10/6/15

AltaGas comments on the ISO 2015-2016 Transmission Planning Process Stakeholder meeting 9/21-22/2015

AltaGas appreciates the opportunity to comment on the ISO presentation during its 9/21-22/15 Stakeholder meeting discussing the 2015-2016 Transmission Plan. Our comments are focused on the AltaGas looping in the existing 230 kV Generation tie line into the existing Red Bluff or Colorado River Substation or both.

Background:

In October 2014, AltaGas Ltd. submitted a proposal to CAISO to modify their existing Blythe Energy Project (Blythe 1) 230 kV gen tie transmission line between Buck Blvd and Julian Hinds substations into a transmission network line. It should be noted that this line has a working rating of 1,482 MVA with an emergency rating of 2,002 MVA, making it the sixth heaviest 230 kV line in WECC.

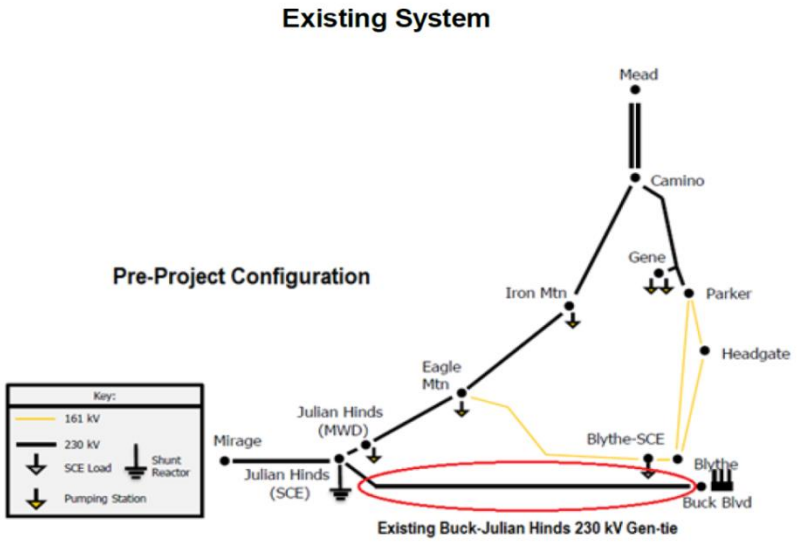
The networked configuration can be accomplished by looping the gen tie line into Colorado River 230 kV (Alt #1) substation or Red Bluff (Alt #2) or both (Alt #3).

CAISO initial analysis concluded that the project has merit but additional analysis was needed. In April 2015, CAISO issued a detailed project schedule indicating possible approval by mid-September 2015.

In July 2015, CAISO concluded their analysis. Further discussion concluded that Alternative #3 is the most attractive alternative economically and for reliability.

Below is the existing configuration, Alternative 1, 2 and 3 configurations:

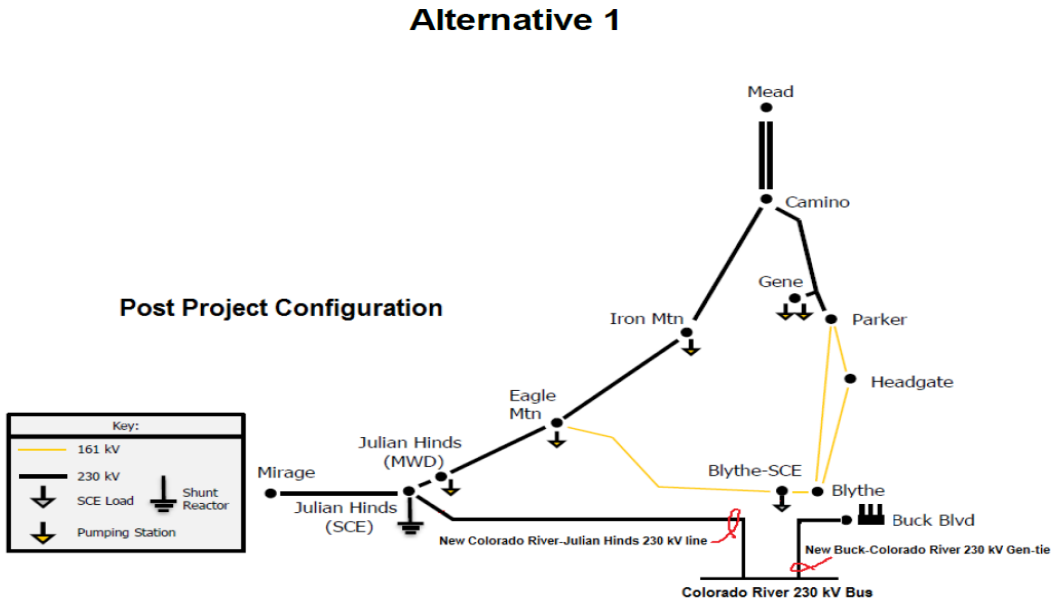
One Line Diagrams



Alternative # 1 – Loop-in the exiting AltaGas 230 kV line through Colorado River Substation

The Buck-Colorado River-Julian Hinds Loop-in alternative #1 consists of converting a portion of the existing Buck Blvd.-Julian Hinds 230 kV generation tie-line to a network facility by looping the line into Colorado River 230 kV bus. This creates a networked facility identified as Colorado River-Julian Hinds 230 kV, and a modified 230 kV gen-tie line identified as Buck-Colorado River.

- Colorado River 230 kV Substation: Install all equipment necessary to Loop Buck Blvd. – Julian Hinds into the Colorado River 220 kV bus.
- Buck Blvd. – Colorado River and Colorado River – Julian Hinds 230 kV Transmission Line: Build approximately 0.4 miles of 230 kV transmission line to loop the line into Colorado River 230 kV bus.

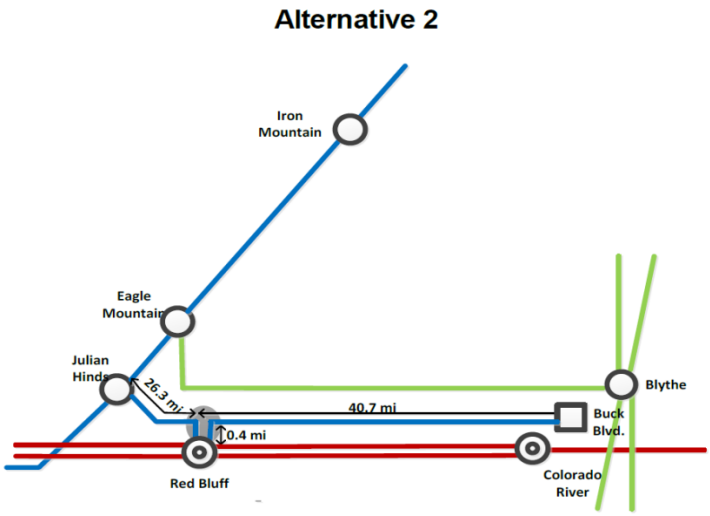


Alternative # 2 – Loop-in the exiting AltaGas 230 kV line through Red Bluff

The Buck-Red Bluff-Julian Hinds Loop-in alternative #2 consists of converting a portion of the existing Buck Blvd.-Julian Hinds 230 kV generation tie-line to a network facility by looping the line into Red Bluff 230kV bus. This creates a networked facility identified as Red Bluff-Julian Hinds 230 kV, and a modified 230 kV gen-tie line identified as Buck-Red Bluff.

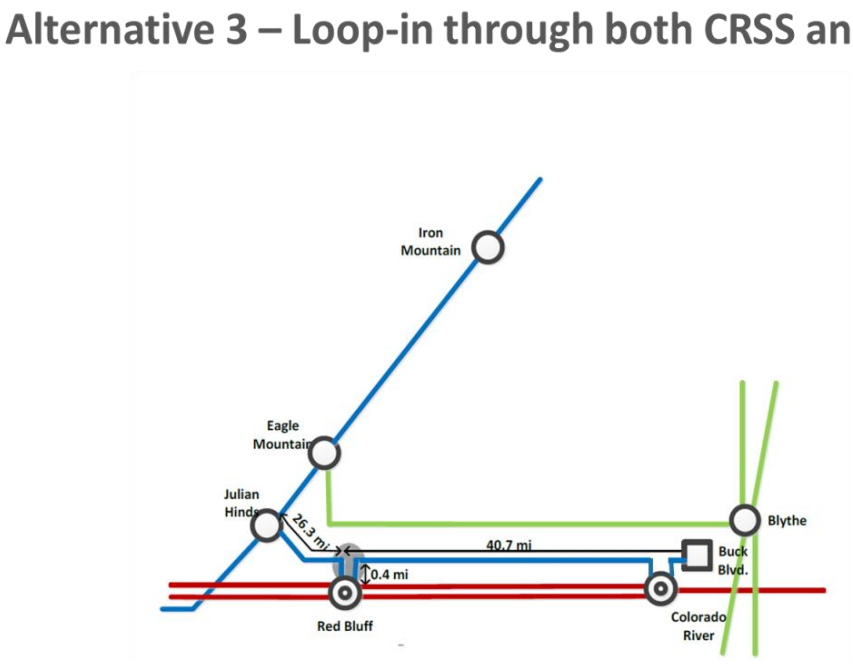
- Red Bluff 230 kV Substation: Install all equipment necessary to Loop Buck Blvd. – Julian Hinds into the Red Bluff 230 kV bus.

- Buck Blvd. – Red Bluff and Red Bluff – Julian Hinds 230 kV Transmission Line: Build approximately 0.4 miles of 230 kV transmission line to loop the line into Red Bluff 230 kV bus



Alternative # 3– Loop-in the exiting AltaGas 230 kV line through both Colorado River and Red Bluff

This alternative would combine both Alternative 2 and 3



Project cost under all three alternatives:

The table below shows the estimated cost of the existing gen tie along with cost of looping-in the gen tie into Colorado River Substation or Red Bluff or both. The existing gen tie cost for alternative 2 was pro-rata reduced based on the actual mileage.

Project Cost (* $1M)	Alt #1	Alt #2	Alt #3
Existing Gen-Tie $M	$ 103	$ 49	$ 103
Loop-In $M	$ 25	$ 25	$ 50
Total $M	$ 128	$ 74	$ 153
Total Nominal $M	$ 649	$ 373	$ 771
Present Cost @ 6% Discount Rate	$ 251	$ 145	$ 300

Summary of Economic analysis:

Economic analysis using production cost modelling was performed by both CAISO and AltaGas/ZGlobal and shows a POSITIVE Benefit to Cost ratio and certainly above recent approved transmission projects. The table below is a summary of the results:

	Based on CAISO Benefit Analysis		Based on Altagas Benefit Analysis			
Benefit Summary	Alt 1 (CAISO)	Alt2 (CAISO)	Alt1 AltaGas	Alt2 AltaGas	Alt 3 AltaGas	Alt 1 AltaGas Sensitivity
Total Benefit	$264.62	$168.80	$310.01	$163.68	$326.68	$326.68
Total Cost	$251	$145	$251	$145	$300	$251
Benefit / Cost Ratio	1.05	1.16	1.24	1.13	1.09	1.30

Note: AltaGas / ZGlobal economic analysis shows a higher economic benefit than CAISO since it includes benefits under extreme scenarios.

In addition, we are working with CAISO and investigating a scenario where cost may be able to be reduced, this will increase the Benefit to Cost ratio proportionally

Specific Comments:

AltaGas' comments are specific to the ISO presentation on "Buck Blvd Gen-Tie loop-in project" (project). The following comments are mainly focused on the reliability benefits since we agree with all CAISO Economic analysis:

1. CAISO did an excellent job in evaluating the project in detail and organizing the results in an easily readable format. CAISO was also clear in identifying the existing system

problems and how the project mitigates those, as well as situations under which the project makes things worse. AltaGas appreciates the CAISO Transmission Planning staff efforts and excellent analysis.

2. While describing the positive impacts of the project, the ISO recognizes that the project reduces N-0 overloads which otherwise would be mitigated through congestion management (generally means generation dropping). This is a major benefit of the project because it applies 99% of the time while the system is operating under normal conditions. Curtailment of Blythe generation will no longer be necessary during normal operation.

3. The ISO also recognizes the apparent reliability benefits under N-1 conditions. However, we would like to emphasize that the project provides significant benefits under N-1-1 conditions. Our internal study has revealed that the project eliminates overloads on some SCE/MWD transmission lines under at least **190** N-1-1 conditions. Most of these overloads occur on the Julian Hinds – Mirage circuit. Some examples follow:

Facility		Loading		delta	Contingency
		Pre-proj	Post-proj (Alt3)		
J.HINDS-MIRAGE		152.1%	56.9%	-95.2%	JHINDMWD - EAGLEMTN 230 kV, DEVERS - MIRAGE 230 kV
BLYTHESC-EAGLEMTN		124.4%	12.6%	-111.8%	EAGLEMTN - IRON MTN 230 kV, J.HINDS - MIRAGE 230 kV
JHINDMWD-J.HINDS		104.4%	37.8%	-66.6%	EAGLEMTN - IRON MTN 230 kV, J.HINDS - MIRAGE 230 kV

We request from CAISO to update bullet #2 under "Positive Impacts of the Project" to include these N-1-1 benefits. See attached Excel table.

4. A review of the negative impacts of the project raises some questions and clarifications. For example, Colorado River (CR) transformer is not overloaded under N-0 condition for Alt 2 or Alt 3. Red Bluff (RB) transformer is not listed in the Thermal Loading Results but Alt 3 will eliminate that overload as well.

5. Similarly, outage of CR transformer does not cause overload under Alt2 or Alt3. Outage of RB transformer does not cause overload under Alt1. AltaGas requests that CAISO update the statements to match with the Thermal Loading Results.

6. Under CAISO Item #3: CAISO stated that the Devers-Red Bluff #2 contingency causes a pre-project overload of Devers-Red Bluff #1 line. We believe that this is an existing problem. The project is actually lowering this overload by 3% (Alt 2 & Alt 3). J. Hinds-Mirage overload is only 101% which is marginal and does not warrant to be counted against the project.

7. The Devers – Red Bluff N-2 contingency is a genuine double contingency for which the project makes things worse. This is the only contingency that the project produces negative results. We agree with CAISO assessment, however, we request from the

CAISO to evaluate the overall reliability benefits. The project has clear N-0, N-1, N-1-1, voltage and economic benefits under normal conditions and hundreds of contingencies but fails only under one very infrequent N-2. The project is willing to pay for an SPS action that mitigates this one and very infrequent N-2.

8. Devers-Valley N-2 contingency causes a pre-project overload of West of Devers circuits. The project is not aggravating overloading of those circuits. Applying existing Devers RAS back-up scheme also causes pre-project overload (132%). It seems like further evaluation is needed to find a successful mitigation plan to eliminate pre-project overloads. Until that is done it does not seem appropriate to count this double contingency against the project.
9. AltaGas appreciates the ISO recognizing the voltage benefits, transient stability benefits and the project providing better voltage control under light load conditions (preventing high voltages).
10. Regarding the short circuit impacts, the CAISO report says the project does not trigger circuit breaker upgrades; however, this is counted as a negative impact of the project?

Closing Comments:

1. AltaGas would like to remind the CAISO that this project is essentially built today and is therefore not subject to the development and execution risks normally associated with a proposed project. While SCE has stated that this project could take three years to complete, this is a standard answer and we are confident that this project could be completed in significantly less time.
2. As stated above the benefit cost ratio is superior to projects approved by the CAISO in recent memory.
3. The rating of the existing line and its proposed loop-in connections would likely provide greater transmission access to renewable energy projects in the area. Some of which have been placed on hold for economic reasons due to high interconnection costs.
4. AltaGas and our consultant ZGlobal are always available to discuss this project further should the need arise.