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UTILITY BOARD OF THE CITY OF KEY WEST

February 20, 2024

Penelope Buys
Florida Public Service Commission
Sent via e-mail to pbuys@PSC.STATE.FL.US

RE: Facility Inspections and Vegetation Management Report for Keys Energy Services pursuant to Rule 25-6.0343, FAC for 2023

Dear Ms. Buys:

Pursuant to Rule 25-6.0343, Florida Administrative Code, attached is the 2023 Facility Inspections and Vegetation Management Report for the Utility Board of the City of Key West dba Keys Energy Services (KEYS).

If any questions develop during your review, please do not hesitate to contact me at 305.295.1041.

Sincerely,

Daniel J. Sabino
AGM and Director of Engineering & Control
Ph. 305-295-1041
Dan.Sabino@KeysEnergy.com

DS/cdc

Copied via electronic mail:
L. Tejeda, General Manager & CEO
F. Culpepper, Director of T&D
M. Alfonso, Supervisor of Engineering

1) Introduction

a) Utility Name: The Utility Board of the City of Key West, Florida
dba Keys Energy Services (KEYS)

b) Address: 1001 James Street
P. O. Box 6100
Key West, Florida 33040

c) Contacts: Lynne Tejeda, General Manager/CEO
Ph. 305-295-1020
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Daniel J. Sabino
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NOTE: This report was developed by Dan Sabino. For questions and/or clarifications, please contact Dan Sabino at 305.295.1041.

2) Number of Meters Served in Calendar Year

a) December 2023: 31,639 Meters

3) Standards of Construction

a) National Electric Safety Code (NESC) Compliance:

- KEYS construction standards, policies, guidelines, practices and procedures comply with the NESC (ANSI C-2). For electrical facilities constructed on or after January 1, 2017, the 2017 NESC or later current version applies.
- KEYS electrical facilities constructed prior to January 1, 2017, are governed by the edition of the NESC in effect at the time of the facilities' initial construction.

b) Extreme Wind Loading Standards:

- KEYS construction standards, policies, guidelines, practices and procedures are guided by the extreme wind loading standards as specified by http://windspeed.atcouncil.org as recommended by the NESC for major planned work, including expansion, rebuild, facilities or relocation of existing facilities, signed on or after December 10, 2006.

c) Flooding and Storm Surges:

- KEYS Electrical construction standards, policies, guidelines, practices and procedures address the effects of flooding and storm surges on underground distribution facilities and supporting overhead facilities. KEYS Underground Construction Standards have always incorporated the elevation of switches, padmount transformers to a minimum of three feet to minimize flood impacts. All substation equipment is elevated to the "FEMA 100-Year Flood Elevation" to prevent electrical damage due to storm surge and flooding. This long-standing policy for over 30 years, proved to be very successful during Hurricane Wilma in 2005 and Hurricane Irma in 2017. No substantial damage occurred to KEYS underground system or substations as a result of flooding due to this longstanding construction standard.

d) Safe and Efficient Access of New and Replacement Distribution Facilities:

In order to comply with the Florida Public Service Commission's Order 25-6.0341 which states "in order to facilitate safe and efficient access for installation and maintenance, to the extent feasible, and cost-effective, electric distribution facilities shall be placed adjacent to a public road, normally in front of the customers' premises"; KEYS developed a program with a long-term goal of constructing all primary distribution facilities adjacent to public roads and removing all facilities that are currently in inaccessible locations. KEYS completed this program in 2019. This included relocation of high voltage facilities from inaccessible easements to the safest, most accessible area available. KEYS is offering a partial rebate to Customers to complete relocation of Customer secondaries to be served from the relocated primary facilities.

Whenever new facilities are placed, all facilities are installed so that KEYS facilities are accessible by its crews and vehicles to ensure proper maintenance/repair is performed as expeditiously and safely as possible.

e) Attachments by Others:

Electrical construction standards, policies, guidelines, practices, and procedures at KEYS include written safety, pole reliability, pole loading capacity, and engineering standards and procedures for attachments by others to the utility's electric transmission and distribution poles. KEYS inspects these attachments on an eight-year cycle.

4) Facility Inspections

a) KEYS Policy, Guidelines, Practices and Procedures for inspecting transmission and distribution lines, pole and structures including, but not limited to, pole inspection cycles and pole selection process.

Pole Testing:

Distribution Poles-

- KEYS tests all poles for compliance to extreme wind load rules.
- KEYS is maintaining an 8-year inspection cycle but electing to test 50% of its poles every 4-years.
- Testing is performed by a contractor. Osmose Utilities Services, Inc. was awarded the last two bids.
- Osmose Utilities Services, Inc. performed the tasks below:

Item #	Task Description
1	Site visit and visual inspection of poles (wood, concrete, & ductile iron)
2	Digital images of entire pole from ground to the top and GPS coordinates
3	Joint use survey of two (2) other utility attachments (identify each third party attachment)
4	identify/document two poles next to each other
5	Sound and Bore test for wood pole
6	Excavated base - Soil around wood pole - Reject Pole
7	Difficult accessible (poles located in rear lot lines)
8	Load Calculation Assessment per pole as per PSC

Transmission Poles-

- KEYS does not have any wood transmission poles.
- KEYS has only one incoming transmission line into its service territory. This is a combination of concrete and metal poles.
- An aerial inspection is performed every two years.
- Infrared survey - KEYS performs 100% infrared inspection every two years.

b) Number and Percentage of Transmission and Distribution Pole Inspections planned and completed for 2023:

Distribution Poles

- Completed
  - KEYS contracted Osmose Utilities Services, Inc. in 2020 to
    - visually inspect 100% of KEYS utility poles
    - sound and bore wood poles in 50% of its service territory.
  - KEYS contracted Osmose Utilities Services, Inc. in 2023 to visually inspect; and sound and bore wood poles in 50% of it's service territory.
- Planned
  - KEYS plans to visually inspect; and sound and bore wood poles in 50% of its service territory in 2027

Transmission Facility Inspections

- Completed
  - Aerial inspection - 100% inspected in 2022.
  - Visual inspection sub transmission (69kv) - 100% inspected in 2022
- Planned
  - Aerial inspection - 100% planned in 2024.
  - Aerial inspection sub transmission (69kv) - 100% planned in 2025.

c) Number and percentage of transmission poles, structures and distribution poles failing inspection and reason for the failure:

- Transmission & Sub Transmission-
  - Number of poles failed (rejected)/excessive cracking -1.0
  - Percentage of rejected failed rate -0.15%
- Distribution-
  - See detail summary in Table 1

Table 1			
Pole Testing Summary Distribution - Testing 2023			
Test Area	**KEYS Energy**	**AT&T**	**Combined Totals**
Total Distribution Poles Tested	**6783**	**232**	**7015**
Total Concrete Poles Tested	4224	1	4225
Total Ductile Iron Poles Tested	638	1	639
Total Wood Poles Tested	1921	230	2151
% of Total Poles Tested	60.4%	11.8%	53.1%
Reject/Failed Pole Summary	**543**	**77**	**620**
Total Concrete Rejects	26	0	26
% of Concrete	0.6%	0%	0.6%
Total Wood Pole Rejects	517	77	594
% of Wood	27%	33%	28%
Total Ductile Iron Pole Rejects	0	0	0
% of Ductile Iron	0%	0%	0%
Reject/Failure Reasons	**KEYS**	**AT&T**	**Total**
Decayed Top	25	6	31
% Decayed Top	4.6%	7.8%	5.0%
Mechanical & Excessive Damage	26	4	30
% Mechanical & Excessive Damage	4.8%	5.2%	4.8%
Hollow - Enclosed Pocket	30	1	31
% Hollow - Enclosed Pocket	5.5%	1.3%	5.0%
Rotten/Shell Rot	417	56	473
% Rotten/Shell Rot	76.8%	72.7%	76.3%
Split Top	24	5	29
% Split Top	4.4%	6.5%	4.7%
Woodpecker Holes	21	5	26
% Woodpecker Holes	3.9%	6.5%	4.2%

d) Number and Percentage of T&D Poles Replaced and the Remediation Plan to Correct:

Transmission Facilities Plan-

- A bid has been issued for the replacement of one concrete transmission pole.
- KEYS received a Hurricane Irma Hazard Mitigation Grant to install galvanic cathodic protection technology on concrete pole structures not currently exhibiting spalling with the intent of proactively preventing the spalling. This was completed in 2023.
- KEYS inspection showed some concrete transmission poles with spalling at the top of the pole. KEYS repaired all poles with this spalling and added a pole to cap to mitigate future spalling.

Distribution Facilities Plan-

KEYS plans to replace 150 distribution poles per year with storm hardened poles. KEYS crews will replace approximately 150 poles per year with any pole failing the 2023 testing being replaced first. Additionally, KEYS received a Pre-Disaster Mitigation Grant to replace wood poles that feed critical government facilities with storm hardened poles. This project was bid to a contractor and is currently underway.

In 2023 KEYS replaced approximately 200 non-storm hardened poles with storm hardened poles. Approximately 33% of KEYS distribution poles have been replaced with poles that meet the extreme wind requirements.

5) Vegetation Management Program

Mission:

- Keys Energy Services (KEYS) is dedicated to maintaining safe clearances surrounding electrical facilities to reduce outages and increase the public's safety and awareness. This is achieved through various programs including, continuous zone trimming, tree safety press releases, Tree Give-A-Way, and by responding to Customer Service requests for vegetation management. The following information describes KEYS programs in greater detail.

KEYS Service Area:

- KEYS' service area consists of 241 OH & UG miles of 3 phase distribution lines & 68 miles of transmission lines.

KEYS Staff and Contractual Crews:

- KEYS has a total of four tree trimming crews, two in-house crews and two contractor crews. KEYS in-house crews maintain all customer request orders, revisit tree trimming list as well as zone trimming and tree removals. Contractor crews specifically work in zone trimming and tree removals. All work is compiled and documented; such as footage, tree removals, zone trimming and man-hours it takes to complete these zones.
- Crews have received special training in the line clearance tree trimming and follow arborist guidelines for utilities, which specify how trees should be cut. Industry standards specify the minimum safety clearances that must be maintained for safety and for reliability.

KEYS Trim Cycle Information:

- KEYS implemented a policy to maintain a two-year cycle for system trimming, which KEYS has been able to complete in this time frame. This two-year cycle has been in place since 2000, which includes trimming of all three-phase feeders, laterals, secondary and communication conductors.
- KEYS performs a quarterly maintenance of tree clearances on all the 68 miles of transmission lines and maintains these clearances.
- KEYS averages approximately six customer requests a day, the low volume of requests are due to the cycle trimming that is in place. KEYS in house crews spend approximately 85% of their time on customer-generated requests, which include service trims, communication and conductor trims. When not working on customer requests, the KEYS crews work on revisits and zone trimming.
- While zone trimming contractor crews as well as KEYS, tree crews remove all invasive trees in the right-of-way and easements. Trees are cut to ground level and sprayed with an herbicide to prevent re-growth.

Problem Trees Outside of Right-Of-Ways or Easements:

- For customer trees that are infringing into KEYS lines, KEYS makes contact with the customer and explains the safety issues that exist with a tree getting into high voltage lines. Most customers are receptive to the tree removal once contacted by KEYS.

- KEYS initiated a quarterly revisit list for the locations throughout the system where customer trees are infringing on KEYS lines and are not willing to have the tree removed. This revisit list was put in place in late 2006 and is working well. The quarterly revisit list is necessary due to KEYS' tropical climate and the substantial growth rate throughout the year.

Addressing appropriate planting and landscaping:

- KEYS has a tree give-a-way program that has been in place since 1995 to help promote energy conservation and public awareness. KEYS helps customers determine the proper placement of the tree to maintain adequate clearance from facilities with one-on-one consultation. KEYS personnel reviews a site layout of the customer's yard and advice on the best placement for shade benefit and proper clearance. During the consultation, KEYS gives the customer a brief summary of what type of problems may occur if a tree was to be placed under the high voltage lines/service drops. Generally, the customer agrees to plant the tree where KEYS indicates on the layout of the property resulting in fewer future tree-trimming problems and increases safety.

Benchmark Reports on Vegetation Management:

- KEYS implementation of the two-year trim cycle, revisit list, tree removals, tree give-a-way program, and public service announcements, responding to customer request and hiring contractor crews for zone trimming has allowed KEYS to reduce outages.
- KEYS maintains records and produce an annual report of all outages throughout the system. In 2020, KEYS had 3 feeder outages and 15 lateral outages due to vegetation. KEYS attributed 38 feeder recloses and 18 lateral outages to unknown causes. These proactive measures have resulted in the low number of occurrences due to KEYS Vegetation Management Program. KEYS will strive to continue to improve this program, further reduce outages, and increase safety to the public and KEYS employees.

LINE CLEARANCES

KEYS strives to maintain the following line clearances where practical as follows:

- 15 feet clearance on all transmission lines.
- 10 feet clearance on all open conductors greater than 600 volts (where possible).

- Five feet minimum clearance on all open conductors less than 600 volts (where possible).

- Three feet minimum clearance on all communication conductors.

The Public Utility Research Center held two vegetation management workshops in 2007 and 2009. KEYS reviewed their reports and will use the information to continually improve vegetation management practices. Through FEMA, KEYS has a copy of their reports and will use the information to continually improve vegetation management practices. We will participate in future best-practice workshops if there is interest.

6) Storm Hardening Research

Key West/Keys Energy Services is a member of the Florida Municipal Electric Association (FMEA), which is participating with all of Florida's electric utilities in storm hardening research through the Public Utility Research Center at the University of Florida. Under separate cover, FMEA is providing the FPSC with a report of research activities. For further information, contact Amy Zubaly, Executive Director, FMEA, 850-224-3314, ext-1001, or azubaly@publicpower.com.