

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

PROCEEDING NO. 20M-0218E

IN THE MATTER OF THE COMMISSION’S CONSIDERATION OF THE EXISTING RESOURCES OF TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC. PRIOR TO ITS INITIAL ELECTRIC RESOURCE PLAN FILING PURSUANT TO 40-2-134, C.R.S.

**DECISION ADDRESSING TRI-STATE’S
ASSESSMENT OF ITS EXISTING RESOURCES
PURSUANT TO THE COMMISSION’S ELECTRIC
RESOURCE PLANNING RULES, DIRECTING TRI-STATE
TO PROVIDE ADDITIONAL INFORMATION WITH
ITS INITIAL ELECTRIC RESOURCE PLAN
APPLICATION FILING, DENYING THE
MOTION TO REQUIRE TRI-STATE TO FILE REVISED
DOCUMENTS, AND CLOSING THE PROCEEDING**

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I. BY THE COMMISSION

A. Statement

1. On June 1, 2020, Tri-State Generation and Transmission Association, Inc. (Tri-State) filed an assessment of its existing resources (Assessment of Existing Resources). Tri-State made the filing pursuant to the new provisions in the Commission’s Rules Regulating Electric Utilities, 4 *Code of Colorado Regulations* (CCR) 723-3, that govern Electric Resource Plans filed by Tri-State (Tri-State ERP Rules).

2. By this Decision, we review the sufficiency of Tri-State’s filing and the objectives of this Proceeding; set forth the additional information Tri-State is required to provide regarding its Assessment of Existing Resources in the forthcoming Electric Resource Plan (ERP) proceeding, to be initiated by December 1, 2020; and encourage Tri-State to conduct further stakeholder engagement in order to promote procedural efficiency. We further deny the motion filed by Natural Resources Defense Council, Sierra Club, Western Colorado Alliance, and Western Resource Advocates requesting that the Commission order Tri-State to file in this

Proceeding revised versions of its Assessment of Existing Resources. Finally, we close this Proceeding.

B. Background

3. On May 30, 2019, Governor Jared Polis signed into law Senate Bill 19-236. Section 40-2-134, C.R.S., as enacted by that bill, directed the Commission to promulgate new rules regarding ERPs filed by Tri-State, Colorado's single wholesale electric cooperative. In developing the rules, the Commission was required to consider, among other factors, that Tri-State serves a multistate operational jurisdiction; has a not-for-profit ownership structure; and whether it has a resource plan that meets the energy policy goals of Colorado.

4. By Decision No. C20-0155, issued March 10, 2020, the Commission adopted amendments to the provisions in the ERP Rules at 4 CCR 723-3-3600, *et seq.*, as they apply to Tri-State.¹ The Commission stated in the decision that Tri-State is the first of Colorado's three electric utilities to submit an application under the Commission's revised ERP Rules. In recognition of both the time Tri-State will need to complete its first full ERP filing and the calls for prompt action among participants in the Commission's ongoing rulemakings,² the Commission directed Tri-State's ERP to be submitted in two parts: an initial plan filing made no later than June 1, 2020, pursuant to the requirements in paragraph 3605(c) of the Tri-State ERP Rules, followed by an application for a full ERP to be filed no later than December 1, 2020. The Commission further stated that this two-part approach would allow for discovery and learning about Tri-State's generation fleet, and its underlying financial requirements, that were essential to the ability of the Commission to take up a full ERP.

¹ Decision No. C20-0155, issued March 10, 2020, Proceeding No. 19R-0408E.

² The ERP Rules and other provisions in 4 CCR 723-3 that are common to Tri-State and the investor-owned electric utilities are under review in Proceeding No. 19R-0096E.

5. Rule 3605(a)(I) requires Tri-State to submit an initial plan filing that is comprised of an Assessment of Existing Resources pursuant to paragraph 3605(c). The primary components of the Assessment of Existing Resources are as follows:

- Existing resource assessment. The utility shall describe its existing generation facilities and energy storage systems at the time the plan is filed, and existing or future purchases from other utilities or non-utilities pursuant to agreements effective at the time the plan is filed. [...]
- Benchmarking. For the purpose of identifying existing resources that potentially are not performing cost-effectively as compared to other resources available in the market, the utility shall compare the costs and performance of each of its existing resources (utility-owned and contracted) to the costs and performance of the generic resources.
- Ancillary services assessment. The utility shall identify its existing resources that provide various ancillary services necessary to support its transmission systems, including load following, reactive power-voltage regulation, system protective services, loss compensation service, system control, load dispatch services, and energy imbalance services.

C. Tri-State's Assessment of Existing Resources

6. On June 1, 2020, Tri-State submitted its initial plan filing, formally referred to as an Assessment of Existing Resources. The Assessment of Existing Resources includes three components: an existing resource assessment (ERA), a benchmarking assessment, and an ancillary services assessment. Tri-State also filed supporting consultant reports by Black & Veatch (B&V) and Mesa Point Energy/BrightLine Group. The initial plan filing included three versions of the main documents, designated as public, confidential, and highly confidential, the latter of which was filed with a Motion for Extraordinary Protection of Highly Confidential Information.

7. Tri-State's ERA included description and detail of Tri-State's generation fleet: partial ownership of three coal-fired stations (including the Craig Generating Station, Laramie River Generating Station, and Springerville Unit 3) representing nameplate capacity of

1,426 MW, two Basin contracts representing 585 MW, 6 gas- and oil-fired stations (J.M. Shafer, Rifle, Limon, Knutson, Pyramid and Burlington) representing 903 MW, WAPA hydro contracts representing 584 MW, power purchase agreements with wind, solar, and small hydro facilities representing 579 MW, and member-owned or contracted assets representing 136 MW. Tri-State included emission rates in pounds per MWh and revenue requirement information relevant to fixed and variable operations and maintenance expenses, capital expenditures, the social cost of carbon, integration and cycling costs, and fuel. Tri-State also explained that it engaged B&V to assist Tri-State with this assessment of existing resources and that B&V recommended various changes in Tri-State's modeling methodology, some of which were followed and others that were disregarded. B&V's recommendations ranged from increasing the Burlington plant heat rate to modifying assumed availability factors for all gas and oil-fired facilities.

8. Tri-State hired B&V to conduct its benchmarking assessment. B&V paired each existing resource to a hypothetical generic resource of a similar technology and location, based on costs, heat rates, and other parameters of facilities generally available in the market, and calculated Levelized Cost of Energy (LCOE) and Levelized Cost of Capacity (LCOC) values to benchmark the cost performance of its existing units. Additionally, Tri-State's August 3, 2020, supplemental filing added benchmarking of the Basin contracts. Tri-State asserts that, to the extent possible, it compared these resources against a hybrid of generic resources based on input received as part of this proceeding.

9. Tri-State's ancillary services assessment explained that Tri-State obtains these services from the applicable Balancing Authority or transmission provider under Open Access Transmission Tariffs or other agreements.

D. Procedures for this Proceeding

10. By Decision No. C20-0437, issued June 11, 2020, the Commission acknowledged Tri-State's initial plan filing and opened this Proceeding. The Commission also established a notice and intervention period for interested stakeholders to participate in this Proceeding as parties.

1. Parties and Discovery Provisions

11. By Decision No. C20-0527-I, issued July 17, 2020, the Commission acknowledged the timely interventions of right of the Staff of the Colorado Public Utilities Commission (Staff), the Colorado Office of Consumer Counsel (OCC), and the Colorado Energy Office (CEO). It also granted the permissive interventions of Colorado Independent Energy Association (CIEA), Colorado Solar and Storage Association and the Solar Energy Industries Association (COSSA/SEIA), Interwest Energy Alliance (Interwest), La Plata Electric Association (LPEA), Natural Resources Defense Council (NRDC), the Sierra Club, Southwest Energy Efficiency Project (SWEEP), Western Colorado Alliance (WCA), and Western Resource Advocates (WRA). The Commission further noted that a grant of intervention in this Proceeding should not be construed as to a right to intervene in the ERP proceeding to come.

12. By the same Decision, the Commission directed Tri-State to confer with parties to develop consensus discovery procedures by no later than July 31, 2020.

13. By Decision No. C20-0550-I, issued July 29, 2020, the Commission adopted the proposed discovery procedures set forth in the conferral report filed by Tri-State. Furthermore, the Commission stated that discovery conducted in this Proceeding may be used in Tri-State's forthcoming ERP proceeding.

14. By Decision No. C20-0586-I, issued August 11, 2020, the Commission further granted the timely filed permissive intervention of The Western Way (TWW), which had been opposed. The Commission also granted Tri-State's Motion for Extraordinary Protection of Highly Confidential Information.

2. Examination of Tri-State's Assessment of Existing Resources

15. On July 1, 2020, NRDC, Sierra Club, WCA, and WRA (Joint Movants) filed a motion asking the Commission to order Tri-State to file revised versions of the ERA and the benchmarking assessment because they omitted information regarding Tri-State's two contracts with Basin Electric Power Cooperative (Basin). Joint Movants argued that Tri-State left out critical information about its Basin contracts, despite those contracts representing approximately 13 percent of Tri-State's total energy sales to members in 2019. Joint Movants alleged that by failing to include information on energy and capacity purchases and emissions attributable to the Basin contracts, Tri-State violated the plain language of Rule 3605(c)(I)(F) and (H). Furthermore, they alleged that by failing to include the Basin contracts in its benchmarking assessment, Tri-State violated the plain language of Rule 3605(c)(III). Joint Movants asked for quick resolution to this deficiency—and specifically, for Tri-State to file revised documents—due to the short timeline of this Proceeding.

16. In its brief response to the motion, filed on July 10, 2020, Tri-State indicated without further explanation that it disagreed with the arguments made by the Joint Movants, but stated that it would file supplemental versions of the ERA and benchmarking assessment that included the Basin contracts by August 3, 2020. Tri-State thus requested that the Commission deny the motion as moot.

17. By Decision No. C20-0527-I, the Commission established procedures for this proceeding and required additional filings. The Commission concluded, based on the intervention pleadings, the other pleadings filed by the parties to this Proceeding such as the Joint Movants' motion, and its own initial review of the ERA filed by Tri-State on June 1, 2020, that this Proceeding would culminate in a Commission decision providing guidance and directives to Tri-State regarding the "Assessment of Existing Resources" component of its December 1, 2020 full ERP application filing. The Commission clarified that this Proceeding would serve to educate the parties and the Commission about Tri-State's generation fleet and its underlying economics as intended in the rulemaking orders in Proceeding No. 19R-0408E. The Commission further stated that this Proceeding would ensure that Tri-State provides all of the information related to its existing resources required for the forthcoming ERP proceeding. The Commission explained that, with a discrete purpose and a specific end date, procedures could be adopted for this Proceeding to address Tri-State's concerns about discovery burdens impairing its ability to meet the December 1, 2020 deadline for the full ERP filing. The Commission directed parties to file initial comments on Tri-State's assessment of existing resources no later than September 7, 2020, and to file comments responsive to the initial comments no later than October 2, 2020. In accordance with these procedures, the Commission concluded that it would rule on the Joint Movants' motion requesting that the Commission order Tri-State to file revised documents in its assessment of existing resources after the initial and responsive were filed.

18. On August 3, 2020, Tri-State filed a revised ERA incorporating information about the two Basin contracts the Joint Movants argued to be absent from the initial plan filing.

19. On September 7, 2020, the following parties filed initial comments: CIEA, the Conservation Coalition (comprised of NRDC, Sierra Club, and WCA), COSSA/SEIA, Interwest, OCC, Staff, SWEEP, TWW, and WRA.

20. In its initial comments, Staff indicated satisfaction with the information provided by Tri-State, although Staff recommended that Tri-State should provide a complete discussion regarding treatment of renewable energy credits received from the Basin contracts.³ WRA, on the other hand, stated that Tri-State had excluded demand charges associated with the Basin contracts from the benchmarking assessment, which potentially led to an artificially low levelized cost of energy as compared against other resources.⁴

21. On October 2, 2020, reply comments were filed by Tri-State and the following parties: CIEA, COSSA/SEIA, Interwest, Staff, TWW, and WRA.

22. In its reply comments, Tri-State recognized the significant efforts of the parties and agreed to provide requested data and “incorporate many of the suggestions provided by commenters into its 2020 ERP.”⁵ Specifically, Tri-State stated that it will provide “specific modeling information” related to details of the various models including methodology and economic assumptions, a single reference table of resource data, modeling related to DSM and distributed generation, detailed information on generic resources and how costs were determined, detailed information on all existing resources regardless of whether they were located within or outside Colorado, an explanation of Tri-State Board policies related to member system

³ Initial Comments of Trial Staff of the Commission (Staff Initial Comments), filed September 8, 2020, at 3-4.

⁴ Initial Comments of Western Resource Advocates (WRA Initial Comments), filed September 8, 2020, at 16.

⁵ Tri-State Generation and Transmission Association, Inc.’s Response Comments (Tri-State Response), filed October 2, 2020, at 4.

self-supply, net dependable capacity, the updated useful life of Craig 2 and Craig 3 based on announced retirement dates, specification of resource modeling status (economic, must run), and a loss of load expectation or loss of load probability study.⁶

23. At the same time, Tri-State rejected comments that sought to require it to address areas it deemed outside the scope of Electric Rule 3605(c) requirements. For example, Tri-State rejected comments requesting that it model particular scenarios, load forecasts, or unit retirements, stating that it “expects to present several substantial carbon reduction scenarios in the 2020 ERP consistent with the Commission’s rules.”⁷ Tri-State asserts that, as this unique proceeding has “provided the parties with the opportunity to learn a significant amount about Tri-State’s existing resources,” it has thus “accomplished its educational goal.”⁸

E. Assessment of Existing Resources in the Forthcoming ERP Filing

1. Unit Cost Values and Cost Recovery

24. Rule 3605(c)(I)(J) of the Tri-State ERP Rules directs Tri-State to file unit-specific cost information for both utility-owned and contracted generation facilities including capital costs, fixed and variable operations and maintenance costs (O&M), fuel costs, unit integration and cycling costs, and contract-related payments. Rule 3605(c)(I)(E) requires Tri-State to estimate any significant new investment or maintenance expense over the useful lives of existing generation and storage assets. Finally, under the benchmarking requirements of Rule 3605(c)(II), Tri-State is required to compare the costs and performance of its existing owned and contracted resources to those of generic resources for potential replacement.

⁶ *Id.* at 5.

⁷ *Id.* at 8.

⁸ *Id.* at 1.

25. Intervening parties raised three primary issues regarding unit cost and cost recovery: (1) current and projected cost of unit operation, (2) capital expenditures prior to unit retirement and in response to potentially tightening air quality oversight, and (3) effective useful life and depreciation practices.

a. Cost of Unit Operation

26. Tri-State developed Modeled Values for an array of unit-cost parameters it intends to incorporate into its Phase II modeling. The Company hired B&V to verify those Modeled Values based on industry norms.

27. Several parties argue that Tri-State was not forthcoming with information on its existing resource portfolio. The OCC and others argue that Tri-State should provide additional information on the model itself, on the assumptions and inputs, and about how existing resources, investments and contracts will be modeled.

28. Conservation Coalition asserts that all cost assumptions, including fuel, O&M, and capital expenses, should be revised to historical or evidence-based values. In a report conducted by its consultant, Strategen, Conservation Coalition claims Tri-State did not provide historical information for fixed and variable O&M costs, among other inputs. The lack of such historical information, the consultant report concludes, significantly limits B&V's (and the other parties') ability to validate Tri-State's Modeled Values. Conservation Coalition asserts, through the Strategen report, that Tri-State should provide historical values for all parameters and all existing units, including the most recent data available. If Modeled Values differ significantly from historical data, Tri-State should revise its Modeled Values or explain thoroughly why it did not do so.

29. Staff agrees with the Conservation Coalition's assertions. Staff recommends that the Commission require Tri-State to perform and submit a new analysis that provides the most recent five years of actual historical data available for each existing unit for each parameter, and either to use the five-year averages as the Modeled Values or to explain any variations from those historic averages.

30. With respect to how unit-operation costs are projected to grow over the analysis period, WRA argues Tri-State inappropriately assumed fixed and variable O&M would escalate no faster at its aged units than that incurred by new generic resources, an oversight that could impact the benchmarking assessment as well as the full ERP modeling process. Conservation Coalition agrees, and argues that in the absence of any data, it is simply not credible to assume that O&M costs will grow at the same rate for both forty-year-old units and new units.

31. In its response, Tri-State states that it engaged B&V to perform an assessment of certain unit characteristics of Tri-State's existing resources, including fixed and variable operations and maintenance expenses. The purpose of this assessment was for B&V to compare Tri-State's current modeled data to available industry sources to detect any possible outliers in modeled values. Tri-State claims its forthcoming ERP application filing will include additional historical and operating data to further explain these issues and also will further explain Tri-State's reasoning for not including certain model changes.

32. Accurate, unit-specific information is critical to the efficiency of the full ERP application. Historical operating costs (both fixed and variable) are the appropriate starting point in developing modeling inputs unless there is a thorough and valid reason to deviate from historical information. As part of its full ERP application, we direct Tri-State to submit five years of historical data on all input parameters for all existing resources through 2019 or 2020, and to

assess trends where cost parameters may escalate faster than overall inflation. As recommended by Staff and others, we direct Tri-State to alter its Modeled Values to be consistent with historic, unit-specific information, including cost escalation rates. To the extent Tri-State believes deviation from historical values is necessary, it is directed to provide a thorough explanation of the need to do so as a part of its full ERP application.

33. WRA additionally contends that Tri-State does not appear to have considered demand charges as a part of its analysis of the cost of two Basin contracts. WRA notes that a comparison of the LCOE between the Basin contracts and the various renewable resources was provided, but does not appear to have included any of the demand charges associated with the Basin contract purchases as a part of its analysis. According to WRA, the demand charges represent a significant part of the cost of the Basin contracts, and double the underlying LCOE when compared to Tri-State's current assumptions.

34. We agree with WRA that the absence of demand charges for the Basin contracts represents a potential deficiency which may significantly impact the ability to compare the cost and performance of the Basin contracts to other resources as part of the benchmarking assessment in the full ERP application. We thus require Tri-State to provide the Basin demand charges as part of its full ERP application, along with an explanation as to the treatment of the Basin contracts in the modeling process.

35. Finally, WRA argues that Tri-State's forward fuel cost assumptions should be further evaluated. WRA notes Tri-State's situation is quite unique given that Tri-State owns many of the coal mines that supply its power plants, but that its cost-based approach to coal price projection may be inappropriate. WRA points out that Tri-State's historical cost of mining has

been high relative to market, that mine reclamation costs should be considered, and that Tri-State is projecting operating losses at its mines over the next 10 years.

36. With respect to its coal cost projection, Tri-State “acknowledges that industry-driven changes and impacts to coal use and production make forecasting coal prices difficult.”⁹ Tri-State states that it cannot revise its coal price forecasts prior to completion of the current ERP “because the current scenario analysis is almost complete.”¹⁰ Accordingly, it recommends making updates in its 2023 ERP.

37. Forward price projections, including fuel price forecasts, are a critical component of the planning process in order to select the most cost-effective portfolio of resources to meet load requirements. We note that the cost of Tri-State’s mining operations is inextricably linked to the cost of unit operation for certain coal-powered generating stations. The Commission is not persuaded by Tri-State’s argument to modify its coal price forecast in its next ERP, currently anticipated for June 1, 2023. We direct Tri-State to justify its coal cost projections as part of its 2020 ERP filing and to conduct a mark-to-market analysis to assess the value of the coal under current market conditions.

b. Capital Expenditures

38. WRA argues Tri-State may be making improper assumptions about capital expenditures at certain facilities prior to being retired. For example, WRA notes that Tri-State spent almost \$6 million at the now retired Nucla Station and almost \$27 million at the soon-to-be retired Escalante Station between 2016 and 2020. WRA contends Tri-State should revise its

⁹ Tri-State Response Comments at 18.

¹⁰ *Id.* at 18.

assumptions to a practical amount so the true LCOE and LCOC of the retiring facilities is reflected.

39. WRA also states that Tri-State apparently excluded potential upgrades to pollution control technologies at its thermal plants. WRA notes that Rule 3605(c)(I)(J) requires that utilities consider “emissions and associated costs” when reviewing unit-level revenue requirements and that two of Tri-State’s gas generation facilities, the JM Shafer and Knutson Generation Stations, are located in Colorado’s serious non-attainment area for ozone.¹¹ WRA contends that failure to account for these future costs in the resource planning process may underestimate the true cost of operating these plants.

40. The OCC agrees, and raises the lack of inclusion of capital investments necessary to keep facilities operating efficiently and still meet regulatory requirements, such as air quality or other regulations. Staff also agrees, and states that exclusion of such costs could “interfere with the proper consideration of early retirements in identifying the most cost-effective approach to emissions reductions.”¹²

41. In response, Tri-State states that its generation fleet is highly emission-controlled, with technologies that are at or near the top of their categories for effectiveness. It also states there are presently no proposals that would require new controls, and so it is not possible to predict with certainty if and how regulatory and legislative drivers may change between now and 2040. Tri-State argues that when any regulatory rules become clearly defined, it incorporates associated costs into its forecast of capital expenditures for the impacted resource(s).

¹¹ WRA Initial Comments at 20 (citing Attachment WRA-27).

¹² Response Comments of Trial Staff of the Commission (Staff Response Comments), filed October 2, 2020, at 9.

42. With respect to capital expenditures prior to unit retirement, there is a thin line between capital expenditures and fixed O&M. The replacement of equipment is an ongoing and necessary aspect to proper facility maintenance. Yet Tri-State provided no basis to assume capital expenditures at retiring facilities will be zero. Similar to fixed O&M, as argued by numerous parties, Modeled Values of capital expenditures should be evidence-based values. We therefore direct Tri-State to provide five years of historical values of capital expenditures at each of its plants and to provide thorough justification of Modeled Values prior to unit retirement.

43. With respect to pollution-control-related expenses, we agree with Tri-State that it is difficult to predict future capital expenditures required to meet requirements that are not currently law or regulation. We thus encourage Tri-State and intervening parties to develop a record in Phase I of the upcoming ERP proceeding that facilitates accurate modeling and decision analysis of this cost component.

c. Effective Useful Life and Depreciation Practices

44. WRA argues that Tri-State may have modified its approach to depreciation, amortization, and impairment of debts and assets in response to its Responsible Energy Plan, and that these issues are not only important to ratemaking but also relevant to the ERP process.¹³ WRA notes that Tri-State appears to be applying lengthy depreciation and amortization schedules to its generation resources, sometimes extending these schedules well beyond the end of their useful lives. WRA also asserts Tri-State has significant debt refinancing obligations in the mid-2020s and that the interplay between this obligation, Tri-State's financial goals, and the selection of resources is unclear. Additionally, WRA contends that a review of Tri-State's

¹³ The Responsible Energy Plan can be found at <https://www.tristategt.org/responsible-energy-plan>.

benchmarking assessment shows that it has significant remaining capital balances on its coal plants. This too, WRA argues, may impact the LCOE/LCOC and selection of these assets.

45. Staff generally agrees, arguing that the Commission should require Tri-State to provide additional information about the nature of its capital balances and related expenses in its modeling processes, including whether Tri-State is considering any changes to its depreciation or amortization schedules, and what portion, if any, of these costs can be avoided from an early retirement.

46. Tri-State argues that it has evaluated the duration of resources distinctly for purposes of potential early retirement decision analysis and depreciation and amortization of costs. Tri-State admits “that its resource useful life analysis for depreciation and other financial analysis purposes could be coordinated with economic and regulatory impact analysis of resource life,” and therefore states that it “intends to work to revise and coordinate these processes prior to the June 1, 2023, ERP filing.”¹⁴

47. We are not persuaded by Tri-State’s request to delay consideration of depreciation and resource useful life until its 2023 ERP. We instead direct Tri-State to provide, for all existing resources it owns in whole or in part, the initial investment level, the remaining capital balance, and all annual depreciation, amortization, and impairment treatments associated with its existing generation units. Tri-State is also required to provide an evaluation of what portion, if any, of these costs can be avoided due to early retirement as a part of its 2020 ERP application.

¹⁴ Tri-State Response Comments at 18.

2. Unit Performance Values

48. As part of its ERA, Tri-State provided information on unit performance to be used as inputs for system planning models in its full ERP application. These inputs, including heat rates, variable and fixed operation and maintenance costs, emissions rates, availability rates, forced outage rates, and capacity factors, were also vetted by B&V. Among other things, B&V's analysis compared Tri-State's Modeled Values to the five-year averages of historic Tri-State data, historic data collected from federal regulators by Standard & Poor's (S&P), historic peer group data from S&P and the North American Electric Reliability Corporation (NERC), and a "Grand Average" of all 3 of those data sets. Where the Modeled Value differed from the Grand Average by 5 to 10 percent or more (and contingent on ensuring the Grand Average was reasonable), B&V sometimes recommended changing assumptions. Tri-State identified eight areas in which B&V recommended changes, of which it accepted four, rejected three, and has one under consideration.

49. COSSA/SEIA asserted that Tri-State did not sufficiently explain how it derived its Modeled Values for metrics like heat rates and pollution emission rates, and recommends that this background be included in the full ERP application. They suggest that this is troubling because the Modeled Values are "biased in a way that increases the economic value of the thermal resource."¹⁵ COSSA/SEIA recommend that Tri-State be required to explain its methodology for deriving Modeled Values and to include workpapers. COSSA/SEIA further critiqued B&V's methodology, arguing that, by not recommending changes to Modeled Values that are significantly different due to the absence of underlying Tri-State data or due to Tri-State

¹⁵ Initial Comments of the Colorado Solar and Storage Association and the Solar Energy Industries Association (COSSA/SEIA Initial Comments), filed September 8, 2020, at 14-15.

data being skewed, B&V's approach is incorrect and overly limited. COSSA/SEIA argue that where Tri-State specific data are available, those data should be used unless there is a specific reason that outlying values will not happen in the future.

50. Conservation Coalition, through its consultant Strategen, agreed with COSSA/SEIA that B&V's methodology was flawed. Conservation Coalition states that B&V failed to explain its decisions on when to accept Tri-State historic data versus recommending a replacement because it was unusual or skewed. For example, Tri-State assumes a forced outage rate (FOR) of 4 percent for all coal-fired generation. However, Conservation Coalition states that Springerville 3 experienced FORs significantly higher than 4 percent, but B&V considered those values "too high" and did not recommend a change in the Modeled Value.¹⁶ Conservation Coalition observes further that the Company calculated an average of the individual FORs of its coal-fired power plants over the years 2015-2017, and then applied that "average of averages" as the FOR to the analysis of each coal plant. Conservation Coalition notes that the Company chose to round this value down to 4 percent. Conservation Coalition argues that this practice suppresses the coal units' actual LCOE and that Tri-State should instead use unit-specific historical data to determine a Modeled Value for the FOR of each plant.

51. Staff expresses concern with the absence of information in the Company's benchmarking assessment about the source of the information it used in modeling renewable resources. Staff suggests that the Company should include a dedicated discussion of the generic resource assumptions and methodology used in the renewable resource modeling required for the full ERP application. Staff also contends that the Company's selection of 100 MW generic

¹⁶ Initial Comments of Natural Resources Defense Council, Sierra Club, and Western Colorado Alliance (Conservation Coalition Initial Comments), filed September 8, 2020, at 11-12.

renewable resources may not be appropriate, particularly for modeling scenarios that contemplate early retirement of large fossil units. Staff recommends that Tri-State either include 200 MW generic renewable resources or demonstrate that there are no additional economies of scale between 100 MW and 200 MW. Staff also notes that net dependable capacity values as required by Rule 3605(c)(I)(B) are missing from the Tri-State existing resource assessment for renewable resources, although the assessment does provide such values for thermal units.

52. With regard to the assumed FORs of its thermal resources, Tri-State agrees that application of unit-specific values may be helpful to the overall planning process, but due to the fast approaching deadline for the full ERP application, the company proposes to make this change in the modeling performed as part of Phase II, rather than Phase I. Tri-State states that it does not believe that moving from an average FOR on thermal resources to unit-specific would significantly impact the expansion plan or dispatch modeling process in the current scenarios.

53. Addressing Staff's concern about Tri-State's choice to model 100 MW capacities for renewable resources rather than 200 MW units, Tri-State notes that its model allows for multiple 100 MW generic resources to be selected in a given year, and states that it does not believe that larger units would significantly alter unit dispatch, as the 100 MW units are already highly competitive against other generic resource technologies. Tri-State also observes that there was little difference in unit prices between 100 MW and 200 MW renewable resources in its most recent request for proposals. However, Tri-State acknowledges that it will be critical to model the actual capacities of all resources as bid in Phase II. It also agrees to provide its Modeled Values for net dependable capacity of renewable resources as part of its full ERP application.

54. We find stakeholder comments regarding Tri-State's justification for selecting its Modeled Values for the ERA and benchmarking assessments to be compelling. Stakeholders have identified cases where Tri-State's chosen values appear to be at odds with a given generating unit's historical performance, and would seem to create a bias favoring those units. Tri-State states that it will provide additional historical data justifying its Modeled Values in its full ERP application.

55. We expect generating unit performance to be modeled using parameters that reflect the actual historical operating performance of each unit, and, as with unit costs, information about unit performance should be unit-specific. Accurate, unit-specific information will promote efficiency in the full ERP application. Accordingly, we direct Tri-State to provide: (1) a thorough description of the source of all unit performance parameters used in its modeling; (2) a minimum of five years of actual historic unit-specific data for each parameter wherever available; (3) a robust and fully supported explanation for any discrepancies between its Modeled Values and actual historic unit-level performance as part of its full ERP application; and (4) if, at the time of the ERP application filing, historic data are unavailable, an explanation as to why they are unavailable and an indication of when such data will become available. We direct Staff to pay particular attention to the above directives in conducting its determination of completeness of Tri-State's ERP application filing under Rule 1303(c)(II) of the Commission's Rules of Practice and Procedure, 4 CCR 723-1.

3. Benchmarking Assessment Methodology

56. Several parties raised concerns that Tri-State's benchmarking methodology of comparing existing units only to generic units of the same technology is fundamentally flawed and does not meet the Commission's benchmarking objective. That is, Tri-State's analysis does

not provide a reasonable benchmark comparison of existing units, such as gas or coal-fired generation, to the cheapest and most likely replacement technology available in the market, such as renewables and storage. Instead, they argue that the Commission should require Tri-State to provide a benchmarking analysis that compares existing units to the least-cost resources or combination of resources, regardless of technology type. In this manner, existing thermal resources should be compared against the least-cost resources available in the market today, including renewable and storage resources.

57. Staff proposes that Tri-State should benchmark the costs for existing units without the one-to-one direct pairing to a single generic resource. Specifically, Staff proposes a group ranking analysis where Tri-State presents a cost analysis for each existing resource and generic resource separately, and then ranks them all as a group. In this manner, the total LCOE or LCOG cost of each resource can be compared. Staff also recommends that Tri-State provide a breakdown of the total costs to show components including fuel, fixed and variable operation and maintenance costs, and capital expenditures. Staff further recommends that Tri-State's benchmarking assessment should be considered with and without sunk costs, which cannot be avoided by discontinuing a unit's operation. Finally, Staff asserts that Tri-State should perform the benchmarking assessment with and without the social cost of carbon (SCC).

58. In response, Tri-State asserts that its benchmarking assessment compared existing resources against potential generic resources as required by the Commission. Tri-State argues that the approach used by B&V was consistent both with the plain language of the rule as well as its purpose. Unlike the benchmarking assessment, the modeling that is conducted within the course of the full ERP process will evaluate Tri-State's system as a whole, including existing

resources, transmission links, load requirements, and all potential generic resources to arrive at a solution within scenario constraints.

59. We generally agree with Tri-State that the benchmarking assessment does not require a direct comparison of existing resources with potential replacement resources of a different technology. Full portfolio modeling, as will be performed as a part of the upcoming ERP proceeding, is required to compare resources with different capacity and energy attributes. For example, as Staff points out, “4 hour battery storage does not provide the same 24-hour, multi-day dispatchability as a fossil unit.”¹⁷

60. However, we agree with Staff that Tri-State could provide information to improve the usefulness of its one-to-one pairing methodology in its benchmarking assessment. Staff’s proposed group-ranking methodology would better inform the Commission and parties about the relative cost performance of Tri-State’s existing resources, and can be performed without a scenario modeling analysis.

61. We therefore direct Tri-State to provide, as a part of its full ERP application, a group ranking benchmarking assessment as proposed by Staff. This includes the total LCOE and LCOC analysis for each existing resource and generic resource separately, with and without sunk costs, and with and without the SCC. The analysis should include a breakdown of all direct cost components including fuel, fixed operation and maintenance costs, variable operation and maintenance costs, capital expenditures, and carbon costs.

¹⁷ Staff Response Comments at 11-12.

62. WRA also observes that Tri-State did not provide capacity credit for renewable resources or such resources paired with energy storage in its benchmarking analysis. WRA argues that such resources should be granted credit for the capacity they provide.

63. We deny WRA's request that the Commission direct Tri-State to include a capacity credit for renewables in benchmarking. We note that when conducting its benchmarking assessment, Tri-State did not provide capacity credit for renewable resources, but neither did it provide such credit for any thermal or contracted resources evaluated on the basis of LCOE. However, we expect the ERP application and associated resource modeling to fully address the capacity attributes of all resources including fossil, renewable, and storage assets.

4. Ancillary Services Assessment

64. Staff states that Tri-State generally complied with the requirement for an ancillary services assessment by explaining that, for the most part, it obtains these services from the applicable Balancing Authority (BA) or Transmission provider by paying monthly charges under the provisions of the relevant Open Access Transmission Tariff (OATT) or other agreement. However, Tri-State did not provide any information about the actual costs incurred for these services, expectations for how the need for and costs of these services might change in the future, or the possibility of self-supplying one or more type of ancillary service.

65. Given the concerns raised by Tri-State regarding already-significant ancillary service costs (particularly for wind integration) and expectations for future increases, Staff suggests that more exploration of these costs and possible alternatives is warranted. Additionally, while it is possible for parties to access the relevant OATTs to determine the current charges for the applicable services, Staff recommends that Tri-State provide information that illustrates the magnitude of additional costs it currently incurs and the forecasted costs it proposes to model for

ancillary services related to renewable resources. Specifically, Tri-State should provide and explain the ancillary service cost expectation for each type of generic renewable resource.

66. Staff further notes that renewable energy resources have the technical ability to provide certain ancillary services. For example, wind and solar farms' capability can be utilized for regulation, contingency response and frequency control. Advances in inverter technology have shown that both solar and wind farms can contribute to the supply of reactive supply and voltage control ancillary services. Furthermore, combining renewable energy and storage can eliminate the need for many ancillary service costs. Staff recognizes that these are generally not traditional options that are currently bid as part of competitive resource solicitations. However, it is important to acknowledge these advances when considering the future of ancillary services and Staff suggests that Tri-State include some discussion of its perspective on these issues in its full ERP application.

67. Specifically, Staff recommends that Tri-State's full ERP application should include expected ancillary services cost for solar, wind and storage projects and an explanation of the forecast methodology, by BA. The filing should also include consideration of the available functionality of inverters for providing regulation and frequency response and how new projects can self-supply these services to reduce ancillary service costs.

68. In response, Tri-State asserts that since its resources and loads are located in multiple BAs, its ancillary service arrangements and requirements are different than other entities that either are a BA themselves or are located within only one BA. Also, Tri-State notes that it is not allowed to self-supply certain of its ancillary services under the provisions of applicable OATTs and will address this again in the 2020 ERP. In particular, Tri-State appreciates and agrees with Staff's recommendation to present ancillary services costs by BA as a part of the

2020 ERP. Tri-State states that its 2020 ERP also will describe modeling of ancillary services and the potential impact on future electric resource plans as a result of participation in an organized market.

69. We agree with Staff that Tri-State generally complied with the requirement for an ancillary services assessment as it obtains these services from the applicable Balancing Authority or Transmission provider. However, ancillary services are highly essential, particularly in Tri-State's circumstances, and we appreciate its commitment to present ancillary services costs by BA as a part of the 2020 ERP. We find that Tri-State complied with the ancillary services requirements in Rule 3605(c), and direct Tri-State to provide a full presentation of ancillary services as a part of its full ERP application.

5. Social Cost of Carbon (SCC)

70. Staff states that Tri-State appears to have calculated an escalation value necessary to set the SCC at its statutory minimum of \$46/ton in 2020, which is the 2007 value in the Interagency Working Group (IWG) documentation, and then applied that same escalator to each year of the planning period. Staff argues that Tri-State instead should use the same methodology for calculating the SCC in nominal 2020 dollars that has been used in prior ERP proceedings for the two Colorado investor-owned electric utilities. This involves using the Consumer Price Index (CPI) to adjust the IWG 2007 value to 2020 dollars, and then escalating that value by an assumed inflation rate of two percent annually to keep the SCC in nominal dollars.

71. The Conservation Coalition also takes issue with the Company's calculation of the SCC, pointing to an analysis by the Institute for Policy Integrity (IPI) showing that Tri-State underestimated the SCC in 2020 and then escalated that cost in a manner inconsistent with the

IWG's calculations.¹⁸ IPI also references the annual damage values calculated by the IWG, and notes that § 40.3.2-106(6)(b), C.R.S., refers explicitly to the 2016 update of the IWG's Technical Support Document as the source of values to be used. Table A1 in Appendix A of that document presents annual damage estimates for the years 2010 through 2050 in dollars per metric ton, using 2007 dollars.

72. WRA is supportive of the IPI criticisms, stating in particular that estimating future SCC using inflation rates is a confusing and less accurate approach, and that the minor errors identified by IPI, such as assuming that a dollar value is in 2020 dollars rather than 2018 dollars, can compound over time and lead to significant differences in total SCC values over the resource planning period. WRA recommends that rather than escalating a 2020 value for the SCC into the future using an escalation factor, Tri-State should employ the full table of values contained in the IWG's TSD with appropriate adjustments from 2007 dollars to 2020 dollars, and from metric to short tons.

73. Tri-State acknowledges appreciation for the Staff methodology, but notes that it produces minimal differences in the SCC value, resulting in changes of no more than \$0.90/MWh in any year. For this reason, Tri-State asserts that its application of the SCC for the planning period is reasonable.

74. The Technical Support Document referred to in § 40.3.2-106(6)(b) C.R.S., contains values for the SCC through the year 2050 denominated in 2007 dollars. The Commission therefore directs Tri-State to adopt the full range of SCC values presented in Table A1 of the IWG Technical Support Document with appropriate conversions to short tons

¹⁸ The Commission notes that the proper calculation of the SCC is also a matter under consideration in Proceeding No. 19R-0096E, and that many participants in that proceeding, including WRA, provided similar input to that provided here.

and to 2020 dollars, using the most current data available for the Consumer Price Index. Because these values extend to 2050, no escalation rate should be necessary for the instant ERP filing. For future ERPs with planning periods extending beyond 2050, unless the IWG updates the Technical Support Document such that additional years are included, the Commission directs Tri-State to apply an escalation rate equal to the cumulative average growth rate in the SCC over the years 2046 through 2050. For purposes of calculating the net present value of carbon costs, we note that paragraph (4) of § 40.3.2-106(6)(b) C.R.S. states: “When calculating the cost of carbon dioxide emissions for any proceeding listed in subsection (1) of this section, the commission shall use the same discount rate as that used to develop the federal social cost of carbon dioxide, as set forth in the technical support document.” Accordingly, we direct Tri-State to discount the present year using the IWG central estimate discount rate of 3 percent.

75. Additionally, WRA and the Conservation Coalition both contend that Tri-State should apply the SCC equally to all resources serving Colorado customers, regardless of whether the resources are situated within Colorado or out of state. WRA contends that as Tri-State conducts resource planning on a system-wide basis, there is no reason for the Company to exclude the SCC from some resources but not others. WRA observes that the damages per ton of carbon are the same regardless of where they are emitted. Conservation Coalition adds that Colorado law requires the Commission to apply the SCC regardless of where a generating resource is located, noting that SB19-236 does not make a distinction between generators located within or outside the state. Staff agrees with WRA and Conservation Coalition on the application of the SCC across state borders, and reiterates that the analysis should show results both with and without the SCC for each resource.

76. We agree with the intervening parties that the application of the SCC should not be limited to in-state resources. The consequences of carbon emissions are global regardless of where those emissions originate. The cost of carbon emissions associated with electricity consumption by Colorado consumers should therefore be calculated regardless of the geographical location of the power plants generating that electricity. Accordingly, we direct Tri-State to apply the SCC to all resources that generate electricity for Colorado consumers, regardless of the state in which the generators are located or the entity that owns or controls those resources.

6. Transmission Information

77. Multiple parties commented that Tri-State's recent Federal Energy Regulatory Commission (FERC) filings and "Rule 3627 reports" indicate that it is significantly transmission-constrained, and therefore may be challenged to bring additional renewable energy resources online. Accordingly, parties indicated that Tri-State's filing was missing significant information required to understand the costs and benefits of adding new resources to the system. These critiques ranged from requests for information on injection capacity and constraints, to financial information including debt service coverage. In particular, a number of parties asked the Commission to direct Tri-State to engage in coordinated transmission planning, and to adopt a number of the recommendations related to transmission that are in the Commission's new ERP rules related to investor-owned utilities.

78. Tri-State acknowledges that significant transmission additions will be needed in eastern Colorado due to its economic wind potential. Furthermore, it indicated that it would comply with the requirements of Rule 3605 for its full ERP application, stating:

Tri-State's 2020 ERP will address modeling details for each scenario with regard to applicable transmission link capacities between regions, and interconnection capacity costs and network upgrades specific to each expansion plan resource. Additionally, Tri-State will detail the methodology used to determine transmission and interconnection capital expenditures for a given scenario, and provide details related to interconnection capacity limitations. This analysis will include how retirements of existing resources impact transmission interconnection and the addition of new resources. Finally, Tri-State will fully explain how its operation across multiple Balancing Authorities ("BA") and Transmission Providers ("TP") affects the transmission-related aspects of its modeling process.¹⁹

79. Tri-State thus asked the Commission to reject the parties' requests to the extent they exceed the requirements of Rule 3605.

80. The Tri-State ERP Rules requiring the initial filing of an Assessment of Existing Resources do not include a review of transmission resources at this juncture, and Tri-State has clearly indicated its intention to provide much or all of the information sought by parties in its full ERP application. However, we also observe that transmission constraints, availability, and investment will require significant attention in the full ERP application.

81. Thorough integration of transmission and generation planning will be necessary to meet the array of challenges before Tri-State and other power planners. We further note the development of a potential solution for integrating transmission planning with resource planning as proposed in the Updated Joint Transmission Proposal and Joint Final Comments to Decision No. C20-0661-I, filed by multiple participants in the ongoing rulemaking addressing the Electric Rules in Proceeding No. 19R-0096E. We direct Tri-State to address in its full ERP application

¹⁹ Tri-State Response Comments at 7.

whether the same or similar approach for integrating transmission planning into its ERP process as proposed in Proceeding No. 19R-0096E would be feasible for Tri- State as well.

F. Conclusion

82. Given the intent of Rule 3605(c) as conveyed by the Commission in prior decisions, the significant additional requirements for Tri-State's ERP application as compared to this initial filing focused on Tri-State's existing generation resources, and the time available prior to that forthcoming application being filed, we reaffirm the scope of this Proceeding as established in Decision No. C20-0527-I.

83. We conclude that the assessment of existing resources filed by Tri-State on June 1, 2020, as supplemented on August 3, 2020, is generally compliant with the requirements of Rule 3605(c). However, consistent with the discussion above, there are several elements of Tri-State's assessment of existing resources that require modifications or supplementation in the forthcoming ERP filing.

84. In accordance with our overall evaluation of Tri-State's filings and the additional opportunities for parties and the Commission to review its existing resources in the upcoming Phase I of Tri-State's ERP, we deny the Joint Movants' request that the Commission order Tri-State to file revised documents in this Proceeding.

85. Several parties to this Proceeding raised diverse issues with regard to their interpretations of Rule 3605(c) requirements, notably highlighting potential gaps and flaws in the development of ERP modeling inputs. While not within the scope of this Proceeding, we encourage Tri-State to take note of the intervening parties' positions, and conclude that these comments were valuable to us as we evaluated this groundbreaking effort leading to Tri-State's first ERP application filing.

86. We further appreciate Tri-State's willingness to address parties' critiques, including topics not explicitly addressed in this Decision. We direct Tri-State to provide the additional information or make the committed modifications as described in its reply comments in the ERP application proceeding.

87. Various intervening parties further proposed that Tri-State engage stakeholders, or that the Commission direct Tri-State to engage stakeholders, in the lead-up to or during the upcoming ERP application proceeding. For example, the OCC asked Tri-State to initiate a stakeholder process to reduce friction in the ERP, with a timeline that continues as needed throughout that process. While Staff disagreed that meetings were required prior to the full ERP application, it proposed that Tri-State conduct a targeted engagement process after filing its ERP, with meetings focused on a variety of issues ranging from software capabilities to transmission data. Staff indicated that non-litigated stakeholder discussions are frequently beneficial.

88. Tri-State is correct that it is not required under the Tri-State ERP Rules to engage stakeholders in a particular way. However, we conclude that Staff's proposal has merit from the perspective of providing a non-litigated forum for multiple parties to better understand these first-of-their-kind filings. The issues Staff raised—including modeling software capabilities, how demand-side management is considered in the model, and transmission planning—reflect issues raised by multiple parties in their comments in this Proceeding. While we do not direct Tri-State to conduct additional stakeholder engagement, we do encourage them to do so, in the interests of procedural efficiency in the upcoming full ERP application.

89. Finally, given that this Proceeding was a first-of-its-kind in implementing Rule 3605 and given the diversity of issues raised by parties, we advise Tri-State that the Commission intends to review Tri-State's full ERP application carefully for completeness and to

ensure that the subsequent proceeding is structured in a way to ensure full consideration and resolution.

II. ORDER

A. The Commission Orders That:

1. The Assessment of Existing Resources filed by Tri-State Generation and Transmission Association, Inc. (Tri-State) on June 1, 2020, as supplemented on August 3, 2020, is generally compliant with the requirements of paragraph 3605(c) of the Commission's Rules Regulating Electric Utilities (Electric Rules), 4 *Code of Colorado Regulations* (CCR) 723-3.

2. Consistent with the discussion above, Tri-State is directed to provide additional information regarding its Assessment of Existing Resources in its application for approval of its Electric Resource Plan (ERP) to be filed no later than December 1, 2020, pursuant to Rule 3605 of the Electric Rules.

3. Tri-State is directed to provide additional information and modifications to its Assessment of Existing Resources in accordance with its Responsive Comments filed October 2, 2020, consistent with the discussion above.

4. The Motion for an Order Requiring Tri-State to File Revised Documents filed jointly by Natural Resources Defense Council, Sierra Club, Western Colorado Alliance, and Western Resource Advocates is denied.

5. Consistent with the discussion above, Tri-State is encouraged to engage with interested stakeholders in relation to its forthcoming ERP application proceeding.

6. Tri-State is advised that the Commission will carefully review Tri-State's first ERP application filing and may take time to ensure its completeness.

7. This Proceeding is closed.

8. The 20-day time period provided by § 40-6-114, C.R.S., to file an application for rehearing, reargument, or reconsideration shall begin on the first day after the effective date of this Decision.

9. This Decision is effective upon its Mailed Date.

**B. ADOPTED IN COMMISSIONERS' WEEKLY MEETING
November 12, 2020.**

(S E A L)



ATTEST: A TRUE COPY

A handwritten signature in cursive script that reads "Doug Dean".

Doug Dean,
Director

THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

JEFFREY P. ACKERMANN

JOHN GAVAN

MEGAN M. GILMAN

Commissioners