

**BEFORE THE COLORADO PUBLIC UTILITIES COMMISSION**

**CLEAN COALITION REPLY COMMENTS ON PROCEEDING NO. 17M-0694E  
IN REGARDS TO DISTRIBUTION RESOURCES PLANNING**

**Colorado PUC E-Filings System**

John Bernhardt  
Outreach Director  
Clean Coalition  
16 Palm Ct  
Menlo Park, CA 94025  
john@clean-coalition.org

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## **I. INTRODUCTION**

The Clean Coalition submits these reply comments in response to comments served by parties participating in Proceeding No. 17M-0694E. As stated in our initial comments, the Clean Coalition strongly encourages the Colorado Public Utilities Commission (“the Commission”) to adopt formal Distribution Resources Planning rules and has submitted draft rules for the Commission’s consideration.

### Summary of Reply Comments

- We are aligned with the Colorado Energy Office and Western Resource Advocates on the purpose and need for formal Distribution Resources Planning rules.
- We disagree with the assertions of Black Hills Energy and Public Service Company of Colorado that no formal Distribution Resources Planning rules are necessary.
- We support the adoption of robust Hosting Capacity Analysis rules.
- We continue to strongly support the Commission’s adoption of formal Distribution Resources Planning rules.

## **II. COMMENTS**

The Clean Coalition very much appreciates the efforts of the Commission in initiating this proceeding and gathering stakeholder input on a variety of topics, including Distribution Resources Planning.

### **Alignment with parties**

With respect to Distribution Resources Planning, parties’ comments fell into two broad camps — either supportive of Commission-adopted rules or against such rules. The Clean Coalition is in alignment with the comments of the Colorado Energy Office (“CEO”) and Western Resource Advocates (“WRA”) on the need and purpose for formal Distribution Resources Planning rules.

As the CEO stated, “distribution system planning is in the best interest of Colorado ratepayers and the time is ripe for the Commission to adopt rules . . .”<sup>1</sup> Through adoption of the Clean Coalition’s proposed Distribution Resources Planning rules, the Commission would establish a comprehensive and transparent framework designed to improve distribution system planning, operations, and investment. The result would be optimizing utilization of existing electricity grid assets and new distributed energy resources (“DER”) — such as distributed generation, energy storage, and demand response — in conjunction with planning the most appropriate and cost-effective investments to modernize the grid while minimizing costs for Colorado’s ratepayers.

### **Reply to Xcel Energy and Black Hills Energy initial comments**

In their comments, both Public Service Company of Colorado (“Xcel Energy”) and Black Hills Energy argued against Commission adoption of Distribution Resources Planning rules, while also acknowledging the value of certain aspects of Distribution Resources Planning.

#### *a. Hosting Capacity Analysis*

The Clean Coalition would like to address utilities’ comments on the value of Hosting Capacity Analysis. The Clean Coalition firmly believes that Hosting Capacity Analysis has become as a foundational business practice for electric utilities in the 21<sup>st</sup> century. The nature of how we generate, manage, and deliver energy is quickly transforming. DER can offer a suite of valuable services to the grid, such as flexible loads, dispatchable storage and generation, and local voltage support. And the rise in deployment of DER, by customers and utilities, is making distribution grids centers of innovation and investment on both sides of the customer meter. However, traditional utility planning processes were not designed to account for the increasingly dynamic nature of distribution grids, two-way power flows, and utilization of DER. Therefore, new distribution grid planning processes are necessary.

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<sup>1</sup> Initial Comments of the Colorado Energy Office in Colorado Public Utilities Proceeding No. 17M-0694E, January 31, 2018.

Hosting Capacity Analysis represents one fundamental component of Distribution Resources Planning, and utilities across the country are already implementing such analyses.<sup>2</sup> In comments submitted to the Minnesota Public Utilities Commission in 2016, Xcel Energy essentially said the same thing: “Xcel Energy recognizes hosting capacity as a key element in the future of distribution system planning.”<sup>3</sup> We recognize, and are supportive of, Xcel Energy’s initial, voluntary steps to enhance transparency on its distribution system by publishing a “proxy for hosting capacity”<sup>4</sup> on its feeders — throughout its Colorado and Minnesota service territories.

This early exercise has proven quite informative. Through Xcel Energy’s initial distribution system study of its Minnesota feeders (Attachment A), it became quite apparent that energy project developers had no visibility into the optimal locations for siting distributed generation projects. For example, as shown below in Figure 1, on line 203, 10.5 megawatts (MW) of distributed generation projects were proposed on a feeder that had only 0.3 MW of hosting capacity. Yet, there are many feeders throughout Xcel Energy’s Minnesota distribution system, such as the feeder on line 211, with multiple MW worth of capacity — but no proposed distributed generation projects.

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<sup>2</sup> Homer, J., Cooke, A., Schwartz, L., Leventis, G., Flores-Espino, F., Coddington, M., (December, 2017). *State Engagement in Electric Distribution System Planning*. Grid Modernization Laboratory Consortium, US Department of Energy, at iv. Available at: <https://emp.lbl.gov/publications/state-engagement-electric>.

<sup>3</sup> Xcel Energy comments in Minnesota’s Grid Modernization Report Docket No. E002/M-15-962, filed December 1, 2016.

<sup>4</sup> Initial Comments of Public Service Company of Colorado in Colorado Public Utilities Proceeding No. 17M-0694E, January 31, 2018.

	A	B	C	D	E	F	G
1	Northern States Power Company			Docket No. E002/M-15-962			
2	Hosting Capacity			Distribution System Study			
3				Attachment A			
4				Page 1 of 16			
5	Substation	Feeder Name	Min-Hosting Capacity (MW)	Limiting Violation (MIN)	Max-Hosting Capacity (MW)	Installed DG (MW)	Proposed DG (MW)
197	Deephaven	DPN063	1.08	Thermal for Discharging DER - min	3	0.005	0
198	Deephaven	DPN071	1.6	Primary Over-Voltage - min	2.77	0.017	0
199	Deephaven	DPN072	1.1	Thermal for Discharging DER - min	2.87	0.061	0
200	Deephaven	DPN073	1.3	Primary Over-Voltage - min	2	0.005	0
201	Delano	DLO021	0.3	Primary Over-Voltage - min	0.37	0.010	0
202	Dodge Center	DOC021	1.2	Primary Over-Voltage - min	1.2	0.010	0
203	Dodge Center	DOC031	0.2	Primary Over-Voltage - min	0.3	0.159	10.5
204	Dodge Center	DOC211	0.3	Regulator Voltage Deviation - min	0.3	0.080	0
205	Douglas County	DGC061	0.2	Breaker Relay Reduction of Reach - min	0.2	0.000	4.75
206	Dundas	DND061	1.7	Primary Over-Voltage - min	2.4	0.026	0
207	Dundas	DND062	0.5	Breaker Relay Reduction of Reach - min	0.5	0.012	5
208	Dundas	DND071	1.1	Breaker Relay Reduction of Reach - min	1.1	0.027	0
209	Eagle Lake	EGL021	0.2	Regulator Voltage Deviation - min	0.2	0.050	1
210	Eagle Lake	EGL022	0.7	Primary Over-Voltage - min	0.7	0.000	0
211	East Bloomington	EBL062	8.7	Primary Over-Voltage - min	8.7	0.000	0
212	East Bloomington	EBL063	2.9	Primary Over-Voltage - min	2.9	0.000	0
213	East Bloomington	EBL064	4	Primary Over-Voltage - min	4	0.000	0

Figure 1. A snapshot of Xcel Energy’s initial Minnesota distribution system study with details on maximum hosting capacity and proposed distributed generation capacity by feeder.

This lack of transparency into the existing distribution grid prevents an efficient market for DER project development. A major benefit of Hosting Capacity Analysis is the proactive guiding of DER projects to optimal locations on the grid, where interconnection is quicker and cheaper. The benefits of Hosting Capacity Analysis are realized by both utilities and their customers in terms of reduced costs for DER project development and fewer unviable interconnection requests that utilities must review.

Xcel Energy’s initial steps at assessing its Colorado distribution system — as detailed in their initial comments — put the utility on a path toward more easily complying with the Distribution Resources Planning rules submitted by the Clean Coalition in our initial comments. And, again, while we commend Xcel Energy on its efforts to-date, this preliminary step by the utility is just that: a very first step. In no way should this prevent the Commission from adopting a strong set of Hosting Capacity Analysis rules that will ensure a robust, time-bound process based on industry best practices.

Black Hills Energy, in its initial comments, stated that Hosting Capacity Analysis “may

prove useful for high DER penetration systems . . .”<sup>5</sup> The Clean Coalition disagrees with the assumption that Hosting Capacity Analysis is useful only in a high-DER penetration system. For example, the ability to defer distribution infrastructure capacity upgrades through use of local generation, demand response, energy efficiency, and/or energy storage is not contingent upon these resources already been deployed on the distribution grid. In Consolidated Edison’s Brooklyn Queens Demand Management Program, the utility deferred a \$1.2 billion substation upgrade through procurement of 52 MW of new demand reductions and 17 MW of new DER capacity.<sup>6</sup> Hosting Capacity Analysis can, and should, be utilized to understand the capabilities of the existing distribution grid and guide smart investments into grid modernization efforts, such as this New York example. Additionally, Hosting Capacity Analysis is valuable for streamlining interconnection of new DER by proactively identifying viable locations. In other words, there need not be high penetrations of DER to realize the benefits of Hosting Capacity Analysis.

Further, we note that “high penetration” is a highly localized circumstance that is not easily predicted. A single new, one MW distributed generation facility on a low penetration circuit would change that circuit to a high penetration. Knowing what the hosting capacity limits are will define the appropriate size and engineering of that project — avoiding the costs and delays associated with multiple interconnection applications, reviews, redesigns and resubmissions that occur absent information on the hosting capacity.

Black Hills Energy also called Hosting Capacity Analysis “complex and costly to implement” but provided no additional details on this point. Hosting Capacity Analysis is simply a low-cost module now available to be added to the commercial software utilized by most utilities across the country to model distribution systems for interconnection and planning. To the extent that a utility does not have reliable and electronically accessible

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<sup>5</sup> Initial Comments of Black Hills/Colorado Electric Utility Company, LP D/B/A Black Hills Energy in Colorado Public Utilities Proceeding No. 17M-0694E, January 31, 2018.

<sup>6</sup> “Straight Outta BQDM: Consolidated Edison looks to expand its non-wires approach,” Utility Dive, July 19, 2017, available at <https://www.utilitydive.com/news/straight-outta-bqdm-consolidated-edison-looks-to-expand-its-non-wires-appr/447433/>.

data about their distribution grid, there is a greater effort required to set up a model to provide results that meet the engineering specifications required in interconnection review. However, utilities will need to ensure they have an accurate distribution grid information database anyway to take advantage of grid modernization benefits. And doing so will streamline utility operations and maintenance (O&M), planning, and outage mitigation to increase reliability — in addition to the interconnection and DER benefits. The Clean Coalition believes that requiring utilities to conduct Hosting Capacity Analysis as part of their Distribution Resources Planning activities is a reasonable and justified cost given the benefits.

Moreover, Black Hills Energy asserted that “A hosting capacity map may be useful to inform potential developers of feasible locations for DER siting, but the map would not replace the existing procedures for evaluating impacts of DER interconnection or a rigorous siting evaluation.”<sup>7</sup> The Clean Coalition agrees that the hosting capacity map would be very useful in providing information as described, but currently available tools extend beyond simple estimation or indication of hosting capacity. Using existing power-flow modeling software as its foundation, the Hosting Capacity Analysis provides engineering analysis to evaluate the primary technical requirements used by existing DER interconnection processes. In fact, in California, the Public Utilities Commission already requires investor-owned utilities to implement their Hosting Capacity Analysis methodology and utilize the results for clearing engineering screens in interconnection review procedures to streamline the process.<sup>8</sup> Both the Hosting Capacity Analysis methodologies employed and potential integration with interconnection rules would be up to the Commission’s direction; however, once implemented, the technical capabilities enable Hosting Capacity Analysis to address the applicable DER interconnection screens.

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<sup>7</sup> Initial Comments of Black Hills/Colorado Electric Utility Company, LP D/B/A Black Hills Energy in Colorado Public Utilities Proceeding No. 17M-0694E, January 31, 2018.

<sup>8</sup> California Distribution Resources Plan (R. 14-08-013) Integration Capacity Analysis Working Group Final ICA WG Long Term Refinements Report, filed January 8, 2018, available at <https://drpwg.org/wp-content/uploads/2018/01/ICA-WG-LTR-Report-Final.pdf>.

Lastly, Black Hills Energy makes a good point about abiding by established cybersecurity and FERC restrictions. Numerous, large investor-owned electric utilities have already conducted Hosting Capacity Analyses and published online maps, so there is a clear blueprint to follow regarding cybersecurity compliance.

*b. Focus on Major Distribution Grid Projects*

Both Xcel Energy and Black Hills Energy expressed concern that Distribution Resources Planning would limit their responsiveness by requiring a Certificate of Public Convenience and Necessity (“CPCN”) for every distribution grid investment. The Clean Coalition recognizes that many small investments are made into the utility distribution grid, and the focus of our proposed Distribution Resources Planning rules is not the small investments. The rules seek to bring greater transparency and review for major distribution grid projects that are estimated to require an investment of more than \$1 million on the distribution grid or more than \$3 million on both the transmission and distribution grids. The Clean Coalition agrees with WRA’s synopsis of this issue: “. . . routine maintenance need not go through the legal formality of obtaining a CPCN, but there should be some opportunity for evaluation of major distribution system projects, and a requirement to explore [if] cost-saving alternatives are available.”<sup>9</sup>

The Clean Coalition believes that Commission adoption of our proposed Distribution Resources Planning rules is in the best interest of Colorado ratepayers because the rules will ensure adequate cost control on large distribution grid expenditures through a required — and transparent — review of potentially cost-saving alternatives, while also enabling utilities to remain flexible and react on behalf of their customers.

More broadly, Commission and stakeholder review of biennial Distribution Resources Plans will ensure that routine equipment replacement is aligned with anticipated needs and functionality associated with greater utilization of DER. This will avoid future

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<sup>9</sup> Initial Comments of Western Resource Advocates in Colorado Public Utilities Proceeding No. 17M-0694E, January 31, 2018.



utilization barriers and retrofit costs associated with installation of equipment designed for grid operations of the prior century rather than those aligned with operational evolution.

*c. Structure to guide highly effective pilot projects*

As correctly stated by Xcel Energy in its initial comments, the utility has a number of distribution-level DER pilots underway, including AGIS and two Innovative Clean Energy Technology projects. The Clean Coalition is generally supportive of the utility's efforts to explore DER functionality, management, and value through pilot projects.

Commission adoption of Distribution Resources Planning would offer a clear procedural framework to review, coordinate, modify, and approve existing and future distribution-level pilot projects. With distribution-level pilots as part of utilities' Distribution Resources Plans, the Commission would be able to review existing and proposed pilots with greater context. This is because Distribution Resources Plans will contain foundational information on the status of the distribution grid, including 1) substation-level analysis; 2) Hosting Capacity Analysis; 3) various DER and load forecasts; 4) a description of planned and proposed Major Distribution Grid Projects; and 5) recent analysis on the economics of DER Alternatives to Major Distribution Grid Projects. The Clean Coalition believes that review and design of pilot projects within the context of Distribution Resources Plans would prove useful to the Commission, utilities, and other stakeholders.

*d. The need for Distribution Resources Planning rules*

Despite acknowledging the value of certain aspects of Distribution Resources Planning, both Xcel Energy and Black Hills Energy, in their comments, asserted the opinion that the Commission should not establish formal rules or processes for Distribution Resources Planning. For the reasons stated in these comments, as well as in the initial comments of

the Clean Coalition, CEO, and WRA, we believe there is indeed a need for the Commission to adopt formal Distribution Resources Planning rules.

The Clean Coalition's proposed Distribution Resources Planning rules would establish a comprehensive and transparent framework designed to improve distribution system planning, operations, and investment by requiring Qualified Retail Utilities to submit biennial plans. These biennial Distribution Resources Plans would enhance the Commission's ability to:

- Maintain and enhance the safety, security, reliability, and resilience of the electricity grid, at fair and reasonable costs, consistent with the state's energy policies;
- Ensure optimized utilization of electricity grid assets and resources to minimize total system costs;
- Increase transparency of utility investments and grid needs;
- Ensure distribution investments achieve a flexible, resilient grid and meet customer needs under a range of futures;
- Evaluate cost-efficient non-wires alternatives to proposed investments, including DER-provided services; and
- Improve inputs for utility Integrated Resources Plans.<sup>10</sup>

Given the importance of these outcomes, it is vital that the Commission adopt formal Distribution Resources Planning rules. Without adoption of formal rules, any progress on distribution system planning processes will happen at the utilities' sole discretion and on their own timeline, which is not in the best interest of Colorado ratepayers. Clear direction from the Commission will ensure that the related plans and reports submitted by each utility provide the information necessary to address the concerns of the Commission. Without this direction, the content and timing of such reports will not be properly coordinated with the schedules of other planning processes and proceedings.

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<sup>10</sup> "Minnesota's Actions to Advance Distribution System Planning," a presentation by Nancy Lange in the Advanced Energy Economy's August 30, 2017 webinar titled *Getting Out in Front: Distribution System Planning for a Modern Grid*, available at <https://info.aee.net/distribution-system-planning-for-a-modern-grid-webinar>.

### **Notes on the definition of robust Hosting Capacity Analysis**

The Clean Coalition submitted draft Distribution Resources Planning rules very much aligned to those of CEO and WRA, and the Clean Coalition commends both CEO and WRA on their excellent work. The one area in which the Clean Coalition has a slightly different view is in regards to Hosting Capacity Analysis. The Clean Coalition believes in a more expansive view of Hosting Capacity, which details more than just the ability of the grid to handle distributed generation.

In our view, “Hosting Capacity” means the quantity of generation and load, including that attributed to all types of DER, which can be accommodated on a particular section of the distribution system at a given time and at a given location under existing grid conditions and operations, without adversely impacting safety, power quality, reliability, or other operational criteria, and without requiring significant infrastructure upgrades. We believe this approach to Hosting Capacity is aligned with current industry best practices, as detailed in the Interstate Renewable Energy Council’s recent report *Optimizing the Grid: A Regulator’s Guide to Hosting Capacity Analysis for Distributed Energy Resources*.<sup>11</sup> Distributed generation is certainly part of Hosting Capacity Analysis, but Commission rules and definitions should not limit Hosting Capacity Analysis only to distributed generation. Hosting Capacity is an analysis and hourly profile of electrical characteristics and the limits of existing infrastructure to accommodate energy flows. It is inherently agnostic as to which technologies or equipment is utilizing or providing that capacity at any moment. The results are equally applicable to any change in load or generation, including those associated with energy storage, electric vehicle charging, load reduction, generation, and the operation of advanced inverter functions.

Furthermore, because a Hosting Capacity Analysis can be designed for various use cases — such as interconnection, service planning, and policy scenario evaluation — we believe that the Commission should adopt rules that are not be overly proscriptive in

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<sup>11</sup> “Optimizing the Grid: A Regulator’s Guide to Hosting Capacity Analysis for Distributed Energy Resources,” Interstate Renewable Energy Council, December 2017, available at [http://www.irecusa.org/wp-content/uploads/2017/12/Optimizing-the-Grid\\_121517\\_FINAL.pdf](http://www.irecusa.org/wp-content/uploads/2017/12/Optimizing-the-Grid_121517_FINAL.pdf).

requiring load analysis on fixed timeframes, such as 3 years and 6 years. While the Commission may decide that these are appropriate timeframes for planning use case analysis, the Clean Coalition believes the rules should provide flexibility to the Commission in determining what methodology should be employed, and what levels of confidence, computational efficiency, spatial granularity, and other factors will provide an optimum result for the specified Hosting Capacity Analysis use case(s).

### **III. CONCLUSION**

The Clean Coalition firmly believes that Distribution Resources Planning has emerged as a foundational policy for modernizing the grid to provide cleaner, more affordable, and more resilient power. Adoption of formal Distribution Resources Planning rules will improve the ability of the Commission, investor-owned electric utilities, and other stakeholders to thoughtfully navigate rapid technological developments and protect ratepayers by guiding optimal investments into grid modernization.

The Clean Coalition appreciates this opportunity to submit comments and is happy to provide additional information.

Respectfully submitted,

/s/ John Bernhardt  
John Bernhardt  
Outreach Director  
Clean Coalition

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