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CABLE ROUTING ALTERNAIVES

INTRODUCTION

I have looked closely at the cable routes, listened to Mr. Epstein's concerns, and Clinton Hedrington at VIWAPA concerns.

Mr. Epstein : Employees on both islands damaging land cable
Position of Beach Manhole on LSJ
Boat Anchoring
Cost and Long-term viability

Mr. Hedrington: Reliability (Ridge Road (existing LGSJ supply) is one of the least reliable
Red Hook one of the most reliable
Land cables break more than water cables due to damage (same concern as JE)
Original Switching Gear a both existing landings need to be replaced

Things that need to be determined:

1. Does Mr. Epstein want/need a redundant source of power is having the backup generation enough?
2. Can we come up with enough protective measures that Mr. Epstein will be comfortable with the land cable crossing?
3. In the future will Mr. Epstein want to go to an alternative method of power generation (solar/wind) that would make the VIWAPA system become a backup?

My thoughts:

1. We can put the land cable in a concrete lined trench and place warning tape and small signage clearly informing workers of the presences of the cables. This can go under existing drives and roadways on LSJ. This has less environmental impact and makes it easier to fix.
2. We should put the Switching Gear on LSJ (existing) in a more protected area to prevent future damage.
3. The secondary cable may not be necessary now. There are advantages to having it, it provides redundancy and back up when a feeder goes down and/or if one of the cables is damaged. The power cables are very strong and WAPA's cable have been caught several times by fairly large vessels with no damage and the cables collect anchors.
4. I think that if a large amount of development is proposed in the future it might be prudent to have the second leg to St. Thomas. If this is desired the Red Hook connection while longer would be a better choice.

EAST LSJ TO GSJ

If no land crossing is desired this would be the best alternative between the two islands. This route would parallel the existing cable coming out of GSJ. The cable would be lain to the north of the existing cable and would parallel the cable slowly veering off past the reefs into the northern facing bay swinging wide to avoid the reef near the entrance the cable would then land at the same location proposed for the Great Bay Cable. Again there are ESA corals on the western shoreline of the GSJ landing. There are also scattered ESA corals within the bay in LSJ, but we should be able to easily avoid these by careful routing giving them a wide berth. There will also be ESA listed on the offshore reefs in this area and we will give them a wide margin of error to prevent impact as the cable settles.

The route is approximately 9250' and again it may be possible to shave off some length as we do the entire route survey.

The GSJ landing would only require approximately 30' of articulated pipe protectors but the LSJ side will require about 250' to get it over the nearshore pavement, once the cable reaches the sand it should self-bury.

WEST LSJ TO EAST GSJ

This is still my preferred route. This is by far the shortest route, but does require crossing LSJ on land and putting a new beach manhole on the west side of LSJ. The cable could be buried in the roadway which crosses the island and the landing would be near the library. Riprap could be moved to place the cable and articulated pipe and then replaced to cover the line and assist in protecting the cable. The cable would then run through the sand beside the rocky outcropping through the cut between the two islands into the existing sand channels and come up across an area of sparsely colonized pavement on the cobble beach below the maintenance warehouse on LSJ. A manhole could either be placed on the beach or the cable could be carried all the way up to the maintenance area and terminate there. I would just carry the cable all the way up to the maintenance area and not put a BMH on the shoreline. There are some ESA corals to the north of the GSJ landing but here again these should be easily avoidable.

This route is only 3000' in length in water and 850' on land on LSJ and 475 on land on GSJ.

Approximately 30' of articulated pipe would be require on LSJ and approximately 275' on LSJ.

I know that there has been some discussion able the difficulties of placing the land cables, however considerations should be given if at all possible. The shorter cable has far less potential impact than the other two cables simply by the virtue of its length.

Red Hook

This is my preferred route if a redundant loop is desired. This gives us a more reliable feeder. This cable could come out south of the waterline and then proceed around Cabrita Point into the northern bay. This could provide a loop connecting two different feeders from St. Thomas. This cable is approximately 12800' in length and would require approximately 30' of articulated pipe at each landing.

We need to evaluate each of these routes carefully and make a decision on whether we want 1 cable or 2 and if we are okay coming across land. All are permittable, and all avoid ESA species to the greatest degree possible. As soon as we select a route I will do the entire route survey and can tie down the length. These are however good estimates of the length required, a 10%-15% allowance should be

included to allow for issues during the lay. The permitting cost will be the same even if we do the two lands, it will only take about 2 extra days of in-water time and I can work with that. During the actual lays two cables will take probably 2 extra days of monitoring and would require twice as much long term monitoring since we would be looking at two different routes.

Respectfully submitted,

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