MEMORANDUM

Date: June 8, 2023

To: Paul Williamson, Lara Rippeon – Key Capture Energy

From: Clint Cyr, PE, INCE – Epsilon Associates, Inc.

Subject: Overview of the Sound Level Impact Assessment for the Proposed KCE CT 9 BESS Project in Windsor Locks, Connecticut

Key Capture Energy (KCE) is proposing to construct a battery energy storage system (BESS) immediately north of Route 20 and west of the Ella T. Grasso Turnpike (Route 75) in the Town of Windsor Locks, Connecticut (the Project). Epsilon Associates, Inc. (Epsilon) has been retained by KCE to conduct a sound level impact assessment for the Project.

The assessment included sound level modeling of operational sound from the proposed BESS and an evaluation against the Connecticut Department of Energy and Environmental Protection (DEEP) regulatory standards, specifically CGS §22a-69. The Project is considered an industrial sound source (Class C). A brief overview of the modeling and the sound level evaluation is provided herein.

Modeling Methodology

The primary sources of sound from the BESS project will be the battery containers and the inverters ("PCS"). There are 12 containers and 2 PCS proposed for the Project. The model utilized sound level data from the proposed manufacturer. The locations of the modeled equipment overlaying aerial imagery are shown in Figure 1.

Sound levels from the facility were predicted using the Cadna/A noise calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The benefits of this software are a refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption. Elevation contours for the modeling domain were directly imported into Cadna/A which allowed for consideration of terrain shielding where appropriate.

Epsilon used Cadna/A, the proposed site plan, and the sound level data from the manufacturer to predict "Project-only" sound levels. A modeling grid with a 10-meter spacing was calculated for the area

surrounding the Project. The grid was modeled at a height of 1.5 meters above ground level to mimic the ears of a typical standing person. This modeling grid allowed for the creation of sound level isolines as shown in Figure 1. The figure also shows 8 discrete modeling receptor locations that represent the closest neighboring properties. The receptors were also modeled at a height of 1.5 meters and are identified as either residential or commercial in Table 1.

Sound Level Evaluation

Table 1 presents an evaluation of broadband sound levels at each of the 8 modeling receptors. Because the BESS will be able to operate at any time of day, the more stringent, i.e., nighttime standards have been evaluated. The nighttime broadband sound level standard from an industrial source (Class C) at a residential zone (Class A) is 51 dBA and the standard at a commercial zone (Class B) is 66 dBA.

Modeled Project-only broadband L_{eq} sound levels are provided in the table that range from 29 to 62 dBA. The highest sound level from the Project at a receptor in a residential zone as defined by the CT DEEP is 34 dBA (R05). As shown in the table, all predicted levels are well below the Connecticut DEEP broadband sound standards for industrial sources.

The CT DEEP also considers prominent discrete tones (tones) as excessive noise under certain conditions. Prominent discrete tones are defined in the regulation using one-third octave band sound levels. One-third octave band sound levels from the Project were calculated in the model using data from the manufacturer. According to the regulation, a tone is considered excessive when a broadband sound level that is 5 dBA below the applicable broadband standard is exceeded when the tone is present. The modeling shows tones at receptors R03, R04, and R06; however, Table 1 shows that the broadband levels at these receptors are 11 dBA, 20 dBA, and 22 dBA below the standard, respectively. Therefore, and in summary, the Project meets the Connecticut DEEP regulatory standards with respect to noise.

Table 1 CT DEEP Evaluation of Broadband Sound Levels

ID	Receptor Type	Town	Modeled Project Only L_{eq} Sound Level (dBA)	CT DEEP Nighttime Standard for Industrial Source (dBA)	Meets CT DEEP Standard?
R01	Commercial	Windsor Locks	63	66	YES
R02	Commercial	Windsor Locks	62	66	YES
R03	Commercial	Windsor Locks	55	66	YES
R04	Commercial	Windsor Locks	46	66	YES
R05	Residential	Windsor	34	51	YES
R06	Residential	Windsor	29	51	YES
R07	Commercial	Windsor	37	66	YES
R08	Commercial	Windsor	30	66	YES

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KCE CT 9 Windsor Locks, Connecticut

Epsilon Associates Inc.

Figure 1

Sound Level Modeling Results