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Comment on IEPR 2017-05-22

See attached file.

Additional submitted attachment is included below.

June 5, 2017

California Energy Commission
Docket Office, MS-4
Re: Docket No. 17-IEPR-11
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Public Comment on IEPR 2017-05-22 Workshop on Energy Reliability in Southern California

Dear Energy Commission Staff:

My name is Issam Najm, and I am a resident of Porter Ranch, California. I appreciate the opportunity to submit to the CEC my comments on IEPR 2017-05-22 workshop on Energy Reliability in Southern California. In my professional career, I am a consulting environmental engineer with a Ph.D. in Environmental Engineering, and an Adjunct Associate Professor of Civil and Environmental Engineering at the University of California Los Angeles. I am also a licensed Professional Civil Engineer in California.

I would like to focus my comments on two areas: First, I would like to make a comment on Reliability and Failure Analysis as it relates to the Aliso Canyon storage field, and the second is a suggestion for an approach that can greatly reduce hourly swings in gas demand for electric generator.

When I first met California Public Utilities Commission (CPUC) staff, I was serving as a member of the Community Advisory Committee (CAC), which was set up by Los Angeles City Councilman Englander in 2016 to serve as a forum for information exchange on Aliso Canyon. At that meeting when the Gas Company was expressing concern about the fact that the regional gas supply depended on Aliso Canyon, I asked PUC staff why the State would allow the system to be vulnerable to a single-point-of-failure situation like this. CPUC staff commented that the PUC's single-point-of-failure was assumed to be a well, not an entire field. Now we know that the catastrophic failure of a single well in a storage field results in the loss of the entire field, at least under the current well design. However, it appears that this lesson has not translated into a change in the system design. All that has been done is maintenance of well casings and replacement of well inner tubing. While this may, at best, postpone the catastrophic failure of another well and the resulting loss of the entire field, it does not prevent it. Therefore, the gas system continues to be vulnerable to complete loss of adequate supply as a result of a single failure event at Aliso Canyon. This is the epitome of a Too-Big-to-Fail situation that is not good for anyone, and should not be acceptable to the State. I urge the State to begin a planned modification of the system now to eliminate its reliance on Aliso Canyon instead of waiting till it is rushed into it after its failure in a natural disaster.

On another issue, one of the concerns expressed by Electric Generators (EGs) relates to the hourly fluctuations in energy demand that require them to rely on the rapid startup of gas-fired power plants. This translates into a sudden increase in gas demand. It is my understanding that the CPUC estimates the

peak hourly demand during a peak day to be approximately 1.4 times that of the average hourly demand on that day. This value may increase as we increase reliance on large solar farms. To that end, I urge the CEC to consider the following two recommendations:

First, I recommend that all gas-fired power plants be equipped with sufficient onsite storage to satisfy the differential gas demand between max day rate and peak hourly rate for the duration of that peak period. This onsite storage can be in the form of either gas supply (e.g., LNG) or battery power, or both, as desired by the EG utility. For example, if a gas-fired power plant utilizes 60 MMcf on its peak day demand, then its average hourly demand on that day is 2.5 MMcf/hr. Assuming a peaking factor of 1.4, the peak hourly demand is calculated at 3.5 MMcf/hr. With an 8-hr peak period, the storage volume required is then estimated at 3.5 x 8 = 28 MMcf. Since LNG occupies $1/600^{th}$ the volume of methane gas, the LNG storage volume required is then calculated at 47,000 ft^3, or 350,000 gallons. This is a manageable storage volume at a power plant, and is no different than storing diesel fuel at a diesel-fired power plant. Alternatively, the EG utility may choose to add this storage as an equivalent generated electricity instead of LNG supply. Either way, the intent is to meet the fluctuating daily electricity demand while receiving gas at a constant rate on any day. Moreover, just as the electric storage system can be filled during lower-than-average demand and drained during higher-than-average demand, the LNG storage system may also be engineered to be filled with received gas supply during lower-than-average gas demand, and drained during higher-than-average demand. This action will result in great reduction in the maximum gas demand and eliminate concerns over hourly peaking.

Another concern expressed by EGs as it relates to solar farms is the effect of moving cloud cover (or solar eclipse) on the sudden increase and/or decrease in electric demand on the grid. To that end, I urge the CEC to consider mandating that all solar farm projects include onsite storage of electric energy equivalent to the farm's generation capacity for a predetermined period of time (e.g., 1 or 2 hrs). This storage system will be used to temper the effects of moving cloud cover on the grid. The storage could be filled at the start of operation and will be relied upon to feed the grid for a set time after the solar panels stop generating electricity. This can provide much needed advance warning to the EG operators to secure an alternative supply. In most cases, the loss of generation due to cloud cover is likely shorter than the period supplied by the onsite storage, and thus no interruption in the electric supply will be experienced at any rate. To that end, this requirement should also be imposed on rooftop solar systems, although it is my understanding that the effect of rooftop systems on the overall electric grid is minimal.

While the above measures do not reduce overall gas demand, they would certainly reduce the high peaking demand rate during summer months, which has been stated as a significant concern. I hope that you will seriously consider these recommendations.

Respectfully,

Issam Najm, Ph.D., P.E.
Resident
Porter Ranch, California