BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans	R.13-12-010 (Filed December 19, 2013)

POST WORKSHOP REPLY COMMENTS OF ALTON ENERGY ON PLANNING ASSUMPTIONS AND SCENARIOS FOR USE IN THE CPUC 2014 LONG-TERM PROCUREMENT PLAN PROCEEDING AND CAISO 2014-15 TRANSMISSION PLANNING PROCESS

Hal Romanowitz, P.E.
Chief Executive Officer & Party Rep
ALTON ENERGY, INC.
4039 Alton Way
Escondido, California 92025
Telephone: (661) 747-0990
Facsimile: (661) 825-8299
Email: hal@altonenergy.com

Jonathan Word
Director of Strategic Operations
ALTON ENERGY, INC.
4039 Alton Way
Escondido, California 92025
Telephone: (602) 540-6309
Facsimile: (661) 825-8299
Email: word@altonenergy.com

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Alton Energy respectfully submits these Post-Workshop Reply Comments in response to the December 19, 2013, *Ruling Establishing a Comment* period *Regarding Workshop Material* sent to the service list in R.12-03-014 by Administrative Law Judge David Gamson ("Ruling"), and the California Public Utilities Commission's ("Commission's") R.13-12-010, *Order Instituting Rulemaking* filed on December 19, 2013 ("OIR").

I. INTRODUCTION.

After extensive review of the scenarios presented and the parties' comments on January 8th, we feel that the scenarios presented by the Commission are not sufficient to cover the policy issues facing the CPUC.[1] We do agree with PG&E in their statement that "parties should not be limited to consideration of the scenarios set forth in the assigned Commissioner's ruling. Parties should be given the opportunity to present analysis based on alternative scenarios"[2] … and that additional time and another comment round may be beneficial to capture sufficient feedback from all parties regarding the various scenarios that have been presented.

[1] Question 1, Key Technical Questions for Parties in Response to December 18th, 2013 Workshop on Planning Assumptions and Scenarios, p. 1

[2] PG&E January 8 Comments, p. 15

We are very concerned that the scenarios are not closely linked with critical state environmental goals, particularly the ARB 2050 emissions reduction goal to reduce emissions by 80% of 1990 levels by 2050. Additionally, as communicated by other parties, we have concern that "CARB appears to be absent from the coordinated efforts taking place between the CEC, CPUC and CAISO to develop the scenarios and assumptions that will lead to an integrated resource plan."[3] We strongly agree with the numerous parties that express the importance of the ARB 2050 emissions reduction goals, and would appreciate a much more active and participatory interaction directly from ARB in the LTPP process.

CalWEA made a very important point that the Commission should consult with the ARB in establishing target levels of energy efficiency and renewable energy [at the likely large scale] necessary to achieve a 2034 GHG target consistent with the ARB's trajectory toward 2030 and 2050 GHG-reduction goals.[4] We then should determine the most cost-effective combination of preferred resources and energy storage to achieve the state's goals.

II. BUSINESS AS USUAL TRAJECTORY DOES NOT MEET STATE GOALS

"SDG&E notes that the key focus at this point must be on developing the base case (i.e., the Trajectory Case)."[5] The Trajectory scenario is noted as the control scenario for resource and infrastructure planning, designed to reflect a modestly conservative future world with little change from existing procurement policies and little change from business as usual practices.[6] If we continue with the business as usual trajectory under a conservative planning approach, Alton

[3] Brookfield January 8 Comments, p. 2

[4] CalWEA January 8 Comments, p. 6

[5] SDG&E January 8 Comments, p. 4

[6] LTPP 2014 Scenario Attachment, p. 20

is very concerned about the irreversible impacts of unnecessary carbon emitting GFG gas procurement, and the correlated failure to meet critical state environmental goals.

The 40% RPS scenario is a good advance forward to assess the operational impacts associated with a higher RPS target post-2020. It is indeed critical to diverge from the Trajectory scenario by using a High DG driven RPS portfolio that targets achieving a 40% standard in 2030.[7] However, the zero carbon energy (and firm dispatchable capacity) needed to address State goals is broader and much more substantial. While DG is a critical component of an effective plan, the bulk scale of zero-carbon energy needed by 2050 is much greater than what DG can do, particularly when large-scale cost-effectiveness is taken into account. We agree with UCS and Sierra Club in their position advocating a more than conservative approach, expressing that "a scenario that explores an RPS of at least 50% by 2030 is consistent with the existing deployment rate of renewable resources and a lower bound of 2050 [ARB] emission reduction trajectory."[8] NRDC referenced a very critical comprehensive study by LBNL about reaching the states 2050 climate goals, that expresses that a "40% RPS by 2020 and 51% RPS by 2030 produces a scenario that does not even achieve the full 2050 goal."[9]

We strongly feel that the Expanded Preferred Resources scenario is the only scenario that is closer to being in sync with the critical state ARB Emissions Reductions goals. However, there are potential modifications needed to optimize this scenario to focus on the true size and scope of the ARB goal (cost-effectively).

[7] LTPP 2014 Scenario Attachment, p. 22

[8] UCS – Sierra Club January 8 Comments, p. 5

[9] NRDS January 8 Comments, p. 13, citing Lawrence Berkeley National Laboratory

> "The Expanded Preferred Resources scenario would assess the impact of pursuing higher levels of preferred resources in order to take an ambitious step toward the California Air Resources Board's (CARB) 2050 greenhouse gas (GHG) emission reduction goals. CARB, via AB 32, seeks to reduce GHG emissions by 80% beyond 1990 levels by the year 2050."[10]

We believe the "Least-Cost 2034 GHG Target Scenario" referred to by CalWEA has substantial merit, and we agree that "a scenario is needed that seeks to meet ARB's intended 2030 [interim] carbon goal as cost-effectively as possible, by taking a holistic view of meeting carbon and reliability goals at the least total cost."[11] It is critical that any proposed scenario assess at least a 2034 GHG goal that is in line with ARB's 2050 emissions reduction goal. Although some amount of DG should be analyzed in a balanced portfolio, we generally agree with SDG&E's statement that "SDG&E does not agree that the High DG scenario should be analyzed, and submits that additional work is required in order to develop better scenarios that are more likely to show lower costs and greater greenhouse gas ("GHG") reductions."[12]

III. THE CRITICAL ZERO-CARBON PLANNING SCENARIO

Unfortunately, in past Proceedings very few parties have highlighted the importance and significance of the long-term California Air Resources Board (ARB) 2050 Emission Reduction Goal of 80% reduction from 1990 levels. This LTPP 2014 has begun on a much more productive note, with numerous parties expressing the importance of the ARB emissions goals. It is crucial to pay careful attention to the State Goal's impact on the electric sector.

As the CEC stated in its recent 2013 IEPR Final Lead Commissioner Report, "To help ensure progress toward its 2050 greenhouse reduction goals, California needs to determine what

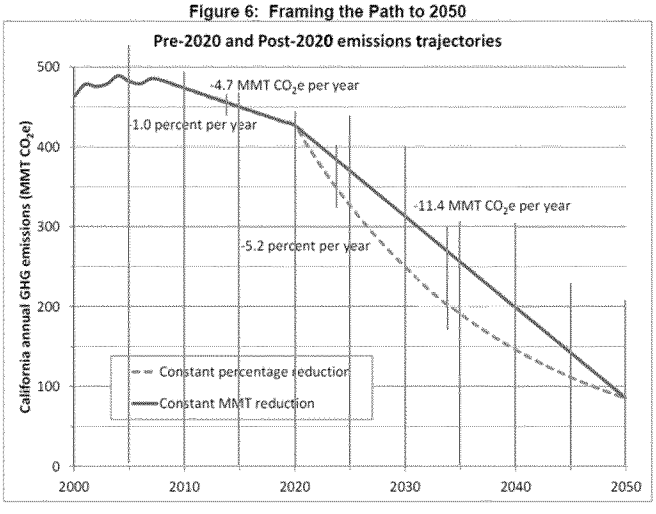
[10] LTPP 2014 Scenario Attachment, p. 22

[11] CalWEA January 8 Comments, p. 5

[12] SDG&E January 8 Comments, p. 11

the electricity system should look like in 2030 as an interim target."… To achieve its greenhouse gas reduction goals, California must be even more aggressive in developing and implementing these policies. Also, the state needs to be prepared to deal with the effects of climate change on the energy sector itself … Achieving California's 2050 greenhouse gas emission reduction goals will require substantial transformation of California's energy system."[13] UCS-Sierra Club presented the following ARB AB 32 Scoping Plan emissions reduction trajectory chart,[14] to which we have added grid lines every 5 years and at the 2024 and 2034 years for reference.

Figure 6: Framing the Path to 2050



After extensive analysis specifically focused on the electric sector, we come to a simple conclusion that it is nearly impossible to meet the ARB 2050 Goal without substantial and continued integration of carbon-free wind and solar that is firmed and shaped by large utility-scale dispatchable Bulk Energy Storage.

Alton Energy submits the below graphic to demonstrate the massive scale of the zero-carbon energy that is needed through 2050.[15]

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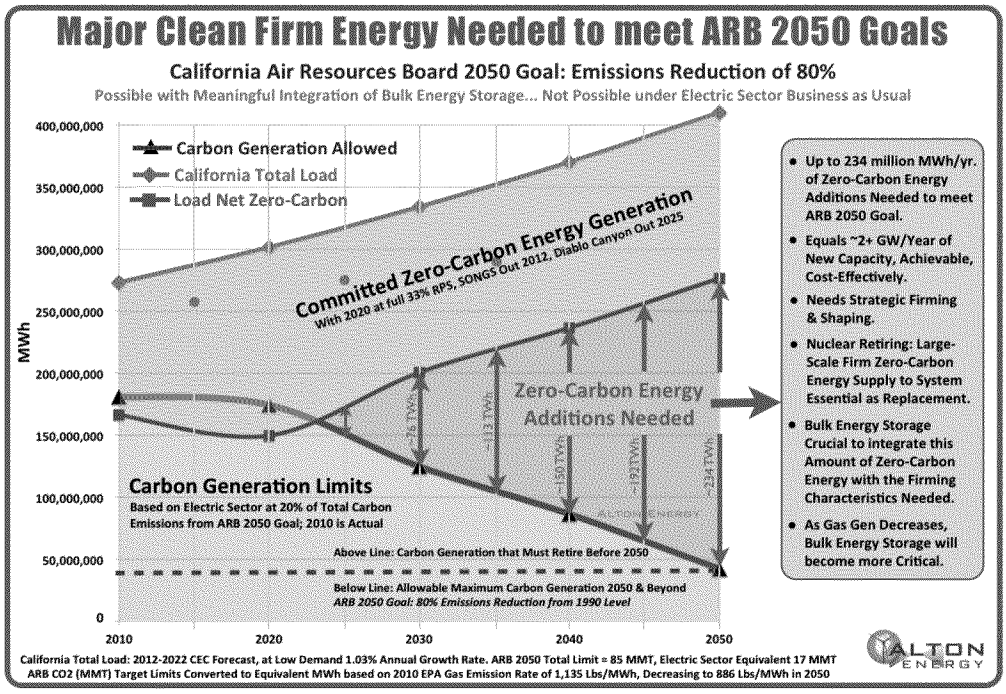
[13] CEC 2013 IEPR, Final Lead Commissioner Report, p. 2, 15

[14] UCS – Sierra Club January 8 Comments, p. 5

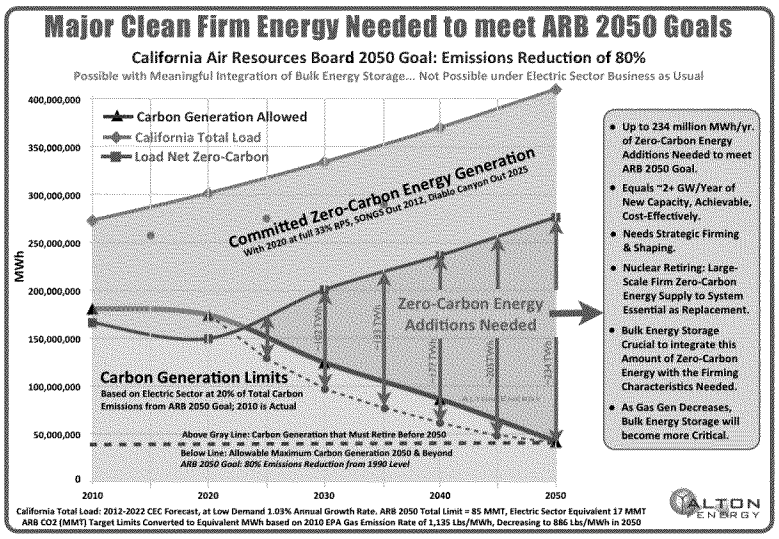
[15] Alton Energy Analysis of ARB Emissions Goals through 2050, added to multiple past CPUC filings by Alton Energy.



The renewable energy (in the Green Band in the above chart) is currently being integrated at low costs by coordination with hydro generation, and CCGT and CT Gas Turbines primarily make up the Carbon Generation band of the graphic. The additional zero-carbon need is reasonably well accommodated through 2020 by the existing supply of hydro and nuclear, in combination with existing and committed renewable generation. However, from 2020 to 2050, the need for additional new zero-carbon energy generation is substantial, about ~234 million MWh/year by 2050, requiring over 2,000 MW of new capacity per year (wind and solar, with storage) to meet this widening gap. There are limited viable solutions to meet the increasingly stringent ARB 2050 Emission Goals. However, such is possible with meaningful integration of bulk energy storage coupled with clean zero-carbon energy (wind + solar), but it will not be possible under Business as Usual. If gas power continues to be procured as the default, the emissions impact will preclude the possibility of reaching ARB 2050 Emissions Reduction Goals and cause substantial stranded cost from the gas generation as Procurement Planning awakens and shifts to a zero-carbon focus.

"Maximizing the use of these "preferred resources" becomes even more important as California works toward reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050." We applaud CEC's position that "the agencies are committed to seeking 50 percent of the incremental resource need from energy efficiency, demand response, distributed generation, and storage."[16] However, the above graphic and extensive analysis will show that this may only be the starting point to most cost-effectively meet the ARB 2050 goal. We would like to draw attention to the importance of bulk energy storage coupled with larger utility-scale solar and wind, and strategic transmission investment.

Shown below is the same graphic but with the modification of the ARB "Constant Percentage Reduction" trajectory from the Figure 6 Graphic above which further increases the quantity and expedited need for carbon-free energy to come online, and most importantly, to be studied in this Proceeding. Planning Studies to support ARB GHG Goals need to be properly incorporated, otherwise it would be a failure in this Proceeding to fully support State Goals, and also a failure to create the best long-term and most cost-effective solutions that will likely be needed in California.



[16] CEC 2013 IEPR, Final Lead Commissioner Report, p. 1, 9

IV. CARBON-FREE ENERGY GRID INTEGRATION

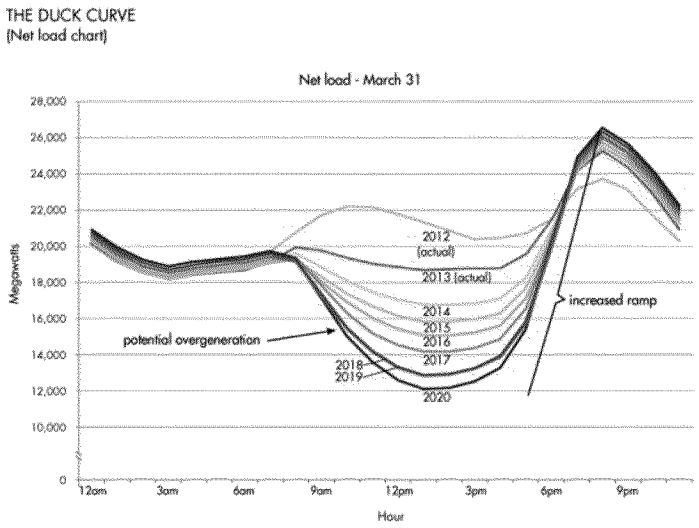
Although it has been argued in CAISO and CPUC Forums that the 33% RPS generation in the system by 2020 may be adequately integrated with existing system resources, this perspective fails to adequately consider longer-term ARB 2050 Goal impacts (and interim 2034 goals), beyond the widely studied 33% Goals. As California progresses down the path to reduced carbon emissions in the generation mix, it becomes clear that the ability of gas turbines to respond to the increasing need to integrate intermittent renewables will be extremely limited, and very expensive.

As the CEC stated, "while the amount of incremental renewable energy procured in going from a 33 percent RPS in 2020 to a 40 percent RPS in 2030 is not large, acquiring a significant share of this energy from solar resources will exacerbate the operational concerns identified in the California ISO Track 2 Study."[17]

"It is questionable whether this level of development can occur without developing significant amounts of complementary resources, the most effective of which will be energy storage that is capable of absorbing energy during other hours, including the morning down-ramp, for using during the net peak hours of the early- and mid evening."[18]

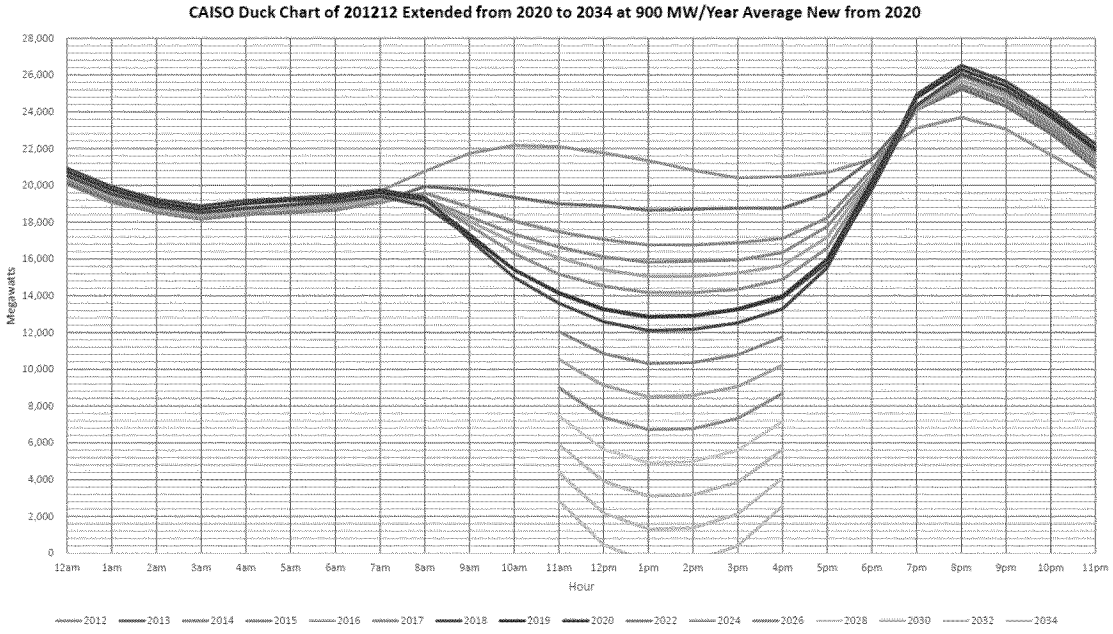
[17] CEC 2013 IEPR, Final Lead Commissioner Report, p. 253

[18] CEC 2013 IEPR, Final Lead Commissioner Report, p. 253



Source: CAISO DR & EE Roadmap: Maximizing Preferred Resources

Moving beyond 2020 as this trend continues the ramping requirements may likely become even more dramatic, as shown in our approximations below:



V. BULK ENERGY STORAGE COUPLED WITH CARBON-FREE RENEWABLES

Bulk Energy Storage, and specifically Pumped Hydro, is the most cost-effective, proven, reliable technology to integrate the magnitude of carbon-free wind and solar energy needed to meet the growing need established in the above referenced charts. If procurement planning is to be linked with critical state emissions goals, then this may be the only combination of resources that answers the question of "what new resources need to be authorized and procured to ensure adequate system reliability, both for local areas and the system generally, during the planning horizon."[19]

However, there are major market barriers that prevent bulk energy storage from being built in California, and until such barriers are removed there will not be energy storage of the magnitude that is needed to help transform the electric sector to meet ARB Goals. Time is of the essence.

We commend the substantial progress made in the Energy Storage Proceeding, but due to the magnitude of the need demonstrated in the above ARB 2050 Emissions Reduction chart and other analyses, we recommend that the Energy Storage Procurement Target from that ES Proceeding be considered just as the first step in the right direction, and that much more bulk energy storage will be required in the near future.

SDG&E erroneously claims that "given the uncertainties surrounding energy storage, including its operating characteristics, and the fact that the resource is not in existence today, the most reasonable way to deal with this potential future resource is to exclude it from the base case

[19] Attachment Planning Assumptions and Scenarios for use in the CPUC 2014 Long-Term Procurement Plan Proceeding and CAISO 2014-15 Transmission Planning Process, p. 19 ("LTPP Scenario Attachment")

model run."[20] We strongly disagree with this statement, especially regarding bulk energy storage (specifically pumped hydro), which may be the most beneficially impactful in terms of scale and cost-effectiveness in this LTPP proceeding. Pumped hydro storage is a proven and reliable means of bulk energy storage, with 3,905 MW operating in California, and ~127,000 MW installed worldwide.[21]

We would like to emphasize the importance of pumped hydro storage to be evaluated on a level playing field in this Proceeding and all other procurement proceedings to be able to compete fairly with all forms of capacity and generation. Indeed, there will be instances when other technologies have their appropriate place in the energy mix; but when barriers are broken down, pumped hydro storage proves itself to be a very cost-effective solution to solve many of the issues facing the evolving electric grid, especially when coupled with large volumes of carbon-free energy. Bulk energy storage, and specifically pumped hydro, has the ability to transform the electric sector at the scale needed, as a means to an end of a carbon intensive industry that is environmentally and economically destructive.

CalWEA previously made an important point that "as the primary reliability concern is the ability to supply firm capacity in peak demand periods in the local area, we would expect multi-hour storage capability to be one of those attributes."[22] In answering the Commission's question, "should storage modeling be focused on deep multi-hour cycling to support operational flexibility or rapid cycling for ancillary services,"[23] this point made by CalWEA is a critical distinction for why pumped hydro must be given the analysis that it merits in this LTPP, due to

[20] SDG&E January 8 Comments, p. 8

[21] National Hydro Association

[22] CalWEA Sep 30 LTPP Track 4 Comments, Page 5

[23] Question 7, Key Technical Questions for Parties in Response to December 18th, 2013 Workshop on Planning Assumptions and Scenarios, p. 1

its long-duration and time shifting capability of large quantities of carbon-free renewables, at the scale necessary to meet state GHG goals. We agree with the numerous Parties[24] who have expressed concern regarding the exclusion of bulk energy storage, and feel strongly that action should be taken promptly to redirect the scenario modeling process.

This proceeding should consider energy storage in its own context. Whereas the Energy Storage (ES) OIR seeks to achieve "Market Transformation" of particularly emerging technologies, it does not evaluate bulk energy storage from an optimized cost-effectiveness standpoint, and at the scale that is truly able to compete with conventional generation in the LTPP. Longer-duration bulk dispatchable technologies that are able to compete directly with gas, such large-scale pumped hydro storage, have been excluded from the ES OIR, and the Commission has encouraged pumped hydro developers to seek procurement partnership with the utilities, particularly in the context of the LTPP. Any potential procurement in the LTPP should be undertaken in a manner that allows all technologies to compete on a level playing field with one another, cost-effectively, and with the sole focus of providing the needed system benefit as efficiently and sustainably as possible.

This Proceeding must from the beginning recognize the importance to plan for and facilitate clean energy with bulk energy storage to be able to qualify and compete on a level playing field with fossil fueled power procurement. There is a clear AB 2514 mandate to facilitate all cost-effective energy storage. The Loading Order dictates wind and solar before gas generation. Pumped Hydro storage, plus wind, plus solar is more cost-effective and a better fit than is new gas generation, even before adding in the huge exposure of gas to stranded costs and

[24] Parties who have expressed concern in their January 8 Comments about pumped hydro storage's exclusion: CESA, NHC, Eagle Crest, Brookfield; and in the Storage OIR numerous parties expressed opposition about pumped hydro's exclusion including: Alton Energy, Brookfield, CalWEA, CEERT, CESA, Clean Coalition, Eagle Crest, EDF, GPI, IEP, PG&E, SCE, and SDG&E.

escalation. As an absolute minimum, this least-cost, best-fit clean technology must be fostered to compete, fairly. Pumped hydro storage in the Energy Storage Proceeding has demonstrated its cost-effectiveness, has been encourage by the Commission, but has not been able to compete directly (above 50 MW) in the Energy Storage Proceeding due to "Sheer Size." It is here in the LTPP that pumped hydro storage has the ability to truly create the Market Transformation goals needed to bring California to its ultimate clean energy low carbon potential.

UCS/Sierra Club recommended the Commission assume at least 2.6 GW of storage capacity is deployed on the grid by 2030.[25] "CESA anticipates that as much as 3,000 MW of new pumped hydro energy storage can be online by 2020-2022 timeframe based on existing projects in the Federal Energy Regulatory Commission ("FERC") licensing queue."[26] We strongly agree with Eagle Crest[27] that it is highly problematic that neither the 40% scenario nor any of the others include substantial amounts of utility scale storage, and go on to express that in addition to their project, there are at least another 2,500 MW [of pumped hydro] in development in the CAISO area.

We respectfully request to the Commission that Pumped Hydro be considered and evaluated more seriously in this Proceeding to assist in removing substantial market barriers, and providing a means towards financing and construction. A primary objective of this Proceeding should be to eliminate obstacles to the cost-effective procurement of pumped hydro storage with wind and solar to compete directly and fairly against new gas generation. Most importantly, if California is to have any realistic chance of meeting the ARB 2050 Emissions Goals, it is crucial

[25] UCS – Sierra Club January 8 Comments, p. 12

[26] CESA January 8 Comments, p. 3

[27] Eagle Crest January 8 Comments, p. 2

that Pumped Hydro Storage along with wind and solar be included in a primary role in any Procurement Process.

We strongly agree with CESA's position that "the first step in creating a reality in which the utilities can effectively procure these resources is to lay the appropriate foundation in the planning assumptions and scenarios."[28] It is critical that the setting of Planning Scenarios not move forward in a rush at the beginning of this Proceeding on a course to miss Planning for State GHG Goals.

For example, Bison Peak Pumped Storage Project, of at least 1,000 MW in capacity, is strategically located in the heart of the Tehachapi Renewable Transmission Project area, able to utilize and add value to the massive investment in the already in-service extra high-voltage (EHV) transmission facilities, and the huge and expanding wind and solar intermittent renewable energy generation installations. These EHV transmission facilities, with minor planned upgrades, can deliver unprecedented value in firm dispatchable clean energy directly to the LA Basin Load Center. Bison Peak Pumped Storage is mentioned as an example of the type of bulk energy storage projects that can be modeled in Planning Studies to integrate and dispatch large volumes of carbon-free renewables. Such holistic study will enable proper documentation of the possibilities of reducing or eliminating otherwise needed GFG capacity to accommodate the replacement of gas and nuclear retirements, which is critical to effectively meet state environmental goals.

[28] CESA January 8 Comments, p. 3

VI. CONCLUSION.

Alton Energy thanks the Commission for its attention to the issues and discussion presented in this reply brief.

Respectfully submitted,

/s/
Hal Romanowitz
CEO & Party Rep
ALTON ENERGY, INC.

/s/
Jonathan Word
Director of Strategic Operations
ALTON ENERGY, INC.

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