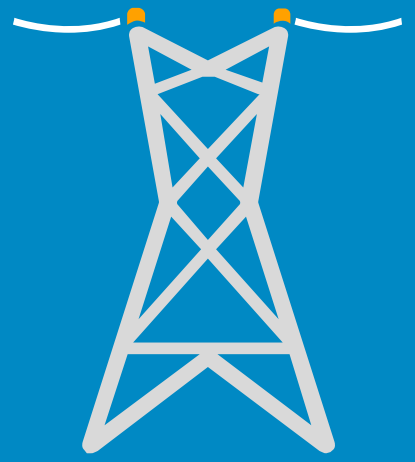
Pacific Gas and Electric Company®



# PSOS-0451

## SYSTEM INSPECTIONS

### ET GROUND CONTRACTOR PROCESS

2023 Program Year Version 1.0

# Welcome to 2023 System Inspection Training

| | | | |
|---|---|---|---|
|  | **Mobile Iron (Security)** |  | **Construct App**<br>*Use to view pending EC/LC Notifications* |
|  | **F5 (Security):** *Make sure slider is turned on* |  | **Maps+**<br>*Review, Create, and Update Alerts* |
|  | **Apps@Work**<br>*Use to download PG&E Applications* |  | **Smart Mobile Workforce**<br>*View System Inspections document offline* |
|  | **Outlook**<br>*Use to access PG&E e-mail* |  | **Google Earth**<br>*Satellite and Street View* |
|  | **Teams** *Use to access Systems Inspections channels* |  | **Issue Tracker (via SIHelpdesk channel in TEAMs)**<br>*Used to submit issues to Helpdesk team* |
|  | **Inspect App**<br>*Core Inspection Application* |  | **<u>For Employee us only:</u>**<br>**LiveSafe (Daily Health Check-in)**<br>*Tap continue, load other apps* |
|  | **Web at work** |  | **SharePoint** |

# Safety and Security Orientation

## Earthquake

- Drop
- Cover
- Hold

## Fire

- Exits, escape routes, evacuation plan
- Compliant fire extinguisher

## Medical Emergency

- First aid/CPR
- 911/share location
- AED

## Security

- Active shooter—get out, hide out, take out*
- Use badge—don't tailgate
- Lock computer
- Report Phishing emails
- Protect data privacy

## Ergonomics

- 30/30
- Proper ergo
- RSI Guard

## COVID-19

- Handwashing/masking
- CAL-OSHA regulations, local county health orders
- Visit COVID-19 website
- HR Helpline 415-973-4357

## Emergency Planning

Update emergency contacts and personal emergency preparedness plan

## Psychological Safety

- Care for each other
- Look out for one another
- Create a safe space for all
- Welcome new ideas from everyone
- Practice self-care

On the road, off the phone.

Follow the Keys to Life

# EVERYONE AND EVERYTHING IS ALWAYS SAFE

Delivering for our hometowns. Serving our planet. Leading with love.


## KEYS TO LIFE

1. Conduct pre-job safety briefings prior to performing work activities.
2. Follow safe driving principles and equipment operating procedures.
3. Use personal protective equipment (PPE) for the task being performed.
4. Follow electrical safety testing and grounding rules.
5. Follow clearance and energy lockout/tagout rules.
6. Follow confined space rules.
7. Follow suspended load rules.
8. Follow safety at heights rules.
9. Follow excavation procedures.
10. Follow hazardous environment procedures.

# Getting Started

**Get Acquainted**

**Record Attendance**

# Ground Rules

**What is expected?**

- Ensure safety first
- Silence cell phones
- Be prepared and ready to work
- Return from breaks on time
- Eliminate distractions
- Act respectfully
- Act professionally
- Choose a positive attitude
- Avoid profanity
- Speak up if you have questions
- If you are listening to this presentation while driving, you must pull over and park in a safe and legal location

# Course Objectives

**When you complete this course, you will be able to:**

- Understand the procedures to perform a Transmission Line Inspection
- Understand when and how to document Compelling Abnormal Conditions and Third-Party Infractions
- Understand your tasks
  - ✓ Start of your shift
  - ✓ While Performing Detailed Inspections
  - ✓ End of your shift
- Learn when and how to
  - ✓ Use Job Aids
  - ✓ Escalate safety conditions
- Software Demo (SMW and Issue Tracker)

# Class Agenda

**Training begins**

**Break(s)**

**Training ends**

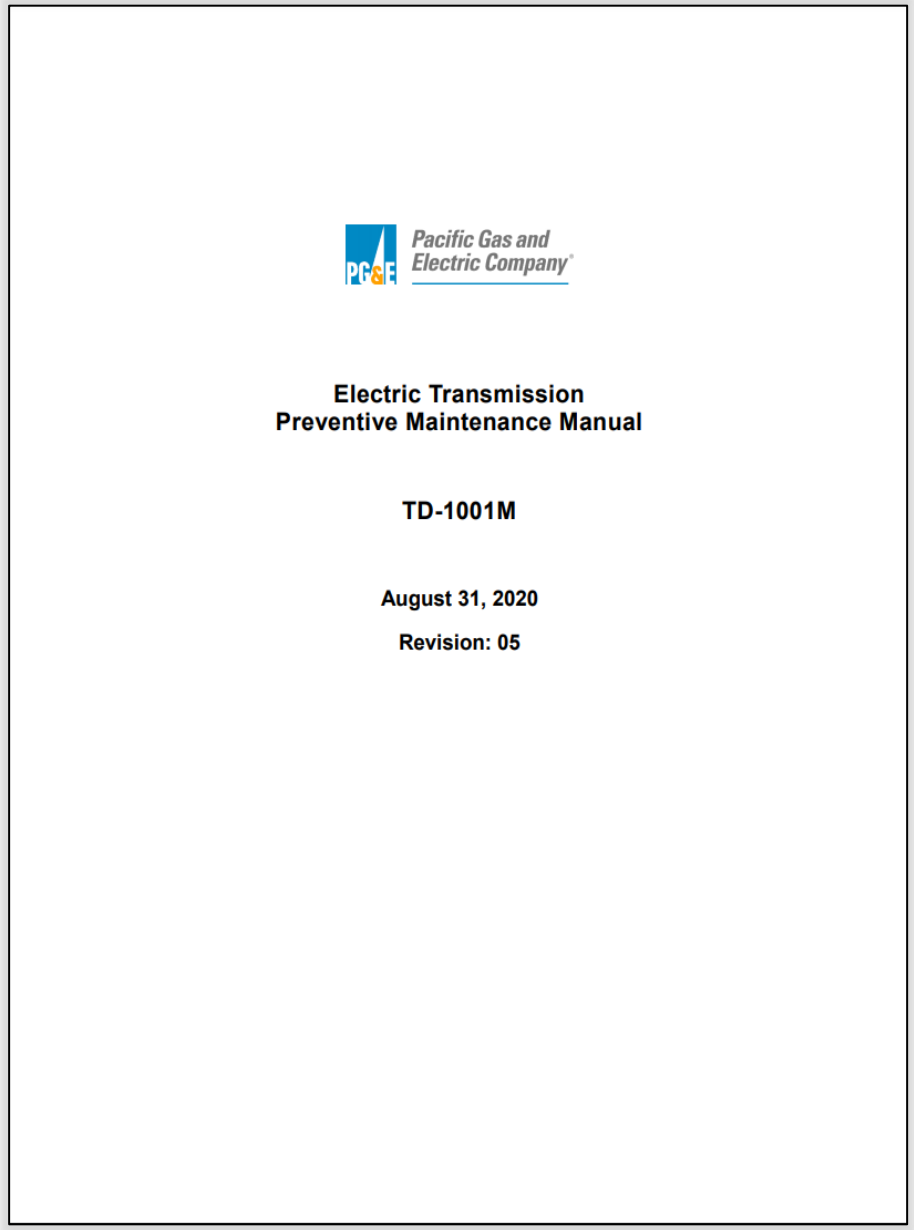
# Electric Transmission Preventative Maintenance (ETPM) Overview

# ETPM Manual

Your primary reference for transmission overhead inspections is the ETPM (TD-1001M) and the associated job aids.  Found in the SMW Application, the ETPM is stored in the library within the Transmission folder.

This Manual covers preventive maintenance for overhead and underground Electric Transmission Facilities. These facilities must be inspected in accordance with this Manual.

**Note**: TD-8123P-103, *Electric Transmission Line Guidance for Setting Priority Codes* supersedes sections 2.3.5.1 through 2.3.5.4, including Tables 3 and 4.


Pacific Gas and Electric Company

Electric Transmission
Preventive Maintenance Manual

TD-1001M

August 31, 2020

Revision: 05

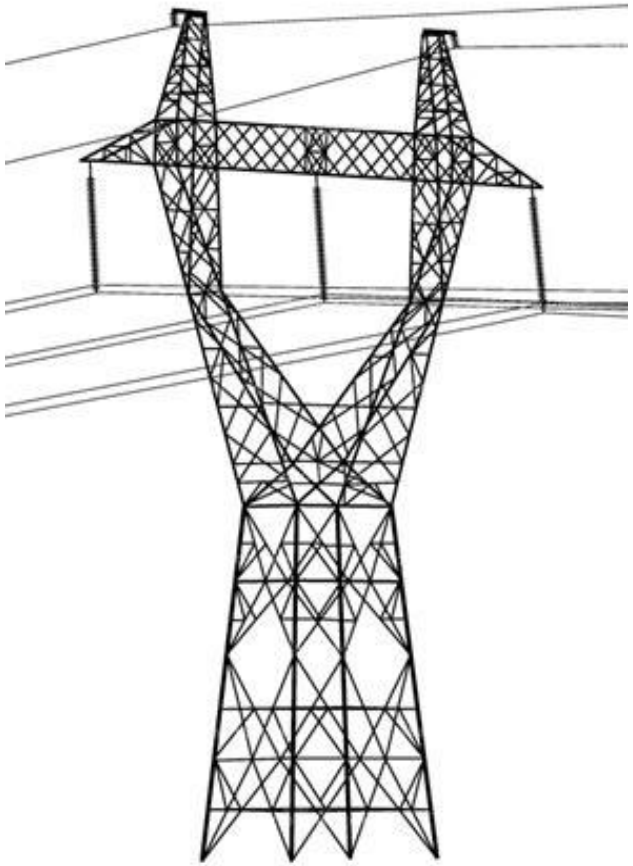
# Transmission Inspections – Program Elements

| | |
|---|---|
|  **Inspection** | Description: An **Inspection** is any preventative maintenance activities that include detailed visual observations of individual components, structures and equipment, operational readings; and component testing (i.e., hammer test, etc.) to identify abnormalities or circumstances that will negatively impact safety, reliability, or asset life. |
|  **Compelling Abnormal Condition** | Description: A Compelling Abnormal Condition is defined as being any Electric Transmission structure, conductors, equipment, components, vegetation and third-party condition that cause a safety or fire ignition risk that may adversely impact public safety and/or service reliability or asset life. |
|  **Duty to Act** | Description: While executing Transmission Inspections, when you observe obvious structural conditions on PG&E or Third-Party assets, whether this location is part of your assigned work, you have a **Duty to Act** to report the condition.<br>• For PG&E facilities, report conditions using the LC Notification form<br>• For Third-Party facilities, report conditions using the LC Notification form |

# Transmission Inspection Program

PG&E’s Transmission Inspections Program is a preventative maintenance program designed to perform Detailed Inspections on PG&E’s Transmission facilities.

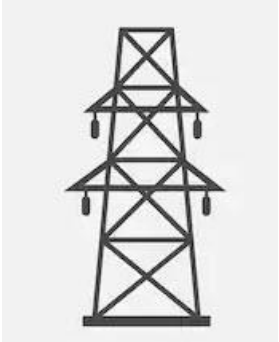
The Program uses a risk-based model that prioritizes enhanced inspection cycles based upon California’s High-Fire Threat District (HFTD) maps and other criteria.



# Overview

**Detailed Inspection has these major requirements:**

- Achieve an un-obstructed 360-degree view of the structure
- Achieve an un-obstructed view of the Conductors from structure to mid-span / termination point
- Assess field conditions
  - ➢ Identify and record compelling abnormal conditions and third-party infractions that negatively impact safety or reliability
  - ➢ Perform Minor Work if authorized to do so
  - ➢ Take photos of PG&E assets and compelling field conditions
  - ➢ Complete a Detailed Inspection Checklist to document your inspection results, observations, findings, photos.
  - ➢ Validate pending LC notifications



# Overview

**Use the Inspect App to:**

1. Record Checklist
2. Document Compelling Abnormal Conditions and Third-Party infractions
3. Review and Update pending LC notifications

**NOTE:** When a compelling abnormal condition is not listed on the Inspection Checklist, complete the Inspection Checklist according to normal processes and separately create an LC for the unique condition that was not identified in the Inspection Checklist.

# Roles and Responsibilities

**Contract Inspector**

- Works safely and adheres to safety protocols
- Performs inspections of Transmission Facilities
- Documents the result of each inspection using the Inspect App
- Submits corrective work (LC) notifications using the Inspect App (as needed)
- Notifies PG&E Lead when work assignments need to be adjusted
- Validate pending LC Notifications

# Roles and Responsibilities (continued)

**PG&E Lead, Inspection Review Specialist (IRS)**

- Provides guidance and manages escalations
- Ensures contractors are working safely
- Facilitate field training and classroom training for onboarding
- Acts as a primary contact for:
  - Safety Concerns
  - Access or Customer Issues
  - Emergency Priority-**A** Notifications
  - Technology Issues
  - Raptor Kill
  - Work Escalations
  - Mis-matched Operating Numbers

# Roles and Responsibilities (continued)

**PG&E Construction Manager (CM)**

- Work and resource planning
- Manages and schedules work assignments via Engage work assignment tool
- Work and resource coordinator for internal Supervisors and Contractors
- Coordinate with Vegetation and Aerial departments

**Contractor General Foreman (GF)**

- Acts as the primary contact for Safety Incidents
- Provides oversight and guidance for Contractors
- Attendance and Scheduling

# Hand-written Records

When using paper forms, the following is required:

- Use non-erasable black or blue ink pen.
- Do not erase or use white out.
  - If an error is made, white out is not acceptable. Instead, draw a line through the original information, write your initials and the date, and then write the correct information. Do not black it out completely.
- Paper records must be retained.
- Follow guidelines for turning in physical records.

# Knowledge Check

Let’s review:

**What is a compelling abnormal condition?**

A. Yard sale sign attached to a pole

B. Locked gates, barking dog, customer refusal

C. Any Electric Transmission structure, conductors, equipment, components, vegetation and third-party condition that cause a safety or fire ignition risk that may adversely impact public safety and/or service reliability or asset life.

# Knowledge Check

Let’s review:

**What is a compelling abnormal condition?**

A. Yard sale sign attached to a pole

B. Locked gates, barking dog, customer refusal

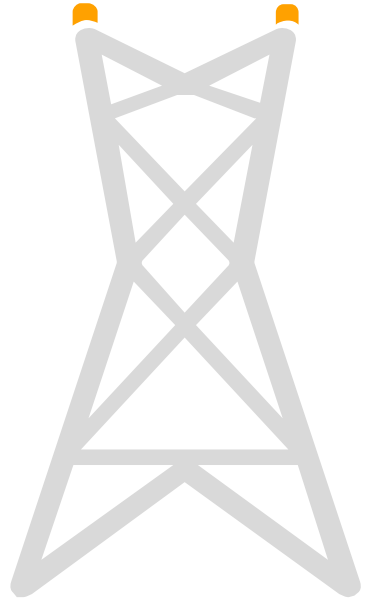
C. Any Electric Transmission structure, conductors, equipment, components, vegetation and third-party condition that cause a safety or fire ignition risk that may adversely impact public safety and/or service reliability or asset life.

# Inspection Approach

The proper method of inspection is determined by the type of structure and the type of inspection (e.g., detailed ground, climbing, aerial, infrared).

Inspectors perform the inspections by reviewing each asset (e.g., structure, conductor, foundation, hardware, insulator).

PGE Transmission System consists of Steel Towers, Steel Lattice Towers, Steel Poles, Multiple Poles, Light Duty Steel Pole, Fiberglass, and Wood Poles.



# Multi-Pole w Shared Crossarm

# Ground Inspection Checklist

## Multi-Pole Structures with Shared Crossarm Supporting Conductors

1. Multi-Pole Structures have 2 or 3 poles with a shared crossarm supporting conductors.

2. Multi-Pole Structures may be referred to as H-Frame structures.

3. This guidance supports all multi-pole structures with a shared crossarm supporting conductors.

**Requirement**: Inspect all attachments that are associated with the structure being inspected.

### Scenario # 1

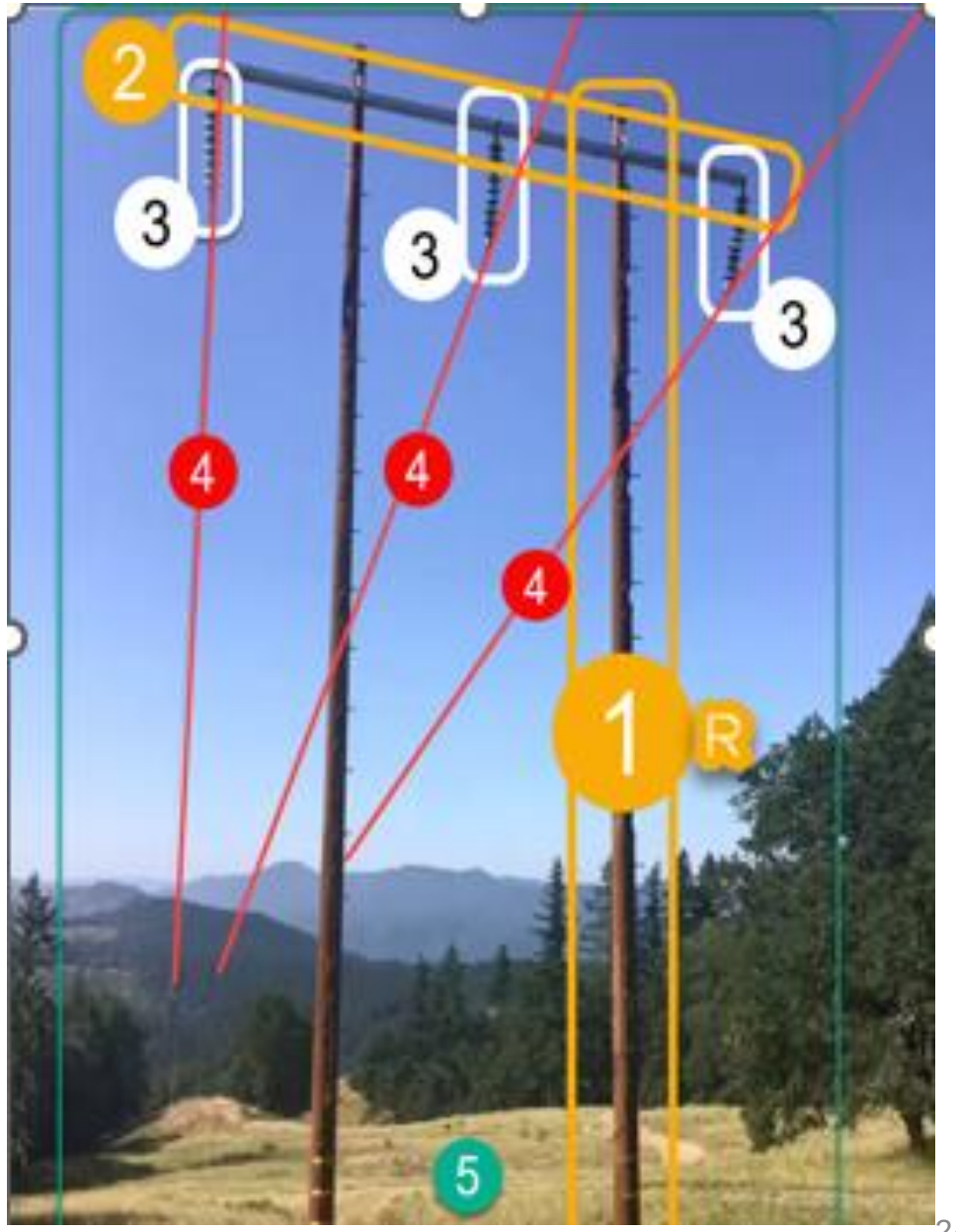
### Scenario # 2

# Ground Inspection Checklist

## Multi-Pole Structures with Shared Crossarm Supporting Conductors

### Scenario #1

1. Inspect the asset with the Orange Halo. This includes the structure (pole) and all attachments.
2. Inspect the shared crossarm because it is attached to the pole being inspected.
3. Inspect all insulators and other attachments including hardware, framing, signage, etc.
4. Inspect all attached conductors.
5. Inspect all foundation, guy/anchors, vegetation, etc.
6. Follow ETPM, Job Aids, Training Material, and Checklist requirements.
7. Photos:
   - ❑ Take photos showing all multi-pole structures
   - ❑ Take photos showing all attachments including the whole shared-crossarm
   - ❑ Take photos showing all strings (hot/cold ends) insulators per the checklist requirements
   - ❑ Take photos showing all lines

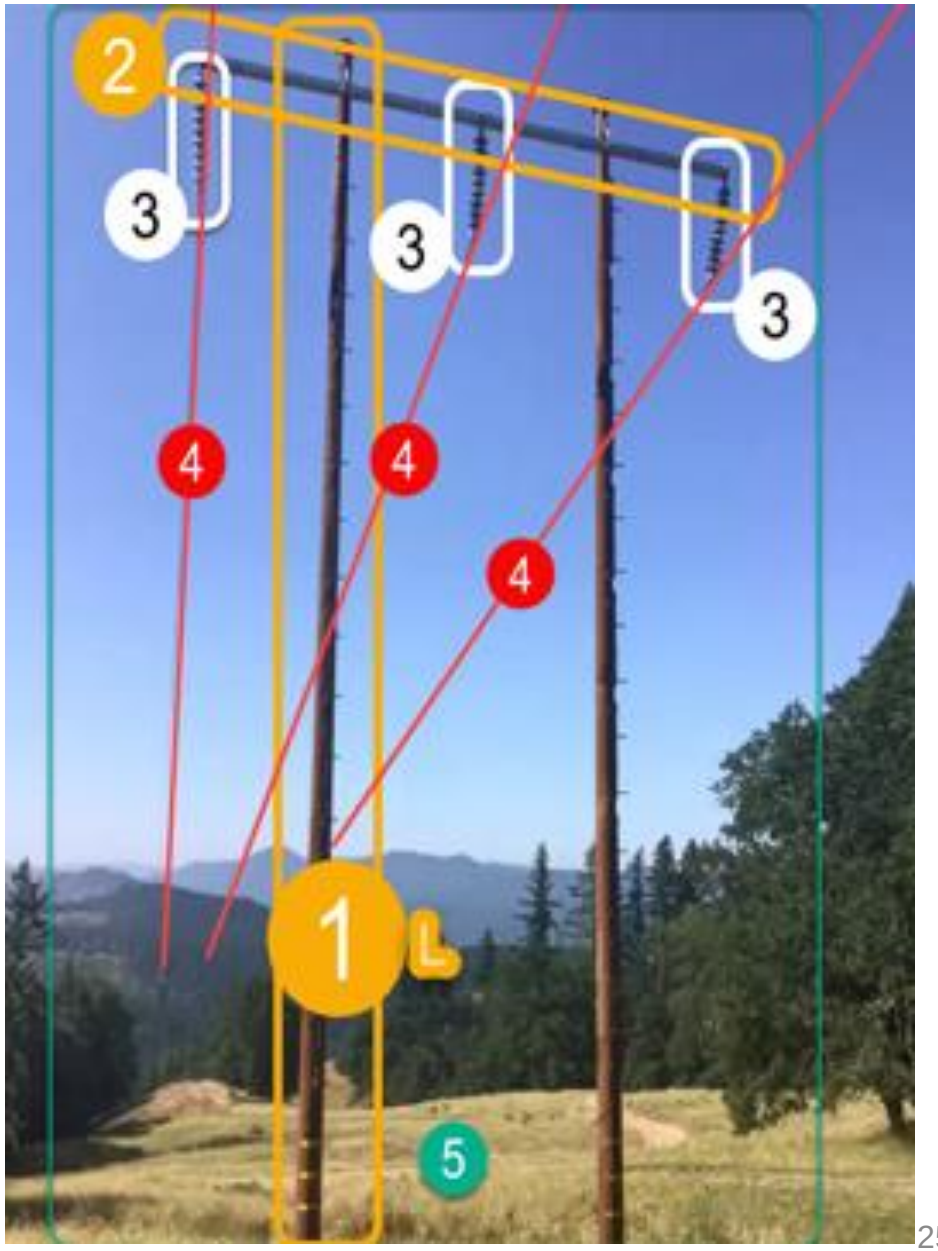


# Ground Inspection Checklist

## Multi-Pole Structures with Shared Crossarm Supporting Conductors

### Scenario #2

1. Inspect the asset with the Orange Halo. This includes the structure (pole) and all attachments.
2. Inspect the shared crossarm because it is attached to the pole being inspected.
3. Inspect all insulators and other attachments including hardware, framing, signage, etc.
4. Inspect all attached conductors.
5. Inspect all foundation, guy/anchors, vegetation, etc.
6. Follow ETPM, Job Aids, Training Material, and Checklist requirements.
7. Photos:
   - ❑ Take photos showing all multi-pole structures
   - ❑ Take photos showing all attachments including the whole shared-crossarm
   - ❑ Take photos showing all strings (hot/cold ends) insulators per the checklist requirements
   - ❑ Take photos showing all lines



# Daily Workflow

## Start of Shift

- **Ensure good Cell / Wi-Fi service**
- **Check Emails**
- **Check Teams & SMW**
- **Check Inspect**
  - Refresh map
  - Touch 'Work' to view Assignments, select MP, Start Checklist to view haloed assets
- **Sync Work**
- **Ensure battery packs are fully charged**
- **Ensure proper tools and equipment are on the truck**
- **Follow the Safety Action Plan**

## Safety Action Plan

- **Identify inspection locations to plan travel route**
- **Check weather reports**
- **Check wildfire risks**
- **Confirm route is safe to drive/walk/hike**
- **Check Enterprise Alerts**
- **Identify types of terrain**
- **Travel to first job site & submit Safety Tailboard**

## Perform Inspection

**Identify Safety Risks**

- Confirm slope less than 40 degrees
- Use Maps+ (If needed)
  - Create Field Intel with new access information
  - Create Field Intel with bad dog information
- Assess Cannot Get In (CGI) conditions
  - Create CGI Notification
- Assess Emergency conditions
  - Create Priority-A Notification
- Review the open LC map layer
  - Locate, Review, & Understand existing LCs
- Assess mapping discrepancies
- Request to add Halo via email, move to next structure

**Before starting Checklist**

- Perform Minor Work (Troublemen/Towermen only)
- Always Measure/Record Guy Tension (Towermen only)
- If needed, Adjust/Record Guy Tension (Towermen only)
- Perform Mechanical testing (Troublemen only)
- Perform Visual Inspection
- Take all photos for all forms

**Start Inspection Checklist**

- Use the Inspection Checklist as a guide to ensure your visual inspection is accurate and complete
- Attach field photos
- Update Pending LCs

**Submit Inspection Checklist**

**After Submitting Checklist**

- Perform Resubmission (if needed)
- Send Email for All Halo issues (if needed)

## Throughout the Day

- **Travel to cell service, as needed**
  - Call IRS, Lead, or Supervisor for Emergency Priority-A
  - Refresh map
  - Get new MPs
  - Access Teams/Email
  - Sync Work
  - Use Text & Phone
  - Check for changes to weather alerts, roads, safety issues, fire index

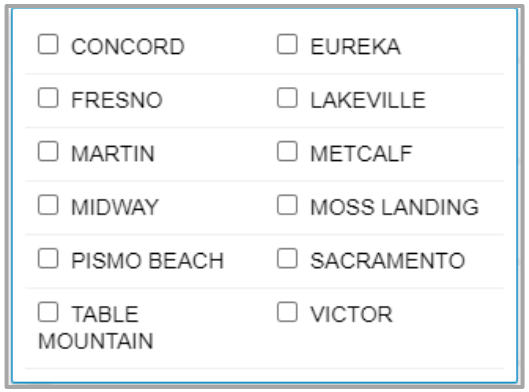
## End of Shift

- **Gather tools & equipment**
- **Sync Work: While on Cell / WiFi network, ensure all forms & photos are submitted**
- **Fully charge iOS devices**
- **Fully charge battery packs**
- **Secure iOS devices in a locked building**

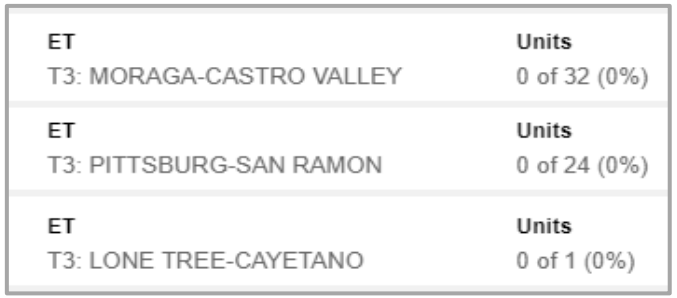
# Review MPs / Work Assignments

# Review MPs / Work Assignments

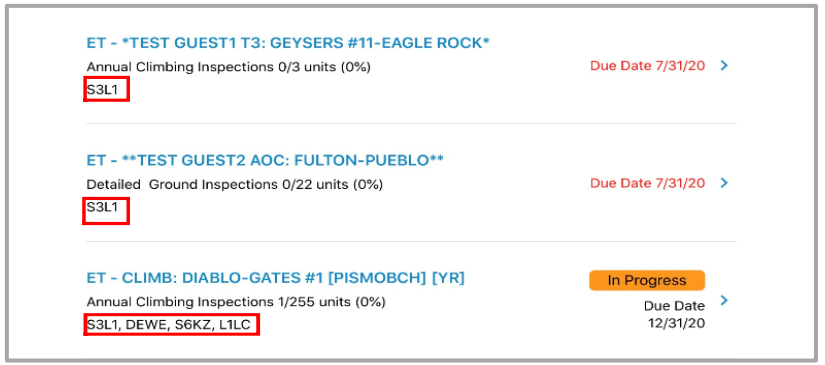
- You’ll be assigned to a Main Work Center (MWC)




- Maintenance Plans are electronically dispatched




- Locate your Maintenance Plans using the Inspect App



# Log A Tailboard

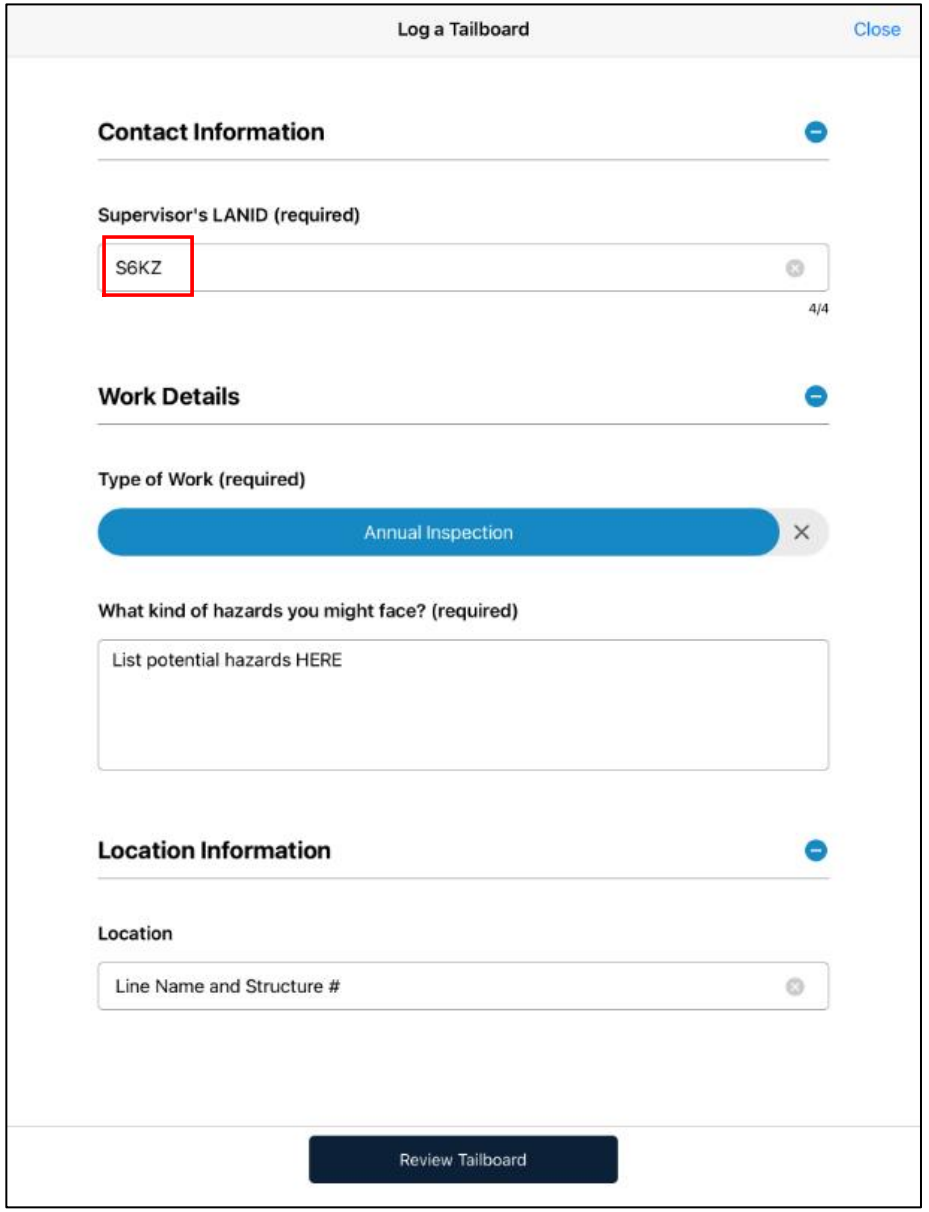
# Log a Tailboard

## Requirements

You are required to submit a Tailboard after you have safely arrived at your first inspection location using the Inspect App “Log a Tailboard”

## Workflow

1. You’ve arrived safely at your first inspection location
2. Log a Tailboard using the Inspect App
3. Submit Tailboard



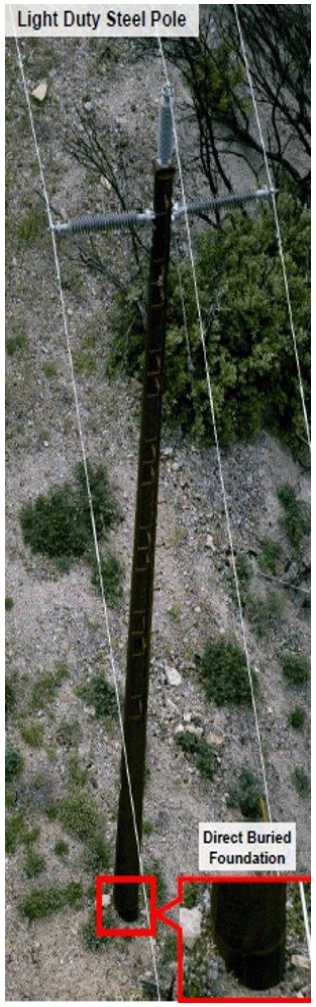
# Performing Detailed Inspections

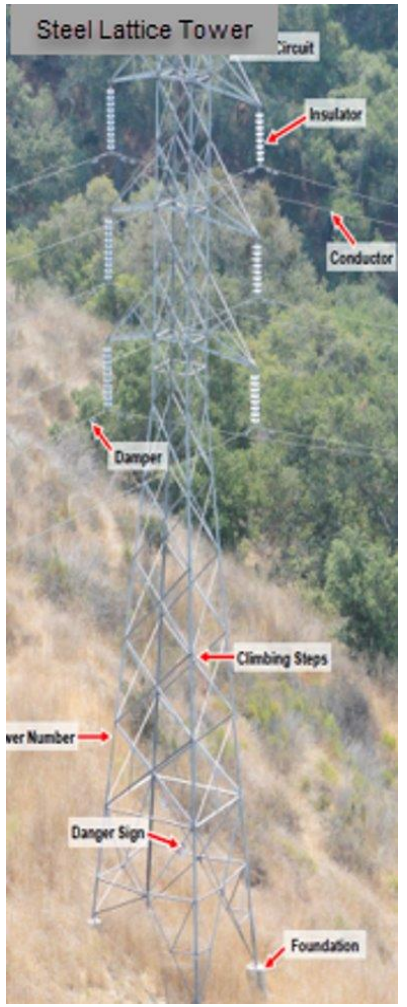
# Ground based Non-Climbing Inspection

- Non-destructive visual inspection
- Applies to wood monopoles, wood structures, composite poles, concrete poles, Tubular Steel Pole (TSP), and Light Duty Steel Poles (LDSP)







# Hammer Test

PG&E requires a hammer test be performed on all wood poles.

- You are required to always carry a hammer with you when performing inspections on wood poles.
- You will determine the condition of the wood pole by assessing the sound emanating from the quadrants that you strike.
- You must follow the steps outlined below for all wood poles:

1. Perform a sound inspection (hammer test) for all poles.
2. Strike the pole on all sides (all four quadrants) with a metal framing hammer (20-ounce minimum) from the groundline to a height of seven feet, or as high as the inspector can reach, whichever is greater.
3. Ensure that marks from the crosshatched face on the strike plate of the hammer are visible on the pole.
4. Listen for the sound produced when the hammer strikes the pole to identify the location of possible internal voids or hollows.

IF the pole produces a hollow sound or other sounds that indicate a pole defect, such as internal ruptures, cross breaks, or ring separation at one or more locations.

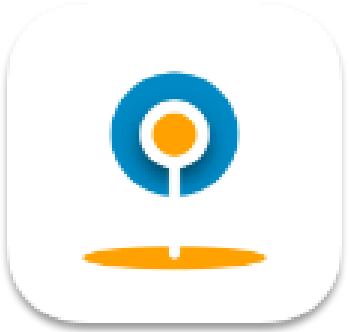
→ Then Create a new LC Notification OR Update the Pending LC Notification

| **Reference:** | **TD-1001M-JA06: Identifying Levels of Damage and Conditions** |
|---|---|

# Inspections – Checklist

You are required to document your inspection results and provide a standard set of photos using the Inspect App checklist forms.

- Steel/Lattice or LDSP Ground Detailed Inspection Form
- Non-Steel Inspection Form



Inspect

# Photo Requirements

During inspection work, photographic images are required of the asset being inspected.


**Photos must be:**

- Taken of the structure at the location being inspected
- Taken during daylight hours
- Taken so that sunlight does not obscure objects (keep reflective light to a minimum)
- Taken in focus and not blurry or dark
- Zoom-in when necessary for clarity to capture sufficient photo targets (C-Hooks, Hot end shoe, etc.)
- Taken so that objects do not obstruct the target of the photo

# Standard Structure Photos – Steel/Lattice/LDSP

Within the Checklist, you will be required to provide a standard set of photos of each Structure being inspected.

**Steel/Lattice/LDSP Structure Photo Requirements**

1. Take a photo of the Structure number (as visible)
2. Take a photo of the bottom 30 feet of each leg (total 4 legs)
3. Take a photo of the top ½ of the structure, in line with conductors
4. Take a photo of the bottom ½ of the structure, 90° from your last position
5. Photos must be taken within 200’ of structure
6. **Use External Cameras** Each photo must be taken separately, no cropping

# Standard Structure Photos – Non-Steel

Within the Checklist, you will be required to provide a standard set of photos of each Structure being inspected.

**Non-Steel Photo Requirements**

1. Take a photo of the Structure number (as visible)
2. Take 2 photos of the first 30 feet of the Structure from the ground up (Take 2 photos of the structure from 2 different angles)
3. Take a photo of the top ½ of the structure, in line with conductors
4. Take a photo of the bottom ½ of the structure, 90° from your last position
5. **Use External Cameras**
6. Photos must be taken within 200’ of structure
7. Each photo must be taken separately, no cropping

**Note:** **Please use long text field noting any field issues/restrictions**

# Knowledge Check

Let’s review:

**What pictures are required at every pole?**

A. Structure number (as visible)

B. Take 2 photos of the structure from 2 angles

C. Top ½ of the structure, in line with conductors

D. Bottom ½ of the structure, 90° from your last position

E. All of the above

# Knowledge Check - Answers

Let’s review:

**What pictures are required at every pole?**

A. Structure number (as visible)

B. Take 2 photos of the structure from 2 angles

C. Top ½ of the structure, in line with conductors

D. Bottom ½ of the structure, 90° from your last position

E. All of the above

# Evaluating Compelling Abnormal Conditions

# Assessing Conditions

## Factors to Consider When Evaluating a Compelling Abnormal Condition

Asset Inspections are one or more observations, examinations, or tests of a structure and its components in order to identify compelling abnormal conditions requiring action.

- The abnormality encountered
- The risk of exposure to the public, workers, or employees
- Risks if the condition continues to deteriorate
- Potential for the condition to further deteriorate
- Impact of failure to system reliability, customers, and service, and/or the potential for injury

**All compelling abnormal conditions requiring action must be acted upon.**

The location of the structure and other site-specific conditions will influence the evaluation of the work required.

The priority and recommended repair date, associated with any notification, depends on the proximity to roadways or pedestrian traffic, accessibility of the location to the public, or the impact of failure or exposure.

# Assessing Conditions / LCs

How to report Compelling Abnormal Conditions

PG&E uses a notification called a Line Corrective (LC) to document field observations of compelling abnormal conditions.

The Inspector makes repair recommendations using the LC form to capture the Detailed Inspection findings.

When a compelling abnormal condition or non-conformance is identified, create the LC notification using the Inspection software:

- Select the priority code and the conditions to be repaired, replaced, or addressed.
- Add comments describing the condition, access information, and any additional information that will be needed to schedule and perform the work
- Attach a minimum of two field photos

The Centralized Inspection Review Team (CIRT) reviews all notifications and determines work required, if any, and timeframes.

# LCs: High Fire Risk Conditions– HFTD Examples

Create LCs for these **fire risk** conditions:

- Excessively sagging conductors
- Inadequate separation
- Damaged or deteriorated conductors and associated conductor hardware (e.g., splices, jumpers, dampers).
- Broken insulators compromising insulation values
- Damaged equipment (e.g., switches)
- Damaged or deteriorated crossarms
- Damaged or deteriorated bird guards
- Damaged or excessively leaning towers or poles
- Deteriorated, damaged or excessively leaning towers or tower foundations
- Damaged or broken guys or guy systems (e.g., anchors, splices)
- Equipment found as burnt, flashed, or with evidence of arcing (e.g., insulators, jumpers)
- Sagging guys
- Deteriorated, damaged or missing hardware that creates a fire risk (e.g., could cause structural failure, sparking)
- Insufficient clearance from vegetation
- Vegetation causing strain or abrasion
- Dead trees that could strike facilities
- Broken or exposed ground wire
- Missing or broken bond wire
- Missing or damaged wood pole bridging on under build

# LCs: Non-HFTD Examples

Create LCs for these **non-fire risk** conditions:

- Missing/illegible high voltage sign in remote locations, inaccessible to pedestrians or vehicles
- Missing/illegible high voltage sign on crossarms or poles above legible high voltage marking on lower crossarm(s)
- Missing/illegible/incorrect numbering on poles/tower legs [Marking, Numbering, identification of structures 022168]
- Damaged or missing guy marker in remote locations, inaccessible to pedestrians or vehicles
- Anchor guy with minimal slack where a pole is straight or leaning towards the anchor
- Climbing space obstruction from vegetation when it (1) does not prevent work from being done and (2) does not violate Rule 35
- Damaged, loose, or idle hardware that (1) is not in the climbing space and (2) does not pose a risk to employees or the public
- Missing or damaged bolt covers where only exposure is to the QEWs
- Exposed ground rod in inaccessible or remote location
- Access (e.g., damaged gate) that does not pose a risk to employees of the public

# LCs – Assigning Priorities and FDAs

ETMP Manual will provide a list of FDA's:

- **Facility**: The component being inspected
- **Damage**: The code assigned to defective element found during inspection or patrol
- **Action**: Required action(s) to correct identified abnormal condition

***If more than one action is required at a facility, then each must be identified.***

*Table 2. Overhead Facility, Damage, and Corrective Action Codes*

| Facility | Damage | Action |
|---|---|---|
| Anchor-Steel | Missing | Install |
| | No Good/Out of Stdrd | Repair |
| | | Replace |
| Anchor-Wood | Missing | Install |
| | No Good/Out of Stdrd | Repair |
| | | Replace |
| Animal Guard-Steel | Missing | Install |
| Animal Guard-Wood | Missing | Install |
| Anode-Tower | Missing | Install |
| | No Good/Out of Stdrd | Repair |
| | | Replace |

| | |
|---|---|
| **Reference** | TD-1001M: ETPM, Table 2. Overhead Facility, Damage, and Corrective Codes, pp. 13-14 |

# Using Table 3: Priority Codes

## Table 3 Priority Codes

| Priority Code | G.O. 95, Rule 18 Level | Priority Description – Time Frame [1] |
|---|---|---|
| A | 1 | The condition is urgent and requires immediate response and continued action until the condition is repaired or no longer presents a potential hazard. SAP due date is **30 days** – to allow time for post-construction processes and notification close-out. |
| B | - | Not used for maintenance corrective action priority. |
| E | 2 | Corrective action is required, as follows:<br>• Within 6 months for HFTD Tier 3[2]<br>• Within 12 months for HFTD Tier 2/HFRA/Zone 1 [2]<br>• Within 12 months for potential violations that compromise worker safety<br>• Within 36 months for all other potential violations |
| F | 3 | Corrective action is required within 60 months. |

Note that Priority E Notifications are time dependent depending on HFTD/HFRA/Zone 1. Safety concerns are also considered

1-Time frames listed are "Not to Exceed" and QCR/CIRT may define time frames according to site-specific conditions.
2- IF the condition in the HFTD Tier 3 OR Tier 2/HFRA/Zone 1 does not create a fire risk (non-threatening), THEN the corrective action is required **within 36 months**.

| **Reference** | Please refer to TD-8123P-103: "Electric Transmission Line Guidance for Setting Priority Codes" |
|---|---|

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Anchor-Steel (ANCS)**<br><br>**Anchor-Wood (ANCW)**<br><br>**Note:** Anchor head buried (per Numbered Document 025998, e.g., incomplete inspection)<br><br>See Job Aid TD-1001M-JA13. | > 50% Material loss | • 25–50% Material loss.<br>• Anchor rod concrete has significant cracking; needs repair and resealing.<br>• Soil movement/slide.<br>• Guy anchor being pulled out.<br>• Twisted/bent anchor rod. | • 15–25% Material loss<br>• Anchor rod concrete has minor cracking; needs resealing.<br>• Anchor rod in concrete not sealed in corrosive environments.<br>• Re-seal deteriorated mastic. |

[1] For Action Code abbreviations, use INST (Install), REPA (Repair), REPL (Replace)
[2] Return to field for completion. Do not process notification (keep in S5 status) until completed in field and anchor condition is identified.
[3] For geotechnical concerns, contact civil engineering and geosciences personnel.

| | |
|---|---|
| **Reminder** | Inspector’s primary responsibility in an overhead electric facility inspection or patrol is to examine and record the specific condition of the facilities. |

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Guy Wire-Steel (GYWS)**<br><br>**Guy Wire-Wood (GYWW)**<br><br>See Job Aid TD-1001M-JA13. | • > 50% Material loss<br>• Broken or missing load bearing guy | • 25–50% Material loss<br>• Broken or missing storm guy where required<br>• Slack or overtension guys [4]<br>• Clearance from energized conductor<br>• Framing configurations where a bird can land and reach energized parts and guy bonded and not sectionalized (e.g., does provide a path to ground). [5]<br>• Guy insulator in poor condition<br>• Preform grips not in thimbles<br>• Preform cross ties not properly installed<br>• Where automatic guy strand dead ends and splices exist, follow Job Aid TD-1001M-JA13. | • 15–25% Material loss<br>• Fiberglass rod not installed or installed in wrong position [5]<br>• Turnbuckle out of threads |

[4] For slack or overtension load bearing guys, recommend to address within 3 months.

[5] Follow guidance in Numbered Document 022178.

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Conductor-Steel (CONS)**<br><br>**Conductor-Wood (CNDW)**<br><br>**Shield Wire/OPGW, ADSS, non-ADSS lashed [6] (SHLS) (SHLW)**<br><br>**Jumpers (JUMS) (JUMW)**<br><br>**Tie Wire (TIES, TIEW)**<br><br>**Ground Wire (GRWS, GRWT, GRWW)**<br><br>See Job Aids TD-1001M-JA10 and TD-1001M-JA11. | • > 50% Material loss<br>• Broken strands and out-of-lay strands (e.g., gunshot) > 40%, Numbered Document 028855<br>• Active arcing<br>• Broken or loose tie wire (conductor not well seated in the saddle with vertical load or not fully captured with tie wire) | • 10–50% Material loss<br>• Broken strands and out-of-lay strands (e.g., gunshot) 5–40%, Numbered Document 028855<br>• Evidence of arcing [7]<br>• Broken or loose tie wire (conductor well seated in the saddle with vertical load or partially captured with tie wire)<br>• Broken ground wire [8]<br>• Loose connector or weight<br>• Twisted bundled conductor [7]<br>• Conductor kinked/pinched at clamp<br>• Vibrating (send to engineering personnel for evaluation)<br>• Ground wire in poor condition (corrosion, flashed, missing) | • Broken strands and out-of-lay strands (e.g., gunshot); Numbered Document 028855<br>• Uneven sag (send to engineering personnel for evaluation) |

[6] For OPGW, ADSS, and non-ADSS lashed fiber cable, refer to the associated job aids referenced in Section 2.4.8 of the *ETPM Manual* for specific conditions and priorities.
[7] Recommend to address within 3 months.
[8] Consider elevating tag priority if condition represents imminent risk to public safety (i.e., break near ground level in urban setting).

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Damper-Steel (DAMS)**<br>**Damper-Wood (DAMW)**<br>**Spacers (SPAS, SPAW)** | | • Broken spacer<br>• Broken/missing/out of position damper<br>• Bent > 45 degrees damper<br>• Missing spacer (where required) | |
| **Splices (SPLS) (SPLW)**<br>See Job Aids TD-1001M-JA14 and TD-1001M-JA19 | • > 50% Material loss<br>• Very hot (> 100-degree differential) | • Hot (< 100-degree differential) [9]<br>• Any visible damage to splice<br>• Automatic Splice<br>• Any splice < 10 feet to clamp | |
| **Electrical clearances: GO95 Clear Infract-Tower (GO9S) GO95 Clear Infract-Wood (GO9W)**<br>**Right of Way (ROW1)**<br>**Vegetation (VEGN)**<br>**Vegetation-Tower (VEGT)**<br>See Job Aids TD-1001M-JA10 and TD-1001M-JA20 | • Tree contacting line or showing signs of contact (burnt leaves or limbs)<br>• Encroachments | • Trees clearance < G.O. 95 or PG&E-required<br>• Circuit-to-circuit<br>• Burnt<br>• Ground clearance < G.O.95 or PG&E-required<br>• Grade change (ground clearance < G.O.95 or PG&E-required)<br>• Significant vegetation around base of structure; may be impacting climbing or ability to inspect base of structure<br>• Jumper clearance less than requirement; Numbered Document 068177 | Encroachments to be resolved via Land Management |

[9] Recommend to address within 3 months.

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Foundation/Concrete-Tower (FOND)** [10]<br><br>**Note:** Earth covered/buried foundation (covering steel member) (incomplete inspection)[11]<br><br>**Direct Buried Grillage**<br><br>**Note:** Uncover 6 inches to determine conditions. If no issue, rebury, no tag needed. Based on condition seen, if additional excavation needed, expose stub < 18 inches [12]<br><br>See Jnh Aid TD-1001M-JA12 | • Significant soil erosion or movement causing lack of support around the foundation [13]<br>• Damage to, or separation of, main structural support members or stub angle tower leg that compromised structural integrity<br>• Direct buried grillage > 50% material loss | • Soil movement (e.g., movement causing bowing of tower members) [13]<br>• Erosion (vertical) > 3 feet [13]<br>• Slide 10–15 inches [13]<br>• Direct buried grillage rust, 30–50% material loss<br>• Stub in concrete, has significant cracking, needs repair and resealing<br>• Rebar exposed with > 50% material loss<br>• 30–50% material loss of foundation or stub<br>• Buckled rebar, concrete spalling<br>• Cracked (cracks > ½ inch) [14]<br>• Exposed wood pile (contact civil engineering personnel for assessment)<br>• Rotated | • Erosion 1–3 feet [13]<br>• Stub in concrete, has minor cracking, needs resealing<br>• Stub in concrete needs resealing<br>• Cracked (cracks 1/16–1/2 inch) |

[10] For structural integrity or other significant concerns, request an engineering assessment by directly contacting civil engineering or through the local supervisor.
[11] Return to field for completion. Do not process (keep in S5 status) until completed in field and foundation condition is identified.
[12] Less than 18 inches minimizes the need for extensive excavation that could compromise tower stability and compaction effort.
[13] For geotechnical concerns, contact civil engineering and geosciences personnel.
[14] For cracks that extend to the stub, recommend to address within 3 months.

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Insulator (INSU)**<br>**Insulator-Steel (INSS)**<br>**Insulator-Wood (INSW)**<br>**Note:** For insulators that are flashed, cracked, broken, gunshot, or chipped > 1-1/2 inches, see Job Aid TD-1001M-JA07. | • > 50% Material loss<br>• Contaminated (arcing) | • 30–50% Material loss<br>• Contaminated (heavy) [15]<br>• Tracking (heavy)<br>• Missing/loose cotter key in retainer pin [16]<br>• Out-of-plumb, post or suspension insulator, exhibiting signs of impacting conductor<br>• Chalking/cracking on polymer [17]<br>• Corona rings damaged, missing (where required), or improperly installed (500 kilovolt [kV] only) | • Contaminated (medium)<br>• Tracking (medium)<br>• Out-of-plumb post insulator > 6 inches |

[15] Recommend to address heavy guano contamination within 3 months.

[16] Other missing or loose cotter key configurations will be prioritized based on site-specific conditions.

[17] Recommend to address within 12 months.

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Hardware (HRDS) (HRDT) (HRDD)**<br><br>**Bolts, J-Bolts, U-Bolts, links, clamps, hot-end or cold-end hardware, shoe assembly, shackles, cotter key/pin, turnbuckle**<br><br>**Hanger Plates**<br><br>Job Aid TD-1001M-JA07. | • > 50% Material loss<br>• Cracked > 50%<br>• Contaminated (arcing)<br>• Cotter key missing **and** retainer pin not fully seated<br>• < ¼ inch material remaining on plate [18, 19] | • 30–50% Material loss [20]<br>• Cracked 5–50% [20]<br>• Missing cotter key or loose cotter key in retainer pin [21]<br>• ¼– ½ inch material remaining on plate [18, 20]<br>• Missing hardware (if necessary, send to engineering personnel for evaluation) | Loose |

[18] Thickness of material (i.e., plate thickness) can determine if Priority A or Priority E. A relatively thin plate (e.g., less material) is a Priority A.

[19] For legacy towers designed with ½ inch starting hanger plate material (e.g., San Joaquin Light and Power K-type towers found on Coalinga #1-San Miguel 70 kV and Wishon-Coppermine 70 kV, but not limited to), Priority E is adequate for 1/4–3/8-inch material remaining.

[20] Recommend to address within 3 months.

[21] Other missing or loose cotter key configurations will be prioritized based on site-specific conditions.

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Switch (SWTC)**<br><br>**Switch-Steel (SWIS)**<br><br>**Switch-Wood (SWIW)**<br><br>**Note:** For switch insulators that are flashed, cracked, broken, gunshot, or chipped >1-1/2 inches, see Job Aid TD-1001M-JA07.<br><br>**SCADA-Steel (SCDS)**<br><br>**SCADA-Wood (SCDW)**<br><br>See Job Aid TD-1001M-JA15. | • > 50% Material loss<br>• Cracked > 50%<br>• Arcing or evidence of arcing<br>• Switch operating mechanism unlocked<br>• Inoperable<br>• Out of adjustment (blades and load break devices not fully seated)<br>• Missing/damaged switch attachment [22]<br>• Inform GCC that SCADA is not operational (no tag required unless instructed) | • 30–50% Material loss<br>• Cracked 5–50%<br>• Contaminated (heavy)<br>• Tracking (heavy)<br>• Loose/broken/missing parts or hardware<br>• Heating<br>• Bent/bowed control rod or platform<br>• Switch handle not bonded to platform [23] | • Contaminated (medium)<br>• Tracking (medium) |

[22] Priority A may be addressed by contacting the GCC and marking the switch inoperable with a caution tag and repair tag time frame as appropriate.

[23] For switch handles not bonded to platform, address within 12 months.

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Structure-Steel (STRS)[24]**<br>**Structure-Tower (STRT)[25]**<br>**Shield Wire Plates**<br>**Crossarms (CRSL, CRST)**<br>See Job Aid TD-1001M-JA04 | • Critical/main member:<br>  ○ > 50% Material loss<br>  ○ Cracked > 50%<br>  ○ Broken/missing<br>• Severe damage to main structural support members compromising structural integrity (stub, leg, cross arm)<br>• Internal corrosion of tubular members | • 30–50% Material loss<br>• Cracked 10–50%<br>• Broken/missing secondary member<br>• Moderate damage to main structural support members compromising structural integrity (stub, leg, cross arm) [26]<br>• H-Frame cross-brace broken<br>• Missing bolts on single bolt connection on critical member<br>• Pack-rust at joints, crevices, or overlaps [27]<br>• Buckled/bent secondary member<br>• Out of plumb (send to engineering personnel for evaluation)<br>• Twisted | • Single bolt missing of multi-bolt connection<br>• Loose bolts<br>• Vibrating members<br>• Climbing steps in poor condition<br>• Paint/galvanizing finish deteriorating and little rust or metal loss |
| **Markers (i.e., signs)-Steel (MRKS)**<br>**Markers (i.e., signs)-Wood (MRKW)**<br>**Guy Markers (GMKS, GMKW)**<br>**FAA Lighting and Batteries** | Facilities or structures with a recent history of trespass or third-party unauthorized access | • Marker balls in poor condition and wearing on conductor<br>• Marker balls damaged<br>• FAA battery no good; FAA lighting missing or no good | • Anti-climbing guards broken, cracked, damaged<br>• Anti-climbing guards missing where required, per TD-1009S-F01<br>• Cracked, broken, loose, missing |

[24] For hanger plates, refer to the Hardware section of this table (Page 14).
[25] For structural integrity or other significant concerns, request an engineering assessment by directly contacting civil engineering or through the local supervisor.
[26] For damage to main structural support members compromising structural integrity that is not an immediate risk, address within 3 months.
[27] Contact civil engineering for further assessment.

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Road (ROAD)** | Posing threat to facilities due to wash-out or land motion. | | Access road repair or replacement |
| **Structure-Wood (STRW)**<br><br>**Guy Stub (STUS, STUW)** (Also referred to as Guy Pole)<br><br>**Note:** Includes pole, crossarms (CRSW, CRSL), bonding, bearing plates.<br><br>SEE Job Aid TD-1001M-JA06 | • Burnt/rotten > 50% material loss<br>• Crossarm bracing missing or broken, compromising insulator and conductor<br>• Bond wire broken < ¼ inch gap<br>• Severe pole top damage or split top, compromising hardware, or crossarm integrity<br>• Cracked (not checks)<br>• Broken | • Burnt/rotten 20–50% material loss<br>• Crossarm bracing loose/missing<br>• Bond wire broken > ¼-inch gap<br>• Pole top damage or split top, compromising hardware or crossarm integrity [28]<br>• Twisted<br>• H-Frame cross brace broken or missing [28]<br>• Out of plumb > 3 feet and causing insulators and conductor to be compromised [28]<br>• Slide > 5 feet [29]<br>• Soil movement (erosion > 3 feet in the ground) [29]<br>• Worn/woodpecker/insect damage (severe and/or near hardware)<br>• Standing water (not including seasonal conditions)<br>• Ground molding in poor condition or missing | • Slide 1–5 feet [29]<br>• Soil movement (erosion 1–3 feet in the ground) [29]<br>• Worn/woodpecker/insect damage (medium or minor damage near hardware)<br>• Climbing steps in poor condition |

[28] Recommend to address within 3 months.
[29] For geotechnical concerns, contact civil engineering and geosciences.

# Using Table 4 – Guide for Assigning Priority Codes

## Table 4 Updates

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Structure (Fiberglass, Composite, or Concrete)** | • Crossarm bracing broken/missing causing insulator and conductor to be compromised<br>• Buckled (deformation) | • Cracked fiberglass [30]<br>• Cracked concrete into rebar [30]<br>• Out of plumb > 3 feet and causing insulators and conductor to be compromised [31]<br>• Soil movement (erosion > 3 feet in the ground) [32]<br>• Slide > 5 feet [32]<br>• H-Frame cross brace broken or missing [31]<br>• Crossarm bracing loose/missing | • Cracked concrete (cracks > ½ inch) not into rebar [30]<br>• Soil movement (erosion 1–3 feet in the ground) [32]<br>• Slide 1–5 feet [32]<br>• Pole access device or climbing steps in poor condition |
| **Idle Facilities (any facility type) (De-energized)**<br><br>See TD-1003P-01, "Management of Idle Electric Transmission Line Facilities." | Removal of idle facilities posing an immediate threat to life, property, or reliability. | | Removal of non-emergency idle facilities. |

[30] Contact civil engineering for further assessment
[31] Recommend to address within 3 months.
[32] For geotechnical concerns, contract Civil Engineering and Geosciences.

# Knowledge Check

Let’s review:

**What does FDA mean and when is it used?**

A. Foundation, Damage, A-Priority and is used when creating an LC Notification for a damaged foundation

B. Facility, Damage, Action Code and is used when an LC Notification is created

C. Found Damaged Asset and is noted in the Comments section in the Inspect App

D. None of the above

# Knowledge Check - Answers

Let’s review:

**What does FDA mean and when is it used?**

A. Foundation, Damage, A-Priority and is used when creating an LC Notification for a damaged foundation

B. Facility, Damage, Action Code and is used when an LC Notification is created

C. Found Damaged Asset and is noted in the Comments section in the Inspect App

D. None of the above

# Knowledge Check

Let’s review:

**Where can you find the FDA Priority?**

A. ETPM Table 4

B. Five Minute Meeting (5MM)

C. Federal Department of Agriculture

# Knowledge Check - Answers

Let’s review:

**Where can you find the FDA Priority?**

A. ETPM Table 4

B. Five Minute Meeting (5MM)

C. Federal Department of Agriculture

# Knowledge Check

**On Steel Structures, broken/missing secondary members constitute what priority?**

A. A (Level 1 – Immediate)

B. E (Level 2 – 6/12/36 Months)

C. F (Level 3 – 60Months)

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Structure-Steel (STRS)[24]**<br><br>**Structure-Tower (STRT)[25]**<br><br>**Shield Wire Plates**<br><br>**Crossarms (CRSL, CRST)**<br><br>See Job Aid TD-1001M-JA04 | • Critical/main member:<br>  ○ > 50% Material loss<br>  ○ Cracked > 50%<br>  ○ Broken/missing<br>• Severe damage to main structural support members compromising structural integrity (stub, leg, cross arm)<br>• Internal corrosion of tubular members | • 30–50% Material loss<br>• Cracked 10–50%<br>• Broken/missing secondary member<br>• Moderate damage to main structural support members compromising structural integrity (stub, leg, cross arm) [26]<br>• H-Frame cross-brace broken<br>• Missing bolts on single bolt connection on critical member<br>• Pack-rust at joints, crevices, or overlaps [27]<br>• Buckled/bent secondary member<br>• Out of plumb (send to engineering personnel for evaluation)<br>• Twisted | • Single bolt missing of multi-bolt connection<br>• Loose bolts<br>• Vibrating members<br>• Climbing steps in poor condition<br>• Paint/galvanizing finish deteriorating and little rust or metal loss |

# Knowledge Check - Answers

**On Steel Structures, broken/missing secondary members constitute what priority?**

A. A (Level 1 – Immediate)

B. E (Level 2 – 6/12/36 Months)

C. F (Level 3 – 60Months)

| Component [1] | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Structure-Steel (STRS)[24]**<br><br>**Structure-Tower (STRT)[25]**<br><br>**Shield Wire Plates**<br><br>**Crossarms (CRSL, CRST)**<br><br>See Job Aid TD-1001M-JA04 | • Critical/main member:<br>  ○ > 50% Material loss<br>  ○ Cracked > 50%<br>  ○ Broken/missing<br>• Severe damage to main structural support members compromising structural integrity (stub, leg, cross arm)<br>• Internal corrosion of tubular members | • 30–50% Material loss<br>• Cracked 10–50%<br>• Broken/missing secondary member<br>• Moderate damage to main structural support members compromising structural integrity (stub, leg, cross arm) [26]<br>• H-Frame cross-brace broken<br>• Missing bolts on single bolt connection on critical member<br>• Pack-rust at joints, crevices, or overlaps [27]<br>• Buckled/bent secondary member<br>• Out of plumb (send to engineering personnel for evaluation)<br>• Twisted | • Single bolt missing of multi-bolt connection<br>• Loose bolts<br>• Vibrating members<br>• Climbing steps in poor condition<br>• Paint/galvanizing finish deteriorating and little rust or metal loss |

# Identifying Compelling Abnormal Conditions

# Using Job Aids and Examining Photos

- The Job Aids provide guidance on whether the location of the condition will impact safety reliability and fire risk.

- Using the Pictures in the Job Aid, the Inspector compares them to the current Compelling Abnormal Condition found in the field and determines the Priority Code.

| | |
|---|---|
| **Job Aids are accessible via:** | • **SMW**<br>• **TIL & Mobile TIL**<br>• **Teams Channel** |

# Job Aid Documents

## List of Job Aids within the ETMP [TD-1001M]

- TD-1001M-JA1
- TD-1001M-JA2
- TD-1001M-JA3
- TD-1001M-JA4
- TD-1001M-JA6
- TD-1001M-JA7
- TD-1001M-JA8

- TD-1001M-JA9
- TD-1001M-JA10
- TD-1001M-JA11
- TD-1001M-JA12
- TD-1001M-JA13
- TD-1001M-JA14
- TD-1001M-JA15

- *TD-1001M-JA16
- *TD-1001M-JA17
- *TD-1001M-JA18
- TD-1001M-JA19
- TD-1001M-JA20
- TD-1001M-JA21
- TD-1001M-JA22
- TD-1001M-JA23

* Denotes the Job Aid is for Underground Conditions

| Job Aid Number | Title | Date |
|---|---|---|
| TD-1001M-JA11 | Evaluating Conditions of OPGW in Transmission Line | 04/07/2022 |
| TD-1001M-JA21 | Evaluating Conditions of ADSS in Transmission Line | 08/31/2020 |
| TD-1001M-JA22 | Evaluating Conditions of Non-ADSS Lashed Fiber Cable in Transmission Line | 08/31/2020 |

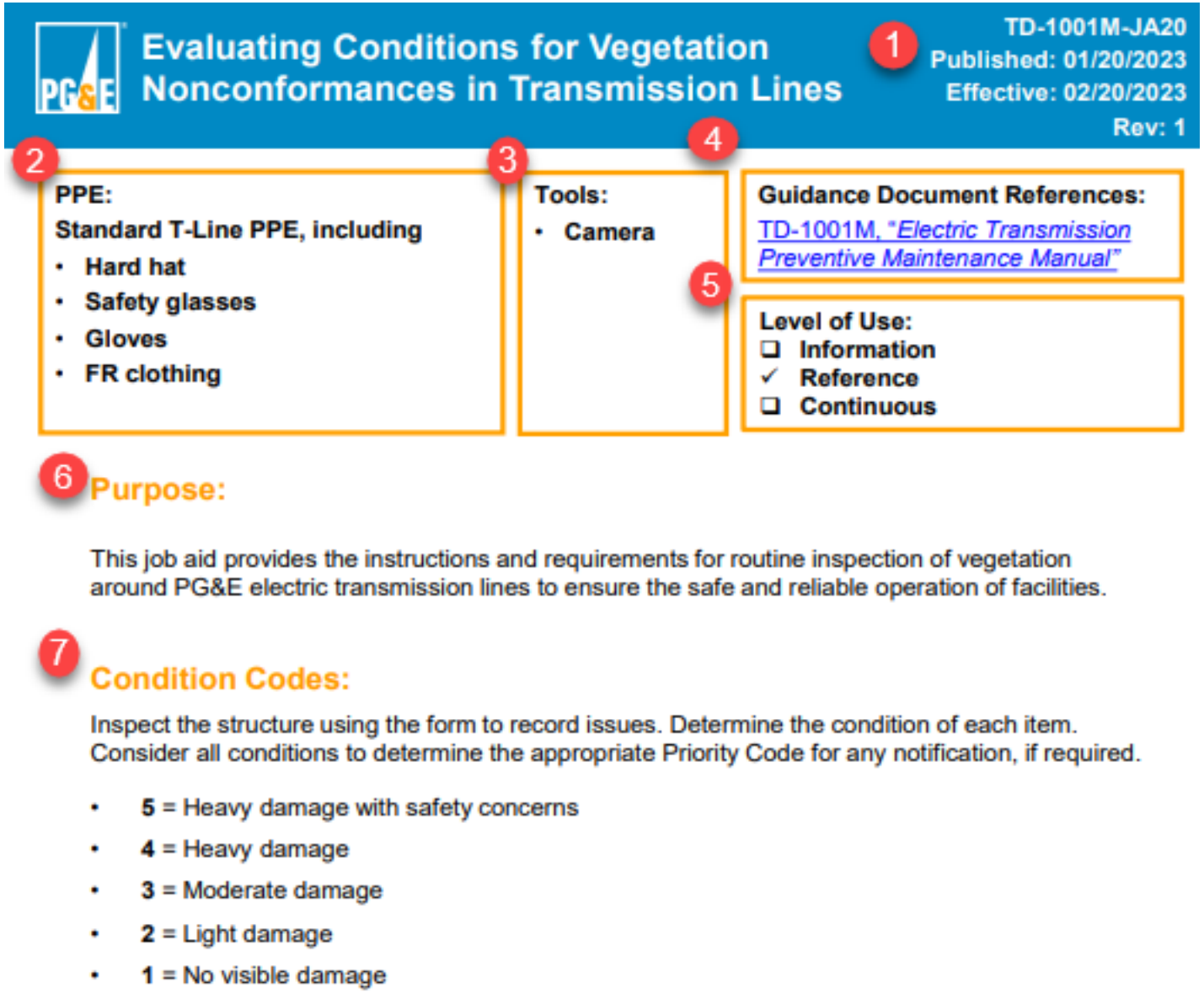
# 2023 Updated Job Aid Documents

| Job Aid Number | Title | Date |
|---|---|---|
| TD-1001M-JA04 | Identifying Levels of Deterioration and Corrosion on Transmission Line Steel Structures and Supports | 01/20/2023 |
| TD-1001M-JA06 | Identifying Levels of Damage and Condition on Wood Poles and Non-Steel Framing on Transmission Line Structures and Supports | 01/20/2023 |
| TD-1001M-JA07 | Identifying Levels of Corrosion and Condition of Hardware and Insulators on Transmission Line Structures and Supports | 01/20/2023 |
| TD-1001M-JA08 | Identifying Levels of Damage and Condition of Animal Guards on Transmission Line Structures and Supports | 01/20/2023 |
| TD-1001M-JA09 | Identifying Maintenance Work on Bird Nests on Transmission Line Structures and Supports | 01/20/2023 |
| TD-1001M-JA10 | Identifying Conductor Conditions | 01/20/2023 |
| TD-1001M-JA12 | Identifying Foundation Condition on Transmission Line Structures and Supports | 01/20/2023 |
| TD-1001M-JA13 | Identifying Levels of Damage and Condition of Guys and Anchors of Transmission Line Structures and Supports | 01/20/2023 |
| TD-1001M-JA14 | Identifying Levels of Damage and Condition of Splices on Transmission Line Structures and Supports | 01/20/2023 |
| TD-1001M-JA15 | Identifying Levels of Deterioration and Corrosion on Transmission Line Switches | 01/20/2023 |
| TD-1001M-JA19 | Evaluating Conditions from Infrared (IR) Inspection in Transmission Line | 01/20/2023 |
| TD-1001M-JA20 | Evaluating Conditions for Vegetation Nonconformances in Transmission Lines | 01/20/2023 |

# Job Aid Outline

Job Aid Template

1. Published Date & No.
2. PPE
3. Tools
4. Guidance Document References
5. Level of Use
6. Purpose
7. Condition Codes



**Evaluating Conditions for Vegetation Nonconformances in Transmission Lines**

1 — TD-1001M-JA20
Published: 01/20/2023
Effective: 02/20/2023
Rev: 1

2 — **PPE:**
**Standard T-Line PPE, including**
- **Hard hat**
- **Safety glasses**
- **Gloves**
- **FR clothing**

3 — **Tools:**
- **Camera**

4 — **Guidance Document References:**
TD-1001M, *"Electric Transmission Preventive Maintenance Manual"*

5 — **Level of Use:**
- ❑ **Information**
- ✓ **Reference**
- ❑ **Continuous**

6 — **Purpose:**

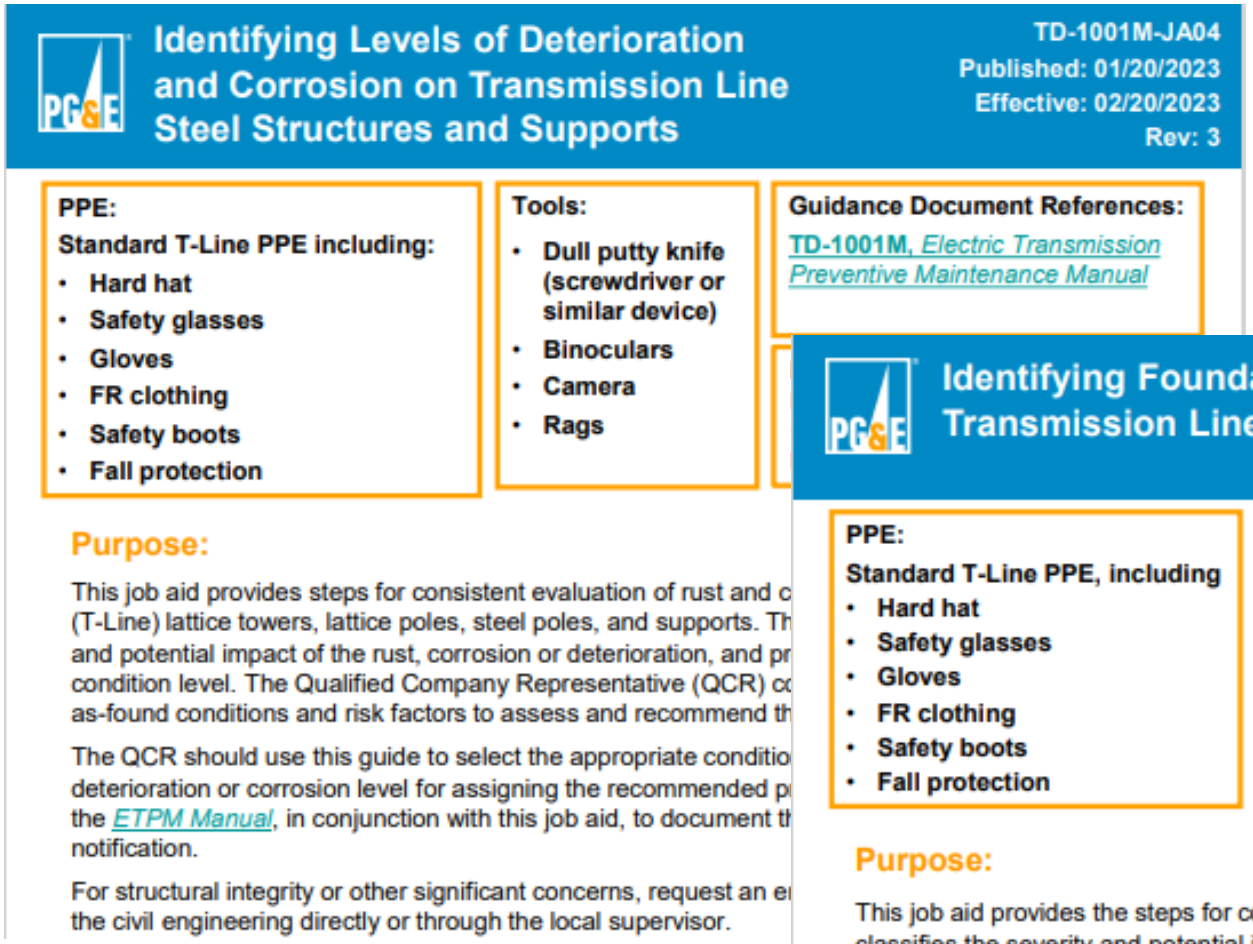
This job aid provides the instructions and requirements for routine inspection of vegetation around PG&E electric transmission lines to ensure the safe and reliable operation of facilities.

7 — **Condition Codes:**

Inspect the structure using the form to record issues. Determine the condition of each item. Consider all conditions to determine the appropriate Priority Code for any notification, if required.

- **5** = Heavy damage with safety concerns
- **4** = Heavy damage
- **3** = Moderate damage
- **2** = Light damage
- **1** = No visible damage

# Identifying Levels of Corrosion and Foundation Condition: Job Aids



## Identifying Levels of Deterioration and Corrosion on Transmission Line Steel Structures and Supports

TD-1001M-JA04
Published: 01/20/2023
Effective: 02/20/2023
Rev: 3

**PPE:**
**Standard T-Line PPE including:**
- Hard hat
- Safety glasses
- Gloves
- FR clothing
- Safety boots
- Fall protection

**Tools:**
- Dull putty knife (screwdriver or similar device)
- Binoculars
- Camera
- Rags

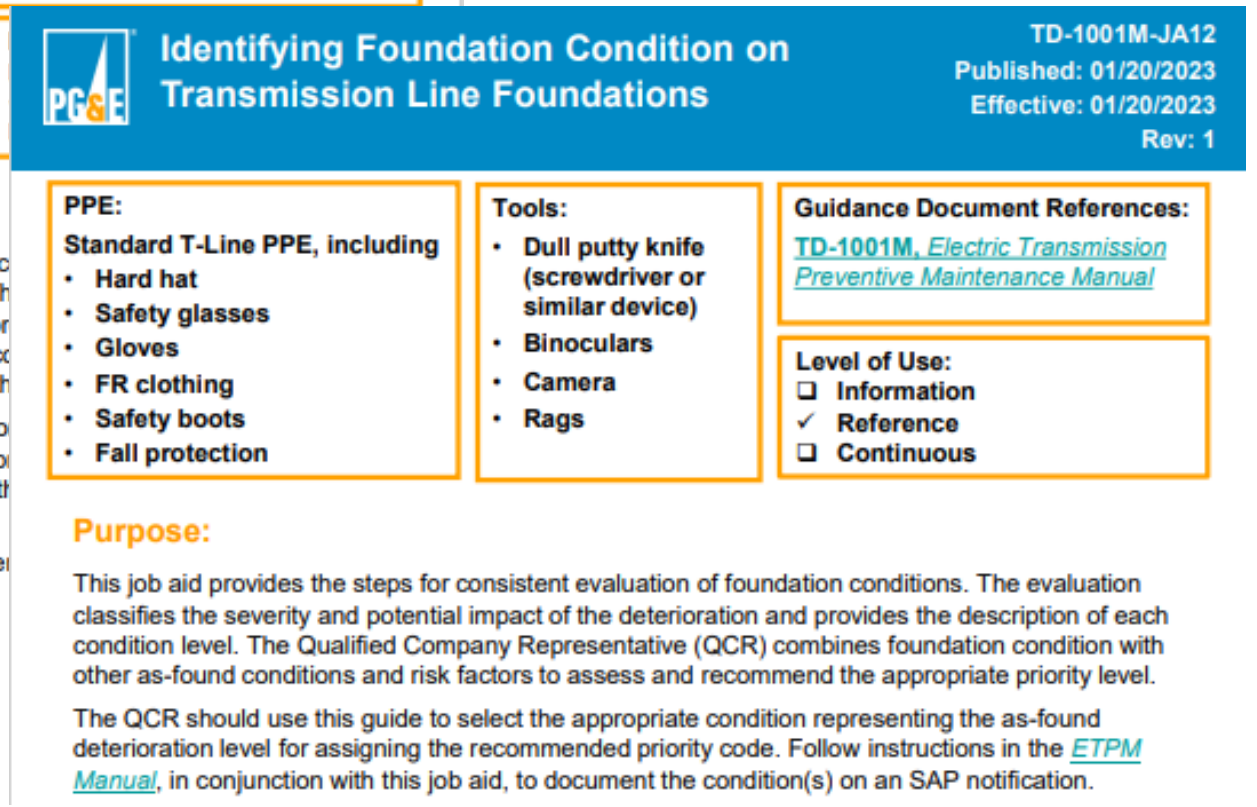
**Guidance Document References:**
TD-1001M, *Electric Transmission Preventive Maintenance Manual*

### Purpose:

This job aid provides steps for consistent evaluation of rust and c
(T-Line) lattice towers, lattice poles, steel poles, and supports. Th
and potential impact of the rust, corrosion or deterioration, and pr
condition level. The Qualified Company Representative (QCR) co
as-found conditions and risk factors to assess and recommend th

The QCR should use this guide to select the appropriate conditio
deterioration or corrosion level for assigning the recommended p
the *ETPM Manual*, in conjunction with this job aid, to document th
notification.

For structural integrity or other significant concerns, request an e
the civil engineering directly or through the local supervisor.



## Identifying Foundation Condition on Transmission Line Foundations

TD-1001M-JA12
Published: 01/20/2023
Effective: 01/20/2023
Rev: 1

**PPE:**
**Standard T-Line PPE, including**
- Hard hat
- Safety glasses
- Gloves
- FR clothing
- Safety boots
- Fall protection

**Tools:**
- Dull putty knife (screwdriver or similar device)
- Binoculars
- Camera
- Rags

**Guidance Document References:**
TD-1001M, *Electric Transmission Preventive Maintenance Manual*

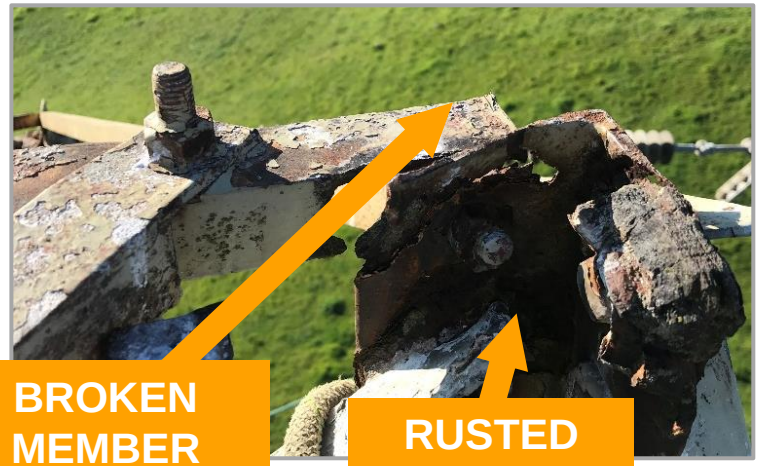
**Level of Use:**
- ❑ Information
- ✓ Reference
- ❑ Continuous

### Purpose:

This job aid provides the steps for consistent evaluation of foundation conditions. The evaluation classifies the severity and potential impact of the deterioration and provides the description of each condition level. The Qualified Company Representative (QCR) combines foundation condition with other as-found conditions and risk factors to assess and recommend the appropriate priority level.

The QCR should use this guide to select the appropriate condition representing the as-found deterioration level for assigning the recommended priority code. Follow instructions in the *ETPM Manual*, in conjunction with this job aid, to document the condition(s) on an SAP notification.

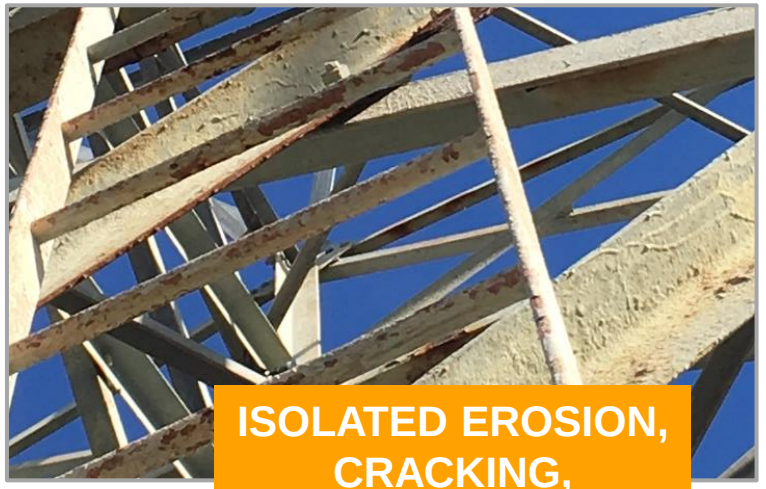
# Examples: Corrosion



**BROKEN MEMBER**

**CONDITION 5**

**RUSTED OFF**



**ISOLATED EROSION, CRACKING, PEELING.**

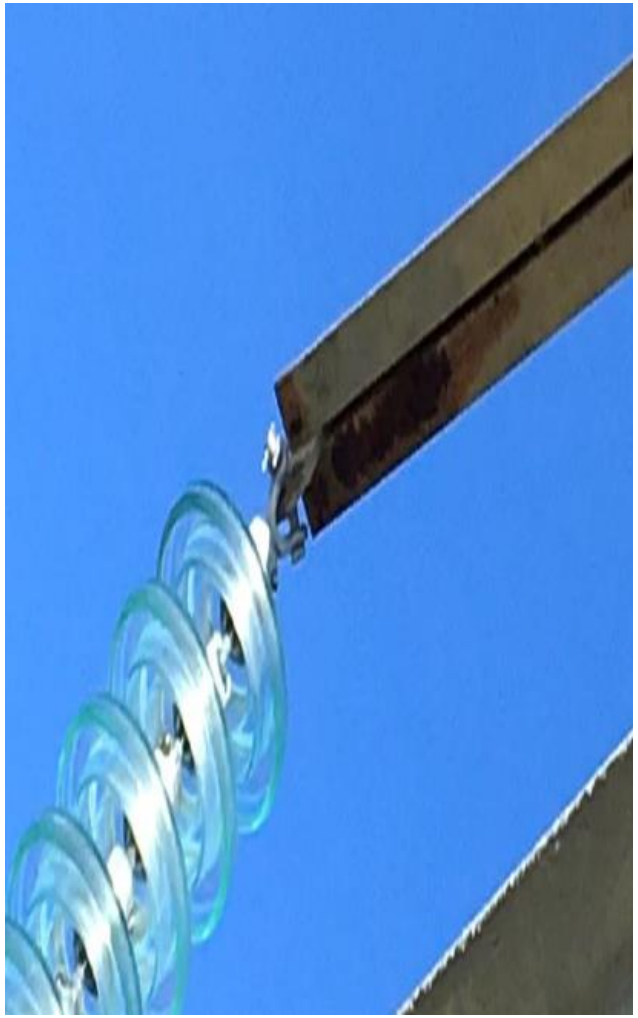
**CONDITION 2**

**LOCALIZED CORROSION. SOME METAL LOSS.**

**CONDITION 3**

Great examples, but the corrosion and the cracks may not be this apparent.

# Examples: Minor Corrosion



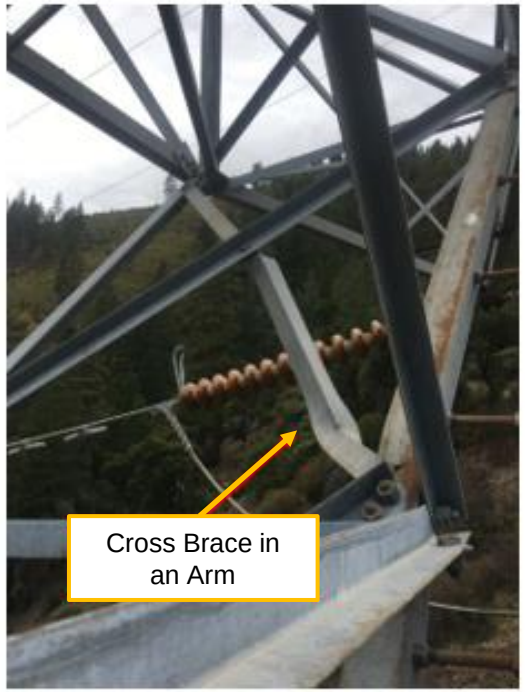
Note – Condition 2: Minor Corrosion with no pits, Add Field Comments to indicate “Minor corrosion”

# Examples: Bracing and Sways


Condition: 2




Condition: 2




Condition: 5

**If you believe an engineering analysis is required, include the following comments in your LC: "May Need Engineering Analysis"**

# Examples: Foundation

**RUSTED OFF AND FOUNDATION CRUMBLING**

**CONDITION 5**

**EXPOSED REINFORCING STEEL**

**CONDITION 4**

**EARTH COVERED STUBS**

**CONDITION 3**

**CRACKS > 1/16”**

**CONDITION 3**

# Job Aid: Examining the Steel Structure & Foundation

## Corrosion and Structure Condition Levels and Impact (continued)

**Condition 4**

**Heavy damage. Severe corrosion** with **possible** near-term impact to safety, facility integrity, or operations.

- 30–50% material loss
- Cracked 10–50%
- Broken/missing secondary member
- Moderate damage to main structural support members compromising structural integrity (stub, leg, crossarm) (recommended to address within 3 months)
- H-Frame cross-brace broken
- Missing bolts on single bolt connection on critical member
- Pack rust at joints, crevices, or overlaps*
- Buckled/bent secondary member
- Out of plumb (send to engineering personnel for evaluation)
- Twisted

***NOTE:** Contact civil engineering for further assessment.

**Action:**

1. Request engineering assessment of the structural integrity.
2. Take photos of damage.
3. Choose Priority Code E.
4. Choose shortened due date (3–12 months) based on conditions and location.


2 **Moderate damage to tower crossarm**
**FDA: Structure-Tower | No Good | Repair**


3 **Severe pack rust at joints**
**FDA: Structure-Tower | No Good | Repair**

**NOTE**
For hanger plate conditions, refer to Job Aid TD-1001M-JA07, "Identifying Levels of Corrosion and Condition of Hardware and Insulators on Transmission Line Structures and Supports."

1. Condition
2. FDA
3. FDA
4. Priority - Duration

## Foundation Condition Levels and Impact

**Condition 5**

**Severe deterioration** with an **immediate** safety concern **OR** potential to impact operations.

- Significant soil erosion or movement causing lack of support around the foundation.*
- Damage to, or separation of, main structural support members or stub angle tower leg that compromised structural integrity.
- Direct buried grillage rust, corrosion > 50% material loss

***NOTE:** For geotechnical concerns, contact Civil Engineering and Geosciences.

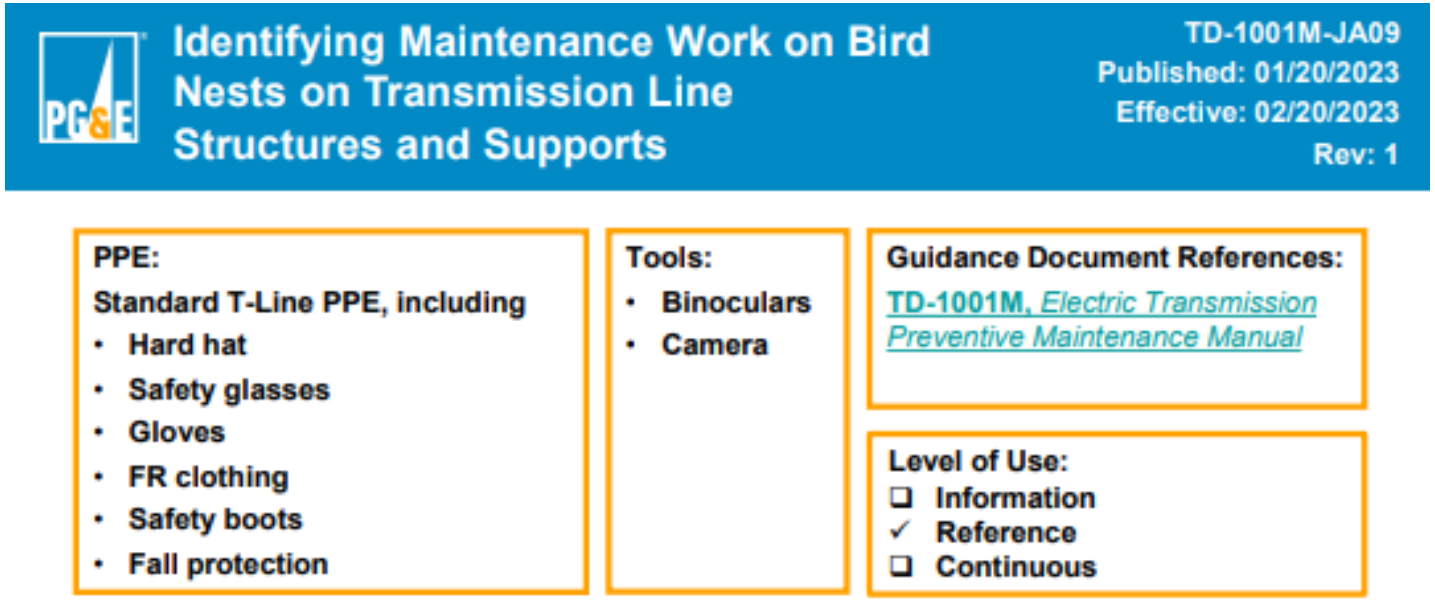
**Action:**

1. Request engineering assessment of the structural integrity.
2. Take photos of damage.
3. Choose Priority Code A.


2 **Corroded stub in concrete, >50%**
**FDA: Emergency | Storm-Related | Repair**


3 **Corroded stub in concrete, >50%**
**FDA: Emergency | Storm-Related | Repair**

# Identifying Maintenance Work on Bird Nests: Job Aids



**Identifying Maintenance Work on Bird Nests on Transmission Line Structures and Supports**

TD-1001M-JA09
Published: 01/20/2023
Effective: 02/20/2023
Rev: 1

**PPE:**

**Standard T-Line PPE, including**

- Hard hat
- Safety glasses
- Gloves
- FR clothing
- Safety boots
- Fall protection

**Tools:**

- Binoculars
- Camera

**Guidance Document References:**

TD-1001M, *Electric Transmission Preventive Maintenance Manual*

**Level of Use:**

- ❑ Information
- ✓ Reference
- ❑ Continuous

## Purpose:

This job aid provides the steps for consistent evaluation of maintenance work on bird nests on transmission line (T-Line) structures. The evaluation assesses the potential impact of the presence of bird nests. The Qualified Company Representative (QCR) combines bird nest condition with other as-found conditions and risk factors to assess and recommend the appropriate priority level.

Follow instructions in the *ETPM Manual*, in conjunction with this job aid, to document the condition(s) on an SAP notification.

**NOTE**

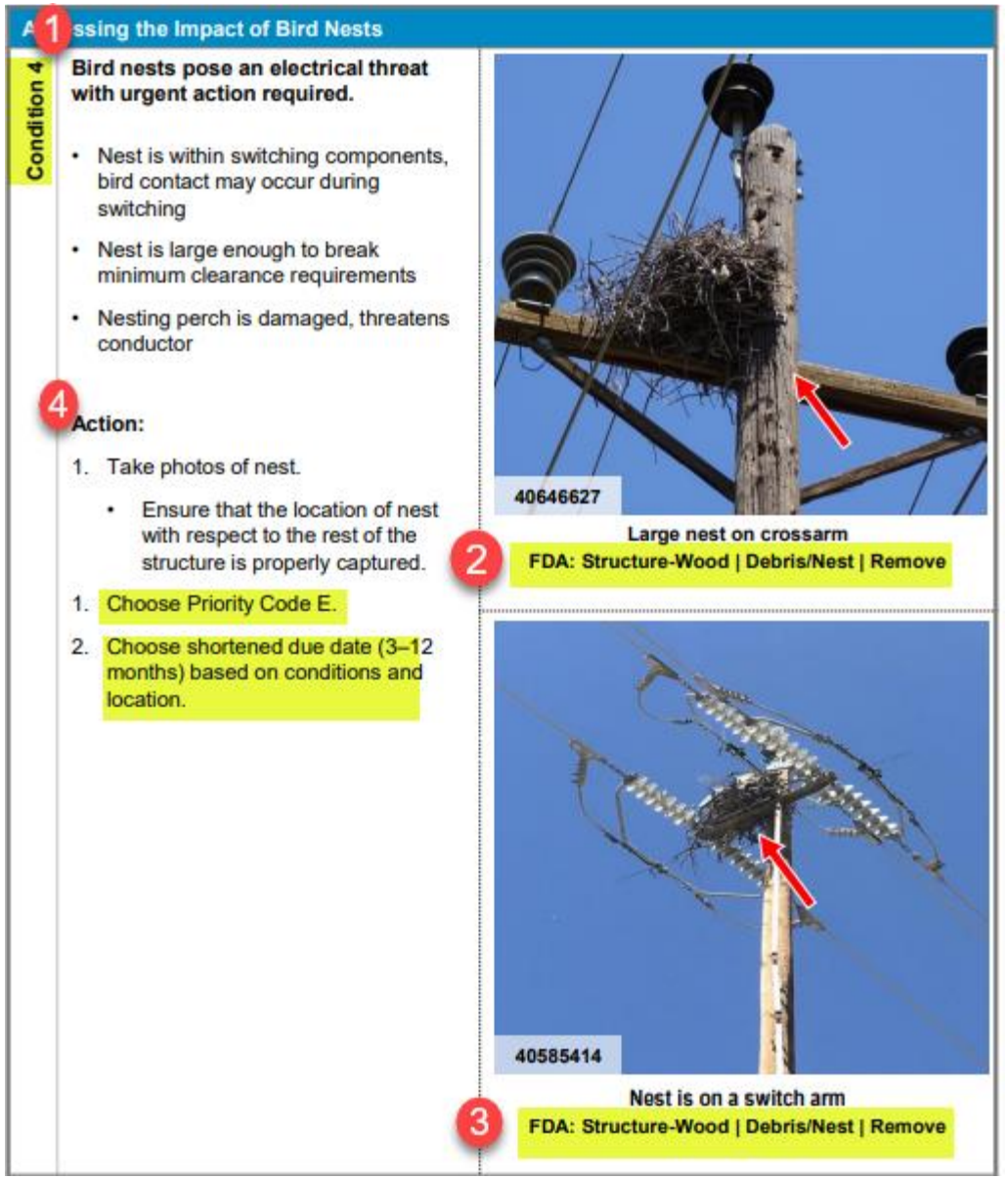
Contact the Avian Manager before the removal of ANY nest.

# Bird Nests on Transmission Line Structures: Job Aid

Job Aid [TD-1001M-JA09] Identifying Maintenance Work on Bird Nests on Transmission Line Structures and Supports

Job Aid Guide:

1. Condition is Listed – 4
2. Recommended FDA Provided
3. Recommended FDA Provided
4. Priority & Duration Provided



# Evaluating Conditions of OPGW

## Evaluating Conditions of OPGW in Transmission Line

TD-1001M-JA11
Published: 04/07/2022
Effective: 06/07/2022
Rev: 3

**PPE:**

Standard T-Line PPE, including:

- Hard Hat
- Safety Glasses
- Gloves
- FR clothing

**Tools:**

- Binoculars
- Camera

**Guidance Document References:**

TD-1001M, "Electric Transmission Preventative Maintenance Manual"

**Level of Use:**

- ❑ Information
- ✓ Reference
- ❑ Continuous

### Purpose:

This job aid provides consistent evaluation of overhead ground wire/fiber optic cable (OPGW) in transmission lines, and consistent decision-making.

The Qualified Company Representative (QCR) should use this guide to evaluate the condition of OPGW, confirm proper application, select the appropriate condition representing the deterioration level, and consistently assign the priority code.

The QCR should use this guide to select the appropriate condition representing the as-found OPGW condition for assigning the recommended priority code.

# Evaluating Conditions of ADSS in Transmission Line

## Evaluating Conditions of ADSS in Transmission Line

TD-1001M-JA21
Effective: 08/31/2020, Rev: 0

**PPE:**

Standard T-Line PPE, including:

- Hard Hat
- Safety Glasses
- Gloves
- FR clothing

**Tools:**

- Binoculars
- Camera

**Guidance Document References:**

TD-1001M, "Electric Transmission Preventative Maintenance Manual"

**Level of Use:**

- ❑ Information
- ✓ Reference
- ❑ Continuous

### Purpose:

This job aid provides consistent evaluation of all dielectric self-supporting cable (ADSS) in transmission lines, and consistent decision-making.

The Qualified Company Representative (QCR) should use this guide to evaluate the condition of ADSS, confirm proper application, select the appropriate condition representing the deterioration level, and consistently assign the priority code.

The QCR should use this guide to select the appropriate condition representing the as-found ADSS condition for assigning the recommended priority code.

# Evaluating Conditions of Non-ADSS Lashed Fiber Cable in Transmission Line

## Evaluating Conditions of Non-ADSS Lashed Fiber Cable in Transmission Line

TD-1001M-JA22
Effective: 08/31/2020, Rev: 0

**PPE:**

**Standard T-Line PPE, including**

- **Hard Hat**
- **Safety Glasses**
- **Gloves**
- **FR clothing**

**Tools:**

- **Binoculars**
- **Camera**

**Guidance Document References:**

**TD-1001M, "Electric Transmission Preventative Maintenance Manual"**

**Level of Use:**

- ❑ **Information**
- ✓ **Reference**
- ❑ **Continuous**

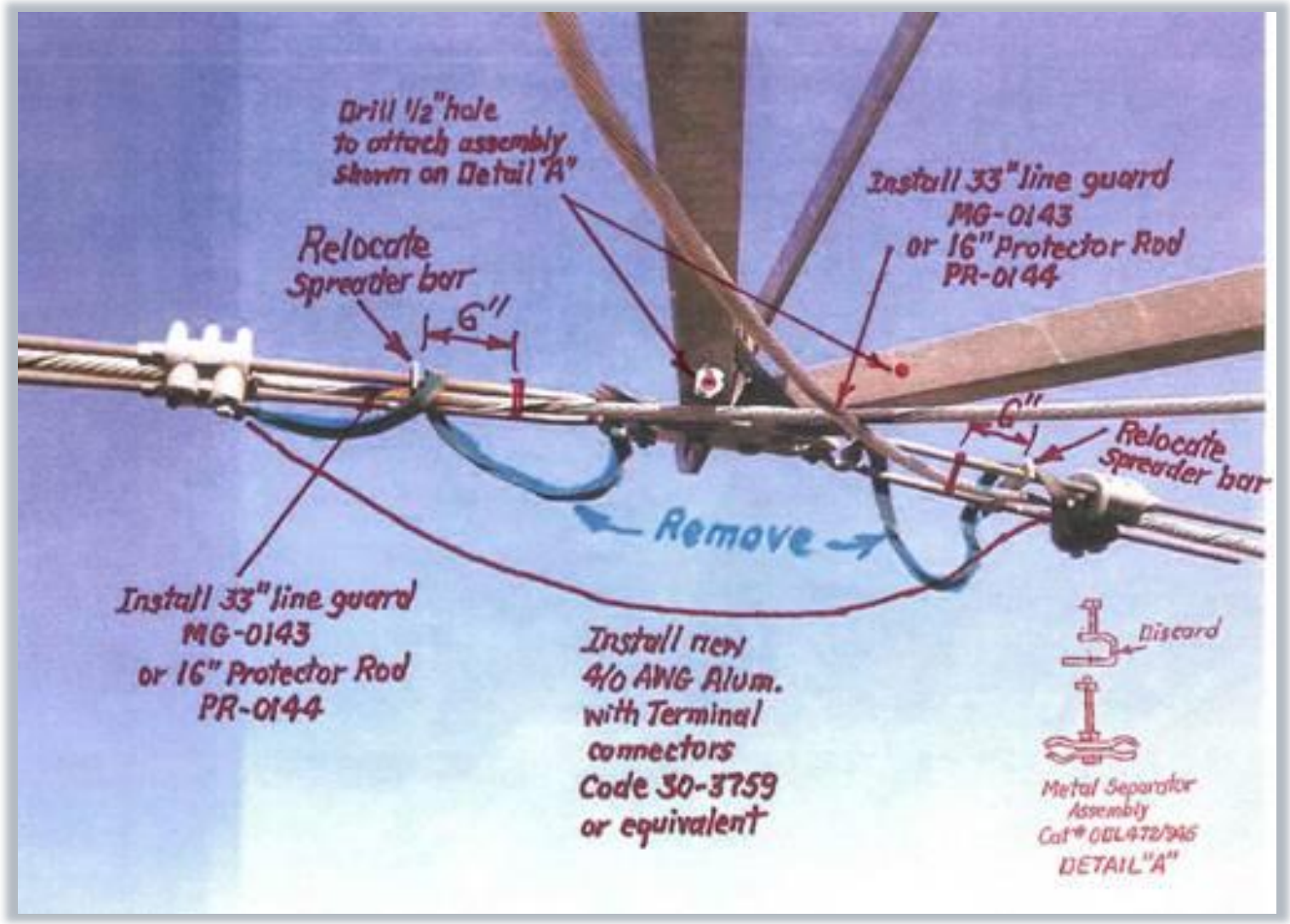
### Purpose:

This job aid provides consistent evaluation of non-all dielectric self-supporting (non-ADSS) lashed fiber cable in transmission lines, and consistent decision-making.

The Qualified Company Representative (QCR) should use this guide to evaluate the condition of non-ADSS lashed fiber cable, confirm proper application, select the appropriate condition representing the deterioration level, and consistently assign the priority code.

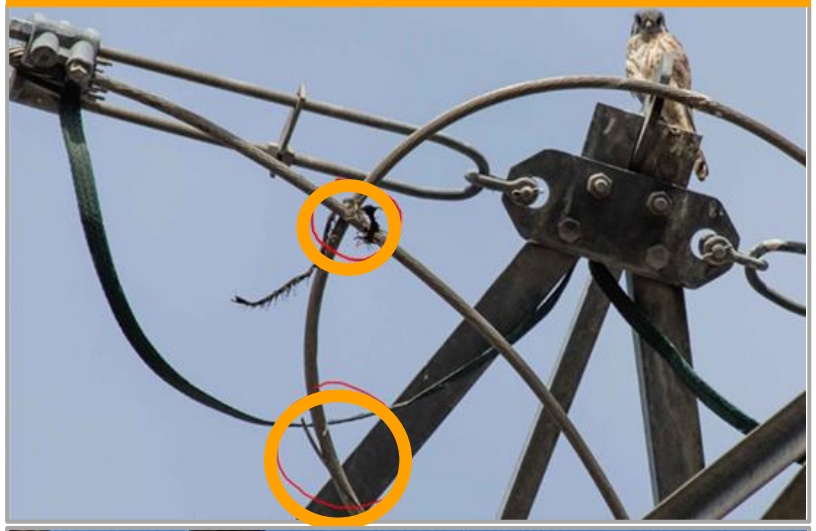
The QCR should use this guide to select the appropriate condition representing the as-found non-ADSS lashed fiber cable condition for assigning the recommended priority code.

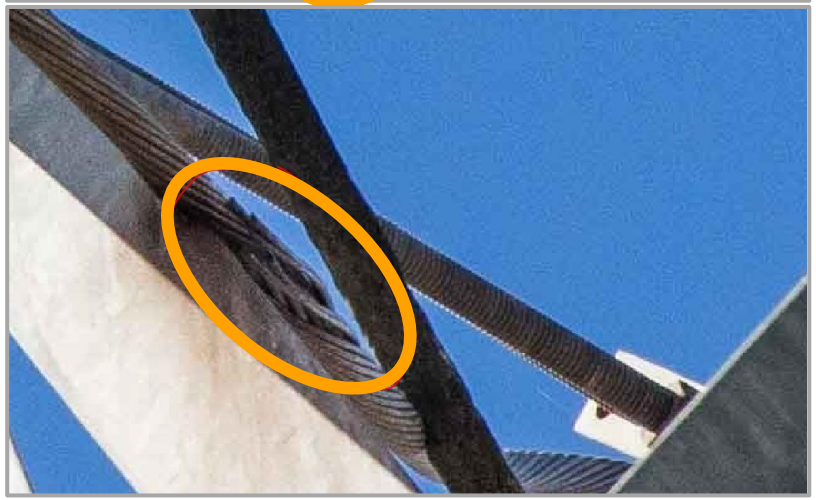
# Overhead Ground Wire, OPGW and ADSS Cable Inspection



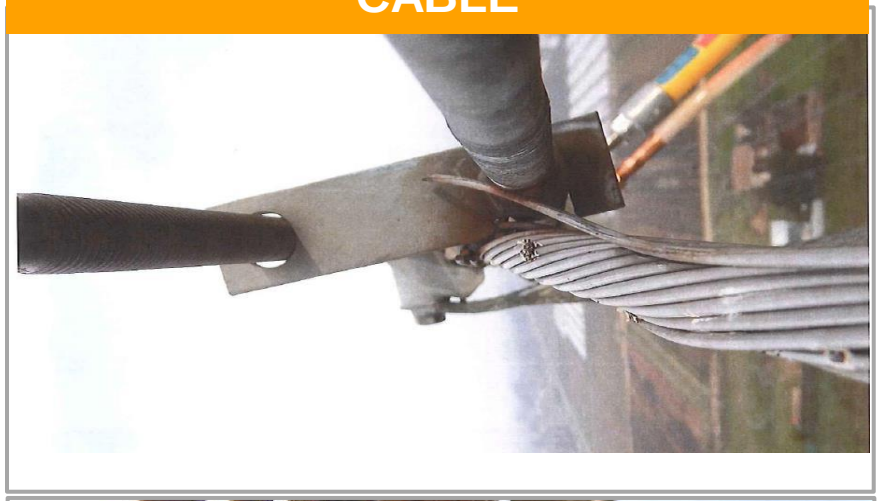
# Examples: OPGW / ADSS Cable Issues

## BROKEN STRANDS

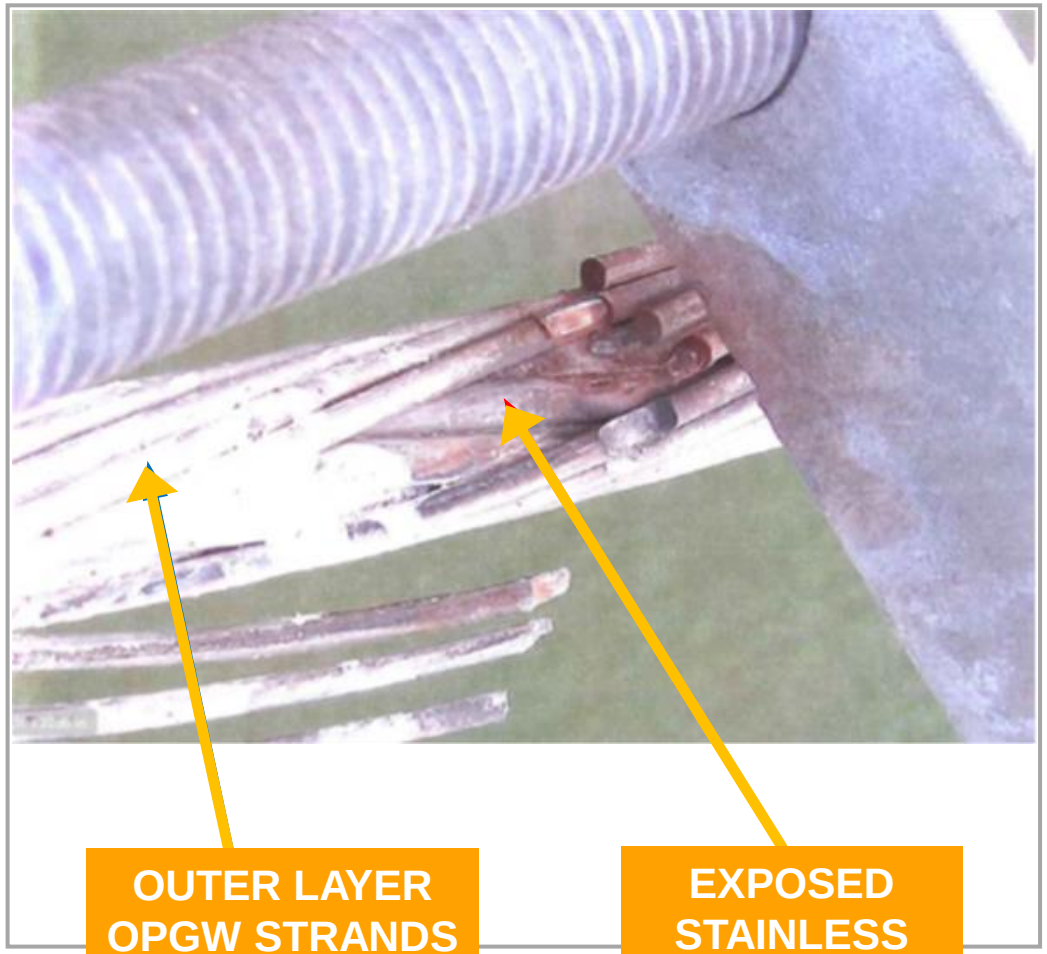


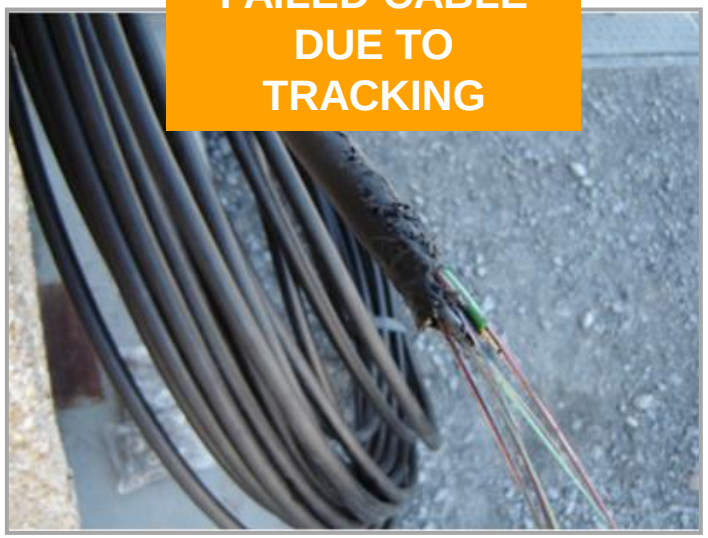


## SPACER BAR DIGGING INTO CABLE



# Examples: Buffer Tube Issues - OPGW




# Example of Broken Lashing

# Examining the Cable and Hardware Installation

| Finding | Line Corrective (LC) Notification | Facility | Damage | Action |
|---|---|---|---|---|
| Signs of:<br>• Tracking<br>• Broken strands<br>• Separating strands<br>• Bare fiber<br>• Exposed buffer tubes | Yes | Shield Wire/OPGW- Steel or Wood | No Good/Out of Stdrd | Repair |

Requirements:

– You are required to provide recommendations for action

– You are required to add field comments, a map screenshot and two field photos of the condition(s)

# Condition of Guys & Anchors

## Identifying Levels of Damage and Condition of Guys and Anchors on Transmission Line Structures and Supports

TD-1001M-JA13
Published: 01/20/2023
Effective: 02/20/2023
Rev: 3

**PPE:**

**Standard T-Line PPE, including:**

- Hard hat
- Safety glasses
- Gloves
- FR clothing
- Safety boots
- Fall protection

**Tools:**

- Binoculars
- Camera
- Shovel

**Level of Use:**

- ☐ Information
- ✓ Reference
- ☐ Continuous

**Guidance Document References:**

- *TD-1001M, "Electric Transmission Preventive Maintenance Manual"*
- Numbered Document 06537, "Guy Grips, Clamps, and Splices"

### Purpose:

This job aid provides steps for consistent evaluation of damage on guys and anchors on transmission line (T-Line) structures. The evaluation classifies the severity and potential impact of the damage or deterioration and provides the description of each condition level. The Qualified Company Representative (QCR) combines the condition of guys and anchors with other as-found conditions and risk factors to assess and recommend the appropriate priority level.

The QCR should use this guide to select the appropriate condition representing the as-found damage or deterioration level for assigning the recommended priority code. When choosing the priority code, consider if the location is in a corrosive environment, such as coastal, heavy agricultural pollution, etc., which can accelerate deterioration. Follow instructions in the *ETPM Manual* in conjunction with this job aid, to document the condition(s) on an SAP notification.

# Fiberglass Guy Strain Insulators

## Sources of Ignition

A second source of ignition is present when un-sectionalized guys are attached to the bonding or are in close proximity to the bonding. If this situation occurs, the fault can travel along the guy wire to ground at the anchor, resulting in ignition.

Line events may occur when:

- Trees contact lines
- Broken, damaged, tracking or flashing of insulators
- Hardware is deteriorated or damaged
- Birds contacting structure/guy wire-to-conductor

Fiberglass strain insulators are to be attached at the Structure-end of the Transmission guy. Guy fixtures are to be tied into the Transmission bonding.

**Steel poles do not require fiberglass guy insulators unless there is a Distribution under-build.**

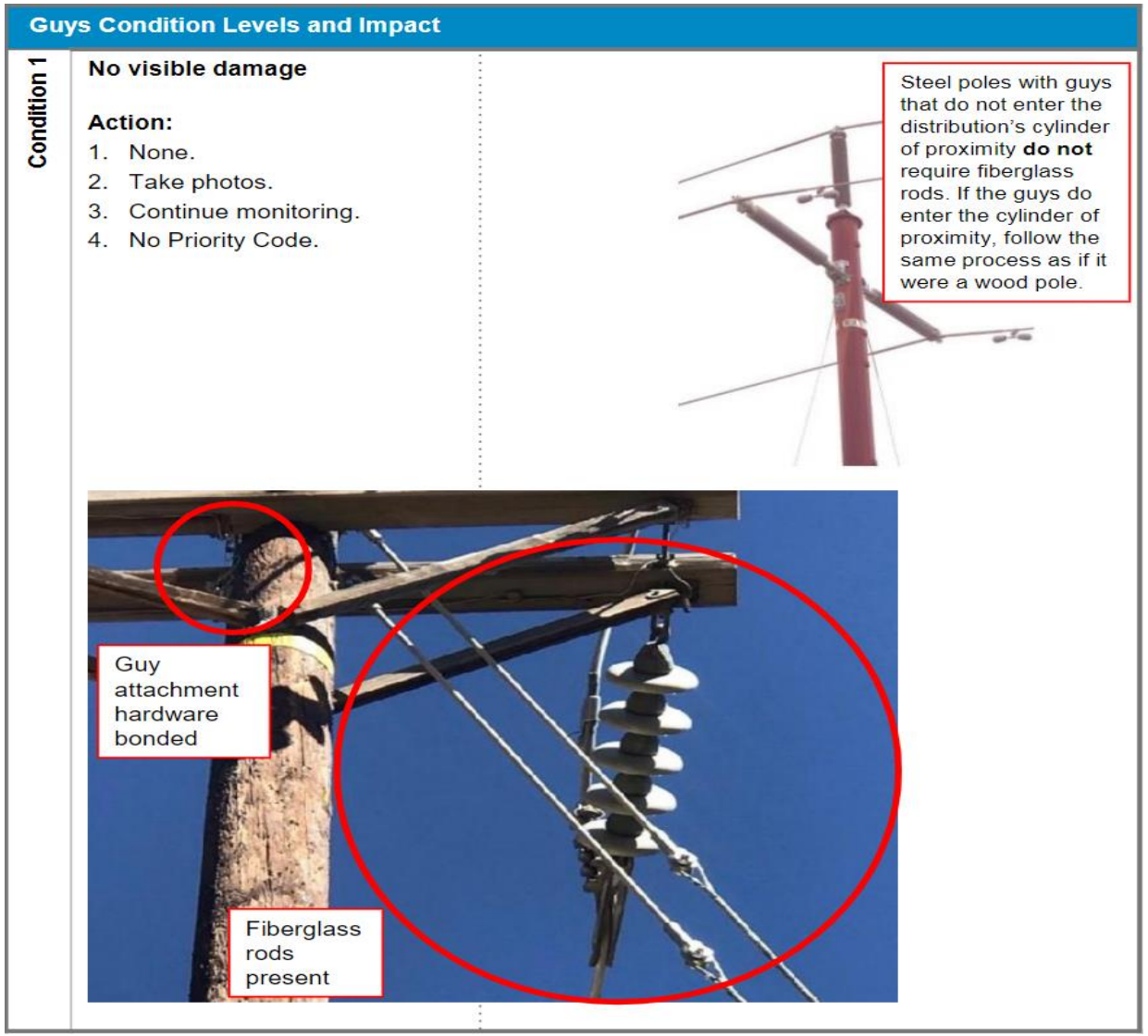
Storm guy fixtures outside the barrel of proximity and located 10’ or more below the lowest level of Transmission conductors do not require bonding or fiberglass links. This also applies to storm guys located at or below the Distribution level.

The following documents are available to help determine if an LC notification is required:

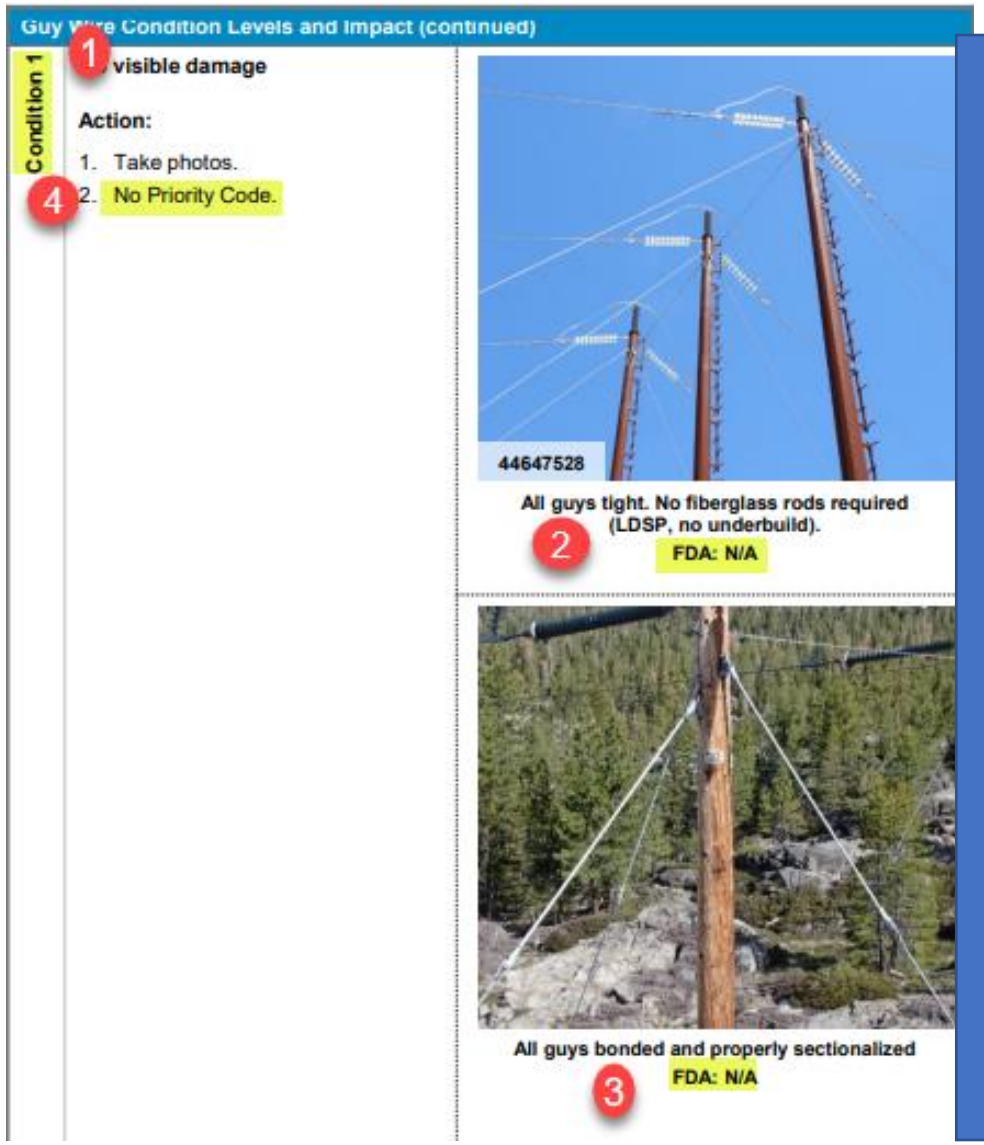
- Job Aid [TD-1001M-JA13]
- Flow Chart/Cylinder of Proximity

# Fiberglass Guy Strain Insulators: Job Aid

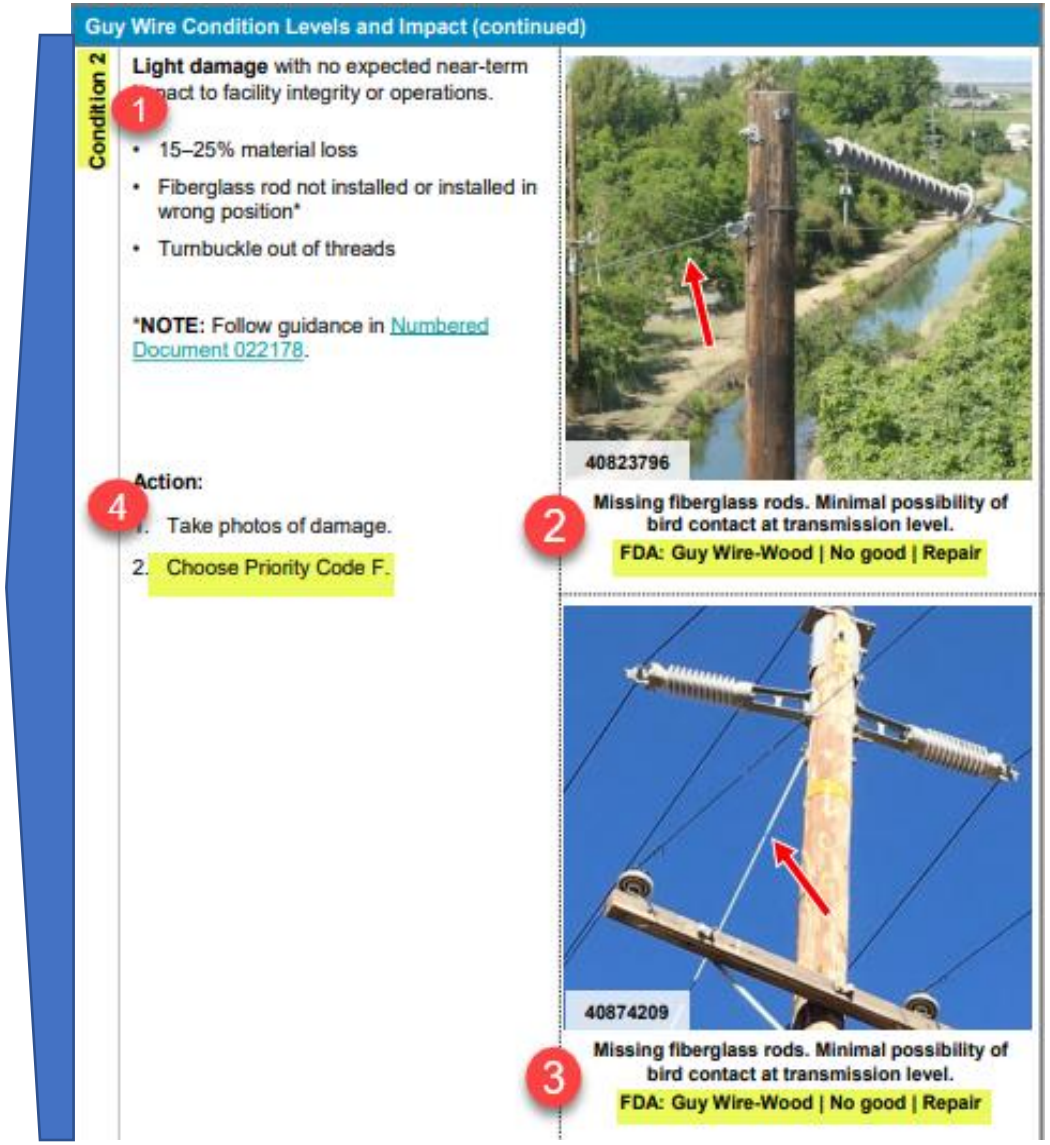
- Job Aid [TD1001M-JA13] Identifying Levels of Damage and Condition of Guys and Anchors on Transmission Line Structures and Supports



# Fiberglass Guy Strain Insulator FDAs

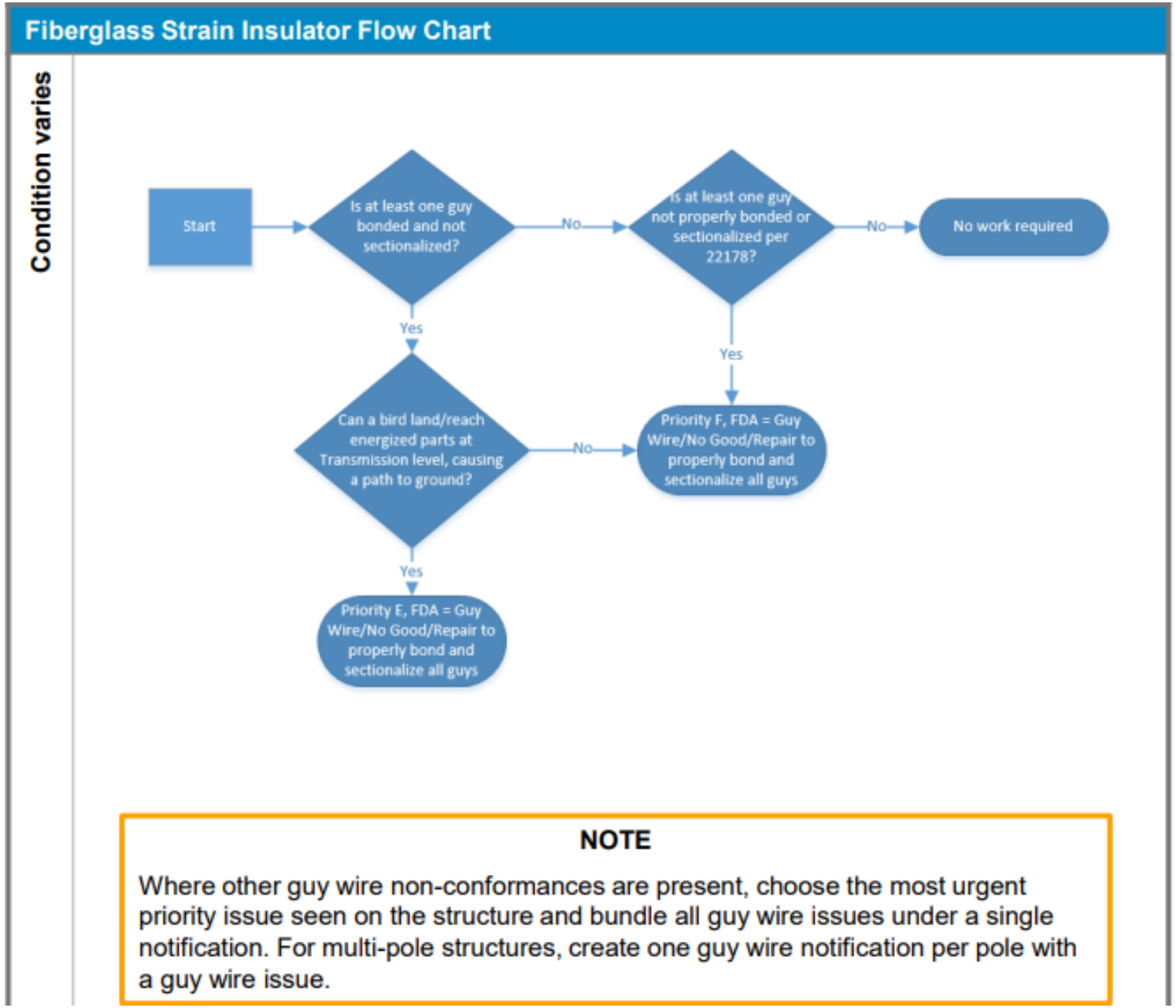



1. Condition
2. FDA
3. FDA
4. Priority - Duration



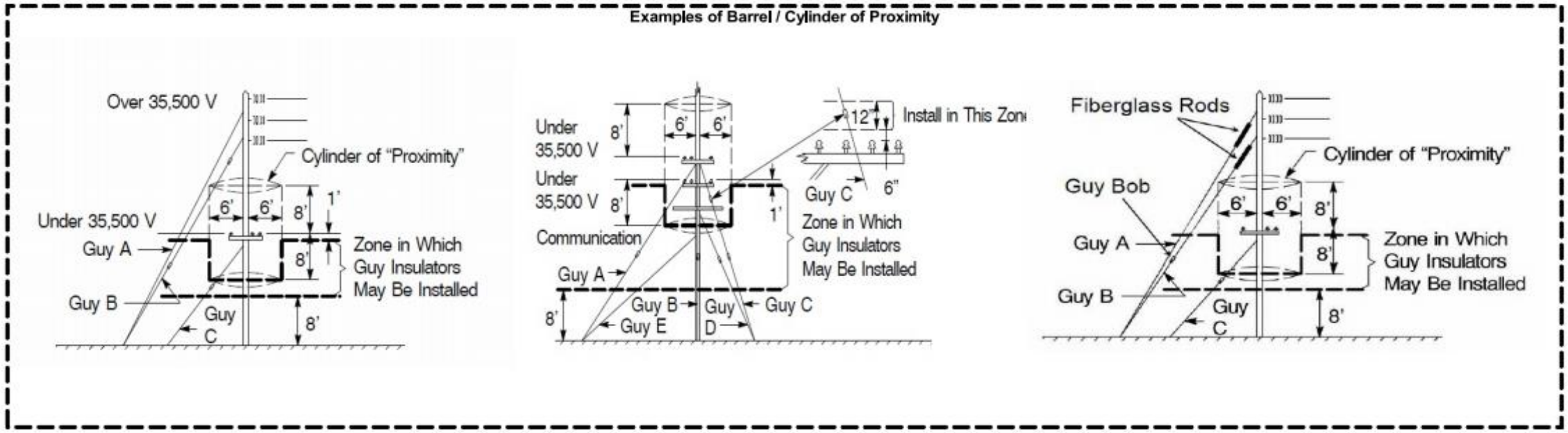
# Insulator Flow Chart

- Un-Sectionalized Guy Wires Decision-Making Tree



# Identifying Need for Fiberglass Guy Strain Insulators

## Cylinder of Proximity



# Damage and Condition of Splices

## Identifying Levels of Damage and Condition of Splices on Transmission Line Structures and Supports

TD-1001M-JA14
Published: 01/20/2023
Effective: 02/20/2023
Rev: 2

**PPE:**

**Standard T-Line PPE, including:**

- **Hard hat**
- **Safety glasses**
- **Gloves**
- **FR clothing**
- **Safety boots**
- **Fall protection**

**Guidance Document References:**

TD-1001M, *Electric Transmission Preventive Maintenance Manual*

**Tools:**

- **Binoculars**
- **Camera**

**Level of Use:**

- ❑ **Information**
- ✓ **Reference**
- ❑ **Continuous**

### Purpose:

This job aid provides the steps for consistent identification of splices in transmission lines, evaluation of condition, and consistent decision-making. Splices are also known as sleeves.

The Qualified Company Representative (QCR) should use this guide to identify the splice, confirm proper application, select the appropriate condition representing the location or deterioration level, and consistently assign the priority code.

Follow instructions in the *ETPM Manual*, in conjunction with this job aid to document the condition(s) on an SAP notification.

# Damage and Condition of Splices: Job Aid

- Job Aid [TD1001M-JA14] Identifying Levels of Damage and Condition of Splices on Transmission Line Structures and Supports

Types of Splices (Sleeves):

Automatic Splice

Western Union Splice

Shunt Splice (installed over existing splice)

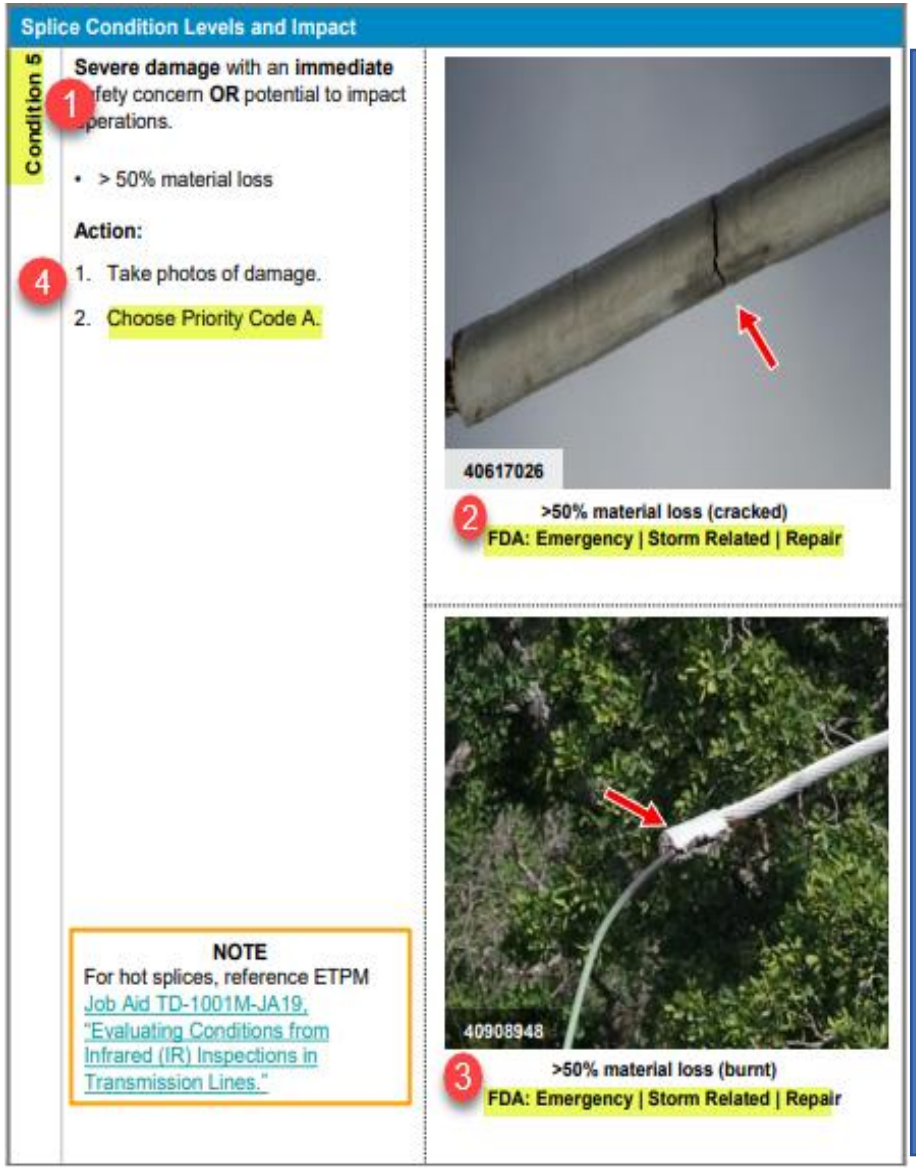
Twisted Splices

Bolted Splices

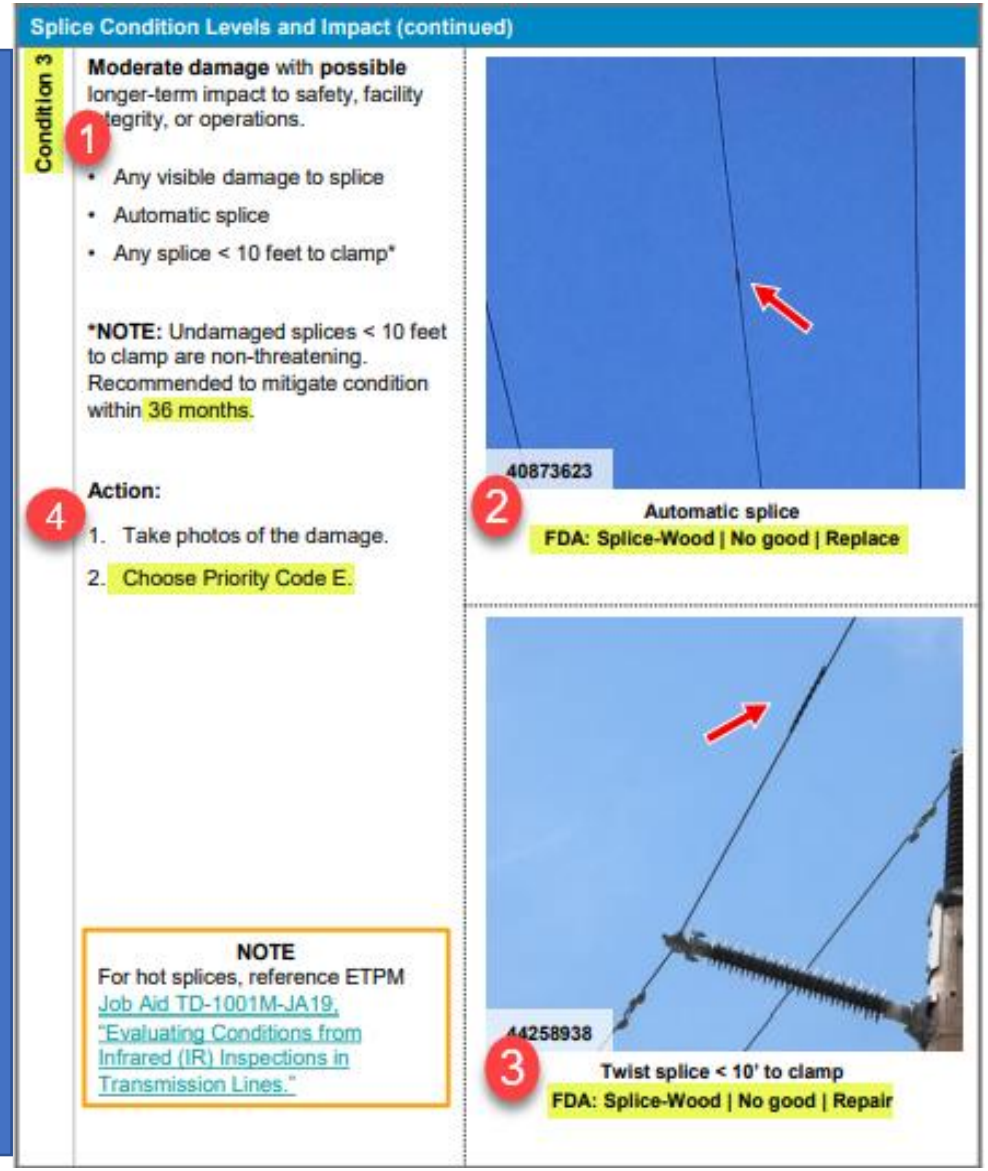
Compression Splices

Moused Splices

# Splice FDAs




1. Condition
2. FDA
3. FDA
4. Priority - Duration



# Deterioration and Corrosion of Switches

## Identifying Levels of Deterioration and Corrosion on Transmission Line Switches

TD-1001M-JA15
Published: 01/20/2023
Effective: 02/20/2023
Rev: 2

**PPE:**

**Standard T-Line PPE, including:**

- **Hard hat**
- **Safety glasses**
- **Class II rubber gloves**
- **FR clothing**
- **Safety boots**
- **Fall protection**

**Tools:**

- **Binoculars**
- **Camera**

**Guidance Document References:**

TD-1001M, *Electric Transmission Preventive Maintenance Manual*

**Level of Use:**

- ❑ **Information**
- ✓ **Reference**
- ❑ **Continuous**

### Purpose:

This job aid provides the steps for consistent evaluation of deterioration and corrosion on transmission line (T-Line) switches. The evaluation classifies the severity and potential impact of the deterioration and/or corrosion and provides the description of each condition level. The Qualified Company Representative (QCR) combines switch condition with other as-found conditions and risk factors to assess and recommend the appropriate priority level.

The QCR should use this guide to select the appropriate condition representing the as-found corrosion level for assigning the recommended priority code. Follow instructions in the *ETPM Manual*, in conjunction with this job aid, to document the condition(s) on an SAP notification.

# Deterioration and Corrosion of Switches: Job Aid

- Job Aid [TD1001M-JA15] Identifying Levels of Deterioration and Corrosion on Transmission Line Switches

## Components of Detailed Switch Inspection:

Inspect the items listed below on all switches, as applicable:

- Switch operating name and number: Confirm that these are present.
- Switch platform and associated grounding:
  - Check condition of bonding connections and/or straps between the platform and operating handle.
  - Check if switch handle is properly connected.
  - Check condition of all ground connections between the operating handle, ground rods, and motor operator (if equipped).
  - Check ground-mounted platforms to ensure that foreign objects do not ground them.
  - Check that platform is secured and properly positioned on supporting piers.
- Control mechanism:
  - Check if operating handle and control rod are bent or damaged.
  - Check if operating handle mounting bolts are tight and secured.
  - Examine fiberglass control rod for exposed stringy fiber.
- Insulators:
  - Check insulator units for tracks, flash marks, or contamination.
  - Check that insulator is plumb to the mounting surface.
- Switch contacts:
  - Check that switch in a fully closed position.
  - Check that switch aligns both vertically and horizontally.
  - Check for unauthorized attachments.
- Switch attachments:
  - Arcing horns
    - Inspect arcing horns for excessive wear.
    - Check for wear between the stationary pre-strike and rotating blade pre-strike arms.
  - High Speed (Break) Interrupters
    - Check that whip is properly engaged with the catch when the switch is in the closed position.
    - Check condition of the whips (e.g., erosion due to burning or improper installation).
  - Vacuum Interrupters
    - Check that the trip arm and catch arm properly latch when switch is closed.
    - Check for signs of external arcing or cracks.
- Motor Operator (MO) or Motorized Switch Operator (MSO), batteries, and accessory wiring:
  - Cabinet
    - Check the cabinet for leaks or water intrusion.
    - Ensure that there is no damage from vandalism or third-party contact.
    - Ensure that the ground wire and associated connections are in proper condition.
    - Check the internal components for proper working conditions, wear, corrosion, and tightness.
  - Batteries
    - Visually inspect the battery case for bulging, terminal corrosion, and case leakage.
    - Test batteries to ensure voltage is acceptable, in accordance with the manufacturer's instructions.
    - Replace batteries
      - IF batteries were not replaced, THEN provide explanation.

        **Example:** Batteries were replaced within the last 6 months and passed the 3 Volt drop test.

# Splice FDAs

**Corrosion and Structure Condition Levels and Impact (continued)**

**Condition 5 (continued)**

1 **Severe damage** with an **immediate** safety concern **OR** potential to impact operations.

- > 50% material loss
- Cracked > 50%
- Arcing or evidence of arcing
- Switch operating mechanism unlocked
- Inoperable
- Out of adjustment (blades and load break devices not fully seated)
- Missing/damaged switch attachment*
- Inform GCC that SCADA is not operational (no tag required unless instructed)

*NOTE: Priority A may be addressed by contacting GCC and marking switch inoperable with a "Caution" tag and repair tag time frame, as appropriate.

**Action:**

4 1. Take photos of damage.
2. Choose Priority Code A.


2 **Switch rod not fully seated**
**FDA: Emergency | Storm-Related | Repair**


3 **Switch blade not fully seated**
**FDA: Emergency | Storm-Related | Repair**

1. Condition
2. FDA
3. FDA
4. Priority - Duration

**Corrosion and Structure Condition Levels and Impact (continued)**

**Condition 3**

1 **Moderate damage** with **possible** longer-term impact to safety, facility integrity, or operations.

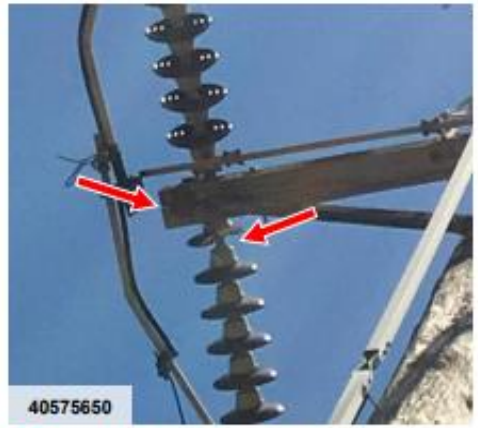
- 30–50% material loss
- Cracked 5–50%
- Contaminated (heavy)
- Tracking (heavy)
- Loose/broken/missing parts or hardware
- Heating
- Bent/bowed control rod or platform
- Switch handle not bonded to platform*

4 *NOTE: For switch handles not bonded to platform, address within 12 months.

**Action:**

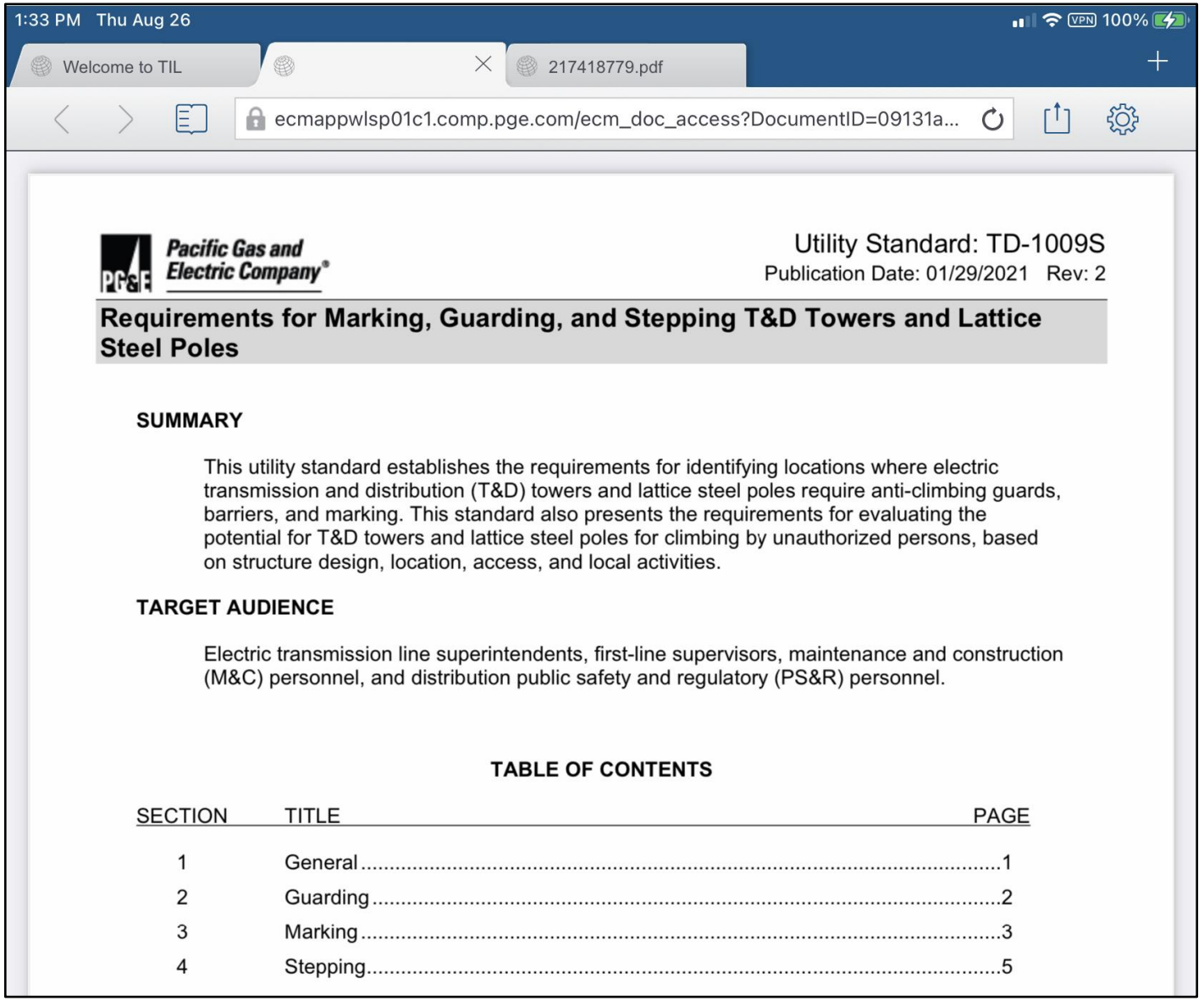
4 1. Take photos of damage.
2. Choose Priority Code E.


2 **Missing/covered operating platform**
**FDA: Switch-Wood | No Good | Repair**




3 **Cracked crossarm and insulator**
**FDA: Switch-Wood | No Good | Replace**

# Marking, Guarding and Stepping



# Anti-Climbing Guards

- Anti-Climbing Guards are installed where tower and lattice steel poles can be easily climbed and is primarily in:
  - Rural: Areas with a population of less than 1,000 persons per square mile as determined by the latest United States census.
  - Urban: Areas with a population of more than 1,000 people per square mile as determined by the latest United States census.
  - Near Roads or Trails: At a short distance. Approximately ¼ mile or 1,320 ft. of frequently traveled roads/trails.
  - Camp: A group of cabins or other shelters used for vacationing, living, or other purposes.
- A suitable barrier shall be installed on towers and lattice steel poles, or other provisions shall be made to prevent easy climbing.
- TD-1009S presents the requirements for evaluating the potential for T&D towers and lattice steel poles for climbing by unauthorized persons, based on structure design, location, access, and local activities.

# Anti-Climbing Guard FDA’s

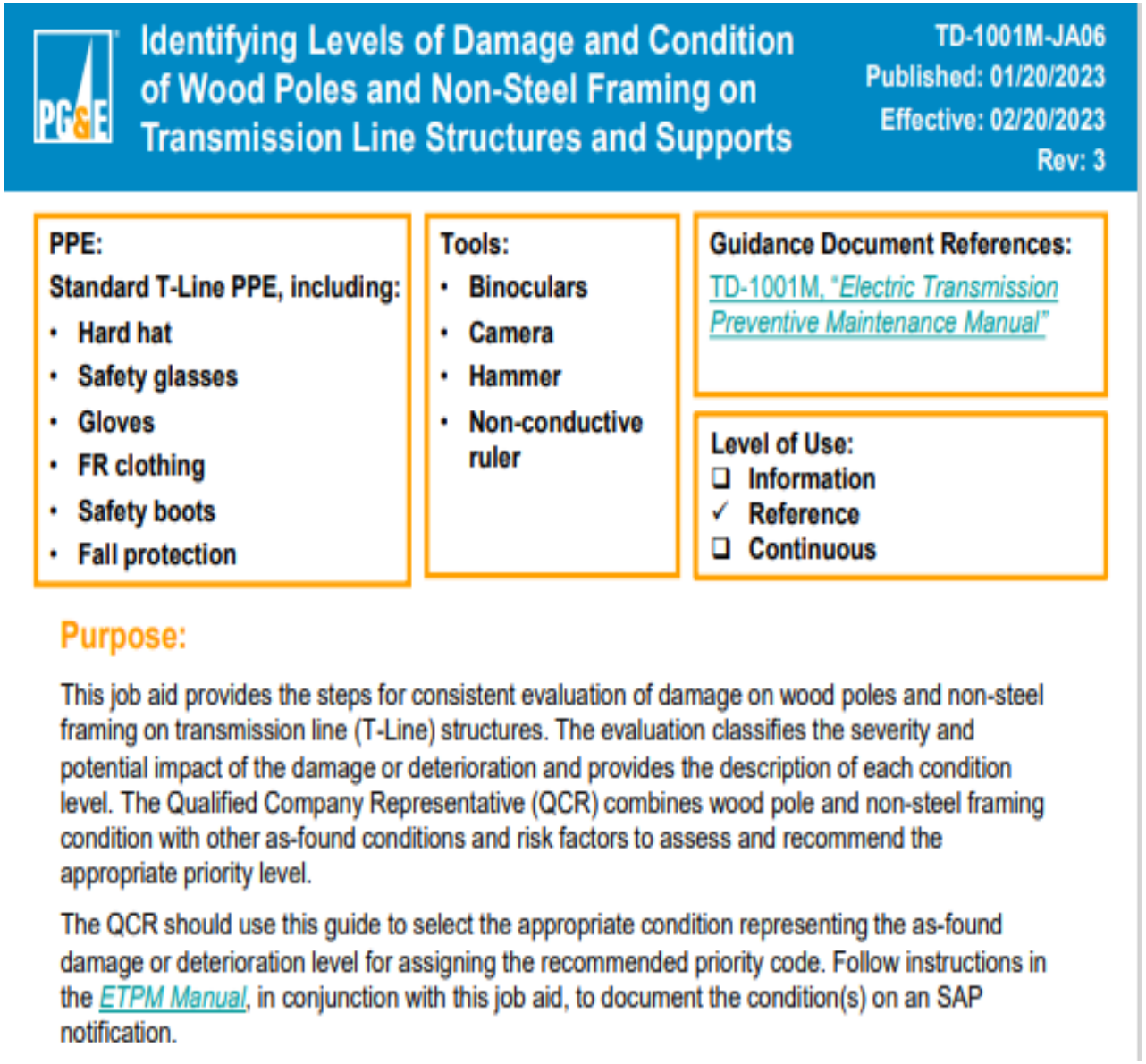
| Finding | Line Corrective (LC) Notification | Facility | Damage | Action |
|---|---|---|---|---|
| Anti-climbing guards are missing | Yes | Marker (i.e. signs)-Steel | Missing | Install |

| Finding | Line Corrective (LC) Notification | Facility | Damage | Action |
|---|---|---|---|---|
| Anti-climbing guards are broken, cracked, damaged | Yes | Marker (i.e. signs)-Steel | No Good/Out of Stdrd | Install |

# Wood Poles & Non-Steel Framing

Job Aid Details:

- Inspection Steps
- Visual Inspection of Physical Defects
- Sound Inspection/Hammer Test
- Evaluation of Intrusive Inspection Results
- Evaluation of Previously-Stubbed Poles



PG&E

**Identifying Levels of Damage and Condition of Wood Poles and Non-Steel Framing on Transmission Line Structures and Supports**

TD-1001M-JA06
Published: 01/20/2023
Effective: 02/20/2023
Rev: 3

**PPE:**

**Standard T-Line PPE, including:**

- Hard hat
- Safety glasses
- Gloves
- FR clothing
- Safety boots
- Fall protection

**Tools:**

- Binoculars
- Camera
- Hammer
- Non-conductive ruler

**Guidance Document References:**

TD-1001M, *"Electric Transmission Preventive Maintenance Manual"*

**Level of Use:**

- ❑ Information
- ✓ Reference
- ❑ Continuous

**Purpose:**

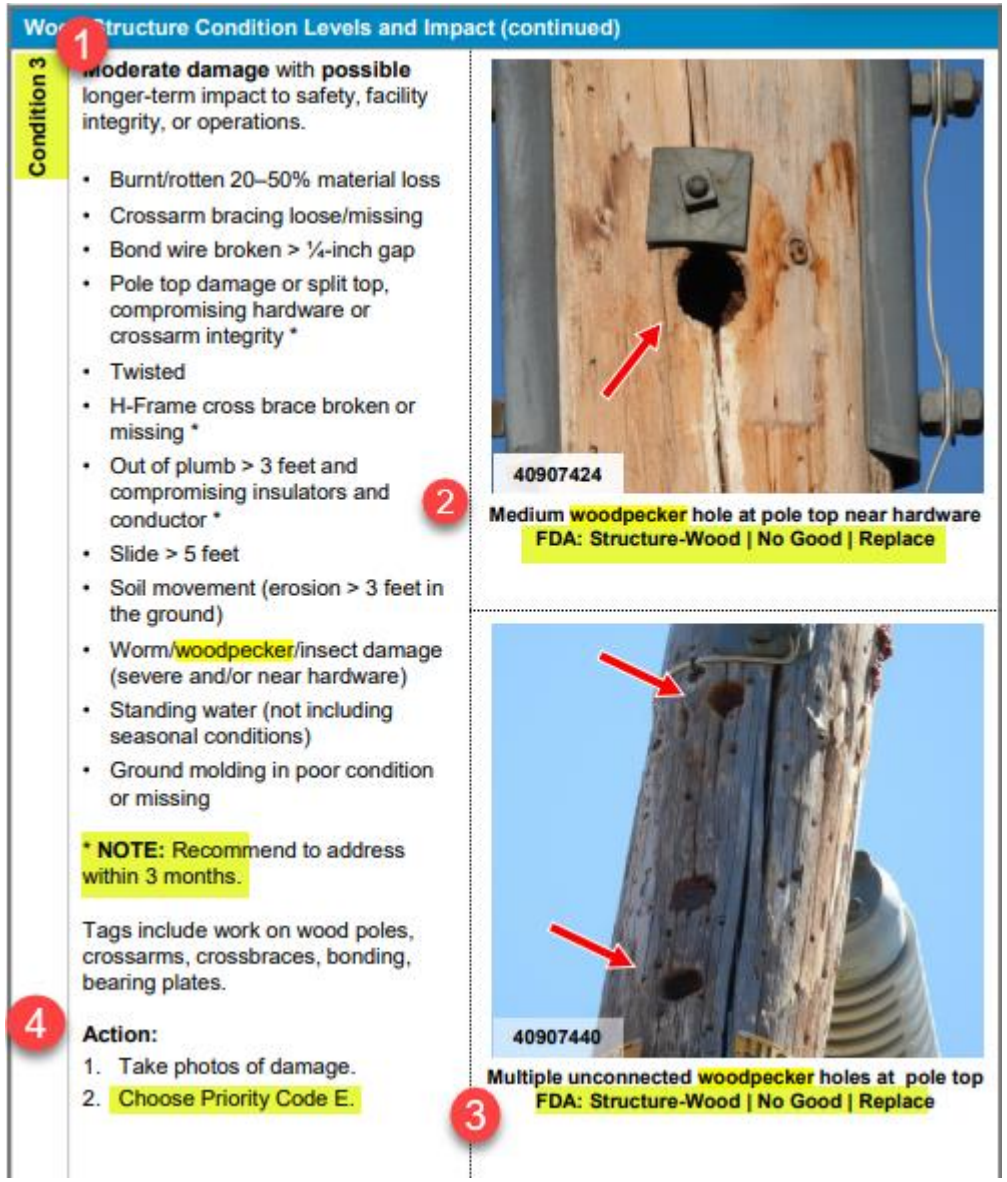
This job aid provides the steps for consistent evaluation of damage on wood poles and non-steel framing on transmission line (T-Line) structures. The evaluation classifies the severity and potential impact of the damage or deterioration and provides the description of each condition level. The Qualified Company Representative (QCR) combines wood pole and non-steel framing condition with other as-found conditions and risk factors to assess and recommend the appropriate priority level.

The QCR should use this guide to select the appropriate condition representing the as-found damage or deterioration level for assigning the recommended priority code. Follow instructions in the *ETPM Manual*, in conjunction with this job aid, to document the condition(s) on an SAP notification.

# Woodpecker Damage

Job Aid Guide

1. Condition is Listed – 3
2. Recommended FDA Provided
3. Recommended FDA Provided
4. Priority & Duration Provided



Wo tructure Condition Levels and Impact (continued)

Condition 3

1

**oderate damage** with **possible** longer-term impact to safety, facility integrity, or operations.

- Burnt/rotten 20–50% material loss
- Crossarm bracing loose/missing
- Bond wire broken > ¼-inch gap
- Pole top damage or split top, compromising hardware or crossarm integrity *
- Twisted
- H-Frame cross brace broken or missing *
- Out of plumb > 3 feet and compromising insulators and conductor *
- Slide > 5 feet
- Soil movement (erosion > 3 feet in the ground)
- Worm/woodpecker/insect damage (severe and/or near hardware)
- Standing water (not including seasonal conditions)
- Ground molding in poor condition or missing

2

40907424

Medium woodpecker hole at pole top near hardware
FDA: Structure-Wood | No Good | Replace

* **NOTE:** Recommend to address within 3 months.

Tags include work on wood poles, crossarms, crossbraces, bonding, bearing plates.

4

**Action:**

1. Take photos of damage.
2. Choose Priority Code E.

40907440

3

Multiple unconnected woodpecker holes at pole top
FDA: Structure-Wood | No Good | Replace

# Wood Structure Condition Levels

## Wood Structure Condition Levels and Impact

**Condition 5**

1. **Severe damage** with an **immediate** safety concern **OR** potential to impact operations.

- Burnt/rotten > 50% material loss
- Crossarm bracing missing or broken, compromising insulator and conductor
- Bond wire broken < ¼-inch gap
- Severe pole top damage or split top compromising hardware or crossarm integrity
- Cracked (not checks)
- Broken

Tags include work on wood poles, crossarms, crossbraces, bonding, bearing plates.

4. **Action:**
1. Take photos of damage.
2. Choose Priority Code A.


2. Broken pole top (cracks run across wood grain)
FDA: Emergency | Storm Related | Replace


3. Severe woodpecker damage
FDA: Emergency | Storm Related | Replace

1. Condition
2. FDA
3. FDA
4. Priority - Duration

## Wood Structure Condition Levels and Impact (continue)

**Condition 4**

1. **Heavy damage** with **possible** near-term impact to safety, facility integrity, or operations.

- Burnt/rotten 20–50% material loss
- Crossarm bracing loose/missing
- Bond wire broken > ¼-inch gap
- Pole top damage or split top, compromising hardware or crossarm integrity *
- Twisted
- H-Frame cross brace broken or missing *
- Out of plumb > 3 feet and compromising insulators and conductor *
- Slide > 5 feet
- Soil movement (erosion > 3 feet in the ground)
- Worm/woodpecker/insect damage (severe and/or near hardware)
- Standing water (not including seasonal conditions)
- Ground molding in poor condition or missing

* **NOTE:** Recommend to address within 3 months.

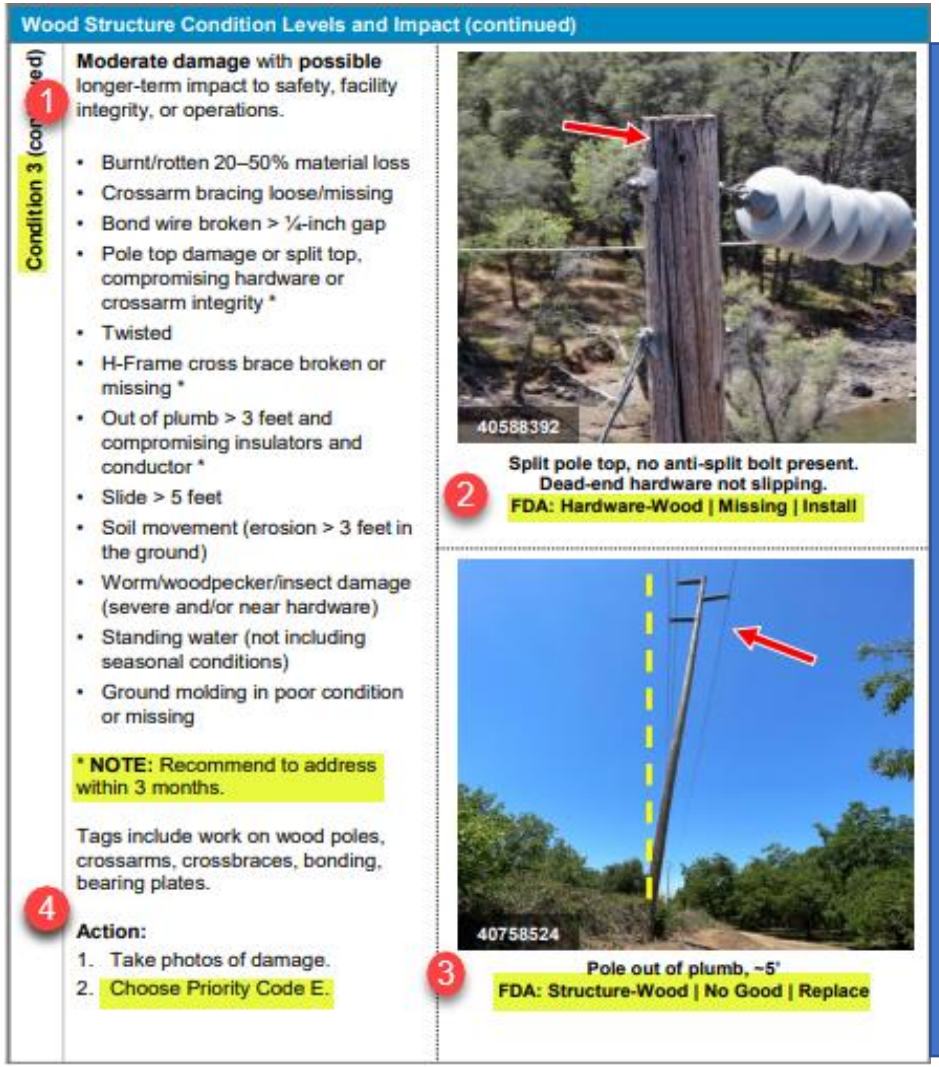
Tags include work on wood poles, crossarms, crossbraces, bonding, bearing plates.

4. **Action:**
1. Take photos of damage.
2. Choose Priority Code E.
3. Choose shortened due date (3–12 months) based on conditions and location.

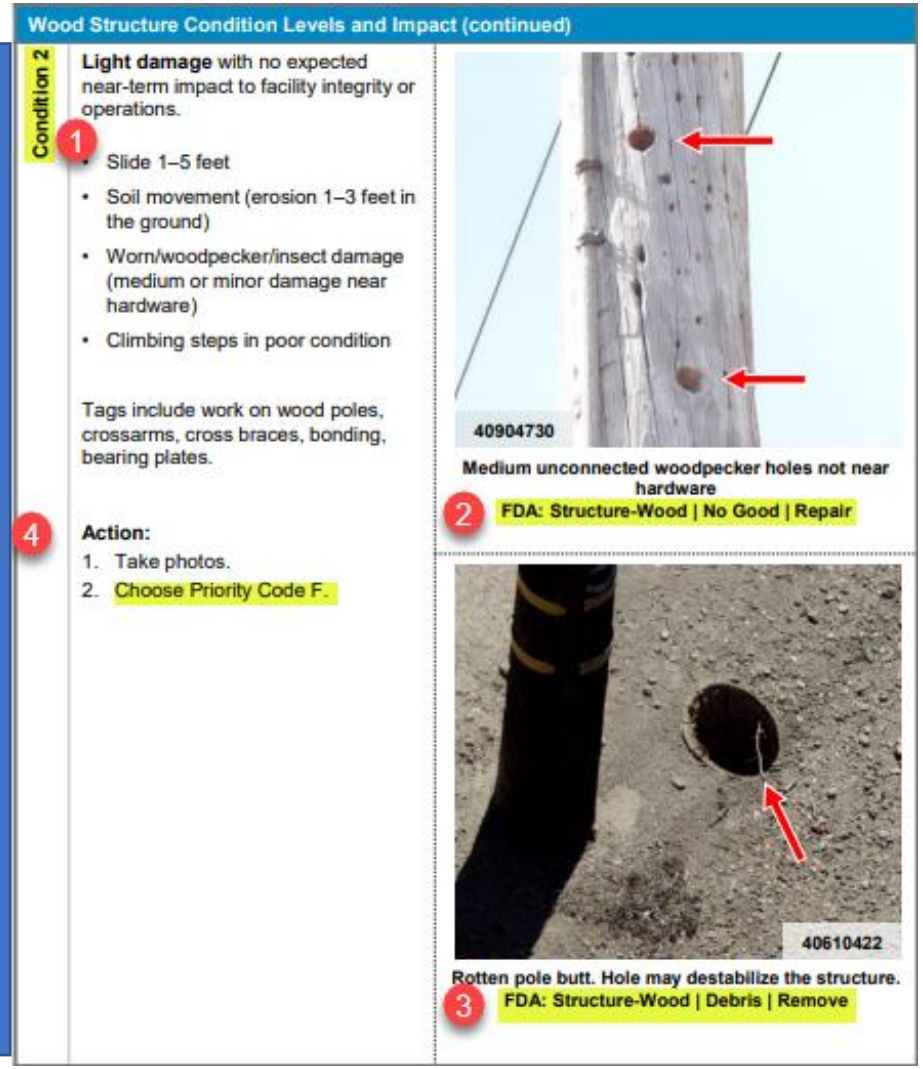

2. Multiple large woodpecker holes at pole top
FDA: Structure-Wood | No Good | Replace


3. Ruler shows continuous woodpecker cavity
FDA: Structure-Wood | No Good | Replace

# Wood Structure Condition Levels cont.




1. Condition
2. FDA
3. FDA
4. Priority - Duration



# Crossarm Conditions

## Crossarm Condition Levels and Impact

**Condition 5**

**Severe damage** with an **immediate** safety concern **OR** potential to impact operations.

1

- Burnt/rotten > 50% material loss
- Crossarm bracing missing or broken, compromising insulator and conductor
- Bond wire broken < ¼-inch gap
- Severe pole top damage or split top compromising hardware or crossarm integrity
- Cracked (not checks)
- Broken

Tags include work on wood poles, crossarms, crossbraces, bonding, bearing plates.

4 **Action:**

1. Take photos of damage.
2. Choose Priority Code A.


Broken crossarm bracing, compromising insulators

2 FDA: Emergency-Wood | Other | Replace


Broken crossarm (cracks run across wood grain)

3 FDA: Emergency-Wood | Other | Replace

1. Condition
2. FDA
3. FDA
4. Priority - Duration

## Crossarm Condition Levels and Impact (continued)

**Condition 4**

**Heavy damage** with **possible** near-term impact to safety, facility integrity, or operations.

1

- Burnt/rotten 20–50% material loss
- Crossarm bracing loose/missing
- Bond wire broken > ¼-inch gap
- Pole top damage or split top, compromising hardware or crossarm integrity *
- Twisted
- H-Frame cross brace broken or missing *
- Out of plumb > 3 feet and compromising insulators and conductor *
- Slide > 5 feet
- Soil movement (erosion > 3 feet in the ground)
- Worm/woodpecker/insect damage (severe and/or near hardware)
- Standing water (not including seasonal conditions)
- Ground molding in poor condition or missing

* **NOTE:** Recommend to address within 3 months.

Tags include work on wood poles, crossarms, crossbraces, bonding, bearing plates.

4 **Action:**

1. Take photos of damage.
2. Choose Priority Code E.
3. Choose shortened due date (3–12 months) based on conditions and location.


Split crossarm compromising hardware

FDA: Crossarm-Wood | No good | Replace

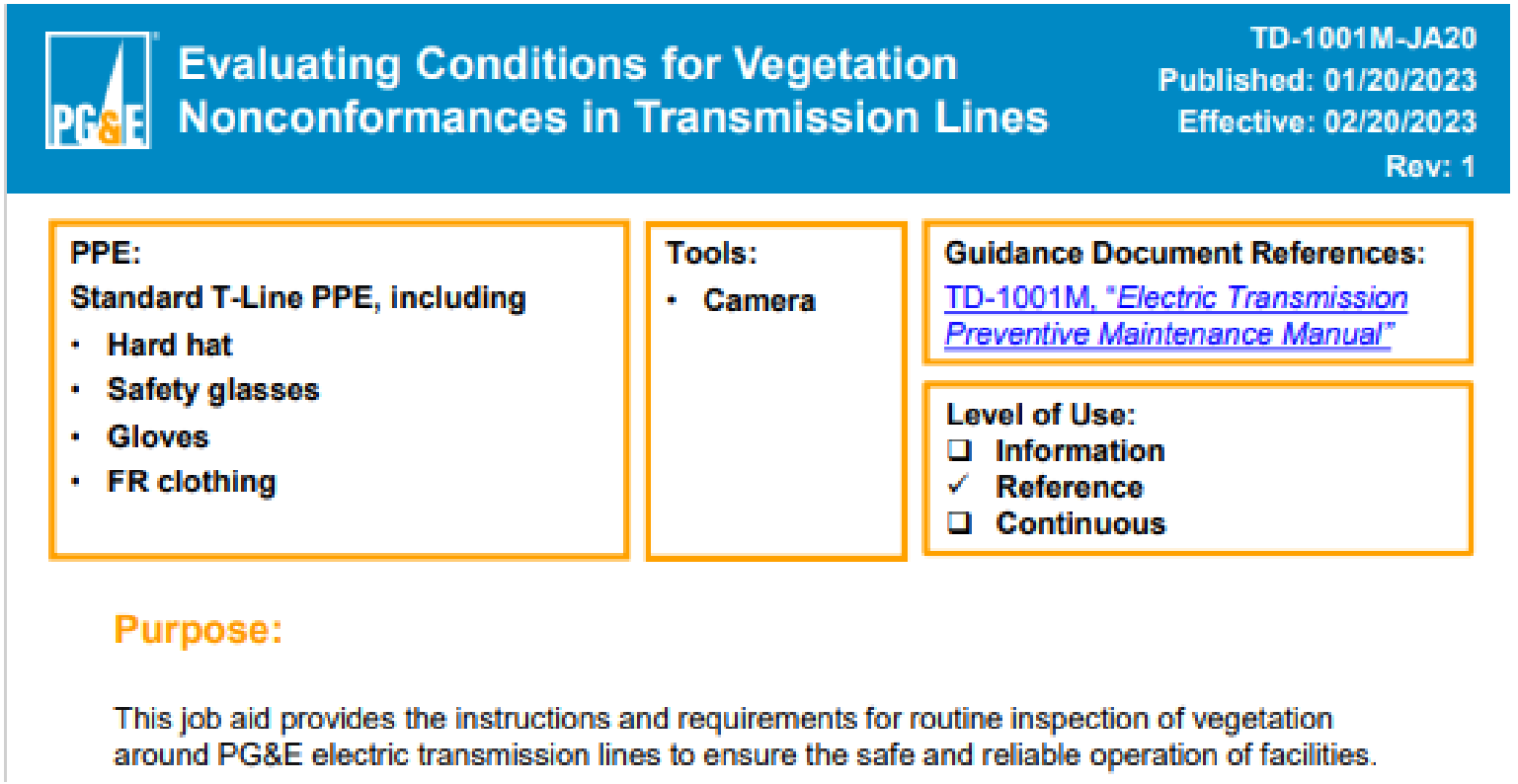
2


Broken H-frame cross brace

FDA: Crossarm-Wood | No good | Replace

3

# Evaluating Conditions for Vegetation



## Evaluating Conditions for Vegetation Nonconformances in Transmission Lines

TD-1001M-JA20
Published: 01/20/2023
Effective: 02/20/2023
Rev: 1

**PPE:**
**Standard T-Line PPE, including**
- **Hard hat**
- **Safety glasses**
- **Gloves**
- **FR clothing**

**Tools:**
- **Camera**

**Guidance Document References:**
TD-1001M, *"Electric Transmission Preventive Maintenance Manual"*

**Level of Use:**
- ❑ **Information**
- ✓ **Reference**
- ❑ **Continuous**

**Purpose:**

This job aid provides the instructions and requirements for routine inspection of vegetation around PG&E electric transmission lines to ensure the safe and reliable operation of facilities.

# Vegetation Conditions

There are two types of vegetation conditions requiring action:

**Steel Structure**

- Vegetation impacting Structure, Framing or Lines
- Significant woody vegetation around Concrete Foundation

**Non-Steel Structure**

- Vegetation impacting Structure, Framing or Lines
- Significant woody vegetation around Base

# Vegetation Conditions

When looking at Vegetation-to-Conductor clearance distances, including De-energized components, refer to Table 1 below.

**Table1: Vegetation-to-Conductor Clearance Distance**

| Voltage (kV) | Clearance Distance | Action Required |
|---|---|---|
| 60/70* | 4 feet or less | Call VPM (Veg Program Manager) |
| 115* | 10 feet or less | Call VPM |
| 230 | 10 feet or less | Call GCC and VPM |
| 500 | 15 feet or less | Call GCC and VPM |

* If the line is NERC/CAISO critical (Spaulding – Summit 60kV, Drum-Summit #1 115kV and Drum-Summit #2 115kV), call the GCC and VPM as required for 230kV and 500kV lines.

# Vegetation Conditions

If woody vegetation is in contact with the pole or tower, vegetation is impacting the structure (including the guy) or significantly interferes with the inspection of the pole or structure base or footings:

1. Document the observation in the Inspection Checklist
2. Create a notification for Vegetation Removal with the FDA code noted below. Choose the appropriate Priority Code for the situation, then Vegetation Management will arrange for appropriate vegetation work.

| Finding | Line Corrective (LC) Notification | Facility | Damage | Action |
|---|---|---|---|---|
| Woody vegetation is in contact with the pole or tower, vegetation is impacting the structure (including the guy) or significantly interferes with the inspection of the pole or structure | Yes | Vegetation | Overgrown | Remove |
| Woody vegetation is in contact with the pole or tower, vegetation is impacting the structure (including the guy) or significantly interferes with the inspection of the pole or structure | Yes | Vegetation-Tower | Overgrown | Cage Clearing |

# Vegetation Management

IF THERE IS **AN IMMINENT THREAT** AS DEFINED BELOW, there are additional immediate communications required.

**Imminent Threat Scenario:** Vegetation-to-Conductor Clearance Distance

- tree uprooting
- tree leaning towards lines or structures
- tree approaching Imminent Threat Vegetation-to-Conductor Clearance Distance which could be compromised by line sag or sway.

**Table 2: Imminent Threat Vegetation-to-Conductor Clearance Distance**

| Voltage (kV) | Clearance Distance | Action Required |
|---|---|---|
| 60/70* | 1’ 4” or less | Call your PG&E Lead |
| 115* | 2’ 4” or less | Call your PG&E Lead |
| 230 | 4’ 7” or less | Call your PG&E Lead |
| 500 | 8’ 3” or less | Call your PG&E Lead |

*If the line is NERC/CAISO critical (Spaulding –Summit 60kV, Drum-Summit #1 115kV and Drum-Summit #2 115kV), call the GCC and VPM as required for 230kV and 500kV lines.

# Vegetation Management - Condition 5

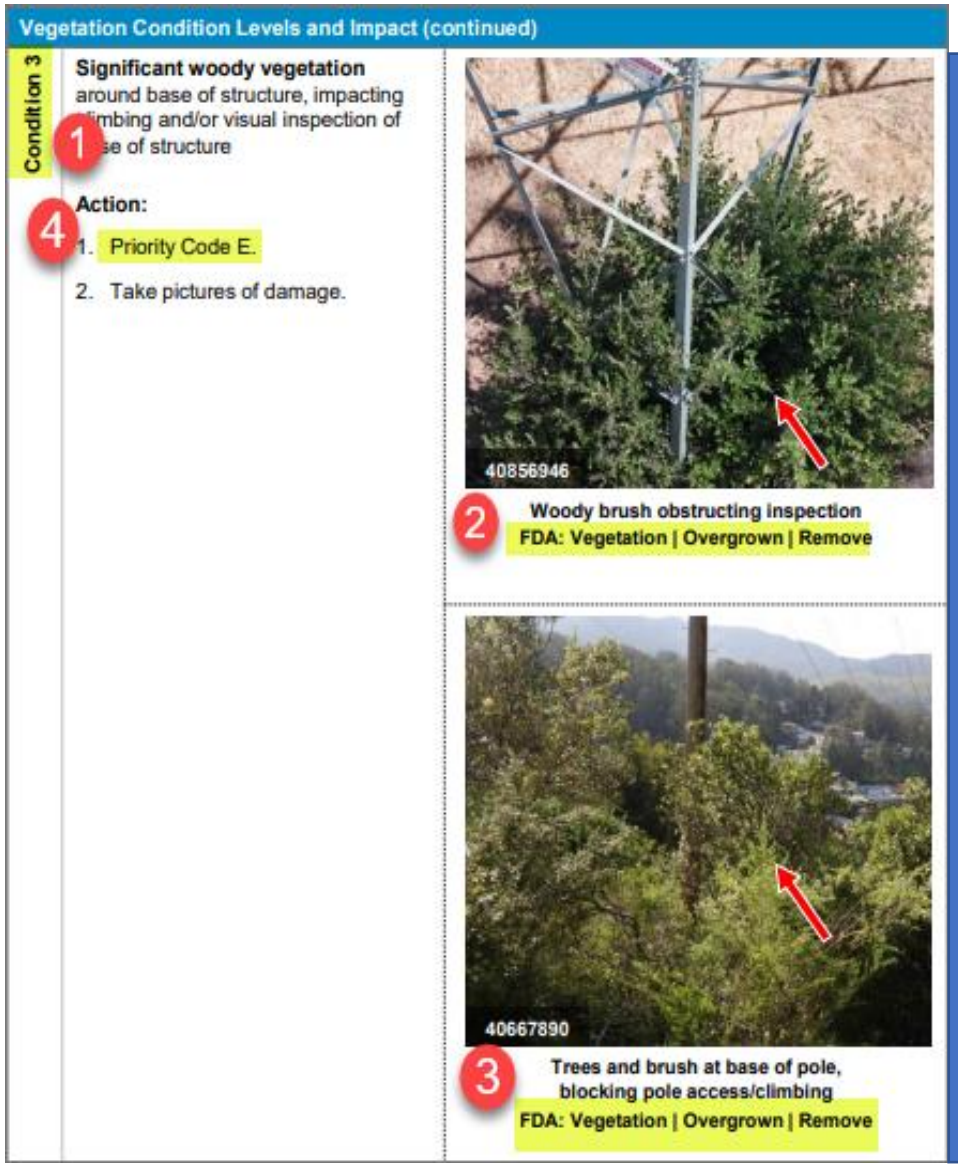
Job Aid [TD-1001M-JA20] Evaluating Conditions for Vegetation Nonconformances in Transmission Lines

Job Aid Guide:

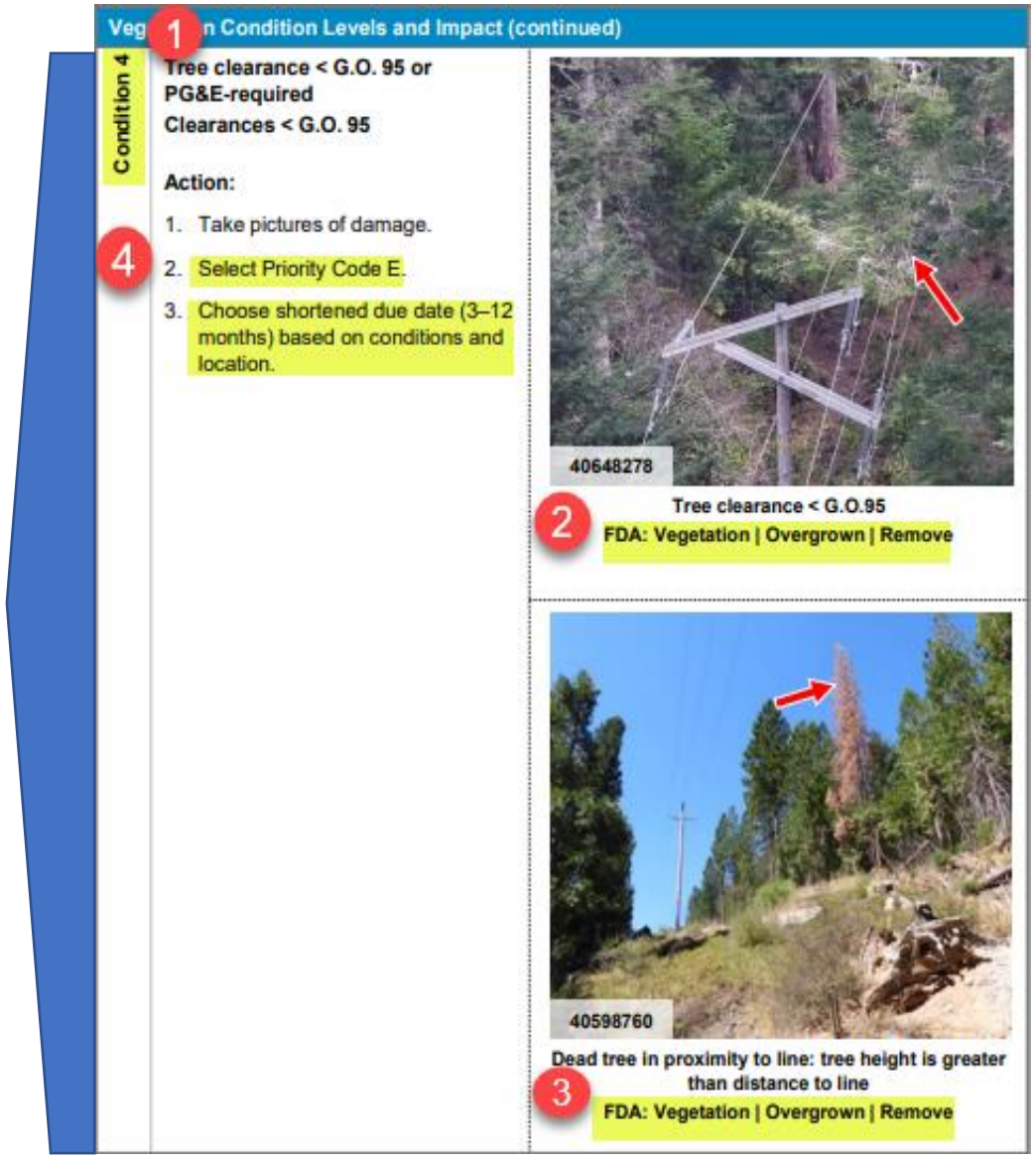
1. Condition is Listed – 5
2. Recommended FDA Provided
3. Recommended FDA Provided
4. Priority Provided


[Refer to Job Aid TD-1001M-JA20]

# Vegetation Management - Condition 3 & 4




1. Condition
2. FDA
3. FDA
4. Priority - Duration



# Knowledge Check

Let’s review:

**Which of these situations require an LC Notification? Priority?**

A. 1

B. 2

C. 3

**1**

**2**

**3**

# Knowledge Check - Answers

Let’s review:

**Which of these situations require an LC Notification? Priority?**

A. 1 - LC Notification, Priority A

B. 2 – No LC Required

C. 3 - LC Notification, Priority E

1

2

3

# Identifying Conductor and Insulator Conditions Job Aids

## Identifying Conductor and Clearance Conditions

TD-1001M-JA10
Published: 01/20/2023
Effective: 02/20/2023
Rev: 3

**PPE:**
**Standard T-Line PPE, including:**
- **Hard hat**
- **Safety glasses**
- **Gloves**
- **FR clothing**

**Guidance Document References:**
TD-1001M, *Electric Transmission Preventive Maintenance Manual*

**Tools:**
- **Binoculars**
- **Camera**

### Purpose:

This job aid provides the steps for consistent evalu
classifies the severity and potential impact of the ru
the description of each condition level.

Conductor clearance should be evaluated to deterr
and other conductors, ground, or other components
(QCR) combines conductor condition with other as-
and recommend the appropriate priority level.

The QCR should use this guide to select the appro
corrosion or deterioration level for assigning the re

## Identifying Levels of Corrosion and Condition of Hardware and Insulators on Transmission Line Structures and Supports

TD-1001M-JA07
Published: 01/20/2023
Effective: 02/20/2023
Rev: 4

**PPE:**
**Standard T-Line PPE, including:**
- **Hard hat**
- **Safety glasses**
- **Gloves**
- **FR clothing**
- **Safety boots**
- **Fall protection**

**Tools:**
- **Binoculars**
- **Camera**

**Guidance Document References:**
TD-1001M, "*Electric Transmission Preventive Maintenance Manual*"

**Level of Use:**
- ❑ **Information**
- ✓ **Reference**
- ❑ **Continuous**

### Purpose:

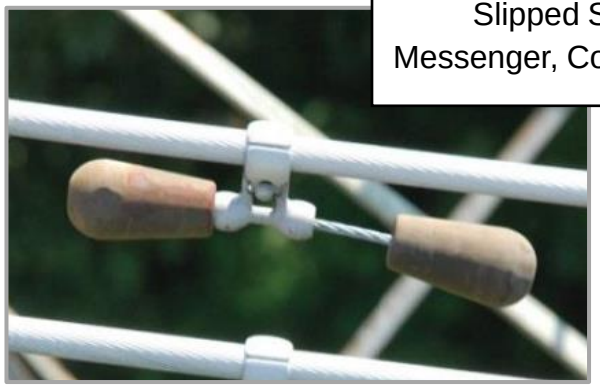
This job aid provides steps for consistent evaluation of rust and corrosion on hardware and insulators on transmission line (T-Line) structures. The evaluation classifies the severity and potential impact of the rust, corrosion, or deterioration, and provides the description of each condition level. The Qualified Company Representative (QCR) combines hardware or insulator condition with other as-found conditions and risk factors to assess and recommend the appropriate priority level.

The QCR must use this guide to select the appropriate condition representing the as-found corrosion or deterioration level for assigning the recommended priority code. Follow instructions in the *ETPM Manual*, in conjunction with this guide, to document the condition(s) on an SAP notification.

# Conductor: Conditions

The *Identifying Conductor Conditions Job Aid [TD-1001M-JA10]* is available to provide consistency to assess if notifications need to be created, condition codes and priority codes.

**EXAMPLES**:



Slipped Strand / Loose Messenger, Condition 3, Priority E

Severe Bird Caging near connector, Condition 5, Priority A

Pollutants But No Loss of Material, Condition 1, No Notification Required

# Conductor: Clearances

## Minimum Conductor Clearance Tables

**Table 1. Minimum Conductor-to-Ground Clearance Calculations**

| Voltage | 60, 70, 115 kV | 60, 70, 115 kV (over railroad) | 230 kV | 230 kV (over railroad) | 500 kV | 500 kV (over railroad) |
|---|---|---|---|---|---|---|
| Minimum Clearance Requirement | 30 feet [1] | 34 feet [1] | 30 feet [1] | 34 feet [1] | 35 feet [1] | 39 feet [1] |

[1] **Note:** If the measured conductor-to-ground clearance is less than shown on this table, consult transmission line engineering to determine the optimal conductor-to-ground clearance for the location in question and whether remediation is required.

Clearances must be measured at the low point in the span. Across uneven terrain, this might not be at the mid-span. See Figure 1, "Clearance Checks on Uneven Terrain" on Page 3.

**Table 2. Minimum Conductor-to-Conductor (Circuit-to-Circuit) Clearances**

| Voltage | 60/70 kV | 115 kV (Wood) | 115 kV (Non Wood) |
|---|---|---|---|
| Minimum Separation for Circuits Supported on Same Structure | 48 inches | 84 inches | 120 inches |
| Minimum Separation to Distribution on an Interset Pole | 96 inches | 120 inches | 120 inches |

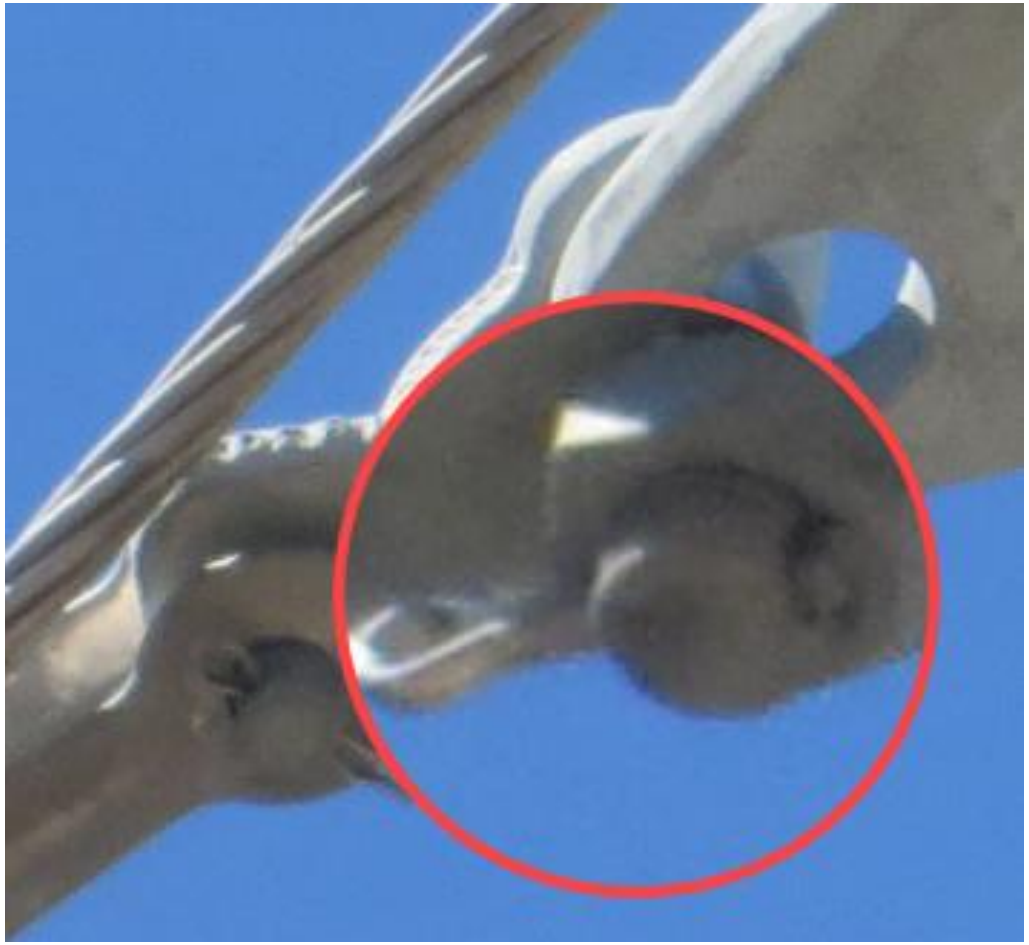
A Job Aid [**TD-1001M-JA10**] is available showing these distances, along with guidance on how to measure the clearances.

# Phase Clearances

**Table 2. Minimum Conductor-to-Conductor (Circuit-to-Circuit) Clearances**

| Voltage | 60/70 kV | 115 kV (Wood) | 115 kV (Non Wood) |
|---|---|---|---|
| Minimum Separation for Circuits Supported on Same Structure | 48 inches | 84 inches | 120 inches |
| Minimum Separation to Distribution on an Interset Pole | 96 inches | 120 inches | 120 inches |

# Missing cotter key backed out pin



# Insulator - Guide for Replacing Damaged Insulators

Job Aid [JA07] is available showing these numbers, along with guidance on how to determine if an LC notification is required

**Table 2**

| Voltage | Configuration | Contamination District | G.O. 95 Minimum Requirements | | Design # of Units | Minimum # of Units |
|---|---|---|---|---|---|---|
| | | | Dry Flashover | # of Units | | |
| 500 kV | Dead-end | AAA | 1,190 kV | 23 | 34 | 32 |
| | Dead-end | B, C, D | | | 34 | 32 |
| | Vee String | AAA | | | 36 | 34 |
| | Vee String | B, C, D | | | 34 | 32 |
| | Suspension | AAA | | | 32 | 30 |
| | Suspension | B, C, D | | | 32 | 30 |
| 230 kV | Dead-end | AAA | 582 kV | 12 | 24 | 20 |
| | Dead-end | A | | | 24 | 20 |
| | Dead-end | B, C, D | | | 15 | 13 |
| | Suspension | AAA | | | 15 | 13 |
| | Suspension | A, B, C, D | | | 15 | 13 |
| 115 kV | Dead-end | AAA | 333 kV | 6 | 12 | 10 |
| | Dead-end | A | | | 11 | 9 |
| | Dead-end | B | | | 10 | 8 |
| | Dead-end | C, D | | | 9 | 8 |
| | Suspension | AAA | | | 10 | 6 |
| | Suspension | A, B | | | 8, 9 | 6 |
| | Suspension | C, D | | | 8 | 6 |
| 60/70 kV | Dead-end | AAA | 180 kV | 3 | 7 | 5 |
| | Dead-end | A, B | | | 6 | 5 |
| | Dead-end | C, D | | | 5 | 5 |
| | Suspension | AAA, A, B | | | 5 | 3 |
| | Suspension | C, D | | | 4 | 3 |

# Conductor & Insulator FDAs

**Conductor Condition Levels and Impact (continued)**

**Condition 3**

1 **Moderate damage or moderate corrosion** with **possible** longer-term impact to safety, facility integrity, or operations.

- 10–50% material loss
- Broken strands and out-of-lay strands (e.g., gunshot), 5–40%; see Numbered Document 028855
- 4 Evidence of arcing (recommended to complete within 3 months)
- Broken or loose tie wire (conductor well seated in the saddle with vertical load or partially captured with tie wire)
- Broken ground wire
- Loose connector or weight
- Twisted bundled conductor (recommended to complete within 3 months)
- Conductor kinked/pinched at clamp
- Vibrating (send to engineering personnel for evaluation)
- Ground wire in poor condition (corrosion, flashed, missing)

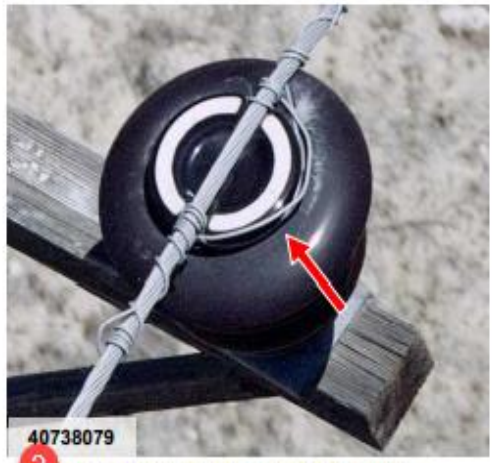
4 **Action:**

1. Take pictures of the damage.
2. Choose Priority Code E.

41123857

2 ~25-30% strands broken

FDA: Conductor-Wood | No good | Repair



40738079

3 Loose tie wire, conductor well seated

FDA: Tie Wire-Wood | No good | Replace

1. Condition
2. FDA
3. FDA
4. Priority - Duration

**Insulator Condition Levels and Impact (continued)**

**Condition 5 (cor ed)**

1 **Severe deterioration** with an **immediate** safety concern **OR** potential to impact operations.

- > 50% material loss
- Contaminated (arcing)

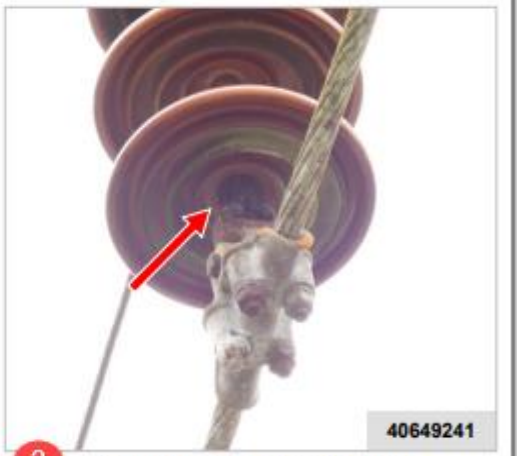
**Action:**

4 1. Take photos of the damage.
2. Choose Priority Code A.

40875900

2 >50% material loss on insulator pin

FDA: Emergency-Steel | Other | Replace



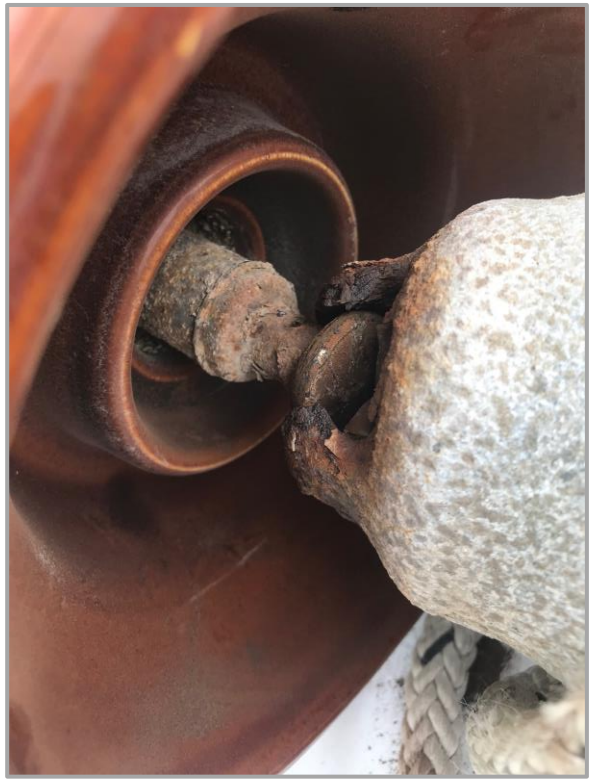
40649241

3 >50% material loss on insulator pin

FDA: Emergency-Steel | Other | Replace

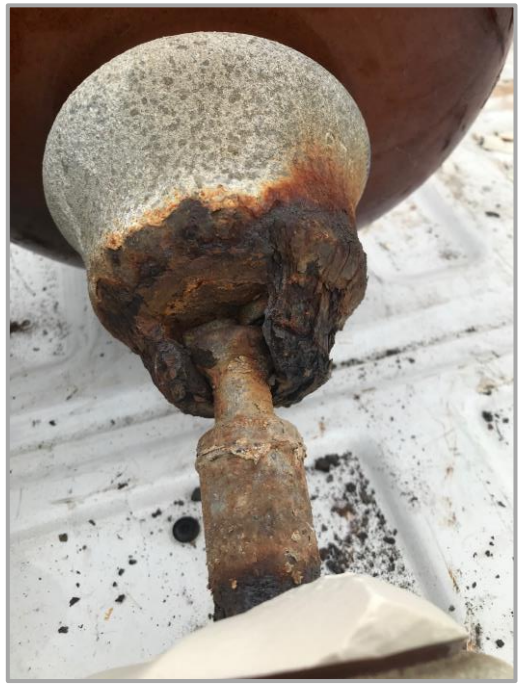
# Insulator: Divide-Vandenberg #1 4/35

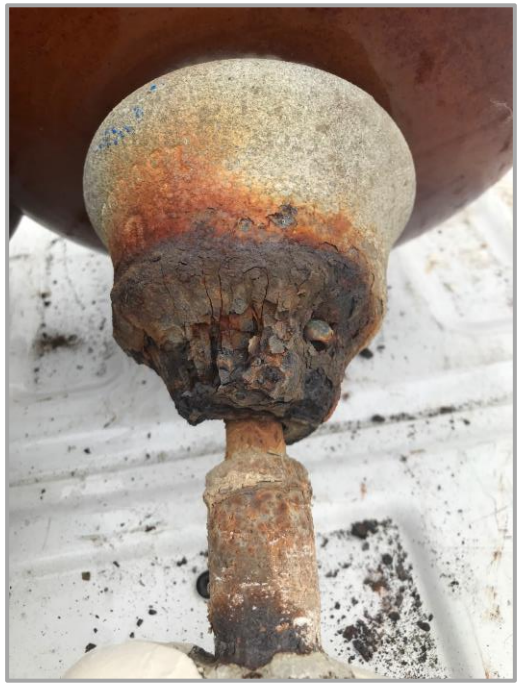
Example #1: **Emergency Priority - A**


# Insulator: Divide-Vandenberg #1 4/35 (continued)

Example # 2: **Emergency Priority - A**





# Knowledge Check

Let’s review:

**Using the Table, Which of the following situations require an LC Notification? What Priority?**

A. A 230kV dead-end insulator string, Contamination District B, has 20 bells total with 4 broken

B. A 115kV suspension insulator string, Contamination District B, has 9 bells total with 4 broken

Table 2

| Voltage | Configuration | Contamination District | G.O. 95 Minimum Requirements | | Design # of Units | Minimum # of Units |
|---|---|---|---|---|---|---|
| | | | Dry Flashover | # of Units | | |
| 500 kV | Dead-end | AAA | 1,190 kV | 23 | 34 | 32 |
| | Dead-end | B, C, D | | | 34 | 32 |
| | Vee String | AAA | | | 36 | 34 |
| | Vee String | B, C, D | | | 34 | 32 |
| | Suspension | AAA | | | 32 | 30 |
| | Suspension | B, C, D | | | 32 | 30 |
| 230 kV | Dead-end | AAA | 582 kV | 12 | 24 | 20 |
| | Dead-end | A | | | 24 | 20 |
| | Dead-end | B, C, D | | | 15 | 13 |
| | Suspension | AAA | | | 15 | 13 |
| | Suspension | A, B, C, D | | | 15 | 13 |
| 115 kV | Dead-end | AAA | 333 kV | 6 | 12 | 10 |
| | Dead-end | A | | | 11 | 9 |
| | Dead-end | B | | | 10 | 8 |
| | Dead-end | C, D | | | 9 | 8 |
| | Suspension | AAA | | | 10 | 6 |
| | Suspension | A, B | | | 8, 9 | 6 |
| | Suspension | C, D | | | 8 | 6 |
| 60/70 kV | Dead-end | AAA | 180 kV | 3 | 7 | 5 |
| | Dead-end | A, B | | | 6 | 5 |
| | Dead-end | C, D | | | 5 | 5 |
| | Suspension | AAA, A, B | | | 5 | 3 |
| | Suspension | C, D | | | 4 | 3 |

# Knowledge Check - Answers

Let’s review:

**Using the Table, Which of the following situations require an LC Notification? What Priority?**

A. A 230kV dead-end insulator string, Contamination District B, has 20 bells total with 4 broken
This is not an urgent situation. It should be noted in the inspection form, but it does not need immediate attention.

B. A 115kV suspension insulator string, Contamination District B, has 9 bells total with 4 broken
This is a Priority-**E** situation because it is LESS than the minimum number of insulators required. Call your PG&E Lead.

Table 2

| Voltage | Configuration | Contamination District | G.O. 95 Minimum Requirements | | Design # of Units | Minimum # of Units |
|---|---|---|---|---|---|---|
| | | | Dry Flashover | # of Units | | |
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| | Vee String | B, C, D | | | 34 | 32 |
| | Suspension | AAA | | | 32 | 30 |
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| 230 kV | Dead-end | AAA | 582 kV | 12 | 24 | 20 |
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| | Dead-end | B, C, D | | | 15 | 13 |
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| | Dead-end | A | | | 11 | 9 |
| | Dead-end | B | | | 10 | 8 |
| | Dead-end | C, D | | | 9 | 8 |
| | Suspension | AAA | | | 10 | 6 |
| | Suspension | A, B | | | 8, 9 | 6 |
| | Suspension | C, D | | | 8 | 6 |
| 60/70 kV | Dead-end | AAA | 180 kV | 3 | 7 | 5 |
| | Dead-end | A, B | | | 6 | 5 |
| | Dead-end | C, D | | | 5 | 5 |
| | Suspension | AAA, A, B | | | 5 | 3 |
| | Suspension | C, D | | | 4 | 3 |

# Knowledge Check

Let’s review:

**Using Table 4 below, which of the following scenarios would require an Emergency Priority-A Notification?**

A. Insulator rust shows greater than 50% material loss
B. Insulator showing medium tracking
C. Insulator worn greater than 50% material loss
D. Insulator cracked to the cap

| Component | Priority Code | | |
|---|---|---|---|
| | A (Level 1 – Immediate) | E (Level 2 – 6/12/36 Months) | F (Level 3 – 60 Months) |
| **Insulator (INSU)**<br><br>**Insulator-Steel (INSS)**<br><br>**Insulator-Wood (INSW)**<br><br>**Note:** For insulators that are flashed, cracked, broken, gunshot, or chipped > 1-1/2 inches, see Job Aid TD-1001M-JA07. | • > 50% Material loss<br>• Contaminated (arcing) | • 30–50% Material loss<br>• Contaminated (heavy)<br>• Tracking (heavy)<br>• Missing/loose cotter key in retainer pin<br>• Out-of-plumb, post or suspension insulator, exhibiting signs of impacting conductor<br>• Chalking/cracking on polymer<br>• Corona rings damaged, missing (where required), or improperly installed (500 kilovolt [kV] only) | • Contaminated (medium)<br>• Tracking (medium)<br>• Out-of-plumb post insulator > 6 inches |

# Knowledge Check

Let’s review:

**Using Table 4 below, which of the following scenarios would require an Emergency Priority-A Notification?**

A. Insulator rust shows greater than 50% material loss

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# Right-of-Way & Encroachments

**Right-of-Way and Encroachments, Attachment 1**

Utility Standard: TD-1005S
Publication Date: 12/17/2014 Rev. 0

**Permissible Uses of Pacific Gas and Electric Company (Company) Easements**

1. **Agriculture**

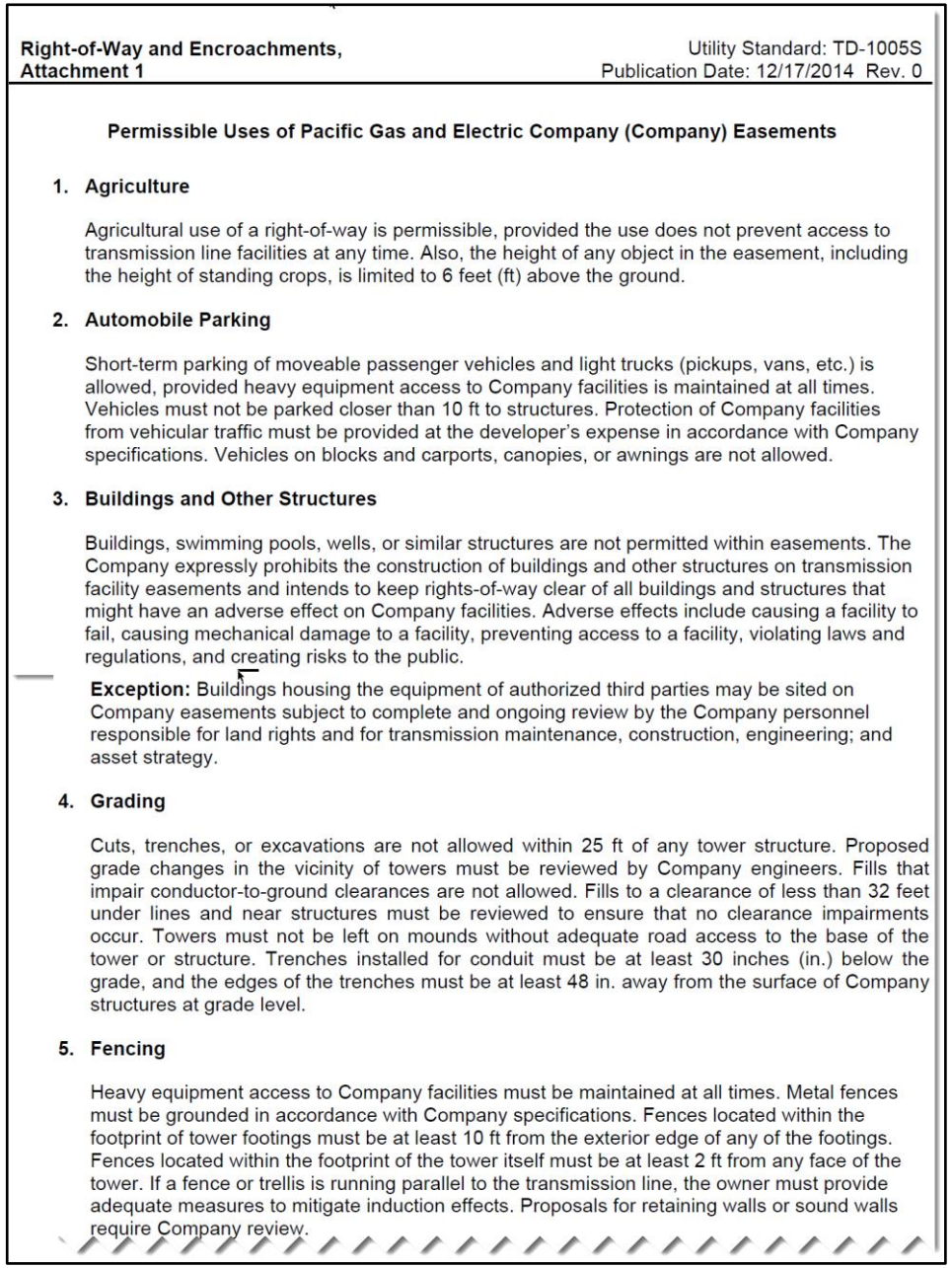
   Agricultural use of a right-of-way is permissible, provided the use does not prevent access to transmission line facilities at any time. Also, the height of any object in the easement, including the height of standing crops, is limited to 6 feet (ft) above the ground.

2. **Automobile Parking**

   Short-term parking of moveable passenger vehicles and light trucks (pickups, vans, etc.) is allowed, provided heavy equipment access to Company facilities is maintained at all times. Vehicles must not be parked closer than 10 ft to structures. Protection of Company facilities from vehicular traffic must be provided at the developer's expense in accordance with Company specifications. Vehicles on blocks and carports, canopies, or awnings are not allowed.

3. **Buildings and Other Structures**

# Right-of-Way & Encroachments





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3. **Buildings and Other Structures**

   Buildings, swimming pools, wells, or similar structures are not permitted within easements. The Company expressly prohibits the construction of buildings and other structures on transmission facility easements and intends to keep rights-of-way clear of all buildings and structures that might have an adverse effect on Company facilities. Adverse effects include causing a facility to fail, causing mechanical damage to a facility, preventing access to a facility, violating laws and regulations, and creating risks to the public.

   **Exception:** Buildings housing the equipment of authorized third parties may be sited on Company easements subject to complete and ongoing review by the Company personnel responsible for land rights and for transmission maintenance, construction, engineering; and asset strategy.

4. **Grading**

   Cuts, trenches, or excavations are not allowed within 25 ft of any tower structure. Proposed grade changes in the vicinity of towers must be reviewed by Company engineers. Fills that impair conductor-to-ground clearances are not allowed. Fills to a clearance of less than 32 feet under lines and near structures must be reviewed to ensure that no clearance impairments occur. Towers must not be left on mounds without adequate road access to the base of the tower or structure. Trenches installed for conduit must be at least 30 inches (in.) below the grade, and the edges of the trenches must be at least 48 in. away from the surface of Company structures at grade level.

5. **Fencing**

   Heavy equipment access to Company facilities must be maintained at all times. Metal fences must be grounded in accordance with Company specifications. Fences located within the footprint of tower footings must be at least 10 ft from the exterior edge of any of the footings. Fences located within the footprint of the tower itself must be at least 2 ft from any face of the tower. If a fence or trellis is running parallel to the transmission line, the owner must provide adequate measures to mitigate induction effects. Proposals for retaining walls or sound walls require Company review.

# Using Standards/Job Aids and Examining Photos

- Is there a threat of potential damage to facilities that could cause an immediate danger? Contact your PG&E Lead immediately.
- Determine if there is interference and whether permanent access can be maintained.
- Confirm there is sufficient conductor-to-ground clearance, radial line clearances, and clearances around structures.
- Confirm whether excavation, grading, equipment use, or land erosion is impacting pole or tower stability

# Examples: Right-of-Way (ROW) – Encroachments

| Finding | Line Corrective (LC) Notification | Facility | Damage | Action |
|---|---|---|---|---|
| Any items around a Structure: Encroachments or other uses on PG&E property or easements, evaluate for interference with maintaining, operating or constructing electric transmission | Yes | Right-of-way | Encroachment | Remove |

# Example: Right-of-way (ROW) – Well Under Conductor

# Examples: Right-of-Way (ROW) – Building or Structure


# Right-of-way (ROW): Pools, Buildings, and Structures

| Finding | Line Corrective (LC) Notification | Facility | Damage | Action |
|---|---|---|---|---|
| Any of the below items under conductors:<br>• Wells<br>• Buildings<br>• Structures<br>• Swimming Pools | Yes | Right-of-way | Encroachment | Remove |

Exceptions:

- Buildings that house the equipment of third-parties subject to on-going reviews (e.g., cell tower sites)
- Dirt spoils and stored material, unless CPUC GO95 infraction

# Removal of Metal Fence Attachments


# Removal of Metal Fence Attachments

| Finding | Line Corrective (LC) Notification | Facility | Damage | Action |
|---|---|---|---|---|
| Unauthorized attachment | Yes | Structure-Steel | Debris, Nest, etc. | Remove |
| Unauthorized attachment | Yes | Structure-Wood | Debris, Nest, etc. | Remove |

Notes:

- Structure-Steel includes lattice steel tower (LST), lattice steel pole (LSP), and tubular steel pole (TSP)Structure-Wood includes wood pole, light duty steel pole (LDSP), fiberglass pole, concrete pole

Requirements:

- You are required to provide recommendations for action
- You are required to add field comments, a map screenshot and two field photos of the condition(s)

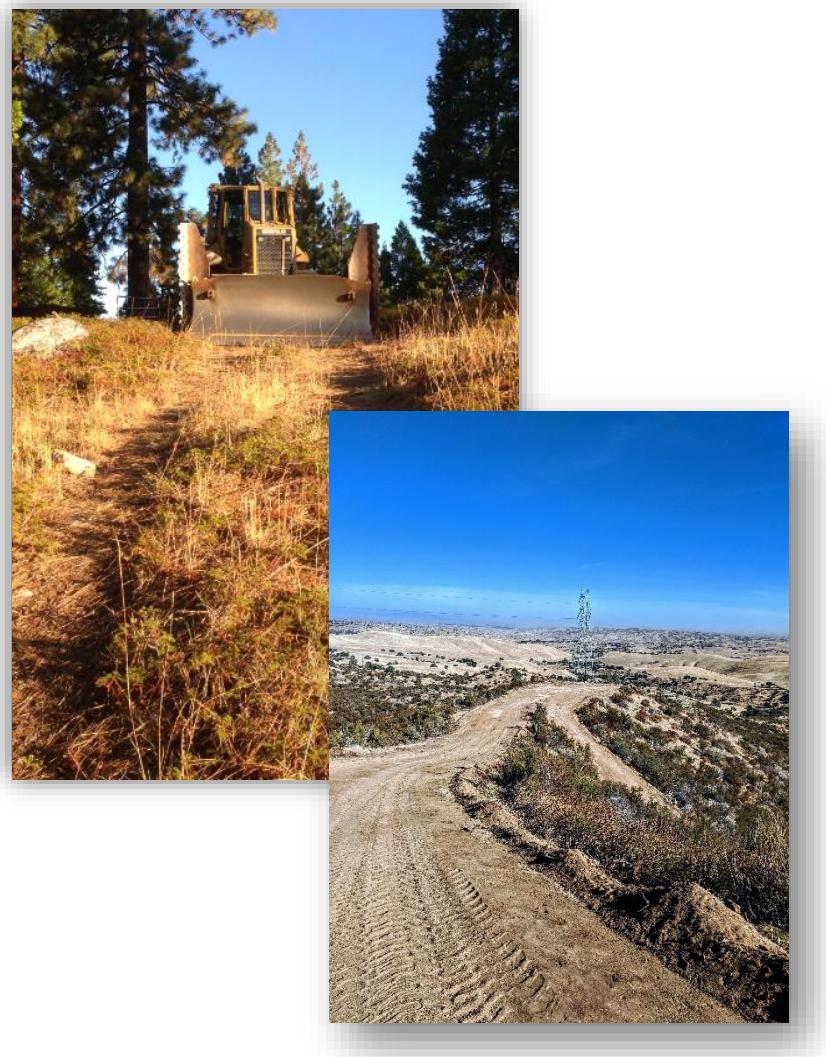
# Corrective Work on Access Routes

The following serves as a guide to inform on the creation of Electric Transmission Line Corrective work notifications relating to poor, damaged or otherwise neglected access roads.

These are known as **TLR Notifications**

Opportunities -

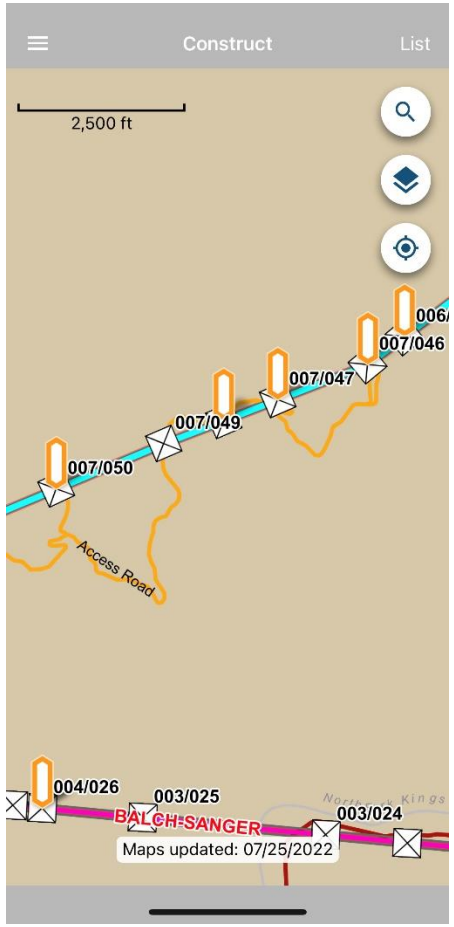
- Access is not being looked at in conjunction when other corrective work notifications are being created.
  - Example – Is access going to impair the completion of related M&C operations
- Inform on how to create Transmission Line Road (TLR) corrective work notifications
- Educate regarding Work Types as it relates to Transmission Line Road Notifications



# Corrective Work on Access Routes

## Foundational Knowledge

- PG&E Access Roads are mapped and managed by the Access Roads Team within the Natural Resource Management Group
- Mobile applications such as Maps+, Construct or Inspect applications provide access road specific data that should be an input into creating access related notifications
- At this time, there is no proactive road maintenance program or funding within PG&E to allow for such work
- Road data is updated from within the Access Roads Management team and routinely pushed to the enterprise

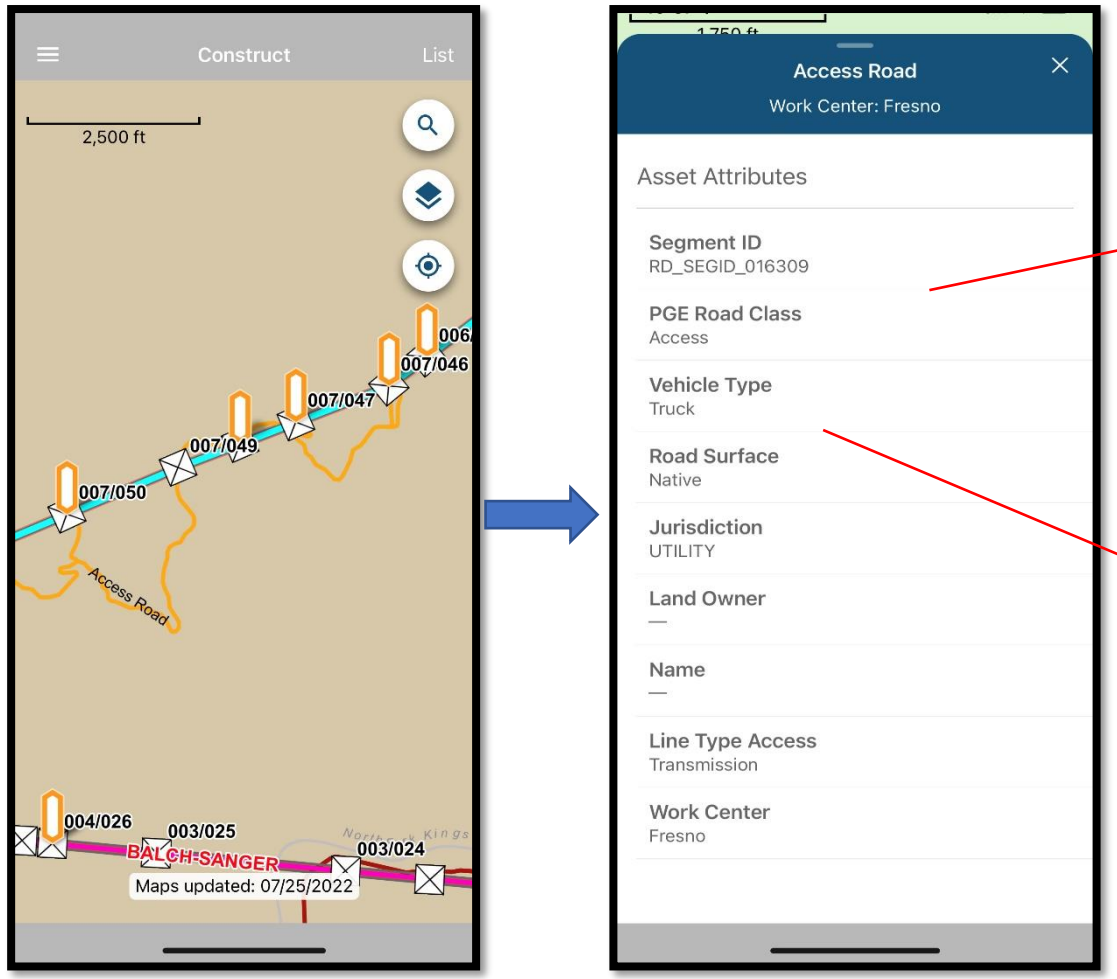



Snapshot shown from construct application where access road data is pushed at a routine cadence.

Road specific information can be utilized by selecting the road asset. See next slide.

# Corrective Work on Access Routes

## Foundational Knowledge

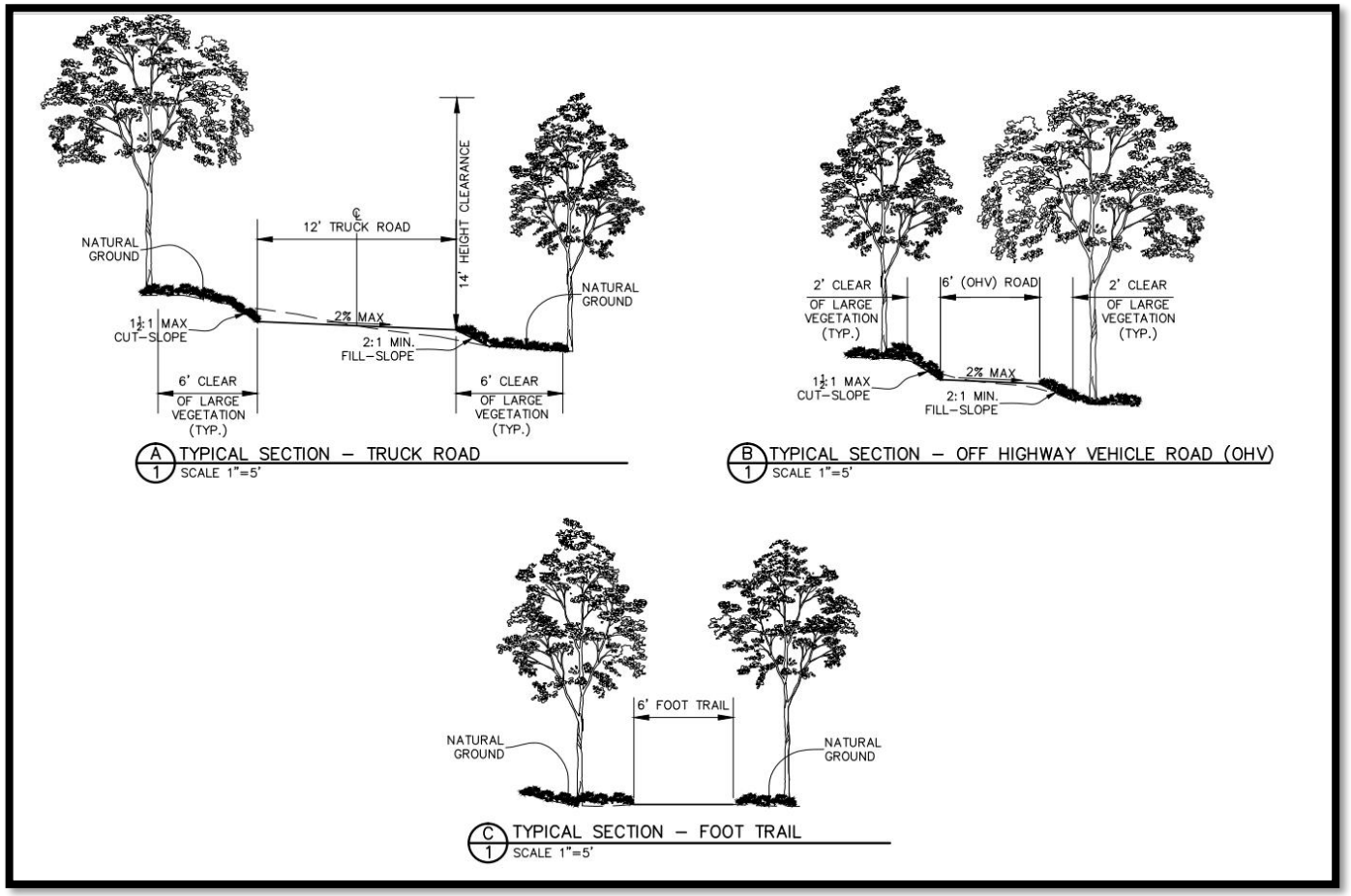



Segment ID – A unique road segment ID for every PG&E access road inventoried

Vehicle Type – Denotes intended vehicle use of road. Does not denote current condition.

# Corrective Work on Access Routes

PG&E Road Management Templates shown below



# Corrective Work on Access Routes

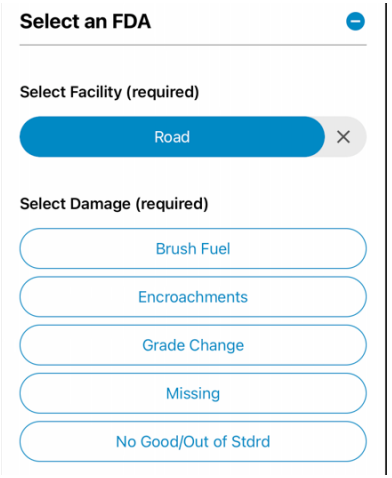
## ***FDA*** *– Facility; Damage; Action*

***F***acility – Access Road (includes roads, trails, gates and culverts)

***D***amage – Use Corrective Work Form

***A***ction – Access group will review and prescribe action

After updating Corrective Work Form, the matrix for Access work will look something like:




**Repair = Expense work**
**Replace/Reclaim/Install = Capital work**

**Expense = MAT - CHS**
**Capital = MAT - 71Y**

# Corrective Work on Access Routes

Access related work falls into the following categories:

- **Vegetation clearing** – road is overgrown, or vegetation is restricting, so road needs to be "brushed"= **Expense**
- **Road work Maintenance**– Can be a range of issues; Surface blading, improving road compaction, stabilizing erosion, boulders blocking access, etc. = **Expense**
- **Watercourse crossings** - (e.g., culverts and bridges) unsafe or otherwise not functioning. Can range between install, replace or repair.
  - Replace/Install – Capital
  - Repair existing - Expense
- **Gates** – existing gate is broken or damaged, gate has been stolen or there isn't a gate, and one is needed.
  - Repair/Broken/Damaged – Expense
  - Missing/Install - Capital
- ***NEW*** **Road Reclamation** – If road has clearly not been maintained for 15 or more years and degraded to a condition where the access to our facilities is a reclamation effort, denote as such – **Capital**
  - **Indications of this is limited visibility of past road prism (See slide 9). Road Prism lost or fully impacted by rocks and/or vegetation**

The following examples will provide some general guidance on how to complete the Corrective Work Form to identify access issues for roads or trails.

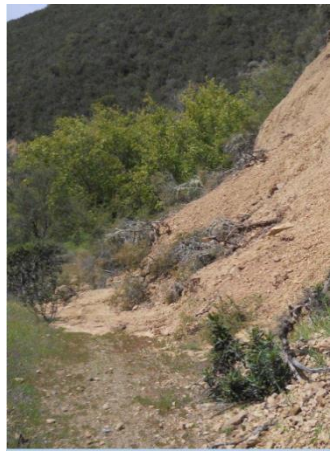
# Corrective Work on Access Routes

Use [Road - Brush/Fuel – Remove] for roads and trails impacted by overgrown vegetation- Expense

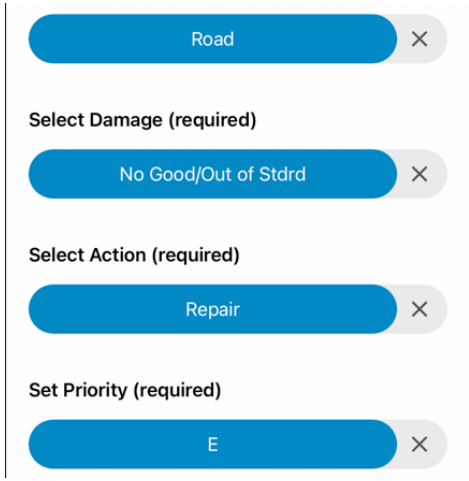
*Road Prism clearly visible, Vegetation restricting access – Include Field note: "Remove vegetation along access road to pole/tower XX/XX"*

# *Corrective Work on Access Routes*

**ROAD WORK:** There are many different types of road work *D*amage, and associated *A*ctions.



**Repair = Expense work**
**Replace, Reclaim = Capital work**




Once TLR notification is created, the access group will review and prepare the *A*ction, bring the job through planning, implement and control work to improve access.

# Corrective Work on Access Routes

## Hardsurfacing treatments – Capital (71Y)

Hardsurfacing (gravel, rock, pavement or other forms of hardening surface – Must be in excess of 714 linear feet OR 10,000 sq ft.

# Corrective Work on Access Routes

**CULVERT:** Where a crossing is plugged or damaged use repair (Expense) – For replacement or failed watercourse crossings (Capital). If we need a new crossing, culvert bridge or other use Culvert – Missing, Install. (Capital)

**Repair/Remove = Expense work**

**Replace/Install = Capital work**

**Replace Culvert:**

**Repair Culvert:**

**Install Crossing:**

# Corrective Work on Access Routes

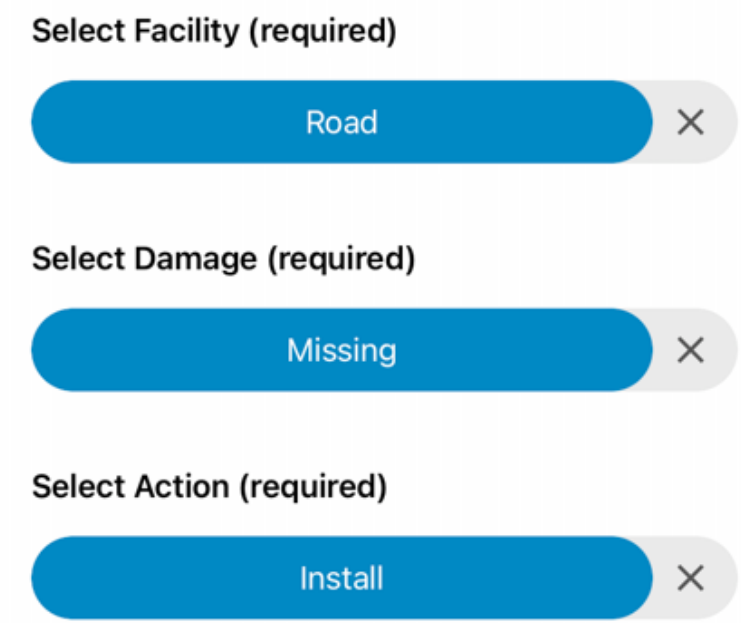
## GATE:

- If gate is missing (stolen) or we need a new gate use Missing – Install; Captial
- If gate is broken or damaged use Broken/Damaged – Repair, if salvageable; use Replace if gate is beyond repair. These are examples for Expense

*Green gate smashed and ripped off hinges – Replace*

# Corrective Work on Access Routes

## *There is no road or trail, and one is needed:*




*Example: Need a foot trail to get to structure for inspection; check the box and make note*

*NOTE: There is likely a reason there is not a road to this location, thus there is a high likelihood a road is not feasible. Thus, a delete flag may ensue once the land consultant performs their evaluation.*

Please use *Field Comments* to indicate type of vehicle for which access is needed – Bucket truck; Pickup; OHV; Foot trail.

# Corrective Work on Access Routes

[X] No Road Access, Reclaim – Capital (71Y) Here you need a road for vehicle access, access road missing, check box and make note in *Field Comments*. Road group will visit site and develop prescription for action.

# Corrective Work on Access Routes

## Additional Information:

**Field Comments/Long Text –** Provide detail into the issue and request as much as possible. Note operational specifics as needed and/or provide details as you can about the access issue or request.

**Encroachment** – These are not TLR notifications - ETMP guidance will provide additional information about structural encroachments impeding access, USE - TLS.

Where road is blocked by encroachment (building, Fence, etc.) of any sort check this box; defer to encroachment guidance documents.

**Limitations** – Be aware of fly in or inaccessible tower locations exist throughout the service territory that access roads can not or will never be built to. Do not create notifications for fly in only locations.

*These are not PGE roads – Access roads are typically Private or Agency (USFS) roads that PGE has an easement allowing access to its facilities. Landowner or Agency may not allow work as prescribed in Notification.

# Distribution Conditions

# Distribution Conditions

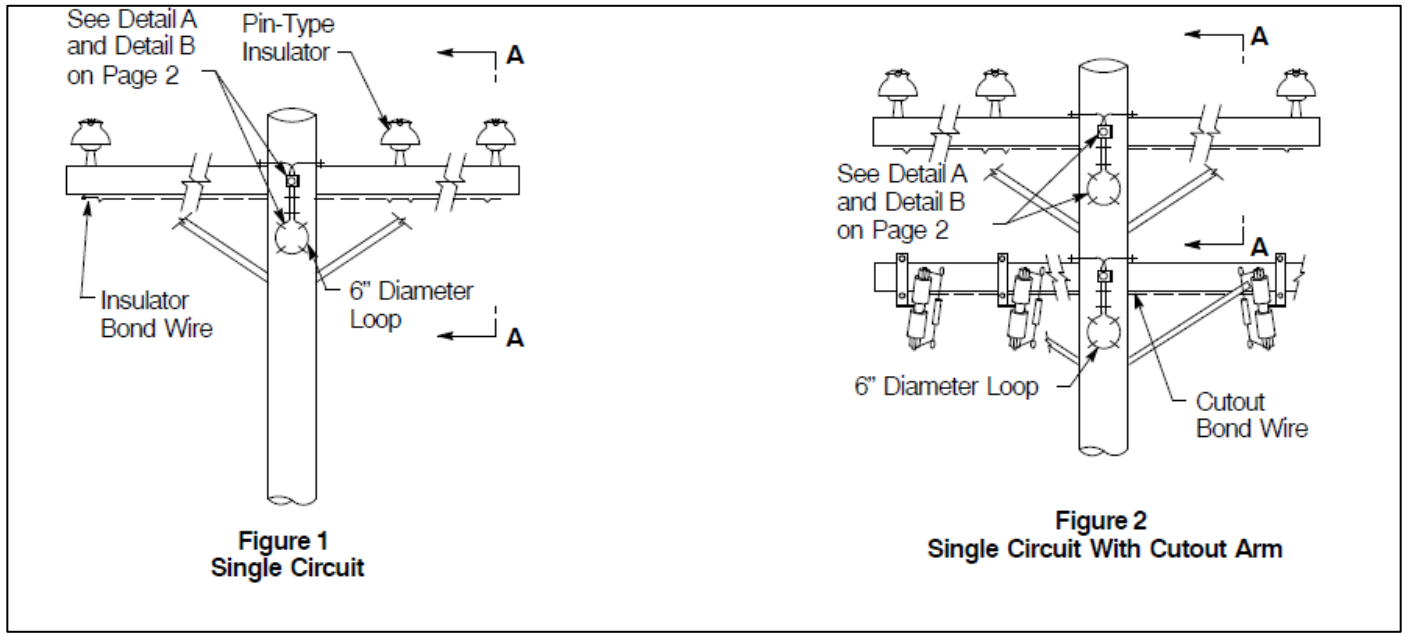
During an Inspection, you may find a **Distribution Condition**.

- You will document the condition by answering the Checklist questions, then create a new LC to report the condition.
- The LC shall include Photos and Comments about the observed condition(s).
- Types of conditions include:
  - Damaged or broken poles
  - Broken or decayed crossarms
  - Broken insulators
  - Damaged tie wire
  - Vegetation issues
  - Missing or broken bridging wire

<u>While traveling to and from inspection locations</u>:

- You have a Duty to Act if you observe a hazard and/or emergency on any of PG&E’s assets, Transmission or Distribution.
- If you observe an immediate hazard and/or emergency, contact your PG&E Lead and standby, if needed.

# Example: Distribution Conditions




# Cannot Get In (CGI) Overview

# Cannot Get In (CGI)

A CGI is identified when an Inspection location is known, but access to the facility prohibits the Inspector from performing an Inspection.

- Customer-related Issues:
  - Locked Gate
  - Bad Dog
  - Customer requests to be notified first
  - Angry/threatening Customer

- Non-Customer Issues:
  - Environmental
  - Permitting
  - Vegetation

# CGI – Customer Issues

| Finding | LC Notification | Facility | Damage | Action |
|---|---|---|---|---|
| Locked Gate/Bad Dogs | Yes | Other | Customer Issue | Access Issue |
| Customer requests to be notified first | Yes | Other | Customer Issue | Appointment Required |
| Angry or Threatening Customer | Yes | Other | Customer Issue | Customer Refusal |

- Facility is behind a locked gate
- Facility has an unleashed dog that poses a safety issue
- Facility is within a secured compound such as Government or Business properties that are fenced and require an appointment
- Facility has property owners that require access negotiation

# CGI – Non-Customer Issues

| Finding | LC Notification | Facility | Damage | Action |
|---|---|---|---|---|
| Land/Environmental Issue | Yes | Other | Land/Enviro Issue | Access Issue |
| Permit required to gain Access | Yes | Other | Permit Required | Access Issue |
| Dense Vegetation | Yes | Other | Vegetation Overgrown | Access Issue |

- Facility is flooded / snow-pack (flooded agriculture, winter/spring storms, etc.)
- Facility requires a Permit to gain access to structure
- Facility is surrounded by overgrown vegetation

# Knowledge Check

Let’s review:

**What does CGI mean?**

A. Conductor Guy Insulator
B. Customer Gone or Inside
C. Cannot Get In
D. Call General Information

# Knowledge Check - Answers

Let’s review:

**What does CGI mean?**

A. Conductor Guy Insulator
B. Customer Gone or Inside
C. Cannot Get In
D. Call General Information

# Knowledge Check

Let’s review:

**What are the things you can do to gain access?**

A. Call Customer Service to get gate-code or customer name/phone
B. Use Inspect App to find Customer gate-code, phone number or access instructions
C. Talk to local yard or call PG&E Lead to get access information from experience
D. Create an LC Notification
E. All the above

# Knowledge Check - Answers

Let’s review:

**What are the things you can do to gain access?**

A. Call Customer Service to get gate-code or customer name/phone
B. Use Inspect App to find Customer gate-code, phone number or access instructions
C. Talk to local yard or call PG&E Lead to get access information from experience
D. Create an LC Notification
E. All the above

# Emergency Priority-A Notifications

# Emergency Priority-**A** Notification: Imminent Threat

You are required to immediately report any Emergency Priority-**A** condition(s) to the PG&E IRS & Contractor GF. If the PG&E IRS or GF is unavailable, contact your PG&E Construction Manager (CM) and PG&E Supervisor.

**If instructed to do so**, create an LC notification Priority-**A** and perform the following:

- You are required to stand by until relieved or advised by your PG&E Lead.
- Take action to make the situation safe.
- Take two field photos of the Emergency Priority-**A** condition and location.
- Confirm that the submission is transmitted.

**Immediately report the issue to your PG&E Lead**

# Imminent Threat: Emergency Priority-**A** Example


# Imminent Threat: Emergency Priority-**A** Examples


# Knowledge Check

Let’s review:

**What are the considerations for determining imminent threats?**

A. The risk of exposure to the public, workers, or employees

B. The abnormality encountered

C. Risks if the condition continues to deteriorate

D. Potential for the condition to further deteriorate

E. Impact of failure to system reliability, customers, and service, and/or the potential for injury

F. All the above

# Knowledge Check - Answers

Let’s review:

**What are the considerations for determining imminent threats?**

A. The risk of exposure to the public, workers, or employees

B. The abnormality encountered

C. Risks if the condition continues to deteriorate

D. Potential for the condition to further deteriorate

E. Impact of failure to system reliability, customers, and service, and/or the potential for injury

F. All the above

# Pending LC Validation Workflow

# Pending LC Field Validation

## Requirements

1. Inspector must:
   - Be at the location of the facility being inspected
   - Review the notification information against the location’s current field conditions
   - Document the current field conditions by updating or canceling the LC Notification

2. Tools for documenting the results of the field validation:
   - Inspect App:
     - The Inspect App will display an LC Notification, including photos
     - Within the checklist, identify an existing LC
     - The Inspect App allows an Inspector to enter comments, recommend Priority, document actual field condition(s), and add required photos

# FSR Workflow

# Field Safety Reassessments

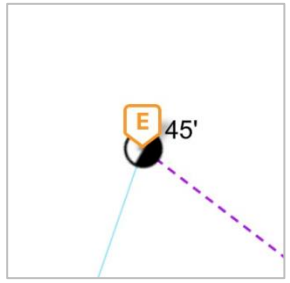
1. A Field Safety Reassessment is intended to cross check the open corrective work on an asset that is in a T2/T3 HFTD and could deteriorate over time.

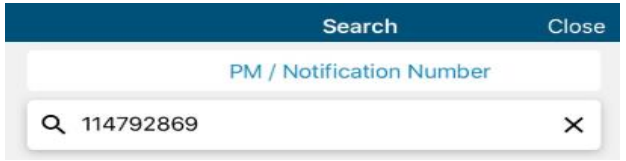
2. The Compliance Inspector must:
   - ❑ Be at the location of the facility being inspected
   - ❑ Review the notification information against the location’s current field conditions
   - ❑ Document the current field conditions by updating or canceling the LC Notification

3. Tools for documenting the results of the field validation
   - ❑ Excel
   - ❑ Inspect App

# Field Safety Reassessments

## Overall Process

1. **Excel:** Refer to the excel spreadsheet to identify the asset location.
2. **Inspect App:** Look for LC Flag 

or Search Notification Number


3. **Inspect App:** Review notification FDAs, Due Date, Priority, Photos, Comments

# Field Safety Reassessments

| | Field Condition | LC Process | Actions |
|---|---|---|---|
| 1 | Field Conditions have changed<br><br>**Emergency** | Update | 1. Follow Emergency Process and Create Priority-**A** Notification<br>2. Select Emergency and follow the instructions<br>3. Update Pending LC:<br>a) Enter New Notification Number, Enter Detailed Comments, Attach 2 photos<br>4. Stand by until relieved |
| 2 | Field Conditions have changed<br><br>**Expedite to Priority A** | Update | 1. Select **Expedite to Priority A**<br>2. Update Pending LC<br>a) Select a recommended due date, Enter Detailed Comments, Attach 2 photos |
| 3 | Field Conditions have changed, and needs to be complete within 12 months | Update | Select **Condition needs to be addressed within 12 months**<br>1. Update Pending LC:<br>a) Select a recommended due date, Enter Detailed Comments, Attach 2 photos |
| 4 | Field Conditions have not changed, and needs to be complete within 60 months<br><br>Only for F-R Priority FDA | Update | 1. Select **Condition needs to be addressed within 60 months**<br>2. Update Pending LC:<br>a) Select a recommended due date, Enter Detailed Comments, Attach 2 photos |

# Field Safety Reassessments

| | Field Condition | EC Process | Actions |
|---|---|---|---|
| 5 | LC is a Duplicate | Cancel | 1. Select **Cancel – Duplicate**<br>2. Update Pending LC:<br>a) Enter Detailed Comments, Attach 2 photos |
| 6 | LC is Not Valid | Cancel | 1. Select **Cancel – Not Valid**<br>2. Update Pending LC:<br>a) Enter Detailed Comments, Attach 2 photos |
| 7 | All Work Found Completed | Cancel | 1. Select **Cancel – All work found completed on arrival (NCOA)**<br>2. Update Pending LC:<br>a) Enter Detailed Comments, Attach 2 photos |
| 8 | Unable to access (CGI) | No Access | 1. Select **CGI**<br>2. Update Pending LC:<br>a) Enter Detailed Comments, Attach 2 photos |

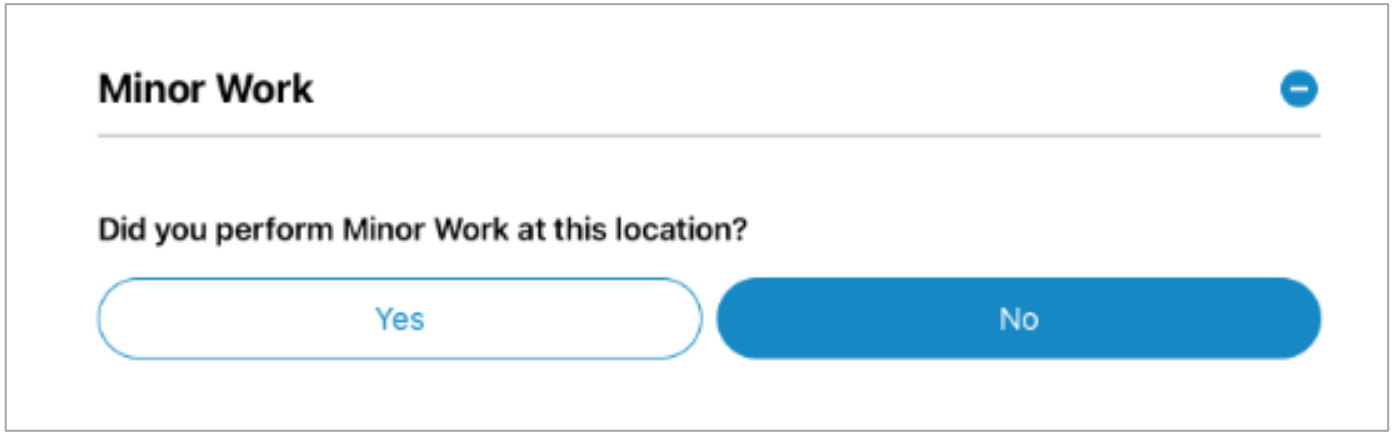
# Minor Work

# Minor Work

## Minor Work Guidance

- **Definition**: Work that can be safely accomplished by an Inspector during a detailed inspection.

- ET Contract Inspector requirements for minor work changes year after year.



# QC Results & Ignition Risks

# 2022 QC Results

# Ignition Risk Attributes (IRA)

Detailed ground and climbing inspections look for conditions related to assets, that if left uncorrected, could lead to fire ignitions. In collaborating with PG&E lines of business, System Inspections have developed a set of attribute conditions that are essential in preventing ignition risks throughout our system.

It is important that you understand these risks while documenting abnormal conditions in both the Steel and Non-Steel checklists. Follow these simple reminders:

- ✓ Prioritize quality by identifying all ignition risks and ensuring accuracy for all items on the checklists. Productivity targets should never drive shortcuts in how you perform and record your inspection. Safety and Quality are key!
- ✓ When conducting a 360-degree visual inspection, make sure to focus on these targets and take quality photos with your external camera. The iPad camera is not sufficient in capturing conditions on these specific components.
- ✓ In the Inspect App summary page, make sure to review all ignition risk attributes and ensure that you have documented all identified violations. This is the final page before submitting the checklist and any associated LC’s.

# Ignition Risk Attributes (IRA)

## Most Common Findings

| |
|---|
| Splices within 10 feet to clamp? |
| Guy is loose / slack? |
| Anchor/Guy covered by vegetation? |
| Cotter key missing / out of place / improperly positioned? |
| Conductor damaged (gunshot, broken strands, arcing, twisted bundle, bird caging) or in poor condition? |
| Structure has bird, animal, or insect damage? |
| Grading / Corona Rings in poor condition or missing? |
| Insulators are damaged, contaminated, arcing/tracking, or in poor condition? |
| Switch has visible signs of rust, corrosion, cracking, arcing, open/unlocked, tracking, contamination, damaged components? |
| Guy hardware bonding is installed incorrectly, damaged, or missing? |
| Hot-End hardware in poor condition? |
| Structure has breaks / cracks / splits? |
| Insulators are out-of-plumb ( > 2 bells out-of-plumb or > 6 inches for post)? |

| |
|---|
| Foundation is Earth-Covered or buried? |
| Pole-Top has damage or split top? |
| Anchor(s) damaged, cracked, corroded, rotted, or in poor condition? |
| Mastic sealant in poor condition? |
| Guy anchor head buried? |
| Earth around anchors eroded, soil movement, slide? |
| Clamps in poor condition? |
| Shield Wire / OPGW plate in poor condition? |
| Turnbuckle(s) bottomed out / out of thread / pinged? |
| Anchor head is buried? |
| Cold-End hardware is in poor condition? |
| Guy insulator (fiberglass or porcelain) in poor condition or missing? |
| Dampers missing or in poor condition (fatigued, drooping, missing weight)? |
| Ground wire in poor condition? |
| Bonding broken / missing? |

# Ignition Risk Rankings – Time Dependent

There are **nine** specific conditions that require a 90-day corrective action/remediation. When identifying these conditions, you must ensure the notification adheres to this time frame.

1. Hot splice greater than 100-degree differential*
2. Foundation cracks to the stub
3. Heavy guano contamination
4. Hangar plates/hardware 30–50 % material loss
5. Structure issues with main structural support damage compromising structural integrity
6. H-frame cross brace broken or missing
7. Structure out of plumb more than 3 feet and causing insulators and conductors to be compromised
8. Twisted bundled conductors
9. Stack or over tension load bearing guys

* *Not expected to be found during ground inspections but may be found during other inspections.*

# Quality Verification Team

## QVT Findings

# QVT Findings - Overview

## Background

- In early 2022, Quality Verification Team (QVT) was asked by the VP of Safety & Risk to perform a monthly rolling audit of System Inspections for the duration of the 2022 enhanced overhead inspection cycle.

  - Audit began 03/08/22, audited last field location on 09/28/22

## Purpose of Assignment

- Audit field inspections completed by Compliance Inspectors

  - All inspections must be completed in accordance with the ETPM Manual and the Inspection Job Aids

## Scope

- The scope of this audit includes documentation and work execution of:

  - Overhead (OH) inspections in HFTD areas
  - Focus on Critical Attribute list from SI QC

# QVT Findings - Overview

## Methodology

Reviewed approximately 2,696 assets, system wide

- Audit to a 99% confidence level
- Locations were randomized
- Sampling Source: ET Attainment Report
- Audits were conducted monthly via previous month’s completed inspection data

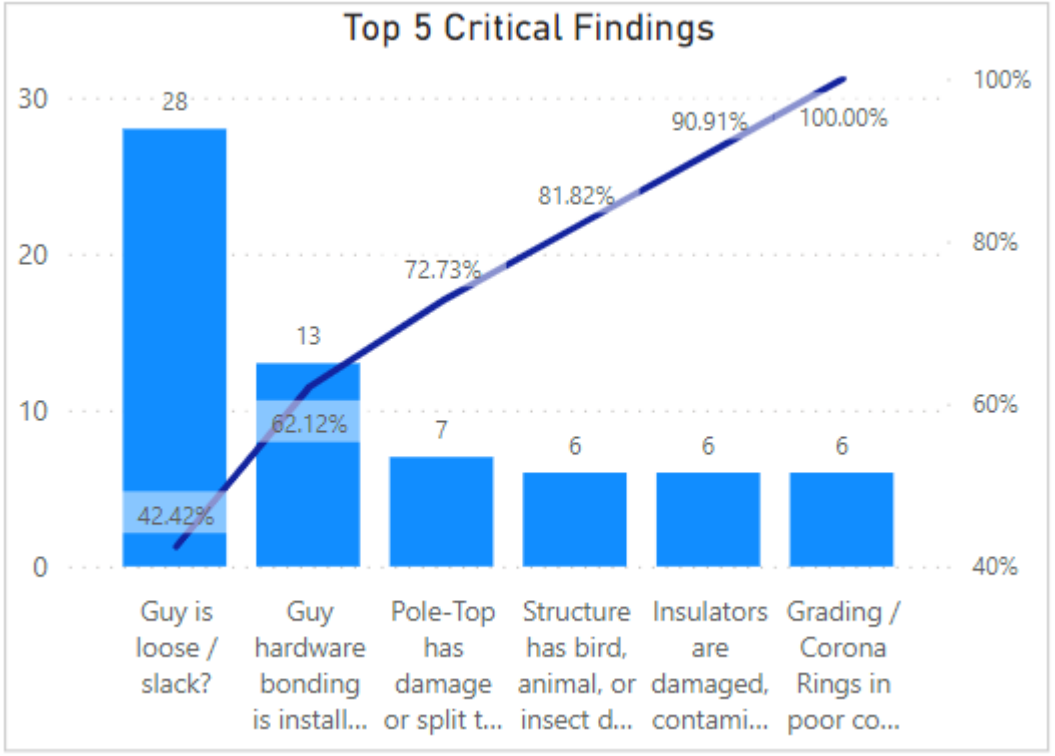
## Tools & References

- ETPM Manual and TIL Documents
- Overhead Inspection Job Aids and Guidance Documents
- Quality Verification processes
- Enterprise Corrective Action Program (ECAP)

# Frequent Findings

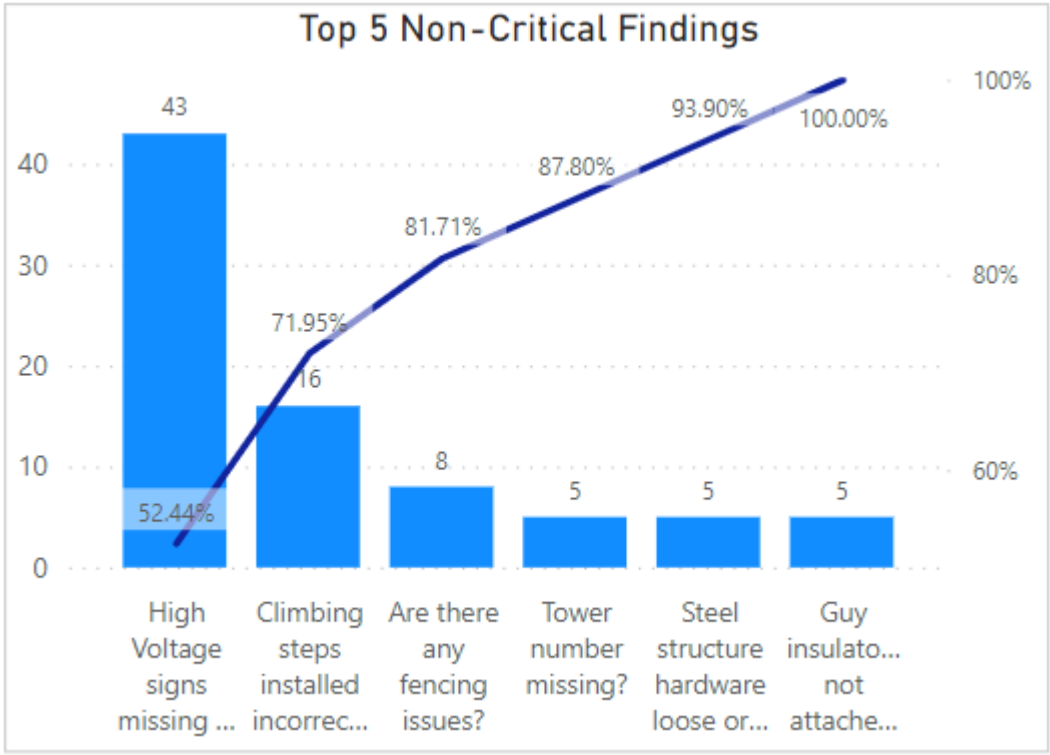
**Top 5 Critical Findings:**

- Guy is loose or slack
- Guy hardware bonding is installed incorrectly, damaged or missing
- Pole-top has damage or split top
- Structure has bird, animal or insect damage
- Grading/Corona rings in poor condition or missing




**Top 5 Non-Critical Findings:**

- High signs missing or installed incorrectly
- Climbing steps installed incorrectly
- Fencing issues
- Missing tower number
- Guy insulator not attached directly at wood pole



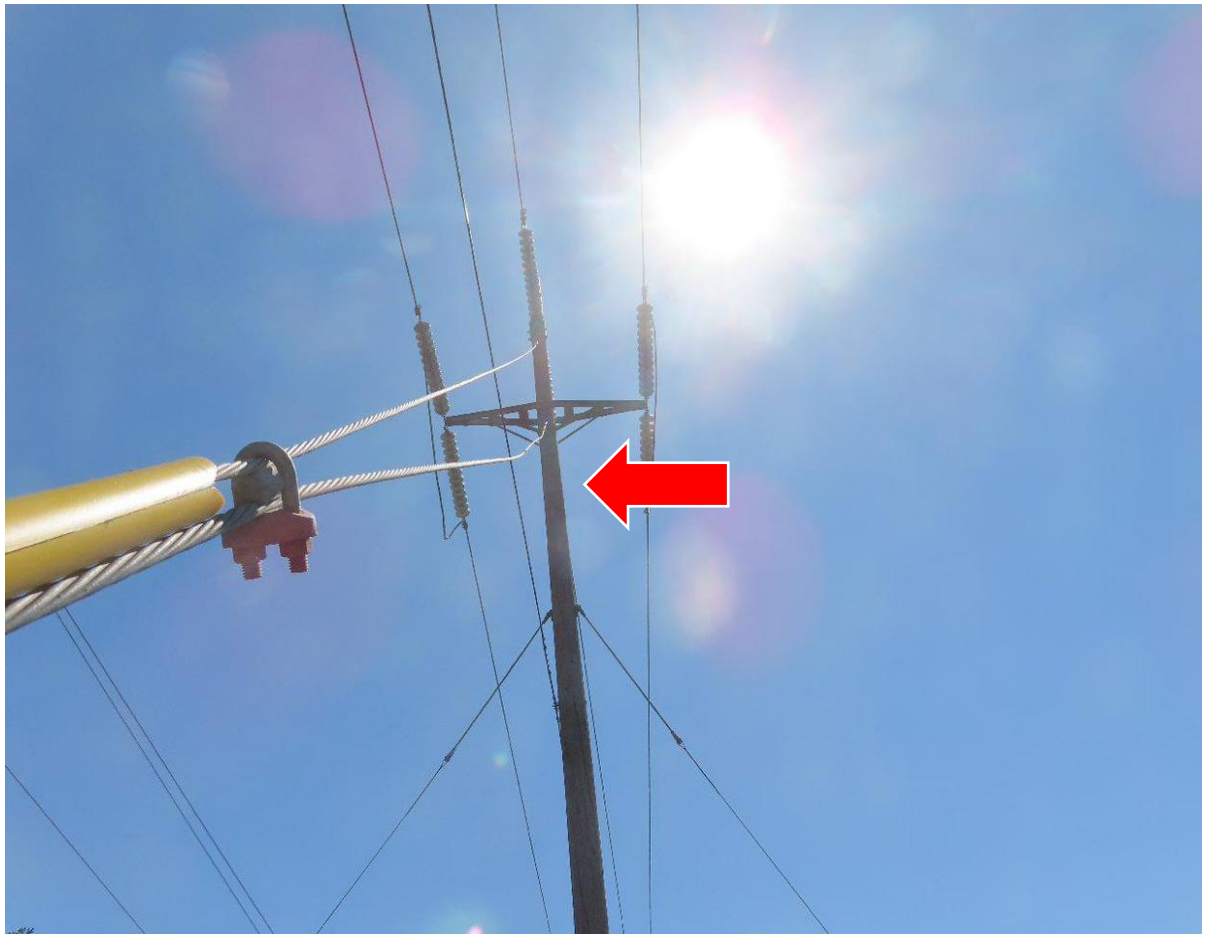
# Top Critical Finding

**Comments**

- Slack guy wire
- Structure # - 003/047
- SAP # - 40814811

**Reference**

- TD-1001M – JA13



# 2nd Most Frequent Critical Finding

**Comments**

- Only one bolt is bonded
- Structure # - 013/011
- SAP # - 40601872

**Reference**

- TD-1001M – JA13

# 3rd Most Frequent Critical Finding

**Comments**

- Substantial split at the crossarm (pole top)
- Structure # - 007/143
- SAP # - 40907478

**Reference**

- TD-1001M – JA06

# 2022 QC Results

Steven Ruiz (SDRe)
Electric Quality Control Specialist

# Smart Mobile Workforce (SMW) Application

# SMW App

- This app allows access to documents offline:
  - Guidance documents and job aids
  - Key Contacts List
  - Other important documents

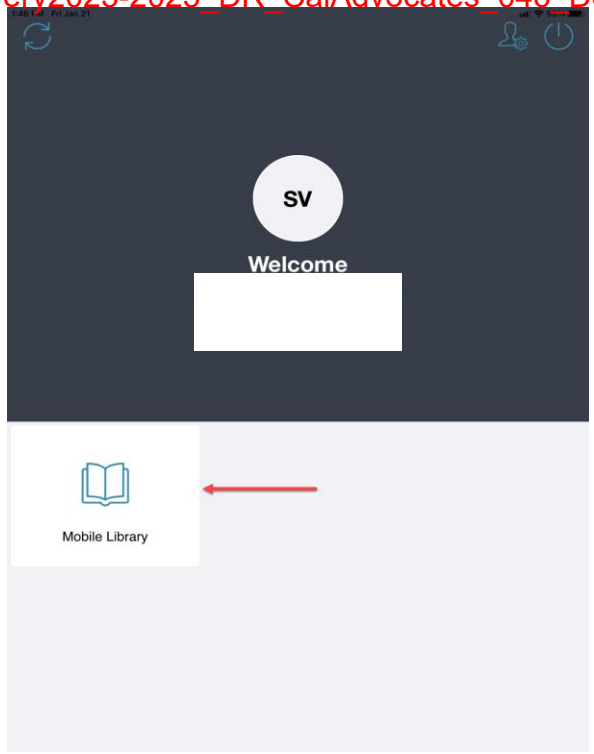
# SMW App

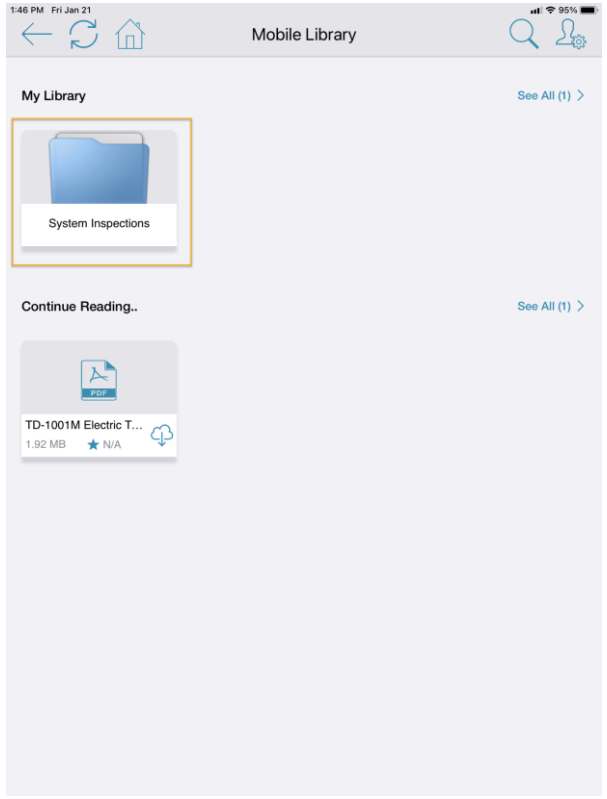
View and search for guidance documents and job aids:

1. Tap SMW 7.2 App icon


2. Tap Mobile Library icon

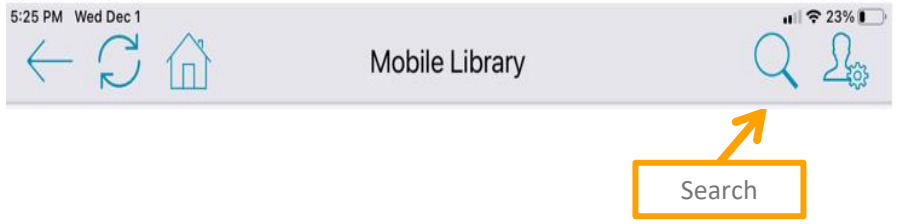

3. Tap System Inspections to view work docs

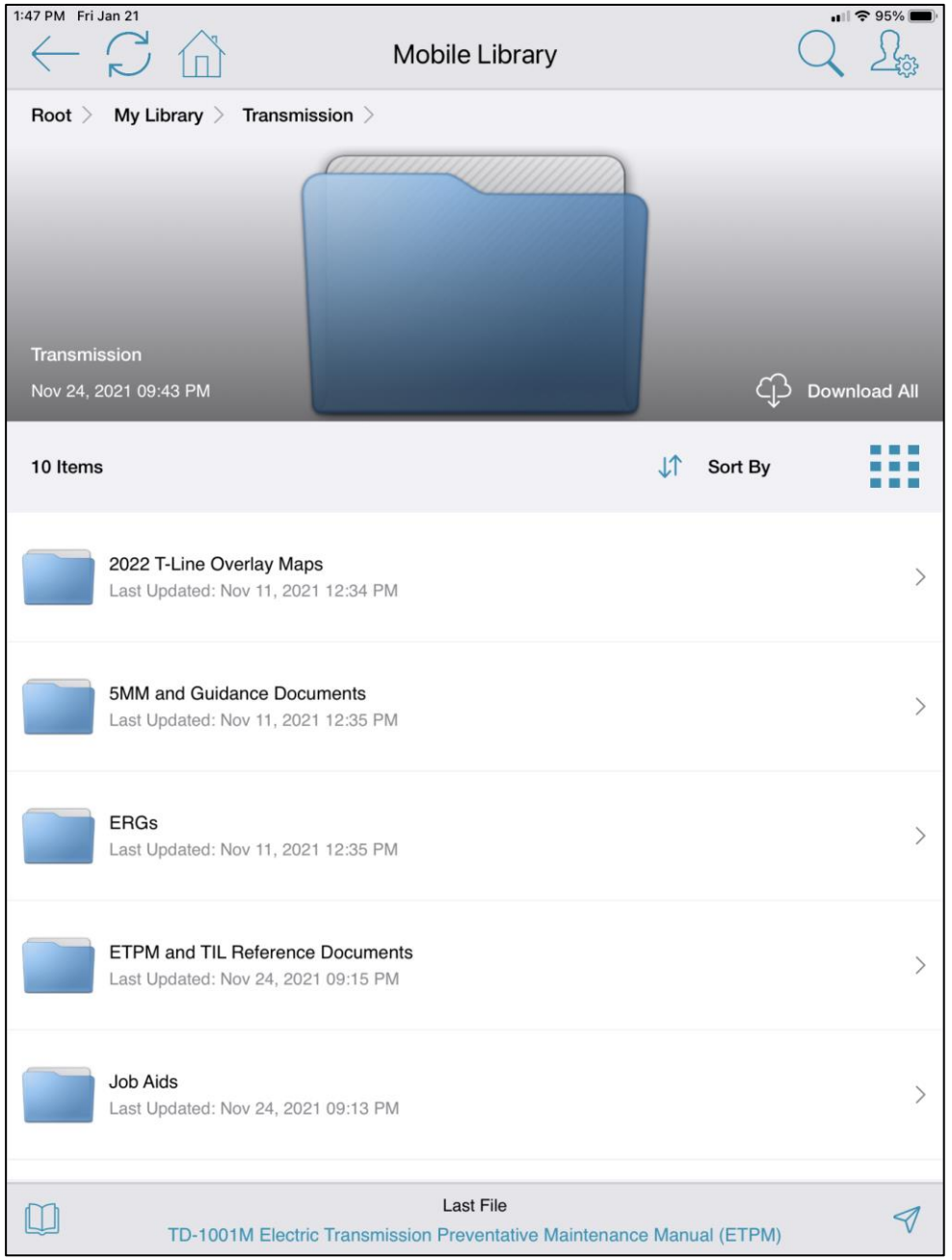



# SMW App Library

- View and search for guidance documents and job aids :
  - –View docs in folders and subfolders
  - –Scroll down to view more
  - –Type document name to search for docs in search field

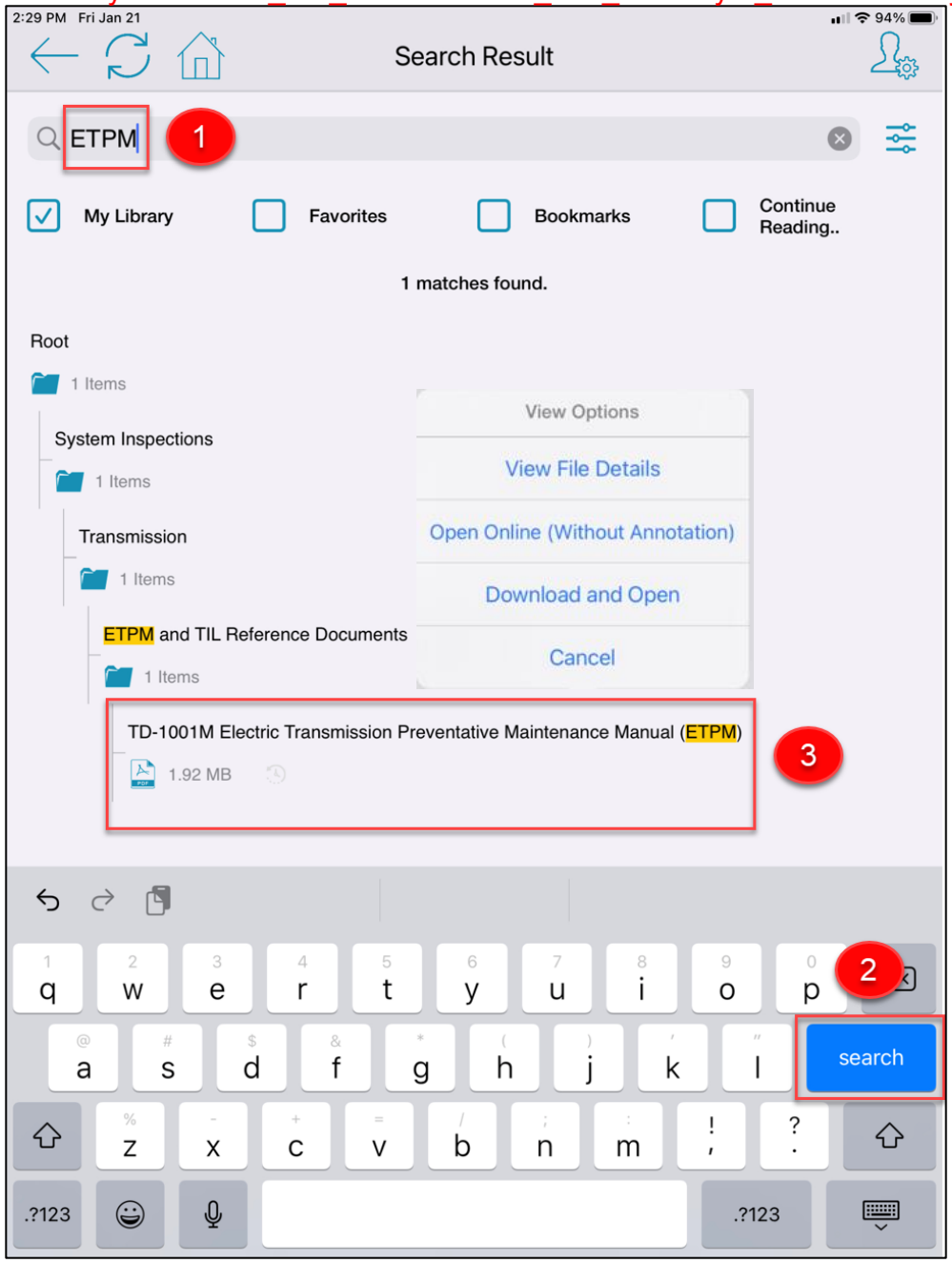


# SMW App Search

View and search for documents:

1. Enter the document name in search bar
2. Tap Search
3. Search results displays the document
   - Tap the document
   - Tap Open Online or download to your device and view



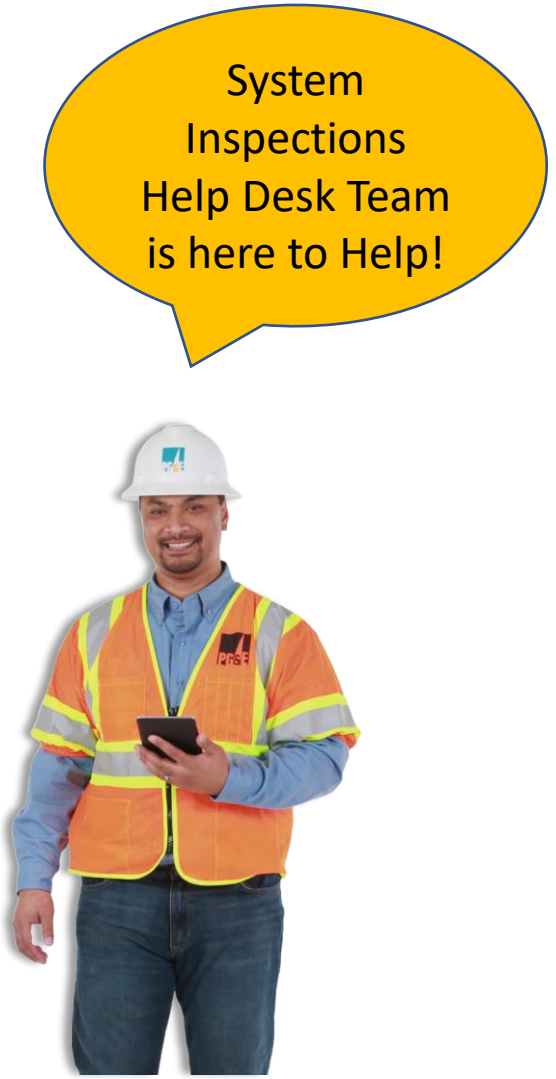
# Demo SMW App

# Help Desk

# Helpdesk is here for you!

**Issue Tracker App**

- Field Inspectors will report Issues to the System Inspection (SI) Help Desk team using the **Issue Tracker app.**
- The Helpdesk team will respond with an answer to their questions quickly.



# Help Desk Supported Activities

**Hours of Operations:** Monday – Friday: 7am to 3pm (0700-1500)

**Reach us using the following:**

- Using the Issue Tracker App (Creating a ticket)
- Through Email: SIHelpDesk@PGE.onmicrosoft.com
- Calling and leaving a Voicemail: **925-328-5510**

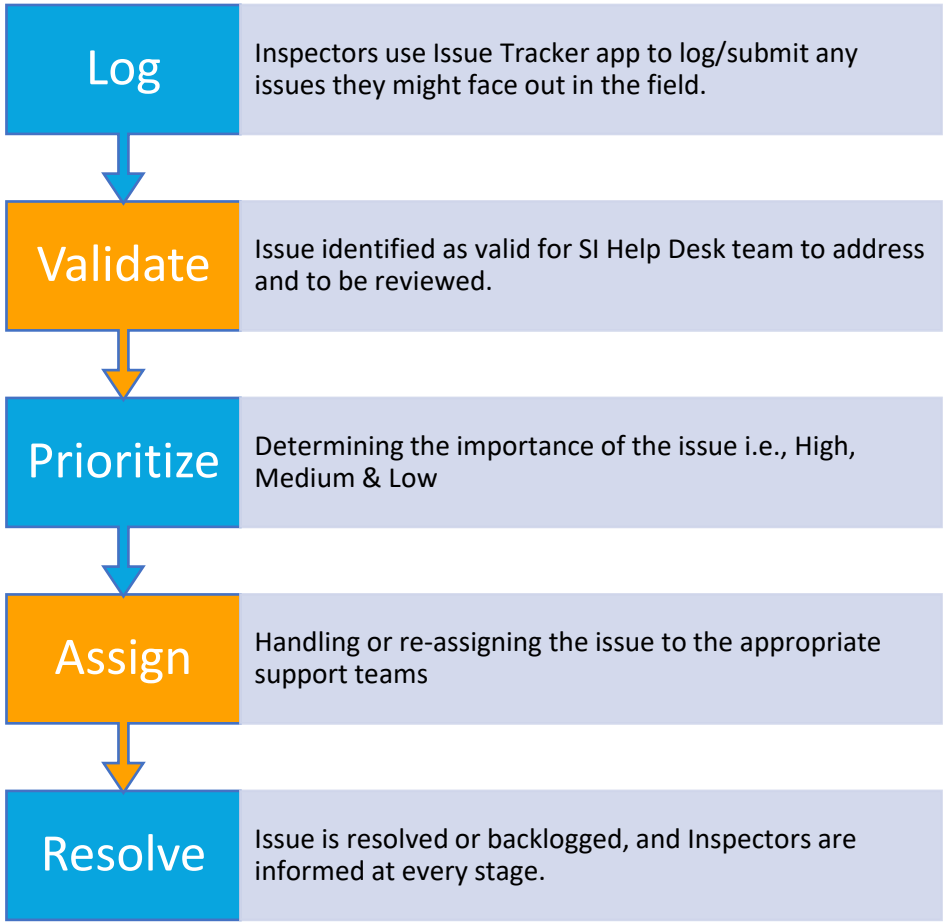
**SI HelpDesk Applications supported:**

- Enterprise Alerts
- Maps+ Field Intel
- Inspect ED/ET Navigation
- Inspect ED/ET Checklist Navigation
- Inspect ED/ET/Engage Checklist MPs
- App Crashes, Photos/Stuck Synch Issues
- App Version/updates, App/Maps/MP not Loading
- Other – Electronic Access, Enhancement Request, Engage, IOS Updates, FSR

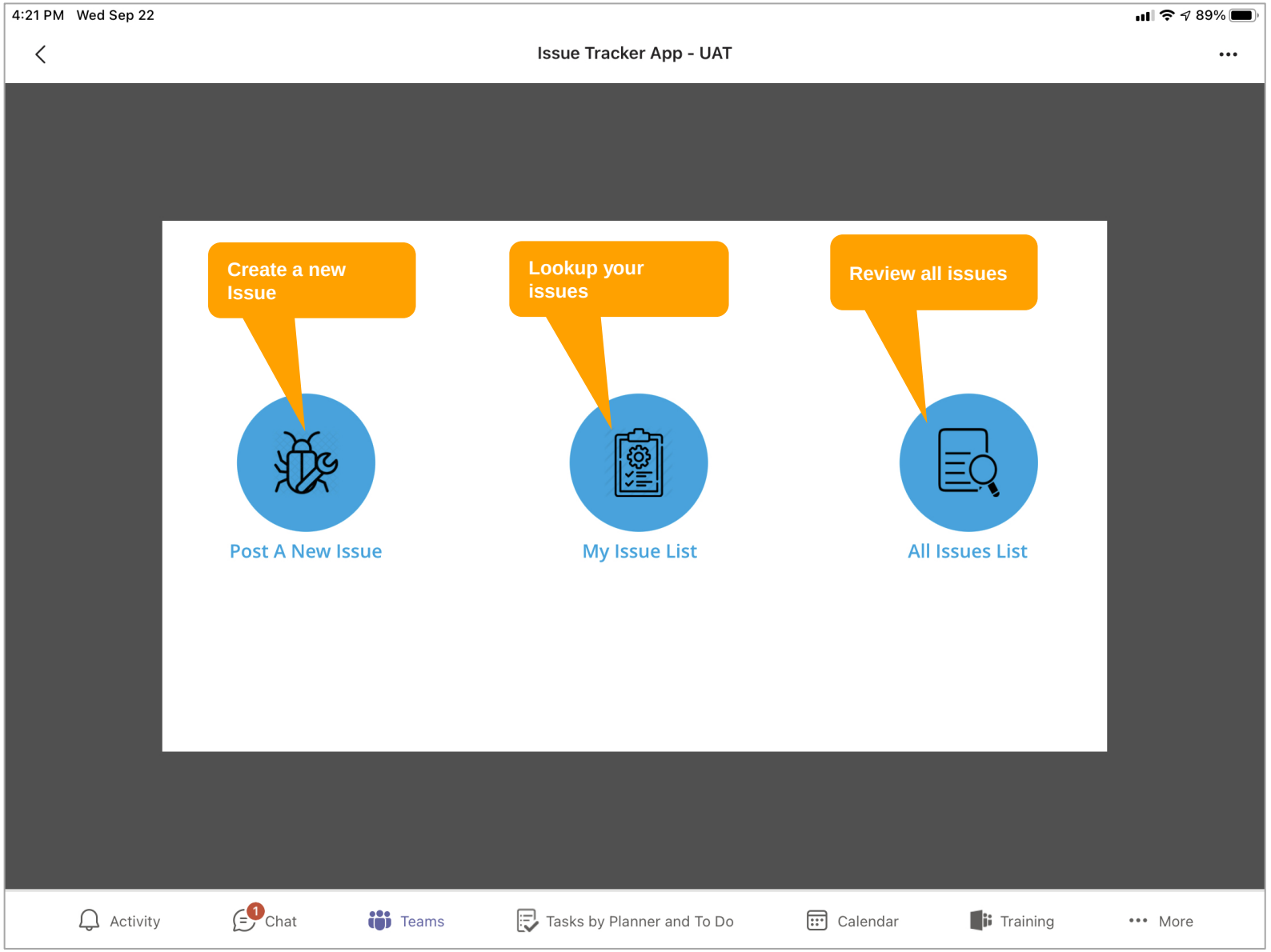
**Applications NOT supported by Helpdesk:**

- All Halo Issues supported by Planners
- Locked Passwords supported by TSC
- Lost/Stolen iPads supported by Corp Security to wipe iPad and to contractor’s agency for BYOD
- CGI Customer supported by Customer Line
- Hostile Customer supported by Corp Security Level 1

# SI Help Desk Process



# Issue Tracker App Overview



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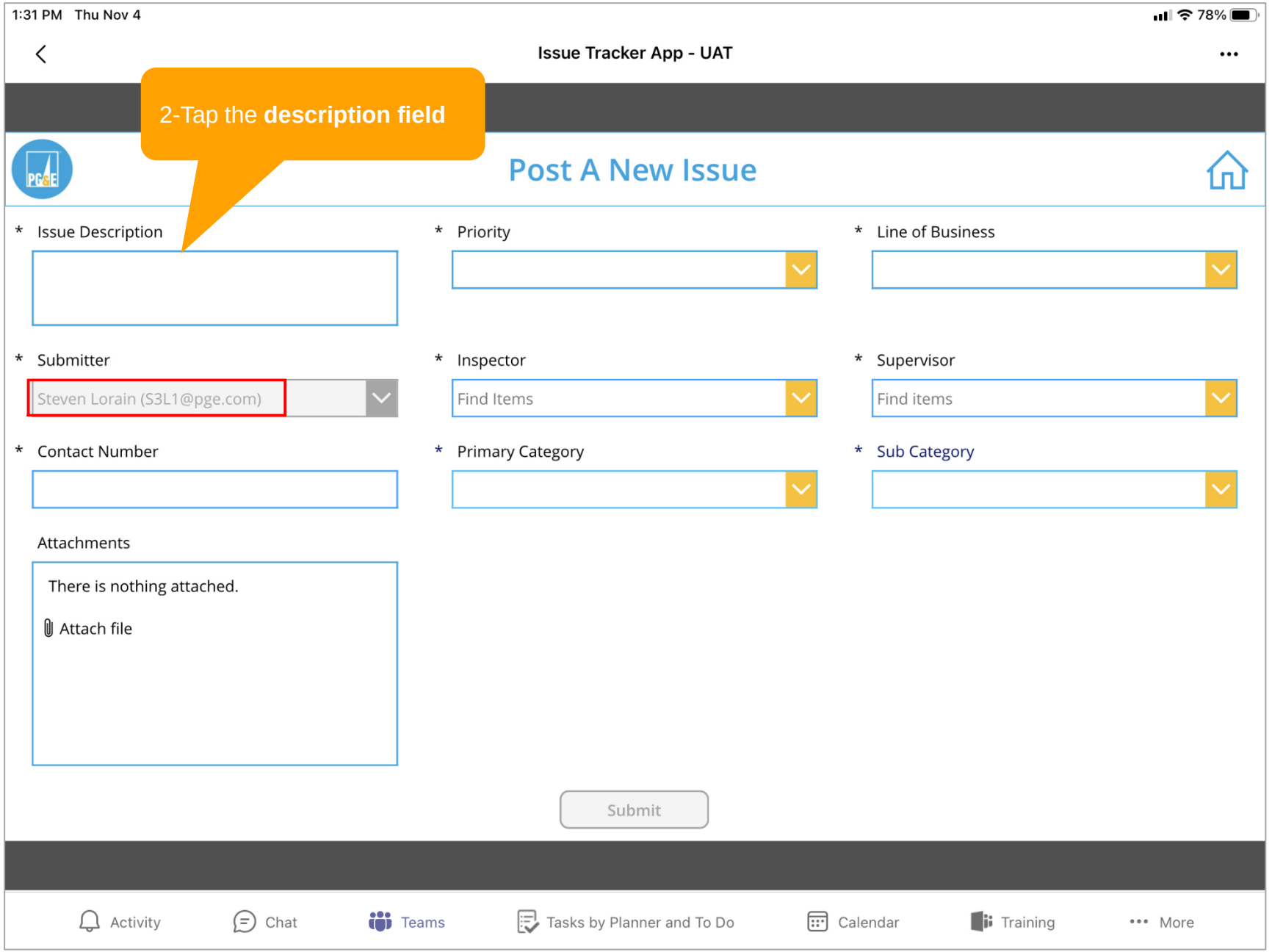
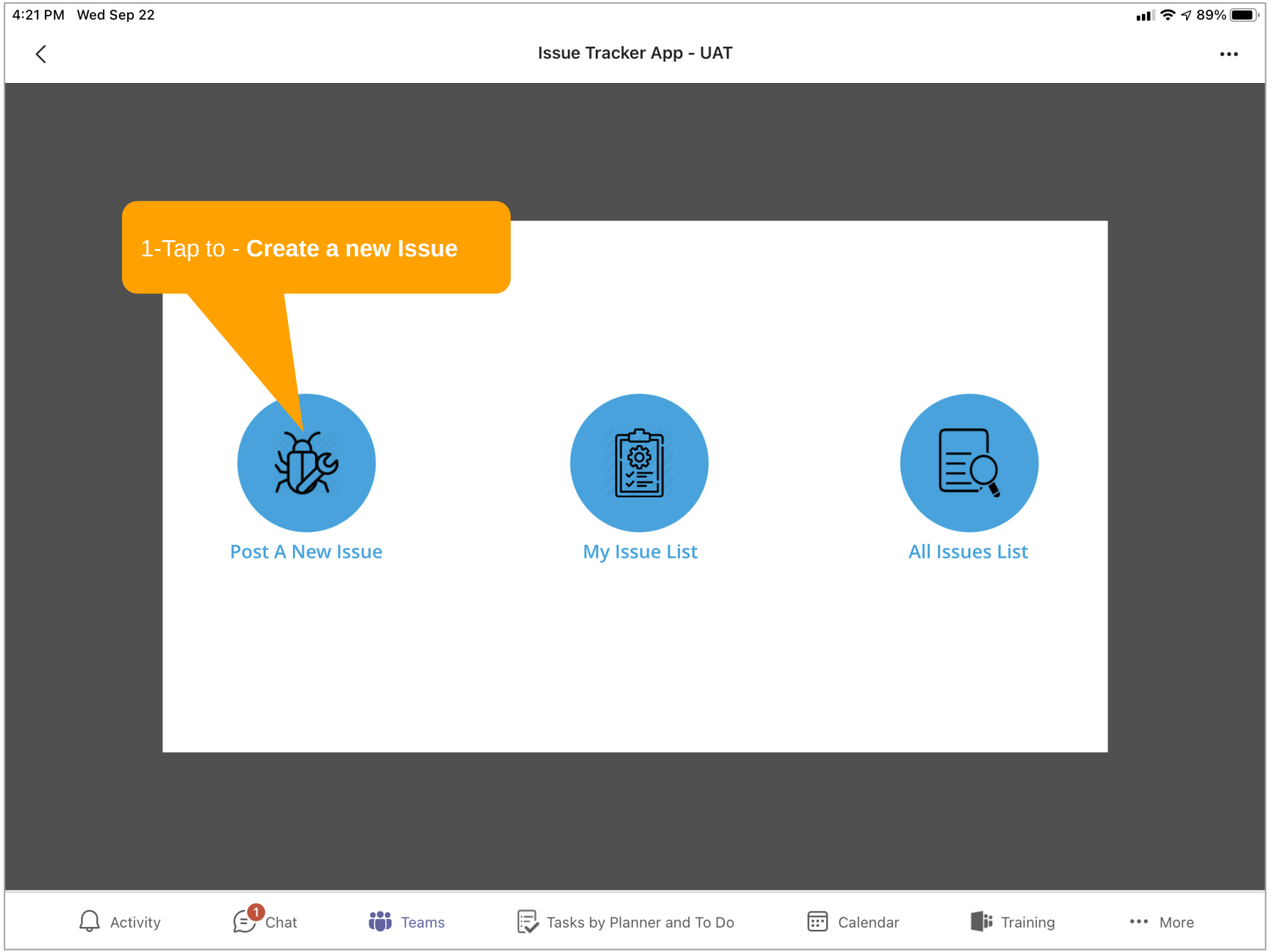


# Logging an Issue

# Issue Tracker



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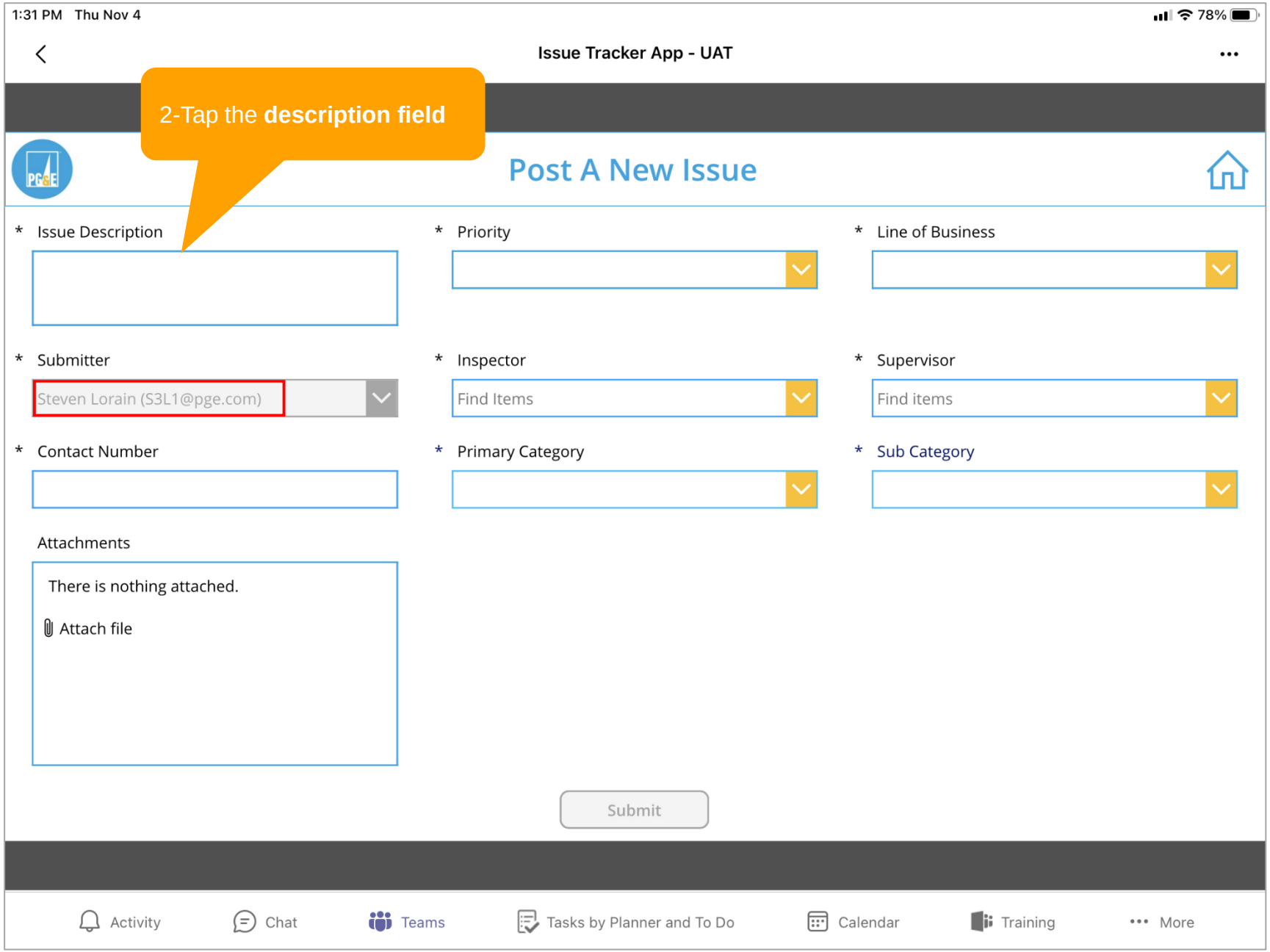

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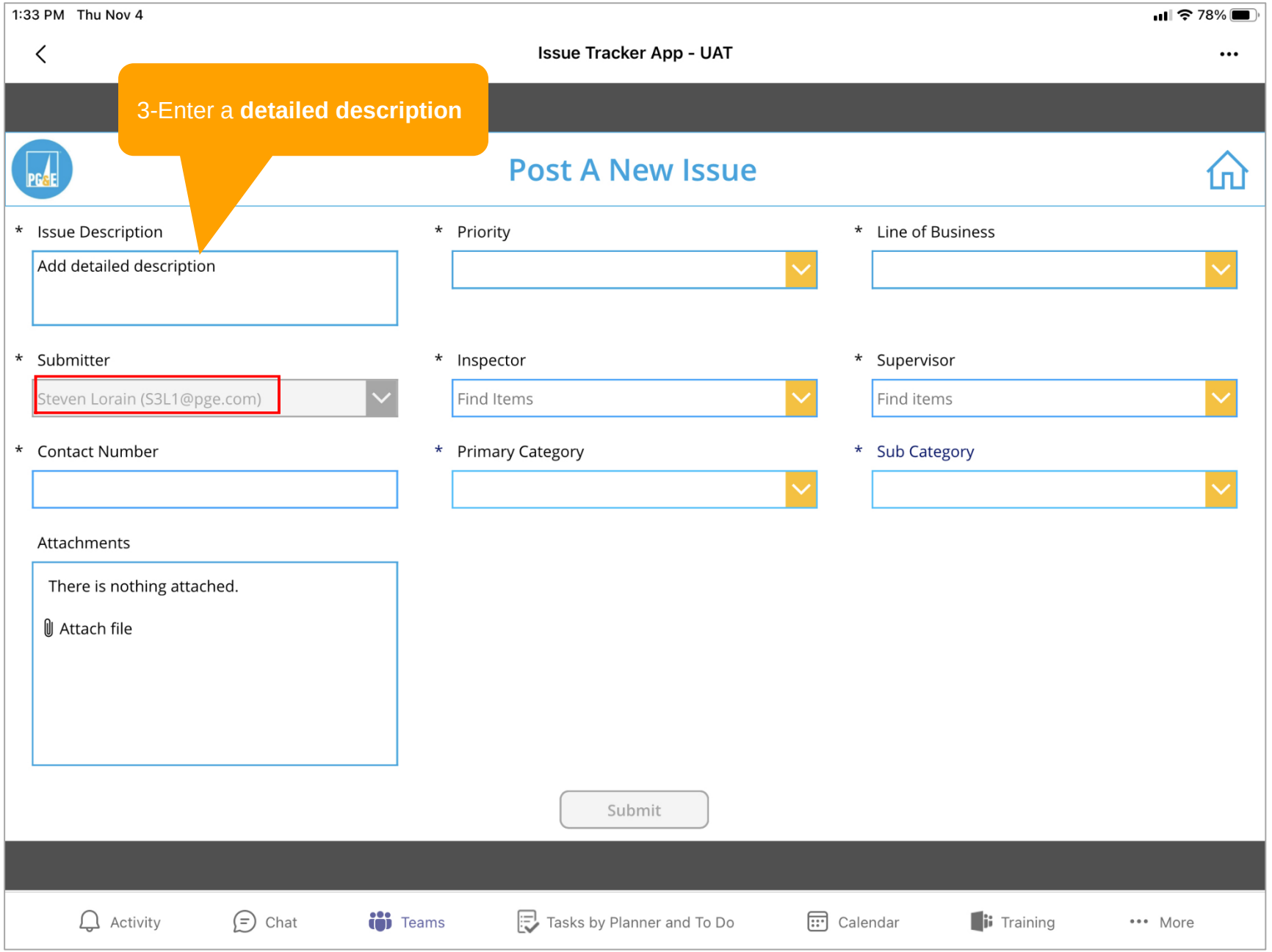

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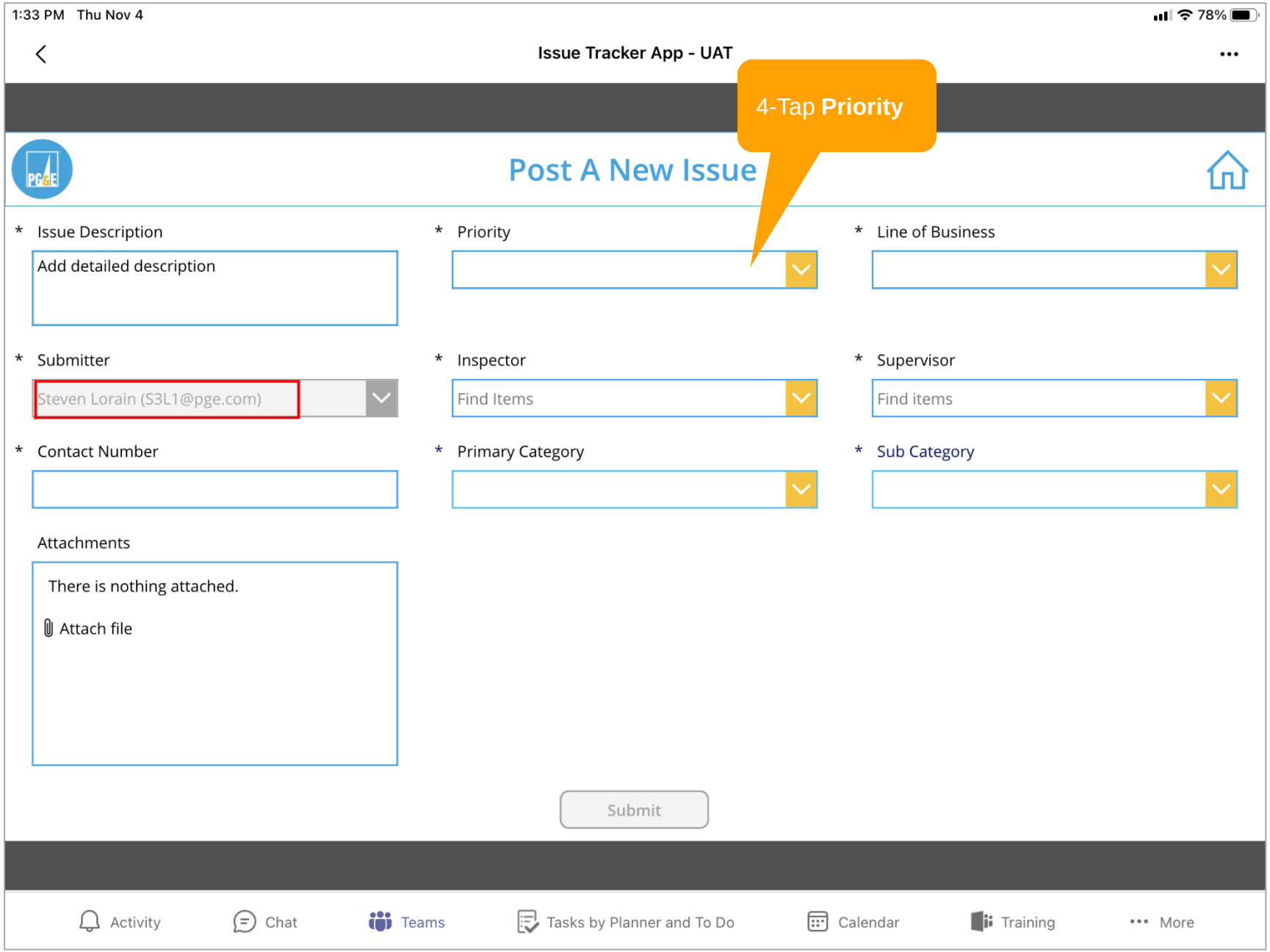

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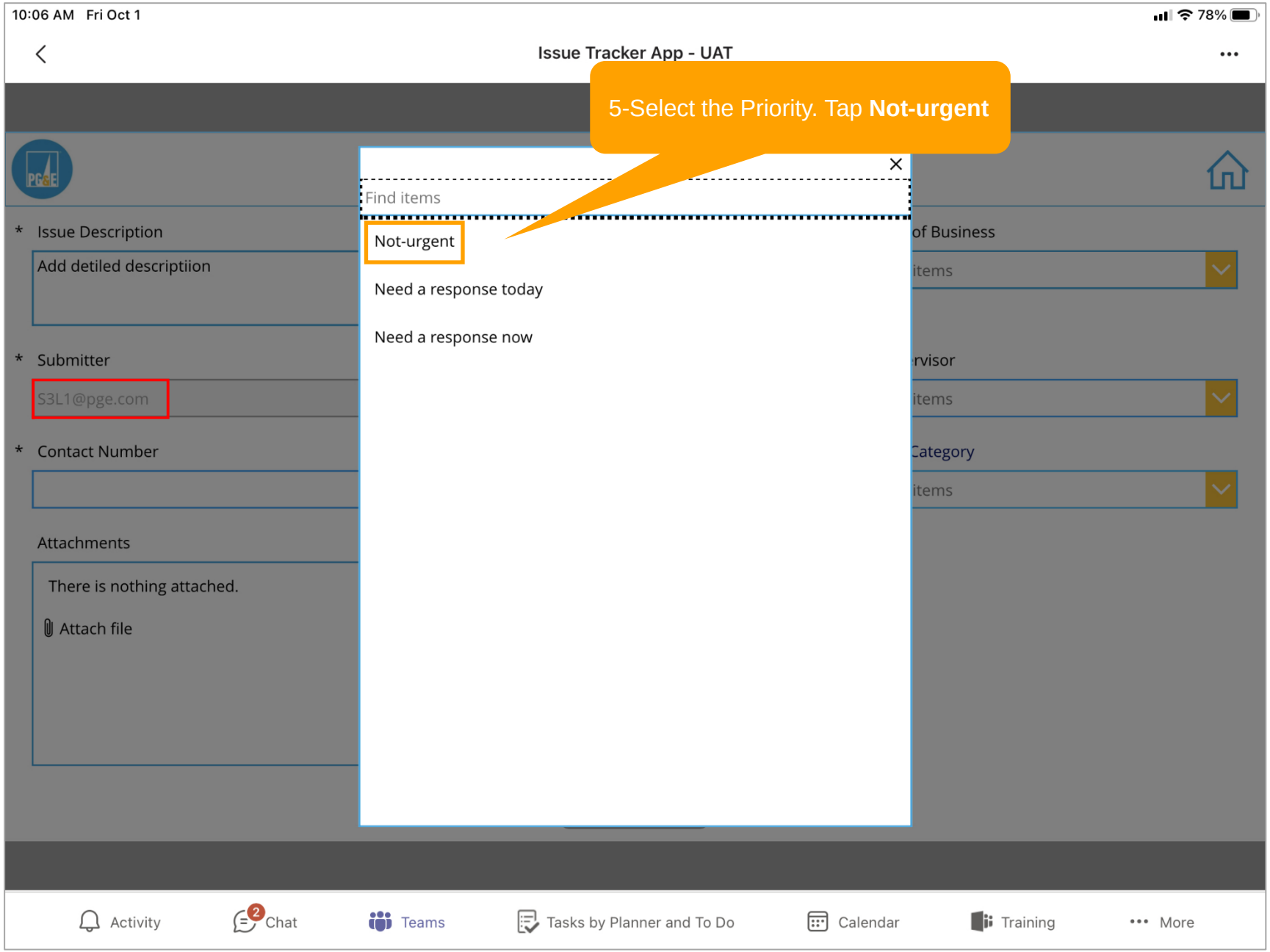

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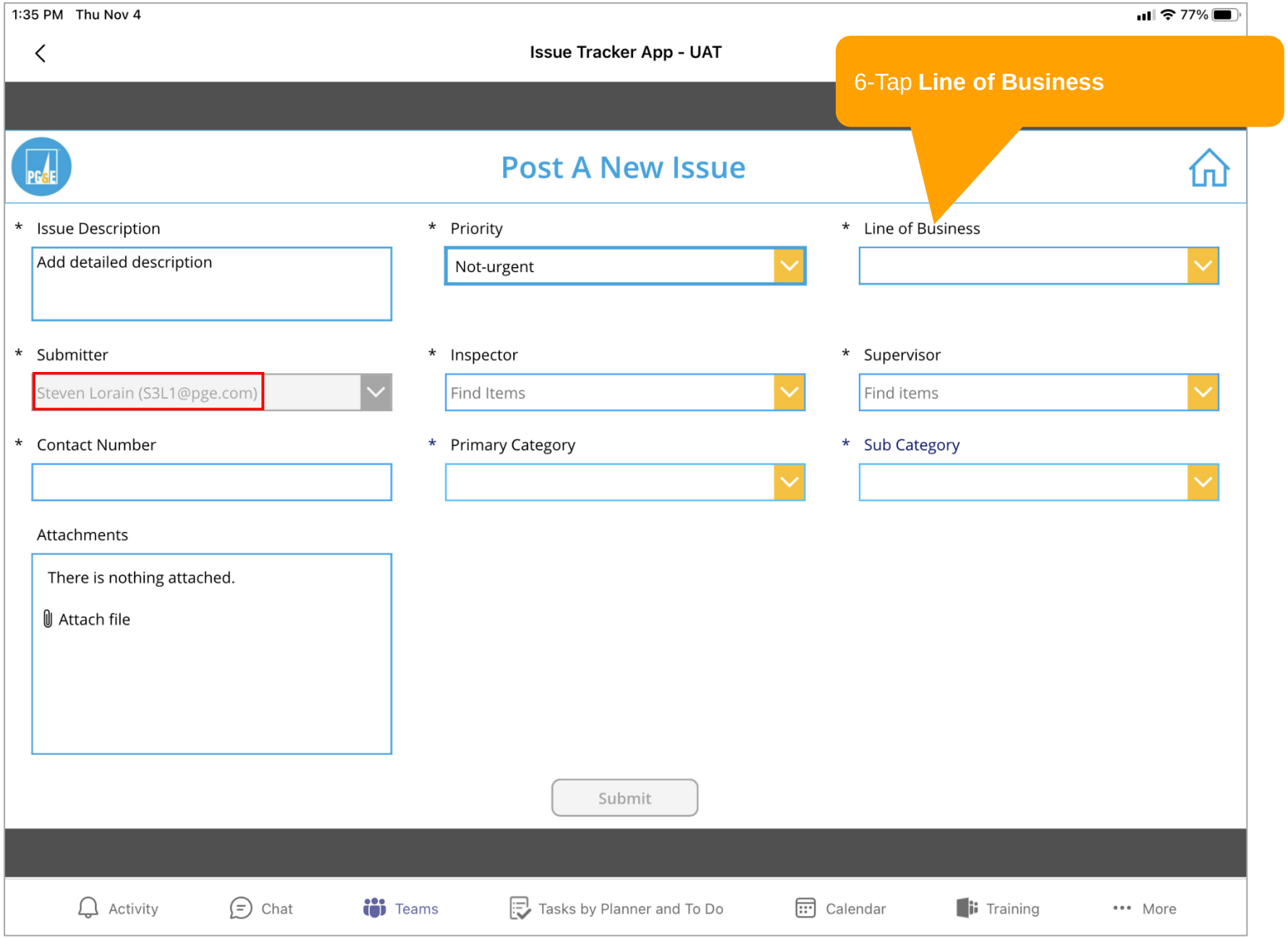

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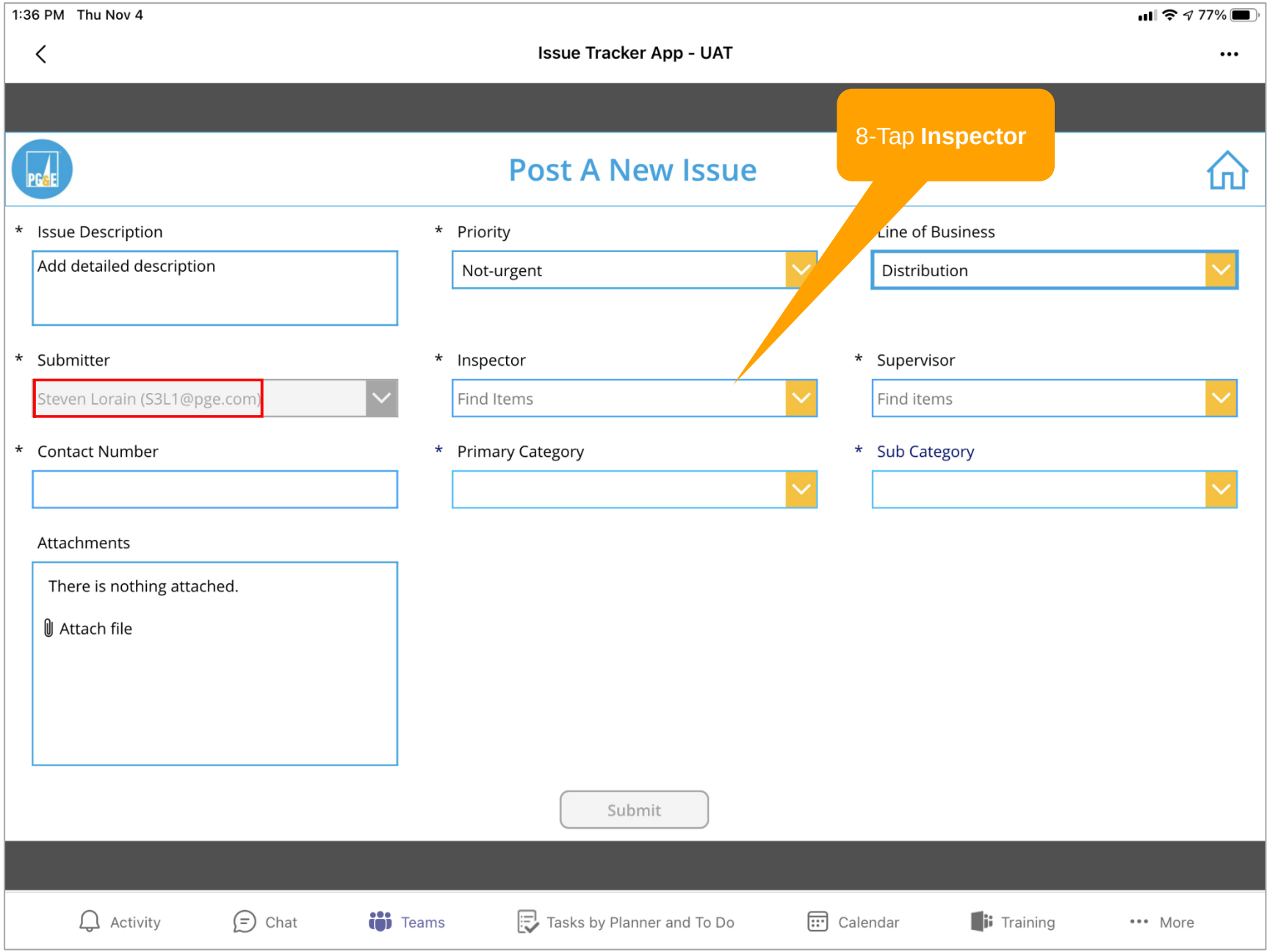

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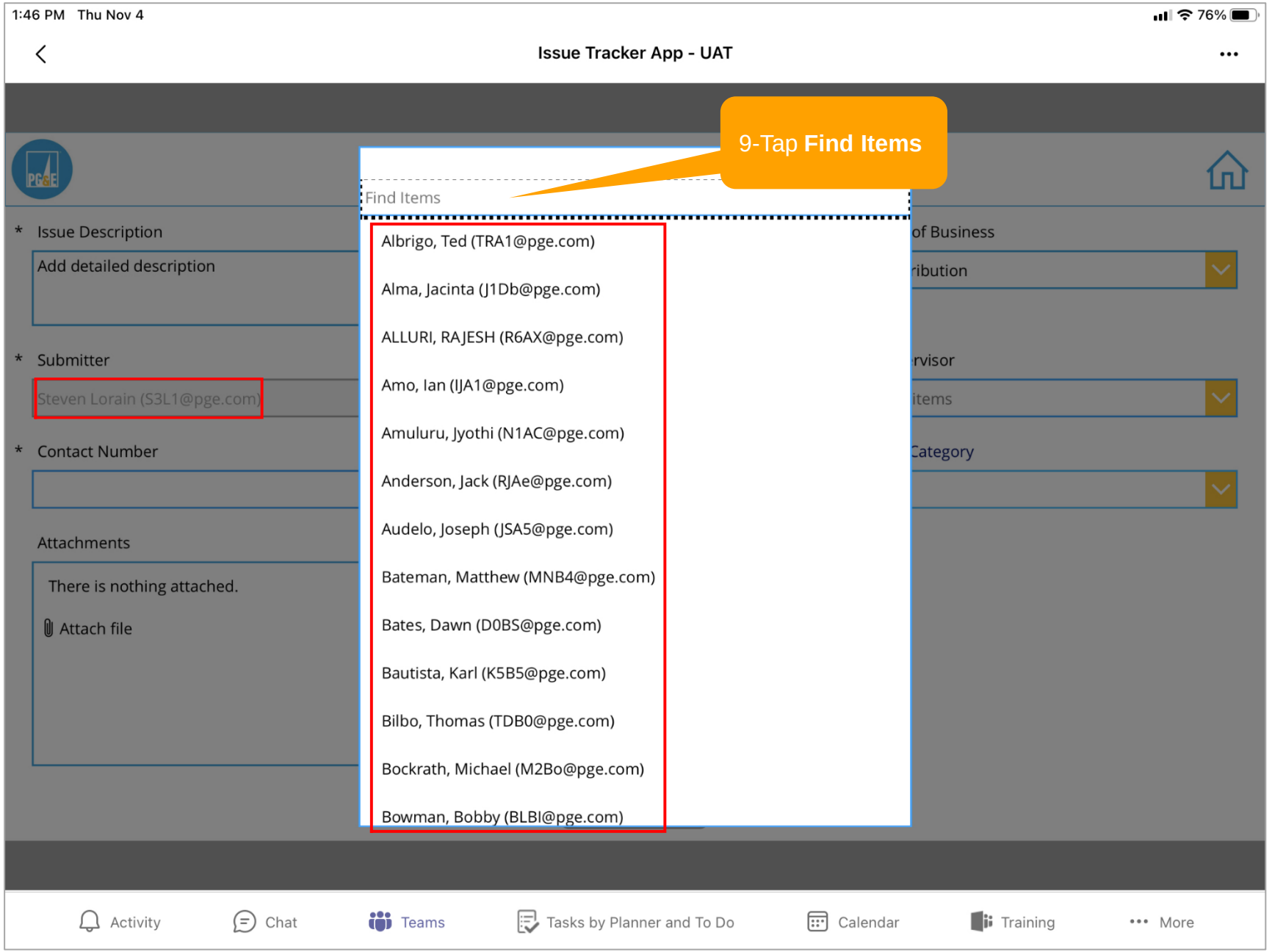

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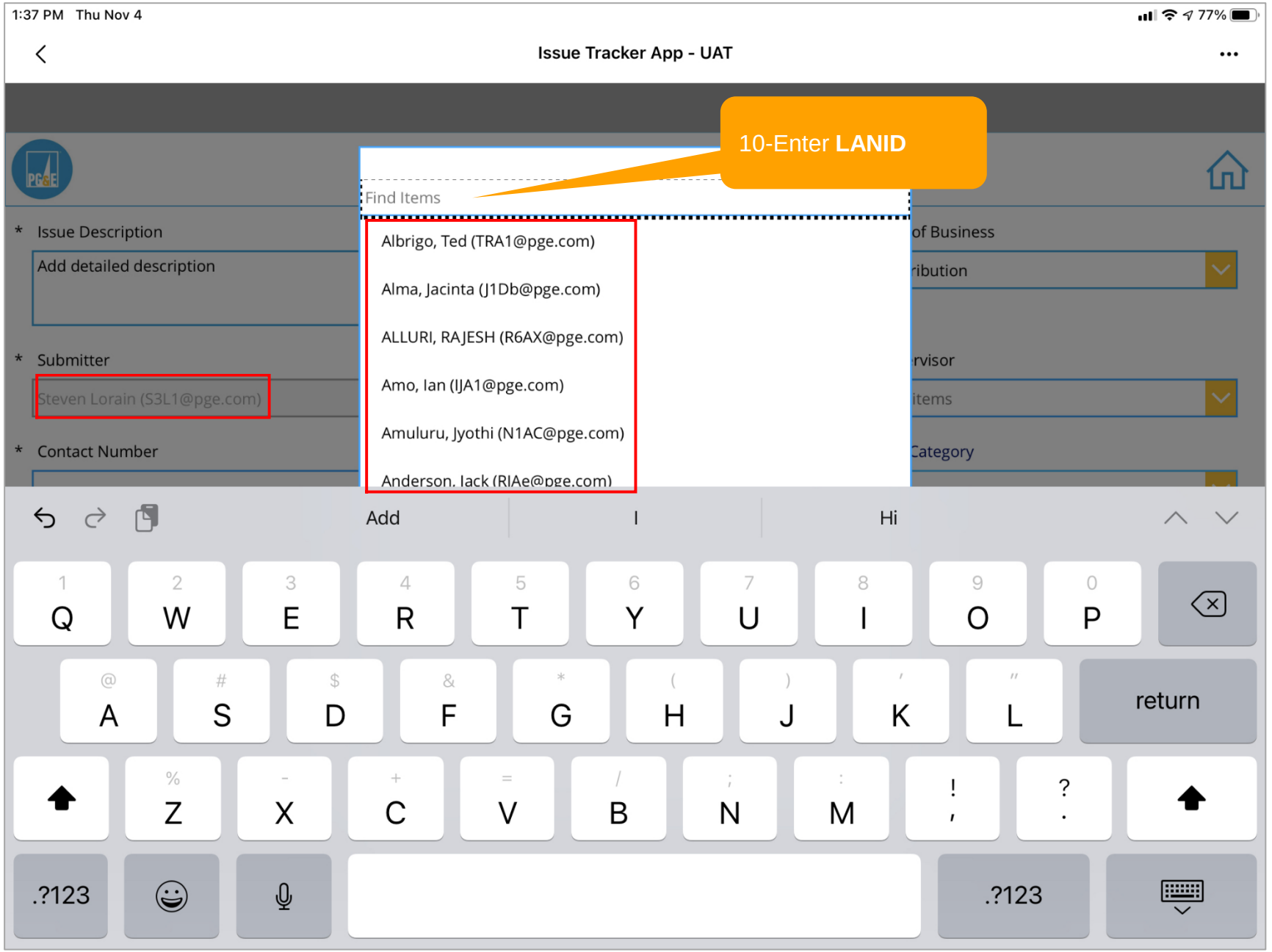

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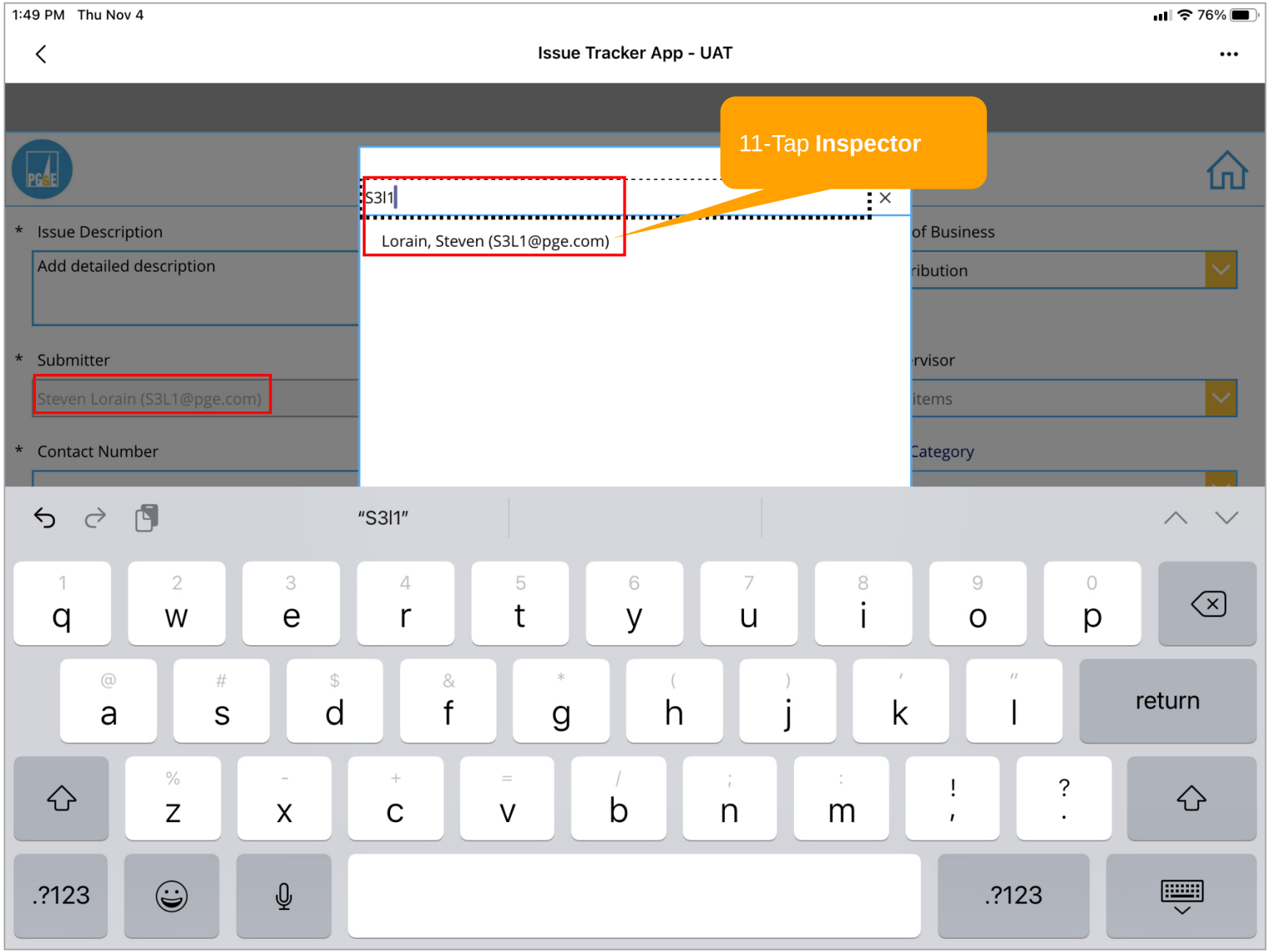

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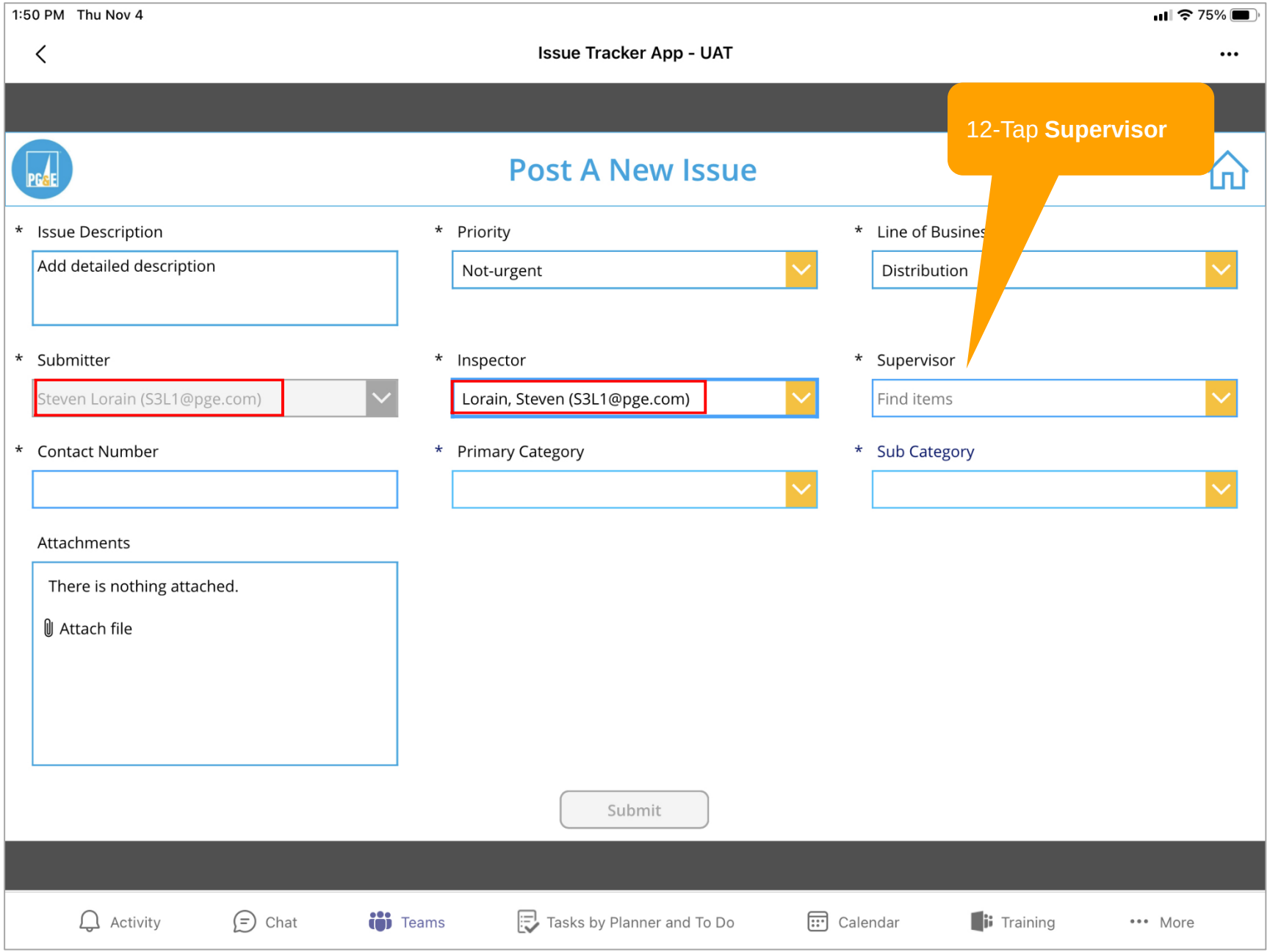

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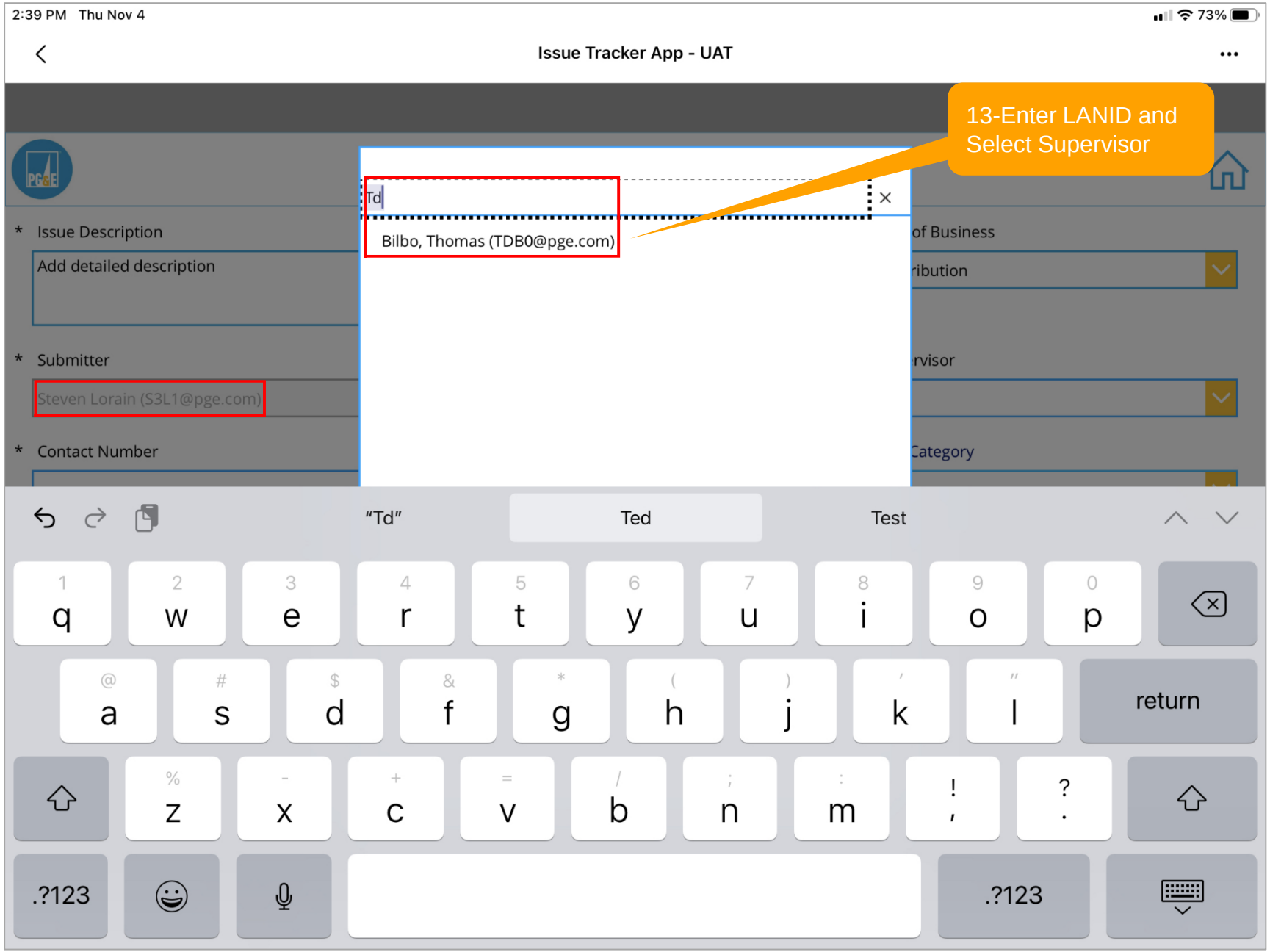

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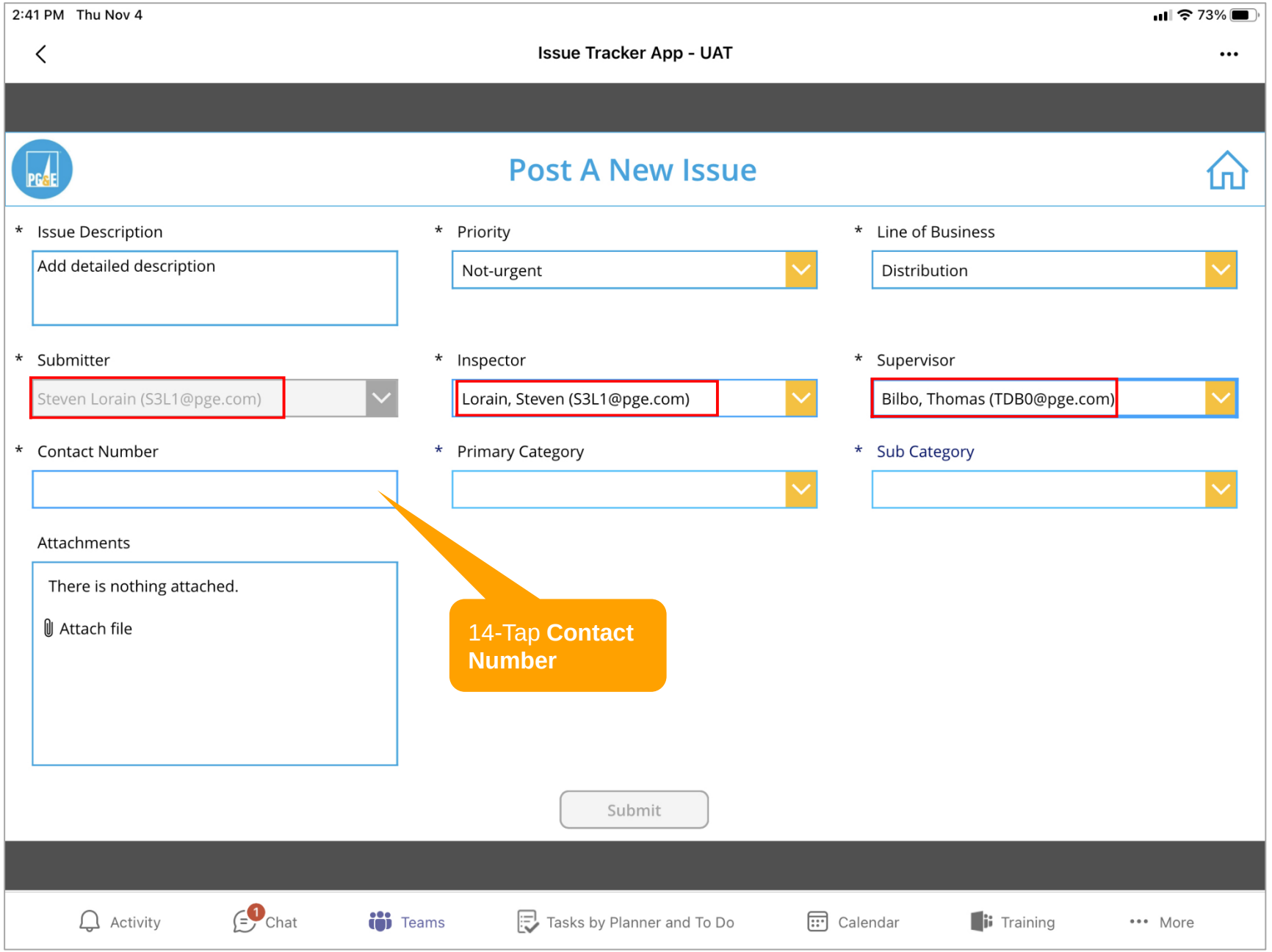

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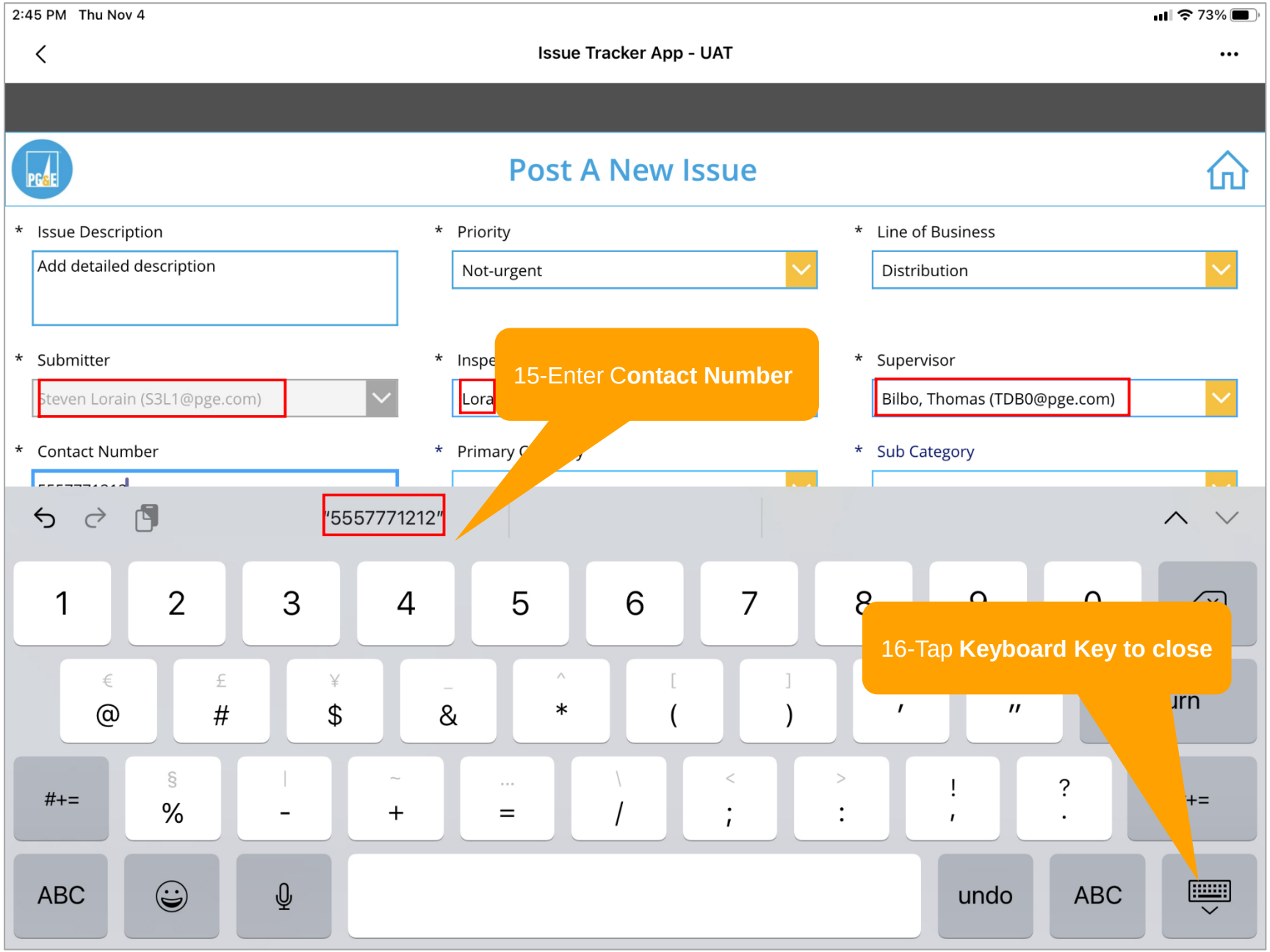

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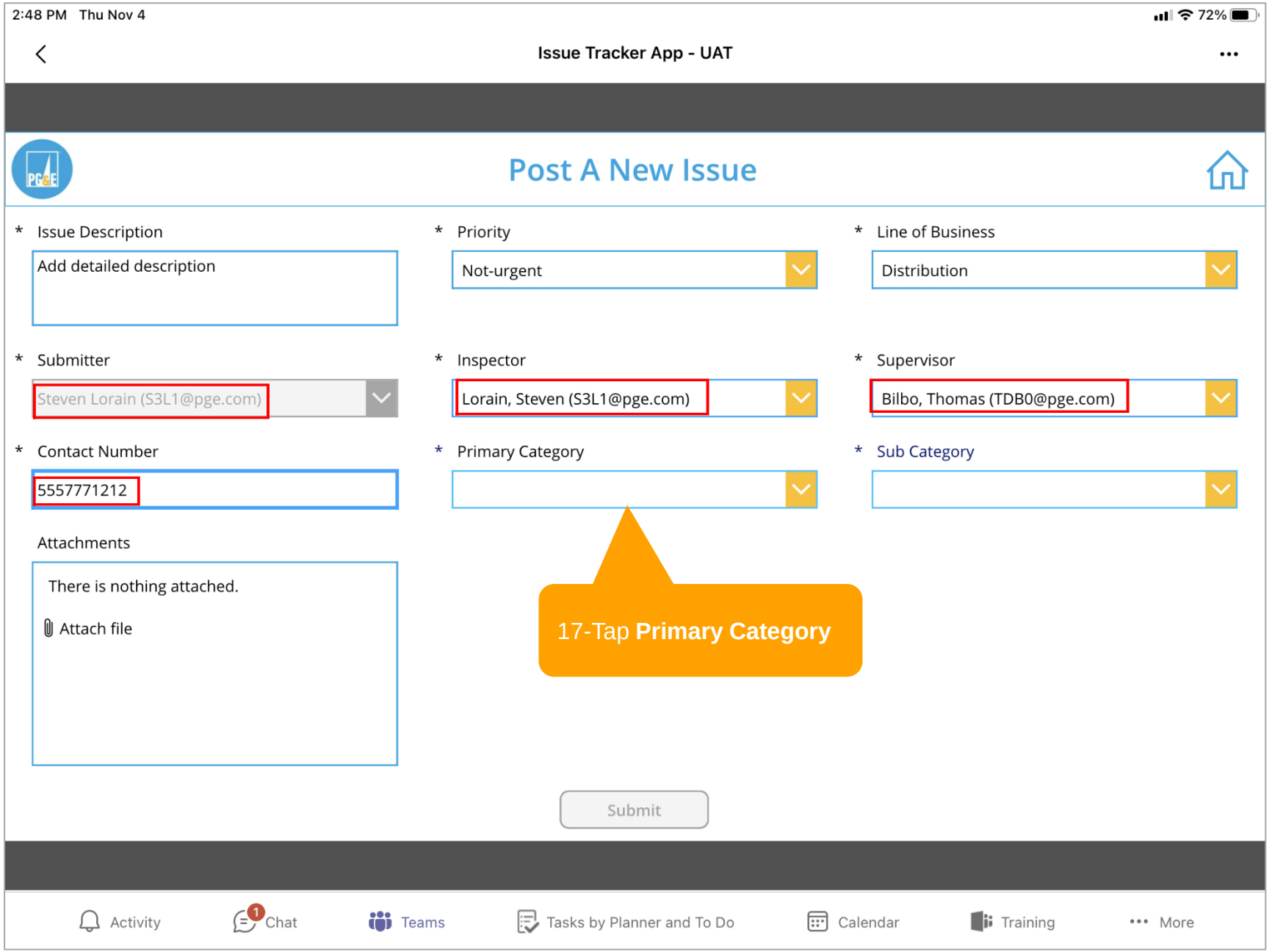

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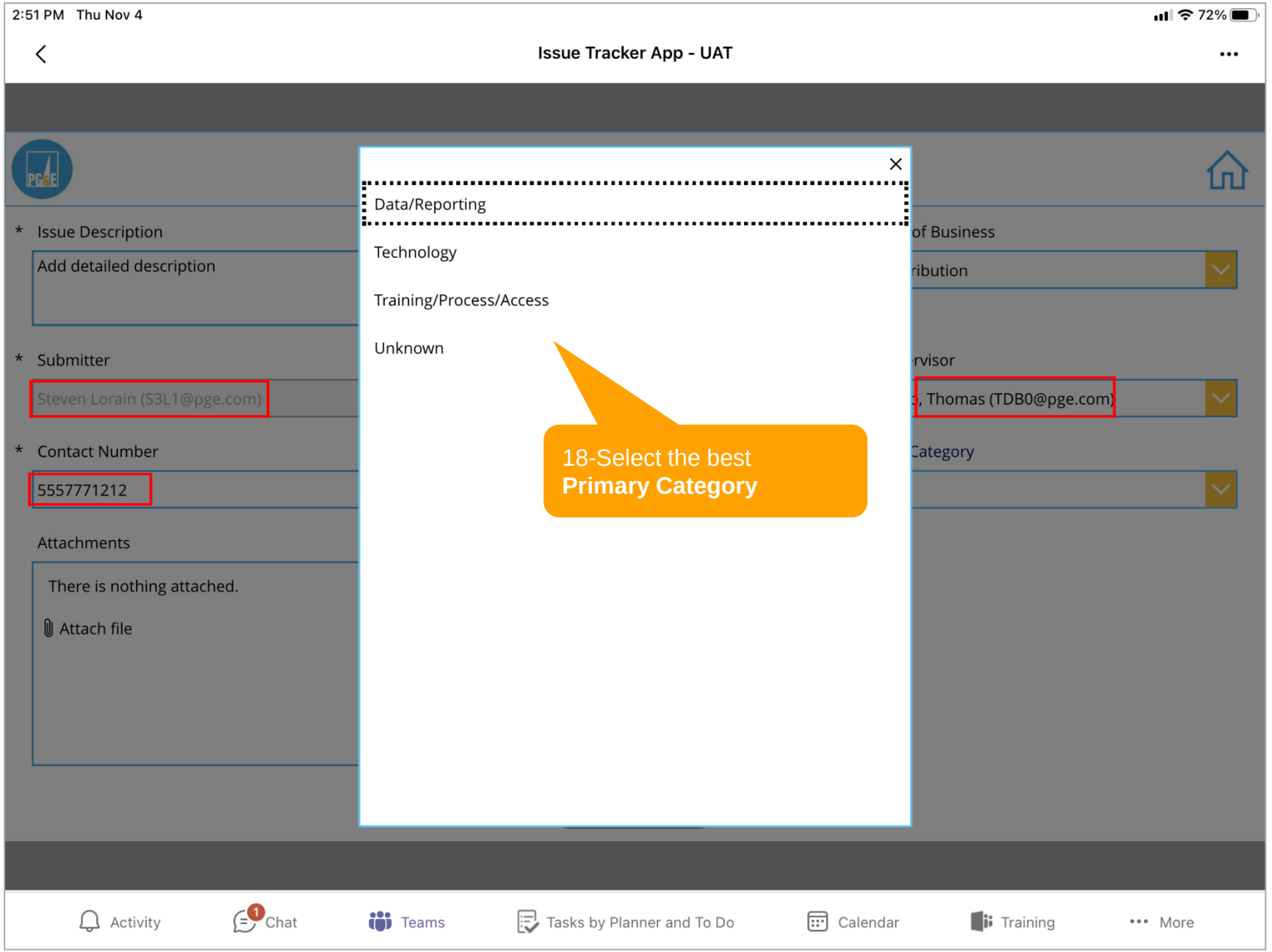

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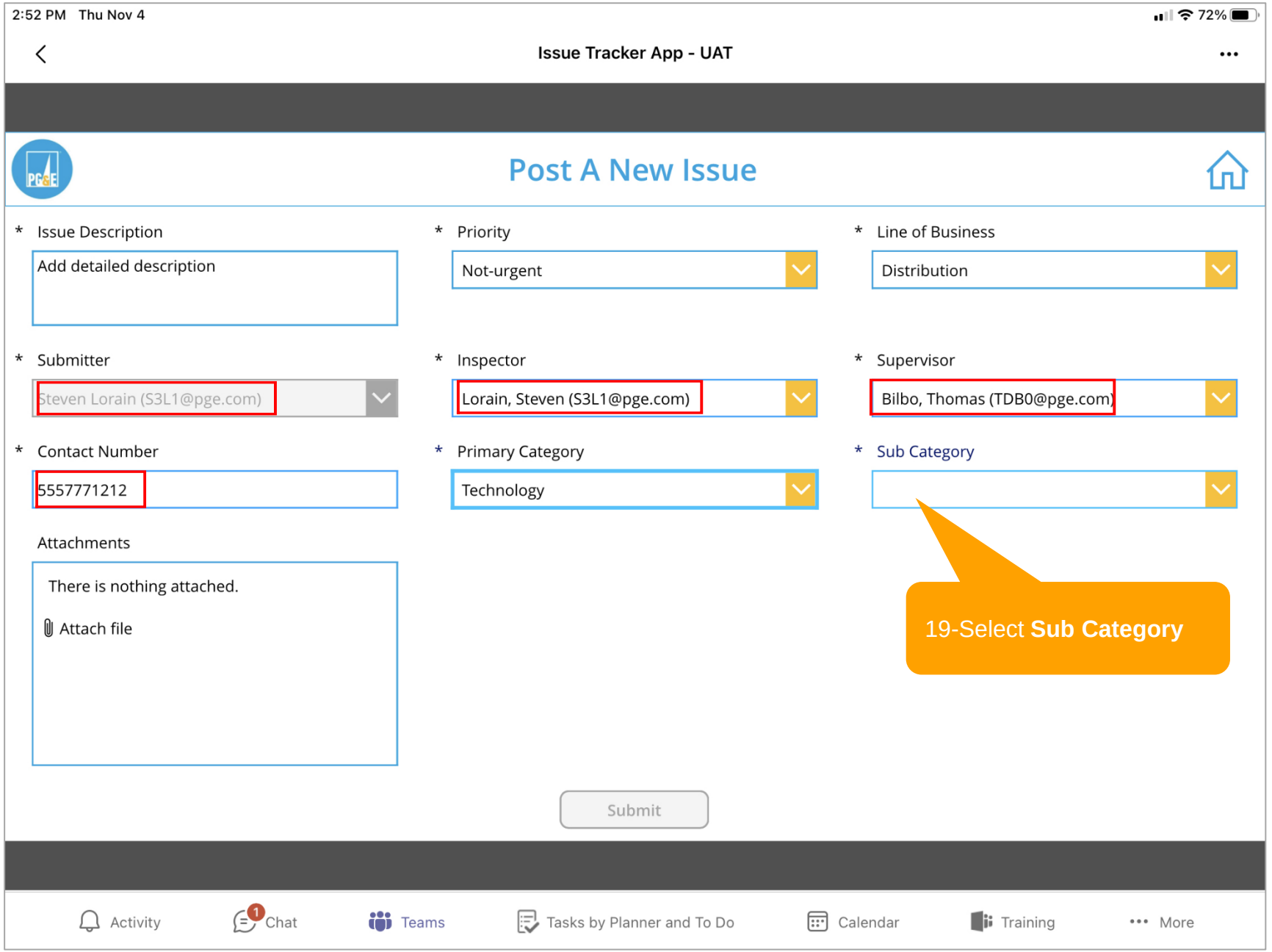

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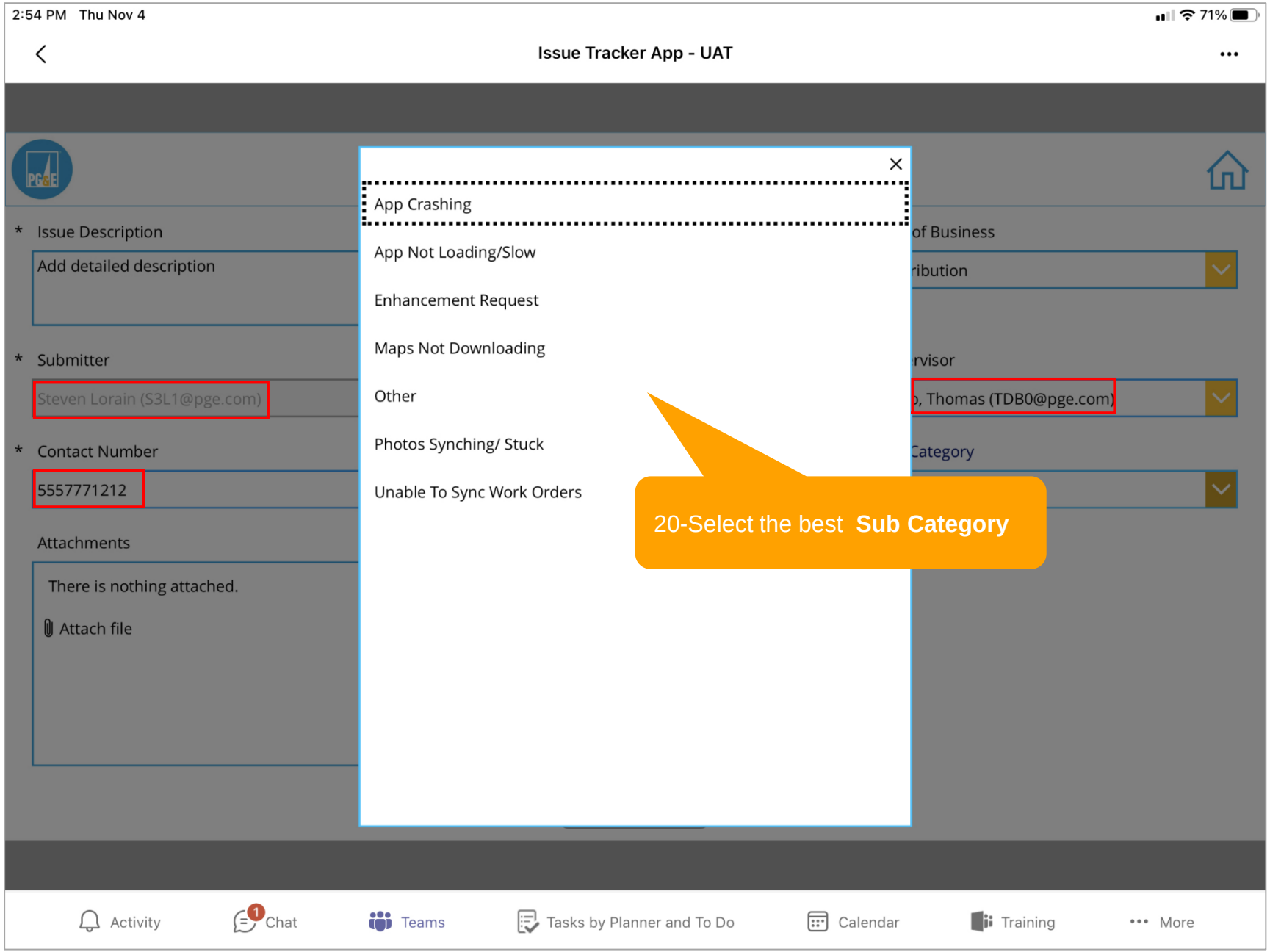

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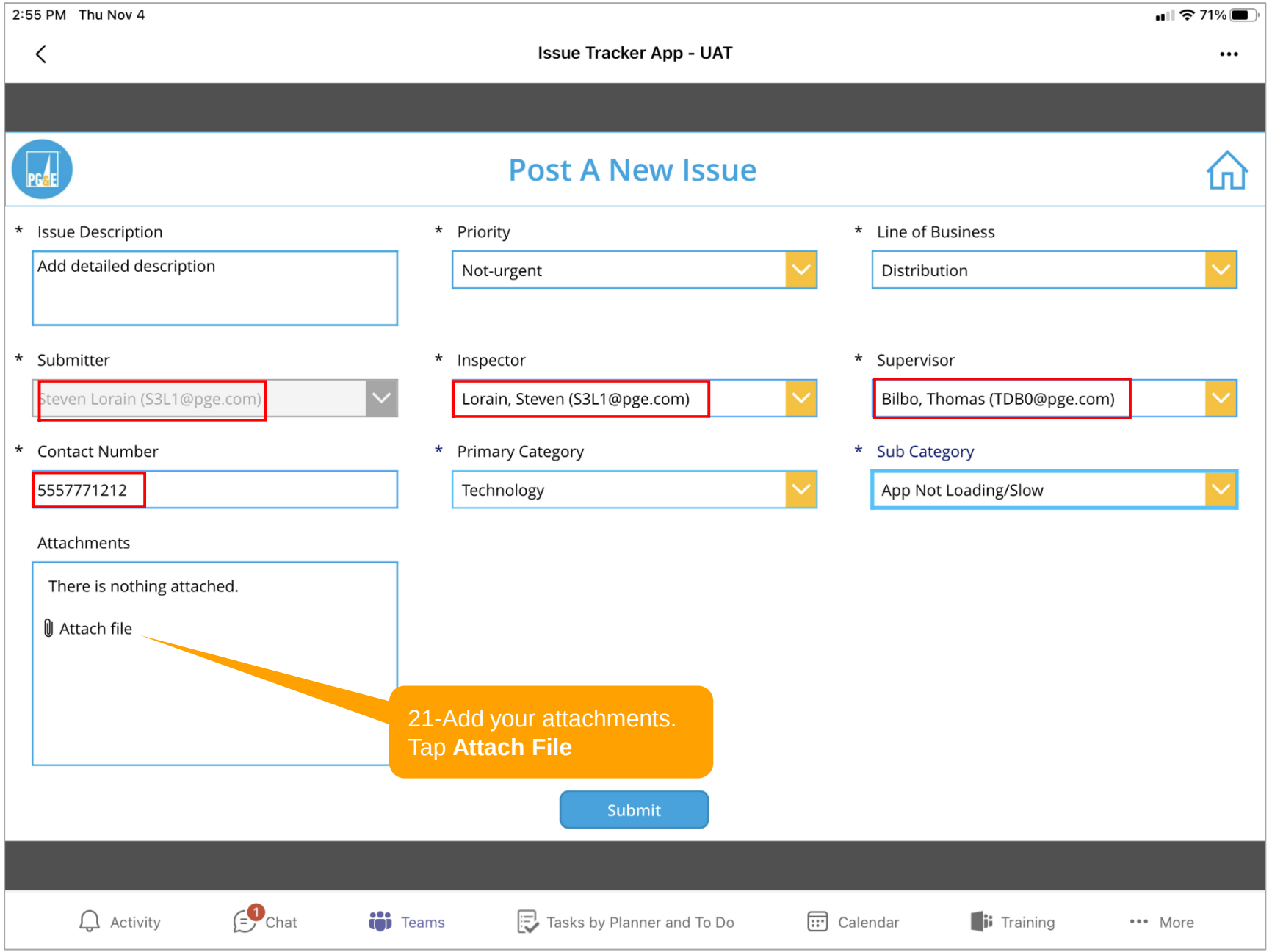

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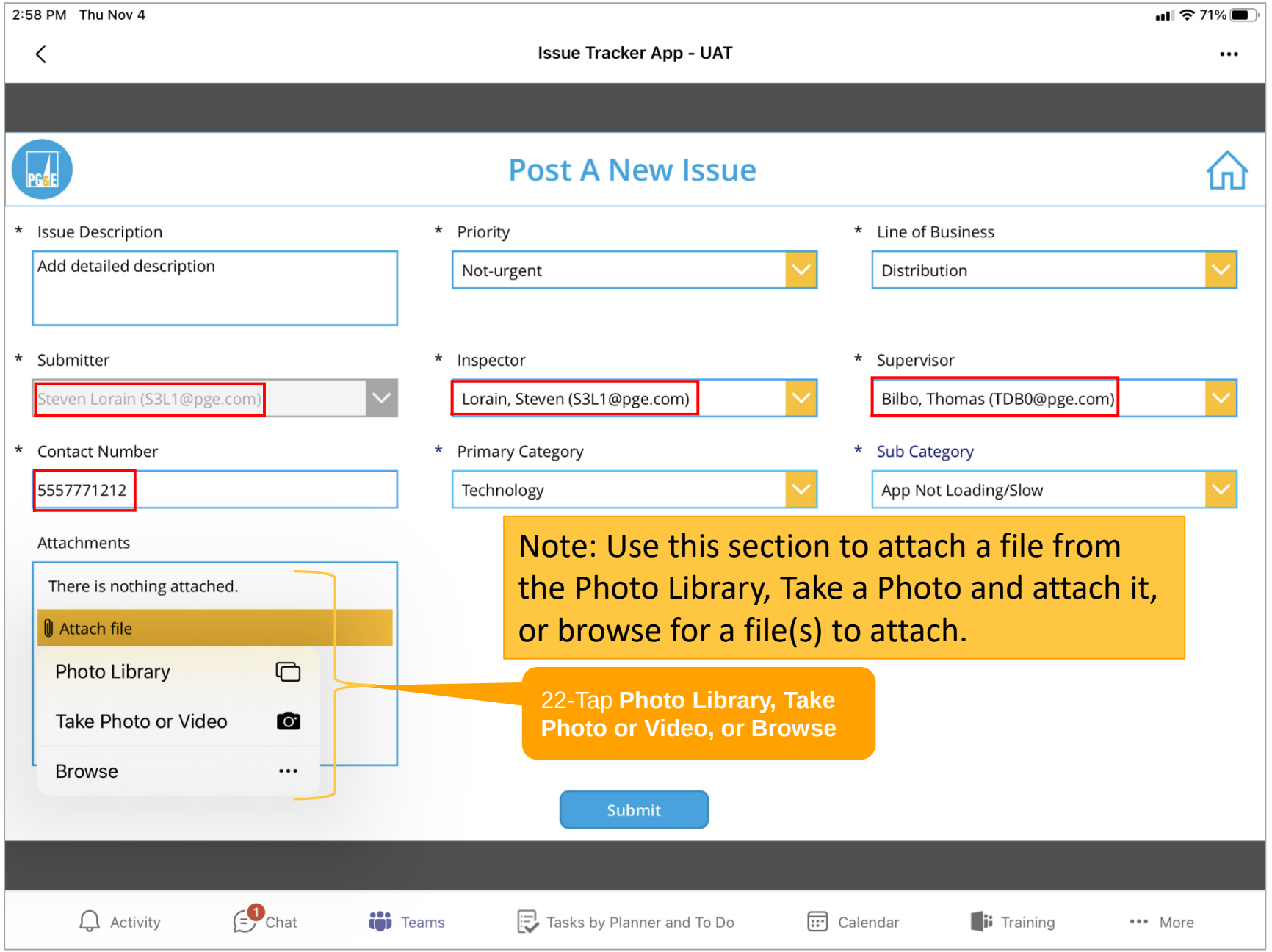

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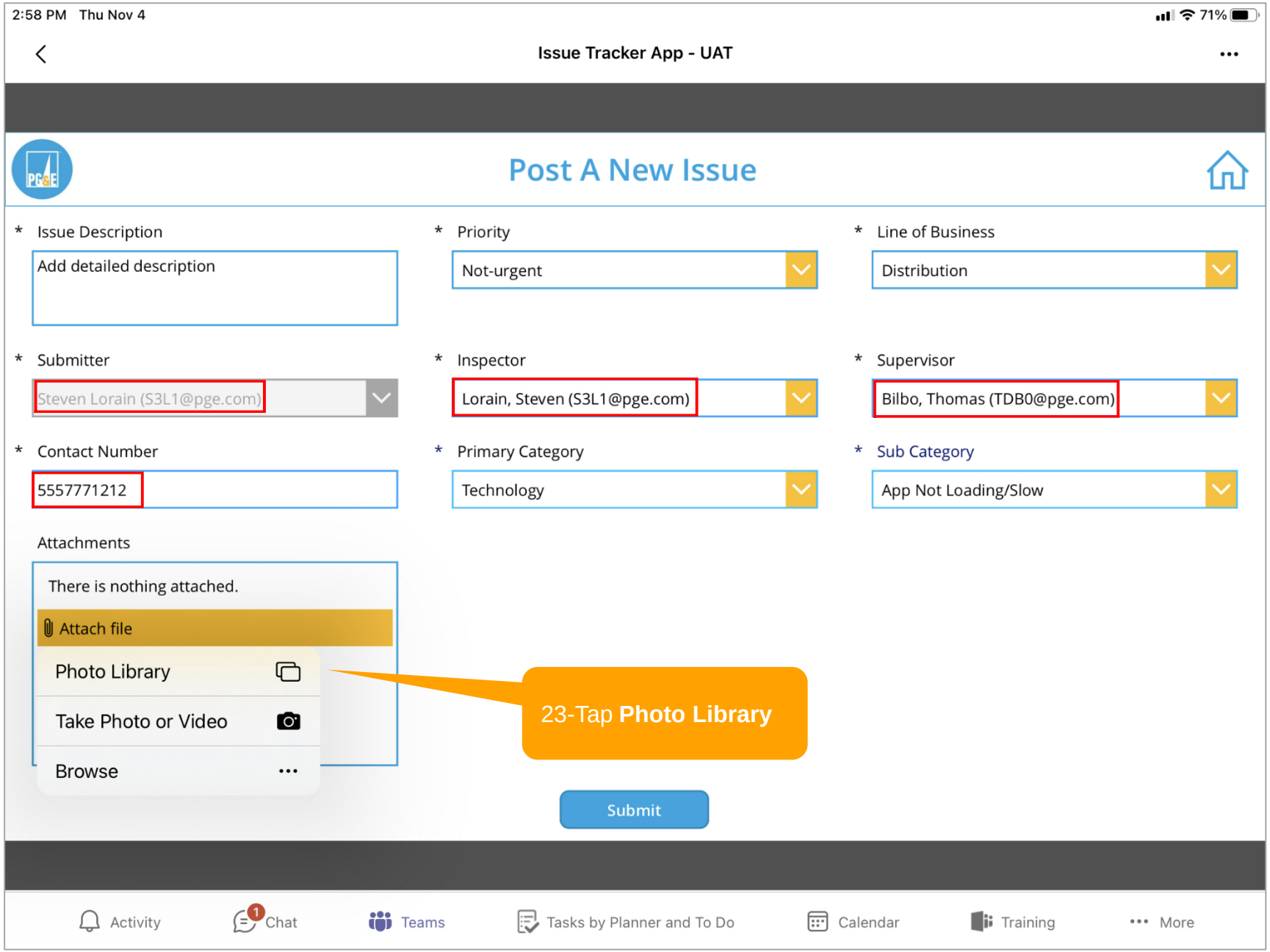

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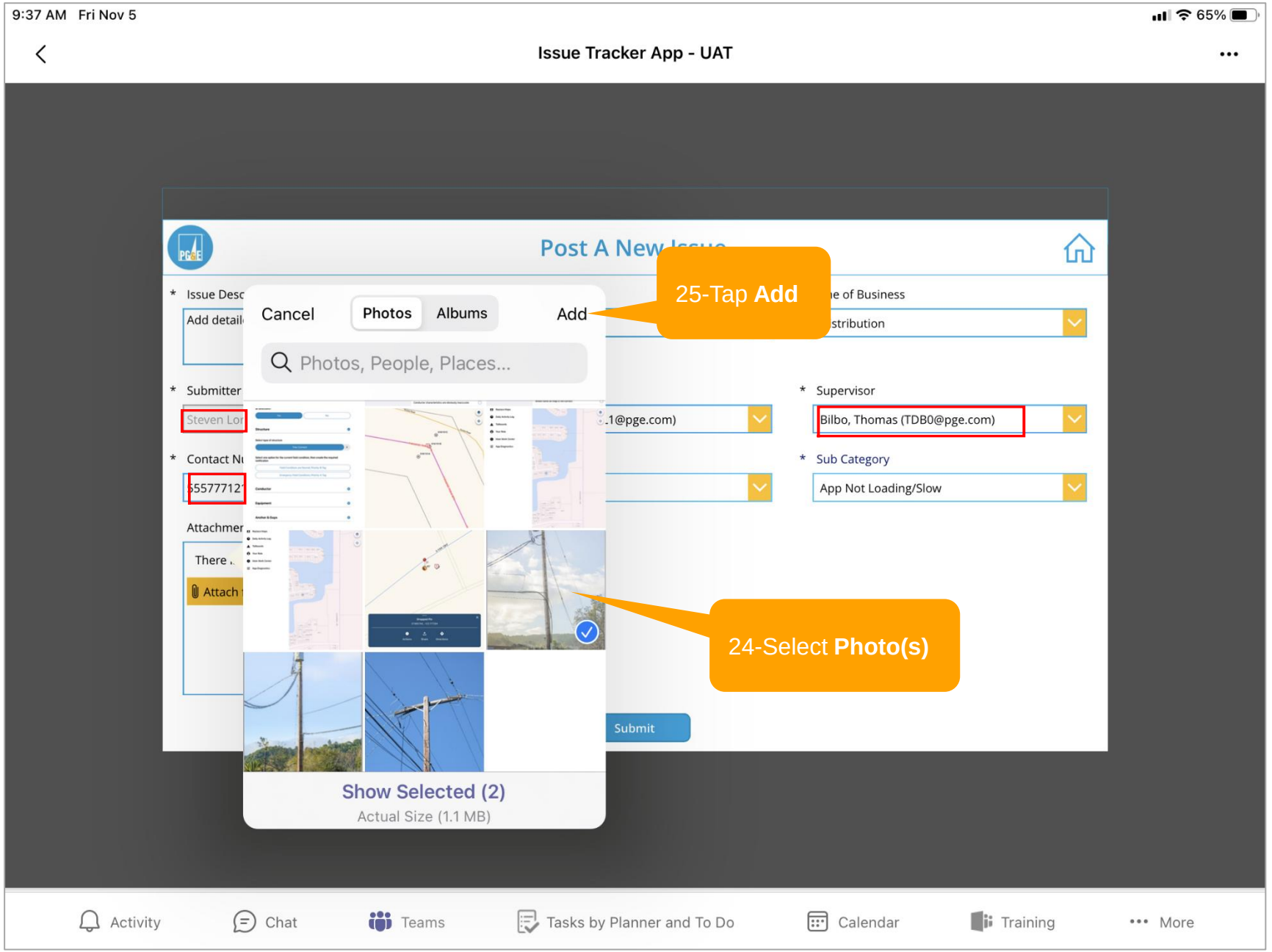

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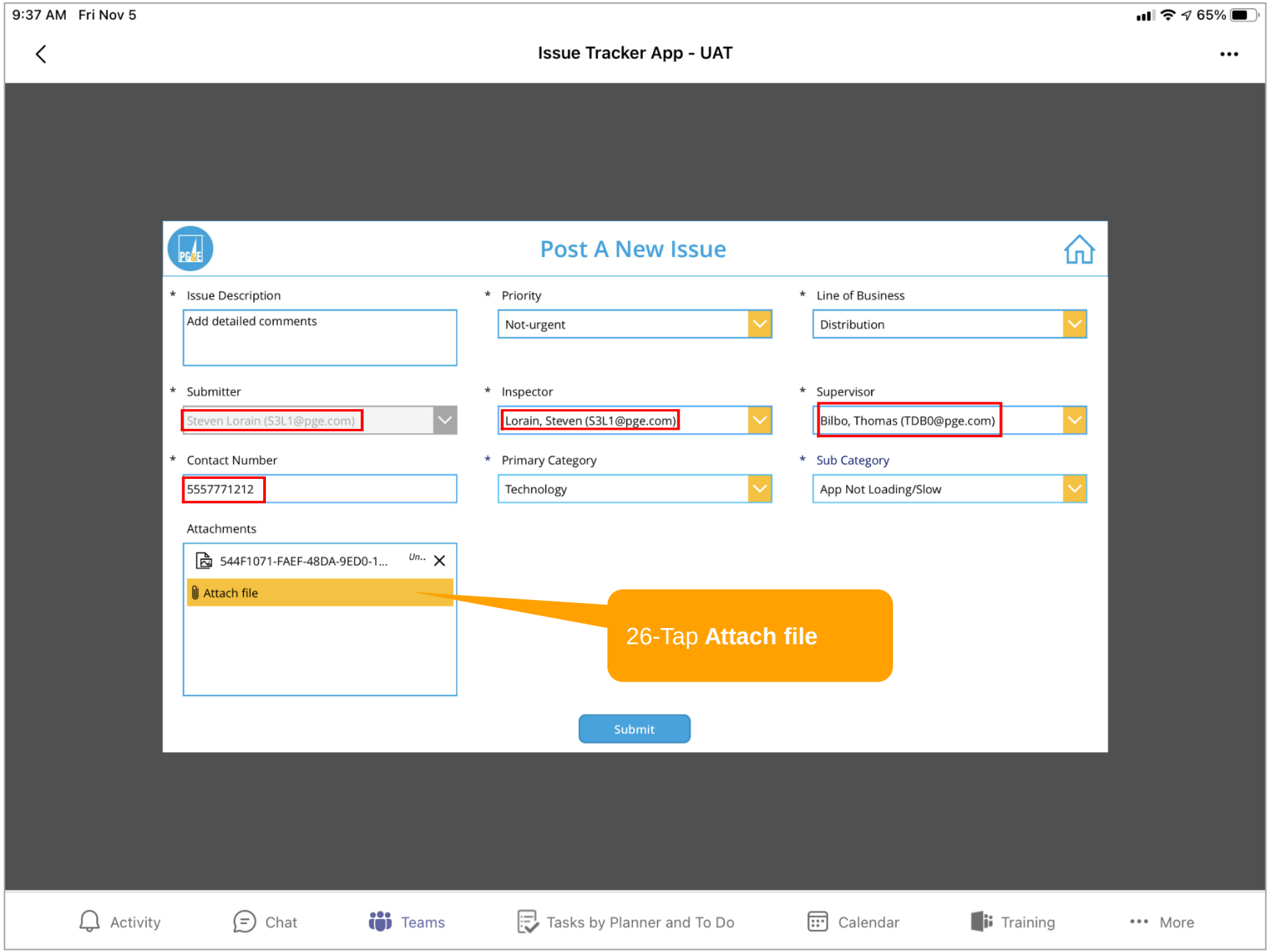

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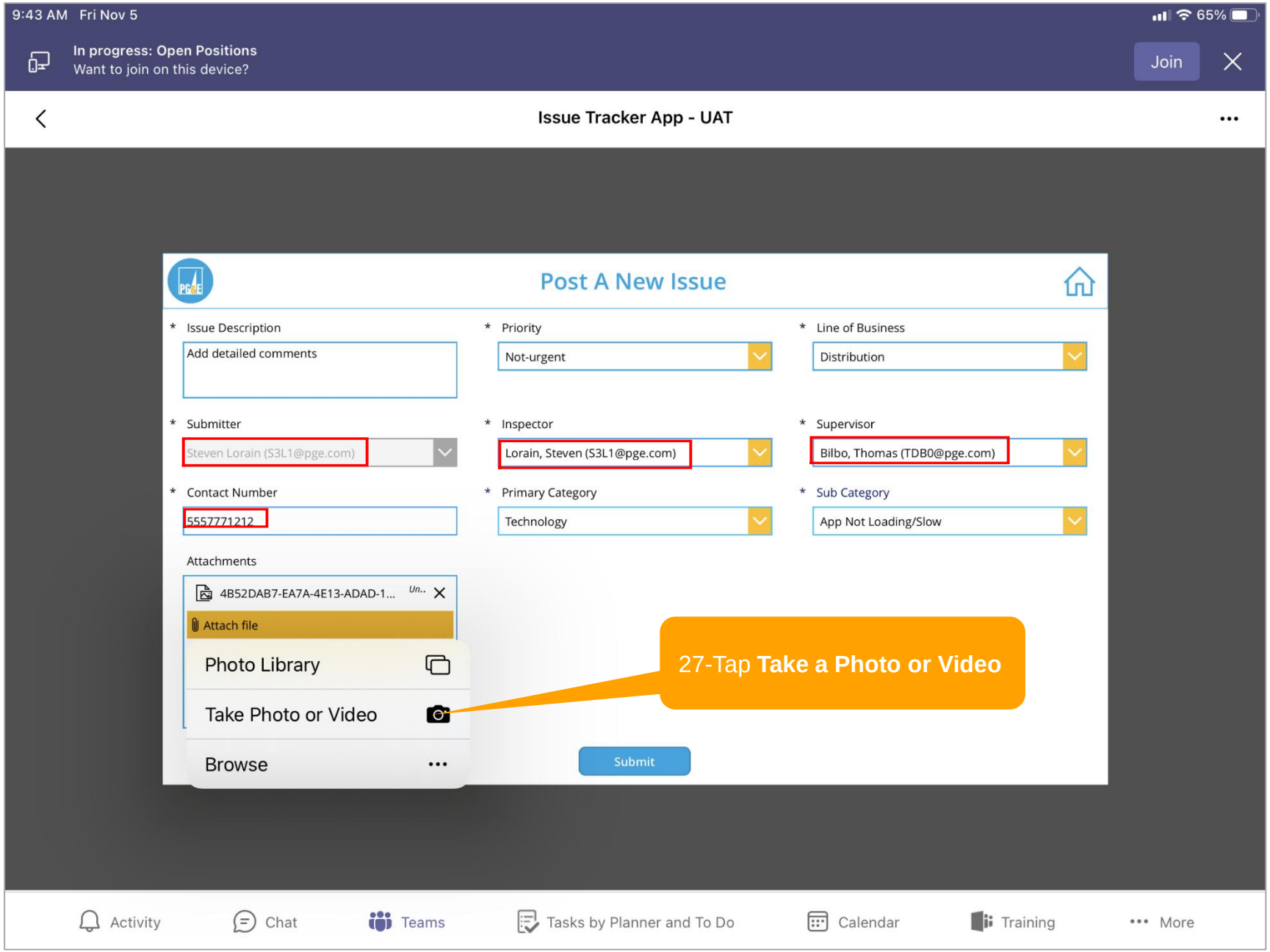
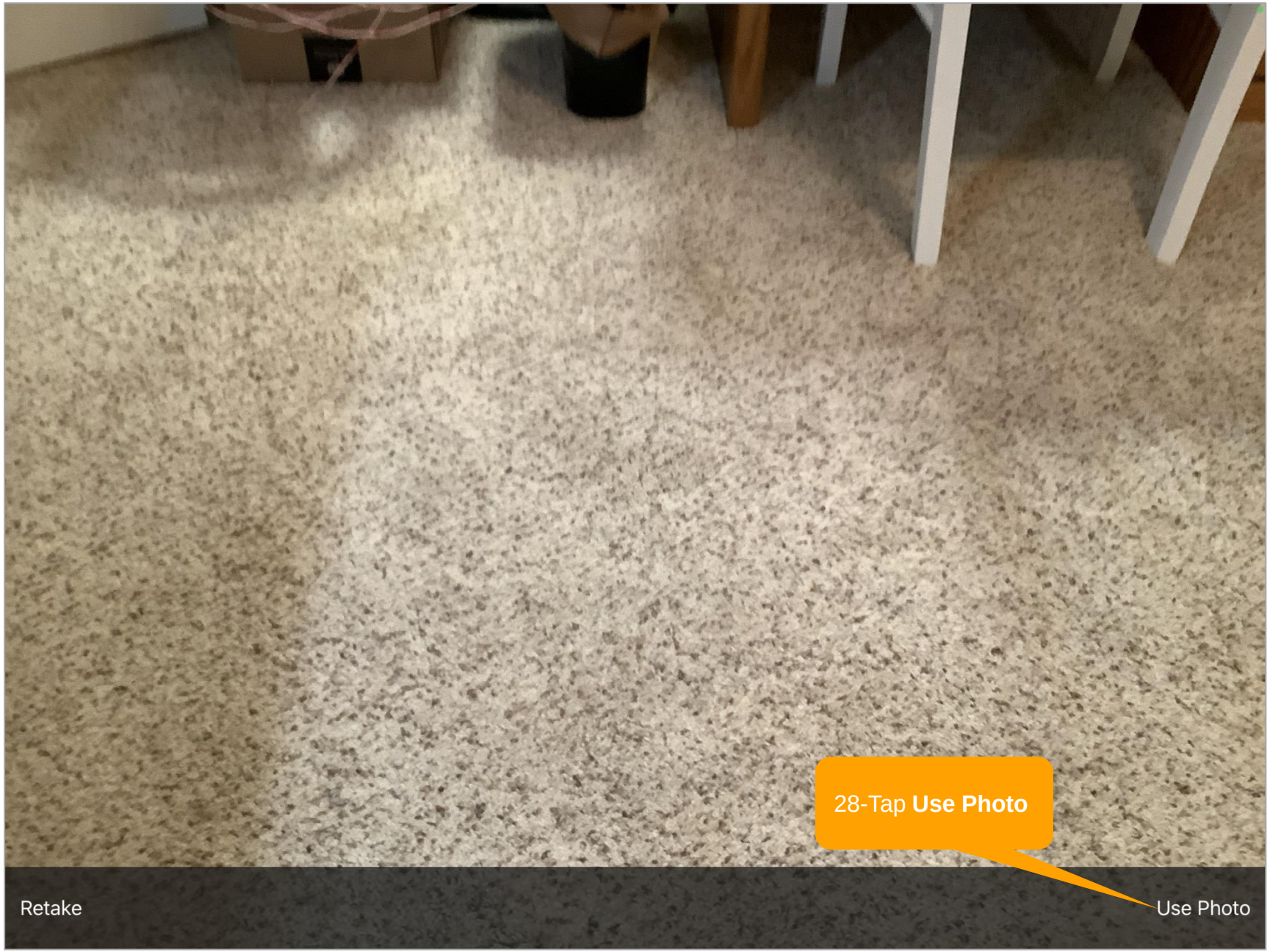


# Issue Tracker



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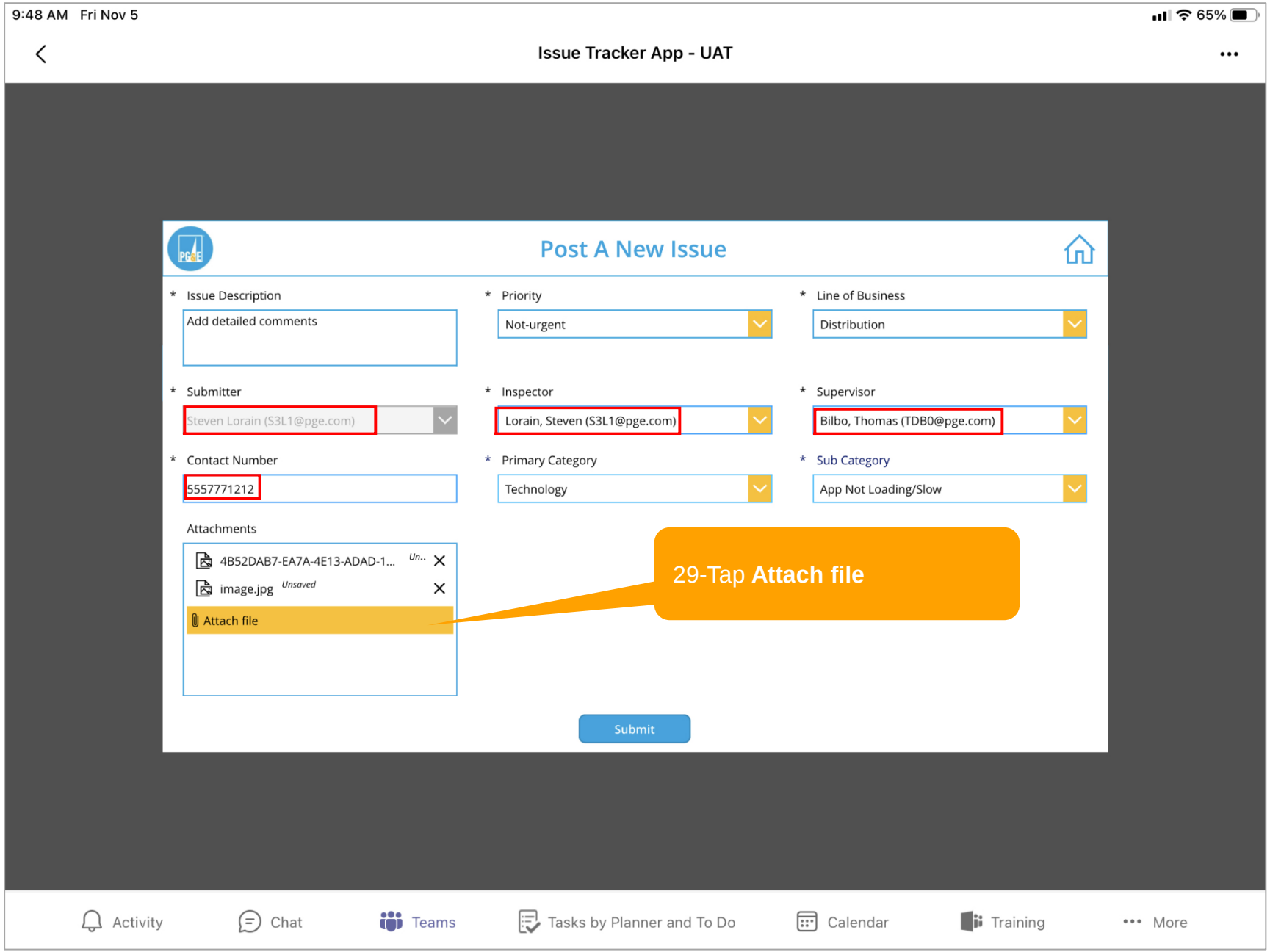

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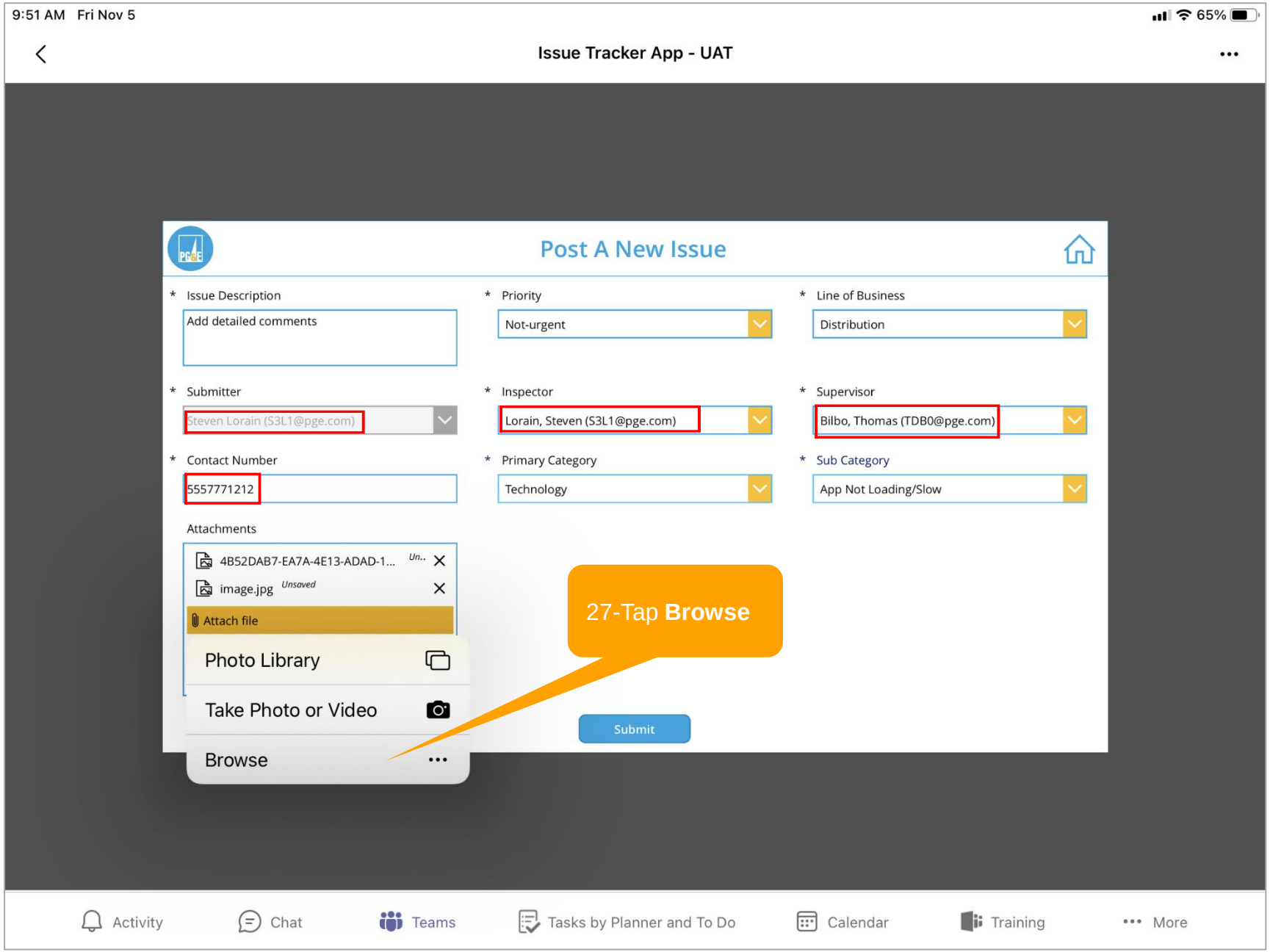

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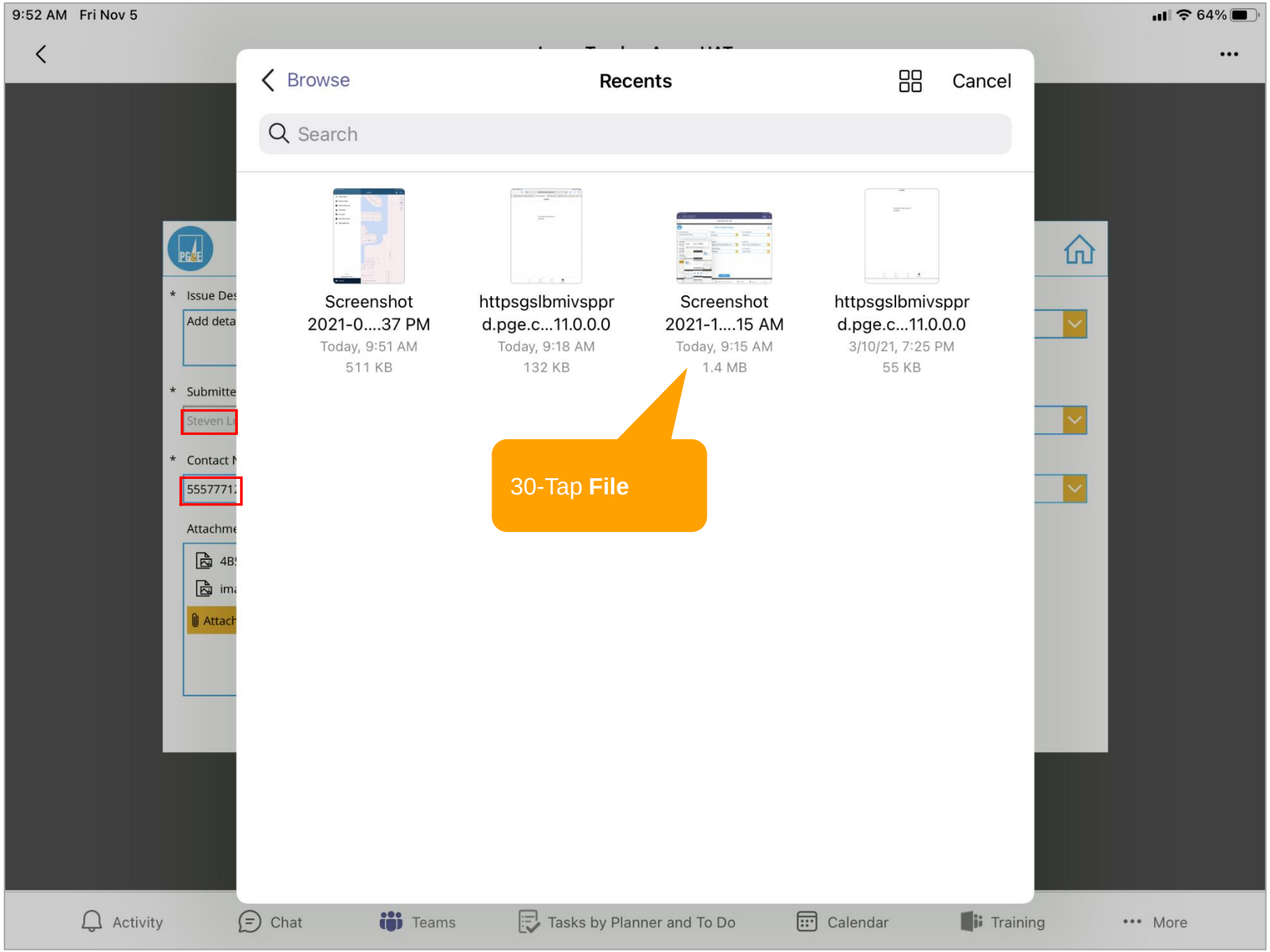

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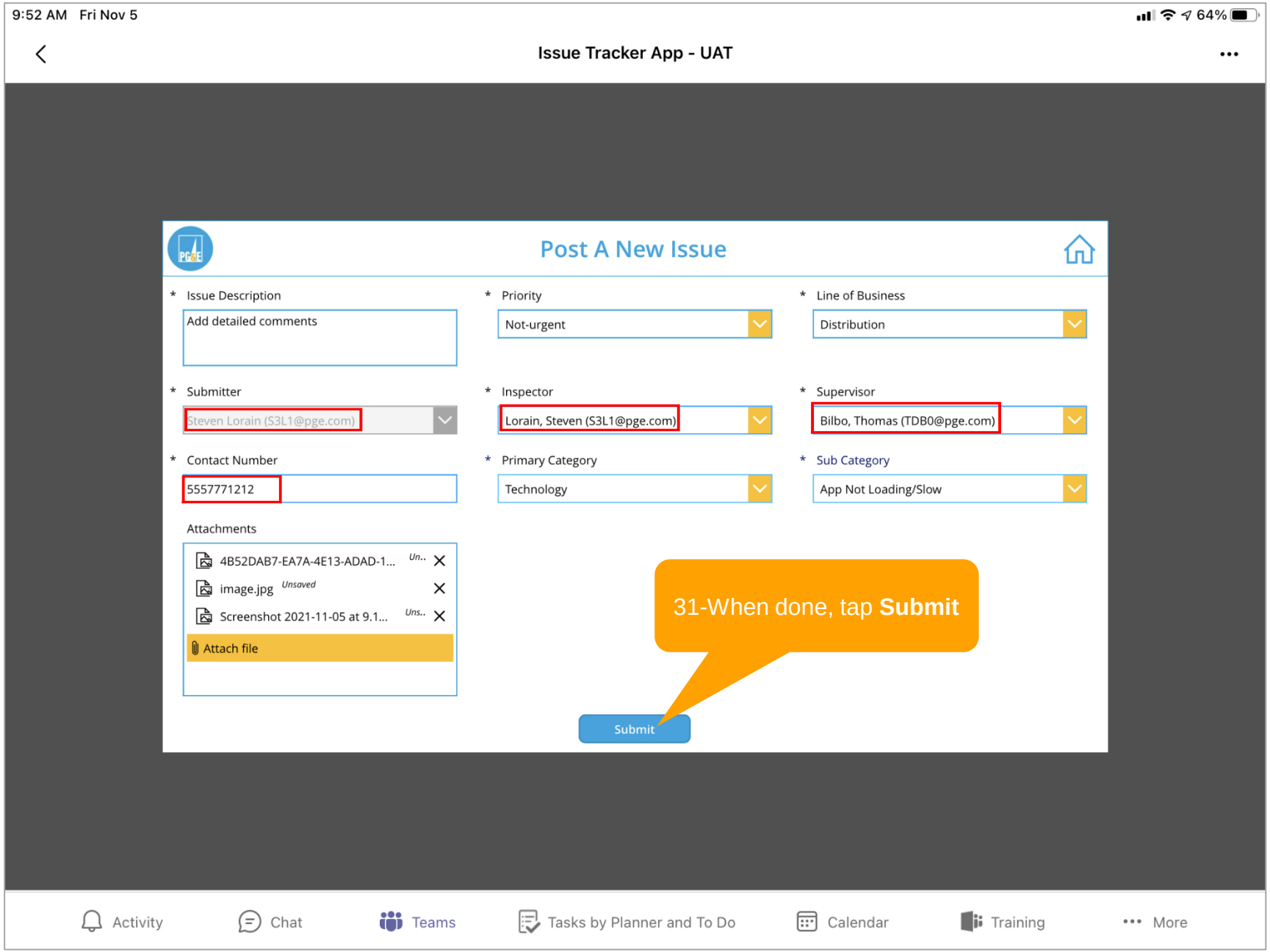
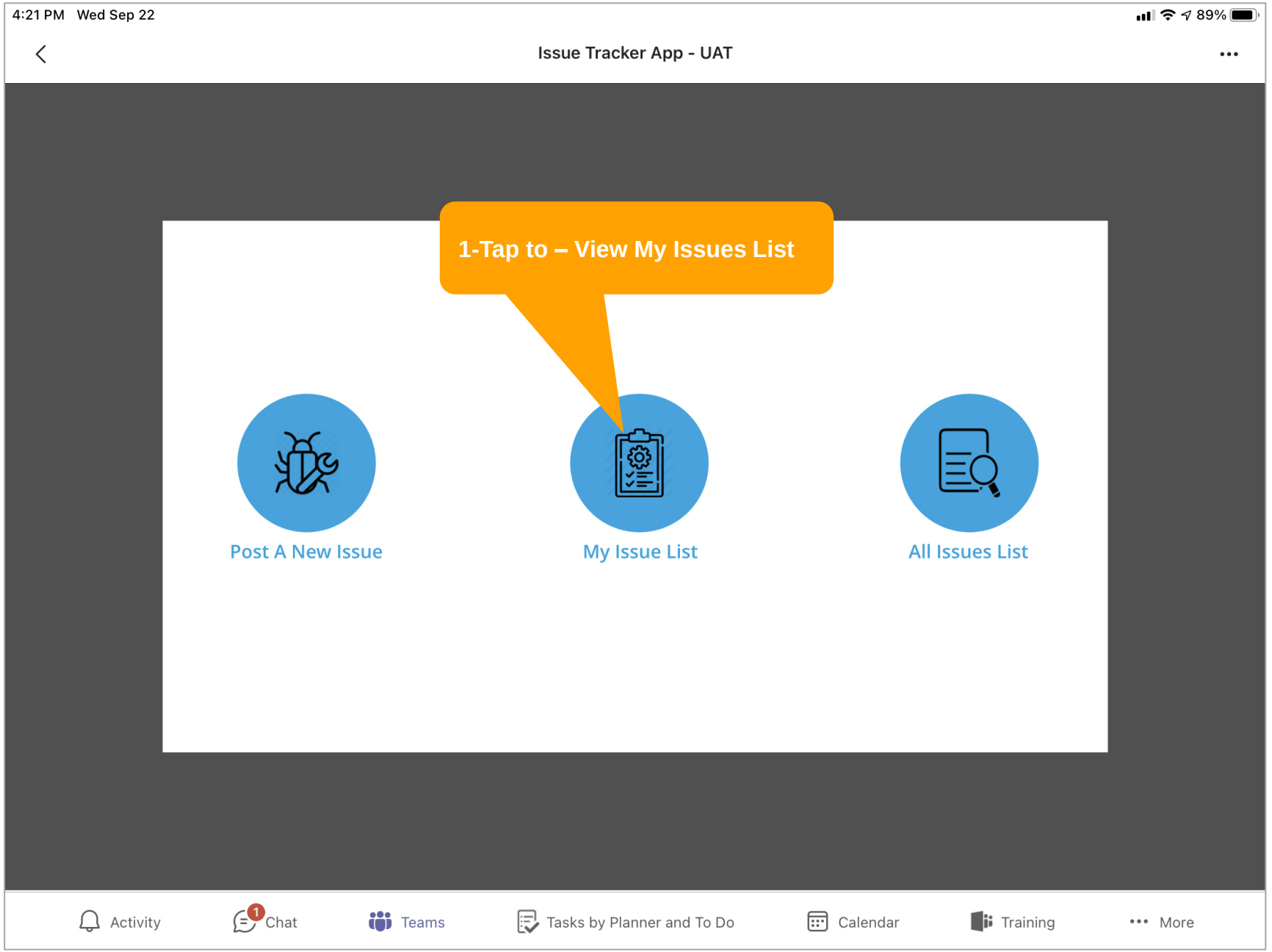


# Viewing My Issues

# Issue Tracker



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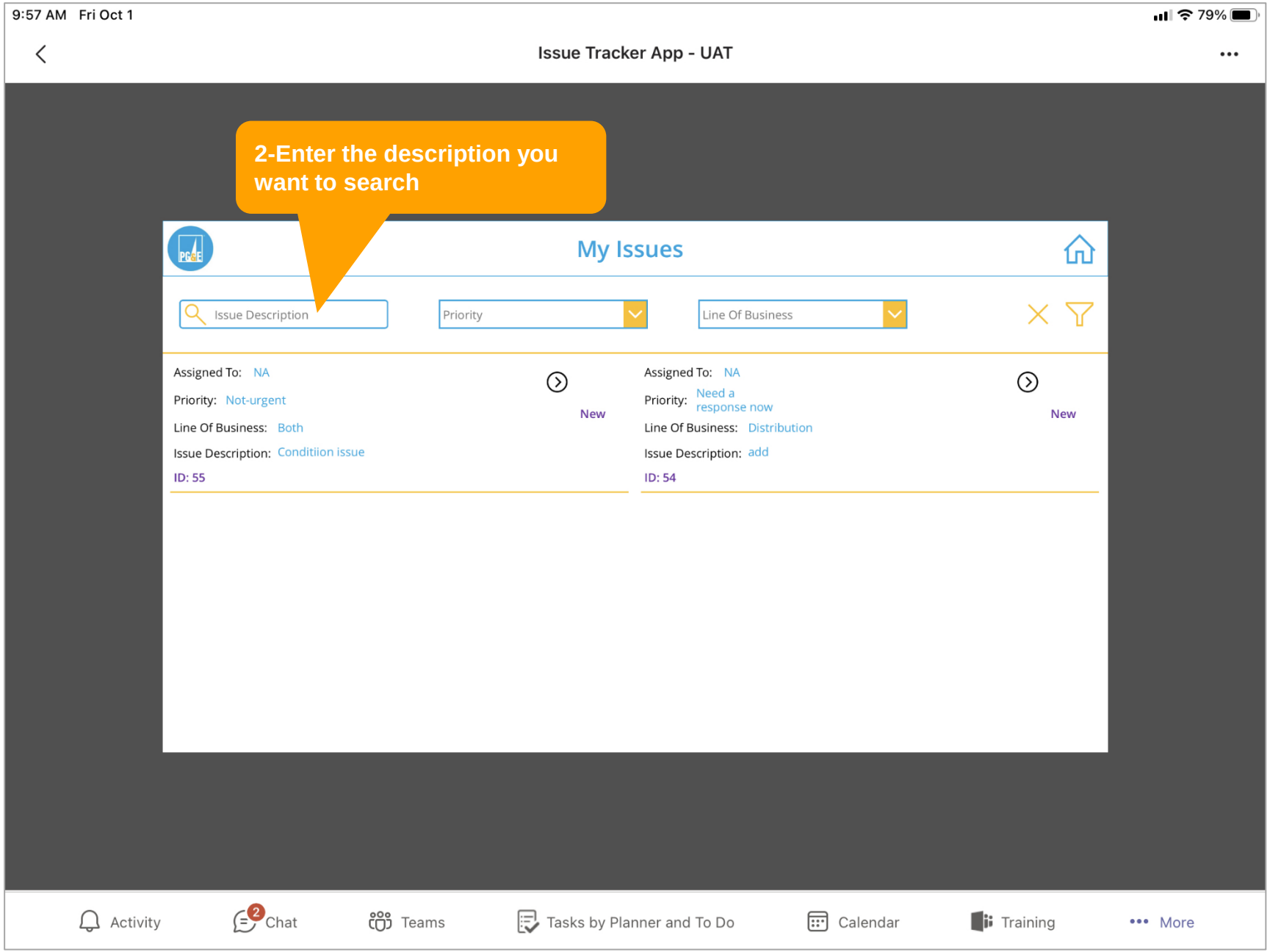
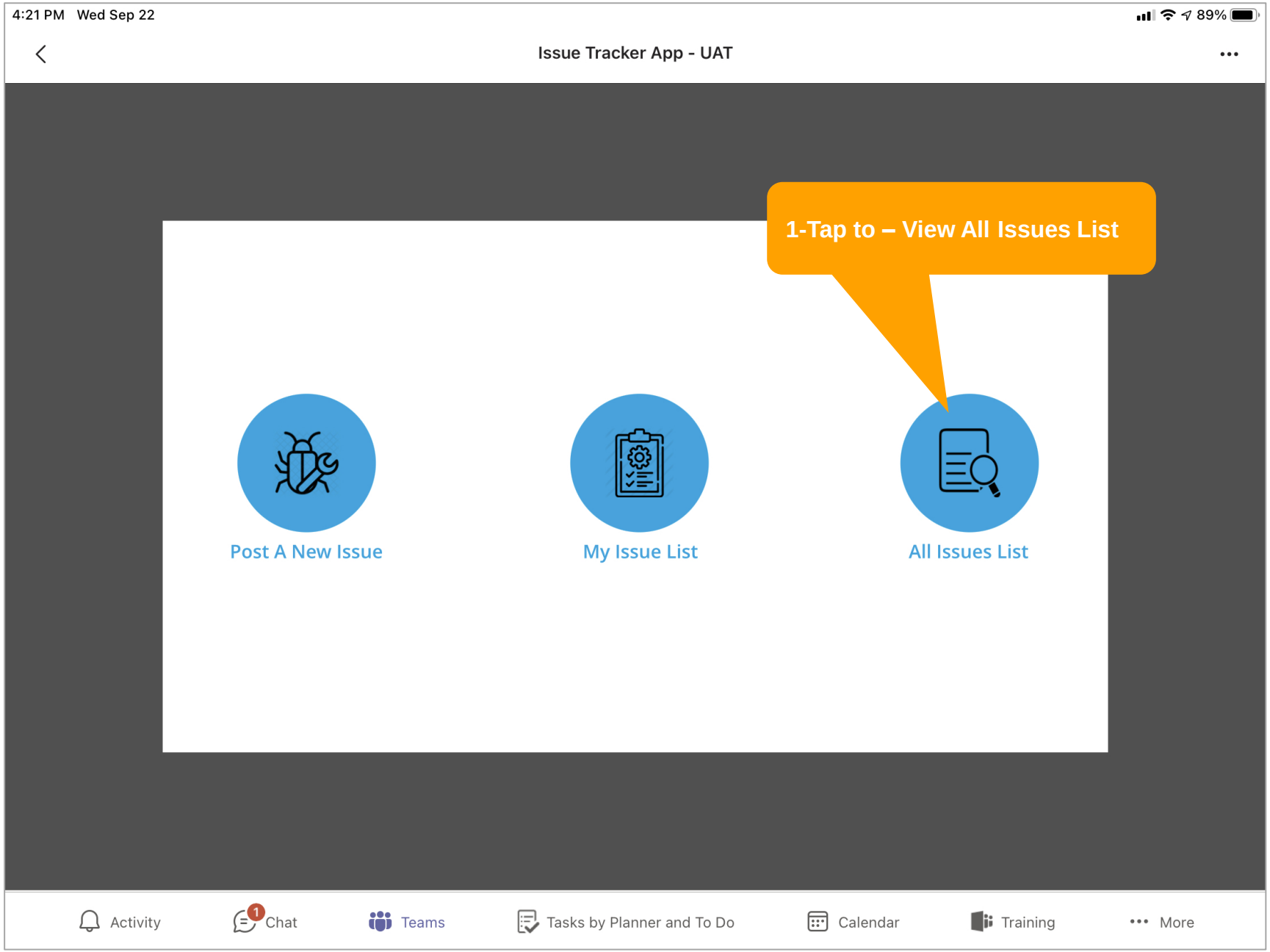


# 04

# All Issues List

# Issue Tracker



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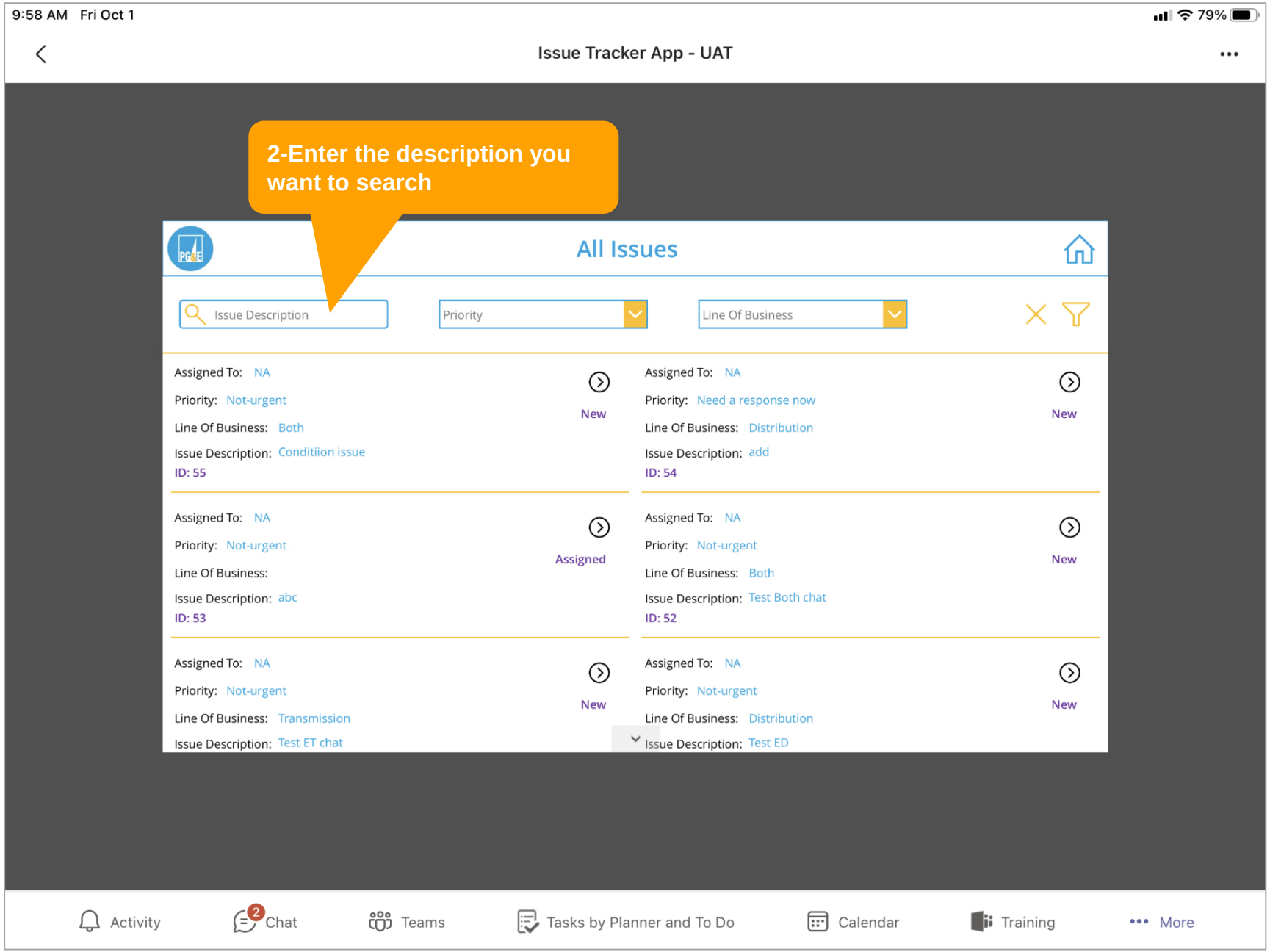
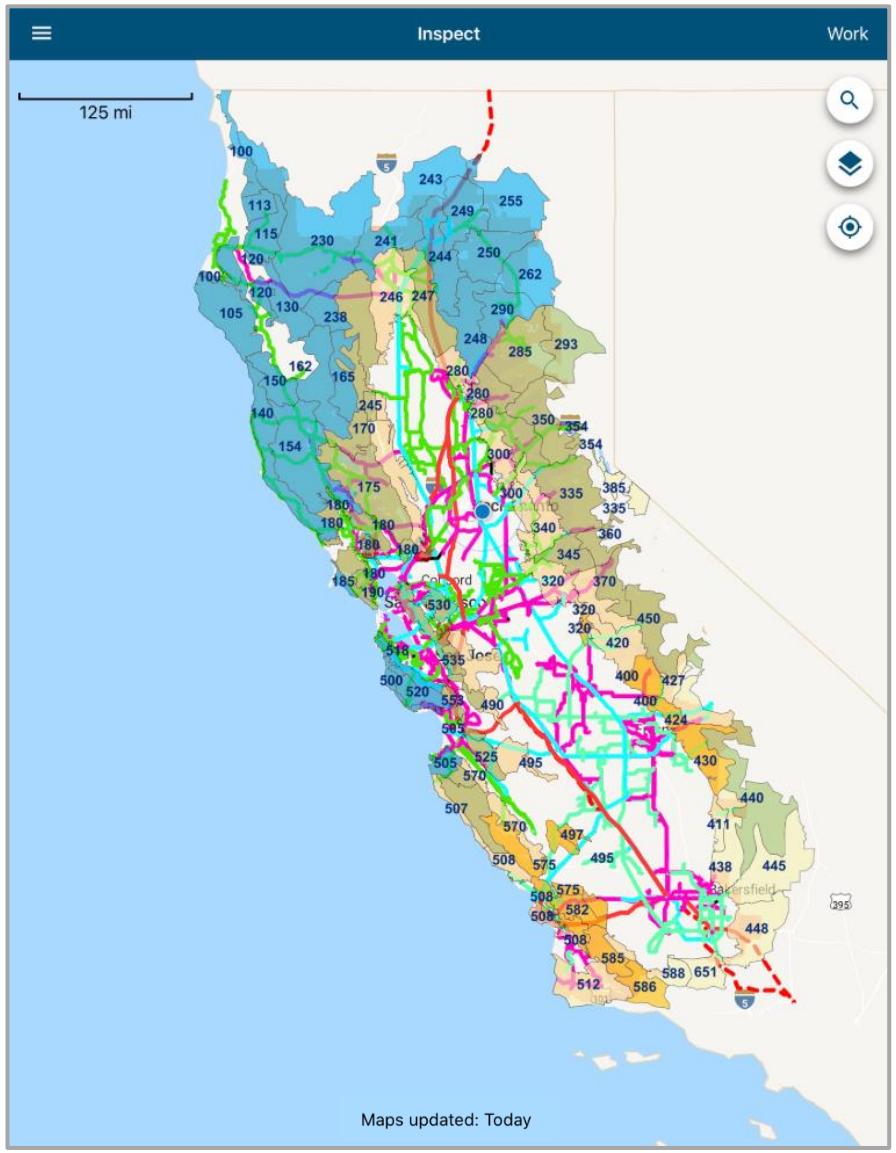


# Inspect App Navigation

# Maps + Color Legend

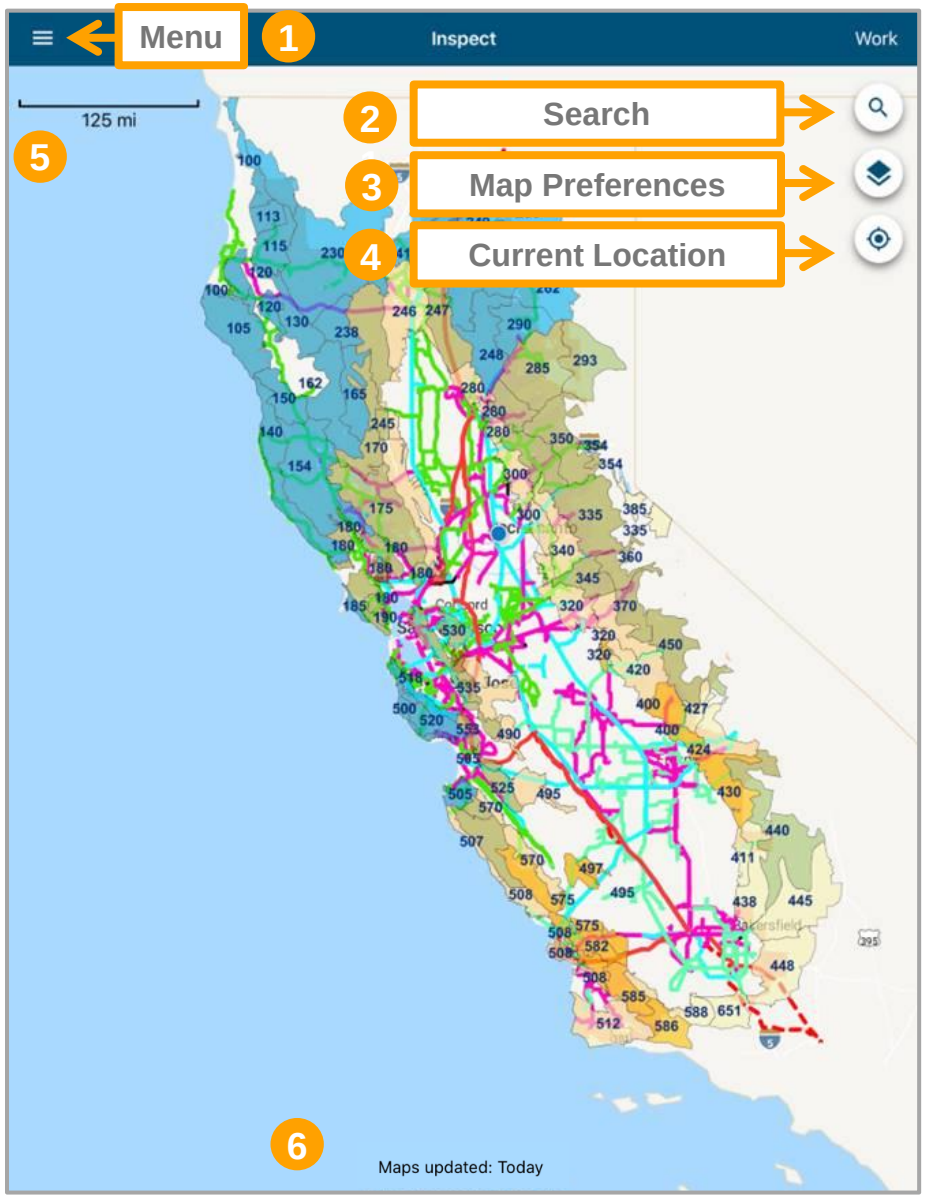
**Maps+ Color Legend**

- Urban Area
- Beach/Dune/Sand Area
- Ocean/Body of Water
- Park/Garden/Golf Course
- Woodland
- School/University/Shopping Center/Hospital/Amusement Park/ Industrial Area/Amusement Park
- Military Area
- Airport
- Tier 3 Fire Threat District
- Tier 2 Fire Threat District



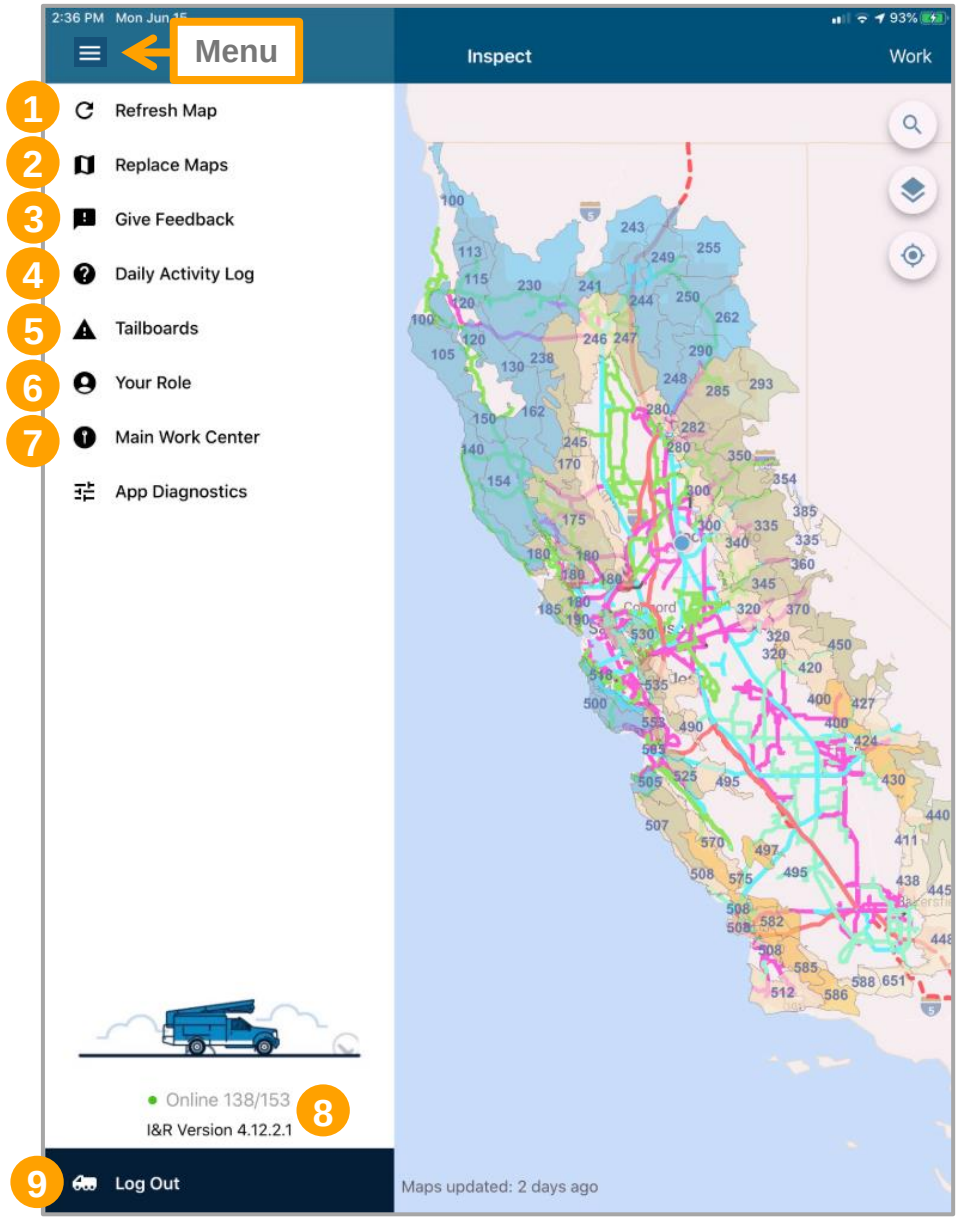
# Navigation

1. **Menu**
2. **Search**
3. **Map preferences**
4. **Current location bullseye**
5. **Map viewing scale**
6. **Map updated date**



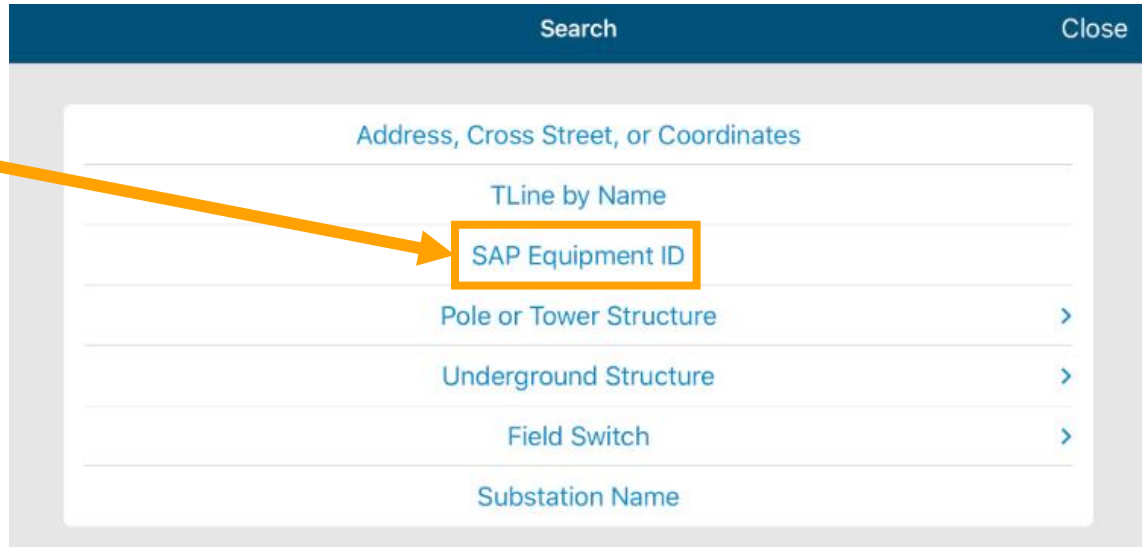
# Menu Options

1. **Refresh Map**
2. **Replace Map**
3. **Give Feedback**
4. **Daily Activity Log**
5. **Tailboards**
6. **Your Role**
7. **Main Work Center**
8. **App Version Number**
9. **Log Out**

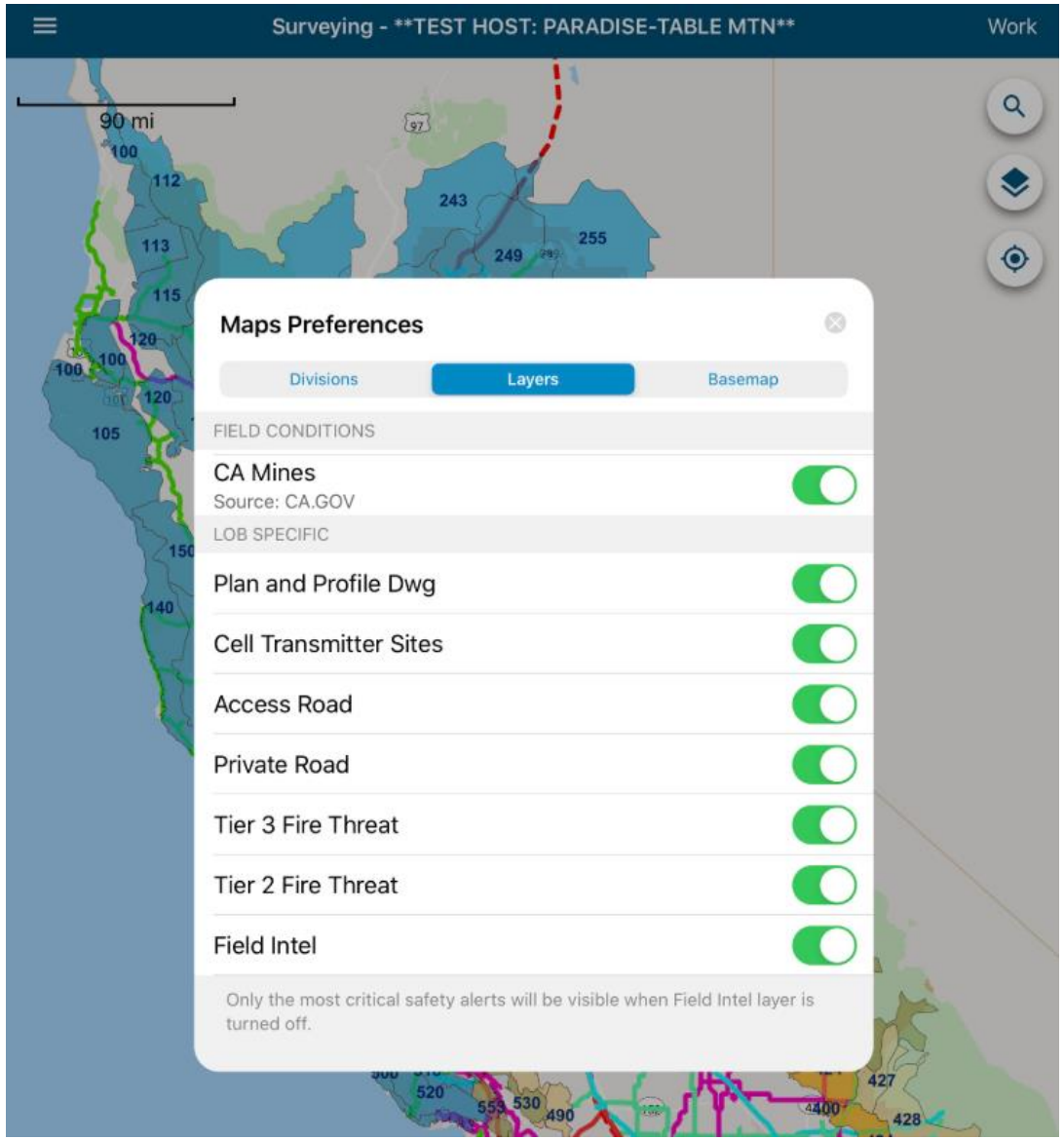


# Search

1. **Address, Cross Street, Coordinate**
2. **TLine by Name**
3. **SAP Equipment ID**
4. **Pole Number**
5. **Underground Structure**
6. **Field Switch**
7. **Substation Name**



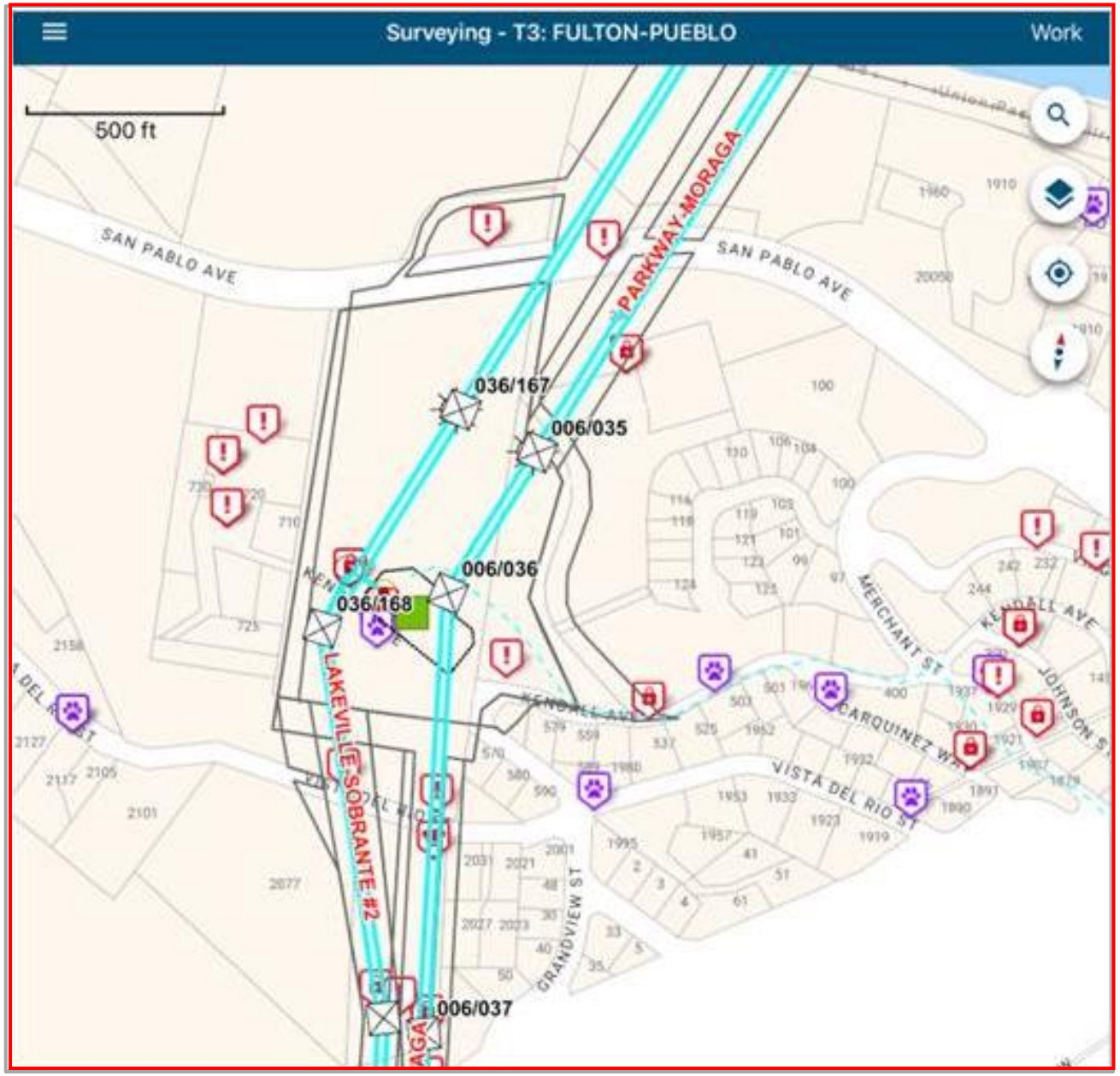
# Map Preferences - Layers



# Alerts

**Scale (Zoom Levels 500 or less)**

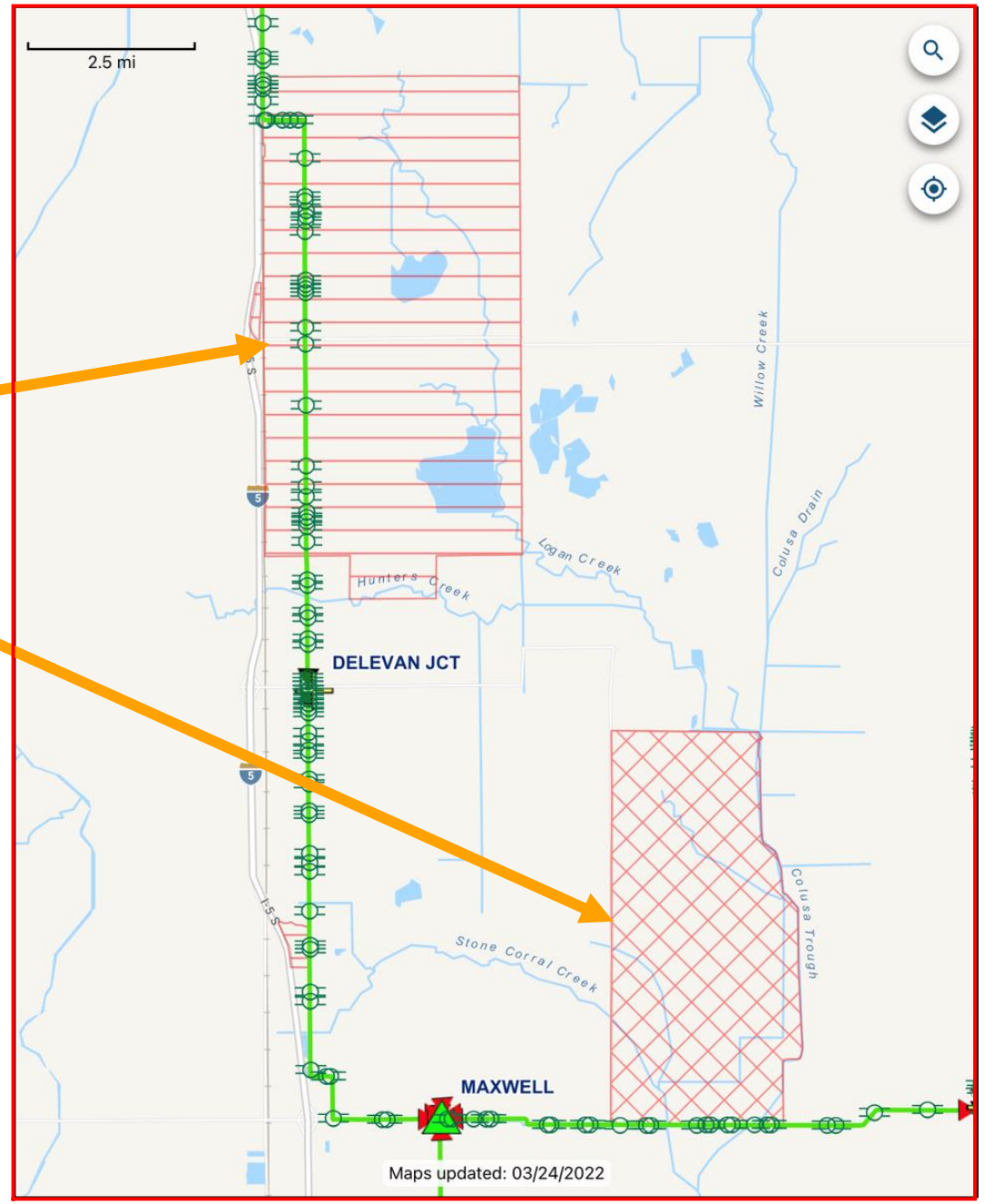
1. **Locked Gates**
2. **Bad Dogs**
3. **Safety Alerts**



# Field Safety Alerts

**Scale (Zoom Levels 2,500 or less)**

Required to notify your PG&E Lead before entering Geo-Fenced areas



# Helpful Contact Info

| Issue | Role | Contact | Hours |
|---|---|---|---|
| Halo Issues | SI Planners | TransmissionAssetStrategist@pge.com | Workdays 7 AM to 4 PM |
| Help Desk | SI Help Desk | 925-328-5510 | Workdays 7 AM to 3 PM |
| Locked Passwords | TSC | 415-973-9000 option 1 | 24/7 |
| Lost/Stolen iPads<br>*Remember to notify your lead/supervisor first* | TSC | 415-973-9000 option 1 | 24/7 |
| Hostile Customer Level 1 | Security Control Center<br><br>Emergency Services | 800-691-0410<br><br>Call 911 | 24/7 |
| CGI Hotline | Customer LCE | 925-415-6600 | Mon – Thur 7 AM to 5 PM<br>Fri – 7 AM – 4 PM |

# Training Contents– Contractors

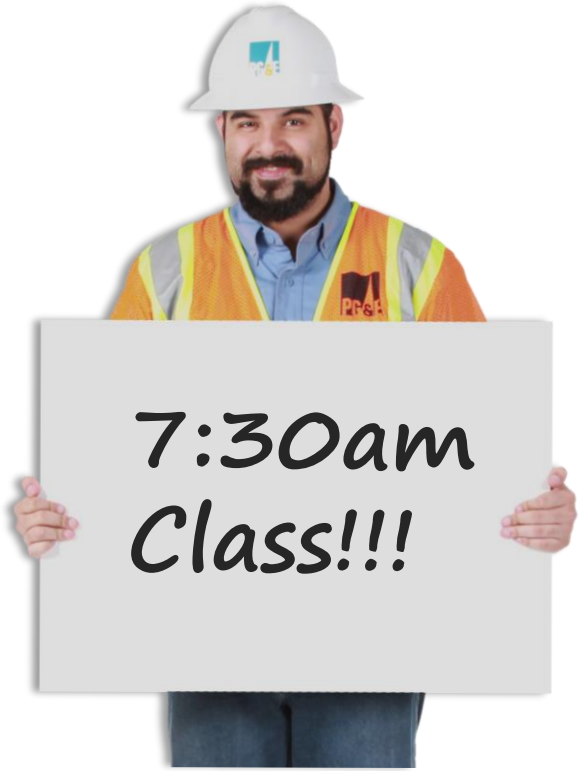
- **Training at Contract Vendor Location**
  - IS Net World Training: Foundations for Contractors
  - IS Net World Training: SAFE-0101 Corporate Contractor Safety Orientation
  - IS Net World Training: EQIP-0200 Rural Driving Safety
  - IS Net World Training: SAFE-1503 Fire Danger Precautions
  - IS Net World Training: SAFE-1507 Fire Danger Precautions Supplemental
  - IS Net World Training: SAFE-4513 Electric Operations Safety

- **Additional Web-Based Training courses**
  - My Learning: ISEC-9022 Security & Privacy Awareness
  - My Learning: CORP-9046 Records & Information Management
  - My Learning: CORP-9124 Privacy Awareness
  - My Learning: ELEC-0708 Oil Spill Response
  - My Learning: ELEC-0417 Transmission Patrols& Inspections

- **Instructor Led Training**
  - PSOS-0410 Onboarding
  - PSOS-0451 Process
  - PSOS-0452 Mobile

# Next Steps

- Questions
- Record Attendance
- Next class starts at 7:30 AM tomorrow
- Arrive to class on time
- Topics include Mobile process
- Drive safely



# Thank You