

**COMMONWEALTH OF MASSACHUSETTS
ENERGY FACILITIES SITING BOARD**

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Petition of Vineyard Wind LLC pursuant to)	
G.L. c. 164, § 69J for Approval to Construct)	
Transmission Facilities in Massachusetts for)	
the Delivery of Energy from an Offshore Wind)	EFSB 17-05
Energy Facility Located in Federal Waters to)	
an NSTAR Electric Company (d/b/a Eversource)	
Energy) Switching Station Located in the Town)	
Of Barnstable, Massachusetts.)	
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Petition of Vineyard Wind LLC pursuant to)	
G.L. c. 40, § 3 for Exemptions from the)	
Operation of the Zoning Ordinances of the)	D.P.U. 18-18
Town of Barnstable and the Zoning Bylaw)	
of the Town of Yarmouth for the Construction)	
and Operation of New Transmission Facilities)	
in Massachusetts for the Delivery of Energy)	
from an Offshore Wind Energy Facility)	
Located in Federal Waters to an NSTAR)	
Electric Company (d/b/a Eversource Energy))	
Switching Station Located in the Town of)	
Town of Barnstable, Massachusetts)	
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Petition of Vineyard Wind LLC pursuant to)	
G.L. c. 164, § 72 for Approval to Construct)	
and use Transmission Facilities in)	D.P.U. 18-19
Massachusetts for the Delivery of Energy)	
from an Offshore Wind Energy Facility)	
Located in Federal Waters to an NSTAR)	
Electric Company (d/b/a Eversource)	
Energy) Switching Station Located in the)	
Town of Barnstable, Massachusetts.)	
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COMMONWEALTH OF MASSACHUSETTS
ENERGY FACILITIES SITING BOARD
EFSB 17-05/D.P.U. 18-18; 18-19

DIRECT TESTIMONY OF PETER J. BURKE, JR.

Q. Please state your name, position, and employer.

A. Peter J. Burke, Jr., Chief, Hyannis Fire Department

Q. On whose behalf are you testifying?

A. The Town of Barnstable.

Q. Please tell us about your education and professional background.

A. I hold a degree in Fire Science from Providence College and a Master's Degree in Emergency Management from Massachusetts Maritime Academy. I am a graduate of the Chief Fire Officer Program conducted by the Firefighting Academy and UMASS Boston's Collins Institute. I am an adjunct professor in fire science at Cape Cod Community College.

I served as a Firefighter/EMT in Seekonk starting in 2002, ending as a shift commander. In 2012, I joined the Barnstable Village Fire Department as Deputy Chief. I joined the Hyannis Fire Department in 2017 as Chief.

I am a member of the District Hazardous Materials Response Team and hold a leadership position in the Regional Technical Rescue Team. I am an instructor at the Massachusetts Firefighting Academy.

Q. What is the purpose of your testimony?

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A. As Fire Chief and a member of the District Hazardous Materials Response Team, I am very familiar with the Hyannis Water System and the challenges it faces and the risks that the Vineyard Wind project in Independence Park pose to the water system. I have been asked to examine this project and provide evidence to the Siting Board.

Q. What is your overall assessment of the risks posed by the proposed location of the Vineyard Wind substation in Independence Park?

A. The probability of a release of hazardous materials in the form of dielectric fluid may be small, but from an exposure and loss perspective extremely significant. However, absent a formal risk assessment and risk management plan it is difficult to quantify. In the event that such a release occurs and enters the groundwater, we will lose the Hyannis water system indefinitely, if not permanently. The damage from a health and safety standpoint in addition to the economic is incalculable.

Q. Have you or any of your colleagues been approached by or had discussions with VW representatives regarding the proposed VW substation in Independence Park.

A. To my knowledge, no.

Q. At this stage in the proceedings, how would you characterize Vineyard Wind's silence?

A. It is highly irresponsible. The issues discussed below should have been thoroughly explored and resolved with emergency responders long ago. With less than three weeks left before testimony begins, and with no plans for the substation having been shared with us, never mind even drawn up, VW's silence is indefensible.

Q. In the event of an emergency at the proposed VW substation in Independence Park, what department/s would respond?

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A. The Barnstable Village Fire Department would be the primary responder. For a major event such as a fire, explosion, or hazardous material release, under the direction of Barnstable Fire, multiple mutual aid fire departments, including Hyannis would respond. Additionally, depending on scope and scale of the incident a variety of state and federal agencies would likely be involved.

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Q. What information is necessary in your opinion to evaluate the substation design?

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A. First and foremost, general plans for all aspects of the project. Specifically, we would want to be involved or at least have an opportunity to review the formal risk assessment and risk management plan.

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The peer review list is extensive. We would need to know the type of hazardous and flammable products on site, see the safety data sheets for each such product, know what volume of each is present and where and how it is stored or contained on the property, and know what the manufacturer's emergency response protocols are.

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We would want to know what, if any, types of alarms are present, what the threshold levels for each alarm are, and where the alarms will report when activated. Additionally, what actions are triggered by said alarms? Presumably, the transformer site will use supervisory control and data acquisition (SCADA) systems. Those systems and associated risks should be assessed and appropriate risk management controls validated.

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For dielectric fluids, I would want to know how flammable or combustible they are at what temperatures. If there were an explosion or risk of explosion, I would want to know what the recommended "stand-off" distance (i.e., approach-no-closer-than distance) is so that my firefighters may safely combat a blaze when explosions are possible.

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I would want to know what the depth to groundwater is and how fast the dielectric fluid will percolate through the ground, propelled by either/both rainwater and

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128 firefighting waters. Only with that information can I determine how much time
129 responders have to respond to a release which will, in turn, inform emergency
130 responders of the equipment and personnel needing to be pre-positioned for best
131 response times as well as the site-specific training and protocols required for most
132 efficient response.

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134 I would want to thoroughly review both an emergency response plan and a spill
135 response plan to evaluate their adequacy in light of the extreme sensitivity of the
136 receptor, the groundwater public water supply, as well as the safety of all first
137 responders.

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139 Q. Vineyard Wind proposes a containment design that will rely on Imbiber Bead
140 technology to block a release of dielectric fluids at the substation from reaching
141 groundwater. Do you have questions concerning that technology?

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143 A. Yes. It is only good if it works. It is important to consider that disasters are
144 often caused by series of compounding events, sometimes referred to as domino
145 effect or the fatal chain of errors. Relative to the Imbiber Beads, ensuring they
146 survive compounding events, such as being exposed to burning liquids followed by
147 firefighting water or agents.

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149 First, we must test the imbiber beads with the actual dielectric fluid that will be
150 deployed at the station. Only then can we be assured that the imbiber beads will
151 perform their primary function.

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153 Second, in the event of an explosion, fire, and release of burning dielectric fluids,
154 we must know whether the imbiber beads located in a drain will survive contact
155 with burning fluids or whether they will be consumed by fire, thus opening the
156 drains and allowing the highly toxic dielectric fluids to have unimpeded access to
157 groundwater. This must be bench tested before any construction permit issues and
158 indeed before any design is finalized.

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160 Q. Can a substation explosion damage the concrete retaining walls?

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168 A. Yes. Dielectric fluids generally are highly flammable and combustible. As they
169 are contained within the transformer, presumably the chance of a boiling liquid
170 expanding vapor explosion (BLEVE) and subsequent release is a possibility. The
171 resulting blast effect can destroy concrete perimeter barriers. It is vital to see,
172 evaluate, and affirmatively approve the design standards for the concrete structures
173 that will be employed at the substation.

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175 Q. Is the porosity of the concrete a consideration in the selected design?

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177 A. Yes. It is a critical consideration. Concrete is inherently porous. It is vitally
178 important to know whether the dielectric fluid, if released, will permeate the
179 concrete and fully penetrate it in a particular period of time. Again, this
180 information will inform both designers and emergency response actions as to the
181 time available for effective containment activity.

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183 Q. Given the explosive nature of dielectric fluids, do you have a recommendation
184 for a minimum sized impermeable floor that should be laid down at the proposed
185 substation?

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187 A. Yes. We would want to see an impermeable concrete floor with perimeter
188 limiting barriers extending at least 100 feet from every piece of equipment that
189 contains dielectric fluids. This perimeter is the minimum necessary to insure that
190 dielectric fluid propelled from an exploding vessel will most likely remain
191 contained within the concrete basin and not fall on the ground outside the basin, to
192 be quickly absorbed to groundwater. Absent a formal risk assessment based on the
193 transformer design it is difficult to know exactly the exposure range, 100 feet may
194 be inadequate to effectively limit the spread of dielectric fluid.

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196 Q. In your opinion, will the federal project have potential impacts on in-state
197 resources that fall within your official duties? Please explain.

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199 A. Yes. At least two areas of impact are of great concern to and will impact local
200 emergency responders.

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First, it is clear beyond debate that Vineyard Wind must rely on local emergency response agencies in the event of a high-angle rescue of injured or sick workers in the WTG's and on the off-shore transformer platforms. It is my opinion that an effective response for such an event would require at least 12 responders specially trained for high-angle and confined space rescue. VW will not likely carry such a capability on its payroll 24/7/365.

High voltage electricity and salt air and water do not mix. Additionally, the WTG itself, located offshore provides an inherently complex and dangerous environment. It is not a matter of if, but only when, that mix will produce personal injury, explosion, and/or fire. There needs to be robust emergency response plans in place, along with highly trained personnel that only the local fire departments have, to quickly respond in force to create the best outcome, no matter the circumstances.

Second, any release of hazardous material at the federal project will enter state waters within hours of release, given very strong ocean currents and strong prevailing winds at the federal project. Containing a spill at the site is a virtually impossible given current conditions that will spread a slick perhaps two miles or more in only one hour following a release. Analyzing possible response actions is further hindered until a dielectric fluid is identified and evaluated in a salt water environment.

What is clear is that Martha's Vineyard would likely be impacted within 7 – 10 hours of a spill at the federal project 14 miles distant. Once the release reaches the area of Muskeget Channel immediately east of the Vineyard, it will be sucked into Nantucket Sound by the exceptionally strong currents that run at 4.5 knots on two incoming tides. Once the hazardous release reaches Nantucket Sound, it is only hours away from impacting the Cape's south side beaches as well as north-facing beaches on Nantucket and the Vineyard.

I am of the opinion that no commercial hazardous materials response company in Massachusetts has either the necessary equipment or is located in close enough

Vineyard Wind, LLC
EFSB 17-05/D.P.U. 18-18, 18-19
Exhibit TOB-PB-1
Date: September 5, 2018
Presiding Officer: Kathryn Sedor
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proximity to the federal project to conduct any meaningful containment and cleanup. There simply is not enough oil boom to have any impact and boom technology is completely ineffective in seas over 3 feet, a very common event in the area. Deployment times would be measured in days, not hours. Skimmers are likewise ineffective in any sort of seaway.

The real question is how a cleanup in Massachusetts will proceed and what assets and planning are available to make the best of a terrible event.

Q. Q. Does this conclude your testimony?

A. Subject to rebuttal testimony, the SDEIR MEPA filing, and further discovery, it does.

Signed under the pains and penalties of perjury at Barnstable this 11th day of September, 2018.



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Peter J. Burke, Jr.
Chief, Hyannis Fire Department