THE STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

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

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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, along with a separate recording that one of the vendors had previously made for the docket list.

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/38e331a47a913e07d9059f4bc737a3bf03b154fca86543a82f293e6cc3fc2960

3 Recording available online: https://app.box.com/s/qjgbae4skxpzxhrkktxp1z50xvv7nhl
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
degraded 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
http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy -
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-F⁶ include:

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(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:

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

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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,
biased the Company against time-varying rates and peak-time rebate programs,” Alvarez
continues. “[Eversource] profits decrease when energy sales volumes fall between rate
cases, biased 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.”

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”. 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. (The utility also came in 91st out of 105 in terms of customer satisfaction in
a related survey.)

9 Available online: http://www.utilityevaluator.com/customer-value-rankings.html
https://nebula.wsimg.com/aeda942af8d2b7b05f3bc8bdfd83c?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 97th, 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

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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. 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
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, shows the 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).\textsuperscript{15}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{RetailMarket.png}
\caption{Retail Market: Customers by Competitive Supplier}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{RetailMarket_Load.png}
\caption{Retail Market: Load by Competitive Supplier}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{Herfindahl_Hirschman.png}
\caption{Herfindahl-Hirschman Index (HHI)}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{MarketShare.png}
\caption{Market Share of Load Served by Top 3 CEPS (CR3 concentration metric)}
\end{figure}

\textsuperscript{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
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:

- **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).

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• **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

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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](http://www.ercot.com/committee/board)
\(^{21}\) Website available online: [http://www.ercot.com/committee/tac](http://www.ercot.com/committee/tac)
Below is a table showing the current Technical Advisory Committee members representing each “customer segment”:22

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

22 Document available online: 
http://www.ercot.com/content/wcm/key_documents_lists/27308/2020_Segment_Representatives.TAC.June.doc
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 change23 — 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 innovation24 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
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:
To illustrate these concepts, I have prepared a simple diagram 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.

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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 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, 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 and 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
functionalities of the data hub, are set in regulations issued by Energinet within the
framework of the Danish Electricity Supply Act.”

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” and a “Guide to the Role of the Metering Coordinator”.

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:

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28 Council of European Energy Regulators, “Roadmap 2018 Self-Assessment Status Report”, at p. 22/74 available online: [https://www.ceer.eu/documents/104400/-/-/89206356-85ff-9977-1ba9-3a8262fe00e3](https://www.ceer.eu/documents/104400/-/-/89206356-85ff-9977-1ba9-3a8262fe00e3).
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:

### Status of Enabling Market Services for Residential Customers

<table>
<thead>
<tr>
<th>Residential Customer Retail Value Chain</th>
<th>Billing</th>
<th>Metering</th>
<th>Meter Reading</th>
<th>Credit &amp; Collections</th>
<th>Outage Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>United States of America</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illinois</td>
<td></td>
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<td>New York</td>
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<td>Texas</td>
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<td><strong>Europe</strong></td>
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<td>Great Britain</td>
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<td>Italy</td>
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<td>Netherlands</td>
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<td><strong>Oceania</strong></td>
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<td>Australia (VC)</td>
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<tr>
<td>Australia (rest of NEM)</td>
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<td>New Zealand</td>
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### Market Survey: Oversight of Default Supply Prices

<table>
<thead>
<tr>
<th>Market</th>
<th>Transitioning</th>
<th>Regulators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas*</td>
<td>United Kingdom</td>
<td>Pennsylvania**</td>
</tr>
<tr>
<td>Australia (NEM)</td>
<td>Italy</td>
<td>New York***</td>
</tr>
<tr>
<td>Germany</td>
<td>Netherlands</td>
<td>Illinois***</td>
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<tr>
<td>New Zealand</td>
<td>France</td>
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</table>

*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.\textsuperscript{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.”\textsuperscript{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:

![New Hampshire Meter Types](image)

![USA Meter Types](image)

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.


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,\textsuperscript{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].”\textsuperscript{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

\textsuperscript{35} Note that this term is a generic industry term, not to be conflated with the specific definition under PUC 2000.
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/](http://www.communitypowernh.org/)
I have attached an article published in New Hampshire Municipal Association’s Town & City magazine, 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:

### Joint Action Summit

- **86 Participants: 1 County, 5 Cities, 23 Towns**
  6 elected officials, ~17 staff, ~60 energy committee members

  Municipalities from all 10 counties represented: Atkinson, Bristol, Cheshire County, Concord, Cornish, Derry, Durham, Enfield, Exeter, Gorham, Hanover, Harrisville, Keene, LakesPC, Lebanon, Lyme, Mason, Marlborough, Nashua, New London, Peterborough, Plainfield, Plymouth, Rindge, Rye, Stratham, Tamworth, Temple, Warner

- **Aggregate Electric Load: ~1,200,000 MWh/year**
  Smallest to largest: ~4,000 to ~200,000 MWh/year

- **Electricity Supply Value: ~$110 Million/year**
  Smallest to largest: $20,000 to ~$21 Million/year

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

### Default Service Metrics

<table>
<thead>
<tr>
<th>Anticipated CPA Launch</th>
<th>Municipalities</th>
<th>CPA Accounts</th>
<th>CPA MWH / yr</th>
<th>CPA Supply Receipts</th>
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</thead>
<tbody>
<tr>
<td>2021</td>
<td>10</td>
<td>82,437</td>
<td>754,588</td>
<td>$69,969,716</td>
</tr>
<tr>
<td>2022</td>
<td>7</td>
<td>33,482</td>
<td>302,118</td>
<td>$27,589,655</td>
</tr>
<tr>
<td>TBD</td>
<td>14</td>
<td>24,109</td>
<td>216,710</td>
<td>$20,006,927</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>31</strong></td>
<td><strong>140,028</strong></td>
<td><strong>1,273,416</strong></td>
<td><strong>$117,566,299</strong></td>
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</table>

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
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
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 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.

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