



September 5, 2014

New Jersey Energy Resilience Bank
erb_comments@bpu.state.nj.us

Re: Draft Energy Resilience Bank Program Guidelines

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To Whom It May Concern:

As a nonprofit organization committed to promoting responsible land use policies that will fuel a prosperous economy, New Jersey Future is pleased to have the opportunity to comment on the Draft Energy Resilience Bank (ERB) Financing Program Guide.

New Jersey Future wholeheartedly endorses the ERB program goals and general approach, but finds that, because of unclear and inadequate requirements for flood hardening, the program as designed will not meet its goal of making energy infrastructure more resilient to future storms and other emergencies. We offer short- and medium-term recommendations to ensure that the ERB delivers on its promise.

New Jersey's Increasing Vulnerability to Flooding.

As noted in the guide, New Jersey is increasingly vulnerable to extreme weather, having experienced 27 major power outages between 1985 and 2013 due to events including tropical storms, hurricanes, wind and rain storms, ice storms, tornadoes and winter storms/nor'easters. The greatest damage has been caused by flooding, most recently from hurricanes Irene (2011) and Sandy (2012). New Jersey has had 11 presidential disaster declarations related to flooding in the last nine years and ranks third in the nation in the value of payments received from the National Flood Insurance Program.¹

But flooding is not limited to major disasters. According to a recent NOAA report, East Coast cities in particular are experiencing an increase in so-called "nuisance flooding," which leads to such public inconveniences as frequent road closures, overwhelmed storm drains and compromised infrastructure. Atlantic City and Sandy Hook rank among the top 10 cities experiencing nuisance flooding, which is caused by rising sea levels. "As relative sea level increases, it no longer takes a strong storm or a hurricane to cause flooding," said William Sweet Ph.D., oceanographer at NOAA's [Center for Operational Oceanographic Products and Services \(CO-OPS\)](#) and the report's lead author. "Flooding now occurs with high tides in many locations due to climate-related sea-level rise, land subsidence and the loss of natural barriers. The effects of rising sea levels along most of the continental U.S. coastline are only going to become more noticeable and much more severe in the coming decades, probably more so than any other climate-change-related factor."

¹ <http://bsa.nfipstat.fema.gov/reports/1040.htm>

Sea level rise is a long-observed phenomenon that has begun to accelerate. In New Jersey, sea levels are rising faster than the global average, because, according to the Rutgers Climate Institute, “the land is subsiding at the same time that water levels are rising.”² Rutgers scientists provide customized projections of sea-level rise for New Jersey as a range to account for uncertainty, with a best estimate of 18 inches by 2050 and a range from 13 to 28 inches.

Rutgers findings concur with those of NOAA, that sea-level rise will make severe coastal flooding events more frequent in the future. By the end of the century, a storm like Hurricane Sandy can be expected to occur once every 20 years, rather than once every 100 years, if sea-level rise in New Jersey is at the high end of the expected range.³

Support for the General Approach of the Energy Resilience Bank.

Given both the damage caused by Hurricane Sandy and the growing risks of future damage due to climate change and sea-level rise, New Jersey Future welcomes the Energy Resilience Bank proposal to fund power systems for critical facilities that will make them less vulnerable to future severe weather events and other emergencies. We also endorse the priority emphasis on the state’s drinking water and wastewater facilities, which are often at above-average risk of flooding and power loss given their locations, and are critical to public health and clean waterways. Although not well-versed on energy technology or finance, New Jersey Future appreciates the bank’s approach to leveraging its \$200 million in federal funds and encouraging energy efficiency and innovative technologies.

Review of the ERB Provisions for a Risk Assessment and Major Concerns

New Jersey’s CDBG-DR Action Plan Amendment,⁴ approved by HUD, states that the state will:

- “review design options that ensure that energy technology will be appropriately elevated, walled, or otherwise resilient to potential future flooding and storm surge;” and
- evaluate potential sites for projects “using the National Oceanic and Atmospheric Administration’s (NOAA) Sea Level Rise Tool to assess the risk of sea level rise over the useful life of the energy technology to be funded.”

New Jersey Future does not find that the program guide meets these claims. In addition, we find that the guide’s requirements lack adequate guidance for applicants on resiliency standards, which may increase their application costs if they attempt to determine an appropriate resiliency standard without such guidance, and which create uncertainty about whether a proposed project meets the required standards.

The program guide includes the following language regarding a risk assessment:

² State of the Climate: New Jersey. 2013. Rutgers Climate Institute. Page 6.

³ Ibid, page 7.

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http://www.nj.gov/dca/divisions/sandyrecovery/pdf/NJ%20Action%20Plan%20Substantial%20Amendment%20%20R%20FINAL%20-%20formatted%205-23_CLEAN%20ve....pdf, page 3-38.

As set forth in the State’s Comprehensive Risk Analysis, detailed in Substantial Amendment No. 7 to New Jersey’s CDBG-DR Action Plan (“Action Plan”), in addition to energy resiliency, the DER technologies to be financed by the ERB must include designs for flood hardening the facility in which the DER technology will be constructed and installed. At a minimum, all resilient generation or storage equipment of the project within the facility will be required to be constructed above FEMA’s best available data for base flood elevations, plus any additional requirements that may be imposed by federal, state, or local ordinance, statute or regulation.

As further explained in the Action Plan, any pertinent infrastructure vulnerabilities should be identified and evaluated in the feasibility and design stage using, among other tools, the National Oceanic and Atmospheric Administration’s (NOAA) Sea Level Rise Tool for Sandy Recovery at <http://www.globalchange.gov/browse/sea-level-rise-tool-sandy-recovery#overlay-context>. (page 10)

And

Consistent with the State’s CDBG-DR Action Plan, any proposed project design must ensure that energy technology will be appropriately resilient to potential future flooding and storm surge. Tools that can help assess these risks include the NOAA Sea Level Rise Tool for Sandy Recovery at <http://www.globalchange.gov/browse/sea-level-rise-tool-sandy-recovery#overlay-context> and Coastal Vulnerability Index and Mapping Protocol at <http://www.state.nj.us/dep/cmp/docs/ccvamp-final.pdf>. (page 13)

New Jersey Future raises the following concerns about these requirements, which should be addressed by the state of New Jersey in the Program Guide, not left to applicants to figure out:

1. The guidelines do not specify which of the four sea-level-rise scenarios in the NOAA sea-level-rise tool to use, nor do they reconcile the NOAA projections with those of the Rutgers Climate Institute. Should municipalities select the low, intermediate-low, intermediate-high, or high scenario? As NOAA itself notes, due to an observed “hot spot” of accelerated sea-level rise in the Mid-Atlantic region, decision-makers “may consider accelerated rates ... into their risk-averse worst-case scenarios.”⁵ Furthermore, how does the NOAA tool relate to the sea-level-rise projections prepared by the Rutgers Climate Institute, which are customized for New Jersey? How should a project engineer factor in risk, given the uncertainty around sea-level-rise projections?
2. The guidelines require applicants to construct projects “above FEMA’s best available data for base flood elevations plus any additional requirements that may be imposed by federal, state, or local ordinance, statute or regulation,” but does not specify what these might be. Where should applicants go to find out what the FEMA and other requirements might be? How much “above” is acceptable? (See our recommendations below.) Those levels, or a process to establish them, should be specified in the guidelines. Note that elevating equipment to higher levels can be quite simple for equipment like solar batteries, which can be placed on a second story as

⁵ NOAA Sea-Level Rise Tool for Sandy Recovery at <http://www.globalchange.gov/browse/sea-level-rise-tool-sandy-recovery#overlay-context>, Page 10.

opposed to the ground floor. Floodproofing standalone power plants, like CHP plants, to a higher design standard may require a combination of approaches and will depend upon site conditions.

3. The guidelines do not specify the planning horizon to use when considering future risks from sea level rise and storm surge. The guidelines should establish the planning horizons for the various types of energy projects that could receive funding. New Jersey Future has always recommended a planning horizon that matches the useful life of the equipment or installation. The concept of “useful” life is fundamentally different for a small piece of equipment, such as a solar battery, than it is for a facility like a combined heat and power (CHP) plant. While a CHP plant may need substantial renovations and upgrades after 25 years, it is major installation that involves considerable site investment and is not considered to be temporary or portable, as one can see in the photograph below of the Princeton University Energy Plant.



4. The program guide offers no guidance on how an applicant should integrate the risk of flooding from storm surge with sea-level-rise projections and maps. Flooding impacts are caused primarily by storm surge, which is exacerbated by sea-level rise. The impact of storm surge depends on site conditions, including whether a site is subject to wave action. The ERB program guide gives applicants the option of referring to the NJDEP Coastal Vulnerability Index and Mapping Protocol, which provides an excellent review of the combined risks of storm surge and sea level rise, *but does not provide any analysis of the interplay of storm surge and sea-level rise for specific sites.* Should applicants conduct their own study to understand this risk? If so, using what assumptions? As noted earlier, sea-level rise increases the impact of all storms: By 2100, what is today a “20-year” storm (with a 5 percent likelihood of occurring this year) will be one with the damage of a “100-year storm” (with a 1 percent likelihood of occurring this year) and the magnitude of Hurricane Sandy.

Recommendations for a Robust Risk Assessment Process to Deliver Resiliency

New Jersey Future finds that the Draft Program Guide for the Energy Resilience Bank falls behind state-of-the-art efforts to assure resilience in the face of flooding. Regardless of how innovative or “resilient”

the energy technologies and designs might be, if they are vulnerable to flooding the program will not achieve its stated goal of “energy resilience.”

The practice of flood hardening in a coastal area is evolving rapidly across the country in response to the growing understanding of risks, jump-started most recently by Hurricane Sandy. As one example of an up-to-date and more robust flood standard, on September 2, Con Edison submitted its Storm Hardening and Resiliency Collaborative Phase Two Report to the New York Public Service Commission. This report included provisions to flood-harden its power facilities using a design standard of FEMA 100 year Base Flood Elevation (BFE) plus three feet, or “BFE+3.”⁶ Con Edison also proposed to review this standard at least once every five years, based on the best available data on climate science and standards, using a process involving outside experts and design engineers.⁷ Interestingly, the New York State Attorney General found that the BFE standard was not adequate and has responded that “Con Edison should refine its BFE+3 flood design standard to account for asset-specific features and risks, including consideration of the BFE+5 design standard for all long-lived, critical assets.” (See attached.)

New Jersey Future recognizes that the ERB has established an aggressive timeframe for launching its program. We make the following recommendations for revisions to the EFB Program Guide that respect that timeframe but will also ensure that taxpayer dollars are not invested in projects at risk of flood damage. The ERB Program Guide should be revised before adoption in order to:

1. Require, as an interim step, that all project applications use a minimum design standard of BFE+3 for tidally influenced areas, and of BFE+2 for non-tidally influenced areas. (Note that Base Flood Elevations are a shorthand means of integrating risks from storm surge and sea-level rise.)
2. Define, as an interim step, “major installations” to include new power plants, including CHP plants, and require for such major installations a more detailed site-specific analysis that considers likely storm surge and a range of design elevations from BFE+3 to BFE+5.
3. Establish a climate hardening advisory group that would include members from the NJDEP, the Rutgers Climate Institute, the Columbia Climate Change Law Center, the New Jersey Association of Floodplain Managers and appropriate engineering professionals, to establish more robust and thorough risk assessment guidelines for applicants and to review criteria for ERB staff, both to ensure resilience and increase certainty in the application process. The State of New Jersey should incorporate the refined guidelines into the program guide by December 2014.
4. To commit to reviewing and updating the risk assessment guidelines on a five-year timeframe.

New Jersey Future wholeheartedly endorses the stated goals of the Energy Resilience Bank. We offer our assistance to the State of New Jersey in updating its flood hardening standards to ensure that the state’s critical facilities, starting with water and wastewater infrastructure, are available to serve New Jersey residents today and in the future regardless of the what the weather may bring.

⁶ <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=13-e-0030&submit=Search+by+Case+Number>

⁷ <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=13-e-0030&submit=Search+by+Case+Number>

We thank you for the opportunity to comment on the Energy Resilience Bank. Please do not hesitate to contact [me](#) (609-393-0008, x104) or [Chris Sturm](#), senior director of state policy (609-393-0008, x114) with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'PK' followed by a long horizontal stroke and a final flourish.

Peter Kasabach
Executive Director