

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

Order Instituting Rulemaking to Oversee  
the Resource Adequacy Program, Consider  
Program Refinements, and Establish  
Annual Local Procurement Obligations

Rulemaking R-11-10-023

**INFORMAL COMMENTS OF THE GREEN POWER INSTITUTE  
ON THE RA TREATMENT OF USE-LIMITED RESOURCES**

October 31, 2013

Gregory Morris, Director  
The Green Power Institute  
*a program of the Pacific Institute*  
2039 Shattuck Ave., Suite 402  
Berkeley, CA 94704  
ph: (510) 644-2700  
fax: (510) 644-1117  
gmorris@emf.net

**INFORMAL COMMENTS OF THE GREEN POWER INSTITUTE  
ON THE RA TREATMENT OF USE-LIMITED RESOURCES**

Pursuant to the Oct. 21, 2013 email sent by Megha Lakhchaura, in Rulemaking R.11-10-023, the **Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Annual Local Procurement Obligations**, the Green Power Institute (GPI), the renewable energy program of the Pacific Institute for Studies in Development, Environment and Security, respectfully submits and serves these *Informal Comments of the Green Power Institute on the RA Treatment of Use-Limited Resources*.

Our interest in this proceeding is focused on developing the means to derive as much flexible-capacity value as possible out of the fleet of preferred resources that are supplying power to the grid. All of the non-intermittent renewables are capable in principle of providing some amount of flexible operations, with biomass particularly well suited for providing these kinds of services. These preferred resources are certainly in the category of use-limited, although in some fundamental ways they are different than many of the conventional resources in the use-limited category. In particular, traditional use-limited resources are used almost exclusively for purposes of providing peaking and ancillary services, whereas renewable generators that provide occasional use-limited ramping services likely will be operated in other (most) hours as baseload resources.

One important barrier to the use of renewables in flexible-operating mode is that the existing PPAs do not anticipate such use, and do not provide any means for eliciting flexible operations. The existing PPAs expect renewables to operate in baseload mode, and are designed around must-take provisions for the generator's output. Therefore, in order to be able to derive the benefits of flexible operations that these resources are capable of providing, one important contribution that the Commission can make is to facilitate the development of contract provisions that allow use-limited flexible

operations for non-intermittent renewables, to complement their baseload operations at other times.

It is important to understand a key tradeoff that has to be made in deciding to use baseload-capable renewables in flexible-operating mode. This is the tradeoff that arises between providing flexible-operating services, and meeting RPS-program objectives. Renewables can only provide afternoon ramping services if they previously have dialed their output down prior to the ramp. By dialing down during the daytime, the renewable generator reduces its total output of RPS-qualifying energy. Thus, a retail seller will only want to use renewable resources in ramping mode at particularly strategic times, when losing the production of RECs is less important than gaining the ramping capability.

Solid-fuel biomass is particularly well suited within the category of non-intermittent renewables for operating in flexible-operating mode. This is a result of two factors. First, biomass is the only renewable that has a substantial variable cost of operation, most of which is the cost of the fuel. The result of this circumstance is that the marginal economic loss to the generator of reducing output prior to a scheduled ramp-up is reduced compared to generators whose cost of operations is mostly fixed. Second, biomass is the only renewable other than large-dam hydro for which fuel storage is straightforward and easy, meaning that fuel delivery and use are essential decoupled. Thus the generator can be tuned up and down without regard to the implications of such operations for the fuel production or receiving operations of the facility. By way of contrast, the implications of flexible operations for the fuel systems at geothermal, biogas and run-of-the-river hydro generators are a substantial concern for those operations.

Given the tradeoff between providing flexible operations and the maximal production of RECs, and the fact that ramping puts a greater strain on solid-fuel generators than on gas-fueled generators, it makes sense to use biomass generators in flexible mode only when the system need for ramping is at a maximum. In terms of where this would place these resources within the context of the traditional bucket approach, it would probably be in the smallest, most restrictive group, the group in the top-left corner on the load-duration

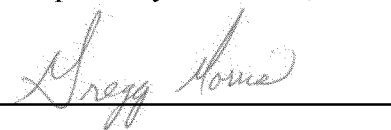
curve (see, for example, slide 8 of the Oct. 15 DECA workshop presentation). This would be the case both using the traditional, capacity-denominated bucket approach, and for the DECA-proposed, ramping-denominated bucket approach.

According to the information presented by CAISO on use-limited resources at the October 15 workshop, the greatest need for late afternoon/early evening ramping services occurs in the winter, whereas the greatest need for total online peak capacity occurs during the summer. Providing ramping services for something like 100 – 200 hours annually during November through February, which would represent no more than, say, 70 three-hour ramps over the course of a year, while operating in baseload mode at all other times, is a duty cycle that many biomass generators are capable of providing. In our estimation, with broad participation from the existing fleet of biomass generators, some 200 MW or more of use-limited flexible capacity could be provided to the CAISO-controlled grid in California. The penalty, in terms of loss of annual REC production from the participating generators, would be in the range of one-to-two percent of what they would have produced in traditional baseload-only operating mode.

Non-intermittent renewables, biomass in particular, can provide valuable use-limited flexible operating services to the grid. In order for these services to be provided, it is necessary to develop mechanisms to reward generators for offering them. The strategic use of renewables for ramping services could fill an important niche with clean energy.

Dated October 31, 2013, at Berkeley, California.

Respectfully Submitted,



Gregory Morris, Director  
The Green Power Institute  
*a program of the Pacific Institute*  
2039 Shattuck Ave., Suite 402  
Berkeley, CA 94704  
(510) 644-2700  
gmorris@emf.net