



## **MEMORANDUM**

**TO:** Hampton City Council  
**FROM:** Donald Whipple, AICP, Chief Planner  
**DATE:** June 8, 2023  
**SUBJECT:** Addendum to staff report for Item No. 23-0151:  
Langley Research and Development Park Association Questions

On May 18, 2023, staff received questions from the Langley Research and Development Park Association regarding the proposed application by Delorean Power LLC to amend the proffered conditions to permit a battery energy storage system. The subject  $\pm$  32.83 acres property is located at 3201 Commander Shepard Blvd, adjacent to the business park. The questions were received the morning of the Planning Commission meeting. Several representatives of the Langley R&D Park Association were present and spoke at the meeting with most of the questions being addressed during the public hearing. With input from the applicant and the Hampton Fire Department, staff offers answers to the question presented by the association.

### **Noise**

#### Concern:

Actual noise levels experienced by surrounding properties. While the Application for Rezoning states Delorean Power "does not anticipate any negative impact to adjacent properties. Noise from the units is generated by cooling pumps and fans and will be approximately 65 decibels or lower at the source and is expected to be inaudible to neighboring facilities."

#### Questions:

1. Is that 65 decibels or lower per Project Site or 65 decibels or lower per battery storage container? If it is 65 decibels or lower per battery storage container and a large number of battery storage containers are installed per site, the noise impact could be significant. Is there data to back up the claim of "Noise... expected to be inaudible to neighboring facilities."

**Answer:** Sound levels vary across technology providers, and as stated in the rezoning application tend to hover around the 65 dB range on average. Delorean has yet to select the technology provider for the Hampton project, but by way of recent example they intend to use Trina Storage for projects proposed to be built within the next year in the northeast US. Lab tests indicate sound levels of less than 60 dB at a distance of 10-ft. The PCS units for those projects will be Power Electronics, which tests indicate are 65 dB at a distance of 16-ft. Important to note is that the equipment will only be operational

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intermittently each day; meaning noise is not constant. Additionally, the project is setback 100-ft or more from all property lines allowing for the dissipation of sound. Sound dissipates on a logarithmic scale, reducing 6 dB every time the distance is doubled from source to receptor. Vegetative buffering, both newly to be planted areas and existing vegetation will remain in many places on-site absorbing sound organically enhancing sound dissipation efficiency.

Although there isn't current data for this site that specifically addresses the total noise level of the project, preliminary modeling suggests that equipment noise levels at the property boundary will be on the order of 35 to 40 dB, which is expected to be less than typical ambient noise levels.

2. What City of Hampton noise ordinances would apply under the current and proposed rezoning to ensure that noise does not have a negative impact to adjacent properties?

**Answer:** Section. 22-9(2) from the City Code - states *"It shall be unlawful for any person to cause or permit to be caused any of the following prohibited sounds or noises: (2) Instruments, machines, or devices. Instruments, machines, or devices operated in such a manner or with such volume or duration that it is plainly audible (i) inside the confines of the dwelling unit, house or apartment of another person; (ii) at a distance of 100 or more feet in any direction from the operator between the hours of 7:00 a.m. and 10:00 p.m.; or (iii) at a distance of 50 or more feet in any direction from the operator between the hours of 10:00 p.m. and 7:00 a.m. addresses noise."* The nearest residential dwelling (Langley Mobile Home Village) is located approximately 1200 feet from the proposed use.

## **Fire Hazards**

### Concern:

Lithium-Ion batteries are known to be extremely hazardous as evidenced by regulations and restrictions regarding shipping of Lithium-Ion batteries and transportation on airlines. They present fire and/or explosion risks and toxic fumes if they fail to operate as intended or are damaged.

### Question:

1. What consideration is the City taking (with input from the fire department) in regards to any fire hazards related to the lithium-ion battery storage containers?

**Answer:** The Fire Department's thoughts on this project are that while there are risks, they are manageable. Although there are fire hazards associated with batteries of these types, Delorean will build this facility with safety measures that comply with all applicable codes and regulations. The entire scope of this project is regulated by not only an entire NFPA Standard (855) but also testing through several UL standards. The containers are purposely built to withstand the fire hazards which would limit complete runaway to other units. One of the most important factors in an energy storage system is

the ability to cool down the components. Hampton Fire is committed to ensure that an adequate water supply is in place for the area. I have spoken to the Fire Marshal in Danville where a facility of this type was just built and was ensured that Delorean went above and beyond to make sure the facility was as safe as possible to include fire department training to mitigate an emergency if it were to arise.

Delorean Power met with Hampton Fire Staff on Tuesday June 6 to discuss the project and associated fire safety requirements and operational protocols that they will utilize to ensure a safe outcome for the community. The Fire Department is planning to attend the June 14<sup>th</sup> City Council meeting in order to address any additional questions that Council may have in regards to this project and associated fire safety plans/project requirements.

2. Does the existence of a battery storage facility near existing businesses impact insurance premiums for surrounding businesses or create a policy "exclusion"?

**Answer:** Staff cannot speak to what the insurance writers do or don't do. A majority of the time insurance policies are written for a specific building and its contents not necessarily the entire surrounding area. With the information we have, the Insurance Services Office (ISO), through Verisk, has written one piece and it speaks to the growing market, not insurance rate increases. That will be one insurance company vs another and policy vs policy determination which we are not privileged to. Delorean Power is responsible for, and has adequate insurance coverages already in place, to manage any liability risks that are associated with the project and any such project liability impacts will be the sole responsibility of Delorean Power to bear, not any adjacent existing business owner and their associated insurance policies.

3. Has Delorean conducted a risk assessment with regard to Lithium-Ion battery storage and operation?

**Answer:** The project design and equipment conform to the requirements of NFPA 855 which enumerates the hazards associated with lithium-ion battery storage and incorporates all of the latest industry and fire protection community standards and best practices to ensure that risks associated with lithium-ion energy storage systems are mitigated to a level acceptable to project stakeholders, including local authorities and emergency response personnel. Additionally, for each project and energy storage system vendor, we require a system hazard analysis and report to verify that the system operations have sufficiently accounted for the risks and requirements listed in NFPA 855.

Additional detail:

Lithium-ion battery energy storage systems are designed with sufficient safety protocols and protections installed to ensure these facilities can be operated in a safe and reliable manner. Possible hazards and risks that can

be associated with lithium-ion battery systems include fire hazards, chemical hazards and explosion risk.

Fire Hazards: Under normal operating conditions, fire hazards can be present if there are defects within the battery cells or design issues with the controls that prevent thermal runaway. Under abnormal operating conditions, battery storage systems can pose risks associated with thermal runaway in the battery cells, which, if not properly isolated and managed, could lead to fire and release of harmful gases. All Delorean systems are required to undergo testing to verify thermal runaway propagation risk (UL 9540a) and fire spread potential is successfully limited.

Chemical Hazards: Under normal conditions, each lithium-ion battery cell's multiple layers of protection seal the system and prevent external chemical hazard impacts. Under abnormal operating conditions, the risk of lithium-ion battery pack coolant leaks, leaked electrolyte, or vented electrolyte can exist. The following types of hazardous chemicals could be present during abnormal conditions:

- Hydrogen (H<sub>2</sub>)
- Carbon Monoxide (CO)
- Various hydrocarbons (battery chemistry specific)
- Gases present similar to that of plastic fires

Explosion Risk: Combustible gases can accumulate during a thermal runaway event. Sparking systems, gas dissipation and deflagration venting equipment are reliable methods to manage the production and accumulation of gases. Delorean Power will manage and mitigate explosion risk via use of proven lithium-ion battery safety equipment.

4. What measures will Delorean take to monitor operations, contain problems should they occur, and accept responsibility for environmental impacts, cleanup, etc. in the event of a problem?

**Answer:** The SCADA (Supervisory Control and Data Acquisition) system enables the connection of all major components of the project, including battery trays, inverters, the energy management system, and it collects a vast amount of data at a high frequency (one second sampling). Data is aggregated, filtered, and analyzed to provide key performance indicators (KPIs), warnings, and alarms. The project operator/bidder takes primary responsibility for monitoring each project on a 24/7 basis, with continuous oversight from the system integrator and Delorean Power Asset Managers providing redundant control for enhanced reliability.

Prevention is fundamental to assure safe operation and long-term performance/state of health of the project. Preventative maintenance activities are performed at least twice a year, aiming to check all the major components and wiring/connectors up to the point of interconnection. Conditioned-based monitoring allows proactive maintenance to address any early-stage issues that may arise with the system's components.

During the construction phase, when the monitoring is not functioning yet, Delorean Power personnel and its contractors oversee the construction's impact to ensure compliance with all environmental and permitting regulations. The EPC contractor is responsible for site security, safety, and environmental aspects during construction, while Delorean teams conduct audits and supervision of all onsite activities and promptly address any issues.

To date, Delorean has maintained an exemplary safety record, with no OSHA recordable incidents or safety/environmental incidents. Delorean's field engineers, who are well-versed in Environmental, Health, and Safety (EHS) practices. They oversee contractors' EHS plans to uphold a strict zero-incident policy throughout construction, operation, and maintenance activities.

Finally, for every project Delorean Power design, a customized emergency response plan to identify potential emergency scenarios and address possible critical events is standard.

## **ELECTRICITY QUALITY**

### Concern:

Adverse impact to the quality/condition of the electricity in the business park.

### Question:

1. Has Delorean conducted any studies to assess the potential impact of their operations or changes/interface to the substation with regard to delivery by Dominion of clean, conditioned electricity free of surges, drops, etc.?

**Answer:** Dominion Energy is currently studying the proposed Project Site 1 project electrically through their interconnection application process. Delorean Power has progressed to the Facilities Study stage with that project and are expecting to receive a definitive interconnection agreement within the next 1-2 months. As such, Dominion has already gone through the process of studying the 29MW project's impact to both the Peninsula substation, which will be the project's interconnecting substation, and the Dominion Energy power grid to ensure there will be no adverse electrical impacts as a result of the battery system being built at the 3201 Commander Shepard Boulevard site.