 **Policy-makers set in motion rapid technology changes...**

...without ensuring we could make decisions fast enough to manage the disruptions!

4 **Complex Systems Theory:**

"Incremental changes to complex systems invariably cause non-linear feedback loops"
(everything works fine until it doesn't)

This is why we say that "*Nothing ever changes until there's a blackout*"

Structural Challenge: we're all human

We tried & failed to modernize the industry: markets are structurally outdated or flawed (as is our thinking...)

1 **We tried to restructure ~20 years ago**

About half the states started the process

2 **California's attempt collapsed**

It scared the heck out of everybody

(except Texas, which stuck to their guns)

3 **All the states froze**

The result was akin to leaping halfway across a very deep chasm...

4 **At present: half the country remains under monopoly control, and half has been operating under illogical market structures**

In both cases, a generation of experts has been trained to think & operate illogically

(except in Texas)

This is also why we say that "*Nothing ever changes until there's a blackout.*"

Design Axiom:

“Legacy thinking will not solve legacy problems”

Ask a group of experts: "How do we fix the power sector?"

(We are an industry of systems-thinkers forced to operate in silos)

Market Structure 101

Government rules make “the market”

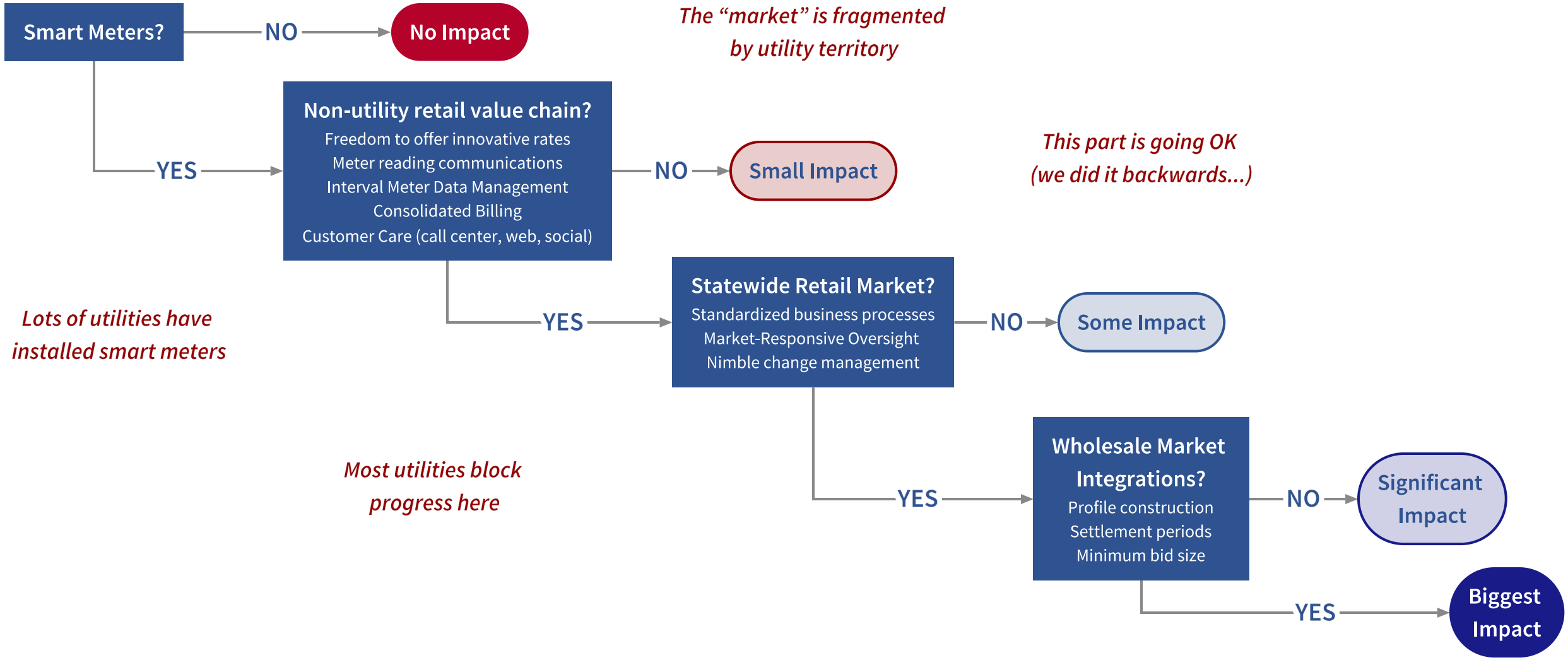
We're responsible for how it performs

(Understanding this is very empowering)

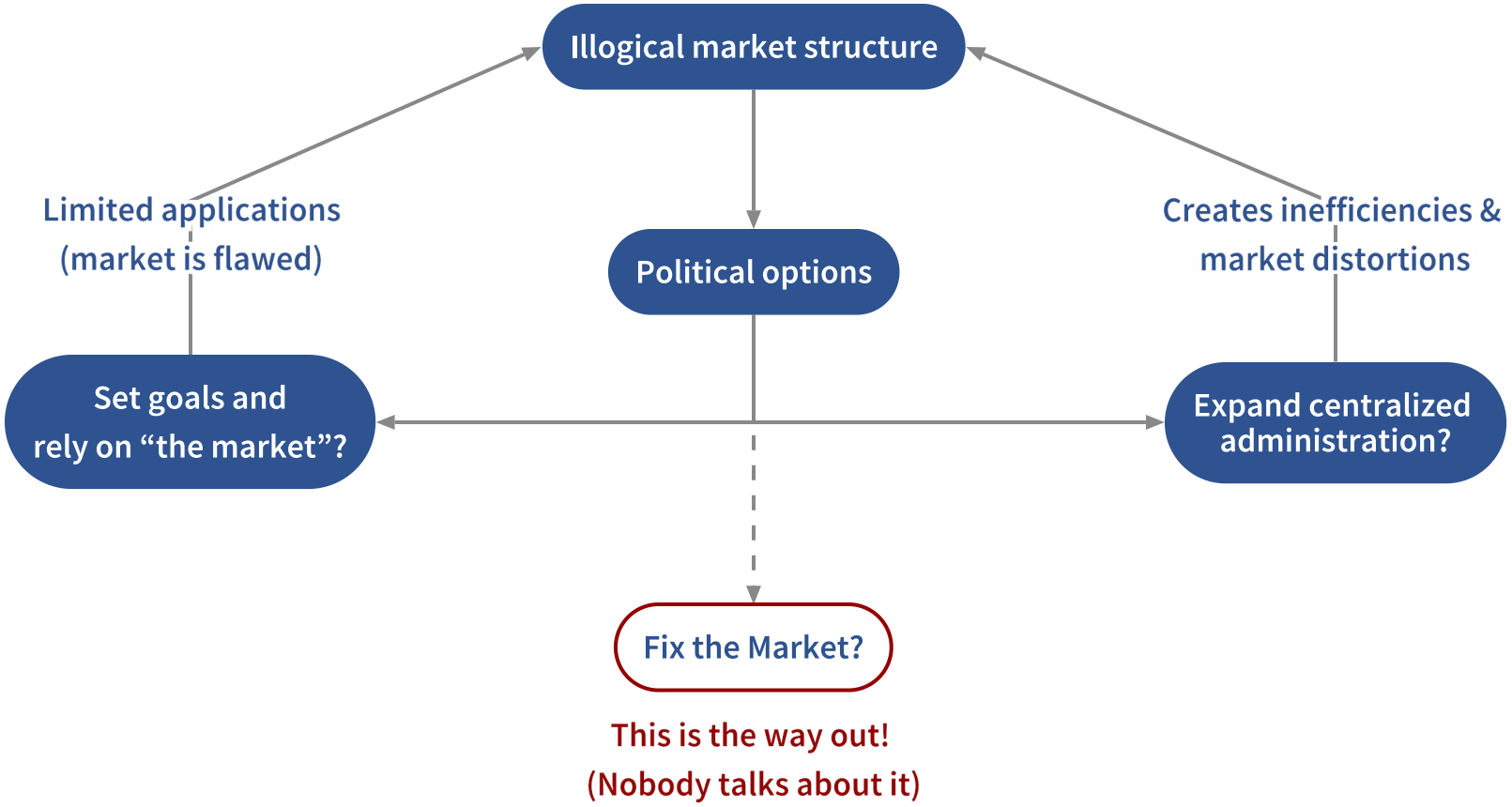
Wholesale Market (Supply)	Power Distribution (Network)	Retail Market (Demand)
Should this be run by a monopoly? (No)	Should this be run by a monopoly? (Not all of it — so be careful)	Should this be run by a monopoly? (No)
~half the states did this	(I think there's only one town in the USA that has no monopoly disco)	~half the states learned & then forgot this (except Texas)

THIS IS THE MARKET FLAW

"Hierarchy of Barriers" to Animating the Retail Market



We're caught in a... feedback loop!



Market Reform:

Communicating the Vision & Doing the Work

These are our Goal Posts

Aim for these and win the game

"*Quarantine the Monopoly!*"

Let distribution utilities (only) be distribution utilities

Help them evolve by building the right infrastructure

Focus regulators on regulating monopolies (not municipalities)

Work together to modernize market rules

Help them evolve beyond what worked in the 1900s

Share services through a Joint Action Agency

Statewide services for all communities big & small

Rapid progress, at-scale

Build local institutional capacity, everywhere

Teach a lot of people about how the power sector works

Make informed decisions quickly & democratically

Help customers save money & carbon (fix the market)

Align municipal authorities with decarbonization

Decarbonization depends on this

Nobody else can do it

Unify & Animate the Retail Market

#1 barrier to innovation = incentives aren't aligned w/ ability to innovate — fix it!

(Take control of the Retail Value Chain & create a Statewide Retail Market)

Do all of this while operating in a competitive market — to ensure fiscal discipline & fuel innovation

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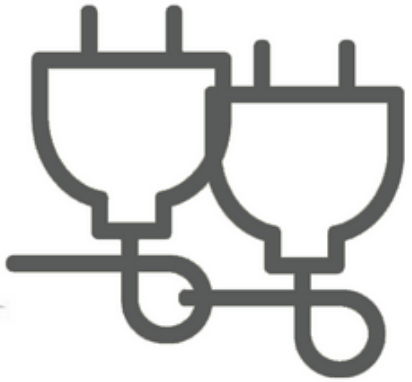

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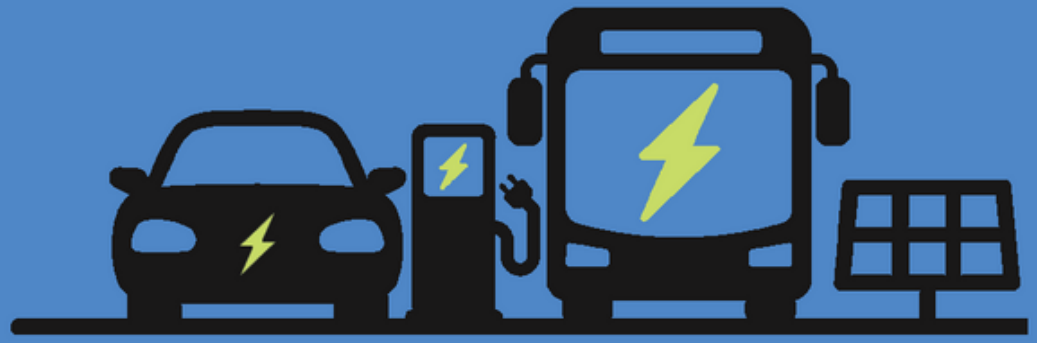

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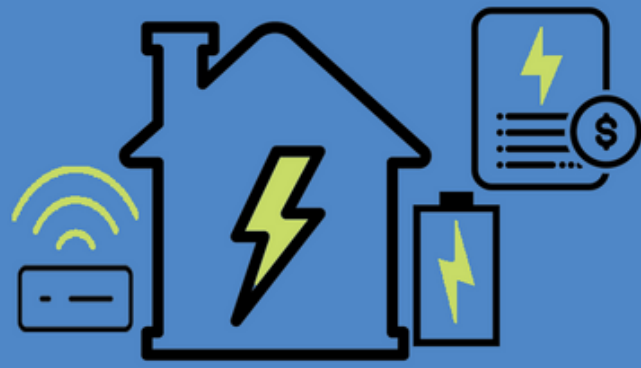

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Empowering Our Communities to Act

Step 1: build the foundation for political reform

3) Everything else is a distraction right now

We need to democratize decision-making before making more decisions

The strength of the wolf is the pack — so, build the pack first!

2) Pass (new or updated) Community Power legislation

Also: explore regulatory approval of (unused) 'home rule' authorities & assess opportunities for franchise agreement renegotiations

1) Communicate the vision & build a coalition

Communities meet regularly to educate one another, solidify the message, formalize plans, and conduct outreach (public, media, regulators, legislators, etc.)

Questions?

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Webinars and expert calls: https://mseforum.com/archives

Reports, articles and interviews: https://www.linkedin.com/in/samuelvgolding/

COMMUNITY CHOICE PARTNERS
SECURING YOUR COMMUNITY'S ENERGY FUTURE