Gmail John Hailperin <johnhailperin@gmail.com>

BESS Risk Analysis

robert jacobson <jakepsa02@gmail.com> Fri, Aug 28, 2026 at 11:54 AM
To: John Halprin <Johnhailperin@gmail.com>

---------- Forwarded message ---------
From: **robert jacobson** <jakepsa02@gmail.com>
Date: Fri, Aug 28, 2026 at 11:46 AM
Subject: Re: BESS Risk Analysis
To: Sherry Mason <smason@beachhaven-nj.gov>, John Hailperin <JHailperin@rbmc.org>, <cwymbs1@comcast.net>
Cc: Colleen Lambert <clambert@beachhaven-nj.gov>

Thank you, Sherry. I will go through the materials. However, even if the Beach Haven BESS technically meets all applicable regulations and requirements, I remain deeply concerned that regulatory compliance alone does not address the fundamental issue: whether this particular BESS is responsibly sited and whether the public can actually be protected in the event of a thermal runaway incident.

In my opinion, placing a BESS of this size and energy capacity in the middle of a densely developed, crowded seasonal community presents an unacceptable public-safety risk unless there is clear, independent, site-specific evidence demonstrating that the emergency response plan and protective-action distances are adequate.

Recent events have only reinforced those concerns. The Suffolk County Water Authority well closures and the findings involving the Moss Landing Marine Laboratories demonstrate why the potential environmental consequences of battery fires and releases cannot simply be dismissed. In Beach Haven, the potential risks extend not only to residents, visitors, and first responders, but also to our drinking-water supply and the environmentally sensitive Barnegat Bay.

Yesterday, I listened to a live BESS Zoom presentation conducted by proponents of the energy-storage industry titled “Demystifying Battery Storage Systems and the Fire Service.” The stated purpose of the presentation was to address and reduce concerns regarding BESS safety.

During the discussion, the Hauppauge Fire Department posted the following:

“For those interested in seeing why the Hauppauge Fire District is adamantly opposed to BESS please visit our website www.hauppaugefiredepartment.org. Read the reports prepared for us by Mr. Richard Ellenbogen, MEE. We also post updates on our social media (Facebook and Instagram). You might also want to look up details of the May 2023 BESS fire in East Hampton, NY. Over 2 million gallons of water were used at that fire and now the Suffolk County Water Authority is suing the BESS operator over allegations of pollution of the groundwater with forever chemicals.”

The Zoom presenters also referenced a report, *Assessment of Potential Impacts of Fires at BESS Facilities*, prepared by Fire & Risk Alliance for the American Clean Power Association. That report concluded that historical BESS fires have not caused widespread environmental contamination or long-term public-health hazards.

This conclusion, however, raises important questions that deserve independent examination.

The industry position appears to be that significant contamination is unlikely where water is not applied directly to the battery fire. Yet lithium-ion battery fires and thermal runaway events can generate hazardous substances that may be transported in smoke, gases, particulates, and fire residues. Those substances do not

necessarily remain at the source simply because rain is absent or because water is not applied directly to the batteries.

For example, Texas A&M Engineering Extension Service (TEEX), together with research partners, reported in May 2024 that testing of lithium-ion battery fires measured 24 heavy metals and 75 semi-volatile organic compounds.

The question that has still not been reconciled for Beach Haven is straightforward:

What is the appropriate isolation and evacuation zone for a thermal runaway event at this specific facility, and is there any scientific basis for believing that the current 150-to-300-foot Emergency Response Plan perimeter is sufficient to protect the public?

The current 150/300-foot plan appears extraordinarily small when compared with the approximately one-third-mile protective distance identified in ERG Guide 147 for certain large lithium-ion battery fire scenarios. Without an independent, site-specific, worst-case plume-dispersion analysis, any conclusion that 150 or 300 feet is adequate remains, in my opinion, unsupported by the analysis that such a conclusion requires.

Subject: Request for Immediate Independent Site-Specific Worst-Case Plume Dispersion Analysis and Review of Emergency Isolation Zones for the Beach Haven BESS

Now that the BESS is operating in a densely populated seasonal community, despite the Mayor's previous request to delay its operation, it is essential that the Borough immediately determine whether the current 150-to-300-foot protective zones contained in the Emergency Operations Plan are actually adequate.

This should not be answered by assumption, regulatory certification, or a predetermined radius.

A generic isolation distance cannot substitute for a scientific analysis of how hazardous gases and airborne contaminants could actually disperse from this particular facility under realistic and worst-case conditions.

Why a Site-Specific Worst-Case Plume Analysis Is Necessary

1. The Actual Behavior of a Plume Has Not Been Demonstrated for This Site

Generic safety certifications and predetermined buffer zones do not account for Beach Haven's unique coastal environment.

Wind direction and speed, sea-breeze effects, atmospheric stability, nighttime inversions, temperature, humidity, and changing weather conditions can significantly affect the direction, concentration, travel distance, and duration of an airborne release.

A thermal runaway event should therefore be evaluated using the actual characteristics of the Second Street BESS, including its:

- Location;
- Battery chemistry;
- State of charge;
- Total energy capacity;
- Battery quantity;
- Enclosure configuration;
- Ventilation characteristics;
- Spacing between units; and
- Surrounding development.

The relevant question is not simply whether hazardous substances can be produced during thermal runaway.

The critical question is:

How far, how quickly, and at what concentrations could those substances travel from this specific BESS under the meteorological and site conditions most likely to create the greatest public exposure?

That question cannot be answered by simply selecting a 150- or 300-foot radius.

2. Beach Haven Has Virtually No Meaningful Margin for Error

The Second Street BESS is located in an established, densely developed barrier-island community surrounded by residences, restaurants, retail businesses, pedestrians, visitors, and other occupied properties.

There is little undeveloped land providing a meaningful physical buffer between the BESS and the public.

If an airborne release travels beyond the facility boundaries, the surrounding development means that people could quickly be exposed.

3. Emergency Planning Must Consider the Chemicals Actually Produced

Depending upon the battery chemistry and fire conditions, lithium-ion battery thermal runaway and fire can produce hazardous gases and other combustion products, including hydrogen fluoride, hydrogen cyanide, carbon monoxide, volatile organic compounds, particulate matter, and potentially toxic metals.

The Borough should know, based upon the actual batteries installed at the Second Street facility:

- Which hazardous substances are credible products of a thermal runaway event;
- What source terms should be assumed;
- How those substances behave after release;
- How far hazardous concentrations could travel;
- How quickly they could reach occupied areas; and
- How long hazardous concentrations could persist.

Without that information, emergency officials may not have a scientifically defensible basis for establishing:

- Evacuation triggers;
- Shelter-in-place boundaries;
- Downwind protective-action zones;
- Responder exclusion zones;
- Safe approach distances;
- Public notification areas; or
- Expected plume-arrival and dissipation times.

Geographic and Demographic Vulnerabilities

Barrier-Island Constraints

Beach Haven's barrier-island geography creates unique challenges for emergency response and evacuation.

A major incident requiring the rapid movement of residents and visitors could place substantial pressure on the limited transportation routes serving the community, particularly during periods of heavy summer traffic.

Extreme Seasonal Population

Beach Haven's year-round population is not an adequate measure of the number of people who could be exposed during a BESS emergency.

During the summer, the population increases dramatically.

Emergency planning should therefore consider peak seasonal occupancy, including major holiday weekends and events when large numbers of residents and visitors may be located within a potential downwind impact area.

Congestion Can Change the Protective Strategy

A protective-action zone that might appear manageable during the off-season could be entirely different during peak summer conditions.

If roads are gridlocked, evacuation may be difficult or impossible within the available time. We had that a situation this year when a vehicle accident caused an extended closure of the boulevard.

The Borough must know in advance whether evacuation, shelter-in-place, or another protective action is appropriate for specific incident scenarios.

The Current 150/300-Foot EOP Isolation Zone Requires Immediate Independent Review

The existing 150-to-300-foot isolation distances contained in the Emergency Operations Plan warrant immediate independent review.

Guide 147 of the 2024 Emergency Response Guidebook provides a significantly larger protective distance for certain lithium-ion battery fire scenarios. For a railcar or trailer involved in fire, the Guide identifies a one-third-mile, isolation and evacuation distance.

The current 300-foot maximum distance in the Beach Haven EOP is dramatically smaller.

A 300-foot boundary represents only approximately 17 percent of 1,760 feet.

This does not necessarily mean that ERG Guide 147 automatically applies to the Beach Haven BESS or that 1,760 feet is necessarily the correct protective distance for this facility.

However, it does demonstrate why the current 150/300-foot distance cannot simply be assumed to be adequate without a site-specific technical analysis.

The same concern arises from the EPA's August 21, 2025 fact sheet, *Battery Energy Storage Systems: Main Considerations for Safe Installation and Incident Response*, which recommends an isolation distance of at least 330 feet for a large commercial BESS, depending upon the site, and emphasizes that protective distances must account for site-specific conditions.

The critical issue is therefore not whether Beach Haven should automatically adopt 150 feet, 300 feet, 330 feet, or 1,760 feet.

The issue is that the appropriate distance must be determined scientifically for this specific facility.

At a minimum, the Borough should publicly explain:

1. Why the current 150-to-300-foot isolation distances were selected;
2. What federal guidance, technical studies, and engineering analyses were relied upon;
3. Whether ERG Guide 147 was considered;
4. Whether the EPA's August 21, 2025 BESS fact sheet was considered;

5. Which specific thermal runaway and fire scenarios were used to establish the current distances;
6. What battery characteristics and source terms were assumed;
7. What meteorological conditions were considered;
8. Whether site-specific plume modeling was performed;
9. Why, according to the February 6, 2026 response from Mr. Vosvick, Vice President for Customer Operations of Pepco Holdings, it was concluded that "no plume modeling specific to local meteorological conditions was required"; and
10. Whether the Emergency Operations Plan has been independently reviewed since the BESS became operational.

The Importance of Real-World First-Responder Experience

Emergency planning must also account for the possibility that hazardous battery off-gassing can occur unexpectedly and after visible flames have been extinguished.

On April 11, 2025, Sacramento firefighters responded to a high-speed Tesla crash. After the driver was extricated and the visible fire had been extinguished, firefighters believed the immediate hazard had passed and removed their SCBA.

An unexpected off-gassing event then produced a rapidly moving, low-lying vapor cloud.

According to the information reported regarding the incident, firefighters approximately 200 feet from the vehicle were exposed and sustained serious respiratory and toxicological injuries.

The significance of this incident for Beach Haven is not that a single electric vehicle is identical to a stationary BESS.

It is not.

The significance is that battery-related hazards may persist or reappear unexpectedly, and responders cannot safely operate on the assumption that a visible fire being extinguished means the release hazard has ended.

If this can occur with a single vehicle battery, the Borough should demand a clear understanding of the potential hazards associated with a stationary facility containing a much larger quantity of battery energy concentrated in one location.

First responders should not be required to guess where a hazardous plume will stop.

They need scientifically defensible information specific to the facility they are being asked to protect.

Immediate Actions Requested

I respectfully request that Beach Haven officials take the following actions immediately:

1. Commission an Independent Site-Specific Worst-Case Plume Analysis

The Borough should retain an independent, qualified atmospheric-dispersion and toxic-consequence modeling firm with demonstrated expertise in lithium-ion battery thermal runaway and fire scenarios.

The consultant should have no financial or contractual relationship that could compromise its independence.

Any current or recent relationship with:

- The BESS owner or operator;
- The battery manufacturer;
- The developer;
- Atlantic City Electric;
- Pepco Holdings;
- Other electric utilities; or
- Other project stakeholders

should be fully disclosed.

The analysis should evaluate the actual operating Second Street BESS and should model credible conservative and worst-case thermal runaway and fire scenarios, including the potential for continued or unexpected off-gassing after visible flames have been extinguished.

2. Evaluate the Full Range of Relevant Meteorological Conditions

At a minimum, the analysis should evaluate:

- Wind direction and speed;
- Very low-wind and near-calm conditions;
- Multiple wind directions;
- Coastal and sea-breeze conditions;
- Atmospheric stability;
- Nighttime stable and inversion conditions where scientifically appropriate;
- Temperature;
- Humidity;
- Daytime and nighttime conditions;
- Seasonal variations;
- Ground-level and near-ground plume behavior;
- The effects of surrounding buildings and streets; and
- Peak summer population conditions, including circumstances comparable to a July 4 holiday event involving severe congestion.

The objective should be to identify the conditions capable of producing the greatest public exposure, rather than relying solely on average or prevailing weather conditions.

3. Use Modeling Appropriate to a Dense Urban Environment

The consultant should determine whether conventional Gaussian or screening models are adequate for this location.

Because the BESS is surrounded by buildings, streets, and occupied properties, the analysis should account for building effects, channeling, recirculation, and near-ground concentrations.

Where appropriate, the study should employ high-resolution modeling, including 3-D Computational Fluid Dynamics or another technically defensible methodology capable of accurately evaluating these site-specific conditions.

Where dense-gas behavior is relevant to the actual release, that behavior should also be evaluated.

4. Determine Actual Toxic Concentrations, Plume Travel, and Protective-Action Distances

The analysis should identify:

- Relevant toxic combustion products;
- Credible source terms;
- Predicted plume travel distances;
- Time to arrival of hazardous concentrations;
- Duration of hazardous concentrations;
- Ground-level concentrations in occupied areas;
- Downwind and crosswind exposure areas;
- Appropriate protective-action zones;
- Evacuation distances;
- Shelter-in-place zones; and
- Responder exclusion and safe-approach zones.

The appropriate protective distance should be determined from the actual characteristics of the facility, credible thermal-runaway scenarios, toxic constituents, site geometry, surrounding population, and conservative meteorological conditions.

No predetermined evacuation or isolation distance should be assumed as the outcome of the analysis.

5. Specifically Reevaluate the Existing 150/300-Foot EOP Distances

The Borough should specifically compare the existing EOP distances with applicable federal guidance, including the protective distances identified in ERG Guide 147 for relevant large-scale scenarios.

If the Borough believes that a substantially smaller protective-action distance is appropriate for the Beach Haven BESS, it should publicly identify the engineering analysis, modeling assumptions, and scientific evidence supporting that conclusion.

The purpose of the independent study should be to determine the appropriate distance—not to justify a distance selected in advance.

6. Evaluate Peak-Population and Emergency-Evacuation Conditions

The analysis should specifically consider an incident occurring during peak summer population conditions.

It should evaluate:

- The number of people potentially located within each modeled protective-action zone;
- Which populated areas could be affected first;
- Whether evacuation would be physically feasible under severe traffic congestion;
- Whether shelter-in-place could be safer in certain scenarios;
- Which roadways and access routes could be affected; and
- How emergency responders could safely approach or withdraw from the area.

7. Make the Complete Analysis Public

The completed study should be made publicly available, including:

- Modeling methodology;
- Assumptions;
- Battery and facility characteristics;
- Toxic-gas source terms;
- Meteorological conditions;
- Modeled scenarios;
- Concentration thresholds;
- Plume maps;
- Time-to-arrival estimates;
- Duration estimates;
- Recommended evacuation and shelter-in-place zones; and
- Recommended responder exclusion zones.

Any information legitimately withheld for security reasons should be specifically identified and justified.

8. Update Emergency-Response Protocols

The results should be incorporated into Beach Haven's emergency-response procedures, including:

- Evacuation zones;
- Shelter-in-place zones;
- Responder exclusion zones;
- SCBA requirements;
- Public notification procedures;
- Emergency traffic management;

- Evacuation triggers;
- Re-entry criteria; and
- Procedures for determining when an area can safely be declared clear of toxic-gas hazards.

9. Require Periodic Reassessment

Because the BESS is already operating, the analysis should be reviewed and updated whenever there is a material change in:

- Battery chemistry;
- Energy capacity;
- Enclosure configuration;
- Ventilation;
- Fire-suppression systems; or
- Any other characteristic capable of affecting the quantity or behavior of a hazardous release.

Conclusion

Beach Haven should not have to guess whether the appropriate protective-action distance is 150 feet, 300 feet, 1,000 feet, 1,760 feet, or some other distance.

The purpose of an independent site-specific analysis is to determine the answer scientifically.

Given the Second Street BESS's location in a densely developed community, Beach Haven's extraordinary seasonal population, the potential for severe traffic congestion during major events, and the possibility of unfavorable atmospheric conditions, the Borough has a responsibility to determine the true consequences of a worst-case thermal runaway event.

The question is not whether a generic regulatory standard has been satisfied.

The question is whether the actual people living, working, visiting, and responding near this specific facility can be protected if the worst happens.

Until that question is answered through an independent, transparent, site-specific scientific analysis, no one can responsibly assure the public that the current 150-to-300-foot protective zones are adequate.

The appropriate protective-action distance should be determined by site-specific science and conservative emergency planning—not by a predetermined radius.

I am hopeful that, just as occurred in the case of the Shoreham Nuclear Power Plant, once our local officials carefully review the emergency response plan incorporating a worst case, site specific plume analysis, a consensus will emerge that safe evacuation of the public may be impossible in the case of a serious event.

The Shoreham Nuclear Power Plant: Built, Closed, Dismantled — Because the Public Could Not Be Safely Evacuated

The Shoreham Nuclear Power Plant on Long Island, New York, stands as one of the most significant examples of the consequences of proceeding with a major energy facility without a realistic and workable emergency evacuation plan. Completed in 1984 at a cost of approximately $6 billion, the plant never received an operating license for commercial operation. It was ordered closed in 1989 and was completely dismantled by 1994.

Why? In large part because state and local officials concluded that a safe and effective evacuation of the surrounding population could not be assured in the event of a serious emergency.

Following the 1979 Three Mile Island accident and the 1986 Chernobyl disaster, Suffolk County officials closely examined the practical realities of emergency evacuation. Long Island's geography—a densely populated peninsula with limited and heavily congested roadways—made the prospect of rapidly evacuating the public during a crisis fundamentally unworkable.

The lesson is directly relevant to Beach Haven.

A thermal runaway event at the Beach Haven BESS during the peak summer population could quickly become an impossible emergency situation with potentially grave consequences. If toxic emissions require evacuation or protective action, local officials and first responders would be faced with the extraordinary challenge of moving thousands of residents, visitors, and workers from a densely developed barrier-island community with limited road access—at a time when summer traffic is already heavily congested.

The critical question is not whether an evacuation plan can be written. The critical question is whether it can actually work.

The Shoreham experience demonstrates that emergency planners must confront reality. If a serious event occurs, the Borough must be able to protect the public—not merely rely on an emergency plan that appears workable on paper but may be impossible to execute under actual emergency conditions.

[Quoted text hidden]