

BEFORE THE COLORADO PUBLIC UTILITIES COMMISSION

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

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I. INTRODUCTION

On October 25, 2017, the Colorado Public Utilities Commission (“Commission”), in Decision No. C17-0878, requested “that stakeholders and interested participants suggest rules that would allow the Commission to engage in distributed resource planning or comments on why the Commission does not need to create such processes.”

The Clean Coalition strongly encourages the Commission to adopt formal Distribution Resources Planning (“DRP”) rules and has worked collaboratively with other stakeholders, including Western Resource Advocates (“WRA”), to develop a common framework for DRP rules. These comments are intended to provide the Commission with details on the importance of DRP and offer the Clean Coalition’s proposed DRP rules for the Commission’s consideration.

II. DESCRIPTION OF PARTY

The Clean Coalition is a nonprofit organization whose mission is to accelerate the transition to renewable energy and a modern grid through technical, policy, and project development expertise. The Clean Coalition drives policy innovation to remove barriers to procurement and interconnection of distributed energy resources (“DER”) — including distributed generation, energy storage, electric vehicles, demand response, and energy storage — and we establish market mechanisms that realize the full potential of integrating these solutions. The Clean Coalition also collaborates with utilities and municipalities to create near-term deployment opportunities that prove the technical and financial viability of local renewables and other DER. The Clean Coalition was heavily involved in the creation of California’s DRP process and works closely with staff at the California Public Utilities Commission and at the state’s largest investor-owned utilities to continue to guide the effective and efficient implementation of the DRP process.

III. COMMENTS

The U.S. electric grid is in the midst of transformational change. Originally designed to transport power from remote power plants to end-use customers, our centralized grid is not optimized for current and future technologies. Rapidly dropping costs and technological advancements have made DER increasingly cost-effective solutions to meet electric system needs. DRP establishes a comprehensive and transparent framework designed to improve distribution system planning, operations, and investment. It seeks to optimize utilization of existing electricity grid assets and new DER resources to modernize the grid while minimizing costs for ratepayers.

DRP is fundamentally a planning process to bring transparency and public input into the development of resources within the distribution system, and to better enable the Commission to evaluate proposed utility investments based on cost-effectiveness for Colorado's electricity consumers. This process provides the foundation for guiding smart and cost-effective grid modernization investments; regulators in numerous states, including New York, Minnesota, California, Maryland, and Hawaii, all have proceedings focused on distribution system planning underway. Nancy Lange, Chair of Minnesota's Public Utilities Commission, clearly articulated the rationale for initiating distribution system planning in her state. Specifically, through this effort, the Minnesota Public Utilities Commission seeks 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 will 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.¹

All of the objectives underscore the importance of distribution grid planning. As such, the Clean Coalition recommends that the Commission formally adopt DRP rules. A set of proposed DRP rules can be found below, in Attachment A, for the Commission’s consideration. Note that while the Clean Coalition and WRA agreed on most of the proposed draft DRP rules, there were a few areas where consensus was not reached. These points of difference are highlighted in red in the proposed rules, and they are focused on hosting capacity analysis and use of the term Distribution Resources Planning.

IV. CONCLUSION

The Clean Coalition firmly believes that DRP is a foundational policy, and its adoption 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,

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¹ “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>.

Attachment A. Draft Distribution Resources Planning rules

DISTRIBUTION **RESOURCES** PLANNING

3635. Overview and Purpose

The purpose of these rules is to establish a process to review qualifying retail utility management of the distribution grid to ensure cost effective investments that support grid reliability and resilience and to support diversification of energy supply; utilization of distributed energy resources including but not limited to energy efficiency, demand response, distributed renewable generation, storage and microgrids for customer use and as non-wire alternatives that reduce the need for conventional distribution grid investment; local ownership or renewable generating facilities; to provide transparency of grid investments, capabilities and capacity; and to facilitate and plan modernization of grid monitoring and control technologies and processes. Distribution **Resources** Plans are part of the comprehensive integrated resource planning process pursuant to rule 3601 of the Electric Resource Planning Rules.

It is the policy of the state of Colorado that, in order to reduce emissions, save consumers and businesses money, attract new businesses and jobs, promote development of rural economies, minimize water use for electricity generation, diversify Colorado's energy resources, reduce the impact of volatile fuel prices, and improve the natural environment of the state, it is in the best interests of the citizens of Colorado to develop and utilize renewable energy resources to the maximum practicable extent.

3636. Definitions

The following definitions apply to rules 3635 through 3640. In the event of a conflict between these definitions and a statutory definition, the statutory definition shall apply.

- (a) "Cost Effective" means an installation, project or program can be implemented at a reasonable cost and rate impact, considering costs and benefits.
- (b) "Demand Response" means any changes in customer electric usage from normal consumption patterns in response to changes in the price of electricity, to effectuate an interruption or load reduction commitment under a demand response program, or in response to incentive payments designed to induce lower electricity use at specific times.
- (c) "Demand-Side Resources" has the same meaning as in Rule 3602(d).
- (d) "Distributed Energy Resources" or "DER" means resources, including distributed renewable generation, energy storage, electric vehicles, microgrids, energy efficiency and demand response programs, that are deployed at the distribution grid level, on either the customer or utility side of the meter. DER can be used to either reduce demand or provide supply to satisfy the energy, capacity, or ancillary service needs of the distribution grid.
- (e) "DER Alternative" means the targeted deployment of one or more DER focused on avoiding or deferring a Major Distribution Grid Project.
- (f) "Distributed Generation" means an energy generation system that complies with Rule 3652(n) and that is interconnected to the distribution grid.
- (g) "Distribution Circuit" means the conductors and devices downstream of the

- substation feeder breaker, including all laterals, primary, and secondary portions.
- (h) “Distribution Resources Plan” means the compliance plan filed every two years in accordance with Rule 3638.
 - (i) “Electric Vehicles” means any vehicle that: (1) has a maximum speed of at least 55 miles per hour; (2) is propelled to a significant extent by one or more electric motors that draws electricity from a battery; (3) has a capacity of at least four kilowatt hours; and (4) has a vehicle battery that is rechargeable from an external source of electricity.
 - (j) “Energy Efficiency” has the same meaning as in Rule 3602(i).
 - (k) “Energy Storage” means a technology that does not generate energy but that is capable of absorbing electrical energy, storing it for a period of time, and thereafter dispatching the energy.
 - (l) “Feeder” means a single distribution line which connects the substation at distribution primary voltage to laterals or secondary circuits, including service transformers near customer locations.
 - (m) “Hosting Capacity” means the quantity of generation and load attributed to DER that 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.
 - (n) “Line section” means a portion of a distribution circuit between two automatic sectionalizing devices or an automatic sectionalizing device and the end of the distribution line. Automatic sectionalizing devices would typically refer to the feeder breaker or line reclosers, but could include other devices.
 - (o) “Major Distribution Grid Project” means construction, reconfiguring, or upgrade of any electric distribution line, substation, or ancillary structure that meets the following criteria: (1) is estimated to require an investment of more than \$2 million on the distribution grid or more than \$3 million on both the transmission and distribution grids; and (2) will be made at or on an existing or planned substation, or on back office software or hardware that interacts with the distribution grid.
 - (p) “Pilot” means offering available for a set period of time with a specified end date or number of customers wherein the utility seeks to gain experience, expertise, system benefits, or cost savings through a new use or deployment of DER on its distribution grid.
 - (q) “Program” means an ongoing, long-term offering with no specified end date that utilizes or deploys DER on the distribution grid in a manner that provides system benefits and/or cost savings.
 - (r) “Qualifying Retail Utility” or “QRU” means a provider of retail electric service in the state of Colorado, other than: municipally owned utilities that serve forty thousand customers or fewer and cooperative electric associations that have voted to exempt themselves from commission jurisdiction pursuant to C.R.S. § 40-9.5-104.
 - (s) “Resilience” is the ability of the distribution grid to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event.

- (t) “Substation Capacity Factor” means the actual load served by the substation during each of the 8760 hours of the year divided by the maximum load the substation is designed to handle at 100% of its rated capacity.
- (u) “Substation Load Factor” means the actual load served by the substation during the peak hour of the year divided by the maximum load the substation is designed to handle at 100% of its rated capacity.

3637. Requirements to file Distribution Resources Plans

- (a) A Qualifying Retail Utility is required to file a Distribution Resources Plan, every 2 years, with the first plan to be submitted on or before February 15, 2019.
- (b) Each Distribution Resources Plan shall conform to the requirements of Rule 3002.
- (c) The Colorado Public Utilities Commission (“Commission”) shall review each Qualifying Retail Utility’s Distribution Resources Plan and approve, modify and approve, or reject the plan. The Commission may modify any plan as appropriate to optimize overall system costs and ratepayer benefits, to improve services derived from the distribution grid, and to achieve state policy pursuant to Rules 3601 and 3635 from investments in the distribution grid and Distributed Energy Resources.

3638. Contents of a Distribution Resources Plan

Each Distribution Resources Plan represents a QRU’s understanding of its distribution system at a particular moment in time, which requires a detailed analysis of the current state of its distribution system. Each Distribution Resources Plan shall also forecast anticipated loads, DER growth, and anticipated investments in the distribution system over a ten-year planning horizon, and identify DER pilot and program opportunities that could reduce overall system costs, improve services derived from the distribution grid, and achieve state policy pursuant to Rules 3601 and 3635.

Each Distribution Resources Plan shall include:

- (a) OBJECTIVES: A narrative description of the utility’s overall vision for evolution of distribution grid capabilities and services that meet customer needs and state policy goals.
- (b) FORECASTS: To proactively plan for future needs, each Distribution Resources Plan shall include at least 10-year forecasts for capacity of the distribution grid and DER connected to the distribution grid including: load growth at the substation and circuit level as described below; QRU investments in the distribution grid, by year; and DER that will be interconnected with the distribution grid. Forecasts should be based on at least three growth scenarios (low, medium and high), including reasonably detailed predictions of the expected areas of substantial growth within the distribution substation grid area and impacts on transmission and distribution system planning. The forecast should include an examination of whether there are geographic trends in load, investment, and DER adoption within the QRU’s service territory.
- (c) SUBSTATION-LEVEL ANALYSES: To identify and assess major distribution grid equipment, each QRU shall produce a map of existing and planned substations within its service territory, as well as information about

the current design capacity and performance of each substation. At a minimum, this should include the following information for each substation on the QRU's distribution grid,:

- (I) Maximum rated capacity;
- (II) Number of feeders served;
- (III) Substation Load Factor;
- (IV) Substation Capacity Factor;
- (V) Identification of any substations that are expected to require expansion or other major investments over the 10-year planning horizon with a description of historic and predicted load growth at each substation, as well as hourly historic load patterns at each substation.

(d) **HOSTING CAPACITY ANALYSIS:** To streamline interconnection of DER and assist in distribution system planning, each QRU's Distribution Resources Plan shall include its most recent Hosting Capacity Analysis. A Hosting Capacity Analysis establishes a baseline of the maximum amount of DER that can be accommodated on the distribution system under existing grid conditions and operations without adversely impacting safety, power quality, reliability, or other operational criteria, and without requiring significant infrastructure upgrades. Because a Hosting Capacity Analysis can be designed for various uses cases, a QRU shall define its use cases, as well as what methodology will be employed, and what levels of confidence, computational efficiency, spatial granularity, and other factors will provide an optimum result for the specified use case(s). At a minimum, the Hosting Capacity Analysis shall:

- (I) Define system limits, which include thermal ratings, protection limits, power quality (including voltage), and safety standards;
- (II) Quantify the hourly limits to hosting capacity for generation and load that can be interconnected before a violation of one or more of the technical criteria occur on a line section or feeder. Details about which violation occurred shall also be provided;
- (III) Define the greatest amount of a DER with a specific indicative operational profile, such as that of a solar photovoltaic (PV) system or an energy storage system, that can be accommodated under the hosting capacity;
- (IV) To provide the accuracy needed to streamline interconnection processes and guide distribution investment decisions, the Hosting Capacity Analysis shall be performed at the nodal level of each line segment, as feasible, within the QRU's entire distribution system;
- (V) Result in a publicly available online map detailing the Hosting Capacity Analysis, utilizing a color-coded scale, throughout the QRU's service territory; and

(VI) Detail planned refinements to the Hosting Capacity Analysis, which the QRU expects to complete in advance of filing its next Distribution Resources Plan.

- (e) REVIEW OF MAJOR DISTRIBUTION GRID PROJECTS: To identify opportunities to reduce costs to customers, each Distribution Resources Plan should include a description of expected Major Distribution Grid Projects, including:
- (I) Review of Major Distribution Grid Projects under construction including:
 - (A) A narrative description of each Major Distribution Grid Investment underway at the time of the Distribution Resources Plan is filed and how the project has changed since the last Distribution Resources Plan;
 - (B) Financial details of the investment in each project;
 - (C) Major equipment being used in the project;
 - (D) A description of whether and/or how any DER are being used as part of the project; and
 - (E) For each plan filed after 2019, any alternatives analyses performed in accordance with Rule 3639.
 - (II) Review of Planned or Proposed Major Distribution Grid Projects including:
 - (A) A narrative description of each Major Distribution Grid Investment underway at the time of the Distribution Resources Plan is filed and how the project has changed since the last Distribution Resources Plan;
 - (B) Ten years of capital investment forecasts for Major Distribution Grid Projects;
 - (C) Financial details of each anticipated project;
 - (D) Major equipment being proposed for each project;
 - (E) A description of how any DER will or can be used as part of the project;
 - (F) At the QRU's option, the Distribution Resources Plan may seek approval or reauthorization of any cost-effective DER Alternative. Any DER Alternative may include the use of targeted incentive payments to customers, consistent with Rule 3639(c). For any proposed DER Alternative, the QRU shall include a Cost Benefit Analysis, including an examination of the costs of non-DER, traditional distribution grid equipment investments avoided through use of the DER Alternative. The Cost Benefit Analysis should include: avoided sub-transmission, substation, and feeder capital and operating expenditures; avoided distribution voltage and power quality capital and operating expenditures; avoided distribution reliability and resiliency capital and operating expenditures; and avoided transmission capital and operating expenditures.

- (f) **RELIABILITY AND RESILIENCE ANALYSIS:** The QRU shall provide a narrative assessment of the reliability and resilience of the distribution grid, including:
- (I) Current status of distribution grid reliability and plans for improving reliability, including areas of the grid where reliability problems have been identified, with plans for resolving them. Distribution grid reliability (SAIDI and SAIFI at a minimum) should be provided for each year for the past three years for each substation;
 - (II) List of major outages involving 10,000 customers or more for each year for the past three years;
 - (III) Analysis of cyber security issues or other threats to the distribution system and what efforts the QRU is taking to ensure the distribution system is secure;
 - (IV) Current status of distribution system Resilience and plans for improving Resilience over time.
- (g) **PILOTS AND PROGRAMS:** Each QRU shall include at least two Pilots in each Distribution **Resources** Plan and may seek approval or reauthorization of any Programs. The Pilots should be designed to improve system performance, minimize systems costs, and/or gain experience with use and integration of DER. Each Pilot need not be Cost Effective as defined in this rule, as the Commission recognizes Pilots provide valuable opportunities for QRUs to gain experience with new and emerging technologies, to learn how DER may best be deployed on the QRU's system, and effective education models for stakeholders and customers. Successful Pilots may be turned into Programs over time. Each proposed Pilot must include:
- (I) A description of what the QRU seeks to learn through the Pilot;
 - (II) An explanation of how the Pilot can enable the QRU to achieve objectives described in the Plan pursuant to Rule 3638(a)(I);
 - (III) The specific DER technology or technologies eligible for the Pilot;
 - (IV) A description of any geographic or locational focus of the Pilot;
 - (V) A description of the potential benefits the QRU expects the Pilot technology to demonstrate;
 - (VI) A description of the costs of the Pilot, including a cap on costs for each Pilot;
 - (VII) A description of how success of the Pilot will be evaluated;
 - (VIII) Pilots may include the use of targeted incentive payments to customers, consistent with rule 3639(c).

3639. DER Alternatives

- (a) QRUs subject to these Distribution **Resources** Planning Rules are encouraged to actively evaluate whether DER Alternatives can be used to improve system efficiency, lower customers' costs, minimize environmental impacts, provide system benefits and avoid or defer traditional distribution grid equipment investments. To that end, investor owned QRUs must evaluate DER Alternatives to any Major Distribution Grid Project identified as part of a Distribution **Resources** Plan and present the results of this analysis in the relevant Distribution **Resources** Plan.

- (b) In any Distribution **Resources** Plan, the investor owned QRU may seek approval to implement a DER Alternative for any Major Distribution Grid Project with a date of need at least 36 months in the future from the date the Distribution **Resources** Plan is filed, to provide sufficient time for deployment of the DER Alternative.
- (c) DER Alternatives and Pilots may include the use of targeted incentive payments to encourage DER adoption by specific customers, in order to provide net benefits to the system. If an investor owned QRU proposes to provide targeted incentives, it must identify the following information as part of its Distribution **Resources** Plan in which it seeks approval of the Pilot or Program:
 - (I) The specific DER technologies eligible for the incentive payment;
 - (II) Any specific distribution substation and circuit targeted by the Pilot or DER Alternative;
 - (III) The specific amount of incentive payments available to eligible customers and eligible technologies, including a cap on overall incentive payments for a specific Pilot or DER Alternative;
 - (IV) A copy of any agreements or contracts the QRU will use to govern a customer's or third party aggregator's receipt of targeted incentives; and
 - (V) Any other terms, conditions, or requirements for targeted incentive eligibility.
- (d) For any Major Distribution **Resources** Project, an investor-owned QRU shall evaluate whether any DER Alternatives are cost effective. In each Distribution System Plan filed after 2019, the utility shall include each DER Alternatives analysis it performed since its last Distribution **Resources** Plan was filed. Any Major Distribution Grid Project, for which a DER Alternatives analysis was not performed, shall not be considered to have occurred in "the ordinary course of business" and associated expenditures are not entitled to any presumption of prudence in a rate recovery proceeding.

3640. Cost Recovery

- (a) Costs associated with an approved Pilot or DER Alternative, including targeted incentive payments, may be placed in a regulatory asset for recovery as part of the QRU's next rate case. A QRU may seek its authorized rate of return on any regulatory asset created pursuant to this Rule.
- (b) Costs associated with DER Alternatives and Pilots approved as part of a Distribution **Resources** Plan are presumed to be prudent and reasonable, subject to any cost caps imposed by the Commission.
- (c) A QRU is not required to obtain a CPCN for DER Alternatives approved as part of a Distribution **Resources** Plan.
- (d) Targeted incentive payments may not be paid for with Renewable Energy Standard Adjustment or demand-side management program funds.