Alberhill Skype Broadcast for Data Package 1

Q1: In Table 2 of response "b", SCE reports that the El Casco, Mirage, Devers, Victor and Kramer systems are 66 kV, but these systems are actually 115 kV, correct?
A: Correct, they are 115 kV systems. The table will be corrected to reflect 115 kV systems.

Q2: In Table 2 of response "b", SCE reports that large radial systems put customers at risk due to extraordinary events. What is the frequency of such events, and how long will they last?
A: Some examples of extraordinary events include wildfires, earthquakes, and cyberattacks. These types of events are unpredictable in frequency, duration, and magnitude. The main defense against these types of events is to build resilient systems.

Q3: SCE's response to "b" states that system resiliency should be achieved at Valley to safeguard load against an extraordinary event. According to Table 2, an extraordinary event at Ellis or La Fresa or other substations will drop approximately 200,000 customers, particularly since these substations have limited tie lines. What is SCE doing to address resiliency at these substations?
A: While any system may be vulnerable to extraordinary events, SCE's planning criteria strives to ensure that these systems deliver safe, reliable power and are capable of mitigating the long-term effects of an extraordinary event. For example, the La Fresa and Ellis subtransmission systems referred to in this question utilize equipment such as transformers and circuit breakers that are rated at 220 and 66 kV which are the most common voltage levels within SCE's service territory. These types of equipment can readily be replaced if damaged during an extraordinary event. In addition, during replacement of damaged equipment, existing system tie-lines would be utilized to restore power to a portion of the customer base in the impacted area. This is in contrast to the Valley South System, that has zero system tie-lines and unique 500/115 kV equipment, which is more challenging to replace.

Q4: Slide 14: (1) Do the % capacity values for the systems other than Vista C shown in this chart reflect the impact of "non-dependable generation" resources? (2) If not, please clarify what the percentage of capacity would be for Valley South with "non-dependable generation resources" accounted for.
A: (1) SCE was referring to % utilization during the webinar therefore, the context of this response is based on that understanding. Yes, the % utilization values for all the systems reflect the impact of non-dependable generation resources where applicable.
(2) N/A

Q5: Table 2 of response "d" indicates that the transmission facilities serving the Valley substation are much less reliable than the transmission facilities which serve other SCE systems because the rate at which transmission is the "root cause" for load drop is twice as high for Valley South than the rest of SCE's system. What is SCE doing to address these transmission problems?
A: Table 2 of response "d" shows the SAIFI performance for the Valley North and Valley South Systems in comparison to the average of the other systems as well as to the SCE system as a whole. These SAIFI metrics include outages within the subtransmission and distribution systems. This table does not include information on the root cause of these outages however. Information regarding the root causes of these outages are included in response "e", which demonstrates that the majority of root causes are largely driven by random, distribution system level events that are associated with equipment failures or damage introduced by animal intrusion, weather, or third parties, and not the transmission facilities.
Distribution projects, which most commonly do not require CPUC licensing, are typically designed and constructed to address system performance issues that are reflected in SAIDI and SAIFI metrics.

Q6: Tables 1 & 2 of response "e", indicate that the operational reliability of the Valley South system is actually better than the Valley North system despite all the inherent deficiencies noted by SCE. Why is this?
A: The data in Tables 1 and 2 show that a large majority of outages and associated SAIDI contribution are caused by distribution system events, which are primarily random in nature and driven by equipment failures or damage introduced by animal intrusion, weather, or third parties. Given the random nature of these events, the performance of one system to another is difficult to assess over a relatively short timeframe.
The Alberhill System Project is a transmission/subtransmission level project and its primary purpose is to provide transmission substation transformer capacity and subtransmission tie-lines. Projects of this type are not driven by SAIDI and SAIFI metrics.

Q7: How would the Valley South outage performance caused by Transmission or Source Loss change if the radial line outages being mitigated by the Valley-Ivyglen Project were removed?
A: The Valley-Ivyglen Project includes construction of a new 115 kV circuit from Valley Substation to Ivyglen Substation. After completion of this project, the Ivyglen Substation will have two source lines, one being the newly constructed Valley-Ivyglen circuit and the other being the Fogarty-Ivyglen circuit, which is served via the Valley-Elsinore-Fogarty circuit. Of the eight outages in the Valley South System over the past five years caused by "Transmission" or "Source Loss", five of them were due to outages on the Valley-Elsinore-Fogarty or Fogarty-Ivyglen circuits. If the Valley-Ivyglen circuit had been constructed and in service during these five events, there would not have been an interruption of service to customers served from the Fogarty or Ivyglen Substations.

Q8: How long does it take to bring the spare transformer online at Valley South?
A: Valley Substation has an installed spare transformer identical to the four transformers serving the load in Valley North and Valley South. This spare transformer is configured to serve either the Valley North or Valley South subtransmission systems in the case of an outage to one of the four normally load-serving transformers (planned or unplanned). The amount of time it takes to bring the spare transformer online is determined on a case-by-case basis, and is dependent on the amount of time it takes grid operators to complete the required procedural operations. The required time typically varies between several minutes to a few hours.
Importantly, in the case of a second transformer failure when the installed spare transformer is already in service to serve load, SCE would be required to deliver, install and in-service an offsite spare 500/115 kV transformer (SCE has only one offsite spare 500/115 kV transformer). This process could potentially take several days. Alternatively, procurement of a new 500/115 kV transformer to replace a failed unit would likely require a year or more.

Q9: According to response to "h", it is not permissible to operate the Valley South System transformers with load over 896 MVA. Doesn't this mean that SCE should activate the spare transformer when Valley South load approaches 896 MVA?
A: Correct, following SCE's current operating procedures, as load approaches or exceeds the operating limit (896 MVA) the spare transformer would be placed into service.

Q10: Slide 14: How is non-dependable generation defined? Does the Valley substation have any non-dependable generation on the system?
A: Non-dependable generation resources represent the portion of generation resources that produce power, but which cannot be fully relied upon for planning purposes. For example, this may include such sources as generation resources that operate intermittently, do not have power purchase agreements in place, or for which there is insufficient historical performance data on which to base expected future output. This may include intermittent generation sources such as solar or wind, but can also include traditional generation sources that may be used to offset load but are not reliably producing power all the time and are not under SCE operational control. The sizes of non-dependable generation resources may range from small rooftop solar PV installations (measured in kilowatts) to large facilities (measured in megawatts). The Valley South System does have generation resources whereby a portion of it is considered non-dependable and is primarily in the form of rooftop solar PV.

Q11: Regarding SCE's response to item "h", isn't it correct that SCE does not identify any extant concerns regarding short circuit duty concerns on the Valley South transformers?
A: Short circuit duty is the amount of electric current that can flow during a fault condition. The Valley South System does not currently have a short circuit duty concern in its normal operating mode, that is, with two transformers in service. When the third transformer (spare) is put into service at Valley Substation to perform overload mitigation however, the available short circuit duty is close to exceeding the ratings of the 12 kV circuit breakers at nearby distribution substations. While there is no immediate concern with short circuit duty at the 115 kV equipment of the Valley Substation, it may be a concern in the future as system configurations change and/or more generation resources (which increase short circuit duty) come online.

Q12: NERC reliability standards (which apply to the CAISO-operated system, including all 500 kV facilities) provide for studies of, and potential mitigation of "Extreme Events." How is SCE planning for the Valley plus [proposed] Alberhill substations (a) subject to and (b) otherwise informed by NERC and CAISO planning standards regarding Extreme Events? How does "Resiliency" as defined on SCE's slide 9 (a) relate to and (b) differ from planning for "Extreme Events" under NERC (and CAISO, if different) planning standards?
A: The existing Valley 115 kV System and the proposed Alberhill 115 kV System are not subject to NERC and CAISO Reliability Standards. However, as it is SCE's goal to provide safe and reliable service to its customers, SCE designs its system to meet service requirements under both normal conditions (all electrical facilities in-service) and N-1 contingency conditions (an outage to a single component of an electrical system such as a transformer or a line). Where appropriate, SCE may also consider low probability, high impact events, which may result in contingency conditions greater than N-1, in an effort to recognize the potential impacts and to compare various alternatives as it relates to both reliability and resiliency.
SCE defines resiliency as how well a utility anticipates, prepares for, mitigates and recovers from the effects of extraordinary events (such as wildfires, earthquakes, cyberattacks, and other high impact, low probability events) which can have widespread impact on its ability to serve customers. The "extraordinary" events which are referenced on slide 9 are fundamentally the same as the "extreme" events referenced in NERC and CAISO planning standards. Both terms refer to low probability, high impact events, such as cyberattacks, wildfires, and severe weather, that can cause multiple components of a system to be out of service (i.e., beyond N-1).

Q13: SCE mentioned anticipating a shortfall in 2022. When during 2022 is the shortfall forecasted to occur?
A: The Valley South System, like most SCE's electrical systems, is a summer peaking system, with peaks occurring between the months of June and September. Therefore, the anticipated shortfall in 2022 is expected to occur during these months. SCE works to ensure that adequate capacity is in place to meet peak demands during these months.

Q14: You stated past reliability issues at the Valley South system are not a basis for the Alberhill project. What then is the basis for this project other than to support future reliability and resiliency objectives which highly speculative at best at this time.
A: The reliability issues described in response "e" show that a large majority of outages and associated SAIDI contributions are caused by distribution system events. These metrics are not applicable when demonstrating project need at a subtransmission or transmission substation level.
The project need is supported by the fact that the Valley South System is already close to maximum operating limits. In the case of a major heat storm, SCE's ability to maintain service to its customers in the Valley
South System is currently at risk. As electrical demands grow, these existing reliability risks will only increase. The peak demand served by the Valley South System is expected to exceed capacity by 2022 based on the SCE 2018-2027 load forecast, impacting SCE's ability to provide continuous safe and reliable electrical service to the approximately 500,000 people it serves in the Valley South System.
Additionally, both reliability and resiliency are impacted by the lack of system tie-lines and the single point of power to the Valley South System. The Alberhill System Project is proposed to address all of these issues.

Q15: Did SCE indicate it has a mobile spare transformer?
A: Most of SCE's transmission substations operate at 220/66 kV and SCE has strategically placed additional spare transformers that can be mobilized and moved to replace a failed unit typically within a day. There is one additional 500/115 kV transformer off-site spare for Valley Substation. However as 500/115 kV transformers are significantly larger and require specialized equipment to transport along specially designated routes, they are not considered as mobile as the other units used throughout the system. To transport and in-service these 500/115kV transformers would likely take days.

Q16: So you have no spare 500/115 kV transformers other than what is already installed at Valley?
A: (See answer to question 15).

Q17: If the Alberhill substation is not constructed what other facility can provide tie lines to the valley south facility to provide power to the valley ivy glen transmission lines
A: The only nearby electrical system that operates at the same voltage level (115 kV) is the Valley North System. This is therefore the only other system in which a new 115 kV system tie-line could be constructed and interconnected. All other subtransmission system in the vicinity of the Valley South System operate at 66 kV. In SCE's forthcoming data submittal package 2, results from the analysis of other system solutions to address project need will be presented including consideration of tie-line configurations.

Q18: Will this webinar be posted to a public forum made available to participants?
A: Yes, this webinar has been posted to the Alberhill System Project site.

Q19: Would the LEAPS project be considered a non-dependable power source
A: The proposed LEAPS project would be connected at 500 kV to the CAISO-controlled bulk electric system and would therefore be subject to dispatch by CAISO. SCE is unable to comment on how this resource would be considered by the CAISO.

Q20: You talk about your concerns with non-dependable generation sources in the Valley South system. Please give examples of these non-dependable generation sources which SCE currently uses to provide power to the Valley South system.
A: SCE does not have a concern with non-dependable generation, but rather identifies it is an important element of supply to be considered in developing a load forecast that appropriately considers the impacts of intermittent generation resources. Non-dependable generation sources typically include intermittent generation resources such as solar or wind but can also include traditional generation sources that offset load but are not producing power all the time and are not under SCE operational control. Specific to Valley South, non-dependable generation primarily consists of solar generation; however, there is also a small amount (<10 MW) of non-solar, non-dependable generation controlled by third parties in the region. SCE does not control or dispatch these resources to provide power the Valley South System as these are third-party resources; however, SCE accounts for the impacts to peak load values which result from the portion of these resources which cannot be relied upon for planning purposes.

Q21: In the event an Alberhill System project is approved, how long would construction take? (Recognizing it depends on which project alternative is selected, so a range of time is appropriate)
A: To date SCE has only evaluated the construction timing for the Proposed Alberhill System Project as evaluated in the CPUC's EIR. The Proposed Alberhill System Project is anticipated to take approximately two years for construction. Any other proposed system solution would require its own evaluation of construction timing.