

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**Verizon Pennsylvania LLC and Verizon North LLC**

**v.**

**Metropolitan Edison Company, Pennsylvania Electric Company, and  
Pennsylvania Power Company  
Docket No. C-2020-3019347**

**Rebuttal Testimony  
of  
Scott Carlin**

**List of Topics Addressed  
Field Audit of FirstEnergy's Poles**

**TABLE OF CONTENTS**

I. INTRODUCTION AND PURPOSE..... 1

II. FIELD AUDIT OF FIRSTENERGY’S POLES..... 3

III. CONCLUSION..... 4



1 Pennsylvania Public Utility Commission (“Commission”), I have agreed to serve on its  
2 recently created Pole Attachment Working Group. In addition, I have chaired nationally  
3 recognized joint use conferences and presented nationally on a broad range of topics  
4 related to pole attachments and data collection processes.

5  
6 **Q. Have you previously testified as a witness before the Commission?**

7 A. No.

8  
9 **Q. Have you been retained by Metropolitan Edison Company (“Met-Ed”),**  
10 **Pennsylvania Electric Company (“Penelec”), and Pennsylvania Power Company**  
11 **(“Penn Power”) (collectively, “FirstEnergy” or the “Companies”) to testify on**  
12 **behalf of the Companies in this proceeding involving the Formal Complaint filed by**  
13 **Verizon Pennsylvania LLC and Verizon North LLC (collectively, “Verizon”)?**

14 A. Yes.

15  
16 **Q. What is the purpose of your rebuttal testimony?**

17 A. My testimony will explain the field audit of FirstEnergy’s poles that was performed  
18 under my supervision.

19  
20 **Q. Are you sponsoring any exhibits with your testimony?**

21 A. Yes. Attached to my testimony as FirstEnergy Exhibit SC-1 is a copy of the FirstEnergy  
22 Random Pole Sample Project Procedures Manual.

1 **II. FIELD AUDIT OF FIRSTENERGY'S POLES**

2 **Q. Please explain why FirstEnergy retained DRG for purposes of this proceeding.**

3 A. DRG was hired by FirstEnergy to perform a field audit of utility poles owned by the  
4 Potomac Edison Company, Met-Ed, Penelec, and Penn Power. The audit was conducted  
5 from December 2019 to January 2020 and was performed under my supervision pursuant  
6 to the FirstEnergy Random Pole Sample Project Procedures Manual, attached hereto as  
7 FirstEnergy Exhibit SC-1.

8

9 **Q. Could you please explain how the field audit was performed?**

10 A. DRG was provided pole locations by FirstEnergy for randomly selected poles in each of  
11 its operating companies in Pennsylvania and Maryland. Each pole was physically visited  
12 in the field by DRG to perform data collection of specific pole and attachment attributes  
13 as outlined in the statement of work included in FirstEnergy Exhibit SC-1. This work  
14 was completed in the field during December 2019 and January 2020.

15

16 **Q. What were the results of the field audit?**

17 A. The results of the field audit were two flat file deliverables in excel format: one  
18 deliverable reflecting all data collected on Verizon-owned poles, and a second deliverable  
19 reflecting all data collected on FirstEnergy-owned poles. The tabular nature of these  
20 results are outlined in the FirstEnergy Exhibit SC-1.

21

22 **Q. Was the field audit performed in accordance with accepted practices in the**  
23 **industry?**

24 A. Yes.

1 **III. CONCLUSION**

2 **Q. Does this conclude your rebuttal testimony?**

3 **A. Yes, it does.**

**FirstEnergy**  
**Exhibit SC-1**

# FIRSTENERGY RANDOM POLE SAMPLE PROJECT

## Procedures Manual

January 28, 2020



Presented by

Davey Resource Group, Inc.  
A Wholly Owned Subsidiary of The Davey Tree Expert Company  
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## Table of Contents

Project Points of Contact	4
FirstEnergy Service Company	4
Safety	5
Davey Personal Excellence	8
Project Scope	10
Delivery	11
Pictorial for Verizon Owned Poles	14
Pictorial for FirstEnergy Owned Poles	19

## Project Points of Contact

The following project teams represent the key contacts on this project for Davey Resource Group, Inc. and FirstEnergy.

### **Davey Resource Group, Inc.**

**Nadine Machunis**

Account Manager

[Nadine.machunis@davey.com](mailto:Nadine.machunis@davey.com)

(401) 378-0386

**Responsibility Overview:** Nadine is the primary point of contact for the FirstEnergy Random Pole Sample Project. She will lead the weekly conference calls, coordinate all project staff, and has ultimate responsibility for decisions on this project. Any questions that FirstEnergy may have can be directed to her.

**John Felten**

Project Manager

[john.felten@davey.com](mailto:john.felten@davey.com)

(919) 438-0321

**Responsibility Overview:** John is responsible for the daily management of production and QA/QC for this project. He will be monitoring this FirstEnergy project daily to primarily ensure all DRG safety programs are followed, in addition to all quality and timeline goals being achieved.

### **FirstEnergy Service Company**

**Stephen F. Schafer**

Manager, Joint Use & Cable Locating  
Energy Delivery - Operations Services

FirstEnergy Service Company

76 South Main Street A-GO-9

Akron, Ohio 44308

[sschafer@firstenergycorp.com](mailto:sschafer@firstenergycorp.com)

(330) 384-3711

**Randy Coleman**

FirstEnergy Service Company

[colemanr@firstenergycorp.com](mailto:colemanr@firstenergycorp.com)>

## Safety

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The DRG team is firmly committed to maintaining a safe and healthy working environment. To achieve this goal, we have implemented a comprehensive Safety and Loss Prevention Program. It is designed to prevent workplace accidents, injuries, and illnesses. This Program is an Industry Best Safety program called “The Road to Zero.”

The Company’s goal is attaining Zero accidents through consistent reduction of accident frequency per 10,000 labor hours. DRG’s Safety and Loss Prevention Program is a commitment to ensuring that all employees understand the key role that they play in achieving these objectives. The primary purpose of the program is to ensure the safety and health of our workers, provide a safe and healthy work environment, and protect property from damage.

To ensure the safety of all personnel that will be performing work on the FirstEnergy project, DRG will additionally define project specific safety requirements that will assist in meeting this goal. These values are something that we strive for our employees to not only maintain on the job, but something that is internalized as part of their daily lives.

Any instance where personnel safety becomes an issue, our HTA (Hard to Access) pole approach will be utilized. In severe cases, FirstEnergy may be requested to provide security or personnel to assist in access.

For personnel in remote locations, the team has implemented the following procedures (these safety protocols are in addition to all standard safety protocols):

- Any personnel entering an area of inconsistent communications will coordinate call in/out times with immediate supervisory personnel.
- Supervisors will clearly identify daily all locations that may require these procedures.
- Supervisors will coordinate with FirstEnergy staff responsible for each local area to understand any specific safety hazards that may be present.
- Any person not contacted within two hours of identified time will be reported to supervisor for an escalated approach.

### Personal Protective Equipment

A key component of preventing incidents is visibility and proper planning. Each employee will be clearly visible and identifiable to the public (**see image at right**). Proper attire is always required after exiting the vehicle. This includes full length pants, boots above the ankle, DRG approved shirt, and proper identification. DRG data technicians will have in his/her possession and wear the following personal protective equipment (PPE):

- **Class III Safety Vest** – While in the field, personnel will wear Class III safety vests any time work is being performed outside of the vehicle. This vest is worn due to the high visibility needed when working in close contact to heavy traffic and approved for use based on ANSI 107-2004.



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- **Hard Hat** – While in the field and outside of the vehicle, personnel will wear Company issued hard hats that meets ANSI Z89.1, 2003, TYPE I, Class “E” & “G” standards.
- **Safety Glasses** – While in the field and outside of the vehicle, personnel will always wear company supplied eye protection. This eye protection meets OSHA standards for eye safety.
- **Field Employee Communications** – All personnel have cell phones and can be contacted where service allows. When an individual enters a known area that has no reliable communication options, we will use a “call in/call out” procedure, meaning each auditor will touch base with their direct superior upon entry and exit from these areas. Cell phone contact lists will be used as the primary tool for contact during emergencies. The Project Manager always has an updated list of these contacts. Each employee will call their direct Supervisor at the end of every workday upon returning from their respective field location as an added safety measure.

### **Safety Tailgates**

DRG supplies all field personnel with monthly Safety Tailgates which are supplemented with additional Asset Management specific tailgates as needed. These tailgates are held weekly with field personnel as part of the ongoing DRG and OSHA safe work practices and training requirements.

### **Job Briefings**

To avoid accidents on the job site, DRG auditors will plan and communicate with one another. Personnel participate in ongoing job briefings in compliance with DRG and OSHA safe work procedure requirements. Ongoing discussions as part of the job briefing:

- Error precursors observed during field visits.
- Practical steps in job completion.
- Potential on the job hazards.
- Action steps to avert the associated on the job hazards.
- Active encouragement of crew members to participate in job briefing.
- Answer all questions thoroughly and be certain that crew members who ask questions understand the answers.

All crewmembers must understand how to complete their part of the job assignment safely. They are not allowed to start a job until supervising personnel are assured this is the case. The term “job briefing” has been introduced in recent years; however, evaluating, planning and communicating have long been part of a DRG coordinator’s responsibilities and daily activities. Job briefing remains one of our primary tools for on the job hazard identification, training and accident prevention.

### **DRG Defensive Driving**

The DRG Defensive Driving Course (DDDC) is a key element of our driver safety education program. The goal of DDDC is to help you to defend yourself on the road, avoid collisions, and adjust driving to unpredictable conditions and, most importantly, how to save your life and lives of others through safe driving. Each driver is trained through the DDDC on a bi-annum basis.

### **First Aid/CPR**

This DRG First Aid Course is designed to provide first aid training specific to the DRG employee. The level of training provided by DRG is intended to meet the requirements set forth by the Occupational Safety and Health Administration (OSHA) and be comparable to standards set by

the American Red Cross. All DRG vehicles are equipped with company supplied First Aid kit and 2.5 lbs. ABC fire extinguisher. All field employees are trained in the full DRG First Aid Course every two years and in CPR every year.

### **Hazardous Materials Training**

DRG's Hazard Communication (HazCom) Standard Training Program is provided to field operations. The Program consists of eight written sessions, a video, and a Session #1 Test. DRG's HazCom is united with the Department of Transportation (DOT) Hazardous Materials Law HM-126F to form a HazCom and HazMat compliance package. To achieve compliance, employees are educated in the components of the Occupational Safety and Health Administration (OSHA) standard and trained in safe hazardous materials usage, handling, and transport. Each employee is certified as being trained in HazCom and HazMat by a valid and certified Instructor/Trainer. DRG's monthly Safety Tailgates provide continuing education and training under the OSHA standard. All field employees are trained in the HazCom program on a two- year basis.

### **Electric/Communication Distribution Identification**

Each DRG field technician is trained in the identification of electrical and communication distribution equipment in the classroom and field environments. Each DRG field technician is trained in the identification of electrical distribution hazards as well as minimum approach distances. Stray Voltage training is also provided, to ensure that contact with unnecessary facilities are avoided, unless strictly described by the scope of work.

### **Vehicle Inspection**

Each DRG driver inspects his vehicle daily before its first use and the vehicle surroundings before movement (after being parked).

### **Temporary Traffic Control**

Each DRG field technician when parking a vehicle will use at a minimum the 3-cone taper traffic control system.

### **Company Attire and Vehicles**

The team outfits its field staff with the best tools to perform the work at the highest level and work as safely as possible. All vehicles will be outfitted with DRG logo, safety lights, and safety-first identification.

### **Drug and Alcohol Policy**

Davey Resource Group, INC recognizes that the future of the Company is dependent upon the physical and psychological health of all its employees, both in the field and in the office. The misuse and abuse of drugs and alcohol poses a serious threat to the well-being and safety of employees, impairs their efficiency and judgment, and could damage customer property and goodwill, thereby injuring Davey Tree's reputation and standing in the community. Davey Tree recognizes that it is the responsibility of both the Company and the employees to maintain a safe and efficient working environment, free from the effects of alcohol and drug abuse, and has therefore adopted the following policies:

- Davey Tree employees are expected to report for work and remain at work in a condition to perform their assigned duties free from the effects of alcohol and drugs. Any involvement with alcohol or drugs on the part of Davey Tree employees that adversely affects the workplace or working environment will not be tolerated.

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- The possession, use, or sale of alcohol, unauthorized or illegal drugs, or the misuse of any legal drugs on Company premises or while on Company business is prohibited and will constitute grounds for disciplinary action or termination of employment.
- All prospective new hires will be tested for use of drugs/alcohol. Positive test results will be considered in employment decisions and may result in the withholding of qualification for employment.
- Davey Tree will initiate such procedures as are necessary to effectively enforce this policy. This may include the requirement that employees cooperate in personal or facility searches when the presence of drugs or alcohol is suspected and in employee medical screening (urine and/or blood testing), where employee judgment or performance is impaired, employee behavior is erratic, or employee accidents or near accidents indicate possible drug or alcohol use. Refusal to cooperate with these procedures may subject employees to discipline and/or termination.
- Davey Tree maintains an Employee Assistance Program (EAP) and strongly encourages employees to use the program for help with alcohol or drug problems. It is each employee's responsibility to seek assistance from the EAP before his problem begins to affect his performance, judgment, or behavior in the workplace.

### ***Davey Personal Excellence***

Davey Personal Excellence (DPE) is more than a safety initiative. It is a distinct way of thinking and behaving that helps reduce human error and organizational conditions that create situations where error is likely to occur. When applied to safety, DPE is designed to identify and mitigate these situations that greatly increase the risk of incidents. The overwhelming majority of incidents are caused or triggered by human error.

DPE is adapted from Human Performance Excellence principles that were developed in response to critical organizational incidents in the nuclear power and commercial aviation industries. These five principles are not safety specific. They apply to every aspect of the Davey Mission. "Always deliver a superior tree, landscape and environmental service experience to every residential, utility, commercial and government client." The success of our mission depends on four key values of our culture: our safety, the quality of our service, our productivity and the client experience that we face every day.

DPE Principles:

- *People are fallible, even the best make mistakes.* It is important to understand we cannot eliminate all errors. We can, however, reduce the frequency and impact of errors.
- *Situations that are likely to result in error are predictable, manageable and preventable.* Things like time pressure, distractions, stress and poor communications skills are error precursors that can create situations ripe for error to occur. Enhanced awareness of error precursors allows us to adjust behaviors and conditions to reduce the likelihood of error.
- *Individual behavior is influenced by organizational pressures and values.* Our Espoused Values are tested every day against our Values-in-Use. Any gaps between our espoused values and values in use put our mission at risk.



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- *People achieve high levels of performance based largely on the encouragement and reinforcement received from leaders, peers and subordinates. High performance cannot be achieved without discretionary effort (effort beyond the minimum we need to get by). This is a key leadership concept. People cannot be threatened or punished into providing discretionary effort. Discretionary effort can only be elicited by encouragement and positive reinforcement of desired behaviors.*
- *Incidents can be avoided by understanding the reasons mistakes occur and applying lessons learned from past incidents. A key component of high performing organizations is a “Just Culture” or “and atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety related information, but in which they are clear about where the line must be drawn between acceptable and unacceptable behavior.”*

***Safety is created every day by people negotiating between safety and the other values of our organization in actual operating conditions. Davey Personal Excellence is about leadership and helping people make good decisions in all our offices and all our job sites.***

## Project Scope

In addition to our safety planning, listed below are the field components for project success:

<b>Scope of Work for FirstEnergy Random Pole Sample Project</b>
<b>Verizon Owned Poles</b>
<i>Field visit each of 1,519 poles owned by Verizon and provided as a source material by FirstEnergy @95%.</i>
<b>FirstEnergy Space Measurement:</b> Provide a measurement of FirstEnergy space on Verizon owned pole. To determine the FirstEnergy space on the Verizon-owned poles, the Auditor will count the distance from the top of the pole down to the lowest FirstEnergy attachment in the <i>usable space</i> . For locations with a streetlight, the lowest power attachment will not include streetlights located in the communication worker safety zone, but if the streetlight is located more than 40" below the lowest power attachment, the lowest FirstEnergy attachment will recorded as the lowest physical point of the street light bracket or street light drip loop. Power down guys will not be counted as the lowest FEOC attachment on the pole. The pole top measurement, lowest power measurements and FE Space will be recorded in the spreadsheet in inches.
<b>Minimum FEOC Space Required for FEOC Attachments:</b> The purpose of this field is to help determine the minimum amount of space FEOC needs on each pole. DRG will determine visually if there is additional space on the pole that is not required for that pole construction type. DRG will enter YES into the 'minimum_feoc_space_required_for_feoc_attachments' field when they visually determine that there is more space allotted in the power zone than is required for the pole construction type.
<b>FE Space Needed –</b> document the required FE space needed on the pole as provided by FirstEnergy construction standards.
<b>FirstEnergy Owned Poles</b>
<i>Field visit each of 1,519 poles owned by FirstEnergy and provided as a source material by FirstEnergy @95%.</i>
<b>Pole Height and Length:</b> To calculate pole height, the Auditor will measure from ground level to the top of the pole, then add the standard pole depth of 10% of the pole height plus 2 feet, and then round up to the nearest five-foot increment so that the pole length equals one of the five-foot increments. Additionally, pictures of the birthmark and pole tags will be taken (if available) of each pole and the pole length on the birthmark will be recorded as an attribute of the pole.
<b>Unusable Space:</b> To calculate the amount of unusable space, the pole depth underground will be added to the FCC's presumptive height above ground of 18 feet. DRG will calculate the unusable space as 10% final pole length + 2 feet + 18 feet of presumptive height above ground level.
<b>Attachment Location on Pole:</b> Each individual attaching entity will be documented from top of pole to bottom of pole. Only FirstEnergy and Verizon will be denoted by name; others will be denoted by Company1, Company2, Company3, etc. If not marked clearly in the field or identical construction in the field, each thru bolt will be identified as an additional company attached to the pole. DRG will not count any down guys
<b>Average Number of Attaching Entities:</b> The number of attaching entities per pole will be calculated based on the number of different companies documented as being attached to the pole regardless of the number of actual attachments on the pole. Holiday attachments will not be counted.

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**Space Occupied:** For each non-FEOC attacher on the pole, the Auditor will count any individual attacher's equipment located in the usable space on the pole (i.e., at and above the lower of 18' above grade or the height above grade of the lowest horizontal wireline attachment on the pole), except for riser cables and riser covers. Each communications Attacher is deemed to occupy six (6) inches of clearance above its highest usable space attachment and six (6) inches below its lowest usable space attachment. For example, if Verizon has two adjacent attachments separated by ten (10) inches, then Verizon is deemed to occupy 10" + 6" below + 6" above for a total of 22". If Verizon has more than two (2) adjacent attachments in the usable space, then the auditor will count the distance between six (6) inches below the lowest adjacent attachment to six (6) inches above the highest of the adjacent attachments. If Verizon has non-adjacent attachments (e.g., which might be connected with a riser cable), then Verizon is deemed to occupy 6" below + 6" above each non-adjacent attachment. J-hooks and equipment will be used to calculate the space used on the pole when they are attached in the usable space but outside of the +/- 6" of the trunk line thru bolt. Adjacent attachments by a single owner (e.g. Company 1) will be denoted as Company1a, Company1b, etc. as needed. For two non-adjacent attachments by the same Company (e.g. Company 1), one will be identified as belonging to Company1a and the other as belonging to Company1and in that way will be identified as attachments of the same company. Down guys will NOT be used to calculate space occupied for any company attached to the pole.

**Midspan Heights:** The northeastern most mainline midspan will be visited and captured in conjunction with each random pole location. This one midspan location will have all communication trunk line heights recorded and denoted to match Verizon and Company1, Company2, Company3, etc. at the pole. The ground is the reference point for all measurements. DRG will note the current temperature at the time of measurement. DRG will also capture the 2nd pole attached to the mainline midspan with the same measurements / information as the source pole. DRG will include a hallway photograph and three annotated photographs (random pole, midspan, and 2nd pole) of each FirstEnergy owned location.

**Lowest Verizon Attachment –** Height above ground. This is the height of the lowest Verizon attachment above ground as measured at the source pole.

**Verizon Sag (As Found) –** This is the difference between the lowest measured height above ground at the source pole and the lowest measured height above ground at midspan

**Lowest Comm Sag (As Found) –** This is the difference between the measured height above ground at the source pole and the measured height above ground at midspan for the lowest communication company other than Verizon.

**Sag Difference (As Found) –** This is the mathematical difference between the Verizon Sag (As Found) and the Lowest Comm Sag (As Found).

**\*\*\*No inspections or NESC violations are being documented at each pole as part of this project.**

## Delivery

DRG will provide the following deliverables for the project:

### Verizon Owned Poles (Random Sample Set)

- Annotated Photo for each randomly selected pole location. Each annotated photo will show the following information
  - Pole Tag Information - Shows Electric and Telephone tag numbers
  - SCID - unique identifier that links the data to the annotated photo and spreadsheet

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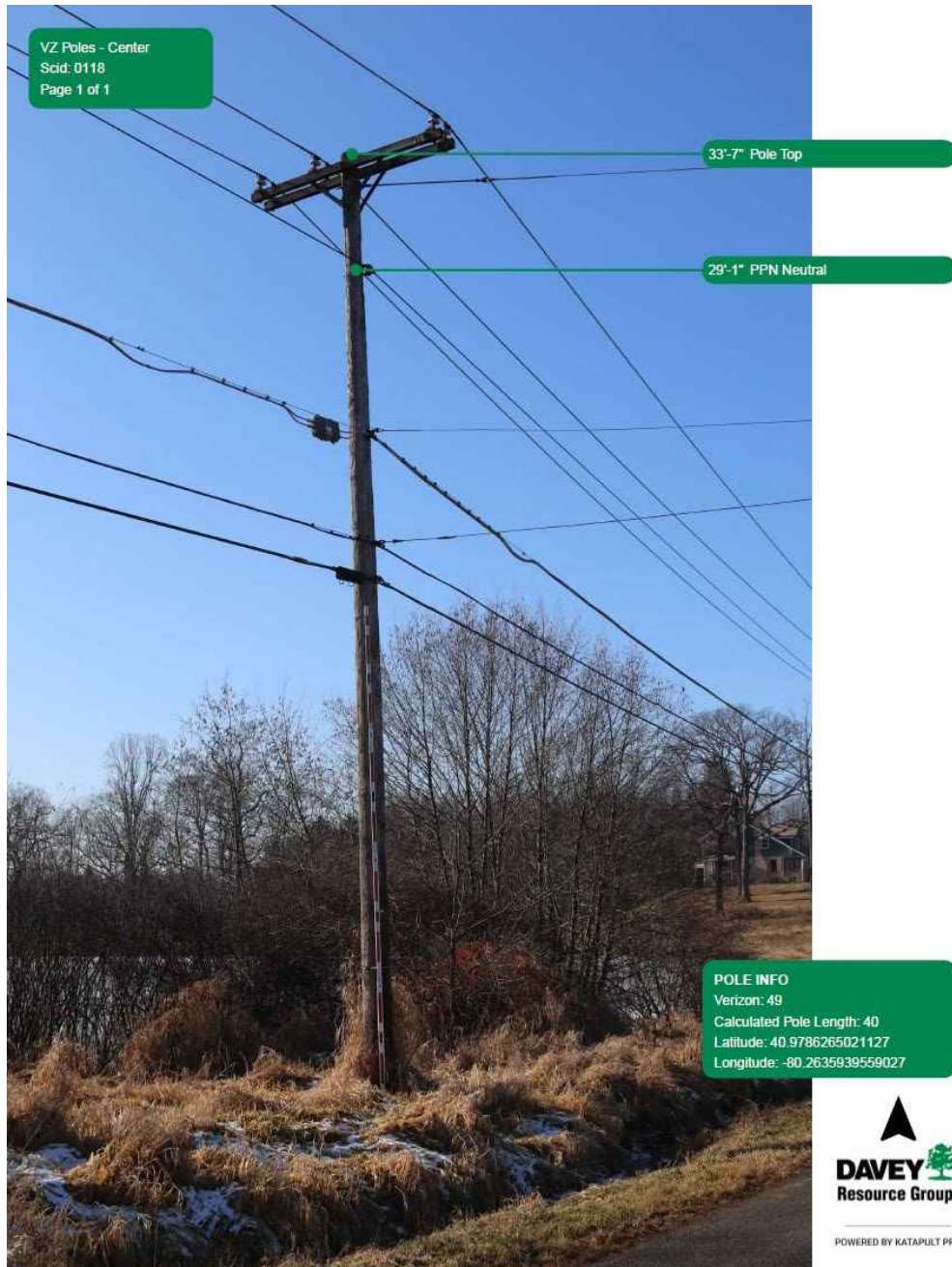
- Pole Length - Calculated measurement based on the measured pole top height + 10% + 2 feet. The final value will be rounded up to the nearest 5-foot increment.
- Latitude and Longitude
- Pole Top Height
- Lowest electric facility height above grade measurement
- Master Spreadsheet - the master spreadsheet will contain all the source data provided, as well as the following fields:
  - Column A: source data from FirstEnergy - Database Site Number - The Pole tag number provided by FirstEnergy
  - Column B: source data from FirstEnergy - Latitude - Y Coordinate provided by FirstEnergy
  - Column C: source data from FirstEnergy - Longitude - X Coordinate provided by FirstEnergy
  - Column D: source data from FirstEnergy - Database Owner - Identifies who the owner of the pole is
  - Column E: source data from FirstEnergy - Operating Company - Identifies the operating power company for the location
  - Column F: source data from FirstEnergy - Database attachments - the total number of attaching entities to the pole.
  - Column G: source data from FirstEnergy - Source Pole Length - The length of the pole as provided by FirstEnergy
  - Column H: source data from FirstEnergy - Node Type (all locations are indicated as poles; this field helps to filter the Katapult program to ensure locations are added properly to the spreadsheet
  - Column I: source data from FirstEnergy - Done - This is indicating if the location has been completed (True) or not (False)
  - Column J: SCID No - This is a unique identifier that will link the pole data with the annotated photo and the spreadsheet
  - Column K: FE Pole Tag No - The FirstEnergy pole tag will be recorded if it exists in the field
  - Column L: VZ Pole Tag No - The Verizon pole tag will be recorded if it exists in the field
  - Column M: Pole Height Brand - This field will capture the pole height and class from the pole birthmark, if one exists in the field
  - Column N: Pole Length Calculated - This field will calculate the pole length. The formula to calculate the pole length is Pole Top Height (inches) \* 1.10 (10%) + 2 feet, rounded up to the nearest 5-foot increment. This value will be shown in inches
  - Column O: Pole Top Measurement - This field will capture the pole top height of the pole from the ground up. This value will be shown in inches
  - Column P: Low Power Measurement - This field will capture the lowest power facility height measurement on the pole. It will be recorded in inches.
  - Column Q: FirstEnergy Space - This field will capture the total FirstEnergy space on each pole from the pole top to the lowest power attachment on the pole. The value will be recorded in inches.
  - Column R: Streetlight Present - This field will indicate if there is a streetlight or not and if there is if it's in the power space, or below the power space
  - Column S: Clearance Space Required - This field indicates if the pole requires 40” of worker safety space or if some other amount of space is required due to streetlight placement.

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- Column T: Total FE Space- This will calculate the FirstEnergy space plus the additional clearance space required.
- Column U: Minimum FirstEnergy Space - DRG will visually review each pole and determine whether the FirstEnergy facilities can be compressed on the pole. This is a visual evaluation and subjective and therefore is only meant to point out the poles that appear to have excessive unoccupied space available.
- Column V: Annotated Photo Link - This field will contain a link that provides direct access to each annotated photo.
- Column W: FE\_Space\_Needed – This field will document the pole space required for FirstEnergy attachments as prescribed by FirstEnergy construction standards.
- Column X: Construction Std. This field is populated by FirstEnergy and references the specific constructions standard that the source pole is built to
- Column Y: NESC Ref. – This field is populated by FirstEnergy
- Column Z: Comment – This field is populated by First Energy
- Supporting Photos (not delivered, but backed up on DRG servers) - DRG is collecting the following photos for each pole location
  - Full length Pole Photo with measuring rod
  - Pole Brand (if available)
  - Pole Tag (if available) - DRG will capture
- Additional Information
  - Source Pole: This is the randomly selected pole to field verify.
  - Midspan: This is the area where heights are field verified between the source and the reference poles
  - Reference Pole: This is the pole field verified in line with the source pole. Preferably to the NE direction if possible.
  - Hallway: This is the fielded photo of the source pole and reference pole in line that captures both the pole top and bottom of each pole and the ground between.
  - Anchor, Down guy, or Span Guy information will not be collected as the lowest power attachment on any pole with other electrical distribution. Span Guys will be collected if they are the only electrical distribution attachment on the pole)
  - If a pole is inaccessible, not tagged with source provided tag number, or no pole is in the immediate area, DRG will collect the next closest pole to the geographic location that has the same ownership as the pole being replaced. The replaced pole will have its X and Y coordinates reported back as part of the final deliverable.
  - Underground fed streetlight poles will be documented with a SL\*Tag Number\* and will be removed from the audit.

## Pictorial for Verizon Owned Poles

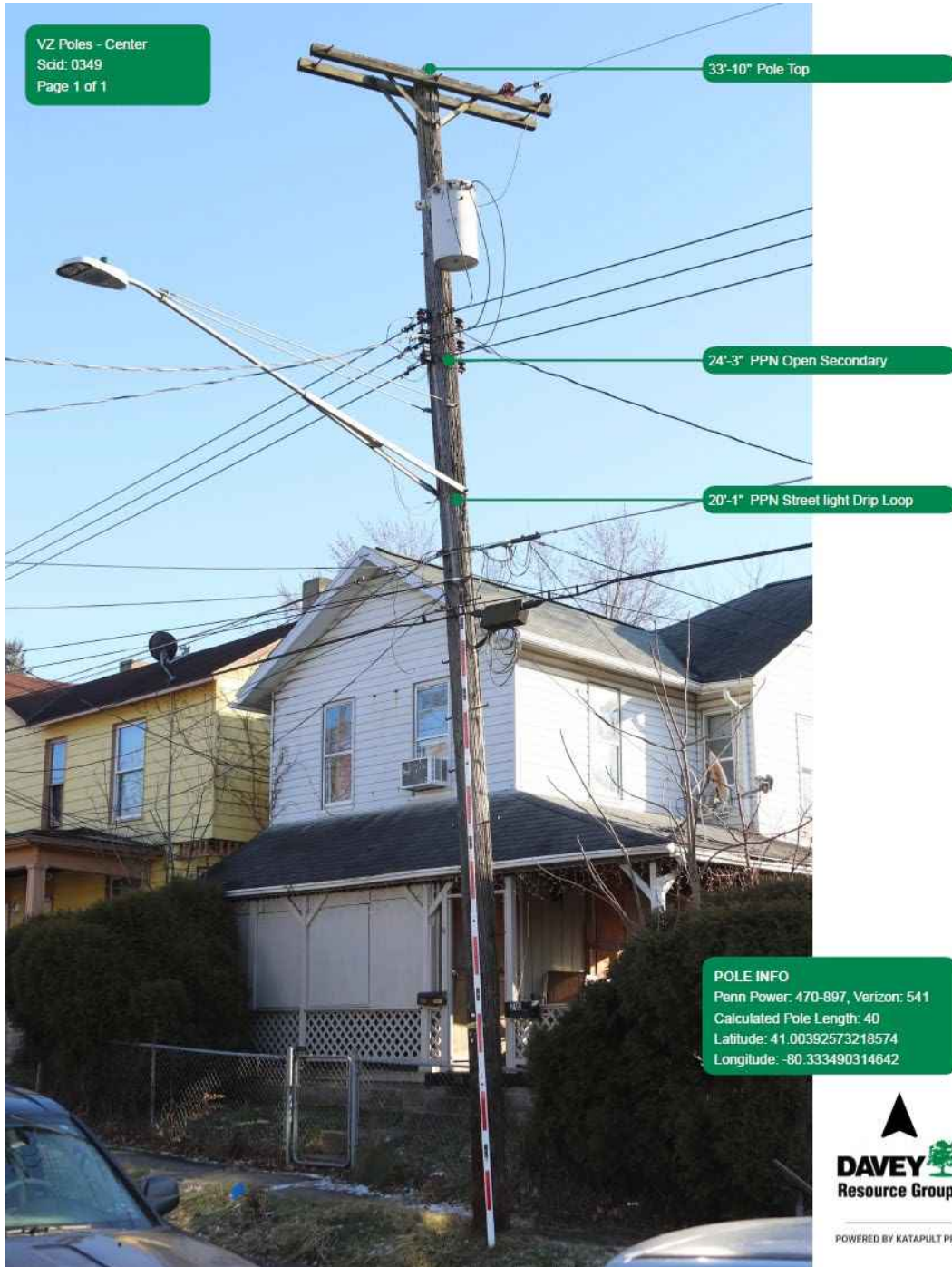
The following images are examples of the annotated photos to be provided. Each image shows the location where measurements will be made on Verizon owned poles. On each photo, the following information will be displayed: In the upper left, the name of the group the location has been associated with in the data collection system and the system unique identifier (SCID) is shown; from top to bottom, along the right side of the photograph, the pole top measurement and lowest power measurement will be annotated; in the lower right, pole tags information, pole length calculation, and latitude / longitude will be documented.



**Data Note: Verizon Owned Pole, VZ Center Area, SCID 0118, Pole Top 33'-7", PPN Neutral 29'-1", Verizon Tag 49, Calculated Pole Length of 40', latitude of 40.97862, longitude of -80.26359**

PUBLIC VERSION

**For locations with a streetlight, the lowest power attachment will be captured (which includes the power neutral, secondary attachments, and transformer drip loops.), and the lowest streetlight attachment will be recorded at the lowest physical point of the streetlight. If the Street Light is below the required 40" of worker safety space from the lowest power attachment, then the Clearance Space Required (Column S) will be calculated as 12" from the lowest streetlight attachment.**



**Data Note: Verizon Owned Pole, VZ Center Area, SCID 0349, Pole Top 33'-10", PPN Open Secondary 24'-3", PPN Street light Drip Loop 20'-1", Penn Power Tag 470-897, Verizon Tag 541, Calculated Pole Length of 40', latitude of 41.003925, longitude of -80.333490**

## FirstEnergy Owned Poles (Random Sample Set)

- Annotated Source Pole Photo will show the following information.
  - Pole Tag Information - Shows Electric and Telephone tag numbers
  - SCID - unique identifier that links the data to the annotated photo and spreadsheet
  - Pole Length - Calculated measurement based on the measured pole top height + 10% + 2 feet. The final value will be rounded up to the nearest 5-foot increment.
  - Latitude and Longitude
  - Pole Top Height
- Annotated Midspan Photo for each randomly selected Source pole location. Each annotated Midspan photo will show the following information
  - Lowest power height measurement
  - Communications height measurements
  - Communications messenger and wire size
- Annotated Reference Photo for each randomly selected Source pole location. Each annotated Reference pole photo will show the following information
  - Communications attachment height measurements
  - Pole Top Height
- Master Spreadsheet - the master spreadsheet will contain all the source data as well as the following fields:
  - Column A: source data from FirstEnergy - Database Site Number - The Pole tag number provided by FirstEnergy.
  - Column B: source data from FirstEnergy - Latitude - Y Coordinate provided by FirstEnergy.
  - Column C: source data from FirstEnergy - Longitude - X Coordinate provided by FirstEnergy.
  - Column D: source data from FirstEnergy - Database Owner - Identifies the owner of the pole.
  - Column E: source data from FirstEnergy - Operating Company - Identifies the operating power company for the location.
  - Column F: source data from FirstEnergy - Database attachments - the total number of attaching entities to the pole.
  - Column G: source data from FirstEnergy - Source Pole Length - The length of the pole provided by FirstEnergy.
  - Column H: Node Type (all locations are indicated as poles; this field helps to filter the Katapult program to ensure locations are added properly to the spreadsheet.
  - Column I: Done - This is indicating if the location has been completed (True) or not (False).
  - Column J: SCID No - This is a unique identifier that will link the pole data with the annotated photo and the spreadsheet.
  - Column K: FE Pole Tag No - The FirstEnergy pole tag will be recorded if it exists in the field
  - Column L: VZ Pole Tag No - The Verizon pole tag will be recorded if it exists in the field
  - Column M: Pole Height Brand - This field will capture the pole height and class from the pole birthmark, if one exists in the field
  - Column N: Pole Length Calculated - Calculated measurement based on the measured pole top height + 10% + 2 feet. The final value will be rounded up to the nearest 5-foot increment.

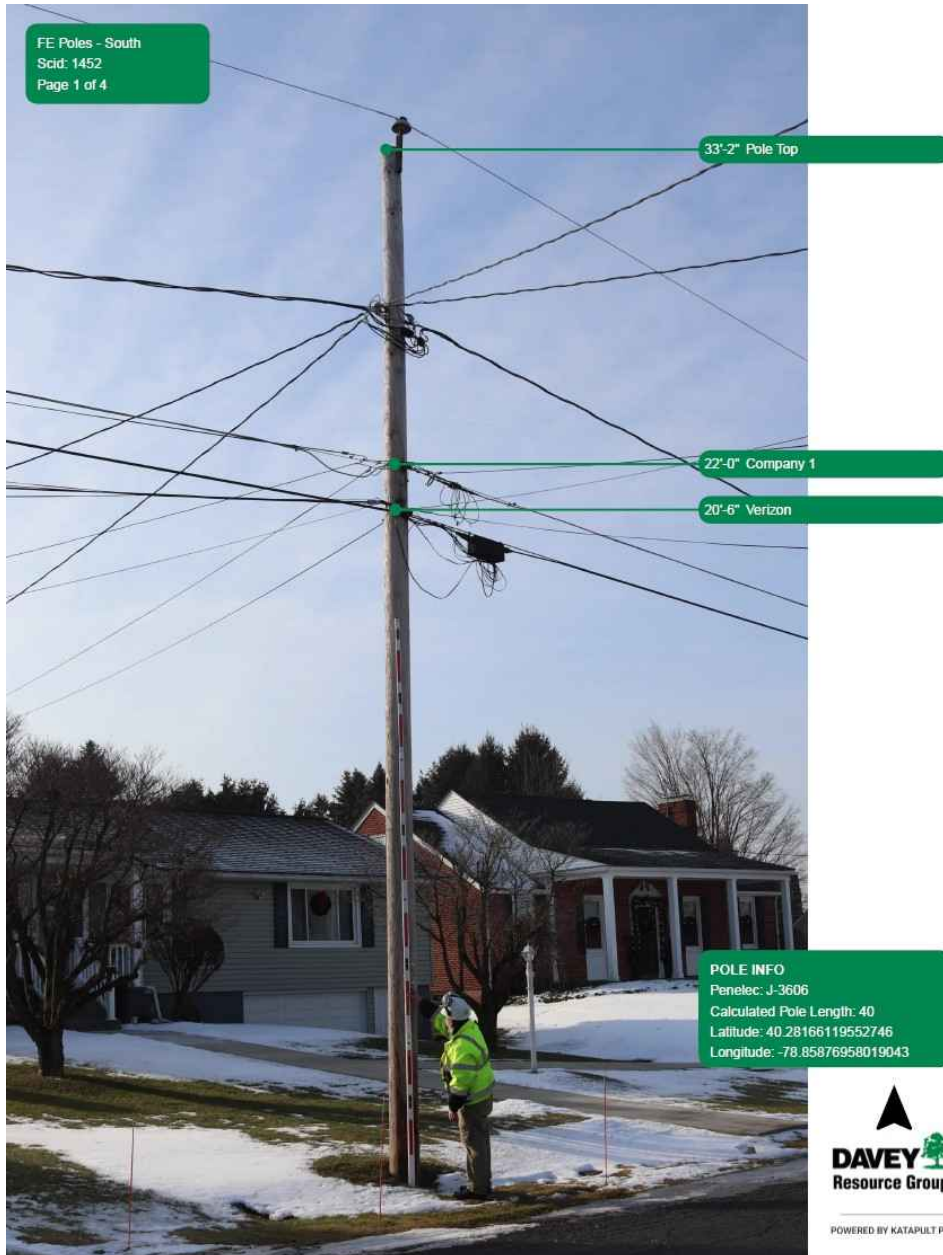
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- Column O: Pole Top Measurement - This field will capture the pole top height of the pole from the ground up. This value will be shown in inches.
- Columns P - BR: Communication Attachment Information - These fields will capture wire size, attachment heights in inches, midspan heights in inches, and total attachment space occupied (inches) on the source pole.
- Column BS: Environment - Reference at the midspan between the source pole and the reference pole.
  - Body of Water
  - Swimming Pool
  - Street
  - Building
  - Driveway
  - Railroad
  - Field
  - Yard
  - Turnpike/Interstate
  - Parking Lot
- Columns BT - CJ: Verizon attachment information. These fields will capture wire size, attachment heights in the usable space, midspan heights, and the total amount of usable space occupied by Verizon on the source pole.
- Columns CK - CT: Reference Pole attachment heights. These fields will include all communication attachment heights in the usable space on the reference pole.
- Column CU: Unusable Space. Column M \* .1(10%) + 2' + 18'. For example,  $(35 * .1) + 2' + 18' / 12 = xxx$  This value will be shown in inches.
- Column CV: Quantity of Attaching Companies - The number of unique attachers on the pole, including Verizon and FirstEnergy, but not including holiday attachments.
- Column CW: Temperature - The temperature at the time of field data collection.
- Column CX: Minimum FEOC Space required for FEOC attachments - This field will be a YES/NO answer to whether a determination has been made for a further look at the pole by an FE engineer. The DRG assessment of usable space is greater than necessary will warrant a YES in this column and then passed along to the FE engineer for further assessment of consolidation. ***This field is a carry over from the Verizon Owned Poles data set will not be populated.***
- Columns CY: Annotated Photos - This column will have a single link to a PDF of the Annotated Source Height Pole, Annotated Midspan Height, Annotated Reference Pole, and a Hallway Photo
- Column CZ: Lowest Verizon Attachment – This is the height of the lowest Verizon attachment as measured above at the source pole
- Column DA: Verizon Sag (As Found) – This is the difference between the measured height above ground at the source pole and the measured height above ground at midspan
- Column DB: Lowest Comm Sag (As Found) - This is the difference between the measured height above ground at the source pole and the measured height above ground at midspan for the lowest communication company other than Verizon.
- Column DC: Sag Difference (As Found) - This is the mathematical difference between the Verizon Sag (As Found) and the Lowest Comm Sag (As Found).



## Pictorial for FirstEnergy Owned Poles

The following images are examples of the annotated photos file to be provided. There are four images included for each location: source height photo, midspan height photo, reference height photo, and hallway photo. Each image shows the location where measurements will be made on FirstEnergy owned poles. On the Source Pole photo, the following information will be displayed: in the upper left, the name of the group the location has been associated with in the data collection system and the system unique identifier (SCID) is shown; from top to bottom, along the right side of the photograph, the pole top measurement and all attachments of communication wires, and they will be annotated as Company 1, Company 2, etc. and Verizon; in the lower right, pole tags information, pole length calculation, and latitude / longitude will be documented.



**Data Note Source Pole: FirstEnergy Owned Pole, FE South Area, SCID 1452, Pole Top 33'- 2", Company 1 22'-0", Verizon 20'-6", Penelec Tag J-3606, Calculated Pole Length of 40', latitude of 40.281661, longitude of -78.858769**

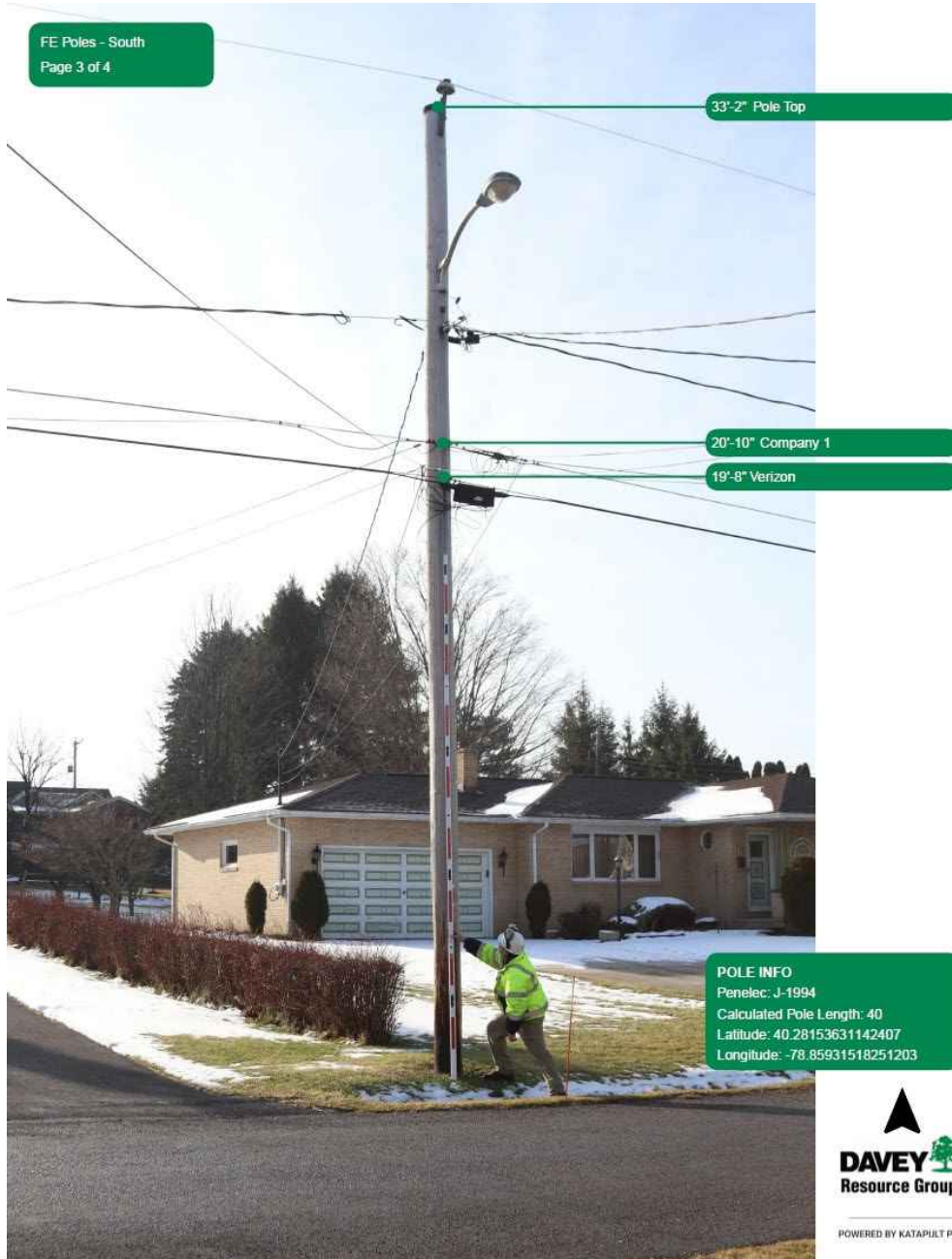
*On the Midspan Photo in the upper left, the name of the group the location has been associated with in the data collection system; from top to bottom, along the right side of the photograph, the midspan measurements of the lowest power measurement and the communications attachers will be annotated, with their wire size, and identified as Company 1, Company 2 etc. and Verizon.*



**Data Note Midspan Pole: FirstEnergy Owned Midspan, FE South Area, Penelec Secondary 22'-6", Company 1 19'-11" C6.6M0750, Verizon 18'-9" T16M1000**

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**On the Reference Pole Height annotated photo the following information will be displayed: in the upper left, the name of the group the location has been associated with in the data collection system; from top to bottom, along the right side of the photograph, the pole top measurement and all attachments of communication wires, and they will be annotated as Company 1, Company 2 Etc. and Verizon; in the lower right, pole tags information, pole length calculation, and latitude / longitude will be documented.**



**Data Note Reference Pole: FirstEnergy Owned Pole, FE South Area, Penelec Tag J-1994, Pole Top 33'-2", Company 1 20'-10", Verizon 19'-8", Calculated Pole Length of 40', latitude of 40.281536, longitude of -78.859315**

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***The Hallway shot is the fielded photo of the source pole and reference pole in line that captures both the pole top and bottom of each pole and the ground between***



***Data Note: Hallway Photo - photograph used to see the surrounding area of source pole, midspan, and reference pole.***