

February 10, 2015

Ms. Stephanie Strength  
USDA/Rural Utilities Service (RUS)  
1400 Independence Avenue SW  
Room 2244-S, Stop 1571  
Washington DC 20250-1571

Via e-mail (stephanie.strength@wdc.usda.gov) and hard copy by US mail.

Subject: Public Scoping for RUS Environmental Impact Statement Related to Energy Answers Arecibo Incineration Project (Project)

Dear Ms. Strength:

I am happy to see the federal government involved with the Energy Answers Arecibo Incineration Project (Project) because up to this time the formal evaluation of the Project has not been transparent, public involvement has been curtailed by lack of public disclosure of vital aspects of the proposal, and the result has been the perception that the outcome of this proposal has already been decided in favor of the Project regardless of social and environmental consequences. Your federal agency has an opportunity to take a fresh and comprehensive look at the elements of the Project and decide if they are or not sound and beneficial or not for the public good.

Regarding your agency's involvement in this issue, I am curious to know if you view this Project as a rural enterprise given that Puerto Rico is mostly an urban island and the Project serves an urban population, not a rural one. Moreover, is your investment for electric power appropriate through an energy inefficient solid waste approach; particularly considering that Puerto Rico has an excess of power production and with declining population may require less in the future? In short, does this Project offer a compelling economic case for USDA in light of the social and environmental costs of the proposal? How strong is the proposed action when compared with the no-action alternative? We don't know the answer to these questions because the environmental review to date has apparently assumed that this Project is a done deal and thus, alternative actions such as the no-action alternative have been either ignored or poorly developed.

Five issues (in bold) that must be addressed in a fresh and objective analysis of this Project are:

**The changing social conditions in the Island.** The Project's Environmental Impact Statement (EIS) contains obsolete population estimates for Puerto Rico because the current population migration to the United States mainland with

subsequent reduction in population was not included, nor were the implications of this population reduction to the social and economic conditions affecting the Project including the production of solid waste materials. Moreover, the age of the population and the type of economic activity that it engages have changed dramatically in the past decade. Given the nature of the Project, it is imperative that its planning and viability be determined by realistic population estimates, whose trends today are moving in the opposite direction to those anticipated by earlier Project documentation. A 500,000 people swing in population results in many tons of solid waste not being produced everyday and the gap between reality and the Project estimates is wider because they projected increases while the population actually decreased.

Equally important for the analysis of the Project is the recent demonstration of the viability of profitable recycling alternatives for dealing with the Island's solid waste problem. The municipalities of Carolina and Guaynabo, to name two, export recycled materials from solid waste, make a profit, and provide jobs to people. This alternative to the Project requires analysis in terms of future competition for solid waste (which affects Project viability) as well as an alternate action to the Project. In the analysis of alternatives to the Project, new and accurate information will be needed concerning the composition of the solid waste produced in the Island. Such information not only helps in the evaluation of alternative uses of materials (such as recycling) but also will inform about the types materials (including toxic ones) that will be concentrated by the Project's residual ashes and atmospheric emissions.

**The vulnerability of the selected site for this proposal.** The selected site is in the floodplain of the Río Grande de Arecibo, a river that can occupy the whole floodplain when it reaches flood stage. This particular location is also close to valuable natural resources such as rich agricultural soils, highly productive estuaries, magnificent karst forests and karst topography, and beautiful vistas of a particularly attractive part of Puerto Rico. To protect the site from the 100-year flood, the Project intends to isolate the site from the rest of the floodway. To do so they must lower the topographic elevation between the site and the river channel. This topographic leveling is expected to provide more space for floodwater discharge during floods. This action will likely alter or eliminate a natural river meander, which requires a justification and environmental impact analysis. The proponent wants to change the topography and functioning of public wetlands for private economic benefit and the public deserves a cost/benefit analysis for such a tradeoff.

Assuming the proponent changes the topography to isolate the site from the river's floodway, the rest of the floodplain should be under water after the 100-year flood. The Project will not flood, assuming its topography is above 5.2 m elevation above mean sea level. What is not clear is if the Project will be able to function under those conditions. If all access roads are flooded, how will the Project get its raw materials? Considering that this activity is designed to serve not only the

surrounding region but also most of the Island, it would appear that a vital cog of the solid waste infrastructure of Puerto Rico is being located at a vulnerable site during frequent periods of floods and hurricanes. This is in spite of a Presidential Executive Order and numerous local and federal laws and regulations that discourage these kinds of vulnerable locations for developments.

Also, if 100-year flood levels reach 5.2 m at the site, and the site's topographic elevation ranges from about 3.0 to 4.6 m, how will the site be protected from flooding? Information about the history of flooding at the site could be helpful for clarifying whether site will flood or not after the implementation of the proposed topographic leveling east of the Project. It would also be useful to the public if the topographic maps in the documents available for review could be drawn in a way that the information about elevations on the maps could be read. Another related question is the functioning of retention ponds, which will be dug to 2 m depth. How effective are these ponds if the water table rises above the ponds during floods? Documents should include a simple diagram that includes the current and future topography of the site, variation of water table levels, and changes in flood heights with different storms intensities. This information is scattered and hidden in technical detail (topographic maps in documents have small letters and do not identify clearly the elevation within the site). Therefore, it is difficult to understand how the site and its infrastructure will perform during extreme floods.

**Potential incompatibilities among the proposed action and affected social and ecological systems.** The Project is designed to process a significant fraction of the solid waste generated in the Island. The Project design capacity is almost double the capacity of solid waste production of Puerto Rico's northwest, which means that a lot of solid waste will have to come from outside the region. Recovery of potentially recyclable materials among the solid waste received in the Project will be minimal. Thus, the Project pretty much closes out the possibility of alternative approaches to solid waste management, including the possibility of a recycling program for Puerto Rico. If true, this statement requires serious consideration. If the Arecibo Project commits the Island to a particular solution to its solid waste disposal and closes out many local recycling, reuse, and reduction of waste initiatives, one expects a more comprehensive analysis of alternatives, which current documents do not include.

It is unclear whether municipalities will or not be forced to produce a set amount of solid waste to the Project (the EIS says no, but press reports contradict these statements). If municipalities are forced to accept the Arecibo Project as the site where all their solid waste is to be disposed of, then the incentive for smaller-scale solutions to waste disposal are lost as the Project will require a steady supply of material to remain operational. Although it is true that Puerto Rico is behind in recycling, this is not because its people are somehow insensitive to this issue. Lack of recycling programs and opportunities explain the current state of affairs and those who look out for the public good must carefully weigh the consequences of

concentrating so much responsibility on a single Project. If the Project fails, the whole Island fails.

The current justifications for the Project do not analyze the increased costs of transporting solid waste to Arecibo. Current documents pass this responsibility and costs to other government agencies while claiming only the benefits of the Project. What are the costs and effects of transporting over long distances so much solid waste from many municipalities to a single location? Burning of fossil fuel, air pollution, noise, road deterioration, increased truck traffic, etc., all require careful consideration because these actions are precipitated by the Project. Moreover, what produces more jobs and economic activity, the Project or an effective Island-wide recycling program? Nowhere are serious alternatives to incineration discussed in available documents.

The use of water from the Caño Tiburones assumes that the water pumped by the Commonwealth at El Vigía is somehow excess water no longer needed for coastal systems or the Caño itself. The selection of this alternative over the recycling of sanitary waters was done without an analysis of the ecological effects of reducing freshwater input into coastal wetlands and coastal waters while increasing marine influence on the coastal zone. Assurances are needed to the effect that the water withdrawal can be sustained without irreversible change in salinity or functioning of coastal wetlands.

**Disclosure and analysis of the full array of environmental effects of the proposal.** To date, no one knows where the ash from the incinerator will be deposited. It is impossible to properly evaluate the Project if a major long-term effect of its implementation and approval occurs outside the selected location and those effects cannot be examined because the locations are not disclosed. The issue is compounded by the possibility of releasing toxic substances to the environment and the already difficult situation in the Island with the disposal of ash residues from another energy-generating plant.

The proposed atmospheric output of the incinerator will comply with the concentration levels in federal regulations, but that compliance does not automatically mean that the toxic materials in air and ash (including fly ash) will not affect social and ecological systems. The Project is located near human communities, agricultural activities, and ecological systems that could be affected by EPA-compliant air. These social and ecological systems do not only respond to concentration of toxins in materials or air, but also to the absolute amounts of these toxic materials. An historical analogy is instructive.

In the 1960's atmospheric nuclear explosions were globally banned because of the phenomena of ecological concentration and magnification of nuclides. Ecological systems such as Florida pastures were exposed to low concentrations of radioactivity and through their natural functioning concentrated and returned the nuclides to people in the form of radioactive milk, including radioactive breast-



feeding milk in humans. I have not seen a calculation of the absolute amount of toxins to be released in the atmosphere and their fate on the landscape other than expected dilution either in the atmosphere or elsewhere. All relevant data are reported in units of concentration that appear very small and within regulations. But what is the long-term fate of the absolute amount of these toxic substances discharged into the social and ecological environment of Puerto Rico? In the Responses to Public Comments document, the Environmental Protection Agency (EPA) states: "The estimated concentrations of all COPEC's (for soil, surface water, and sediment), in the ESA's are much lower than their appropriate ESBL's screening values (i.e., more than 3 orders of magnitude less for soil and sediment, and more than one order of magnitude for surface water), *and therefore, adverse effects in the ecological receptors are not expected.*" (page 117 of 124; my emphasis). Concentration data does not justify the EPA's conclusion of lack of adverse effects on ecological systems for two reasons: (1.) It is incorrect to use concentration data to compare substances with different densities because their concentration is not proportional to the quantity stored in these materials. Concentration data needs to be corrected for the density of the substances so that equivalent units of mass can be compared. (2.) Even after correction for density, the data only states what is present in two places at a certain time and provides no information on rate of accumulation over time. Natural ecosystems concentrate substances at different rates and after a period of time can accumulate sufficient material to cause ecological effects. Thus, the technical basis for the EPA's conclusion that "*...adverse effects in the ecological receptors are not expected*" is questionable and requires reassessment.

The karst forests and karst pastures in the vicinity of the incinerator concentrate nutrients and organic matter over the nutrient-poor rocks, much like Florida forests and pastures do when growing on sandy soils. Will these tropical systems concentrate toxins and return them to humans in their milk and food? This is a question that should be of enormous interest to USDA because the karst region where the Project is located supports the milk industry of the Island, one of the few agricultural activities that are almost self-sustaining in Puerto Rico. To be convincing that this Project has no effects on people or ecosystems it will be necessary to construct a mass balance of materials, including the toxic ones that escape the site through the air or ashes. Using the law of mass conservation, such a mass balance needs to be expressed in units of weight per unit area and unit time. Ecological research should establish the concentration rate of toxic substances by karst forests and pastures. This will allow a quantitative assessment of the load of chemicals that this Project will have over the surrounding ecosystems and human communities, over the long run.

**Long-Term Aspects of the Project.** The fundamental issues that require special attention when addressing the environmental impact of this Project are its effects over the long-term. For example: long-term effects on:

- The level of recycling in the island,

- The transportation costs and effects of hauling garbage long distances to Arecibo,
- The potential accumulation of toxins by forests and pastures and their potential transfer to people,
- The environment due to accumulating ashes in undisclosed locations,
- The changing hydrologic conditions around Caño Tiburones, and
- The rapidly evolving demographic and economic situation of the Island (and vice versa).

To effectively address the five issues that I have outlined in this letter, your agency must not depend on previous documentation used to justify this proposal through the local jurisdictions. Any cursory review of past documentation quickly establishes that the record is incomplete, obsolete, and misleading. For example past documents do not disclose the location for the disposal of ash, they contain obsolete population data, and mislead on how solid waste management of municipalities will be affected by the proposal. The ecological consequences of potential natural concentrations of toxins are ignored. Moreover, as I discuss above, the effects of the Project has to be considered over the long-term because this is a decision that affects many components of the economic, social, and ecological systems of the Puerto Rico for decades to come.

The USDA has an opportunity to help this Island make a decision of fundamental importance to its future in a way that is open and fair and which discloses all the potential benefits and hazards of what is being proposed.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ariel E. Lugo', with a stylized flourish at the end.

Ariel E. Lugo  
Támesis 1528  
San Juan, PR 00926

Cc Pedro Saade