ADVANCED ENERGY BUYERS GROUP

the policy voice of advanced energy purchasers

BEFORE THE

PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

IN THE MATTER OF THE COMMISSION'S IMPLEMENTATION OF §§ 40-2.3-101 AND 102, C.R.S., THE COLORADO TRANSMISSION COORDINATION ACT.	)	Proceeding No. 19M-0495E

COMMENTS OF ADVANCED ENERGY BUYERS GROUP

Filed: November 15, 2019

The Advanced Energy Buyers Group (AEBG) on behalf of large energy users[1] appreciates the opportunity to provide initial comments in response to the request for input by the Public Utilities Commission of the State of Colorado (Commission or PUC) in the above-captioned proceeding. The potential for increased interstate electricity market coordination in the West is of great interest and potential benefit to large customers, especially those invested in a cost-effective, reliable transition to a 100% clean energy future for both their own operations and

[1] These comments represent the consensus view of the Advanced Energy Buyers Group (information and membership available at https://www.advancedenergybuyersgroup.org/). However, this document does not necessarily the reflect the position of any specific member of the AE Buyers Group, and these comments should not be attributed to any individual company or companies participating in the AE Buyers Group.

the broader economy. The AEBG looks forward to remaining engaged as the Commission explores this complex and important topic.

I. ABOUT THE ADVANCED ENERGY BUYERS GROUP

The Advanced Energy Buyers Group is a business-led coalition of large energy users engaging on policies to expand opportunities to procure energy that is secure, clean, and affordable. Members of the Buyers Group are market leaders and major employers spanning different industry segments, including technology, retail, and manufacturing. Our companies are among the 71% of Fortune 100 companies and 43% of Fortune 500 companies that have established renewable and/or climate targets as part of our corporate sustainability commitments.

AEBG members share a common interest in expanding our use of advanced energy, such as renewable energy like wind, solar, geothermal, and hydropower; demand-side resources like energy efficiency, demand response, and energy storage; and onsite generation from solar, advanced natural gas turbines, and fuel cells. In addition to pursuing advanced energy for our own operations, we also share a goal to accelerate the transition to an advanced energy future that benefits all ratepayers, including our customers and employees.

In 2017, members of the AEBG totaled over $1 trillion in revenue and collectively consumed over 18 TWh of electricity, including over 11 TWh hours of renewable electricity, equivalent to the electricity sales for the states of North Dakota and Delaware, respectively. AEBG members include companies with a footprint in Colorado and across the Western interconnection.

II. OVERVIEW OF AEBG'S PERSPECTIVE IN THIS CASE

Fundamentally, the goal of the electricity system is to meet the electricity needs of customers at a reasonable price. To do this successfully, the system must be responsive to

customers' needs and preferences, which may shift over time. Members of the AEBG, as large electricity customers, share a desire for the electricity we consume to be *reliable, affordable,* and *clean.* Our comments in this proceeding reflect these goals, and highlight the role that a more fully integrated regional wholesale market could play in enabling Colorado's electricity system to better align with the preferences of our companies and other customers.

A. Commercial and Industrial Customer Role in Transition to 100% Clean Electricity System

Large corporate customers are major drivers of the growth of renewable and advanced energy technologies; as noted above, 71% of Fortune 100 companies and 43% of Fortune 500 companies have established renewable and/or climate targets as part of their corporate sustainability commitments. Companies are setting these goals for multiple reasons, including obtaining cost savings from renewable energy, meeting the needs and expectations of their employees and the communities where they work, responding to concerns from leadership and boards of directors regarding the risks of climate change, and responding to customer preferences to be aligned with brands that support clean energy and environmental goals.

To fulfill their commitments, companies such as members of the AEBG are increasing their purchases of advanced energy technologies. Since 2008, commercial and industrial customers have signed contracts to procure 22 gigawatts (GW) of renewable energy, including a record of 7.15 GW in 2019 year-to-date. Most recently, large renewable energy purchases to power their operations were announced by both Google (18 power purchase agreements for a

total of 1,600 megawatts[2]) and Amazon (two power purchase agreements totaling 215 MW of solar in Virginia and North Carolina[3]).

In addition to renewable energy, our companies are increasing our investments in energy efficiency, demand response, distributed energy resources, and energy storage, to make their operations more resilient, save them money, and provide benefits to the grid. For example, Microsoft's Virginia data center has behind the meter battery storage for backup power and power quality, piloting an advanced uninterruptible power supply system with capability to support both critical load and grid services applications; this project provides around the clock reliability at the host site while providing frequency regulation service to the wholesale market. Other data centers, including those run by Equinix, Apple, and eBay, are utilizing fuel cells to provide backup power in the event of grid failure. In another example, over two-dozen Walmart stores in California have installed advanced energy storage systems to shave the retailer's peak load, balance out on-site solar generation with store consumption, and help the local utility, Southern California Edison, reduce peak demand on the grid in conjunction with a broader grid modernization plan. Similarly, over 800 Target stores in 31 states participate in demand-response programs, reducing peak demand and helping to keep the electric system in balance while also delivering operational savings.

As states such as Colorado explore opportunities to make progress toward ambitious clean energy policy goals, we encourage looking to commercial and industrial (C&I) customers as valuable partners in this transition. By enacting policies that enable greater action by

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[2] Eamon Barrett, "Google Has Bought Enough Renewable Electricity to Power All of Uruguay," *Fortune* (Sept. 20, 2019), https://fortune.com/2019/09/20/google-renewable-energy-uruguay-climate-week/

[3] Catherine Morehouse, "Amazon announces 265 MW in new solar, wind as part of 100% renewables pledge," *Utility Dive,* https://www.utilitydive.com/news/amazon-announces-265-mw-in-new-solar-wind-as-part-of-100-renewables-pledg/565788/

customers—or, at the very least, avoiding policies that hinder such actions—states can reach their policy goals more quickly while also meeting the needs of C&I customers.

B. Importance of wholesale markets in achieving C&I renewable energy goals

As large electricity customers seeking to reach our own renewable energy goals cost-effectively, and as companies committed to accelerating the transition to a 100% clean energy grid overall, members of the AEBG see myriad benefits in regions operating under organized competitive wholesale markets. Based on our experience in other regions, we believe a more fully integrated regional wholesale market (such as a Regional Transmission Organization, RTO) that operates across the Western Interconnection will better optimize and integrate renewable energy and other advanced energy technologies onto the grid while also delivering grid performance benefits and cost savings, ultimately benefiting all ratepayers. Specifically, an expanded organized wholesale market in the West would:

- **Facilitate renewable energy integration, enabling new renewable energy development and decreasing curtailment of existing projects.** An expanded wholesale market would help reduce renewable energy curtailment in the region, provide a market for cost-effective resources located far from load centers, and facilitate transmission planning to enable greater renewable energy development. These changes would benefit existing renewable energy projects while helping to unlock opportunities to develop new, cost-competitive renewable energy projects across the West.
- **Provide additional flexibility and choice for our companies as we seek renewable energy and other advanced energy resources to meet our needs.** In addition to providing a broader geographic footprint within which to pursue renewable energy purchases, a larger wholesale market in the West would open new opportunities for

companies to seek renewable energy projects through power purchase agreements (PPAs), virtual PPAs, and other similar structures only available in competitive, organized wholesale markets.

- **Improve grid performance and reliability.** A coordinated market across the Western states would bring significant grid benefits to the region. For example, a larger regional footprint with a greater range of peak production and peak load times would help smooth out variable renewable energy generation.
- **Deliver cost savings to all customers due to more efficient transmission and generation infrastructure buildout and more efficient resource use.** Already, the expansion of the Energy Imbalance Market to several utilities in the West has brought significant customer savings, with total benefits since its initial expansion in November 2014 estimated at over $800 million.[4] A more integrated organized market would provide further savings by ensuring more efficient resource deployment and development, transmission coordination, and long-term planning across the region.

While greater regional coordination alone will not deliver a 100% clean energy future and guarantee achievement of the ambitious clean energy goals of our companies and of the state of Colorado, regionalization is an important tool that should not be ignored. Below, we provide initial feedback on the various pathways to increased intra- and inter-state electricity market coordination under consideration in Colorado, with the aim of maximizing the benefits listed here.

[4] California ISO, "Western EIM Benefits reach $801.07 million since its launch in 2014" (Oct. 30, 2019), *available at* https://www.westerneim.com/Documents/WesternEIMBenefitsReach801_07MillionSinceLaunchIn2014.pdf.

III. RESPONSES TO SELECT PUC QUESTIONS

A. Comments on Market Definitions

While AEBG does not have specific feedback on the definitions proposed by the Commission, we emphasize the significant distinction between a full RTO versus any of the other approaches; namely, an RTO is the only category that unlocks all possible pathways to short-term optimization of existing resources as well as long-term optimization of infrastructure buildout, including both generating resources and transmission infrastructure.

B. Comments in response to questions and issues raised by the Commission

a) Costs and Benefits – Modeling studies to date have primarily addressed the savings attributable to generation commitment and dispatch optimization provided by integrated markets (as determined by production cost modeling). What other costs and benefits should be quantified for purposes of this investigation? What other costs and benefits cannot be quantified but should be taken into account and how can those be factored into an evaluation of market constructs? How do these change over time and with differing levels of resource and transmission investment?

AEBG recommends a thorough exploration of all potential costs and benefits of each of the different market constructs, including outcomes that are difficult to quantify with precision. In particular, consistent with the expected benefits outlined above, AEBG recommends including at least the following quantifiable benefits in any analysis of the different market structures under consideration:

- Savings attributable to generation commitment and dispatch optimization (consistent with prior studies);
- Savings from reduced renewable energy curtailment, and more cost-effective balancing and integration of renewable energy;

- Cost savings from access to lowest-cost renewable energy resources, including both transmission cost savings and energy savings from efficient buildout of renewable energy resources;
- Long-term savings from coordinated transmission buildout, and near-term savings from reduction of multiple transmission charges for long-distance transmission;
- Opportunities for distributed energy resources and energy storage resources to earn revenue in wholesale markets, reducing costs for these technologies;
- Relative cost of increased electrification of buildings and vehicles under different market structures, including cost to meet new load and opportunities to manage increasingly dynamic and controllable loads; and
- The relative cost to achieve the Polis administration's 100% renewable electricity by 2040 goal and the mandate enacted by SB 19-236 for all utilities with more than 500,000 customers to reduce atmospheric carbon emissions by 100% by 2050.

In addition, any analysis should take into account benefits that are more difficult to quantify, especially the increased opportunity for C&I renewable energy procurement under certain market constructs and the associated economic development and environmental benefits from this market activity.

With regard to timing, it is likely that the costs of transitioning to a new market construct will primarily be borne upfront, while the benefits may not fully materialize for years or even decades; the deepest savings relative to business-as-usual may occur when Colorado and other Western states are much closer to reaching 100% clean energy penetration. Accordingly, it is important that any analysis look far enough into the future to capture all potential benefits.

b) Ratepayer Benefits – What are the mechanisms by which ratepayers realize the benefits from greater market integration? What kind of benefits and costs impact retail energy rates? How does the Commission ensure that benefits flow to ratepayers?

Retail electricity customers will benefit to the extent that the cost to serve them goes down as a result of the benefits outlined above; these savings should be passed on to customers through their retail rates. Pursuant to its jurisdiction over retail rates, the Commission will play a central role in guaranteeing that savings resulting from regionalization are passed on to ratepayers.

Importantly, and as noted above, ratepayer benefits also extend beyond cost savings, and include the benefit to AEBG members and other large customers seeking renewable energy, energy storage, distributed energy resources, and other advanced energy resources to meet their own operational needs. For such customers, introduction of a more competitive and coordinated market in the West will spur innovation and open new opportunities for advanced energy purchases. As one important example, many companies pursue renewable energy purchases through virtual PPAs in organized wholesale markets. Under a virtual PPA, the customer signing the PPA receives the associated renewable energy certificates (RECs), while the output (energy, capacity, and any ancillary services) of the project is sold into the wholesale market; the net charge to the customer is the difference between the PPA price and the relevant project revenues. The availability of such contracts in wholesale markets is one important factor contributing to the high concentration of C&I renewable energy procurement in ERCOT, SPP, and PJM. Along with the opportunity to pursue PPAs and virtual PPAs for large-scale renewable energy, the flexibility to pursue other technologies and contract structures and the potential to develop new, innovative approaches is an important benefit of an organized competitive wholesale market.

c) **Governance – How should the Commission evaluate the potential governance structures of the four identified market structures and the subsequent potential for changes in regulatory authority? How should the Commission consider such non-quantifiable governance issues as the independence of market service providers, transparency in market decision-making, the representation of consumer interests, and the role of FERC in market oversight?**

With respect to representation of customer interests, we strongly recommend an accessible and open stakeholder process that recognizes that electricity markets are, at their core, providing a service to customers. AEBG members include companies that participate actively as stakeholders in existing RTO/ISO stakeholder processes. Under any market construct, AEBG strongly urges a governance structure that enables individual C&I customer participation, including not only the option to participate in theory but true facilitation of this option in practice, e.g., by avoiding unreasonable costs or logistical barriers to entry.

More broadly, governance is an important consideration that should be explored thoroughly but should not be allowed to present a barrier to any of the market constructs under consideration. Although the Commission cites governance challenges under the full RTO and the EDAM market structures in particular, the existing multi-state RTOs have all addressed this question in different ways, proving that a variety of workable solutions do exist. Colorado has the opportunity to work with neighboring states to explore existing models and to consider alternatives that build from lessons learned elsewhere and that take into consideration the unique goals and characteristics of the West. Under any governance structure, state decision-making on energy policy matters must be clearly protected and delineated.

d) **Risks – What risks should the Commission consider in its evaluation of markets? How do these risks change depending on market construct? What factors influence the level of risk borne by Colorado entities?**

AEBG has no comment at this time.

e) **Quantitative Analysis –What kind(s) of modeling efforts or other analyses should the Commission be pursuing?**

AEBG has no comment at this time, beyond our recommendations in response to question (a) above.

f) **Footprints – What geographic market footprints should the Commission consider in its market evaluation? Footprint options could include the state of Colorado, the Mountain West Transmission Group, or a larger regional area.**

AEBG encourages the Commission to study multiple geographic market footprints, including a study of the entire West. With this information, the Commission will be equipped to make informed decisions about a range of options moving forward. Because many of the anticipated *benefits* scale up as the geographic footprint expands, while many of the expected *costs* do not, it is important to include the full West as a benchmark against which to assess the costs and benefits associated with smaller geographic footprints.

g) **New Transmission – To what extent is additional transmission access/investment needed in order to realize the benefits of market participation? What is the potential cost and or range of costs of new transmission build needed to enable the full benefits of an RTO? What are the barriers to the development of new transmission resources within the state of Colorado and elsewhere?**

Building new transmission unavoidably comes with costs and challenges; however, these costs should be considered not in isolation, but in the context of the benefits they unlock as well as in comparison to alternate pathways. Specifically, while costly, targeted transmission buildout that unlocks the full benefits of an RTO may be much less costly than achieving 100% clean energy within the geographic boundaries of Colorado—a path that, it is important to note, would also almost certainly involve costly investment in transmission infrastructure. Therefore, AEBG

cautions against any calculation of added transmission costs under a full RTO pathway that is not presented in comparison to costs that would be borne under a non-RTO pathway.

Furthermore, we note that transmission is often a worthwhile investment. As purchasers of large-scale renewable energy projects, AEBG members are acutely aware that transmission constraints can present a significant barrier to bringing cost-effective renewable energy development to market. Increased regional coordination can help to prioritize investments in efficient use of existing transmission infrastructure and targeted buildout of new transmission infrastructure—including interregional projects—that would allow full utilization of existing generating facilities and optimal buildout of new generation projects. An analysis by David Gardiner & Associates found that even under an aggressive transmission buildout scenario where 90% of all planned transmission is built, transmission capacity would be sufficient to meet only 70% of projected renewable energy demand from voluntary corporate buyers and announced state renewable portfolio standards.[5]

In addition to being necessary for companies pursuing renewable energy targets to meet their goals on time and cost-effectively, unlocking access to areas with high renewable energy resource potential will lower costs for consumers overall by ensuring optimal buildout of the lowest-cost and highest quality renewable energy resources. Equally important, such transmission investments will minimize curtailment of existing projects as more renewable energy facilities are built on a transmission-constrained system, reducing risk for offtakers from these projects, including our companies.

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[5] Based on 51 GW of demand for renewable energy, derived from Renewable Energy Buyers Alliance goals. David Gardiner and Associates, *Transmission Upgrades & Expansion: Keys to Meeting Large Customer Demand for Renewable Energy* (January 2018), available at https://windsolaralliance.org/wp-content/uploads/2018/01/WEF-Corporate-Demand-and-Transmission-January-2018.pdf.

h) Transmission Pricing and Cost Treatment – How should transmission be priced under different market structures? How should the Commission consider transmission cost allocation issues and the impact on rates for both new and existing transmission infrastructure?

AEBG reiterates our caution in response to question (g) above urging the Commission to consider transmission costs not as a simple cost but as one element of a pathway that should be compared to alternative pathways on the basis of both total costs and total benefits.

With respect to transmission cost allocation issues, AEBG recommends addressing this issue upfront as Colorado explores different market constructs. Existing RTOs have taken different approaches to transmission cost allocation, and Colorado and Western states will need to determine the most appropriate approach, recognizing the mutual benefits of sharing the cost of coordinated transmission buildout.

As the Commission weighs potential incentives or policies to drive investment in projects that will improve access to renewable energy resources, AEBG also encourages consideration of new or different roles that project offtakers such as our companies could play in the buildout of transmission infrastructure. While transmission needs have historically been met by merchant or utility providers, voluntary purchasers also have an interest in cost-effective, timely buildout of transmission infrastructure to unlock access to new renewable energy projects. The potential involvement of customers such as our companies in building out transmission system needs should, at the very least, not be hindered under a future market construct, and we would welcome exploration of potential policies that would facilitate investments or partnerships involving our companies.

i) Other Market Services – How should the Commission consider other market functions such as reserve planning, resource adequacy, GHG policies, ancillary services, and capacity markets?

AEBG has no comment on these other market services at this time.

j) Timeframe – What period of time should be covered by the Commission's quantitative analysis? Some risks the Commission might consider include the potential for stranded costs, reduction in opportunities for bilateral transactions for non-participating entities, potential market exit fees, etc.

AEBG encourages the Commission to consider multiple timeframes, extending out to at least 2050, the date by which SB 19-236 directs all electric utilities with more than 500,000 customers to reduce carbon emissions by 100%.

k) State Environmental Goals – How should the state's statutory requirements and/or environmental goals pertaining to the state's electric utilities be considered in the Commission's analysis? What implications do different market constructs have for greater renewable penetration and the economics of renewable generation? How do the impacts change over time and depending on technological development?

As noted throughout these comments, AEBG views broader regional market coordination as a key tool to enable a cost-effective increase in renewable energy penetration, including through expansion of opportunities for voluntary renewable energy purchases by customers such as our companies. As such, comparative analysis of the costs and benefits of the different market approaches should all include as a baseline assumption the achievement of Colorado's clean energy goals and continued growth of C&I renewable energy demand.

We also note that it will be important for the state to ensure upfront that any interstate market is set up such that Colorado's ability to achieve its own policy goals is safeguarded.

l) Imports/Exports – How should an evaluation of public interest consider the potential impact of markets on the exports of high-GHG emission generation to other states?

AEBG has no comment at this time.

C. Comments in response to questions regarding the regulatory process and specific authority of the PUC as regards market regionalization efforts

a) **Stakeholder Process – The Commission envisions holding a series of workshops and a public hearing to address specific issues related to its CTCA investigation. What topics and workshop structure would be most productive?**

AEBG strongly supports the Commission's plan to hold a series of workshops and public hearings to explore this multi-faceted and important topic. As part of these efforts, we encourage the Commission to include the perspective of large electricity customers who are pursuing clean energy targets. Companies such as members of the AEBG stand to be significantly impacted by decisions regarding Western electricity market development—both as ratepayers and as committed partners in the transition to a 100% clean electricity system. The perspective of our companies is unique and often missing from such forums, which generally focus discussion of customer impacts on residential customers or C&I customers not motivated by clean energy goals.

We also encourage the Commission to invite representatives from existing RTOs/ISOs, specifically individuals who were present for the initial decision-making around governance, cost allocation, and market design, among other key considerations. We further urge the Commission to invite representatives from other states currently pursing ambitious clean energy targets and participating in multi-state RTOs/ISOs.

b) **Ordering Authority under the CTCA – Does the Commission have authority to order Electric Service Providers within the state of Colorado to enter into one of the market options discussed in the CTCA?**

Based on the plain text of the CTCA, it is clear that the Commission has the authority to order Electric Service Providers within the state of Colorado to enter into one of the market options discussed in the CTCA and considered in this proceeding. Specifically, the CTCA states that the Commission "shall direct electric utilities to take appropriate actions and conduct such

proceedings as the commission deems appropriate to pursue participation in an energy imbalance market, regional transmission organization, power pool, or joint tariff."[6] This language clearly indicates that the Legislature has granted the Commission authority to take action based on the findings of this proceeding.

c) Legislative Clarification – Should the General Assembly clarify and or amplify the jurisdiction of the PUC to order these entities to participate in a market?

To the extent the Commission for some reason finds that it lacks jurisdiction, AEBG supports seeking additional clarity from the legislature. However, as noted above, the text of the CTCA does not suffer from ambiguity on this issue.

d) Imbalance Market Regulatory Process – If Colorado jurisdictional utilities decide to pursue either CAISO or SPP energy imbalance services, what would they need to file at the PUC and when would that occur? How does this relate to when the costs to join such a market would begin to be incurred? When would FERC filings be made and what would be included in those FERC filings? To what extent do decisions regarding imbalance market participation restrict future regional market options?

AEBG has no comment with respect to the process to pursue energy imbalance services. However, prior to taking this step, AEBG strongly urges the Commission to chart out the steps that would be needed to subsequently pursue full RTO participation. More generally, AEBG urges the Commission against allowing any Colorado Electricity Service Provider to pursue a pathway that would make eventual transition to a full RTO more difficult.

e) Bifurcated State – What are the implications, both regarding regulatory processes and costs and benefits, of different Colorado Electric Service Providers pursuing different market constructs or different market operators?

[6] Colo. Rev. Stat. § 40-2.3-102(4).

While a bifurcated state is likely not ideal in terms of maximizing benefits and minimizing overall costs, there may be other reasons, geographic or otherwise, that justify this outcome. The Commission should remain open to a bifurcated state, because different Colorado Electric Service Providers joining different market constructs may still be preferable to the status quo.

IV. CONCLUSION

AEBG is encouraged by the Commission's thoughtful and deliberate consideration of the different options for Colorado to participate in a broader, more coordinated electricity market construct, and appreciates the opportunity to provide input at an early stage in the investigation of costs, benefits, challenges, and opportunities.

As the state charts a path to a 100% clean electricity system, we encourage the Commission to make use of all available tools to facilitate a cost-effective and reliable transition. Participation in a more fully integrated regional wholesale market is one such tool, because this would facilitate efficient infrastructure buildout and resource deployment across a broader geographic area. At the same time, RTO particpation would also enable an expansion and acceleration of customer-driven contributions to a clean energy grid.

AEBG looks forward to continued participation in this proceeding as the Commission evaluates, compares, and potentially implements available options.