August 2024

KNEEHILL SOLAR

EMERGENCY RESPONSE PLAN

ADDENDUM 1 (BESS)

Last Updated:
August 14, 2024

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KNEEHILL SOLAR - ADDENDUM 1

BESS EQUIPMENT UPDATE

1. PURPOSE

This BESS Emergency Response Plan Addendum (the ERP Addendum) has been developed by Kneehill Solar LP, a subsidiary of Capstone Infrastructure Corporation (Capstone), to provide a formal emergency preparedness program that protects human health and property in the event of an emergency pertaining to the Battery Energy Storage System (BESS) (such as medical, fall and confined space rescue, fire, explosion, etc.). This addendum is an integral part of the existing Emergency Response Plan (ERP) for the Kneehill Solar Facility (Kneehill Solar) and cannot be used or reviewed in isolation without the rest of the ERP. The full ERP, along with the ERP Addendum, formalizes the arrangements with local police, fire departments, hospitals, and emergency response providers, in case of an emergency pertaining to Kneehill Solar or the BESS additional equipment. A copy of this plan should be reviewed with each employee during orientation and annually thereafter and be posted on the Site Health & Safety Bulletin Board.

2. FACILITY & BESS INFORMATION

The Kneehill Solar project is described in more detail in Section 2 of the main ERP. The Kneehill Solar site will be updated with new BESS equipment to host a 10 MW /20 MWh battery energy storage system to be located directly adjacent to the existing Kneehill Solar switching station. The planned BESS equipment will contain eight (8) total containerized Lithium-Ion (Lithium-Iron-Phosphate) battery cells connected to eight electrical inverters that are able to charge and discharge at a power rate of 2.5 MW for each inverter (10 MW in total) and for up to 2 hours at a time, until the battery cells are depleted and need charging again. The location of the BESS facility is noted in Figure 1 below.

GENERAL INFORMATION ABOUT THE BESS EQUIPMENT:

- As noted above, the BESS equipment is comprised of 8 energy storage enclosures (see typical image in Figure 2 below). These enclosures are secure containers, enterable only be authorized staff, with the only access to the system being through exterior doors which open directly to battery modules and other internal components.

Figure 1. Location of new BESS equipment at the Kneehill Solar Project. (The blue dashed line represents the total maximum construction area, the orange areas represent new roads for emergency vehicles to go around the batteries, the yellow rectangles show the battery container locations, and the black rectangles represent the inverters and electrical equipment.)

Figure 2. Dimensions of the Solbank Container: 2.9m x 2.4m x 6m

- The system comprises all necessary power electronics including inverters, transformers, and switchgear to sustain power operations and will be connected to the local switching station. Each container is comprised of 2.75 Megawatt-hours (MWh) of capacity, based on the lithium-iron-phosphate (LFP) battery design manufactured by Canadian Solar Inc.
- The only personnel on-site will be for maintenance purposes of both the Kneehill Solar facility and the BESS equipment. Staff may be on site multiple days a week. A Health, Safety, and Environment Notice Board will be maintained in the operations building, which will also function as the first responder station on-site.
- On-site disconnections will be done automatically by maintenance personnel, directly on site with the BESS equipment, or off-site remotely.
- The site will have its own lockbox at the main gate for emergency entry. Maintenance personnel on-site or in the area will NOT be needed to grant Fire Department access, if required.

BESS CONTAINER COMPONENTS

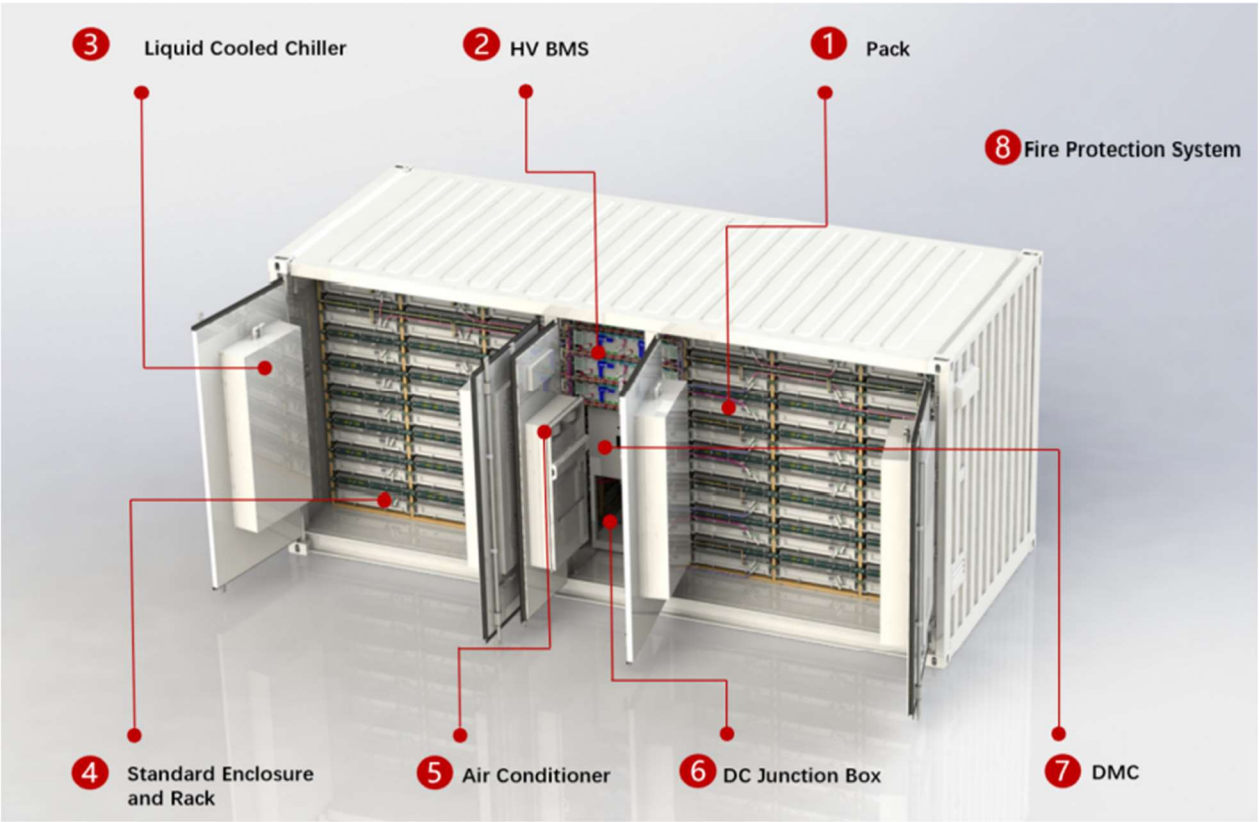


Figure 3. Components of the Solbank Container

1) **Pack**: The SolBank Container contains 48 Lithium Iron Phosphate (LFP) battery packs, each consisting of 69 series wired battery cells.

2) **HV BMS**: The SolBank contains 8 HV BMS (High Voltage Battery Management System). These are easily accessed for installation and maintenance within the central bay of the container. The BMS ensure optimal battery functionality and safety.

3) **Liquid Cooled Chiller**: The SolBank's liquid cooling/heating system facilitates improved battery temperature management efficiency relative to traditional forced air systems. Each battery pack is liquid cooled, allowing for greater heat dissipation and uniform cell temperature management. During charge and discharge, cell temperature is maintained between 20°C - 35°C.

4) **Standard Enclosure and Rack:** All models of the SolBank utilize a standard IP-55 rated 20' ft HC container and battery rack design allowing for enhanced system modularity without increased production and equipment costs.

5) **Air Conditioner:** The SolBank's Air HVAC is used to control the temperature of the DMC and Junction Box within the 25℃ (±3) range, as well as the temperature and humidity in the SolBank chamber.

6) **DC Junction Box:** The SolBank's DC (Direct Current) Junction box contains all primary DC buswork, fusing, Surge Protection Devices (SPD), disconnects, and power monitoring required to safely exchanged power between the SolBank and PCS (Power Conversion System).

7) **DMC:** The Distribution Management Cabinet (DMC) and Control Cabinet houses all aux power distribution equipment including 2-hour backup uninterruptible power supply; system communication, control, and monitoring hardware including network switch, and Local emergency management system, and all required communication, signal, and aux power interfaces.

8) **Fire Protection System:** The SolBank combines heat and smoke detection with an explosion-proof ventilation system.

CONDITION MONITORING AND ALARMING

The System is set up to measure temperature, current, and voltage of the battery which provides real-time indication of the conditions inside the containers. In addition, the system is equipped with smoke detectors, heat detectors, and gas detectors to monitor atmospheric conditions. The conditions and data may be reported in real-time to the site management team who may be able to interpret and relay the conditions inside the cabinets to the fire department, in case of emergency.

FIRE SAFETY SYSTEM ALARM ACTIVIATION

The system is set up for a single stage alarm notification based on detection from one of the smoke or gas detectors. A thermal alarm based on battery temperatures may also be utilized as an additional safety feature, however, set points and alarm conditions for this detection have not yet been finalized.

Upon the trigger of the alarm, an alarm signal is sent to the operator of the system who will then assess the situation and notify emergency response and fire service personnel. The system contains both an audible fire alarm bell and visual fire strobe located at the end of each container. If the smoke or heat sensors are triggered, the fire alarm will activate, and corresponding alarms will be sent to the BESS Energy Management System (EMS).

EMERGENCY RESPONSE COMPONENTS

Site Alarm Panel: A first responder station, which will house a HMI (Human Machine Interface) control panel will be on site near the BESS equipment. This panel will allow first responders to access information about the entire site, including alarm conditions and the status of every individual container.

Audible and Visual Alarms: The system contains both an audible fire alarm bell and visual fire strobe located at the end of each container. If the smoke or heat sensors are triggered, both fire alarms will activate, and corresponding alarms will be sent to the BESS Energy Management System (EMS).

Interior Sensors: Heat, smoke, and gas detectors are provided within the enclosure.

Emergency Stop (E-Stop): Not readily available to first responders except at the first responder station. This should not be actively sought by the Fire Department. Only use at the direction of the SME and if the buttons may be pressed easily and safely by personnel outside the blast radius of an enclosure.

Exhaust Ventilation System: Two exhaust fans are installed in each cabinet to keep gas concentrations from reaching flammable levels in the case of cell off-gassing. The exhaust system is triggered by any of the following conditions:

- Flammable gas detector detects concentration of flammable gas within enclosure
- Second-level fire alarm (ambient temperature and smoke)

3. KEY CONTACTS AND RESPONSIBILITIES

The key contact people and their responsibilities for the Kneehill Solar facility will remain the same once the BESS equipment is installed.

4. EMERGENCY CONTACTS

The emergency contacts for the BESS equipment remain the same as in the ERP section 4 for the Kneehill Solar facility.

5. INCIDENT NOTIFICATION & INVESTIGATION

The process for incident notification and investigation for the BESS equipment will remain the same as in the ERP section 5 for the Kneehill Solar facility.

6. EMERGENCY DRILLS

The scheduling and process for emergency drills for the BESS equipment will be incorporated into the emergency drills planned and developed under section 6 in the ERP for the rest of the Kneehill Solar facility.

7. PROVINCIAL OCCUPATIONAL HEALTH AND SAFETY AUTHORITIES & REPORTING

The scheduling and process for emergency drills for the BESS equipment will be incorporated into the emergency drills planned and developed under section 7 in the ERP for the rest of the Kneehill Solar facility.

8. TRAINING

The training protocol outlined in section 8 of the ERP for the Kneehill Solar facility will remain the same, however, some specific BESS drills and training may be required for the specific battery technology type planned for installation. It is important that local first responders and emergency response authorities have input and can review the development of the site-specific ERP plan for the BESS project. Appropriate training for the BESS facility may also be specifically needed, so that responders can react accordingly and be knowledgeable of the procedures.

For example, the current plan is to use a Lithium-Iron-Phosphate (LFP) chemistry battery, and some specific training will be required for this type of BESS system. A tailored ERP plan for installation will be presented prior to construction of the BESS equipment on site. As well, Capstone commits to ongoing updates to this ERP for the specific type of technology and information available for the BESS project once it is installed.

9. EVACUATION (GENERAL)

The evacuation protocol and planning for the Kneehill Solar facility will remain the same as outlined in section 9 of the ERP, after the installation of the BESS equipment.

10. FIRST AID & MEDICAL EMERGENCIES

The first aid and medical emergency protocol and planning for the Kneehill Solar facility will remain the same as outlined in section 10 of the ERP, after the installation of the BESS equipment (please see Appendix A – Site Emergency Map). Other types of First Aid Emergencies related to the BESS include:

First aid measures:

Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin Contact: Remove contaminated clothing and shoes. Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

Inhalation: Move to fresh air. If symptoms persist, call a physician.

Ingestion: Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Swallowing: Do not induce vomiting. Get medical attention.

Indication of any immediate medical attention and special treatment needed:

Inform physician. Treat symptomatically

Respiratory Protection:

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use.

Basic PPE items to be used when working on BESS as mentioned in the SolBank Installation Manual.

11. FIRE EMERGENCIES – GENERAL

In addition to the steps and protocols outlined in the main solar ERP in section 11, specific fire protocols needed in the case of a fire emergency associated with the BESS equipment are detailed below:

11.1 Geneal Guidelines (additions for BESS)

- BESS equipment is designed to withstand operating ambient temperatures up to about 50°C, with up to 100% humidity and storage temperatures of up to 60°C, for up to 24 hours without affecting the health of the unit.
- Prolonged exposure of BESS equipment to temperatures beyond that can drive battery cells into

thermal runaway and result in a fire.

- Exposure of battery packs to localized heat sources such as flames could result in cell thermal runaway reactions and should be avoided in all circumstances.
- Always treat a BESS battery fire **as a large uncontrollable fire and follow the procedures detailed in section 11.5 in the main ERP in addition to the guidelines outlined in section 11.6 below.**

11.2 Assessing Severity (additions for BESS)

- For any BESS equipment on fire, **treat such events as a sever fire and follow the procedures detailed in section 11.5 in the main ERP in addition to section 11.6 below.**
- In no event shall personnel try to extinguish a BESS fire.

11.3 Fire (Basic Procedure)

This section pertains to solar facility and does not pertain to the new BESS equipment. Please refer to section 11.3 of the main solar ERP.

11.4. Small Controllable Fire

This section pertains to solar facility and does not pertain to the new BESS equipment. Please refer to section 11.4 of the main solar ERP.

11.5. Large Uncontrollable Fire

This section pertains to solar facility. Please refer to section 11.5 of the main solar ERP.

- For any BESS equipment on fire, **treat such events as a sever fire and follow the procedures detailed in section 11.5 in the main ERP in addition to section 11.6 below.**

11.6 Specific BESS Fire Response

In the event of a battery fire with the BESS containers, the following are key firefighting instructions:

- The site technicians should electrically isolate the BESS from the rest of the solar facility, if at all possible.
- Contact should be made immediately with local fire departments, and clear directions should be provided on the BESS fire situation as they arrive.
- A minimum distance should be maintained and communicated of at least 25 m (80 feet) from the affected battery system.

- Based on the battery chemistry, the chemical fire may not be one you should extinguish.
- Apply water to the surrounding areas to reduce the spread of fire to other parts of the BESS facility.
- Notify nearby residences and landowners, if there is reasonable cause to do so.

It is noted that there may also be a more detailed corporate ERP developed that will supplement this general ERP guide in the future. This ERP Addendum may be updated from time to time with new information from the manufacturer.

12. SOLAR PLANT SPECIFIC EMERGENCIES

This section pertains to solar facility emergencies and has not been updated for the new BESS equipment. Please refer to section 12 of the main solar ERP.

12.1 Trespassers in Switching Station

This section pertains to solar facility switching station and remains the same the new BESS equipment. Please refer to section 12.1 of the main solar ERP.

12.2 Switching Station Fires

This section pertains to solar facility switching station and remains the same for the new BESS equipment. Please refer to section 12.2 of the main solar ERP.

12.3 Fire at Solar Arrays or Invertor Pads

This section pertains to solar facility and does not pertain to the new BESS equipment. Please refer to section 12.3 of the main solar ERP.

12.4 Grassfires / Wildfires

This section pertains to the solar facility and remains the same for the new BESS equipment. Please refer to section 12.4 of the main solar ERP.

12.5 BESS Specific Emergencies

There are five main potential emergencies posed by lithium-ion (LFP) battery failures: fire, explosion, electric shock, arc flash, and toxicity of by-products from off-gassing. Off-gassing of flammable gas from damaged cells is also a unique characteristic of lithium-ion battery failures and should be looked for when arriving at the scene of a battery incident.

Battery Fire: Battery fires present unique hazards, including stranded energy and re-ignition risk. Fire growth can be slow, fast, or explosive in nature. Flames may sometimes arise violently and resemble jet flames.

BESS Off-Gassing: Lithium-ion batteries release flammable and toxic chemicals when subjected to electrical or physical damage, including fire. Chemicals released can also pose an inhalation hazard.

BESS Explosion: Accumulated flammable gasses inside a BESS enclosure may result in an explosion, if ignited. Given the size of the batteries in this system versus the volume of the container, even a single cell may create a flammability or explosion hazard inside the battery container. Therefore, responders should assume that any failure in the battery may create an explosive situation.

Electric Shock: Even though a battery may look to be destroyed by fire and/or other means, there is great potential that the battery still has stranded energy and remains energized.

Arc Flash: An electrical explosion due to a fault condition or short circuit when either a phase-to-ground or phase-to-phase conductor is connected and current frows through the air.

By-Products of Off-Gassing: During a failure event, a lithium-ion battery may emit tens to hundreds of liters of off-gas, and larger failures may emit thousands of liters of gas. Typical composition of a lithium-ion off-gassing event may include:

- Higher concentrations: carbon monoxide, carbon dioxide, hydrogen
- Medium concentrations: Methane, ethane/ethanol/ethylene, other hydrocarbons,
- Low concentrations: hydrogen fluoride, hydrogen chloride, hydrogen cyanide, benzene, toluene

Indicators which may provide insight into what is happening or about to happen during an event may include:

- Smoke or flaming coming from the battery enclosure or related equipment
- Change in smoke color
- Change in velocity or volume of smoke production
- Sounds – popping (many times caused by venting cells) and / or hissing sounds
- Smell – sweet smell

Cells or batteries may flame or leak potentially hazardous organic vapors if exposed to excessive heat, fire, or overvoltage conditions. Some vapors may include volatile organic compounds (VOCs), hydrogen gas, carbon dioxide, carbon monoxide, soot, and particulates containing oxides of nickel, aluminum, lithium, copper, and

cobalt. Additionally, phosphorus pentafluoride, POF3, and HF vapors may form. Therefore, local firefighters should be notified of BESS specific components and risks and trained accordingly. They should also be equipped with self-contained breathing apparatus (SCBA) and fire-protective turnout gear.

Always treat all BESS systems and related electrical equipment as energized (Energetic Hazardous Material). A BESS does not have a single point of disconnect to electrically isolate all components from each other. There are disconnects that will de-energize select parts of the system, **but the batteries themselves will remain energized**.

The BESS system will be remotely monitored at all times with emergency response monitoring and signaling. The emergency monitoring and alarm systems are discussed in more detail in section 2.

In the event of any emergency associated with the BESS system, the evacuation plan and muster point shall be Gate B4 outlined in Appendix A of the main ERP.

Shutting Down in an Emergency

1. Engage the external E-Stop button or remote shutdown contact to the BESS system.
2. If the BESS is connected upstream by an external AC breaker or disconnect to the main solar facility switching station, open the breaker or disconnect.
3. If necessary, turn off the AC breaker of each inverter for the solar facility.
4. Only if safe to do so, turn off each container using the on/off switch.

12.5.1 BESS Fire

When sensors within the BESS enclosures detect conditions that indicate a fire, an audible alarm will sound, and a visual strobe will flash on the enclosure exterior. Smoke and flame may be visible from the outside of the BESS enclosure. A minimum of seventy-five feet (75') shall be maintained between individuals and the BESS enclosure exhibiting fire conditions. Personnel and resources should not be positioned parallel to the sides of the BESS enclosure. In order to minimize exposure to the potential blast radius, these resources should be positioned on the corners of the BESS enclosure. Any attempts to approach the BESS enclosure should adhere to the same recommendations. Attempt to extinguish the fire only if imminent threat to life safety exists.

The risk of battery re-ignition remains present for hours or even days after the smoke/flame was initially detected. Even if a lithium-ion battery fire has been extinguished there is still a risk of re-ignition.

Chemicals released during a fire or explosion will be in a gaseous form and primarily pose an inhalation hazard. A fog pattern from a handline or monitor nozzle may be an effective way to control the off-gassing event on the exterior of the battery container from migrating to unwanted areas. However, if water is used in extinguishing flames, these gasses can become acids which may cause skin irritation.

Water curtains or hose streams may be applied to adjacent exposures for cooling purposes. If any indicators are present of damage or heat to an adjacent system, the BMS data shall be closely monitored for the adjacent system and relayed to the appropriate individual within the Incident Command System.

Following partial or complete consumption of the system by fire, batteries may continue to emit low levels of flammable gases and dangerous levels of toxic gases for an extended period of time. Continuous monitoring of gas levels in and around the incident location shall be conducted and use of mechanical ventilation may be utilized to manage gas levels. Full firefighter PPE and SCBA shall be utilized until gas levels are confirmed to be at a safe level. A fire watch shall be performed for a minimum of 24 hours after any fire incident.

12.5.2 BESS Explosion

A minimum of twenty-five (25) meters (or 75 feet) should be maintained between individuals and the incident battery container. Personnel and resources should not be positioned parallel to the sides of the BESS enclosure. In order to minimize exposure to the potential blast radius, these resources should be positioned on the corners of the BESS enclosure. Any attempts to approach the BESS enclosure should adhere to the same recommendations. Only attempt to extinguish fire if eminent threat to life safety exists.

Given the size of the individual battery cells and the volume of the enclosure, it should be assumed that a single cell can produce an explosive atmosphere inside the enclosure. Therefore, any failure or alarm condition should result in the assumption of an explosive risk.

Lithium batteries off-gas when heated or when subjected to electrical or physical damage. These gasses can accumulate inside the battery container at levels above the Lower Explosive Limit (LFL), especially if the fire suppression system has been discharged.

- Extreme caution shall be taken prior to any ventilation or attempts to open any compartments or doors on the system as the introduction of fresh air may bring atmospheric condition back into the explosion range and result in an explosion if fire or other ignition source is or becomes present.
- The responder preparing to open any door or compartment shall stand to the side to eliminate the risk of being directly in the path of the blast pressure if an explosion were to occur.

- Gas monitoring shall be continuously conducted at all times and gas meters shall be affixed to all responders to warn of potential atmospheric risks. If possible, gas readings from inside the battery container shall be attempted to be gathered from an exterior point prior to any entry.
- Gas readings outside the battery container, if the doors remain closed, should not be considered indicative of conditions inside the enclosure.
- Any ignition source inside or near the BESS enclosure can cause the flammable gasses to ignite and/or explode.
- The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

12.5.3 Electric Shock

All BESS systems and related electrical equipment shall always be treated as energized (Energetic Hazardous Material).

Even though a battery may look to be destroyed by fire and/or other means, there is great potential that the battery still has stranded energy and remains energized. De-energization of the system or any removal of the battery or battery component shall only be performed by a trained and competent individual with appropriate PPE.

12.5.4 Arc Flash

All BESS systems and related electrical equipment shall always be treated as energized (Energetic Hazardous Material).

Although not designed for entry, if work is being performed in the battery container, wear non-melting or untreated natural fiber long-sleeve shirt, long pants, safety glasses, hearing protection, and leather gloves. AR plant clothing is also acceptable. Maintain arc flash boundary until completion of task.

*****Arc Flash Boundary: At least 2 meters (6 ft) *****

Note: The Arc Flash Boundary may be increased based on site specific conditions, which will be assessed after construction is complete and the site is commissioned (e.g. based on the Arc Flash study during commissioning of project).

12.5.5 BESS Chemical Release

The off gas can contain detectable levels of carbon monoxide (CO), hydrogen chloride (HCl), hydrogen fluoride

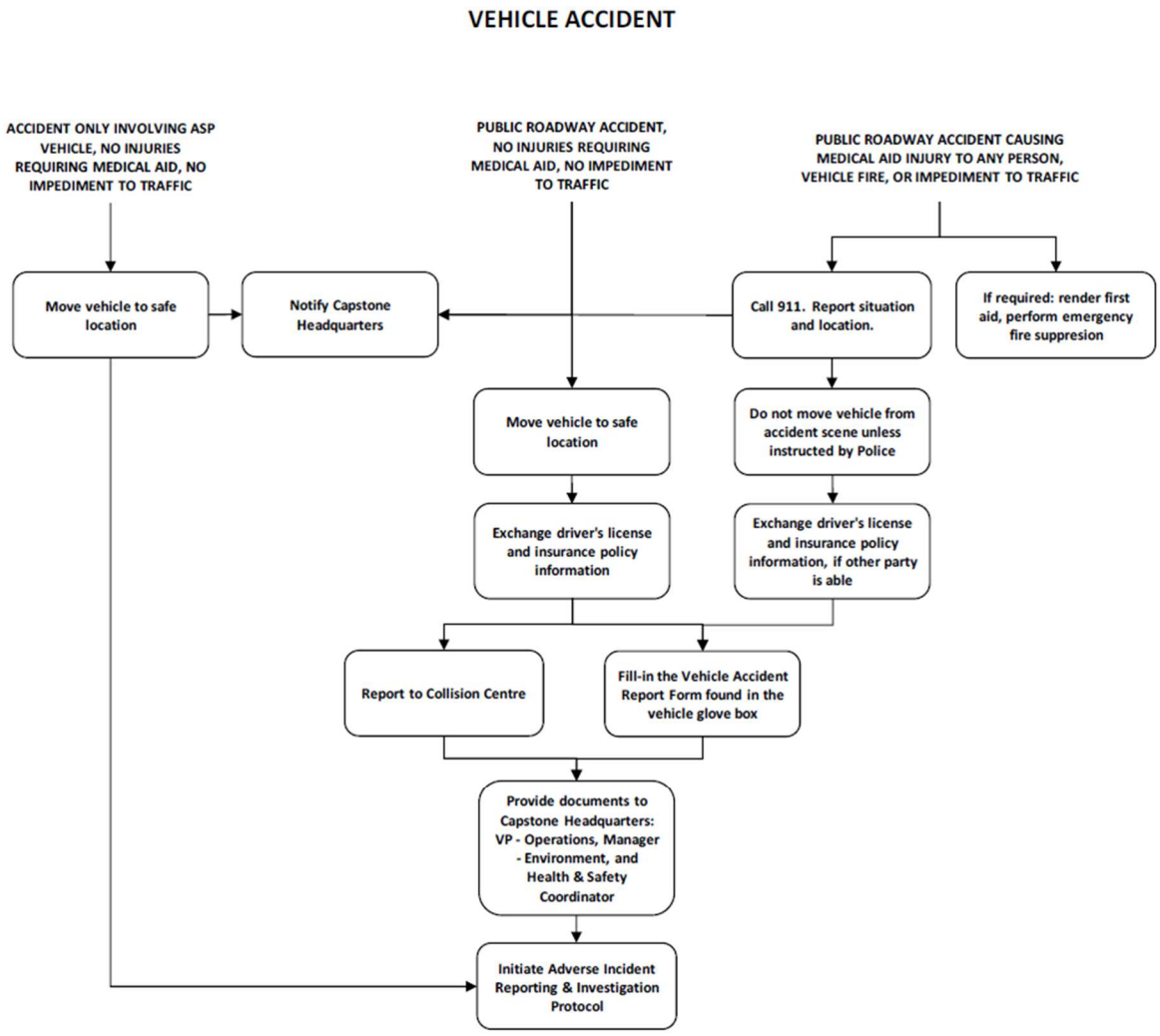
(HF), and hydrogen cyanide (HCN) and other hydrocarbons and VOCS.

No approach shall be permitted during an off-gassing event unless there is eminent threat to life safety at which time only properly trained and equipped public safety may enter. This approach shall be with full firefighter protective gear to include self-contained breathing apparatus (SCBA). The approach in this situation shall be at the sole discretion of the officer in charge (OIC).

Chemicals released during a fire or explosion will be in a gaseous form and primarily pose an explosion hazard if gas levels accumulate inside a BESS enclosure. However, if water is used in extinguishing flames, these gasses can become acids which may cause skin irritation.

13. MOTOR VEHICLE ACCIDENTS

In the event a Capstone owned/operated vehicle is involved in a collision, the following flowchart outlines the process that shall be followed. This is the same process as section 13 in the main solar ERP.



14. ENVIRONMENTAL RELEASES

This section of the ERP remains unchanged with the addition of the BESS equipment. Please refer to section 14 of the main solar ERP.

15. WEATHER / NATURAL PHENOMENA

This section of the ERP remains unchanged with the addition of the BESS equipment. Please refer to section 15 of the main solar ERP.

16. SECURITY THREATS

This section of the ERP remains unchanged with the addition of the BESS equipment. Please refer to section 16 of the main solar ERP.

17. CONFINED SPACE RESCUE PLAN

This section of the ERP remains unchanged with the addition of the BESS equipment. Please refer to section 17 of the main solar ERP.

18. FALL RESCUE PLAN

This section of the ERP remains unchanged with the addition of the BESS equipment. Please refer to section 18 of the main solar ERP.