

# **WG#1**

# **DAMAGE PREVENTION**

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**PSEG**

"If we knew what we were doing,  
it wouldn't be called Research"

**Albert Einstein**

**Objective:** Prevent 3<sup>rd</sup> party excavation damage to pipeline facilities.



**Focus:** High risk  **Transmission Pipelines**

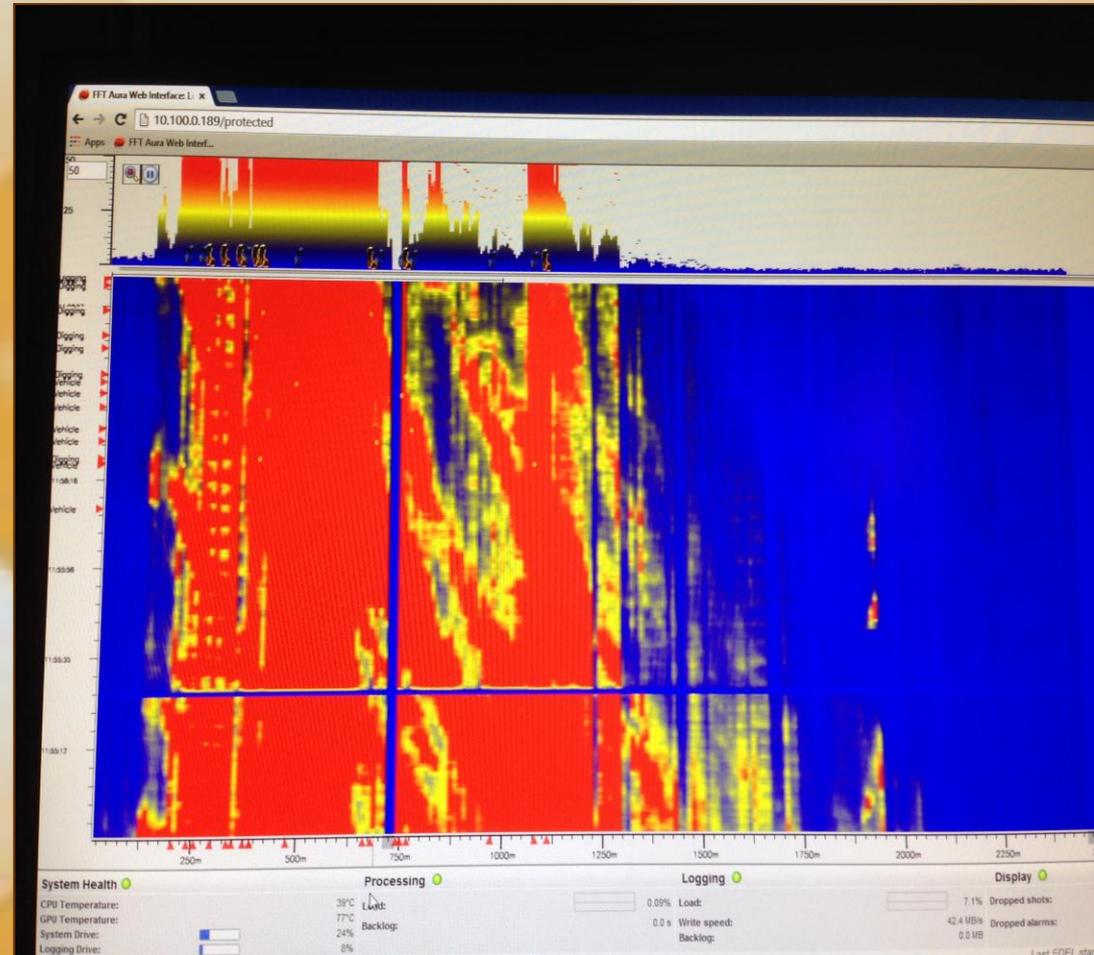
High consequence



**ROW Monitoring**

# Ongoing Research Efforts

- Acoustic sensors
- Camera surveillance technology
- Satellite surveillance
- Fiber optics



# Gaps

- **No single technology can do it all**
- **High installation cost**
- **Limited line of sight/visibility**
  - Camera
  - Satellite
- **100% repeatability/reliability**
- **False positives**
- **Weather impacts soil conditions**
  - Daily
  - Seasonal
- **We don't know, what we don't know**

# Challenges

- **Detect before damage**
  - Construction equipment
    - Monitoring
    - Interaction with environment
- **Low cost solution**
  - Initial installation
  - Retrofit
  - Maintenance
- **“O” false positives**

# Challenges

- **Diverse environment**
  - River/Wetlands
  - Railroad Crossings
  - County/State Roadways
  - Steep Terrain
  - Backyards



# Challenges

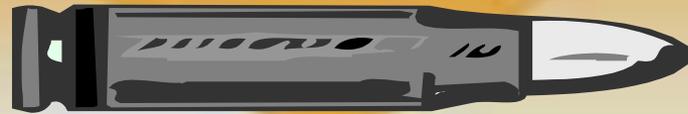
- **Diverse soil conditions**
  - Soft
  - Hard
  - Set it and forget it
- **Impacts of changing weather**
  - Frost/thaw
  - Wet/dry

# Challenges

- **Vandalism-proof**
- **Robust**
- **Real-time over long distances**
- **All major types of construction equipment**



There's no silver bullet!



# Questions