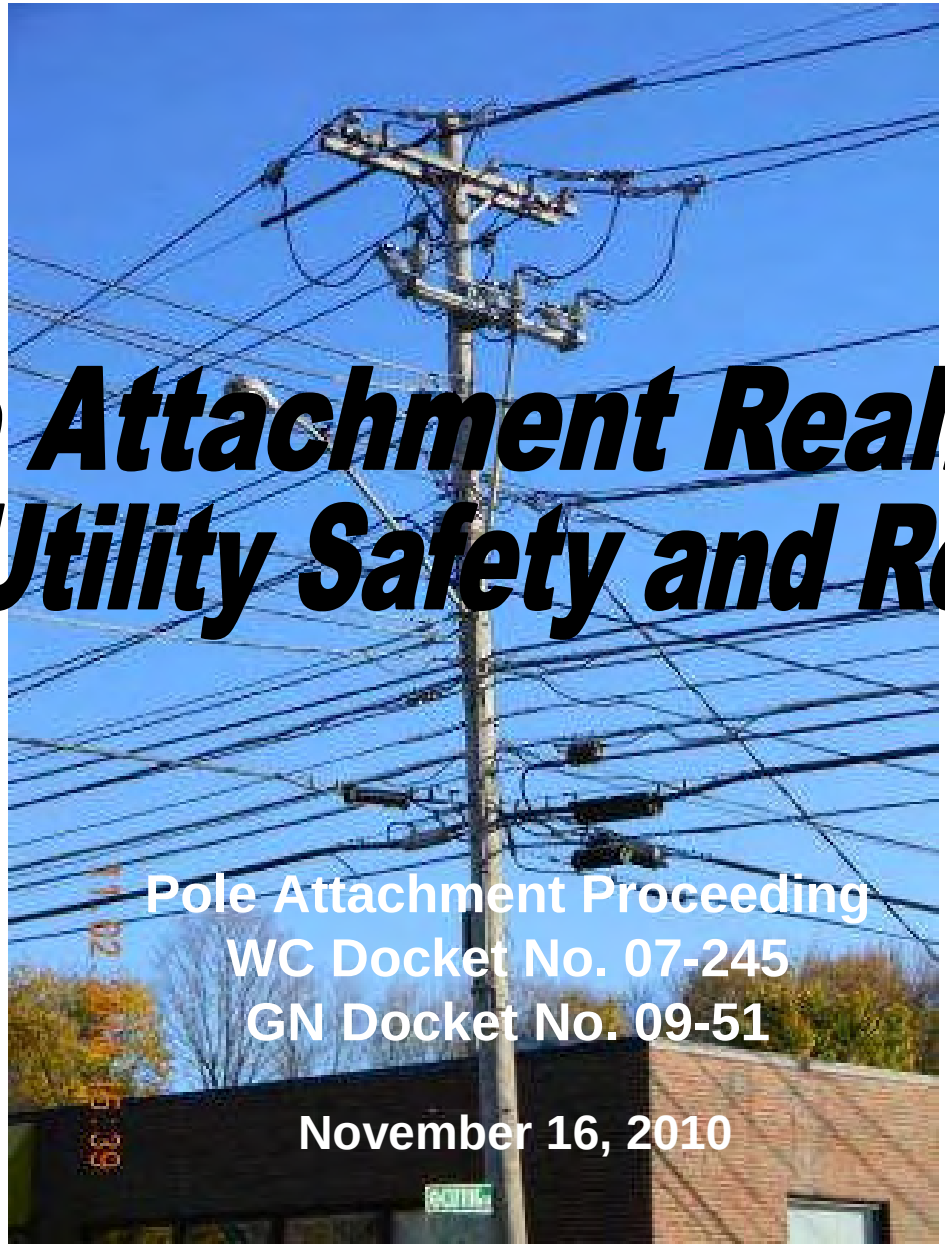

Pole Attachment Realities: Electric Utility Safety and Reliability

Pole Attachment Proceeding
WC Docket No. 07-245
GN Docket No. 09-51

November 16, 2010

Introduction

Aryeh Fishman

- Edison Electric Institute

  701 Pennsylvania Ave, N.W.

  Washington, DC 20004
- Email: afishman@eei.org
- Phone: (202) 508-5023

EDISON ELECTRIC INSTITUTE

The Association of Shareholder-Owned Electric Companies

Moderator

Tom Magee

- Keller and Heckman LLP

  1001 G Street, N.W.

  Washington, DC 20001
- Email: magee@khlaw.com
- Phone: (202) 434-4128

For the *Coalition of Concerned Utilities*

KELLER AND HECKMAN LLP

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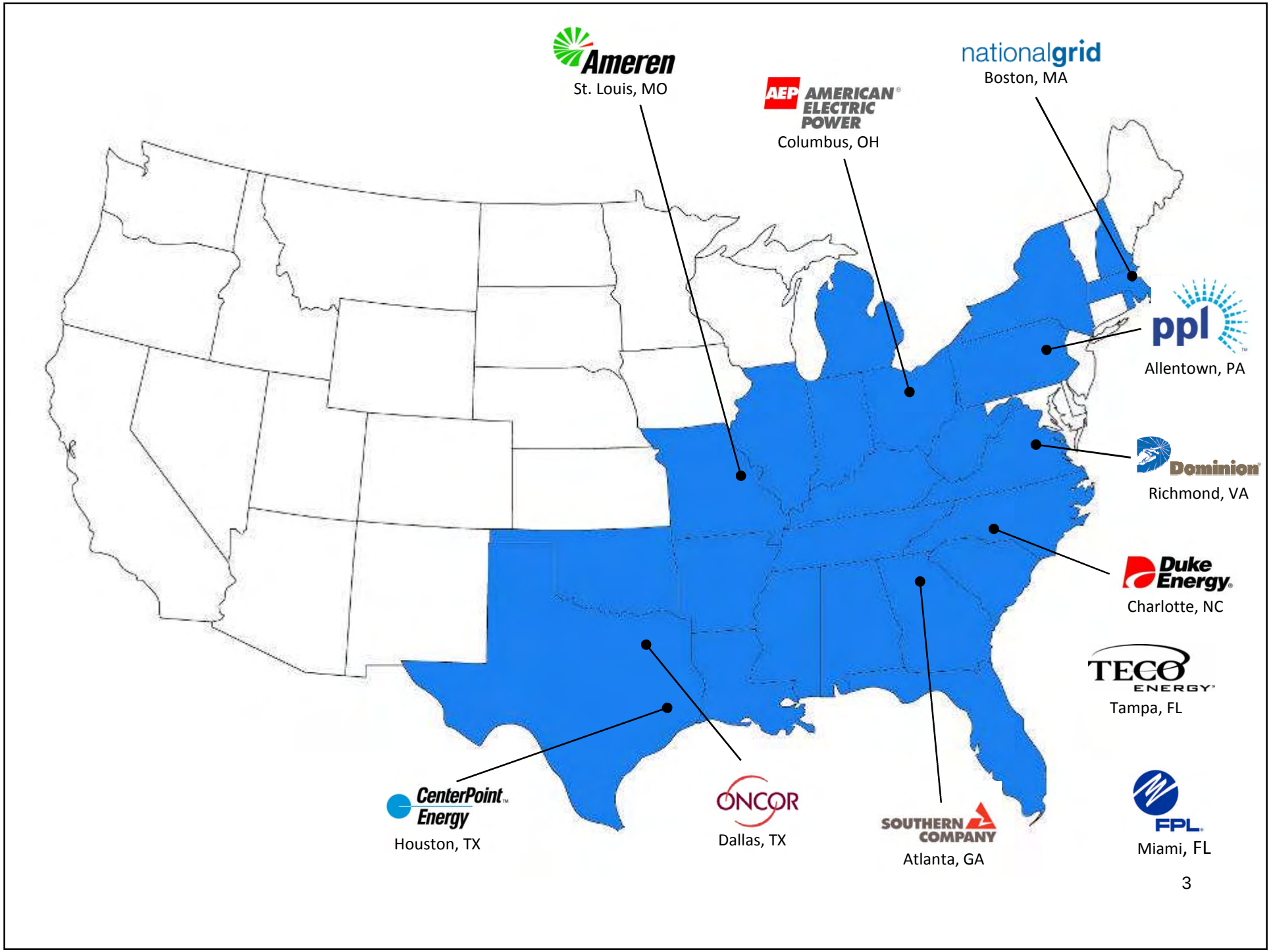

Ameren
St. Louis, MO
AEP AMERICAN ELECTRIC POWER
Columbus, OH
nationalgrid
Boston, MA
ppl
Allentown, PA
Dominion
Richmond, VA
Duke Energy
Charlotte, NC
TECO ENERGY
Tampa, FL
FPL
Miami, FL
SOUTHERN COMPANY
Atlanta, GA
ONCOR
Dallas, TX
CenterPoint Energy
Houston, TX

Agenda

I. Introduction (Aryeh Fishman, Edison Electric Institute)

II. Moderator Overview (Tom Magee, Keller and Heckman)

III. Presentations

1. Introduction to Pole Attachments
   - National Grid (Joe Snyder)
   - Ameren (Scott Liebel)
2. Make-ready Assessment & Design (Engineering and Office Work)
   - American Electric Power (Pam Ellis)
   - Dominion (Jay Griles)
   - PPL Electric Utilities (Dave Glenwright)

Agenda (cont'd)

3. Performance of Make-ready Work (How Does the Work Get Done?)
   - Oncor (Karen Flewharty)
   - Florida Power and Light (Tom Kennedy)
4. Administration of Attachers
   - Georgia Power (Allen Bell)
   - Duke Energy (Andy Russell)
5. Other Attachment Issues
   - CenterPoint Energy (Cindi Salas)
   - Tampa Electric (Eric O'Brien)

IV. Questions and Answers

V. Conclusion and Thank You (Aryeh Fishman, EEI)

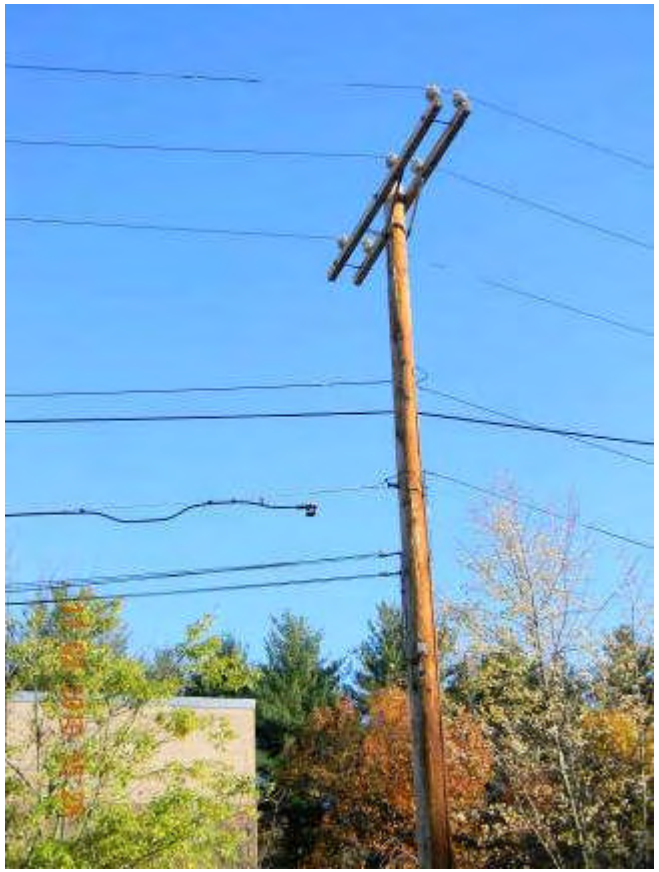
Pole Attachments

Introduction to Pole Attachments

Scott Liebel – Ameren
Joe Snyder – National Grid

Pole Attachments

Perception



Reality

Pole Attachments

Perception

Reality

Pole Attachments

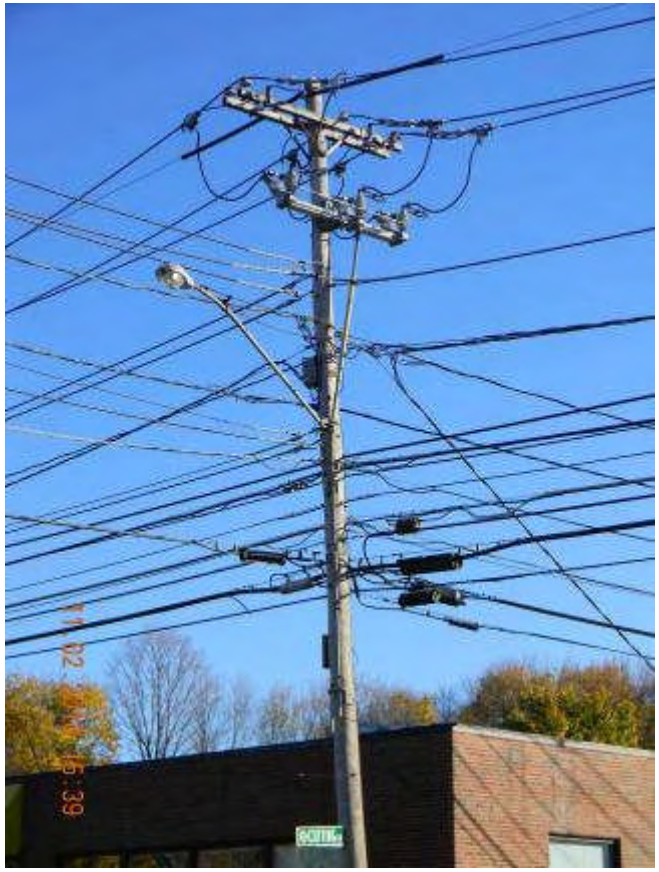
Perception

Reality

Pole Attachments

Perception

Reality



Pole Attachments - Conflicting Objectives

Telecom

- Speed to market
- Priority service
- One size fits all rules

Electric Utility

- Worker & Public Safety
- System Reliability
- Minimize Operational Impact

Pole Attachments - Safety

OCALA FL, Ocala.com February 11, 2009 -- An electrical contractor died Tuesday night after he was electrocuted while working on power lines.

SHARON MA, The Boston Globe April 17, 2006 -- A repairman for a communications company was electrocuted yesterday morning while making repairs on a telephone pole.

PROVIDENCE RI, Powerlineman.com July 19, 2006 -- A communication company worker suffered an electric shock and was severely burned yesterday.

MARPLE TOWNSHIP, PA, The Philadelphia Inquirer June 30, 2010 -- A communication company technician accidentally electrocuted Tuesday afternoon.

Pole Attachments – Utility Concern

SAFETY & Code Compliance - ***Conflicts***

- "Speed to market"
- Mandatory timeframes
- Reqt's that circumvent pole replacement

Perception: "Overhead power lines are well-insulated."

Reality: Overhead power lines are typically not "insulated". Physical space provides isolation from the hazard.

Pole Attachments - Reliability

Pole Attachments - Reliability

Pole Attachments - Reliability

Pole Attachments - Reliability

Ice storm leaves 533,000 without power

(Reuters) - Utilities were bringing in out-of-state crews to help restore electric service after a weekend ice storm knocked out power to more than 530,000 customers in several states in the Central Plains, power companies said on Monday.

Pole Attachments - Reliability

St. Louis Area Experiences Record Power Outages

ST. LOUIS, (SLFP.com), July 23, 2006 - Since the evening of July 21, Ameren companies have restored approximately 175,000 Metro St. Louis and Illinois customers affected by the devastating July 19 and July 21 storms - 305,000 remain without power in the Metro area.

Pole Attachments - Reliability

Pole Attachments - Reliability

February 7, 2010 Associatedcontent.com **Blizzard Report: Metro Washington DC Suffers Massive Outages, No Heat, No Public Transport**

July 26, 2010, CNN.com **Power outages plague DC region after storm that killed 2 people**

August 12, 2010 The Washington Times **Storms swept through the Washington region knocking out power to thousands of customers**

Pole Attachments – Utility Concern

System Reliability - ***Conflicts***

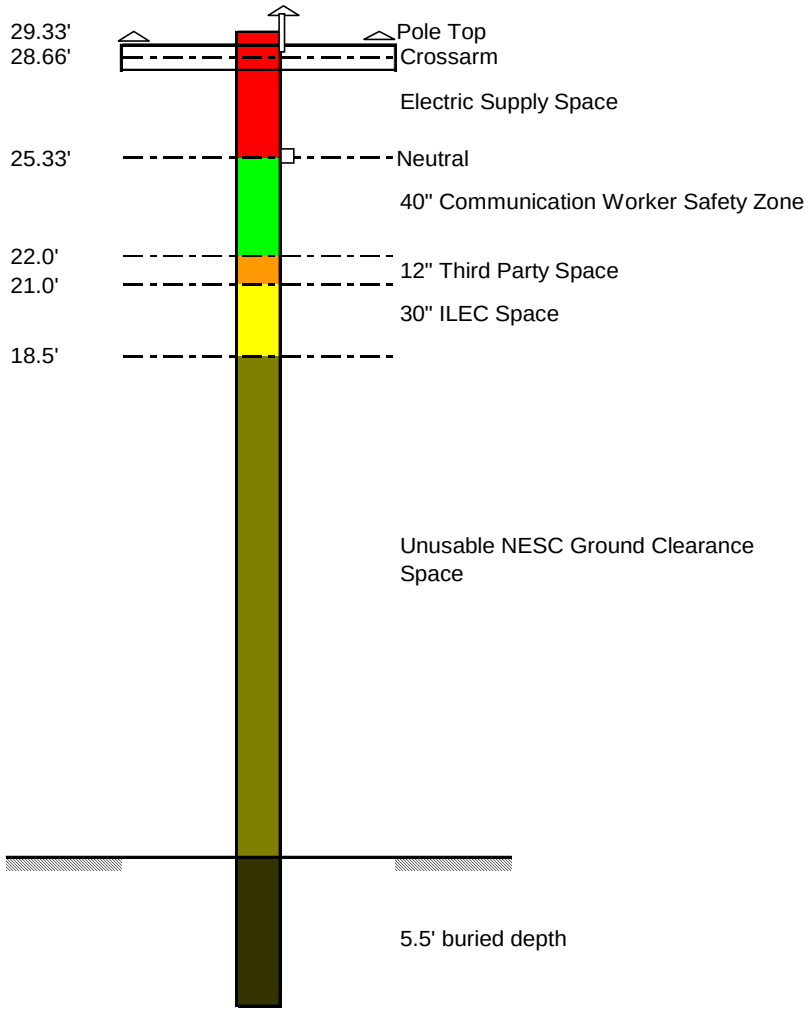
- Reqt's that circumvent pole replacement
- Mandatory timeframes (e.g. loading)
- NESC as universal standard

Pole Attachments – Utility Concern

Operational Impact - ***Conflicts***

- Boxing and Extension Arms
- Mandatory timeframes (e.g. outages)
- Use of contractors

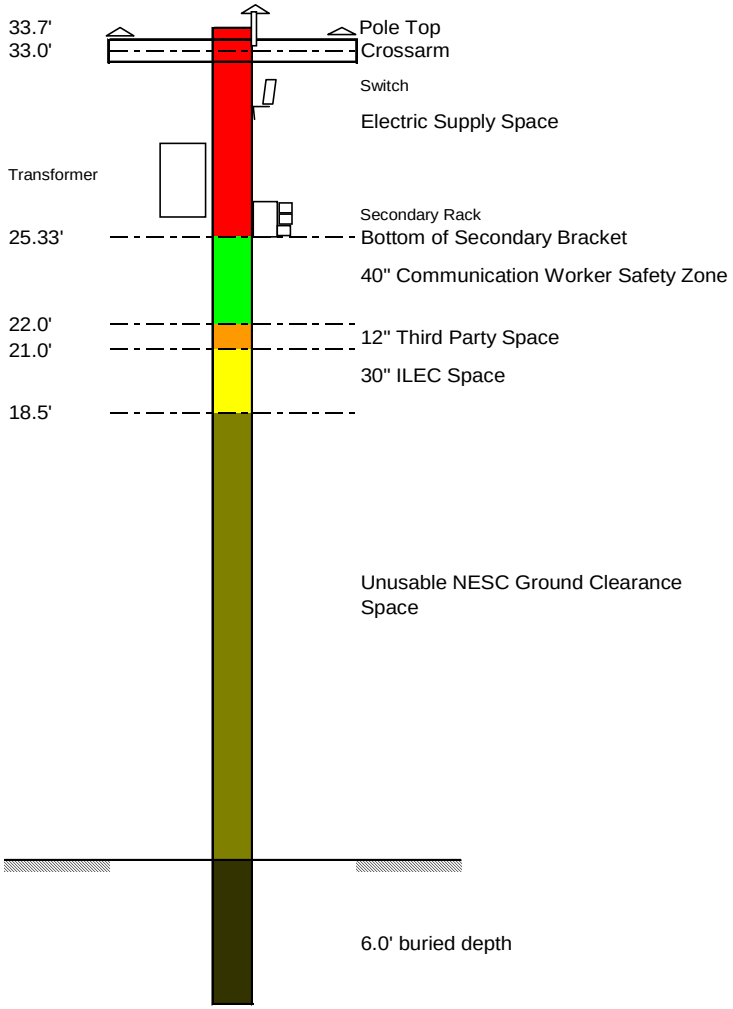
Pole Attachments – The Basics



Standard 35' Pole

Pole Attachments – The Basics

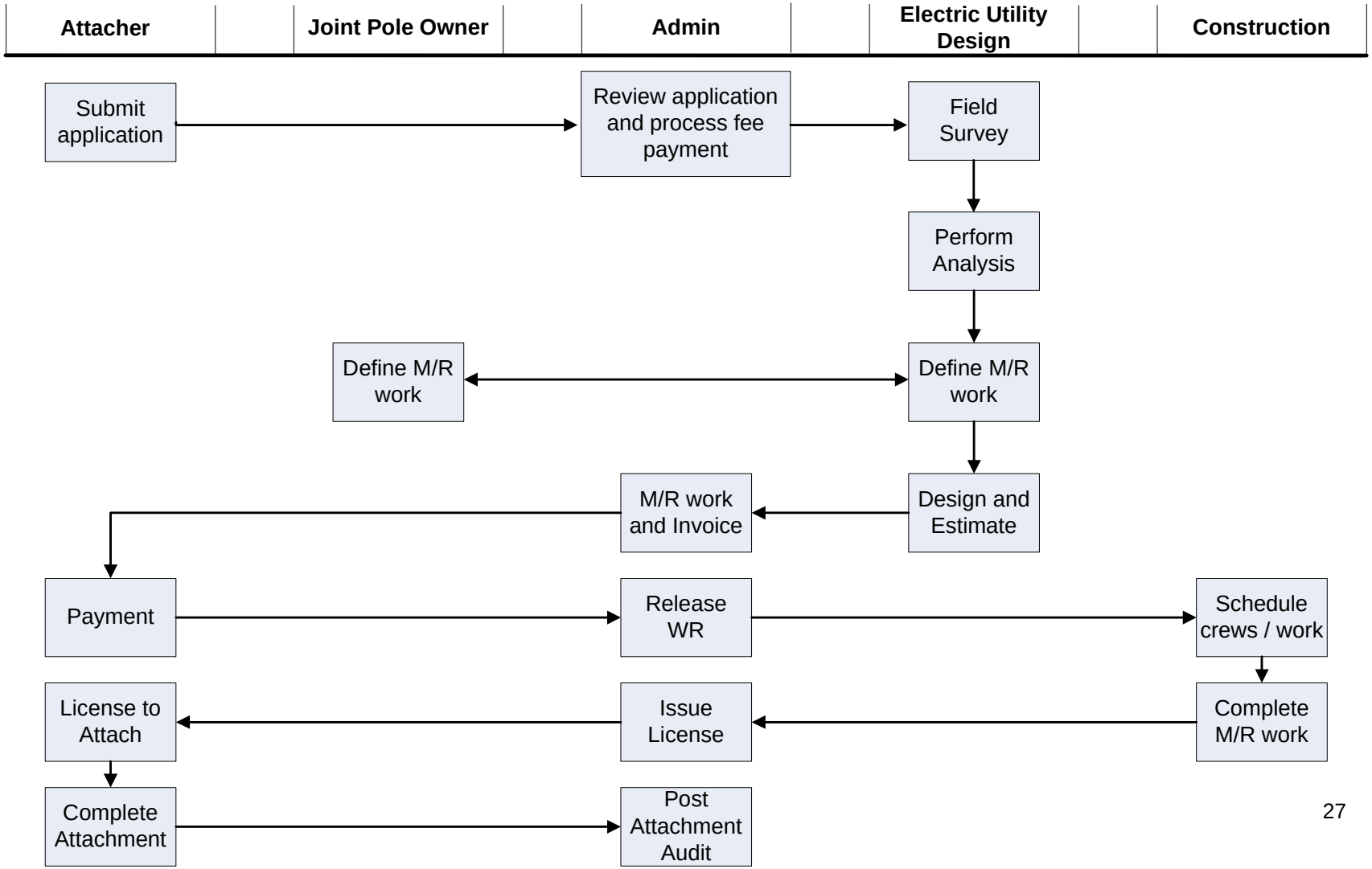
Pole Attachments – The Basics



Standard 40' Pole

Pole Attachments – The Basics

Pole Attachments – Simplified Process



Pole Attachments

Safety & Reliability Impossible w/o:

- Permitting Process
- Specific Workflow Steps
- Compliance with Utility Standards & NESC

Conflicting Priorities for Pole Access

- Safety and Reliability vs. Speed to Market

Perception vs. Reality

- One-Size-Fits-All Rules Will Not Work

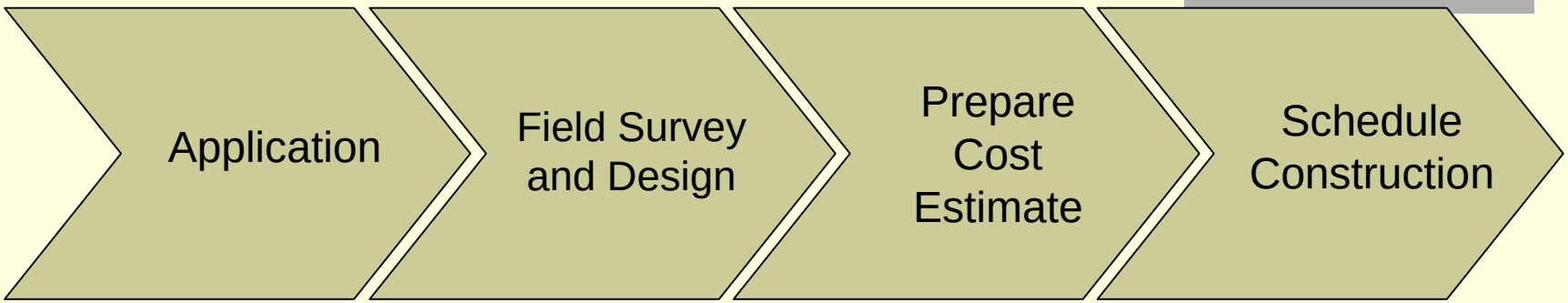
Electric Utility Pole Attachment Meeting

November 16, 2010

Make-Ready Assessment and Design

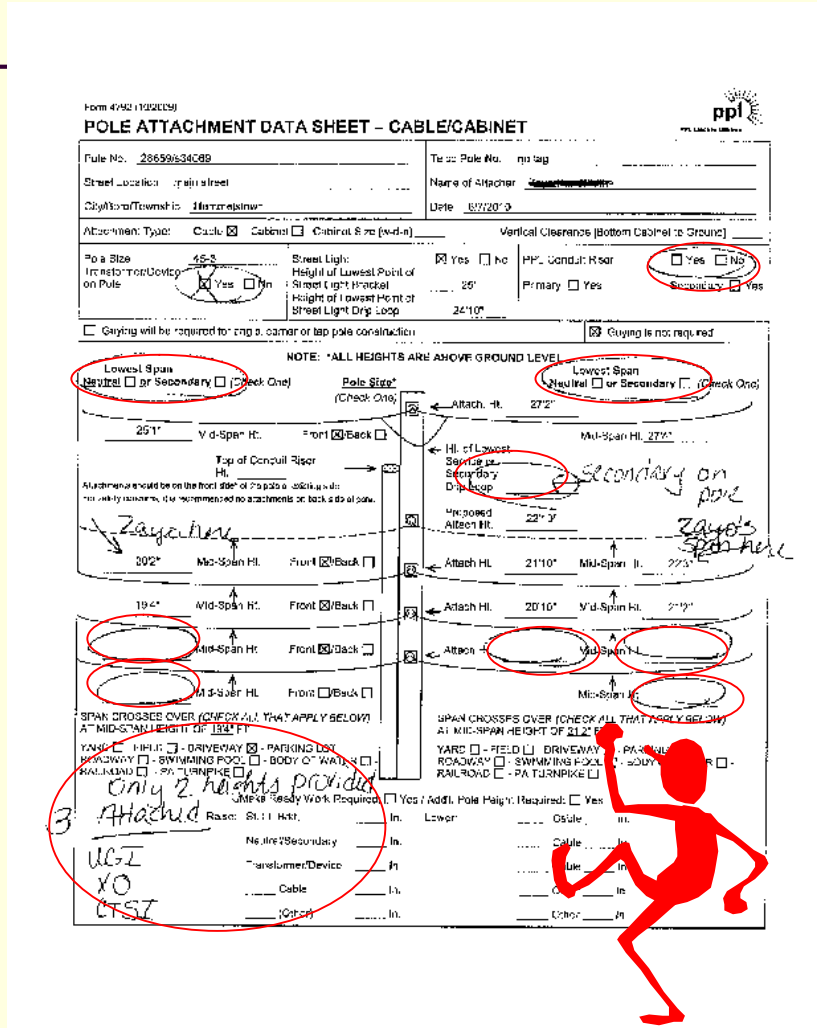
- **American Electric Power (AEP), Pam Ellis**
- **Dominion, Jay Griles**
- **PPL Electric Utilities, Dave Glenwright**

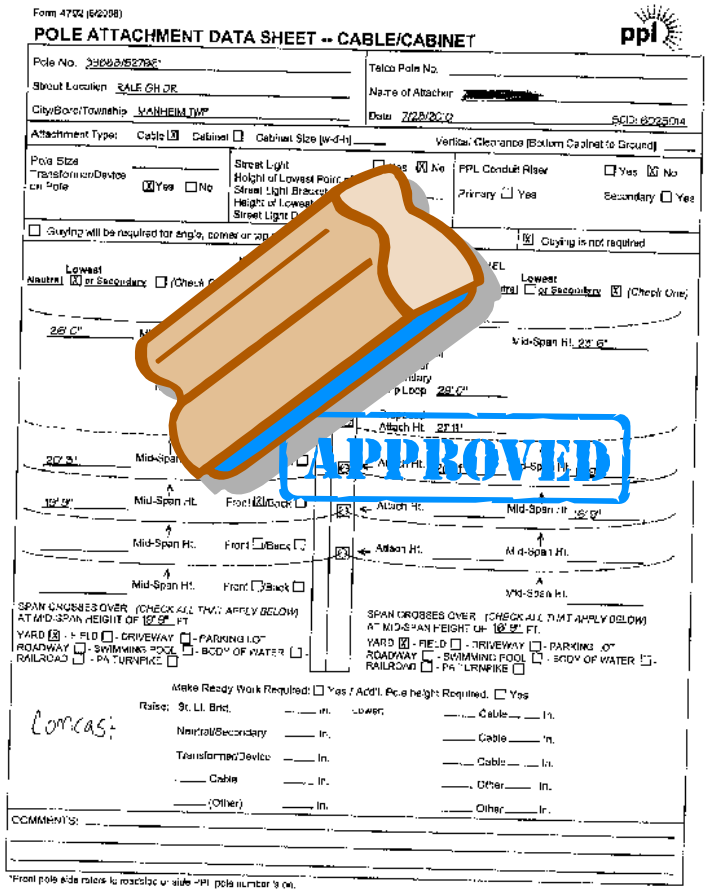
Attachment Design Steps



Application	Field Survey and Design	Prepare Cost Estimate	Schedule Construction
Attaching Co •Initial field survey •Submit application Electric Co •Reviews application •Approve or reject •Authorizes attachment or schedules field review	Electric Co •Design field survey •Identifies work needed •Consults with Attaching Co Attaching Co •Reviews design – may involve additional field review	Electric Co •Finalizes work scope •Prepares construction estimate & invoice Attaching Co •Review & payment of invoice or cancels job	Electric Co •Receives payment •Schedules construction work

Not all Applications are Equal



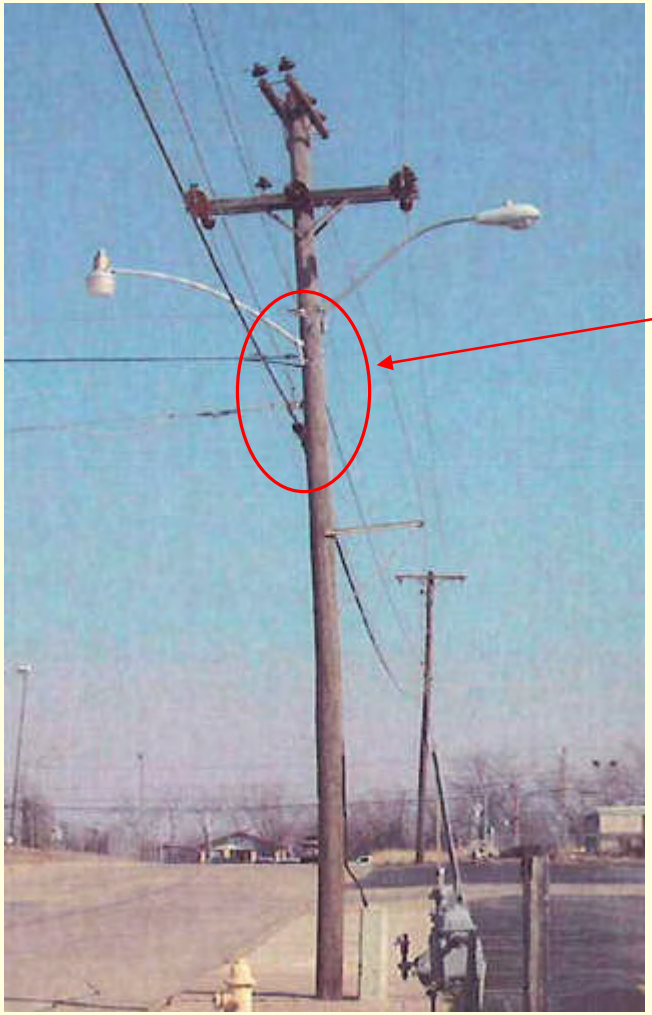


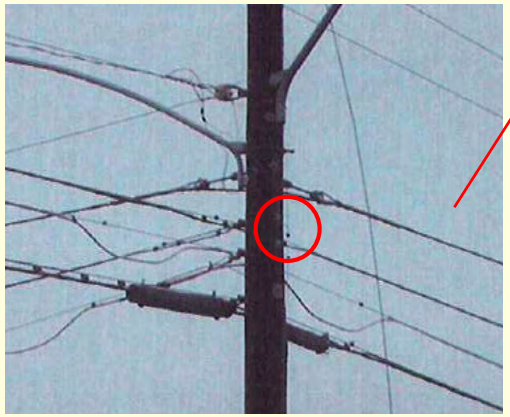
Field Survey

Each Job is Different

Reality vs. Perception

Safety Violations Impede Process



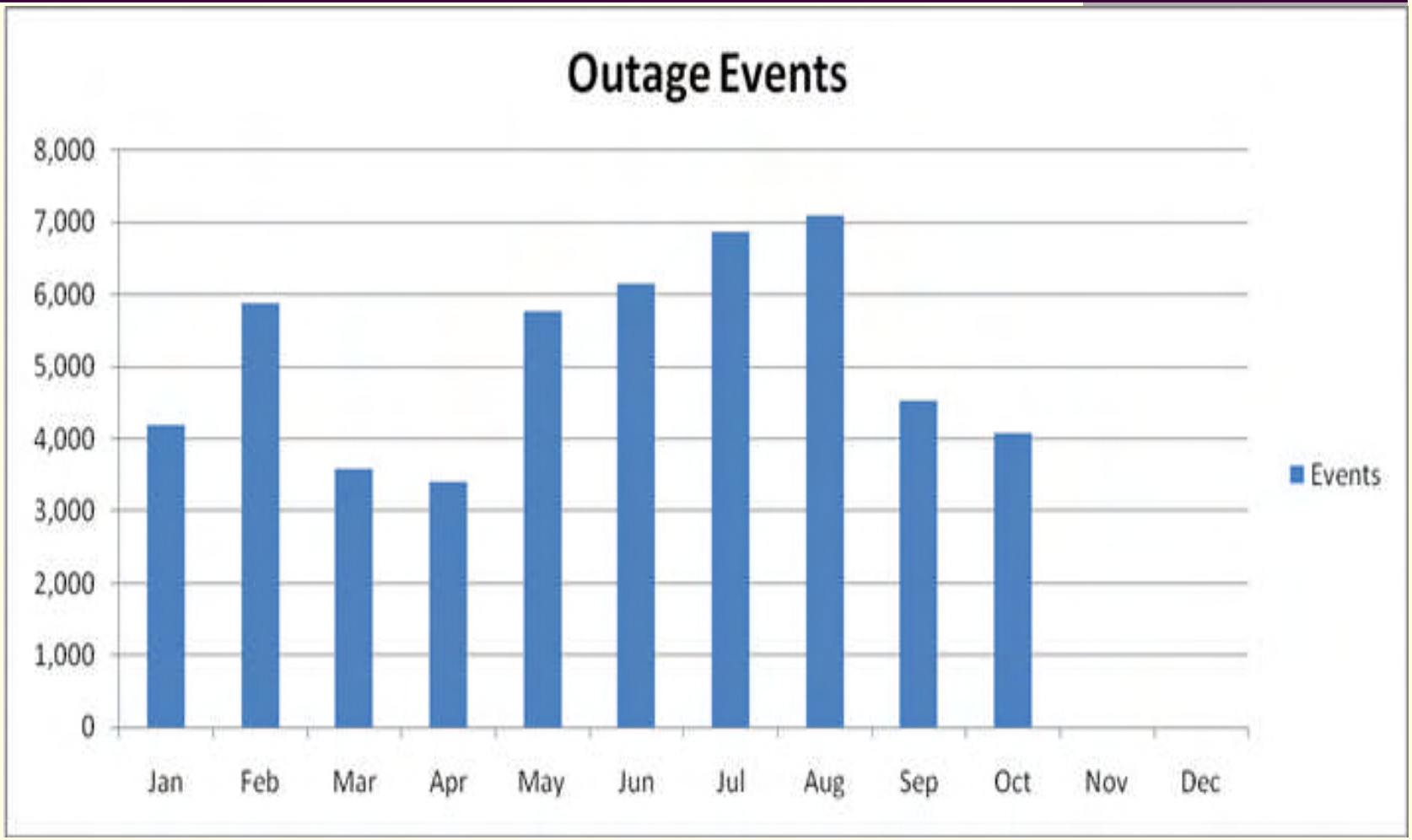


Over-lashing in progress

Effects of Over-lashing

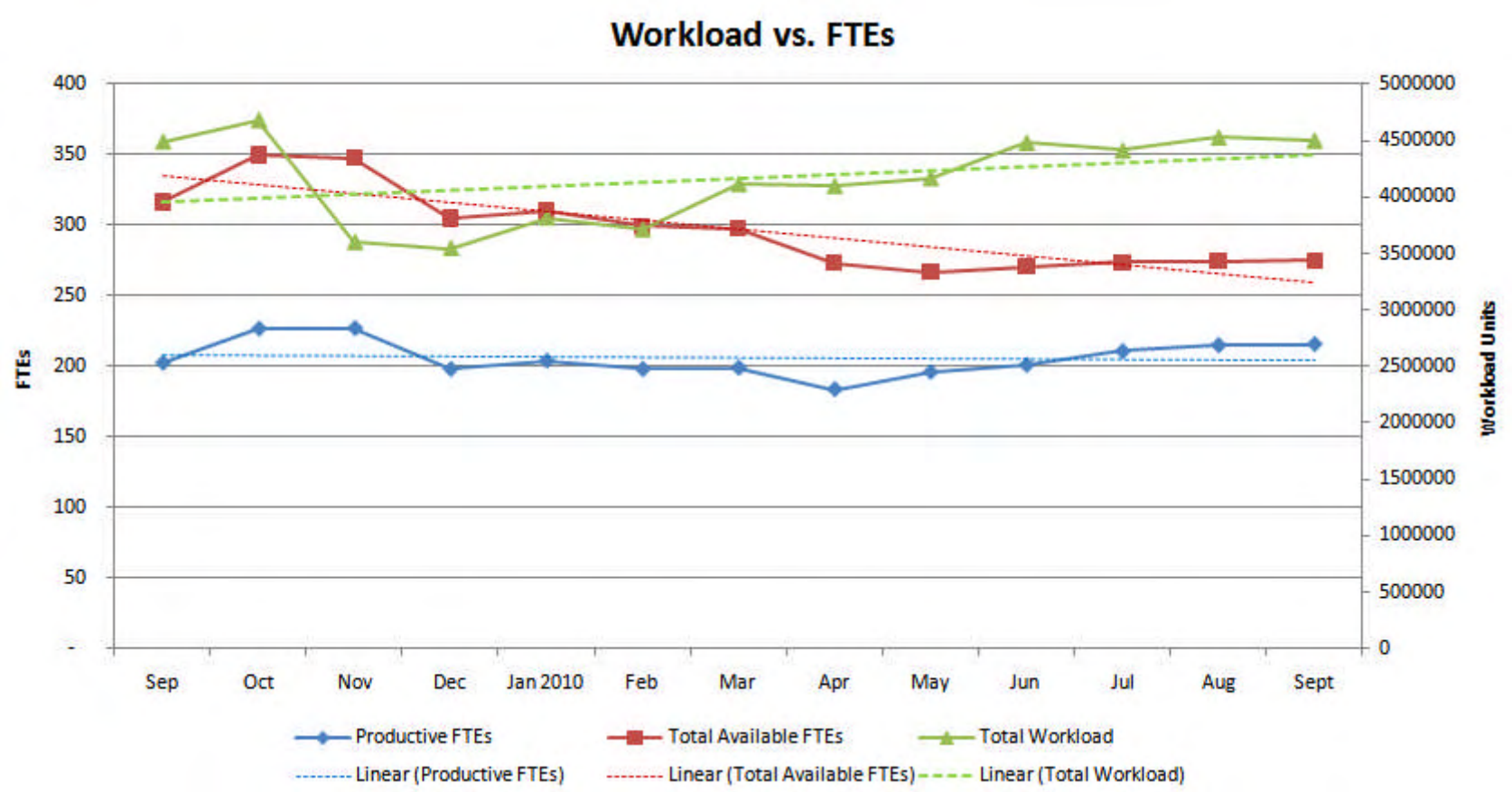
Weather Conditions Impact Design

Outages Delay Process



This graph shows the Outage Events for 2010 (YTD).

Design Workload Variation



Actual Attachment Request

- **November 2009** Heads up meeting - 54 miles of fiber to connect all schools in the City with the School Board.
- **February 2010** Requester submitted 48 Permits with a total of 2,000 poles
  Survey revealed three pole owners involved.
  Scheduled meeting of stakeholders.
- **March 2010** Held meeting with 3 pole owners and 3 existing attachers.
  Stakeholders agreed to use NJUNS to notify of make ready.
- **July 2010** Status Update - Priority Sections 80% complete.
  Attacher expecting December design completion.
- **September 2010** Attacher awarded their construct contract.
- **November 2010** Priority sections are designed. Waiting payment from attacher to release make ready for construction.

Performance of Make-Ready Work

Electric Utility / FCC Staff Meeting: November 16, 2010

Thomas J. Kennedy, P.E.
Principal Regulatory Affairs Analyst
Florida Power and Light Co.

Work Scheduling & Coordination

Myth:

Uniform rules will work for all pole configurations.

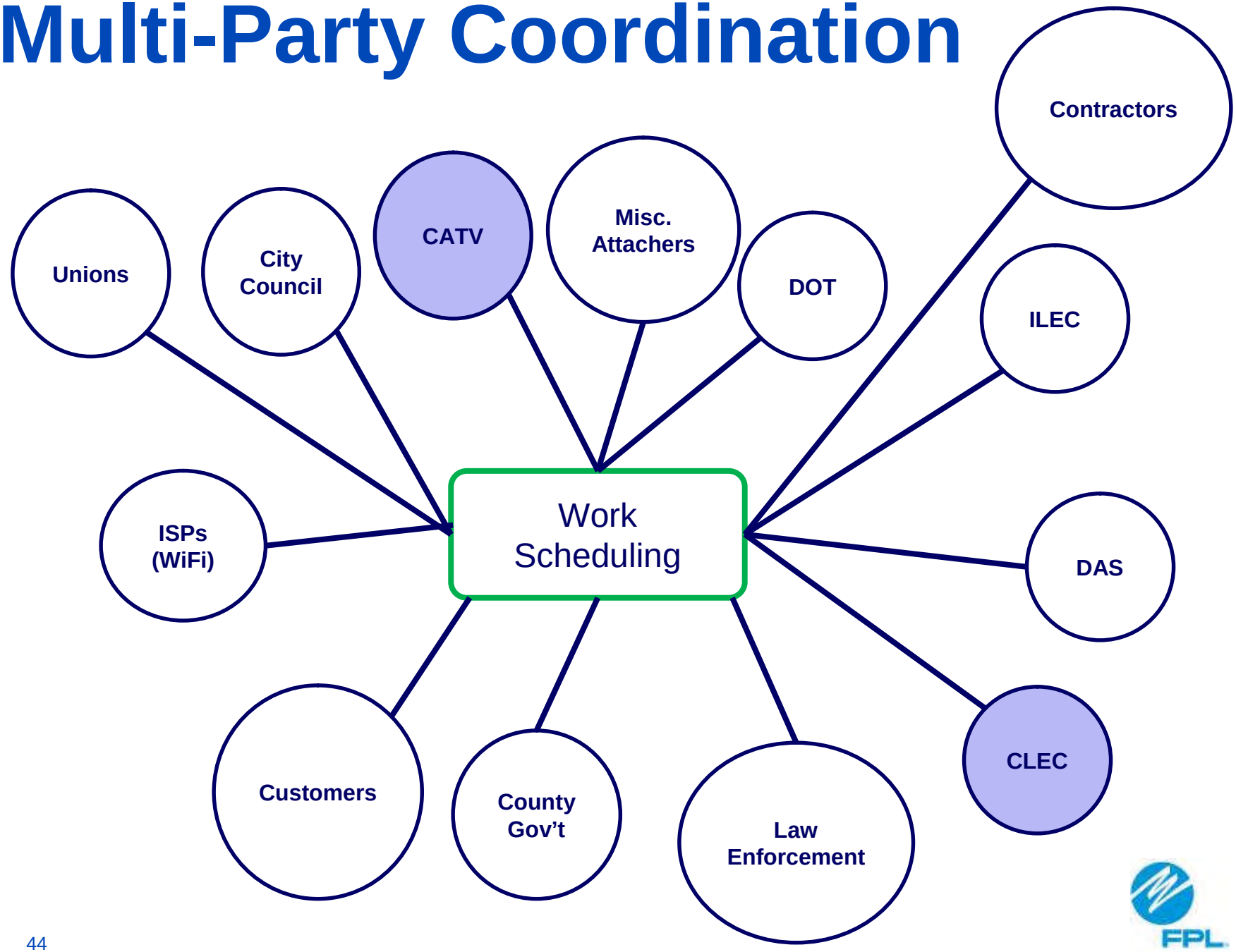
Reality:

No one project or pole is like another – uniform rules do not work.

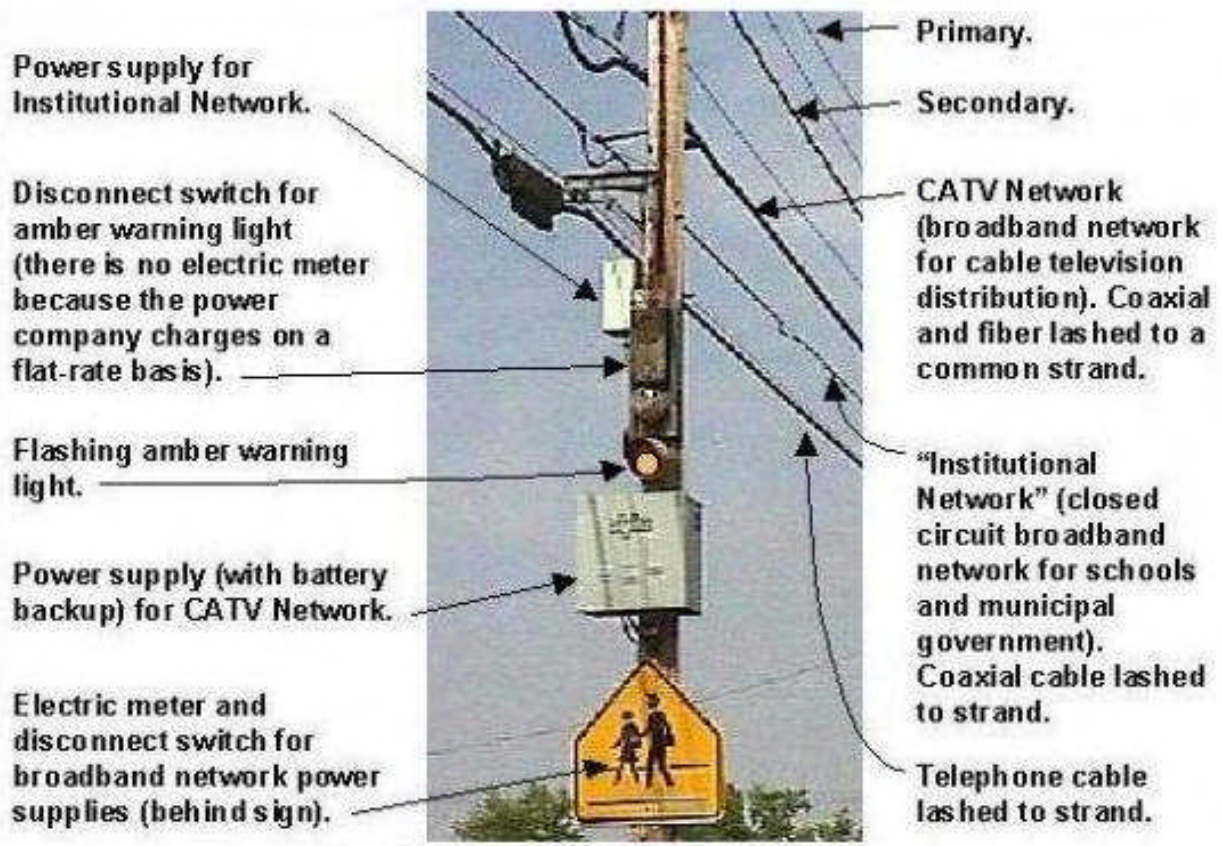
Solution:

Leave work scheduling and coordination to local cooperation.

Multi-Party Coordination



Multi-Party Coordination



Sun Prairie, Wisconsin, 1998

Example 1

Multi-Party Coordination

Brooklyn, New York, 2001

Example 2

Coordination ≠ Deadlines

Not FCC Regulated

Not FCC Regulated

Not FCC Regulated

Scheduling & Coordination

Myth

45 day make-ready timeline is fair

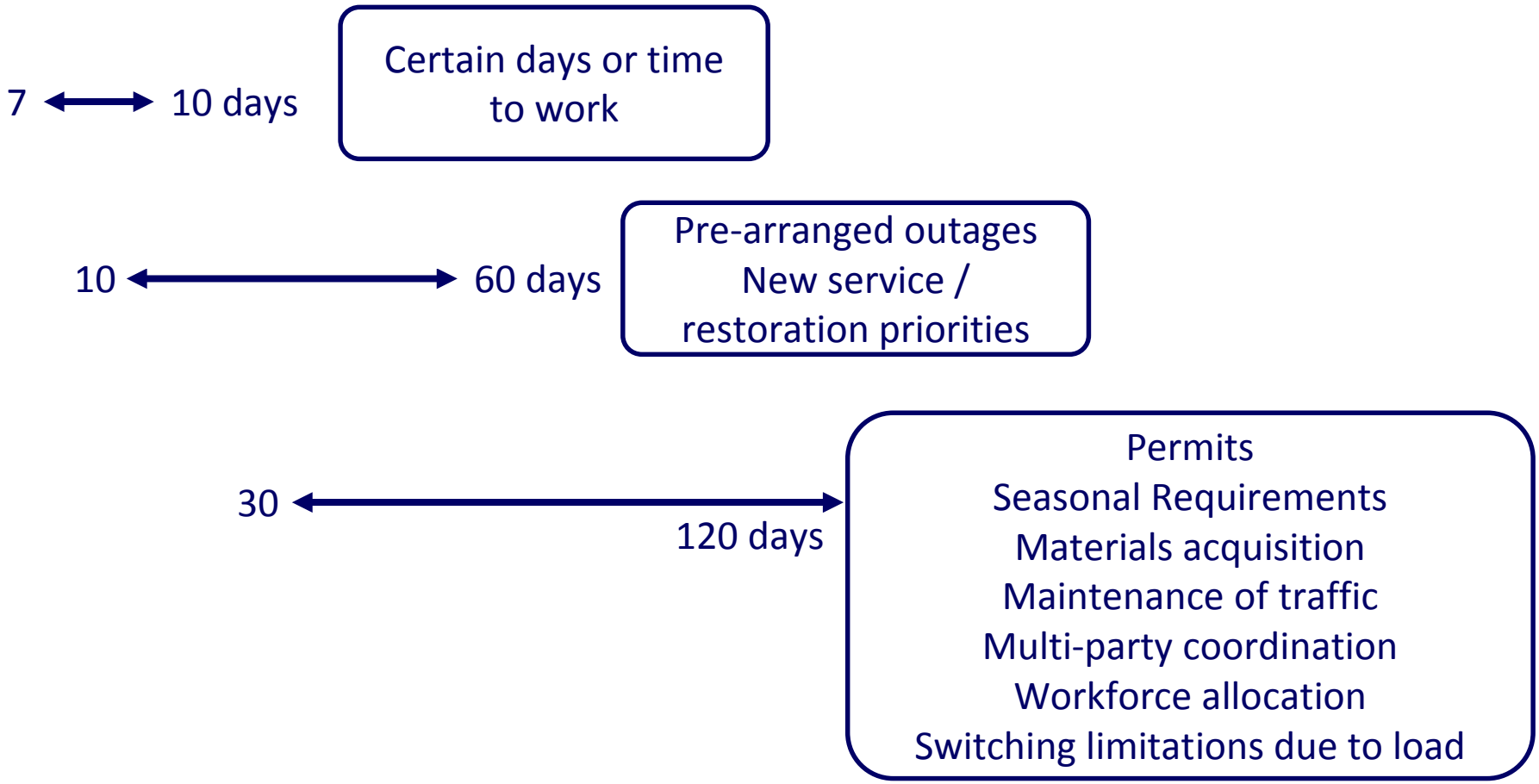
Reality

***Maybe*: If simple communication space rearrangement**

NO: If power space make-ready or pole change-out

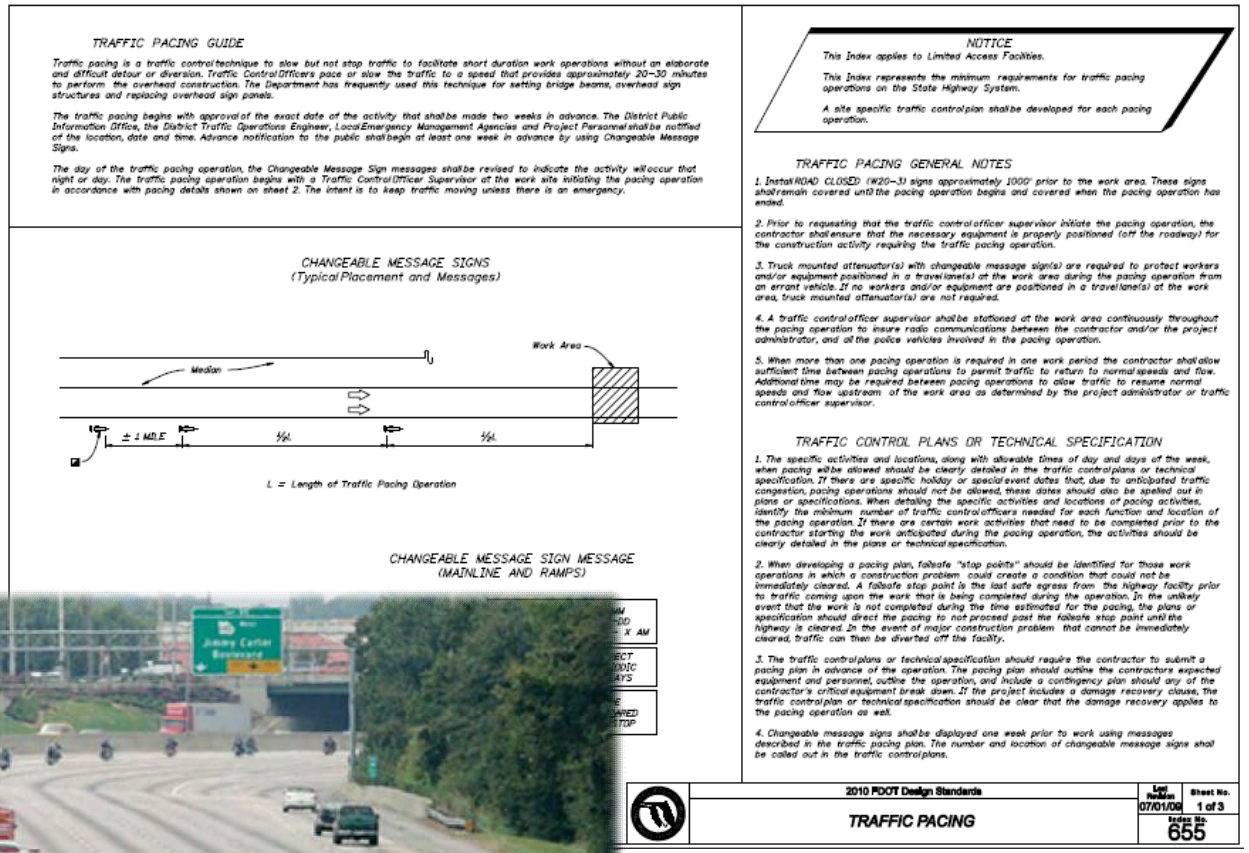
Timeframe to Complete Make-Ready

Pole Change-Out / Power Space Make-Ready ≠ Deadlines



Timeframe to Complete Make-Ready

Seasonal Limitations



TRAFFIC PACING GUIDE

Traffic pacing is a traffic control technique to slow but not stop traffic to facilitate short duration work operations without an elaborate and difficult detour or diversion. Traffic Control Officers pace or slow the traffic to a speed that provides approximately 20–30 minutes to perform the overhead construction. The Department has frequently used this technique for setting bridge beams, overhead sign structures and replacing overhead sign panels.

The traffic pacing begins with approval of the exact date of the activity that shall be made two weeks in advance. The District Public Information Office, the District Traffic Operations Engineer, Local Emergency Management Agencies and Project Personnel shall be notified of the location, date and time. Advance notification to the public shall begin at least one week in advance by using Changeable Message Signs.

The day of the traffic pacing operation, the Changeable Message Sign messages shall be revised to indicate the activity will occur that night or day. The traffic pacing operation begins with a Traffic Control Officer Supervisor at the work site initiating the pacing operation in accordance with pacing details shown on sheet 2. The intent is to keep traffic moving unless there is an emergency.

CHANGEABLE MESSAGE SIGNS
(Typical Placement and Messages)

Work Area
Median
± 1 MILE
½L
½L
L = Length of Traffic Pacing Operation

CHANGEABLE MESSAGE SIGN MESSAGE
(MAINLINE AND RAMPS)

NOTICE

This Index applies to Limited Access Facilities.

This Index represents the minimum requirements for traffic pacing operations on the State Highway System.

A site specific traffic control plan shall be developed for each pacing operation.

TRAFFIC PACING GENERAL NOTES

1. Install ROAD CLOSED (W20–3) signs approximately 1000' prior to the work area. These signs shall remain covered until the pacing operation begins and covered when the pacing operation has ended.

2. Prior to requesting that the traffic control officer supervisor initiate the pacing operation, the contractor shall ensure that the necessary equipment is properly positioned (off the roadway) for the construction activity requiring the traffic pacing operation.

3. Truck mounted attenuator(s) with changeable message sign(s) are required to protect workers and/or equipment positioned in a travel lane(s) at the work area during the pacing operation from an errant vehicle. If no workers and/or equipment are positioned in a travel lane(s) at the work area, truck mounted attenuator(s) are not required.

4. A traffic control officer supervisor shall be stationed at the work area continuously throughout the pacing operation to ensure radio communications between the contractor and/or the project administrator, and all the police vehicles involved in the pacing operation.

5. When more than one pacing operation is required in one work period the contractor shall allow sufficient time between pacing operations to permit traffic to return to normal speeds and flow. Additional time may be required between pacing operations to allow traffic to resume normal speeds and flow upstream of the work area as determined by the project administrator or traffic control officer supervisor.

TRAFFIC CONTROL PLANS OR TECHNICAL SPECIFICATION

1. The specific activities and locations, along with allowable times of day and days of the week, when pacing will be allowed should be clearly detailed in the traffic control plans or technical specification. If there are specific holiday or special event dates that, due to anticipated traffic congestion, pacing operations should not be allowed, these dates should also be spelled out in plans or specifications. When detailing the specific activities and locations of pacing activities, identify the minimum number of traffic control officers needed for each function and location of the pacing operation. If there are certain work activities that need to be completed prior to the contractor starting the work anticipated during the pacing operation, the activities should be clearly detailed in the plans or technical specification.

2. When developing a pacing plan, failsafe "stop points" should be identified for those work operations in which a construction problem could create a condition that could not be immediately cleared. A failsafe stop point is the last safe egress from the highway facility prior to traffic coming upon the work that is being completed during the operation. In the unlikely event that the work is not completed during the time estimated for the pacing, the plans or specification should direct the pacing to not proceed past the failsafe stop point until the highway is cleared. In the event of major construction problem that cannot be immediately cleared, traffic can then be diverted off the facility.

3. The traffic control plans or technical specification should require the contractor to submit a pacing plan in advance of the operation. The pacing plan should outline the contractors expected equipment and personnel, outline the operation, and include a contingency plan should any of the contractor's critical equipment break down. If the project includes a damage recovery clause, the traffic control plan or technical specification should be clear that the damage recovery applies to the pacing operation as well.

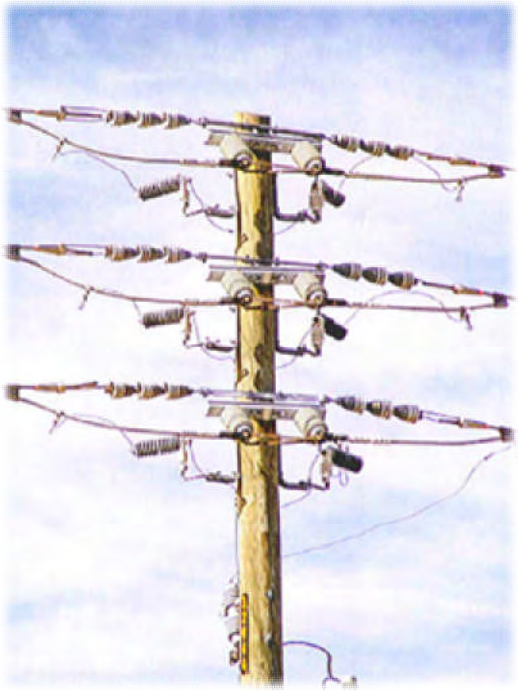
4. Changeable message signs shall be displayed one week prior to work using messages described in the traffic pacing plan. The number and location of changeable message signs shall be called out in the traffic control plans.

2010 FDOT Design Standards | Last Revision 07/01/09 | Sheet No. 1 of 3
TRAFFIC PACING | Index No. 655

Permit and Maintenance of Traffic Requirements

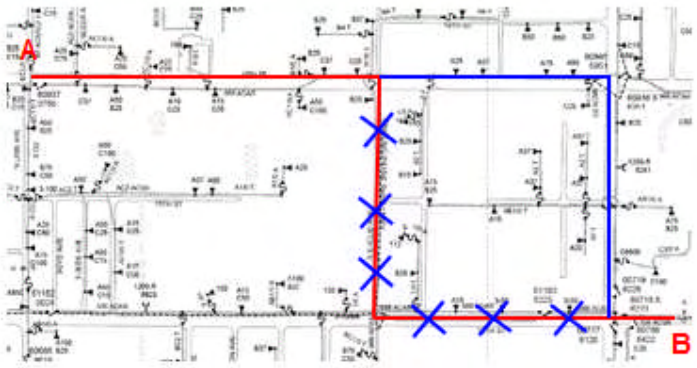
Timeframe to Complete Make-Ready

Material Acquisition



Switching Limitations

Collaboration Can Speed The Attachment Process



1 permit
8,000 attachments
Poor pre-planning
45 days = No way

The Real Solution

Key Takeaways

- **No one project or pole is like another**
  - ✓ Need flexibility depending on pole location, pole configuration and other conditions
- **If any deadlines are adopted, limit them to the communications space**
  - ✓ No deadlines in power space
- **Attachers must pre-plan and pre-engineer**
  - ✓ Collaboration and coordination with pole owner = faster speed-to-market

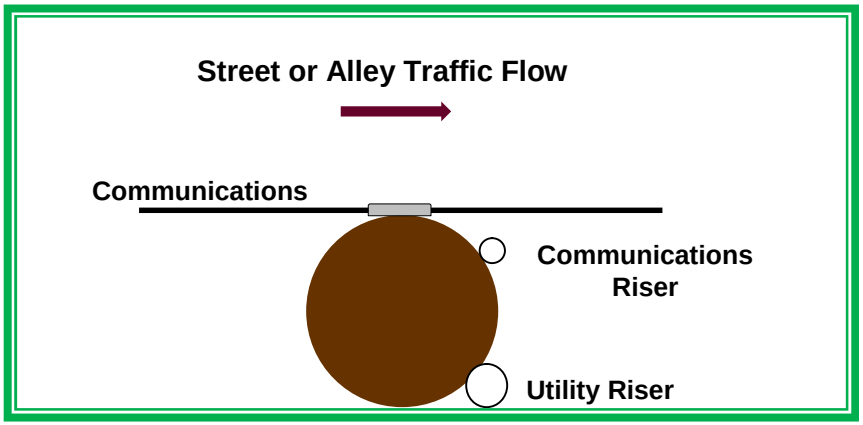
FPL

Performance of Make-Ready Work

Electric Utility/FCC Staff Meeting: November 16, 2010

Karen Flewharty
Joint Use Manager
Oncor Electric Delivery Company LLC

Attachers Impede Power Space Work



Reality: Joint Use Poles Are Not Widgets

Reality: Location Matters

Backyard Access Only: Must Climb Pole

Climbing obstructions

Fence

Vegetation, Tree trimming required

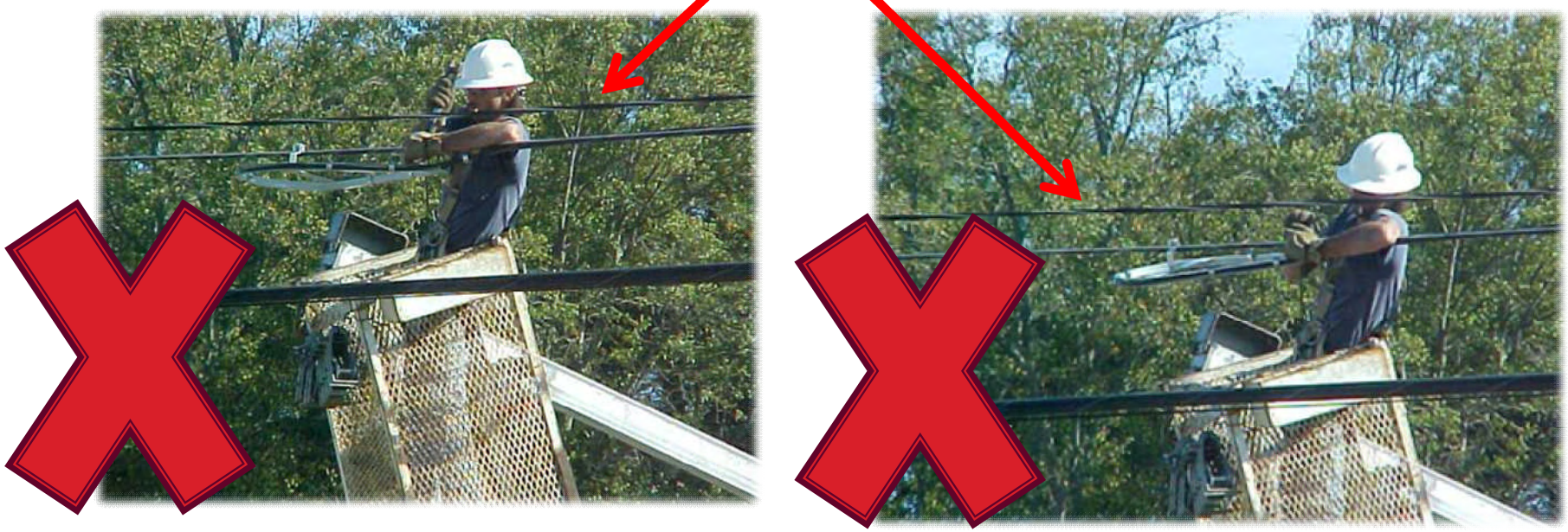
Multi-Party Coordination

Construction = Outage = Impacted Parties

Communications Contractor ≠ Power Contractor

NESC and OSHA Violations

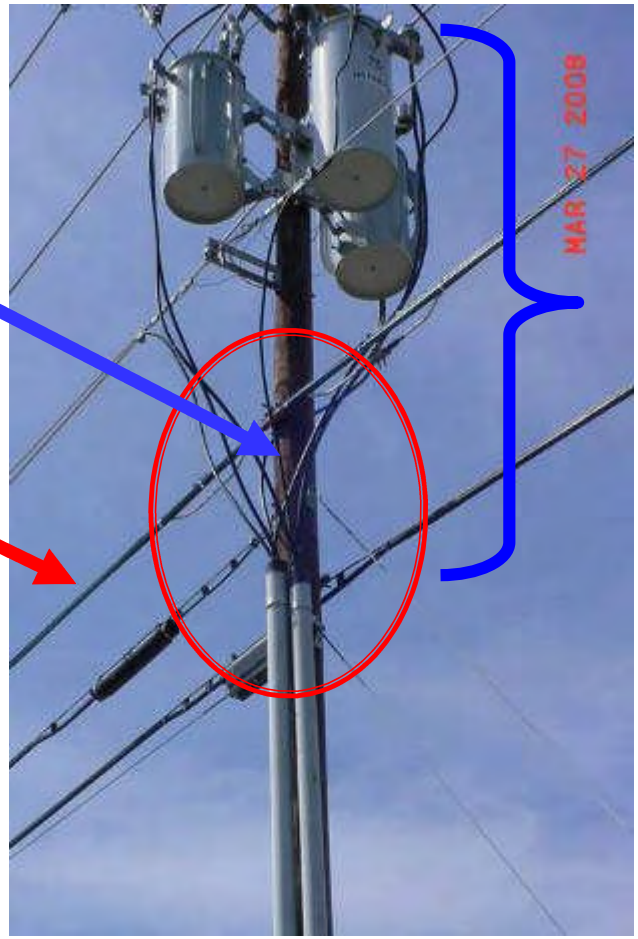
Secondary
Power Line



Speed-To-Market = DANGER!

Secondary power conductors

CATV facilities through power space



Power Space

Speed-To-Market = DANGER!

California Wildfires October 2007

- CPUC blames non-compliant electric facilities and cable attachments for deadly wildfires
- Cox overlashing made contact with electric primary
- 1,300 homes destroyed
- 200,000 acres burned
- 2 dead
- 300 victims file lawsuits

Palo Alto Lawsuit

PALO ALTO DAILY

Atherton | East Palo Alto | Los Altos | Los Altos Hills | Menlo Park | Mountain View | Portola Valley | Stanfor

Volume 12, Number 55 **WEDNESDAY, JANUARY 31, 2007**

Palo Alto man wins $29M lawsuit

Starts a company after accident

BY KRISTINA PETERSON

On the morning of May 1, 2002, Palo Alto resident Lupe Tuiaki chatted briefly with her husband, Sifa, who was working in Mendocino County to install cables. He told her he would call again that evening.

Instead Tuiaki, five months pregnant with the couple's second son, returned home from her job at Home Depot to find two police officers knocking on her door. Her husband had been involved in a work accident and was being airlifted to the burn unit at a hospital in Davis, they said.

"At first I didn't believe it because I had just been talking to him," Tuiaki said.

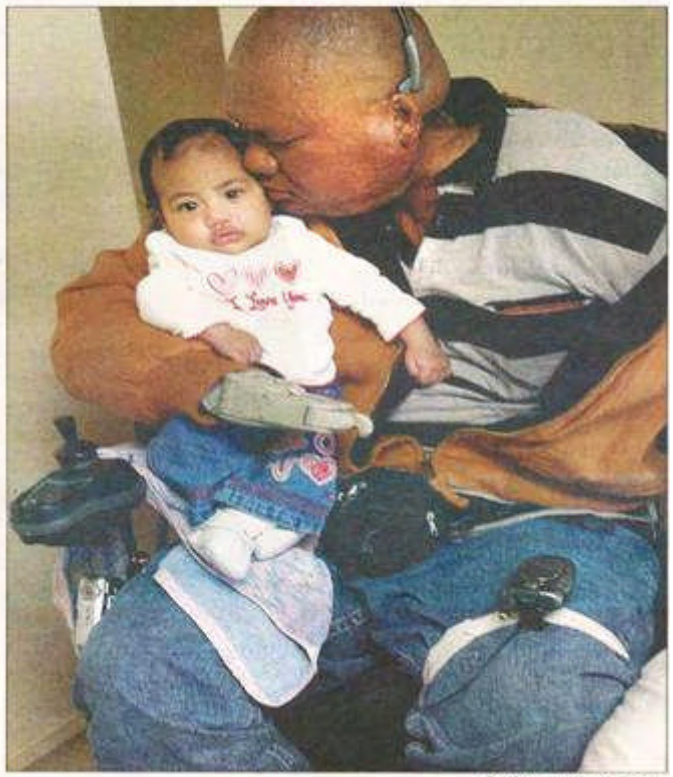
After seven months in the hospital, 14 surgeries and four years in court, the couple has transformed their lives to accommodate Sifa Tuiaki's devastating injuries.

On the day of the accident, Sifa Tuiaki had been riding in an elevated bucket, installing a structure to hold fiber optic cables. When his truck made a sharp turn between poles, Tuiaki was struck from behind by a 7,200-volt power line. It burned over 45 percent of his body and paralyzed him. Doctors had to partially amputate both of Tuiaki's arms.

But Tuiaki has not stopped earning a living in construction. Last year, he passed the test to obtain his contractor's license and started his own company, T & S Construction. The initials stand for his two sons, Tonga, 9, and Sifa Jr., 5.

"I was planning to get my own license before I got hurt," said Tuiaki.

SETTLEMENT, page 7



Victor Maccharoli / Daily News

Sifa Tuiaki holds his 4-month-old daughter, Loloahi, at his Palo Alto home Tuesday. Tuiaki received a $29 million settlement after being burned and paralyzed during an accident on the job in 2002. Since the accident, Tuiaki has operated a business, T & S Construction.

www.paloaltodailynews.com **NEWS**

SETTLEMENT

From page 1

who came to California from Tonga in 1993 to attend school.

Tuiaki's company started out with two employees, and now has a staff of up to 13 during the busy summer months. His wife helps out the business, typing up estimates and contracts.

> They were sent out there with one hand tied behind their backs.'
>
> *Timothy Tietjen, plaintiff's attorney*

The couple, who met at a Menlo Park church in 1997, adopted a baby girl from New Zealand. Loloahi Caroline turned 4 months old Saturday, her mother said. She said the family is working on plans to "rebuild the whole house," and Tuiaki wants to take the family on a trip to Hawaii, thanks to some extra cash.

This month, Tuiaki was awarded $29 million in a settlement agreement reached through mediation Jan. 12. Multiple defendants in the case, including Adelphia Communications and Pauley Construction, will pay Tuiaki $23 million after the agreement is finalized Feb. 20. An additional $6 million will come from the workers' compensation carrier, said Tuiaki's attorney, Timothy Tietjen.

Neither Adelphia nor Pauley Construction returned calls for comment Tuesday.

Tietjen said that a map given to workers did not show the location of the power line that hit Tuiaki.

"They were sent out there with one hand tied behind their backs," he said.

E-mail Kristina Peterson at kpeterson@dailynewsgroup.com.

What Went Wrong?

"All three defendants failed to provide make-ready sheets . . . preventing [plaintiff] and his crew from safely planning their work. Make-ready sheets are documents commonly used by cable lineman to determine the clearances between power and cable at work sites. Counsel asserted that the make-ready sheets would have indicated detailed information about the height of attachment of power and cable at every pole location along the line and they would have included note where trees needed to be trimmed."

www.verdictsearch.com

Key Takeaways

- Attachers Impede Power Space Work
- Joint Use Poles Are Not Widgets
- Location Matters
- Multi-Party Coordination Does Not Work On Deadlines
- Communications Contractors ≠ Power Space Contractors
- Safety Concerns Are Real and Trump Speed-to-Market

Administration of Attachers

November 16, 2010

Allen Bell, Georgia Power
Andy Russell, Duke Energy

GEORGIA POWER
A SOUTHERN COMPANY

Duke Energy®

I. Rearrangements are Labor Intensive and Complex

A. Physical Properties of Pole Attachments

1. Cables and Supporting Equipment

- Attachments vary in size and number of components

2. Positioning of Attachments

GEORGIA POWER
A SOUTHERN COMPANY

Duke Energy®

GEORGIA POWER
A SOUTHERN COMPANY

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GEORGIA POWER
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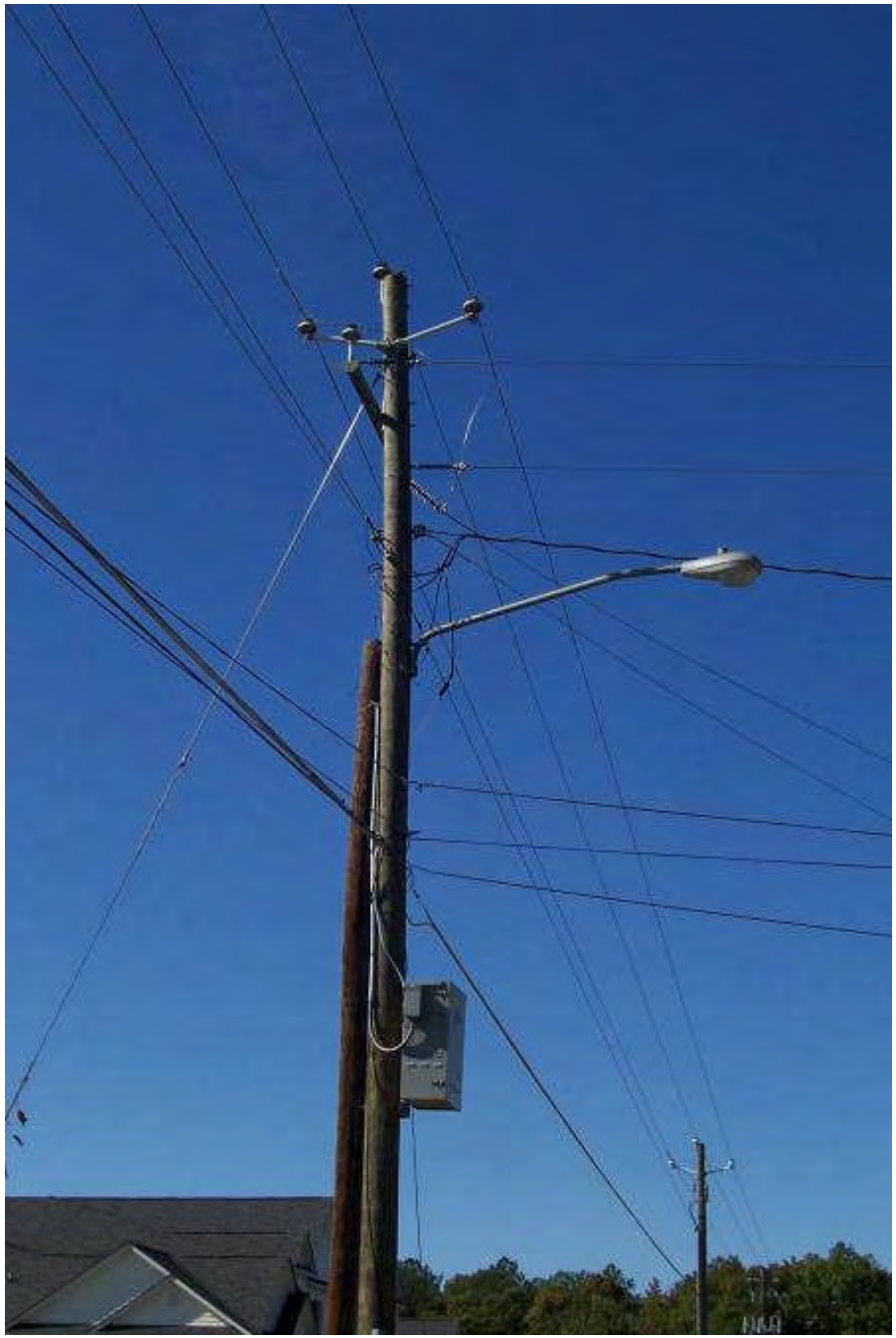

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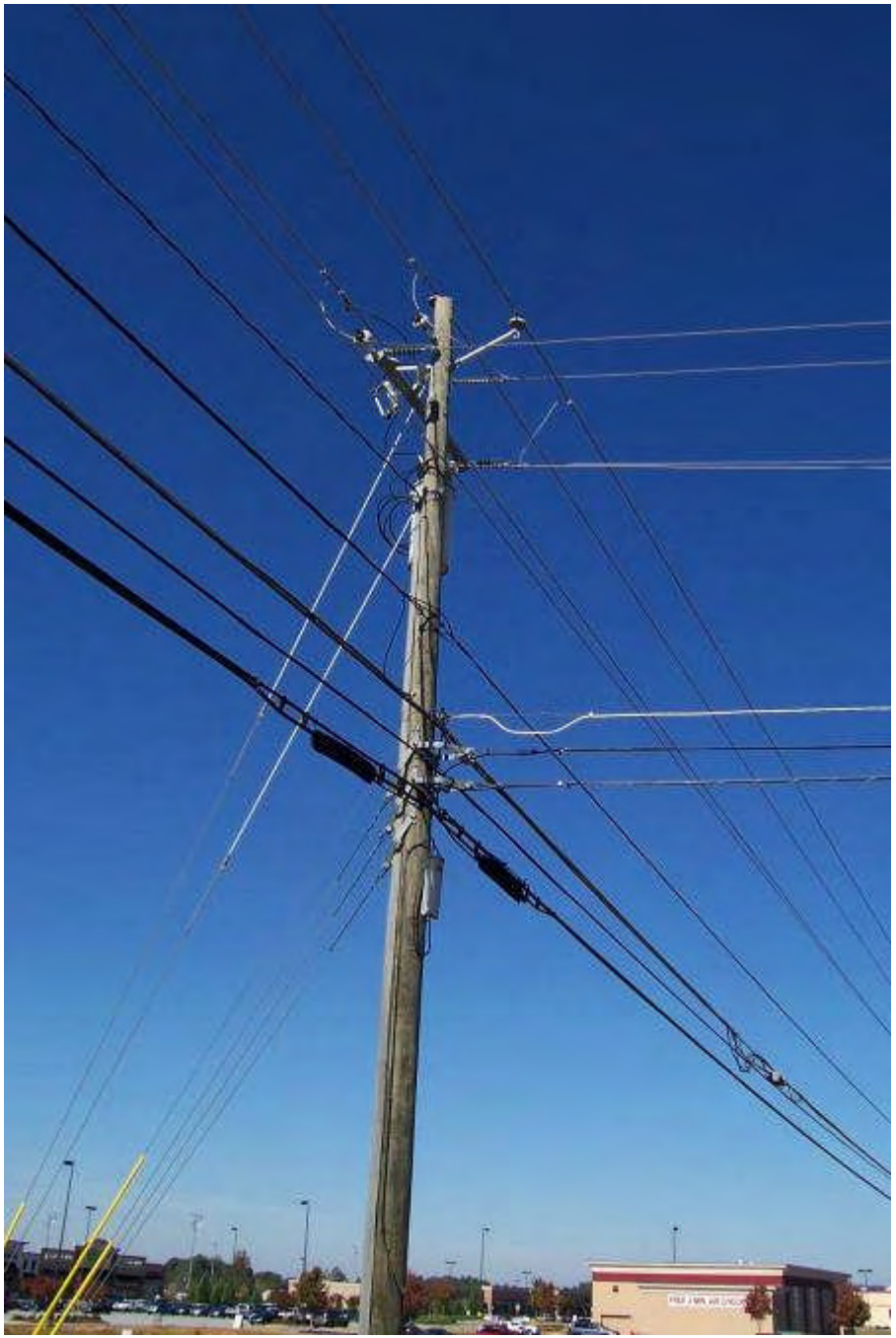

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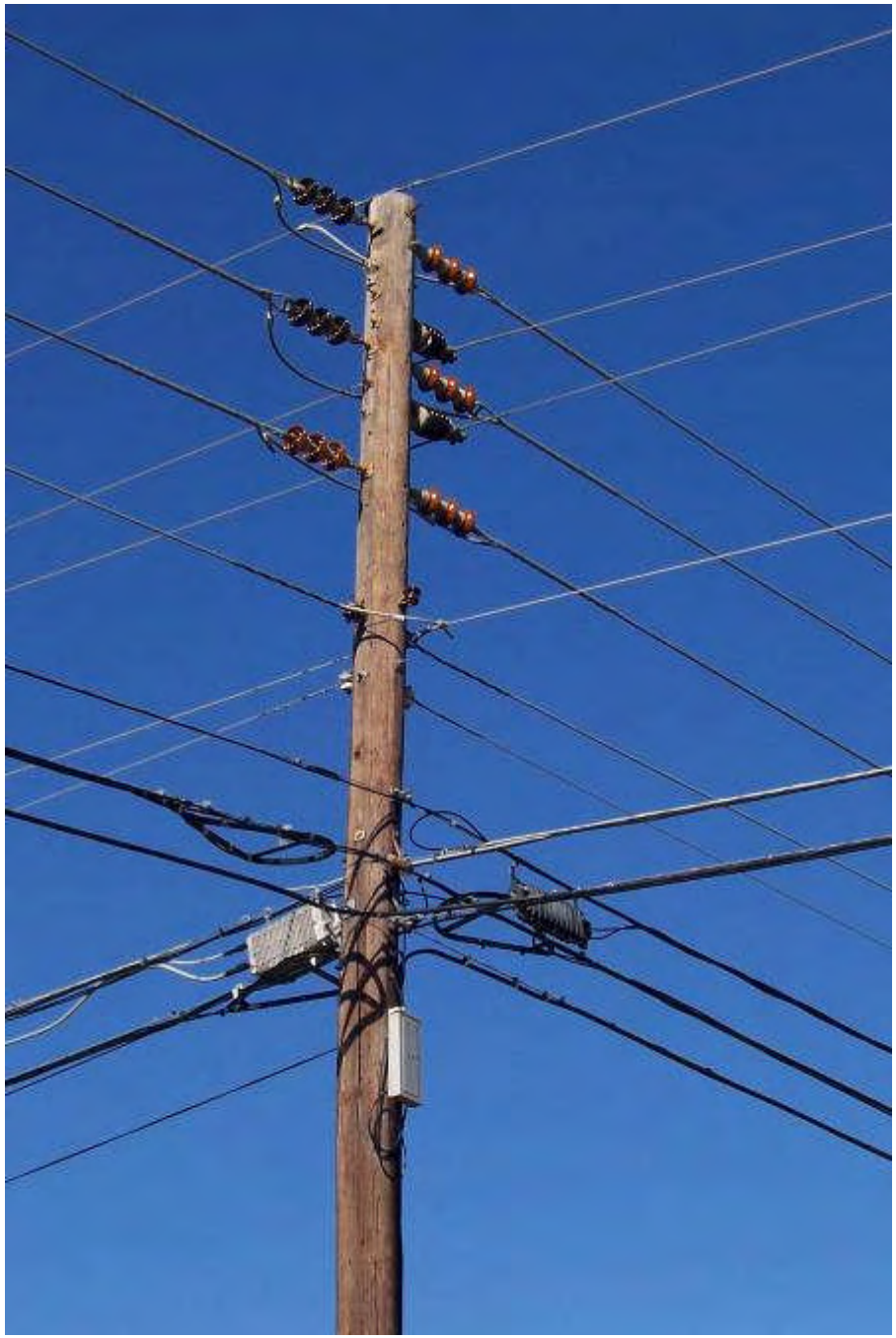

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I. Rearrangements are Labor Intensive and Complex

B. Multiple Pole Owners and Multiple Attaching Entities

1. Each Attacher Must be Involved in the Design Phase

2. Only the Attacher Can Determine How to Safely and Reliably Transfer Its Facilities

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I. Rearrangements are Labor Intensive and Complex

C. Potential Sources of Disagreements and Delays

1. Scheduling and Coordination

- Only the Attacher Can Estimate the Time Frame Needed to Attach

2. Invoicing and Payment

- New Attachers Request Firm Cost Estimates Before Committing to Any Route

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II. THE NEW ATTACHER IS BEST POSITIONED TO EXECUTE A SCHEDULE FOR REARRANGEMENTS

A. Incentive To Demand Prompt Action by Existing Attachers

B. Resources Dedicated to Network Build

C. Direct Payment to Affected Parties

D. The Pole Owner Does Not Control Existing Attachers

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III. The FCC's Rules Should Not Shift the Burden to the Pole Owner

A. Proposed Framework Would Not Expedite Pole Access

B. Proposed Framework Would Unfairly Expose the Pole Owner

C. Proposed Framework Must be Enforceable by the New Attacher

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Other Attachment Issues

Unauthorized Attachments

Boxing & Bracketing

Cindi Salas, CenterPoint Energy

Eric O'Brien, Tampa Electric

What Is An Unauthorized Attachment?

- An attachment or modification made without following the permitting process and avoids engineering analysis and inspection.

- A threat to the safety of workers and reliability of electric distribution infrastructure

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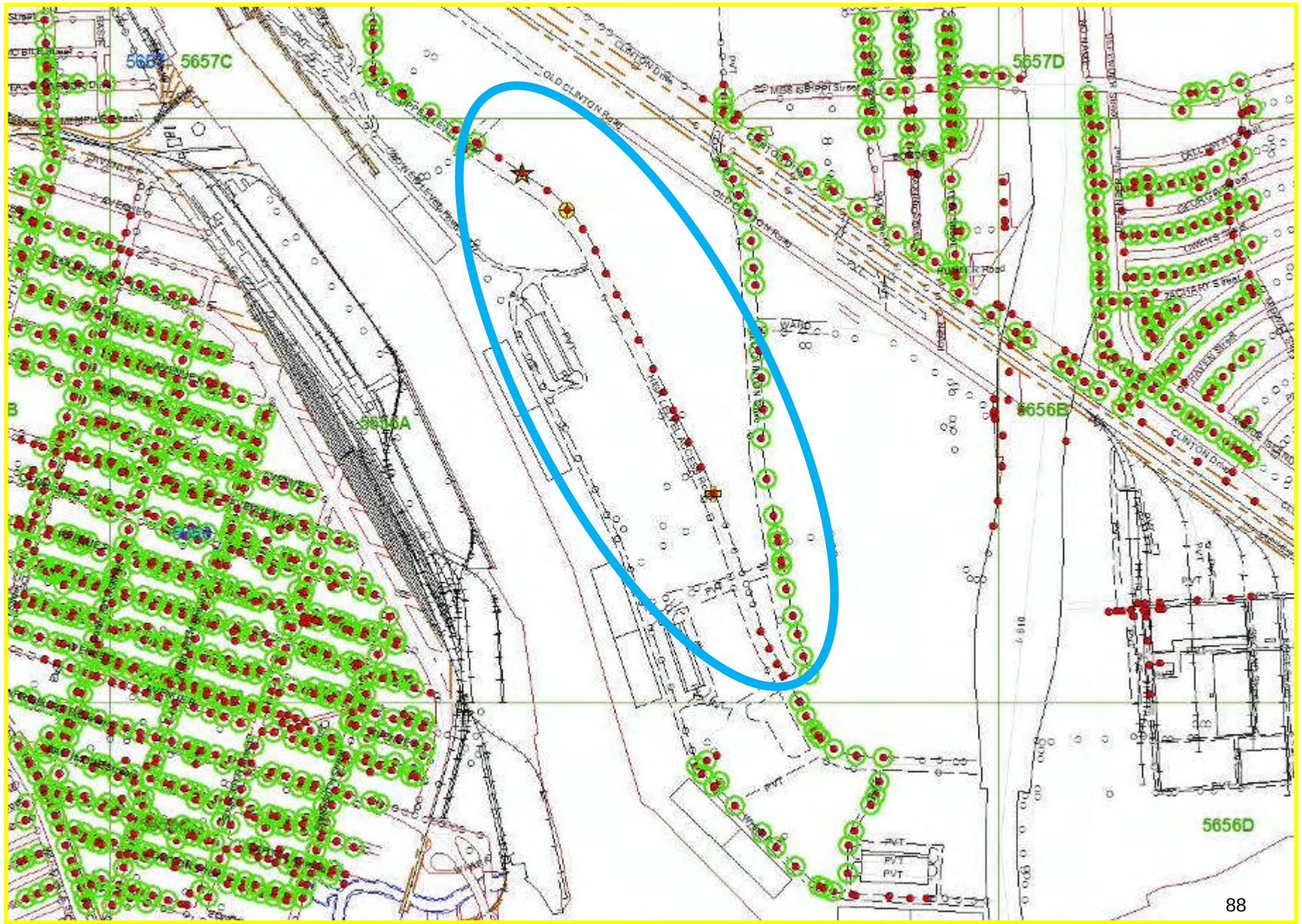
5657C
5657D
5656B
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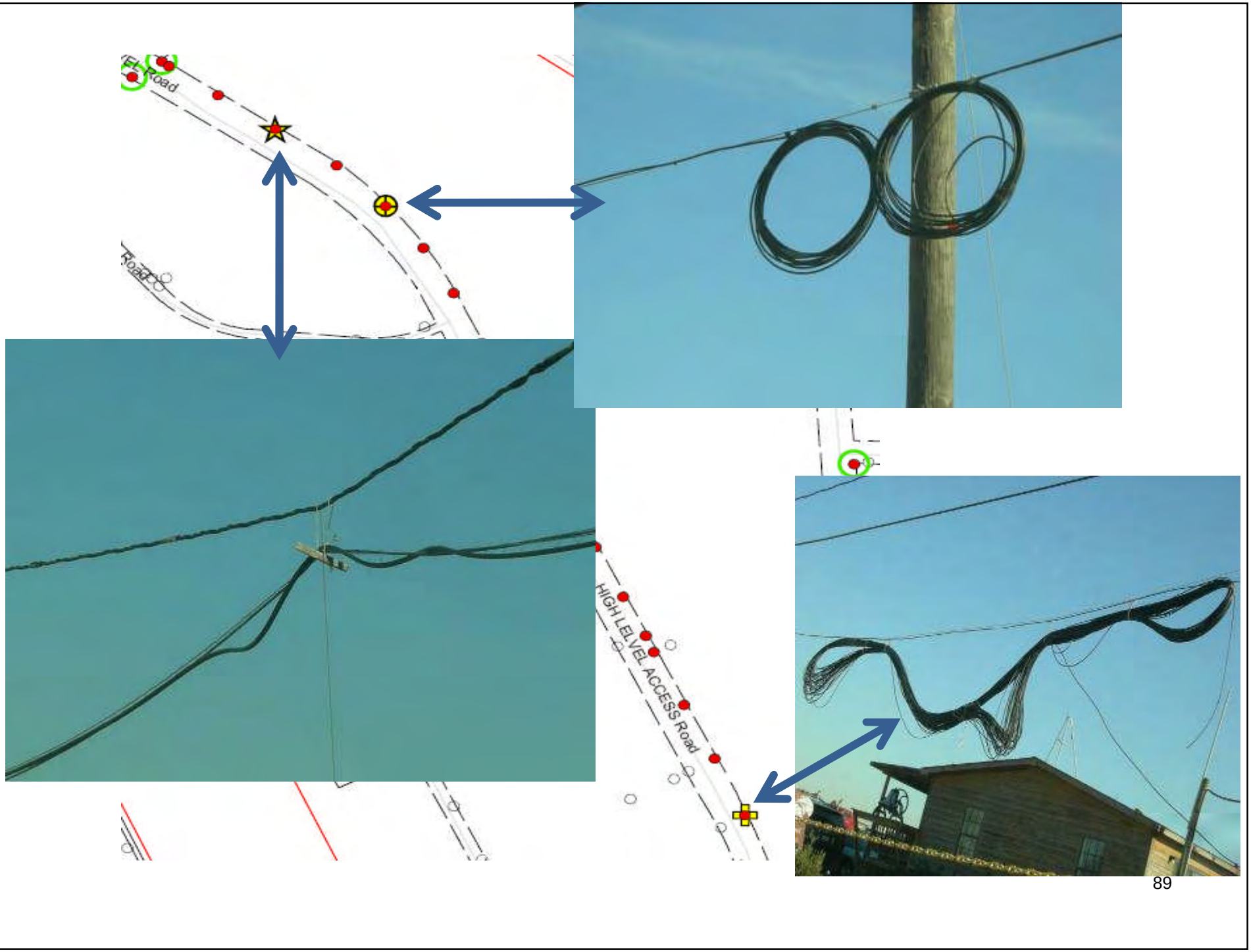
5656D
OLD CLINTON ROAD
CLINTON DRIVE
PVT


Road
Road
HIGH LELVEL ACCESS Road

Pole Attachment Audits

Company	Pole Population	Licensed Attachments	Number of Unreported Attachments	Percent of Unreported Attachments	
CenterPoint	>1,000,000	431,000	129,000	30%	2004-2008 Audit
	>1,000,000	123,000	15,000	12%	2009-2013 Audit Underway (with 250,000 poles audited)
TECO	329,000	365,000	> 30,000	10%	2007-2008 Audit

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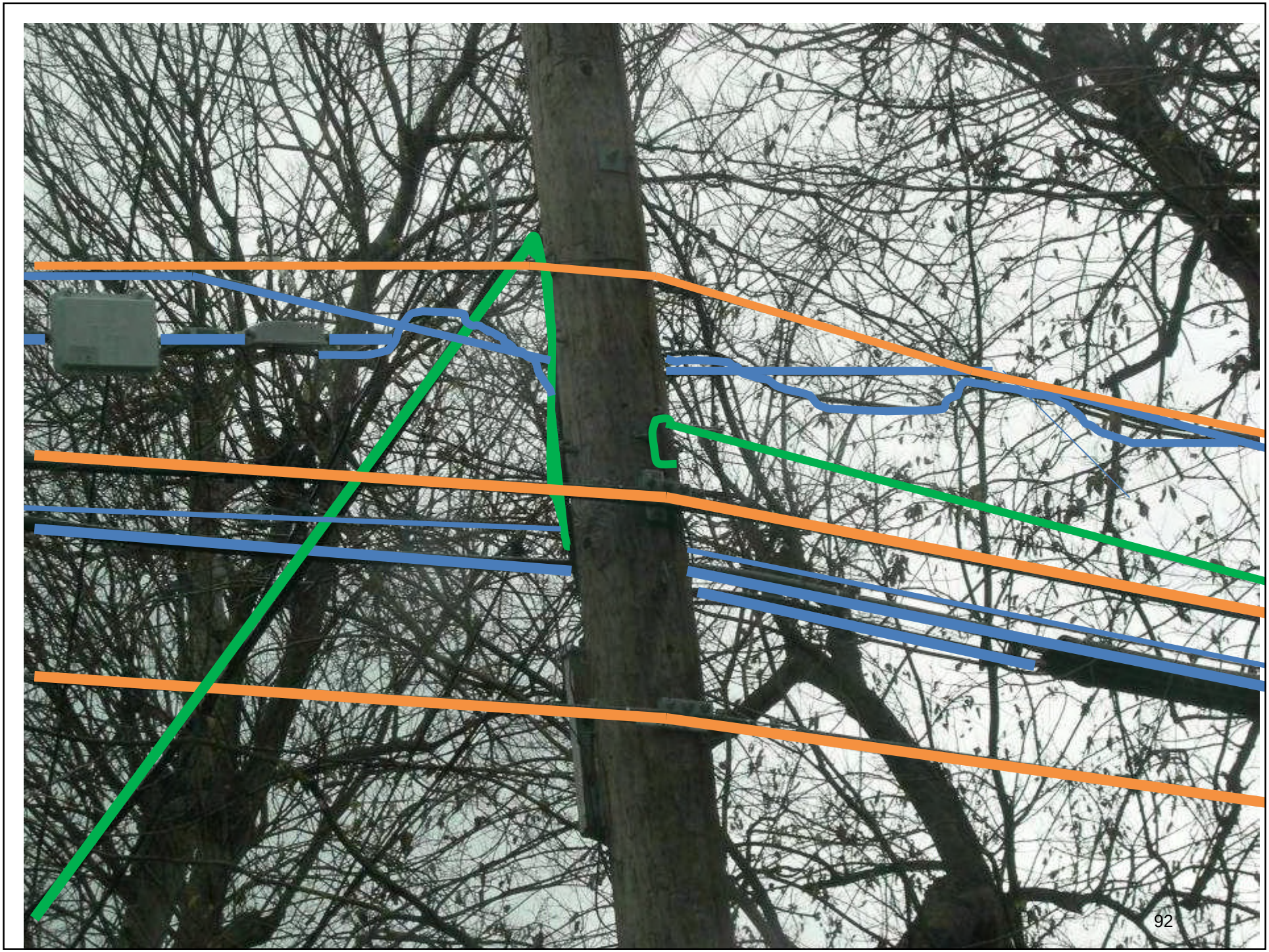
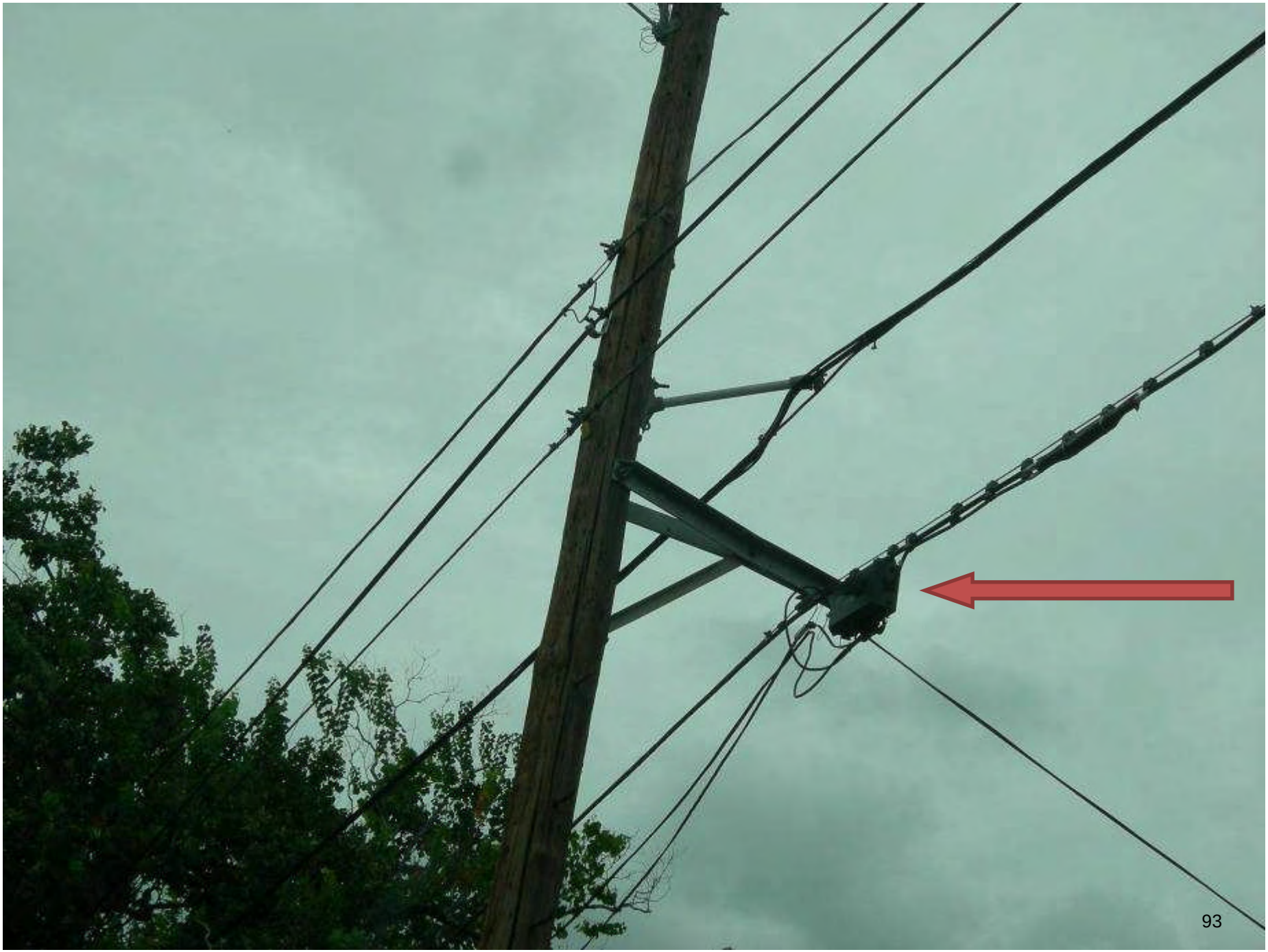
Boxing and Bracketing

- What is boxing?
  - Placement of communications lines on two or more sides of a pole
  - Impediment to pole climbing; slows change-out process; jeopardizes hurt-man rescue
- What is bracketing?
  - Use of extension arms in communications space
  - Impediment to pole climbing; limits use of bucket truck





Pole Loading:
More than Meets the Eye

Mythbusting Wind Loading

- Myth: Fiber attachments are light and cause very little stress to a pole.
- Fact: It's not just the **weight** of the fiber; it's also the **wind loading** created by the surface area.
- Example: The wind loading force of a 1" fiber on a ¼" messenger with 200' spans (weight 116 lbs) is equal to a 45' Class 4 wood pole which (weight 1,570 lbs) has an average diameter of 9".

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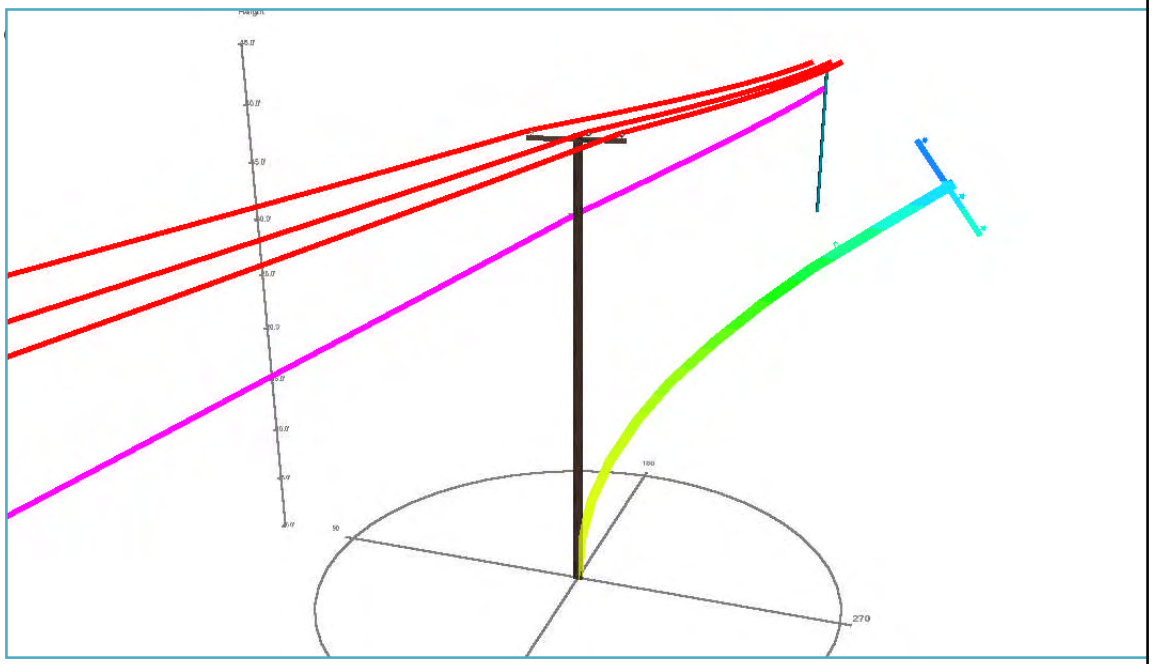
Common Pole Loading Example

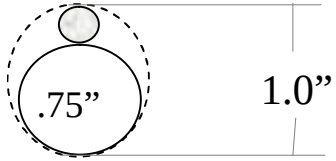
- **Light grade B 45’ Class 4 pole 200’ spans**
- **Three Phase Tangent 336 ACSR Conductor with a 2/0 AAAC Neutral**



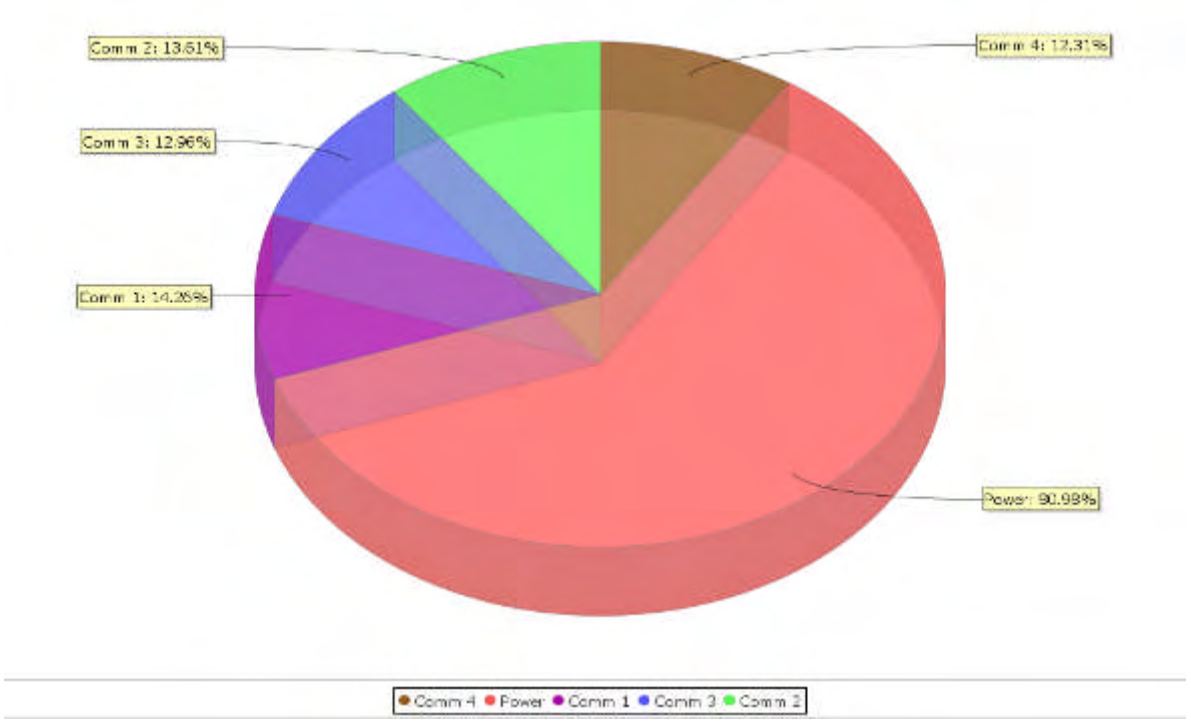
Loading results

Loading 80.98%

Multiple Attachments



- **Comm 1 95.24%**
- **Comm 2 108.85%**
- **Comm 3 121.81%**
- **Comm 4 134.12%**



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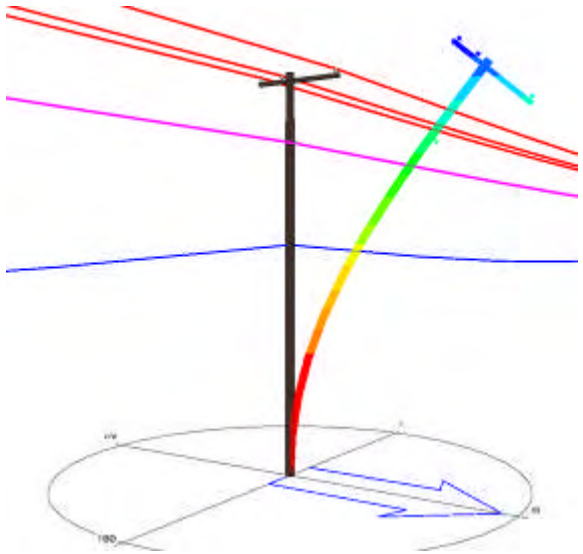
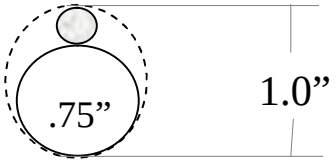
Overlash

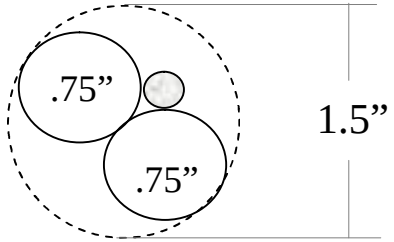
- **Light grade B - 45’ pole 200’ spans**
- **Three Phase Tangent 336 ACSR Conductor 2/0 Neutral – One 1” Comm attachment with overlash**
- **1” Comm 93%**
- **1.5” Ideal Overlash 102%**
- **1.75” Max Overlash 106%**



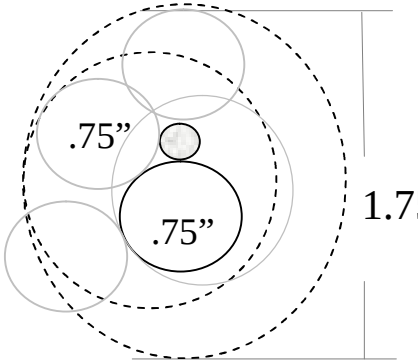
Effective Cable Diameter Existing Bundle



Ideal Overlash Bundle



Possible Overlash Bundle



Mythbusting Wind Loading

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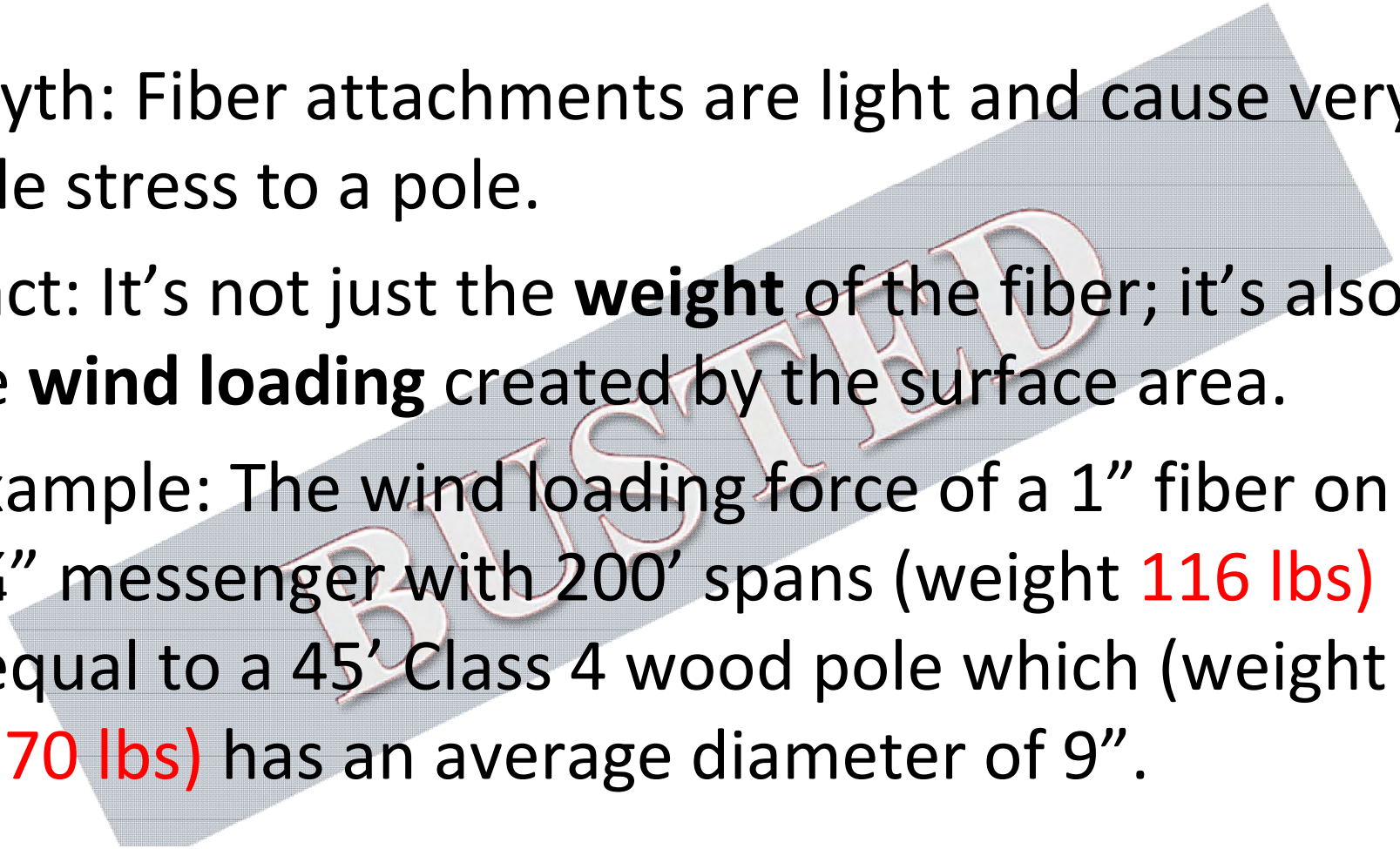

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Wrap-Up

- Unauthorized attachments circumvent pre-engineering
  - Can and does create safety and reliability problems
  - Pole owners need deterrent mechanisms
- Boxing and bracketing in communications space complicate maintenance and make-ready
  - Pole owners should be able to prohibit

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FPL

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nationalgrid

ONCOR

Pole Attachment Realities: Electric Utility Safety and Reliability

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