

May 25, 2014

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Re: Pilgrim Nuclear Power Station's Emergency Planning provides "*No Escape From The Cape*"

Ladies and Gentlemen:

We are writing to the Commissioners of the Nuclear Regulatory Commission (NRC), Federal Emergency Management Agency (FEMA) and Massachusetts Emergency Management Agency (MEMA) at the suggestion of the Honorable Allison Macfarlane, Chairman of the Nuclear Regulatory Commission, as a follow up to a meeting with the Chairman on April 21, 2014. Cape Cod residents believe that the current emergency planning by the NRC, FEMA and MEMA for Entergy's Pilgrim Nuclear Power Station (PNPS) in Plymouth, MA is ineffectual in the service of providing "*reasonable assurance of adequate protection of public health and safety*" for Cape Cod residents and visitors.

The current plan titled "PNPS, Development of Evacuation Time Estimates" formulated by KLD for Entergy in December, 2012 (refer to "Cover Sheet PNPS ETE, KLD, 2012", encl'd):

1. closes the Sagamore Bridge to Cape Cod shadow self-evacuation traffic, redirects that traffic to the Bourne Bridge (refer to Pg 1-11 and Fig 7-2, encl'd),
2. assumes the Cape Cod shadow self-evacuation to be 20% of the Cape Cod year round resident population living between 10 and 15 miles from PNPS, or approximately 4500 to 5500 individuals (refer to Pg 1-11, encl'd),
3. prescribes, only by default, sheltering in place as the protective action for Cape Cod residents and visitors and
4. does not provide a public awareness program for Cape Cod residents and visitors.

On October 3, 2012 MEMA Director Kurt Schwartz informed the Barnstable County Regional Emergency Planning Committee (BCREPC) that:

5. Cape Cod self-evacuation traffic will be bled off Cape over the Bourne Bridge only if it doesn't interfere with the evacuation of the 10 mile Emergency Planning Zone (refer to highlighted text pp.14, 2012 10-3, MEMA Director Kurt Schwartz presentation to BCREPC, encl'd).

Provoked by the relentless concern of Cape Cod citizens expressed as "*No Escape From The Cape*", in 2012 MEMA and Entergy engaged KLD Engineering, P.C. (43 Corporate Drive, Hauppauge, NY 11788) to undertake a Cape Cod Traffic Study to assess then formulate a plan to handle the Cape

Cod shadow self-evacuation traffic during a PNPS incident and develop a Cape Cod PNPS public awareness program.

To date the only part of the study made available for public consumption has been a telephone survey reported in a July 25, 2013 Memo: "Cape Cod Telephone Survey Results" (encl'd). The results reveal a self-evacuation response by 50% to 70% of the year round resident population (by the 2010 Census, the Cape Cod Population = 218,000), approximately 109,000 to 153,000 individuals respectively. That's a Cape Cod shadow evacuation volume 24 to 28 times greater than the theoretical design assumptions used to predict and apply, in the formulation and calculations of current PNPS emergency planning.

The Telephone Survey polled only year round residents. During the summer months Cape Cod's total population patently doubles and periodically triples the year round resident population. The assumption that that most visitors and transients will choose to self-evacuate conservatively contributes an additional 200,000 to 400,000 individuals. In total, during the high summer season there's the potential to find between 309,000 and 553,000 people trapped by design and by gridlock during a PNPS incident on the established and marked Cape Cod evacuation routes. This compounds the disparity to levels 66 to 100 times greater than the theoretical design volume of current emergency planning. The Islands of Nantucket and Martha's Vineyard were not included in the telephone survey or any of the Cape Cod self-evacuation volumes above, and obviously only adds to the size of the problem.

Conclusion 1: The generic theoretical shadow evacuation assumptions (20% from 10-15 miles) grossly underestimates the Cape Cod shadow self-evacuation volume.

By geography and by design, Cape Cod residents and visitors are marginalized to the status of captives, at risk of experiencing harmful radiation dosages:

- Cape Cod does not have a natural backdoor means of egress to a safe distance away from PNPS. In fact Cape Cod residents and visitors have to drive toward the danger in their attempt to escape the danger.
- The Sagamore Bridge will purposefully be closed and all Cape Cod self-evacuation traffic will be bled over the Bourne Bridge.....*only if it doesn't interfere with the EPZ evacuation.*
- For those sheltering in place, from 66,000 to 109,000 residents with limited protection (0-10% reduction), the plan is relocation from hot spots after experiencing radiation exposure.
- For those trapped in their vehicles, 109,000 to 553,000 residents and visitors, a meager 5000 to 6000 can be housed in existing conventional *hurricane sheltering facilities* on the Joint Base Cape Cod (formerly the Mass Military Reservation). Bottom line: essentially all Cape Cod self-evacuation traffic will be stuck in gridlock, with no protection during the exposure period, gambling on wind direction as the only plan, followed by decontamination then relocation.

Conclusion 2: Trapping 109,000 to 553,000 individuals in their vehicles with no protection, hoping the wind doesn't blow in their direction is a completely unreasonable and unacceptable risk mitigation strategy that speaks to an anticipated collateral damage casualty expectation as an acceptable outcome, by design.

The NRC's generic theoretical 10 mile EPZ as the preemptive adequate evacuation zone is inconsistent with contemporary empirical information. Pilgrim is sited relative to Cape Cod Bay similarly to Fukushima Daiichi's siting to the Pacific Ocean. The vast majority of the Fukushima Daiichi's fallout fell into the Pacific Ocean due to the prevailing Westerly winds. PNPS also experiences prevailing Westerly winds blowing towards Cape Cod Bay and Lower Cape Cod. Fukushima provides undeniable evidence that a 12.4 mile (10 km) evacuation zone can be anticipated in all directions, including upgradient of the prevailing wind direction. Additionally, an expanded evacuation zone resulted at Fukushima, extending 29.4 miles (48 km), again in an upgradient direction as a function of brief localized wind vectors (SSW) contrary to the prevailing wind direction (refer to "Fukushima Evacuation Zones applied to PNPS" encl'd). A 29.4 mile evacuation/uninhabitable zone around PNPS encompasses almost all of Cape Cod.

Conclusion 3: Essentially all of Cape Cod is at risk of becoming uninhabitable. Fukushima's evacuation zones and uninhabitable zones should be viewed as minimal standards of anticipated reasonable evacuation zones informing the PNPS emergency planning. The NRC's generic theoretical 10 mile EPZ boundary (one size fits all) is conspicuously simplistic and only marginally anticipates the scope of historical (Fukushima) evacuation and uninhabitable zones. This is especially evident with respect to the uninhabitable regions created by unpredictable shifts in wind direction that pushed hazardous levels of radiation 29.4 miles from the Daiichi reactors, notably in a direction counter to the prevailing winds.

We respectfully request the NRC, FEMA and MEMA reevaluate:

- the geographic conditions and current planning that effectively trap people on Cape Cod,
- the gross underestimate of Cape Cod self-evacuation volumes in PNPS emergency planning,
- the undeniable scope of real evacuation and uninhabitable zones that resulted at Fukushima Daiichi (12.5 miles and 29.4 miles) beyond the NRC's "one size fits all" 10 mile EPZ,

and therefore exercise your mandated responsibility to provide "*reasonable assurance of adequate protection of public health and safety*" for Cape Cod residents and visitors by revoking the license and decommissioning Pilgrim Nuclear Power Station.

Under a separate cover please find additional materials from lawmakers and institutions supporting citizen concerns: Massachusetts Governor Deval Patrick, Senator Edward Markey, Senator Elizabeth Warren, Representative William Keating, Barnstable County Commissioners, Cape Cod National Seashore Advisory Commission, Association to Preserve Cape Cod. and GAO.

Sincerely,

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**Enclosures:**

Cover Sheet, Pilgrim Nuclear Power Station (PNPS) Evacuation Time Estimate (ETE), KLD, 2012  
Fig 7-2. PNPS Shadow Region, PNPS ETE, KLD, 2012  
Fig 8-2. Transit Dependent Bus Routes, PNPS ETE, KLD, 2012  
Fig. 10-3. Evacuation Route Map, PNPS ETE, KLD 2012  
Pg 1-11. Cape Cod Shadow Evacuation Estimate, PNPS ETE, KLD, 2012  
Memo: Cape Cod Telephone Survey Results, KLD, 2013  
2012 10-3 MEMA Dir. Kurt Schwartz presentation to BCREPC

**Enclosed under separate cover:**

2012 3-30 Cape Cod National Seashore Advisory Commission letter to NRC  
2012 5-7 Governor Deval Patrick letter to NRC  
2013 3-0 GAO: Emergency Preparedness  
2013 6-10 Cape Cod National Seashore Advisory Commission letter to Governor Patrick  
2013 8-16 Senators Markey and Warren letter to Entergy: Evacuation Concerns  
2014 3-17 Association to Preserve Cape Cod: Position Statement on PNPS  
2014 3-17 Governor Deval Patrick letter to NRC  
2014 4-6 Barnstable County Commissioners  
2014 4-18 Senators Markey and Warren letter to NRC: Seismic Concerns  
2014 4-25 Representative Keating letter to NRC

**cc.**

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