Stakeholder Comments

Commitment Cost Enhancements Phase 3 (CCE3), Technical Workshop, July 20, 2015

Submitted by	Company	Date Submitted
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SDG&E appreciates the opportunity to comment on the stakeholder technical workshop held July 20th for developing the methodology to calculate a use limited resource (ULR) opportunity cost adder as outlined in Commitment Cost Enhancements Phase 2 (CCE2). The CAISO has made good efforts to define inputs and processes to determine the opportunity cost adder. SDG&E has the following comments outlined by topic.

Input Variables

SDG&E believes the fifteen minute (FMM) market price to be the appropriate LMP to use for estimating future LMPs as an input to the model. The FMM is, in many instances, the LMP used for the commitment of ULR units. Additionally, the FMM LMP better captures the volatility of the real time (RT) market. This volatility will show the highest value hours to be dispatched to maximize unit profits across the limitation for a ULR. The greater price spikes will be the greatest captured value for the resource based on its use limitation, and, therefore, illustrate the opportunity cost. Also correlated, the volatility and higher prices will show where the unit is needed for reliability.

The method described to forecast future LMPs seems reasonable. The CAISO proposes to use past LMP data to derive the implied heat rate and apply this heat rate to future gas prices to create a future LMP price profile. These future LMP prices would then be an input to the model. SDG&E supports this method.

The CAISO also proposes the possibility of an additional input to reflect future power prices. SDG&E believes this is an idea worth exploring further. This may be a good way to reflect future expectation of prices in the model. The currently outlined method relies on past year market performance for implied heat rates to create future LMPs. The implied heat rate is the element of market LMPs that would, for the most part,

reflect the market volatility. The future gas prices are a representation of gas supply and demand, not CAISO generation and load market dynamics. Past year performance may be a fair proxy. However, we can look at market factors which may change from one year to the next and anticipate market impacts. For example, this year was a low hydro year during the spring months. This may not be the best indicator of next year's LMPs if snow pack is better and we know there will be more hydro. However, this should be accounted for in the opportunity cost model. Future power prices may better account for this future expectation.

As a way to reflect future power prices, CAISO mentioned a method of incorporating an 'inflator' element for LMPs if observed future power prices exceed some baseline level. If future power prices do not exceed the baseline then no inflator would be added. This sounds reasonable, and SDG&E would like to see the CAISO develop this idea more. It would also be good to produce some test data to see what kind of an impact this might make. This method should be able to be applied to 2014 data as CAISO did with the estimated LMP data to the actual LMPs.

Modeling software

SDG&E leans in favor of the SAS method for calculating the opportunity cost adder for ULRs.   While the GAMS solver is a true 'optimization' solver, there does not seem to be enough evidence of its superiority over SAS to warrant investing in a new software program. As CAISO mentioned, there are some unknowns with GAMS like what server would the system run on and how long would it take to run. These questions are not of small consequence. SAS provides similar results as demonstrated by CAISO. And, while the process is a bit 'back-of-the-envelope,' it may provide more flexibility in updating the process for the shifting needs of the opportunity cost adder.

Future Policy Options

SDG&E is concerned about the method of accounting for emission and fuel usage limitations. Emission levels are different at different stages in the run cycle of a unit. A unit typically produces more emissions per MWh at start up than it does running at full capacity. And, many units have a different emission profile based on where they are generating between pmin and pmax. It stands to be extremely difficult to translate this in to run hours, starts or MWh limits. These same issues hold true for fuel usage. Units tend to be more efficient the closer they run to max capacity. Any method of translating these types of permit limitations will be imprecise.

This translation challenge brings risk, and the CAISO has proposed the scheduling coordinator (SC) be the one to interpret the permit limitation and translate these permit limitations to cleaner inputs for the model. While the SC may be the most appropriate translator, this places some additional burden on the SC. The SC must rely on the plant for accurate operational data. And, then, is responsible for translating this operation data into inputs for the opportunity cost adder calculation process. There must be some

protection mechanism for the SCs if they are to take on administrative and operation risk.

In addition to some level of protection, SDG&E requests CAISO communicate the results of the model to the SCs. Once the model has run and produced results, the CAISO should share model results, or the optimization expectation, with SCs about how the unit limitations (starts/run hours/emission/fuel) are expected to be used over the model run time horizon. This will help SCs monitor limitations and actual dispatch versus model results. And, if SCs are to be the ones to provide unit inputs for the opportunity cost adder optimization, this will help SCs better translate plant operation limitations to inputs the CAISO needs for the model.

SDG&E recommends the CAISO re-run the model on a monthly interval to update unit information (limitation uses over the prior month and how that affects the opportunity cost adder for the remaining use of the unit of the time horizon). As mentioned above, there may be some challenges with translating certain limitation to usable inputs for the model. Monthly updates will allow generators and/or SCs to better hone unit limit translation methods and ensure the limitations are being properly accounted for in the model run and outputs. This is especially important for the beginning of implementation. This is a new element to unit bid creation and CAISO market dispatch. SDG&E would be open to less frequent re-runs once the process is established and agreed to be functioning reasonably by both the CAISO and stakeholders.

SDG&E supports option #1 for scheduled re-runs which would update the limitation to the actual remaining limitation for the year and produce a new opportunity cost adder based on the new limited availability over the remaining time horizon.

There should be some triggers in which the opportunity cost model would rerun out of normal frequency. If the model were to run on a monthly basis, these triggers may not need to be as stringent. Otherwise, there should be triggers around how much of a resources limitation are being used in relation to how much the opportunity cost model found it to dispatch over the course of the limitation. For example, if a unit is being dispatched far more in the spring time due to RT price volatility than the model estimated, there should be a trigger such that the opportunity cost model is re-run to ensure the unit is available for other times of the year the model estimated the unit to be dispatched. Currently, we see many of our CT peaker plants (fast start units with run hour limitations based on air permits) receiving bid cost recovery (BCR) payments in the spring time. This implies they are not, necessarily, dispatched for economic reasons. This needs to be taken into account by the opportunity cost model. Units are not always economically dispatched.

Another consideration to be accounted for in the larger modeling methodology is the fact that the greatest need for flexibility, of which many of the fast start use limited CTs provide, has been established by the CAISO to be in December. Most ULRs have an annual limitation. This means any mis-accounting for opportunity cost may have magnified consequences due to unavailability of flexible units in December. As

mentioned above, peakers are not always dispatched for economics. So, ignoring non-economic starts in conjunction with any mis-acocunting for a ULR opportunity cost points to the very real possibility that flexible units may not be available when they are most needed in December. SDG&E recommends CAISO consider building in a reserve buffer to ensure some starts remain for December for reliability purposes.

Lastly, SDG&E is concerned about the possibility of compounding opportunity costs if a unit has multiple limitations and they are all added to the bid cap. Does a ULR run in to an over-accounting for opportunity costs in this case?