

Date: July 11, 2017

Via Hand-Delivery to:

Town Council
Town of Palm Beach
360 South County Road
Palm Beach, FL 33480.

Re: Town of Palm Beach (the “**Town**”) proposed Non-Ad Valorem Special Assessments for the design, acquisition, construction, and installation of the Underground Utility Improvements for the fiscal year October 1, 2017 – September 30, 2018 and future fiscal years and Resolutions Nos. 090-2017 and 100-2017 (collectively, the “**Special Assessment**”).

Public Hearing Date: July 12, 2017
Date of Notice of Hearing: June 21, 2017

CAROL KOSBERG’S OBJECTION TO SPECIAL ASSESSMENT

WEISS, HANDLER & CORNWELL, P.A.
Counsel for Carol Kosberg
One Boca Place, Suite 218-A
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Boca Raton, FL 33431
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Facsimile: (561) 423-0458



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KOSBERG'S OBJECTION TO SPECIAL ASSESSMENT

Carol Kosberg and Carol Kosberg, Trustee U/T/D 2-23-90 (collectively, "Kosberg"), through undersigned counsel, object to the Special Assessment on the following grounds:

1. Kosberg is the owner of the property located at 3400 South Ocean Boulevard, Apartment 2H2, Palm Beach, Florida, 33480, more particularly described as Condominium Apartment Number II-H-2 in the ATRIUMS OF PALM BEACH CONDOMINIUM APARTMENTS, a Condominium according to the Declaration of Condominium thereof, OR Book 3012, Page 994, of the Public Records of Palm Beach County, FL, as amended ("Kosberg's Property").

2. The Special Assessment is invalid as to Kosberg's Property and all other property within the Town subject to the Special Assessment (Kosberg's Property and all other property within the Town subject to the Special Assessment being collectively referred to as the "Assessed Property") for the reasons set forth herein and for all of the reasons stated in the materials contained in the Appendix to this Objection, incorporated herein by reference, which the Town

Council has failed to consider, thereby making the Special Assessment arbitrary. Kosberg also adopts and incorporates by reference all objections to the Special Assessment filed or otherwise submitted by any other property owner.

3. The Special Assessment does not satisfy the two-prong test and other standards set forth in *Morris v. City of Cape Coral*, 163 So.3d 1174 (Fla. 2015) and similar cases that require that (1) the property burdened by the assessment must derive a special benefit from the service provided by the assessment, and (2) the assessment for the services must be properly apportioned.

4. There does not exist a logical relationship between the Undergrounding Project which is the subject of the Special Assessment and the benefit to the Assessed Property.

5. The undergrounding of above-ground utility lines is a general sovereign function and by law does not provide a special benefit for the Assessed Property.

6. The Town Council's legislative determinations are unsupported by the record and are arbitrary.

7. The Town Council's legislative determinations are not supported by competent substantial evidence.

8. The Special Assessment is not directly proportionate to the benefits to the Assessed Property. The Town has not demonstrated that the amounts of the assessments are proportional to, and no greater than, the benefits conferred on the Assessed Property. This is particularly true given that such properties are required to pay for special benefits conferred upon certain parcels and neighborhoods that, under the Town's methodology, will be benefitted by the Undergrounding Project, but which were nevertheless excluded from or favorably treated by the assessment.

9. The Special Assessment is in excess of the proportional benefits to the Assessed Property.

10. The Town Council has not quantified the benefit to the Assessed Property and therefore there is no basis for determining that the amount of the assessments are not greater than the benefit to the Assessed Property.

11. The Town is on a barrier island subject to storm surge, with portions below sea level and in a flood zone, including the Assessed Property, making the underground lines, above-ground switch boxes and underground vaults on the Assessed Property more vulnerable to damage and to disruption in service than hardened utility poles and above-ground lines, particularly hardened poles and lines. As a result, there is no safety or reliability benefit to undergrounding.

12. The FPL Reliability Reports relied upon by the Town Council do not address undergrounding on a barrier island, with portions below sea level and in a flood zone, and therefore cannot be the basis to justify the determination that there are benefits for safety and reliability resulting from undergrounding. FPL's comments favorable to undergrounding are in general and are inapplicable to the Town because of these factors.

13. There is no safety or reliability benefit to undergrounding the Assessed Property.

14. Undergrounding will require that owners on whose property switch boxes and underground vaults will have to be installed must give easements to service these. The Town Council did not consider the negative effects of the easements and the decrease in property value to the Assessed Property resulting from the installation of the switch boxes and vaults and the granting of the easements.

15. The assignment of safety equipment benefit units ("EBUs") should be based on average density. Instead, the Town Council is assigning safety EBUs based on property frontage, which works against condominium unit owners, including the Assessed Property. The Town Council has assigned reliability EBUs based on density and should do the same as to safety EBUs.

16. The assignment of EBUs to the golf courses and the Breakers is arbitrary and inconsistent with the assignment of EBUs to other properties. This assignment was based on the false assumption that “parcels that make up the golf courses and the Breakers benefit to a lesser degree due to diminished return of benefit as the parcel’s total acreage increases.” In fact, overhead facilities are primarily visible when people are outside. When on a residential property, a large percentage of time is also spent indoors. When on a golf course, a large percentage of time is also spent outdoors. If time spent looking at overhead facilities is related to aesthetic benefit, golf courses and the Breakers have a per-acre benefit that is greater than residential properties.

17. The method of assignment of EBUs to “excluded parcels” is arbitrary and inconsistent with the assignment of EBUs to other parcels. The “excluded parcels” should be assigned EBUs in the same manner as the other parcels which are subject to the assessment.

18. The method of assignment of EBUs to “excluded neighborhoods” is arbitrary and inconsistent with the assignment of EBUs to other parcels. The “excluded neighborhoods” should be assigned EBU’s in the same manner as the other parcels which are subject to the assessment.

19. In addition or alternatively, the “excluded neighborhoods” should be assigned a safety and/or aesthetic EBUs. The safety EBU includes increased access. The “excluded neighborhoods” will have increased access as a result of surrounding parcels and other parts of the Town having increased access, if any, resulting from the undergrounding. The “excluded parcels” will also benefit from the aesthetic benefit, if any, to surrounding parcels and other parts of the Town resulting for the undergrounding.

20. The assignment of aesthetic EBUs is not objective or quantifiable and there is no basis to determine that the aesthetic benefit of undergrounding will increase property values.

21. The undergrounding will be installed in phases, yet the assessment will be imposed on all Assessed Property at the same time. It is arbitrary to levy an assessment on a parcel that will not receive a benefit immediately or within a reasonable time, such as the same tax year.

22. Kosberg and all other owners of Assessed Property will be denied due process of law. Kosberg's property will not receive any actual, physical, material and quantifiable special benefit from undergrounding. Therefore, the Special Assessment is an improper effort to take Kosberg's Property and other owners of Assessed Property without due process of law. *See Carson v. City of Fort Lauderdale*, 155 So. 2d 620 (Fla. 2d DCA 1963).

23. FPL is mandated by the State of Florida to harden utility poles by replacing wood utility poles with those made of concrete or steel that can withstand winds of 145 mph. Significantly, FPL's replacement of electric poles is at no cost to the Town. FPL's hardening program is expected to render the electric poles safe. There is, thus, no "safety" benefit from undergrounding.

24. The Raftelis Report is fatally flawed in that it assumes – without supporting evidence or analysis – that undergrounding of utilities will benefit each parcel with the Assessed Property and contains no analysis (other than through arbitrary assignment of EBU values based on improved safety, improved reliability and improved aesthetics) to show how the Assessed Property will actually receive a "special benefit" from the proposed undergrounding (*i.e.*, that any increase in value of the properties being assessed resulting from the proposed construction will be greater than the assessments to be levied against such properties).

25. Even if a benefit is conferred upon particular parcels of property, if the benefit is the same or similar to that which is conferred upon the community at large, the individual homeowner may not be assessed for a *pro rata* cost of the improvement, and a special benefit may

never be inferred on the theory that all similarly-situated parcels were benefited in the ratio that such parcels relate to the total value of all improved parcels. *Hanna v. City of Palm Bay*, 579 So. 2d 320, 322 (Fla. 5th DCA 1991).

CONCLUSION

26. Based on the foregoing and the materials contained in the Appendix, the Special Assessment is invalid.

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KOSBERG'S APPENDIX TO OBJECTION TO SPECIAL ASSESSMENT

1. June 21, 2017 Town Council Notice to Carol Kosberg
2. Report of Dr. Richard Brown and exhibits.
3. Report of Dr. Henry Fishkind and exhibits.
4. July 10, 2017 letter from Karyn Erickson and exhibits.
5. June 13, 2017 Izak Teller statement.
6. June 25, 2017 Izak Teller statement.
7. July 2, 2017 Izak Teller statement.

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By: _____

A handwritten signature in blue ink, appearing to read "H. B. Handler", written over a horizontal line.

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APPENDIX

1



Town Council of the
Town of Palm Beach, Florida
360 South County Road
Palm Beach, FL 33480

TOWN OF PALM BEACH, FLORIDA
NOTICE OF HEARING TO IMPOSE AND
PROVIDE FOR COLLECTION OF
NON-AD VALOREM ASSESSMENTS

NOTICE DATE: JUNE 21, 2017

Tax Parcel #: 50-43-44-35-13-002-0028

KOSBERG CAROL
CAROL KOSBERG TR HLDGR
3400 S OCEAN BLVD # 2H2
PALM BEACH FL 33480-6637

Legal Description:
ATRIUMS OF PALM BEACH COND UNIT 2H
TOWER II

As required by section 197.3632, Florida Statutes, and the direction of the Town Council of the Town of Palm Beach, Florida, notice is given by the Town of Palm Beach that an annual assessment for the design, acquisition, construction, and installation of the Underground Utility Improvements using the tax bill collection method may be levied on your property contained within the Town-wide Underground Utility Assessment Area for the fiscal year October 1, 2017 - September 30, 2018 and future fiscal years. The use of an annual special assessment to fund improvements benefiting property located within the Underground Utility Assessment Area is a fair, efficient and effective means of funding these needed improvements.

The assessment for your property will be based on the number of equivalent benefit units assigned to the Tax Parcel. A more specific description of the improvements and the method of computing the assessment for each parcel of property are set forth in the Initial Assessment Resolution adopted by the Town Council on June 13, 2017. Copies of Chapter 90, Article II of the Town Code, the Initial Assessment Resolution (Resolution No. 090-2017), and the preliminary Assessment Roll for the upcoming fiscal year are available for inspection at the office of the Town Manager, located at Town Hall, 360 South County Road, Palm Beach, Florida. Information relating to the assessment for the above Tax Parcel is included on the last page of this notice.

The Town intends to issue a combination of short term and long term debt to finance the Underground Utility Improvements project. This will permit the cost attributable to your property to be amortized over a period of years. However, you may choose to prepay your assessment in full and avoid additional financing, administration, and collection costs. Please do not send payment now. If the assessments are imposed, you will receive a separate notice of the date and place for this optional prepayment. If you do not choose to prepay, the amount necessary to pay your assessment in full will be increased by your share of the financing costs, plus annually incurred administration, statutory discount, and collection costs.

The total annual assessment revenue related to the Improvement Assessment to be collected within the Underground Utility Assessment Area is estimated to be \$5,779,627. The annual assessment will include your fair share of the principal, interest, administration, and project costs related to the Underground Utility Improvements and amounts related to collection of assessments, and statutory discounts. Annual assessments will be payable for 30 years, however, if there are no significant defaults in payment of the assessments, the last loan payment may be made from any reserve accounts funded by the loan. The Town intends to include annual assessments on your ad valorem tax bill. Failure to pay your assessments will cause a tax certificate to be issued against the property which may result in a loss of title.

A public hearing will be held at 5:01 p.m. on July 12, 2017, in the Town of Palm Beach Town Council Chambers, 360 South County Road, Palm Beach, Florida, for the purpose of receiving public comment on the proposed Underground Utility Improvements and the special assessments and their collection on the ad valorem tax bill. You and all other affected property owners have a right to appear at the hearing and to file written objections with the Town Council within 20 days of this notice. Pursuant to section 286.0105, Florida Statutes, if you decide to appeal any decision made by the Town Council with respect to any matter considered at the hearing or at any subsequent meeting to which the Town Council has continued its deliberations, you will need a record of the proceedings and may need to ensure that a verbatim record is made, including the testimony and evidence upon which the appeal is to be made. In accordance with the Americans with Disabilities Act, persons needing a special accommodation or an interpreter to participate in this proceeding should contact the Town Manager's Office at (561) 838-5410 or through the Florida Relay Service by dialing 1-800-955-8770 for voice callers or 1-800-955-8771 for TDD callers, at least two (2) days prior to the date of the hearing.

Unless proper steps are initiated in a court of competent jurisdiction to secure relief within 20 days from the date of Town Council action at the above hearing (including the method of apportionment, the rate of assessment and the imposition of assessments), such action shall be the final adjudication of the issues presented.

If there is a mistake on this notice, it will be corrected. If you have any questions regarding your assessment, please contact the Town Manager's Office at (561) 835-4631, Monday through Friday between 8:30 a.m. and 5:00 p.m.

For additional information regarding the assessment program and the undergrounding project, visit our website at www.undergrounding.info

Town-wide Underground Utility Improvements Project

KOSBERG CAROL
50-43-44-35-13-002-0028

Equivalent Benefit Units (EBUs)

Total number of Safety EBU's attributed to property:	.66
Total number of Reliability EBU's attributed to property:	.76
Total number of Aesthetic EBU's attributed to property:	.66

Prepayment and Annual Assessments

Initial prepayment amount (excludes financing cost):	\$8,311.91
Number of annual payments:	30
Maximum annual assessment:	\$ 533.77
Expected date of first bill:	November 2017
Total amount of annual payments:	\$16,013.10
Expected date of last bill:	November 2046

* * * * * SEND NO MONEY NOW. THIS IS NOT AN INVOICE * * * * *



Town Council of the
Town of Palm Beach, Florida
360 South County Road
Palm Beach, FL 33480



100372

KOSBERG CAROL
CAROL KOSBERG TR HLD
3400 S OCEAN BLVD # 2H2
PALM BEACH FL 33480-6637

28 ENAPHSB 33480



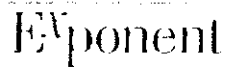
APPENDIX

2

Engineering Sciences

Exponent®

**Assessment of Palm Beach
Utility Undergrounding Benefits
and Cost Allocation**



**Assessment of Palm Beach
Utility Undergrounding Benefits and
Cost Allocation**

Prepared for:

William J. Berger
Weiss, Handler & Cornwell, P.A.
2255 Glades Rd, Suite 218A
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Prepared by:

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July 7, 2017

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Limitations

At the request of Weiss, Handler & Cornwell, P.A., Exponent conducted an assessment of the facts related to the proposed overhead-to-underground conversion of electric distribution utility facilities with respect to benefits and cost allocation. The opinions and comments formulated during this assessment are based on observations and information available at the time of the assessment.

The findings presented herein are made to a reasonable degree of engineering certainty. If new data becomes available or there are perceived omissions or misstatements in this report regarding any aspect of those conditions, we ask that they be brought to our attention as soon as possible so that we have the opportunity to fully address them.

1. Introduction

The Town of Palm Beach (Palm Beach) has plans to bury all utilities on the island in nine phases, to be completed in 2026, with an estimated cost exceeding \$90 million. The early years will be funded through short-term bank financing, followed by a bond issue. The debt will be repaid over 30 years with special assessments on roughly 8,500 properties using a formula that accounts for the improved safety, service reliability and aesthetics the town says are provided through the underground service.

The Town Council of Palm Beach has introduced Resolution Nol. 090-2017 ("Resolution") that, if approved, would create a special assessment area, with overhead utilities within the special assessment area being converted to underground and property owners paying for the undergrounding costs through a special assessment.

A report has been submitted by Raftelis Financial Consultants, Inc. titled "Town of Palm Beach: Utility Undergrounding Assessment Methodology Update," June 12, 2017 (Raftelis Report). This report presents a cost allocation methodology based on the benefit categories of improved safety, improved reliability, and improved aesthetics. This report is included by reference in the Resolution.

The primary purpose of this report is to perform an assessment of the benefit categories and assessment methodology presented in the Raftelis Report.

The assessments made in this report are based on the material listed in Appendix A and the knowledge, education, training, and industry experience of the author.

2. Qualifications of Author

I have a BSEE, MSEE, and PhD in Electrical Engineering in the area of Power Systems. My research and consulting has focused on distribution system reliability, including the reliability of distribution systems during major weather events and storm hardening. I also have an MBA and regularly perform economic assessments and benefit-to-cost analyses. Selected projects that I have performed related to storm hardening include:

Benefit-to-Cost Assessment of Strategic Undergrounding Program, Dominion. This project prepared testimony supporting rate-case rider treatment of overhead-to-underground conversion of distribution facilities for Dominion Virginia Electric Power. This testimony discusses overall approaches to storm hardening in general and then performed a societal benefit-to-cost assessment for the first phase of the Dominion \$2 billion proposed program.

Substation Hurricane Protection (Long Island Power Authority). LIPA had more than a dozen substations flood during Hurricane Sandy. This project, ordered by the New York Public Service Commission, assesses the temporary flood protection measures put in place by LIPA, assesses flood exposure and the potential impact of climate change, developed a flooding and storm surge model, and makes recommendations for permanent flood protection.

System Hardening and Reliability Improvement (Baltimore Gas & Electric). BGE was ordered by the Maryland Public Service Commission to submit a report on short-term reliability enhancements and another report on longer-term system hardening initiatives. This project supported BGE in assessing their current re-liability and storm hardening initiatives, performed a technology review, performed detailed cost-to-benefit analyses for various reliability improvement and storm hardening scenarios, assessed their storm damage modeling systems and processes, and prepared the commission reports.

Benefit-to-Cost Assessment of Hurricane Hardening Projects, Public Utilities Commission of Texas. This project examined the impact of hurricanes and tropical storms to electric and telecom utilities in Texas. It examined the cost-effectiveness of potential hardening programs

such as vegetation patrols, hazard tree programs, ground-based inspections, locating substations outside of floodplains, emergency backup generation in central offices, underground conversion, smart grid technologies, targeted hardening, and post-storm data collection. This report determines the costs for each program, the direct utility benefits, and greater societal benefits. Follow upwork to this project included a benchmark surveys for distribution hardening.

Florida Undergrounding Study, Florida Electric Utilities. This project performed a three-phase project for a consortium representing all electric utilities in Florida (managed through the Public Utility Research Consortium of the University of Florida). Phase 1 performed a comprehensive literature review and assessment. Phase 2 performed four case studies of completed underground conversion projects. Phase 3 developed a hurricane simulation model capable of predicting the costs and benefits to all stakeholders for potential underground conversion projects, as well as comparing these costs and benefits to a hardened overhead system.

Reliability Improvement Roadmap, Puget Sound Energy. Puget Sound Energy (PSE) was exploring the possibility of significantly improving the reliability of its system, including performance during major storms. This three-phase project assisted them in this effort. The first phase consisted of the development of a 10-year reliability roadmap including an assessment of the current state, an identification of the desired future state, and the development of a high-level set of transition steps to harden the system. The second phase consisted of a detailed cost-versus-reliability assessment for a pilot area to gain a full understanding of cost quantification, benefit quantification, and estimates of budget, time, and resources required to achieve reliability improvement goals on a system-wide scale. The third phase extrapolated results into a system wide plan capable of reducing SAIDI by 50% over the ten year roadmap period and significantly reducing expected infrastructure damage should a major storm occur.

Hurricane Hardening Roadmap, Florida Power & Light. This project developed a hurricane hardening roadmap for FPL. This included the development of a “hardening toolkit,” standards, specifications, criteria, application guidelines, and supporting tools. It also included a pilot study that demonstrated and refined these concepts, and provided a basis for a ten-year roadmap in terms of projected cost and effort. Last, this project developed a ten-year reliability roadmap

that achieved all FPL's distribution hardening objectives for the least possible cost. Extreme Wind Hardening Benchmark Survey, BC Hydro This project performed a survey of hardening initiatives of utilities in the Pacific Northwest following the severe wind storms of Dec. 2006. This project also surveyed hardening initiatives in other parts of the country and around the world.

I have been qualified as a power systems expert and have submitted expert witness testimony to regulatory commissions in the states of California, North Carolina, Florida, Maryland, Massachusetts, Virginia, and Texas. I have published more than 90 peer reviewed technical papers, have taught courses in eleven countries, and am author of the books *Electric Power Distribution Reliability* and *Business Essentials for Utility Engineers*. My book *Electric Power Distribution Reliability* has a section titled "6.5 Storm Hardening" and another section titled "6.6 Conversion of overhead to Underground."

I am a member of the Institute of Electrical and Electronics Engineers (IEEE) and was elected to the rank of IEEE Fellow in 2007 for "contributions to distribution system reliability and risk assessment." The grade of Fellow is conferred by the IEEE Board of Directors for an extraordinary record of industry accomplishments, and is limited to one-tenth of one percent of the total voting membership per year.

My full *curriculum vitae* is provided in Appendix B.

3. Underground Conversion for Storm Hardening

As a result of Florida experiencing five hurricanes in 2004-2005, the Florida Public Service Commission (FPC) issued Order No. PSC-06-0351-PAA-EI, which directed each investor-owned electric utility in Florida to establish a plan that increases collaborative research to further the development of storm-resilient electric utility infrastructure and technologies that reduce storm restoration costs and interruptions to customers. Municipal electric and cooperative electric utilities participated voluntarily. In an effort to comply with this order, the following utilities jointly sponsored research on the costs and benefits of underground utility conversion in Florida, and coordinated their efforts through the Public Utility Research Center (PURC) based out of the University of Florida:

Investor-Owned Utilities

- Florida Power & Light Company;
- Progress Energy Florida, Inc.;
- Tampa Electric Company;
- Gulf Power Company;
- Florida Public Utilities Company;

Publicly-Owned Entities

- Florida Municipal Electric Association;
- Florida Electric Cooperatives Association;
- Lee County Electric Cooperative, Inc.

I was retained as the principal investigator for this commission-directed project. The scope of the overall project was to investigate the implications of converting overhead electric distribution systems in Florida to underground (referred to as undergrounding). The primary focus of the project is the impact of undergrounding on hurricane performance, which is the ability of the local power system to withstand high winds and other damage from hurricanes and to minimize the number and duration of customer interruptions.

The scope of work for the overall project is divided into three phases. Phase 1 was a meta-analysis of existing research, reports, methodologies, and case studies. Phase 2 examined specific undergrounding project case studies in Florida. Phase 3 developed and tested a

methodology to identify and evaluate the costs and benefits of undergrounding specific facilities in Florida.

A list of the 61 publications examined in Phase I is provided in Appendix B, many of which are specific to Florida. Based on these references, I concluded the following in the Executive Summary of the Phase I report (emphasis added):

The conversion of overhead electric power distribution facilities to underground has been a topic of discussion in Florida for more than twenty years. The topic has been studied, discussed, and debated many times at the state, municipal, and local levels. Overhead construction is the standard in Florida, but all investor-owned utilities are required to have a process where customers can opt to underground existing overhead service by paying the incremental cost. For municipalities and cooperatives, the decision to underground is left to local citizen boards.

This report presents the results of a review of relevant previous undergrounding studies done in Florida as well as literature on the subject from throughout the US and around the world. This review finds that the conversion of overhead electric distribution systems to underground is costly, and these costs are far in excess of the quantifiable benefits presented in existing studies, except in rare cases where the facilities provide particularly high reliability gains or otherwise have a higher than average impact on community goals.

This conclusion is reached consistently in many reports, which almost universally compare the initial cost of undergrounding to the expected quantifiable benefits. No prior cost benefit study recommends broad-based undergrounding, but several recommend targeted undergrounding to achieve specific community goals. ...

The Florida Public Service Commission as well as many municipalities and electric customers in Florida are interested in undergrounding electric distribution systems in order to improve aesthetics, improve reliability of service, and reduce vulnerability to hurricane damage. The benefits associated with improved aesthetics are not quantifiable. Without considering aesthetics, no study reviewed in this report concludes that wholesale conversion of overhead electric distribution lines to underground can be fully cost justified.

Hurricane Ike made landfall at Galveston, Texas, on September 13, 2008. At landfall, it was a large Category 2 hurricane with hurricane force winds extending 275 miles from the center. Hurricane Ike was the third costliest U.S. hurricane of all time, behind Hurricane Andrew of 1992 and Hurricane Katrina of 2005. On December 12, 2008, the Public Utility Commission of

Texas (PUCT) issued RFP No. 473-09-00155 to provide a cost-benefit analysis of hurricane hardening recommendations in Final Staff Report, Project No. 32182, Item No. 93, which included overhead-to-underground conversion of electric distribution facilities. I was selected as the principal investigator for this project.

Many of the general conclusions in my PUCT report with regards to distribution undergrounding draw from my findings in my Florida investigations. Additional conclusions from the section on Underground Distribution (Section 5.5) include the following:

Underground conversion can actually be detrimental in areas subject to storm surge damage. Overhead distribution facilities are generally much faster to repair compared to underground equipment that has been flooded, eroded away, or otherwise damaged by storm surges. ... Undergrounding of new facilities is potentially cost-effective, provided the location is not subject to storm surge, depending upon the cost differential of overhead construction versus underground.

My PUCT report also identifies the risk of damage to pad-mounted distribution equipment (which is required for most underground distribution systems) during post-storm cleanup. For example, pad-mounted equipment covered by debris piles can be easily destroyed by bulldozers.

As a follow up to my PUCT report, I was further retained to perform a distribution hardening benchmark study. A survey was sent out to a total of 83 utilities, all in the US and Canada. A total of 26 utilities responded, a response rate of 31%. One utility provided a separate response for three operating companies, for a total of 28 surveys. Two of the responding utilities were Canadian and the remainder domestic.

One of the survey questions asked, "What would you recommend as a best practice for distribution hardening?" Of the 28 responses, only one utility mentioned undergrounding as a best practice, and that utility limits recommended undergrounding to residential neighborhoods, "Our utility believes that placement of distribution facilities in residential subdivisions underground and placement of facilities in the front of the lots of new residential service are best practices."

The last question in the survey was open ended and asked, "Any other thoughts or comments on the subject of distribution hardening?" Two utilities responded to this question by cautioning against underground conversion. One utility answers, "Undergrounding is not the answer for coastal area exposed to storm surge." Another utility answers, "Our utility does not recommend costly measures such as conversion to underground. In addition to the obvious tremendous conversion cost, underground facilities can also be damaged during storms, especially in areas subject to tidal surge and salt water intrusion leading to multiple failures, which, along with the difficulty in determining the precise location of underground line failures, leads to lengthier outages. ..."

And so, there is ample evidence that (1) underground conversion is not a cost-effective approach for storm hardening, and (2) underground conversion in areas subject to storm surge actually results in worse reliability as it relates to major weather events.

The primary reason for undergrounding in areas subject to storm surge must be improved aesthetics. Neighborhoods and municipalities talk about other benefits, but they mostly just don't want to look at overhead utility facilities. The problem is that there are no studies of which I am aware that actually indicate that property values improve as a result of undergrounding distribution facilities. My FPSC Phase One report summarizes this issue as follows:

Improved Aesthetics. One of the most commonly cited improvements from undergrounding is the removal of unsightly poles and wires. Such aesthetic benefits are extremely difficult to quantify with any degree of accuracy, but they are almost always an important part of any justification for an actual undergrounding projects. Improved aesthetics are commonly expected to result in improved property values, and anecdotal evidence suggests this is the case because almost all developers commonly pay premiums to put distribution systems in new neighborhoods and in new business parks underground. Although there are no studies demonstrating the effect of underground distribution on property values, such studies do exist for overhead transmission. The Virginia General Assembly Staff report has a section reviewing the impact that nearby *transmission* lines have on property values due to unsightliness and concerns over electromagnetic fields. The estimates in this report of negative impact on property values are all heavily qualified, but generally range from a 0% to 10% reduction, with special cases warranting a 15% reduction.

By contrast, a Hawaii study notes that there have been conflicting results with regard to undergrounding and property values in Hawaii. It observes that one recent 138-kV

project report stated that property values were unaffected, whereas recent legislation on utilities was based on other reports that determined property values would increase when nearby lines were undergrounded. The Hawaiian study also mentions an increased *business* value to tourism and recreational enterprises in areas where aesthetics were improved due to undergrounding, amounting to an estimated \$1 to \$10 per tourist per day.

No similar quantitative results are given among the references reviewed with respect to the impact of underground *distribution* facilities. Generally, the common expectation seems to be that undergrounding of distribution lines will have a benign or positive benefit on property value (no report states or implies that underground lines *lower* property value), but no report gives any estimates of the change and several do not list an improvement in property value as a benefit of *distribution* undergrounding.

The remainder of this report focuses on the three benefit categories used in the Raftelis Report: Improved Safety, Improved Reliability, and Improved Aesthetics. No disadvantages of undergrounding are mentioned in the Raftelis Report. There are other potential benefits to undergrounding, as well as many potential disadvantages. My FPSC Phase One report summarizes these as follows (emphasis added):

Potential Benefits of Underground Electric Facilities

- Improved aesthetics;
- Lower tree trimming cost;
- Fewer motor vehicle accidents;
- Reduced live-wire contact;
- Fewer outages during normal weather;
- Far fewer momentary interruptions;
- Improved utility relations regarding tree trimming; and
- Fewer structures impacting sidewalks.

Potential Disadvantages of Underground Electric Facilities

- Stranded asset cost for existing overhead facilities;
- Environmental damage including soil erosion, and disruption of ecologically-sensitive habitat;
- Utility employee work hazards during vault and manhole inspections;
- Increased exposure to dig-ins;
- Longer duration interruptions and more customers impacted per outage;
- Susceptibility to flooding, storm surges, and damage during post-storm cleanup;
- Reduced flexibility for both operations and system expansion;
- Reduced life expectancy;
- Higher maintenance and operating costs; and
- Higher cost for new data bandwidth.

From the perspective of a community subject to storm surges, I have underlined above the primary benefit of undergrounding (aesthetics) and the primary disadvantage of undergrounding (worse reliability when a storm surge occurs). That is, an informed community decision to convert overhead utilities to underground will ask whether the aesthetic benefits outweigh the costs and problems associated with storm surge.

4. Flood Zone Assessment

Much of the Town of Palm Beach is currently categorized by FEMA as Flood Zone A, which is an area with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. There are also currently proposed Flood Zone updates that would significantly increase the percentage of the Town of Palm Beach that is Flood Zone A. In this area, flooding risk is almost exclusively due to storm surge.

For the purposes of this report, the point is that a high percentage of the Town of Palm Beach is subject to storm surge, and this percentage is likely higher than what was previously assumed.

As discussed previously, the storm reliability of underground distribution facilities is much worse than the storm reliability of overhead distribution facilities. From a reliability perspective, the parts of Palm Beach in Flood Zone A are the worst possible areas to convert overhead distribution utilities to underground.

5. Safety Benefit Assessment

The Raftelis Report describes the safety benefits associated with underground conversion in Section 3.1 and in Section 4.1 as follows:

Section 3.1

The removal of utility poles and overhead lines provides an improved safety benefit by reducing the potential of hazardous conditions occurring on benefited property in the event of natural disasters. Severe tropical storms, hurricanes, and other natural disasters can cause poles and/or overhead lines to fall and impact property, and possibly cause live electric lines to be exposed. Downed electric lines and vegetation overgrowth onto electric lines pose a potential threat of property fire and potential injury due to electric shock and can restrict ingress and egress of residents and emergency services.

Section 4.1

Properties specially benefit from the improved safety of undergrounding overhead utilities in two distinct ways: 1) the elimination of the potential for poles or overhead lines adjacent to a property to fall and damage property from falling or exposing “live” electrical lines and 2) the elimination of the potential for poles or overhead lines to be downed within the neighborhood restricting ingress and egress to and from the property.

The remainder of this section first assesses what the actual reliability impacts to residents of Palm Beach of undergrounding are likely to be, and then discusses whether the allocation method in the Raftelis Report is reasonably aligned with these impacts.

Safety Benefits

The Raftelis Report presents no evidence whatsoever to justify its assumption that underground utility facilities are safer than overhead facilities.

The electric utility that serves the Town of Palm Beach is Florida Power & Light (FPL). FPL is required by the Florida Public Service Commission (FPSC) to design and operate its power system in accordance with the National Electrical Safety Code (NESC). As such, all overhead and underground facilities built to FPL standards are safe according to the NESC and safe according to the FPSC.

The Raftelis Report cites some possibly unsafe scenarios that can possibly occur on overhead facilities. A complete discussion of overhead utility system safety is beyond the scope of this report, but I now provide some context about the specific safety claims cited in the Raftelis Report.

Claim: Poles and/or overhead lines can fall and damage property.

Response: This is not a safety issue. Any damage to property that is the fault of FPL overhead or underground facilities can be addressed through the FPL claims department.

Claim: Downed electric lines can cause fires.

Response: Downed electric distribution lines in neighborhoods like the Town of Palm Beach rarely-if-ever cause fires.

Claim: Downed electric lines can result in people getting shocked.

Response: Utility distribution systems have overcurrent protection devices that almost always de-energize downed electric lines. It is possible in certain situations for a downed power line to be energized, which is why (1) utilities train 911 call centers, local police, and fire departments how to safely and properly deal with downed power lines; and (2) utilities prioritize the dispatch of hazard responders to potentially unsafe downed wire locations. The point is that utilities have robust procedures to manage safety issues related to downed power lines..

Claim: Vegetation overgrowth onto electric lines can cause fires.

Response: Vegetation overgrowth onto electric lines generally cannot cause fires.

Claim: Vegetation overgrowth onto electric lines can result in people getting shocked.

Response: Vegetation overgrowth onto electric lines generally cannot result in people getting shocked.

Claim: Downed poles or overhead lines can restrict ingress and egress.

Response: A broken pole or downed wire lying in a street can certainly restrict ingress and egress. This is an inconvenience, but I have never heard of a single case where restrict ingress/egress due to downed utility facilities resulted in any safety issues. Furthermore, in communities like Palm Beach, the vast majority of restricted ingress/egress will be due to downed trees, not downed utility facilities. This is why utilities coordinate closely with vegetation management crews during storm restoration, since downed trees restrict the ability of utility vehicles to reach damage locations.

Although the Raftelis Report cites some possibly unsafe scenarios that can possibly occur on overhead facilities, it fails to cite any of the possibly unsafe scenarios that can possibly occur on underground facilities. For example:

- Digging activity can result in contact with energized buried cables.
- Pad-mounted utility equipment can have internal faults that result in their casings being energized.
- Equipment in underground vaults can explode.
- Storm surges can cause extensive erosion that leaves formerly-buried cable exposed.

As with overhead utility facilities, utilities have processes in place to properly manage the safety risks associated with underground facilities. The point is that both overhead utility facilities and underground utility facilities are safe, with one not clearly safer or less safe than the other.

It is my opinion that there is no material safety benefit associated with the undergrounding of utilities in the Town of Palm Beach. Both overhead utilities and underground utilities are safe according to the NESC and the FPSC.

Safety Benefit Allocation

The Raftelis Report allocates safety benefits by assigning each parcel an Equivalent Benefit Unit (EBU) based on the type of parcel and whether the parcel has adjacent overhead facilities. Safety EBUs are assigned according to Table 6-1.

Table 6-1. Safety EBU Calculation Recommended by the Raftelis Report

Land Use	Overhead Utilities	Safety EBU Assignment
Single-Family	Yes	Lot Size / 8,700; rounded down to nearest 0.5, minimum of 1.0 EBU
	No	(Lot Size / 8,700) / 2; rounded down to nearest 0.5, minimum of 1.0 EBU
Condominium	Yes	(Complex Lot Size / 8,700; rounded down to nearest 0.5) / condos in Complex
	No	0.5 x [(Complex Lot Size / 8,700; rounded down to nearest 0.5) / condos in Complex]
Multi-Family	Yes	Lot Size / 8,700; rounded down to nearest 0.5
	No	0.5 x (Lot Size / 8,700); rounded down to nearest 0.5
Non-Residential	Yes	Lot Size / 8,700; rounded down to nearest 0.5, minimum of 1.0 EBU
	No	0.5 x (Lot Size / 8,700); rounded to nearest 0.5, minimum of 0.5 EBU
Vacant	Yes	Lot Size / 8,700; rounded down to nearest 0.5, minimum of 1.0 EBU
	No	0.5 x (Lot Size / 8,700); rounded down to nearest 0.5, minimum of 1.0 EBU

As stated previously, my opinion is that there is no material safety benefit associated with the undergrounding of utilities in the Town of Palm Beach. This opinion includes egress issues, which is predominately related to downed trees and not downed power lines. Since there is no safety benefit, the allocated EBU for each parcel should be zero.

[Note: it is highly inappropriate for the Raftelis Report to imply that overhead utility systems are unsafe, which they are not. I challenge the authors of the Raftelis Report to find a single utility employee to agree that an overhead distribution system designed to the utility's standards is unsafe.]

6. Reliability Benefit Assessment

The Raftelis Report describes the reliability benefits associated with underground conversion in Section 3.1 and in Section 4.2 as follows:

Section 3.1

The undergrounding of the overhead facilities will also improve the reliability of utility services received by properties within the Town. Based on Florida Power & Light's 2015 Reliability Report, the undergrounding of overhead utilities reduces the frequency of power outages, when compared to the frequency of outages occurring with overhead networks. Parcels will also specially benefit from new upgraded utility lines, cables, and appurtenant facilities installed through the proposed utility undergrounding. This will provide a higher level of reliability of utility services, and reduces exposure to the elements that could cause potential damage and speed deterioration to facilities resulting in potential interruptions.

Section 4.2

The benefit from the distribution of electricity, other utilities, and the underground wires and cables is essentially equivalent for each single-family residence. Further, since all of the single-family lots have the same ability to use utilities and each single-family parcel benefits from the increased reliability that undergrounding provides, each single-family residential property has been assigned (1.0) Reliability EBU to account for the failure in any one or more of the following systems, resulting in an interruption in services: 1) primary distribution lines; 2) secondary distribution lines, or 3) local distribution lines that provide connections to a property's utilities.

The remainder of this section first assesses what the actual reliability impacts to residents of Palm Beach of undergrounding are likely to be, and then discusses whether the allocation method in the Raftelis Report is reasonably aligned with these impacts.

Reliability Benefits

The only evidence that the Raftelis Report presents to justify its assumption that underground utility facilities are more reliable than overhead facilities is that FPL states that underground facilities fail less frequently than overhead facilities. Applying this general FPL statement to the specific situation in the Town of Palm Beach is a profound oversimplification and an indication that the authors of the Raftelis Report do not have an even remote understanding of the topic of distribution system reliability.

I will first discuss distribution reliability during non-storm conditions.

In a general sense, I agree with FPL that underground facilities tend to fail less frequently than overhead facilities. However, this is only one aspect of distribution system reliability. When an overhead facility fails, it is generally faster to locate and fix when compared to an underground failure. Plus, there are more locations on overhead facilities to place protection devices and switching devices, resulting in fewer customers being affected by overhead failures and an increased ability to isolate the failure and restore customers. Therefore, fewer underground failures do not necessarily result in worse customer reliability when compared to more overhead failures.

It is also important to note that both failure rates and repair times vary widely on both overhead and underground systems. When writing my book *Electric Power Distribution Reliability*, I researched publically-available failure rate data for both overhead and underground systems (see Table 4-1 and Table 4-2). Results are reproduced here as Table 7-1.

Table 7-1. Failure Rates and Repair Times

Description	Failure Rate (per mile per year)			Repair Time (hours)		
	Low	Typical	High	Low	Typical	High
Overhead Lines						
Primary Trunk	0.020	0.100	0.300	2.0	4.0	8.0
Lateral Tap	0.020	0.160	0.300	2.0	4.0	8.0
Secondary & Service Drop	0.020	0.088	0.030	1.5	2.5	8.0
Underground Cable						
Primary Cable	0.003	0.070	0.587	1.5	10.0	30
Secondary Cable	0.005	0.100	0.150	1.5	10.0	30

Notice that overhead line annual failure rates vary widely from 0.02 to 0.3 failures per circuit mile. This range is primarily due to tree density and tree species around the power lines. In the case of Palm Beach, the trees do not grow as tall as the power lines, and therefore cannot fall into the power lines. Figure 8-1 shows a Google Street View image from Hibiscus Avenue, which is typical of the rest of Palm Beach. This image shows the trees being incapable of falling into the power lines, which will result in an overhead line failure rate much lower than average.



Figure 8-1. Trees in Palm Beach Grow Shorter than the Power Lines

If I were performing a reliability assessment of Palm Beach and had no other information, I would initially select an overhead line failure rate of 0.05 (half of average due to short-growing trees) and an underground cable failure rate of 0.025 (about two-thirds less than average due to new cable). Using the average repair time of 4 hours, a mile of overhead line would be expected to be out for about $0.05 \times 4 = 0.2$ hours per years. Using the average repair time of 10 hours, a mile of underground cable would be expected to be out for about $0.025 \times 10 = 0.25$ hours per years. This is not the whole story with regards to customer reliability, which also depends upon overcurrent protection devices and the ability to restore customers through switching action. However, it is certainly not clear that either overhead or underground systems provide higher or lower levels of customer reliability during non-storm conditions.

I will first discuss distribution reliability during storm conditions that involve storm surge, such as tropical storms and hurricanes.

It is well-known that underground distribution systems are much less reliable during storm conditions that involve storm surge when compared to overhead systems. When a storm surge occurs, pad-mounted equipment becomes immersed in salt water causing internal faults and causing corrosion on all exposed metal. Salt water will also fill conduit systems, causing corrosion wherever it is able to contact concentric neutral conductors.

Salt water is not the only problem. A storm surge can bring in heavy objects that act as battering rams on pad mounted equipment (see Figure 8-2). This type of damage takes a long time to repair when compared to typical overhead system damage. A storm surge can bring in large amounts of sand that can bury pad mounted equipment (see Figure 8-3). This requires excavation, re-grading, and replacement of the pad mounted equipment. A receding storm surge can also cause significant erosion and expose formerly-buried power lines (see Figure 8-4). These lines cannot safely be re-energized until the cables are re-buried to the appropriate depth. A storm surge clean-up activities also result in large debris piles that can easily bury pad mounted equipment (see Figure 8-5). When bull dozers remove debris piles they can easily destroy pad-mounted equipment.

In a severe storm, about 1% to 2% of utility poles will break and require fixing or replacing. When a storm surge occurs, 100% of equipment submerged in salt water will require fixing or replacing. Plus, overhead damage is much faster to repair during storm restoration when compared to underground damage – those served by underground facilities in storm surge area are typically restored very late in the restoration process.

In summary, there are not clear reliability benefits to undergrounding during non-storm conditions, and reliability of underground distribution is significantly worse in areas subject to storm surges. From a storm reliability perspective, undergrounding a utility distribution system in areas subject to storm surges is the worst possible action that can be taken.

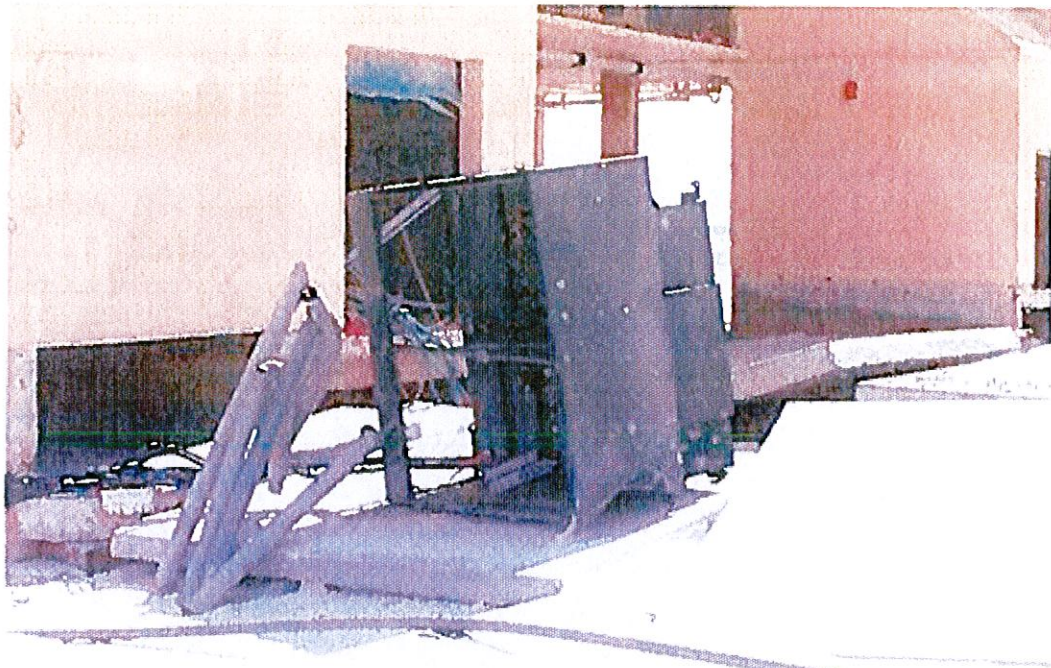


Figure 8-2. Storm Surge Damage to Pad Mounted Equipment



Figure 8-3. Storm Surge Buries Pad Mounded Equipment in Sand



Figure 8-4. Storm Surge Erosion Exposes Underground Cables



Figure 8-2. Pad Mounted Equipment Buried in Debris Piles

Reliability Benefit Allocation

The Raftelis Report allocates reliability benefits by assigning each parcel an Equivalent Benefit Unit (EBU) based on the type of parcel. Safety EBUs are assigned according to Table 7-1.

Table 7-1. Reliability EBU Calculation Recommended by the Raftelis Report

Land Use	Density Factor	Reliability EBU Assignment
Single-Family	$2.04/2.04 = 1.00$	$1.0 \text{ EBU} \times \text{Density Factor} = 1.00 \text{ EBU}$
Condominium	$1.56/2.04 = 0.76$	$1.00 \text{ EBU} \times \text{Density Factor} = 0.76 \text{ EBU}$
Multi-Family	$1.56/2.04 = 0.76$	$1.0 \text{ EBU} \times \text{Density Factor} \times \text{Units}$
Non-Residential	N/A	Lot Size / 8,700; minimum of 1.0 EBU, rounded down to nearest 0.5
Vacant	N/A	Lot Size / 8,700; minimum of 1.0 EBU, rounded down to nearest 0.5

As stated previously, my opinion is that there is no material reliability benefit during non-storm conditions associated with the undergrounding of utilities in the Town of Palm Beach. However, undergrounding of utilities in the Town of Palm Beach will make reliability during storm conditions much worse in areas subject to storm surge. Since there is no reliability benefit, the allocated EBU for each parcel should be zero.

7. Aesthetic Benefit Assessment

The Raftelis Report describes the aesthetic benefits associated with underground conversion in Section 3.1 and in Section 4.3 as follows:

Section 3.1

In addition to the safety and reliability benefits provided by undergrounding utilities, removing the overhead facilities and utility poles will eliminate a heavy visual concentration of electric lines and communication facilities. Overall this will improve the aesthetics for all properties within a project area by enhancing the value, use, enjoyment, commercial and residential attractiveness and viability of such properties.

Section 4.3

Removing the overhead utilities will improve the overall aesthetics to an individual property and the neighborhood aesthetics for all properties within a defined project area by eliminating a heavy concentration of electric lines and communication facilities.

The remainder of this section first assesses what the actual reliability impacts to residents of Palm Beach of undergrounding are likely to be, and then discusses whether the allocation method in the Raftelis Report is reasonably aligned with these impacts.

Aesthetic Benefits

The Raftelis Report presents no evidence whatsoever to justify its assumption that underground utility facilities are safer than overhead facilities.

As discussed in Section 3, I have done an extensive literature search on the overhead-to-underground conversion of distribution facilities and have found no studies that show an impact on property value or more general community good such as increased tourism. Therefore, while I concede that many prefer the aesthetics of underground facilities, it is impossible to weight these benefits in a monetary sense to the cost of undergrounding.

It should also be noted that not everyone prefers the aesthetics of underground facilities requiring pad-mounted equipment to overhead facilities. This is especially true of properties that will now have pad-mounted equipment visible from the street.

Another deficiency in the Raftelis Report, is that it creates a “special case” of aesthetic benefits for golf courses and for the Breakers resort. It states:

While parcels throughout the Town benefit from the undergrounding of nearby utilities, certain parcels that make up the golf courses and the Breakers benefit to a lesser degree due to diminished return of benefit as the parcel’s total acreage increases. The parcel(s) have a lower frontage-to-acreage ratio and as the parcel size increases, most the parcel’s area is either the golf course itself or passive parklike facilities that do not utilize utilities.

The Raftelis Report presents no evidence whatsoever to justify the statement that “the golf courses and the Breakers benefit to a lesser degree due to diminished return of benefit as the parcel’s total acreage increases.” In fact, overhead facilities are primarily visible when people are outside. When on a residential property, a large percentage of time is spent indoors. When on a golf course, a large percentage of time is spent outdoors. If time spent looking at overhead facilities is related to aesthetic benefit, golf courses have a per-acre benefit that is greater than residential properties, and the Breakers resort would have at least a per-acre benefit of condominiums, and probably more.

The Raftelis Report exempt undevelopable parcels, parking spaces, and certain other parcels from assessments since they “do not confer any measurable special benefit from the improvements.” In fact, the aesthetic benefit of undergrounding results from not having to look at overhead facilities when on the parcel (parcel benefit) or near the parcel (neighborhood benefit). These aesthetic benefits are no different for undevelopable parcels, parking spaces, and other parcels mentioned by the Raftelis Report when compared to other parcels.

Aesthetic Benefit Allocation

The Raftelis Report allocates reliability benefits by assigning each parcel an Equivalent Benefit Unit (EBU) based on the type of parcel. Safety EBUs are assigned according to Table 8-1.

Table 8-1. Safety EBU Calculation Recommended by the Raftelis Report

Land Use	Overhead Utilities	Aesthetics EBU Assignment
Single-Family	Yes	Lot Size / 8,700, rounded down to nearest 0.5, minimum of 1.0 EBU
	No	(Lot Size / 8,700) / 2, rounded down to nearest 0.5, minimum of 0.5 EBU
Condominium	Yes	(Complex Lot Size / 8,700, rounded down to nearest 0.5) / condos in Complex
	No	0.5 x [(Complex Lot Size / 8,700, rounded down to nearest 0.5) / condos in Complex]
Multi-Family	Yes	Lot Size / 8,700, rounded down to nearest 0.5
	No	0.5 x (Lot Size / 8,700), rounded down to nearest 0.5
Non-Residential	Yes	Lot Size / 8,700, rounded down to nearest 0.5, minimum of 1.0 EBU
	No	0.5 x (Lot Size / 8,700), rounded to nearest 0.5, minimum of 0.5 EBU
Vacant	Yes	Lot Size / 8,700; rounded down to nearest 0.5, minimum of 1.0 EBU
	No	0.5 x (Lot Size / 8,700); rounded to nearest 0.5, minimum of 0.5 EBU

The following assessment of aesthetic benefit allocation assumes that there is a net aesthetic benefit to Palm Beach should it underground its utilities. In making this assessment I do not assume that the benefits to Palm Beach exceed its costs, nor do I assume that the benefits to individual residents exceed their assessed costs.

The only research on undergrounding that I have found links undergrounding to a percentage increase in property value (these were related to transmission facilities, not distribution facilities). I have found no studies that link undergrounding to an increase in property value proportional to lot size. I have found no studies that differentiate increases in property value to whether overhead utilities are on parcel frontage as opposed to, say, across the street or generally in the neighborhood.

The Raftelis Report assigns twice the aesthetic benefit to parcels with adjacent overhead facilities on secondary streets when compared to parcels without adjacent overhead facilities on secondary streets. If this approach is taken, parcels where pad-mounted equipment will be located should be compensated for the associated negative aesthetic impact.

8. Special Cases and Exceptions

The Raftelis Report creates a special class for the Breakers and yet another special class for other golf courses. It presents no evidence whatsoever to justify this special treatment. The special treatment is as follows:

Special Treatment for the Breakers

The Breakers resort and associated golf courses parcels are combined as one property. Instead of using the total combined parcel total acreage, the combined total parcel total frontage is multiplied by a lot depth of 200 feet based on the typical depth of Low Density Residential lots throughout the Town.

Special Treatment for Other Golf Courses

Instead of using the total combines parcel total acreage, the combined total parcel total frontage is multiplied by a lot depth of 200 feet based on the typical depth of Low Density Residential lots throughout the Town.

One can argue that the benefit of the Breakers resort property is proportionally more than lot size when compared to condominium parcels since people staying at Florida resorts generally spend a lot of time outside. One can argue that the benefit of golf course parcels are proportionally more than lot size when compared to residential parcels since people on golf courses spend most of their time outside. Based on this, the special treatment for the Breakers resort and the special treatment for Golf Courses represent massive cross subsidies from residential residents of Palm Beach to the largest for-profit businesses in Palm Beach.

The Raftelis Report also creates a special class for undevelopable parcels, parking spaces, storage and condominium cabanas. It presents no evidence whatsoever to justify this special treatment. The special treatment is as follows:

Special Treatment for Undevelopable Parcels

Undevelopable parcels will be assessed nothing.

Special Treatment for Parcels used as Parking Spaces

Parcels used as Parking Spaces will be assessed nothing.

Special Treatment for Parcels used for Storage

Parcels used for Storage will be assessed nothing.

Special Treatment for Parcels used as Condominium Cabanas

Parcels used as Condominium Cabanas will be assessed nothing.

Special Treatment For Undevelopable Parcels

Undevelopable parcels will be assessed nothing.

As discussed previously, the Raftelis Report exempts these parcels from assessments since they “do not confer any measurable special benefit from the improvements.” In fact, the aesthetic benefit of undergrounding results from not having to look at overhead facilities when on the parcel (parcel benefit) or near the parcel (neighborhood benefit). These aesthetic benefits are no different for undevelopable parcels, parking spaces, and other parcels mentioned by the Raftelis Report when compared to other parcels.

The Raftelis Report also excluded certain neighborhoods from being part of the special assessment zone altogether. It states:

Non-Assessable Obligation

Certain neighborhoods within the Town have either already created an assessment program to underground its overhead facilities (Everglades Island and Via Fontana) or are currently in the process of creating a utility undergrounding assessment program (Nightingale and Lake Towers). Due to the timing of these assessment programs, appurtenant facilities remain at the termination points of these project areas which will be undergrounded once this utility undergrounding assessment program is completed. As such, an indirect reliability benefit exists within this utility undergrounding assessment program associated with the termination points of these other assessment programs. Each termination point is assigned 1 Reliability EBU to account for this indirect benefit resulting from different timing of the undergrounding projects for a total of 7 Reliability EBUs. The obligation associated with these 7 Reliability EBUs will not be assessed against any parcel within the proposed utility undergrounding assessment program and will be excluded from the assessment.

In essence, four neighborhoods (Everglades Island, Via Fontana, Nightingale, Lake Towers) are being allowed to pay for their own undergrounding projects or will not be assessed anything under the resolution. The result is that residential property owners in the Resolution’s special assessment area end up cross-subsidizing properties categorized as special cases and exemptions, while residential property owners outside of the Resolution’s special assessment area do not pay anything beyond the undergrounding costs of their neighborhood.

Consider a neighborhood next to the Breakers. In Scenario A, the neighborhood and the Breakers each create their own assessment zone and pay for the undergrounding in their own assessment zone. In Scenario B, the neighborhood and the Breakers are treated as a combined assessment zone with allocations according to the Raftelis Report. In Scenario B, neighborhood parcels are allocated far more when compared to Scenario A, representing a cross subsidy from the neighborhood to the Breakers. In this way, Everglades Island, Via Fontana, Nightingale, Lake Towers would be exempt from paying cross-subsidies while the rest of the residential neighborhoods in Palm Beach are stuck with paying all of the cross-subsidies.

9. Weighting of Benefits

When calculating the allocation for each parcel, the Raftelis Report equally weights the importance of safety, reliability, and aesthetics. It does not present any evidence whatsoever to justify weighting each of these factors equally. In fact, it should be obvious to all that the primary motivation of undergrounding is improved aesthetics. Aesthetic benefits occur all of the time. Safety benefits, if any,¹ are small compared to aesthetic benefits and I have never heard of any community paying anything at all for safety-related utility improvements for utilities in its community. Reliability benefits for areas subject to storm surges are significantly negative. In other areas, reliability benefits, if any,² are small compared to aesthetic benefits and I have never heard of any community paying anything at all for reliability-related utility improvements for utilities in its community.

¹ I do not think that there are any, as both overhead and underground systems are safe.

² I do not think that there are any in this situation, as discussed in Section 6.

10. Conclus

1. Undergrounding safety benefits according to industry safety codes.
2. Undergrounding overhead significant reliability benefits worse reliability during storms.
3. There are no studies that I am overhead-to-underground conversion.
4. There are no studies that I am overhead-to-underground conversion and/or population density.
5. There are no studies that I am aware of overhead-to-underground conversion as much for a particular same neighborhood.
6. Since the aesthetic facilities, parcels benefit than parcels.
7. Since the outdoor as much outdoor allocation should condominium conversion.
8. Since the outdoor least as much outdoor aesthetic benefit allocation of a single.
9. Since undevelopable condominium conversion.

the benefit, if any, on the
ation utilities for a given parcel.

with a single family home, their per-acre aesthetic benefit allocation should be at least as much as the per-acre aesthetic benefit allocation of a single family home.

10. The allocation methodology of the Raftelis Report would result in a significant and unfair cross-subsidy from residents of the Town of Palm Beach to large for-profit businesses operating in the Town of Palm Beach.
11. The allocation methodology of the Raftelis Report would result in Everglades Island, Via Fontana, Nightingale, Lake Towers being exempt from paying cross-subsidies to large for-profit businesses while the rest of the residential neighborhoods in Palm Beach would not be exempt from paying cross-subsidies to large for-profit businesses.

Appendix A – Reviewed Materials

Council Resolution

1. Town Council of the Town of Palm Beach, Resolution No. 090-217

Raftelis Reports

2. *Town of Palm Beach: Utility Undergrounding Assessment Methodology Update*, Draft Report, April 2017 (prepared by Raftelis Financial Consultants, Inc.)
3. *Town of Palm Beach: Utility Undergrounding Assessment Methodology Update*, June 12, 2017 (prepared by Raftelis Financial Consultants, Inc.)

Richard E. Brown Publications with Undergrounding Content

4. R. E. Brown, *Electric Power Distribution Reliability*, Second Edition, CRC Press, 2009.
5. "Distribution Hardening: Benchmark Survey and Best Practices." Prepared for the Public Utilities Commission of Texas and filed under docket number 36375.
6. "Cost-Benefit Analysis of the Deployment of Utility Infrastructure Upgrades and Storm Hardening Programs." Prepared for the Public Utilities Commission of Texas and filed under docket number 36375.
7. "Undergrounding Assessment Phase 1 Final Report: Literature Review and Analysis of Electric Distribution Overhead to Underground Conversion." Prepared for the Florida Electric Utilities and submitted to the Florida Public Service Commission per order PSC-06-0351-PAA-EI. ("Florida Undergrounding Phase 1 Report")
8. "Undergrounding Assessment Phase 2 Final Report: Undergrounding Case Studies." Prepared for the Florida Electric Utilities and submitted to the Florida Public Service Commission per order PSC-06-0351-PAA-EI.
9. "Undergrounding Assessment Phase 3 Final Report: Ex Ante Cost and Benefit Modeling." Prepared for the Florida Electric Utilities and submitted to the Florida Public Service Commission per order PSC-06-0351-PAA-EI.

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23. Edison Electric Institute. 2004. *Out of Sight, Out of Mind? A Study on the Costs and Benefits of Undergrounding Overhead Power Lines*. By Bradley W. Johnson. Washington, D.C.
24. Florida Public Service Commission. 2005. *Preliminary Analysis of Placing Investor-Owned Electric Utility Transmission and Distribution Facilities Underground in Florida*. Tallahassee, Florida.
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Depositions

71. xxx

Answers to Interrogatories

72. xxx.

Additional Material

73. xxx.

Appendix B – CV of Richard E. Brown

Richard Brown is an internationally recognized industry expert in electric system infrastructure, electric system operations, system planning, asset management, and economic analysis. He has submitted expert witness testimony to regulatory commissions in the states of California, Florida, Maryland, Massachusetts, and Texas. He has published more than 90 technical papers, has taught courses in eleven countries, and is author of the books *Electric Power Distribution Reliability* and *Business Essentials for Utility Engineers*. Dr. Brown is an IEEE Fellow and a registered professional engineer.

Professional Experience

Title	Institution	Dates
Practice Director and Principal Engineer	Exponent	3 2014 - present
Vice President, USAC Power Networks	WorleyParsons	3 2012 - 2 2014
Vice President, Operations	Quanta Technology	7 2006 - 2 2012
Vice President, Asset Management	KEMA	5 2003 - 6 2006
Director of Technology	ABB Consulting	5 2001 - 4 2003
Principal Engineer	ABB Power Distribution Solutions	2 1999 - 4 2001
Senior Engineer	ABB Corporate Research	7 1996 - 1 1999
Research/Teaching Assistant	University of Washington	1 1994 - 6 1996
Electrical Engineer II-III	Jacobs Engineering	4 1991 - 12 1993

Dr. Brown has been an adjunct faculty member of North Carolina State University since 2008.

Education

Degree	Institution	Location	Year Received
M.B.A.	University of North Carolina (Kenan-Flagler)	Chapel Hill, NC	2003
Ph.D.	University of Washington	Seattle, WA	1996
M.S.E.E.	University of Washington	Seattle, WA	1993
B.S.E.E.	University of Washington	Seattle, WA	1991

Honors and Awards

- IEEE Technical Committee Working Group Recognition Awards: Electric Delivery System Reliability Tutorial Working Group (2007); Aging Power System Infrastructure (2007); T&D Asset Management (2006); Transmission Planning (2008)
- IEEE PES Walter Fee Outstanding Young Engineer Award (2003)
- ABB Award of Excellence: President's Award (1999)
- ABB Award of Excellence: Product Development (1998)
- Member, Eta Kappa Nu (Electrical Engineering Honor Society)
- Member, Beta Gamma Sigma (Business Honor Society)

Professional Registration and Professional Societies

- IEEE Fellow
- Registered Professional Engineer in the State of North Carolina (Certificate No. 23088)

IEEE Power Engineering Society Activities

- Elected IEEE Fellow in 2007 for "contributions to distribution system reliability and risk assessment." The grade of Fellow is conferred by the IEEE Board of Directors for an extraordinary record of industry accomplishments, and is limited to one-tenth of one percent of the total voting membership per year.
- Awards
 - Technical Committee Working Group Recognition Award (2008). *Awarded by the Power System Operations Committee for work on power system transmission planning*

- Technical Committee Working Group Recognition Award (2007). *Awarded by the Power System Analysis, Computing & Economics Committee for contributing to the development of an electric delivery system reliability tutorial.*
- Technical Committee Working Group Recognition Award (2007). *Awarded by the Power System Operations Committee for work on Aging Power System Infrastructure.*
- Technical Committee Working Group Recognition Award (2006). *For work which resulted in a special issue of the IEEE Power and Energy magazine, May 2005.*
- Walter Fee Outstanding Young Engineer Award (2003). *For outstanding contributions in predictive reliability modelling of distribution systems.*
- Chair, Technical Awards Committee (2007 – present)
- Member, Power System Planning and Implementation Committee (1997-present)
 - Committee Vice Chair (2006-2008)
- Chair, Distribution Working Group (2003-2006)
- Chair, Power Delivery Reliability Working Group (1997-1999)
- Member, Distribution Subcommittee, Working Group on System Design (1997-2012)
- Technical Paper Reviewer
 - *IEEE Transactions on Power Systems* (1996-2012)
 - *IEEE Transactions on Power Delivery* (1996-2012)
 - *IEEE General Meeting* (2001-2012)
 - *IEEE T&D Conference and Exposition* (2001-2012)
 - *IEEE Power Systems Conference and Exposition* (2004-2012)
 - Power Systems Computation Conference 2008
- President, University of Washington Student Chapter (1994-1995)
- Vice President, University of Washington Student Chapter (1993-1994)

Books, Book Chapters, and Theses

1. **R. E. Brown**, *Business Essentials for Utility Engineers*, CRC Press, 2010.
2. **R. E. Brown**, *Electric Power Distribution Reliability, Second Edition*, CRC Press, 2009.
3. **R. E. Brown**, *Electric Power Distribution Reliability*, Marcel Dekker, 2002.
4. **D. J. Morrow and R. E. Brown**, "Future Vision: The Challenge of Effective Transmission Planning," Chapter 6, *Power System Analysis and Design*, 5th Edition, J. D Glover *et al* (Editor), pp. 295-304.
5. **R. E. Brown, H. L. Willis**, "Substation Asset Management," Chapter 19, *Electric Power Substations Engineering*, J. D. McDonald (Editor), Taylor & Francis (CRC Press), 2007, pp. 19-1 through 19-31.
6. **R. E. Brown**, "Power System Reliability" Section 13.5, *Electric Power Engineering Handbook*, L. L. Grigsby (Editor), CRC Press LLC, 2001, pp. 13-51 through 13-65.
7. **R. E. Brown**, "Predictive Distribution Reliability and Risk Assessment," Chapter 3, *IEEE Tutorial on Probabilistic T&D System Reliability Planning*, A. A. Chowdhury (Editor), IEEE 07TP182, 2007, pp. 29-36.
8. **R. E. Brown**, "Distribution System Reliability: Analytical and Empirical Techniques", Chapter 3, *IEEE Tutorial on Electric Delivery System Reliability Evaluation*, J. Mitra (Editor), IEEE 05TP175, 2005, pp. 39-51.
9. **R. E. Brown**, *Reliability Assessment and Design Optimization for Electric Power Distribution Systems*, Ph.D. Dissertation, University of Washington, Seattle, WA, 1996.
10. **R. E. Brown**, *An Intelligent Overload Relay for Extruded Dielectric Transmission Cable*, Masters Thesis, University of Washington, Seattle, WA, 1993.

Refereed Journal Papers

1. **R. E. Brown, M. V. Engel, and J. H. Spare**, "Making Sense of Worst Performing Feeders", *IEEE Transactions on Power Systems*, Vol. 20, No. 2, May 2005, pp. 1173-1178.
2. **R. E. Brown, G. Frimpong, and H. L. Willis**, "Failure Rate Modeling Using Equipment Inspection Data", *IEEE Transactions on Power Systems*, Vol. 19, No. 2, May 2004, pp. 782-787.
3. **S. S. Venkata, A. Pahwa, R. E. Brown, and R. D. Christie**, "What Future Distribution Engineers Need to Learn," *IEEE Transactions on Power Systems*, Vol. 19, No. 1, Feb. 2004, pp. 17-23.
4. **F. Li and R. E. Brown**, "A Cost-Effective Approach of Prioritizing Distribution Maintenance Based on System Reliability," *IEEE Transactions on Power Delivery*, Vol. 19, No. 1, Jan. 2004, pp. 439-441.

5. F. Li, R. E. Brown, and L. A. A. Freeman, "A Linear Contribution Factor Model of Distribution Reliability Indices and its Applications in Monte Carlo Simulation and Sensitivity Analysis," *IEEE Transactions on Power Systems*, Vol. 18, No. 3, Aug. 2003, pp. 1213-1215.
6. R. E. Brown and A. P. Hanson, "Impact of Two Stage Service Restoration on Distribution Reliability," *IEEE Transactions on Power Systems*, Vol. 16, No. 4, Nov. 2001, pp. 624-629.
7. R. E. Brown and J. J. Burke, "Managing the Risk of Performance Based Rates," *IEEE Transactions on Power Systems*, Vol. 15, No. 2, May 2000, pp. 893-898.
8. R. E. Brown and M. M. Marshall, "Budget Constrained Planning to Optimize Power System Reliability," *IEEE Transactions on Power Systems*, Vol. 15, No. 2, May 2000, pp. 887-892.
9. R. E. Brown, "The Impact of Heuristic Initialization on Distribution System Reliability Optimization," *International Journal of Engineering Intelligent Systems for Electrical Engineering and Communications*, Vol. 8, No. 1, March 2000, pp. 45-52.
10. R. E. Brown and J. R. Ochoa, "Impact of Sub-Cycle Transfer Switches on Distribution System Reliability," *IEEE Transactions on Power Systems*, Vol. 15, No. 1, Feb. 2000, pp. 442-447.
11. R. E. Brown, T. M. Taylor, "Modeling the Impact of Substations on Distribution Reliability," *IEEE Transactions on Power Systems*, Vol. 14, No. 1, Feb. 1999, pp. 349-354.
12. R. E. Brown and J. R. Ochoa, "Distribution System Reliability: Default Data and Model Validation," *IEEE Transactions on Power Systems*, Vol. 13, No. 2, May 1998, pp. 704-709.
13. R. E. Brown, S. Gupta, R. D. Christie, S. S. Venkata, and R. D. Fletcher, "Distribution System Reliability: Momentary Interruptions and Storms," *IEEE Transactions on Power Delivery*, Vol. 12, No. 4, October 1997, pp. 1569-1575.
14. R. E. Brown, S. Gupta, R. D. Christie, S. S. Venkata, and R. D. Fletcher, "Automated Primary Distribution System Design: Reliability and Cost Optimization," *IEEE Transactions on Power Delivery*, Vol. 12, No. 2, April 1997, pp. 1017-1022.
15. R. E. Brown, S. Gupta, R. D. Christie, S. S. Venkata, and R. D. Fletcher, "Distribution System Reliability Analysis Using Hierarchical Markov Modeling," *IEEE Transactions on Power Delivery*, Vol. 11, No. 4, Oct. 1996, pp. 1929-1934.
16. V. N. Chuvychin, N. S. Gurov, S. S. Venkata, and R. E. Brown, "An Adaptive Approach to Load Shedding and Spinning Reserve Control During Underfrequency Conditions," *IEEE Transactions on Power Systems*, Vol. 11, No. 4, Nov. 1996, pp. 1805-1810.

Refereed Conference Papers

1. J. Romero Agüero and R. E. Brown, "Distribution System Reliability Improvement Using Predictive Models," *IEEE PES 2009 General Meeting*, Calgary, Alberta, July 2009.
2. J. Romero Agüero, R. E. Brown, J. H. Spare, E. Phillips, L. Xu, and J. Wang, "A Reliability Improvement Roadmap Based on a Predictive Model and Extrapolation Technique," *IEEE PES 2009 Power Systems Conference and Exposition*, Seattle, WA, March 2009.
3. J. Romero Agüero, R. E. Brown, J. H. Spare, E. Phillips, L. Xu, and J. Wang, "A Reliability Improvement Roadmap Based on a Predictive Model and Extrapolation Technique," *DistribUTECH Conference and Exhibition*, San Diego, CA, Feb. 2008.
4. R. E. Brown, "Asset Management Standards and Guidelines", *EPRI Fourth Power Delivery Asset Management Conference*, Chicago, IL, Oct. 2008.
5. R. E. Brown, "Impact of Smart Grid on Distribution System Design", *IEEE PES 2008 General Meeting*, Pittsburg, PA, July 2008.
6. L. Xu and R. E. Brown, "A Hurricane Simulation Method for Florida Utility Damage and Risk Assessment", *IEEE PES 2008 General Meeting*, Pittsburg, PA, July 2008.
7. R. E. Brown, "Hurricane Hardening Efforts in Florida", *IEEE PES 2008 General Meeting*, Pittsburg, PA, July 2008.
8. L. Xu and R. E. Brown, "Simulation of Hurricane Damage to Utilities in Florida," *DistribUTECH Conference and Exhibition*, Tampa Bay, FL, Jan. 2008.
9. R. E. Brown, "Reliability Benefits of Distributed Generation on Heavily Loaded Feeders", *IEEE PES 2007 General Meeting*, Tampa, FL, June 2007.
10. R. E. Brown, "Pole Hardening Following Hurricane Wilma," 2007 Southeastern Utility Pole Conference, Tunica, MS, Feb. 2007.

11. B. Ramanathan, D. Hennessy and R. E. Brown, "Decision-making and Policy Implications of Performance-based Regulation," *IEEE Power Systems Conference and Exhibition*, Atlanta, GA, Oct. 2006.
12. R. E. Brown, "The Regulatory Usefulness of Reliability Reporting," 2006 IEEE Rural Electric Power Conference, Albuquerque, NM, April 2006.
13. M. Butts, J. H. Spare and R. E. Brown, "Practical and Verifiable Reliability Improvement at the Baltimore Gas and Electric Company," *DistribUTECH Conference and Exhibition*, Tampa Bay, FL, Feb. 2006.
14. R. E. Brown, "Project Selection with Multiple Performance Objectives," *2005 IEEE PES Transmission and Distribution Conference and Exposition*, New Orleans, LA, Sept. 2005.
15. R. E. Brown and J. H. Spare, "The Effects of System Design on Reliability and Risk," *2005 IEEE PES Transmission and Distribution Conference and Exposition*, New Orleans, LA, Sept. 2005.
16. R. E. Brown and J. H. Spare "A Survey of U.S. Reliability Reporting Processes," *2005 IEEE PES Transmission and Distribution Conference and Exposition*, New Orleans, LA, Sept. 2005.
17. Y. Zhou and R. E. Brown, "A Practical Method for Cable Failure Rate Modeling," *2005 IEEE PES Transmission and Distribution Conference and Exposition*, New Orleans, LA, Sept. 2005.
18. R. E. Brown and J. H. Spare, "Asset Management and Financial Risk," *DistribUTECH Conference and Exhibition*, San Diego, CA, Jan. 2005.
19. R. E. Brown and J. H. Spare, "Asset Management, Risk, and Distribution System Planning," *IEEE Power Systems Conference and Exhibition*, New York, NY, Oct. 2004.
20. R. E. Brown, "Identifying Worst Performing Feeders," *Probabilistic Methods Applied to Power Systems, PMAPS 2004*, Ames, IA, September 2004.
21. H. L. Willis, M. V. Engel and R. E. Brown, "Equipment Demographics - Failure Analysis of Aging T&D Infrastructures," *2004 Canada Power Conference*, Toronto, Canada, September 2004.
22. R. E. Brown, "Failure Rate Modeling Using Equipment Inspection Data", *IEEE PES 2004 General Meeting*, Denver, CO, June 2004.
23. R. E. Brown, "Coming to Grips with Distribution Asset Management," *2003 Real World Conference: It's All About Cost and Reliability*, Transmission and Distribution World, Ft. Lauderdale, FL, Oct. 2003.
24. R. E. Brown, "Reliability Standards and Customer Satisfaction," *2003 IEEE PES Transmission and Distribution Conference and Exposition*, Dallas, TX, Sept. 2003.
25. A. Pahwa, S. Gupta, Y. Zhou, R. E. Brown, and S. Das, "Data Selection To Train A Fuzzy Model For Overhead Distribution Feeders Failure Rates," *International Conference on Intelligent Systems Applications to Power Systems*, Lemnos, Greece, Sept. 2003.
26. R. E. Brown, "Network Reconfiguration for Improving Reliability in Distribution Systems," *IEEE PES 2003 General Meeting*, Toronto, Canada, July 2003.
27. R. E. Brown, J. Pan, Y. Liao, and X. Feng, "An Application of Genetic Algorithms to Integrated System Expansion Optimization," *IEEE PES 2003 General Meeting*, Toronto, Canada, July 2003.
28. R. E. Brown and L. A. A. Freeman, "A Cost Benefit Comparison of Reliability Improvement Strategies," *DistribUTECH Conference and Exhibition*, Las Vegas, NV, Feb. 2003.
29. S. Gupta, A. Pahwa, R. E. Brown and S. Das, "A Fuzzy Model for Overhead Distribution Feeders Failure Rates," *NAPS 2002: 34th Annual North American Power Symposium*, Tempe, AZ, Oct. 2002.
30. R. E. Brown, "Web-Based Distribution System Planning," *IEEE PES Summer Power Meeting*, Chicago, IL, July 2002.
31. R. E. Brown, "System Reliability and Power Quality: Performance-Based Rates and Guarantees," *IEEE PES Summer Power Meeting*, Chicago, IL, July 2002.
32. R. E. Brown, "Modeling the Reliability Impact of Distributed Generation," *IEEE PES Summer Power Meeting*, Chicago, IL, July 2002.
33. S. Gupta, A. Pahwa, R. E. Brown, "Data Needs for Reliability Assessment of Distribution Systems," *IEEE PES Summer Power Meeting*, Chicago, IL, July 2002.
34. R. E. Brown, "Meeting Reliability Targets for Least Cost," *DistribUTECH Conference and Exhibition*, Miami, FL, Feb. 2002.
35. S. Gupta, A. Pahwa and R. E. Brown, "Predicting the Failure Rates of Overhead Distribution Lines Using an Adaptive-Fuzzy Technique," *NAPS 2001. 33rd Annual North American Power Symposium*, College Station, TX, Oct. 2001.
36. P. R. Jones and R. E. Brown, "Advanced Modeling Techniques to Identify and Minimize the Risk of Aging Assets on Network Performance," *Utilities Asset Management 2001*, London, UK, July 2001.
37. R. E. Brown, "Distribution Reliability Modeling at Commonwealth Edison," *2001 IEEE/PES Transmission and Distribution Conference and Exposition*, Atlanta, GA, Oct. 2001.

38. R. E. Brown, "Distribution Reliability Assessment and Reconfiguration Optimization," *2001 IEEE PES Transmission and Distribution Conference and Exposition*, Atlanta, GA, Oct. 2001.
39. R. E. Brown, J. Pan, X. Feng and K. Koutlev, "Siting Distributed Generation to Defer T&D Expansion," *2001 IEEE PES Transmission and Distribution Conference and Exposition*, Atlanta, GA, Oct. 2001.
40. D. Ross, L. Freeman and R. E. Brown, "Overcoming Data Problems in Predictive Distribution Reliability Modeling," *2001 IEEE/PES Transmission and Distribution Conference and Exposition*, Atlanta, GA, Oct. 2001.
41. R. E. Brown and L. A. A. Freeman, "Analyzing the Reliability Impact of Distributed Generation," *IEEE PES Summer Power Meeting*, Vancouver, BC, Canada, July 2001.
42. R. E. Brown and M. Marshall, "Microeconomic Examination of Distribution Reliability Targets," *IEEE PES Winter Power Meeting*, Columbus, OH, Jan. 2001, Vol. 1, pp. 58-65.
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Regulatory Experience

Dr. Brown has filed the following expert testimony before public utility commissions (copies are available upon request):

1. Prepared direct testimony, reply testimony, and surreply testimony, "Investigation of the reliability of Pepco's electric distribution system and the quality of the service it provides to customers," Prepared on behalf of the Massachusetts Attorney General Filed and submitted to the Maryland Public Service Commission under Case No. 9240. *This testimony performs a review of the following reports generated to assess the reliability of Pepco's reliability and customer service during both normal and major event conditions:* "
2. "Impact of Aging Infrastructure on System Reliability at SCE," Workpaper submitted with the 2012 General Rate Case to Public Utilities Commission of the State of California, Docket U 338-E, 2010. *This report examines the impact of aging equipment on system reliability over twenty years, and calculates the benefit-to-cost ratios of proactive aging infrastructure replacement for both the overall system and for worst-performing circuits.*
3. "Hazard Trees: Benchmark Survey and Best Practices." Prepared for the Public Utilities Commission of Texas and filed under docket number 36375. The results of this report were presented to the commission in an open meeting on July 30th 2009. *A industry benchmark survey was performed to determine typical and best industry practices related to the identification and removal of trees with defects that have the potential to fall into power lines. The report identifies eighteen recommendations.*
4. "Distribution Hardening: Benchmark Survey and Best Practices." Prepared for the Public Utilities Commission of Texas and filed under docket number 36375. The results of this report were presented to the commission in an open meeting on July 30th 2009. *A industry benchmark survey was performed to determine typical and best industry practices related to hardening distribution systems so that they experience less damage during major storms. The report identifies eighteen recommendations.*
5. Prepared direct, rebuttal, and surrebuttal testimony, "Investigation by the Massachusetts Department Of Public Utilities on its Own Motion into the Preparation and Response of the Massachusetts Electric Distribution Companies to the December 12, 2008 Winter Storm," Prepared on behalf of the Massachusetts Attorney General

- Filed and submitted to the Massachusetts Department Of Public Utilities under Docket DPU 09-01-A. *This testimony presents an analysis of the technical aspects of Fitchburg Gas & Electric (FG&E) as they relate to the damage and restoration associated with the 2008 Ice Storm.*
6. "Cost-Benefit Analysis of the Deployment of Utility Infrastructure Upgrades and Storm Hardening Programs." Prepared for the Public Utilities Commission of Texas and filed under docket number 36375. The results of this report were presented to the commission in an open meeting on April 9th 2009. *This report examines the impact of hurricanes and tropical storms to electric and telecom utilities in Texas. It examines the cost-effectiveness of potential hardening programs such as vegetation patrols, hazard tree programs, ground-based inspections, locating substations outside of floodplains, emergency backup generation in central offices, underground conversion, smart grid technologies, targeted hardening, and post-storm data collection. This report determines the costs for each program, the direct utility benefits, and greater societal benefits*
 7. "Undergrounding Assessment Phase 1 Final Report: Literature Review and Analysis of Electric Distribution Overhead to Underground Conversion." Prepared for the Florida Electric Utilities and submitted to the Florida Public Service Commission per order PSC-06-0351-PAA-EI. The results of this report were presented to the commission in an internal affairs meeting. *This report describes the body of literature related to the costs and benefits of converting existing overhead distribution systems to underground, including the impact on non-storm reliability performance and storm reliability performance. Phase 2 of this project will examine for case studies for actual underground conversion projects that have been completed in Florida. Phase 3 of this project will develop a model that is able to predict the anticipated costs and benefits for potential underground conversion projects.*
 8. "Undergrounding Assessment Phase 2 Final Report: Undergrounding Case Studies." Prepared for the Florida Electric Utilities and submitted to the Florida Public Service Commission per order PSC-06-0351-PAA-EI. The results of this report were presented to the commission in an internal affairs meeting. *This report details four actual undergrounding projects that have been completed in Florida with respect to realized benefits and incurred costs.*
 9. "Undergrounding Assessment Phase 3 Final Report: Ex Ante Cost and Benefit Modelling." Prepared for the Florida Electric Utilities and submitted to the Florida Public Service Commission per order PSC-06-0351-PAA-EI. The results of this report were presented to the commission in an internal affairs meeting. *This report develops a methodology to assess the utility and customer costs and benefits of undergrounding and system hardening with an emphasis on hurricane performance. It also contains a user's guide to the software tool in which the methodology is implemented.*
 10. "Technical Report: Post Hurricane Wilma Engineering Analysis." Prepared for Florida Power & Light and submitted to the Florida Public Service Commission for the 2005 hurricane cost recovery hearings, Docket 060038-EI. A deposition was given on the findings of this report and Dr. Brown was called as an expert witness in the FPL storm cost recovery hearings. *This report examines the infrastructure damage that occurred on the FPL system following Hurricane Wilma, and determines whether this damage was consistent with prudent management decisions and therefore eligible for recovery of the associated recovery costs.*
 11. "Hurricane Hardening." January 23rd 2006 (undocketed). Transcript available on the FPSC website. *Presented techniques at a staff workshop for strengthening electric power systems so that they sustain less damage during hurricane.*
 12. "Assessment of PBR Reliability Metrics and Related Systems and Processes." Prepared for Southern California Edison and submitted to the California Public Utilities Commission under Docket I.06-06-014. *This testimony examined the systems and processes of SCE related to reliability data gathering and reliability index calculations used for PBR metrics during the PBR period of 1997 through 2003. The focus of the testimony was on the ability of the SCE systems and processes to generate reliability metrics that are useful from a regulatory incentive perspective.*
 13. "Asset Management and System Reliability Group Review." Prepared for Southern California Edison and submitted to the California Public Service Commission for the 2008 general rate case, Docket A.07-11-011. *This report examines, among other things, the impact that aging infrastructure will have on distribution reliability indices over time, and the mitigation impact of the proactive replacement activities proposed in the rate case*
 14. "A Better Measure for Distribution Reliability." Prepared for San Diego Gas & Electric and submitted to the California Public Service Commission for the 2007 general rate case, Docket A.06-12-009. *This report discusses the strengths and weaknesses of standard reliability indices when used for prioritizing reliability improvement projects. The report discusses potential difficulties associated with the most common indices (SAIDI, SAIFI, and MAIFI), examines alternatives, and proposes a new reliability index that is highly suitable for performance-based ratemaking.*

15. "Aging Distribution Infrastructure at Pacific Gas & Electric." Prepared for Pacific Gas & Electric and submitted to the California Public Service Commission for the 2006 general rate case, Docket A-05.12-002. *This report examines the state of the U.S. electric industry in terms of aging infrastructure and its impact on reliability performance. It then compares these findings to the situation at PG&E, and examines the appropriateness of related spending proposed in the general rate case with regards to cost and reliability benefits.*

Dr. Brown has also supported several utilities in regulatory activities that did not result in filed testimony. These include:

16. Excel Energy – Assessment of Reliability Reporting Systems and Processes. *This project was a result of accusation that Excel Energy was manipulating reliability indices for the purposes of avoiding regulatory financial penalties. The scope of the project included a comprehensive assessment of systems and processes and their ability to generate reliability indices that are useful for their intended regulatory purpose. This included an industry benchmark study.*
17. Oklahoma Gas & Electric – Five-year reliability plan for rate case filing. *This engagement created a cost-versus reliability curve for the OG&E system. This curve to set five-year reliability improvement and spending targets for inclusion in their 2006 rate case filing.*

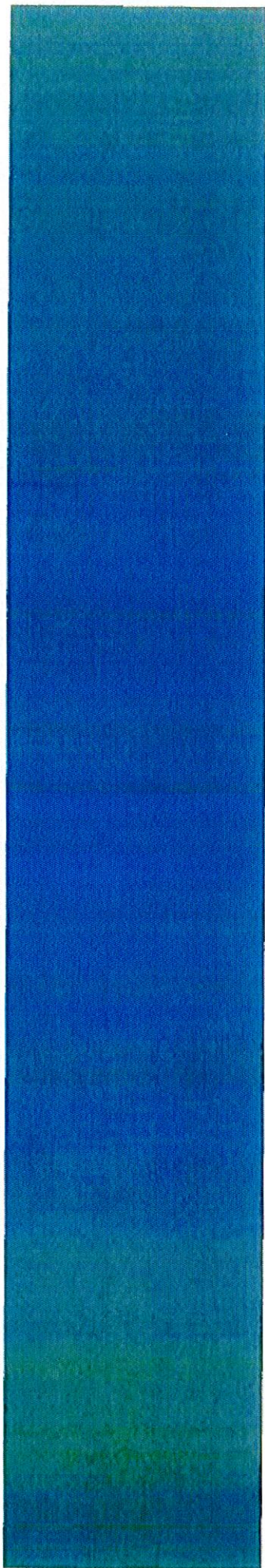
Dr. Brown has also served as an expert witness in the following civil cases.

18. Jersey Central Power & Light. Provided expert witness services for a pole collision case (Seals, et al. v. JCP&L, et al.) including two reports, two depositions, and trial testimony. This case involved a driver colliding with a pole and asserting that the utility was to blame for the accident. The jury verdict assigned 100% blame to the plaintiff and 0% blame to the utility.

Developed Courses

Dr. Brown has designed the curriculum, developed the material, and taught the following courses:

1. Distribution Reliability, 4-day course.
2. Power System Reliability, 4-day course.
3. Asset Management, 4-day course.
4. Business Essentials for Utility Engineers, 4-day course.
5. Utility Infrastructure Hardening, 2-day course.



APPENDIX

3

FISHKIND & ASSOCIATES

ANALYSIS OF SPECIAL ASSESSMENTS PROPOSED TO FUND UTILITY UNDERGROUNDING IN PALM BEACH

July 10, 2017

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Executive Summary

- The Town of Palm Beach plans to impose \$90,000,000 in special assessments ("Assessments") to fund the undergrounding ("Undergrounding") of its overhead utility lines (Resolution No. 090-2017 all capitalized terms not defined herein have the meanings defined in the Resolution).
- Valid special assessments in Florida must satisfy two requirements (City of Boca Raton v. State, 595 So. 2d 25 (Fla. 1992)).
 - A. Special Benefit – A special benefit must: (1) confer a special and peculiar benefit to the assessed property, over and above the general benefits to the public; (2) measured in terms of increased property value, lower insurance premiums, or added use and enjoyment; and (3) greater than the cost of the assessments.
 - B. Equitable Apportionment – The assessments must be fairly allocated among the specially benefiting properties in proportion to the benefits each receives.
- In support of the Assessments the Town commissioned an Assessment Report ("Town of Palm Beach Utility Undergrounding Assessment Methodology Update," June 2, 2017, by Raftelis Financial Consultants, Inc.).
- The Assessment Report claims that Undergrounding creates special benefits from improved: (a) reliability, (b) safety, and (c) aesthetics. Equitable allocation is based on an Equivalent Benefit Unit ("EBU") methodology that assigns Safety EBUs, Reliability EBUs, and Aesthetic EBUs to each assessed property based upon its use and other site specific characteristics.
- The Assessment Report is fatally flawed and fails to establish that: (a) the Undergrounding will generate special benefits and (b) even if it did that the special benefits were equitably apportioned.
- The Assessment Report claims that Undergrounding will improve system reliability based on Florida Power & Light's 2015 Reliability Report that concluded that the undergrounding of overhead utilities reduces the frequency of power outages, when compared to the frequency of outages occurring with overhead networks. However, the FPL report was based on statewide averages and fails to account for the particular circumstances for a barrier island like Palm Beach.

- FPL makes many of these same observations concerning the propriety of undergrounding utility distribution systems.
- The Assessment Report's remaining claim of special benefit, improved aesthetics, is undermined by two facts. First, in new subdivisions FPL only charges a premium of \$266 to install underground service versus overhead. Despite this modest premium not every new subdivision installs underground service. This means that the market value of the improved aesthetics is \$266 per lot or less. Second, the par value of the Assessments exceeds \$8,000 per Residential Property including individual homes and condominiums.
- Therefore, the Assessments constitute special burdens on the properties to be assessed instead of special benefits. The cost of the Assessments exceeds any reasonable estimate for their aesthetic contribution and there is no reasonable demonstration that the Undergrounding will improve either reliability or safety.
- If there is no reasonable proof that the Undergrounding will improve reliability or safety, then the cost of the Assessments cannot be allocated to properties based on alleged improvements to reliability or to safety that they will not in fact receive.
- Finally, even if one concludes that the Undergrounding would create special benefits and that these are equitably allocated, there is one more fatal flaw. The Undergrounding will take an estimated 8-years to complete. However, the Resolution requires all property owners to begin paying assessments in fiscal year 2017 beginning in October, 2017. This means that many property owners will be paying assessments for many years before there is any Undergrounding improvements adjacent to or near their properties. Payment of assessments without any providing of the alleged special benefits from the Undergrounding clearly violates the requirement that there be special benefits conferred on properties required to pay Assessments.

1.0 Introduction

1.1 Assignment

Weiss, Handler & Cornwell, P.A. ("Client") retained Fishkind & Associates, Inc. ("FA") to analyze special assessments the Town of Palm Beach proposes to impose to Underground their overhead utility distribution system pursuant to Resolution 090-2017.

1.2 Qualifications to Render this Opinion

I am qualified to provide this analysis of Palm Beach's special assessment program based on my education, training and experience. I am an economist and President of Fishkind & Associates, Inc. ("FA"). FA is an economic and financial consulting firm with offices in Orlando, and Port St. Lucie, all in Florida. My clients include state and municipal governments, the U.S. Department of Justice, Fortune 500 Companies, and major property developers, as well as both plaintiffs and defendants in litigation.

My resume is included as Exhibit #1 which documents my qualifications. I have a Ph.D. in economics with specialties in Urban and Regional Economics and in Econometrics.

For many years I was a Research Economist with the Bureau of Economic and Business Research at the University of Florida, and from time-to-time I served as its Acting Director and its Associate Director. During the course of my work at the Bureau, I conducted numerous economic studies mostly concerning Florida's economy. I designed, launched, and administered the Bureau's monthly economic confidence index which involved sample surveys of Floridians. I also designed and executed the Bureau's economic forecasting program. I have served on the State of Florida's Governor's Council of Economic Advisors under two different administrations.

While I was employed at the Bureau, I was also a faculty member in the Department of Economics at the University of Florida. I achieved the rank of Associate Professor and obtained tenure before I decided to leave the University and work as an economic consultant and financial advisor in the private sector.

I was a founding board member of Engle Homes, a publicly traded (NASDAQ) homebuilding company until it was sold to TOUSA. I was also a founding board member of Summit Properties, which was a large, national apartment REIT traded on the NYSE until the company was sold to Camden Properties. As a board member of these real

estate development companies I served on their asset allocation committees among other assignments.

As the President of FA, I am regularly engaged to design and implement special assessment programs to support the funding and installation of capital infrastructure projects. I have assisted FA's clients in successfully raising over \$5 billion in special assessment revenue bonds funding infrastructure throughout Florida.

FA serves as District Managers and Financial Advisors to over 100 special purpose units of local government in Florida including some of the largest community development districts and special act districts in Florida including: The Villages, Lakewood Ranch, Lake Nona, and Babcock Ranch.

FA is a Municipal Advisor registered with the SEC and the MSRB License # 867-01196. Dr. Fishkind is the Principal and a Registered Municipal Advisor Representative for FA.

I have been qualified as an expert witness to provide economic testimony on more than 50 occasions by both the federal and state courts in Florida and in federal courts in Tennessee and Washington, D.C. I have also served as a court-appointed expert to provide valuation reports to the U.S. Tax Court. I have participated as an expert witness concerning special assessments in Florida on more than ten occasions.

2.0 Overview of the Special Assessment Program to Fund Undergrounding in Palm Beach

2.1 Summary of the Undergrounding Project and its Financing

The Town plans to convert its existing overhead utility distribution system to an underground system based on engineering plans by Kimley Horn. The Resolution specifies a maximum par debt of \$90,000,000 to fund the Undergrounding. The Town plans to issue long term debt to finance the Underground Utility Improvements to allow the Assessments to be collected in annual installments over a 30-year repayment period.

The Underground Utility Improvements are projected to be designed, constructed, and installed throughout the Underground Utility Assessment Area over an 8-year build out period. This build-out period is required due to the extensive coordination, traffic control, and mobilization needed during the project construction.

The Resolution imposes the obligation on all properties within the Underground Utility Assessment Area to begin paying their assessments in fiscal year 2017 which begins in October, 2017. Even though the Underground Utility Improvements project is not planned to be substantially complete throughout the Underground Utility Assessment Area for 8-years, the Resolution claims that all properties will receive a special benefit, at a certain level, upon the initiation of the project.

2.2 Summary of the Assessment Report

In support of the Assessments the Town commissioned an Assessment Report ("Town of Palm Beach Utility Undergrounding Assessment Methodology Update," June 2, 2017, by Raftelis Financial Consultants, Inc.). The Assessment Report claims that Undergrounding creates special benefits from improved: (a) reliability, (b) safety, and (c) aesthetics.

The Assessment Report claims that Undergrounding will improve system reliability based on Florida Power & Light's 2015 Reliability Report that concluded that the undergrounding of overhead utilities reduces the frequency of power outages, when compared to the frequency of outages occurring with overhead networks.

According to the Assessment Report properties specially benefit from the improved safety of undergrounding overhead utilities in two distinct ways: (1) the elimination of the potential for poles or overhead lines adjacent to a property to fall and damage property from falling or exposing "live" electrical lines and (2) the elimination of the potential for poles or overhead lines to be downed within the neighborhood restricting ingress and egress to and from the property.

Removing the overhead utilities will improve the overall aesthetics to an individual property and the neighborhood aesthetics for all properties within a defined project area by eliminating a heavy concentration of electric lines and communication facilities.

Equitable allocation is based on an Equivalent Benefit Unit ("EBU") methodology that assigns Safety EBUs, Reliability EBUs, and Aesthetic EBUs to each assessed property based upon its use and other site specific characteristics. According to the Assessment Report, to establish an equitable benefit nexus, it is necessary to relate each property's proportional special benefits to the special benefits of all other properties within a project area. This method of apportionment utilizes a weighted EBU methodology that defines an equivalent benefit unit for each category of benefit as the basic unit of benefit, or 1.0 EBU. Collectively, the three categories of special benefit listed above reflect the overall proportional

special benefits that properties will receive from the undergrounding of the overhead utilities within the assessment program.

Properties within the Town are assigned Safety EBUs, Reliability EBUs, and Aesthetic EBUs based upon property use and other site specific characteristics to distinguish the degree of special benefits received by different properties for each of the three categories of special benefit, respectively. Each category of benefit is allocated EBUs independent of each other and the total utility undergrounding cost assigned to each category is based on the percent of total benefit units derived within each category. The total EBUs per category of benefit is a function of the special benefits received by each parcel and; therefore, reflect the amount of special benefit parcels receive from the proposed utility undergrounding.

2.0 Requirements for Valid Special Assessments

2.1 Overview

There is extensive Florida case law concerning special assessments.¹ This case law provides important guidance concerning the legal and the economic standards governing valid special assessments. I am an economist and not an attorney, and my analysis provided below is not intended to render any legal opinions. Instead, the analysis of the case law provides direction as to what may constitute the appropriate and supportable basis for the Town to make the necessary findings that the Assessment Report, which is the foundation for Resolution 090-2017, is sufficient to support the imposition of valid special assessments.

Valid special assessments in Florida must satisfy two requirements.²

- A. Special Benefit – A special benefit must: (1) confer a special and peculiar benefit to the assessed property, over and above the general benefits to the public³; (2) measured in terms of increased property value⁴, lower insurance premiums, or added use and enjoyment⁵; (3) greater than the cost of the assessments.⁶

¹ See van Assenderp, Kenza, et al. (Spring 1993), "Dispelling the Myths: Florida's Non-Ad Valorem Special Assessment Law", Florida State University Law Review, Volume 20, Issue 4, pages 823-869.

² City of Boca Raton v. State, 595 So. 2d 25, 29-30 (Fla. 1992)

³ City of Boca Raton v. State, 595 So. 2d 25, 29-30 (Fla. 1992)

⁴ Fire Dist. No. 1 v. Jenkins, 221 So. 2d 740, 741 (Fla. 1969)

⁵ Meyer v. City of Oakland Park, 219 So. 2d 417, 420 (Fla. 1969).

⁶ City of Treasure Island v. Strong, 215 So. 2d 473 (Fla. 1968)

B. Equitable Apportionment – The assessments must be fairly allocated among the specially benefiting properties in proportion to the benefits each receives. An apportionment is considered reasonable unless it "so transcend[s] the limits of equality and reason" that it becomes extortion and confiscation of the property assessed.

Each of these two prongs of the test for a valid special assessment articulated in the Boca Raton case is discussed next.

2.2 Special Benefit

Special benefits are determined by the peculiar and particular benefits that the properties burdened by the assessments receive from the facilities or services funded from those assessments. The Florida Supreme Court held that the finding of a special benefit did not rest solely "in the judgment or upon the 'ipse dixit' of the municipal officer or officers"⁷ Rather, the court held that the determination of special benefit "is a question of fact to be ascertained and established as any other fact. . ."⁸

These findings, when made by a governing body, are presumed valid and this presumption of validity "can be overcome only by strong, direct, clear and positive proof."⁹ In deciding whether a party challenging the validity of such findings has met his burden the Florida Supreme Court has held that: if reasonable men may differ as to whether land assessed was benefitted by the local improvement the determination as to such benefits of the city officials must be sustained. If the evidence as to benefits is conflicting and depends upon the judgment of witnesses, the findings of the [governing body] will not be disturbed.¹⁰

Finally, the Florida Supreme court has held that "it is not necessary that the benefits be direct or immediate, but they must be substantial, certain,

⁷ 192. 350 So. 2d 578 (Fla. 2d DCA 1977). 193. Id. at 580; see also *South Trail Fire Control Dist. v. State*, 273 So. 2d 380 (Fla. 1973). 194. *Rosche v. City of Hollywood*, 55 So. 2d 909, 913 (Fla. 1952).

⁸ 188. Id. at 576 (citing *Atlantic Coast Line R.R. v. City of Lakeland*, 115 So. 669, 675 (Fla. 1927)). 189. Id. 190. *Meyer v. City of Oakland Park*, 219 So. 2d 417, 420 (Fla. 1969); *Rosche v. City of Hollywood*, 55 So. 2d 909, 913 (Fla. 1952) ("[All presumptions are in favor of the validity of assessments for local improvements, and the burden of proof is on persons attacking the validity of assessments to show that they are invalid.]; *City of Hallandale v. Meekins*, 237 So. 2d 318, 320 (Fla. 4th DCA 1970), decision adopted sub nom. *Investment Corp. of S. Fla. v. City of Hallandale*, 245 So. 2d 253 (Fla. 1971).

⁹ 188. Id. at 576 (citing *Atlantic Coast Line R.R. v. City of Lakeland*, 115 So. 669, 675 (Fla. 1927)). 189. Id. 190. *Meyer v. City of Oakland Park*, 219 So. 2d 417, 420 (Fla. 1969). *Rosche v. City of Hollywood*, 55 So. 2d 909, 913 (Fla. 1952) ("[All presumptions are in favor of the validity of assessments for local improvements, and the burden of proof is on persons attacking the validity of assessments to show that they are invalid.]; *City of Hallandale v. Meekins*, 237 So. 2d 318, 320 (Fla. 4th DCA 1970), decision adopted sub nom. *Investment Corp. of S. Fla. v. City of Hallandale*, 245 So. 2d 253 (Fla. 1971).

¹⁰ 192. 350 So. 2d 578 (Fla. 2d DCA 1977). 193. Id. at 580; see also *South Trail Fire Control Dist. v. State*, 273 So. 2d 380 (Fla. 1973). 194. *Rosche v. City of Hollywood*, 55 So. 2d 909, 913 (Fla. 1952).

and capable of being realized within a *reasonable time*." (Emphasis added).¹¹

2.3 Equitable Allocation

As is the case with the determination of special benefits, the determination of whether allocation of the cost to pay for the special benefit from a special assessment was reasonably apportioned is a legislative function of the levying local government. Therefore, the method of apportioning the cost of the system, service, or facility provided must be given great weight. If reasonable people disagree about the reasonableness of the allocations, the apportionment scheme must be sustained. "As long as the amount of the assessment for each tract is not in excess of the proportional benefits as compared to other assessments on other tracts,"¹² any method of apportioning the special benefits is valid and need not be mathematically precise.¹³

In determining the validity of a special assessment, courts also examine whether the cost that the property owner is required to pay has been reasonably and fairly apportioned to the property levied. An apportionment is considered reasonable unless it "so transcend[s] the limits of equality and reason" that it becomes extortion and confiscation of the property assessed.¹⁴

However, even though determining reasonable apportionment of special assessments is a legislative function of the governing body of the government imposing the assessments, there are limits on these powers. The government cannot abuse its discretion in these matters. If the government has abused its discretion, this overcomes the legislative presumption of validity.¹⁵

¹¹ 195. Meyer v. City of Oakland Park, 219 So. 2d 417, 420 (Fla. 1969)

¹² 215. See City of Boca Raton v. State, 595 So. 2d 25 (Fla. 1992); Meyer v. City of Oakland Park, 219 So. 2d 417, 420 (Fla. 1969); Rosche v. City of Hollywood, 55 So. 2d 909, 913 (Fla. 1952); City of Hallandale v. Meekins, 237 So. 2d 318, 320 (Fla. 4th DCA 1970), decision adopted sub nom. Investment Corp. of S. Fla. v. City of Hallandale, 245 So. 2d 253 (Fla. 1971). 216. South Trail Fire Control Dist. v. State, 273 So. 2d 380, 383 (Fla. 1973); Fire Dist. No. 1 v. Jenkins, 221 So. 2d 740, 742 (Fla. 1969); Lainhart v. Catts, 75 So. 47, 55 (Fla. 1917); Fiske, 350 So. 2d at 580. 217. Meekins, 237 So. 2d at 320-21. The Florida Supreme Court has explained that: Many elements enter into the question of determining and prorating benefits in a case of this kind. They are physical condition, nearness to or remoteness from residential and business districts, desirability for residential or commercial purposes, and many other peculiar to the locality where the lands improved are located.... No system of appraising benefits or assessing costs has yet been devised that is not open to some criticism. None have attained the ideal position of exact equality, but, if assessing boards would bear in mind that benefits actually accruing to the property improved in addition to those received by the community at large must control both as to benefits prorated and the limit of assessments for cost of improvement, the system employed would be as near the ideal as it is humanly possible to make it. City of Boca Raton, 595 So. 2d at 31 (quoting Meyer, 219 So. 2d at 419-20 (citations omitted)).

¹³ City of Boca Raton, 595 So. 2d at 31 (quoting South Trail Fire Control Dist., 273 So. 2d at 384).

¹⁴ Fisher v. Board of County Comm'rs, 84 So. 2d 572, 576 (Fla. 1956). 210. Atlantic Coast Line R.R. v. City of Winter Haven, 151 So. 321, 324 (Fla. 1933).

¹⁵ Rosche v. City of Hollywood, 55 So. 2d 909, 913 (Fla. 1952).

3.0 Analysis of Special Benefits Asserted in the Assessment Report

3.1 Special Benefits According to the Assessment Report

The Assessment Report identified three categories of special benefits that Undergrounding creates. These are improved: (a) reliability, (b) safety, and (c) aesthetics.

3.2 Analysis of Reliability Claim

The Assessment Report relies upon Florida Power & Light's 2015 Reliability Report ("FPL Report") to support its conclusion that the Undergrounding in the Town of Palm Beach will reduce the frequency of power outages, when compared to the frequency of outages occurring with existing overhead system.

While it is true that the FPL Report supports the conclusion that undergrounding service can improve reliability, this conclusion is based on a system-wide analysis and was not specific to coastal areas, with high water tables, subject to storm surge. Furthermore, it is important to consider how FPL itself weighs the strengths and weaknesses of undergrounding service. On its website FPL provides the following information.

"While underground facilities are not as susceptible to wind and debris-blown damage, they are more susceptible to water intrusion and local flood damage, which can make repairs more time consuming and costly. Overhead facility damage is easier to locate than underground and can generally be repaired quicker. Underground interruptions may be less frequent, but typically last longer due to more complex repair requirements. Following recent hurricanes, we've found that areas that took the longest to repair were generally those served by underground facilities still flooded days after the storm passed. Damage and corrosion of underground electrical systems often shows up days or even months later, causing additional outages and inconvenience to customers. Storm winds can damage both types of systems, causing outages. Overhead systems face outages resulting from trees and debris blowing into lines. Underground systems face outages from trees collapsing on above-ground transformers and switch boxes or from tree root systems uprooting buried cable when trees topple. While a neighborhood may be locally served by underground cable, all electric service eventually comes back above-ground and connects to overhead service, either in the surrounding neighborhoods, or further down the street. So, exposure to above-ground electric service from weather, animals and trees is never fully eliminated."¹⁶

¹⁶ <https://www.fpl.com/reliability/underground-conversions-faq.html>

The authors of the Assessment Report are not qualified engineers. They are accountants and financial advisors. They have no expertise to make findings concerning the relative reliability of Undergrounding compared to the existing overhead delivery system in Palm Beach.

3.3 Analysis of the Safety Claim

The second category of special benefit cited in the Assessment Report is improved safety. The Assessment Report argues that Properties specially benefit from the improved safety of undergrounding overhead utilities in two distinct ways: (1) elimination of the potential for poles or overhead lines adjacent to a property to fall and damage property from falling or exposing "live" electrical lines and (2) elimination of the potential for poles or overhead lines to be downed within the neighborhood restricting ingress and egress to and from the property.

Once again Raftelis, the authors of the Report, are not competent to render expert opinions concerning whether safety would be improved by Undergrounding. Their conclusions are not supported by any facts or evidence that underground facilities are comparably safer than overhead distribution systems. The Assessment Report fails to analyze any safety concerns related to underground distribution systems. Yet, underground systems also present safety concerns including: (a) digging can result in contact with energized buried cables; (b) pad-mounted utility equipment can have internal faults that result in their casings being energized; (c) equipment in underground vaults can explode; and (d) storm surges can cause extensive erosion exposing live cables. All that the Assessment Report offers is their anecdotal observations about safety concerns related to overhead distribution. The Assessment Report fails to analyze any safety concerns

3.4 Analysis of the Aesthetics Claim

As discussed above, the Assessment Report's claims of improved reliability and enhanced safety from Undergrounding are not based on facts or reliable expert opinion. These cannot serve as a reasonable basis for a special benefit. The Assessment Report presents no quantification of the aesthetic benefit, nor does it review the extensive professional literature on the impact of power lines on property values. The Assessment Report does not even reference the relative cost of undergrounding electric distribution in new subdivisions by FPL, even though such data are readily available.

Consider first that fact that FPL charges a premium of only \$651.49 to convert an existing overhead line to underground.¹⁸ Furthermore, FPL charges this same premium for new subdivisions where the developer desires underground service.¹⁹ Even at these relatively low prices, not every homeowner has converted to underground service. In fact, relatively few have done so. In addition, in my experience as a homebuilder, subdivision developer, and developer of master planned communities, including Tradition in Florida, not every project benefits sufficiently from undergrounding utility service to merit the cost. This indicates that the market value of the aesthetic benefit of undergrounding is around \$266 dollars per unit.

Furthermore, the professional literature on the impact of powerlines on property values finds rather small impacts, if any. The point to keep in mind here is that if the professional literature finds little or no impact on property values from transmission lines, it is not reasonable to conclude that there would be large impacts from distribution lines. Despite my extensive research, I could not identify any studies quantifying the impact of undergrounding distribution lines on property values.

¹⁷ Assessment Notice to Ms. Carol Kosberg for unit 214 in Atriums Tower 2 is \$8,311.91.

¹³ <https://www.fpl.com/reliability/underground-conversions-faq.html>

¹⁹ <https://www.fpl.com/reliability/underground-conversions-faq.html>

3.5 Problem of Timing

There is one additional problem with the claim of special benefit from the Undergrounding plan. Resolution 090-2017 requires all property owners in the Underground Utility Assessment Area ("Area") to begin paying assessments in fiscal year 2017 beginning in October, 2017. Thus, all property owners in the Area will be assessed for special benefits through their assessment payments that must be made along with all other property taxes no later than March 31, 2018.

However, according to the Resolution and the Undergrounding plan, the improvements giving rise to the special benefits will be installed in phases with completion expected over 8-years. This means the many assessment payers will be paying assessments for many years without receiving any special benefit. They will be paying assessments, but will still have overhead lines in front of their homes and in their neighborhoods. That are supposed to provide special benefits of aesthetics, safety and reliability will not be doing so for many years into the future.

While the case law does not require that improvements be provided before assessments are collected, it does require that there be special benefits conferred in a reasonable amount of time. In this fact situation, delaying the provision of improvements for up to 8-years cannot be considered a reasonable amount of time.

The Town could have easily phased the requirement for payment of assessments to coincide with the installation of the improvements. However, the Town chose not to do so. By collecting assessments well in advance of providing any improvements and their associated special benefits, if any, the present value of those benefits would be greatly diminished. If the Town can wait up to 8-years to provide any improvements, then what limit is there? Up to an 8-year delay in providing improvements and special benefit to assessment payers is not a reasonable period of time.

4.0 Analysis of Equitable Allocation in the Assessment Report

As noted above, determination of whether or not special assessments are equitably apportioned is a legislative function. The legislative determination cannot be overcome unless the governing body's actions are beyond its discretion.

The Assessment Report allocates the costs of Undergrounding based on its three tiers of alleged special benefits. However, if there are no special

benefits arising from the
Report, then its a

As noted above, the
claims for special
Therefore, the allocation
assessments is not

Furthermore, the
contradicted by the
low premium cost to
literature concerning
this category of alleged

5.0 Conclusions

Assessment Report is
Undergrounding would
cannot allocate the costs
categories of benefit for

5.1 No Improvement to Reliability

The Assessment Report does not reasonably demonstrate that the
Undergrounding would
render opinions concerning
overhead distribution

In support of its conclusion
upon FPL's 2015
Assessment Report
results are not applicable

5.2 No Improvement to Safety

The Assessment
compared to the
Report failed to
Without even considering
system, the Assessment
concluding that a
is safer than the current

5.3 No Improvement to Cost

The Assessment Report argues that Undergrounding will improve aesthetics. While I agree with this proposition, the issue is not simply a yes/no question. The issue is whether or not the Undergrounding provides a special benefit to assessment payers greater than the cost that they must pay for that benefit.²⁰

The cost of the Undergrounding to a residential property exceeds \$8,000. This is far in excess of the cost that FPL charges to underground residential service in new or existing neighborhoods which is \$266. Even at this low price of \$266, relatively few homeowners have converted to underground and not every new subdivision undergrounds its utilities. This indicates that the market valuation of the aesthetic benefits of undergrounding is far less than \$8,000. A review of the professional literature on the impact of power lines on property values is consistent with the market behavior.

5.4 Timing of Assessments Before Benefits is a Fatal Flaw

The Resolution allows for up to an 8-year delay between the time assessments must be paid to the time when all assessment payers will receive any improvements that give rise to their special benefits. This is not a reasonable period of time to delay receipt of special benefits.

5.5 No Equitable Allocation is Possible

The Assessment Report allocates benefits based on the same three categories of special benefit it has identified: (a) aesthetics, (b) safety, and (c) reliability. Costs are allocated using all three of these categories on a weighted basis. If even one of these categories of benefit is found to be unreasonable or nonexistent, then the entire allocation scheme fails. Since all three benefit categories are unreasonable, the entire allocation program fails.

²⁰ See *Treasure Island*, Op. Cit.

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- 2017-06-29 TPB SOS Letter
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- Fisher v. Board of County Comm'rs, 84 So. 2d 572, 576 (Fla. 1956).
- Atlantic Coast Line R.R. v. City of Winter Haven, 151 So. 321, 324 (Fla. 1933).
- Rosche v. City of Hollywood, 55 So. 2d 909, 913 (Fla. 1952).

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APPENDIX

4



7201 Delaney Court
Sarasota, FL 34240
Phone (941) 373 6460
www.ericksonconsultingengineers.com

July 10, 2017

Via Email

William J. Berger
Weiss, Handler & Cornwell, P.A.
2255 Glades Rd, Suite 218A
Boca Raton, FL 33431

RE: Town of Palm Beach FEMA Flood Map Review

Dear Mr. Berger,

This letter concerns the Town of Palm Beach's intended installation of underground power conduits and related utility boxes to be installed on the right-of-way on State Road A1A/South Ocean Blvd. The opinions expressed in this letter are within a reasonable degree of engineering certainty.

The revised August 18th, 2014 preliminary FEMA flood maps were taken into consideration in our assessment of potential flooding impacts as well as the current September 30th, 1982 FEMA flood maps. Based on our review of these FEMA flood maps, South Ocean Blvd and the land areas that are located both west and east of South Ocean Blvd are subject to the 100-year flood (Base-Flood) south from "Sloans Curve" to the town's municipal limits. The 100-year flood zone is designated as Zone "A" (1982) and "AE" (2014) which are areas expected to experience water levels of 6 feet (NAVD88) above sea level.

Available elevation/topographic data information derived from the FEMA flood maps as well as the Undergrounding of Utilities Master Plan, developed by Kimley Horn, for South Ocean Blvd indicates the power conduits and utility boxes are below the described floodplain. Therefore, the proposed underground utility lines would be located within the floodplain zone and well below the 100 year flood elevation. Underground high-voltage power cables not encased and shielded properly are susceptible to failure and thereby present a hazard to the surrounding areas when storm-related flooding occurs. Structures above ground proposed at or below the floodplain zone risk high vulnerability to flooding and moisture infiltration, especially salt water, which increases corrosion.

Most of the entrances, driveways, parking lots, front lawns and private property along the right-of-way that front these buildings lie within the "AE" zone, and are expected to flood during a 100-year flood event. Such examples are the properties of 3400 South Ocean Blvd and 2770 South Ocean. Additionally, the proposed "AE" zone extends nearly to the

Civil, Coastal and Environmental Engineering



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beach dune in some areas as well. Such examples are the properties of 2560 South Ocean Blvd, 2545 South Ocean Blvd, and 2565 South Ocean Blvd. It is our opinion that additional inspections should be tasked to identify specific locations of additional risk based on existing elevations and potential risks.

Most condominium and cooperative buildings on the east side of South Ocean Blvd are in the "X500" zone which represents areas between the limits of the 100-year and 500-year flood.

It is standard practice to cite proposed infrastructure at a minimum of 2.0 feet above the floodplain elevation, or at an 8 feet (NAVD88) elevation in this area. The exact locations for the proposed power utility boxes and underground work need to be assessed according to the risk to flood impacts and exposure and special siting and cable sheathing/protection requirements evaluated thoroughly.

Sincerely,

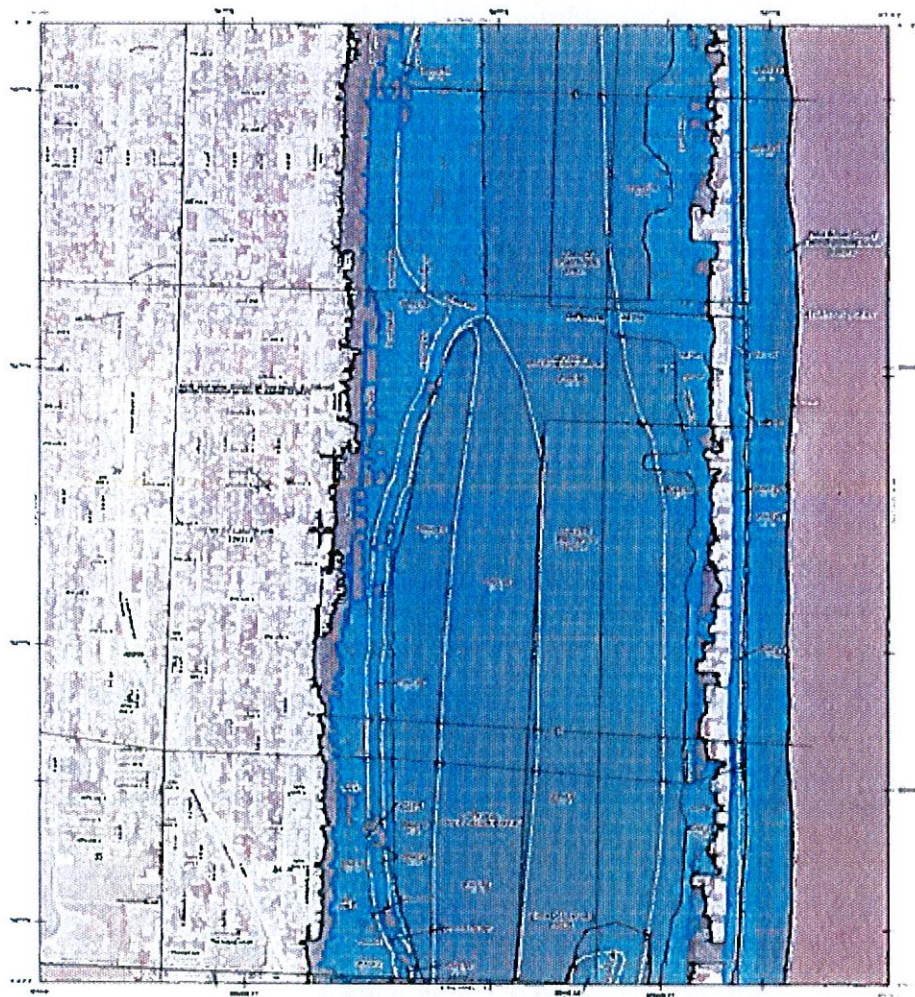
ERICKSON CONSULTING ENGINEERS, INC.

A handwritten signature in cursive script, appearing to read "Karyn Erickson", is written over the printed name.

Karyn Erickson, PE
Principal Engineer

Exhibits:

- A.) 2014 Preliminary Revised FEMA Flood Maps
- B.) 1982 FEMA Flood Maps
- C.) Topography Map -- Kimely Horn

[illegible]

1 **What is the purpose of the document?** The purpose of the document is to provide information about the company's products and services.

2 **What is the main product or service offered?** The main product or service offered is the company's proprietary software solution.

3 **What are the key features and benefits of the product?** The key features and benefits of the product include its ease of use, scalability, and integration capabilities.

4 **What is the pricing structure?** The pricing structure is based on the number of users and the level of support required.

5 **What is the contact information for sales and support?** The contact information for sales and support is provided at the bottom of the document.

6 **What is the company's mission statement?** The company's mission statement is to provide innovative software solutions that improve business efficiency.

7 **What is the company's history?** The company was founded in 1995 and has since grown into a leading provider of software solutions.

8 **What are the company's future plans?** The company's future plans include expanding its product line and entering new markets.

9 **What is the company's commitment to sustainability?** The company is committed to sustainability and has implemented various initiatives to reduce its carbon footprint.

10 **What is the company's commitment to social responsibility?** The company is committed to social responsibility and has implemented various initiatives to support the community.

11 **What is the company's commitment to customer satisfaction?** The company is committed to customer satisfaction and has implemented various initiatives to ensure a high level of service.

12 **What is the company's commitment to innovation?** The company is committed to innovation and has implemented various initiatives to stay at the forefront of technology.

13 **What is the company's commitment to transparency?** The company is committed to transparency and has implemented various initiatives to ensure that its operations are open and honest.

14 **What is the company's commitment to diversity and inclusion?** The company is committed to diversity and inclusion and has implemented various initiatives to ensure that all employees are treated fairly.

15 **What is the company's commitment to ethical sourcing?** The company is committed to ethical sourcing and has implemented various initiatives to ensure that its products are made from ethically sourced materials.

16 **What is the company's commitment to data privacy?** The company is committed to data privacy and has implemented various initiatives to ensure that customer data is protected.

17 **What is the company's commitment to cybersecurity?** The company is committed to cybersecurity and has implemented various initiatives to ensure that its systems are secure.

18 **What is the company's commitment to environmental sustainability?** The company is committed to environmental sustainability and has implemented various initiatives to reduce its environmental impact.

19 **What is the company's commitment to social sustainability?** The company is committed to social sustainability and has implemented various initiatives to support the community.

20 **What is the company's commitment to economic sustainability?** The company is committed to economic sustainability and has implemented various initiatives to ensure that its business is financially sound.

21 **What is the company's commitment to stakeholder engagement?** The company is committed to stakeholder engagement and has implemented various initiatives to ensure that it is responsive to the needs of its stakeholders.

22 **What is the company's commitment to risk management?** The company is committed to risk management and has implemented various initiatives to ensure that it is prepared for potential risks.

23 **What is the company's commitment to compliance?** The company is committed to compliance and has implemented various initiatives to ensure that it is following all applicable laws and regulations.

24 **What is the company's commitment to quality management?** The company is committed to quality management and has implemented various initiatives to ensure that its products and services are of high quality.

25 **What is the company's commitment to continuous improvement?** The company is committed to continuous improvement and has implemented various initiatives to ensure that it is always looking for ways to improve its products and services.

26 **What is the company's commitment to innovation and research and development?** The company is committed to innovation and research and development and has implemented various initiatives to ensure that it is always at the forefront of technology.

27 **What is the company's commitment to talent development?** The company is committed to talent development and has implemented various initiatives to ensure that its employees are always learning and growing.

28 **What is the company's commitment to employee well-being?** The company is committed to employee well-being and has implemented various initiatives to ensure that its employees are happy and healthy.

29 **What is the company's commitment to community engagement?** The company is committed to community engagement and has implemented various initiatives to ensure that it is an active member of the community.

30 **What is the company's commitment to corporate citizenship?** The company is committed to corporate citizenship and has implemented various initiatives to ensure that it is a responsible corporate citizen.

31 **What is the company's commitment to global impact?** The company is committed to global impact and has implemented various initiatives to ensure that it is making a positive impact on the world.

32 **What is the company's commitment to social impact?** The company is committed to social impact and has implemented various initiatives to ensure that it is making a positive impact on society.

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35 **What is the company's commitment to stakeholder value?** The company is committed to stakeholder value and has implemented various initiatives to ensure that it is creating value for all its stakeholders.

36 **What is the company's commitment to long-term success?** The company is committed to long-term success and has implemented various initiatives to ensure that it is sustainable for the long term.

37 **What is the company's commitment to excellence?** The company is committed to excellence and has implemented various initiatives to ensure that it is always striving for the highest quality.

38 **What is the company's commitment to integrity?** The company is committed to integrity and has implemented various initiatives to ensure that it is always acting with honesty and integrity.

39 **What is the company's commitment to respect?** The company is committed to respect and has implemented various initiatives to ensure that it is always treating others with respect.

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90 **What is the company**

FIRM
FLOOD INSURANCE RATE MAP
PALM BEACH COUNTY,
FLORIDA
AND THE THREATENED AREAS

PANEL 781 OF 1280

2002 FIRM PANEL 781 PALM BEACH COUNTY, FLORIDA

LEGEND

Special Flood Hazard Area (SFHA)	Special Flood Hazard Area (SFHA)	Special Flood Hazard Area (SFHA)
Zone A	Zone B	Zone C
Zone D	Zone E	Zone F
Zone G	Zone H	Zone I
Zone J	Zone K	Zone L
Zone M	Zone N	Zone O
Zone P	Zone Q	Zone R
Zone S	Zone T	Zone U
Zone V	Zone W	Zone X
Zone Y	Zone Z	Zone AA
Zone AB	Zone AC	Zone AD
Zone AE	Zone AF	Zone AG
Zone AH	Zone AI	Zone AJ
Zone AK	Zone AL	Zone AM
Zone AN	Zone AO	Zone AP
Zone AQ	Zone AR	Zone AS
Zone AT	Zone AU	Zone AV
Zone AW	Zone AX	Zone AY
Zone AZ	Zone BA	Zone BB
Zone BC	Zone BD	Zone BE
Zone BF	Zone BG	Zone BH
Zone BI	Zone BJ	Zone BK
Zone BL	Zone BM	Zone BN
Zone BO	Zone BP	Zone BQ
Zone BR	Zone BS	Zone BT
Zone BU	Zone BV	Zone BW
Zone BX	Zone BY	Zone BZ
Zone CA	Zone CB	Zone CC
Zone CD	Zone CE	Zone CF
Zone CG	Zone CH	Zone CI
Zone CJ	Zone CK	Zone CL
Zone CM	Zone CN	Zone CO
Zone CP	Zone CQ	Zone CR
Zone CS	Zone CT	Zone CU
Zone CV	Zone CW	Zone CX
Zone CY	Zone CZ	Zone DA
Zone DB	Zone DC	Zone DD
Zone DE	Zone DF	Zone DG
Zone DH	Zone DI	Zone DJ
Zone DK	Zone DL	Zone DM
Zone DN	Zone DO	Zone DP
Zone DQ	Zone DR	Zone DS
Zone DT	Zone DU	Zone DV
Zone DW	Zone DX	Zone DY
Zone DZ	Zone EA	Zone EB
Zone EC	Zone ED	Zone EE
Zone EF	Zone EG	Zone EH
Zone EI	Zone EJ	Zone EK
Zone EL	Zone EM	Zone EN
Zone EO	Zone EP	Zone EQ
Zone ER	Zone ES	Zone ET
Zone EU	Zone EV	Zone EW
Zone EX	Zone EY	Zone EZ
Zone FA	Zone FB	Zone FC
Zone FD	Zone FE	Zone FF
Zone FG	Zone FH	Zone FI
Zone FJ	Zone FK	Zone FL
Zone FM	Zone FN	Zone FO
Zone FP	Zone FQ	Zone FR
Zone FS	Zone FT	Zone FU
Zone FV	Zone FW	Zone FX
Zone FY	Zone FZ	Zone GA
Zone GB	Zone GC	Zone GD
Zone GE	Zone GF	Zone GH
Zone GI	Zone GJ	Zone GK
Zone GL	Zone GM	Zone GN
Zone GO	Zone GP	Zone GQ
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Zone GX	Zone GY	Zone GZ
Zone HA	Zone HB	Zone HC
Zone HD	Zone HE	Zone HF
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Zone HS	Zone HT	Zone HU
Zone HV	Zone HW	Zone HX
Zone HY	Zone HZ	Zone IA
Zone IB	Zone IC	Zone ID
Zone IE	Zone IF	Zone IG
Zone IH	Zone II	Zone IJ
Zone IK	Zone IL	Zone IM
Zone IN	Zone IO	Zone IP
Zone IQ	Zone IR	Zone IS
Zone IT	Zone IU	Zone IV
Zone IW	Zone IX	Zone IY
Zone IZ	Zone JA	Zone JB
Zone JC	Zone JD	Zone JE
Zone JF	Zone JG	Zone JH
Zone JI	Zone JJ	Zone JK
Zone JL	Zone JM	Zone JN
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Zone KP	Zone KQ	Zone KR
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Zone KV	Zone KW	Zone KX
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Zone LN	Zone LO	Zone LP
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Zone NK	Zone NL	Zone NM
Zone NO	Zone NP	Zone NQ
Zone NR	Zone NS	Zone NT
Zone NU	Zone NV	Zone NW
Zone NX	Zone NY	Zone NZ
Zone OA	Zone OB	Zone OC
Zone OD	Zone OE	Zone OF
Zone OG	Zone OH	Zone OI
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Zone OP	Zone OQ	Zone OR
Zone OS	Zone OT	Zone OU
Zone OV	Zone OW	Zone OX
Zone OY	Zone OZ	Zone PA
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Zone PH	Zone PI	Zone PJ
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Zone PN	Zone PO	Zone PP
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Zone PT	Zone PU	Zone PV
Zone PW	Zone PX	Zone PY
Zone PZ	Zone QA	Zone QB
Zone QC	Zone QD	Zone QE
Zone QF	Zone QG	Zone QH
Zone QI	Zone QJ	Zone QK
Zone QL	Zone QM	Zone QN
Zone QO	Zone QP	Zone QQ
Zone QR	Zone QS	Zone QT
Zone QU	Zone QV	Zone QW
Zone QX	Zone QY	Zone QZ
Zone RA	Zone RB	Zone RC

NOTES

1. This map is a preliminary map and is not to be used for any purpose other than for information.

2. The map is based on the best available information and is not to be used for any purpose other than for information.

3. The map is not to be used for any purpose other than for information.

4. The map is not to be used for any purpose other than for information.

5. The map is not to be used for any purpose other than for information.

6. The map is not to be used for any purpose other than for information.

7. The map is not to be used for any purpose other than for information.

8. The map is not to be used for any purpose other than for information.

9. The map is not to be used for any purpose other than for information.

10. The map is not to be used for any purpose other than for information.

NATIONAL FLOOD INSURANCE PROGRAM

FORM

FLOOD INSURANCE RATE MAP

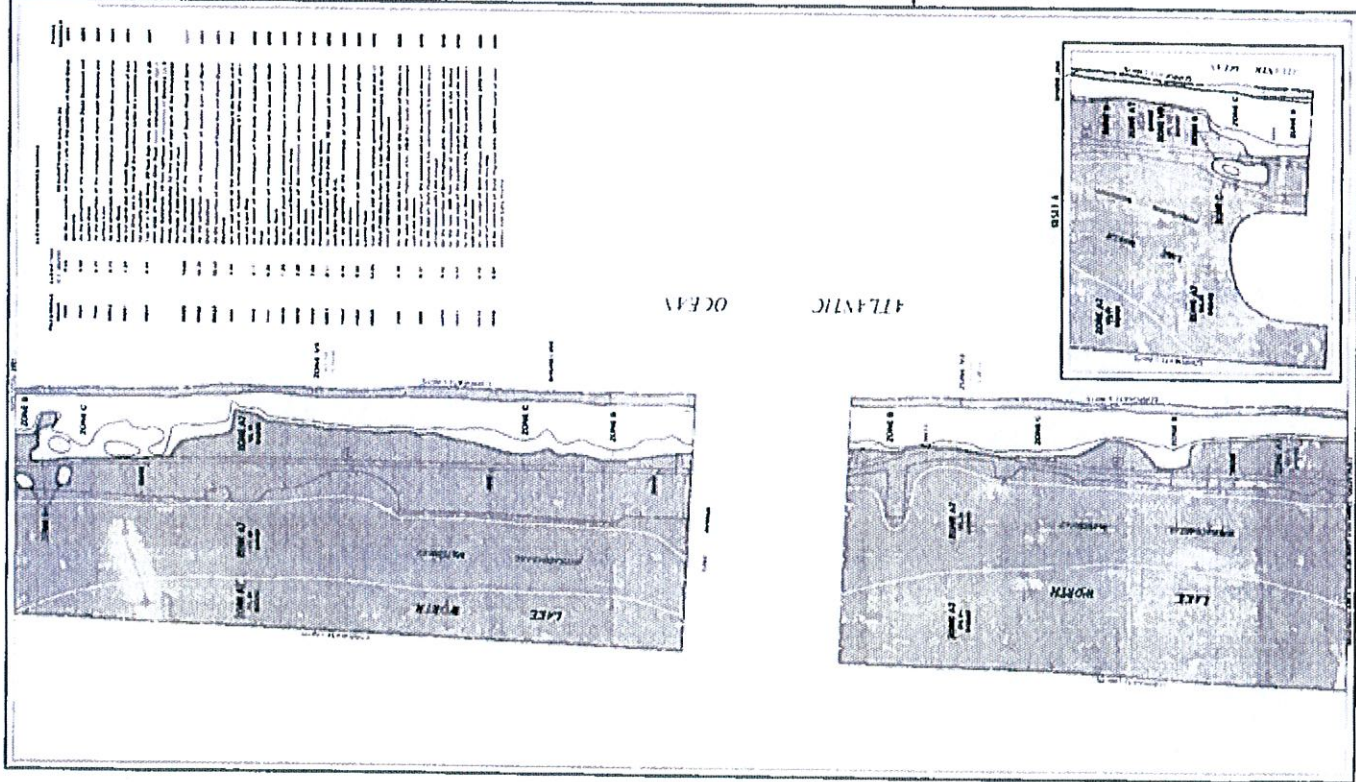
TOWN OF
PALM BEACH, FLORIDA
PALM BEACH COUNTY

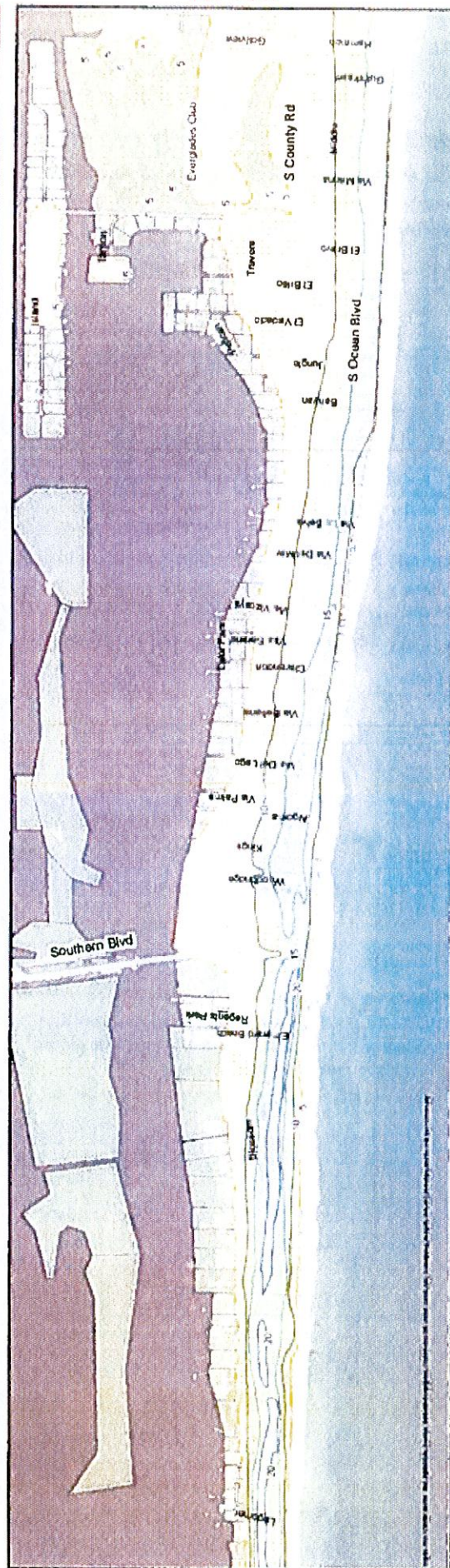
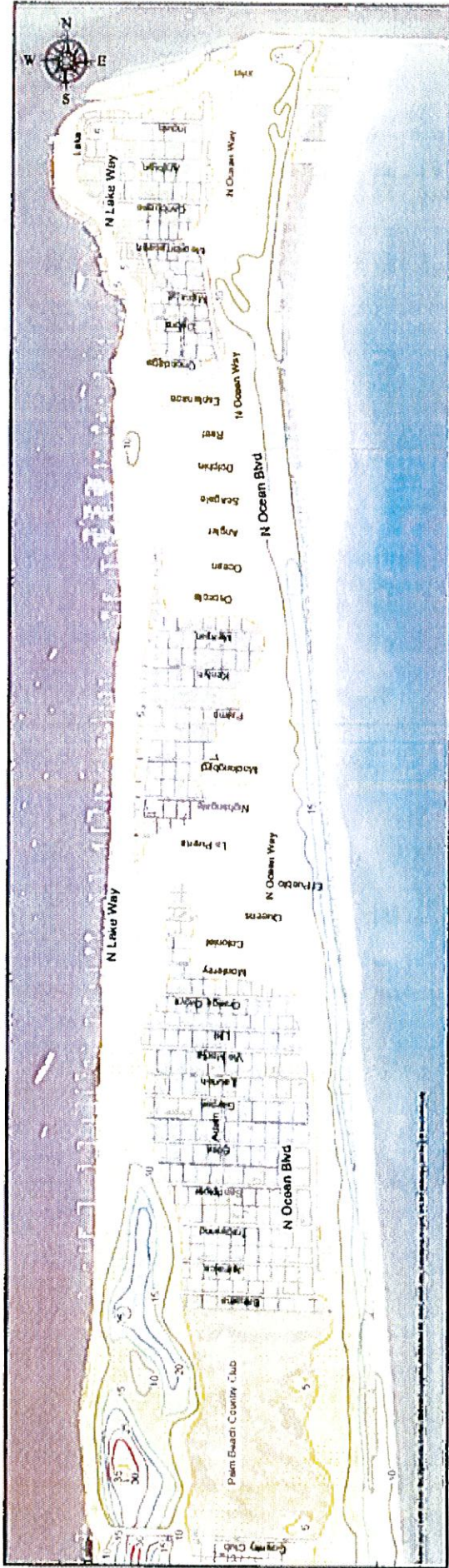
DATE
SEPTEMBER 31, 1962

SCALE
1" = 1/4 MILE

COMMISSIONER
JAMES H. HARRIS
1207 N. W. 10th St.
MIAMI, FLORIDA 33136

APPROVED
SEPTEMBER 31, 1962





ATLANTIC OCEAN

OLD SOCEAN BLVD

ZONE VE

EL 12

ZONE VE

EL 10

ZONE AE

EL 9

AD2837

SOCEAN BLVD

23

14





14

Town Of
Palm Beach
120220

Palm Beach County
Unincorporated Areas
120192

ATLANTIC OCEAN

ZONE VE
(EL. 10)

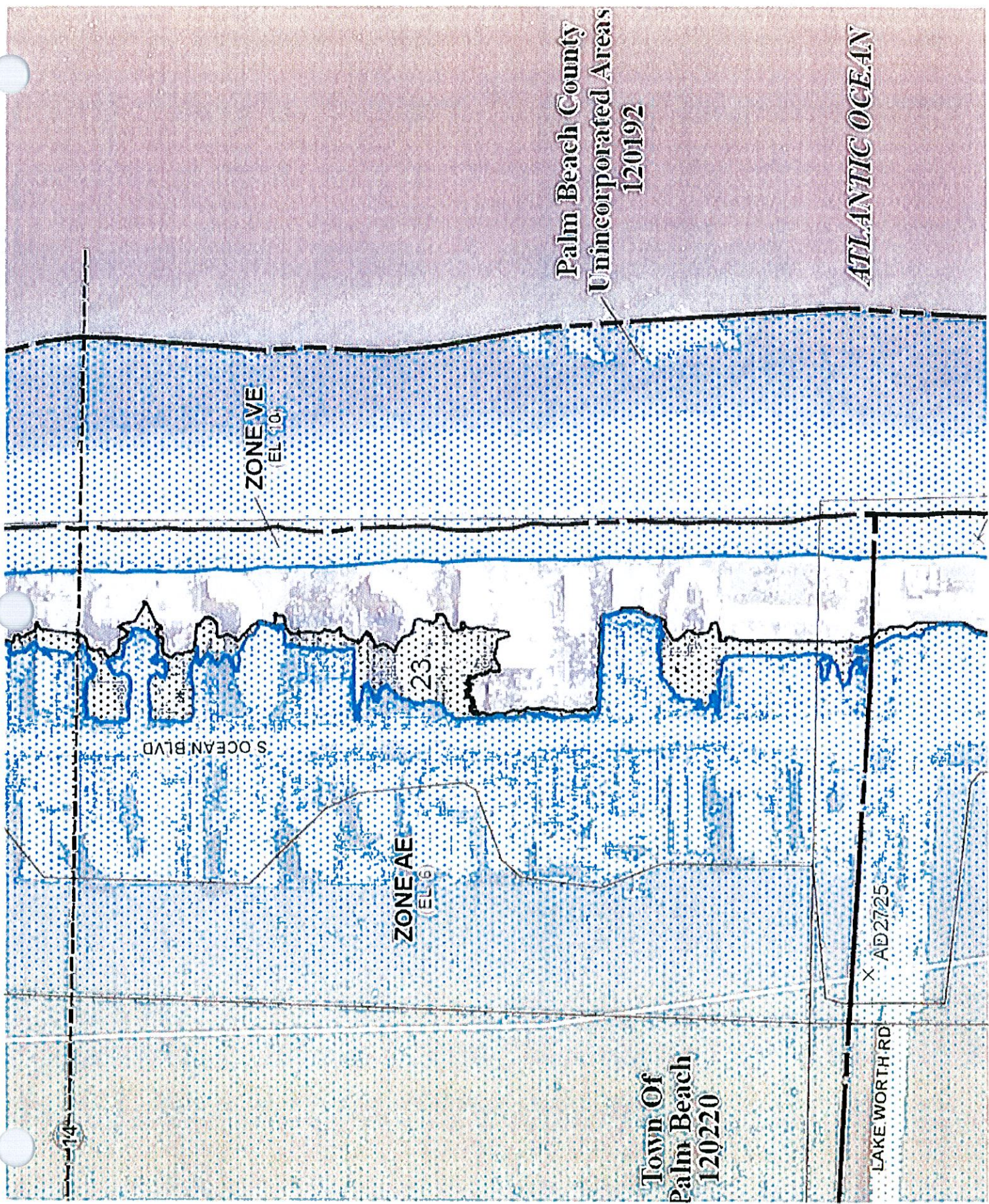
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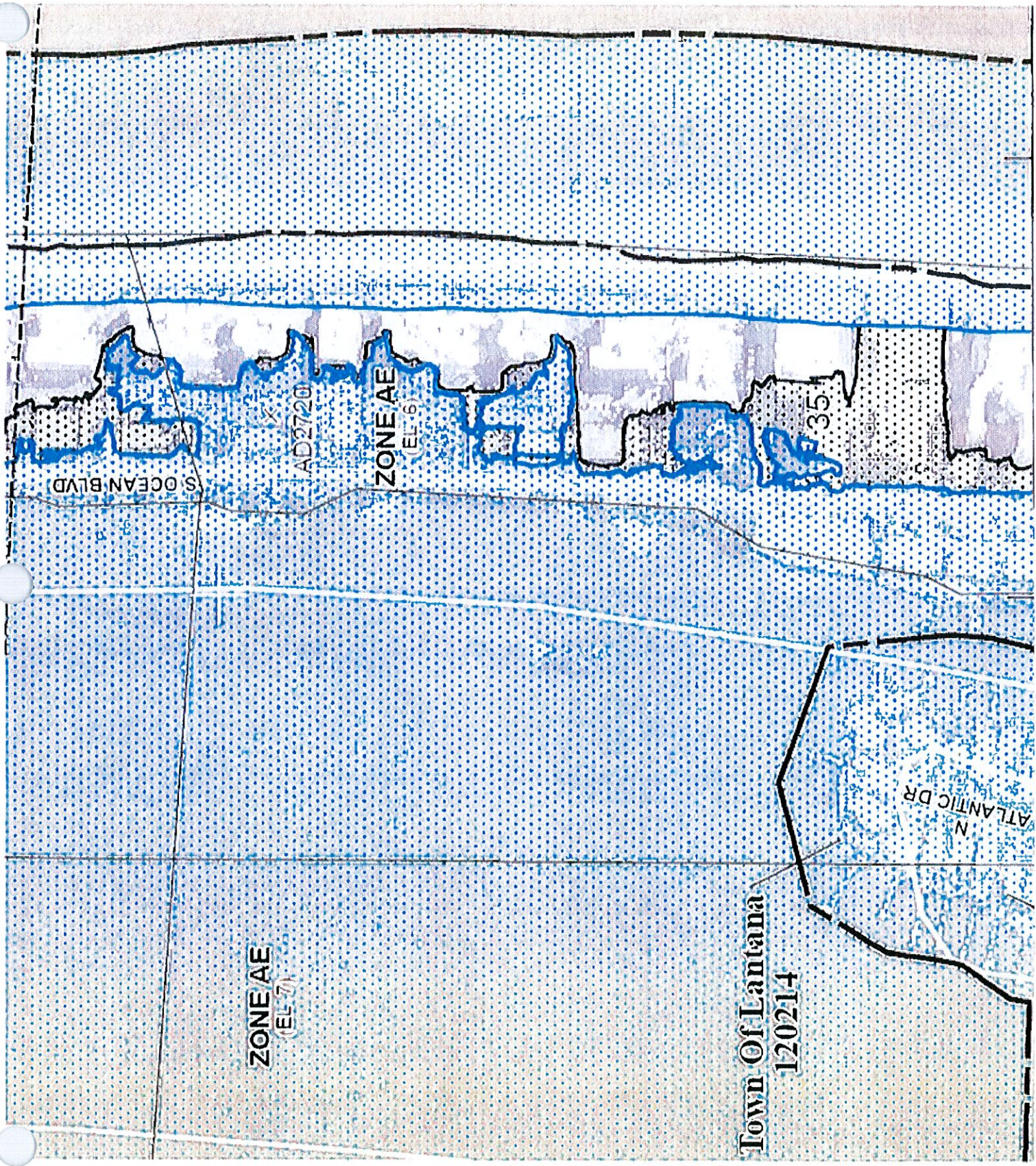




8400 S Ocean Blvd

S Ocean Blvd

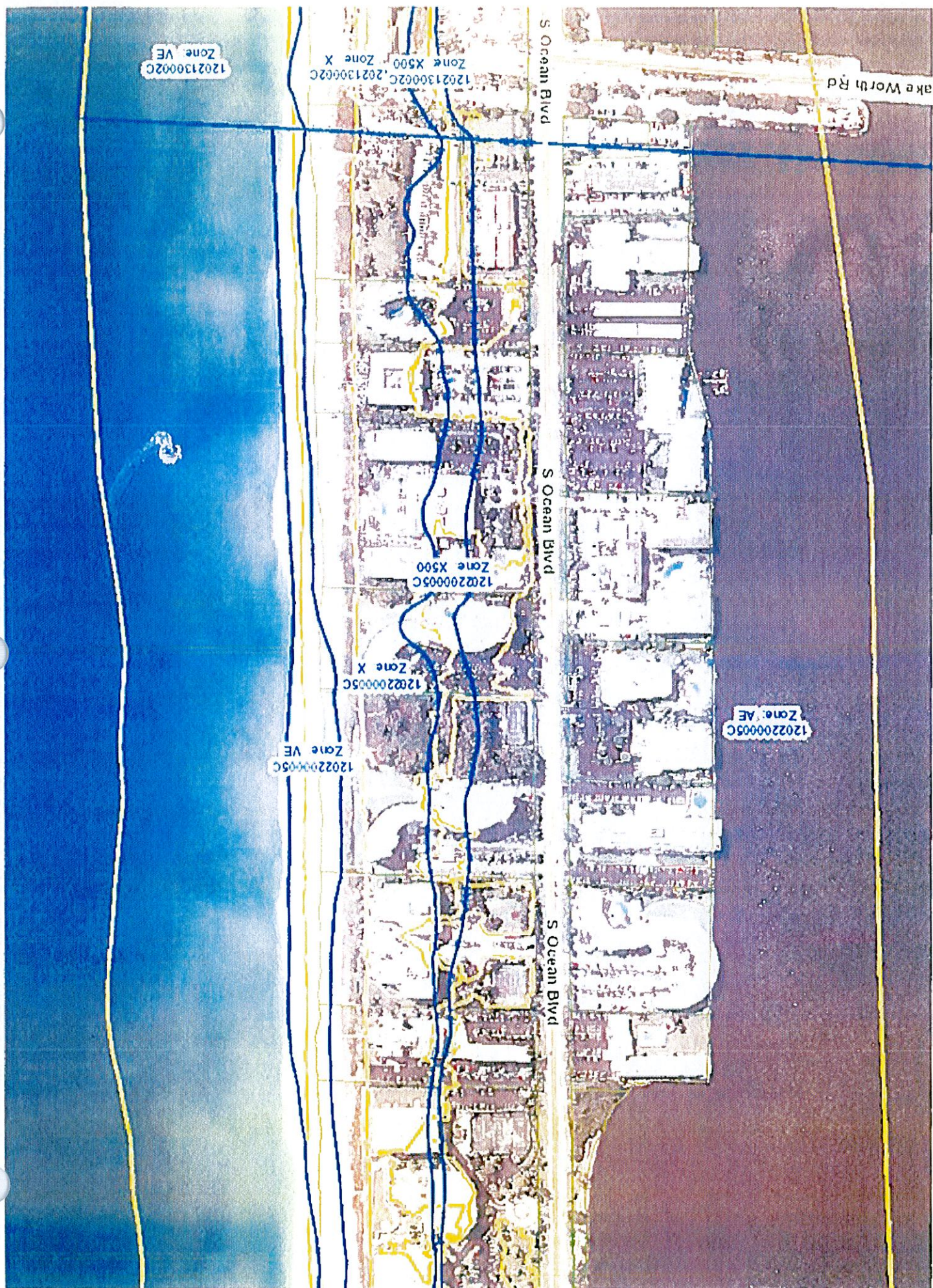
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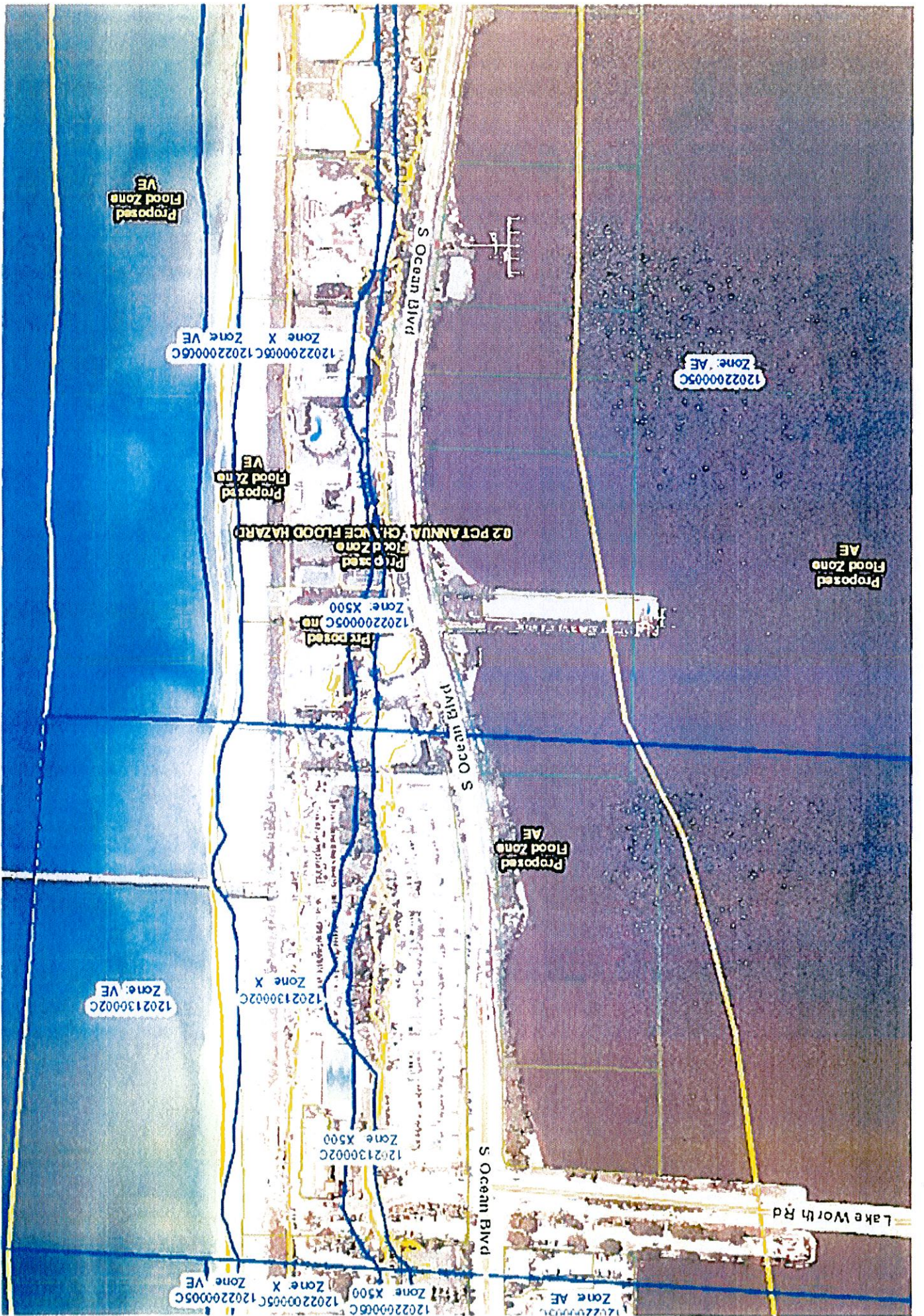








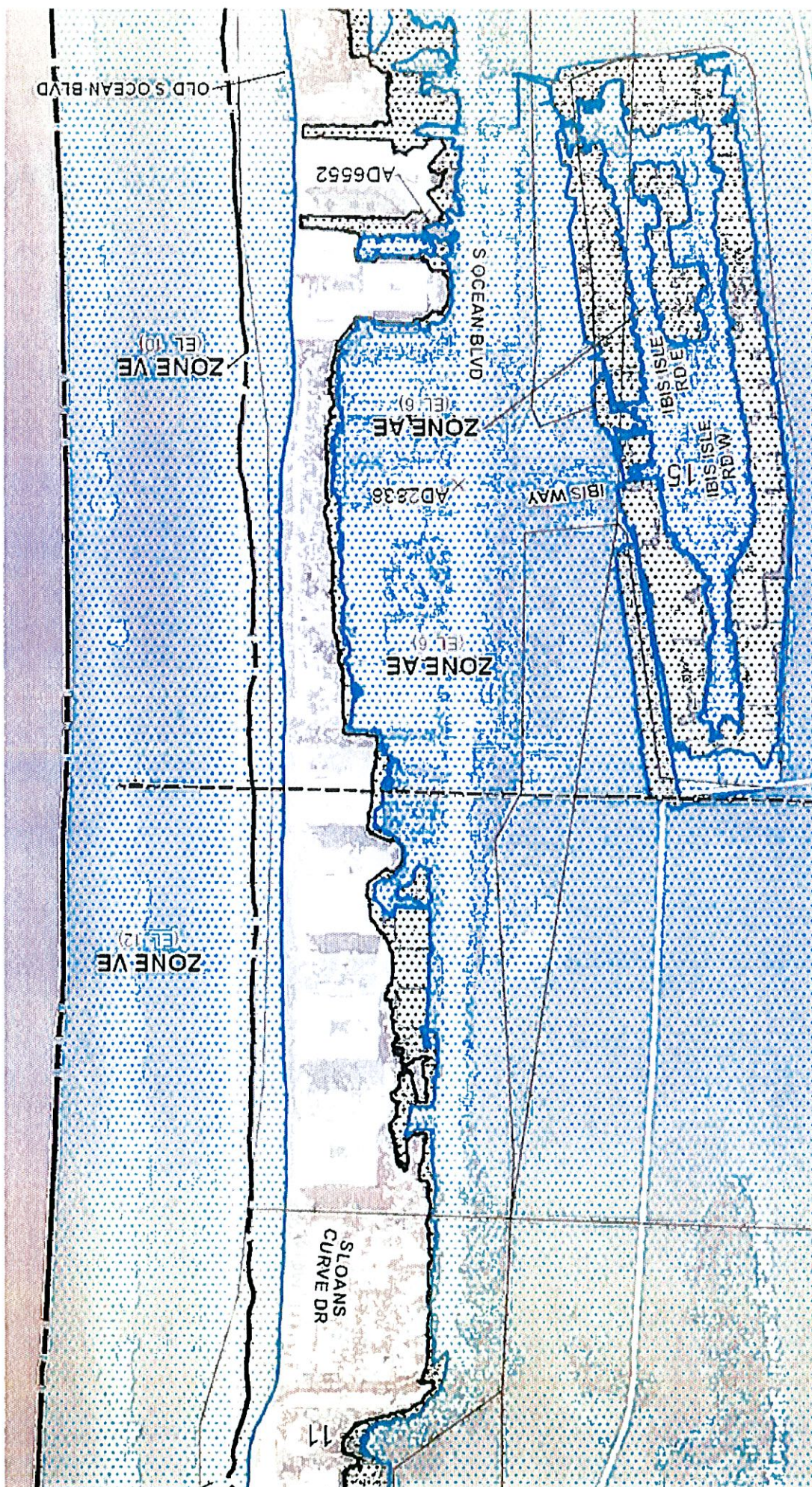








Old-S-Ocean
© 2017 Google
Image © 2017 TerraMetrics



APPENDIX

5

Statement of Safety Concerns RE Underground Utility Boxes on public rights-of-way on South Ocean Boulevard in Palm Beach

My name is Izak Teller and I am the Vice-President of the 2600 Condo Board of Directors on South Ocean Blvd. in the south-end. I am a licensed professional electrical engineer in New York City and Connecticut with over 30 years of municipal engineering experience.

I have serious concerns about the safety issues regarding the Town of Palm Beach's proposal to convert to underground the utilities on a low-lying, flood-prone barrier island.

The following is my opinion concerning the installation by the Town of almost 100 hazardous, large, approximately 6-foot tall, industrial style high-voltage, Switch, Capacitor and Transformer Utility boxes on the State right-of-way, as well as on any other part of the front lawns of the densely populated, condo/co-op residences along the little more than 4 mile stretch on State Road A1A / South Ocean Blvd., from Sloan's Curve to the Town of Palm Beach boundary.

From my 30 year' of experience in municipal engineering, which includes underground utilities, I bring to your attention the following:-

- These huge utility boxes that the Town of Palm Beach plans to install along A1A, South Ocean Blvd., carry high voltages and currents needed to supply electrical power to the multi story buildings in this densely populated area that houses many thousands. All of these utility boxes have only a cover of a thin sheet of metal between this dangerous voltage and the outside environment.
- The Town of Palm Beach is situated on a barrier island. The latest FEMA Flood Maps show that 75% of the Town of Palm Beach is in the "Special Flood Hazard Area". The Town is surrounded by saltwater on three sides with high water tables and low-elevation levels. The on-ground outdoor utility boxes and underground wiring will be exposed to the elements of nature which will accelerate serious deterioration of the underground conduit and cause combustion in the electrical utility boxes.
- Underground utilities are subject to corrosion from saltwater intrusion.
- Unsafe conditions are caused due to increased thermal loading during heat waves.
- Underground wiring with the required tap at each connection to a home or building, plus the associated above-ground equipment are susceptible to saltwater intrusion, storm surges and flooding issues.
- The humid salty air and saltwater speed up the corrosion process, especially when you are on a barrier island surrounded by saltwater, which heats up the equipment and causes explosions.
- Explosions in the switch, capacitor and transformer boxes, underground taps and wiring caused by salt air/saltwater and gases building up/ heat/ thermal overload, will deteriorate the boxes/wiring/ conduits and, result in electrical malfunctions, sparks/ explosions and possibly even electrocution.

- In the Switch utility boxes, the corrosion can cause a system fault overload. Switch gear has killed people when they have come close to it.
- The majority of the approximately 100 utility boxes to be installed in the rights-of-way and front lawns along South Ocean Boulevard, State Road A1A in the south-end of the Town of Palm Beach are Switch utility boxes. These Switch Boxes are used to turn the power on and off, much like a relay. Switch boxes are high voltage/ high current and if a failure occurs, which you have from salt air and salt water intrusion, then the box blows up like sticks of dynamite! It is the contacts in the box that stick and cause a failure, called "arch flashes".
- People have been killed by arch flashes alone!! This happens when the switch gear get corroded, or are not serviced enough.
- You can walk up to or be within the area of any of these three types of utility boxes when this explosion takes place, or just be a victim of the flying shrapnel.
- These conditions under these circumstances will result in system failure and power outages and hazardous situations.
- Whether these 96-98 high voltage huge utility boxes are close to State Road A1A or even set back on the front lawns along the approximately 4 mile stretch of South Ocean Blvd. in the south end, they are unsafe and place the residents, their properties, cyclists, pedestrians, children, seniors and the property owners and their families in danger.

APPENDIX

6

6/25/17: Additional Statement of Safety Concerns RE Underground Utility Boxes on public rights-of-way on South Ocean Boulevard in Palm Beach

My name is Izak Teller and I am the Vice-President of the 2600 Condo Board of Directors on South Ocean Blvd. in the south-end of the Town of Palm Beach. I am a licensed professional electrical engineer in New York City and Connecticut with over 30 years of municipal engineering experience.

As I have previously explained in my statement, I have serious concerns about the safety issues regarding the Town of Palm Beach's proposal to convert to underground the utilities on a low-lying, flood-prone barrier island.

These concerns have been exacerbated by the recent revelation that, on the new FEMA Flood Plain Maps, 75% of the Town of Palm Beach is in a "Special Flood Hazard Area".

The south-end of Town extends from Sloan's Curve to the Town's southern boundary. This entire area of the Town is part of the "Special Flood Hazard Area". This information is shown on the new FEMA Flood Plain Maps and greatly compounds my previously stated opinion concerning the installation by the Town of Palm Beach of almost 100 hazardous, large, approximately 6-foot tall, industrial style high-voltage, Switch, Capacitor and Transformer Utility boxes on the State right-of-way, as well as on parts of the front lawns of the condo/co-op residential buildings along State Road A1A/ South Ocean Boulevard. In addition, I have recently learned that there will be Underground Type Feeder Splice boxes installed on the State right of way in addition to the above mentioned on-ground utility boxes.

From my 30 years of experience in municipal engineering, which includes underground utilities, I would like to bring this new information and my opinion as to the risks and safety impacts it will bring, if these installations are permitted by the FDOT.

With more of the Town of Palm Beach being "under" the FEMA flood plain, it greatly increases the possibility of electrical failures, combustion and other dangers stemming from the conversion to underground utilities on a flood prone barrier island.

1. As previously stated, water and electricity don't mix! Especially ocean and Lake Worth salt water.
2. Saltwater and electrical equipment and wires don't mix! It greatly accelerates the rate of corrosion. More saltwater flooding from a larger flood plain makes things far worse.

3. Undergrounded conduits are not the same as "submarine cables" that go under the ocean and Intracoastal Waterway. "Submarine" cables are made differently and have no splices.
4. Underground conduits have "taps" or splices so that other connections, wires and or conduits can be attached. Saltwater from flooding gets into the conduits and remains in the conduits, after the flood waters have receded. This causes continual accelerated corrosion of the wires, which brings on the safety issues.
5. Repairs become necessary and that means that the right of way will be ripped up, disrupting traffic and creating safety hazards on State Road A1A/ South Ocean Boulevard. Therefore, underground conduits and underground electrical vaults create safety hazards in the "Special Flood Hazard Area".
6. The elevation of the on-ground utility boxes and equipment is important. Saltwater flooding intrusion causes shorts, combustion and will create major safety issues for the entire right of way.
7. Converting to underground utilities under these conditions is a life and safety issue that should not be permitted by the State and the FDOT under any circumstances.

APPENDIX

7

**RE: Electrical Engineer Izak Teller's Review of Hazardous Palm Beach
Underground Utilities Project In the Flood Zone**

This is in follow-up to my 6/28/17 statement concerning safety issues.

The Undergrounding Utilities Project that is planned for the right-of-way on State Road A1A/ South Ocean Boulevard is hazardous and will endanger the public.

The Town of Palm Beach is located on a flood-prone barrier island and saltwater infiltration will have a dangerous impact on the underground conduits and the on-ground electrical equipment to be placed on the State public right-of-way/ South Ocean Boulevard that borders residential condominium/co-operative buildings that house thousands of residents.

The new FEMA Flood Maps show that South Ocean Boulevard in the Town of Palm Beach is in the Flood Zone which is below the floodplain. Saltwater will infiltrate the conduits that are to be installed at each connection to the buildings.

Under the National Electrical Code, a conduit buried in shallow ground must be concrete encased. However, this does not stop the saltwater infiltration which comes at each connection. Openings are necessary to get access to the power feeds to feed the buildings. These openings are the access points for saltwater infiltration. When saltwater infiltrates, it fills the conduit. The water sits in those conduits and attacks the wires and the connections. The insulation comes off wherever you make connections. This results in the rotting out of the wires.

Underground wires are made of copper and copper corrodes quickly from the saltwater which damages the wiring.

Each building underground connection has a junction box to connect to each building. A junction box is very vulnerable to flooding, especially saltwater.

In addition, this situation becomes very dangerous for the on-ground high voltage, combustible utility boxes and all the contacts within them.

It is a fact that whether the Town bores or whether they trench, there still exists a major safety hazard when it is in a flood zone area, below the floodplain, such as is the situation in the Town of Palm Beach.