

# Southern California Edison Error Prevention Initiative

January 14, 2019

Energy for What's Ahead<sup>SM</sup>



# Overview

- Background: Why Error Prevention?
- Strategy Overview: A Grassroots Approach
- Implementation & Sustainability Plan
- Q&A

# Why Error Prevention?

- Long-Term Vision
  - **Prevent injury, system reliability interruption and damage** through the consistent application of fundamental principles and practices across all levels of the organization:
    1. We are all fallible. Even the best make errors!
    2. Human and System Error likely situations are predictable & manageable.
    3. The organization's processes influence behavior.
    4. Positive and immediate reinforcement supports high levels of performance.
    5. Response Matters: Proactively learn from events by looking at the context.
  - **Let's Build Our Capacity and Defenses!** This way of thinking and operating has been adopted by High Risk and High Reliability Organizations (HROs)
  - **Integrated with SCE's Safety Culture Transformation**

# Why Error Prevention?

- **Immediate and Long-Term Benefits**

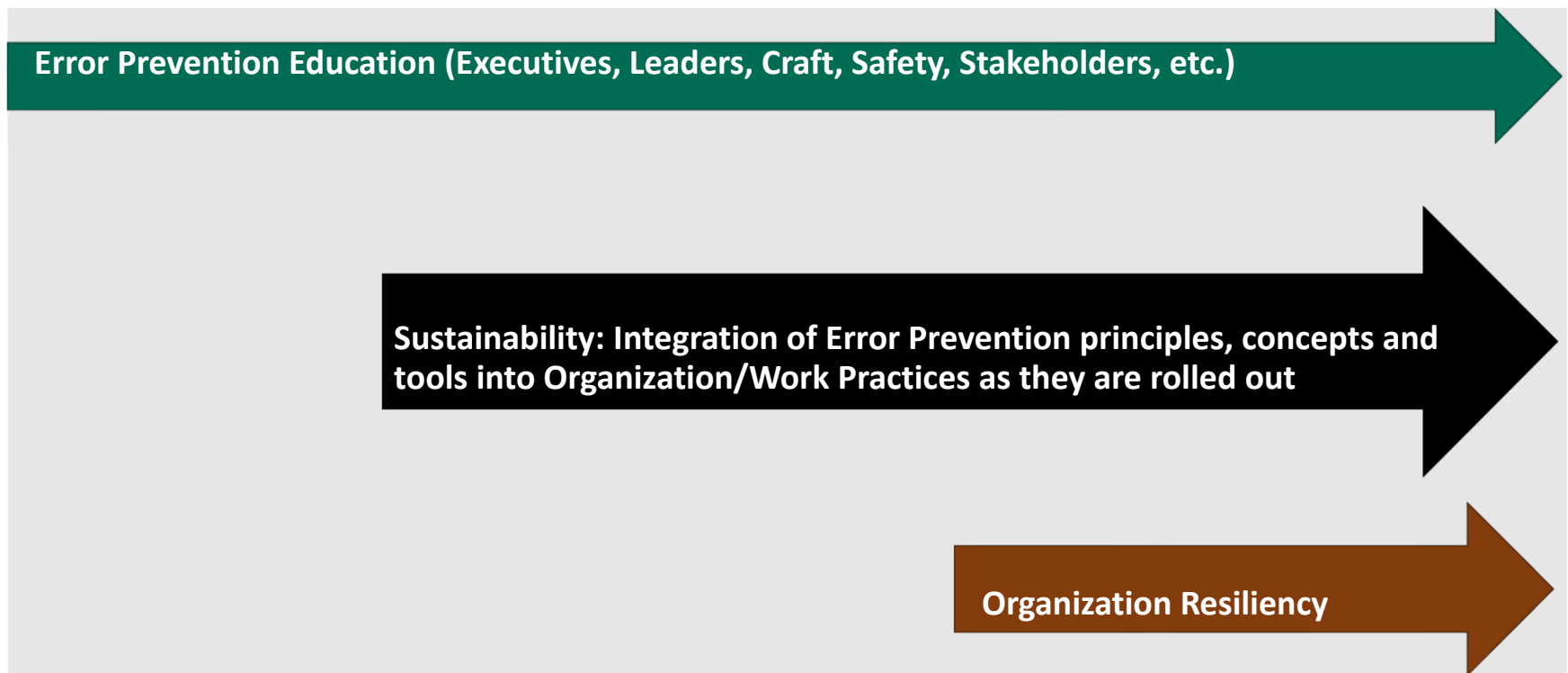
- ✓ Adoption of principles and practices to proactively and actively **prevent injury, system reliability interruption and damage** triggered by human errors and organization hidden conditions/landmines particularly at critical/irreversible steps
- ✓ Build capacity and defenses – fail safely!
- ✓ A better understanding of error management to proactively prevent undesired events, minimize the consequences of error and learn from events
- ✓ Clear responsibilities across the organization to support one another to prevent human and system errors and learn from events by looking at the context

# Strategy Background

- **2016** NATF HP/Error Prevention Team formed sponsored by Transmission, Substation and Operations VP
- **2017** T&D Error Prevention/HPI Peer Utilities Reviews (NATF/AEIC) -ComEd, Duke, Dominion, Florida P&L, etc.
  - HPI NATF Peer Review Recommendations
    - ✓ Utilize the NATF HP Roadmap and other member resources to develop and communicate a formalized plan
    - ✓ Assign accountability for the HP program and provide resources consistent with the vision and strategy
- **2018** Benchmarked internally across SCE and externally across different industries and utilities
- **2018** Strategy developed (grassroots/holistic approach) leveraging industry best practices including US DOE, NATF, HPRCT, etc. and close partnership with field SMEs across all SCE organizations

# Strategy Overview

Concurrent and ongoing phases for ongoing continuous improvement and learning based on US DOE and industry Error Prevention best practices including NATF.



# Scope

- Error Prevention Initiative with sustainability plan will be rolled out at the enterprise level
  - **Phase 1:** Will include high risk/high incident classifications and leadership starting with several classifications in Transmission, Substation and Operations (TS&O) in Q1 2020 and the rest of the classification in 2021- ongoing
  - **Phase 2:** Will be designed for knowledge workers (e.g., Planners, Engineers, etc.).

# Scope: High Risk/High Incident Classifications

In red classifications in scope Phase 1 (TS&O SC&M & Substation Operations). Phase 2 includes the rest of the classifications (timeline TBD).

T&D Distribution	TS&O	Generation	Transportation Services	Other
<b>DC&amp;M (Distribution)</b> <ul style="list-style-type: none"> <li>Lineman</li> <li>Apprentice</li> <li>Groundman</li> <li>E-Crew Foreman</li> <li>Field Supervisor</li> <li>General Foremen</li> <li>OS</li> <li>District Manager</li> <li>P-Spec</li> <li>Underground Civil Construction</li> <li>Principal Manger</li> </ul>	<b>SCM (Substation Construction &amp; Maintenance) - Test Technician</b> <ul style="list-style-type: none"> <li>Test Technician</li> <li>Test Supervising Test Technician</li> <li>Senior Supervisor</li> <li>Senior Manager</li> <li>Principal Manger</li> </ul> <b>SC&amp;M - Maintenance Electrician</b> <ul style="list-style-type: none"> <li>Maintenance Electrician</li> <li>Apprentice Electrician</li> <li>Senior Supervisor</li> <li>Senior Manager</li> <li>Principal Manger</li> </ul> <b>SC&amp;M – Facility Maintenance</b> <ul style="list-style-type: none"> <li>Utilityman</li> <li>Facility Maintenance Supervisor</li> <li>Senior Manager</li> <li>Principal Manager</li> </ul> <b>SC&amp;M - CFF</b> <ul style="list-style-type: none"> <li>Battery</li> <li>Power Cable</li> <li>EFS</li> <li>Civil Structure Mechanics</li> <li>Construction Electricians</li> <li>Sup/Senior Supervisor</li> <li>Manager</li> <li>Principal Manger</li> </ul> <b>SC&amp;M - Apparatus</b> <ul style="list-style-type: none"> <li>Apparatus Technician</li> <li>Supervisor</li> <li>Manager</li> <li>Senior Manager</li> <li>Principal Manger</li> </ul>	<b>Grid Ops - Substation Operations</b> <ul style="list-style-type: none"> <li>Substation Operator</li> <li>System Operator</li> <li>Operator Trainee</li> <li>Supervisor</li> <li>Senior Supervisor</li> <li>Senior Manager</li> <li>Principal Manger</li> </ul> <b>GCC Grid Control Center</b> <p>Transmission Dispatcher:</p> <ul style="list-style-type: none"> <li>Senior and Lead Dispatcher</li> <li>Transmission Dispatcher</li> <li>Manager</li> <li>Senior Manager</li> <li>Principal Manger</li> </ul> <b>Transmission</b> <ul style="list-style-type: none"> <li>Lineman</li> <li>Apprentice</li> <li>Groundman</li> <li>Senior Patrolman</li> <li>General Foremen</li> <li>Sr. Supervisor</li> <li>Grid Manager</li> <li>P-Spec</li> <li>Telecom: Cable Splicer, Helper and Foreman</li> <li>Principal Manger</li> </ul>	<b>Western Operations</b> <ul style="list-style-type: none"> <li>Apprentices</li> <li>Test Technician</li> <li>Electrician</li> <li>Heavy Equipment Operator</li> <li>Operations</li> <li>Mechanics/Machinist</li> <li>Foremen</li> <li>Managers</li> <li>Supervisors</li> </ul> <b>Eastern Operations</b> <ul style="list-style-type: none"> <li>Supervisors</li> <li>Test Techs</li> <li>Hydro Operator (Chief Operator, HSSO and HSSO Lead)</li> <li>Hydro Operator Mechanic</li> <li>Hydro ICE Tech</li> <li>Hydro Mechanical Maintenance</li> <li>Hydro Civil Maintenance</li> <li>General Heavy Equipment Operator</li> <li>Hydro Structural Carpenter</li> <li>Plant Maintenance Mechanic</li> <li>Catalina Utility-man</li> <li>Control Operator</li> <li>Plant Equipment Operator</li> <li>Mechanic Water &amp; Gas System</li> <li>Control Operator</li> <li>Operator Mechanic</li> <li>Chemical Technician</li> <li>ICE Tech</li> <li>Machinist Mechanic</li> <li>Territorial Utility Man</li> <li>Apprentices</li> <li>Hydro Equipment Operator</li> <li>Rough Carpenters</li> <li>Hydrographer</li> <li>Foremen</li> <li>Managers</li> <li>Supervisors</li> </ul>	<ul style="list-style-type: none"> <li>Crane Operators</li> <li>Mechanics</li> <li>Foremen</li> <li>Supervisors</li> <li>Managers</li> <li>Principal Managers</li> </ul> <ul style="list-style-type: none"> <li>VPs, Directors and Principal Managers</li> <li>T&amp;D, TSD &amp; Generation Training Organizations</li> <li>Safety Organizations</li> <li>Others</li> <li>Cause Evaluators across SCE</li> <li>Union Leaders</li> <li>HR Partners</li> <li>IT High risk classifications</li> </ul>
<b>Troubleman</b> <ul style="list-style-type: none"> <li>Troubleman</li> <li>Field General Supervisor</li> <li>Streetlight Patrolman</li> <li>Manager</li> <li>Principal Manger</li> </ul>				
<b>Meter Field Organization</b> <ul style="list-style-type: none"> <li>Meter Techs 4, 5 &amp; 6</li> <li>Field Services Representative</li> <li>Supervising Field Service Representative</li> <li>Senior Supervisor</li> <li>Manager</li> <li>Senior Manager</li> <li>Principal Manger</li> </ul>				



# Strategy Grassroots Approach - Leadership and Frontline Early Engagement

- **2018 (25)** Sponsors identified by organization including VPs, Directors and Principal Managers
- **2018 (10)** Error Prevention Leads/Champions identified by organization (attended accredited Shane Bush HPI Certificate and Graduate Course from the University of Idaho based on DOE HPI standards)



# Grassroots Approach - Frontline Early Engagement

- **2018** Union engagement
- **2018** Standardization of Error Prevention Tools by Error Prevention Business Line Leads/Champions  
(description, why, when, how, and at-risk behaviors)



# Strategy Grassroots Approach - Course Development

- **2018-2019 (100)** Finalized identification of Champions/Leads by location which included socialization and buy-in
- **2018** SCE Error Prevention Course developed and validated by Business Line Error Prevention Leads to ensure relevance and maximize learning effectiveness using the Systematic Approach to Training (ADDIE Model)
  - *Training is craft specific and will be delivered by Error Prevention Leads/Champions for their locations*

# Strategy Grassroots Approach – Course Pilots

- **Pilot #1 December 2018** Audience: Business Line Leads, Safety, HR and T&D Training (N=22)



# Strategy Grassroots Approach – Course Pilots

- **Pilot #2 February 2019** Audience: Distribution, Construction & Maintenance, Grid Field Operations craft & leaders, HR and Safety (N=20)



Scale 1-10	Q1-Objectives of the training were clearly defined	Q2-Participation and Interaction were encouraged	Q3-The topics covered were relevant	Q4 -The content was organized and easy to follow	Q5-This training will help me with my role
<b>Average Score</b>	<b>8.4</b>	<b>9.0</b>	<b>9.1</b>	<b>8.7</b>	<b>9.2</b>

# Strategy Grassroots Approach – Course Pilots

- **Pilot #3 March 2019** Audience: Construction Field Forces and Generation craft & leaders, Union and Safety (N=20)



Scale 1-10	Q1-Objectives of the training were clearly defined	Q2-Participation and Interaction were encouraged	Q3-The topics covered were relevant	Q4 -The content was organized and easy to follow	Q5-This training will help me with my role
<b>Average Score</b>	<b>9.5</b>	<b>9.6</b>	<b>9.6</b>	<b>9.1</b>	<b>9.7</b>



# Strategy Grassroots Approach – Stakeholder Engagement

- **2019 171 Stakeholders and Business Co-Leads/Champions** attended Industry HPI 8-Hour course by Shane Bush based on US DOE HPI Standards



# Strategy Grassroots Approach – Implementation and Sustainability Plan

- **2018- Ongoing** addressing sustainability workstreams (Safety Observations, Cause Evaluations, Apprentice Programs, Post Training Reinforcement, Leads Engagement, etc.)



# Sustainability Work Streams (13)

## Sustainability Work Streams

### 1. Training Integration

- New Employee Orientation Illuminate
- Apprentice Programs including assessments (TPEs, OJTs)
- Refresher Training Programs (Example Yearly Craft Specific Refresher)
- Intact New to Role Training (Leaders/Supervisors)
- New to Role Training

### 2. Ongoing Leadership EP learning and reinforcement with case study exercises (all levels including Supervisors, Managers, Directors and Executives)

### 3. Ongoing education for leads/champions with industry experts and partnership with other utilities

### 4. EP Drip Model/Reinforcement Plan for Safety Meetings and other avenues

- Principles reinforcement plus one tool at a time – videos, case studies, topics, stories, etc.
- Ongoing integration into Safety Congresses, etc.

# Sustainability Work Streams (13)

## Sustainability Work Streams

### **5. Ongoing Promotion and Marketing- Communication**

- Examples: Job tasks with critical steps video learnings, Newsletters, Safety Digest, Smart Screens, Portal, 100 Safety Questions, etc.

### **6. Recognition Program Integration**

- For champions, behaviors exhibiting principles application
- Recognizing system errors and addressing them
- Exchange Program, Bright Program, other

### **7. Monthly Event Learning Form** (Preliminary incident call forms updated with EP principles)

### **8. Integration into Cause Evaluations, Close-Calls, Trending, Operating Experiences, etc.**

# Sustainability Work Streams (13)

## Sustainability Work Streams

**9. Tailboard Integration**

**10. Safety Observations Integration**

**11. Learning Teams to Perform Cause Evaluations**

**12. Continuous Improvement Evaluation**

- Qualitative change on adoption of the principles, number of defenses (system errors identified and addressed), number of close calls

**13. Continuous engagement with the industry best practices (HROs)**

# NEXT STEPS: Implementation & Sustainability

- **2018- Ongoing** addressing sustainability workstreams.
- **Q4 2019** Launched TS&O Train the Trainer Plan. Complete in Q2 2020.



- **Q1 2020** Launching TS&O communications, course and sustainability plan.
- **2020** Strategize 2021 implementation and monitor effectiveness for continuous improvement.

Q/A

# Thank You!

## **Remember:**

- ✓ We are Humans and we are Fallible!
- ✓ Let's Help our Organizations Build Capacity and Defenses so that when we Fail, we Fail Safely!!