Public Employees for Environmental Responsibility
Protecting Employees Who Protect The Environment
PEER

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Department of Environmental Protection
Commonwealth of Massachusetts
1 Winter Street
Boston, MA 02108-4747
Attn: William Space

Comments on Proposed Approval of GHG Credits at Dominion Energy Brayton Point

Via U.S. MAIL & EMAIL

Dear: Mr. Space:

The Massachusetts Department of Environmental protection (Mass DEP) is proposing to approve an application for verification of greenhouse gas (GHG) credits submitted by Dominion Energy Brayton Point. On behalf of Public Employees for Environmental Responsibility (PEER), I am writing to urge that Mass DEP disapprove this application for the reasons outlined below.

Mass DEP premises its approval for extending GHG credits for using coal combustion wastes (coal ash) in the production of Portland cement based upon determinations it has made relative to reductions of GHG emissions. In order to qualify for GHG Credits, an Appendix B(7) project must result in emissions reductions that are real, additional, verifiable, enforceable, and permanent. 310 Code Mass. Rules § 7.70(10)(a). Mass DEP claims to have determined that use of coal ash in Portland cement results in GHG emission reductions that met these statutory criteria. None of these determinations are correct, however.

In fact, use of coal ash in Portland cement production as proposed by Mass DEP–

1. Increases rather than reduces GHG emissions;

2. Lacks evidence of real, verifiable and enforceable permanent GHG reductions;

3. Undermines the goals of the Climate Protection and Green Economy Act by promoting use of non-renewable dirty fossil fuels;

4. Violates the prohibition against awarding credit to a project including an electric generation component;

5. Rests on unsupported assertions about coal ash production and substitution; and

6. Fosters other forms of pollution damaging to public health and the environment.

Comments Detailed

1. Increases rather than reduces GHG emissions

One huge fallacy in the Mass DEP proposal is that the agency omits any consideration of the massive amounts of greenhouse gases emitted in mining and burning the coal to produce the ash.

Coal-fired power is the largest single source of GHG emissions generated in the U.S. – contributing around 40% of our total CO2 emissions.

The Mass DEP makes no mention of the GHG emissions required to create the coal ash. It illogically equates coal ash with virgin material to make an inapt comparison relative to GHG impacts.

It is paradoxical, if not outright oxymoronic to suggest that use of coal ash results in a net reduction of GHG emissions.

The Mass DEP proposal does not mention, let alone consider, a lifecycle assessment that looks at whole system boundaries. The U.S. Environmental Protection Agency (EPA) Office of Research and Development National Risk Management Research Laboratory's "Lifecycle Assessment: Principles and Practice" describes the system boundaries that should be included when conducting life cycle assessments. The EPA National Risk Management Research Laboratory publication notes that co-products (outputs from the process that are "not treated as wastes") marketed to other manufacturers should be treated as co-products and quantified:

> "In performing co-product allocation, some means must be found to objectively assign the resource use, energy consumption, and emissions among the co-products."

This process is contrasted to waste materials that are reused within the same process and therefore part of an "internal recycling loop" and thus not included in the inventory (since [materials in an internal recycling loop] do not cross boundaries of the subsystem").

The Mass DEP analysis behind its proposal ignores significant upstream greenhouse gas emissions associated with the processes that generate coal combustion waste "co-products."

2. Lacks evidence of real, verifiable and enforceable permanent GHG reductions

Dominion Energy is improperly seeking GHG credits for an emissions reduction achieved through the independent actions of third parties. In order to qualify for GHG credits, an Appendix B(7) project must result in emissions reductions that are real, additional, verifiable, enforceable, and permanent. 310 Code Mass. Rules § 7.70(10)(a). Because the emissions reduction associated with this project are a result of actions by third parties, the concrete manufacturers, and not Dominion Energy, the proposed approval is incomplete. Specifically, the proposed approval does not establish that the emissions reductions are real, verifiable, or enforceable.

While it is true the emissions reductions can be achieved through the use of coal ash instead of Portland cement, no effort has been made to show that the emissions reductions for which credit is sought here are real. Appendix B(7) defines real as "actual." Appendix B(7)(b). In the proposed approval, the project description only states that the coal ash was transported to an "exclusive ash marketer," not that it was used in cement manufacturing and resulted in actual emissions reductions. The proposed approval blindly accepts as true that the coal ash was used in a way which resulted in emissions reductions, even though the regulations require the emission reductions to have actually occurred before GHG credits can be awarded.

Similarly, to establish that the emissions reductions are verifiable, the proposed approval improperly relied on the transfer to an ash marketer instead of actual use in cement manufacturing. The proposed approval states that "the applicant provided documents showing the transfer of processed coal ash to Headwaters, an ash marketer with which the applicant has established a contractual relationship." However, this does not meet the regulatory definition of verifiable, which means that "emission reductions, avoided emissions or sequestered emissions can be determined through replicable methods." Appendix B(7)(b).

Thus, to qualify as verifiable, DEP must find that coal ash used in cement manufacture results in replicable emissions reductions at the cement manufacturing plant. The proposed approval's reference transfer to a coal ash marketer wholly fails to satisfy this standard.

Perhaps most significantly, the emissions reductions achieved through this project are not enforceable because Dominion Energy does not control the emissions reductions. It only controls the production of a substance that can be used independently by a third party to result in an emissions reduction.

The proposed approval states that the emissions reductions are enforceable because DEP has the power to enforce a violation by "any person who applied for certification or verification of GHG Credits." This statement fails to recognize that it is the emission reductions, and not the GHG credits, which must be enforceable. See 310 Code Mass. Rules § 7.70(10)(a) & (e) (establishing that GHG credits earned through an Appendix

B(7) requirement must "represent CO2 equivalent emission reductions or carbon sequestration that are real, additional, verifiable, enforceable, and permanent").

Even though Dominion Energy will hold the GHG credits, DEP cannot enforce the emission reductions through them or the GHG credits because Dominion Energy cannot force the cement manufacturers to use coal ash. Although Dominion Energy can treat coal ash to be used by cement manufacturers and sell it to them, neither it, nor DEP, can require the cement manufacturers to use it. Therefore, there is no way that these emissions reductions can be enforced, requiring DEP to reject Dominion Energy's application.

3. Undermines the goals of the Climate Protection and Green Economy Act by promoting use of non-renewable dirty fossil fuels

The GHG credits sought by Dominion Energy are a part of the Regional Greenhouse Gas Initiative (RGGI) that seeks to combat climate change by reducing the carbon dioxide emissions in the power generating sector across the Northeastern United States. By awarding GHG credits for a project that relies on the end result of coal combustion, DEP would be incentivizing power plants to produce more power from coal, and more carbon dioxide, directly contradicting the purpose of RGGI.

Power generators subject to RGGI and the Massachusetts regulations implementing it can earn GHG credits by completing projects that reduce greenhouse gas emissions. These credits can then be used by the generator to offset excess emissions above its limit, 310 Code Mass. Rules § 7.29(5)(a)5.d.

This release valve for power generators is designed to encourage beneficial activities by the power that also assist in reducing carbon dioxide emissions while giving the generators some leeway in the actual emissions coming from their plant (see *CO_2 Offsets*, REGIONAL GREENHOUSE GAS INITIATIVE, http://www.rggi.org/market/offsets). This intent is evident in the projects that are specifically approved to earn GHG credits. Under Massachusetts regulations, GHG credits can be awarded to a power plant for completing one of five specifically listed projects (310 Code Mass. Rules § 7.70(10)(c)1.a.i.-v., or by completing another project created under 310 Code Mass. Rules 7.00: Appendix B(7), 310 Code Mass. Rules § 7.70(10)(c)4.e). These projects are:

i. Landfill methane capture and destruction;
ii. Reduction in emissions of sulfur hexafluoride (SF_6);
iii. Sequestration of carbon due to afforestation;
iv. Reduction or avoidance of CO2 emissions from natural gas, oil, or propane end-use combustion due to end-use energy efficiency, and;
v. Avoided methane emissions from agricultural manure management operations.

By awarding GHG credits here, DEP would not be achieving the objective of offset projects. Instead, it would be subverting the mission of RGGI to reduce greenhouse gas emissions by the power sector.

Dominion Energy's coal ash treatment project is directly related to the combustion of coal. Unlike the specifically approved projects, awarding GHG credits here does not incentivize a beneficial activity that results in lesser carbon dioxide. Instead, it would incentivize not only a harmful activity, but the exact activity that RGGI seeks to reduce – the generation of energy through coal combustion.

By treating and selling the coal ash, Dominion Energy gains yet another economic benefit from coal combustion. This benefit should not be further enhanced by also giving Dominion Energy GHG credits that will serve as further economic encouragement to produce more carbon dioxide through coal combustion.

4. Violates the prohibition against awarding credit to a project including an electric generation component

Dominion Energy's project cannot be awarded GHG credits because it fails to meet the requirement of not having an electric generation component. GHG Credits awarded by DEP through a Appendix B(7) project meet all the requirements imposed by 310 Code Mass. Rules § 7.70(10), 310 Code Mass. Rules § 7.70(10)(c)4.e., including the requirement that an offset project cannot include an electric generation component, § 7.70(10)(c)4.b.

Dominion Energy's project plainly fails to meet this requirement because the project has an essential electric generation component—coal combustion at the Brayton Point Power Station. In fact, coal combustion is the starting point for Dominion Energy's project. Without the combustion of coal, there would be no coal ash, and, thus, no use of treated coal ash in cement manufacturing. Drawing an arbitrary line between coal combustion and this project combustion cannot hide that the two are inextricably intertwined and that coal combustion is essential to the completion of the project. Because Dominion Energy's project has an electric generation component, it cannot qualify for GHG credits.

5. Rests on unsupported assertions regarding coal ash production and substitution

Mass DEP's coal ash waste greenhouse gas claims fail to adequately include impacts associated with processing ash for use in cement. For example, additional processing is sometimes used to transform coal combustion byproducts to meet project specifications. It is unclear from Mass DEP's greenhouse gas reduction calculation whether, and to what extent, any additional processing impacts are taken into account by its models.

If Mass DEP greenhouse gas calculations do not include clear references detailing underlying assumptions, then decisions about whether and how many GHG credits to award for coal ash use in cement may be based on incomplete lifecycle estimates. Factors such as these can change the greenhouse gas reduction benefit ratios and should be noted explicitly along with any numeric greenhouse gas emission reduction claims.

Thus, Mass DEP's greenhouse gas reduction claims lack transparency as to source of data used and assumptions employed. Without explicit reference to the underlying assumptions and presentation and discussion of all factors in the analysis, the presented information is incomplete.

EPA has previously cited an industry claim that increasing coal ash substitution for Portland cement from 12.6 million tons to 20 million tons "would reduce the future generation of greenhouse gasses by more than 6.5 million tons a year." However, as EPA points out, this emissions reduction figure is based on EPA's Waste Reduction Model (WARM). This becomes problematic because the WARM model is designed to assist waste managers in quantifying the greenhouse gas benefits of various waste management practices, and it assumes coal ash starts off as a greenhouse gas neutral material. With coal-fired electricity, in particular, this assumption can lead to grossly inaccurate lifecycle greenhouse gas emission estimates, and faulty cost-benefit conclusions when comparing materials.

6. Fosters other forms of pollution damaging to public health and the environment

Setting aside the major deleterious environmental impacts of coal mining, transport and combustion, the resulting coal combustion wastes contain high levels of toxic materials including: arsenic, beryllium, boron, cadmium, chromium, chromium VI, cobalt, lead, manganese, mercury, molybdenum, selenium, strontium, thallium, and vanadium, along with dioxins and PAH compounds.

According to a study entitled *"Fate of Mercury Collected From Air Pollution Control Devices"* (Senior, Constance L., Susan Thorneloe, Bernine Khan, David Goss) published in the July 2009 issue of *Journal of Air and Waste Management*): "Virtually all mercury will be volatilized when [coal combustion residuals) are used as a feedstock to cement kilns as the result of high operating temperatures (1450ºC)." The results of a laboratory simulation of cement clinker production indicated that all of these chemicals are volatilized as a result of the high temperatures (1450ºC). However, these metals will be retained in the kiln dust and the air pollution control residues of the cement kiln.

Ensuring that these metals are not later released depends upon how the air pollution control residues are managed. However, there are no federal or state requirements for lining of landfills used for cement kiln dust disposal. Thus, use of coal ash in cement production may result in additional profound air and soil pollution.

In fact, allowing the unrestricted use of coal combustion residues as raw feed in cement kilns may negate the environmental benefits of regulating mercury emissions from coal fired power plants as well as any environmental benefit from regulating coal combustion waste disposal. Essentially, sending the coal combustion wastes to be used in cement kilns means that you have captured the mercury from the coal fired power plant and prevented the coal fired power plant from disposing of the resulting air pollution control byproduct in an unsafe way, only to ultimately transfer the captured mercury to less stringently regulated air emissions or waste streams of cement kilns.

For example, after finding high levels of mercury in the soil and wildlife surrounding Lafarge North America's cement plant in Ravena, New York, the state announced in October 2009 that the Ravena cement plant would be prohibited from using coal fly ash. The plant used between 30,000 and 60,000 tons of coal ash a year. It has been reported that although fly ash is less than 2% of the kiln mixture, in 2008 it caused more than 10% of the plant's mercury emissions on average, emissions Lafarge, with one of four tests showing that the ash accounted for 19% of the plant's mercury emissions.

This pollution by-product of coal ash will only worsen. The levels of these toxics are increasing under new power plant air emissions control requirements. Due to stronger air pollution controls on emissions of mercury and other toxics, the mercury levels in coal ash and other wastes has been rising and will likely nearly double this decade.

Finally, we all realize that cement is not permanent and must be disposed of eventually. Construction material containing coal combustion wastes will require end-of-life safeguards to prevent toxic substances therein from entering the environment. Mass DEP does not consider the need for such safeguards in claiming a net environmental benefit from use of coal ash.

In conclusion, PEER urges that Mass DEP reject this application or any application purporting to grant GHG credits to coal combustion wastes.

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