Trans Bay Cable LLC
Wildfire Mitigation Plan 2020

R.18-10-007: CPUC Informational Workshop & Wildfire Mitigation Plan Presentations

February 18, 2020

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Agenda

- **Trans Bay Cable Overview**
  - Operations Summary
  - Facilities
  - Risk Profile
  - Theoretical Impact
- **Metrics**
- **Lessons Learned**
- **Objectives**
- **Efforts to Date**

Trans Bay Cable (TBC) is a critical resiliency resource for San Francisco and the Greater Bay Area grid

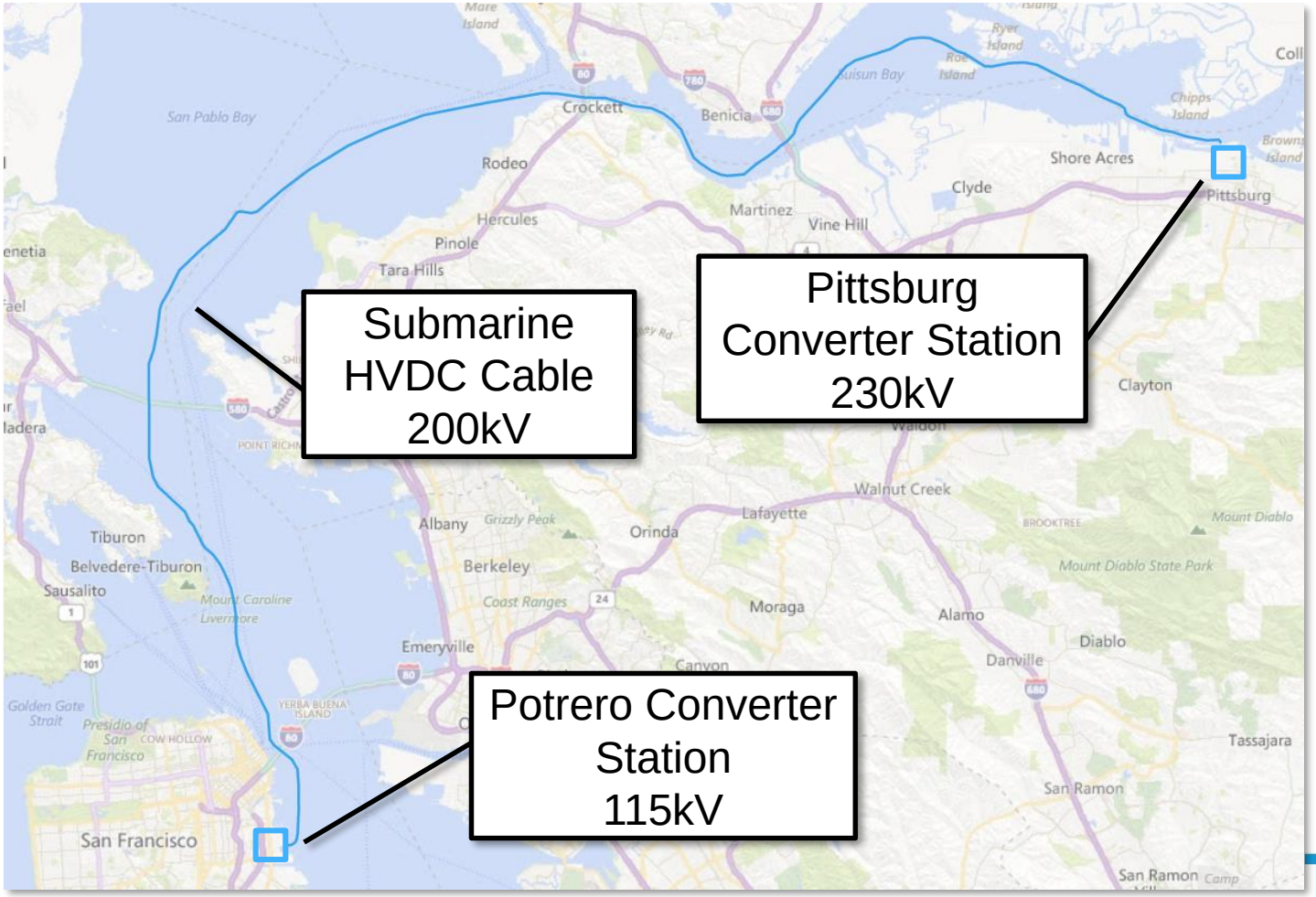
Trans Bay Cable Operations

- **High voltage DC transmission system**
  - 53 mile submarine cable
  - Two AC/DC Converter Stations
    - -- Pittsburg Converter Station
    - -- Potrero Converter Station (located in San Francisco)
- **Capable of providing 400 MW – up to 40% of the City's power**
- **Provides voltage support to Greater Bay Area grid**
  - +/- 145 MVar in Pittsburg
  - +/- 170 MVar in San Francisco
- **Resiliency to San Francisco by providing additional power path**
- **Provides network congestion relief to Greater Bay Area**
- **Direct access to economic generation in Sacramento delta**
- **No distribution / no loads / no generation - solely transmission**

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Operating territory is limited to three elements of critical infrastructure supporting the Greater Bay Area grid

Operating Territory

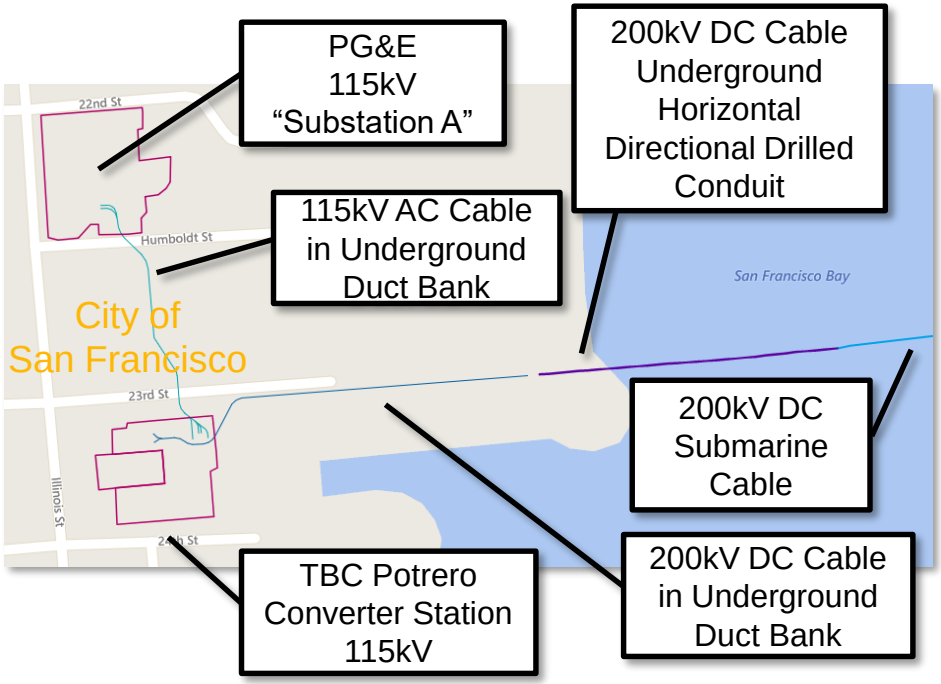


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Potrero Converter Station replaced last carbon emitting generation station in San Francisco with transmission link

Potrero Converter Station

Infrastructure Elements



Overhead View



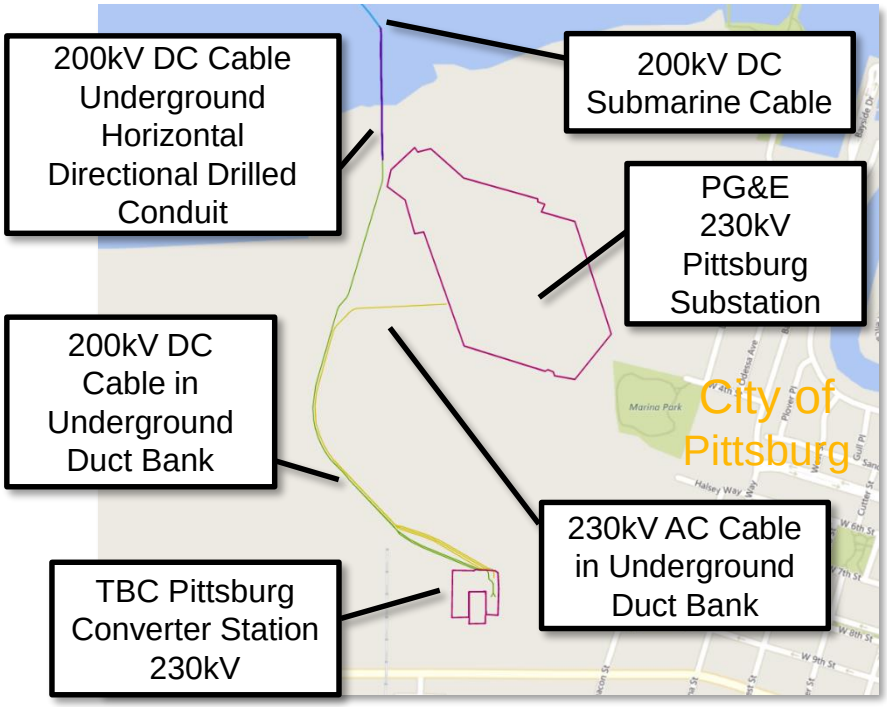
Located within San Francisco urban area – no wildfire risk

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Pittsburg Converter Station is closely coupled to economic generation in Sacramento delta – highest wildfire risk

Pittsburg Converter Station

Infrastructure Elements



Overhead View

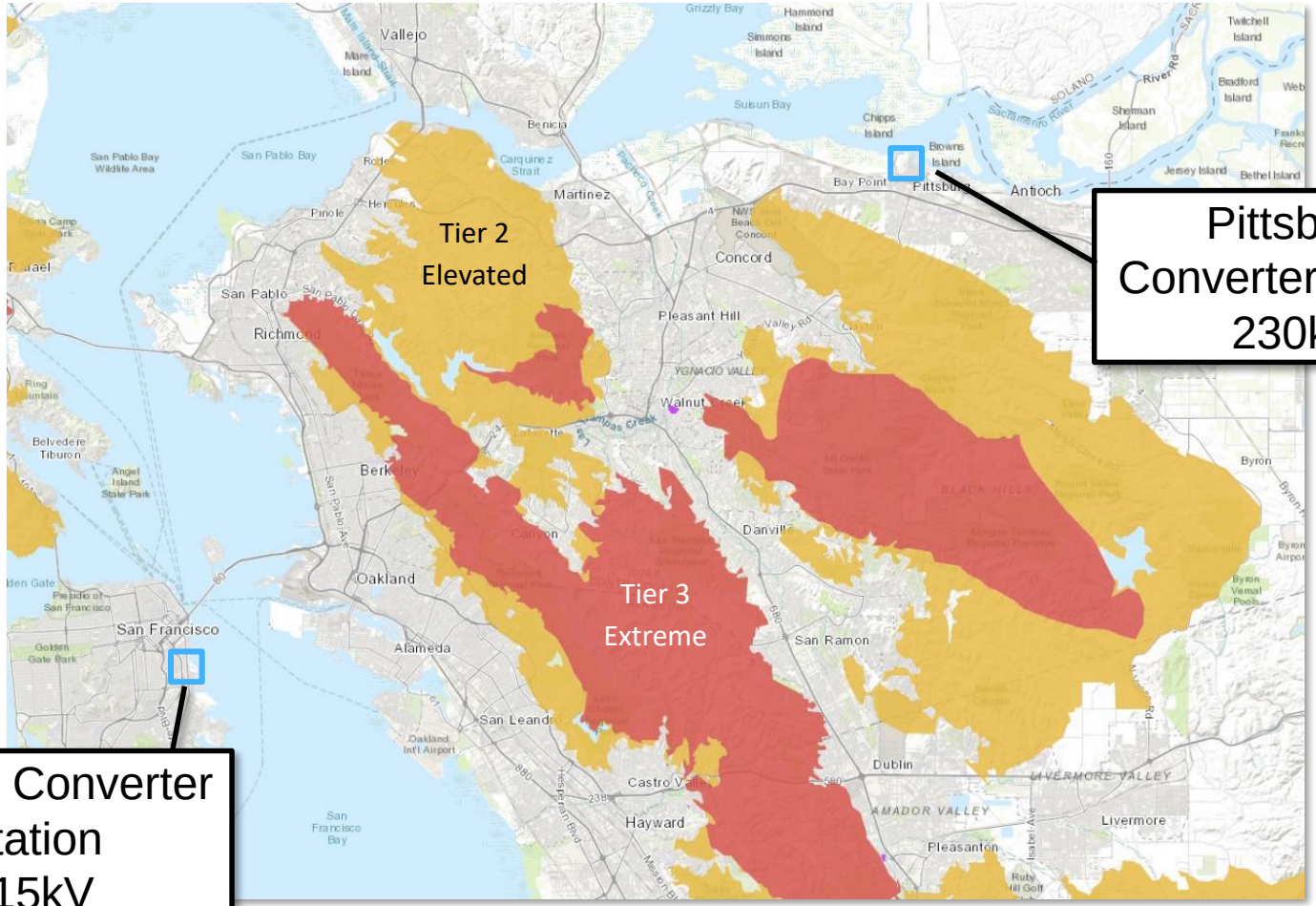


Located adjacent to the Wildland Urban Interface (WUI) of West Pittsburg

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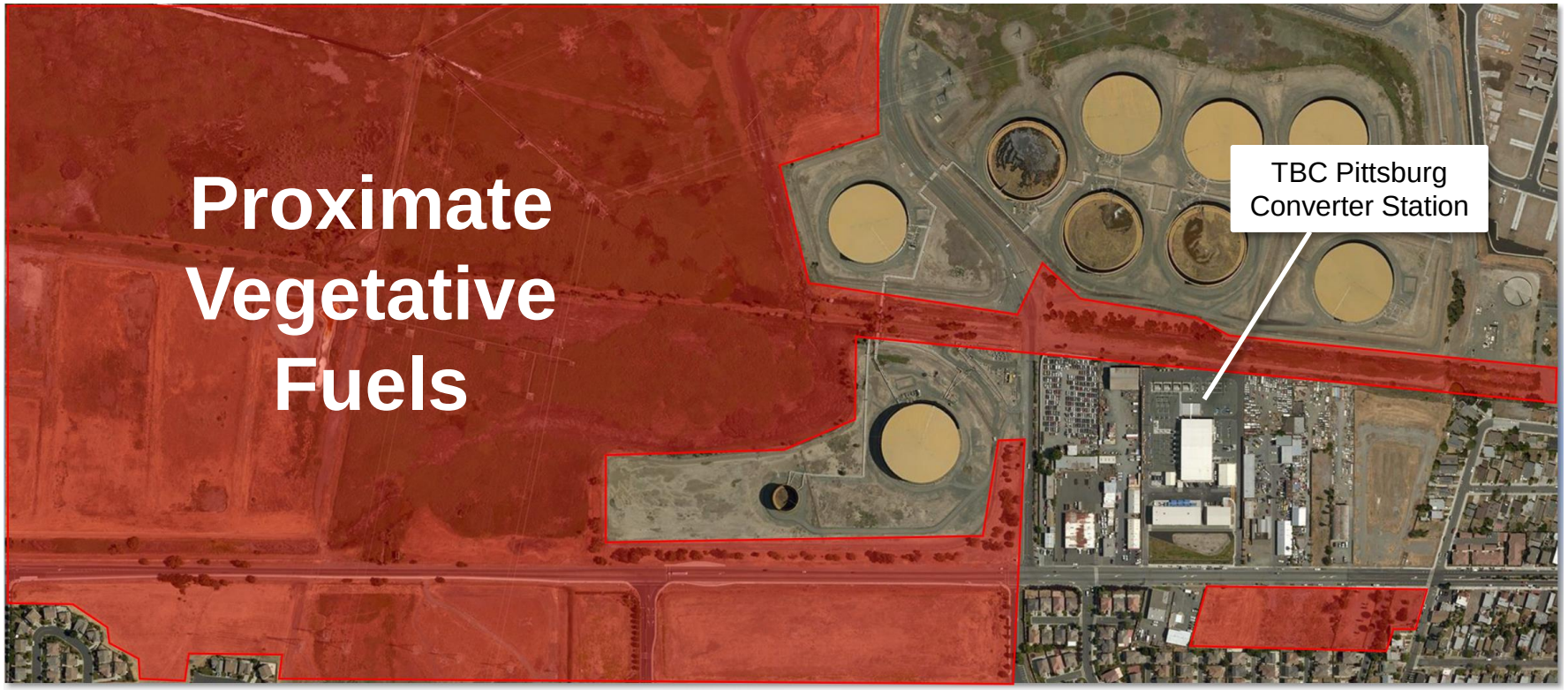
TBC critical facilities located on periphery of High Threat Fire Districts but not in wildlands or WUI

Proximate Fire Risk Areas



Pittsburg Converter Station located amid area with proximate vegetative fuels

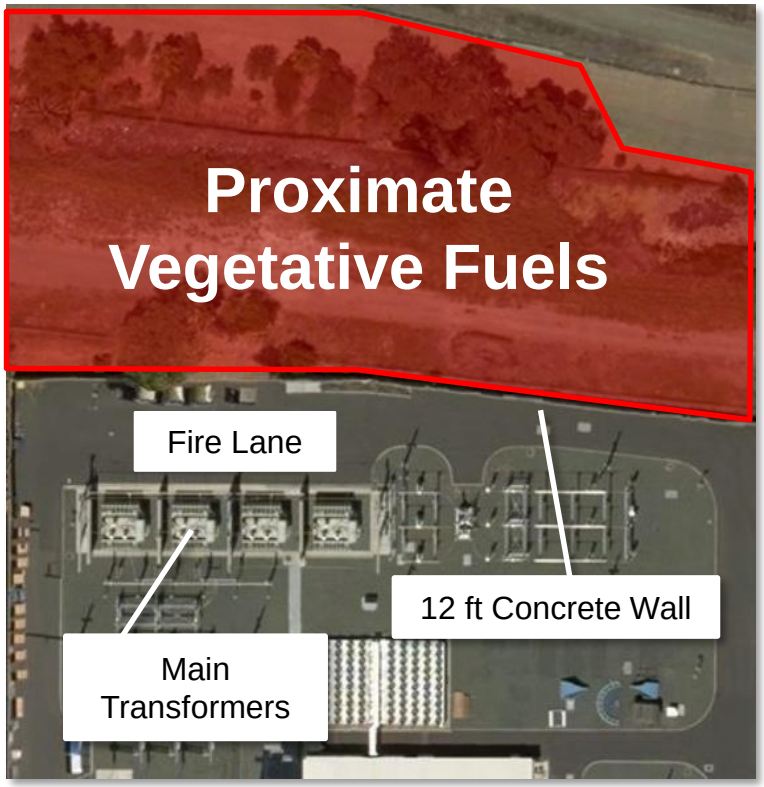
Proximate Vegetative Fuels



Assessed as low to moderate fire risk

Pittsburg Converter Station is immediately adjacent to fuels that if ignited could put nearby community at risk

Nearby Areas of Concern



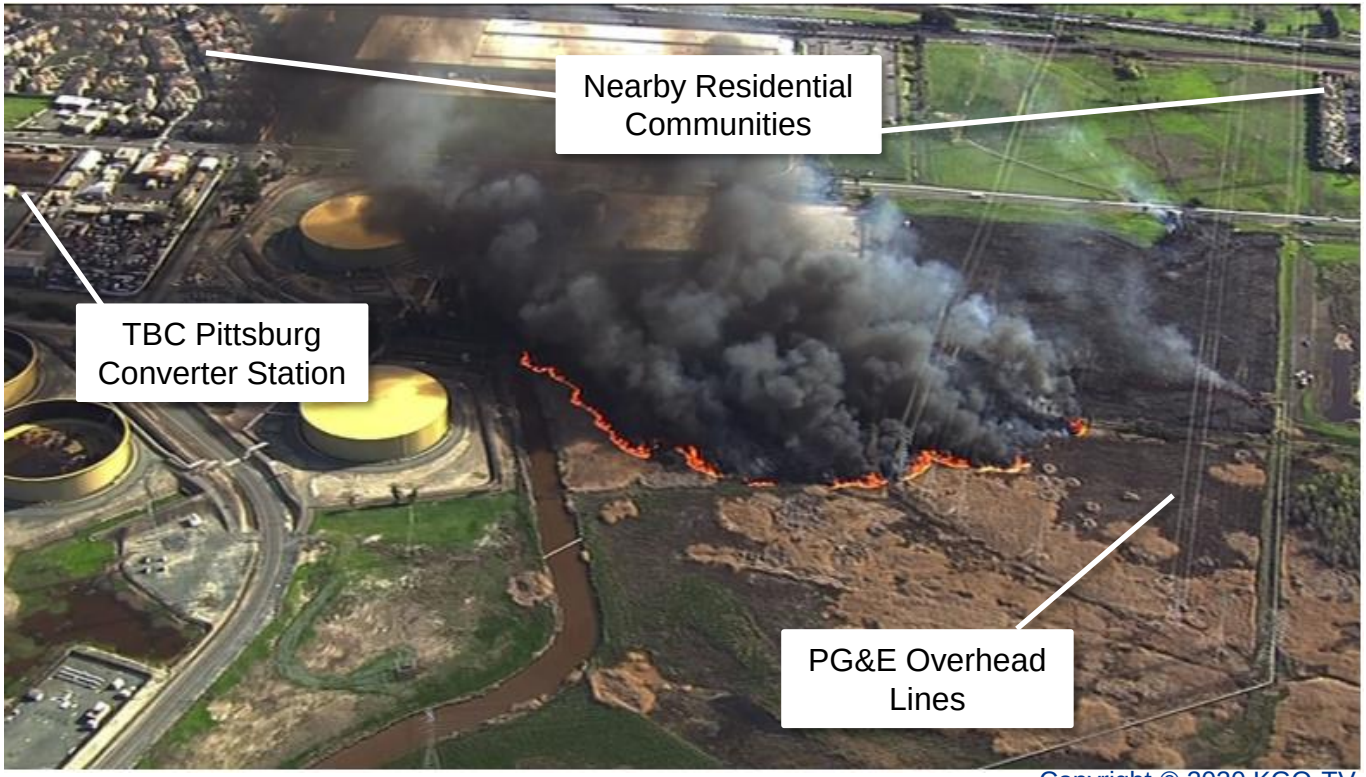


Ignition of vegetative fuels threatening community is greatest concern

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Ignition of proximate fuels that threatened the community and transmission infrastructure has recent precedent

Fire in Proximate Vegetative Fuels



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20 March 2019 – 40 acres burned

Not attributable to TBC or PG&E electric infrastructure

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TBC focused on seismic hardening initiatives that also serve to mitigate fire risks

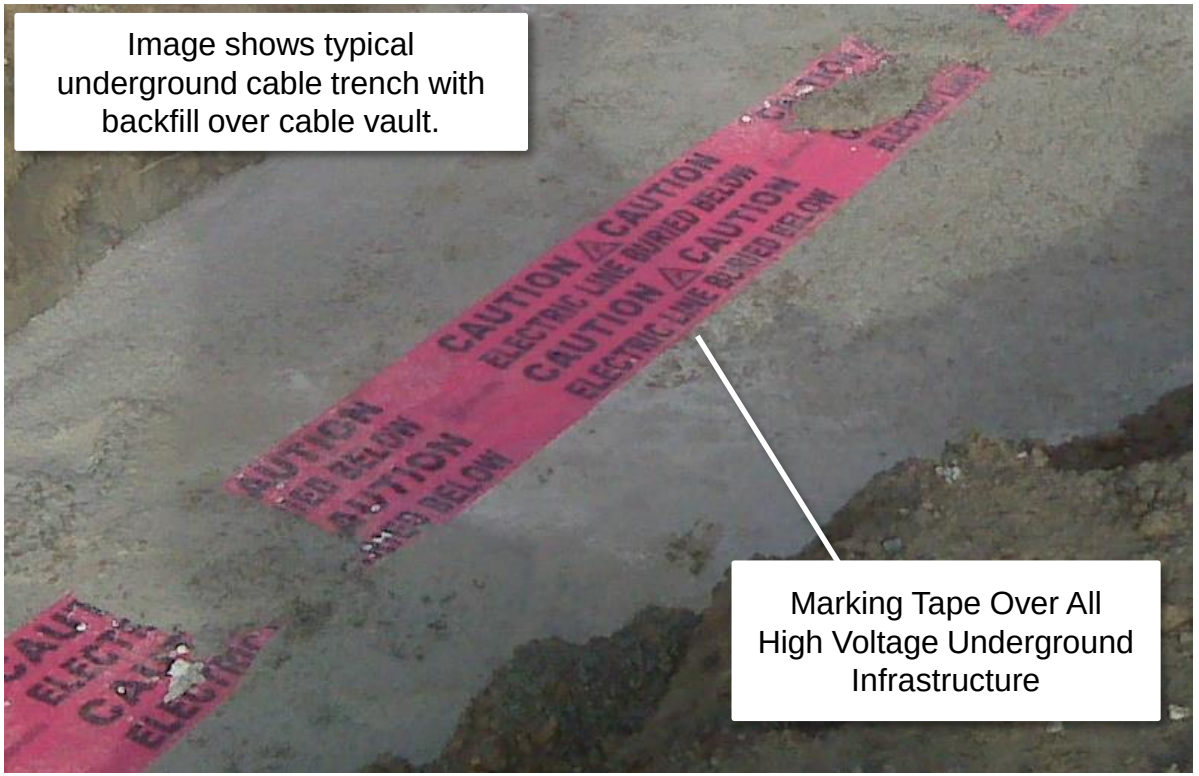
Faults Proximate to Operating Area



Seismic event likely pre-cursor to an ignition event

Initiatives focus on precluding uncoordinated excavation absent above ground transmission infrastructure at TBC

Derangement from Uncoordinated Excavation

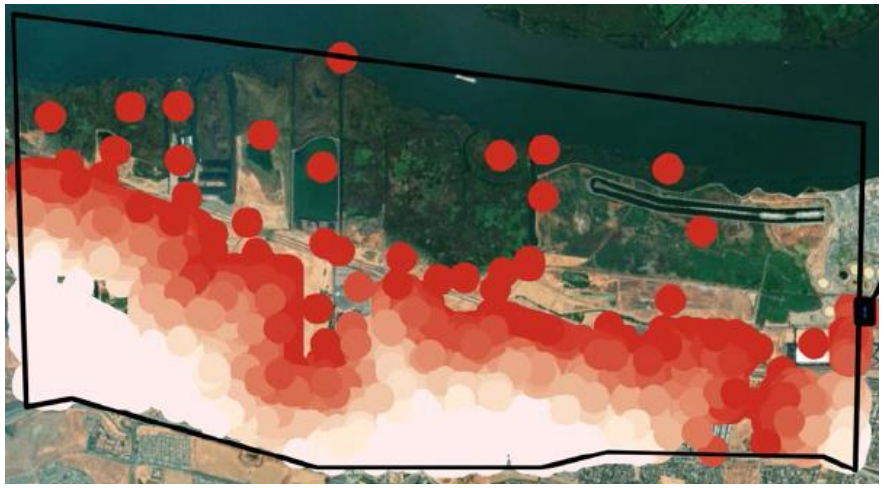


With all transmission assets underground – a key concern

TBC understands the potentially Extremely Severe consequences that can result from a fire event

Western Fire Scenario



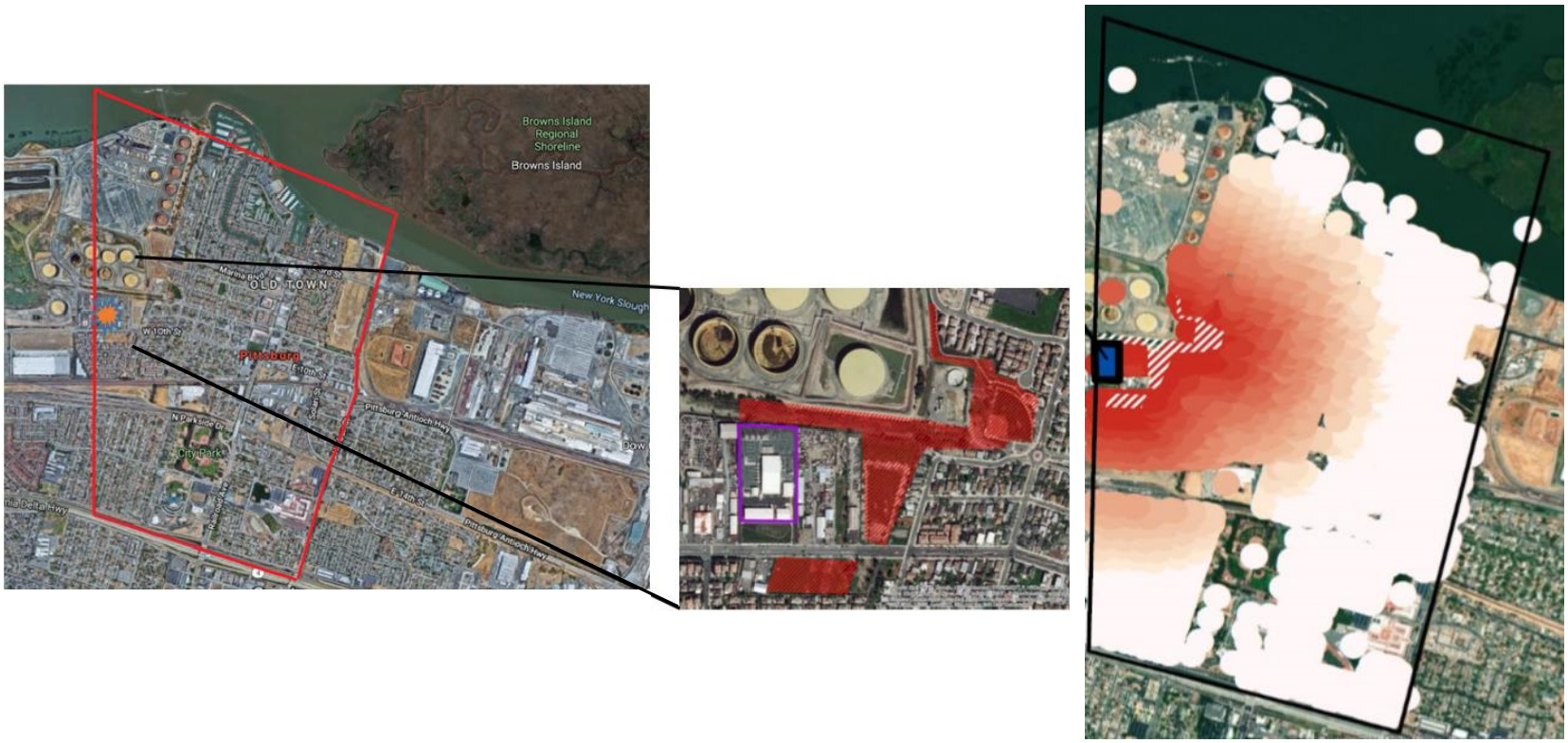


Estimated damages $300M-930M

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TBC operating practices and fire prevention mitigations are geared towards responsible community protection

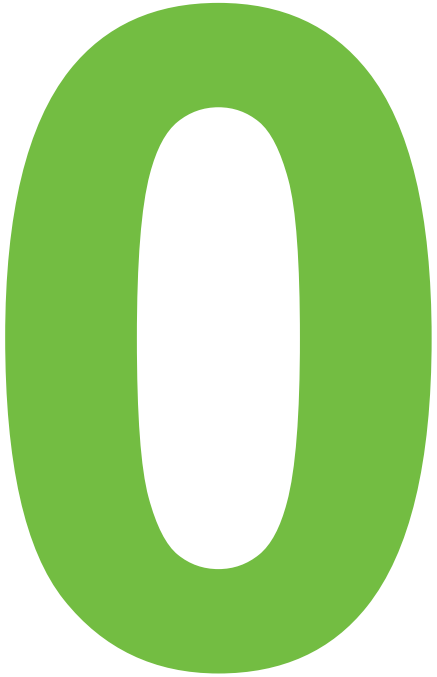
Eastern Fire Scenario



Estimated Damages $52M-175M

The metrics provided indicate a different operating profile than other utilities regarding wildfire risks and mitigations

Historical / Current Relevant Operational Metrics



- Distribution customers
- Overhead lines/poles/towers
- Infrastructure in HTFD
- Infrastructure in wildlands
- Infrastructure in WUI
- Fatalities / accidental deaths
- OSHA reportable injuries
- Assets destroyed
- Structures damaged
- Acreage burned
- Ignition events
- Near miss events
- Missed facility inspections
- Findings from inspections
- Historical PSPS
- Anticipated PSPS
- Impact of Red Flag Warning Days
- Weather impacts to operations
- Weather stations operated
- Vegetation management needed
- Line hardening needed
- Reclosers operated
- Uncovered transmission conductor
- Use of expulsion fuses

Metrics reflect a system that is hardened to wildfire risk and effectiveness of current operational practices

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For TBC, wildfire has had limited operational impact but an overall fire safety hardening focus is valuable line of effort

TBC Perspective

- **Limited data to drive narrowly focused wildfire mitigation initiatives**
- **Red Flag Warning Days did not change operational profile**
- **Weather has minimal impact on operations**
- **No anticipated need to issue a Public Safety Power Shutoffs**
- **No TBC distribution customers reduces need for many initiatives**
- **No operations in wildlands/WUI reduces need for many initiatives**
- **WMP catalyst for conduct of extensive liability assessment**
- **Wildfire Mitigation planning provides valuable information**
  - General fire safety hardening focus
  - Improved understanding of challenges faced by neighboring entities

TBC regards Wildfire Mitigation Planning efforts as a valuable opportunity to focus on system hardening

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TBC has a near and long term plan focused on overall operational risk mitigation that encompasses wildfires

Upcoming 2020 Wildfire Season

- Maintain current fire prevention plan and associated training
- Complete seismic upgrades to main transformers
- Complete third-party fire protection system assessment

Prior to 2021 WMP Update

- Conduct Utility Wildfire Mitigation Maturity Assessment
- Conduct annual wildfire Failure Modes and Effects Analysis
- Commence capital improvements for fire protection
- Continue to assess opportunities for seismic hardening

Efforts focused on overall fire and seismic damage prevention

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Clear vision on way forward to responsibly achieve sustained protection for neighboring communities

Next 3 Years

- **Achieve highest feasible level of Wildfire Mitigation Maturity**
- **Complete capital improvements for fire protection**
- **Achieve a "world class" standard for fire protection**

Next 10 Years

- **Sustain highest feasible level of Wildfire Mitigation Maturity**
- **Maintain a continuum of continuous improvement**
  - Routine evaluation of new technologies
  - Sustained participation and contributions to relevant industry efforts

Outlook for sustained maturity in fire protection

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Solid results from addressing CPUC wildfire concerns in first year of Wildfire Mitigation Plan implementation

Objectives Achieved

- **Sustained record of zero ignitions**
- **Installation of real-time cable monitoring system**
  - Detective measure against uncoordinated excavation
  - Enhanced situational awareness of cable conditions for operator
- **Initiation of third-party fire protection system assessment**
  - Independent fire risk assessment
  - Assessment of alternatives for fire system upgrades
- **Conducted fire impact study**
  - Validated potential Extremely Severe consequences
  - Provided quantification of impacts of a fire event
- **2020 Seismic upgrade projects on-track**

All 2019 WMP objectives achieved

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