

BATTERY ENERGY STORAGE SYSTEMS ORDINANCE
Draft Ordinance Language
Citywide Ordinance
Categorical Exemption, Zoning Text Amendment, and Airport Area of Influence Review
File No. 24-059

New text is shown below in underlined font, and text to be removed is shown in ~~strike through font~~.

SECTION I

Division 14.09 of the Vacaville Municipal Code is amended to create Chapter 14.09.271 and add the following text to the chapter:

Chapter 14.09.271
Battery Energy Storage Systems.

Section 14.09.271.010 Purpose and Applicability

A. Purpose. The provisions of this Title are hereby established and adopted to protect and promote the public health, safety, morals, comfort, convenience, and welfare, and more particularly to:

1. Implement the goals and objectives of the general plan and guide and manage development within the city in accordance with such plan.
2. Protect the physical, social, and economic stability of residential, commercial, industrial, and other land uses within the city to assure its orderly and beneficial development.
3. Reduce hazards to the public and emergency responders resulting from the inappropriate location, use, or design of buildings/structures and other improvements.
4. Attain the physical, social, and economic advantages resulting from comprehensive and orderly land use and resource planning.
5. To prioritize public safety over exploitation of corporate profit.

B. Applicability. The requirements of this ordinance shall apply to all Tier 2 and Tier 3 front-of-the-meter Battery Energy Storage Systems that are permitted and installed in the City of Vacaville after the effective date of this ordinance. This ordinance does not extend to the general maintenance and repair of battery energy storage systems permitted, installed, or modified prior to the effective date of this ordinance. This ordinance does not apply to behind-the-meter Battery Energy Storage Systems supporting residential, commercial, agricultural, and industrial uses.

C. Exclusions. Tier 2 and Tier 3 Battery Energy Storage Systems that contain "Lithium-ion" or any technology type with documented occurrences of thermal runaway events shall not be permitted within the City of Vacaville.

Section 14.09.271.020 Definitions

"Energy Storage" means any technology that is capable of absorbing electricity, storing the electricity for a period of time, and redelivering the electricity.

"Battery Energy Storage System" (BESS) means an electrochemical device, with a rated capacity of equal to or greater than 1,000-kilowatt hours (1 megawatt hour), that charges or collects energy from the grid or a generation facility, stores that energy, and then discharges that energy at a later time to provide electricity or other grid services when needed. For the purpose of this chapter, the definition or term "BESS" shall not include any chemistry type involving "Lithium-ion" or any technology type with documented occurrences of thermal runaway events.

“Behind-the-meter (BTM) Battery Energy Storage System” refers to a Battery Energy Storage System (BESS) installed on the customer’s side of the utility meter. These systems are designed to support energy use by providing backup power, demand charge management, load shifting, or renewable energy integration.

“Commissioning” means a systematic process that provides documented confirmation that a battery energy storage system functions according to the intended design criteria and complies with applicable code requirements.

“Decommissioning Plan” means a plan to retire the physical facilities of the Project, including decontamination, dismantlement, rehabilitation, landscaping and monitoring. The plan contains detailed information on the proposed decommissioning and covers the schedule, type and sequence of decommissioning activities; waste management, storage and disposal of the waste from decommissioning; the timeframe for decommissioning and site rehabilitation.

“Front-of-the-meter (FTM) Battery Energy Storage System” refers to a Battery Energy Storage System (BESS) that is directly connected to the transmission or distribution grid and primarily serves wholesale market functions such as grid support, frequency regulation, or energy arbitrage.

Hazard Mitigation Analysis (HMA) is a systematic method that considers the various hazards related to the installation, identifies potential failure modes as well as their causes and effects, and develops appropriate mitigation solutions. HMAs evaluate the consequences of thermal runaway conditions, failure of an energy storage management system, failure of a required ventilation or exhaust system, and failure of a required smoke/fire detection system, fire suppression, or gas detection system.

“IEEE” is the Institute of Electrical and Electronics Engineers is a global professional organization dedicated to advancing technology for the benefit of humanity. IEEE develops and maintains international standards in various fields of electrical and electronic engineering, computer science, and related disciplines.

“Lithium-ion” batteries refers to a battery where the negative electrode (anode) and positive electrode (cathode) materials serve as a host for the lithium ion (Li+). Lithium ions move from the anode to the cathode during discharge and are intercalated into (i.e., inserted into voids in the crystallographic structure of) the cathode. The ions reverse direction during charging. Since lithium ions are intercalated into host materials during charge or discharge, there is no free lithium metal within a lithium-ion cell and thus, even if a cell does ignite due to external flame impingement or an internal fault, metal fire suppression techniques are not appropriate for controlling the lithium-ion fire. Lithium ion is a generic term covering a number of different technologies, which can be broken down into the following three main groups that are currently commercially available:

1. Lithium metal oxide cathodes with a carbon anode [e.g., nickel cobalt aluminate (NCA) and nickel manganese cobaltate (NMC)]
2. Lithium phosphate cathode with a carbon anode [e.g., lithium iron phosphate (LFP)]
3. Lithium metal oxide cathode with a titanium oxide anode [e.g., lithium titanate (LTO)]

“National Fire Protection Association” (NFPA) is a nonprofit organization dedicated to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards. Established in 1896, the NFPA develops and publishes over 300 consensus codes and standards intended to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation in the United States and internationally. The NFPA’s mission extends beyond code development; it also focuses on research, training, education, and advocacy to promote safety and preparedness.

“National Electric Code” (NEC), also known as NFPA 70, is a set of standards for the safe installation of electrical wiring and equipment in the United States. Its primary purpose is to ensure the safety of electrical installations by setting forth requirements to protect people and property from electrical hazards. The NEC covers the installation of electrical conductors, equipment, and raceways; signaling and

communications conductors and equipment; and fiber optics. It is updated every three years to incorporate new technologies and improve safety measures.

“NFPA 855” the Standard for the Installation of Stationary Energy Storage Systems, provides comprehensive guidelines for the safe installation of stationary energy storage systems (ESS), including those using lithium batteries. These standards address various aspects of installation to mitigate fire and explosion risks associated with energy storage technologies. It covers topics such as system design, construction, operation, and maintenance to ensure safety and reliability.

“Sensitive Receptors” shall include locations with hospitals, schools, and day care centers, residential uses, and such other locations as the air district board or California Air Resources Board may determine pursuant to the California Health and Safety Code §42705.5(a)(5).

“Thermal Runaway” refers to an uncontrollable, self-sustaining exothermic chain reaction within a battery energy storage system, initiated by a failure mechanism (e.g., internal short circuit, overcharging, physical damage, or thermal exposure). This reaction results in a rapid increase in cell temperature, leading to the release of flammable electrolytes, generation of toxic gases (e.g., hydrogen fluoride, carbon monoxide), and potential cascading failures to adjacent cells. If unmitigated, thermal runaway may cause fire, explosion, or hazardous material release, posing risks to public safety, property, and the environment.

Tier 1 (Residential-Scale) battery energy storage systems have a maximum stored energy capacity less than or equal to 20 kWh and, if in a room or enclosed area, consist of only a single energy storage system technology. The aggregate rating of the ESS shall not exceed the following for each location listed:

1. 40 kWh within utility closets, basements, and storage or utility spaces.
2. 80 kWh in attached or detached garages and detached accessory structures.
3. 80 kWh where outdoor wall or ground mounted.

Tier 2 (Medium-Scale/Commercial) battery energy storage systems have an aggregate energy capacity greater than 40 kWh, up to 600 kWh.

Tier 3 (Industrial-Scale/Public Utility) battery energy storage systems have an aggregate energy capacity greater than 600 kWh, up to, but not exceeding, 200 mega-watt hours (MWh), or battery energy storage systems with more than one storage battery energy technology (e.g., Lithium-ion, Lead-acid, Flow batteries, Nickel-based, Sodium-ion, and Solid-state batteries) is provided in a room or enclosed area. A HMA as outlined in NFPA 855 shall be required for lithium-ion ESS that exceed 600 kWh (2,160 MJ) for outdoor ESS installations, ESS installations in open parking garages and on rooftops of buildings, and mobile ESS equipment.

“UL 9540” is a standard for ESS and equipment. It is designed to ensure the safety of these systems and covers their construction, performance, and testing requirements. UL 9540 certification is essential for verifying that energy storage systems, such as batteries and related equipment, meet rigorous safety standards to prevent hazards related to electrical, mechanical, and environmental conditions.

Section 14.09.271.030 Land Use and Siting Standards

A. Land Use. Table 14.09.271.A, Land Use Regulations – Energy Uses, establishes the land use regulations for specific energy uses. In cases where a specific land use or activity is not defined, the Director of Community Development shall assign the land use or activity to a classification that is substantially similar in character. Land uses not listed in the table and not substantially like the uses identified below are prohibited. Within the Northeast Growth Area, the supplemental regulations identified in Section 14.09.060.040 are applicable.

TABLE 14.09.271.A: LAND USE REGULATIONS – ENERGY USES

“P” = Permitted Use; “M” = Minor Use Permit required; “C” = Conditional Use Permit required; “–” = Use Not Allowed				
<u>Land Use Classification</u>	<u>PF</u>	<u>IP</u>	<u>BP</u>	<u>Additional Regulations</u>
<u>Transportation, Communication, and Utility Uses</u>				
<u>Battery Energy Storage Systems</u>	<u>C</u>	<u>C</u>	<u>C</u>	<u>See Chapter 14.09.191</u>
<u>No Battery Energy Storage Systems are allowed within the Nut Tree Airport Compatibility Plan area.</u>				

1. Unincorporated County. New BESS facilities proposed on unincorporated land located within Solano County that desire to annex into Vacaville city limits must be located within the city’s Sphere of Influence and shall be required to amend the Vacaville General Plan and Zoning Map to ensure the subject site is designated and zoned consistently with this ordinance.

2. Tier 1 Battery Energy Storage Systems are allowed in all zoning districts, subject to the applicable requirements of the most current (or adopted per Title 24) editions of the NEC, NFPA 70, NFPA 855, and Title 24 of the California Code of Regulations, and all equipment shall be UL 9540 listed. Tier 1 systems, if installed outside a structure, shall meet all established setbacks for the zone they are within, and shall be protected by fencing and screened from view of any adjacent property and the public Right of Way.

3. Natural Disaster Zone Exclusion. A Battery Energy Storage System facility shall not be located on a parcel in the following areas that are subject to impacts from natural disasters:

a. BESS facilities are not permitted in High or Very High Fire Hazard Severity Zones as determined by Cal Fire within a State Responsibility Area or a Local Responsibility Area. Applicants must submit mapping of the proposed site demonstrating compliance with this section. If the maps listed are updated prior to permit issuance, the application must be amended to reflect most recent maps.

b. BESS facilities are not permitted within a FEMA designated floodplain unless the parcel or developed area where the BESS, including perimeter roads for emergency vehicles, is to be installed, is raised to at least two feet above the Base Flood Elevation (BFE) through engineered fill or equivalent flood protection measures. A Conditional Letter of Map Revision (CLOMR) shall be obtained from FEMA prior to site grading or fill, demonstrating that the project will not result in an increase in BFE or adverse floodplain impacts, demonstrating that the proposed project meets all applicable NFIP requirements.

c. Front-of-the-meter BESS modules will not be permitted indoors.

B. Development Standards.

1. Development Regulations. Table 14.09.271.B, Development Regulations – Energy Uses, establishes standards for new BESS facilities, which shall comply with these standards. In addition, Battery Energy Storage Systems shall comply with NFPA 855 requirements related to setbacks and buffers. In the event of a conflict between standards, the standard providing the greatest level of protection to City residents shall prevail, as determined by the Director of Community Development and Vacaville Fire Chief. An applicant may request a waiver of these requirements or submit an Alternate Means and Methods Request under California Title 24, under circumstances where an engineered solution may satisfy setback requirements outlined in NFPA 855. The Director of Community Development shall make the final determination on a requested waiver of development requirements.

TABLE 14.09.271.B: DEVELOPMENT REGULATIONS – ENERGY USES

<u>Standard</u>	<u>PF</u>	<u>IP</u>	<u>BP</u>	<u>Additional Regulations</u>
<u>Setbacks (setbacks are measured from property line or back of sidewalk, whichever results in a greater setback)</u>				
<u>Minimum Front Setback & Corner Street Side (ft)</u>				
<u>Buildings/Batteries</u>	<u>100</u>	<u>100</u>	<u>100</u>	
<u>Guardhouses</u>	<u>75</u>	<u>75</u>	<u>75</u>	
<u>Perimeter Wall/Fence</u>	<u>50</u>	<u>50</u>	<u>50</u>	
<u>Minimum Interior Side (ft)</u>				
<u>Buildings/Batteries</u>	<u>50</u>	<u>50</u>	<u>50</u>	
<u>Perimeter Wall/Fence</u>	<u>30</u>	<u>30</u>	<u>30</u>	
<u>Minimum Rear Setback (ft)</u>				
<u>Buildings/Batteries</u>	<u>50</u>	<u>50</u>	<u>50</u>	
<u>Perimeter Wall/Fence</u>	<u>30</u>	<u>30</u>	<u>30</u>	
<u>Minimum Setback Adjoining Freeway (ft)</u>	<u>200</u>	<u>200</u>	<u>200</u>	
<u>Minimum Setback from Residentially Zoned Property and Parcels Developed with Sensitive Receptors (ft)</u>	<u>500</u>	<u>500</u>	<u>500</u>	<u>Setback also applies to properties in Solano County</u>
<u>Height Standards</u>				
<u>Maximum Building Height (ft)</u>	<u>20</u>	<u>20</u>	<u>20</u>	<u>Standard is applicable to structures used to enclose batteries.</u>

2. Lighting Requirements. BESS facilities shall comply with the following City standards:

a. Interior and perimeter lighting shall be provided to ensure all areas are illuminated to an intensity between 1-to-3-foot candles. Interior lighting shall be dimmable to turn off when no motion is detected after 5 minutes.

b. Lighting poles or fixtures mounted to cabinets and perimeter walls/fences that are located on the interior of a BESS facility shall not exceed a height 20 feet above the ground. Lighting poles and fixtures located on the exterior of a BESS facility shall not exceed 8 feet, excluding street lighting located along the public right-of-way.

c. All lighting shall be directed downward and shall not shine across adjoining properties.

d. Other requirements specified in state statutes or code for electrical infrastructure that are appropriate to apply to BESS.

e. Access roads for emergency responders shall be illuminated as well as all emergency disconnects.

3. Security and Screening. BESS facilities shall comply with the following security and screening requirements:

a. The facility shall have a non-scalable and transparent perimeter fence of at least 10 feet in height. The perimeter fence shall have at minimum two entrance gates equipped with a rapid access system chosen in consultation with Vacaville Fire Department; and shall have the discretion to require more entrances. Fencing shall consist of tubular-steel, powder-coated black fence or equivalent. Click to Enter and Knox-Switches shall be required on all gates.

b. The facility shall be equipped with a security system to prevent break-ins including cameras and barbed wire that is visible from public roads. The cameras must be monitored 24 hours a day, 7 days a week, with any threats immediately reported to law enforcement.

c. The facility shall comply with NFPA 855 specifications related to barriers and buffering.

d. BESS modules shall not be visible from the public right of way and freeway.

e. Reflective Signage shall be located on BESS modules, perimeter fences and any other security barriers. Signage shall include an illuminated site map. Signage shall contain 24-hour emergency contact information, product description, site owner and hazard warnings. Signage or maps should identify isolation distances response personnel shall maintain from BESS during an emergency. Signage shall be provided for grid-interactive BESS operating in parallel with other power generating sources. Signage shall be provided indicating explosion hazard zones. Signage must be compliant with all NFPA 704 standards and must be reflective of local amendments by the City of Vacaville.

4. Noise Requirements. The average noise generated from BESS facilities, components, and associated ancillary equipment, measured at the nearest building, lot line that can be built upon, or public way, shall not exceed any noise limits established under Section 14.09.240.140, Noise.

5. Utility Lines and Electrical Circuitry. All on-site utility lines shall be placed underground to the extent feasible and as permitted by the serving utility, with the exception of the main service connection at the utility company right-of-way and any new interconnection equipment, including without limitation any poles, with new easements and right-of-way. In accordance with Chapter 14.12.050, Undergrounding of Utilities, a developer shall provide for the undergrounding of all existing and proposed utility distribution or transmission facilities, which include but are not limited to electric, natural gas, irrigation district canals, cable television, telephone and other communication facilities, within or abutting the subdivision or development.

6. Landscaping. No landscaping is required on the interior side of the screen walls, regardless of the percentage of open space landscaped. At minimum, the facility shall provide a 20-foot-wide fire access road around the perimeter of the site, which must be designed to support emergency services apparatus weighing 80,000 lbs. At the discretion of the Vacaville Fire Department, additional maintenance roads may be required. The first 30 feet of setback along a street frontage and freeway shall be landscaped and irrigated with a combination of dirt mounding a minimum of 3 feet tall.

7. Must provide a water supply that is approved by the Vacaville Fire Department.

8. Must have Click to Enter and Knox-Switches on all gates for emergency responders.

9. Tier 2 and 3 systems must be provided with fire extinguishing systems.

B. Battery Chemistry Technology

1. Best Available Technology. BESS facilities shall utilize commercially available battery technologies that minimize the risk of thermal runaway. Applicants are strongly encouraged to select technologies with no or low thermal runaway risk. All BESS applications must include third party written documentation evaluating whether the proposed battery technology poses a risk of thermal runaway.

a. If the proposed battery technology is determined by the City of Vacaville to present a thermal runaway risk, the applicant shall submit a comprehensive technology comparison analysis. This analysis must include, at a minimum: A techno-economic comparison of alternative battery technologies based on publicly available information; an assessment of hazardous chemicals involved in the event of thermal runaway, qualitative and quantitative risk analysis of thermal runaway; A thermal runaway plume modeling analysis; and any additional information deemed necessary by the Director of Community Development and/or the Fire Chief.

b. If the proposed battery technology is determined by the City of Vacaville to present no risk of thermal runaway, then the Applicant shall submit Third-party verification of system stability (e.g., material safety analysis, abusetolerance testing results) and basic chemical hazard documentation to demonstrate no risk of hazardous emissions or thermal runaway propagation.

2. Owner Responsibility for Thermal Runaway. BESS facility owners must reimburse the City of Vacaville and emergency response agencies, including fire agencies, for all costs associated with a thermal runaway event. This includes thermal runaway response costs, as tracked by the Vacaville Fire Department. In the event of thermal runaway, the BESS facility owner/operator shall provide three scopes of work for the hiring of a subject matter expert to conduct a root-cause analysis of the event, which shall be subject to review and authorization by the Vacaville Fire Department. The Vacaville Fire Department shall act as the lead coordinator is directing the preparation of the analysis, and all costs shall be funded by the BESS facility operator/owner.

The BESS facility owner must also reimburse costs of an assessment of damage to the environment, agriculture, residents, and businesses conducted by one or more third party consultants selected by the City of Vacaville and all testing, damages and remediation conducted by responsible entities that is required to return all sites in the path of the plume caused by thermal runaway to the previous condition after thermal runaway incident or other hazardous incident.

Section 14.09.271.040 Permitting and Environmental Compliance

A. Conditional Use Permits. All new applications for Tier 2 and Tier 3 Battery Energy Storage Systems shall require a Conditional Use Permit, which shall be processed in accordance with Chapter 14.09.300, Use Permits.

B. Development Agreement. All new applications for Tier 2 and Tier 3 Battery Energy Storage Systems shall require a Development Agreement in accordance with Division 14.17, Development Agreements, to strengthen the public planning process, encourage private participation in comprehensive planning by providing a greater degree of certainty in that process, to ensure that the community's safety is addressed, and to ensure that the public benefits provided by the development are appropriate.

C. Modifications. Applications for periodic augmentation to maintain the capacity of the Battery Energy Storage System or nominally increase the capacity of the system shall constitute a Modification. For applications to modify an approved use permit for a Battery Energy Storage System for which a land use or building permit has been approved (including after project completion), the Director of Community Development shall determine the level of permit modification that shall be required based on the criteria outlined under Section 14.09.030.110, Modifications to an Approved Project and/or Permit.

D. Environmental Compliance. An Applicant shall comply with, and receive the necessary permits for, relevant state and federal environmental and wildlife laws prior to commencing construction and operation of the Battery Energy Storage System.

Section 14.09.271.050 Application Submittal Procedures.

A. Preliminary Application Process.

1. Purpose. The purpose of the Preliminary Application is to allow the Planning Division to work with the applicant and coordinate an internal review of Battery Energy Storage Systems. This process is intended to provide feedback to the applicant early in the process by helping applicants understand

the approval process, identifying potential issues to be addressed, and facilitating community outreach. The Preliminary Application is not intended to be a comprehensive review of the project, does not result in any approvals, and is not subject to appeal. The outcome of the Preliminary Application process is a comprehensive letter describing the approval process, summarizing major planning concerns and issues noted during internal review and a fee estimate. The fee estimate for the project application may differ from the Pre-App estimate.

2. Applicability. A Preliminary Application for Tier 2 and Tier 3 Battery Energy Storage Systems shall be required to provide neighborhood notification and a minimum of one Planning Commission study session to discuss the proposed project and to document community concerns. The Director shall have discretion to require additional community meetings prior to the Planning Commission Study Session. The Director may require additional meetings if it is determined that additional meetings will be beneficial to the community. Preliminary Applications must include written confirmation demonstrating compliance with requirements outlined under NFPA 855.

3. Community Meeting Requirements. The applicant is responsible for arranging the community meeting venue and presenting the project to the community. Meetings shall occur at a publicly accessible venue within the City, preferably at the project site or within a one-mile radius of the site. At least 30 days before the meeting date, the Applicant shall notify the City of the desired meeting date and the City shall promptly determine whether it conflicts with any established City-sponsored meetings. Public notification shall be provided in accordance with Section 14.09.030.070, Public Notice. The Applicant shall be required to provide the following services for the Community Meeting:

- a. Publish a website with project information and contact information.
- b. Reception desk with sign-in sheets, flyers printed with contact information.
- c. Staff to document questions from the community, prepare meeting minutes, and organize responses to the questions. The meeting shall be recorded and made available to the public.
- d. Moderator with at least one representative knowledgeable about Battery Energy Storage Systems to facilitate the meeting, presentation, and questions.
- e. Weeknight meetings shall occur between 6:00 p.m. and 9:00 p.m. and weekend meetings shall occur between 10:00 a.m. and 9:00 p.m.

4. Preliminary Application Letter and Formal Submittal. Within 30 days of outreach completion, the Planning Division will send to the Applicant a letter summarizing major project concerns, a description of the approval process, other issues noted during internal review, and a fee estimate. A formal project submittal will be accepted only after the Pre-Application letter has been issued. If a formal application is not submitted within one year, a new Pre-App will be required before project submittal.

B. Formal Application Process.

1. Application. Applications and fees for Battery Energy Storage Systems shall be submitted in accordance with the provisions set forth in Section 14.09.030.030, Application Forms and Fees. In addition, application shall include information demonstrating that requested entitlements conform to the required findings for approval.

2. Environmental Review. Applications for Battery Energy Storage Systems shall be evaluated in accordance with Division 14.03, Environmental Review, and the California Environmental Quality Act (CEQA). Applicants are responsible for funding the environmental analysis and corresponding technical studies necessary to disclose project-related impacts. Any unused fees will be reimbursed upon completion of the application process or withdrawal of a pending application.

3. Public Notice and Hearing. An application for a Battery Energy Storage System facility shall require noticed public hearings before the Planning Commission and City Council. Applications shall comply with the public notice and hearing requirements of Section 14.09.030.070, Public Notice.

4. Decision. The decision maker must make a determination that the application complies with the required findings under Chapter 14.09.300, Use Permits, and Chapter 14.09.290, Design Review, and any other entitlement findings that are required for the application. The decision maker shall deny an application for a Battery Energy Storage System facility if it is unable to make a determination that the project meets the required findings for approval.

5. Submittal Checklist.

a. A preliminary emergency response plan that includes site access, equipment locations and potential hazards for responders, nearby residents, and businesses, in addition to any other requirements. The emergency response plan may be revised after land use permits are approved, with written approval from the Vacaville Fire Department. A final emergency response plan, with written approval of Vacaville Fire Department, must be submitted prior to issuance of any building permits.

b. A report documenting coordination to-date with the Vacaville Fire Department and Solano County Office of Emergency Services in developing the required emergency response plan for the project site.

c. A plan for offering site-specific training to first responders including the Vacaville Fire Department and cooperating agencies that are likely to provide mutual aid during the initial response at project site. If the fire department determines that specialized training, PPE and/or equipment are required for response to potential incidents at this location, the cost of such will be provided by the developer.

d. A hazard mitigation analyses if required by NFPA 855.

e. A comprehensive technology comparison analysis.

f. A financial assurances plan, including liability insurance that includes coverage for thermal runaway events and other hazardous incidents, pollution and other environmental damages, decommissioning bonds, a battery cell manufacturer responsibility agreement, and an agreement indemnifying the City of Vacaville and all emergency response agencies in the event of an incident associated with the BESS facility that causes environmental damage or causes injury to persons or property. Insurance shall address all phases of construction, development, and operations.

i. As part of the financial assurances, the applicant shall acknowledge that relevant and responsible agencies having jurisdiction over the site will oversee and coordinate subject matter experts to conduct a root cause analysis related to any hazardous incident, with all costs borne by the BESS facility owner.

ii. As an additional aspect of the financial assurances, the applicant shall acknowledge the responsibility and agreement to reimburse all damaged parties for an assessment of damage to the environment, agriculture, residents, and businesses conducted by one or more third-party consultants selected by the City of Vacaville and all testing, damages, and remediation conducted by responsible entities that is required to return all sites in the path of any plume caused by thermal runaway or otherwise subject to a hazardous incident to the previous site conditions.

g. A description of cybersecurity risks and mitigation measures associated with BESS modules, the Battery Management System, and active and passive fire and explosion detection systems.

h. Submitted plans and documents must be under the signature and seal of a CA Licensed design professional.

i. HMA, Fire Risk Analysis, fire suppression systems and deflagration protection analysis submittals shall be from a CA Licensed Fire Protection Engineer approved by the Vacaville Fire

Department per California Fire Code (CFC) Section [A]104.7.2 as it may be amended. Submittals shall include signature and seal.

j. Fire protection system submittals such as fire suppression, pre-engineered systems, and water supply shall be provided by a licensed fire protection engineer or other approved licensed professionals as required by the CFC.

k. Fire alarm systems, fire detection, and gas detection shall include a C-10 - Electrical Contractor of record.

l. Final approval of any BESS or safety related equipment that has routine maintenance requirements according to the code or manufacturer's instructions will not receive approval until a maintenance plan has been submitted to the Vacaville Fire Department. Maintenance must comply with all NFPA Standards, title 24 and manufacturer's instructions

m. Once an application is accepted for review, any updated submittals during the period of review, installation and final inspections must either be signed and sealed by the design professional of record, or a cover letter signed and sealed by the design professional of record shall accompany the submittal, attesting that the updated information conforms to the overall design and code requirements.

n. Applicant must provide funding to the air quality district with jurisdiction over the project site to establish 10 or more permanent air monitors, at distances and elevations determined by the air quality district with jurisdiction over the project site to detect harmful constituents, hazardous to human life or wildlife, emitted as a result of thermal runaway as determined by the air quality district with jurisdiction over the project site. The number of sensors deployed will be determined by the air quality district with jurisdiction over the project site. If a thermal runaway incident occurs or air monitors detect hazardous constituents, the monitoring system and BESS operators shall notify Vacaville Police and Fire Dispatch. After an incident, related to BESS thermal runaway or otherwise, City staff will have access to the raw, unfiltered data from the air monitors.

o. BESS operator will submit a comprehensive annual report to the City of Vacaville staff as designated by the City consisting of but not limited to: the number of threats made to the site, the number of trips of the site security system, the number of hazardous incidents at the site, the number of fire and law responses to the site, soil testing on-site and the surrounding properties for hazardous chemicals existing in the battery system, air monitor results. This list can be supplemented and modified by City staff at any time.

p. The Applicant shall prepare and submit a Phase II Environmental Analysis that includes soil testing to provide the baseline condition of the site, which shall provide a benchmark reading for future measurements of potential contamination resulting from a thermal runaway event.

6. Technical Studies.

a. All technical studies, Hazard Mitigation Analysis and planning documents required by SB 38, NFPA 855 and the City of Vacaville must include both a probable scenario of limited thermal runaway and possible scenarios of simultaneous thermal runaway in all site modules at once, and shall address hazards as outlined in the "Emergency Response Plan Guidance" to the site and mitigation measures deployed.

b. Applicants must submit technical studies prepared by a third-party fire protection engineer selected by the City detailing the proposed fire safety features of the design, operation, and use of the BESS. Changes in installation configuration from the initial UL 9540A cell, module, and unit level test and the separate large scale fire testing, including internal architecture of modules and units will not be accepted unless it is demonstrated that the configuration provides equivalent results, subject to review and approval by the Vacaville Fire Department and Building Division.

Fire safety features must include mechanisms for maintaining the temperature and humidity ratings of the listing.

c. Technical studies prepared by a third-party fire protection engineer, which the City has the discretion to select, must account for setback requirements and best practices from residential buildings and sensitive receptors. Technical study must include estimated impacts to property values and insurability of properties potentially impacted by a plume caused by thermal runaway.

d. Technical studies prepared by third party subject matter experts, which the City has the discretion to select, must include plume modeling and toxic gas dispersion analysis, specifically addressing impacts on missions and flight paths of Travis Air Force Base and Nut Tree Airport and freeways.

e. Technical studies prepared by third party subject matter experts selected by the City analyzing the chemical composition of BESS fire emissions and associated human, wildlife and environmental hazards, specifically at which distances emission impacts will be hazardous.

f. Technical studies prepared must analyze runoff of water and fire suppression liquid associated impacts to groundwater, wildlife, waterways, and the environment. If determined to be required by City staff, site plans must include a system for capturing runoff water, whose size requirements will be determined based on technical studies in consultation with the City of Vacaville, for water or fire suppressant liquid that may be used by first responders during thermal runaway incidents, and a geo-lined impermeable layer under all BESS modules. The retention basin must be emptied the same day if filled by rain or flood water, in accordance with applicable state laws. If thermal runaway occurs, five samples of fire suppressant liquid or water utilized must be taken by the third party subject matter expert selected by the City and mitigation measures will be taken to reduce the adverse impact by third party subject matter experts selected by the City, with the costs being paid for by the site owner. Applications shall include samples of the existing groundwater subbasin that would be affected by the BESS facilities to determine current levels of concentration.

g. BESS facilities must have active and passive fire and explosion detection systems in place, including gas detectors that meet UL 9540A, NFPA 72, and NFPA 69 standards. These systems must be able to detect explosive gases, trigger alarms, and initiate ventilation systems to mitigate risks from thermal runaway.

h. Battery Management System (BMS) must be approved and meet manufacturer's specifications. The BMS must transmit signals to an approved location, as reviewed and approved by the Vacaville Fire Department, if hazardous conditions are detected, and such signals must be monitored twenty-four hours a day seven days a week. BMS documentation must identify security risks and potential threats, along with the mitigation measures implemented to reduce each identified risk. A combustible gas concentration reduction system compliant with NFPA 855, NFPA 69, UL 9540, and CFC that has undergone UL 9540A testing will have the ability to be automatically activated.

Section 14.09.271.060 Required Findings of Economic Benefit; Public Benefit Agreement; Exempt Projects.

A. Consistent with Public Resources Code section 25545.9, and in addition to all other findings and determinations necessary for the grant of a conditional use permit, no conditional use permit for an Tier 2 or Tier 3 Battery Energy Storage System shall be granted unless the City finds that the construction and operation of the facility will have an overall net positive economic benefit to the City. For purposes of this sub-section, economic benefits may include, but are not limited to, any of the following:

1. Employment growth.

2. Housing development.

3. Infrastructure and environmental improvements.
4. Assistance to public schools and education.
5. Assistance to public safety agencies and departments.
6. Property taxes and sales and use tax revenues.
7. Contributions to City initiatives or projects that benefit the community.

B. Consistent with Public Resources Code Section 24454.10, no Conditional Use Permit for a Tier 2 or Tier 3 Battery Energy Storage System shall be granted unless the City has entered into a legally binding and enforceable agreement with, or that benefits, the City, where there is mutual benefit to the parties to the agreement. The topics and specific terms of the community benefits agreements may vary and may include funding for or providing specific community improvements or amenities such as public safety training facilities for emergency responders, park and playground equipment, urban greening, enhanced safety crossings, and paving roads and bike paths.

C. The City of Vacaville finds and declares that, where an Tier 2 or Tier 3 Battery Energy Storage System is issued a certificate pursuant to Chapter 6.2 (commencing with Section 25545) of Division 15 of the Public Resources Code, and where such certificate is in lieu of a conditional use permit or other permit, certificate, or document required by the City, a community benefit agreement in the form described in subdivision (2), above, shall satisfy the obligations on Public Resources Code section 24454.10.

D. Training, Emergency Response, and Monitoring Agreement shall be required for BESS facility operators of Tier 2 and Tier 3 facilities. Agreements shall outline the funding mechanism and procedure for obtaining equipment and providing training to emergency responders, which shall include the following:

1. Annual training with updates on BESS best practices paid for by the company and provided to the Vacaville Fire Department and cooperating agencies that are likely to provide mutual aid during the initial response, Vacaville Police Department, Utilities, and Public Works. If the best practice include new equipment or PPE this must be paid for by the company.
2. Initial training on all systems regarding their BESS for all County Haz Mat personnel throughout the county and other Fire Departments in neighboring agencies that collaborate through mutual aid agreements (e.g., Dixon Fire Department and Fairfield Fire Department).
3. Air Monitoring systems provided by and maintained by the owner of the company with remote monitoring systems accessible by the Vacaville Fire Department and Solano County Haz Mat team.
4. Gas monitors provided by and maintained by the owner of company including cost of training, maintenance and calibration.
5. Reimbursement agreements to ensure all costs associated with mitigation of events at their facility are paid by owners/operators of the BESS facility.

Section 14.09.271.070 Commissioning, Safety Standards and Certifications

A. Commissioning Plan. Prior to issuance of Building and Fire Permits for a BESS facility, Applicants shall submit a commissioning plan consistent with NFPA 855 that contains:

1. A electrical diagram detailing the Battery Energy Storage System layout, associated components, and electrical interconnection methods, with all NEC compliant disconnects and over current devices.
2. A preliminary equipment specification sheet that documents the proposed Battery Energy Storage System components (including all associated cutsheets), inverters and associated electrical equipment that are to be installed. A final equipment specification sheet shall be submitted prior to the issuance of the building permit.

3. Name, address, and contact information of proposed or potential system installer and the owner and/or operator of the battery energy storage system. Such information regarding the final system installer shall be submitted prior to the issuance of a Building Permit. The installer must have a business license with the City of Vacaville.

4. A commissioning plan, commissioning test and report meeting the requirements of NFPA 855 Sections 6.1.3, 6.1.4 6.1.5 shall be submitted prior to final inspection.

5. If plans include connection to the City of Vacaville wastewater collection system, an Industrial User Permit application must be submitted to the Utilities Department.

B. Safety Requirements. Battery Energy Storage Systems shall comply with the latest published version that is approved to be used by the CFC Chapter 80 and NFPA 855, Standard for Installation of Stationary Energy Storage Systems, at the date of the submission of the application. Prior to issuance of Building and Fire Permits, Applicants are required to:

1. Submit an emergency response plan as an appendix to the project application.

2. Submit a plan as an appendix to the project application for offering site-specific training to the Vacaville Fire Department and cooperating agencies that are likely to provide mutual aid during the initial response at the project site.

3. Conduct hazard mitigation analyses if specified by NFPA 855.

4. Equipment Certification. All batteries integrated within the battery energy storage system shall be listed under UL 1973. The battery energy storage system shall be listed in accordance with UL 9540, either from the manufacturer or by field evaluation.

5. Submit an ongoing weed abatement plan for review and approval by the Vacaville Fire Department.

C. Decommissioning

1. Decommissioning Plan. Prior to issuance of any permits related to decommissioning activities, the Applicant shall submit a Decommissioning Plan that complies with the following requirements, and is consistent with NFPA 855 and agreements reached between the Applicant and other landowners of participating properties, and that ensures the return of all participating properties to a useful condition, including removal of above-surface facilities and infrastructure that have no ongoing purpose. The decommissioning plan shall include, but is not limited to:

a. An overview of the decommissioning process developed specifically for the BESS that is to be decommissioned.

b. Roles and responsibilities for all those involved in the decommissioning of the BESS.

c. A detailed description of each activity to be conducted during the decommissioning process and who will perform that activity and at what point in time.

d. Procedures to be used in documenting the BESS and all associated operational controls and safety systems that have been decommissioned.

e. Guidelines and format for a decommissioning checklist and relevant operational testing forms and necessary decommissioning logs and progress reports.

f. A description of how any changes to the surrounding areas and other systems adjacent to the ESS facility, including, but not limited to, structural elements, building openings, means of egress, and required fire detection and suppression systems, will be protected during decommissioning and confirmed as being acceptable after the system is removed.

g. Estimated costs associated with decommissioning.

h. Evidence of insurance for bankruptcy in the form of a bridge policy. This includes financial assurance in the form of a bond, a parent company guarantee, or an irrevocable letter of credit, but excluding cash, to be determined by applicant. The amount of the financial assurance shall not be less than the estimated cost of decommissioning the energy facility, after deducting salvage or recycling value, as calculated by a third party with expertise in decommissioning, hired by the applicant. The entire financial assurance must be posted by the start of full commercial operation of the BESS facility.

i. Battery disposal plan and acknowledgment of the facility owner's responsibility to recover and recycle battery cells at an authorized recycling facility upon decommissioning.

E. Ownership Changes. If the owner of the Battery Energy Storage Systems facility changes or the owner of the property changes, the project approvals shall remain in effect, provided that the successor owner or operator assumes in writing all the obligations of the project, site plan approval, and Decommissioning Plan. A new owner or operator of the facility shall notify the Community Development Department of such change in ownership or operator within 30 days of the ownership change. A new owner or operator must provide such notification to the Community Development Department in writing. The project and all approvals for the facilities would be void if a new owner or operator fails to provide written notification to the Community Development Department in the required timeframe. Reinstatement of a voided project or approvals will be subject to the same review and approval processes for new applications under this chapter.

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