

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

Order Instituting Rulemaking Pursuant to  
Assembly Bill 2514 to Consider the Adoption  
of Procurement Targets for Viable and Cost-  
Effective Energy Storage Systems. )

Rulemaking 10-12-007  
(Filed December 16, 2010)

**COMMENTS OF PILOT POWER GROUP, INC. ON THE ASSIGNED  
COMMISSIONER'S RULING PROPOSING STORAGE PROCUREMENT  
TARGETS AND MECHANISMS**

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Dated: July 3, 2013

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**I. INTRODUCTION**

In accordance with the Assigned Commissioner’s Ruling Proposing Storage Procurement Targets and Mechanisms (the “Proposal”), dated June 10, 2013, Pilot Power Group, Inc. (“Pilot Power”) hereby submits the following comments and responses in the above captioned proceeding addressing the issues identified in the Proposal.

**II. REQUESTED COMMENTS**

The Assigned Commissioner’s Ruling (ACR) sets forth specific issues on which Parties are requested to comment. Pilot Power respectfully submits the following responses to the specified issues as directed by the Commissioner.

**A. Please comment on this proposal overall, with emphasis on the proposed procurement targets and design.**

The California Public Utilities Commission (“CPUC” or “Commission”) needs to be commended for tackling such a large and difficult issue as energy storage in such a short period of time. There is little question that as intermittent renewable resources are added to the grid in increasing percentages, the need for cost-effective storage systems increases. The question becomes how best to approach and handle this daunting challenge. On June 28, 2013, the CEO

of LightSail Energy, Steve Crane, published an article on CNBC entitled “An Energy Model for the Future, From the 12th Century,” which can help to frame one of the central problems. After describing the use of wind and water power as energy sources for milling grain during the Middle Ages, Mr. Crane related that experience to the challenges we face today, as follows:

“But back to the 12th century for a moment. The fact is that wind isn't as good a power source as flowing water. It was adequate, barely, for grinding grain; but wind is catch-as-catch-can. Water is steadier, more reliable—especially if there's a millpond upstream to assure a steady supply.

So before history can repeat itself and wind power (or solar power) can once again challenge the established order, whether it be an authoritarian regime in the developing world or a regulated utility in a Western democracy, it needs to be made dispatchable—available on demand. It needs storage.

Cheap large-scale energy storage tied to intermittent renewable generation (industry jargon for wind and solar power) offers two benefits, one relatively benign and the other deeply disruptive:

First, the combination of renewable generation and storage can displace fossil fuel-based generation—taming the unpredictability of renewables puts them on the same footing functionally as, say, a coal plant.

Second, the renewables-plus-storage combination reduces or eliminates the need for a central power grid. Power generation can be distributed and local. The grid reflects the economies of scale and logistics required to generate electricity from fossil fuels; and leading inevitably, like Abbot Samson's water wheel, to monopolistic authority.

But, no one has to deliver the sun or wind to your town or to your campus or business park. Storage changes the balance. It's the key to turning energy from a centrally controlled resource into a distributed asset available to anyone ... provided, always provided, that the economics make sense.

Solar, in particular, is cheap and scalable. Storage is still expensive. It has to be half or a third of today's cost to truly enable the disruption that seems tantalizingly close.”

As Mr. Crane notes, energy storage is the missing component that can make intermittent renewable resources practical and functional in meeting the needs of the electricity grid. However, as tantalizing as this goal may appear, it only makes common sense to pursue this goal if it also makes economic sense. As of today, however, energy storage is 2 to 3 times too expensive to make economic sense. Moreover, energy storage technology is in its infancy. While a number of technologies are under development, most have not been tested in real world

applications. Accordingly, we cannot know with any degree of reasonable certainty their functional efficacy, let alone their real world costs.

**1. It Is Not Appropriate At This Time To Set Procurement Targets.**

California Public Utilities Code Section 2836 states, in relevant part, the following:

(a) (1) On or before March 1, 2012, the commission shall open a proceeding **to determine appropriate targets, if any**, for each load-serving entity to procure viable and cost-effective energy storage systems to be achieved by December 31, 2015, and December 31, 2020. As part of this proceeding, the commission may consider a variety of possible policies to encourage the cost-effective deployment of energy storage systems, including refinement of existing procurement methods to properly value energy storage systems.

(2) The commission shall adopt the procurement targets, **if determined to be appropriate** pursuant to paragraph (1), by October 1, 2013. (emphasis added)

Thus the legislature specifically granted the CPUC discretion to determine whether it is appropriate to set procurement targets, at this time. Clearly, therefore, if this Commission determines that it is not appropriate to set procurement targets at this time, it may postpone the setting of procurement target to a later date that is deemed more appropriate.

This Commission already recognizes that energy storage is an emerging technology, of which many proposed forms have little to no operational experience. The viability of many of these technologies, therefore, is still an unanswered and open question. Nevertheless, the legislature expressly stated that energy storage must be both “viable and cost-effective”. Given the outstanding technology and interconnection issues, it could be some time before numerous types of energy storage are considered viable. Viability, therefore, should be demonstrated before Load Serving Entities (LSEs) are required to procure storage resources.

In the Proposal, the Commission notes that a number of energy storage projects have either been authorized or are being considered by the Commission for all of the Utility Distribution Companies (UDCs) (PG&E, SCE, and SDG&E). These projects should be allowed

to go forward as expeditiously as possible. The experience to be gained over the next couple of years with these projects will provide valuable input in this Commission's formulation of sensible policies and, if appropriate, targets. This experience will help all parties to better gauge the viability of the projects and differing technologies, but also to better understand the costs.

The legislature placed particular emphasis on the absolute requirement that energy storage be "cost-effective". Aside from Section 2836 quoted above, the requirement for "cost-effectiveness" is also included in the definition of an "energy storage system" in Public Utilities Code Section 2835(a)(3) which states: "An "energy storage system" shall be cost-effective and either reduce emissions of greenhouse gases, reduce demand for peak electrical generation, defer or substitute for an investment in generation, transmission, or distribution assets, or improve the reliable operation of the electrical transmission or distribution grid." Notice that an energy storage system has to be cost-effective AND provide one of the benefits listed. An energy storage system may provide all the benefits listed such as reduce emissions, reduce peak demand, defer or substitute for an investment in generation, transmission, or distribution assets, or improve the reliable operation of the transmission or distribution grid, BUT if it is not "cost effective", it does not meet the definition. The existence of the benefits is NOT a proxy for cost-effectiveness. Cost-effectiveness is a separate and distinct factor. Note also that the legislature did not say that an "energy storage system" must be a cost-effective way of obtaining one of the listed benefits. No. The legislature specifically said an "energy storage system" must be "cost-effective" AND must provide one of the listed benefits.

In Section 2836.2, the legislature stated that this Commission must "Ensure that the energy storage system procurement targets and policies that are established are technologically viable and cost effective." And in case anyone missed the legislature's great concern for the

cost, Section 2836.6 states: “All procurement of energy storage systems by a load-serving entity or local publicly owned electric utility **shall be cost effective.**” (Emphasis added.) Yet despite the over-arching concern for “cost-effectiveness, the legislature did not define what “cost-effective” means.

Cost-effectiveness is the legislatively mandated single most important criteria for energy storage systems. All policies, all targets, all rules and regulations must, **MUST** take their cue from the requirement that energy storage be cost-effective. How can intelligent policies be developed before the most basic and important criteria—cost-effectiveness—is properly defined and understood?

According to the dictionary, “cost-effectiveness” is defined as producing optimum results for the expenditure, or providing adequate financial return in relation to outlay. If the conventional definition was applied to the term, no targets would be necessary, since if something is truly considered cost-effective, the market will demand it without the need for mandated targets. So, to be considered cost-effective, does the energy storage solution need to be cost-effective in comparison to other energy solutions such as peaking power plants? These are basic, fundamental, and critical determinations that must be made before we can even consider setting targets. The proposed targets include contracts and solicitations which may or may not become an actuality because of the outstanding barriers. Targets, if any are appropriate, should be set when they can actually be met in the real world.

At the All Party Meeting held at the Commission on June 25, 2013, during comments of various parties, a representative of PG&E talked about how costs for renewable energy skyrocketed when the legislature advanced the requirement for LSEs to acquire 20% of their energy from renewable resources from the original date of 2020, to 2010. This caused the LSE’s

to have to procure at a much faster rate, amongst scarce resources. As a result, prices spiked dramatically just in time for when LSE's had no choice but to procure renewable resources. Prices have since moderated somewhat. The Commission should learn from this unfortunate experience. All electricity customers have suffered from unnecessarily high electricity rates because legal and regulatory requirements imposed on LSEs preceded the market development of the necessary renewable resources. Had the timeframe established by the legislature taken into account the timeframe for the development of the necessary resources, costs could have been significantly lower. In this case, the legislature has been wise enough to avoid the establishment of inflexible mandates. Instead, the legislature has granted broad discretion to the Commission to set procurement targets, **if targets are appropriate at this time**. To avoid repeating the mistakes of the past, the Commission should allow the energy storage market to develop further before arbitrary targets are established.

For the foregoing reasons, Pilot Power respectfully urges the Commission to determine that, at this time, the establishment of procurement targets is not appropriate. This determination, however, should be reviewed by the Commission again in two years to see if the establishment of procurement targets is appropriate at that time. By then, it is hoped that much more information will be available to the Commission and all the parties to better inform policy making.

## 2. **It Is Too Soon To Establish Buckets.**

Given the early stage of energy storage, the Proposal's procurement targets and design seem premature in nature. There are not enough currently viable energy storage solutions to begin categorizing them into buckets and it is unknown at what rate the storage solutions will become viable. It is also too soon to know where energy storage solutions are needed. At this

point, we do not know what if any energy storage is needed at the transmission level, at the distribution level, or at the customer level. Instead of procuring energy storage in order to satisfy arbitrarily established targets and buckets, parties should be allowed to pursue energy storage which solves current and anticipated problems and needs of the electricity grid. The needs of the transmission and distribution system should dictate the energy storage systems procured – not arbitrary targets. Once system needs are more fully understood (particularly in light of experience with the energy storage projects currently being developed by the UDCs), and once the energy storage market develops and there are more options from which to choose, then it may make sense to set targets and possibly even categorize those targets into buckets. At this time, however, it is too soon.

**B. Comment on whether any of the projects proposed to count toward the procurement targets be excluded, or any additional projects included, and on what basis.**

Pilot Power has no comment on this issue.

**C. Comment on how actual operational deployment should be defined for PIER – and EPC – funded projects, and on what basis.**

Pilot Power has no comment on this issue.

**D. Comment on how any utility’s procurement that exceeds a target in one year should be addressed and considered for future procurement targets.**

In the event the Commission does in fact adopt targets, procurement which exceeds a target in one period should be able to be applied to the following period’s procurement targets. There should be no penalty for those who are early to adopt the new policy. All procurement should be cumulative to encourage early adoption. If procurement is limited to a certain period and not allowed to be carried over to the next, the “target” really becomes a limit as there is no encouragement to procure beyond the target, but rather to simply meet it and defer any other possible contracts to the following period.



**E. Comment on whether and to what extent utilities should be permitted flexibility in procuring among the use-case “buckets” (transmission, distribution, and customer-sited) of energy storage within one auction, and whether a minimum amount for each “bucket” must be targeted.**

There are currently not enough viable energy storage solutions to begin categorizing them into buckets and it is unknown at what rate the energy storage solutions will become viable. As stated above, the energy storage market should be allowed to develop and once there are more options from which to choose, then it may be wise to set targets and categorize them into buckets.

Additionally, excluding energy storage which is proven and deployed, such as pumped hydrological storage, from the buckets and/or targets, seems to discourage the procurement of something which has known viability and benefits. There is nothing in Public Utilities Code Sections 2835 et. Seq. which even hints that pumped hydrological storage should be treated differently from other technologies. In fact, an argument can be made that because the statutes require viability for any energy storage system, pumped hydrological storage is one of the few existing technologies that may qualify. There is much uncertainty as to which energy storage systems will become viable and when it will happen. Hence, it seems to go against the very goal of this proceeding in its search for cost-effective and beneficial energy storage solutions to encourage procurement of uncertain or unproven types of energy storage while discouraging the procurement of proven energy storage.

**F. Comment on the appropriate “off ramps” for relief from procuring up to each target and what metrics should be used to evaluate the appropriateness of the off ramps.**

If the Commission chooses to move forward with issuing targets, all Load Serving Entities should have the ability to seek relief from any required targets based on the

circumstances, including technological viability, cost-effectiveness, availability, or any other relevant factors.

**G. Comment on how this proposal may be coordinated with Renewable Portfolio Standard procurement plans, as set out in Public Utilities Code section 2837.**

Public Utilities Code section 2837 references only “electrical corporations” which, as defined in Public Utilities Code section 218, only refers to “every corporation or person owning, controlling, operating, or managing any electric plant for compensation within this state, except where electricity is generated on or distributed by the producer through private property solely for its own use or the use of its tenants and not for sale or transmission to others.” Hence, Public Utilities Code Section 2837 does not apply to ESPs or CCAs. Pilot Power, as an ESP, believes this to be an important distinction as ESPs and CCAs have much smaller loads than the UDCs and it seems little to no benefit will accrue from non-utility LSEs including energy storage in their renewable procurement plans.

**H. Comment on the options presented for ESPs and CCAs to either a) be required to procure an equivalent amount of storage projects commensurate with the load they serve or b) have their customers assessed the costs of the IOU procurement of energy storage projects through a cost allocation mechanism.**

As argued above, Pilot Power believes it is not appropriate at this time for the Commission to establish any procurement targets for energy storage. However, if the Commission does establish procurement targets, and those targets also apply to ESPs and CCAs, Pilot Power will comply with any such requirements. Pilot Power is reasonably certain that all other ESPs and CCAs will likewise comply with the Commissions requirements, just as all have with respect to Resource Adequacy and Renewable Portfolio Standards. Nevertheless, Pilot Power recommends that the Commission give careful consideration to approaches that may be simpler and more effective to implement and administer.

In 1998 when the electricity market in California was restructured, energy procurement was unbundled from the various services that had theretofore been provided by the UDCs as vertically integrated monopoly providers. As a result of restructuring, ESP's could compete with the UDCs for the provision of electrical energy to certain customers. However, only energy procurement was opened to competition. All transmission and distribution services remained the monopoly services of the respective UDCs. In fact, ESPs are prohibited from providing competing transmission and distribution services. Every single energy customer of an ESP is also a captive transmission and distribution customer of the relevant UDC. Although a Direct Access customer can choose to change energy providers (LSEs), a customer cannot choose to change its transmission and distribution provider, unless it moves into a different UDC territory, at which point it becomes a captive transmission and distribution customer of the new UDC.

As noted by several parties at the Commission's All Party Meeting on June 25, 2013, energy storage is not generation. Energy storage does not create energy, it simply defers usage of energy from the time it is created to a later time when it is needed on the grid. Energy storage, therefore, is primarily a transmission and distribution grid management and grid reliability function—functions which the California Independent System Operator ("CAISO") and the UDCs control and provide on a monopoly basis. The CAISO and the UDCs have the obligation and the monopoly control over the transmission and distribution grid to ensure grid reliability. They know where storage is needed, how to integrate it with their systems, and in many cases already have the land and rights of way necessary to site storage projects. In fact, in the Proposal the Commission identifies 21 end uses for energy storage, of which 7 fall within the exclusive purview of the CAISO, 3 involve generators, 6 fall within the exclusive purview of the UDCs, and only 4 effect end-use customers--all of whom have a UDC as their monopoly T&D provider,

and a only a small handful have an ESP as their energy provider.

In its Proposal, the Commission suggested that ESPs and CCAs could participate in energy storage by either paying their share of energy storage procurement costs to utilities through the Cost Allocation Mechanism (CAM), and/or procuring energy storage projects commensurate with their load share. While a well-intended attempt to provide flexibility, this actually could create significant difficulties for all parties. The UDCs would not know whether they need to procure for ESP and CCA load and would require constant communication with the ESPs and CCAs. What happens when a UDC goes out and procures energy storage for all its T&D customers, only to discover that an ESP or CCA has already procured for their joint customers? Does that create stranded costs? If the UDC does procure for ESPs and CCAs, how do we ensure that the CAM is fair and does not cause any cost-shifting in either direction? As this Commission is well aware, UDC accounting issues are far from simple, straight-forward, or clear.

From a practical standpoint, it is far simpler, more direct, and more likely to achieve the legislative goal of cost-effectiveness, if instead of each LSE procuring energy storage, each UDC procures energy storage for all of their transmission and distribution customers. The costs for energy storage could be recovered by the UDCs as part of their transmission and distribution rates, similar to the way Demand Response is handled. This avoids the messy and difficult issues of determining a fair CAM since all transmission and distribution customers would be fairly paying their share of the costs as part of the CPUC approved rates of the UDCs.

The UDCs have rightly expressed a desire to control energy storage assets and/or contracts. Allowing the UDCs to procure energy storage as part of their transmission and distribution grid management and grid reliability functions allows them complete control over

the entire process, subject only to Commission approval. This also avoids the potential problems of customer load migration. Under the current Resource Adequacy system, load migration has been a constant issue and problem. It is unfair for one LSE to procure resources for certain load, then have that load migrate to another LSE. If the UDCs procure energy storage as part of the transmission and distribution grid management and grid reliability function, and those costs are recovered from all customers through their transmission and distribution rates, load migration ceases to be an issue.

Several parties at the All Party Meeting held on June 25, 2013, noted the lead time and costs associated with developing energy storage projects. Most energy storage projects have a long lead time, require much work to be accomplished even before costs can be estimated, and require assurance of payment before any work can commence. Similarly, it was noted that banks and financial institutions will not take the risk of financing energy storage projects themselves. In order to finance energy storage projects, a captive customer base must be available—the UDC ratepayers. Since all customers within a UDC territory are the transmission and distribution customer of the UDC, if energy storage costs are part of T&D rates, all customers will be available to finance the development of energy storage projects.

The importance of this difference between the way the UDCs operate (having captive customers as well as guaranteed recovery of costs) and ESPs and CCAs operate (having customers who can migrate virtually at will) should not be ignored. Early in the RPS proceedings process, at a workshop dealing with the issue of long-term procurement requirements, representatives for the UDCs confessed that if they did not have captive customers and guaranteed recovery of costs, but instead had to operate under the same model as the ESPs, they would not be able to enter into long term contracts. Some ESPs have massive parent

companies that own and operate generation units throughout the U.S. and in other countries. These ESPs might have access to the financial resources required to finance energy storage projects. However, some ESPs like Pilot Power are closely held corporations without access to deep financial pockets. Being an energy provider is quite expensive and takes a lot of assets. But having to finance long-term development projects takes the financial requirements to whole new levels.

Finally, Public Utilities Code Section 2838.5 states in relevant part: “Notwithstanding any provision of this chapter, the requirements of this chapter do not apply to either of the following: (a) An electrical corporation that has 60,000 or fewer customer accounts within California.” If the entire Chapter dedicated to Energy Storage Systems in the Public Utility Code is not meant to apply to electrical corporations that have as many as 60,000 customer accounts in California, why should it apply to ESPs and CCAs with significantly fewer customer accounts than 60,000 within California? It makes even less sense to apply energy storage requirements to ESPs and CCAs since they have no control over the transmission and distribution grid.

For the foregoing reasons, Pilot Power respectfully requests that in the event the Commission establishes energy storage procurement targets, that the UDCs be directed to procure energy storage as part of their transmission and distribution grid management and grid reliability functions for all their transmission and distribution customers. Costs for energy storage should be recovered from all transmission and distribution customers as part of the transmission and distribution rates.

**I. Comment on how the preliminary results of the cost-effectiveness models should be applied to the question of setting procurement targets.**

Pilot Power has no comment on this issue.

**J. Based on the preliminary results, should utilities set a cost cap for offers to be submitted in the 2014 auction? If yes, what should the cap be and how should the auction be structured to incorporate the cap?**

Pilot Power respectfully submits that cost caps should not be set. Cost caps have unintended consequences in the market. When a cost cap is set, market prices automatically migrate toward the cap, so that the cap rapidly becomes a de facto floor.

**III. SUMMARY**

As discussed above, it is not appropriate at this time to set energy storage procurement targets. We need significantly more experience with energy storage systems before we can determine their viability and cost effectiveness. In addition, we need to address what is meant by cost-effectiveness before we can even determine whether any proposed energy storage project is cost-effective. We also need to procure energy storage as dictated by system needs, rather than merely to satisfy arbitrary regulatory targets. In the event that energy storage procurement targets are set, Pilot Power respectfully suggests that it would be simpler and more straightforward if the UDCs procure energy storage as part of their transmission and distribution grid management and grid reliability functions, and recover their costs through their transmission and distribution rates.

Respectfully submitted,  
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Dated July 3, 2013

## VERIFICATION

I, Thomas R. Darton, am an officer of Pilot Power Group, Inc. and am authorized to make this verification on its behalf. The matters stated in the foregoing COMMENTS OF PILOT POWER GROUP, INC. ON THE ASSIGNED COMMISSIONER'S RULING PROPOSING STORAGE PROCUREMENT TARGETS AND MECHANISMS are true of my own personal knowledge, except as to matters which are stated therein on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this Verification is executed this 3rd day of July, 2013, at San Diego, California.

/s/ Thomas R. Darton  
Thomas R. Darton