

June 28, 2023

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**Subject: Comments of Flatiron Energy on the Mass. Mid-Duration and Long-Duration Energy Storage Study**

Dr. Ferguson:

Flatiron Energy (“Flatiron”) is an independent power producer (IPP) exclusively focused on the development, construction, and operation of utility scale standalone energy storage projects. The company is focused in the Northeast with a pipeline of over 3 GW of standalone storage projects and 1.7 GW located in Massachusetts alone. The Flatiron leadership team has over 25 years of collective experience working in standalone energy storage and over 70 years of combined experience working in the power and finance industries. The Flatiron leadership team has been directly responsible for successfully developing and delivering over 20 operational and profitable standalone energy storage projects. Flatiron Energy is a pending B Corporation and takes seriously a commitment to weigh environmental and social factors beyond the bottom line.

Flatiron commends E3’s organization of this study to address the three questions outlined on slide 13. Studying the current state of energy storage in the Commonwealth will provide important context to understanding the additional benefits that mid-duration and long-duration energy storage can provide. E3 appears to have a good grasp on the value streams available to front-of-the-meter storage today, as well as the existing revenue gap and market barriers facing such resources. Flatiron believes the methodology for the study outlined by E3 will provide valuable insight into the reliability benefits that mid-to-long-duration storage can provide. In addition to the outlined study, Flatiron urges E3 to incorporate additional analysis to consider the near-term commercial viability of mid-duration energy storage and the intra-day load shifting and balancing benefits it can provide.

**Select Responses to E3 Stakeholder Questions:**

*What are the biggest barriers that remain unaddressed by current programs (slide 15)?*

One of the largest remaining barriers to utility-scale storage deployment in the Commonwealth is access to financeable revenue streams. In the current market, it is very difficult for energy storage projects to obtain financing on fully merchant projects. These financing limits and revenue uncertainty drive up hurdle rates and limit the pool of potential investment capital. While the Clean Peak Standard program provides an innovative opportunity for projects to earn revenue by relieving grid needs, the program’s

auction pricing structure creates substantial revenue uncertainty. As the Commonwealth saw in the transition from the SREC program to the SMART program, providing contracted revenue can significantly reduce state program costs while driving much greater resource deployment.

*Which value streams are most attractive to developers? Are there other value streams we should be considering? Data/opportunities to measure other value streams? (slide 17)*

As noted in our previous response, less volatile and more secure revenue sources are the most attractive to developers, as they enable projects to secure financing and bring down project capital costs. Flatiron generally commends E3 for their understanding of the available revenue streams to utility-scale energy storage projects in the Commonwealth. In addition, Flatiron strongly recommends E3 incorporate proposed changes to the ISO-NE capacity market that have a high likelihood of implementation through the ISO's Resource Capacity Accreditation (RCA) process, the most important being marginal ELCC. The adoption by ISO-NE of marginal ELCC will have a material impact on available capacity revenue for storage projects and on revenue uncertainty. This revenue uncertainty may be further compounded by the proposed change from a three-year forward capacity market to a "prompt and seasonal" market that would occur the same year as the deliverability period.

Flatiron agrees with E3's conclusion on slide 21 that front-of-the-meter standalone storage projects will struggle to recover costs in 2023. In addition, Flatiron believes that if marginal ELCC is implemented and no new source of contracted revenue is identified in the Commonwealth, battery storage will struggle to recover costs even in 2030. While the ISO-NE queue does show a robust pipeline of energy storage projects, these projects will need clear market and revenue signals in order to attract the necessary capital to come online.

*Are there other technologies and is our technology readiness assessment accurate?*

Flatiron notes that while E3 examines candidates for long-duration technologies on slide 26, the presentation does not appear to contemplate viable technologies for mid-duration storage. This is an important oversight given the intention of this study to also focus on mid-duration storage. Importantly, candidates for mid-duration storage technologies are already commercially viable in the form of lithium-ion chemistries. In markets such as California, the right market signals have driven wide-scale adoption of 4+hour lithium-ion batteries to address system and local resource adequacy needs.

As E3 studies the cost-benefit impact of mid-to-long-duration storage, it will be important to incorporate data on commercially viable technologies. Flatiron also suggests that E3 incorporate cost-benefit analysis on the ability of commercially viable mid-duration technologies to derate their power output to meet longer windows of system needs as system conditions change over time.

*What are the contingencies/scenario assumptions of greatest interest (slide 31)?*

On slide 13 E3 frames the focus of the third prong of this study as understanding the potential applications of mid-and long-duration storage. The proposed methodology in the reliability modeling later in the presentation seems a viable approach to understanding inter-day balancing. However, this approach does not appear to incorporate the intra-day load shifting and balancing benefits that mid-duration storage can provide to the Commonwealth. As outlined on Slide 12, storage can provide hourly and sub-hourly benefits, intra-day shifting benefits and inter-day benefits. While hourly benefits will primarily be provided by short-duration batteries, intra-day load shifting is well-served by 4+hour batteries and is important to study.

Thank you for the opportunity to participate in this stakeholder process and offer this feedback.

Thank you,

A handwritten signature in black ink that reads "Juliana Mandell". The signature is written in a cursive, flowing style.

Juliana Mandell  
Managing Partner & Chief Commercial Officer  
Flatiron Energy