



February 29, 2016

Mr. Robert Shea  
Presiding Officer  
DPU Energy Facilities Siting Board  
One South Station  
Boston, MA 02110

**RE: NRG Canal 3 Development LLC Petitions for Approval to Construct a New Electric Power Plant (Unit 3) and to Obtain a Comprehensive Zoning Exemption from the Town of Sandwich**

Dear Mr. Shea,

On behalf of the Jones River Watershed Association, we submit the following comments concerning the above referenced petitions.

***Decommission Units 1 & 2***

We strongly believe that EFSB should use NRG's petition for Unit 3 as an opportunity to take Units 1 and 2 permanently offline. These outdated and environmentally harmful units should be decommissioned before Unit 3 is built. Given that Unit 3 is being proposed as a 40-year plant and it appears that NRG's Air Quality Operating Permit for Units 1 and 2 expired on January 9, 2014, EFSB should offset the additional fossil fuel facility by taking the two obsolete units offline to eliminate water use and impacts to marine life. When operating, Units 1 and 2 have the capacity to use up to 518 million gallons per day (MGD) through two cooling water intake structures and entrainment/impingement of marine organisms and pollutant discharges are issues. Furthermore, Unit 3 should be decommissioned at the end of its 40-year lifespan and no license extensions should be permitted.

***Intermittent Use***

According to NRG's Petition, the new facility will use natural gas as its primary fuel (4,380 hours per year) and ultra-low sulfur distillate (ULSD) oil as is backup fuel (1,440 hours per year). NRG should describe under which specific circumstances back up oil fuel would be required.

***Security of Barge Spills and Other Releases***

NRG reports that ULSD oil will be transported to the proposed facility by barge and approximately 4,000 feet of new pipeline will connect the ULSD to various storage tanks. There is already a history of multiple oil spills associated with this power facility (e.g., one of the worst spills in Buzzard's Bay history occurred in 1969 when an oil tanker heading to the plant grounded itself releasing nearly 200,000 gallons, 98,000

gallons were released in 2003, about 3,400 gallons in 2005, about 930 barrels in 2007, and more). The 2003 spill of heavy fuel oil left the Buzzards Bay environment and economy severely impacted. Thousands of fish and birds died, shellfish beds were contaminated and more than 93 miles of beached were affected.

Buzzards Bay, Cape Cod Bay, the Cape Cod Canal, and the surrounding environment are at continued risk from oil spills by further barge shipments to NRG's Unit 3, as well as from methane releases from the new pipeline and storage tanks. The environmental and economic consequences of these spills and releases should be outlined in NRG's petition -- including the likely trajectory and dispersion of oil under various ocean and weather conditions, and the effects of oil on various biological resources, particularly endangered, threatened and rare species. An estimated number of spills/releases per year and the average size of those spills/releases should be included, as well as plans for prevention and response.

EFSB must specify circumstances and limitations under which companies using and expanding fossil fuel use will take complete responsibility for the accidents (e.g., oil spills, methane leaks) that inevitably occur in the transportation/transmission of these fuels. Responsibilities should include cleanup and mitigation of the damage in order to restore natural resources to previous or improved health status. Companies should be required to maintain environmental mitigation accounts that can be drawn on to effectively respond to a variety of accidents or when emissions exceed permitted levels.

#### ***Water Use, Intake, NPDES***

NRG's current Units 1 and 2 operate under an expired NPDES permit. U.S. EPA required a closed-loop system in 2008 as Best Technology Available (BTA) but the then owner, Mirant, appealed. The final NPDES permit requiring closed-looped cooling was never issued and Units 1 and 2 operate in accordance with the original permit issued in 1989 and expired in 1994. This means that, when operational, NRG's Canal Station uses outmoded systems that cause excessive damage to the marine environment. This is unnecessary and abusive and should end, regardless of U.S. EPA's capacity to update the permit.

Units 1 and 2 use two cooling water intake structures – water consumption, thermal pollution, and impingement and entrainment of marine life are major issues. When operating, water for the cooling system is withdrawn from the Cape Cod Canal at a rate of up to 518 MGD and the heated water is then discharged back to the Canal through two of the facility's discharge outfalls. EPA determined in 2008 that closed-cycle cooling was BTA for reducing entrainment and made a number of corresponding changes to the conditions of the August 2008 Final NPDES Permit. The decision was appealed in September 2008 and consequently, the August 2008 Final Permit was stayed. The final permit requiring closed-looped cooling or a comparable technology was never issued and the Canal Station operates in accordance with the expired permit. Today, other systems may exist that were not available in 2008 and should be considered. It is unacceptable that impacts to the marine environment are glossed-over while expansion of the facility is considered.

As mentioned above, EFSB should require that Units 1 and 2 be decommissioned if Unit 3 is approved. This would better protect fisheries and ecological health since water use from the Canal would cease.

Given that Unit 3 is an updated unit and it will be using wells for process water as opposed to Cape Cod Canal water, it seems this should be a major focus of EFSB's decision to protect the local and regional environment from harmful impacts. In addition, Unit 3 is reported to be more efficient in its use of fuel and, consequently, most air emissions.

As for groundwater, Unit 3 will be served by two on-site water wells for various processes. Well #2 was constructed and the yield was tested in 1966. Well #3 was developed and tested in 1974. It is unclear which of these wells are registered pursuant to the Water Management Act (WMA). According to NRG, its WMA Registration that was issued in May of 1990 allows for an average groundwater withdrawal volume from wells #2 and #3 of 0.45 MGD (164.25 million gallons per year); and the actual new total demand will be slightly less at about 0.38 MGD (138.7 million gallons per year). However, the WMA Registration obtained from MassDEP indicates that wells #1 and #2 are those registered in the 2013 renewed WMA permit that expires in December 2017. This needs to be clarified. Is the 2013 renewed WMA Registration the same as the 1990 WMA Registration referenced by NRG in its petition? If so, does well #3 have a WMA permit? If not, NRG should acquire the appropriate permit for well #3.

NRG states that well #4, installed in 2001, has not been permitted and has not yet been placed into service. NRG should clarify whether it ever intends to use well #4, and if so, **we suggest that NRG be required to apply for a WMA Registration for this well.**

#### ***Facility Discharges***

In Section 1.6.3.6 (Facility Wastewater), NRG indicates that there will be no direct discharges of facility wastewater to the environment. Instead, wastewater, along with the turbine startup drains, will be collected in an underground tank and periodically trucked offsite. Whether there is a schedule for checking the stability of underground tanks and pipes, and how leaks will be detected should be outlined. As sea levels rise, so will groundwater levels on the site, and **whether salt water intrusion will be an issue for NRG's underground infrastructure should be addressed.**

Section 4.3.3.1. (On-site Water Sources) does briefly report that there is no salt water intrusion suspected on the site wells or wetlands and overall water quality is considered excellent based on site-specific lab results; however, the results reported are from tests in 1974. Our coastal environment is very different than it was more than 40 years ago and **new analyses should be carried out to properly characterize the site and any salt water intrusion that could affect underground infrastructure**, and include future sea level rise and other coastal changes over the lifetime of the facility.

Section 4.3.4. (Wastewater Discharge) reports that currently non-contact cooling water is discharged into the Cape Cod Canal through a submerged slot diffuser permitted through an active NPDES permit. Again, mitigation for the new fossil fuel Unit 3 should be discontinuance of Units 1 and 2 to eliminate any discharge to the Cape Cod Canal. **NRG also fails to mention that the "active" permit is expired and EPA required a closed-loop system as BTA in 2008, which still has not been installed to minimize adverse impacts to the marine environment.**

Currently, NRG reports that sanitary wastewater is managed through an on-site sanitary septic system. Since the new amount of sanitary/ domestic water used and generated by the proposed Unit 3 will be small (compared to the volume consumed and generated by existing operations), no modifications to the existing septic system are anticipated. However, considering sea level rise and rising groundwater table levels due to climate change, it seems that the vulnerability of this system should be discussed as well as any plans to mitigate associated problems or update the system since it will continue to be used for the 40-year lifespan of the unit.

### ***Storm Water***

NRG reports that storm water, as currently designed, is collected and discharged to the cooling water discharge flume, which in turn discharges to the Cape Cod Canal and at several locations to a drainage swale between the property fence and the railroad right of way. The swale ultimately discharges to wetlands south of the property. While NRG reports that no new direct point discharges of untreated storm water associated with the new Unit 3 will be needed (the project will reuse the three existing point source discharges), **it should be clarified whether the project's new storm water management system will address only new discharges, or whether the existing storm water discharge pollution will be updated and improved.**

### ***Air Pollutants***

NRG reports that the existing Canal Station is considered a major source of emissions of Nitrogen Oxides, volatile organic compounds, sulfur dioxide, carbon monoxide, particulate matter and hazardous air pollutants. But even the new facility, as outlined on pages 2-1 to 2-2, does not meet EFSB's TPS (technology performance standards) for CO emissions by 13%. **There is clearly a CO emission exceedance that is of major concern for the surrounding environment. As discussed above, Units 1 and 2 should be decommissioned to mitigate the continued decline of air quality and atmospheric health by Unit 3.**

### ***Zoning Exemption***

Although we disagree with the zoning exemption request that will be filed by NRG, if the decision of the Town of Sandwich is to support the exemption then we at least request that the EFSB take on the role of enforcing protections that would be covered by local zoning and to ensure that the Town of Sandwich and the surrounding resources (including Cape Cod Bay) are protected now and in the future.

### ***Sea Level Rise and Other Coastal Impacts***

In Section 4.2.2.2 (Climatology and Meteorology), NRG reports that the average annual precipitation at the proposed site is about 48 inches (1981-2010) and the average annual temp is 50.6°F (1981-2010). It's important to recognize predicted changes in local precipitation and temperature over the lifetime of the facility. **Not only should historical data be assessed, but also future climatic conditions that are projected to increase precipitation amounts and temperatures, particularly in the Northeast U.S.**

Several studies suggest that precipitation amounts are expected to increase in the future due to climate change and have been projected to increase by 20-30 percent by 2070 to 2100.<sup>1</sup> Specifically in the Northeast, it has been shown that heavy rainfall events are increasing (about 70% from 1958-2012) and are projected to increase further in the coming years due to climate change.<sup>2</sup>

Section 5.2.4.2. (Sea Level Rise and Resiliency) states that the site will be affected by sea level rise, flooding, storm surge and wave action in the future and the facility must be designed to address impacts from a 100-year storm event and also include flood adaptation strategies to mitigate future risk associated with sea level rise. NRG uses a 2-foot sea level rise because it represents a “conservative projection.” While we support the use of sea level rise values based on NOAA and USACE since they are nationally accepted and established estimates, **NRG should use the most conservative value which is the NOAA high value of 2.93 by 2060. NRG should also discuss potential for rising groundwater tables, subsidence, and increase in erosion to impact the site, as well as combined effects with extreme storm events.** It is not clear that the combined effect scenario was considered in this application. In other words if storm surge and flooding is combined with excessive precipitation (e.g., ice, snow or rain), then how will the site be protected?

NRG states that the facility site was designed so that the floor elevations of critical components will be at an elevation of 16 feet above mean sea level (MSL); or 5.7 feet above the lowest elevation on site and 2.0 feet above the 100-year flood zone elevation. EFSB should adopt a strictly conservative approach to evaluating new facilities, such as NRG’s Unit 3, in flood prone areas that are especially vulnerable to sea level rise and other coastal hazards. NRG clearly admits that its site will potentially be impacted nearly 3 feet above MSL (based on NOAA data) until the permit expires in 2060. **The EFSB should require NRG to preserve the integrity of the entire site, not just protect the first floor and critical components and the most conservative estimate identified in the petition (2.93 feet) should be used.**

It is also important to recognize that permits for energy facilities are regularly extended. While it’s difficult to predict future permitting activity, EFSB should maintain a highly conservative approach so that access to and functioning of the facility and the site are preserved if permits are extended, as seems to be the typical practice. NRG should clearly state the economic design life of the facility so that proper conservative planning can be in force.

Construction of the facility will result in alteration of approximately 12 acres of Land Subject to Coastal Storm Flowage (LSCSF) on the site. LSCSF is defined as land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater (31 CMR 10.04). On the proposed facility site, LSCSF is coincident with the limits of the 100-year flood zone mapped by FEMA on the Flood Insurance Rate Map. NRG will raise the elevation

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<sup>1</sup> Stratz S.A. and F. Hossain. 2014. Probable maximum precipitation in a changing climate: Implications for dam design. *Journal of Hydrologic Engineering*. 19(12): 06014006; Kunkel K.E., Karl T.R., Easterling D.R., Redmond K., Young J., Yin X., and P. Hennon. 2013. Probable maximum precipitation and climate change. *Geophysical Research Letters* 40(7): 1402-1408.

<sup>2</sup> Melillo J.M., Richmond T.C., and G.W. Yohe, Eds. 2014. *Climate change impacts in the United States: the third national climate assessment*. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2.

of a portion of the facility site to 16.0 feet above MSL, which is above the 100-year flood zone floodplain level. Some proposed facility buildings and components, as well as a new site access roadway will be located in LSCSF. Consideration should be given to ensuring access to all major components in foul flooded conditions, so that the facility can also be maintained during extraordinary weather related events, and rising sea levels, and no adverse environmental consequences are caused from failing infrastructure.

### **Listed Species**

NRG reports that no federally or state listed, proposed, and/or candidate species were identified within the proposed site and no federal critical habitat on the site. However, a portion of the property overlaps with habitat associated with two Species of Concern (least and common terns). NRG reports that no impacts will occur from the proposed facility. As previously discussed, impacts to protected species from all activities associated with the constructions and operation Unit 3 should be outlined, including releases of oil and other hazardous substances. As discussed in Section 4.5, there is a history of hazardous waste releases on the site (and off the coast) and impacts to endangered, threatened and rare species should be discussed.

North Atlantic right whales and associated critical habitat are briefly discussed; however impacts from spills and leaks could impact the critically endangered species. While right whales are clearly not found on the facility site, leaks and spills don't adhere to boundaries. Potential impacts – including to food sources – and the range of physiological and toxic effects that can occur should be outlined by NRG. Right whales are known to travel through the Cape Cod Canal. Individual adults, mother-calf pairs, and larger groups have been sighted near the plant (see image below).<sup>3</sup>



Image: NOAA NEFSC Interactive Sightings Map ([www.nefsc.noaa.gov/psb/surveys](http://www.nefsc.noaa.gov/psb/surveys)). Canal Station is seen in bottom left of image. Four right whale sightings near NRG's facility were confirmed by NOAA (including a mother-calf pair) in 2005 & 2014.

<sup>3</sup> For example, more than a dozen right whales were spotted near the mouth of the Cape Cod Canal in April 2015. See <https://www.bostonglobe.com/metro/2015/04/30/more-than-dozen-right-whales-spotted-near-mouth-cape-cod-canal/uLdwSd2udL6tJ9Y81orluO/story.html>

**In late January 2016, NOAA announced that right whale critical habitat areas were significantly expanded (including almost all of the Gulf of Maine and all of Cape Cod Bay). Again, spills and leaks could most certainly impact right whale critical habitat and these issues should be discussed by NRG.**

### ***Methane Leaks and Overreliance on Natural Gas***

In Section 4.3.2.8. (Greenhouse Gases), NRG discusses CO<sub>2</sub> emissions but at no point in the petition does the company discuss methane (CH<sub>4</sub>) emissions. According to U.S. EPA, CH<sub>4</sub> is more efficient at trapping radiation than CO<sub>2</sub> and has a 25x greater impact on climate change over a 100-year period.<sup>4</sup> NRG discusses its CO<sub>2</sub> emission monitoring/reporting requirements under the Regional Greenhouse Gas Initiative (Section 4.2.1.8.) and its Acid Rain Program emission monitoring/reporting requirements (Section 4.2.1.6.), but the company should also discuss methane requirements.

While not the direct subject of NRG's petition, we are deeply concerned that Massachusetts is becoming overly-reliant on natural gas and NRG's project is a further step in that direction. Our state is already heavily dependent on this source -- more than 50 percent of our in-state electricity generation currently comes from natural gas. Becoming overly-reliant on natural gas creates financial risk, places the economy and consumers at risk from fluctuating gas prices, weakens efforts to cut emissions, and more.

The U.S. Department of Energy has projected that the cost of natural gas will rise as demand increases. This means consumers will eventually have to pay more once costs go up. Too much natural gas also undermines long-term carbon emission reductions. While natural gas electrical generation produces much less carbon emissions than coal or oil, it still produces emissions. It is important to consider the life-cycle of an energy source to appreciate the true impacts. Drilling, storage, extraction, and pipeline activities associated with natural gas result in methane leaks. Compared to carbon dioxide, methane is a far more potent greenhouse gas that could escalate climate problems.

In order to justify the construction of an additional fossil fuel facility, funds should be set aside to identify and mitigate methane leaks. Otherwise, additional construction should not be permitted or tolerated. Natural gas for NRG's proposed facility will be delivered via an interconnection to the Algonquin Gas Transmission pipeline and a new approximately 3,500 foot pipeline will be required to deliver natural gas to the NRG facility. Use of Unit 3 will put more demand on the Algonquin pipeline and create additional pipeline infrastructure. **There should be a fee required of the operator of this facility – and others that use the pipeline – to pay for efforts to search for, prevent, and stop methane leaks.**

Our state's plan – including the role of natural gas – will define our energy future for many decades to come. Massachusetts will be investing billions to replace power from outdated and dangerous nuclear, coal and oil facilities with new infrastructure. Instead of relying solely on natural gas for short-term gains, the state should recognize the long game and ensure adoption of energy policies that support

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<sup>4</sup> EPA. 2016. Overview of greenhouse gases: methane emissions.  
<http://www3.epa.gov/climatechange/ghgemissions/gases/ch4.html>

further development of renewable energy resources, protect against climate change impacts and environmental degradation, and protect consumers. We ask that UFSB please consider phasing out and eliminating Units 1 and 2 to offset and advance our new energy policies.

Thank you,



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