QUANTA TECHNOLOGY

# A Practical Approach to T&D Asset Management

May 7, 2020

# A Survival Guide on Working from Home

- Maintain a Healthy Lifestyle
  - The most sedentary job you can have is working from home since you can't work around the office
  - Being sedentary is harmful for your health
  - Workout earlier rather than later and reap the rewards for the rest of the day
  - Go outside, your home can become your bunker
    - Your body needs sunlight to live
    - Walk, run do anything for your mental stability
  - On a conference call or online training?
    - Stand up & walk around (just make sure your camera is not on)


Stay Safe

Stay Healthy

Stay Connected

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# Upcoming Webinars

| | | |
|---|---|---|
| **May 14, 2020**<br>11:00 AM – 12:00 PM EDT | **May 21, 2020**<br>11:00 AM – 12:00 PM EDT | **May 26, 2020**<br>11:00 AM – 12:00 PM EDT |
| **Utility Support of Transportation Electrification: Integrating Business and Supply Chains into Electrification Strategies** | **Value of DER Session #2** | **Grid Modernization for Public Power and Co-Ops, Creating a Roadmap for Investments** |
| Rick Fioravanti | Dr. Ralph Masiello | Dr. Julio Romero Aguero, Dr. Bob Dumas, Dr. David Hart |

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# Introductions

- **Kevin Dasso**
  - **Kevin Dasso, PE,** *Executive Advisor, Distribution & Asset Management,* is a utility executive with more than 35 years of experience in the gas and electric utility business.
  - His areas of expertise include operations, asset management, standards, risk management, system performance, and maintenance programs.

- **Gregg Lemler**
  - **Gregg Lemler, MBA, PE,** *Vice President and Executive Advisor, Distribution & Asset Management,* has more than 35 years of experience in the power industry and has been a key member of one of the largest utility companies on the West Coast.
  - His areas of expertise include asset management, infrastructure planning and integration, systems operations, project engineering and construction, system maintenance, and emergency response.

- **Stephen Teran**
  - **Stephen R. Teran, MBA,** *Principal Advisor, Distribution & Asset Management,* has more than 15 years of utility experience spanning all aspects of distribution and system planning.
  - His areas of expertise include asset management, risk management, capital portfolio optimization, distribution planning and analysis, DER Integration, profile-driven capacity planning, geospatial and network analysis, general rate cases, and software development and implementation.

# Agenda

- What is the Asset Management (AM) Process?
- What is the Asset Management value proposition for utilities?
- What trends are driving utilities to review their AM Process and System?
- What are some practical approaches to address these trends?
- Questions & Answers

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# Key Elements of an Asset Management Program

Corporate Strategy

Asset Management Policy

Strategic Asset Management Plan

Asset Families

Asset Management Plans for all Asset Families

Asset Management Standards and Procedures

Organizational Engagement

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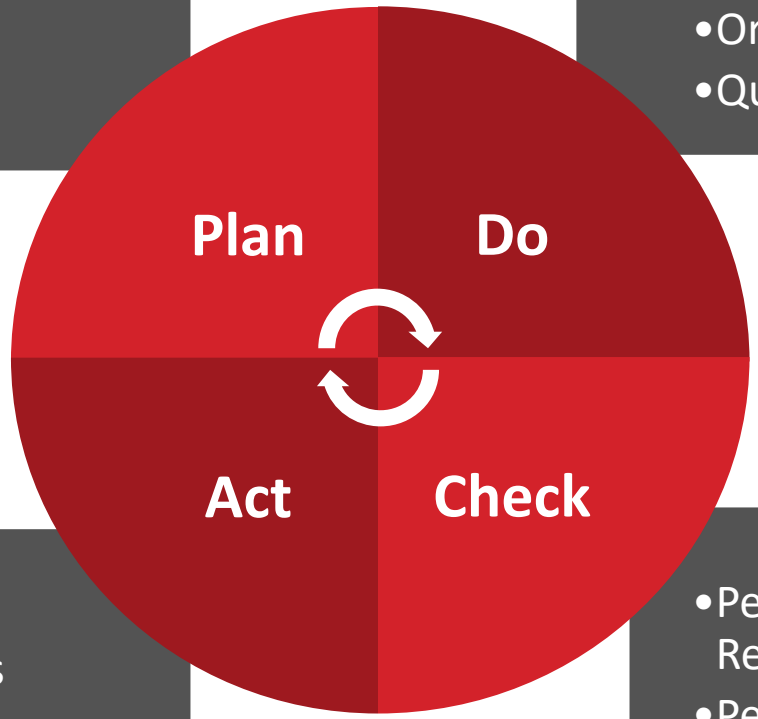
# Asset Management Process

- Asset Management Policies
- Asset Management Plans
- Cost, Risk, Performance Attributes
- Asset Knowledge

- Create, Operate, Maintain, Upgrade, Dispose
- Implement Standards and Procedures
- Organizational Engagement
- Quality Expectations




- Corrective Actions
- New Technologies and Methods
- New Requirements

- Performance Monitoring and Reporting
- Performance Trends/Gaps
- Changes in External Drivers

# Asset Management Value Proposition for Utilities

| | |
|---|---|
| Alignment of Resources with Goals | • Flow down from corporate strategy through the SAMP and AMPs results in projects that are aligned with objectives and metrics |
| Project Prioritization | • Alignment of projects with objectives and consistent measurement of value facilitates portfolio prioritization<br>• Efficient and effective project execution |
| Clarify Roles | • Clearly identify organizational roles throughout the AM process to avoid confusion and duplicative effort<br>• Strengthens teamwork and increases workforce engagement |
| Confidence and Credibility | • Articulate a clear of line-of-sight from strategic goals to executed work<br>• Structured framework clearly communicates plans to external stakeholders |

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# Why are utilities reviewing AM practices?

Climate change is driving more frequent, high-impact events shifting the focus from reliability to resiliency

- Increasingly frequent extreme weather events increasing risk of widespread outages
- Severe drought leading to year-round threat of wildfire
- Coastal flooding

- Advanced asset inspection and condition assessment technologies
- AI and machine learning
- Predictive analytics

Advances in technology and analytics are increasing asset knowledge

# Why are utilities reviewing AM practices?

Distributed Energy Resources (DERs) require modern grid capabilities at the same time existing infrastructure is ready for replacement

- Integration of DERs
- DER non-wires alternatives
- Microgrids

- Renewable procurement targets
- GHG emissions reduction
- Transportation electrification

Policy goals are increasing public dependence on the grid

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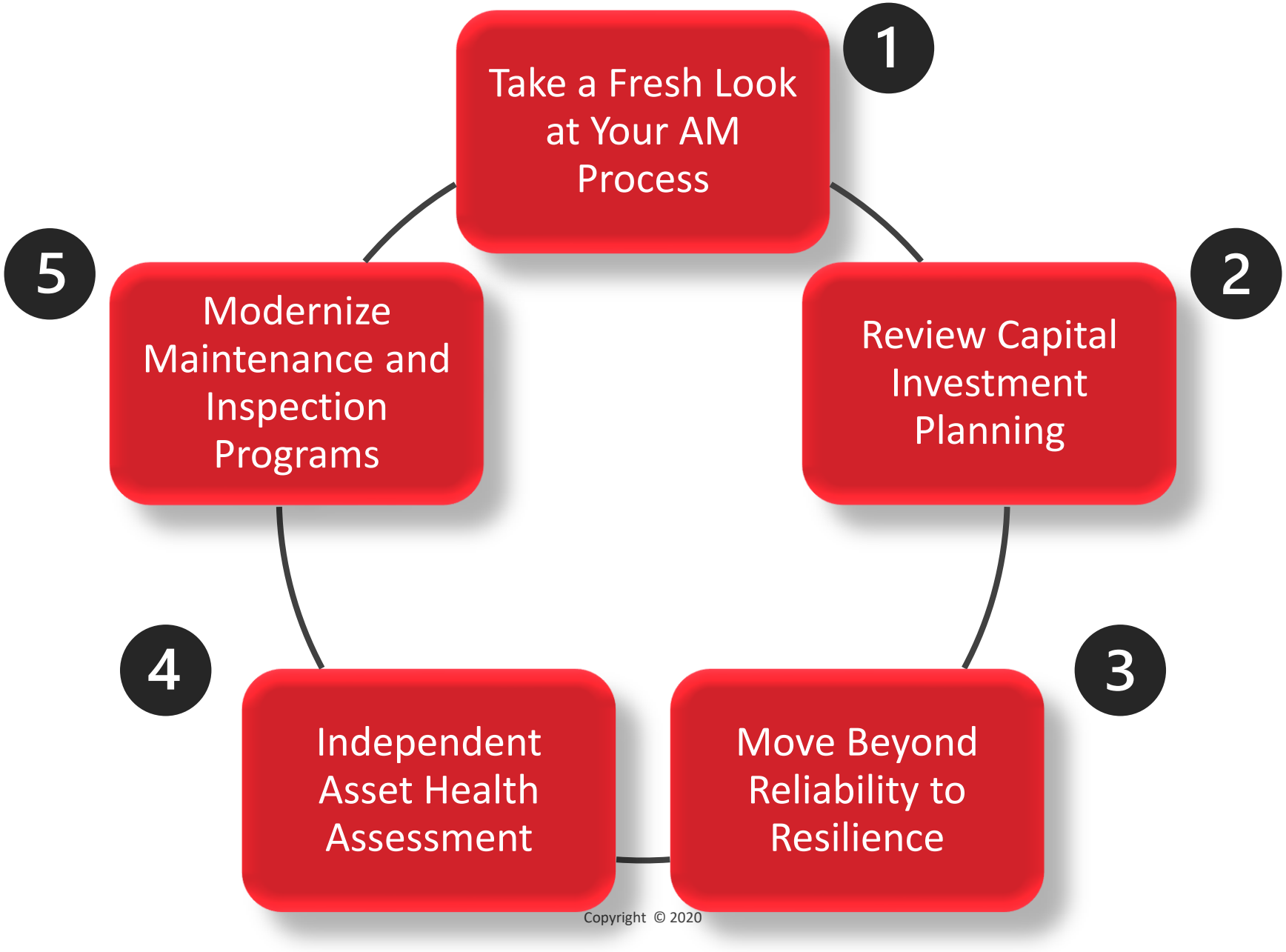
# Practical Approaches



# Approach 1 – Take a fresh look at your AM Process

**1 - Asset Management Process**

- Current scope of AM function
- Business planning processes
- Operational and maintenance processes
- Organization roles and responsibilities

**2 - Risk Management**

- Enterprise risk management
- Key risks and mitigations
- Risk assessments

**3 - Asset Management Plans**

- Current asset management plans
- Asset performance and health analysis
- Strengths and opportunities

**4 - Asset Knowledge**

- Asset information
- Asset management tools
- Performance data

**5 - Technology and Analytics**

- Data collection
- Inspection processes
- Analytics capabilities

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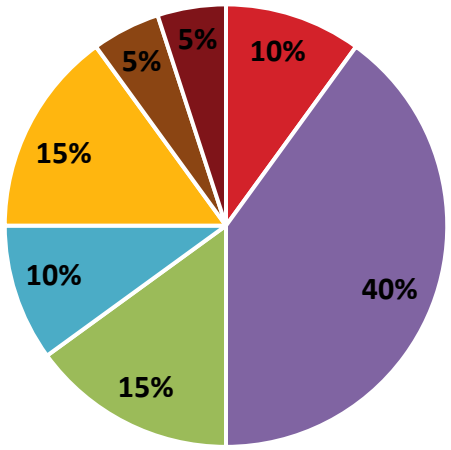
# Approach 2 – Review Capital Investment Planning

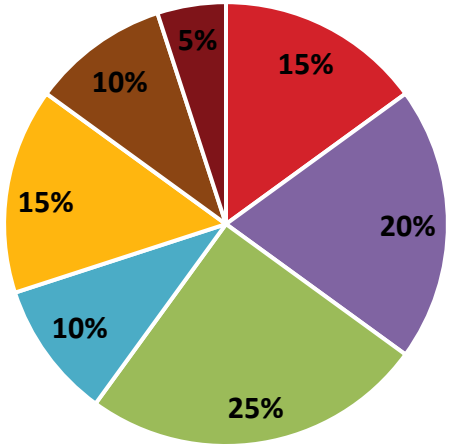
Current Program 1
- Safety – 20%
- Reliability – 75%
- Flexibility – 5%

Updated Program 1
- Safety – 30%
- Reliability – 40%
- Flexibility – 30%

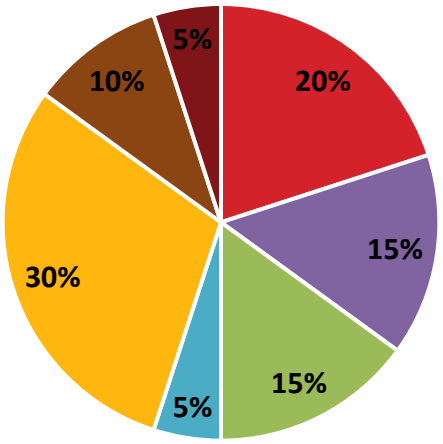
**Current Plan**




**Scenario 1: Deploy resilient, DER-enabled grid**




**Scenario 2: Keep grid costs competitive with alternatives**




Safety Reliability Resilience Sustainability Affordability Flexibility Security

*Allocation developed by scoring existing programs*

*Allocations developed by assessing alternative capital investment strategies focused on multiple objectives*

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# Approach 3 – Move Beyond Reliability to Resilience

## Resilience

- Weather Hardening and Climate Change Preparedness
- Holistic Reliability Improvement
- Physical and Cyber Security
- Aging Infrastructure Replacement
- Electromagnetic and Geomagnetic Pulses

## Flexibility

- Real-Time Monitoring and Control
- Optimized Substation and Feeder Capacity
- Substation and Feeder automation
- Adaptive Protection
- Volt-VAR Management and Optimization Telecommunications

**Resilient, DER-Enabled Grid**

## Advanced Analytics

- Resiliency Analytics
- System Modeling and Simulation
- Planning and Performance Analytics
- Asset Health Analytics

## DER Integration

- Hosting Capacity Management and Optimization
- Enabling Technology
- Advanced DER Design and Management
- Microgrid integration
- Cross Line of Business (T&D) Integrated Energy Resource Modeling

# Approach 4 – Independent Asset Health Assessment

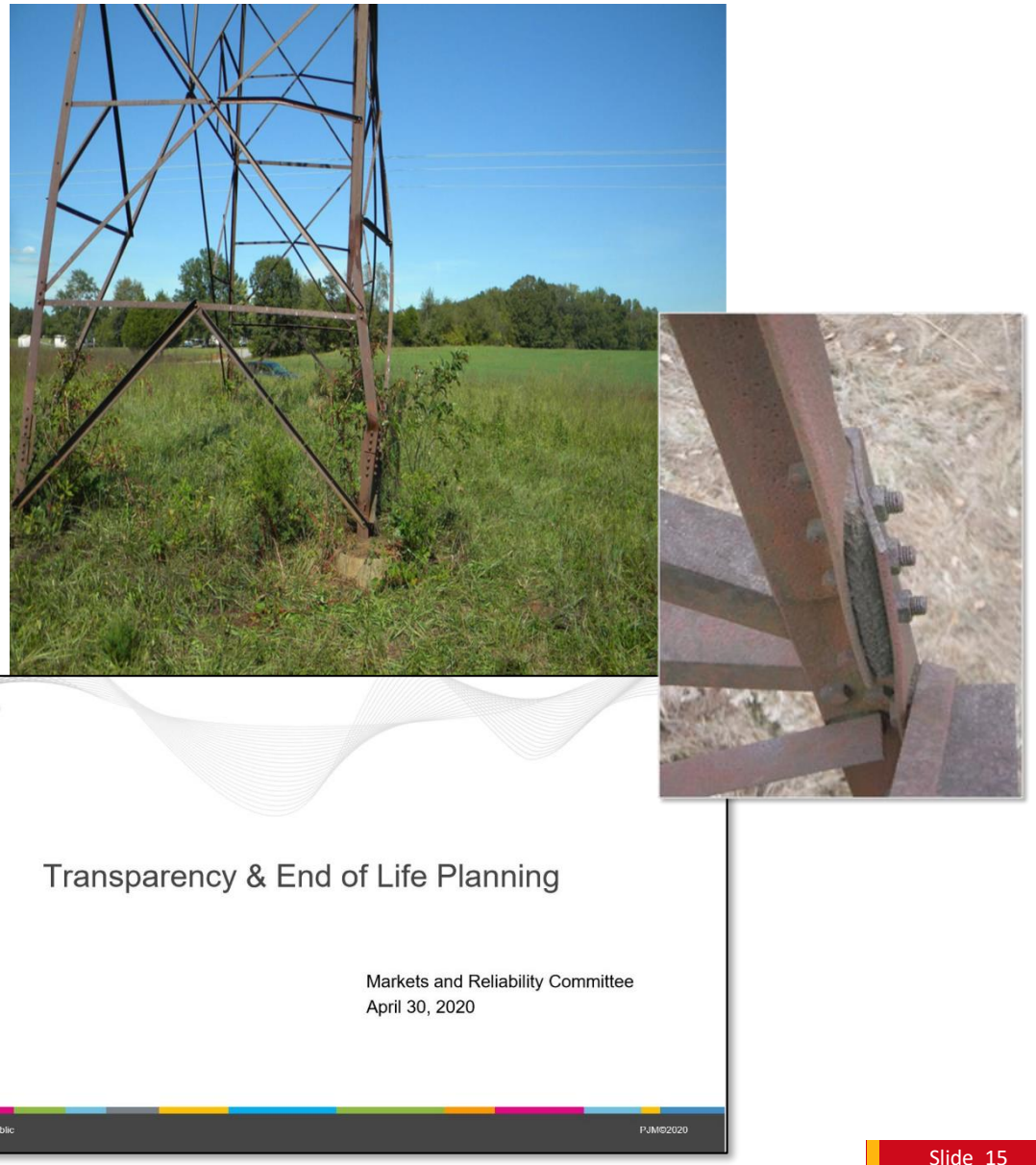
Determine End-of-Life and proactively take necessary actions to sustain a reliable T&D grid.

End-of-Life – when an asset is at risk of failure, and continued maintenance or refurbishing the asset is not a valid option to extend the life.

Independent asset condition assessment to validate End-of-Life and prioritize investments.

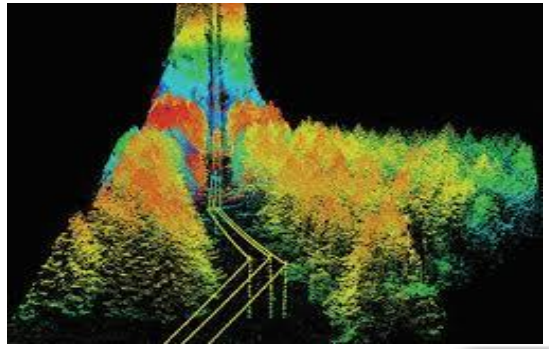
PJM Transparency and End-of-Life Planning

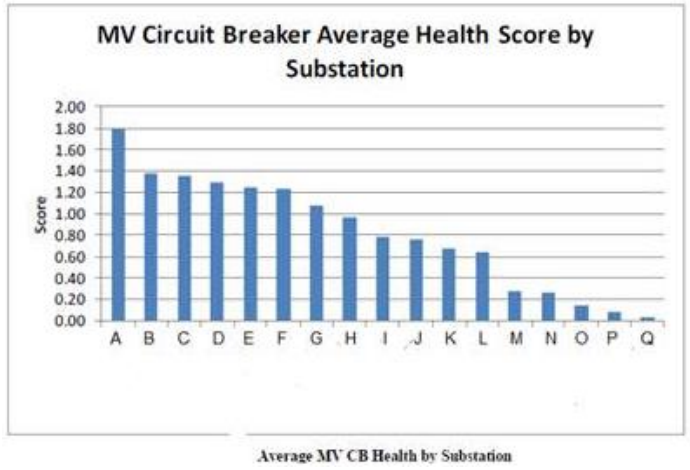
- Intended to develop specific governing document language to establish criteria that will apply to all transmission assets.
- Solution package would require TO-specific program/process which covers
  - Asset condition assessments
  - End-of-Life determination process which may consider industry averages, manufacturers recommendations and good utility practice



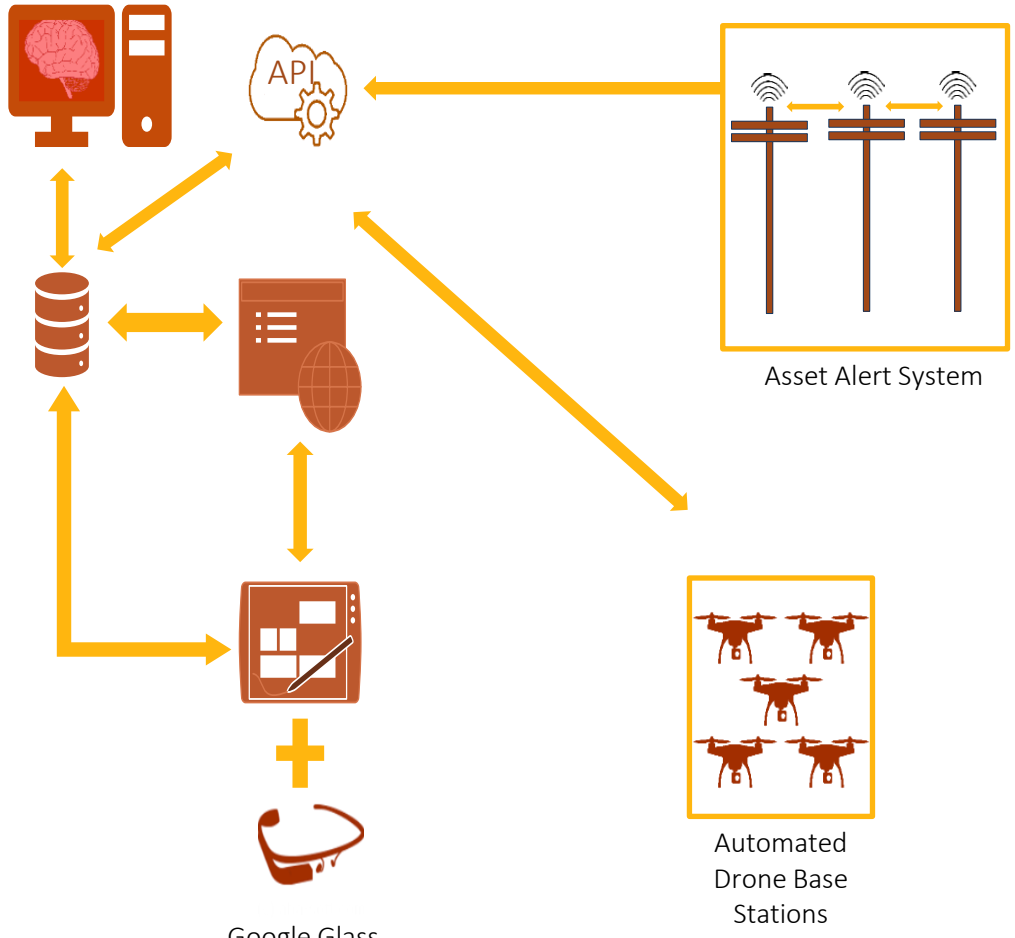
# Approach 5 – Modernize Maintenance & Inspection Programs

- Leverage new technology and techniques for comprehensive asset condition assessments
- Enhanced data collection process and data science pipelines
- Advanced image capture and AI processing
- Greater accuracy and completeness of asset data
- More thorough asset health and risk modeling





Average MV CB Health by Substation

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# Questions and Answers

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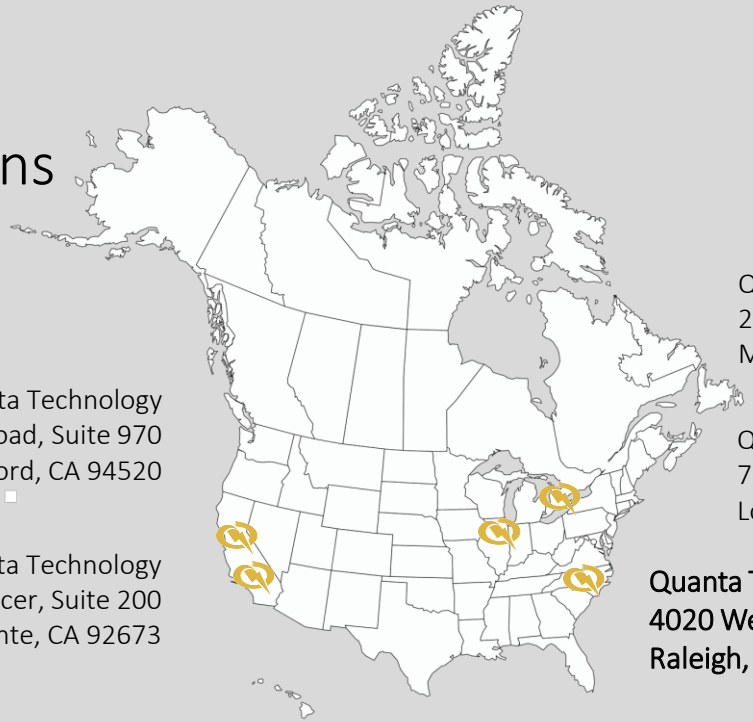
# *Thank you!*

## Office Locations



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