



City of Anaheim
PUBLIC UTILITIES DEPARTMENT

DATE: AUGUST 12, 2014

FROM: PUBLIC UTILITIES DEPARTMENT

SUBJECT: ENERGY STORAGE SYSTEM PLAN AND DETERMINATION
OF PROCUREMENT TARGETS PURSUANT TO ASSEMBLY
BILL (AB) 2514

ATTACHMENT: (Y/N): YES

ITEM # 21

RECOMMENDATION:

That the City Council, by Resolution:

- 1) Determine that a procurement target for energy storage systems is not appropriate, at this time, due to a lack of cost-effective and viable options; and
- 2) Authorize the Public Utilities General Manager, or designee, on behalf of Anaheim, to prepare, execute, and submit any documents and take such actions, as necessary, in connection with the determination made hereunder.

SUMMARY:

The Public Utilities Board recommended that the City Council approve this action at its meeting of July 23, 2014.

Energy Storage (ES) systems are comprised of technologies that collect and store power for use at a later time. They consist of batteries, flywheels, pumped storage, compressed air, and thermal storage for air conditioning. In concept, these technologies would support the proliferation of renewable resources such as solar and wind because they can store power and enable utilities or consumers to use that power when it is economical to do so.

AB 2514 requires the governing boards of local publicly owned electric utilities to conduct an evaluation to determine appropriate procurement targets for 2016 and 2021, if any, for each utility to procure viable and cost-effective ES systems. The bill further requires that the determinations made be re-evaluated every three years, with the findings and determinations reported to the California Energy Commission (CEC).

The Public Utilities Department (Department) has developed the ES Plan which describes its evaluation of ES systems, their viability and availability, and evaluates the cost effectiveness of the systems with respect to the Department's existing and near future infrastructure and power resources.

Due to the relative high cost of ES technologies, limited resource needs, and other technical factors, the Department recommends that procurement targets not be established for either the 2016 or 2021 timeframes at this time. However, the Department will continue to implement energy storage technologies as appropriate, monitor technical advancements, cost improvements, and other utility experiences to comply with all AB 2514 reporting requirements.

DISCUSSION:

The Department conducted a comprehensive review of available technologies and performed an economic analysis utilizing software created for the Department of Energy (DOE) in order to evaluate the cost effectiveness of ES systems. Additionally, the Department met with other investor-owned and municipal utilities, in particular, San Diego Gas and Electric, since investor-owned utilities have prescribed ES targets mandated, to discuss project and technical attributes as well as limitations of ES systems.

As a result of the Department's analysis, the following conclusions were reached:

1. Cost Effectiveness: ES technologies that are relatively new, such as battery systems, are expensive. For example, one 5 Megawatt (MW) system installed at a substation would cost approximately \$20M, which is the amount of the Department's annual routine capital program (replacement of wires, transformers, switches, etc.), and would require a 6% rate increase or issuance of additional bonds. Since ES systems do not replace existing infrastructure, this would be an added cost to Anaheim ratepayers.
2. Space Limitations: ES technologies are space intensive and difficult to site in urban settings such as Anaheim. As an example, a 5 MW battery system would require enough space to house 5 semi-trailer sized containers, in addition to all the wiring and balance of plant to connect the batteries to a substation. Finding locations in areas that are best suited to ES systems, such as in West or Central Anaheim where there is a higher density of electric demand would be difficult and costly to purchase parcels.
3. Peak Reduction: One of the key benefits of ES is that it addresses shortfalls in energy supply and allows a utility to call upon it when needed; however, the Department has Canyon Power Plant, which effectively performs the same function with many other benefits of reducing California Independent System Operator (CAISO) fees, providing local and regional grid support, and the ability to bid into the wholesale energy market. ES may be more suitable in other mid-sized utilities that do not have such a resource or larger utilities that have much higher energy demands.
4. Reliability: The Department already has a prominent track record of high system reliability, and has been recognized as a Reliable Public Power Provider (RP3) by the American Public Power Association since 2006, and the installation of ES would have a marginal impact. As an example, ES installed at a substation would help if a broader supply issue occurred; however, those incidents are

uncommon, and the more routine outages that occur due to vehicles hitting utility poles or tree branches getting caught in utility lines would not be mitigated by an ES at a substation. Customers who wish to increase their reliability already have business justifications for the higher costs and are free to invest in backup systems, generators, or Uninterruptible Power Supplies (UPS) without a utility procurement target.

5. Technology: ES technologies vary in maturation. For example, battery systems have been available for many years at locations such as data centers. As additional utility applications are identified, research and innovation will continue to improve the technology and the associated costs will decrease over time. And, the corresponding safety concerns such as batteries catching on fire will need to be addressed by manufacturers. The Department will continue to support customers who wish to install systems to reduce their peak demand, and already offers time-based rates to encourage this behavior in lieu of prescribed targets of ES procurement.

Based on these criteria and evaluation, the Department recommends not proceeding with procurement targets for either the 2016 or 2021 timeframes at this time, given the current state of technologies and associated costs. The Department will continue to evaluate the improvement of ES systems and bring back an update within three years as required by AB 2514.

IMPACT ON BUDGET:

There is no budgetary impact.

Respectfully submitted,

Dukku Lee
Public Utilities General Manager

Attachments:

1. Resolution
2. Energy Storage System Plan dated July 2014