BEFORE THE CALIFORNIA AIR RESOURCES BOARD

Mary D. Nichols, Chairman
California Air Resources Board
1001 I Street
Sacramento, CA 95812

Richard Corey, Executive Officer
California Air Resources Board
1001 I Street
Sacramento, CA 95812

ARB Scoping Plan Draft

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COMMENTS OF ALTON ENERGY ON ARB SCOPING PLAN DISCUSSION DRAFT

Hal Romanowitz, P.E.
Chief Executive Officer
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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ON ARB SCOPING PLAN DISCUSSION DRAFT

We commend the substantial efforts that have gone into successfully achieving the 2020 Emissions Reduction Goal as outlined in AB 32. However, we agree with the ARB that emphasis and major focus must shift to addressing the strategy and planning process for achieving the longer-term goals beyond 2020, if we are to have any chance of Environmental and Market Transformation that is needed. "While the path to 1990 emission levels by 2020 is transformative in its own right, reducing emissions by 80 percent by 2050- as scientific assessments suggest is required to avoid the worst impacts of climate change- will require a fundamental shift to efficient, clean energy in every sector of the economy."[1] We strongly agree and would like to draw emphasis in this planning and strategy process to the crucial statement that the ARB made that "California will be unable to achieve the needed GHG emissions by simply continuing current trends… The State needs an overarching energy plan to ensure that long-term climate goals can be achieved."[2] While great progress has been made in the electric energy sector over the last years, we would like to draw attention to the risks of not creating a specific and strategic electric energy plan beyond 2020. We present in our comments several concepts for consideration that shed light on the drastic changes that are needed in the electric sector to help facilitate the 2050 target.

[1] ARB Scoping Plan October 2013 Draft, pg. 11
[2] ARB Scoping Plan October 2013 Draft, pg. 94

California has an urgent necessity to focus on meeting the ARB 2050 Goal[3] to reduce Emissions by 80% below 1990 levels. As ARB importantly noted, "these 2050 goals are consistent with an Intergovernmental Panel on Climate Change (IPCC) analysis of the emissions trajectory that would stabilize atmospheric GHG concentrations at 450 parts per million carbon dioxide equivalent (CO2e) and reduce the likelihood of catastrophic climate change."[4]

Most gas generation will need to retire before 2050, or the State will fail to meet the ARB 2050 Emissions Goal. To meet this Goal, major new zero-carbon energy additions that are Firmed and Shaped by energy storage must be procured. Bulk Energy Storage, coupled with wind and solar, must be encouraged and allowed to compete in direct competition with any fossil energy procurement. They can do so cost effectively, now. However, to achieve the overall scale needed accelerated action must start now to maintain cost-effective long-term results.

We commend the acknowledgement of many parties, in their conclusion that GHG Emissions is an important point for consideration. However, we believe the timing and magnitude of the need is widely underestimated, and the need is for early, aggressive procurement of future clean energy so that it is available in the volumes needed to meet established future Goals. Emissions reduction needs to be a critical core driver behind the architecture of any meaningful Long Term Procurement Process and Electric Sector Market Design.

Unfortunately, very few parties have highlighted the importance and significance of paying attention to the long-term California Air Resources Board (ARB) 2050 Emission Reduction Goal of 80% reduction from 1990 levels. It is crucial to pay careful attention to the State Goal's impact on the electric sector. While the 2020 goals are commendable if successfully

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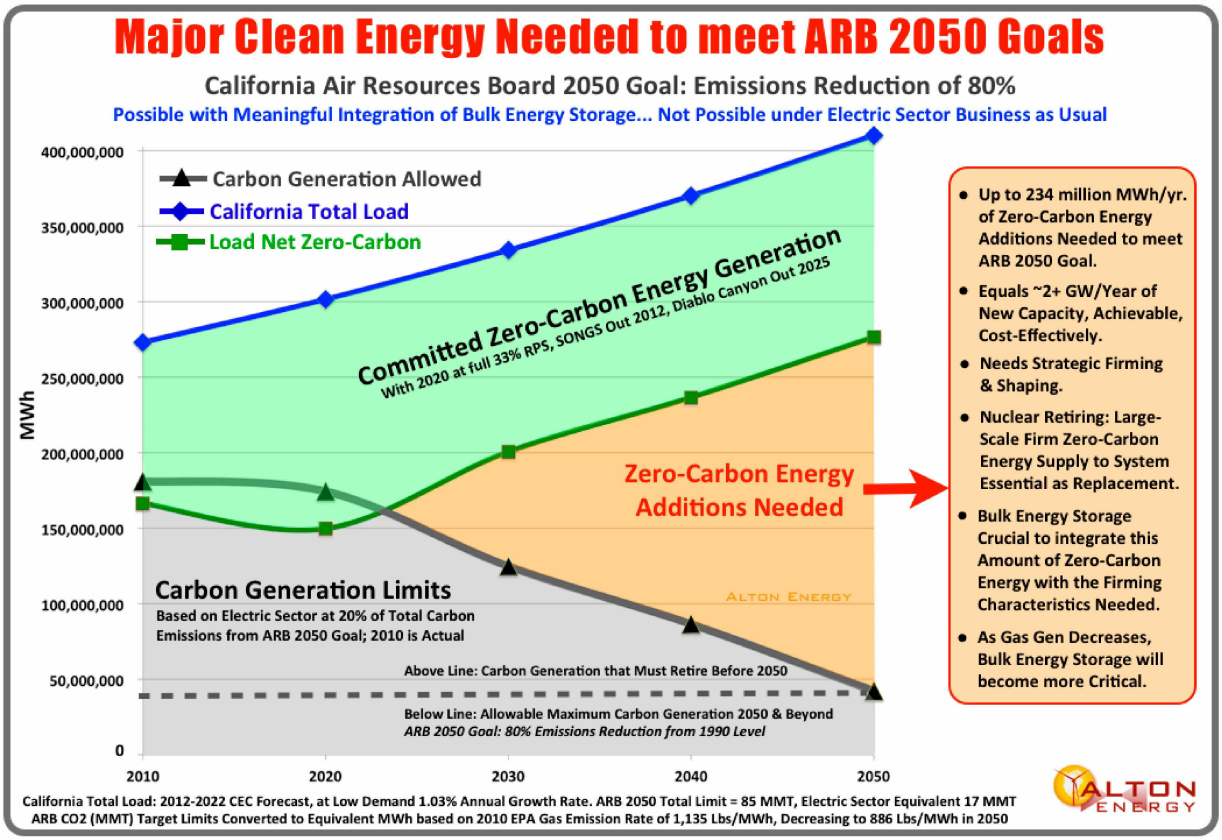
[3] Governors Executive Order S-3-05, now an ARB Goal to reduce Emissions by 80% from 1990 levels by 2050
[4] ARB Scoping Plan October 2013 Draft, pg. 12

achieved, they alone will not get us to where we need to be fast enough to initiate the transformation that is required. As ARB pointed out, "Progressing toward California's 2050 climate target will require that GHG reduction rates be significantly accelerated. Emissions from 2020 to 2050 will have to decline at more than twice the rate needed to reach to 2020 emissions limit."[5]

After extensive analysis we come to a simple conclusion that it is near 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 Bulk Energy Storage.

Alton Energy submits the below graphic[6] to demonstrate the massive scale of the zero-carbon energy that is needed through 2050.[7] The need is reasonably well accommodated through 2020 by the existing supply of Hydro and Nuclear, in combination with existing and committed renewable generation.

[5] ARB Scoping Plan October 2013 Draft, pg. 14
[6] This chart will be updated with the new numbers from ARB Final Updated 2013 Scoping Plan when published.
[7] Alton Energy Analysis of ARB Emissions Goals through 2050, added to multiple past CPUC filings by Alton Energy



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.

The renewable energy (in the Green Band in the above chart) is currently being integrated at low costs by coordination with Hydro Generation, and with CCGT and CT Gas Turbines (included in the Carbon Generation band of the graphic). 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, 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.

Bulk Energy Storage, and specifically Pumped Hydro, is the most cost-effective, proven, reliable technology to meet this need. 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 CPUC 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 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.

Additionally, as we exceed the 33% RPS target for renewable energy, it is critical to create an electric sector plan that is in line with the ARB 2050 Emissions Reductions Target. Many parties have shown that to achieve the 33% RPS, no new additional gas capacity or storage is required to integrate the variable renewables. However, as the ARB has correctly emphasized, we now need to focus beyond 2020 goals. This requires a much more comprehensive electric sector strategy and plan and incorporates all of the most efficient technologies, including energy storage, to most effectively expand the carbon-free generation on the grid.

As SCE has pointed out in its testimony in the LTPP Proceeding, the addition of strategic well positioned and conceived transmission expansion can become one of the most important parts of a resource expansion Plan that expands resources available to meet local capacity needs, to provide highly cost effective long term solutions, and also reduce GHG Emissions. Transmission expansion, coupled with Bulk Energy Storage, Wind Generation, and Solar Generation can provide a superior long-term solution to California's energy addition needs.

It is well known that expansion of the magnitude of resources included in balancing needs creates substantial efficiencies and typically reduces the need for additional resources. We believe that creative transmission expansion, as well as the inclusion of bulk energy storage, along with wind and solar generation in combination can create major improvements and the form of Market Transformation highlighted by the CPUC and ARB.

There is a clear AB 2514 mandate to facilitate all cost-effective energy storage. The Loading Order dictates wind and solar before gas generation. Bulk energy 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 escalation. As an absolute minimum, this least-cost, best-fit clean energy must be fostered to compete, fairly. This will ensure that bulk energy storage, specifically pumped hydro, is able to successfully address the long-term policy and regulatory goals to reduce emissions from the electric sector, by facilitating the increasing integration of carbon-free energy, and displacing and avoiding the unneeded dispatch of inefficient high heat rate gas generation. Pumped hydro storage in the CPUC 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."

To meet the ARB 2050 Emissions Goals, Distributed & Bulk Energy Storage, and specifically Pumped Hydro, must be included in any Procurement. This will enable wind and solar generation, including major solar roof additions, to remain an effective and essential portion of the future clean energy mix. Large-scale energy storage will be needed to maintain strong integration capabilities of variable renewable energy (beyond 33% RPS) as gas generation decreases. It is also important that the ARB highlight the importance of a bulk energy storage roadmap to achieve the emissions reduction at the scale that is needed to meet 2050 goals.

THE ARB SHOULD RECOMMEND A SPECIFIC STUDY AND ANALYSIS OF THE ELECTRIC SECTOR, TO ILLUSTRATE THE MAGNITUDE OF THE 2050 GOAL IMPACT ON THE ELECTRIC SECTOR AND TO HELP FACILIATE A STRATEGY TO THE MOST COST-EFFECTIVE LOW-CARBON ENERGY PROCUREMENT PROCESS AND MARKET SUPPORT.

We have created the aforementioned Emissions Reduction Gap chart to extrapolate the 2050 Emissions Target impact on the electric sector. By doing so, the substantial need for massive carbon-free power generation need becomes evident. It is this type of analysis that is crucial to move beyond 2020, and achieve meaningful market transformation that is driven by the widespread scientific evidence supports the ARB and State Emissions Reduction goals. Furthermore, it is crucial that further focus be brought to energy storage and its important role that it can play in the low carbon future. Additionally, there are critical elements of the electric sector that need attention, such as why we continue to import such a large amount of electricity from out of state, we can be displacing that carbon intensive energy with carbon free renewables and energy storage. The Carbon Cap and Trade is in its infancy, and a thorough multi-party analysis can help strengthen this program so that it further supports renewable energy and energy storage to be cost-effective and to be procured at the level necessary to achieve the 2050 goals. It is critical that more attention is paid specifically to the electric sector, so that a strategic plan is

laid out that optimizes the electric sector to be as efficient as possible. The energy sector makes up about 40 percent of total California emissions, with the electric sector at 19%.[8] These are a few of the topics that we feel require focus, to successfully move beyond the 2020 milestone.

We believe that one important outcome from such an electric energy sector focus will address the ARB Recommendations to Maintain Momentum, that "the [energy] plan should evaluate and recommend the most appropriate combination of clean energy technologies…"[9]

CONCLUSION

We thank the ARB for consideration of these Comments. We look forward to collaborating further in this Scoping Plan process to help facilitate a timely and meaningful framework for the successful creation of a cost-effective long-term opportunity for bulk energy storage and increased penetration of zero carbon resources into the California energy mix.

Respectfully submitted,

/s/

Hal Romanowitz
CEO
ALTON ENERGY, INC.

/s/

Jonathan Word
Director of Strategic Operations
ALTON ENERGY, INC

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[8] ARB Scoping Plan October 2013 Draft, pg. 31, 35
[9] ARB Scoping Plan October 2013 Draft, pg. 94