

From: [Clifton Below](#)
To: [PUC: Executive Director](#); [allison@44northlaw.com](#); [amfarid@dartmouth.edu](#); [Bart.Fromuth@felpower.com](#); [Buckley, Brian](#); [brian.rice@eversource.com](#); [charliespencevt@gmail.com](#); [Shute, Christa](#); [christine.hastings@eversource.com](#); [devin@utilityapi.com](#); [Kreis, Donald](#); [dpatch@orr-reno.com](#); [eisfeller@unitil.com](#); [epler@unitil.com](#); [erica.menard@eversource.com](#); [ethan.goldman@gmail.com](#); [golding@communitychoicepartners.com](#); [heather.tebbetts@libertyutilities.com](#); [henry@cleanenergynh.org](#); [Brennan, James J](#); [Morse, Jason](#); [jessica.chiavara@eversource.com](#); [jmarks@acadiacenter.org](#); [Julia Griffin](#); [Cramton, Karen](#); [karen.sinville@libertyutilities.com](#); [kat.mcghee@leg.state.nh.us](#); [katherine.peters@eversource.com](#); [katherine.provencher@eversource.com](#); [kelly@cleanenergynh.org](#); [Demmer, Kurt](#); [madeleine@cleanenergynh.org](#); [marc.lemenager@eversource.com](#); [matthew.fossum@eversource.com](#); [maureen.karpf@libertyutilities.com](#); [mdean@mdeanlaw.net](#); [Melissa.Samenfeld@libertyutilities.com](#); [Clifton Below](#); [michael.sheehan@libertyutilities.com](#); [michael@missiondata.io](#); [nikhil@greentelgroup.com](#); [PUC - OCA Litigation](#); [paul@packetizedenergy.com](#); [pmartin2894@yahoo.com](#); [Shaun Mulholland](#); [simpsonc@unitil.com](#); [Eckberg, Stephen](#); [Frink, Stephen](#); [Tad Montgomery](#); [Greg Ames](#); [Frantz, Tom](#)
Subject: RE: Docket No. 19-197 Development of a Statewide Multi-Use Online Energy Data Platform - Staff Rebuttal Testimony
Date: Friday, October 23, 2020 4:32:30 PM
Attachments: [19-197 LGC Rebuttal Testimony of S Golding.pdf](#)

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Attached please find the rebuttal testimony of the LGC witness Golding. Hard copies will not follow pursuant to the PUC's pandemic procedures.

Clifton Below ❖ Asst. Mayor, Lebanon City Council ❖ personal office: 1 COURT ST, STE 300, Lebanon, NH 03766-1358
 (603) 448-5899 (O), 667-7785 (M) ❖ Clifton.Below@LebanonNH.Gov ❖ www.linkedin.com/in/clifton-below

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

Rebuttal Testimony of Samuel Nash Vautier Golding

On behalf of
Local Government Coalition

October 23, 2020

Table of Contents

I. Introduction..... 1

II. Summary of Governance Proposals..... 2

III. Evaluation of Governance Proposals 11

IV. Overview of Market-Based Governance Proposal 14

V. Responses to Electric Distribution Company Discovery Requests 22

1 **I. Introduction**

2 **Q. Would you please identify yourself and your involvement in this proceeding?**

3 **A.** My name is Samuel Nash Vautier Golding. My business address is 12 S. Spring Street,
4 Concord, NH 03301. I am president of Community Choice Partners, Inc., a consultancy that
5 specializes in the design and operation of power enterprises operating in competitive markets and
6 is dedicated to maximizing democratic, informed decision-making in the energy industry. I have
7 previously filed Direct Testimony, responded to discovery / data requests, and participated
8 actively in technical sessions and in informal conversations with stakeholders throughout this
9 docket process as a member of the Local Government Coalition (“LGC”).

10 **Q. Please summarize your rebuttal testimony.**

11 **A.** The purpose of my testimony is to provide the Commission with context and advice
12 regarding how best to structure governance of the Statewide Platform “in order to accomplish the
13 purposes of electric utility restructuring under RSA 374-F”, the Electric Utility Restructuring
14 Act, as called for under SB 284.¹ To that end, my testimony summarizes and analyzes the
15 governance proposals submitted by parties and provides a more developed “strawman”
16 proposal based upon the successful market-based governance framework that has evolved in the
17 fully restructured ERCOT market.

18 In addition, Eversource and Unifil (EU) asked 19 discovery questions of me. Some elicited
19 additional background and clarification of my direct testimony, while others provide insight into
20 our differential positions and perspectives. Since all my responses elucidate my testimony in
21 contrast to their positions, especially where we differ, I am submitting my responses to their
22 discovery requests and questions as my rebuttal testimony. The standard discovery response
23 formatting has been removed, except for the request number line. A few responses have had

¹ Available online:

1 minor (non-substantive) typos fixed. My response to Request No. EU to LGC 1-058 on pages
2 68-69 below, concerning whether a distribution level transactive energy platform would be
3 subject to FERC jurisdiction, was prepared in collaboration with witness Clifton Below and
4 should be considered the joint testimony of both of us.

5 **II. Summary of Governance Proposals**

6 **Q. Have you reviewed the governance proposals submitted by parties?**

7 **A.** Yes.

8 **Q. Please summarize the governance proposal of Liberty Utilities.**

9 **A.** Liberty Utilities recommends a model based upon the EESE Board and Grid Mod
10 Stakeholder Group, with a governing body composed of “multiple stakeholders, including the
11 utilities, Commission Staff, the OCA, along with parties that may be interested in utilizing the
12 platform”, with “a set number of members that have voting rights” who make
13 “recommendations to the Commission that are based on consensus” regarding the “design of
14 the platform, costs and benefits to all stakeholders, especially costs to be passed on to utility
15 customers for the initial setup and ongoing annual costs of the platform, standards for data
16 accuracy, cyber security, financial security of third parties, and future enhancements of the
17 platform as the energy landscape continues to change.”²

18 **Q. Please summarize the governance proposal of Eversource and Unitil.**

19 **A.** Eversource and Unitil propose two working groups of stakeholders who “represent the
20 user experience and advocate for policy purposes of the platform”, called “the Governance

² Joint Direct Testimony of H. Tebbetts & M. Samenfeld, Bates p. 028 to 029

1 Working Group (“GWG”) and the Operations Committee (“OC”)”³ with the following
2 composition, voting structure and responsibilities:

- 3 • The Governance Working Group would have 11 to 14 members, consisting of 6 utility
4 representatives, 3 Commission-appointed stakeholder representatives, 2 OCA
5 representatives, and up to three Commission Staff. It’s role would be to “provide a
6 diversity of ideas and ensure the platform capabilities can provide ongoing value to
7 state energy policies and initiatives and would make recommendations to the
8 Commission on a semi-annual or annual basis that the Commission could consider for
9 implementation... Recommendations will be made by general consensus, with
10 dissenting opinions noted for consideration. Recommendations must have more than
11 six representatives supporting it to be submitted to the Commission. The GWG should
12 meet at least monthly for the first year after the platform is active, with less frequent
13 meetings as appropriate thereafter.”⁴
- 14 • The Operations Committee would consist solely of “equal representatives of each
15 utility and be responsible for drafting platform operation policy and procedures,
16 technical design, scoping and pricing changes, change management, security
17 management and recommendations on the feasibility and cost/benefit analysis of
18 requests for enhancements or changes. The proposals of the OC would be submitted to
19 the GWG should it want to add recommendations to OC proposals. Proposals of the OC
20 would be submitted periodically or as needed to the Commission, but no more
21 frequently than semi-annually.”⁵

22 Further details regarding the responsibilities of the Operations Committee were provided in
23 discovery (refer to Attachment 5: Response to Request No. STAFF 1-024):

³ Joint Testimony of Thomas Belair, Riley Hastings, and Dennis Moore for Eversource Justin Eisfeller, Kimberly Hood, and Jeremy Haynes for Uniti, p. 49.

⁴ Ibid., p. 50

⁵ Ibid., p. 50

1 “The Operations Committee (OC) would need approval of the Governance Working
2 Group (GWG) for draft or revised operating policies and procedures; platform scoping
3 and pricing changes; operating and capital budget revisions; and final decisions on
4 security restrictions on users of the platform. The OC and GWG would need approval
5 of the Commission on governance changes, and operating and capital budget approvals,
6 as those items relate to the core mandate of the Commission’s authority.

7 The Operations Committee (OC) would make decisions on day-to-day operations and
8 security including short term restrictions on platform access due to immediate cyber
9 concerns; platform change management categorization (there is an expectation that
10 change management approvals will vary with change complexity and risk); and cyber
11 event classification and incident response. The OC would also be responsible for
12 making technical design decisions where the decision affects the operations or security
13 of the platform.”

14 **Q. Please summarize the governance proposal of the Office of Consumer Advocate.**

15 **A.** OCA recommended the creation of a Stakeholder Governance Board and Platform
16 Operations Committee, with the following composition:

- 17 • The Stakeholder Governance Board would have 9 members: “the Consumer Advocate
18 or his designee (to represent the interests of residential customers), a representative of
19 small commercial customers, a representative of large commercial customers, two
20 members of the Commission Staff, two municipal representatives, and two
21 representatives of firms that provide energy-related services to consumers that depend
22 on access to data” —all of which would be appointed by the Commission (other than
23 the OCA representative) — or “alternatively, the size of the stakeholder governance
24 board could be increased to 12 voting members with a representative of Eversource,

1 Liberty, and Unitil each given one vote”; regardless, the utilities would attend all
2 meetings of the Board “to provide such information and advice to the body as it might
3 require.”⁶

- 4 • The Platform Operations Committee would have 10 members: “three utility
5 representatives (one each from Eversource, Liberty, and Unitil), three representatives of
6 third-party service providers reliant on the platform for data, and a tie-breaking
7 representative of the Commission Staff”, with non-utility representatives appointed by
8 the Commission.⁷

9 Both bodies would draft their own bylaws and procedures, subject to Commission
10 approval. The Stakeholder Governance Board would be responsible for the design and ongoing
11 planning of the Statewide Data Platform, while the role of the Platform Operations Committee
12 was described thus:

13 “The key here is nimble and efficient decision making. The committee should be
14 responsible for operationalizing the initial and ongoing requirements established under the
15 governance body. A key responsibility would be the review of changes to the technology,
16 implementation, and functional requirements of the platform quickly, as the need for such
17 changes arises in real time. There is also likely to be a need to resolve disputes in the event
18 that platform users encounter obstacles or difficulties. It would make sense to allow the
19 platform committee to authorize subcommittees to make decisions quickly, subject to
20 review by the entire committee. Disputes within the committee should be brought to the
21 governance board for resolution. If there is a need to resolve conflicts between the
22 Committee and the Board these would go to the Commission.”⁸

23 **Q. Please summarize the governance proposal of Mission: data.**

⁶ Prefiled Direct Testimony of James Brennan, Bates p. 090-091

⁷ Ibid., Bates p. 091

⁸ Ibid., Bates p. 091-092

1 A. Mission: data proposes that the Commission appoint a Data Platform Committee with 5
2 members: 2 utility representatives, 2 Distributed Energy Resource representatives, and 1 OCA
3 representative. The Committees function was described thus:

4 “The Committee’s responsibilities are to (i) review and attempt to resolve outstanding
5 support tickets from the issue-tracking system; (ii) refine and approve change requests,
6 which may be submitted by any Committee member, so long as the costs of
7 implementing Committee-approved change requests shall not exceed \$250,000 per
8 year. Committee-approved change requests will receive a presumption of prudence in
9 each utility’s next rate case. Change requests must be for bona fide changes or
10 improvements to functionality or user experience, and may not include security updates
11 or other regularly-occurring or expected operations, whose costs are to be considered
12 part of the basic operation of the platform and recoverable through rates. The
13 Committee will make decisions by majority vote following Roberts Rules of Order,
14 with minutes and change request forms publicly posted on the Commission’s website.
15 Committee decisions may be appealed by any party at the Commission, which will
16 review the decision de novo.”⁹

17 **Q. Please summarize the governance proposal of Clean Power New Hampshire.**

18 A. Clean Power New Hampshire proposes the creation of a “Data Platform Council” to
19 oversee implementation and operation of the Statewide Platform. The body would have three
20 core functions:¹⁰

21 1. Approving standards for publication on the Data Platform Hub, including shared logical
22 data model, API standards, and standards for authentication and authorization;

⁹ Direct Testimony of Michael Murray, p. 69-70

¹⁰ Testimony of Ethan Goldman for Clean Energy NH, Bates p. 25

- 1 2. Ensuring that new Data Sources meet established standards in order to be included in
- 2 the Data Platform Hub;
- 3 3. Evaluating the ongoing performance of Data Platform to ensure it is meeting its goals.

4 Clean Power New Hampshire did not propose a specific number of representatives, but
5 rather proposed that it “should have representation from diverse groups that represent the
6 market, including public and private sectors, as well as representatives with technical
7 familiarity with the subject matter”, which could include the following representatives
8 “selected through an application/nomination process to be vetted and approved by the PUC”:¹¹

- 9 • One or more seats for Data Sources (including utilities)
- 10 • One or more seats for state government (PUC, OCA, State Energy Manager)
- 11 • One or more seats for local government
- 12 • One or more seats for academia and other researchers
- 13 • One or more seats for advocacy groups
- 14 • One or more seats for third party energy service providers and DER representatives

15 Representatives would be expected to possess “adequate proficiency to participate in
16 technical conversations about the functional requirements of the Platform and the tradeoffs
17 inherent in different options”, or otherwise “designate a technical expert to participate in
18 proceedings on their behalf, or to accompany the voting member at meetings to help parse the
19 implications of different choices”¹² and would be occasionally supported by “an expert
20 consultant who can provide independent advice to the Council regarding database structure,
21 API mechanisms, security models, etc.”.¹³

¹¹ Ibid., Bates p. 27-28

¹² Ibid., Bates p. 27-28

¹³ Ibid., Bates p. 29

1 Utilities were recognized as a “major Data Source” that should be “closely involved with
2 setting these standards so that they can help to avoid requirements that would be impossible or
3 unduly expensive to meet, and instead to look for ways to leverage existing data systems and
4 functionality” — but Clean Power New Hampshire cautioned that allowing utilities to vote on
5 the Data Platform Council could potentially create a conflict of interest.¹⁴

6 **Q. Please summarize the governance proposal of the Local Government Coalition.**

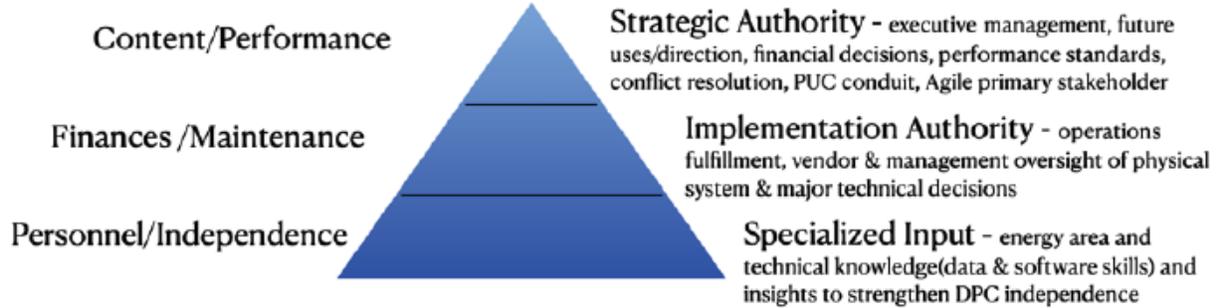
7 **A.** The Local Government Coalition consists of myself, Clifton Below, April Salas, Kat
8 McGhee, Dr. Amro M. Farid and Pat Martin. Proposals regarding governance are summarized
9 below.

10 Representative Kat McGhee brought forward a “potential blueprint” establishing the
11 “Platform Data Council” to provide “the vision, oversight and functional decision-making” for
12 the Statewide Platform, with 13 members in total: 6 energy stakeholder members (3 of whom
13 should have sufficient technical or software domain expertise), 4 utility members, 2 “State of
14 NH members (Dept of Energy, OCA, PUC, ST&E, etc.)” and 1 ratepayer member.¹⁵ The body
15 would plan and oversee the implementation of the Statewide Platform within the boundaries of
16 the PUC’s initial order / scope and budget, and thereafter prioritize and propose new
17 functionality based on “consensus and non-consensus recommendations” under a process that
18 would require “Commission approval prior to initiating new projects beyond initial scope.”
19 Representative McGhee also provided a conceptual model delineating the scope and
20 responsibilities of governance:

¹⁴ Ibid., Bates p. 28-29

¹⁵ Testimony of Kat McGhee for LGC, Bates p. 38

Governance model



NH Data Platform Council

Kat McGhee, NH State Rep 2020

16

1

2 Representative McGhee’s additional insights and recommendations, reflecting her
 3 domain expertise as a legislator and software development practitioner, defy concise
 4 summation; refer to Testimony of Kat McGhee for LGC, Bates pages 33 through 38 as well as
 5 her relevant discovery responses (to Request No. EU to LGC 1-036, Request No. EU to LGC
 6 1-039, Request No. EU to LGC 1-040, all of which are included in her Rebuttal Testimony for
 7 reference) for a greater level of detail.

8 Dr. Amro M. Farid notes that governance should “include all of the stakeholder
 9 categories”¹⁷ shown in the figure below:

¹⁶ Ibid., Bates p. 35

¹⁷ Testimony of Dr. Amro M. Farid for City of Lebanon & Local Government Coalition, Bates p. 166

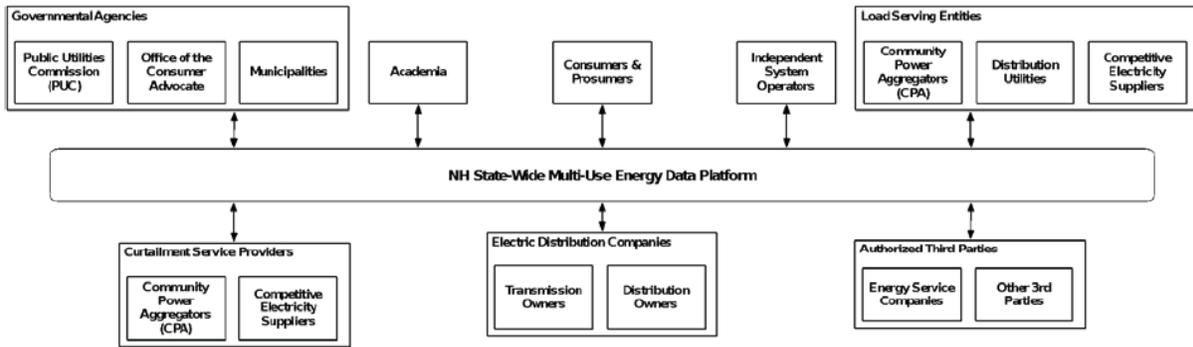


Figure 1. Interfaces between a NH State-Wide Multi-Use Energy Data Platform and NH Energy Stakeholders

1 18

2 My own Direct Testimony recommended the Commission look to how the Texas
 3 ERCOT market has structured its governance, specifically their Technical Advisory Committee
 4 (TAC) charter, customer representative segments and subcommittee protocols, which were
 5 attached for reference.

6 To provide context in support of this recommendation, my testimony characterized: the
 7 current state of public confidence in the utility industry; the extent and performance of the
 8 competitive retail market in New Hampshire; the structure, performance metrics and
 9 governance framework used in fully restructured competitive retail markets; my observations
 10 regarding New Hampshire’s default service practices in relation to the goals of the Electric
 11 Utility Restructuring Act; recent controversies regarding utility investments in the retail value
 12 chain that structurally foreclose market-driven innovation in favor of utility-controlled
 13 innovation; the statutory authorities, business model and political drivers of CPAs and how they
 14 are naturally aligned with the development of market frameworks as called for under RSA 53-F;
 15 and the anticipated expansion and sophistication of New Hampshire’s CPA market due to the
 16 rapid progress of the Community Power New Hampshire joint-action initiative.

¹⁸ Ibid., Bates p. 142

1 In other words, my testimony focused primarily on explaining why adopting a market-
2 based governance regime for the Statewide Platform was both necessary and prudent, as a
3 mechanism to see through the numerous reforms necessary to align New Hampshire's market
4 structure, operational practices and utility infrastructure investment decisions with the letter and
5 spirit of the Electric Utility Restructuring Act — such that market participants would be able to
6 put the data made available through the Statewide Platform to good use in actually creating new
7 value for customers.

8 **III. Evaluation of Governance Proposals**

9 **Q. Do you consider any of the proposals to be credible?**

10 A. No.

11 **Q. Why not?**

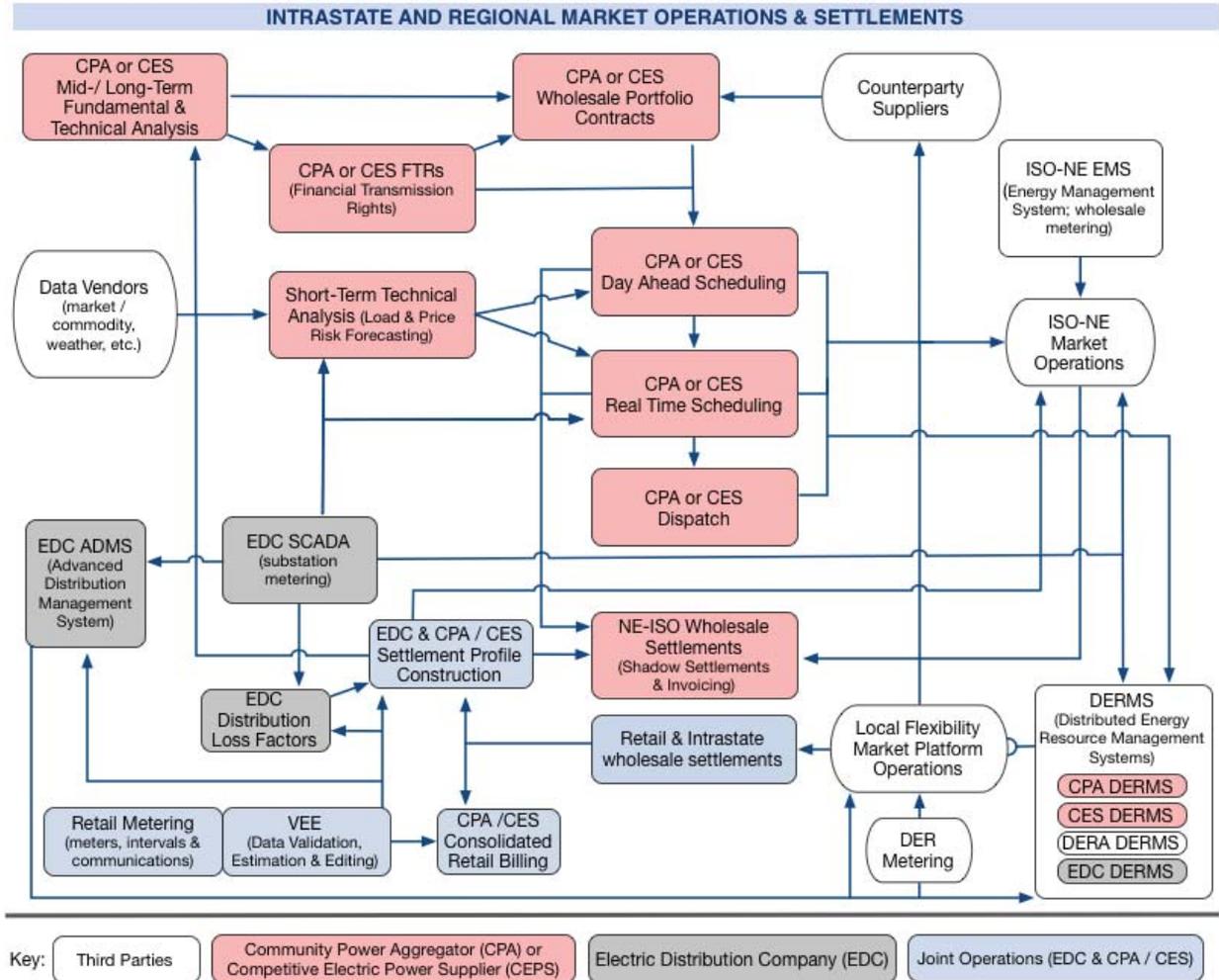
12 **A.** As a threshold matter, governance over the Statewide Platform must be structured in a
13 manner that (1) incentivizes the participation and is responsive to the collective insights and
14 requirements of a representative diversity of market participants, and (2) leverages their
15 participation to assess and remove barriers to data-driven gains in operational efficiencies and
16 market-based innovation by (a) reforming business processes and market rules and (b)
17 informing and guiding the deployment of market-enabling infrastructure (e.g. Grid
18 Modernization).

19 This is critical to ensuring the appropriate design, cost-effective implementation and
20 continuous evolution of the Statewide Platform, for the simple reason that better access to data
21 does not, in and of itself, create value for customers. Rather, market participants actually have
22 to be able to put the data to good use by creating, marketing and monetizing new retail
23 customer products and services in ways that create benefits for individual customers and the

1 system as a whole. This creates the requirement that business processes and market rules must
2 accommodate data-driven innovation, and ipso facto, that governance over the Statewide
3 Platform provide a credible mechanism through which market participants will identify and
4 remove barriers to innovation from an operational “front lines” perspective. Absent a credible
5 mechanism to do so, market participants will have weak incentives at best to participate in
6 governance, and governance will thus remain under-informed in regard to (1) how the
7 Statewide Platform should evolve to meet the requirements of market participants and (2) how
8 business processes and market rules should change to accommodate data-driven retail market
9 innovation.

10 Apart from the Local Government Coalition, parties have evinced little to no
11 understanding regarding this critical aspect of governance. Proposals either envision
12 governance to be narrowly focused on enhancing data access and exchange, without
13 consideration of the fact that data access absent enabling reforms of business processes and
14 market rules is insufficient to create new value for customers, and / or recommend the creation
15 of one or two committees with representation weighted heavily towards non-market
16 participants — usually in a manner befitting the strategic objectives or industry perspective of
17 the proposing party — without consideration of the fact that market participants would be the
18 ones responsible for actually using the Statewide Platform to create new value for customers.

19 In this context, it is critical to understand that retail data needs to be used by market
20 participants in a variety of applications and functions that flow across all the horizontal
21 dimensions of the electric power system — and that barriers at any point can undermine the
22 ability of market participants to create new value for customers in practice. To that end, I offer
23 the following schematic showing the inter-related functions required to facilitate transactions
24 across retail, distribution and wholesale domains:



1

2

Refer to Attachment 6: ISO-NE_EPRI Digital Grid_June2020 for ISO-NE’s presentation at an EPRI workshop earlier this year, which identified the need for states to establish a “local energy market construct”, and to my Response to Request No. EU to LGC 1-061 (beginning on page 71 herein) for additional context. Absent a governance regime that empowers market participants to identify and resolve barriers to innovation across all the linkages in the above schematic, the Statewide Platform will remain under-utilized and fail to maximize value.

8

This is why charging ratepayers for a Statewide Platform while excluding or unwisely circumscribing the role of market participants in governance is comparable to “taxation without representation” — i.e., not the hallmark of a stable regime!

10

1 **IV. Overview of Market-Based Governance Proposal**

2 **Q. Do you have a concrete proposal for how to establish a market-based governance**
3 **framework for New Hampshire?**

4 **A.** Yes. As recommended in my Direct Testimony, New Hampshire should adopt a market
5 governance framework based off of the successful framework that evolved in Texas to govern
6 a robust, innovative and fully restructured market. To my knowledge, it is the only regime in
7 any state that has successfully induced the active participation of a truly representative
8 diversity of market participants, and used their collective insights and activity in order to guide
9 the evolution of a statewide data platform along with the continuous streamlining of business
10 processes and market rules in a manner that enables market-driven retail innovation.

11 To that end, I have adapted various foundational governance documents used by ERCOT
12 for use in New Hampshire. These documents would create the Retail Operations Council of
13 New Hampshire (the “ROC”) as a non-profit, non-stock voluntary corporation, the primary
14 functions of which are to:

- 15 • Act as the NHPUC-appointed administrator of the Statewide Platform, and carry out
16 other related market functions at the direction of the NHPUC going forward;
- 17 • Ensure that access to the Statewide Platform for all market participants is provided for
18 on a nondiscriminatory basis;
- 19 • Ensure that information transacted across the Statewide Platform is conveyed in a
20 timely manner to the market participants who need this information.

21 Please refer to Attachments 1 through 4 for the foundational governance documents, which
22 consist of the following:

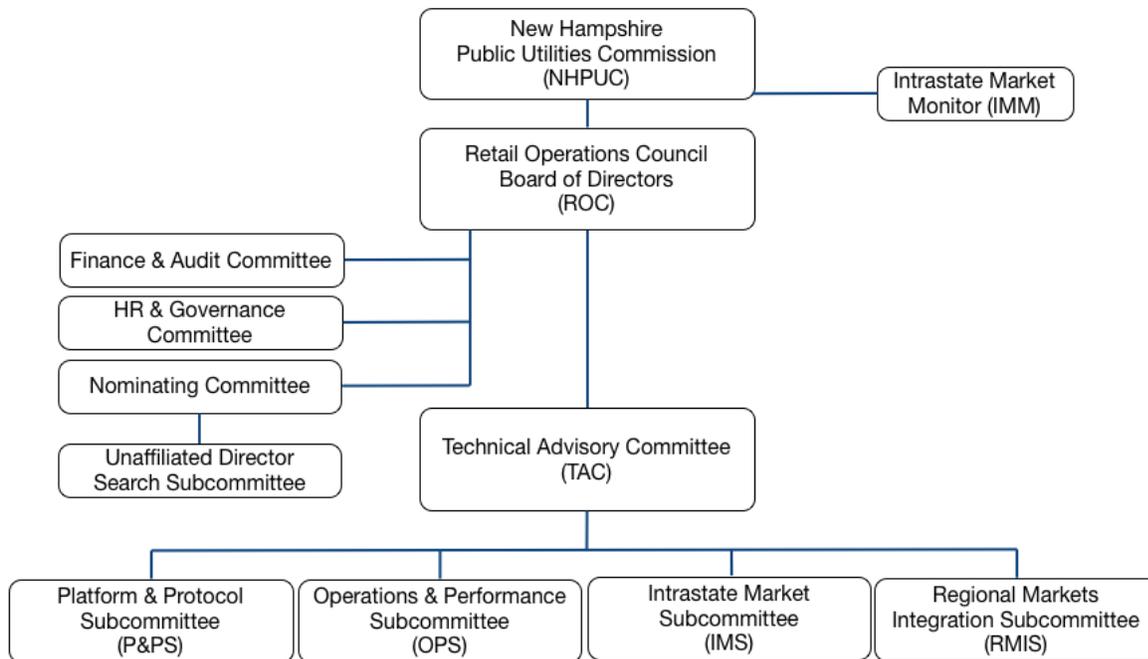
- 23 1. Corporate Bylaws;

- 1 2. Board Procedures;
- 2 3. Technical Advisory Committee (“TAC”) Procedures; and
- 3 4. Platform & Protocol Revision Request and Budgeting Process.

4 Note that these documents are in draft form and should be considered as a “strawman”
 5 proposal for review and future refinement.

6 **Q. Please summarize the ROC’s governance framework.**

7 A. The NHPUC would preside over what recommendations of the ROC are implemented.
 8 Within the ROC, there are three levels of organizational decision-making leading up to that
 9 point: the Board, the Technical Advisory Committee (TAC) and the TAC subcommittees.
 10 Please refer to the organization chart below:



11

12 Governance within the ROC is predicated upon the voluntary participation of people and
 13 organizations who identify as belonging to one of the following nine (9) Market Segments:

- 1 1. Aggregator;
- 2 2. Competitive Electric Power Supplier (CEPS);
- 3 3. Cooperative;
- 4 4. Community Power Aggregator (CPA);
- 5 5. Distributed Energy Resource Company;
- 6 6. Electric Distribution Company or Local Distribution Company (EDC & LDC);
- 7 7. Limited Producer;
- 8 8. Municipal; or
- 9 9. Consumer.

10 The ROC covers its costs through member dues and platform fees and may not profit
11 financially from its activities as the Statewide Platform Administrator for New Hampshire's
12 intrastate market.

13 After paying nominal dues to become members —either Full, Associate or Adjunct
14 Members (the voting rights of which vary) — members vote within their respective Market
15 Segments to elect members to the ROC Board, to the Technical Advisory Committee (TAC)
16 and to the TAC subcommittees. Members may also vote on amendments to the Bylaws (subject
17 to NHPUC approval).

18 The four standing subcommittees of the TAC are:

- 19 1. Platform and Protocol Subcommittee (P&PS): to implement the Statewide Platform and
20 its accompanying protocols (with input from the other subcommittees below), and to
21 thereafter oversee the revision (change management) process;
- 22 2. Intrastate Market Subcommittee (IMS): to investigate and prioritize market barriers and
23 opportunities to enhance market innovation at the retail and distribution grid integration
24 levels within New Hampshire;

- 1 3. Regional Markets Integration Subcommittee (RMIS): to ensure that the development of
- 2 New Hampshire’s intrastate market aligns with NEPOOL and ISO-NE rules and is
- 3 cognizant of evolving rule changes and market dynamics;
- 4 4. Operations & Performance Subcommittee (OPS): to implement an expanded range of
- 5 metrics reported by market participants, and to ensure that these metrics, along with
- 6 analytics generated by the Statewide Platform, are sufficient to inform the situational
- 7 awareness and strategic decision-making of the IMS and RMS, the TAC, the Board and
- 8 the NHPUC in regards to the development of New Hampshire’s intrastate market.

9 The composition, voting weights, election of voting entities, and election at each level of
 10 governance, as applicable, is summarized in the tables below:

		TAC Standing Subcommittees									
		Market Segment Standing Representatives				Market Segment Voting Weights					
		ROC Board	Technical Advisory Committee (TAC)	Platform and Protocol Subcommittee (P&PS)	Intrastate Market Subcommittee (IMS)	Regional Markets Integration Subcommittee (RMIS)	Operations & Performance Subcommittee (OPS)	Platform and Protocol Subcommittee (P&PS)	Intrastate Market Subcommittee (IMS)	Regional Markets Integration Subcommittee (RMIS)	Operations & Performance Subcommittee (OPS)
Total		18	38	19	Minimum of 11; Maximum is self-determined			9	9.5	9.5	9.5
NHPUC Chair		1	0								
ROC CEO		1	1								
Unaffiliated Directors		5	0								
Nine Market Segments	Aggregators	1	4	2	Each segment elects one to four Standing Representatives			1	1	1	1
	CEPS	1	4	2				1	1	1	1
	Cooperative	1	2	2				1	1	1	1
	CPAs	1	4	2				1	1	1	1
	DER Companies	1	4	2				1	1	1	1
	EDCs & LDCs	1	4	2				1	1	1	1
	Limited Producers	1	4	2				1	1	1	1
	Municipals	1	4	2				1	1	1	1
	Consumers	3	7	3				See below (self-determined)			1
Consumer Market Subsegments	Residential (OCA)	1	1		Residential, Small & Medium Commercial and Large Commercial & Industrial subsegments each determine number of Standing Representatives						
	Residential	0	1	1				1/3	0.5	0.5	0.5
	Small & Medium Commercial	1	2	1				1/3	0.5	0.5	0.5
	Large Commercial	1	1	1				1/3	0.5	0.5	0.5
	Industrial		2								

Voting Entities	Board members, except for NHPUC Chair	All TAC Members, except for ROC CEO; segments may opt for participatory voting	All ROC members (Full, Associate & Adjunct classes)	Standing Representatives	Standing Representatives	Standing Representatives
Election of Voting Entities	Full Members nominate & elect w/in segments; Unaffiliated Directors are (1) nominated by 2/3 Board vote, (2) approved by Full Members in 5 of 9 Market Segments, and (3) approved by NHPUC		n/a (see above)	Self-elected by Members w/in Market Segments		
Election of Officers	Board elects Chair & Vice-Chair from Unaffiliated Directors	Chair & Vice Chair TAC elected & Board confirmed	Chair & Vice Chair elected by Standing Representatives of each subcommittee; confirmed by TAC			

1 In exchange for participating in governance, each Member must comply with any
2 applicable planning and operating criteria, procedures and guides adopted by or under the
3 direction of the Board to maintain the integrity of the intrastate market, coordinate planning,
4 promote comparable access to the intrastate market by all users and to further the exempt
5 purposes of ROC.

6 **Q. How would the ROC manage the evolution of the Statewide Data Platform?**

7 **A.** Both the ROC Board and the TAC contribute to strategic planning and setting of
8 objectives for the evolution of the Statewide Platform. To this end, the ROC CEO prepares the
9 annual budget, which includes projections of ROC's overall financial performance and
10 financing plans, and describes the services, projects, programs, and the associated revenues
11 and expenditures for the next fiscal year. Adoption of the Budget by the Board and approval by
12 the NHPUC authorizes the CEO to complete work plans and make associated expenditures.

13 Additionally, specific requests for revisions to the Statewide Platform, its associated
14 protocols and manuals may be submitted by a range of eligible entities (not just ROC
15 members) at any time in the form of:

- 16 • Platform Change Requests (PCRs);
- 17 • Protocol Revision Requests (PRRs); and
- 18 • Market Guide Revisions (MGRs).

19 Submission of the above requests trigger a process in which much of the actual work to
20 assess and refine the proposal occurs within relevant TAC subcommittees (and ad hoc working
21 groups approved by TAC) in coordination with ROC staff, after which the revision request is
22 voted on by P&PS, then TAC, and subsequently elevated to the Board for approval, rejection
23 or remand (back to TAC subcommittees).

1 Within this process, the TAC may recommend prioritization of specific projects (and
2 may delegate this responsibility to one of its subcommittees, on a project-specific basis), and is
3 regardless responsible for incorporating the expense of proposed projects into annual
4 budgeting exercises.

5 Platform and protocol changes approved by the Board are either implemented directly
6 or submitted to the NHPUC for approval or denial by a Hearing Officer, as appropriate.

7 **Q. What is the relationship between the NHPUC and the ROC?**

8 **A.** Beyond appointing the ROC as the administer of the Statewide Platform, the
9 relationship between the ROC and the NHPUC includes the following notable features and
10 considerations:

- 11 • The NHPUC Chair is an ex officio, non-voting Director on the ROC Board;
- 12 • The ROC annual budget must be approved by the NHPUC;
- 13 • Amendments to the ROC Bylaws must be approved by the NHPUC;
- 14 • Statewide platform and protocol changes approved by the Board are either implemented
15 directly or submitted to the NHPUC for approval or denial by a Hearing Officer, as
16 appropriate;
- 17 • The five Unaffiliated Directors on the ROC Board (non-market participants, 2 of which
18 must be Chair and Vice-Chair of the Board) are elected by ROC members but must be
19 approved by the NHPUC;
- 20 • Removal of Unaffiliated Directors may only be done by the NHPUC, and any Board
21 action to remove a Director or Alterative is subject to NHPUC review;
- 22 • ROC members must maintain their registration or certification by the NHPUC (to the
23 extent required by statute or rule);

- 1 • NHPUC independently retains an “Intrastate Market Monitor” (IMM) to assist with
2 oversight and enforcement activities, coordinating with the ROC OPS to identify
3 conduct by market participants or market rules that compromise the efficiency or distort
4 the outcomes of the markets. Additionally, the IMM issues periodic reports providing
5 an independent assessment of the competitive performance and operational efficiency
6 of the market; and
- 7 • NHPUC staff or the IMM may submit revision requests (PCRs, PRRs or MGRs), attend
8 ROC meetings, comment on revision requests or subcommittee actions, and appeal the
9 actions of subcommittees, the TAC or the ROC Board.

10 **Q. Why is the ROC proposed as an independent, voluntary corporation?**

11 **A.** For the simple reason that doing so was the most expedient way of adapting ERCOT’s
12 successful governance structure to New Hampshire. In other words, preserving the ROC as an
13 independent, voluntary corporation avoided necessitating substantive changes to the Corporate
14 Bylaws, Board Procedures, Technical Advisory Committee (“TAC”) Procedures; and Platform
15 & Protocol Revision Request and Budgeting Process — all of which are layered with
16 references to the other documents in a way that would have been time consuming to re-align
17 without introducing errors.

18 If the Commission would prefer establishing a similar governance regime under a less
19 formal tiered committee or council structure, as the other parties have proposed, the option
20 could be explored. I would recommend paying careful attention to how doing so might
21 compromise key elements that are necessary to induce sufficient participation by market
22 participants e.g. in terms of the membership structure, differential voting regimes, checks and
23 balances inherent in the decision-making process, et cetera.

1 **Q. Can elements of other parties' proposals be integrated into this market-based**
2 **governance framework?**

3 **A.** Yes. I expect parties will appreciate the robust and inclusive approach to ensuring that a
4 diversity of industry stakeholders and market participants are included in governance and
5 motivated to participate and will have additional insights and refinements to offer in that and
6 other regards. For example, Mission:data specifically pointed out that:

7 "In Texas, the utilities operating SMT followed two practices that became problematic.
8 The first was that any stakeholder was permitted to submit a change request, leading to
9 a large volume of requests, some of which were impractical and not adequately thought
10 through. The result was an extremely time-consuming and unfocused review of each
11 request, some of which were limited to providing benefits to a particular third party and
12 not to the state as a whole. By limiting change requests in New Hampshire to those
13 proposed by Committee members only, my proposal encourages individual Committee
14 members to fully vet and refine change requests prior to proposal before the
15 Committee, and ensures that proposed change requests provide value to many platform
16 users.

17 Second, there wasn't a defined budget for ongoing change requests in Texas. At first,
18 the Texas utilities approved change requests under the belief they would be afforded
19 cost recovery. But then the utilities reversed their policy arbitrarily and abruptly,
20 bringing all improvements to a halt. Some of these improvements were very important
21 to third parties, such as user experience improvements. My proposal eliminates the
22 capriciousness and uncertainty of platform improvement seen in Texas by giving the
23 Committee authority to approve change requests within a certain budget amount."¹⁹

¹⁹ Direct Testimony of Michael Murray, p. 71

1 Kat McGhee's made similar recommendations regarding budgetary oversight and
2 expenditure procedures, wherein the body is able to make decisions and minor changes on an
3 expedited basis while prioritizing and budgeting for more substantive changes with PUC
4 approval.

5 These and other refinements and recommendations could be readily incorporated into the
6 "strawman" governance documents for New Hampshire.

7 **V. Responses to Electric Distribution Company Discovery Requests**

8 Eversource and Unitil (EU) asked 19 discovery questions of me. Since all the responses
9 elucidate my testimony in contrast to their positions, especially where we differ, I have inserted
10 the responses to their discovery requests and questions below. Note that the standard discovery
11 response formatting has been removed, apart from the request number line, and that a few
12 responses have had minor (non-substantive) typos fixed:

13 **Request No. EU to LGC 1-041** Witness & Respondent: Samuel Nash Vautier Golding

14 **REQUEST:** Page 47, lines 17-18: Please describe the "market framework" called for under
15 New Hampshire's Electric Utility Restructuring Act.

16 **RESPONSE:** The Electric Utility Restructuring Act refers to the establishment of a "*market*
17 *framework*" under "*Administrative Processes*", and states that:

18 *"The commission should adapt its administrative processes to make regulation more*
19 *efficient and to enable competitors to adapt to changes in the market in a timely manner.*
20 *The market framework for competitive electric service should, to the extent possible,*
21 *reduce reliance on administrative process. New Hampshire should move deliberately to*
22 *replace traditional planning mechanisms with market driven choice as the means of*
23 *supplying resource needs."*

24 The law is online here: <http://www.gencourt.state.nh.us/rsa/html/XXXIV/374-F/374-F-mrg.htm>.

25 See also the response to Request No. EU to LGC 1-009.

1 **Request No. EU to LGC 1-042** Witness & Respondent: Samuel Nash Vautier Golding

2 **REQUEST:** Page 47, line 20: What rule changes do you foresee as necessary for innovation in
3 New Hampshire's market operations? Please cite specific administrative rules.

4 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
5 testimony, as it asks the witness to undertake additional analysis and develop new information as
6 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
7 objection, the witness provides the following responses:

8 New Hampshire has failed to extend the benefits of restructuring to the mass market, its current
9 active retail market evinces a high degree of market concentration (never a good sign), and the
10 metrics by which one could properly assess the level of innovation and barriers to fully
11 animating choice at a granular level remain wholly untracked.

12 This question asks for technical particulars on what specifically has to change to enable
13 innovation. That may be well-intentioned, and there are undoubtedly a variety of near-term
14 specific changes warranted (a few of which any individual stakeholder could offer), but it really
15 is missing the point. The appropriate question to ask is how did we manage to relegate ourselves
16 to this disadvantageous position, and how do we make better decisions going forward?

17 Adapting to the accelerating pace of fundamental change in technologies, market dynamics and
18 consumer preferences necessitates a continuous rule reform process that leverages a diversity of
19 interested, informed, localized, and specific knowledge. I know of no other way of creating, let
20 alone sustaining, a rational economic ordering of the electric power system given such dynamic
21 fundamentals other than a market framework.

22 That is why the main purpose of my testimony was to demonstrate why New Hampshire needs to
23 implement a market framework for governance — in compliance with the Electric Utility
24 Restructuring Act, and as an alternative to the current reliance on administrative processes —

1 and how doing so could allow our industry to rely on the collective knowledge of all
2 stakeholders (market participants like Community Power Aggregators in particular) to guide the
3 rule reforms needed to allow innovation in retail customer products and services to play out
4 freely whilst creating value for the system as a whole.

5 To put it bluntly: until we get governance right, I fear we will all be condemned to endlessly
6 repaving the road to hell with our good intentions.

7 **Request No. EU to LGC 1-043** **Witness & Respondent: Samuel Nash Vautier Golding**

8 **REQUEST:** Page 50, line 11: Please define “fully restructured” relative to organized energy
9 markets.

10 **RESPONSE:** I believe that the section “*How should the statewide, multi-use online energy data*
11 *platform be governed?*” of my Direct Testimony, which starts on Bates p. 82, along with the
12 section “*How are fully restructured markets governed in practice?*”, which starts on Bates p. 60,
13 and the attachments from Bates p. 99 through 128, substantially addresses this question.

14 **Request No. EU to LGC 1-044** **Witness & Respondent: Samuel Nash Vautier Golding**

15 **REQUEST:** Page 50, line 21: What elements of integration within the retail market
16 “*structurally disadvantage retail competition and foreclose retail innovation and choice in*
17 *services*” and why?

18 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
19 testimony, as it asks the witness to undertake additional analysis and develop new information as
20 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
21 objection, the witness provides the following responses:

22 Please refer to the response to Request No. EU to LGC 1-042.

23 **Request No. EU to LGC 1-045** **Witness & Respondent: Samuel Nash Vautier Golding**

1 **REQUEST:** Page 50, line 21: Please explain how the current state of distribution grid operation
2 integration by the utilities “*structurally disadvantages*” retail competition.

3 **RESPONSE:** Page 50, line 21 references the following sentence, excerpted here in its entirety:

4 *“However, utilities have not been quarantined to operating the distribution grid, and*
5 *instead remain integrated within the retail market in ways that I believe structurally*
6 *disadvantage retail competition and foreclose retail innovation and choice in services for*
7 *the majority of customers.”*

8 I am unsure what the phrase “*distribution grid operation integration by the utilities*” in the
9 question refers to in the New Hampshire market context in general or in relation to my above-
10 cited testimony. I did not assert that “the current state of distribution grid operation integration”
11 structurally disadvantages retail competition.

12 **Request No. EU to LGC 1-046** Witness & Respondent: Samuel Nash Vautier Golding

13 **REQUEST:** Page 51, lines 3-6: What decision-making is “*carried out through administrative*
14 *procedures and not through a transparent and responsive ‘market framework’*”?

15 **RESPONSE:** As far as I can tell, substantially all of it, except for a limited amount of retail
16 choice of a limited number of products, mostly realized by larger C&I customers. As Bates p. 51,
17 lines 3-7 states:

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

22 Note that the emphasis is on the lack of a market framework. This relegates decision making to
23 an administrative regime by default — which are reactive, procedural and adversarial in nature,
24 siloed in terms of scope in relation to the whole system, and commonly bifurcated by utility as
25 opposed to applying uniformly across the natural boundaries of the retail market.

26 Moreover, the current administrative regime seems to have ignored, for years, undertaking even
27 the most basic functional operational improvements for the competitive retail electricity market.

1 As one example, the Electric Distribution Companies' Electronic Data Interchange (EDI)
 2 documentation on the PUC website and PUC order initially approving the EDI²⁰ states that they
 3 are temporary, indicate they will be soon will be finalized and implemented by rules and are
 4 more than two decades old at this point. The EDI Working Group recommended "that the
 5 Commission establish a standing working group to address the need for modifications and
 6 enhancements to the standards and processes described in the report."²¹ However, the working
 7 group was apparently never established, and the EDI data transaction formats, test plans, training
 8 manuals et cetera all were last updated in 1998.²² There are also apparently several fields in the
 9 Electronic Data Interchange tariffs that indicate functionality that are not, in reality, functionally
 10 available to CEPS to utilize.

11 **Request No. EU to LGC 1-047** **Witness & Respondent: Samuel Nash Vautier Golding**

12 **REQUEST:** Page 51, line 7: Please describe your view of "*a holistic, responsive and market-*
 13 *based decision-making framework.*"

14 **RESPONSE:** I believe that the section "*How are fully restructured markets governed in*
 15 *practice?*" of my Direct Testimony, which starts on Bates p. 60, substantially addresses this
 16 question.

17 **Request No. EU to LGC 1-048** **Witness & Respondent: Samuel Nash Vautier Golding**

18 **REQUEST:** Page 51, line 7: Please provide specific examples of cases where
 19 the NH distribution utilities decision making with respect to the retail market has been "*unduly*
 20 *mediated by the monopoly distribution utilities*".

21 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
 22 testimony, as it asks the witness to undertake additional analysis and develop new information as

²⁰ In Order No. 22, 919, May 4, 1998 the Commission states that "we will temporarily adopt the Working Group's recommendations pending the outcome of a rulemaking on the implementation of EDI standards." Web address: <https://www.puc.nh.gov/Regulatory/Orders/1998ords/22919e.html> .

²¹ "Consensus Plan for the Transmission of Electronic Data in New Hampshire's Retail Electric Market," Docket DR 96-150, Electric Utility Industry Restructuring, April 2, 1998, p. 4. Web address: <https://www.puc.nh.gov/Electric/EDI/edirev53.pdf>.

²² NH PUC "EDI Information" webpage: <https://www.puc.nh.gov/electric/edi.htm>

1 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
2 objection, the witness provides the following responses:

3 I believe that the section “*Have distribution utilities’ recent investment decisions in the retail*
4 *value chain hindered or supported the development of a competitive retail market?*” of my
5 Direct Testimony, which starts on Bates p. 72, substantially addresses this question.

6 More broadly, Bates p. 51 lines 7 through 9 are as follows:

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

10 Note that the emphasis is on the lack of a market framework, and how this relegates decision
11 making to administrative proceedings by default — which are reactive, procedural and
12 adversarial in nature, siloed in terms of scope in relation to the whole system, and commonly
13 bifurcated by utility as opposed to applying uniformly across the natural boundaries of the retail
14 market. The behavior of the electric distribution companies to-date is largely a product, a logical
15 outcome, of this administrative regime. From that perspective, such behavior underscores the
16 need to reform the very rules by which this game is played.

17 **Request No. EU to LGC 1-049** Witness & Respondent: Samuel Nash Vautier Golding

18 **REQUEST:** Page 55, line 5: Please provide the referenced EIA 861 datasets.

19 **RESPONSE:** EIA 861 datasets are publicly available online here:
20 <https://www.eia.gov/electricity/data/eia861/>.

21 Please note that "Public Service Co of NH" (utility name) in the 2013 EIA861 dataset
22 "Advanced_Meters_2013.xls" lacks any data reported under "Number Non AMR/AMI Meters".
23 Consequently, this utility is missing about 475,000 meters. I notified EIA of the first omission on
24 7 January 2020 but it appears that the data is still unreported or missing. "Public Service Co of
25 NH" could presumably provide the data directly.

26 **Request No. EU to LGC 1-050** Witness & Respondent: Samuel Nash Vautier Golding

1 **REQUEST:** Page 57, line 1: Please provide a comparison of market prices versus default
2 energy prices in NH and comment on the competitiveness of 3rd Party pricing for residential
3 customers.

4 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
5 testimony, as it asks the witness to undertake additional research and analysis and develop new
6 information as part of a data request, which is not an appropriate use of discovery.
7 Notwithstanding the objection, the witness provides the following responses:

8 If you assume that residential customers only want a commodity, then you misunderstand
9 consumer preferences in today's retail electricity market. Those preferences are heterogenous:
10 some may value assistance in ensuring continuity of service (e.g. backup generation) at a
11 premium, or price stability in the form of longer-term hedged products relative to default service,
12 or access to more granular time-varying pricing and assistance shaping their load to wholesale
13 price or carbon emission intensity intervals, or to purchase a product with higher renewable or
14 local generation content, or to access more convenient customer services, or bespoke advisory
15 services regarding DER products, or help with budgeting and pre-paid or otherwise flexible
16 payment options — the list goes on.

17 In a word, freedom is the most accurate metric by which to approximate the potential of a market
18 to create value for customers: the aggregator's freedom to innovate in offering new products and
19 services and the customer's freedom to choose those same products and services.

20 Analyzing commodity price is therefore antediluvian and altogether too narrow an accounting —
21 specious, in fact — without first collecting a sufficiently broad array of market metrics and
22 accounting for the above service quality and product differentiators. Such a question is
23 motivated, in my opinion, by ignorance at best and an anti-consumer bias at worst.

24 Regardless, the strengthening of consumer protection depends upon maximizing long-run
25 creation of value, in all the many forms valued by consumers. Thus, the framing that lower

1 consumer prices of the commodity should be pursued without regard to consequences of scope or
2 quality of service is both naïve and a threat to social welfare.

3 **Request No. EU to LGC 1-051** Witness & Respondent: Samuel Nash Vautier Golding

4 **REQUEST:** Page 58, lines 6-8: What do you and what does the Council of European
5 Regulators consider as a sufficiently “*low concentration*” within a given market
6 structure? Please explain.

7 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
8 testimony, as it asks the witness to undertake additional analysis and develop new information as
9 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
10 objection, the witness provides the following responses:

11 Refer to the table on Bates p. 60 for the specific metrics the Council of European Regulators uses
12 to track progress for this and other key properties of well-functioning markets. Refer to Bates p.
13 59, footnote 19 for the report from which this table was taken, refer to page 3/74 therein for
14 documents related to the report, and refer therein to the “*2017 Handbook for National Energy*
15 *Regulators How to assess retail market functioning*”, pages 11 through 17 for detailed tables
16 summarizing the following for each metric related to this key property: Metric Name;
17 Description; Purpose; Source of Data; Quantification; Frequency; Unit of Measure; and Data
18 Completeness.

19 The aforementioned “*2017 Handbook for National Energy Regulators How to assess retail*
20 *market functioning*” is available online here: [https://www.ceer.eu/documents/104400/-/-](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)
21 [/840b4ce7-9e4a-5ecc-403a-fad85d6ba268](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)

22 The tables available therein are excerpted below for your convenience:

Metric 1	Herfindahl-Hirschman Index
Description	The HHI measures the degree of concentration in a market.
Purpose	<p>Based on guidance from the European Commission (Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), a HHI above 2000 signifies a highly concentrated market. In general, a high number of suppliers and low market concentration are seen as one of the indicators of a competitive market structure.</p> <p>To accurately evaluate the degree of concentration, the NRA could use the following step-by-step approach, which is in line with that used by the Directorate-General for Competition (DG COMP) and national competition authorities:</p> <ol style="list-style-type: none"> 1. Define the relevant product markets (i.e. assess the degree of demand and supply substitution of different products): The retail supply of both gas and electricity can be divided into several categories of final customers, with different product preferences and needs: (i) households, (ii) small industrial and commercial customers (SMEs), (iii) large industrial customers and (iv) very large/energy intensive customers. We advise to, as a minimum, distinguish between household and non-household customer segments and, preferably between households, SMEs and other customer segments. In some member states, the supply of energy at regulated prices (or supply covered by a designated supplier of last resort) and the supply of energy at free prices (or the supply to customers with different metering arrangements e.g. prepayment meters, time of use and smart meters) can be considered as relevant product markets. The market for some categories of vulnerable household customers or the market for households on social tariffs can also be considered as relevant markets. For electricity, industrial/commercial customers are usually 'half-hourly metered' and often connected to high and medium voltage grids. It may however be considered that supply to large industrial consumers forms part of the wholesale market, not retail market, depending on whether industrial consumers buy energy to consume or to resell. Households and smaller industrial/commercial customers are most often non-half-hourly metered and connected to the lower voltage grids. <p>For gas, product markets can be defined on the basis of criteria such as the customers' volume of consumed gas, off take patterns (e.g. usage of gas for electricity generation) or whether they are connected to the transmission network. Finally, the possibility of a combined</p>

1

	<p>retail gas and electricity market for domestic customers can be considered, as some suppliers offer a single contract covering both the supply of gas and electricity (dual fuel contract) to domestic customers.</p> <p>2. Define the relevant geographic markets (i.e. identify the geographic boundaries of the area where suppliers compete against each other): The retail supply of electricity to large industrial and commercial customers can be considered to be national, provided that these markets are fully liberalised and if the conditions of competition are found to be uniform throughout the relevant territory. The retail supply of electricity to household and smaller industrial and commercial customers is generally national in scope, however, if, for example, many local energy companies (vertically-integrated DSO/supplier) exclusively serve their historical zones and no other suppliers operate, regional areas can be considered as relevant markets. For gas, retail supply markets are generally national in scope, but can also be local.</p> <p>3. Calculate the HHI for every relevant market according to the quantification as suggested below.</p> <p>The resulting relevant markets should also be considered for the completion of the other metrics contained in this handbook.</p>
Source of data	Information request to retailers or regulated companies.
Quantification	The HHI is calculated as the sum of the squares of the market shares of all firms in the market. It ranges between 0, for an infinite number of small firms, and 10,000, for one firm with a 100% market share. Market shares can be calculated on the basis of consumed volumes and number of customers or meter points.
Frequency	The HHI should be calculated at least annually. In particular, its development over time should be assessed to understand whether the market structure becomes more or less competitive.
Unit of measure	Index
Data completeness	Depending on the relevant market definition, the data requirement to calculate the HHI may be more or less complex. As a minimum, the NRA should be able to obtain data on supplier shares in household and non-household markets.

1

2 **Request No. EU to LGC 1-052** Witness & Respondent: Samuel Nash Vautier Golding

3 **REQUEST:** Page 58, lines 9-11: What do you and what does the Council of European

4 Regulators consider as sufficiently “*low market-entry barriers*” within a given market

5 structure? Please explain.

1 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
 2 testimony, as it asks the witness to undertake additional analysis and develop new information as
 3 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
 4 objection, the witness provides the following responses:

5 Refer to the table on Bates p. 60 for the specific metrics the Council of European Regulators uses
 6 to track progress for this and other key properties of well-functioning markets. Refer to Bates p.
 7 59, footnote 19 for the report from which this table was taken, refer to page 3/74 therein for
 8 documents related to the report, and refer therein to the “*2017 Handbook for National Energy*
 9 *Regulators How to assess retail market functioning*”, pages 11 through 17 for detailed tables
 10 summarizing the following for each metric related to this key property: Metric Name;
 11 Description; Purpose; Source of Data; Quantification; Frequency; Unit of Measure; and Data
 12 Completeness.

13 The aforementioned “*2017 Handbook for National Energy Regulators How to assess retail*
 14 *market functioning*” is available online here: [https://www.ceer.eu/documents/104400/-/-](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)
 15 [/840b4ce7-9e4a-5ecc-403a-fad85d6ba268](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)

16 The tables available therein are excerpted below for your convenience:

3.2 Key property II: Low market entry barriers

In order to facilitate competition and innovation, barriers to market entry and growth for new market actors (i.e. suppliers and third parties) as well as barriers for innovation (including demand response) need to be as low as possible.

Metric 2: Time needed and cost of accessing well-functioning wholesale markets and licencing/balancing regimes

17 **Metric 2**

Time needed and cost of accessing well-functioning wholesale markets and licencing / balancing regimes

Description	<p>Fair access to energy procurement on the wholesale market and to licencing and balancing regimes is a key pre-requisite for any supplier considering entry into the retail market. A supplier is always responsible for acquiring contracts regarding energy procurement and balance responsibilities. This can be achieved in different ways. In this respect, the NRA shall verify whether or not there are procedures to obtain such responsibilities for a new supplier.</p> <p>To ensure a level playing field to enter a market there is a need for a common denominator for market rules, such as equal and non-discriminatory access for all suppliers within the relevant market.</p>
Purpose	<p>Firstly, establish whether such procedures are available to all parties interested in becoming, or acting, as a supplier on the market. Secondly, establish that such procedures, and in particular their length and costs, are equal and non-discriminatory for all suppliers on the market, or suppliers wanting to access a market.</p>
Source of data	<p>For the first purpose, the main sources would include NRAs' knowledge of regulatory and legal entry processes, as well as the information made available by regulated companies and balancing and settlement agencies. For the second purpose, market participants may be best placed to offer (via surveys/discussions/questionnaires) a more qualitative assessment of balancing, licencing and other access costs, based on their actual entry experience.</p>
Quantification	<p>The metric focusses on the time and costs associated with administrative and financial rules to access wholesale markets and licencing/balancing regimes. It does not include entry IT investment and staff resources costs incurred by individual suppliers.</p> <p>In order to quantify this metric we suggest that the NRA addresses the following three sets of questions (please specify whether the answers differ at national and regional levels):</p> <p>Wholesale energy procurement</p> <ul style="list-style-type: none"> • Are there procedures to access a national or regional wholesale market? • How long does it take to gain access to energy procurement in a national or regional wholesale market? • What is the cost of accessing national or regional wholesale market? • Supplier license: Are market participants required to have a license to act in a national or regional market? • How long does it take to obtain a licence to act in a national or regional market? • What is the cost of acquiring a licence to act in a national or regional market? <p>Balancing responsibility</p>

1

	<ul style="list-style-type: none"> • Is it possible for market participants to become a balance responsible party (BRP) in a national or regional market? • How long does it take to become a BRP in a national or regional market? <p>What is the cost to obtain balancing responsibility in a national or regional market (e.g. bank guarantees)?</p>
Frequency	This metric should be monitored every one or two years.
Unit of measure	Regarding the existence of the relevant procedures: Yes/No and qualitative explanation. Regarding time: Number of months (legal requirements and/or as observed in practice if data is available). Regarding costs: Euros as applicable in relation with the different types of procedures/licensing.
Data completeness	NRA should have access to such information since it is a requisite for the market functioning. As such, the data should be available at the national level.

1

Metric 3: Percentage of consumers connected to “bundled” DSOs

Metric 3	Percentage of consumers connected to “bundled” DSOs
Description	As energy networks are regulated monopolies, DSOs have exclusive access to all customers within their network area. Suppliers bundled with these DSOs have an indirect access to such information. The 3 rd Package requires legal, functional and accounting separation of DSOs and suppliers within a vertically integrated utility, although it also specifies exemptions from the requirements for smaller DSOs. This metric focusses on the existence of exempt bundled DSOs and not on other aspects of the 3 rd package requirements on unbundling.
Purpose	For new suppliers entering the market, both national and cross-border, equal rules are essential. Bundled DSOs and suppliers acting mutually towards customers might prevent new actors from entering a market. Therefore, there must be a sufficient level of unbundling between suppliers and associated DSOs in order to create a level playing field in retail energy markets. This is essential for all competitive actors to compete on the same terms. The existence of bundled DSOs does not immediately presuppose a problem; nevertheless, it might be a sign to further look into the matter. Through this metric the NRA can monitor the situation and must then evaluate whether the result reveals a problem or whether the market works well despite the existence of customers connected to bundled DSOs.
Source of data	Information request and survey to regulated companies.
Quantification	In order to quantify this metric we suggest that the NRA addresses four main questions:

2

	<ul style="list-style-type: none"> • Are there DSOs with bundled suppliers exempted from the legal requirements in the 3rd Package? • What is the minimum standard for being exempted? • How many customers are connected to exempt DSOs? Compare this figure with the total number of customers in the MS. • How many active⁶ rival suppliers operate in the exempt DSOs' areas? Compare this figure with the total number of active suppliers in the MS.
Frequency	This metric should be monitored every one or two years.
Unit of measure	Regarding unbundling implementation: yes/no and qualitative explanation. Regarding exempted DSOs and their customers: number and % of total amount of customers in the MS.
Data completeness	NRAs should have access to such information as part of their basic market monitoring

1

Metric 4: Percentage of consumers with regulated energy prices

Metric 4	Percentage of consumers with regulated energy prices
Description	<p>By definition, an end-user regulated price is a price subject to regulation by a public authority, as opposed to an end-user price exclusively set by the interaction of supply and demand. Price regulation can take different forms, such as the setting or approval of prices, price caps, or various elements of these. Regulation can be set ex-ante (price is defined by the responsible authority on underlying information on the market, before market participants conclude contracts based on these prices) or ex-post (price is checked and possibly amended/changed by responsible authority after contracts have been concluded by market participants). The regulatory intervention can also be social, when a regulated price is set for specific consumer groups, e.g. vulnerable customers (social tariffs). Another relevant distinction is about regulation that is permanent and regulation that is designed as temporary, with a clear end date.</p> <p>Regulated energy prices distort competition in the market and might prevent new actors, both national and cross-border, to enter a market.</p>
Purpose	The purpose is to measure the impact of price regulation in the market, with the ultimate goal to abolish the regulated energy prices in order to remove the barrier to entry for a new supplier and to create a level playing field between competing actors.
Source of data	NRAs generally already provide this data for the CEER database, which is used for the ACER/CEER Market Monitoring Report (MMR). Retailers are the main source for this data but, depending on the market, bundled DSOs/suppliers may also be a relevant source.
Quantification	<p>In order to quantify this metric we suggest that the NRA addresses three main questions:</p> <ul style="list-style-type: none"> • Which types of price regulation apply to gas and electricity markets?

2

	<ul style="list-style-type: none"> • What is the proportion of customers (and their consumption volume) with regulated energy prices on each type of regulated price and each relevant market? • What is the proportion of customers on social tariffs? If there are different types of social tariffs, aimed at different categories of vulnerable customers, please indicate the proportion of customers on each tariff type.
Frequency	This metric should be monitored at least on an annual basis.
Unit of measure	Regarding the existence of price regulation: Yes/no and qualitative explanation of what regulation exists. Regarding the customers: Proportion of customers and their consumption relative to the total number of customers and consumption in each considered relevant market.
Data completeness	NRA's should have access to such information as part of their basic market monitoring.

1

Metric 5: Number of common standards for consumer data and for DSO-supplier contract or existence of a national data hub

Metric 5	Number of common standards for consumer data & for DSO-supplier contracts or the existence of a national data hub
Description	<p>Efficient, safe and secure data exchange between stakeholders is vital to ensure a well-functioning retail market and the possibility for new suppliers, both national and cross-border, to enter into a market. All suppliers, both existing and new, and other third parties (authorised by the customer) need to be able to access relevant customer meter data on equal and non-discriminatory terms.</p> <p>CEER recommends having one national common standard (CEER Advice on Customer Meter Data Management for Better Retail Market Functioning). In 2016, CEER conducted a comprehensive review of data management models in eight countries. All of the countries participating in the study reported to have a common standard for access to data for suppliers and third parties. Moreover, all but one country reported to be moving to a more centralised model of data management, either in the form of data hubs with storage, or communication hubs. The participating countries generally cited efficient data handling, fair competition and easier access to data as advantages of their more centralised future models. A summary of the reported change from current to future models is shown below. More details can be found in the CEER Review of Current and Future Data Management Models (C16-RMF-89-03).</p> <p>With a supplier centric model there is a need for agreements between DSOs and relevant suppliers. This might become a burden and even a barrier for small actors on a market.</p> <p>Where available and feasible, the existence of a data hub is an alternative option to ensure access to information on equal and non-discriminatory terms, including the implementation of a common standard. A data hub simplifies the market structure further, as suppliers only communicate with a centralised hub rather than with several DSOs.</p> <p>The roll out of smart meters may also make access to information on equal and non-discriminatory terms easier.</p>

2

Purpose	The purpose of this metric is to monitor the possibility of accessing information easily for suppliers, aggregators and other third parties on the retail market. The lack of access to consumer data is a barrier for new actors, both national and cross-border.
Source of data	Possible sources of data include the following: the data hub or the metering operator regarding the common standards for historical data; the metering operator regarding the common time-of-use data; and the DSOs regarding DSO-supplier contracts.
Quantification	<p>In order to quantify this metric it will be necessary for the NRA to examine whether there are set processes regarding access to customers data for authorised supplier or third party. It will be important to show the MS level of implementation of the advice on data management or if there is a functioning data hub, which meets the functionality demands set by the European Commission. More specifically, in order to quantify this indicator the NRA should consider the following questions:</p> <ul style="list-style-type: none"> • Is there a procedure containing common standards regarding the accessibility of data for suppliers and third parties? What kind of data is covered by the procedure (in particular, is historic consumption information, defined in metric 18, included)? • Is there a procedure for contracts between DSO-supplier in a MS where a supplier centric model is applicable? • Is there a national data hub? What are its main features (e.g. who runs it and to what extent does it rely on explicit customer consent for data sharing with third parties)?
Frequency	This metric should be monitored every one or two years.
Unit of measure	Yes/or no for all the questions and related qualitative explanations
Data completeness	NRA's should have access to such information as part of their basic market monitoring.

1

Metric 6: Availability of time-of-use metering and, where applicable, additional fee paid by the consumer to be able to have time-of-use price vs. traditional metering

Metric 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 and profiling
Description	The availability of smart metering equipment and systems which allow time-of-use meter readings is a pre-requisite for consumers to be able to choose implicit demand response and flexibility schemes. Smart meters may also enable explicit demand response services through a dedicated standard interface, either as mandatory equipment or as an option. Availability of such metering might also include an additional fee for the customer.

2

Purpose	The purpose of this metric is to determine if customers have the possibility to be active on the market through demand response or flexibility schemes. If the customer cannot access time-of-use meter readings then this might distort competition on the retail market for new suppliers, aggregators and third parties with innovative contracts, as well as restrict market choice for customers. Lack of time-of-use-metering, such as hourly readings, hinders innovation and development on the market as a whole.
Source of data	Information request to DSOs, metering operators and retailers (in those markets where retailers may be responsible for meters).
Quantification	We suggest that the NRA answer the following questions: <ul style="list-style-type: none"> • Are meters for time-of-use metering available for customers in each relevant market? • What type of time-of-use metering is available, e.g. 15 minute, half-hourly, hourly metering, day/night metering? And such meters for which the timeframe is linked to the market settlement period? Consider both electricity and gas meters. • How many time-of-use meters of each type are there in the MS? What is their number relative to the total number of metering points? • Is there an additional fee to install these meters in each relevant market? How much does it cost?
Frequency	This metric should be monitored at least on an annual basis.
Unit of measure	Regarding the availability of time-of-use metering: Yes/no and qualitative explanations. Regarding the share of time-of-use meters, percentage: Number of installed meters relative to total number of metering points. Regarding the additional fee to access these meters: Euros for installation.
Data completeness	NRAs should have access to such information as part of their basic market monitoring, although the detail on costs may be more difficult to obtain.

1

2 **Request No. EU to LGC 1-053** Witness & Respondent: Samuel Nash Vautier Golding

3 **REQUEST:** Page 59, line 1: Please explain what energy service components are included
 4 within “*retail prices*” as referenced.

5

6 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
 7 testimony, as it asks the witness to undertake additional analysis and develop new information as
 8 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
 9 objection, the witness provides the following responses:

1 Refer to the table on Bates p. 60 for the specific metrics the Council of European Regulators uses
2 to track progress for this and other key properties of well-functioning markets. Refer to Bates p.
3 59, footnote 19 for the report from which this table was taken, refer to page 3/74 therein for
4 documents related to the report, and refer therein to the “*2017 Handbook for National Energy*
5 *Regulators How to assess retail market functioning*”, pages 11 through 17 for detailed tables
6 summarizing the following for each metric related to this key property: Metric Name;
7 Description; Purpose; Source of Data; Quantification; Frequency; Unit of Measure; and Data
8 Completeness.

9 The aforementioned “*2017 Handbook for National Energy Regulators How to assess retail*
10 *market functioning*” is available online here: [https://www.ceer.eu/documents/104400/-/-](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)
11 [/840b4ce7-9e4a-5ecc-403a-fad85d6ba268](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)

12 The tables available therein are excerpted in the response to Request No. EU to LGC 1-054 for
13 your convenience.

14 **Request No. EU to LGC 1-054** Witness & Respondent: Samuel Nash Vautier Golding

15 **REQUEST:** Page 59, lines 1-4: If retail prices do not closely reflect wholesale market prices, is
16 it your opinion that customers are not “*paying a fair price*”?

17 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
18 testimony, as it asks the witness to undertake additional analysis and develop new information as
19 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
20 objection, the witness provides the following responses:

21 As a foundational matter, it is important to keep in mind that there are eight key properties of
22 well-functioning markets here, which are as follows: low concentration within a relevant market;
23 low market-entry barriers; a close relationship between wholesale markets and retail prices; a
24 range of offers, including demand response; a high level of awareness and trust; the availability
25 of empowerment tools; sufficient consumer engagement; and appropriate consumer protections.
26 These are accompanied by a matrix of 25 metrics used to track progress within each of the eight

1 key properties (Bates p. 60.). The point is that no one metric, narrowly considered in isolation
2 from the others, could credibly suffice to indicate a well-functioning market.

3 The question references one of the above eight key properties but does so in a way that
4 seemingly misconstrues my testimony. The lines in question from my testimony (Page 59, lines
5 1-4) state:

6 *“A close relationship between wholesale markets and retail prices to ensure that*
7 *consumers receive correct price signals, which is an important incentive for demand*
8 *response. In addition, the mark-up between wholesale and retail prices reveals whether*
9 *consumers are paying a fair price.”*

10 Referring to the above, I do not consider the wording “*close relationship*” in the above metric to
11 be synonymous with the phrase “*closely reflect*” as used in the question; the latter brings to mind
12 a direct comparison in a narrow sense, while the latter does not. Furthermore, the metric refers to
13 “*wholesale markets*” and not “*wholesale market prices*” per se; again, the latter is a much
14 narrower conception than the former. Last but not least, the key property clearly refers to the
15 “*mark-up between wholesale and retail prices*” as providing a measure of insight into whether or
16 not consumers are “*paying a fair price*” — not whether retail prices “*closely reflect wholesale*
17 *market prices*”.

18 These distinctions are rather critical, considering that retail pricing structures in fully restructured
19 markets reflect what the customer has agreed to with their retailer, and therefore naturally
20 encompass an appropriate range of price-risk structures and product options serving a diversity
21 of customer preferences and capacities, and within those, a range of correlations between retail
22 price-risk structures and wholesale price-risk dynamics. Put another way: different retail
23 products offer a variety of price-risk structures relative to underlying wholesale price-risk drivers
24 and price movements, and a credible analysis must appropriately capture this reality. In this way,
25 the key property as cited in my testimony appropriately countenances this real-world complexity,
26 while the question seems oblivious to it.

1 If you refer to the table on Bates p.60, you will see that this key property is actually composed of
2 two metrics: the first is “Metric 7: Correlation between wholesale and retail energy prices” while
3 the second is “Metric 8: Mark-up between wholesale and retail energy prices”.

4 The question has created a chimera by conflating two distinct metrics of this key property —
5 managing to doubly-misconstrue the key property in question as a consequence.

6 For a detailed description regarding both of the metrics, refer to the “2017 Handbook for
7 National Energy Regulators How to assess retail market functioning”, available online here:
8 <https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268>

9 There you will find detailed tables containing the following fields for each metric: Metric Name;
10 Description; Purpose; Source of Data; Quantification; Frequency; Unit of Measure; and Data.

11 Note that “Metric 7: Correlation between wholesale and retail energy prices” is on page 18/44 to
12 19/44, and “Metric 8: Mark-up between wholesale and retail energy prices” is on page 19/44 to
13 20/44.

14 The tables available therein are excerpted below for your convenience:

3.3 Key property III: Close relationship between wholesale markets and retail prices

Well-functioning retail energy markets are dependent on well-functioning wholesale energy markets. Organised and transparent wholesale markets set the market value of energy as a commodity, thereby providing the foundation for the prices that consumers pay in retail energy markets. These metrics only concern the energy component of the total retail energy price.

Suggested analysis to accompany metric 7 and 8: Break down of the cost components of the total retail energy price

Accompanying these metrics should be a table with a breakdown of the total retail energy price, showing the shares that the energy component, network tariff, taxes and other components (e.g. capacity component, RES-charge) respectively constitute of the total price that consumers pay. This is important because it puts metrics 7 and 8 in perspective. In addition to this it is essential to clarify the right consumption profile, because it affects the breakdown of the total retail energy price.

15

Metric 7	Correlation between wholesale and retail energy prices
Description	Well-functioning retail energy markets depend on well-functioning wholesale energy markets. Organised and transparent wholesale markets determine the price of energy as a commodity. The relationship between the energy component of the total retail price and the wholesale price is important, as it reveals what consumers are paying for their energy relative to the underlying wholesale market price. This metric concerns only the energy component of the total retail price, which is separate from network tariffs, taxes and surcharges.
Purpose	<p>Close correlation between wholesale and retail prices can ensure that consumers receive correct price signals from wholesale markets. Price signals may function as an incentive for demand response. Consumers may receive price signals from wholesale markets through the energy component of the retail price, if the pricing of this component follows variations in the wholesale price. This depends largely on the price structure of the contract the consumer has agreed with the retailer. Price structures may vary from hourly pricing set against wholesale markets at one end, to fixed prices at the other.</p> <p>The ability of retailers to offer contracts that have a close correlation to wholesale markets depends on their ability to access and procure energy in a well-functioning wholesale market. This analysis therefore presumes that wholesale markets are well functioning, organised and transparent.</p> <p>Given that consumers can choose different pricing options with different degrees of correlation, e.g. hourly wholesale pricing, standard variable pricing or fixed pricing, this analysis should use aggregate price <i>per contract type</i> for comparison with wholesale markets. Both flexible and fixed price contracts should correlate with wholesale markets at the time of offering, reflecting the inherent price-risk structure of the contracts, to different extents. For example, with a wholesale-based contract the customer carries the risk of the price variation, whereas with a fixed-price contract the supplier could carry the risk of the price variation.</p>
Source of data	Information request to retailers, price comparison tools or other parties (e.g. statistical bureaus) that collect price data for retail energy contracts. The data should differentiate between different types of contracts offered to households and business consumers, e.g. wholesale-based price, standard variable price, fixed price. The wholesale price data should be day-ahead and forward prices from power/gas exchange/hubs.
Quantification	Retail and wholesale price data should be monthly average data, for a minimum of three consecutive years. If the data is weighted, the method of weighting must be clearly specified. Only the energy component of the retail price can be used for comparison against wholesale price data. The data should be placed in a time series graph. The energy component should be separated from bundled products.

1

	<p>Monthly average retail price data for each contract type should either be prices effectively paid (e.g. what suppliers actually billed consumers) or prices on contract offers (e.g. what is listed in a price comparison tool), weighted at consumption values that are representative for each country. For example, the ACER/CEER MMR uses 5,000 kWh/yr for electricity and 15,000 kWh/yr for gas. In the absence of retail price details by contract type, the methodology used by the ACER/CEER MMR may be used.</p> <p>Wholesale prices should be quantified as the monthly average hub/exchange prices, where available. A nationally specific quantification of the wholesale price may be added to transparent market data. The source and type of all price data used for the analysis, and any method of quantification used, must be clearly specified.</p>
Frequency	This metric should be monitored at least on an annual basis.
Unit of measure	Unit prices should be expressed in terms of Eurocent/kWh
Data completeness	Foreseeable issues include availability of retail price data by contract type as well as the availability of wholesale prices in the absence of transparent wholesale markets.

1

Metric 8	Mark-up between wholesale and retail energy prices
Description	<p>Well-functioning retail energy markets depend on well-functioning wholesale energy markets. Organised and transparent wholesale markets determine the price of energy as a commodity. The relationship between the energy component of the total retail price and the wholesale price is important as it reveals what consumers are paying for their energy relative to the underlying wholesale market price. This metric concerns only the energy component of the total retail price, which is separate from network tariffs, taxes and surcharges.</p> <p>Mark-ups are not precisely comparable to the suppliers' final profits. Suppliers have to pay operational costs and taxes out of this margin. Mark-ups represent the gross margin, while the actual or net margin will depend significantly on operating costs and consumption levels. However, the evolution of mark-ups may serve as an indication of the level of retail competition and the "responsiveness" of the retail to wholesale prices over time.</p>
Purpose	<p>The mark-up between wholesale and retail prices reveals whether consumers are paying a fair price for energy relative to the underlying wholesale price. The responsiveness of the mark-up relative to rising or falling wholesale prices is essential for this analysis. The level of the mark-up will depend on the price structure of the contract the consumer has agreed with the retailer. Price structures may vary from hourly pricing set against wholesale markets at one end, to fixed prices at the other.</p> <p>This analysis presumes that wholesale markets are well functioning, organised and transparent.</p>

2

	By analysing the mark-up based on different contract types, e.g. wholesale-based or fixed pricing, the analysis reveals which contract types are the most beneficial for consumers. Different contract types should have different levels of mark-up to wholesale markets, reflecting the differences in the inherent price-risk structure of the contract type. For example, with a wholesale-based contract the customer carries the risk of the price variation whereas with a fixed-price contract the supplier could carry the risk of the price variation.
Source of data	Information request to retailers, information available on PCTs or from other institutions (e.g. statistical bureaus) that collect price data for retail energy contracts. The data should differentiate between contracts offered to households and business consumers. The wholesale price data should be day-ahead and forward prices from power/gas exchange/hubs. Where transparent market data is not available, the methodology of the ACER/CEER MMR should be used.
Quantification	<p>Retail and wholesale price data should be monthly average data, for a minimum of three consecutive years. If the data is weighted, the method of weighting must be clearly specified. Only the energy component of the retail price can be used for comparison against wholesale price data. The mark-up is quantified as the monthly difference between the retail price and the wholesale price, expressed in eurocent/kWh. The data should be placed in a time series graph. The energy component should be separated from bundled products.</p> <p>Monthly average retail price data for each contract type should be either prices effectively paid (e.g. what suppliers actually billed consumers) or prices on contract offers (e.g. what is listed in a price comparison tool), weighted at consumption values that are representative for each country. For example, the ACER/CEER MMR uses 5,000 kWh/yr for electricity and 15,000 kWh/yr for gas. In the absence of retail price details by contract type, the methodology used by the ACER/CEER MMR may be used.</p> <p>Wholesale prices should be quantified as the monthly average hub/exchange prices, where available. A nationally specified quantification of the wholesale price may be added <i>in addition</i> to transparent market data. The source and type of all price data used for the analysis, and any method of quantification used, must be clearly specified.</p>
Frequency	This metric should be monitored at least on an annual basis.
Unit of measure	Unit prices should be expressed in terms of Eurocent/kWh
Data completeness	Foreseeable issues include availability of retail price data by contract type as well as the availability of wholesale prices in the absence of transparent wholesale markets.

1

2

Request No. EU to LGC 1-055

Witness & Respondent: Samuel Nash Vautier Golding

1

2 **REQUEST:** Page 59, line 5: What is a sufficient range of offers, including demand response
3 services, for a well-functioning market? Please explain.

4

5 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
6 testimony, as it asks the witness to undertake additional analysis and develop new information as
7 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
8 objection, the witness provides the following responses:

9 Refer to Bates p. 64, footnote 24: for a list of innovative retail products, refer to page 25 of this
10 report: Dr. Philip R. O'Connor, "Restructuring Recharged," Retail Energy Supply Association.
11 April 2017. Available online:

12 [https://www.resausa.org/sites/default/files/RESA_Restructuring_Recharged_White%20Paper_0.](https://www.resausa.org/sites/default/files/RESA_Restructuring_Recharged_White%20Paper_0.pdf)
13 [pdf](https://www.resausa.org/sites/default/files/RESA_Restructuring_Recharged_White%20Paper_0.pdf)

14 The table referenced is excerpted below for your convenience:

TABLE 6 - INNOVATIVE PRICING, PRODUCTS & SERVICES IN CHOICE MARKETS

Fixed-Price Multi-Year Contracts	In monopoly states, utilities generally decide when to file for rate changes. In choice states, customers can choose multiyear price guarantees that in some markets may be as long as five years. Among other things, a business can lock in a key budget item for a known period of time.
Index Pricing	In choice markets, some customers will choose to buy power supply under various index-pricing arrangements. Options may include pricing on a monthly, daily or even hourly basis. Such deals may or may not include the cost of capacity, transmission or other ancillary cost values depending on the type of program selected by the customer.
Mixed Fixed & Index Pricing	Some customers will choose a mix of fixed and floating or index-based pricing. Some businesses also choose to purchase fixed-price "blocks" similar in shape to those acquired in the wholesale market in order to mitigate risk and achieve cost savings. A business may adjust its operations to control its usage and demand to save money.
Blend & Extend Pricing	Customers who have chosen a fixed-price or a mix of fixed- and index-pricing may choose to extend the duration of a supply contract if market prices move downward or if there is a concern about possible upward movement in price. This gives the customer the opportunity to have a more favorable price going forward under an existing contractual relationship based on their view of the market and their company's unique risk profile.
Real-Time Pricing	Real-time pricing is available for nearly all C&I customers and some residential customers in competitive jurisdictions from competitive suppliers, the local wires utility or the RTO. Some monopoly utilities provide real-time supply options to some C&I and residential customers under highly restricted conditions, including limiting the favorable prices to only a portion of supply or requiring payment of procurement charges or latent capacity fees. In choice markets, customers can simply access the real-time energy price, while not paying for capacity. Customers therefore can choose to bear the unhedged risk of short-term high prices in order to take advantage of both low on-peak and off-peak prices that can lead to overall cost savings on average.
Demand Response (DR)	Retail competitive markets allow customers to contract directly with RTOs, through wires-only utilities and/or through competitive suppliers. Demand reductions during peak periods are compensated on the same basis as supply. DR is less prevalent under monopoly models because participation is controlled by utilities that own generation against which DR competes. ²⁴
Renewable & Green Supply Blends	Customers in competitive states can usually choose the portion of supply that is produced by renewable (green) resources, rather than being limited to minimum levels mandated by state government policies that may prevail in some monopoly or competitive states.
Market Data, Analytics & Budget Reports	Many C&I customers receive energy market data and additional analytics in order to facilitate purchase decisions and budget planning. Such services operate in tandem with options for customers to blend and extend their contracts, for example. Some suppliers will work with customers to provide ongoing reports that integrate with firm budgeting when electricity is a key business expense.
Energy Efficiency Options & On-Bill Financing	Although many traditional vertical monopoly utilities offer energy efficiency programs, including on-bill financing, there can be inherent conflicts due to ownership of rate-based generation assets. In choice markets, while suppliers sell power, they have incentives to help customers achieve efficient energy use as a means of customer retention and as a business in and of itself. Many competitive suppliers enable efficiency project financing with charges for this service added to competitive supplier's commodity bills or through energy savings.
Distributed Energy Resources (DER)	Customers interested in locating DER on their premises can often work with competitive suppliers to optimize the value of the resources, unhindered by local monopoly tariffs and regulations which may limit customers in selling output into the market.
Integrated Home Solutions	Suppliers are offering residential customers smart thermostats, smart home automation and various applications to facilitate home energy and appliance management in order to optimize the value of market signals.

1

1 Refer to the table on Bates p. 60 for the specific metrics the Council of European Regulators uses
2 to track progress for this and other key properties of well-functioning markets. Refer to Bates p.
3 59, footnote 19 for the report from which this table was taken, refer to page 3/74 therein for
4 documents related to the report, and refer therein to the “*2017 Handbook for National Energy*
5 *Regulators How to assess retail market functioning*”, pages 11 through 17 for detailed tables
6 summarizing the following for each metric related to this key property: Metric Name;
7 Description; Purpose; Source of Data; Quantification; Frequency; Unit of Measure; and Data
8 Completeness.

9 The aforementioned “*2017 Handbook for National Energy Regulators How to assess retail*
10 *market functioning*” is available online here: [https://www.ceer.eu/documents/104400/-/-](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)
11 [/840b4ce7-9e4a-5ecc-403a-fad85d6ba268](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)

12 The tables available therein are excerpted below for your convenience:

3.4 Key property IV: A range of offers, including demand response

13 A well-functioning market is characterised by innovation and the range of products and services offered to consumers. In general, retailers’ ability to offer a significant number of commercial options - coupled with consumers’ ability to compare the offers and take informed decisions - is a sign of healthy competition and innovation.

14 Demand response can be defined as the capacity to change electricity usage by end-use customers (including residential) from their normal or current consumption patterns in response to market signals, such as time-variable electricity prices or incentive payments, or in response to acceptance of the consumer's bid, alone or through aggregation, to sell demand reduction/increase at a price in electricity markets or for internal portfolio optimisation. The valuation of demand response can be done explicitly or implicitly: explicit demand response is sold as a product on a market and therefore requires a specific control (ex-ante and/or ex-post). Implicit demand response does not need such a process since it is not sold to anyone and remains only for the benefit of the final consumer and the corresponding retailer or the Balance Responsible Party (BRP)⁷ as an optimisation respective of its sourcing costs or imbalances (e.g. via a payment organised between the independent flexibility service provider and the supplier).

Metric 9	Availability of a variety of pricing and billing options
Description	<p>This metric describes two ways of differentiating an offer (pricing and billing) in retail energy markets. Retailers may offer different products based on the way in which they are priced or billed. The consumers' bill contains key information, and may consist of information about the energy component price, the network tariff and taxes paid. This metric is aimed at the household market and possibly SMEs when and where applicable.</p>
Purpose	<p>Various options of pricing and billing can present innovation in the market and create benefits for the customer.</p> <p>Examples of various pricing options may be fixed pricing, variable pricing, or wholesale-based pricing. Wholesale pricing may be hourly (based on time-of-use metering), or monthly (based on an arithmetic mean, or load profile adjusted day-ahead price for the previous month, where time-of-use metering is not available). With wholesale pricing, the supplier earns its margin through an add-on per kWh or a monthly fee. Consumers should have the option to choose to be exposed to time-varying electricity prices, which reflect the value and cost of electricity and transportation at the moment of consumption. Equipped with this information, consumers can make conscious choices – or automate the decision – to use less electricity at times of high prices and thereby reduce their energy bill.</p> <p>Variations of billing options could be many, falling essentially under two broad categories: advance payments or post-meter reading payments. Post-meter reading billing should be advocated for consumers with time variable pricing, as this ensures that consumers are billed for the actual energy consumed during the billing period. As such, advance payments may be a barrier to demand response unless a correct settlement takes place after each consumption period.</p> <p>Opportunities for a variety of pricing and billing options should enable new suppliers with innovative ideas on pricing and billing to enter a market. If such opportunities are severely restricted, this might distort competition.</p>

1

<p>Source of data</p>	<p>Information requests to retailers and information available on PCTs are the most common sources of this data. The ACER/CEER MMR already provides an overview of the main pricing options for most capital cities MSs, based on PCT information.</p>
<p>Quantification</p>	<p>This metric aims to capture the variety of pricing and billing options available to customers in a relevant market. It does not require a detailed monitoring of the offers at each supplier level, although this could provide a useful piece of complementary information to understand the pricing and product strategies followed by different suppliers. Another relevant piece of complementary information could be the number of customers on each pricing and billing option.</p> <p>In order to quantify this metric the NRA should address the following two sets of questions:</p> <p>1) Is there a variety of pricing options? Tick boxes for the yes or no options below.</p> <p>Variable price set, and announced, ahead of time (ex-ante). Example: Price is changed every month and announced before the start of the month.</p> <p><input type="checkbox"/> Variable price that changes 4-12 times per year <input type="checkbox"/> Variable price that changes more than 12 times per year</p> <p>Wholesale-based price announced ex-post plus fee and/or mark-up announced ex-ante. Example: The wholesale price changes every month and is announced after the month has ended, when the supplier knows what it paid on average during the previous month.</p> <p><input type="checkbox"/> Price settled against monthly average wholesale <input type="checkbox"/> Price settled against daily/weekly average wholesale <input type="checkbox"/> Price settled against hourly average wholesale</p> <p>Fixed price stipulated in the contract ahead of time. Example: Price and fee for the following 12 months are announced in the offer before the customer signs the agreement.</p> <p><input type="checkbox"/> Fixed 3-11 months <input type="checkbox"/> Fixed 1-3 years <input type="checkbox"/> Fixed 4 years or longer</p>
<p>Other pricing options</p>	<p>Mixed price based on both fixed and variable components. Example: 50% of the consumption is billed according to fixed rate (winter) and 50% according to a variable price (summer) component.</p> <p><input type="checkbox"/> Mix of variable and fixed price <input type="checkbox"/> Pricing method varies between seasons</p> <p>Other price that does not fit description above</p> <p><input type="checkbox"/> Other pricing 1 (specify) _____ <input type="checkbox"/> Other pricing 2 (specify) _____ <input type="checkbox"/> Other pricing 3 (specify) _____</p>

1

2

	<p>2) Are there a variety of billing options? Tick boxes for the yes or no options available below.</p> <p><input type="checkbox"/> Direct debit <input type="checkbox"/> Bank transfer <input type="checkbox"/> SEPA⁸ <input type="checkbox"/> Credit card <input type="checkbox"/> Cash <input type="checkbox"/> Pre-payment <input type="checkbox"/> Other (specify) _____</p> <p>All pricing and billing options should refer to viable options, i.e. it should be possible for the addressed consumer to utilise these options.</p>
Frequency	The frequency for the monitoring of this metric may range from monthly to yearly, depending on the relevant market circumstances.
Unit of measure	Yes/or no for all the questions and any relevant qualitative explanations
Data completeness	NRA's should have access to such information as part of their basic market monitoring, although the level of detailed breakdown may vary.

1

Metric 10	Availability of value added services for implicit demand response and self-generation
Description	This relates to the availability of contracts containing price mechanisms, and/or added services that allow consumers to reduce their load or shift it from peak to off-peak periods, as well as to self-generate. Availability of market infrastructure, e.g. smart meters, and procedures enabling consumers to receive the correct price settlement are essential to make implicit demand response and self-generation an established viable option for consumers.

2

<p>Purpose</p>	<p>The availability of demand response offers and flexibility services can indicate an innovative, competitive and diversified market. It can offer consumers the opportunity to lower energy costs by adapting to time varying prices that reflect price formation on well-functioning wholesale market e.g. settlement against hourly prices.</p> <p>For customers it is essential to get clear information regarding the conditions when a contract is bundled e.g. with energy-efficiency services, products, maintenance services or other add-ons such as value added services.</p> <p>A second purpose of this metric is to determine if the customers have the possibility to self-generate their electricity and also to feed the surplus into the system. Fair access to market mechanisms and systems through which prosumers can feed energy into the energy networks are essential.</p> <p>It is, however, crucial that the contract terms for the market arrangements, mentioned above, do not disadvantage the customer or limit customer benefits.</p>
<p>Source of data</p>	<p>Survey to retailers and energy service companies</p>
<p>Quantification</p>	<p>In order to quantify this metric the NRA should address the following questions:</p> <ul style="list-style-type: none"> • Are there contracts available for implicit demand response such as time-of-use contracts or flexibility contracts? • What kind of value added services or products that contribute to demand flexibility are available for customers? <p>(Automatically controlled or supplied with demand response switch)</p> <p><input type="checkbox"/> Hot water heaters</p> <p><input type="checkbox"/> Storage – batteries</p> <p><input type="checkbox"/> Smart thermostat</p> <p><input type="checkbox"/> Gas heater</p> <p><input type="checkbox"/> Air conditioning</p> <p><input type="checkbox"/> Washing machines</p> <p><input type="checkbox"/> Refrigerators</p> <p><input type="checkbox"/> Electric car chargers</p> <p><input type="checkbox"/> Maintenance services</p> <p><input type="checkbox"/> Other</p> <p>Specify other:</p> <p>Questions regarding the conditions for self-generation.</p> <p>Questions regarding whether the surplus from self-generation can be fed into the system</p> <ul style="list-style-type: none"> • How many consumers participate in implicit DR through a contract? • How many customers have contracts, which include feed in from electricity, and/or gas from self-generation? • Are there appliances with demand response switches or other connections available on the electricity and gas market?

1

1
2

Frequency	The frequency for the monitoring of this metric may range from monthly to yearly, depending on the relevant market circumstances
Unit of measure	Yes/No and a qualitative elaboration, multiple choice. On self-generation: number of customers relative to the total amount of customers.
Data completeness	This is an area of the market that is developing and that NRAs may not have started monitoring yet, hence data may not be complete.

3
4

Metric 11	Availability of online offers, bills, contracts and online customer service.
Description	The European Commission's Digital Agenda proposes to better exploit the potential of Information and Communication Technology (ICT). The availability of different user-friendly channels through which a customer can interact with the market actors is a sign of innovation in the retail market.
Purpose	The purpose of this metric is to monitor innovation related to the use of ICT. If customers can interact with market actors in executing key contractual processes such as comparing different offers, signing up to an offer and receiving a bill online, as well as getting online customer service (i.e. the 'customer journey'), this can be seen as a sign of innovation and progress in the market. The focus should be on identifying whether retailers provide these options and whether these options are available to all categories of consumers (there may be some that, for geographical or technical issues, may not have access to these online offers). This metric is closely related to metric 17, which refers to the access to an independent and verified PCT.
Source of data	PCTs, and information requests to retailers.
Quantification	In order to quantify this metric the NRA should consider the following questions. These questions are linked to the 'customer journey'. <ul style="list-style-type: none"> • Are offers comparable online and/or through digital applications for all MS customers? If not, please indicate why and for what proportion of customers this is not the case. • Can contracts be signed online through the PCT or otherwise for all MS customers? If not, please indicate why and for what proportion of customers this is not the case. Is management of energy contracts online and/or through digital applications available to all MS customers? • Are bills available online? • Is customer service available through online channels
Frequency	The frequency for the monitoring of this metric may range from monthly to yearly, depending on the relevant market circumstances.
Unit of measure	All questions: yes/no and possible number of customers and qualitative explanations (especially if a "no" answer is provided).
Data completeness	This is a relatively new monitoring area and NRAs may not have developed it yet, hence data may not be complete.

1	Metric 12	Availability of contracts guaranteeing the origin of energy
	Description	This metric measures the availability of specific contracts, for each relevant market, containing information on the source and origin of the electricity and/or gas procured by the supplier. The contracts should specify the source(s) of energy as well as the supplier's commitment on how to obtain this [e.g. by acquiring Guarantees of Origin (GO)].
	Purpose	The purpose of this metric is to assess whether products with a specific origin and source, mostly renewable sources, are available for consumers. The availability of such contracts is a sign of innovation on a market. .
	Source of data	PCTs, and information requests to retailers.
	Quantification	<p>In order to quantify this metric the NRA should consider the following questions: Are there contracts with a specific source guaranteed for each relevant market (e.g. contracts guaranteeing the source to be from wind, water or solar)? Is it possible for customers to sign contracts such as those listed below? Tick the box if the option is available. Guarantees for energy sources (exclusively)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hydro <input type="checkbox"/> Wind <input type="checkbox"/> Solar <input type="checkbox"/> Biomass <input type="checkbox"/> Nuclear <input type="checkbox"/> Fossil (any) <input type="checkbox"/> Specific plant (any type, such as a specific wind farm, etc.) <input type="checkbox"/> Other (specify)
2		<p>Guarantees for energy sources (in combination)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hydro <input type="checkbox"/> Wind <input type="checkbox"/> Solar <input type="checkbox"/> Bio <p>What is the share of the above contracts that are available in the market and how many suppliers offer them? This should give an indication of whether the availability is actually meaningful.</p>
	Frequency	The frequency for the monitoring of these offers may range from monthly to yearly, depending on the relevant market circumstances. On the other hand, the update of the Guarantees of Origin registry will generally happen once per year.
	Unit of measure	All questions: yes/no and possible qualitative explanations (especially if a "no" answer is provided).
3	Data completeness	NRAs may already collect this data as part of the implementation of the renewable directive and disclosure of the source of electricity sold to end-users by suppliers, though this does not necessarily imply that there are contracts with specific origin and/or that these are supervised. Some MSs also have guarantees of origin and disclosure for gas sold to end-users by suppliers.

Metric 13	Availability of explicit demand response offers
Description	This metric monitors the availability of products that provide explicit demand side flexibility in the market. In explicit demand response the “freed-up/shifted” electricity is traded in electricity markets or used for other purposes. Consumers receive specific remuneration to change their consumption upon request (using more or using less), e.g. triggered by activation of balancing energy, differences in electricity prices or a constraint on the network.
Purpose	The purpose of the metric is to assess if there are explicit demand response opportunities available and to which customers. In particular, it aims at identifying what, if any, market arrangements exist, allowing customers to free up or shift electricity usage and trade it in a market place. Moreover, it is of particular interest to monitor the flexibility capacity that is available on the market through these products.
Source of data	Information is likely to come from different entities according to the use of flexibility and the related main market body: <ul style="list-style-type: none"> • For balancing and reserve markets: TSOs, as already required by European regulation (article 17 of Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets) • For local system support services: DSOs. • For wholesale markets: reporting by different market actors may be necessary, based on clear rules protecting sensitive information.
Quantification	In order to quantify this metric, the NRA should address the following questions: <ul style="list-style-type: none"> • Are explicit demand response opportunities available in each relevant market? • How much capacity/volume is available through the use of explicit demand response contracts on an annual basis? Use a metric based on capacity for market mechanisms essentially based on availability (balancing and ancillary services, and system adequacy mechanisms) and a metric based on volume for flexibility sold into the market annually for the wholesale market and some reserves market where energy is traded.
Frequency	The frequency for the monitoring of this metric may range from monthly to yearly, depending on the relevant market circumstances.

1

1

Frequency	The frequency for the monitoring of this metric may range from monthly to yearly, depending on the relevant market circumstances.
Unit of measure	Regarding explicit demand response opportunities: <input type="checkbox"/> Possible <input type="checkbox"/> Not possible <input type="checkbox"/> Possible but contracts not available <input type="checkbox"/> Possible and contracts available

2

Data completeness	<input type="checkbox"/> Possible but no knowledge if such contracts are available. Regarding capacity measure: kW in total or proportion of total peak-demand. Regarding volume measure: kWh in total or proportion of total demand. This is a new monitoring area for most NRAs. The gathering of data may prove difficult and, in the case of the capacity measure, may require estimates.
--------------------------	--

3

Metric 14	Percentage of consumers knowing they can switch supplier
Description	A precondition for consumer participation in retail energy markets is awareness and knowledge about the possibility to make an active and informed choice. This includes choosing another supplier, choosing another contract with their current supplier, or deliberately staying with their current supplier. This metric focusses on switching supplier. Recent studies show that even in liberalised markets a significant share of household consumers is insufficiently aware of the possibility to switch supplier and thus reaping key benefits of market liberalisation (cheaper energy, increasing competition, etc.). While market liberalisation brings a number of rights for consumers, switching supplier can be seen as crucial.
Purpose	The metric is used to measure the awareness of consumers about a key consumer right and how this awareness varies over time. Widespread awareness of this right facilitates market participation, which is key to well-functioning retail energy markets.
Source of data	NRAs may rely on existing national consumer surveys.
Quantification	This indicator should be the result of a survey based on a representative sample of the consumer population in terms of gender, age, location, socio-economic category. The targeted interlocutor is the person in the household in charge of electricity and gas bills payment. There should be different panels for gas and electricity. The survey questions should cover the following dimensions: factors determining the choice of supplier, the possibility to choose a supplier, etc. After consultation with national experts in this field (e.g. consumer survey companies), the questions could read as follows, though NRAs are welcome to use questions that would lead to similar results: "In your opinion: 1. The choice of an [electricity / gas] supplier is determined by the geographic area where you live? o Yes o No [correct answer] o No opinion 2. Every household can choose its electricity supplier?"

	<ul style="list-style-type: none"> ○ Yes [correct answer] ○ No ○ No opinion <p>3. Can you quote the name of 3 [electricity / gas] suppliers?</p> <ul style="list-style-type: none"> ○ 3 or more correct answer ○ 2 correct answer ○ 1 or less correct answer ○ Mention companies that are not electricity / gas suppliers (e.g. DSO, TSO, etc.)”
Frequency	This metric should be measured annually or, at least, every 3 years
Unit of measure	For each question, percentage of consumers choosing the different possible answers.
Data completeness	N/A

1

Metric 15	Percentage of consumers who know that DSOs are responsible for the continuity of supply and, where applicable, of metering
Description	A precondition for consumer participation in retail energy markets is awareness and knowledge about the possibility make an active and informed choice. It also involves some ‘basic knowledge about how the market works. This metric focusses on the awareness about the role of the DSO. In particular about the responsibility of DSOs for continuity of supply, as well as the awareness that switching to another supplier has no impact on continuity of supply. Such a concern is often given by consumers as one of the main reasons for not switching supplier.
Purpose	The metric is used to measure the understanding of retail market functioning principles of consumers. This could help NRAs to raise consumers’ awareness and therefore increasing the confidence of consumers in the market.
Source of data	NRAs may rely on existing national consumer surveys.
Quantification	<p>This indicator should be the result of a survey based on a representative sample of the consumer population in terms of gender, age, location, socio-economic category. The targeted interlocutor is the person in the household in charge of electricity and gas bills payment.</p> <p>There should be different panels for gas and electricity.</p> <p>Survey questions should cover the following dimensions: link between switching a supplier and changing one’s meter, link between supplier switching and power cuts, entity responsible for meter reading, etc.</p> <p>After consultation with national experts in this field (e.g. consumer survey companies), the questions could read as follows, though NRAs are welcome to use questions that would lead to similar results: “In your opinion,</p>

2

	<ol style="list-style-type: none"> 1. If you switch to another supplier, must you change your meter? <ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> No opinion 2. If you switch to another supplier, do you believe that you will experience more power cuts?? <ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> No opinion 3. If you switch to another supplier, do you believe that your new supplier will be in charge of meter reading? <ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> No opinion 4. Can you quote the name of the company that operates [power lines / gas pipes] to your home? <ul style="list-style-type: none"> <input type="radio"/> Correct answer [depends on interviewee location] <input type="radio"/> Incorrect answer <input type="radio"/> No opinion"
Frequency	This metric should be measured annually or, at least, every 3 years.
Unit of measure	For each question, percentage of consumers choosing the different possible answers.
Data completeness	N/A

1

Metric 16	Percentage of consumers trusting the energy market
Description	This metric measures the level of trust in the market and in the individual suppliers. It is important for consumers to be confident that they will be treated fairly and can trust the information that suppliers provide them. A bad experience with one supplier can undermine consumers' confidence in the energy market as a whole, causing them to disengage in the long term. And, because energy is an essential service, consumers should be able to expect to receive fair treatment from their own and other suppliers.
Purpose	The metric is used to measure the consumer's trust in the energy markets. A high level of consumer confidence in the market allows for a more active participation. However, trust is a complex concept and when assessing the situation, an NRA must be careful to attain an accurate picture of the situation. In addition to the outcome of this metric, more background information, including the results from the other metrics, is necessary to fully understand the situation.
Source of data	NRA's may rely on existing national consumer surveys or on the DG Justice Consumer Scoreboard.

2

Quantification	<p>This indicator should be the result of a survey based on a representative sample of the consumer population in terms of gender, age, location, socio-economic category. The targeted interlocutor is the person in the household in charge of electricity and gas bills payment.</p> <p>There should be different panels for gas and electricity.</p> <p>Survey questions should cover the following dimensions: consumer evaluation of competition, consequence of competition in terms of service quality and price development, etc.</p> <p>NRAs are welcome to define questions that best fits their national context after consultation with experts in surveys. A large set of pilots is provided as an example of possible approaches.</p>
Frequency	This metric should be measured annually or, at least, every 3 years.
Unit of measure	For each question, percentage of consumers choosing the different possible answers.
Data completeness	N/A

1

Metric 17	Percentage of consumers having access to at least one independent and verified price comparison tool
Description	Percentage of consumers having access to offers through at least one independent and verified price comparison tool
Purpose	<p>This metric is used to measure whether the consumer has the possibility to identify the best offers. The easier the consumer can estimate available savings, the more informed their decision will be to either switch to a better offer or stay with the current deal.</p> <p>An independent and verified price comparison tool (PCT) is a powerful empowerment tool to make comparisons easier for consumers. A PCT is a tool, generally a web page, which lists all the offers available to the consumer and where they can evaluate the potential benefits of switching. Such a tool can be considered:</p> <ul style="list-style-type: none"> - <u>Independent</u>: as long as it is free from any commercial bias. - <u>Verified</u>: if the check made by the NRA, or another competent authority, shows that the tool is correct, accurate and exhaustive. <ul style="list-style-type: none"> o Exhaustiveness: all prices and products available for all customers should be shown as a first step. If not possible, the Comparison Tool should clearly state this before showing results. After the initial search, the option to filter

2

	<p>results should be offered to the customer.</p> <ul style="list-style-type: none"> o Correctness and accuracy: price information used in the comparison should be updated as often as necessary to correctly reflect prices available on the market.
Source of data	This indicator should be the result of research made by the NRA.
Quantification	<p>The percentage of consumers is calculated on the basis of the number of consumers that have access to an independent and verified comparison tool, relative to the total amount of consumers. This PCT has been identified as an independent and verified tool by the NRA.</p> <p>This metric should be calculated separately for gas and electricity. Similarly, metric 11 should also focus on whether at least one of such PCTs lists offers that are relevant for all categories of consumers (for geographical or technical issues there may be some consumers who cannot find relevant offers on any PCTs).</p> <p>“Having access to a PCT” requires that consumers can actually find at least one alternative offer from an alternative supplier for their connection point, assuming that they can access the internet. (The intention is not to measure the possibility for consumers to access the internet.)</p>
Frequency	This metric should be measured annually.
Unit of measure	Percentage of consumers having access to relevant offers through an independent and verified price comparison tool
Data completeness	N/A

1

Metric 18	Percentage of consumers having access to online historical consumption information
Description	Percentage of consumers having access to online historical consumption information
Purpose	<p>This metric is used to measure the possibility for consumers to access their consumption data through online tools. Having access to accurate historical consumption data enables consumers to compare alternative offers available in the market and make informed choices. It is also important for a consumer to get insight into their historical consumption in relation to the impact on the bill. This may, in turn, help towards a more responsible use of energy.</p> <p>Online access seems the most convenient way to access consumption data when required, especially in the case of a large amount of data (such as hourly billing).</p>
Source of data	Research conducted by the NRA and, potentially, information requests to retailers and/or regulated companies.
Quantification	Data available to the consumer must go back at least 3 years, if such data is available to the concerned supplier or DSO (if the customer is in the supplier / DSO portfolio for less than 3 years, the data available must cover the whole period starting from the entry of the customer in the portfolio).

2

	<p>The percentage should be broken down into four categories depending on the level of detail provided:</p> <ul style="list-style-type: none"> - annual data; - monthly data; - daily data; - all the data required by the current supplier in order to proceed to billing: consumption on each billing period (annual, monthly, peak / off-peak, hourly,...). <p>The metric should be calculated separately for gas and electricity.</p>
Frequency	This metric should be measured annually.
Unit of measure	Percentage of consumers having access to online historical consumption information relative to the total number of consumers in the member state, to be broken down, if possible, by category as illustrated above.
Data completeness	N/A

1

Metric 19	Percentage of consumers having access to standardised supplier switching process (and its duration)
Description	Percentage of consumers having access to standardised supplier switching process (and its duration)
Purpose	<p>This metric is used to measure the availability of a standardised supplier switching process for consumers. An easy to use and quick switching process can spur further consumer engagement. This metric will inform NRAs about any needs for measures to improve the existing switching process.</p> <p>According to the 3rd Package, a supplier switch should take no longer than three weeks, and consumers should receive their final bill within six weeks. In the CEER Guidelines of Good Practice on electricity and gas retail market design, with a focus on switching and billing, there are three recommendations regarding the timing on a supplier switch:</p> <ol style="list-style-type: none"> 1. A switch should be executed as quickly as possible. This could be as quickly as within 24 hours and in any case within three weeks. 2. A switch should be possible any day of the week. 3. No market actor should be able to stop an initiated switch except for limited cases foreseen in the regulatory framework.
Source of data	Research conducted by the NRA and potentially information requests to retailers and/or regulated companies.
Quantification	<p>In order to quantify this metric, the NRA should first of all verify the implementation of the switching process with the DSOs. It should also calculate the average time between:</p> <ul style="list-style-type: none"> - the date of the switching request made by the supplier, with all required data provided; and - the date when the actual transfer of the client is completed.

2

	The time required to resolve any legitimate disputes that prevent the transfer according to national regulations should not be included in the calculation.
Frequency	The duration should be measured monthly to annually. The percentage of consumers having access to a standardised switching process should be measured annually.
Unit of measure	Regarding the access of consumers to a standardised switching process: percentage of consumers out of the total number of consumers in the MS. Regarding the duration of the switching process: average number of working days to complete the process across all suppliers.
Data completeness	NRAs should have access to such information as part of their existing market monitoring of 3 rd Package indicators.

1
 2 **Request No. EU to LGC 1-056** Witness & Respondent: Samuel Nash Vautier Golding

3 **REQUEST:** Page 59, line 12: Do you consider default energy supply options as providing
 4 customer engagement?

5 **RESPONSE:** In the context of the question, yes. (The answer is self-evident to the degree that
 6 I’m curious how anybody could think otherwise.)

7 However, the context of my testimony that the question cites is rather more specific and prudent
 8 in these regards. Bates p. 59 lines 12-14 reads:

9 *“Sufficient consumer engagement where switches, renegotiations and prosumers are*
 10 *assessed on a yearly basis. In general, a well-functioning market is one in which a*
 11 *significant number of consumers engage with the market on a regular basis.”*

12 Refer to the table on Bates p. 60 for the specific metrics the Council of European Regulators uses
 13 to track progress for this and other key properties of well-functioning markets. Refer to Bates p.
 14 59, footnote 19 for the report from which this table was taken, refer to page 3/74 therein for
 15 documents related to the report, and refer therein to the “2017 Handbook for National Energy
 16 Regulators How to assess retail market functioning”, pages 11 through 17 for detailed tables
 17 summarizing the following for each metric related to this key property: Metric Name;
 18 Description; Purpose; Source of Data; Quantification; Frequency; Unit of Measure; and Data
 19 Completeness.

- 1 The aforementioned “2017 Handbook for National Energy Regulators How to assess retail
 2 market functioning” is available online here: [https://www.ceer.eu/documents/104400/-/-](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)
 3 [/840b4ce7-9e4a-5ecc-403a-fad85d6ba268](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)
 4 The tables available therein are excerpted below for your convenience:

3.7 Key property VII: Sufficient consumer engagement

A well-functioning market is one in which a number of consumers engage with the market.

Metric 20: Supplier switching rate

Metric 20	Supplier switching rate
Description	The rate at which consumers switch or engage with energy suppliers or the wider market, measured on a yearly basis. The switching rate alone may be a crude measure of supplier engagement. In this metric the definition of switching is extended to also include another measure of consumer engagement, namely the renegotiation of contracts.
Purpose	This metric is used to measure the active engagement of consumers in the energy retail market. The supplier switching rate is one of these measures. It is directly linked with the level of competition, since the switching rate affects the market share of competing companies and thus puts competitive pressure on energy suppliers. Supplier switching, or the threat thereof, can stimulate companies to offer better products and services. Supplier switching must be observed over time, as only a long-term perspective can contribute to a better understanding of what triggers supplier switching and how a competitive market reacts to this. In addition to this, renegotiated contracts could be measured. Consumers who actively decide to renegotiate their contracts with their current supplier also put competitive pressure on their energy supplier.
Source of data	Information requests to DSOs/national point of information exchange (data hub) and retailers. Wider measures of household consumer engagement among household consumers may be gathered through survey data (the latter will be consumer perceptions of the switching experience).
Quantification	For completeness, the NRA should quantify both the customer switching to a new supplier and the renegotiation of contracts with the existing supplier. A switch is counted when a consumer moves from one energy supplier to a competing energy supplier. Switches are measured separately for household and business consumers. The definition of switching should follow the methodology established for data collection in the CEER database, feeding into ACER/CEER MMR.

5

	The number of renegotiated contracts with the existing suppliers should, ideally, exclude automatic roll-overs and changes that only affect payment method or account management. Note that this measure, also defined as “internal switching”, is a metric included in the DG JUST Consumer Scoreboard.
Frequency	This metric should be measured annually.
Unit of measure	For the switching rate: Percentage of meter points, supplier customer accounts, and/or consumption volume that switched supplier in a given year relative to the average number of meter points/customer accounts or total consumption volume in the relevant market. For the number of renegotiations: Percentage of number of renegotiations relative to the total number of supplier meter points /customer account (if the data is gathered from suppliers) or consumers (if the data is gathered through a consumer survey).
Data completeness	NRAs have access to such information normally through monitoring or through the national statistical responsible body. Issues with availability of survey data are foreseeable.

1

Metric 21	Percentage of inactive consumers
Description	Inactive consumers are defined here as consumers who have neither switched supplier/product nor actively searched for better deals. As a proxy, consumers considered as inactive are contracted on a default contract and have not made a choice of supplier in the market. The definition of default contract depends on the national context. What constitutes a default contract should be clearly specified when undertaking the assessment.
Purpose	The metric is used to measure the lack of consumer involvement in the market. Inactive consumers represent the share of consumers that do not actively participate in liberalised market processes. Inactive consumers may lack the opportunity to participate in liberalised market processes altogether depending on the national context. The metric can help inform NRAs’ policies aimed at improving the level of consumer engagement and stimulating competitive pressure on suppliers.
Source of data	Information requests to retailers (incumbents, default suppliers, or suppliers of last resort) and regulated companies. Consumer surveys can also be used.
Quantification	Number of consumers who have not switched supplier for the last 3 years and are contracted on a default contract. What constitutes a default contract should be clearly specified when undertaking the assessment. Inactive consumers are measured separately for gas and electricity. Inactive consumers are measured separately for household and business consumers. Number of consumers who have never switched (based on survey data). Number of consumers who have <u>not</u> actively searched for better deals within the last 3 years (based on survey data).

2

1

Frequency	This metric should be measured annually.
Unit of measure	Percentage: Number of inactive consumers relative to the total number of supplier meter points/customer accounts. Percentage: Number of consumers who have never switched relative to number of consumers. Percentage: Number of consumers who have not actively searched for better deals relative to number of consumers.
Data completeness	Issues with availability of survey data are foreseeable.

2

Metric 22	Percentage of prosumers
Description	Self-generation of energy allows consumers to become active “prosumers”. Being able to produce and consume energy, by using different available technologies (e.g. roof solar photovoltaic panels, batteries), allows the consumer to engage actively in the market. Prosumers are consumers who produce energy on-site, behind a metering point capable of registering at least their hourly generation and consumption, making production data available ⁹ . Small generation plants connected at distribution level, for which there is not on-site production, are not typically classified as prosumers. The percentage of consumers engaging in distribution-level schemes could nonetheless be relevant to measure, e.g. community initiatives. Equally, this applies to consumers living in multi-dwelling buildings that may have come together to invest in generation capacity.
Purpose	This metric is used to measure the percentage of “prosumers” engaged with the market for self-consumed energy and related services. It indicates the percentage of consumers that participate actively in the energy transition, by producing energy on-site. This could include prosumers living in multi-dwelling buildings that have a metering scheme that differs from the traditional definition of prosumers as being behind one metering point. As a separate measure, the level of consumers engaged in distribution-level schemes in the local community could be measured. Where the latter is measured, this must be clearly specified.
Source of data	This could be DSOs/TSOs or any registers or organisations for prosumers. This list is not exhaustive.
Quantification	The percentage of prosumers is calculated as the share of consumers that are registered and defined as prosumers on the national level. The method of registration and definition may be subject to national specificities; however, if a definition of prosumers also includes generation beyond a consumer’s metering point this must be clearly specified. The share of prosumers engaged in schemes in multi-dwelling buildings either as a separate measure, or if specified, as part of the general definition of prosumer. The share of prosumers engaged in local schemes at distribution level.
Frequency	This metric should be measured annually.

Unit of measure	Percentage: Prosumers relative to the total number of supplier meter points/customer accounts.
Data completeness	This is a new monitoring area for most NRAs. Data availability and completeness may be an issue.

1
 2 **Request No. EU to LGC 1-057** Witness & Respondent: Samuel Nash Vautier Golding

3 **REQUEST:** Page 59, lines 15-17: What do you consider as appropriate
 4 consumer protections? Which customer types do you consider as most vulnerable?

5 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
 6 testimony, as it asks the witness to undertake additional analysis and develop new information as
 7 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
 8 objection, the witness provides the following responses:

9 Refer to the table on Bates p. 60 for the specific metrics the Council of European Regulators uses
 10 to track progress for this and other key properties of well-functioning markets. Refer to Bates p.
 11 59, footnote 19 for the report from which this table was taken, refer to page 3/74 therein for
 12 documents related to the report, and refer therein to the “*2017 Handbook for National Energy*
 13 *Regulators How to assess retail market functioning*”, pages 11 through 17 for detailed tables
 14 summarizing the following for each metric related to this key property: Metric Name;
 15 Description; Purpose; Source of Data; Quantification; Frequency; Unit of Measure; and Data
 16 Completeness.

17 The aforementioned “*2017 Handbook for National Energy Regulators How to assess retail*
 18 *market functioning*” is available online here: [https://www.ceer.eu/documents/104400/-/-](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)
 19 [/840b4ce7-9e4a-5ecc-403a-fad85d6ba268](https://www.ceer.eu/documents/104400/-/-/840b4ce7-9e4a-5ecc-403a-fad85d6ba268)

20 The tables available therein are excerpted below for your convenience:

3.8 Key property VIII: 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.

Metric 23: Time between notification to pay and disconnection for non-payment

Metric 23	Time between notification to pay and disconnection for non-payment
Description	This is the time period between the notice to pay/notice of disconnection after missing payments and the disconnection of the customer.
Purpose	This metric should be used to assess the level of protection against disconnections due to non-payment, in conjunction with metric 24 on number of disconnections for non-payment. In selected cases, suppliers and/or DSOs can disconnect consumers from electricity and gas networks. Specific consumer protection legislation foresees a number of provisions to mitigate disconnecting household consumers in cases of non-payment of bills. However, if those consumers continue to fail to pay their bills, suppliers and DSOs can disconnect them. Most MSs have installed a procedure for disconnections, which foresees a certain period between non-payment and disconnection, to settle due amounts. That is why this metric should be assessed in conjunction with the other metric on the number of disconnections due to non-payment.
Source of data	This metric should first be evaluated from a legal point of view. To evaluate this metric from a practical point of view, the NRA could submit an information request to either the retailer or the regulated company, depending on the national circumstances, to assess the minimum duration from non-payment to disconnection. The ADR/Ombudsman organisation may be considered as a source for information as well. If complaint handling is run by the NRA, this may be a source of information as well.
Quantification	Number of working days between the notice of disconnection after missing payments and the connection of the customer for both electricity and gas. When answering from a legal point of view, indicate the number of days fixed by law, and when answering from a practical point of view, indicate the average number of working days observed in practice. For the practical measure, consider that only households are included that do not make any payments toward the unpaid amounts (consumption in the past), nor do the households pay any upcoming instalments. It should also be assumed that the delivery of mail, notifications or similar warnings is instantaneous to make it possible to speak about an "absolute minimum" length of this duration.
Frequency	In case the regulated company (DSO) does not know the exact reason for a disconnection, as a proxy the total amount of disconnections by the DSO per request of the supplier, can be assessed. The metric should be measured annually.

1

2

1

Unit of measure	Number of working days, or days.
Data completeness	NRAs should have access to such information as part of their existing market monitoring of 3 rd Package indicators.

Metric 24	Percentage of disconnections due to non-payment
Description	In selected cases suppliers and/or DSOs can disconnect consumers from electricity and gas networks due to non-payment.
Purpose	<p>This metric should be used to assess the level of protection against disconnections due to non-payment, in conjunction with metric 23 on disconnection notification time. Specific consumer protection legislation foresees a number of provisions to mitigate disconnecting household consumers in cases of non-payment of bills. However, if those consumers continue to fail to pay their bills, suppliers and DSOs can disconnect them. Most MSs have installed a procedure for disconnections, which foresees a certain period between non-payment and disconnection, to settle due amounts. That is why this metric should be assessed in conjunction with the other metric on disconnections</p> <p>If prepayment meters are widely distributed and used as a tool to manage debt, the proportion of new prepayment meters installed for debt (and especially if they are accompanied by a Court order) should be monitored alongside the number of disconnections for debt.</p>
Source of data	Retailers and/or regulated companies. The ADR/Ombudsman organisation may be considered as a source for information as well.
Quantification	<p>To quantify this metric the NRA should use the following step-by-step approach:</p> <ol style="list-style-type: none"> 1. Determine the number of disconnected households due to non-payment t for electricity and gas separately during a given year; 2. Determine the share of disconnections by dividing the number of disconnections by the total amount of household metering points for electricity and gas separately during the same year. <p>If applicable, determine also the number of new prepayment meters installed for debt, using the same reference year as that used for disconnections.</p> <p>In case the regulated company (DSO) does not know the exact reason for a disconnection, as a proxy the total amount of disconnections by the DSO per request of the supplier, can be assessed.</p>
Frequency	The metric should be measured annually.
Unit of measure	Percentage of total electricity and/or gas disconnections in a given year, and if available: number and percentage of prepayment meters installed for debt.
Data completeness	NRAs should have access to such information as part of their existing market monitoring of 3 rd Package indicators.

2

Metric 25	Percentage of suppliers applying rules for key information in advertising and bills
Description	Consumers need to be provided with the means of assessing the offers against each other in a transparent and clear manner. The proportion of suppliers using minimum standards for key information in advertising and bills ideally identified separately and based on Annex 1 of the 2009 Directive, can serve as an indicator of suppliers' compliance with this provision. Rules for key information in advertising and bills are defined as legislation and/or self-regulation.
Purpose	The purpose of this metric is twofold. It monitors the existence in the MS of minimum information standards, as well as the proportion of suppliers complying with them. This is a complex area and when assessing the situation an NRA must be careful to attain an accurate picture of the situation. In addition to the outcome of this metric, more background information is necessary to fully understand the situation.
Source of data	Most likely sources will include legislation/license conditions and research conducted by NRAs on how suppliers comply with the standards. Consumer organisations and/or ADR/Ombudsmen could also be a source of information.
Quantification	At this point there is no one-size-fits-all approach to assess this metric. Ideally, and as a result, the outcome of the metric consists of: Rules for key information in advertising and bills are defined as legislation and/or self-regulation. For each of the rules, the proportion of active suppliers using it out of the total number of active suppliers. CEER encourages NRAs to explore the approach that is most suitable to the national circumstances. As a best practice example we refer to the pilot that is included in this handbook.
Frequency	The metric should be measured annually.
Unit of measure	Yes/no (list of standards) and, if feasible percentage of total amount of suppliers of electricity and/or gas.
Data completeness	This a relatively new and complex monitoring area, for which new research by NRA will be required

1
 2 **Request No. EU to LGC 1-058** Witness : Samuel Nash Vautier Golding
 3 Respondents: Samuel Golding and Clifton Below

4 **REQUEST:** Page 64, lines 5-7: If a New Hampshire “*market platform facilitates transactions*
 5 *between the wholesale generation market, the distribution utility, and the non-utility entities that*
 6 *serve retail customers and manage portfolios of distributed energy resources*” would such a
 7 platform be subject to FERC regulation? Please explain.

1 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
2 testimony, as it asks the witness to undertake additional research and analysis and develop new
3 information as part of a data request, which is not an appropriate use of discovery. It is also
4 seeking a legal opinion from someone who is not a lawyer. Notwithstanding the objection we
5 provide the following response:

6 A distribution system level transactive energy system platform (or platforms), the data
7 platform(s) supporting it, and all of the interconnected DERs and eIoT devices connected to the
8 distribution grid, including DG and storage that is less than 5 MW in capacity²³ and are not
9 participants in the ISO-NE FERC jurisdictional interstate wholesale electricity market
10 jurisdictional distribution grid should not be subject to FERC regulation. States have exclusive
11 jurisdiction over retail and intrastate wholesale sales of electricity and the entire distribution grid
12 (and generally things connected to that grid, especially including DERs and eIoT devices behind
13 retail meters) per the Federal Power Act and FERC and US Supreme Court interpretations of that
14 law. Please see the response to Request No. EU to LGC 1-006 for more detail and citations.

15 Of course the retail market, the state jurisdictional portion of the overall market, is and will
16 continue to be necessarily connected to the interstate wholesale markets, like the distribution grid
17 is connected to the transmission grid, so that interface and participation in those markets would
18 be subject to FERC regulation. Likewise, DERs including DG less than 5 MW that voluntarily
19 chooses to participate in the FERC jurisdictional ISO New England markets are subject to FERC
20 regulation with regard to that participation, even if they are connected to the distribution grid and
21 are behind a retail meter. We can't think of any good reason why a market interface, respecting
22 jurisdictional boundaries can't be drawn just like we have a clear boundary between what is
23 FERC jurisdictional transmission facilities and what is state jurisdictional distribution facilities
24 with the interface jointly managed and regulated.

²³ Any generator 5 MW or greater in capacity in New England is required to register as a FERC jurisdictional interstate wholesale market participant with ISO New England per OP No.14, so is subject to FERC regulation.

1 **Request No. EU to LGC 1-059** Witness & Respondent: Samuel Nash Vautier Golding

2 **REQUEST:** Page 64, line 9: Please elaborate on the term “permission-less innovation”.

3 **RESPONSE:** Refer to Bates p. 64, footnote 23: Refer to Lynne Kiesling and Michael Giberson,
4 "The need for electricity retail market reforms," Regulation. Fall 2017. Available online here:
5 <https://www.cato.org/sites/cato.org/files/serials/files/regulation/2017/9/regulation-v40n3-4.pdf>

6 **Request No. EU to LGC 1-060** Witness & Respondent: Samuel Nash Vautier Golding

7 **REQUEST:** Page 64, line 13: Does NH offer a large enough market to drive
8 the standardization of data exchange and market innovation? Please include comparison of NH
9 markets versus New England, Texas and California.

10 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
11 testimony, as it asks the witness to undertake additional analysis and develop new information as
12 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
13 objection, the witness provides the following responses:

14 New Hampshire, as a partially restructured market, is certainly behind the curve. Its relatively
15 small size is not of particular concern, however, in the context of the question as I understand it.

16 Refer to LGC 1-061. There are numerous third-party providers of Local Flexibility Markets, for
17 example, which have developed in mature, fully restructured organized electricity markets. My
18 understanding is that such companies, having already developed and deployed the necessary
19 capabilities — often with substantial public and private investment — are now actively seeking
20 opportunities to deploy their platforms in new markets at marginal cost.

21 In other words, New Hampshire is likely in a position to “free ride” upon the leadership and
22 hard-won lessons learned of other markets in this regard — because in the process, they have
23 collectively created a market of proven, innovative data platform providers, in competition with
24 one another for market share beyond the confines of their respective native domains.

1 Moreover, these are software companies. As any software market matures (i.e. become
2 standardized in terms of functionality) it becomes a commodity. As such, software companies
3 are naturally — and keenly! — motivated to capture sufficient market share in strategic domains
4 so as to create a ‘network effect’ as a means to foreclose their competition. As such, providers
5 will almost certainly view the opportunity to deploy a statewide platform in New Hampshire as a
6 “first mover” competitive advantage in capturing and thereby unifying additional state-level
7 markets within ISO-NE.

8 Given such context, I would be surprised if New Hampshire were unable to extract advantageous
9 contractual concessions beyond pure pricing dimensions from qualified bidders e.g.
10 performance-based contracting, et cetera.

11 **Request No. EU to LGC 1-061** **Witness & Respondent: Samuel Nash Vautier Golding**

12 **REQUEST:** Page 65, line 4: Please explain “Local Flexibility Markets” referenced in simple
13 diagram provided.

14 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
15 testimony, as it asks the witness to undertake additional analysis and develop new information as
16 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
17 objection, the witness provides the following responses:

18 Local flexibility markets (LFM) are a platform approach to allowing intelligent load
19 management devices and DERs to be autonomously coordinated in a decentralized manner that
20 is co-optimized across all the horizontal segments of the electric power system. The platform
21 spans multiple Electric Distribution Company territories and is naturally operated by neutral
22 third parties.

23 (Note that a market framework has to be constructed to enable this flexibility because of the lack
24 of distribution locational marginal pricing — the advent of which will obviate transaction costs
25 while increasing market efficiency).

1 Particularly in the context of increasing variable renewable penetration, closure of thermal power
2 plants, and the multi-sectoral electrification that decarbonization entails (which at-scale
3 confound forecasting and traditional planning, resource adequacy and operating regimes), active
4 orchestration of a growing “grid edge” asset fleet enables efficient allocation of capital across all
5 geographic and temporal dimensions — which are, generically:

- 6 1. Over the short-term and at the regional level: lessening renewable curtailment, price
7 volatility, high voltage network congestion and ancillary service requirements;
- 8 2. Over the short- to medium-term and at the local level: lessening operational stress on existing
9 low-voltage network components while steering investment in retail technologies and
10 enabling services towards specific geographies where deployments create system value; and
- 11 3. Over the medium- to long-term and at both the local and regional levels: deferring and
12 refining (i.e. minimizing stranded cost) investments in both generation capacity and low-
13 voltage and high-voltage network upgrades.

14 Local flexibility markets are thus not only beneficial for retail customers, who receive an
15 additional revenue stream in exchange for their demand flexibility and DER dispatch, but for the
16 system as a whole.

17 From the perspective of an Electric Distribution Company, such markets offer the means to
18 forego capital expenditures in favor of operational expenditures that procure products from
19 aggregators to manage congestion on low-voltage networks. This naturally requires the utility to
20 become a “wires only” enterprise and the evolution of a suitable regulatory regime (e.g. RIIO in
21 the UK being one such example).

22 An electric distribution company facing network capacity constraints due to the penetration of
23 DERs could, for example, transact with aggregators managing fleets of DER and trading
24 capacity on the local flexibility market platform so as to curtail demand during times of
25 congestion — or publish operating envelopes around which aggregators trade capacity with one

1 another to achieve the same operational objective. Load usage patterns are actively shaped in this
2 fashion, within targeted geographies, to elevate the level of distributed generation
3 interconnection that would otherwise (i.e. absent the market) require upgrades to the underlying
4 network. Further, the development of such a platform architecture enables more granular and
5 societally equitable marginal cost pricing approaches in comparison to cost-averaging tariff-
6 based regimes, for example by facilitating bid-based capacity reservation tenders to manage the
7 charging of electric vehicles (to recover the cost of the network).

8 In fully restructured electricity markets, it is natural to assume such a holistic perspective and to
9 therefore plan and operate the system in relation to market activity across horizontal segments.
10 The need for a market-based approach to unlocking operational flexibility is thus as widely
11 established in the EU and Oceania as it is lacking in the USA (wherein state-level retail markets
12 remain almost all vertically integrated or partially restructured).

13 Below are a selection of useful resources in regard to the design of Local Flexibility Markets:

- 14 • Smart Grid Task Force (of the European Commission), “*Regulatory Recommendations for*
15 *the Deployment of Flexibility*”, 2015. Available online:
16 [https://ec.europa.eu/energy/sites/ener/files/documents/EG3%20Final%20-](https://ec.europa.eu/energy/sites/ener/files/documents/EG3%20Final%20-%20January%202015.pdf)
17 [%20January%202015.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/EG3%20Final%20-%20January%202015.pdf)
- 18 • CEER, “*Distribution Systems Working Group: Flexibility Use at Distribution Level*” 17 July
19 2018. Available online: [https://www.ceer.eu/documents/104400/-/-/e5186abe-67eb-4bb5-](https://www.ceer.eu/documents/104400/-/-/e5186abe-67eb-4bb5-1eb2-2237e1997bbc)
20 [1eb2-2237e1997bbc](https://www.ceer.eu/documents/104400/-/-/e5186abe-67eb-4bb5-1eb2-2237e1997bbc)
- 21 • INTERRFACE Consortium, “*INTERRFACE (TSO-DSO-Consumer INTERFACE*
22 *aRchitecture) to provide innovative Grid Services for an efficient power system,*” 2020.
23 Available online:
24 [https://cadmus.eui.eu/bitstream/handle/1814/64505/INTERRFACE_D2.4_v1.0.pdf?sequence](https://cadmus.eui.eu/bitstream/handle/1814/64505/INTERRFACE_D2.4_v1.0.pdf?sequence=1&isAllowed=y)
25 [=1&isAllowed=y](https://cadmus.eui.eu/bitstream/handle/1814/64505/INTERRFACE_D2.4_v1.0.pdf?sequence=1&isAllowed=y)

26 A refreshingly ‘matter of fact’ summary of many key concepts and mechanisms was (as usual)
27 published by the Nordic Council of Ministers in the 2017 report “*Demand Side Flexibility in the*
28 *Nordic Electricity Market from a Distribution System Operator Perspective*”, available online at:
29 <http://norden.diva-portal.org/smash/get/diva2:1167837/FULLTEXT01.pdf> . A selection of

1 quotes follows (note that they refer to Electric Distribution Companies as Distribution System
2 Operators, or “DSOs”):

3 *“Being a natural, regulated monopoly, the DSO cannot engage in services other than*
4 *grid. Hence, to mobilise the full set of incentives to end users, the DSOs rely on other*
5 *players taking a role towards end users – like energy service providers or aggregators.*
6 *For DSOs, financial incentives are the most likely instruments. This may be in the form of*
7 *grid tariffs, investment contributions or purchase of flexibility.*

8 *It is likely that many of the measures available to end users have a low marginal loss of*
9 *utility. For example, EV home charging can in most cases be done during off-peak hours*
10 *at night instead of during evening peak hours. Slow loads like hot water tanks or electric*
11 *cables may be switched off during peak hours with no real loss of utility.*

12 *To incentivize load shifting, tariffs must include a load based element. We discuss several*
13 *relevant models, and point out that dynamic models where the strength of the price signal*
14 *depends on the system load, rather than the individual end user load, are more effective*
15 *at producing network savings at low socio-economic costs than static models. Also, both*
16 *findings from previous studies, as well as comments from DSOs, show that peak load*
17 *problems in the grid can normally be addressed with targeted measures from a very*
18 *limited number of end users – possibly only 10% or less than the total number of*
19 *households. This means that targeted tariff and dynamic models will have significant cost*
20 *efficiency advantages over static, general models.*

21 *Purchase of flexibility could be organized directly between the DSO and the end user, or*
22 *via a third party. From a market perspective, the two models are very different. Direct*
23 *purchase from the DSO may be the most efficient model in isolation, but will also affect*
24 *market prices for flexibility and the possibility to develop market-driven models with*
25 *third-party players. Hence, DSO direct purchase could be negative for developing DSR*

1 *for use in established and future system services markets at TSO level, or new market*
 2 *solutions at TSO/DSO level.”*

3 This provide the context to understand why:

- 4 • *“In CEER’s view, flexibility products should be developed in the markets, and the role of the*
 5 *DSOs would be as user of flexibility that benefits the grids, i.e. the DSO purchases flexibility*
 6 *from third parties, but does not provide it.”*²⁴
- 7 • All four local flexibility market platforms currently deployed or under development in the
 8 EU across various member states (NODES, Piclo Flex, Enera, GOPACS) are operated by
 9 non-utility third parties to avoid the platform becoming “*monopolistic by nature*” and “*all*
 10 *projects engage or tend to engage with multiple DSOs*”.²⁵
- 11 • Similarly, local flexibility market platforms deployed in Oceania are operated by third parties
 12 and designed to operate across multiple Electric Distribution Company territories.
 13 Greensync’s “Distributed Energy Exchange” (DeX) platform is one such example.²⁶
 14 Designed in cooperation with 60+ stakeholders as a market platform spanning multiple
 15 Electric Distribution Companies and aggregators, I understand it to be in the early stages of
 16 deployment but apparently already managing ~500+ MW of DER and retail load flexibility
 17 (based upon somewhat dated conversations i.e. about a year ago).

18 These local flexibility market platforms are deployed, and thus evidently cost effective. Piclo
 19 Flex, to provide another example, reportedly has “200+ flexibility providers” offering “4.5 GWs
 20 of flexibility” at present.²⁷

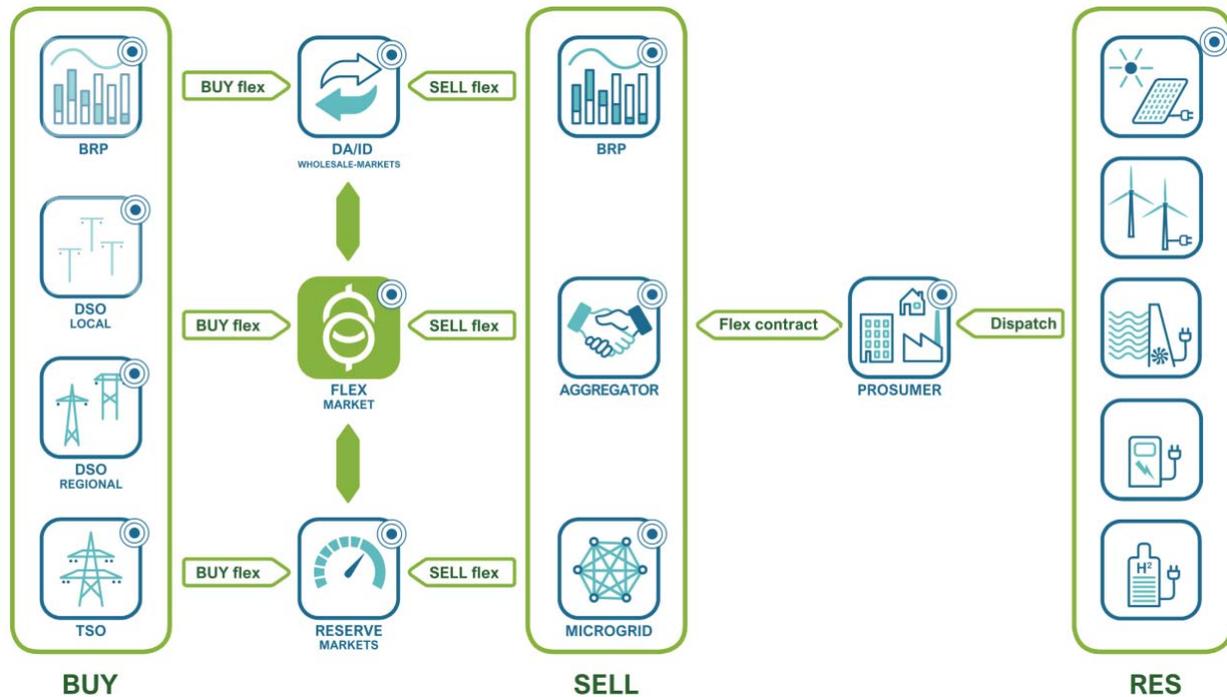
²⁴ CEER, “*Distribution Systems Working Group: Flexibility Use at Distribution Level*” 17 July 2018 at p. 10. Available online: <https://www.ceer.eu/documents/104400/-/-/e5186abe-67eb-4bb5-1eb2-2237e1997bbc>

²⁵ INTERFACE Consortium, “INTERFACE (TSO-DSO-Consumer INTERFACE aRchitecture) to provide innovative Grid Services for an efficient power system,” 2020, at page 43-44 and p. 50. Available online: https://cadmus.eui.eu/bitstream/handle/1814/64505/INTERFACE_D2.4_v1.0.pdf?sequence=1&isAllowed=y

²⁶ Refer online to: <https://arena.gov.au/projects/decentralised-energy-exchange/> and <https://greensync.com/>

²⁷ Refer online to: <https://picloflex.com/>

1 Whitepapers, status reports and background materials appear generally available off of each
 2 platform’s websites. Here is a useful simplified market schema from the NORD platform:²⁸



3
 4 Note that these market platforms do not obviate the need for aggregators to self-provide DERMS
 5 functionality.

6 **Request No. EU to LGC 1-062** Witness & Respondent: Samuel Nash Vautier Golding

7 **REQUEST:**

8 Page 65, lines 5-11: Please explain the following questions:

- 9 A. Should the utilities still offer energy supply for those customers who fall out of the
- 10 competitive energy market?
- 11 B. Who would coordinate the demand reduction and operation of the power system if the
- 12 distribution utilities only engage with customers for outage and interconnection requests?
- 13 C. Should regulators oversee these services outside “wires only” service?

14 **RESPONSE:**

²⁸ Refer online to: <https://nodesmarket.com/market-design/>

1 The LGC objects to this question as overly broad and beyond the scope of the testimony, as it
2 asks the witness to undertake additional analysis and develop new information as part of a data
3 request, which is not an appropriate use of discovery. Notwithstanding the objection, the witness
4 provides the following responses:

5 A) Eventually, no. Fully restructured markets confine monopoly power to the domains of natural
6 monopolies i.e. wires only. Refer to Bates p. 68.

7 B) Within a fully restructured market, demand management (“demand reduction” is an outdated
8 concept, mind you) naturally falls to aggregators, which are entities with both the incentives
9 and ability to do so under properly designed markets. Refer to section “*Do you expect that*
10 *Community Power Aggregators will help to fully implement RSA 374-F?*” beginning on Bates
11 p. 74. Electric distribution companies naturally maintain a role in the “operation of the power
12 system”, which is a rather broad phrase. Refer to LGC 1-065 and LGC 1-061.

13 C) Yes, though in a manner that comports with Principle XIV of the New Hampshire Electric
14 Restructuring Act i.e. primarily by ensuring the competitive market is functioning efficiently.
15 Refer to “*How should the statewide, multi-use online energy data platform be governed?*”
16 beginning on Bates page 82, “*What other metrics are used to track the maturity of retail*
17 *energy markets?*” beginning on Bates page 57, and “*How are fully restructured markets*
18 *governed in practice?*” beginning on Bates page 60.

19 **Request No. EU to LGC 1-063** **Witness & Respondent: Samuel Nash Vautier Golding**

20 **REQUEST:**

21 Page 77, line 4: Please elaborate on “intelligent management of distributed energy” and give
22 examples of CPA’s currently offering these services.

23 **RESPONSE:**

24 The LGC objects to this question as overly broad and beyond the scope of the testimony, as it
25 asks the witness to undertake additional analysis and develop new information as part of a data

1 request, which is not an appropriate use of discovery. Notwithstanding the objection, the witness
2 provides the following responses:

3 The most advanced CPA market to date is California. The experience of municipalities there is
4 encouraging. Nearly 200 communities have launched 15 separate agencies (most are joint action
5 power agencies) that are self-funded and evolving rapidly while selling competitively priced
6 electricity to 4+ million retail customers.

7 These agencies are collectively building more than 3,600 megawatts of renewable energy and
8 storage. Several have creating comprehensive multi-sectoral decarbonization plans. Many are
9 leveraging municipal authorities and collaborating with each other and with local and regional
10 agencies, legislators, utilities, labor, developers and manufacturers to remove barriers to rooftop
11 solar installations, electric vehicles and other retail innovations. One agency negotiated the siting
12 of a new electric bus factory, creating local jobs and the nation's first all-electric bus fleet in
13 partnership with their local transportation authority. Another submitted a lease application for
14 California's first offshore wind project. Others are building renewable microgrids for critical
15 facilities and business parks, and partnering with utilities and energy companies to replace a
16 natural gas peaker plant, causing health problems in low-income communities, with storage and
17 a virtual power plant of solar+storage deployed across low-income properties.

18 Below are a non-exhaustive variety of links regarding these CPA's current offerings and
19 initiatives specifically pertaining to the "intelligent management of distributed energy" in
20 operations, planning and codes and standards:

- 21 • <https://cal-cca.org/cca-programs/>
- 22 • <https://cal-cca.org/wp-content/uploads/2020/05/CCA-Resilience-Initiatives-August-2020.pdf>
- 23 • [https://www.greentechmedia.com/squared/dispatches-from-the-grid-edge/the-elusive-](https://www.greentechmedia.com/squared/dispatches-from-the-grid-edge/the-elusive-microgrid-tariff-begins-to-emerge-in-california)
24 [microgrid-tariff-begins-to-emerge-in-california](https://www.greentechmedia.com/squared/dispatches-from-the-grid-edge/the-elusive-microgrid-tariff-begins-to-emerge-in-california)
- 25 • <https://cal-cca.org/calcca-launching-new-community-energy-innovation-webinar-series/>

- 1 • <https://cal-cca.org/ebce-launches-first-of-its-kind-home-battery-backup-program/>
- 2 • <https://cal-cca.org/inside-clean-energy-whats-a-virtual-power-plant-bay-area-consumers-will-soon-find-out/>
- 3
- 4 • <https://cal-cca.org/clean-power-alliance-approves-new-five-year-clean-energy-programs-plan/>
- 5
- 6 • <https://cal-cca.org/calchoice-associate-member-pico-rivera-innovative-municipal-energy-prime-launches-distributed-energy-resources-program/>
- 7
- 8 • <https://cal-cca.org/peninsula-silicon-valley-collaboration-recognized-for-advancing-electrification-in-building-codes-ev-infrastructure/>
- 9

10 Almost all of this progress in California has occurred since 2016. This is what rapid, cost-
 11 effective decarbonization and retail market innovation looks like in practice, in my opinion —
 12 and it is replicable, because we now know how to design Community Power Aggregations
 13 correctly, to a large extent based on the industry’s practical experience in California.

14 Community Power New Hampshire is being designed based on these proven best practices, and
 15 leveraging the insights of experts like Clifton Below and Dr. Amro M. Farid (e.g. Lebanon’s
 16 transactive energy pilot with Dartmouth College and Liberty Utilities).

17 Senate Bill 286 has given Community Power Aggregations in New Hampshire even greater
 18 authorities, and thus promises even greater ability to innovate and create value in new ways for
 19 communities going forward.

20 **Request No. EU to LGC 1-064** **Witness & Respondent: Samuel Nash Vautier Golding**

21 **REQUEST:** Page 82, line 9: Please explain who should oversee the “decentralized
 22 coordination” of the markets.

23 **RESPONSE:** I believe that the section “*How should the statewide, multi-use online energy data*
 24 *platform be governed?*” of my Direct Testimony, which starts on Bates p. 82, substantially
 25 addresses this question.

26 **Request No. EU to LGC 1-065** **Witness & Respondent: Samuel Nash Vautier Golding**

1 **REQUEST:** Page 83, line 19: With regard to “technical knowledge” referenced, please provide
2 the qualifications of those with experience in power systems operation or electrical engineering
3 who participated in the Joint Action Summit referenced on Bates Page 80.

4 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
5 testimony, as it asks the witness to undertake additional analysis and develop new information as
6 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
7 objection, the witness provides the following responses:

8 Refer to Bates p. 89 through 93. There were over 80 elected officials, municipal staff and local
9 energy committee members in attendance at the event; while I’m unsure of — let alone in
10 possession of — all of their qualifications, among them were all the individuals that comprise
11 this Local Government Coalition. The keynote speaker was the CEO of Silicon Valley Clean
12 Energy Authority (a Community Choice Aggregator in California) Girish Balachandran, who is
13 an electrical engineer with over three decades of executive leadership experience in the public
14 power industry.

15 However, I would caution against what I perceive of as a fatal conceit within the question itself:
16 namely, that “*technical knowledge*” at a conference for Community Power Aggregations refers
17 solely to “*those with experience in power systems operation or electrical engineering*”.

18 The central challenge for New Hampshire and every other market going forward is as follows:

- 19 • The effective engagement of retail customers, in terms of the shaping of their load and use of
20 intelligent end-use devices and other DERs in a manner that preserves the core mission of the
21 industry through a period of unprecedented and interminable fundamental change for the
22 system driven by variable renewable generation, fleet retirements and decarbonization policy.
- 23 • The effective engagement of communities, that is to say municipal governments and regional
24 collaborations thereof and the diverse array of interest groups their decision-making naturally

1 and literally incorporates, in terms of re-orienting system planning under the aegis of these
2 entities in their carrying out of multi-sectoral decarbonization activities.

3 In that context, I would remind all those with “*experience in power systems operation or*
4 *electrical engineering*” of two considerations of paramount importance going forward that their
5 domain of expertise often fails to consider:

- 6 • Customers are not meters; and
- 7 • Communities exercise a broader scope of democratic decision-making and relevant planning
8 authorities that the electric utility industry needs to integrate into alignment with its own
9 planning in order to effectuate multi-sectoral decarbonization.

10 The Community Power Aggregator construct is designed specifically to bridge these gaps for
11 New Hampshire. With that in mind, refer to section “*Do you expect that Community Power*
12 *Aggregators will help to fully implement RSA 374-F?*” beginning on Bates p. 74 and contrast its
13 focus with that of section “*How would you characterize New Hampshire’s current retail market*
14 *structure?*” beginning on Bates p. 68.

15 **Request No. EU to LGC 1-066** **Witness & Respondent: Samuel Nash Vautier Golding**

16 **REQUEST:** Page 84, line 4: How specifically do you recommend that the Commission
17 structure governance based on the model in Texas? Who do you recommend as stakeholders in
18 the governance process?

19 **RESPONSE:** The LGC objects to this question as overly broad and beyond the scope of the
20 testimony, as it asks the witness to undertake additional analysis and develop new information as
21 part of a data request, which is not an appropriate use of discovery. Notwithstanding the
22 objection, the witness provides the following responses:

23 I believe that the section “*How should the statewide, multi-use online energy data platform be*
24 *governed?*” of my Direct Testimony, which starts on Bates p. 82, along with the section “*How*

1 *are fully restructured markets governed in practice?”*, which starts on Bates p. 60, and the
2 attachments from Bates p. 99 through 128, substantially addresses this question.

3 **Q. Does this conclude your rebuttal testimony?**

4 **A. Yes.**



**BYLAWS OF
THE RETAIL OPERATIONS COUNCIL
OF NEW HAMPSHIRE, INC.**

(A New Hampshire Non-Stock, Non-Profit Corporation)

Approved on [insert date]

ARTICLE 1 OFFICES

Section 1.1 Principal Office. The principal office of the Retail Operations Council of New Hampshire, Inc., a New Hampshire non-stock, non-profit corporation (“ROC”), shall be located at such place in New Hampshire as the ROC Board of Directors (the “Board”) may determine. Additional offices may be established and maintained at such place or places as the Board may from time to time designate.

Section 1.2 Registered Office and Registered Agent. ROC will maintain a registered office and a registered agent in New Hampshire. The Board may change the registered office and the registered agent as permitted by the New Hampshire [insert code reference] thereof.

ARTICLE 2 DEFINITIONS

For purposes of these Bylaws, the following definitions apply:

1. **Aggregator.** Aggregator shall mean any person or entity that aggregates but takes no ownership of the electricity needed to meet that aggregated load, as defined under Puc 2002.02.
2. **Affiliate.** Affiliate shall mean, with respect to any person, any other person who, directly or indirectly, through one or more intermediaries: (i) controls, is controlled by, or is under common control with such person, as set forth in Subsection (B) below; or (ii) exercises substantial influence over such person, is substantially influenced by such person, or is under common substantial influence with such person, as set forth in Subsection (C) below. Membership in ROC shall not create an affiliation with ROC.

(A) Construction

As used in this definition:

(x) “party” shall mean any individual, corporation, limited liability company, partnership, firm, joint venture, association, joint stock company, trust, unincorporated organization, or other entity;

(y) “person” shall mean any party, but shall exclude electric cooperatives and all of the entities listed in [insert code reference]; and

(z) “controls”, “controlled by”, or “under common control with” shall mean the possession by a person, directly or indirectly, through one or more intermediaries, of the power to direct or cause the direction of the

management and/or policies and procedures of another person, whether through voting securities, contract or otherwise.

(B) Affiliation Through Control

Ownership by a person of equity securities (whether publicly traded or not) of another person shall result in a presumption of no control for purposes of this definition if:

1. the holder owns (in its name or via intermediaries) less than 20 percent of the outstanding securities of the person; or
2. the holder owns (in its name or via intermediaries) 20 percent or more of the outstanding securities of the person, and:
 - a. the securities are held as an investment;
 - b. the holder does not have representation on the person's board of directors (or equivalent governing body) or vice versa; and
 - c. the holder does not in fact exercise influence over day to day management decisions.

An ownership interest of 20 percent or more without all of the conditions set forth in Subsection (B)(2)(a) through (c) above shall create a presumption of control that may be challenged pursuant to Subsection (D) below.

For purposes of determining whether two otherwise unrelated persons are affiliated based on a holder's ownership of equity securities of both persons, the holder's ownership interest shall not result in common control for purposes of this definition if such holder's ownership meets the foregoing conditions for either person.

(C) Affiliation Through Substantial Influence

A person who is not controlling, controlled by or under common control with another person as described in Subsection (B) above, may nonetheless be determined by the Board, pursuant to Subsection (D) below, to be an Affiliate of another person, if allegations brought before the Board are substantiated that such person, directly or indirectly, through one or more intermediaries, exercises substantial influence over such person, is substantially influenced by such person, or is under common substantial influence with such person. Such a determination may be made by the Board only after notice and an opportunity for hearing at a ROC Board meeting as set forth in Subsection (D).

(D) Procedure for Board Determinations Regarding Affiliation

1. Any party may challenge the presumption of control pursuant to Subsection (B) above, or allege substantial influence pursuant to Subsection (C) above, to the Board pursuant to the procedure set forth in this Subsection (D).
2. The challenging party shall submit written notice of the challenge to ROC's General Counsel. Such written notice shall identify any persons that are the subject of the challenge and shall include a detailed summary of the facts supporting the challenge. ROC's General Counsel will provide a recommendation to the Board on the challenge.
3. The Board will hear such matter at the next regularly-scheduled Board meeting that is at least ten (10) Business Days after the date the written notice of challenge is received by ROC's General Counsel. Notice of the Board's consideration of the challenge shall be given pursuant to Section 4.6(b) of these Bylaws.
4. The Board shall have discretion to determine whether the persons who are the subject of the challenge are Affiliates of one another for purposes of these Bylaws by reference to the factors set forth in this definition and other persuasive evidence. The challenging party shall bear the burden of proof.

(E) Changes in Affiliates

Members shall notify ROC of any change in Affiliates in accordance with Section 3.3(c) of these Bylaws.

2. **Community Power Aggregator ("CPA").** CPA has the meaning set forth in RSA 53-E:2, II, namely, "a municipality or county that engages in aggregation of electric customers within its boundaries" and shall mean a municipal or county aggregation established pursuant to RSA 53-E to group retail electric customers to provide, broker, or contract for electric power supply and energy services for such customers, including a group of such entities operating jointly pursuant to RSA 53-E:3, II(b) and RSA 53-A, as defined under Puc 2002.[insert code reference]
3. **Consumers.** Any entity meeting the definition for Residential Consumers, Commercial Consumers or Industrial Consumers as set forth in this Article.
4. **Commercial Consumers.** A commercial consumer in New Hampshire: (a) **Small and Medium Commercial Consumer** – A commercial consumer having a peak

demand of [insert number] kilowatts or less (or an organization representing such consumers); (b) **Large Commercial Consumer** – A commercial consumer having a peak demand of greater than [insert number] kilowatts. An entity applying for ROC membership as either a Small and Medium Commercial Consumer or a Large Commercial Consumer is ineligible if that entity has interests in the electric industry in any other capacity than as an end-use consumer or customer generator, as defined under RSA 362-A:1-a II-b, or represents the interests of another entity that has interests in the electric industry in any other capacity than as an end-use consumer or customer generator, as defined under RSA 362-A:1-a II-b, such as but not limited to, aggregators, competitive electric power suppliers, competitive natural gas suppliers, transmission or distribution companies, local distribution companies, cooperatives, municipals, or generators and the interest is of such an extent or nature that its decisions might be affected or determined by it. The three Consumer Directors have the right to determine by majority vote of the Consumer Directors whether any applicant or member is ineligible, as described above, to become or remain a member of the Consumer Segment.

5. **Competitive electric power supplier (CEPS).** CEPS shall mean any person or entity that sells or offers to sell electricity to retail customers by using the transmission and/or distribution facilities of any public utility in New Hampshire, as defined under Puc 2002.04. A competitive electric power supplier includes but is not limited to owners of electric generating facilities, marketers of electricity, and municipalities selling or offering to sell electricity.
6. **Cooperative.** An entity operating in New Hampshire that is a corporation organized under [insert code reference] and operating under that chapter.
7. **Director.** A member of the Board of ROC.
8. **Distributed Energy Resource Company.** Any entity that is not a T&D Entity or Affiliate of a T&D Entity and that [insert definition and code reference, if applicable].
9. **Limited Producer.** Any entity that is not a T&D Entity or Affiliate of a T&D Entity and that (i) owns or controls generation capable of operating up to 5 MW in the ISO-NE Region, or (ii) is preparing to operate and control generation of up to 5 MW, as defined under RSA 362-A:1-a, III.
10. **Electric Distribution Company (“EDC”).**
 - a. An investor-held, for-profit “electric distribution company” as defined in [insert code reference]; or
 - b. An Affiliate of any such electric distribution company; or
 - c. A public utility holding company of any such electric distribution company.

11. **Eligible Voting Director.** A Seated Director of the Board of ROC other than the *ex officio* Director who is the Chairman of the New Hampshire Public Utility Commission (“NHPUC”), pursuant to these Bylaws, who votes in person or by proxy at a meeting properly noticed and held pursuant to these Bylaws.
12. **Eligible Voting Representative.** A Seated Representative, pursuant to these Bylaws, who votes in person or by proxy at a meeting properly noticed and held pursuant to these Bylaws.
13. **Entity.** An Entity includes an organization and all of its Affiliates.
14. **ROC Protocols.** The document adopted by ROC and approved by the Public Utility Commission of New Hampshire, as amended from time to time that contains the operating and planning policies, rules, guidelines, procedures, standards, and criteria of ROC.
15. **ISO-NE Region.** The geographic area and associated transmission and distribution facilities that are synchronously interconnected with electric utilities operating within the jurisdiction of the Independent System Operator of New England.
16. **Industrial Consumers.** An industrial consumer is a consumer with at least one meter with average monthly demand greater than [insert number] kilowatts consumed within New Hampshire engaged in an industrial process.
17. **Local Distribution Company.** [insert definition and code reference]
18. **Market Participant.** For purposes of these Bylaws, a Market Participant is (i) any entity that engages in any activity that is in whole or in part the subject of the ROC Protocols and has, or should have, a contract regarding such activities with ROC or (ii) any entity that qualifies for ROC membership.
19. **Market Segment.** For purposes of these Bylaws, any of the segments (all of which are defined within this Article 2 of these Bylaws) as follows:
 - (1) Aggregator;
 - (2) Competitive Electric Power Supplier;
 - (3) Cooperative;
 - (4) Community Power Aggregator;
 - (5) Distributed Energy Resource Company;
 - (6) EDC and LDC;
 - (7) Limited Producer;
 - (8) Municipal; or
 - (9) Consumer (including: (1) Commercial Consumer comprised of Small Commercial Consumer and Large Commercial Consumer, (2) Industrial Consumer, or (3) Residential Consumer).
20. **Market Segment Director.** A Director who has been elected by one of the Market

Segments.

21. **Member.** A member of ROC, the New Hampshire non-stock, non-profit corporation, which has been approved by ROC to meet the applicable membership qualifications described in Sections 3.1 and 3.2 of these Bylaws, or the member's appointed representative, as the context so requires.
22. **Municipal.** An entity operating in New Hampshire that owns or controls transmission or distribution facilities, owns or controls dispatchable generating facilities, or provides retail electric service and is a municipal owned utility as defined in [insert code reference]
23. **Officer.** An individual elected, appointed, or designated as an officer of an entity by the entity's governing authority or under the entity's governing documents.
24. **NHPUC.** The New Hampshire Public Utility Commission, which is the New Hampshire state agency that has responsibility and oversight of the activities conducted by ROC.
25. **Residential Consumers.** The appointed Board Director representing residential consumer interests, an organization or agency representing the interests of residential consumers in New Hampshire, or the Residential Consumer Representative on the Technical Advisory Committee ("TAC"). An entity applying for ROC membership as a Residential Consumer is ineligible if that entity has interests in the electric industry in any other capacity than as an end-use consumer or customer generator, as defined under RSA 362-A:1-a II-b, or represents the interests of another entity that has interests in the electric industry in any other capacity than as an end-use consumer or customer generator, as defined under RSA 362-A:1-a II-b, such as but not limited to, aggregators, power marketers, retail electric providers, transmission or distribution companies, cooperatives, municipals, or generators. The three Consumer Directors have the right to determine by majority vote of the Consumer Directors whether any applicant or member is ineligible, as described above, to become or remain a member of the Consumer Segment.
26. **Seated Director.** A Director, or the Director's designated Segment Alternate when serving in the Director's stead (if applicable), who is currently serving, having been selected in accordance with these Bylaws, regardless of attendance at meetings. A vacant position shall not be considered a "Seated Director".
27. **Seated Representative.** A TAC Representative (as defined in Section 5.1 of these Bylaws) or a member of a subcommittee of TAC, or the TAC Representative's designated alternate representatives when serving in the TAC Representative's stead (if applicable), who is currently serving, having been selected in accordance with these Bylaws, regardless of attendance at meetings. A vacant position shall not be considered a "Seated Representative".

28. **Segment.** For purposes of these Bylaws, a “Segment” refers to a Market Segment as defined in this Article 2 of these Bylaws.
29. **Segment Alternate.** A designated alternate Board representative, duly elected by his respective Market Segment, who can attend and vote at meetings in the absence of the respective Market Segment Director (including while such Director is unable to attend a Board meeting or while such Director’s seat is vacant). Each Segment Alternate must meet all qualifications of a Director and shall receive all Board materials.
30. **Transmission and Distribution (“T&D”) Entity.** Any entity that is an EDC, Cooperative or Municipal that owns or controls transmission and/or distribution facilities in the ISO-NE Region or any entity that is a “[insert term],” as defined in [insert code reference], operating in the ISO-NE Region.
31. **Unaffiliated Director.** A Director who is unaffiliated with a Market Participant and who meets the requirements identified in Section 4.3(b).

ARTICLE 3 MEMBERS

Section 3.1 Membership.

- (a) Members must qualify in one of the following segments as defined in Article 2:
- (1) Aggregator;
 - (2) Competitive Electric Power Supplier;
 - (3) Cooperative;
 - (4) Community Power Aggregator;
 - (5) Distributed Energy Resource Company;
 - (6) Electric Distribution Company and Local Distribution Company;
 - (7) Limited Producer;
 - (8) Municipal; or
 - (9) Consumer in one of three subsegments: (i) Residential, (ii) Small and Medium Commercial; and (iii) Large Commercial & Industrial.
- (b) Except for the Consumer Segment, Members must have an actual financial interest in the New Hampshire retail market or ISO-NE wholesale electric market and be able to do business in one of these markets. A Member must maintain its registration or certification by the NHPUC to the extent it is required to do so by statute or NHPUC rule.
- (c) The Board may adopt and amend Member application procedures.

Section 3.2 Membership Types and Voting Rights. ROC Members may be Full Members, Associate Members, or Adjunct Members as hereinafter described:

- (a) Full Members – shall have the rights and obligations as described in these Bylaws including the right to vote on all matters submitted to the general membership (such as election of Directors, election of TAC Representatives and amendments to the Certificate of Formation and these Bylaws).
- (b) Associate Members – shall have the rights and obligations as described in these Bylaws excluding the right to vote on any matter submitted to the general Membership (such as election of Directors, election of TAC Representatives and amendments to the Certificate of Formation and these Bylaws).
- (c) Adjunct Members – may be approved for Adjunct Membership by the Board if such entity does not meet the definitions and requirements to join as a Full or Associate Member. Adjunct Members shall have no right to vote on any matter submitted to the general Membership nor any right to be elected or appointed to the ROC Board, TAC or any subcommittee of the Board or TAC. Adjunct Members shall be bound by the same obligations as other Members of ROC.

Section 3.3 Obligations of All Members.

- (a) Each Member must comply with any applicable planning and operating criteria, procedures and guides adopted by or under the direction of the Board to maintain the integrity of the intrastate market, coordinate planning, promote comparable access to the intrastate market by all users and to further the exempt purposes of ROC.
- (b) Consistent with applicable laws and regulations, Members must share information at ROC's request as necessary for the furtherance of the exempt purposes or activities of ROC and consistent with NHPUC rules relating to confidentiality.
- (c) Each Member shall fully disclose any Affiliates in its annual Membership application submitted pursuant to procedures adopted under Section 3.1(c). If a Member's Affiliates change prior to submission of the next year's Membership application, the Member shall notify ROC of any change in writing by letter to the General Counsel or by the online link found on ROC's website on the Membership page. When there is a change to Affiliates previously submitted to ROC, the notice must be submitted upon the earliest of: (i) promptly after the Member's designated representative has obtained actual knowledge; (ii) promptly after any Member's representative who serves on a ROC governing body or committee with Membership representation (such as, the Board of Directors, Technical Advisory Committee or TAC subcommittee) has obtained actual knowledge; or (iii) within 90 days of a change to the Member's Affiliates. A Member's designated and voting representatives are responsible for taking steps to remain informed about the Member's Affiliates and for conducting a reasonable inquiry if they have reason to believe that there may have been a change in Affiliates.

Section 3.4 Annual Member Dues. Each Member annually shall pay dues to ROC (the

“Annual Member Dues”). Each Member shall pay its Annual Member Dues within thirty (30) days after receipt of ROC’s annual statement of such dues. Failure to do so shall constitute such Member as being in arrears. Except as provided below, Annual Member Dues for Full Members shall be \$2,000. Annual Member Dues for Associate Members shall be \$500. Annual Member Dues for Adjunct Members shall be \$500. The Annual Member Dues for Residential and Commercial Consumer Members shall be \$100 for Full Membership and \$50 for Associate Membership. Office of Consumer Advocate (“OCA”) and the appointed Residential Consumer TAC Representative(s) shall be eligible to be Full Members without the payment of Annual Member Dues. Any Member may request that the Member’s Annual Member Dues be waived by the Board of Directors for good cause shown.

Section 3.5 Representation. Each Member shall appoint a representative to receive notices from ROC and shall give to the ROC Chief Executive Officer (“CEO”) or his designee in writing (signed by a duly authorized representative of the Member) the name of the person thus appointed. For Full Members, such appointed representative shall also act on behalf of the Full Member at all meetings of the Full Members.

Section 3.6 Participation.

- (a) No Entity shall simultaneously hold more than one Full Membership. Any Entity may also simultaneously have a maximum of one seat on each of the following: the Board and TAC.
 - (1) Except for Adjunct Members, Members must qualify for Membership in a Segment. Entities may join ROC in any Segment in which they qualify for Membership provided that an Entity may join as a Full Member in only one Segment. In the event that an Entity qualifies for more than one Segment, such Entity may join such other Segments as an Associate Member upon payment of the Associate Annual Member Dues for each Segment in which such Entity desires to participate as an Associate Member. Once an Entity has applied to be and has been approved by ROC to meet the minimum qualifications as a Full Member of a Segment, the Entity must continue to vote in that Segment for a minimum of one year. If, at any point during the membership year, an Entity no longer meets qualifications for the Segment for which it was originally approved by ROC, the Entity may not vote in that Segment; however, that Entity may then immediately elect to become a Full Member in any Segment for which it does qualify. Except as otherwise provided in these Bylaws, an Associate Member may be selected by the Full Members of a Segment in which the Associate Member participates to serve as a voting member of the Board, TAC or any subcommittee of the Board or TAC.
- (b) Subject to any specific provisions in these Bylaws or the Certificate of Formation, each Full Member in good standing is entitled to one vote on each matter submitted to a vote of the Full Members. A Full Member in good standing is one that is not in arrears for payment of its Annual Member Dues for a Full

Membership or payment of any other fees owed to ROC unless in good faith disputed, is not in breach of any contract with ROC, and is not suspended or expelled as a Full Member as of the record date of the meeting. Full Members that are not in good standing are not entitled to vote on any matters unless and until they have regained good standing.

Section 3.7 Meetings of the Full Members.

- (a) Full Members shall meet at least annually on a date to be established by the Board (“Annual Meeting”). Except for appointed Directors, the representatives of the Full Members shall confirm the members of the Board at the Annual Meeting, and conduct such other business as may be properly brought before them.
- (b) Special meetings of the Full Members may be called by the Board.
- (c) Written or printed notice of any meeting of the Full Members shall be delivered to each Member at least three weeks prior to the date of the meeting. Notice to Members of such meetings shall be by mail, facsimile, or email. Notice shall include an agenda explaining the purpose of the meeting and any business upon which the Full Members will be requested to vote.
- (d) The record date for determining Full Members entitled to notice shall be on the Friday which is at least thirty days but not more than thirty-six days prior to the meeting date.
- (e) Representation at any meeting of ROC of at least fifty-one percent (51%) of the Full Members, in person or by proxy, shall constitute a quorum for the transaction of business at such meeting; and abstentions do not affect calculation of a quorum. Except as otherwise provided in these Bylaws, an act of fifty-one percent (51%) of the Full Members shall be the act of the Full Members. For purposes of voting of the Full Members, Full Members who abstain from voting shall not have their votes included in the total number of votes from which the requisite percentage of affirmative votes is required for action.
- (f) Written proxies may be used for meetings of the Full Members in accordance with any relevant provisions in these Bylaws and the New Hampshire [insert code reference] thereof. For any meeting of the Full Members, proxies shall count towards a quorum.
- (g) Unless otherwise provided by law, any action required or permitted to be taken at any meeting of the Full Members may be taken without a meeting, if a consent in writing, setting forth the action to be taken, is signed by a sufficient number of Full Members as would be necessary to take that action at a meeting at which all of the Full Members were present and voted. Full Members may participate in and hold a meeting by means of a 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 participating in the meeting, and participation in a meeting pursuant to this Section 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. Where action is taken without a meeting, notice of the proposed action shall be provided to Full Members in accordance with Section 3.7(c).

Section 3.8 Sanction, Suspension, Expulsion, or Termination of Members. No Member, either a Member organization or a Member representative, may be sanctioned, expelled or suspended, and no Membership or Memberships in ROC may be terminated or suspended except pursuant to the following procedure, which is intended to be fair and reasonable and carried out in good faith, absent a Board resolution providing an alternative procedure:

- (a) Written notice. An intent to terminate, expel or suspend a Member shall be preceded by twenty (20) days written notice of the date when a hearing will be held to determine whether the Member shall be expelled, suspended, terminated or sanctioned. Such notice shall set forth the reasons therefore. Said notice must be given by first class or certified mail sent to the last address of the Member to be expelled, suspended, terminated or sanctioned, as shown in ROC's records.
- (b) Hearing. An opportunity shall be provided for the Member to be heard, orally and in writing. The Member shall be entitled to have counsel present at and to participate in the hearing at his or its own expense, and to present and cross-examine any witnesses. The hearing shall be conducted at the next meeting of the Board for which there is time to give proper notice.
- (c) Liability. A Member who has been sanctioned, expelled, terminated or suspended shall be liable to ROC for fees as a result of obligations incurred or commitments made prior to sanction, expulsion, termination or suspension.
- (d) Challenges. Any proceeding challenging an expulsion, suspension, sanction or termination, including a proceeding in which defective notice is alleged, must be commenced within one year after the effective date of the expulsion, suspension, sanction or termination. Any such proceeding before the Board will be subject to the hearing requirements described in (b) of this section.

Section 3.9 Resignation. Any other provision of these Bylaws notwithstanding, any Member may withdraw from participation in the activities of ROC at any time upon written notice to the CEO, whereupon it shall cease to be a Member, shall cease to be entitled or obligated to participate in the activities of the Board, TAC or any subcommittee of the Board or TAC and shall have no further obligations as a Member; provided, however, that if such notice is given more than thirty (30) days after such Member's receipt of its statement of Annual Member Dues for a fiscal year, the Member shall be obligated to pay its Annual Member Dues for the full fiscal year within which such

termination is effective.

Section 3.10 Reinstatement. A former Member may submit a written request for reinstatement of Membership. The Board may choose to reinstate Membership on any reasonable terms that the Board deems appropriate.

Section 3.11 Property Ownership and Control. Subject to applicable laws, rules, regulations, agreements, and ROC Protocols, each Member shall retain sole control of its own facilities and the use thereof, and nothing in these Bylaws shall require a Member to construct or dedicate facilities for the benefit of any other electric system or allow its facilities to be used by any other Member, or to construct or provide any facilities for its own use, and nothing herein shall be deemed to impair the ability or right of any Member to take such actions or to fail to act, as it deems necessary or desirable, with respect to the management, extension, construction maintenance and operation of its own facilities, present and future. A Member has no interest in specific property of ROC and waives the right to require a partition of any ROC property.

ARTICLE 4 BOARD OF DIRECTORS

Section 4.1 Powers. The affairs of ROC shall be managed by the Board (“Board”).

Section 4.2 The Board. The Board shall be composed of a total of eighteen (18) Directors as follows:

- (a) The Chair of the NHPUC as an *ex officio* non-voting Director;
- (b) The CEO as an *ex officio* voting Director;
- (c) Five (5) voting Directors selected as Unaffiliated Directors.
- (d) The Consumer Advocate of OCA as an *ex officio* voting Director representing Residential Consumers;
- (e) One (1) voting Director elected by the Large Commercial & Industrial Consumer Segment and one (1) Segment Alternate;
- (f) One (1) voting Director elected by the Small and Medium Commercial Consumer Segment and one (1) Segment Alternate; and
- (g) Eight (8) voting Directors elected by their respective Segments as follows:
 - 1. One (1) Aggregator and one (1) Segment Alternate;
 - 2. One (1) Competitive Electric Power Supplier and one (1) Segment Alternate;

3. One (1) Cooperative and one (1) Segment Alternate;
4. One (1) Community Power Aggregator and one (1) Segment Alternate;
5. One (1) Distributed Energy Resource Company and one (1) Segment Alternative
6. One (1) Electric Distribution Company and Local Distribution Company and one (1) Segment Alternate;
7. One (1) Limited Producer and one (1) Segment Alternate; and
8. One (1) Municipal and one (1) Segment Alternate.

Section 4.3 Selection, Tenure, and Requirements of Directors and Segment Alternates.

(a) Selection of Market Segment Directors and Segment Alternates.

- (1) For Consumer Directors, the following shall apply: The Director and Segment Alternate from the Small and Medium Commercial Consumer subsegment shall be elected by the Small and Medium Commercial Consumer Full Members. If there are no Small and Medium Commercial Consumer Full Members eligible or willing to serve, then the current Small and Medium Commercial Consumer Director shall appoint the Consumer Director and Segment Alternate. The Large Commercial and Industrial Consumer Director and Segment Alternate shall be elected by the Large Commercial and Industrial Consumer Full Members.
- (2) Within each Market Segment represented on the Board (except for the Consumer Segment which follows the process described in Section 4.3(a)(1)), only Full Members of the respective Membership Segment for the available Board seat shall be allowed to elect a Director and a Segment Alternate for that seat.
- (3) The Board shall establish procedures for the election and appointment of new Directors, Segment Alternates and Representatives of TAC. A Segment may choose an alternate election procedure for the year by an affirmative vote of at least two-thirds of members of that Segment and may conduct elections as needed to fill any Director or Segment Alternate vacancies.
- (4) With regard to eligibility of Consumer Directors (other than the *ex officio* Consumer Director representing Residential Consumers), Market Segment Directors and Segment Alternates, the following shall apply:

- (i) Each Director and Segment Alternate respectively elected by the Commercial and Industrial Consumer subsegments or the Aggregator, Competitive Electric Service Provider, Community Power Aggregator, Distributed Energy Resource Company, Electric Distribution Company and Local Distribution Company, or Limited Producer Market Segments must be an employee of:
 - a. a Full or Associate Member; or
 - b. an Affiliate of a Full or Associate Member of the respective Market Segment or subsegment which provides services through the Affiliate's employees to such Full or Associate Member.
- (ii) Each Director and Segment Alternate respectively elected by the Large Commercial Consumer subsegment as described in Section 4.3(a)(1) or by the Cooperative or Municipal Market Segments must be an employee of a Full or Associate Member.
- (iii) Unless otherwise provided in these Bylaws, if a Director or Segment Alternate is elected or appointed to serve on the Board, such person is only eligible to serve in such capacity so long as he or she is an employee of the same Member or Affiliate as described in Section 4.3(a)(4)(i) (as applicable), as he or she was at the time of such election or appointment. If the Member or Affiliate as described in Section 4.3(a)(4)(i)(b) (as applicable) is subject to a corporate restructure for tax or operational purposes which is not the result of a merger or acquisition, then such restructure shall not affect the eligibility of the Director or Segment Alternate.

(b) Selection of Unaffiliated Directors.

- (1) The Nominating Committee shall consist of all of the voting Directors, other than the CEO. The Chair and Vice-Chair of the Nominating Committee shall be the Chair and Vice-Chair of the Board, respectively, absent a request for an election of these positions by a member of the Nominating Committee.
- (2) The Nominating Committee shall retain an executive search firm to locate and present candidates with the required qualifications. Qualifications for Unaffiliated Directors shall be as follows:
 - (i) Experience in one or more of these fields: senior corporate leadership; professional disciplines of finance, accounting, engineering or law; regulation of utilities; risk management; and information technology.
 - (ii) Independence of any Market Participant in the ISO-NE Region. Requirements of such independence include, but are not limited to,

the following:

- a. An Unaffiliated Director or family member (any spouse, parent, spouse of a parent, child or sibling, including step and adoptive relatives and household member) shall not have the following:
 - 1. Current or recent ties (within the last two years) as a director, or Officer of a Market Participant or its Affiliates;
 - 2. Current or recent ties (within the last two years) as an employee of a ROC Member or NERC-Registered Entity operating in the ISO-NE Region;
 - 3. Direct business relationships, other than retail customer relationships, with a Market Participant or its Affiliates; and
 - 4. To the extent that an Unaffiliated Director or family member (any spouse, parent, spouse of a parent, child or sibling, including step and adoptive relatives) living in the same household or any other household member owns stocks or bonds of Market Participants, these must be divested or placed in a blind trust prior to being seated on the Board.
 - b. An Unaffiliated Director shall not have any relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a ROC board member, including the Delegated Authority pursuant to these Bylaws.
 - (iii) Residence in the State of New Hampshire is preferred.
 - (iv) Other criteria as approved by the Board.
- (3) The Nominating Committee or its subcommittee shall interview the qualified candidates; and the Nominating Committee shall select, by at least a two-thirds majority, an Unaffiliated Director(s) (as such seat is vacant) to present to ROC Membership for its approval.
 - (4) The Membership shall vote by Segment as described in Section 13.1(d) in favor or against the proposed Unaffiliated Director(s) as needed to fill Unaffiliated Director positions. A proposed Unaffiliated Director(s) that is approved by at least five out of nine Segments shall be elected as an Unaffiliated Director(s). Upon election by the Membership, ROC staff shall file a petition for approval of the Unaffiliated Director(s) with the NHPUC.

- (5) The Membership-elected Unaffiliated Director(s) shall be seated only upon approval by the NHPUC. If elected by the Membership, an Unaffiliated Director shall not begin service for his initial term and be seated on the Board until the NHPUC approves such election. An Unaffiliated Director who has been elected by the Membership for any renewal term shall cease service on the Board upon expiration of the Unaffiliated Director's current term and shall not be re-seated on the Board for a renewal term until the NHPUC approves such election of the Unaffiliated Director for a renewal term. If the NHPUC does not approve of the Unaffiliated Director for any of the initial or renewal terms, then the Nominating Committee shall recommend another Unaffiliated Director candidate to the Membership for election and, if elected by the Membership, for approval by the NHPUC as soon as reasonably possible.
- (c) Terms. The term for all Market Segment Directors shall be for one year. Any Market Segment Director may be reappointed or reelected for consecutive terms. The term for all Unaffiliated Directors shall be three-year terms, which shall be staggered to the extent possible, unless changed by Amendment to these Bylaws. An Unaffiliated Director may be reelected for up to two consecutive terms. In order to serve on the Board during their terms, all Directors and Segment Alternates shall continuously remain in good standing and meet their respective minimum requirements and qualifications of their Director and Segment Alternate positions, respectively.
- (d) Director Voting Weights. All voting Directors shall have a single vote each.
- (e) Alternates and Proxies. Market Segment Directors with a Segment Alternate may not designate other alternate representatives and may not designate another Director as a proxy unless their Segment Alternate is unavailable. Unaffiliated Directors may designate another Director, preferably an Unaffiliated Director whenever possible, as a proxy if unable to attend a Board meeting. Consumer Directors and *ex officio* Directors may designate a proxy or an alternate representative who may attend meetings and vote (if applicable) in the absence of such Director.
- (f) Prohibitions on Certain Stakeholder Memberships and Representation. With the exception of the Consumer Advocate and representatives of OCA, no Director or Segment Alternate shall vote or otherwise become or hold themselves out as a member, representative or alternate of TAC; any of TAC's subcommittees, task forces or working groups; or any other group the decisions of which may ultimately be appealed to the Board. For a period of one year from the last date of service as an Unaffiliated Director, the former Unaffiliated Director shall not represent a Market Participant before the Board, TAC, any of TAC's subcommittees, task forces or working groups.

Section 4.4 Chair and Vice Chair. Annually and as needed, the Board shall elect, from the Board's membership, by an act of the Board as set forth in Section 4.7, a Chair and

a Vice Chair. The Chair shall be one of the Unaffiliated Directors. The Vice Chair shall be an Unaffiliated Director who may serve as needed in the Chair's absence (including a vacancy of the Chair position). The CEO shall not be qualified to act as the Vice Chair.

Section 4.5 Vacancies and Removal.

- (a) A vacancy of a Director or Segment Alternate position will occur if: (1) the respective Director, other than an Unaffiliated Director, or Segment Alternate elected or appointed is no longer employed by the Entity for which the Director or Segment Alternate was employed at the time of his election or appointment; (2) the respective Director or Segment Alternate resigns his Director or Segment Alternate position from the Board; or (3) the Director or Segment Alternate is removed from the Board in accordance with the provisions of Section 4.5(b).
- (b) A Director or Segment Alternate may be removed: (1) with or without cause at any time by whomever had the right to appoint such respective Director or Segment Alternate, or if elected, by an affirmative vote of sixty percent (60%) of the Members allowed to elect that Director or Segment Alternate; or (2) with cause by the Board upon at least seventy-five percent (75%) affirmative votes of the eligible, remaining voting Directors. Removal shall occur if: (1) a Director, other than an Unaffiliated Director, a Segment Alternate, or the organization that a Director, other than an Unaffiliated Director, or Segment Alternate represents no longer meets the criteria of their representative Segment; or (2) an Unaffiliated Director, a Director, a Segment Alternate, or the organization that a Director or Segment Alternate represents is: (A) found by the Board to have committed a prohibited act as identified in Section 9.3 of these Bylaws pursuant to and after completion of a hearing process as described in Section 9.3 of these Bylaws, and (B) the Board recommends removal of an Unaffiliated Director, a Director or a Segment Alternate from the Board. Any Board action to remove a Director or a Segment Alternate from the Board shall be subject to review by the NHPUC. An Unaffiliated Director may be removed by the NHPUC in accordance with applicable law.
- (c) The right to elect Directors or Segment Alternates may not be assigned, sold, pledged or transferred in any manner.
- (d) A vacancy may be filled only by the persons authorized to elect or appoint such Director or Segment Alternate.
- (e) The Chair of the Nominating Committee shall notify the NHPUC Commissioners when a vacancy of an Unaffiliated Director position occurs and shall provide information to the NHPUC Commissioners as required by the NHPUC.
- (f) Any Director or Segment Alternate so chosen shall serve in his respective Director or Segment Alternate position until the earlier of the expiration of his term, resignation, ineligibility, inability to serve or removal.

Section 4.6 Meetings.

- (a) The Board shall meet at least quarterly, with at least one meeting occurring in conjunction with the Annual Meeting of the Members. Additional meetings of the Board shall be held at such time and at such place or (for meetings held in accordance with Section 4.7(e)) via such means as may from time to time be determined by the Board. Special meetings of the Board may be called by the Chair or Vice Chair of the Board, or the CEO or his designee. Special meetings of any subcommittee having at least one Director may be called by the Chair or Vice Chair of the subcommittee, or the CEO or his designee.
- (b) Notice stating the purpose, business to be transacted, place or (for meetings held in accordance with Section 4.7(e)) access information, date and hour of any meeting of the Board or any Board subcommittee where at least one Board Director is present shall be given to each Director and made available electronically to the public on the Internet not less than one week before the date of the meeting; provided, however, the Board or any subcommittee having at least one Director may meet on urgent matters on such shorter notice, not less than 1 hour, as the person or persons calling such meeting reasonably may deem necessary or appropriate for urgent matters. For purposes of these Bylaws, an urgent matter is an emergency or public necessity (including but not limited to an imminent threat to public health and safety or to the ROC market or system), or a reasonably unforeseen situation. A matter shall be considered an urgent matter if it would be difficult or impossible for a quorum of Directors or subcommittee members to physically convene in one location and failure to consider the matter without delay may result in operational (including but not limited to those activities and functions affecting the ROC market or system), regulatory, legal, organizational or governance risk.
- (c) The Board and its subcommittees having at least one Director may meet to consider urgent matters in accordance with Section 4.7(e). The Board must ratify any action taken on notice of less than one week or at a meeting held in accordance with Section 4.7(e) at its next regularly scheduled meeting.
- (d) The Board shall promulgate procedures allowing public access to meetings of the Board and Board subcommittees and allowing for members of the public to provide comment on the matters under discussion at public portions of meetings of the Board and subcommittees.
- (e) Meetings of the Board or Board subcommittees shall be open to the public provided that the Board or Board subcommittee on which at least one Board Director sits may, at its discretion, exclude any persons who are not Directors from any meeting or portion of any meeting held in Executive Session, including for purposes of voting. An Executive Session shall be held at the discretion of the Board or Board subcommittee for sensitive matters including, but not limited to, confidential personnel information, contracts, lawsuits, deliberation of purchase of real property, competitively sensitive information, deployment or implementation

of security devices or other information related to the security of New Hampshire's electrical and gas distribution network and discussion of any matters on which the Board receives legal advice from its attorney(s) in which the New Hampshire Disciplinary Rules of Professional Conduct impose on the attorney(s) a duty to preserve confidentiality, including but not limited to anticipated or pending litigation, administrative agency contested cases, and other regulatory matters.

- (f) The Secretary or his designee shall keep minutes of every Board meeting.

Section 4.7 Quorum; Action by Directors; Abstentions; Proxies; Seated Directors; and Meetings by Telephone.

- (a) Except as may be otherwise specifically provided by law, the Certificate of Formation or these Bylaws, at all meetings of the Board, fifty percent (50%) of the Seated Directors shall constitute a quorum for the transaction of business; and abstentions do not affect calculation of a quorum.
- (b) The act of: (i) at least two-thirds of the affirmative votes of the Eligible Voting Directors; and (ii) at least 50% of the total Seated Directors shall be the act of the Board, unless the act of a greater number is otherwise required by law, the Certificate of Formation, or these Bylaws. If a quorum shall not be present at any meeting of the Board, the Directors present may adjourn the meeting.
- (c) For purposes of voting on the Board, Directors who abstain from voting shall not have their votes included in the total number of votes from which the requisite percentage of affirmative votes is required for action.
- (d) Written proxies may be used for meetings of the Board or any subcommittees of the Board in accordance with any relevant provisions in these Bylaws and the New Hampshire [insert code reference] thereof. For any meeting of the Board or any subcommittee of the Board, a Segment Alternate or designated alternate representative, where permitted by these Bylaws, attending in place of a member shall be counted towards a quorum, while proxies shall not be counted towards a quorum.
- (e) Directors (for urgent matters in accordance with Section 4.6) may participate in and hold a meeting by means of a 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 participating in the meeting, and participation in a meeting pursuant to this Section 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.

Section 4.8 Subcommittees. The Board shall confirm the Representatives of the

Technical Advisory Committee (TAC) and may appoint subcommittees as it deems necessary and appropriate to conduct the business of ROC. The designation of subcommittees and the delegation thereto of authority shall not operate to relieve the Board or any individual Director of any responsibility imposed upon it or him by law.

Section 4.9 Other Appointments. The Board may elect, from among its members, or direct the TAC to elect, from among its members, persons to serve on NEPOOL and ISO-NE committees and associated subcommittees, task forces, and working groups. The selection of the representatives or delegation of the selection of the representatives to TAC shall require an act of the Board as set forth in Section 4.7. If more than one representative is requested or required, such representatives directly selected by the Board shall be from different Segments.

Section 4.10 Duties. It shall be the duty of the Board to initiate any specific action required, in its opinion, to fulfill the exempt purposes of ROC as stated in the Articles of Incorporation, within the limitations of the Certificate of Formation, applicable law, and these Bylaws. Such action may be taken by the Board, by such subcommittee(s) as may be formed by the Board, the CEO as directed by the Board or by individuals appointed by the Board provided that the following actions of the Board may not be delegated: (a) approval of the Budget (as defined in Section 10.3); (b) approval of the employment and terms for the CEO, as well as termination of CEO's employment; (c) ratification of other Officers of ROC; (d) annual selection of a qualified independent public accounting firm ("Auditor") to audit the financial statements of ROC; (e) approval of the initiation of any non-routine filing to a regulatory agency that requests regulatory action; and (f) initiation of any lawsuit. The Board shall adopt policies regarding the delegation of the following actions: (a) the acquisition of real property; (b) the sale of ROC assets; (c) the execution of contracts; (d) large purchases; and (e) borrowing money or establishing a line of credit in the name of ROC.

ARTICLE 5 TECHNICAL ADVISORY COMMITTEE

Section 5.1 TAC Representatives.

- (a) For the purposes of this section, membership in the TAC shall be divided in accordance with the definitions of the Segments described in Section 3.1. TAC shall be comprised of the following ("Representatives"):
 - (1) Representatives of four Members elected from each of the nine Segments (other than as described for the Consumer Segment) listed in Section 3.1.
 - (2) For the Consumer Segment, Full Members of each subsegment shall elect its Representatives. For any subsegment in which there are no Full Members, the Consumer Director of that subsegment shall appoint such Representatives. For the Residential, Commercial and Industrial

subsegments, the TAC Representative seats are as follows:

- (i) The Consumer Advocate's designee as an *ex officio* voting member;
 - (ii) One Representative of Residential Consumers;
 - (iii) One Representative of Small & Medium Commercial Consumers;
 - (iv) One Representative of Large Commercial Consumers; and
 - (v) Two Representatives of Industrial Consumers.
- (b) Each TAC Representative shall be entitled to one vote on matters submitted to TAC.
- (c) Fifty-one percent (51%) of the eligible, Seated Representatives of TAC shall constitute a quorum for the transaction of business; and abstentions do not affect calculation of a quorum. Affirmative votes of: (i) two-thirds of the Eligible Voting Representatives of TAC; and (ii) at least 50% of the total Seated Representatives shall be the act of TAC. 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.
- (d) Written proxies may be used for meetings of TAC or any subcommittees of TAC in accordance with any relevant provisions in these Bylaws and the New Hampshire [insert code reference] thereof. For any meeting of TAC or any subcommittee of TAC, where permitted by these Bylaws, attending in place of a member shall be counted towards a quorum, while proxies shall not be counted towards a quorum.
- (e) Unless otherwise provided by law, any action required or permitted to be taken at any meeting of TAC Representatives or any subcommittee of TAC may be taken without a meeting, if a consent in writing, setting forth the action to be taken, is signed by a sufficient number of TAC Representatives or subcommittee members as would be necessary to take that action at a meeting at which all of the TAC Representatives and subcommittee members were present and voted. TAC Representatives or subcommittee members may participate in and hold a meeting by means of a 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 participating in the meeting, and participation in a meeting pursuant to this Section 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. Where action is taken by TAC without a meeting, notice of the proposed action shall be provided to the TAC Representatives in accordance with Section 5.3.

- (f) Each Segment may choose to participate in “Participatory Voting” as described herein. If a Segment chooses to engage in Participatory Voting, each TAC Representative elected by that Segment shall be required to present the decision of the Full Members of that Segment. A Full Member may delegate an employee or agent other than the Member representative described in Section 3.5 to vote on its behalf for purposes of Participatory Voting. If a Full Member of a Segment using Participatory Voting is unable or does not wish to attend a TAC meeting that Member may deliver a written proxy, at any time prior to the start of the meeting at which it will be voted, to a Participatory Voting delegate of any Member of the same Segment. A Full Member delegate in attendance at a TAC meeting may give a written proxy to a Participatory Voting delegate of any Member of the same Segment during such meeting.
- (g) All TAC Representatives shall be appointed or elected annually by the Full Members of their respective Segments. The term for all TAC Representatives shall be one year. Any TAC Representative may be reappointed or reelected for consecutive terms, without limitation. A vacancy shall be filled by the same means used to elect or appoint the previous TAC Representative. No Entity shall participate in more than one Segment of TAC. The Representatives of TAC shall elect from amongst themselves a Chair and Vice Chair subject to confirmation by the Board. The Chair and Vice Chair shall provide full disclosure pursuant to Section 9.2 (Potential Conflicts of Interest) of these Bylaws during the confirmation process, and any person speaking on behalf of TAC before the Board shall provide full disclosure pursuant to Section 9.2 (Potential Conflicts of Interest) of these Bylaws before speaking on behalf of TAC.
- (h) Each person (other than the Residential Consumers Representative) serving on TAC or any subcommittee thereof must be an employee or agent of a Full or Associate Member. Unless otherwise provided in these Bylaws, if an employee or agent of a Member is elected or appointed to serve on TAC or any subcommittee thereof, such person is only eligible to serve in such capacity so long as he or she is an employee or agent of the same Member as he or she was at the time of such election or appointment.
- (i) In the event that a Small Commercial Consumer Representative cannot be identified to serve on TAC, that seat may be filled by any other Commercial Consumer representative appointed by the Consumer Director of the Small Commercial subsegment provided that such representative represents at least one consumer in New Hampshire. Any Representative of the Consumer Segment appointed to TAC by a Consumer Director, if not otherwise a Member of ROC, shall be allowed to vote on TAC without the payment of the Annual Member Service Fees. An appointed Commercial Consumer TAC Representative is eligible to serve in such capacity so long as he or she is an employee or representative of the same company as he or she was at the time of such appointment.

Section 5.2 Functions of TAC. TAC shall have the authority to create subcommittees, task forces and study groups (“subcommittees”). TAC shall determine the eligibility

requirements, quorum requirements and voting structure for each subcommittee. TAC shall (a) through its subcommittees make such studies and plans as it deems appropriate to accomplish the purposes of ROC, the duties of its subcommittees and the policies of the Board, (b) report the results of such studies and plans to the Board as required by the Board, (c) review and coordinate the activities and reports of its subcommittees, (d) make such recommendations to the Board as it deems appropriate or as required by the Board, (e) perform such other duties as directed by the Board and (f) make recommendations regarding ROC expenditures and projects. In accordance with ROC procedures and applicable law and regulations, certain guidelines, criteria and other actions approved by TAC may be effective upon approval by TAC; provided however, that such actions are reported to the Board for review and nothing herein shall affect the ability of the Board to independently consider such guidelines, criteria and actions, and to take such action with respect thereto as the Board deems appropriate, including revocation and remand with instructions.

Section 5.3 Meetings. TAC and its subcommittees shall meet as often as necessary to perform their duties and functions. All meetings of TAC and its subcommittees shall be called by their respective chairmen and all such meeting notices shall be sent in writing to each member at least one week prior to the meeting, unless an emergency condition should suggest otherwise (such emergency to be by mutual consent of a majority of the Seated Representatives of TAC or subcommittee). Any Member may request notification of any such meetings and may have an employee or a TAC-approved representative for that Member attend as an observer. Each Representative of TAC may designate in writing an alternate representative who may attend meetings in the absence of the Representative and vote on the Representative's behalf.

Section 5.4 Other Appointments. TAC shall elect representatives to the various NEPOOL and ISO-NE committees and associated subcommittees, task forces, and working groups, as directed by the Board. The selection of TAC representatives to NEPOOL and ISO-NE shall require an act of TAC as set forth in Section 5.1(c). If more than one representative is requested or required, TAC should consider selecting representatives from different Segments.

ARTICLE 6

Intentionally Omitted.

ARTICLE 7 CHIEF EXECUTIVE OFFICER

Section 7.1 CEO Hiring and Duties. The Board shall hire a Chief Executive Officer ("CEO") who, under the Board's supervision and direction shall carry on the general affairs of ROC. The CEO shall be a member of the staff of ROC and shall be an *ex officio* voting Director. It shall be his duty to approve the expenditure of the monies appropriated by the Board in accordance with the Budget approved by the Board. The CEO shall make an

annual report and periodic reports to the Board concerning the activities of ROC. The CEO shall serve as President of ROC. He or she shall comply with all orders of the Board. All agents and employees of ROC shall report, and be responsible, to the CEO. The CEO shall perform such other duties as may be determined from time to time by the Board.

Section 7.2 Notice of CEO Vacancy. The Board Chair or the Board Chair's designee shall notify the NHPUC Commissioners when a vacancy occurs for the CEO.

Section 7.3 CEO Selection. The Board Chair or the Board Chair's designee shall provide information to the NHPUC Commissioners regarding selection of the CEO requested by any of the NHPUC Commissioners as required by the NHPUC.

Section 7.4 CEO Compensation. The compensation of the CEO shall be approved by the Board.

ARTICLE 8 OFFICERS

Section 8.1 General. The Officers of ROC shall consist of a President, one or more Vice Presidents, a Secretary, and such Officers and assistant Officers as the Board may create. The CEO shall serve as President of ROC. Any two (2) or more offices may be held by the same person, except the offices of President and Secretary. A subcommittee duly designated may perform the functions of any officer and the functions of two or more officers may be performed by a single subcommittee.

Section 8.2 Tenure. The CEO of ROC shall be elected and the other Officers of ROC shall be ratified by the Board at such time and in such manner and for such a term not exceeding one (1) one year, as shall be determined from time to time by the Board. Any Officer may be re-elected or re-ratified for consecutive terms, without limitation. All Officers of ROC shall hold office until their successors are chosen and qualified or until their earlier resignation or removal. Any Officer elected or appointed may be removed by the persons authorized to elect or appoint such Officer whenever in their judgment the best interests of ROC will be served thereby.

ARTICLE 9 TRANSACTIONS OF CORPORATION

Section 9.1 Deposits and Checks. All of ROC's funds will be deposited to the credit of ROC in banks, trust companies, or other depositories that the Board approves.

Section 9.2 Potential Conflicts of Interest. Each Director, Segment Alternate, TAC Representative and subcommittee member shall have an affirmative duty to disclose to the Board, TAC or subcommittee (as the case may be) any actual or potential conflicts of interest of the Director, Segment Alternate, TAC Representative or subcommittee

member or his employer where, and to the extent that, such conflicts or potential conflicts directly or indirectly affect any matter that comes before the Board, TAC or subcommittee, as the case may be. A Director or Segment Alternate with a direct interest in a matter, personally or via his employer, or by having a substantial financial interest in a person with a direct interest in a matter, shall recuse himself from deliberations and actions on the matter in which the conflict arises and shall abstain on any vote on the matter and not otherwise participate in a decision on the matter. A direct interest is a specific interest of a person or entity in a particular matter, provided that an interest that is common to entities in the Market Segment of a Director or Segment Alternate or a general interest of some or all Market Segment Directors or Segment Alternates in a matter does not constitute direct interest. Any disclosure of a direct interest by a Director or Segment Alternate shall be noted in the minutes of the Board meeting at which the direct interest is disclosed. Mere attendance at the meeting, if the Director, Segment Alternate, TAC Representative or subcommittee member recuses himself or herself from the deliberation and action on the matter in which the conflict arises, shall not constitute participation.

ROC may not make any loan to a Director, Segment Alternate or Officer of ROC. A Member, Director, Segment Alternate, TAC Representative, Officer, or subcommittee member of ROC may lend money to and otherwise transact business with ROC except as otherwise provided by these Bylaws, the Certificate of Formation, and applicable law. Such a person transacting business with ROC has the same rights and obligations relating to those matters as other persons transacting business with ROC. ROC may not borrow money from, or otherwise transact business with, a Member,

Director, Segment Alternate, TAC Representative, Officer, or subcommittee member of ROC unless the transaction is described fully in a legally binding instrument and is in ROC's best interests. ROC may not borrow money from, or otherwise transact business with, a Member, Director, Segment Alternate, Officer, TAC Representative or subcommittee member of ROC without full disclosure of all relevant facts and without the Board's approval, not including the vote of any person having a personal interest in the transaction.

Section 9.3 Prohibited Acts. As long as ROC exists, no Member, Director, Segment Alternate, Officer, or subcommittee member of ROC may:

- (a) Do any act in violation of the Certificate of Formation or these Bylaws;
- (b) Do any act in violation of a binding obligation of ROC except with the Board's prior approval;
- (c) Do any act with the intention of harming ROC or any of its operations;
- (d) Receive an improper personal benefit from the operation of ROC;
- (e) Use ROC's assets, directly or indirectly, for any purpose other than in furtherance of ROC's exempt purposes;
- (f) Wrongfully transfer or dispose of ROC property, including intangible property

such as good will;

- (g) Use ROC's name (or any substantially similar name) or any trademark or trade name adopted by ROC, except on behalf of ROC in the ordinary course of its business or as a reference to the New Hampshire region;
- (h) Disclose any of ROC's or Members' business practices, trade secrets, or any other confidential or proprietary information not generally known to the business community to any person not authorized to receive it;
- (i) With regard to the Directors and Segment Alternates, do any act in violation of a ROC rule [as that term is defined in [insert code reference], or applicable statute.

Violations of these prohibited acts may lead to sanction, suspension, expulsion or termination after a hearing conducted using the same procedure as described in Article 3 of these Bylaws.

ARTICLE 10 EXPENSES, BOOKS AND RECORDS

Section 10.1 Member Representatives' Expenses and Compensation of Certain Directors and TAC Representatives.

- (a) Except as described below, ROC shall not bear the personal and travel expenses of each person who serves as a representative of a Member or as a Director, Segment Alternate, TAC Representative or subcommittee member. Except as provided below, no such person shall receive any salary or other compensation from ROC.
- (b) The Board shall have the authority to fix the compensation of its Unaffiliated Directors who may be paid a fixed sum plus reimbursement of travel expenses for attendance at each meeting of the Board, or a stated compensation as a member thereof, or any combination of the foregoing. Unaffiliated Directors, who are members of standing or special committees, may be allowed like compensation and reimbursement of travel expenses for attending committee meetings. Unaffiliated Directors and Consumer Directors may be reimbursed for registration, travel, lodging and related expenses for training activities and Unaffiliated Directors shall be reimbursed for travel lodging and related expenses for attending each meeting of the Board. The reimbursement of travel expenses by ROC shall be in accordance with ROC policies on the reimbursement of appropriate and reasonable, documented travel expenses.
- (c) The Board shall fix the compensation for the appointed Residential Consumer TAC Representative for attendance at each meeting of the Board, TAC, or any standing or special committee of such on an annual basis. Any Residential Consumer TAC Representative shall not be an agent of ROC for any purpose and shall not be considered to be serving at ROC's request, even though compensated by ROC.

Section 10.2 ROC Expenses. The expenses of ROC shall include, but not be limited to, administrative expenses, operational costs and debt service.

Section 10.3 Budget. A budget (the "Budget") for ROC for the ensuing one or more fiscal years shall be adopted by the Board. In connection with the Board's approval, the Budget, including cost of liability insurance, for ROC shall be compiled by the CEO and submitted to the Board. To be effective, the Budget must be approved by an act of the Board as set forth in Section 4.7. The representatives of each Member shall be promptly notified of the Budget following adoption of the Budget by the Board.

Section 10.4 Loans and Guarantees. Neither participation in the activities of ROC nor any provision of these Bylaws or of the Certificate of Formation shall be deemed to constitute a pledge or loan of the credit of any Member for the benefit of ROC or a guarantee by any Member of any obligation of ROC.

Section 10.5 Access to Books and Records. All Members of ROC will have access to the books and records of the organization, including financial statements and budgets; however, the Board shall establish procedures by which a Member, upon written demand stating the purpose of the demand may examine and copy the books and records of ROC. If necessary to protect the confidential information of ROC, a Member requesting examination of ROC's books and records may be required to sign a confidentiality and non-disclosure agreement before viewing such information. The procedures shall include policies that provide reasonable protection against the unnecessary disclosure of information related to individual employees, including their compensation.

Section 10.6 Audit. At least annually, an audit of the financial statements of ROC shall be performed by the Auditor approved by the Board. The Auditor's opinion and the audited financial statements will be made available to all Members as described in Section 10.5.

Section 10.7 Fiscal Year. The fiscal year of ROC shall be from January 1 through the following December 31, or as otherwise fixed by resolution of the Board.

ARTICLE 11 INDEMNIFICATION

Section 11.1 Indemnification. EACH PERSON WHO AT ANY TIME SHALL SERVE, OR SHALL HAVE SERVED, AS A DIRECTOR, OFFICER, EMPLOYEE OR AGENT OF ROC, OR ANY PERSON WHO, WHILE A DIRECTOR, OFFICER, EMPLOYEE OR AGENT OF ROC, IS OR WAS SERVING AT ITS REQUEST AS A DIRECTOR, OFFICER, PARTNER, VENTURER, PROPRIETOR, TRUSTEE, EMPLOYEE, AGENT OR SIMILAR FUNCTIONARY OF ANOTHER FOREIGN OR DOMESTIC CORPORATION, PARTNERSHIP, JOINT VENTURE, SOLE PROPRIETORSHIP, TRUST, EMPLOYEE BENEFIT PLAN OR OTHER ENTERPRISE, SHALL BE ENTITLED TO INDEMNIFICATION AS, AND TO THE FULLEST EXTENT, PERMITTED BY [insert code reference] OF THE NEW HAMPSHIRE [insert code reference] OR ANY

SUCCESSOR STATUTORY PROVISION, AS FROM TIME TO TIME AMENDED, SUCH ARTICLE OR SUCCESSOR PROVISION, AS SO AMENDED, BEING INCORPORATED IN FULL IN THESE BYLAWS BY REFERENCE. THE FOREGOING RIGHT OF INDEMNIFICATION SHALL NOT BE DEEMED EXCLUSIVE OF ANY OTHER RIGHTS TO WHICH THOSE TO BE INDEMNIFIED MAY BE ENTITLED AS A MATTER OF LAW OR UNDER ANY AGREEMENT, VOTE OF DISINTERESTED DIRECTORS, OR OTHER ARRANGEMENT.

ARTICLE 12 NOTICES

Section 12.1 Form. Unless otherwise provided in these Bylaws, any notice required by these Bylaws to be given to a Member, Director, Segment Alternate, committee or subcommittee member, TAC Representative, member of a subcommittee of TAC, or Officer of ROC must be given by at least two of the following methods: mail, facsimile, email, or website posting. If mailed, a notice is deemed delivered when deposited in the mail addressed to the person at his address as it appears on the corporate records, with postage prepaid. A person may change his address in the corporate records by giving written notice of the change to the CEO.

Section 12.2 Signed Waiver of Notice. Whenever any notice is required by law or under ROC's Certificate of Formation or these Bylaws, a written waiver signed by the person entitled to receive such notice is considered the equivalent to giving the required notice. A waiver of notice is effective whether signed before or after the time stated in the notice that was to be given.

Section 12.3 Waiver of Notice by Attendance at a Meeting. Attendance at a meeting shall constitute a waiver of notice of such meeting, except where attendance is for the express purpose of objecting to the transaction of any business on the ground that the meeting is not lawfully called or convened.

Section 12.4 Objection. If any person, who is a voting member of a group holding a meeting, reasonably objects to the transaction of business regarding a specific issue, or issues, at a meeting on the grounds that the meeting is not properly called or convened or that the issue, or issues, was improperly noticed, the issue or issues in question may not be addressed at that meeting. The Chair of such meeting shall determine if such objection is reasonable.

ARTICLE 13 AMENDMENTS

Section 13.1 Amendments to these Bylaws. Subject to the provision that no amendment to these Bylaws may limit the rights of a Member to resign from Membership and subject to approval by the NHPUC, these Bylaws may be amended, altered, or repealed by the voting Segments through the following procedure:

- (a) Any Full Member suggesting amendments to these Bylaws must submit a

proposal of the amendment, including any necessary supporting documents, to the CEO.

- (b) The CEO shall place the proposal on the agenda for a Board meeting in the time and manner prescribed by the Board.
- (c) If the proposal is approved by an act of the Board as set forth in Section 4.7, the Board shall place the proposal on the agenda of the next Annual Meeting of the Full Members unless the Board in its discretion calls a Special Meeting of the Full Members to vote on the proposal or determines to seek Membership approval without a meeting as provided in Section 3.7(g).
- (d) Full Members must vote to enact the Board-approved amendment by the following voting procedure:
 - (1) For the purposes of voting on Bylaws, each Segment shall have one whole vote.
 - (2) Except for the Consumer Segment, an affirmative vote of at least two-thirds of the Full Members of a Segment present constitutes an affirmative vote by that Segment.
 - (3) For purposes of voting on Bylaws amendments, the Consumer Segment shall be subdivided into the following Consumer subgroups:
 - (i) Residential Consumers;
 - (ii) Commercial Consumers; and
 - (iii) Industrial Consumers.

An affirmative vote of the majority of the Full Members within a Consumer subgroup shall constitute an affirmative vote of that subgroup. An affirmative vote of at least two of the three Consumer subgroups shall constitute an affirmative vote of the Consumer Segment.
 - (4) An affirmative vote by at least five of the nine Segments shall be necessary to amend these Bylaws.

Section 13.2 Amendments to the Certificate of Formation. In accordance with the procedures set forth in the New Hampshire [insert code reference], an affirmative vote of at least two-thirds of all Full Members shall be required to amend the Certificate of Formation.

ARTICLE 14 MISCELLANEOUS PROVISIONS

Section 14.1 Legal Authorities Governing Construction of Bylaws. These Bylaws shall be

construed under New Hampshire law. All references in these Bylaws to statutes, regulations, or other sources of legal authority will refer to the authorities cited, or their successors, as they may be amended from time to time.

Section 14.2 Legal Construction. Any question as to the application or interpretation of any provision of these Bylaws shall be resolved by the Board. To the greatest extent possible, these Bylaws shall be construed to conform to all legal requirements and all requirements for obtaining and maintaining all tax exemptions that may be available to nonprofit corporations. If any Bylaw provision is held invalid, illegal, or unenforceable in any respect, the invalidity, illegality, or unenforceability will not affect any other provision, and these Bylaws will be construed as if they had not included the invalid, illegal, or unenforceable provision.

Section 14.3 Headings. The headings used in these Bylaws are for convenience and may not be considered in construing these Bylaws.

Section 14.4 Number and Gender. All singular words include the plural, and all plural words include the singular. All pronouns of one gender include reference to the other gender.

Section 14.5 Parties Bound. These Bylaws will bind and inure to the benefit of the Members, Directors, Segment Alternates, TAC Representatives, Officers, subcommittee members, employees, and agents of ROC and their respective administrators, legal representatives, successors, and assigns except as these Bylaws otherwise provide.

Section 14.6 Effective Date. The effective date of these Amended and Restated Bylaws is [insert date], provided that the Board may implement transition procedures before the effective date in order to ensure a smooth transition to the structure described in these Bylaws.

Board Policies and Procedures Effective [insert date] By the ROC Board of Directors

Table of Contents

PREAMBLE: DEFINITIONS	2
I. MEETING PROCEDURES	2
II. RESPONSIBILITIES, QUALIFICATIONS, AND COMPENSATION OF THE BOARD OF DIRECTORS.....	3
III. DELEGATION OF AUTHORITY TO THE CHIEF EXECUTIVE OFFICER	6
IV. THE SALE OF ROC ASSETS.....	7
V. TERMINATION OR LIQUIDATION OF ROC.....	7
VI. MEMBER EXAMINATION OF THE CORPORATE FINANCIAL BOOKS AND RECORDS OF ROC	7
VII. SELECTION OF NEW BOARD MEMBERS, BOARD CHAIR AND VICE CHAIR, AND TAC REPRESENTATIVES	8
VIII. PARTICIPATION BY PARTIES OPPOSING ACTIONS RECOMMENDED BY TAC OR ROC STAFF	10
IX. BOARD POLICY ON APPROVAL OF USER FEES	12
X. DETERMINATION OF AFFILIATE RELATIONSHIP FOR MEMBERSHIP.....	12
XI. REVIEW AND REAFFIRMATION.....	13

Preamble: Definitions

- 0.1 The Definitions included in the Bylaws of the Retail Operations Council of New Hampshire, Inc. (the “Bylaws”) are incorporated by reference.

I. Meeting Procedures

- 1.1 Meeting Schedule. Board meetings are normally held on the third Tuesday of the month when the Board is scheduled to meet, but may be moved or held by agreement of the Board, provided that the Board shall meet at least quarterly consistent with the Bylaws.
- 1.2 Meeting Notice. Notice of each full Board meeting with the Board agenda shall be given consistent with the Bylaws.
- 1.3 Board Agenda Items. A Director is entitled to place matters the Director reasonably considers important on the Board agenda if notification of such matters and background materials are received by the Secretary of the Corporation no later than 5 p.m. Eastern Prevailing Time eleven days before the date of the Board meeting (e.g., normally on the Friday before the second Tuesday of the month during which the Board is scheduled to meet). ROC Members and Market Participants, with permission of the Chair, may request that matters be placed on the Board agenda if notification of such matters and background materials are received by the Secretary of the Corporation no later than 5 p.m. Eastern Prevailing Time eleven days before the date of the Board meeting (e.g., normally on the Friday before the second Tuesday of the month during which the Board is scheduled to meet).
- 1.4 Board Packet. When a Board agenda contemplates the Board taking specific actions, ROC staff will provide Directors a “Board Packet” with all appropriate information at least seven (7) days prior to the meeting to allow study of and reflection on the issue raised. If such information is not available seven (7) days in advance of the meeting, ROC staff shall send information to the Directors as soon as such information is reasonably available. Information that ROC staff provides to the Directors which is not “sensitive” (as described in Section 4.6(e) of the Bylaws) must also be made available electronically to the public on the Internet, along with the agenda of the meeting. A Director may request that the Board defer action if he or she requires additional information or additional time to review appropriate information.
- 1.5 Minutes. Minutes shall be kept for all meetings of the full Board, Board Committees, TAC and TAC subcommittees. Such minutes, except those which are held in Executive Session, shall be posted on ROC’s website for at least one year following the date of the meeting. ROC shall maintain a permanent record of the minutes of full Board meetings. ROC shall maintain records of meetings of TAC and TAC subcommittees for five years.

- 1.6 Executive Session. The Board may meet in Executive Session for purposes consistent with governing law and with the Bylaws. The notice for Executive Session discussion items may be worded such that the sensitive nature of the item is not compromised or disclosed. Except for acting to approve the minutes of prior Executive Sessions, the Board shall emerge from Executive Session before voting or taking any action on any Executive Session noticed items or based on Executive Session discussions.

II. Responsibilities, Qualifications, and Compensation of the Board of Directors

- 2.1 Annual Goals and Objectives. In keeping with its fiduciary duties to ROC, the Board shall establish the overall direction and affirm the annual goals and objectives developed by ROC staff. The Board shall review such goals and objectives on an ongoing basis, and may issue policies and resolutions setting forth direction of ROC management actions to attain such goals and objectives. The Board's primary responsibility is to ensure that ROC maintains reliability and operates in a fair, efficient and non-discriminatory manner. The Board is also responsible for overseeing ROC's administration of the ROC Protocols.
- 2.2 Duties. The Board shall faithfully discharge its duties by conducting its affairs in a highly ethical and sound business manner. The Board, collectively and severally, will not direct the policies and actions of ROC from perspectives of private gain or personal advantage.
- 2.3 Chief Executive Officer and Management. Subject to applicable approval by the New Hampshire Public Utilities Commission (NHPUC), the Board shall retain a Chief Executive Officer ("CEO") with the capabilities to execute Board policies. The Board delegates to the CEO all general powers and duties necessary to accomplish ROC's purpose, goals, and objectives as established by the Board, except for those specifically reserved to the Board by the Bylaws or herein. The CEO and management are required to supply Directors with sufficient information to keep Directors properly informed about the business and affairs of ROC.
- 2.4 Matters Reserved for Board Approval. Except for and subject to those matters which require NHPUC approval or are mandated by the NHPUC without Board approval, the Board expressly reserves the following matters for Board approval:
- 2.4.1 Those matters reserved by the Bylaws.
- 2.4.2 Approval of the initiation of any non-routine filing that seeks regulatory action by a regulatory agency; provided that emergency situations may require immediate regulatory filings to protect the interests of ROC and may be filed by the General Counsel in its reasonable discretion without prior approval of the Board if there is concurrence of the CEO, General Counsel, the Chair and Vice Chair of the Board for such filing, and provided that the Board is notified as soon as practicable.
- 2.4.3 Initiation of any lawsuit; provided that emergency situations may require

immediate legal action including the initiation of a lawsuit to protect the interests of ROC. Such a lawsuit may be initiated by the General Counsel without prior approval of the Board if there is concurrence of the CEO, General Counsel, the Chair and Vice Chair of the Board for such filing, and provided that the Board is notified as soon as practicable and the Board subsequently ratifies the filing.

- 2.4.4 Approval of the purchase of goods or services for ROC's use, or of a contract for such purchase, with a value of over \$[insert amount] if such purchase or contract is not contemplated in ROC's Board-approved Budget. With regard to this section, exceptions for such approval are as follows:
- 2.4.4.1 NHPUC-Directed Goods or Services. If ROC is directed, required or ordered to purchase goods or services by contract or otherwise by the NHPUC, no Board approval is required.
- 2.4.4.2 Emergency Business-Continuity Purchases. If ROC needs to make emergency purchases up to \$[insert amount] which are necessary to meet business continuity or other immediate needs that, if not met, may result in an interruption to ROC's normal business, such purchases may be made according to ROC's procedures without seeking prior approval; however, ratification of such purchases must be sought at the next Board meeting.
- 2.4.5 Approval of the sale or pledge of any ROC assets valued in excess of one million dollars \$[insert amount].
- 2.4.6 Establishment of any line of credit, loans, or other forms of indebtedness in the name of ROC exceeding \$[insert amount].
- 2.5 CEO Delegations. The Board shall exercise reasonable diligence to ensure that the delegations to the CEO provided in this policy statement are properly implemented. The Board will articulate clear and coherent goals and statements of its expectations through its policies and the adoption of the Budget. The CEO is responsible for fulfilling these commitments and managing the organization.
- 2.6 Individual Director Duties. Each Director shall, individually, have the following duties:
- 2.6.1 Attend all regular, special and urgent meetings of the Board when notified, unless circumstances prevent the Director from attending. If attendance is not possible, Bylaws procedures for Segment Alternates, Proxies and Alternate Representatives shall be followed.
- 2.6.2 Participate in the selection of the members of all committees and subcommittees of the Board represented by his or her particular Market Segment.

- 2.6.3 Not disclose the confidential information of ROC to unauthorized people.
 - 2.6.4 Handle any actual or potential conflict of interest in accordance with Bylaws Section 9.2.
 - 2.6.5 Consistent with the fiduciary duty of care in overseeing, monitoring, and supervising the affairs of ROC, prepare for and participate to the best of his or her ability in determination of policy and other matters coming before the Board.
 - 2.6.6 Set policy and make decisions in the best interest of the ROC organization and the ROC market.
 - 2.6.7 Upon joining the Board and annually thereafter, sign the ROC Director Ethics Agreement.
- 2.7 Director Qualifications. Each Director shall meet the following qualifications:
- 2.7.1 Have a willingness to serve the Membership of ROC and to commit the time and resources necessary to carry out the duties of a Director.
 - 2.7.2 Be willing to work cooperatively with ROC Members.
 - 2.7.3 For Market Segment Directors, possess significant electric energy-related work experience in a senior or executive management level in the Market Segment he or she represents, and meet employment qualifications as required by the Bylaws.
 - 2.7.4 Meet all qualifications defined by the Bylaws or required by the NHPUC or New Hampshire or other governing law.
- 2.8 Compensation and Expense Reimbursement for Unaffiliated Directors.
- 2.8.1 Unaffiliated Director Compensation. Each Unaffiliated Director will receive the following:
 - 2.8.1.1 Annual Retainer. The Annual Retainer shall be \$[insert amount] and shall cover a full calendar year (January to December) and shall be paid to each Unaffiliated Director in equal monthly installments of \$[insert amount].
 - 2.8.1.2 Board Committee Chair Compensation. Each Unaffiliated Director who serves as the Chair of a Committee of the Board shall be paid \$[insert amount] in additional to the Annual Retainer.
 - 2.8.1.3 Board Vice Chair Compensation. Each Unaffiliated Director who serves as the Vice Chair of the Board shall be paid \$[insert amount]

in addition to the Annual Retainer.

2.8.1.4 Board Chair Compensation. Each Unaffiliated Director who serves as the Chair of the Board shall be paid \$[insert amount] per year, in addition to the Annual Retainer.

2.8.2 Expense Reimbursement.

2.8.2.1 Affiliated Directors. Affiliated Directors are generally expected to be reimbursed by their employers. Unaffiliated Directors, and Affiliated Directors who may receive limited reimbursement from time to time, shall comply with the ROC Business Expense Reimbursement Corporate Standard.

2.8.2.2 Business Expense Reimbursement. General Counsel shall provide Directors with the Business Expense Reimbursement Corporate Standard and a summary thereof, upon new Directors joining the Board and also whenever modifications are made to the Standard.

2.9 Compensation for Residential Consumer TAC Representative.

2.9.1 Retainer, Meeting Fees and Compensation Cap. Compensation for the Residential Consumer TAC Representative shall be as follows: (i) a retainer of \$[insert amount] per month; and (ii) \$[insert amount] per TAC or other standing or special TAC subcommittee meeting actually attended. Total compensation for the Residential Consumer TAC Representative shall not exceed \$[insert amount] per month.

2.9.2 Business Expense Reimbursement. The Residential Consumer TAC Representative shall be eligible for reimbursement of reasonable business expenses associated with attending meetings of TAC or other standing or special TAC subcommittee, but shall comply with the ROC Business Expense Reimbursement Corporate Standard.

III. Delegation of Authority to the Chief Executive Officer

3.1 CEO Responsibility and Authority. Consistent with the goals, objectives, policies, and specific directions of the Board, and the Bylaws, the CEO is responsible for carrying out the business activities of ROC. The CEO shall have the authority to execute contracts and agreements, establish lines of credit, and take all other lawful actions, as he may deem expedient and proper in conducting the business of ROC, except as may be limited by the Board.

3.2 CEO Delegation to Officers and Employees. The CEO may delegate his authority to other ROC officers or employees in his discretion, except as limited by the Board. The CEO shall issue appropriate management procedures setting forth the direction of staff management and other employee actions to fulfill the goals, objectives, policies and other directions of the Board.

- 3.3 Budget. The CEO will present to the Board by October of each year when the Budget is to be approved, or at such other time as directed by the Board, a Budget to carry out the Board's directives for the following year or longer as directed by the Board. The Budget will include projections of ROC's overall financial performance and financing plans, and describe the services, projects, programs, and the associated revenues and expenditures for the next fiscal year. Adoption of the Budget by the Board and as approved by the NHPUC authorizes the CEO to complete work plans and make associated expenditures as provided for in accordance with the Budget.
- 3.4 Information for the Board. The CEO is responsible for bringing policy matters to the attention of the Board when its current policies give inadequate direction for ROC operations or leave ROC at a disadvantage because of changing conditions. The CEO will provide thorough, well-organized information to the Board in a timely manner. Communications to the Board will be made forthrightly and with candor in the evaluation of the conduct of business and operations of ROC. In the discretion of the CEO, significant contracts, agreements, or other major decisions may be brought to the Board for specific approval. In coordination with the General Counsel, the CEO shall represent ROC in communicating the position and interests of ROC to legislative bodies.
- 3.5 Internal Controls. Consistent with the Board's guidance and the ROC Internal Control Management Program, the CEO will approve and enforce appropriate policies, standards and procedures for ROC, to ensure adequate internal controls for ROC business and operations.

IV. the Sale of ROC Assets

- 4.1 Sale of Assets. Personal property that is no longer necessary, convenient or of beneficial use to the business of ROC, and that has a fair market value of \$[insert amount] or less may be sold, transferred, auctioned, or conveyed by the CEO for its fair market value. ROC shall use revenues from the sale of its property to offset ROC expenses.

V. Termination or Liquidation of ROC

- 5.1 Termination or Liquidation. Upon termination or liquidation of ROC, the Board shall, consistent with applicable federal and state regulatory requirements, liquidate ROC, and dispose of its property and assets in the manner required by its governing documents and New Hampshire law applicable to non-profit corporations.

VI. Member Examination of the Corporate Financial Books and Records of ROC

- 6.1 Member Right of Inspection. Every Member shall have the right at any reasonable time to inspect ROC's corporate financial books and records of account subject to the following Procedures:

- 6.1.1 The Member representative must be acting upon the authority of the Member, as evidenced in writing by the representative designated and listed in ROC's records for that Member.
 - 6.1.2 The writing must state a legitimate business purpose for the inspection and identify the documents the Member desires to inspect.
 - 6.1.3 The writing must state the date and time of the inspection, such date and time to be no less than 10 days after ROC receives the request and shall be during ROC's normal business hours.
 - 6.1.4 If the information requested is determined to be Confidential Information of ROC, ROC shall require the Member to sign a Confidentiality and Non-Disclosure Agreement in a form acceptable to ROC. Non-public information relating to individual ROC employees, including compensation, shall not be subject to disclosure. ROC retains the right to withhold information that is confidential by law or by contract.
 - 6.1.5 If the information requested is determined to be Confidential Information of a ROC Member, ROC shall not disclose such information except as provided in the ROC Protocols.
 - 6.1.6 If Confidential Information is requested by the Member or a Market Participant who provided ROC the information, ROC shall provide copies of such information to the Member or Market Participant, or its designee upon written authorization by the Member or Market Participant.
- 6.2 Prohibition against Dissemination of Confidential Information. No Member shall use or disseminate any information obtained as a result of any such inspection in its capacity as a Member, for his or her own personal gain, to the detriment of ROC or its staff, or to the detriment of any competitors of any Entity with which the Member is affiliated, except in connection with the enforcement of a tariff, contract or applicable law and consistent with the Protocols and ROC's policy regarding Confidential Information.

VII. Selection of New Board Members, Board Chair and Vice Chair, and TAC Representatives

- 7.1 Annual Meeting and Record Date. At least two months prior to the Annual Meeting of the Full Members, the ROC Board will set the date and location for the Annual Meeting. The Record Date for determining the Full Members entitled to notice of and representation at the Annual Meeting is set forth in the Bylaws.
- 7.2 Elections of TAC Representatives, Market Segment Directors and Segment Alternates. For TAC Representatives, Market Segment Directors and Segment Alternates, as appropriate, to be elected by their respective Market Segments, one of two procedures shall apply: (a) ROC will provide all Full Members of the Segment or Subsegment with advance notice that the Segment or Subsegment

will be holding the election, and follow-up notice of election results; or (b) ROC will directly facilitate the election according to the following procedures:

- 7.2.1 On the next business day after the Record Date, ROC will send a list of all the Members in each Segment or Subsegment, by membership level (*i.e.*, Full, Associate or Adjunct) to ROC Members.
 - 7.2.2 ROC will request that Full Members of each Segment or Subsegment nominate Directors, Segment Alternates, as appropriate, and TAC Representatives and forward their nominations to ROC.
 - 7.2.3 With the nominations provided, ROC will then create and provide ballots to Full Members for return to ROC.
 - 7.2.4 ROC will facilitate a meeting of the Segment or Subsegment to assist in the nomination and election process if requested.
 - 7.2.5 Only Full Members may participate in the election of Directors, Segment Alternates, as appropriate, and TAC Representatives for the Segment or Subsegment in which they are members.
 - 7.2.6 Each seat shall be filled by the person receiving the most votes (proxies allowed) of eligible Full Members.
- 7.3 Selection and Election of Unaffiliated Directors. For Unaffiliated Directors, subject to applicable law, statute or NHPUC rule, the following procedures shall apply:
- 7.3.1 All new Unaffiliated Directors shall be selected in accordance with the process established in the Bylaws.
 - 7.3.2 Six months prior to the expiration of an Unaffiliated Director's term, such Director shall indicate whether he or she wishes to remain on the Board for another term (if applicable). If the Unaffiliated Director desires to remain on the Board, the Nominating Committee will vote on whether such Unaffiliated Director may be nominated again for the Board.
 - 7.3.3 If an Unaffiliated Director elects to leave the Board or, due to the upcoming expiration of an Unaffiliated Director, the Nominating Committee otherwise elects to seek potentially a new Unaffiliated Director, the Nominating Committee shall retain an executive search firm to begin the candidate selection process, pursuant to the Bylaws.
 - 7.3.4 Where feasible, elections for Unaffiliated Directors will be held and approval by the NHPUC sought within a timeframe that will allow such Directors to be seated on the Board so as to avoid or minimize the length of Unaffiliated Director vacancies on the Board.
- 7.4 Appointment of Residential Consumer TAC Representatives. Notwithstanding

Section 7.2, for the Residential Consumer Subsegment, the Consumer Advocate shall appoint Residential Consumer TAC Representative(s). ROC will assist, if requested, in providing potential candidates for such seats. The Consumer Advocate shall identify their appointees to ROC at least one week prior to the Annual Meeting. ROC will notify new Consumer appointees of the information necessary to attend the Annual Meeting.

- 7.5 Facilitation of Election. If a Segment is unable to elect a Director, Segment Alternate, as appropriate, or TAC Representative at least two weeks prior to the Annual Meeting, ROC will notice a meeting of the Segment to facilitate the election.
- 7.6 Election Results and Confirmation. Prior to the Annual Meeting of Full Members, ROC will determine the results of the elections. At the Annual Meeting, the new Directors, Segment Alternates and TAC Representatives will be announced and confirmed. The new Directors, Segment Alternates and TAC Representatives will be seated according to their elected terms.
- 7.7 Election and Terms of Board Chair and Vice Chair. The Board shall elect the Board Chair and Vice Chair pursuant to the Bylaws. The Board Chair and Vice Chair shall be elected to serve in their positions until their respective successors are elected in the following year to avoid any break in service of Board leadership.

VIII. Participation by Parties Opposing Actions Recommended by TAC or ROC Staff

- 8.1 Procedural Situations Addressed by this Section. Any ROC Member, Market Participant, NHPUC Staff, or ROC staff may: (a) appeal a TAC action to reject, defer, remand or refer a matter that would have proceeded to the Board for consideration had it been recommended for approval by TAC, and requires a TAC recommendation as part of the approval process, directly to the ROC Board (“TAC Appeal”); or (b) submit written comments requesting a Board action to reject, defer, remand, or refer a matter that is before the Board for consideration, and requires a TAC recommendation as part of the approval process (“TAC Recommendation Opposition”); or (c) submit written comments opposing a voting item recommended by ROC staff that does not require a TAC recommendation prior to Board action (“ROC Recommendation Opposition”). Board consideration of TAC Appeals and TAC or ROC Recommendation Oppositions will be conducted pursuant to the process and timelines provided in this Section VIII.
- 8.2 Advance Notice of TAC Appeals, TAC Recommendation Oppositions, or ROC Recommendation Oppositions. It is the policy of the Board that important arguments and information relating to a TAC Appeal or a TAC or ROC Recommendation Opposition be available to the Board in writing far enough in advance to enable informed decisions on such matters. The Board, and its members, may discount arguments and information that are provided out of time and/or that were not provided to TAC.

8.3 Procedural Timeline for TAC Actions Not Designated as Urgent. Written notice of TAC Appeals or TAC Recommendation Oppositions on matters that have not been granted Urgent status as part of the TAC review and recommendation process or that the Board Chair or Vice-Chair or a NHPUC Commissioner designates as urgent must be submitted to ROC's General Counsel within ten (10) Business Days after the date of the TAC action which serves as the basis for the TAC Appeal or Comments on TAC Recommendation. The Board will hear such matter at the next regularly-scheduled Board meeting that is at least ten (10) Business Days after the date of the TAC Appeal or TAC Recommendation Opposition. The following deadlines will apply to the parties involved:

8.3.1 The TAC Chair or Vice-Chair shall designate a TAC Advocate to defend the TAC action at least eight (8) Business Days before the Board meeting.

8.3.2 ROC shall post notice of the TAC Appeal or TAC Recommendation Opposition, and identify the TAC Advocate on the ROC website, and notify TAC of the same, at least seven (7) Business Days before the Board meeting.

8.3.3 The party appealing or contesting the TAC recommendation and the TAC Advocate must, and any other interested Entity may, provide a position statement, with or without supporting data, to ROC's General Counsel at least six (6) Business Days before the Board meeting.

8.3.4 ROC will distribute all timely position statements to the Board in the Board Packet as described in Section 1.2 above.

The Board Chair or Vice-Chair may override any deadline in this Section 8.3 for good cause shown.

8.4 Expedited Procedural Timeline for Urgent TAC Actions. Notwithstanding Section 8.3, an expedited process shall apply to TAC Appeals or TAC Recommendation Oppositions of: (a) TAC actions related to decisions on items designated as Urgent; or (b) any other TAC action that the Board Chair or Vice-Chair or a NHPUC Commissioner designates as urgent. Written notice of such TAC Appeals or TAC Recommendation Oppositions must be submitted to ROC's General Counsel within forty-eight (48) hours after the end of the relevant TAC meeting and those TAC Appeals or TAC Recommendation Oppositions shall be heard at the next Board meeting, and the TAC Chair and Vice-Chair shall work with ROC's General Counsel to preserve the intent of Sections 8.2 and 8.3 above as fully as possible, given that such matters will be heard on less than ten Business Days' notice.

8.5 Procedural Timeline for ROC Recommendation Oppositions. The process for ROC Recommendation Oppositions applies to situations in which the Board agenda includes a voting item that does not require a TAC recommendation before it comes before the Board for a vote. If a party seeks Board consideration

of its comments opposing a ROC Recommendation for Board action, and requests that ROC include the comments in the Board Packet, the party must provide written notice to ROC's General Counsel at least ten (10) Business Days before the date of the Board meeting where the issue will be on the agenda and submit its comments with ROC's General Counsel at least eight (8) days before the date of the Board meeting where the issue will be on the agenda. If a party seeks to submit comments after the Board Packet has been delivered to Board members, the timing of the publication and distribution of the comments (as well as of any comments supporting the ROC Recommendation) will be at the discretion of the Board Chair or Vice-Chair.

IX. Board Policy on Approval of User Fees

- 9.1 User Fees Approval Process. The Board may authorize ROC to charge reasonable user fees for services provided by ROC to any Market Participant or other Entity. A new user fee must be approved by the Board pursuant to the Revision Request process set forth in Section 2 of the Protocols. User fees charged by ROC must be identified in the ROC Fee Schedule included in the Protocols.
- 9.2 New User Fee Criteria. The Board retains the full authority to adopt user fees for services provided by ROC, including fees currently included in the Protocols, but establishes the following policy guidelines for establishing user fees which are not currently included in the Protocols:
- 9.2.1 Material Impact. A new user fee should produce revenue in excess of \$[insert amount] annually, or materially improve ROC operations.
- 9.2.2 Incremental Revenues. The revenues recovered by a new user fee should be incremental to revenue recovered through the System Administration Fee.
- 9.2.3 Limited Beneficiaries. A new user fee should be for a service that benefits a relatively few discrete Market Segments or Market Participants rather than providing general benefit to most Market Segments or Market Participants.

X. Determination of Affiliate Relationship for Membership

- 10.1 Membership Applicant Procedure. Any applicant for Membership (Membership Applicant) shall follow the procedure in this section to request Board determination of whether entities are Affiliates of one another for the purpose of determining Member Segment and voting rights pursuant to the definition of "Affiliate" in the Bylaws (Article 2, Paragraph 1).
- 10.2 Verified Letter or Affidavit. The Membership Applicant shall send to the Board Chair with a copy to the General Counsel either (1) a letter verified by an authorized representative of the Membership Applicant or (2) an affidavit

executed by an authorized representative of the Membership Applicant, requesting Board determination of Affiliate relationship for purposes of the definition of "Affiliate". The verified letter or affidavit must provide sufficient facts of relevant corporate relationships of the Membership Applicant to allow for the Board's review of corporate relationships in consideration of the definition of "Affiliate".

- 10.3 Deadline for Submission. The Membership Applicant must send the verified letter or affidavit to be received no later than the submission date for the Board Packet materials for the Board meeting preceding the Membership application deadline for the following Membership year.

XI. Review and Reaffirmation

- 11.1 Review and Reaffirmation. The Board may amend this document at any time by a vote that complies with Bylaws requirements, but at a minimum the Policies and Procedures shall be reviewed and reaffirmed annually, at or before the annual Strategic Planning Meeting.

Retail Operations Council of New Hampshire
Technical Advisory Committee
Procedures

TAC Approved: [insert date]

Effective as of [insert date]

ROC
Technical Advisory Committee Procedures

These Technical Advisory Committee (TAC) Procedures are based upon incorporated provisions of the ROC Bylaws. Upon amendment of the ROC 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 ROC staff, make and utilize such studies or plans as it deems appropriate to accomplish the purposes of ROC, 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 Platform Change Request (PCR), Protocol Revision Request (PRR) and Market Guide Revision (MGR) 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 ROC Bylaws Section 3.1, TAC Representatives, shall be elected or appointed according to the provisions of the ROC Bylaws and procedures established by the ROC Board. An Entity and its affiliates that are Members of ROC 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

ROC
Technical Advisory Committee Procedures

The TAC shall be comprised of Representatives of Members from each Market Segment as defined in the ROC Bylaws: Aggregators, Competitive Electric Service Providers, Community Power Aggregators, Distributed Energy Resource Companies, Electric Distribution Companies and Local Distribution Companies, Limited Producers, and Consumers. The Full Members of each Segment are responsible for electing or appointing their Representatives to TAC. In addition, the ROC Chief Executive Officer (CEO) or the ROC 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 ROC Bylaws.

III. CHAIR AND VICE-CHAIR

A. Qualifications and Appointment

As provided in the ROC Bylaws, the Chair and Vice-Chair shall be elected by TAC and confirmed by the ROC 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

ROC 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, ROC 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

ROC
Technical Advisory Committee Procedures

As provided in the ROC 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 ROC 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.

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 ROC 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 Full Members of their Segment in attendance at a TAC meeting. A Full Member may delegate an employee or agent other than the Member representative to vote on its behalf for purposes of Participatory Voting. If a Full 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 Full 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 ROC 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.

ROC
Technical Advisory Committee Procedures

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 ROC 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, ROC Meeting Rules of Order, in the conduct of the meetings. ROC staff shall be responsible for recording minutes of TAC meetings and distributing such minutes and other communications to all members of TAC and for posting such information on the ROC website. 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 and distributed energy resource asset 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 ROC 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 ROC for tallying by the close of two Business Days after

ROC
Technical Advisory Committee Procedures

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 ROC 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 Platform and Protocol Subcommittee (P&PS)) 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 ROC 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 ROC website at least one week prior to the meeting, unless an emergency condition requires a shorter notice.

ROC
Technical Advisory Committee Procedures

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

E. Appeal Procedures

Any Entity that demonstrates it is affected by a TAC subcommittee decision may appeal the TAC subcommittee vote to TAC utilizing the following process:

1. Any appeal (including requested relief) must be submitted to ROC (insert email address) 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. ROC 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 ROC prior to the TAC meeting. Any other interested Entity may also provide a position statement to ROC prior to the TAC meeting. Position statements should be submitted to ROC by no later than 1700 Eastern Prevailing Time on the day prior to the TAC meeting.
6. ROC 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 ROC 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 ROC (insert email address) within

ROC
Technical Advisory Committee Procedures

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 ROC 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. Intrastate Market Subcommittee (IMS); Operations and Performance Subcommittee (OPS); and Regional Markets Integration Subcommittee (RMIS)

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, Small and Medium Commercial, and Large 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. ROC shall appoint appropriate staff member(s) to attend and participate in the subcommittee meetings. A Member entity and its affiliates that are also ROC 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

ROC
Technical Advisory Committee Procedures

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, ROC 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 ROC 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 ROC website.

ROC
Technical Advisory Committee Procedures

2. Platform & Protocol Subcommittee (P&PS)

The P&PS is mandated by the ROC Protocols.

Membership: Membership shall consist of two Standing Representatives from each Segment with the exception of the Consumer Segment. The Consumer Segment shall consist of three Standing Representatives (Residential, Commercial, and Industrial). 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 P&PS 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, Small and Medium Commercial, and Large 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 ROC Full Members, ROC Associate Members, and ROC 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 ROC 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

ROC
Technical Advisory Committee Procedures

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 ROC, 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 Full 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, ROC 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 P&PS 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 ROC for tallying by the close of two Business Days after notification of the vote. A P&PS e-mail vote on a request for Urgent Status shall be submitted to ROC for tallying within 48 hours. The

ROC
Technical Advisory Committee Procedures

final tally shall be distributed to the subcommittee distribution list and posted on the ROC website.

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 ROC General Counsel may declare that remote voting is permitted for TAC and TAC Subcommittee duties and functions. A notice will be sent to all ROC 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 ROC Bylaws, Board Procedures, or Board resolutions. The ROC Board may, upon its own motion, amend these Procedures upon reasonable notice to the TAC membership.

ROC
Technical Advisory Committee Procedures

Appendix A, ROC 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. The Standard Code of Parliamentary Procedure shall guide stakeholder meetings in all areas not addressed by the ROC Protocols, ROC 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 a revision request (e.g., recommend approval, reject, defer decision, refer or remand)	I move to recommend approval of revision request	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

ROC
Technical Advisory Committee Procedures

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

ROC
Technical Advisory Committee Procedures

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

ROC
Technical Advisory Committee Procedures

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.

ROC Protocols

Section 1: Platform & Protocol Revision Request and Budgeting Process

[insert date]

1	<i>Revision Request and Budgeting Process</i>	1
1.1	Introduction.....	1
1.2	Submission of a Protocol Revision Request or Platform Change Request.....	2
1.3	Platform and Protocol Subcommittee.....	2
1.4	Protocol Revision and System Change Procedure.....	3
1.4.1	<i>Review and Posting of Protocol Revision Requests</i>	3
1.4.2	<i>Review and Posting of Platform Change Requests</i>	4
1.4.3	<i>Withdrawal of a Protocol Revision Request or Platform Change Request</i>	5
1.4.4	<i>Platform and Protocol Subcommittee Review and Action</i>	5
1.4.5	<i>Comments to the Platform and Protocol Subcommittee Report</i>	6
1.4.6	<i>Revision Request Impact Analysis</i>	6
1.4.7	<i>Platform and Protocol Subcommittee Review of Impact Analysis</i>	7
1.4.8	<i>Technical Advisory Committee Vote</i>	8
1.4.9	<i>ROC Impact Analysis Based on Technical Advisory Committee Report</i>	9
1.4.10	<i>ROC Board Vote</i>	9
1.4.11	<i>Appeal of Action</i>	10
1.4.11.1	<i>Appeal of Platform and Protocol Subcommittee Action</i>	10
1.4.11.2	<i>Appeal of Technical Advisory Committee Action</i>	10
1.4.11.3	<i>Appeal of ROC Board Action</i>	10
1.5	Urgent and Board Priority Protocol Revision Requests and Platform Change Requests	11
1.6	Protocol Revision Implementation	12
1.7	Review of Project Prioritization and Annual Budget Process	12
1.8	Review of Guide Changes	13

1 REVISION REQUEST AND BUDGETING PROCESS

1.1 Introduction

- (1) A request to make additions, edits, deletions, revisions, or clarifications to the ROC Protocols, including any attachments and exhibits to the ROC Protocols, is called a Protocol Revision Request (PRR). Except as specifically provided otherwise in the following sentence or in other sections of these Protocols, Sections 1.2, Submission of a Protocol Revision Request or Platform Change Request, through 1.8, Review of Guide Changes, apply to all PRRs. ROC Members, Market Participants, New Hampshire Public Utilities Commission (NHPUC) Staff, the Interstate Market Monitor (IMM), the Independent System Operator of New England (ISO-NE), the New England Power Pool (NEPOOL), the ROC Board, and any other Entities are required to utilize the process described herein prior to requesting, through the NHPUC or other Governmental Authority, that ROC make a change to these Protocols, except for good cause shown to the NHPUC or other Governmental Authority.
- (2) A request that ROC change its Statewide Platform that does not require a revision to the Protocols is called a Platform Change Request (PCR). Except as specifically provided in other sections of these Protocols, Sections 1.2 through 1.7, Review of Project Prioritization and Annual Budget Process, apply to all PCRs.
- (3) The “next regularly scheduled meeting” of the Platform and Protocol Subcommittee (P&PS), the Technical Advisory Committee (TAC), an Assigned TAC Subcommittee (as defined below), or the ROC Board shall mean the next regularly scheduled meeting for which required notice can be timely given regarding the item(s) to be addressed, as specified in the appropriate ROC Board or committee procedures.
- (4) ROC may make non-substantive corrections at any time during the processing of a particular PRR. Under certain circumstances, however, the Protocols can also be revised by ROC rather than using the PRR process outlined in Section 1.4, Protocol Revision and System Change Procedure.
 - (a) This type of revision is referred to as an “Administrative PRR” or “Administrative Changes” and shall consist of non-substantive corrections, such as typos (excluding grammatical changes), internal references (including table of contents), improper use of acronyms, and references to ROC Protocols, NHPUC Substantive Rules, the Independent System Operator of New England (ISO-NE) rules, New England Power Pool Generation Information System (NEPOOL GIS), North American Electric Reliability Corporation (NERC) regulations, Federal Energy Regulatory Commission (FERC) rules, etc. Additionally, updates to Section 23, Forms, may also be processed as Administrative PRRs.
 - (b) ROC shall post such Administrative PRRs to the ROC website and distribute the PRR to P&PS at least ten Business Days before implementation. If no Entity submits comments to the Administrative PRR in accordance with paragraph (1) of Section 1.4.4, Platform and Protocol Subcommittee Review and Action, ROC

shall implement it according to paragraph (4) of Section 1.6, Protocol Revision Implementation. If any ROC Member, Market Participant, NHPUC Staff, Independent System Operator of New England (ISO-NE) staff, New England Power Pool (NEPOOL) staff, the IMM, or ROC submits comments to the Administrative PRR, then it shall be processed in accordance with the PRR process outlined in Section 1.4.

1.2 Submission of a Protocol Revision Request or Platform Change Request

- (1) The following Entities may submit a Protocol Revision Request (PRR) or Platform Change Request (PCR) (“Revision Request”):
 - (a) Any Market Participant;
 - (b) Any ROC Member;
 - (c) New Hampshire Public Utilities Commission (NHPUC) Staff;
 - (f) The Interstate Market Monitor (IMM);
 - (g) The Independent System Operator of New England (ISO-NE);
 - (h) The New England Power Pool (NEPOOL);
 - (i) The ROC Board; and
 - (h) Any other Entity that meets the following qualifications:
 - (i) Resides (or represents residents) in New Hampshire or operates in the ISO-NE electricity market; and
 - (ii) Demonstrates that Entity (or those it represents) is affected by the [insert relevant protocol references, e.g. Customer Registration, etc.] sections of these Protocols.

1.3 Platform and Protocol Subcommittee

- (1) The Platform and Protocol Subcommittee (P&PS) shall review and recommend action on formally submitted Protocol Revision Requests (PRRs) and Platform Change Requests (PCRs) (“Revision Requests”) provided that:
 - (a) P&PS meetings are open to ROC, ROC Members, Market Participants, the Independent System Operator of New England (ISO-NE), The New England Power Pool (NEPOOL), the IMM and NHPUC Staff;
 - (b) Each Market Segment is allowed to participate; and

- (c) Each Market Segment has equal voting power.
- (2) Where additional expertise is needed, the P&PS may refer a Revision Request to working groups or task forces that it creates or to existing Technical Advisory Committee (TAC) subcommittees, working groups or task forces for review and comment on the Revision Request. Suggested modifications—or alternative modifications if a consensus recommendation is not achieved by a non-voting working group or task force—to the Revision Request should be submitted by the chair or the chair’s designee on behalf of the subcommittee, working group or task force as comments on the Revision Request for consideration by P&PS. However, the P&PS shall retain ultimate responsibility for the processing of all Revision Requests.
- (3) ROC shall consult with the P&PS chair to coordinate and establish the meeting schedule for the P&PS. The P&PS shall meet at least once per month and shall ensure that reasonable advance notice of each meeting, including the meeting agenda, is posted on the ROC website.

1.4 Protocol Revision and System Change Procedure

1.4.1 Review and Posting of Protocol Revision Requests

- (1) Protocol Revision Requests (PRRs) shall be submitted electronically to ROC by completing the designated form provided on the ROC website. Excluding ROC-sponsored PRRs, ROC shall provide an electronic return receipt response to the submitter upon receipt of the PRR.
- (2) The PRR shall include the following information:
 - (a) Description of requested revision and reason for suggested change;
 - (b) Impacts and benefits of the suggested change on ROC market structure, ROC operations, and Market Participants, to the extent that the submitter may know this information;
 - (c) List of affected Protocol Sections and subsections;
 - (d) General administrative information (organization, contact name, etc.); and
 - (e) Suggested language for requested revision.
- (3) ROC shall evaluate the PRR for completeness and shall notify the submitter, within five Business Days of receipt, if the PRR is incomplete, including the reasons for such status. ROC may provide information to the submitter that will correct the PRR and render it complete. An incomplete PRR shall not receive further consideration until it is completed. In order to pursue the PRR, a submitter must submit a completed version of the PRR.

- (4) If a submitted PRR is complete or upon completion of an PRR, ROC shall post the PRR on the ROC website and distribute to the Platform and Protocol Subcommittee (P&PS) within three Business Days.
- (5) For any ROC-sponsored PRR, ROC shall also post an initial Impact Analysis on the ROC website, and distribute it to P&PS. The initial Impact Analysis will provide P&PS with guidance as to potential ROC computer systems, operations, or business functions that could be affected by the submitted PRR.

1.4.2 Review and Posting of Platform Change Requests

- (1) Platform Change Requests (PCRs) shall be submitted electronically to ROC by completing the designated form provided on the ROC website. Excluding ROC-sponsored PCRs, ROC shall provide an electronic return receipt response to the submitter upon receipt of the PCR.
- (2) The PCR shall include the following information:
 - (a) Description of desired additional system functionality or the additional information desired and reason for suggested change;
 - (b) Impacts and benefits of the suggested change to ROC market structure, ROC operations and Market Participants, to the extent that submitter may know this information;
 - (c) General administrative information (organization, contact name, etc.); and
 - (d) Summary of requested changes to ROC systems.
- (3) ROC shall evaluate the PCR to determine whether the request should be submitted as an PRR. If ROC determines that the PCR should be submitted as an PRR, ROC will notify the submitter within five Business Days of receipt, and the submitter shall withdraw its PCR and may submit an PRR in its place. If ROC deems it necessary for further review beyond the five Business Days, ROC shall notify the submitter.
- (4) ROC shall evaluate the PCR for completeness and shall notify the submitter, within five Business Days, if the PCR is incomplete, including the reasons for such status. ROC may provide information to the submitter that will correct the PCR and render it complete. An incomplete PCR shall not receive further consideration until it is completed. In order to pursue the PCR requested, the submitting Entity must submit a completed version of the PCR.
- (5) If a submitted PCR is complete or upon completion of an PCR, ROC shall post the PCR on the ROC website and distribute to the P&PS within three Business Days.
- (6) For any ROC-sponsored PCR, ROC shall also post an initial Impact Analysis on the ROC website, and distribute it to P&PS. The initial Impact Analysis will provide P&PS with

guidance as to potential ROC computer systems, operations, or business functions that could be affected by the submitted PCR.

1.4.3 Withdrawal of a Protocol Revision Request or Platform Change Request

- (1) A submitter may withdraw or request to withdraw an PRR or PCR (“Revision Request”) by submitting a completed Request for Withdrawal form provided on the ROC website. ROC shall post the submitter’s Request for Withdrawal on the ROC website within three Business Days of submittal.
- (2) The submitter of a Revision Request may withdraw the Revision Request at any time before P&PS recommends approval of the Revision Request. If P&PS has recommended approval of the Revision Request, the request for withdrawal must be approved by the Technical Advisory Committee (TAC) if the Revision Request has not yet been recommended for approval by TAC. If TAC has recommended approval of the Revision Request, the request for withdrawal must be approved by the ROC Board if the Revision Request has not yet been approved by the ROC Board. Once approved by the ROC Board, a Revision Request cannot be withdrawn.

1.4.4 Platform and Protocol Subcommittee Review and Action

- (1) Any ROC Member, Market Participant, the NHPUC Staff, the Independent System Operator of New England (ISO-NE), the New England Power Pool (NEPOOL), the IMM, or ROC may comment on a Revision Request.
- (2) To receive consideration, comments must be delivered electronically to ROC in the designated format provided on the ROC website within 14 days from the posting date of the Revision Request. Comments submitted after the 14-day comment period may be considered at the discretion of P&PS after these comments have been posted. Comments submitted in accordance with the instructions on the ROC website—regardless of date of submission—shall be posted to the ROC website and distributed to the P&PS within three Business Days of submittal.
- (3) The P&PS shall consider the Revision Request at its next regularly scheduled meeting after the end of the 14-day comment period. At such meeting, the P&PS may take action on the Revision Request. The quorum and voting requirements for P&PS action are set forth in the Technical Advisory Committee Procedures. In considering action on a Revision Request, P&PS may:
 - (a) Recommend approval of the Revision Request as submitted or as modified;
 - (b) Reject the Revision Request;
 - (c) Defer decision on the Revision Request; or

- (d) Refer the Revision Request to another TAC subcommittee, working group, or task force as provided in Section 1.3, Platform and Protocol Subcommittee.
- (4) If a motion is made to recommend approval of a Revision Request and that motion fails, the Revision Request shall be deemed rejected by P&PS unless at the same meeting P&PS later votes to recommend approval of, defer, or refer the Revision Request. The rejected Revision Request shall be subject to appeal pursuant to Section 1.4.11.1, Appeal of Platform and Protocol Subcommittee Action.
- (5) Within three Business Days after P&PS takes action, ROC shall post a P&PS Report reflecting the P&PS action on the ROC website. The P&PS Report shall contain the following items:
- (a) Identification of submitter of the Revision Request;
 - (b) Protocol language or summary of requested changes to ROC systems, recommended by the P&PS, if applicable;
 - (c) Identification of authorship of comments;
 - (d) Proposed effective date(s) of the Revision Request;
 - (e) Priority and rank for any Revision Requests requiring a ROC project for implementation; and
 - (f) P&PS action.
- (6) The P&PS chair shall notify TAC of Revision Requests rejected by P&PS.

1.4.5 *Comments to the Platform and Protocol Subcommittee Report*

- (1) Any ROC Member, Market Participant, NHPUC Staff, the Independent System Operator of New England (ISO-NE), the New England Power Pool (NEPOOL), the IMM, or ROC may comment on the P&PS Report. Comments submitted in accordance with the instructions on the ROC website—regardless of date of submission—shall be posted on the ROC website and distributed to the committee(s) (i.e., P&PS and/or TAC) considering the Revision Request within three Business Days of submittal.
- (2) The comments on the P&PS Report will be considered at the next regularly scheduled P&PS or TAC meeting where the Revision Request is being considered.

1.4.6 *Revision Request Impact Analysis*

- (1) If P&PS recommends approval of a Revision Request, ROC shall prepare an Impact Analysis based on the proposed language or proposed system changes in the P&PS Report. If ROC has already prepared an Impact Analysis, ROC shall update the existing

Impact Analysis, if necessary, to accommodate the language or system changes recommended for approval in the P&PS Report.

- (2) The Impact Analysis shall assess the impact of the proposed Revision Request on ROC staffing, computer systems, operations, or business functions and shall contain the following information:
 - (a) An estimate of any cost and budgetary impacts to ROC for both implementation and on-going operations;
 - (b) The estimated amount of time required to implement the Revision Request;
 - (c) The identification of alternatives to the Revision Request that may result in more efficient implementation; and
 - (d) The identification of any manual workarounds that may be used as an interim solution and estimated costs of the workaround.
- (3) Unless a longer review period is warranted due to the complexity of the proposed P&PS Report, ROC shall post an Impact Analysis on the ROC website, for a Revision Request for which P&PS has recommended approval of, prior to the next regularly scheduled P&PS meeting, and distribute to P&PS. If a longer review period is required by ROC to complete an Impact Analysis, ROC shall submit comments with a schedule for completion of the Impact Analysis.

1.4.7 Platform and Protocol Subcommittee Review of Impact Analysis

- (1) After ROC posts the results of the Impact Analysis, P&PS shall review the Impact Analysis at its next regularly scheduled meeting. P&PS may revise its P&PS Report after considering the information included in the Impact Analysis or additional comments received on the P&PS Report.
- (2) Within three Business Days of P&PS consideration of the Impact Analysis and P&PS Report, ROC shall post the P&PS Report on the ROC website. If P&PS revises the P&PS Report, ROC shall update the Impact Analysis, if necessary, post the updated Impact Analysis on the ROC website, and distribute it to the committee(s) (i.e., P&PS and/or TAC) considering the Impact Analysis. If a longer review period is required for ROC to update the Impact Analysis, ROC shall submit comments with a schedule for completion of the Impact Analysis.
- (3) If the Revision Request requires a ROC project for implementation, at the same meeting, P&PS shall assign a recommended priority and rank for the associated project.

1.4.8 Technical Advisory Committee Vote

- (1) TAC shall consider any Revision Requests that P&PS has submitted to TAC for consideration for which both a P&PS Report and an Impact Analysis (as updated if modified by P&PS under Section 1.4.7, Platform and Protocol Subcommittee Review of Impact Analysis) have been posted on the ROC website. The following information must be included for each Revision Request considered by TAC:
 - (a) The P&PS Report and Impact Analysis;
 - (b) The recommended P&PS priority and rank, if a ROC project is required; and
 - (c) Any comments timely received in response to the P&PS Report.
- (2) The quorum and voting requirements for TAC action are set forth in the Technical Advisory Committee Procedures. In considering action on a P&PS Report, TAC shall:
 - (a) Recommend approval of the Revision Request as recommended in the P&PS Report or as modified by TAC, including modification of the recommended priority and rank if the Revision Request requires a project;
 - (b) Reject the Revision Request;
 - (c) Defer decision on the Revision Request;
 - (d) Remand the Revision Request to P&PS with instructions; or
 - (e) Refer the Revision Request to another TAC subcommittee or a TAC working group or task force with instructions.
- (3) If a motion is made to recommend approval of a Revision Request and that motion fails, the Revision Request shall be deemed rejected by TAC unless at the same meeting TAC later votes to recommend approval of, defer, remand, or refer the Revision Request. If a motion to recommend approval of a Revision Request fails via email vote according to the Technical Advisory Committee Procedures, the Revision Request shall be deemed rejected by TAC unless at the next regularly scheduled TAC meeting or in a subsequent email vote prior to such meeting, TAC votes to recommend approval of, defer, remand, or refer the Revision Request. The rejected Revision Request shall be subject to appeal pursuant to Section 1.4.11.2, Appeal of Technical Advisory Committee Action.
- (4) Within three Business Days after TAC takes action on the Revision Request, ROC shall post a TAC Report reflecting the TAC action on the ROC website. The TAC Report shall contain the following items:
 - (a) Identification of the submitter of the Revision Request;
 - (b) Modified Revision Request language proposed by TAC, if applicable;

- (c) Identification of the authorship of comments;
 - (d) Proposed effective date(s) of the Revision Request;
 - (e) Priority and rank for any Revision Requests requiring a ROC project for implementation;
 - (f) P&PS action;
 - (g) TAC action; and
 - (h) ROC's position on the Revision Request.
- (5) If TAC recommends approval of a Revision Request, ROC shall forward the TAC Report to the ROC Board for consideration pursuant to Section 1.4.10, ROC Board Vote.

1.4.9 ROC Impact Analysis Based on Technical Advisory Committee Report

- (1) ROC shall review the TAC Report and, if necessary, update the Impact Analysis as soon as practicable. ROC shall distribute the updated Impact Analysis, if applicable, to TAC and post it on the ROC website. If a longer review period is required for ROC to update the Impact Analysis, ROC shall submit comments with a schedule for completion of the Impact Analysis.

1.4.10 ROC Board Vote

- (1) Upon issuance of a TAC Report and Impact Analysis to the ROC Board, the ROC Board shall review the TAC Report and the Impact Analysis at the next regularly scheduled meeting. For Urgent Revision Requests, the ROC Board shall review the TAC Report and Impact Analysis at the next regularly scheduled meeting, unless a special meeting is required due to the urgency of the Revision Request.
- (2) The quorum and voting requirements for ROC Board action are set forth in the ROC Bylaws. In considering action on a TAC Report, the ROC Board shall:
- (a) Approve the Revision Request as recommended in the TAC Report or as modified by the ROC Board;
 - (b) Reject the Revision Request;
 - (c) Defer decision on the Revision Request; or
 - (d) Remand the Revision Request to TAC with instructions.
- (3) If a motion is made to approve a Revision Request and that motion fails, the Revision Request shall be deemed rejected by the ROC Board unless at the same meeting the ROC Board later votes to approve, defer, or remand the Revision Request. The rejected

Revision Request shall be subject to appeal pursuant to Section 1.4.11.3, Appeal of ROC Board Action.

- (4) Within three Business Days after the ROC Board takes action on a Revision Request, ROC shall post a Board Report reflecting the ROC Board action on the ROC website.

1.4.11 Appeal of Action

- (1) The following processes are to be used to appeal an action related to a Revision Request.

1.4.11.1 Appeal of Platform and Protocol Subcommittee Action

- (1) Any ROC Member, Market Participant, NHPUC Staff, the Independent System Operator of New England (ISO-NE), the New England Power Pool (NEPOOL), the IMM, or ROC may appeal a P&PS action to reject, defer or refer a Revision Request, directly to the TAC. Such appeal to the TAC must be submitted electronically to ROC by completing the designated form provided on the ROC website within seven days after the date of the relevant P&PS appealable event. ROC shall reject appeals made after that time. ROC shall post appeals on the ROC website within three Business Days of receiving the appeal. Appeals shall be heard at the next regularly scheduled TAC meeting that is at least seven days after the date of the requested appeal. An appeal of a Revision Request to TAC suspends consideration of the Revision Request until the appeal has been decided by TAC.

1.4.11.2 Appeal of Technical Advisory Committee Action

- (1) Any ROC Member, Market Participant, NHPUC Staff, the Independent System Operator of New England (ISO-NE), the New England Power Pool (NEPOOL), the IMM, or ROC may appeal a TAC action to reject, defer, remand or refer a Revision Request directly to the ROC Board. Appeals to the ROC Board shall be processed in accordance with the ROC Board Policies and Procedures. An appeal of a Revision Request to the ROC Board suspends consideration of the Revision Request until the appeal has been decided by the ROC Board.

1.4.11.3 Appeal of ROC Board Action

- (1) Any ROC Member, Market Participant, NHPUC Staff, the Independent System Operator of New England (ISO-NE), or the New England Power Pool (NEPOOL), or the IMM may appeal any decision of the ROC Board regarding a Revision Request to the NHPUC. Such appeal to the NHPUC must be made within any deadline prescribed by the NHPUC, but in any event no later than 35 days of the date of the relevant ROC Board appealable event. Notice of any appeal to the NHPUC or other Governmental Authority must be provided, at the time of the appeal, to ROC's General Counsel. If the NHPUC rules on the Revision Request, ROC shall post the ruling on the ROC website.

1.5 Urgent and Board Priority Protocol Revision Requests and Platform Change Requests

- (1) The party submitting a Protocol Revision Request (PRR) or Platform Change Request (PCR) (“Revision Request”) may request that the Revision Request be considered on an urgent timeline (“Urgent”) only when the submitter can reasonably show that an existing Protocol or condition is impairing or could imminently impair ROC retail market operations, or is causing or could imminently cause a discrepancy between a ISO-NE settlement formula and a provision of these Protocols.
- (2) The Platform and Protocol Subcommittee (P&PS) may designate the Revision Request for Urgent consideration upon a valid motion in a regularly scheduled meeting of the P&PS or at a special meeting called by the P&PS leadership. Criteria for designating a Revision Request as Urgent are that the Revision Request requires immediate attention due to:
 - (a) Serious concerns about ROC market operations under the unmodified language or existing conditions; or
 - (b) The crucial nature of ISO-NE settlement activity conducted pursuant to any settlement formula.
- (3) The ROC Board may designate any existing Revision Request a Board Priority Revision Request. If the ROC Board directs ROC Staff to file a Revision Request, it may further direct that a Revision Request be designated a Board Priority Revision Request. All Board Priority Revision Requests will be considered on an Urgent timeline.
- (4) ROC shall prepare an Impact Analysis for Urgent and Board Priority Revision Requests as soon as practicable.
- (5) The P&PS shall consider the Urgent or Board Priority Revision Request and Impact Analysis, if available, at its next regularly scheduled meeting, or at a special meeting called by the P&PS leadership to consider the Urgent or Board Priority Revision Request.
- (6) If recommended for approval by P&PS, ROC shall post a P&PS Report on the ROC website within three Business Days after P&PS takes action. The TAC chair may request action from TAC to accelerate or alter the procedures described herein, as needed, to address the urgency of the situation.
- (7) Any Urgent or Board Priority Revision Requests shall be subject to an Impact Analysis pursuant to Section 1.4.9, ROC Impact Analysis Based on Technical Advisory Committee Report, and ROC Board consideration pursuant to Section 1.4.10, ROC Board Vote.

1.6 Protocol Revision Implementation

- (1) Upon ROC Board approval, ROC shall implement Protocol Revision Requests (PRRs) on the first day of the month following ROC Board approval, unless otherwise provided in the Board Report for the approved PRR.
- (2) For such other PRRs, the Impact Analysis shall provide an estimated amount of time required to implement the PRR and ROC shall provide notice as soon as practicable, but no later than ten days prior to actual implementation, unless a different notice period is required in the Board Report for the approved PRR.
- (3) If the ROC Board approves changes to the Protocols, such changes shall be, in accordance with rules and procedures adopted by the NHPUC:
 - (a) Either filed with the NHPUC for informational purposes as soon as practicable, but no later than one day before the effective date of the changes; or
 - (b) Submitted to the NHPUC for review and approval or denial by a Hearing Officer, as appropriate; and
 - (b) Subsequently incorporated into the Protocols and posted on the ROC website as soon as practicable, but no later than one day before the effective date of the changes.
- (4) ROC shall implement an Administrative PRR on the first day of the month following the end of the ten Business Day posting requirement outlined in Section 1.1, Introduction.

1.7 Review of Project Prioritization and Annual Budget Process

- (1) The Platform and Protocol Subcommittee (P&PS) shall recommend to the Technical Advisory Committee (TAC) an assignment of a project priority for each approved Protocol Revision Request (PRR) and Platform Change Request (PCR) (“Revision Request”) that requires an associated project.
- (2) Annually during the ROC budget process, the P&PS shall review the priority of all market-requested projects and recommend new or revised project priorities for market-requested projects.
- (3) TAC shall consider the project priority of each Revision Request and make recommendations to the ROC Board.
- (4) The ROC Board shall take one of the following actions regarding the project prioritization recommended by TAC:
 - (a) Approve the TAC recommendation as originally submitted or as modified by the ROC Board;

- (b) Reject the TAC recommendation;
- (c) Remand the TAC recommendation to TAC with instructions; or
- (d) Defer consideration of the TAC recommendation.

1.8 Review of Guide Changes

- (1) The revision process for the ROC market guides shall be governed by the individual guides and assigned subcommittees. The Platform and Protocol Subcommittee (P&PS) shall review changes to market guides proposed by other subcommittees that may conflict with existing Protocols and report the results of its review to the submitting subcommittee.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-197

Date Request Received: 09/22/2020

Date of Response: 10/02/2020

Request No. STAFF 1-024

Page 1 of 1

Request from: New Hampshire Public Utilities Commission Staff

Witness: Christine Riley Hastings, Justin Eisfeller

Request:

Reference Testimony at Page 50 of 55 describing a governance model including an Operations Committee.

- a. Please describe which responsibilities of the proposed Operations Committee would need approval from the Governance Working Group and/or Commission via semi-annual proposals and why.
- b. Please describe which responsibilities would be entirely under the authority of the Operations Committee and why.

Response:

- a. The Operations Committee (OC) would need approval of the Governance Working Group (GWG) for draft or revised operating policies and procedures; platform scoping and pricing changes; operating and capital budget revisions; and final decisions on security restrictions on users of the platform. The OC and GWG would need approval of the Commission on governance changes, and operating and capital budget approvals, as those items relate to the core mandate of the Commission's authority.
- b. The Operations Committee (OC) would make decisions on day-to-day operations and security including short term restrictions on platform access due to immediate cyber concerns; platform change management categorization (there is an expectation that change management approvals will vary with change complexity and risk); and cyber event classification and incident response. The OC would also be responsible for making technical design decisions where the decision affects the operations or security of the platform.

AUGUST 12, 2020

Market Participation of Distributed Energy Resources

EPRI-Stanford Digital Grid Webinar



Tongxin Zheng

TECHNICAL DIRECTOR



ISO New England (ISO) Has More Than Two Decades of Experience Overseeing the Region's Restructured Electric Power System

Energy Market

Electric Energy: The Day-Ahead and Real-Time Energy Markets are forward and spot markets for trading **electric energy**. Energy prices **fluctuate** throughout the day and at different locations in New England, reflecting the amount of consumer demand, constraints on the system, and the price of fuel that resources use to generate electricity.

Ancillary Markets

Short-Term Reliability Services: Resources compete in the ancillary markets to provide backup electricity as well as services needed to support the physical operation of the system, such as frequency regulation and voltage support. These services are **critical** during periods of heavy demand or system emergencies.

Forward Capacity Market

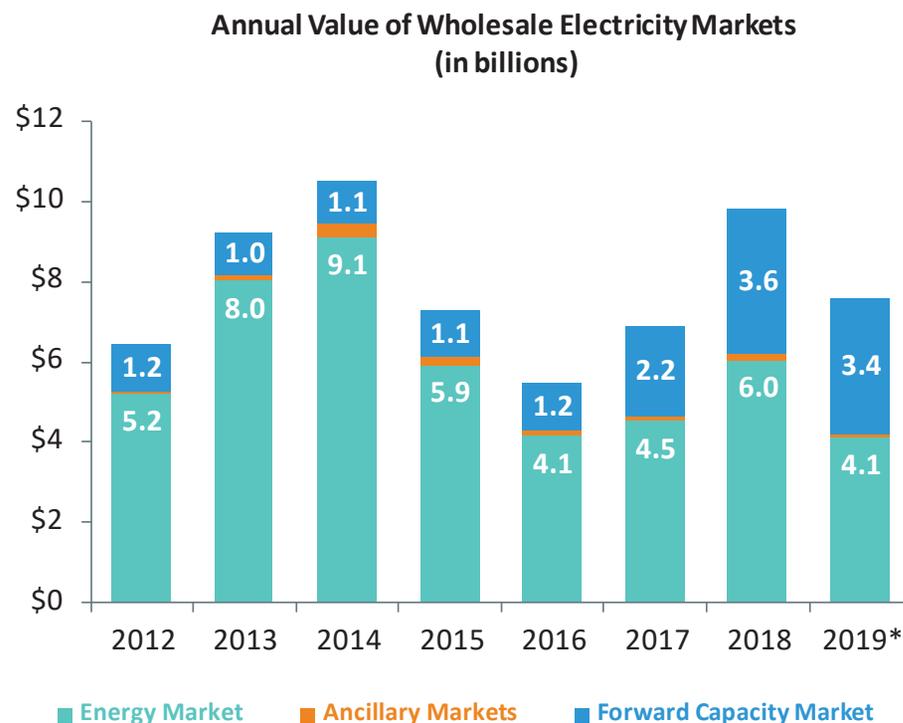
Long-Term Reliability Services: Resources compete to sell **capacity** to the system in three years' time through annual Forward Capacity Auctions. The Forward Capacity Market works in tandem with the Energy Markets to **attract** and **sustain** needed power resources today and into the future.



Bates p. 161

Many Resources Compete to Supply Electricity in New England's Wholesale Markets

- Close to **500** buyers and sellers in the markets
- **\$7.6 billion** in wholesale electricity market transactions in 2019
 - **\$4.1 billion** in the energy market
 - **\$100 million** in the ancillary services markets
 - **\$3.4 billion** in the capacity market

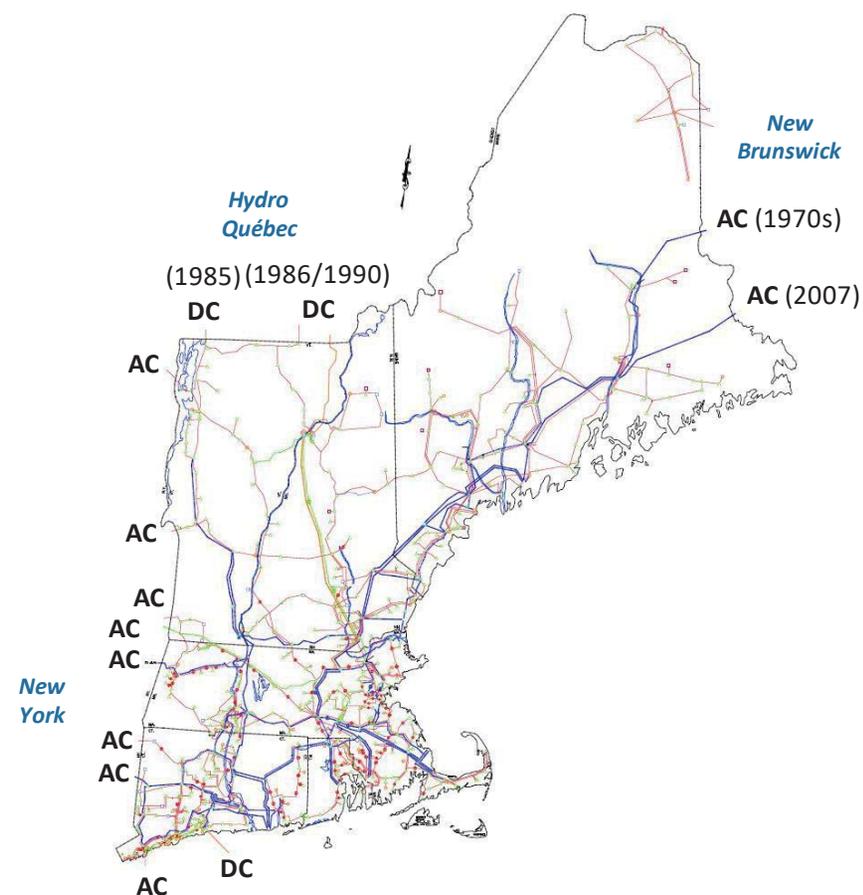


* 2019 data are subject to adjustment



Key Facts About ISO New England Grid

- **7.2 million** retail electricity customers drive the demand for electricity in New England (14.8 million population)
 - Region's all-time summer peak demand: **28,130 MW** on August 2, 2006
 - Region's all-time winter peak demand: **22,818 MW** on January 15, 2004
- Transmission system is tied to neighboring power systems in the U.S. and Eastern Canada:
 - New York (8 AC ties, 1 DC tie)
 - Hydro Québec (2 DC ties)
 - New Brunswick (2 AC ties)
- **19%** of the region's energy needs were met by imports in 2019

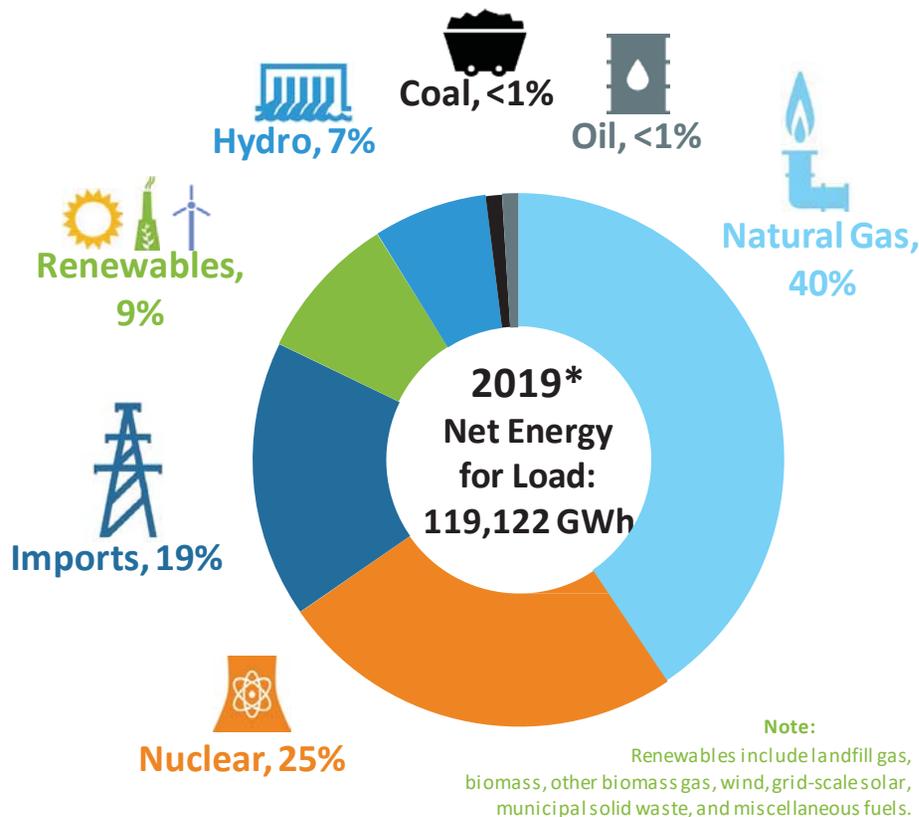


Note: AC stands for Alternating Current and DC stands for Direct Current



Generation and Demand Resources Are Used to Meet New England’s Energy Needs

- 350 dispatchable generators in the region
- 31,500 MW of generating capacity
- Over 20,000 MW of proposed generation in the ISO Queue
 - Mostly wind proposals
- Roughly 7,000 MW of generation have retired or will retire in the next few years
- 580 MW of active demand response and 2,630 MW of energy efficiency with obligations in the Forward Capacity Market*



* In the Forward Capacity Market, demand-reduction resources are treated as capacity resources.

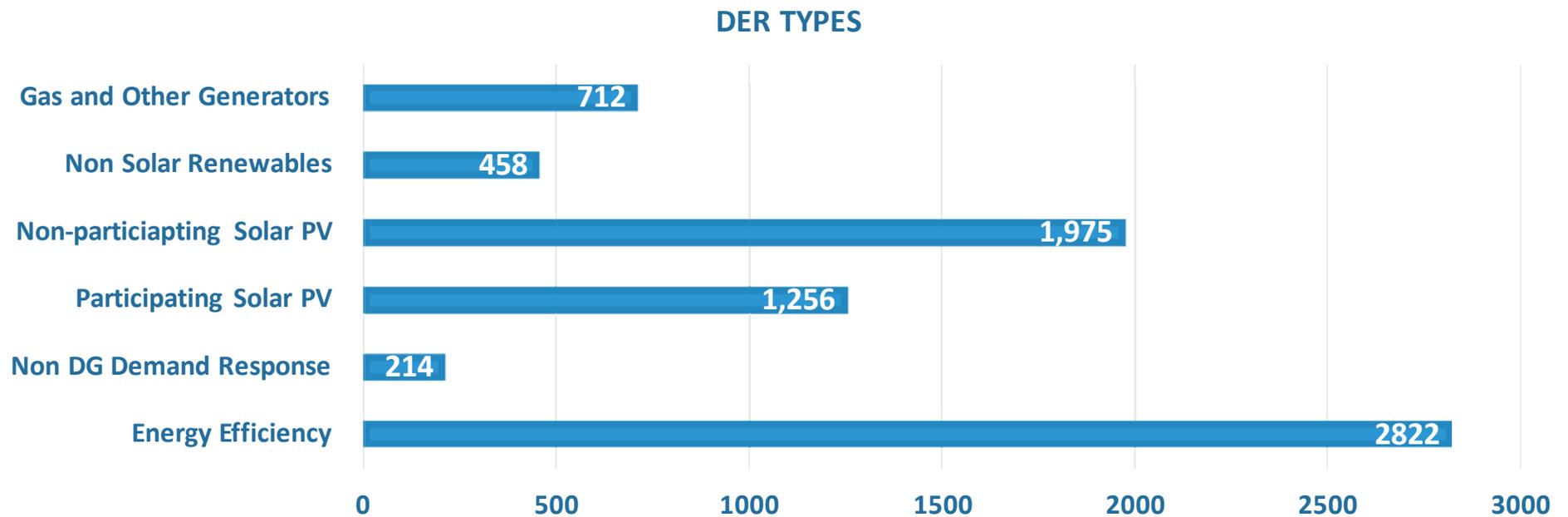
*Data is subject to adjustment



Bates p. 164

Distributed Energy Resources in ISO NE System

- 7437 MW, 19% of operating capacity



Data as of 9/1/2019, source: https://www.iso-ne.com/static-assets/documents/2019/10/rm18-9_resp_to_der_data_req.pdf

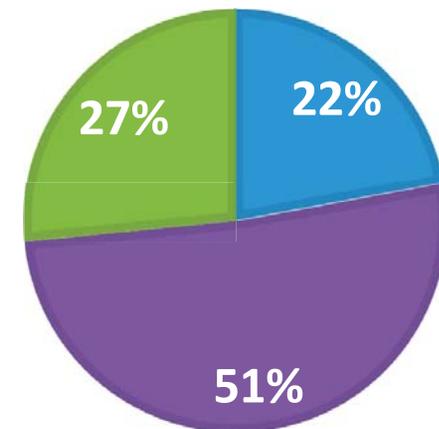
Bates p. 165

Current DER Market Participation

- Market participation programs
 - Demand Response (DR)
 - Passive demand resources
 - On-peak
 - Seasonal On-peak
 - Active demand resources
 - Price responsive demand (PRD)
 - Settlement Only Generator (SOG)
 - Energy Storage

DER MARKET PARTICIPATION

■ SOG ■ DR ■ Non Market Participation



Bates p. 166

PRD Program

- Product Eligibility
 - Capacity, Energy and Ancillary Services
 - Metering and baseline calculation are required
- DR aggregation at a DR zone
 - 20 DR zones
 - Registered resource with multiple assets within the same DR zone
 - Capable of 0.1MW demand reduction
 - No individual asset with Max Interruptible Capacity \geq 5MW
- DR resource at a single location
 - Capable of 0.1MW demand reduction
 - Max Interruptible Capacity \geq 10kW
 - Single Retail Delivery Point and Pricing Node

Reference: ISO New England Market Rule 1, Section III.8.1

Bates p. 167

SOG Program

- SOG scheme is basically a settlement construct
 - Capacity resource
 - Not explicitly considered in system operations and market clearing
 - Does not receive ISO dispatch signal
 - Self schedule by owners
 - Receive energy revenue
 - Settle at a designated pricing location
- Eligibility
 - Interconnected below 115kV
 - Less than 5MW

Reference: Operating Procedure 14, Section II.A

Bates p. 168

Energy Storage

- Program is established under FERC Order 841
- Qualification
 - One or more storage facilities at the same point of interconnection
 - Must be able to inject/consume at least 0.1MW
- Products offered
 - Capacity, Energy, and Ancillary Services
- Registered as both a generator and a dispatchable demand
- Can be either a “Binary Storage Facility” or a “Continuous Storage Facility”
 - Depends on the choice of regulation service provision

Reference: Market Rule 1, Section III.1.10.6



Challenges of DER Integration

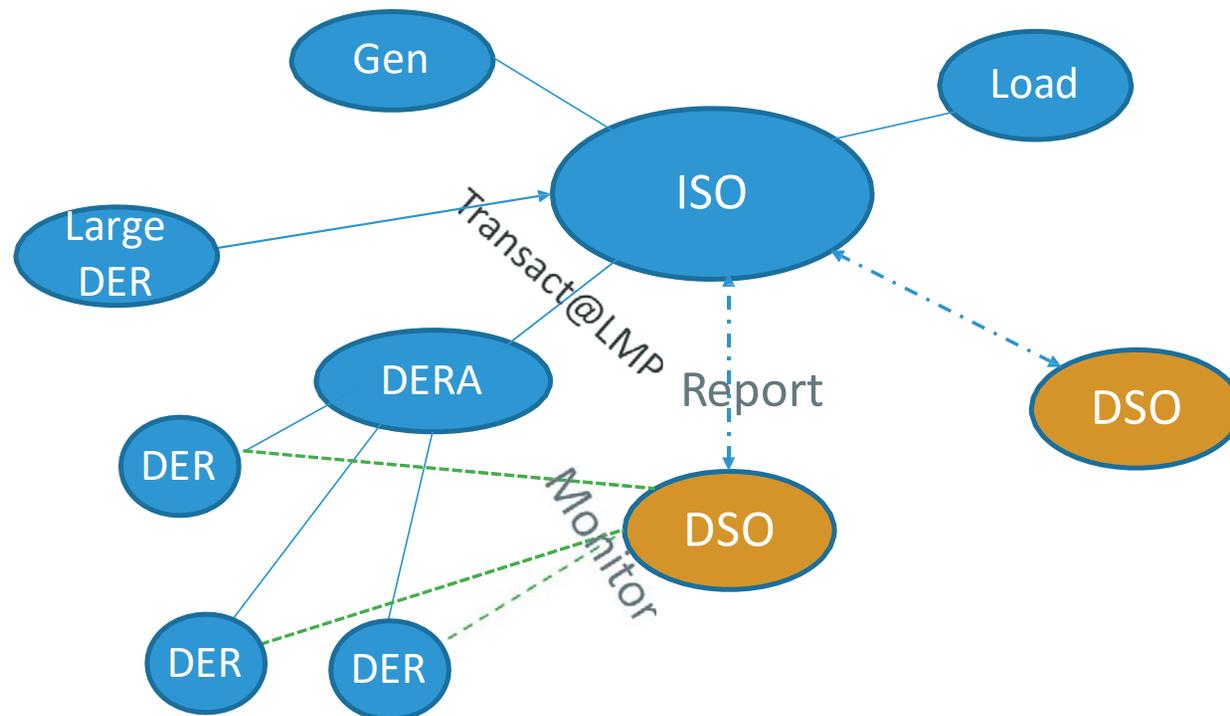
- Distribution resource planning
- Transmission system planning
- Grid operation
- DER control and operation
- Market participation
- State and federal policy



Bates p. 170

Current Market Structure for DER Integration

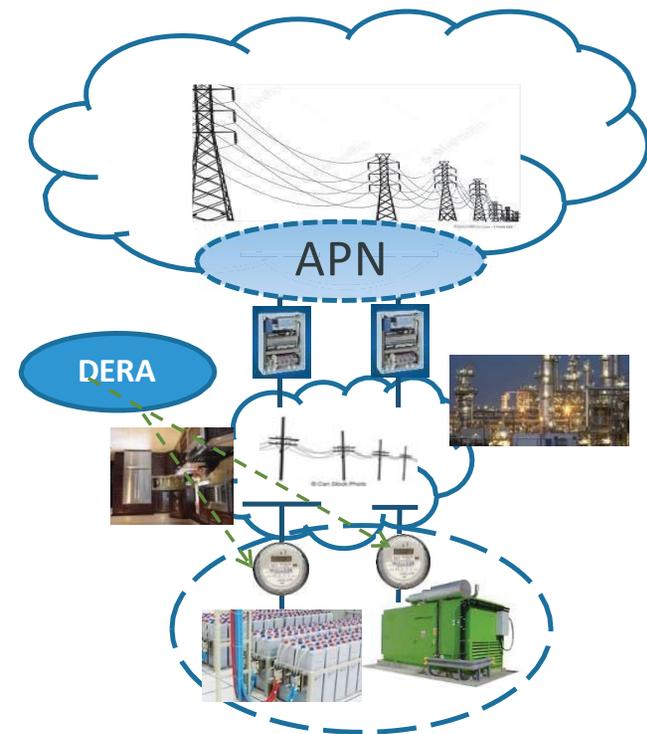
- ISO/DSO wholesale only market



Bates p. 171

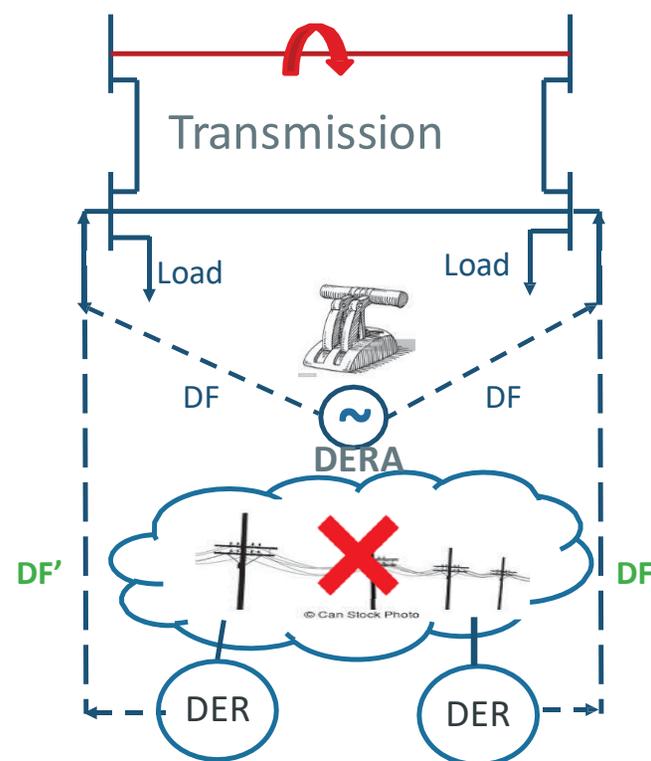
Thoughts on DER Aggregation Model

- A prosumer model
 - Individual DER participates the wholesale market through a DER aggregator
 - Provide energy, ancillary services, and capacity products
 - Aggregator is responsible for
 - Submitting bids to buy and offer to sell at an aggregation level
 - Following ISO dispatch instruction and disaggregating ISO dispatch signal for each DER
 - Reporting DERA telemetry
 - Communicating with ISO on distribution limitation on DERA output
 - No double compensation or double charge such as net metering
- TO/DSO should communicate with ISO on its operational issues and its requirements on DER dispatch and commitment



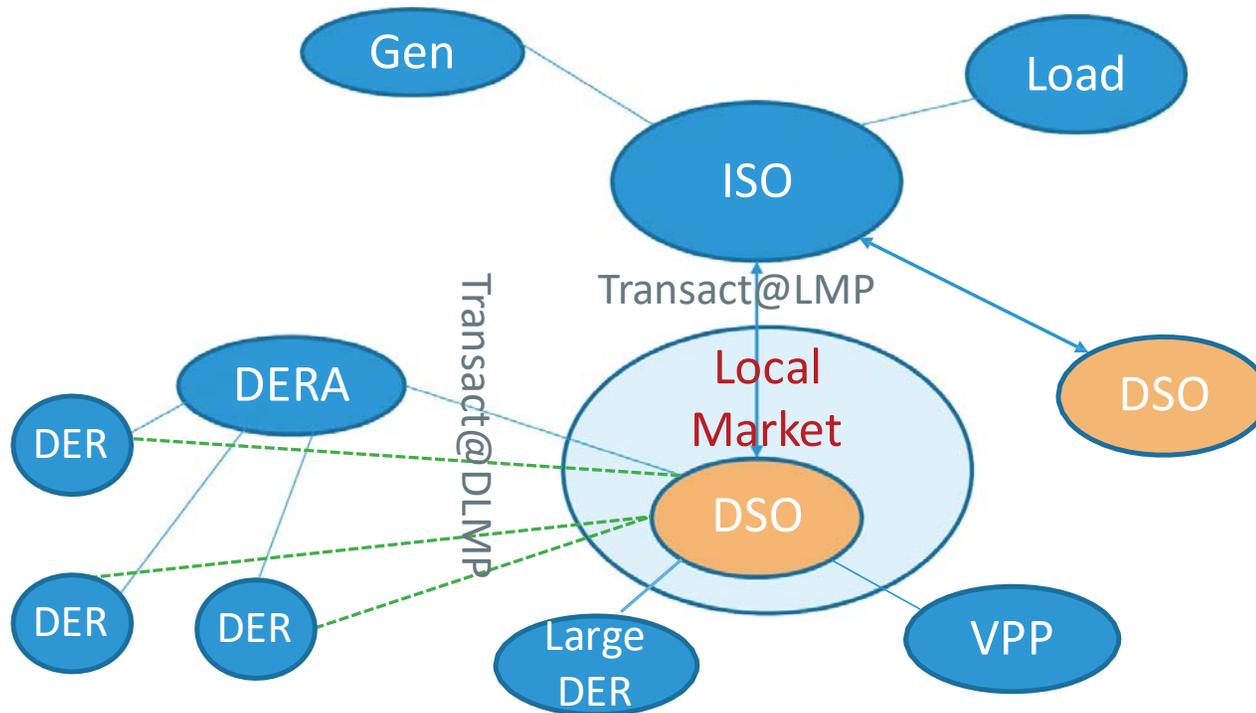
Challenges with the Aggregation Model

- Dispatch efficiency and transmission congestion management
 - Actual DER responses to the control room dispatch signal may not be consistent with what the dispatch model predicts.
 - Local congestion may require significant adjustment of an aggregated DER's output rather than a small set of DERs.
 - DER aggregator's control may result in issues in distribution system.
 - Feeder congestion
 - Voltage
 - Power quality



Possible Long-Term Market Structure for DER

- A local energy market construct



Bates p. 175

Conclusion

- A DER aggregation model should be considered for the future DER integration of wholesale electricity markets
- Direct participation of DERA in the wholesale markets requires a proper ISO/DSO/DERA coordination, and can be efficient in the short-run
- To fully resolve the TSO/DSO coordination issue, local energy markets could be established in the future when a large number of DERs participate in the wholesale markets



Questions

