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**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Continue
Implementation and Administration,
and Consider Further Development,
of California Renewables Portfolio
Standard Program.

Rulemaking R.15-02-020

**REPLY COMMENTS OF THE GREEN POWER INSTITUTE
ON LEAST-COST / BEST-FIT REFORM**

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**REPLY COMMENTS OF THE GREEN POWER INSTITUTE
ON LEAST-COST / BEST-FIT REFORM**

Pursuant to the June 22, 2016, *Administrative Law Judge's Ruling Accepting into the Record Energy Division Staff Paper on Least-Cost Best-Fit Reform for Renewables Portfolio Standard Procurement and Requesting Comment*, in Proceeding R-15-02-020, the **Order Instituting Rulemaking to Continue Implementation and Administration, and Consider Further Development, of California Renewables Portfolio Standard Program**, the Green Power Institute, the renewable energy program of the Pacific Institute for Studies in Development, Environment, and Security (GPI), provides these *Reply Comments of the Green Power Institute on Least-Cost / Best-Fit Reform*. We reply to the Opening Comments of the IOUs and other Parties.

Overall Approach to LCBF Reform

As the June 22 Staff Paper on LCBF reform details, the LCBF methodology has been modified several times since the initial implementing Decision, D.03-06-071. However, there has never been a comprehensive, overall reassessment of the LCBF methodology, and how well it has or has not worked. It is our understanding that the purpose of the June 22 Ruling was to initiate a comprehensive examination of LCBF. We welcome the initiation of a comprehensive overhaul of the LCBF methodology.

Several Parties, including PG&E and SCE, ask the Commission to limit or restrict the scope of the LCBF overhaul. The GPI reminds the utilities that one of the explicit goals for the LCBF reform process, as stated in the Staff Paper, is to increase transparency and market efficiency. A broad, publicly-conducted examination of LCBF, which we believe can be accomplished without any need make use of confidential information, will go a long way towards promoting transparency and market efficiency. Limiting the LCBF reform process and conducting it under the cloak of confidentiality would have the opposite effect.

CEERT and SDG&E, among other Parties, joined the GPI in Opening Comments in calling for the Commission to take a holistic approach to LCBF reform. SDG&E, SCE and other parties discussed melding the LCBF process with the newly-mandated IRP process, with some Parties suggesting that the IRP process would subsume the need for the LCBF process. We remind the parties that LCBF and IRP, while in some ways related and dependent on the same or similar input datasets, are separate methodologies that are used for very different purposes. LCBF is designed for use in bid ranking for RPS procurement solicitations, while IRP is a long-term, whole-system planning tool. The LCBF reform process should go forward full throttle in this proceeding (R.15-02-020), as should the development of the IRP in the LTPP proceeding (R.16-02-007). The LCBF reform process should not be delayed or worse yet discontinued in deference to the development of the IRP methodology.

Past LCBF Reform Efforts

IEP and PG&E, among other Parties recommend studying the effects that past efforts to modify the LCBF methodology, and to make adjustments to TOD factors, have had on the outcome of the process, in order to assess whether they have been effective. We join these parties in requesting such an assessment.

In their July 22 Comments, the utilities, in response to utility-only questions in the June 22 Ruling, provide information on past changes in TOD factors, and subsequently observed energy values in the marketplace. This is a good start in terms of studying past efforts to improve the LCBF reform process, but it is only a start. A systematic analysis of LCBF effectiveness in the California RPS needs to be conducted, with public participation and oversight.

Use of Confidential Information

The GPI notes that all three of the IOUs, in connection with Opening Comments filed on July 22, filed part of their Comments under seal due to confidentiality considerations. We acknowledge that some of the questions in the Staff Paper addressed to the utilities-only

may have asked for information that goes beyond the specific needs of LCBF reform, but we take it as a cautionary note about the tendency of the utilities to want to take this process under seal, and out of the public eye. We believe that the work on LCBF reform should be able to proceed without the need to resort to the use of confidential information, and we further argue that it should be the goal of the LCBF reform process to produce a methodology that does not depend on the use of confidential information. The IOUs often argue that the market competitiveness of their solicitations could be compromised if too much information is available in the public domain. This argument flies in the face of basic economic theory, which holds that widely available and accurate information promotes market efficiency (perfect markets require perfect information).

IEP, among other Parties, recommends against the use of confidential information in the LCBF methodology. The GPI strongly endorses IEP's recommendation. As CEERT noted, for too long the LCBF process has been completely opaque to market participants. It is time to bring transparency to LCBF.

Curtailement

CalWEA, Calpine, and CBEA, among other Parties joined the GPI in Opening Comments in requesting that the issue of curtailment should be added to the work plan for LCBF reform. Curtailment conditions occur when the supply of must-take and as-available power exceeds the demand for electricity on the grid. Curtailment conditions occur primarily during the spring when the demand for power is low and hydro is at its maximum. As the statewide installed capacity for solar grows, curtailment conditions are likely to occur more frequently, and for longer stretches of time per occurrence.

Curtailment conditions affect every must-take and as-available generator on the grid, which includes virtually all renewable generators. The negative effects that continued growth of curtailment conditions have on all renewable generators needs to be factored into the LCBF methodology.

Updating TOD Factors and Increasing Granularity

Many Parties, including CEERT, SCE, SDG&E, CalWEA and Calpine, among others, joined GPI in recommending that TOD factors be overhauled and updated from their current structures. The current time-period definitions were designed more than thirty years ago, for a time-of-day and seasonal distribution of electricity values that is very different from what we have today. Time differentiation of energy values is useful only if it reflects actual conditions in the marketplace. When values in the marketplace change, the time-differentiation factors need to be updated in order to remain representative of marketplace conditions. Otherwise, TOD values can provide perverse incentives to generators, for example incenting them to maximize generation when in reality there is surplus supply on the grid compared to demand.

The issue of timeframe is a complex issue for the determination of TOD profiles, both for purposes of LCBF bid ranking, and for purposes of time-differentiation of energy payments. With respect to LCBF, the challenge is to project the time- and seasonally-differentiated value distribution of energy over the lifetime of the contract for a proposed project. With respect to the payment of revenues under RPS PPAs, there is a tradeoff between fixing the TOD factors in the contract for an extended period of time, and the risk of substantial changes taking place in the marketplace that render the fixed TOD factors out-of-date.

All three of the IOUs implicitly assume that TOD factors will be fixed for the term of a PPA, similar to the treatment for energy prices. This does not have to be the case. The energy price, which is the centerpiece of a bid, is the overall price level that a project will receive for its energy if its bid is accepted. In order to facilitate the financing of their projects, the RPS program since the beginning has provided bidders the option of a long-term, fixed energy-price contract. In the opinion of the GPI, the policy of fixing energy prices for the term of a PPA does not necessarily carry over to a necessity to fix the TOD factors for the term of the PPA. The energy price represents the underlying cost of the bid. The TOD profiling converts the fixed annual-average price of a contract to a time- and

seasonally-varying value space whose annual average value must, by definition, equal the annual-average price. In other words, the TOD profiling of the bid price does not affect the overall annual-average energy price, only how it is distributed across the hours of the year.

As several parties argue, there is a case to be made in favor of providing certainty in TOD profiling, as well as in overall energy pricing, in order to facilitate the financing of capital-intensive projects. Without it, there is a risk that the fit between the output-profile of a project and the value-profile of power on the grid may deteriorate over time, which could lead to a reduction in a project's revenues if its overall energy price is fixed, but its TOD-profiling is maintained at market conditions. On the other hand, TOD profiling of energy prices is only effective if the profiles mirror the distribution of values in the real-world marketplace. If fixed TOD profiles become out-of-whack with the marketplace, the generator will be operating with a set of incentives that are contrary to market needs. The IOUs express strong reservations about using fixed TOD profiles for too long a period for just this reason.

TOD value distributions in the marketplace can and have been changing over time in response to structural changes in the marketplace, such as the proliferation of PV generators on both sides of the meter that is occurring today. Nevertheless, TOD profiles are far less volatile over time than underlying energy prices, and they are relatively predictable. The GPI believes that some kind of accommodation ought to be able to be crafted that can balance the needs of project developers for financial certainty, and the imperative to ensure that market signals match the needs of the changing marketplace. As a non-market participant (environmental organization), it is difficult for the GPI to accurately represent the interests of generators or LSEs on this matter, but we suggest as a starting point that for a 20-year RPS contract with energy prices fixed for the term of the contract, a fixed TOD profile of perhaps five-years duration might be a reasonable compromise.

Based on the Opening Comments of the three IOUs, it is clear that they are all using hourly-profiled values in their LCBF methodologies of the kind proposed for TOD profiling by the GPI in our own Opening Comments. In other words, by their own descriptions the IOUs are already using hourly profiles for the time-differentiation of energy prices in their LCBF methodologies, and GPI endorses that use. We go further, and repeat our proposal to apply the same kinds of hourly profiles to energy payments, per our June 22 Comments. Several of the Parties called for greater granularity in the time-differentiation of energy payments. For example, CalWEA argues:

Unlike the time-of-use periods being discussed in a separate proceeding, where simplicity is important to promote customer understanding and responsiveness, TOD factors used in making energy payments should, if they are used at all, be as finely differentiated as those used in the LCBF analysis (CalWEA Opening Comments, pg. 8).

It is time to bring the time time-differentiation of energy payments into the 21st Century, and base it on the development of two sets of monthly 24-hour profiles, one for weekdays, and one for weekends and holidays. These profiles can then be applied to annual-average contract price, to determine the payments paid to generators based on their time-of-day and season of delivery.

It is worth noting that there is more than one way in which to mathematically express TOD factors. All of the IOUs currently are expressing the factors as multipliers to be applied to the annual average value of energy. An alternative approach is to express the TOD factors as adders (positive and negative) to be applied to the annual average value. Multipliers tend to lead to greater changes than adders in terms of extremes of peak and valley values when the underlying value of energy prices change, so basing TOD profiling on multipliers may require more frequent updating than if the profiling is based on adders. GPI prefers the use of adders over the use of multipliers. Both methods are workable

TOD Applications – LCBF and Payments

During the 2014 RPS procurement cycle SDG&E proposed paying RPS generators a flat rate for all power delivered, rather than the current practice of differentiating payments

using the currently-approved TOD periods and factors. The Decision conditionally authorizing the 2014 RPS procurement plans and solicitations declined SDG&E's proposal, but left the door open to its future consideration. In their July 22 Comments, SDG&E reintroduces its flat-payment proposal, and SCE and ORA endorse the proposal. The GPI strongly opposes the flat-payment proposal for RPS generators. In our opinion, embracing such a proposal would represent a huge step backwards in terms of providing accurate market signals for market participants. One of the arguments made by the proponents of flat payments is that renewable generators, once placed into service, have limited latitude to respond to market prices. That may be true, at least to some degree, but it is in no way a valid argument against providing market signals in the first place. In the opinion of the GPI, many generators have more flexibility to adjust their output than is acknowledged in the Comments of the IOUs. Moreover, over the lifetime of an RPS PPA significant technological advancement is not only possible but likely. However, advancements in output profile shifting will not occur in the absence of market signals that motivate the desired outcome, which is the operation of renewable generators more in concert with the pattern of market demand.

The most compelling reason for rejecting the flat-payment proposal is that it promotes gaming of RPS bids. CalWEA and Calpine joined GPI in arguing in Opening Comments that it is essential to apply the same or equivalent TOD profiles in both LCBF bid ranking, and in the time-differentiation of payments to generators. Time differentiation of energy values as used in the LCBF process allows projects with very different daily and seasonal output profiles to be compared on an equivalent-value basis. Time differentiation of energy payments ensures that payments to generators are in concert with the value of the energy to the LSE and its customers. If the same time differentiation is not used for both applications, a project would be able to bid a more desirable output profile than is likely to be the case into a solicitation, thus over-representing the value of the power to be delivered to the grid, and with the flat-payment structure in place there would be no penalty for delivering a less desirable output profile than what was represented in the bid.

Ironically, SDG&E, SCE and ORA argue that the flat-payment approach would help to avoid gaming. However, their arguments are flawed. For example, ORA states:

Second, a project developer could submit a less-expensive bid, based on a profile with a substantial portion of the project's generation taking place during the less expensive off-peak hours, but ultimately generate most of its energy during the more expensive peak hours when the project comes on line, putting an unnecessary burden on ratepayers (ORA Comments, pg. 4).

This scenario does not make sense. In the first place, if a bidder submits a bid with a substantial portion of the project's generation taking place during the off-peak hours, then the bid will be identified as having a low-valued output profile in the LCBF process, and its bid ranking would presumably be negatively affected. On the other hand, if a project delivers electricity with an output profile that is of greater market value than the profile represented in the bid, that project may very well earn greater revenues than projected. However, the conclusion that this puts an unnecessary burden on ratepayers completely neglects the fact the generator is delivering a product that is more valuable to the utility, and thus the ratepayer, than what was expected based on the project description in the bid. This is as likely to be a benefit as a burden.

SCE argues:

Renewable projects with dispatchable storage may take advantage of TODs to develop profiles for their generators that may rank high in project valuations, whereas the actual storage dispatch and deliveries may not match what was presented during the solicitation (SCE Comments, pg. 10).

In fact, by matching the TOD profiling that is used in the LCBF process with the TOD profiling used in payments, this scenario is properly handled. If the generator represents its expected output profile to be more valuable than it actually is they may boost their ranking score, but ultimately they will earn less than what the bid projects. With flat payments there is no penalty for underperformance with respect to the output profile that was bid. With accurately- and granularly-profiled payments, generators with dispatchable

storage will be motivated to match their output profile to the needs of the grid, which is exactly what the IOUs should wish for.

Combined vs. Separate Energy and Capacity

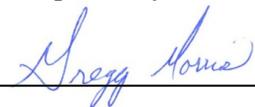
The majority of the Parties commenting on the subject of combined or separate energy and capacity payments prefer the use of separate energy and capacity payments, especially for cases where voluntary or ordered curtailment are expected to be part of the annual operating regime. The GPI believes that effective incentives can be embedded using either separate or combined energy and capacity values, but given the prevailing sentiment as expressed in Parties' Opening Comments, we will not push the case for using combined energy and capacity values at this point in time.

Conclusion

The GPI is pleased to see that the LCBF reform process has at long last been initiated. We continue to be concerned about the lack of a comprehensive plan for how the underlying LCBF framework itself will be reformed, how transparency and user friendliness will be enhanced, and the lack of an outreach effort being made to ensure that all of the relevant issues are being included. We hope that the Commission takes our Comments and Reply Comments into account as the LCBF reform process proceeds.

Dated August 9, 2016

Respectfully Submitted,



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VERIFICATION

I, Gregory Morris, am Director of the Green Power Institute, and a Research Affiliate of the Pacific Institute for Studies in Development, Environment, and Security. I am authorized to make this Verification on its behalf. I declare under penalty of perjury that the statements in the foregoing copy of *Reply Comments of the Green Power Institute on Least-Cost / Best-Fit Reform*, filed in R.15-02-020, are true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters I believe them to be true.

Executed on August 9, 2016, at Berkeley, California.



Gregory Morris