

## Notes on Berkeley Electric Cooperative meeting April 12, 2018

### Participants:

Berkeley Electric –Tim Mobley, VP Engineering and Operations, Mark Gaddy, VP Economic Development and Government Affairs; Tony Vincent, Manager of Economic Development and Key Accounts ; Tom Harvey, Manager Distribution Operations; Scott Bennet, Superintendent Johns Island; Chris Rutledge, Superintendent System Management; Jeff Coleman, Manager of Engineering and Tech Services.

Kiawah – John Leffler, Diana Mezanotte, Jim Chitwood, Jane Ellis, David Pumphrey, Jim Sullivan, Lyn Schroeder, Jack Kotz, Chris Widuch, Cathy Pumphrey

### Overview of System

- BEC buys power from Santee Electric. Electricity is delivered through high voltage line that crosses intracoastal at the Limehouse Bridge on Main Road and delivers to Substations at Seabrook and Legareville.
- Kiawah can be serviced through the both lines coming in from Seabrook and Legareville. If there is disruption to one, then power can be routed through the other.
- BEC distributes electricity to customers through series of switch gear stations, and transformers.
- The switchgear and transformers become smaller as the distribution system gets closer to the ultimate customers.
- Santee Cooper is about to complete a loop for power distribution (May 2018). The Loop connects Wadmalaw to Seabrook/Kiawah for better distribution.

### Vulnerabilities of the Distribution System to Sea Level Rise

- BEC is not explicitly considering SLR in their planning. The focus has been on hardening the system in the face of storms, including wind impacts and flooding. Plans for preparation for storms and SLR are similar. The distribution system needs to be resilient for possible inundation by salt water. Salt water can be extremely destructive for electrical equipment.

- BEC is placing underground cables in conduits to protect them from salt water. are OK and are being replaced with waterproof cabling.
- Most vulnerable part of the system are the above ground component such as switch gears that have vulnerable parts that will be affected by flooding. The power failure during Irma was caused by the loss of 3 switchgears on the island.
- Larger switch gears may service hundreds of homes while transformers may serve a few houses. Larger switch gears are placed on pads that raise them 36 inches off the ground. Transformers are placed on shorter pads about 5-15 inches. The specifications for these pads are set by the Rural Utility Services, a part of the Agriculture Department, that provides loans to rural electric cooperatives.
- BEC has been taking steps to lower vulnerability of sensitive equipment to salt water flooding. In places where there was flooding during Irma BEC is planning to replace up to 9 switchgears so that they can be submerged.
- Normal switchgear units cost about \$20,000 while the water tight units cost \$80,000 – 100,000. BEC representatives stressed that they need to consider these capital investments carefully and in the context of what is best for all of their customers.
- BEC has also replaced some switchgear with splice units to reduce the number of total units on the island. Raising the height of switchgear and transformers is possible but there is concern about the overall height of the equipment would not be aesthetically acceptable.
- They purchase transformers with more stainless steel parts for use in places like Kiawah or Seabrook.
- If a category 4-5 hurricane makes landfall south of Kiawah, we will have major loss of structures and infrastructure. BEC does not plan for this type event and recovery will take a long time.
- Re-routing power is a manual process so when there is a localized outage, they can connect to alternate sources but it usually requires manual intervention.
- BEC works on 4 year construction plans. They forecast their spending plans four years forward for their entire service area, then submit the plan to the RUS for a loan to fund the plan. If they want to make a change in that plan, they must consult RUS.

Areas for Further Discussion

- The more detailed GIS work by Norm Levine on areas that could be flooded with different levels of SLR should be shared with BEC to provide the basis for longer planning about investment equipment that would be more watertight.
- The Committee may want to review the actions that investor owned utilities in other flood prone areas are taking to reduce their vulnerability to SLR. This could include cities like Virginia Beach and Miami.
- Kiawah may want to evaluate the use of pump stations reduce the risk to critical electrical equipment. BEC said that Seabrook has done this. (discussion after the meeting ended.)