Participation Information

Using more than one participation option may create feedback.

Please begin your comment by stating your name and organization

- **In Person:**   Warren-Alquist State Energy Building, Imbrecht Hearing Room, First Floor, 1516 Ninth Street, Sacramento, California 95814. Sign-in sheet at entry.

- **Zoom:** https://us06web.zoom.us/j/82296854117

- **Phone:** 404-43-6397 US Toll | 877-336-1831 US Toll-free | Conference code: 167251
- Participants are placed in "listen/watch only" mode until the public comment portion of the meeting. During the public comment portions, participants may use the raise hand function on the Zoom videoconference or may dial #2 (pound/hashtag two) to be placed in a queue when they wish to speak. The hosting team will unmute callers in order of request.

- **Email:** Written comments may be emailed to WSAB@energysafety.ca.gov.

- **Tech Issues:** For technical issues, please e-mail WSAB@energysafety.ca.gov or call Mary Ann Aguayo at 279-336-1731.

California Wildfire Safety Advisory Board

Locating Meeting Materials

California Wildfire Safety Advisory Board

Meeting Materials Available at:

https://energysafety.ca.gov/what-we-do/wildfire-safety-advisory-board/wsab-events-and-meetings/

Public Comments Available at:

https://energysafety.ca.gov/what-we-do/wildfire-safety-advisory-board/public-comments-received-by-the-wildfire-safety-advisory-board/

About the Wildfire Safety Board

Members:

- **Jessica Block, Chair**
- **Diane Fellman, Vice Chair**
- **Ralph M. Armstrong Jr., Board Member**
- **John Mader, Board Member**
- **Christopher Porter, Board Member**
- **Alexandra Syphard, Board Member**

Information about the Board and its Members available at: energysafety.ca.gov/WSAB.

California Wildfire Safety Advisory Board

Pledge of Allegiance

Agenda

1) Public Comments
2) Discussion/Vote on November 16, 2022
    Meeting Minutes
3) Presentations on Utility Safety Culture
4) Discussion and scheduling of activities for 2023
5) Closed Session
6) Adjournment

California Wildfire Safety
Advisory Board

1 - Public Comments

Please begin your comments by stating your name and organization (if applicable).

a. In-person

b. On Zoom

c. On the Phone

d. Via Email

Discussion
&
Vote

Energy Safety Update

Jonathan Frost
*On the behalf of the
Office of Energy Infrastructure
Safety*
California Natural Resources Agency

California Wildfire Safety
Advisory Board

1. **Dr. Mark Fleming,** Saint Mary's University

2. **Joint IOUs,** PG&E, SCE, SDG&E

3. **Dr. Louise Comfort,** U.C. Berkeley

California Wildfire Safety Advisory Board

Safety Culture

Dr. Mark Fleming

Mark.fleming@smu.ca

Overview

- Origins of Safety Culture
  - Organizational culture model
- Safety culture and disasters
  - Relevance to regulators
- Safety culture measurement
- Conclusions

In the beginning…

Safety culture began as an undefined term, coined for political expediency.

It is now a globally recognized poorly defined term, that is a major area of practice.

The Public Inquiry into the Piper Alpha Disaster

The Hon Lord Cullen

DEPARTMENT OF ENERGY

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Organizational failure

- Despite the adoption of a full range of safety arrangements, complex systems broke down disastrously, because the people running them failed to do what they were supposed to do

- These were not simply individual errors, but malpractices that corrupted the social system and organizational functioning.

Lee (1997)

Safety culture

- Abstract concept that was created to describe a collective failure to implement know controls to prevent catastrophic events.

- These are cultural failures as organizational members believed that they were safe prior to the disaster

- Concerned with major hazard risk, rather than occupational safety

Safety Culture is:

the shared

values   attitudes   behaviour

that determines the effectiveness of

safety management

Key elements of safety culture definitions

- It is something that people share
- Organizational rather than individual level construct
- It is multi faceted and complex
- Includes values, attitudes, beliefs, norms practices related to risk and safety
- It influences safety practices and behavior

Safety culture and disasters

- Reviewed 17 disasters inquiries to identify cultural causal factors
- 14 disasters contained cultural causes
  - Tolerance of inadequate systems and resources (identified 10 times)
  - Normalization of deviance, (identified 9 times)
  - Complacency, (identified 8 times)
  - Work pressure/ cost (identified 4 times)

Safety culture threats
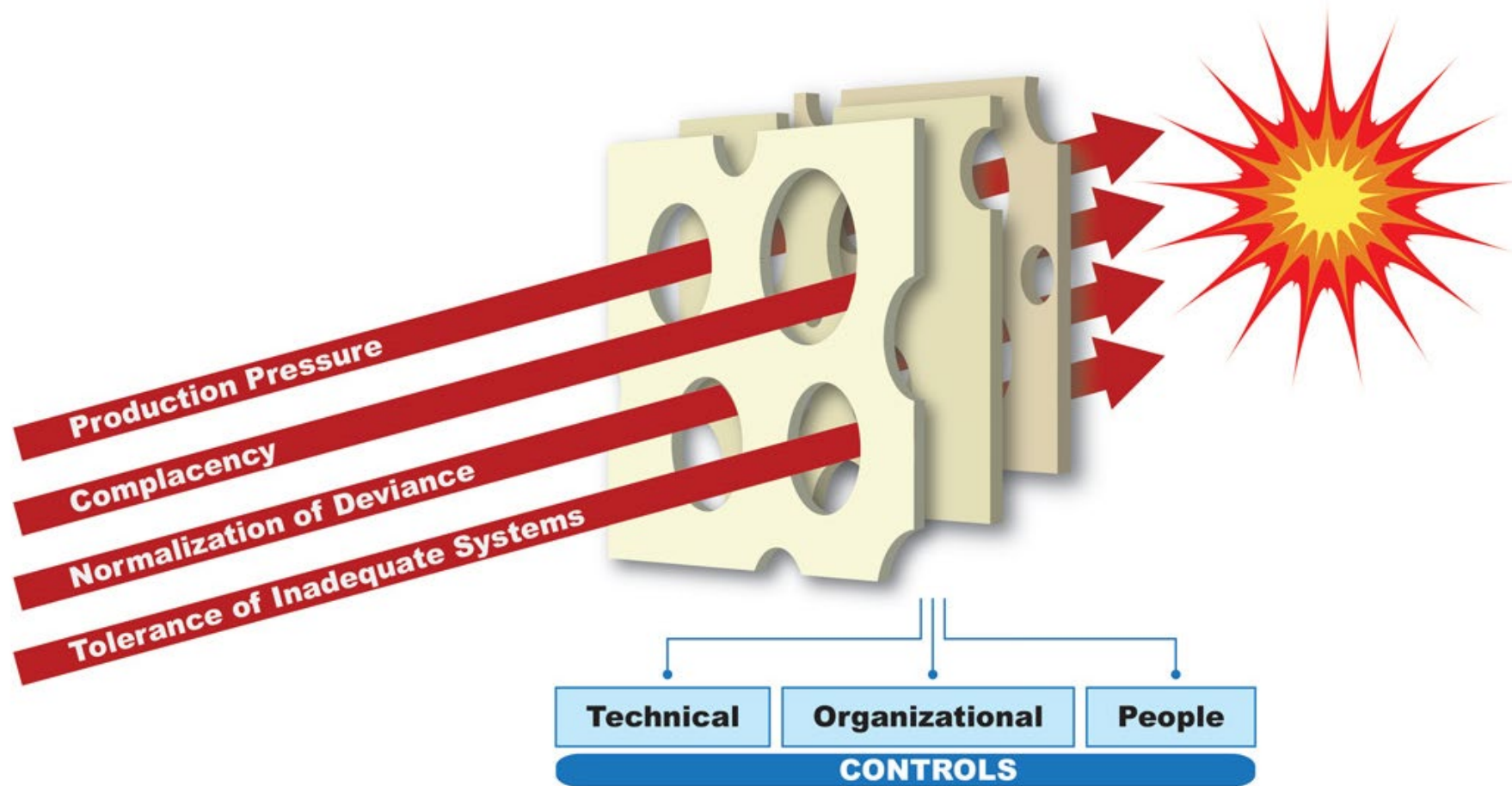

Graphic courtesy of the NEB

Regulatory challenge

- Need to be able to identify regulated entities with cultures that increase the risk of disaster by:
  - Understanding the complex nature of culture and how it influences risk
  - Be able to identify cultural warning signs
  - Influence duty holders to address safety culture

Measurement issues

- Abstract construct, cannot measure
- Overuse of the term
- Diverse range of approaches
- Similar to other constructs (e.g., safety climate)
- Incentives for stakeholders to claim to be measuring safety culture

Safety culture iceberg Jell-O model
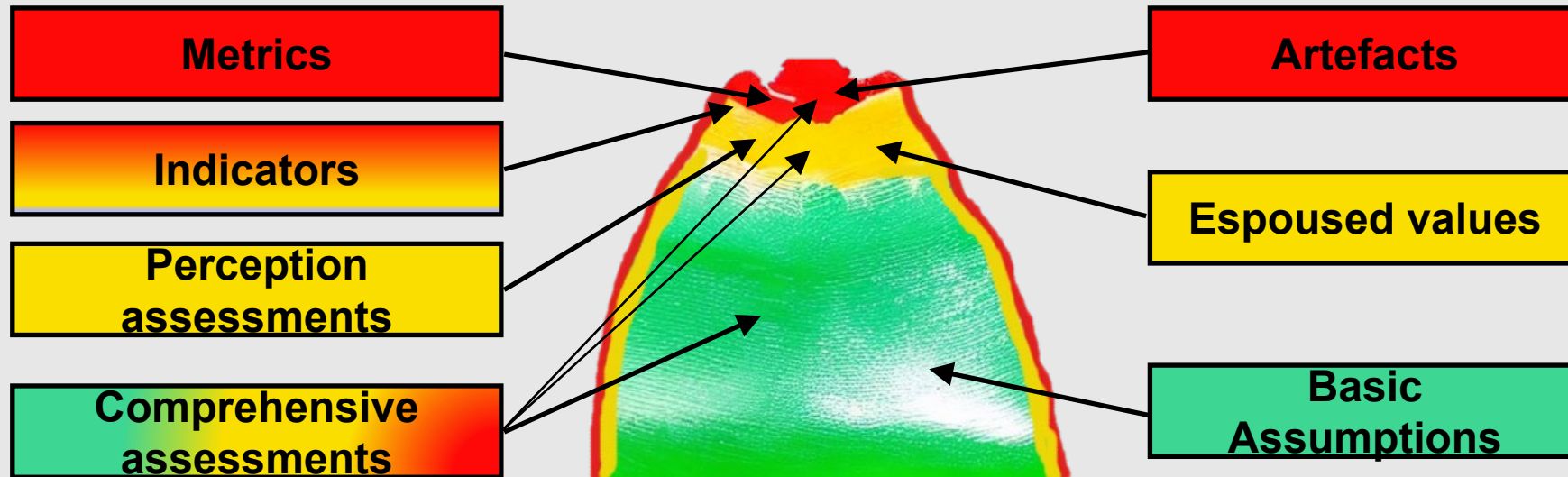
Illusion of objectivity

- Numbers are not objective
- Artefacts can deceive
- Indicators become distorted
  - Goodhart's Law:

When a measure becomes a target, it ceases to be a good measure

Safety Culture Assessment / Evaluation
API 1173- 10.2.4

- A comprehensive evaluation involves multiple methods
  - Surveys
  - Interviews and focus groups
  - Document analysis of policies, procedures, risk assessments, reporting and learning processes
  - Observation

Avoid Good versus Bad judgements

Shifu: Master! I have... it's very bad news!
Oogway: Ah, Shifu. There is just news. There is no good or bad.

Survey results

- Provide information about employee perceptions, not reality
  - Ballpark estimate (a lot of error)
  - Perceptions are influenced by many factors
- Important to understand why employees have these perceptions
  - Are employee perceptions reflected in practice

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Summary

- Safety culture is not real, yet important
- Avoid simplistic approaches
  - Beware of delusion of objectivity
- Develop a sophisticated understanding of safety culture
- Seek ways to identify the presence of safety culture threats

Thank you

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Overview - AB 1054 Safety Culture Assessment (SCA)

SCA Requirement

- Public Utilities Code Section 8389(d)(4):
  CPUC shall adopt and approve (by Dec. 1, 2020, and annually thereafter):

  "A process for the division to conduct annual safety culture assessments for each electrical corporation."

California Wildfire Safety
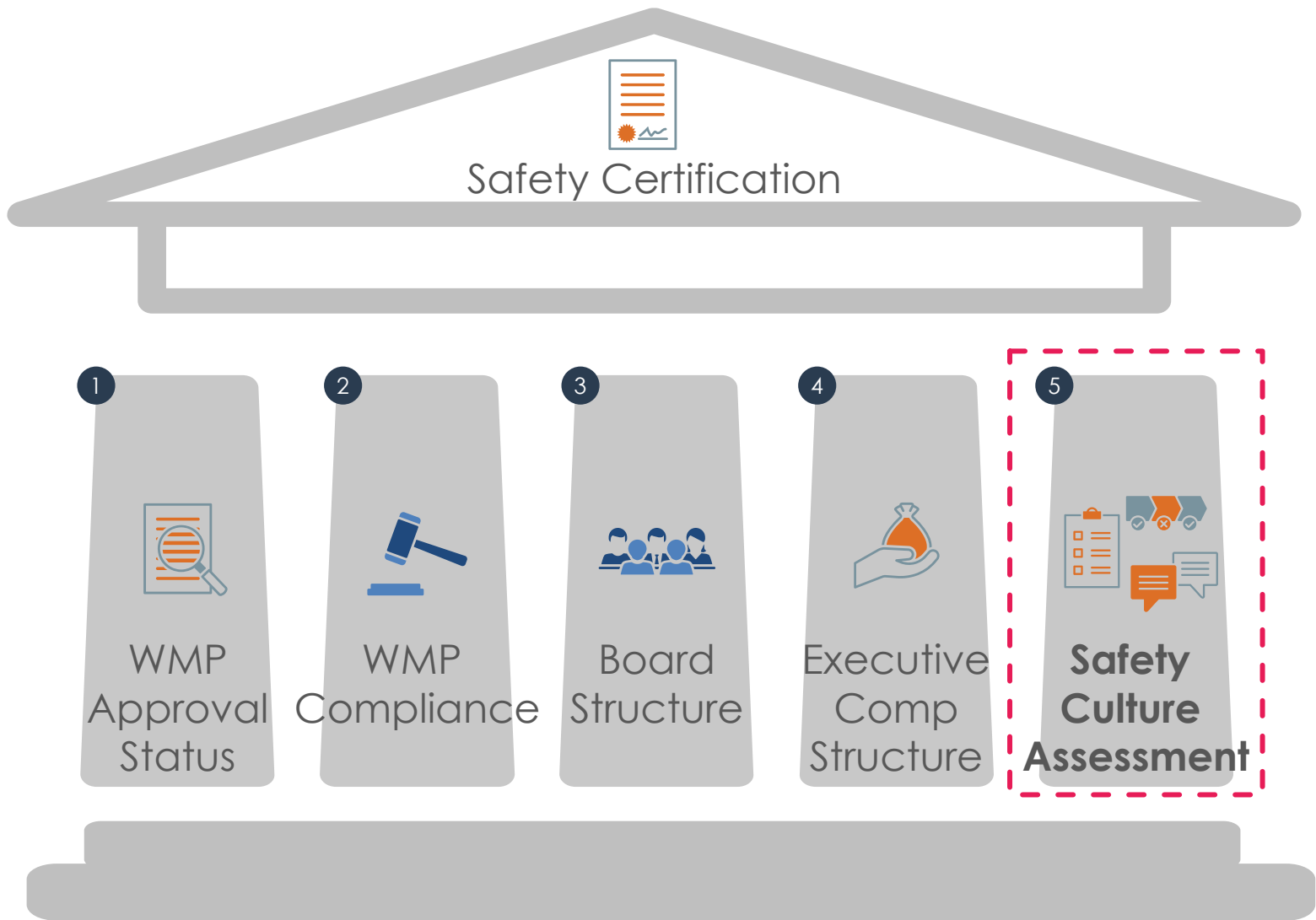Advisory Board

SCA Overview (Cont.)

SCA Purpose

- Assess safety outcomes over time, "foster continuous and collaborative improvement and learning" (WSD-011 Attachment 4)

- Provide option to companies seeking a safety certification to use SCA report to establish "good standing"

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SCA Core Components

- Workforce survey (large IOUs and SMJUs)
- Management self-assessment (large IOUs)
  - Summary plan for the coming year
- Interviews to better understand survey and self-assessment (large IOUs)
- Safety culture objectives & lessons learned (Large IOUs, SMJUs, ITOs)
  - Includes reporting of implementation of recommendations 2021 SCA

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SCA – Part of Safety Certification

Safety Certification

1	2	3	4	5
WMP Approval Status	WMP Compliance	Board Structure	Executive Comp Structure	**Safety Culture Assessment**

California Wildfire Safety Advisory Board

SCA Overview (Cont.)

WSAB Role

- Public Utilities Code Section 8389(b) directs the WSAB to make recommendations to Energy Safety regarding:

  "The appropriate scope and process for assessing the safety culture of an electrical corporation" (by June 30, 2020, and annually thereafter)

California Wildfire Safety
Advisory Board

California Utility Safety Culture Trends

Wildfire Safety Advisory Board Meeting

February 22, 2023

Southern California Edison Safety Culture Trends

Andrew Martinez, Vice President, Safety, Security & Business Resiliency

Rajdeep Roy, Director, Wildfire Safety

Wildfire Safety Advisory Board Meeting

February 22, 2023

EDISON INTERNATIONAL®

Overview

- SCE's portfolio of wildfire mitigation initiatives have significantly reduced wildfire risk and customer impacts across the service area when compared with 2018 levels
  - Among other findings, SCE's efforts have resulted in fewer faults and structures damaged and lower asset defect find rates
- SCE has implemented the four recommendations from Energy Safety's 2021 Wildfire Safety Culture Assessment (SCA) and is driving continuous improvement activities in these areas
  - In addition, SCE continues to see positive signs of progress with improved leader safety ownership and employee psychological safety from its own SCA process which began in 2016
- SCE's safety performance underscores our commitment to doing whatever it takes for as long as it takes to eliminate Serious Injuries and Fatalities
  - SCE experienced an employee fatality in January. While employee safety performance has plateaued in lagging indicators, leading indicators show positive signs of progress
  - Contractor safety performance continues to improve in both leading and lagging indicators. Targeted SCE efforts are driving improved contractor oversight through focused observations, reinforced consequences and increased accountability

Protecting Public Safety by Reducing the Risk of Significant Wildfires and Reducing Customer Impacts

Wildfire mitigations have resulted in a ~65-70% reduction in the risk of experiencing catastrophic wildfires[1]
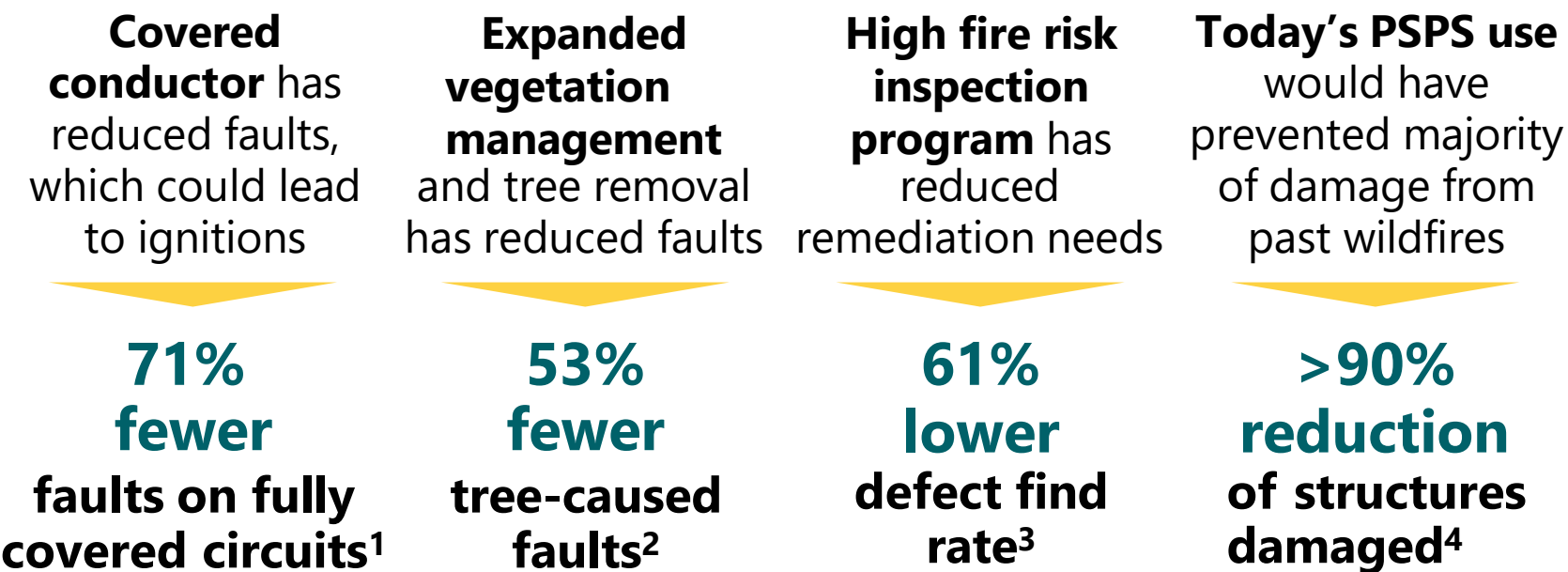
- Grid Hardening
- Situational Awareness
- Risk Modeling
- Vegetation Management
- Inspections & Remediations
- Data Governance

- Emergency Preparedness
- New Technology
- PSPS
- Grid Operations & Protocols
- Customer Care Programs
- Community Partnerships

REDUCE RISK OF SIGNIFICANT WILDFIRES

REDUCE CUSTOMER IMPACTS

[1] Based on model produced by Risk Management Solutions. Estimate is in comparison to 2018 risk, based on results through Q3 2022, and considers grid hardening, PSPS, vegetation management and inspections.

SCE is Making Meaningful Progress in Mitigating Wildfire Risk for its Customers

Covered conductor has reduced faults, which could lead to ignitions

Expanded vegetation management and tree removal has reduced faults

High fire risk inspection program has reduced remediation needs

Today's PSPS use would have prevented majority of damage from past wildfires

71% fewer
faults on fully covered circuits[1]

53% fewer
tree-caused faults[2]

61% lower
defect find rate[3]

>90% reduction
of structures damaged[4]

On segments where SCE has covered bare wire, there has not been a CPUC-reportable ignition from the drivers that covered conductor is expected to mitigate

[1] Measured by faults covered conductor is expected to mitigate per 100 circuit miles on fully covered circuits as compared to bare circuits from 2018–2022 in HFRA

[2] Measured by average monthly tree caused circuit interruptions in HFRA in 2022 as compared to the average from 2017–2019

[3] Measured as Total Defect Find Rate of Top Ignition Drivers (percentage of inspections) in 2022 as compared to 2019 (inception of program) for structures inspected every year

[4] Measured as structures damaged or destroyed in wildfires greater than 1,000 acres associated with SCE's infrastructure during 2015–2020, using red flag warning days as a proxy for PSPS conditions. Please note, however, that a red flag warning, alone, would not necessarily result in a decision to implement a PSPS

SCE is Making Timely Progress in the Implementation of Energy Safety and SCE Safety Culture Assessment Recommendations

SCE IMPLEMENTATION OF ENERGY SAFETY 2021 CULTURE ASSESSMENT RECOMMENDATIONS	SCE'S SAFETY CULTURE ASSESSMENT PROGRESS

- **Improved safety-related communication concerning wildfire roles and decisions**, by enhancing wildfire safety protocol communications and conducting field workforce outreach

- **Evaluated progress of wildfire communication improvements** via surveys measuring PSPS protocol changes and communications effectiveness

- **Embedded learning organization concepts into culture**, by incorporating root cause and lessons learned into employee communications and initiating human & organizational performance training

- **Mitigated serious exposure posed by interactions with discontented members of the public**, by analyzing incident trends and training employees to proactively mitigate threats

- **Improved safety leadership and psychological safety,** by driving targeted activities to address key assessment findings, e.g., safety standups focused on speaking up

- **Implemented a risk-based approach to safety culture**, by focusing safety improvement efforts at targeted locations resulting in leading indicator improvements

Employees see safety culture improvements
- 78% agree safety culture has improved
- 75% see safety leadership improvements
- 91% "feel comfortable talking about

Worker Safety Programs Prioritize Reduction of Serious Injuries and Fatalities

SCE continues driving efforts to strengthen leader safety ownership, hazard identification and controls to improve our safety culture and performance

Performance Trends 2018-2022

Metric	2018	2019	2020	2021	2022	Peer Benchmark Average[1]
Employee Fatalities	0	0	0	0	0	—
Employee Serious Injuries and Fatalities (SIF) Rate	0.11	0.05	0.12	0.06	0.09	0.07
Employee Days Away Restricted or Transferred (DART) Rate	0.98	1.17	0.90	1.05	1.18	0.53
Employee OSHA Rate	1.98	2.34	1.80	1.94	2.01	1.09
Tier 1 Contractor Fatalities	2	3	3	1	0[2]	—
Tier 1 Contractor SIF Rate	0.32	0.13	0.19	0.12	0.06[3]	—
Tier 1 Contractor DART Rate	0.55	0.35	0.45	0.36	0.25	0.35
Tier 1 Contractor OSHA Rate	0.92	0.56	0.65	0.57	0.43	0.70

SCE's 2022 year-end employee SIF rate of 0.09 is consistent with previous multi-year averages:

Time Period	# Yrs	Avg SIF Rate
2017-2019	3	0.09
2020-2022	3	0.09
2018-2022	5	0.09

[1] Employee benchmark based on 2021 survey of Edison Electric Institute (EEI) member companies; Contractor benchmark based on separate 2021 EEI survey; "-" indicates no peer benchmark available
[2] SCE experienced a Safety Tier 2 fatality in 2022
[3] Excludes contractors managed by the Decommissioning General Contractor (DGC) engaged by SCE to undertake a significant scope of decommissioning activities at San Onofre; excludes Tier 2 fatality

Considerations for 2023 Energy Safety's Wildfire Safety Culture Assessment

- Articulating the desired wildfire safety culture outcomes and how the Energy Safety SCA process will advance those outcomes will be helpful in grounding the overall assessment process.

- A consistent, evidence-based SCA process can help drive further wildfire safety culture improvements.
  - Consistency in the annual SCA methodology and approach should help drive desired, long-term cultural shifts.
  - Use of evidence-based measures (i.e., those proven to measure cultural change) will produce meaningful SCA results.

- Energy Safety's SCA process should be aligned with other regulatory efforts, e.g., Safety Culture OIR.

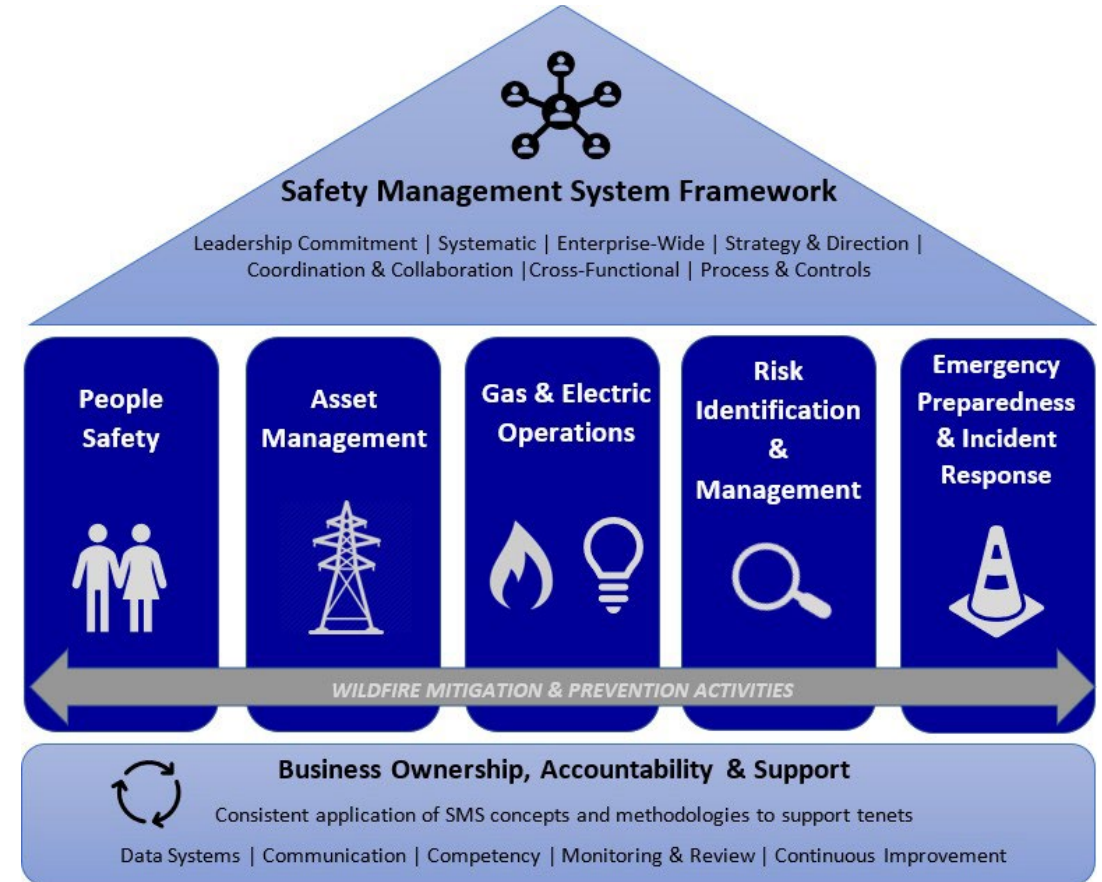# Utility Workforce Safety Culture

Kevin Geraghty

Chief Operating Officer & Chief Safety Officer

CA Wildfire Safety Advisory Board Meeting

February 22, 2023

Safety Management System

- Company-wide system expands beyond "traditional" occupational (employee & contractor) safety to include:
  - Public Safety
  - Asset and System Safety
  - Cyber Safety
  - Psychological Safety

- Better aligns and integrates our business; increases collaboration and sharing of best practices and lessons learned

- Process-based approach that integrates risk and builds safety into everything we do

- Increases use of data analytics to deploy proactive and preventative measures; increases access to data

- Incorporates technology enhancements for effective and sustainable progress

Safety Management System Framework

Leadership Commitment | Systematic | Enterprise-Wide | Strategy & Direction | Coordination & Collaboration | Cross-Functional | Process & Controls

| People Safety | Asset Management | Gas & Electric Operations | Risk Identification & Management | Emergency Preparedness & Incident Response |

WILDFIRE MITIGATION & PREVENTION ACTIVITIES

Business Ownership, Accountability & Support

Consistent application of SMS concepts and methodologies to support tenets

Data Systems | Communication | Competency | Monitoring & Review | Continuous Improvement

Building Trust: Fostering an Environment Safe to Speak Up

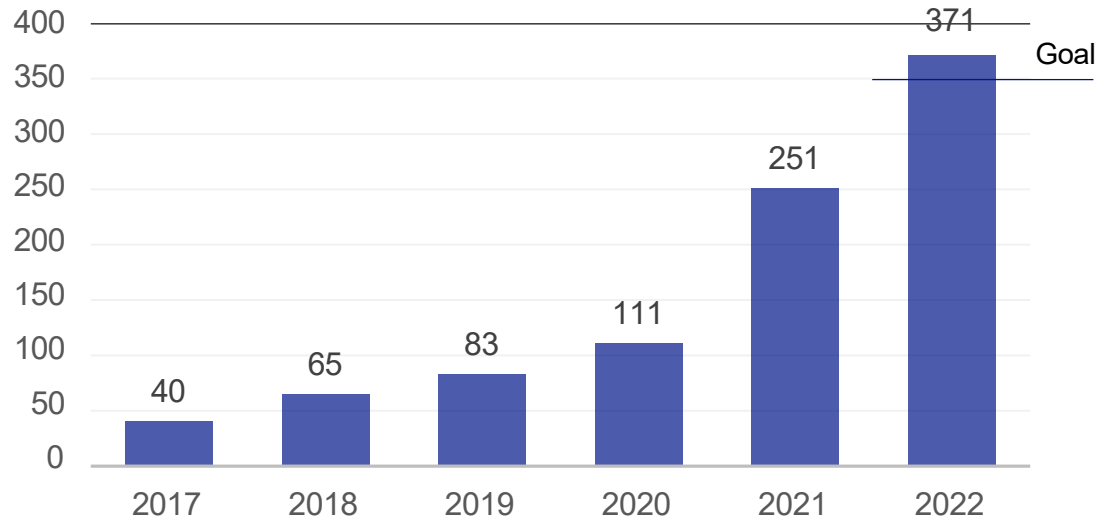Within its Safety Management System, SDG&E has:

- Processes for employees and contractors **to voice concerns** with consistent follow-up and feedback

- An environment where all employees and contractors are empowered to stop or pause work **without fear of retribution**

- A **learning environment** where safety incidents and Near Misses are viewed as opportunities for improvement

- **Transparent, open, two-way communication** with increased sharing of information, best practices and lessons learned

- **Increased accessibility to data** with company-wide safety communications and safety dashboards

- **Enhanced collaboration** between business units (e.g., gas and electric coordination)

- Demonstrated **leadership commitment** where teams lead by example and demonstrate the follow-up and improvements resulting from employee feedback
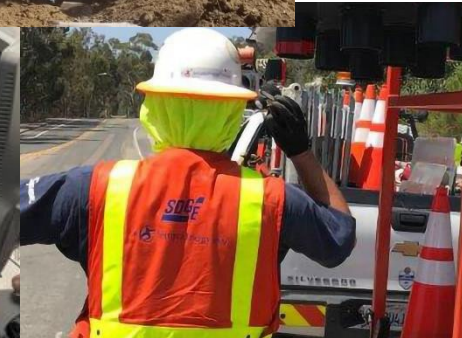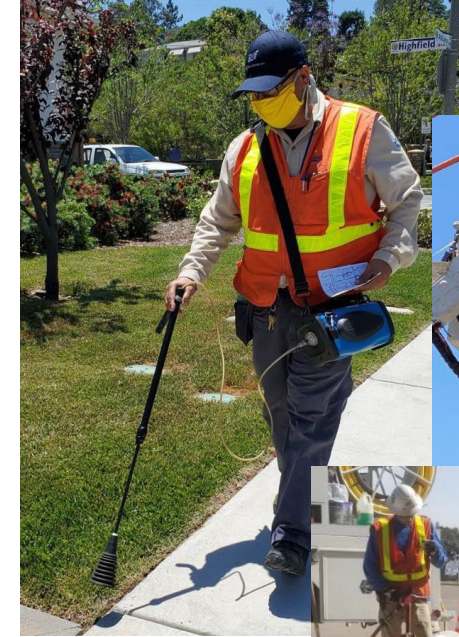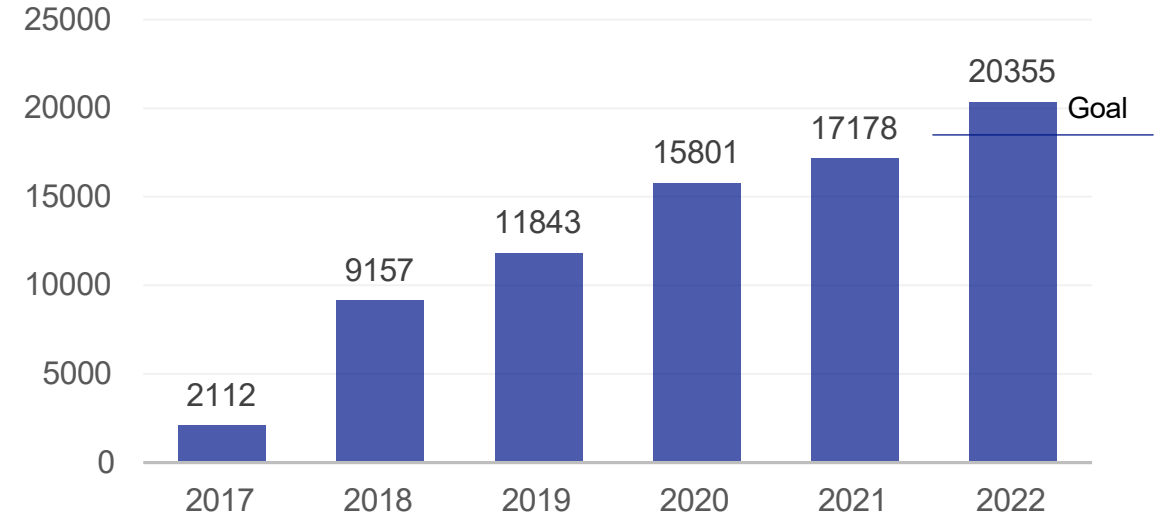
2022 Safety Management Action Plan Results

Key Cultural Leading Indicators

Near Miss Submittals

Year	Value
2017	40
2018	65
2019	83
2020	111
2021	251
2022	371 (Goal)

Safety Observations

Year	Value
2017	2112
2018	9157
2019	11843
2020	15801
2021	17178
2022	20355 (Goal)

- Achieved best-ever results in 2022 for two key leading safety indicators
  - Safety culture; building trust
  - Early identification of risk

- 2023 Goals include:
  - Increased follow-up and feedback of submitted Near Miss Reports
  - Enhanced data analytics
 - Continued demonstrated leadership engagement

2022 Safety Management Action Plan Results

Contractor Safety

Overview

- Continual improvement of SDG&E's Contractor TRIR

- Over 7.8M Contractor hours worked in 2022

- Over 400K Safety Observations performed in 2022

- Incidents and events are documented, mitigation measures are developed and communicated

- Observations and incident data is communicated internally and externally in monthly reports and on a live dashboard

- Training verification conducted on contractors working on SDG&E sites

- Contractor Safety Scorecard is used to grade safety performance for pre-selection process

Total Recordable Incident Rate (TRIR)

Year	TRIR
2019	1.19
2020	0.97
2021	0.85
2022	0.76
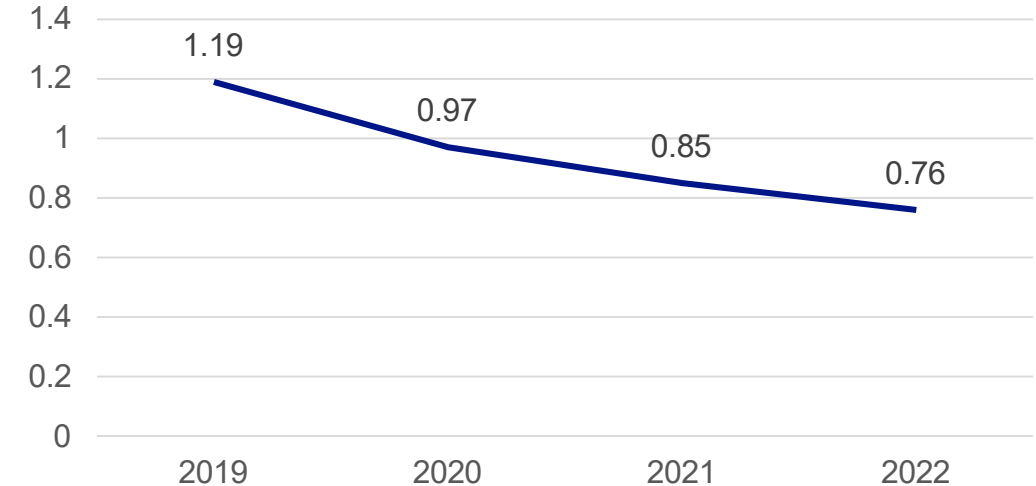
2023 Start Strong Safety Event

Objectives:

- Start the year strong by establishing clear safety performance and safety culture expectations, goals and initiatives

- Demonstrate and heighten safety (both physical and psychological) focus during a time when we typically see increased incidents

- Increase mental health awareness and encourage employees to speak-up, seek support and utilize company resources

Key Leadership Messaging: Recognize, Encourage & Focus

- Acknowledge and thank teams for contributing to 2022 safety achievements

- Convey targeted areas of focus, key initiatives to achieve goals in 2023

- Challenge everyone to commit to being "All in for Safety":
  - Work safely
  - Look out for one another
  - Speak-up and raise risk and safety concerns
  - Get involved - Safety takes all of us

2023 Challenge Coin

2021 Wildfire Safety Culture Assessment Report

Recommendations

Actions

Integrate safe behaviors associated with mitigating hazards into the Behavior-Based Safety (BBS) observation program

→

- **Communication & Awareness**
  - ○ Operational and manager training & focused meetings hosted by safety advisors
  - ○ Company-wide psychological safety town halls & District safety all-hands meetings
- **Engagement**
  - ○ On-site safety visits by Chief Safety Officer and District leadership
  - ○ Feedback collected by Executive Safety Council (ESC) from front-line operational employees and supervision
- **Process & Technology**
  - ○ New BBS process for electric distribution system operators to identify safe and at-risk behaviors associated with mitigating hazards from wildfires; expanding BBS checklist accordingly
  - ○ Enhanced Near Miss reporting application

Clarify, coach, and track the behaviors field leadership needs to adopt to advance the safety culture

→

- **Company-wide manager training workshops** to promote a culture of safety and trust
- Increased leadership **safety observations and visits**
- Safety all-hands meetings held by District leadership to **clarify safety expectations**
- Launched company-wide Supervisor Training Academy for frontline leaders, which covers safety, supervisor effectiveness, diversity and inclusion, compliance, employee engagement and culture

---

Recognize and take action to mitigate the serious exposure posed by interactions with certain discontented members of the public

→

- **Delivered social media communications** reminding members of the public that SDG&E employees may be on their property performing work to maintain safety and reliability
- **Heightened company-wide focus and attention around hostile interactions** with discontented members of the public resulting from bill increases and media attention
- Company and operational leadership provided all employees with **talking points and safety tips for customer interactions** and communications around safely interacting with members of the public

2022 Wildfire Doubling Down Effort

Double Down No.	Description	Result
1	Evaluate the removal of grounding banks in the HFTD to reduce wildfire risk	Initial risk analysis on 4 circuits including 11 banks completed. Ongoing project/program evaluation.
2	Reinforce training to check all phases when CMU/SMU phases are found open.	Included in Electric Distribution Engineering's October 2022 newsletter.
3	Ensure material availability for SUG initiative, reducing delays	Working group suggested long-term improvement plans for procurement of long lead time materials. Procurement approach modified to utilize forecasts rather than historical averages.
4	Identify and maintain access roads required for high PSPS risk circuits.	Distribution access roads have been identified and will be included in road maintenance program.
5	Perform double inspection of all trees in HFTD by September 1 each year.	Implemented vegetation Off-cycle Patrol Program (WMP.508)
6	Synch pole brush locations with actual structure location in systems of record.	Implemented system integration between vegetation management and asset inventory systems.
7	Evaluate the need to inventory and digitize services in GIS	Scoped project to digitize services in GIS utilizing LiDAR data.
8	During PSPS events, enable system functionality that prevents operators' ability to close service restorers and PSPS isolation devices without approval.	System enhancement completed and all operators trained on new functionality.
9	Prioritize CMP findings on high PSPS risk circuits.	All Tier 3 findings are resolved in required timeframes and accelerated if needed. Corrective work on critical risk circuits is discussed and prioritized weekly
10	Assess and secure availability of fleet vehicles prior to peak wildfire and PSPS season.	Patrols teams identified and fleet vehicles are assigned by unit.
11	Perform drone inspections on 34 coastal canyon circuit segments.	Completed drone inspections on 34 coastal canyon circuit segments.
12	Investigate use of an additional staging area in DeLuz (Northeast District), including improvements in communications, to utilize during PSPS events.	Staging area in DeLuz has been established and is pending final testing prior to implementation. This site includes a mobile command repeater to enhance mobile communications in the area.
13	Continue to resolve customer issues resulting from drone inspections.	Ongoing effort to resolve customer issues in Tier 2 and Tier 3. SDG&E is contracting with third party to assist customers in need.

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2022 Safety Culture Goals

Objective: Continuous improvement of the safety culture by focusing on management leadership, worker participation, and a proactive approach to identifying and mitigating risks and hazards

Action

- Communicate and follow-up on reported hazards and incidents, including:
  - Those that pose wildfire risk
  - Proactively reduce exposure
  - Prevent future incidents
- Near miss reports also indicate:
  - Employees' comfort level in raising risks
  - Building trust

- Document safety incidents
- Identify action plan
- Track action through timely completion

- Supervisors/leaders observing tasks and peer-to-peer observations to provide:
  - Safety assurances and lead to positive engagement with employees
  - Identify and communicate safe and at-risk behaviors
  - Increased trust and transparency
  - Constant improvement of SDG&E's workplace safety culture
  - Safety performance in all areas

- Safety observations of third-party contractors provide:
  - Additional safety assurances that the work is being performed safely
  - Identify and communicate safe and at-risk behaviors.
  - Coaching regarding avoidance of at-risk behaviors
  - Recognition of safe behaviors help move safety culture forward
  - Improve safety performance of contractors

Metric

Near Misses

Environment & Safety Compliance Management Program (ESCMP) Findings Mediated

Employee Safety Observations

Contractor Safety Observations

Target

350

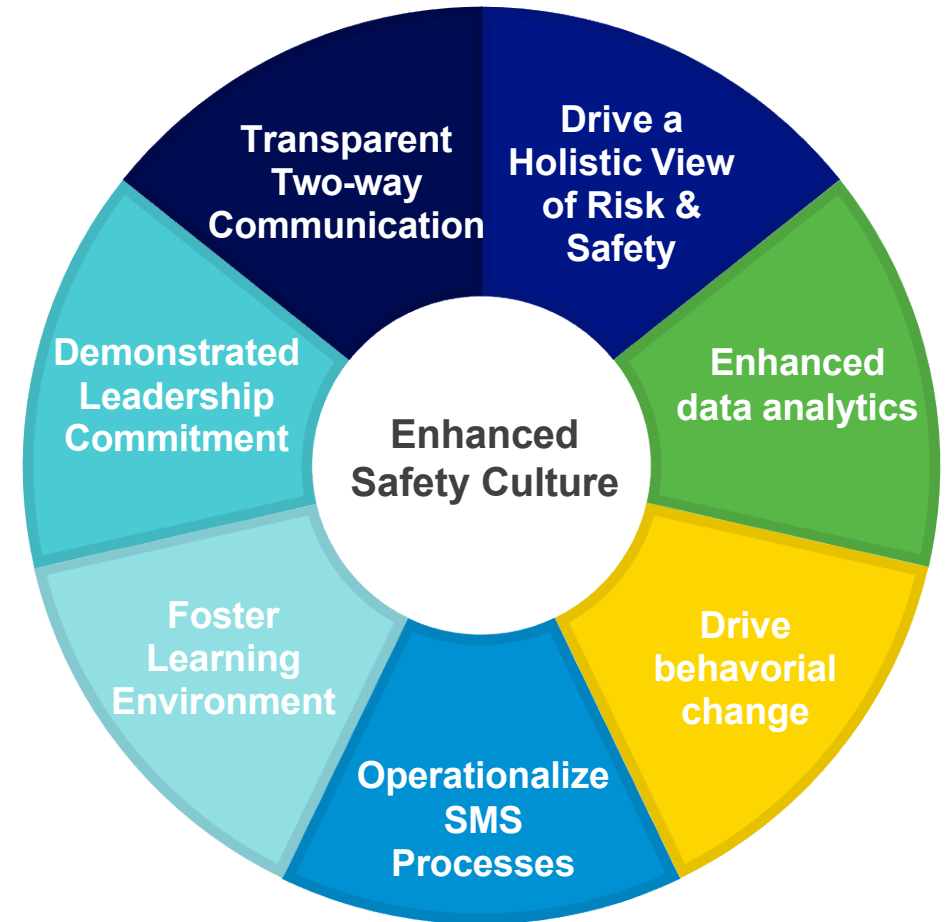**100%**

17,000

15,500

SDGE™

Longer-Term Safety Culture Goals (2-3 Years)

Objective: Continuously improve the safety culture by focusing on management leadership, worker participation, and a proactive approach to identifying and mitigating risks and hazards

Action

- Stopping the task that is perceived to be unsafe, indicates employees' comfort levels in:
  - Speaking up, risk awareness, and trust

- Assessing Near Miss/safety incidents for the potential to have caused serious injury or fatality allows for:
  - Identification of corrective and/or preventative actions to reduce risk and exposure
  - Broad sharing of lessons learned

- Communicate and follow-up on reported hazards and incidents, including:
  - Those that pose wildfire risk, proactively reduce exposure or prevent future incidents.

- Near miss reports also indicate:
  - Employees' comfort level in raising risks
  - Trusting management

- Supervisors/leaders observing tasks and peer-to-peer observations to provide:
  - Safety assurances
  - Lead to positive engagement with employees
  - Identify and communicate safe and at-risk behaviors.
  - Increase trust and transparency
  - Constant improvement of SDG&E's workplace safety culture
  - Safety performance in all areas

- Safety observations of third-party contractors provide:
  - Additional safety assurances that the work is being performed in a safe manner
  - Identify and communicate safe and at-risk behaviors.
  - Coaching regarding avoidance of at-risk behaviors and
  - Recognition of safe behaviors help move the safety culture forward
  - Ultimately improve safety performance of contractors performing work

- Document safety incidents

- Identify action plan, and

- Track action through completion in a timely manner

Metric

Stop the Job / Stop the Task	SIF Potential Assessments Completed	Near Misses	Safety Observations	Contractor Safety Observations	ESCMP Findings Mediated

Target

| 20/Year | 100% | 300-400 | 18,000 - 20,000 | 15,500 - 17,000 | 100% |

Continually Advancing SDG&E's Safety Culture

- ➤ Demonstrated **leadership commitment**
  - January 2023 Start Strong event; Safety Standdowns; set clear safety goals and expectations; being visible; increased engagement
- ➤ Increased **accessibility to data**
  - Enhanced Safety Dashboard; weekly safety messages
- ➤ Enhanced **data analytics**
  - Asset 360; Office of Data Science; Meteorology, Ignition Mgt. Program, Power Quality data
- ➤ Holistic **systems approach** to safety
  - SMS process implementation
- ➤ Recognize safe behavior; **drive behavioral change**
  - Vehicle telematics and coaching; BBS observations; Stop the Job recognition; ERO Operational Excellence Awards
- ➤ **Learning is key to prevention;** non-punitive; increased sharing of best practices and lessons learned
  - Monthly Safety Incident Review Meetings; SMS Lessons Learned repository; Emergency Management After Action Debriefs & Reports

Enhanced Safety Culture

- Transparent Two-way Communication
- Drive a Holistic View of Risk & Safety
- Enhanced data analytics
- Drive behavorial change
- Operationalize SMS Processes
- Foster Learning Environment
- Demonstrated Leadership Commitment

SDGE™

Key Leading & Lagging Metrics
Public Safety and Operational Performance

CPUC Reportable Metric	2020	2021	Current Month	2022 YE	Trend	Overall Performance	Comparability Across CA IOUs (YE 21)
Public Serious Injuries and Fatalities (# Serious Injuries | # Fatalities)	3 | 0	2 | 0	0 | 0	0 | 0	⬇	Seeking Target Zero; continuous improvement with SIF-prevention initiative.	1. SoCalGas: 0 3. SCE:9 2. **SDG&E: 2** 4. PG&E: 20
Fire Ignitions (# CPUC-reportable ignitions)	29	25	0	20	⬇	Launched program connecting different data owners within the company to enhance the connections between ignition data with other data.	1. **SDG&E: 25** 2. SCE: 173 3. PG&E: 477
T&D OH Wires Down – including secondary & MEDs (# instances)	179	372	28	372	▬	Tracking of secondary wires down began in August 2020.	1. **SDG&E: 372** 2. SCE: 2,057 3. PG&E: 5,822
Electric Emergency Response (Average time in minutes)	46.57	49.71	52.58	46.59	⬇	**~6% improvement** vs. 2021; Response times remain stable with slight decrease corresponding with a historically average number of emergency orders in 2022.	1. PG&E: 32.00 2. **SDG&E: 49.71** 3. SCE: 50.28
Gas Emergency Response Time (Average time in minutes)	30.36	29.06	28.86	28.72	▬	Steady. Continued improving trend since 2018.	1. PG&E: 20.60 2. SoCalGas: 24.98 3. **SDG&E: 29.06**
Gas Dig-ins (Dig-ins per 1,000 USA tickets)	1.61	1.54	0.63	1.19	⬇	Continued improving trend since 2018.	1. PG&E: 0.91 2. **SDG&E: 1.54** 3. SoCalGas: 2.23
Control Time – Gas Shut-in Time Mains (Median time in minutes)	580.50	871.00	922.00	833.00	⬇	**~4% improvement** vs. 2021; Increased 2021-22 times are largely attributed to the coordination, callout efforts, and crew travel times due to COVID-19 safety measures. In 2023, Gas Ops will continually implement operational efficiencies and process enhancements.	1. PG&E: 73.30 2. SoCalGas: 385.00 3. **SDG&E: 871.00**
Control Time – Gas Shut-in Time Services (Median time in minutes)	94.00	127.00	139.73	98.08	⬇	**~23% improvement** vs. 2021; see above narrative.	1. PG&E: 32.30 2. **SDG&E: 127** 3. SoCalGas: 205

Safety Management System | Working together to improve safety

Benchmarking & Measuring Effectiveness

Objective: Apply lessons learned to identify opportunities for continuous safety improvement

Management Commitment

- Examples of top management demonstrating their leadership and commitment to safety include:
  - Bi-monthly Executive Safety Council
  - Chief Safety Officer and management participation in various safety committees
  - Chief Safety Officer and management participation in monthly Behavior Based Safety meetings

Employee Safety Barometer Survey results*: **Improved**

2018: 91.7 **2022**: 98.7
2020: 98.3

Supervisor Engagement
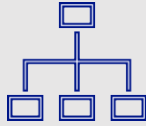
- Examples of improved Supervisor Engagement include:
  - Increased field safety visits
  - Training curriculum and testing program Employee Safety

Employee Safety Barometer Survey results*: **Improved**

2018: 90.8 **2022**: 99.2
2020: 99.0

Employee Involvement

- Increased measures to promote safety awareness and an active role in incident investigations and in identifying and eliminating hazards, including:
  - Increased number of near miss events reported by contractors and employees
  - Implemented a specific skills audit team from the Skill Training Center

Employee Safety Barometer Survey results*: **Improved**

2018: 85.3 **2022**: 96.6
2020: 95.8

Safety Support Activities

- Improved the frequency of detailed and regularly scheduled inspections; focused on improving safety training for new employees, and Behavioral Accident Prevention Process (BAPP) which:
  - Provides a structured process for continuous safety improvements
  - Developed hazard and risk assessment checklists; focused on key areas of "critical risk."
  - Conduct on the spot accountability conversations
  - Identify and further act on undiagnosed risk exposure
  - Drive hazard and risk removal and mitigation

Employee Safety Barometer Survey results*: **Improved**
2018: 89.0 **2022**: 98.0
2020: 96.9

Safety Support Climate

- Improved the status and value of safety committees; increased supervisory level focus from on how they think about safety, including:
  - Near Miss Reporting program - tailgates
    - safety meetings
    - through an online process
    - using a newly developed smart device application

Employee Safety Barometer Survey results*: **Improved**

2018: 89.8 **2022**: 99.3
2020: 98.6

* Survey results are percentile scores benchmarked against the 580 utilities in the NSC Database

Key Leading & Lagging Metrics
Employee & Contractor Safety Performance

SDGE™

Monthly Safety Update: December 2022

Rate = (# Incidents X 200,000 / hours worked)

Safety Message: Set clear leadership safety goals and expectations – both safety culture and performance – in order to start the year strong. Establish goals by building risk and safety into everything we do focusing on mental, physical, asset and system safety. Encourage teams to establish their 2023 safety resolutions. 2022 safety data is being assessed to develop targeted, actionable, measurable enhancements within SDG&E's 2023 Safety Management Action Plan.

SAFETY CULTURE

	Near Miss Submittals		Safety Observations	
	Employee	**Contractor**	**Employee**	**Contractor**
Current Month	10 ✅	7	930 ✅	812 ✅
YTD 2022	371 ⬆️	142	20,355 ⬆️	13,091 ⬆️
Goal	350	N/A	17,178	12,000

EMPLOYEE SAFETY

CONTRACTOR SAFETY

Period	SIF Rate		P-SIF Rate		TRIR			LTI Rate			SIF Rate		P-SIF Rate		TRIR			DART Rate	
	Rate	Trend	Rate	Trend	Rate	Goal	Trend	Rate	Goal	Trend	Rate	Trend	Rate	Trend	Rate	Goal	Trend	Rate	Trend
Current Month	0.00	⬇️	0.00	⬇️	1.30	1.26	⬇️	0.00	0.31	⬇️	0.00	TBD	0.00	TBD	1.00	0.94	TBD	1.00	TBD
YE 2022	0.04	⬆️	1.30	⬇️	1.82	1.26	❌	0.37	0.31	⬇️	0.03	➖	0.28	⬇️	0.76	0.94	⬇️	0.33	⬇️
2021	0.02	⬆️	2.53	N/A[1]	1.81	N/A	➖	0.55	0.36	⬆️	0.03	⬇️	0.29	N/A[1]	0.85	0.96	⬇️	0.56	⬆️
2020	0.00	--	N/A[1]	N/A[1]	1.56	N/A	--	0.54	0.48	⬇️	0.08	N/A[1]	N/A[1]	N/A[1]	0.97	1.37	⬇️	0.53	⬇️

✅ On track to meet goal

⬇️ Positive trend; improved performance

⬆️ Negative trend; needs attention

❌ Not on track to meet goal; needs attention

➖ Neutral; remains steady or no change

1. Data collection began in 2021

Safety Management System | Working together to improve safety

SIF: Serious Injury or Fatality
P-SIF: Potential Serious Injury or Fatality
LTI: Lost Time Incident
TRIR: Total Recordable Incident Rate
DART: Day(s) Away/Restricted or Transfer Rate

Wildfire Safety Advisory Board

Safety Culture Trends

February 22, 2023

Presenters: Matt Hayes and Russ Prentice

Progress on 2021 Safety Culture Assessment Recommendations

We are improving our safety culture based on recommendations from our assessment results.

Build Leadership Skills

- Hosted 100-days of Keys to Life
- Hosted Bi-Annual Safety Week
- Hosted Regional Town Halls
- Developing Leadership Development program

Establish Governance Structure for Workforce Safety Strategy

- Established Lean Operating System
- Developed Tactical Implementation Plans (TIPs) to drive strategy execution
- TIPs reviewed during Operating Reviews

Leadership Engagement on Plan Execution

- Officer team participates in Safety Operating Reviews weekly
- Safety Strategy TIP updates provided to Safety and Nuclear Oversight Committee

Improve Safety and Wildfire Information Flow and Tracking

- Established daily, weekly and monthly operating reviews to support information flow
- Continued emphasis on reporting issues via the Corrective Action Program (CAP)

Increase Assessment Engagement

- Achieved a 15-percentage point increase in coworker response rate (*Preliminary response data*) through:
  - Providing work time to complete survey
  - Executing additional coworker communications and promotional events
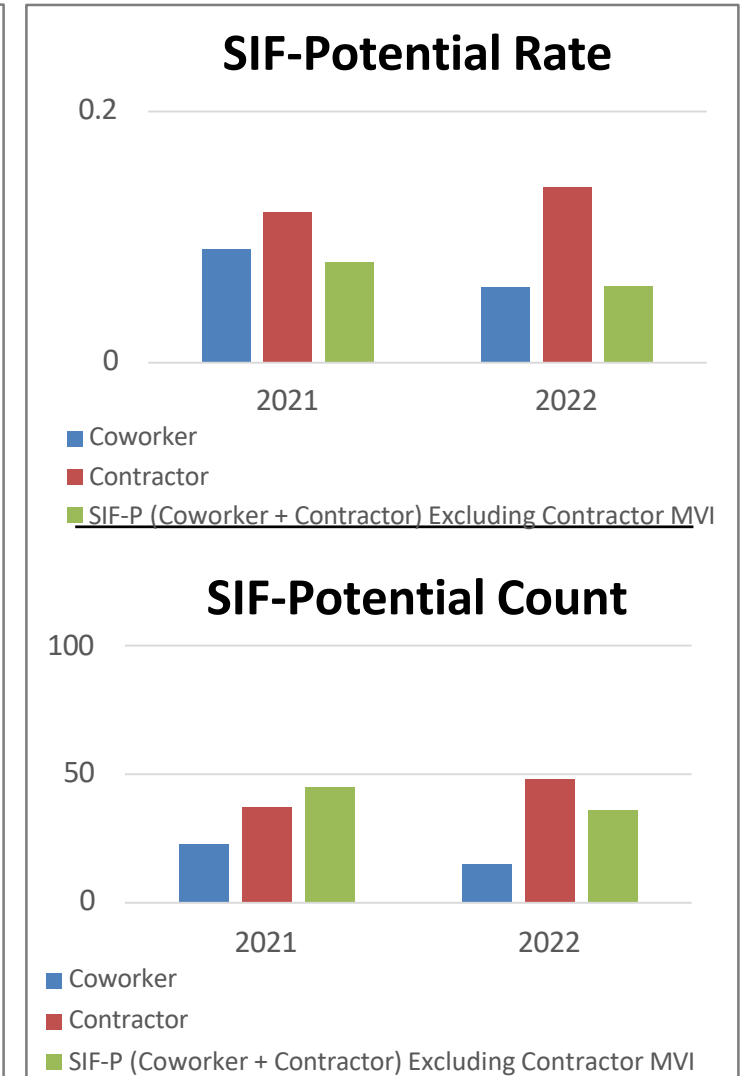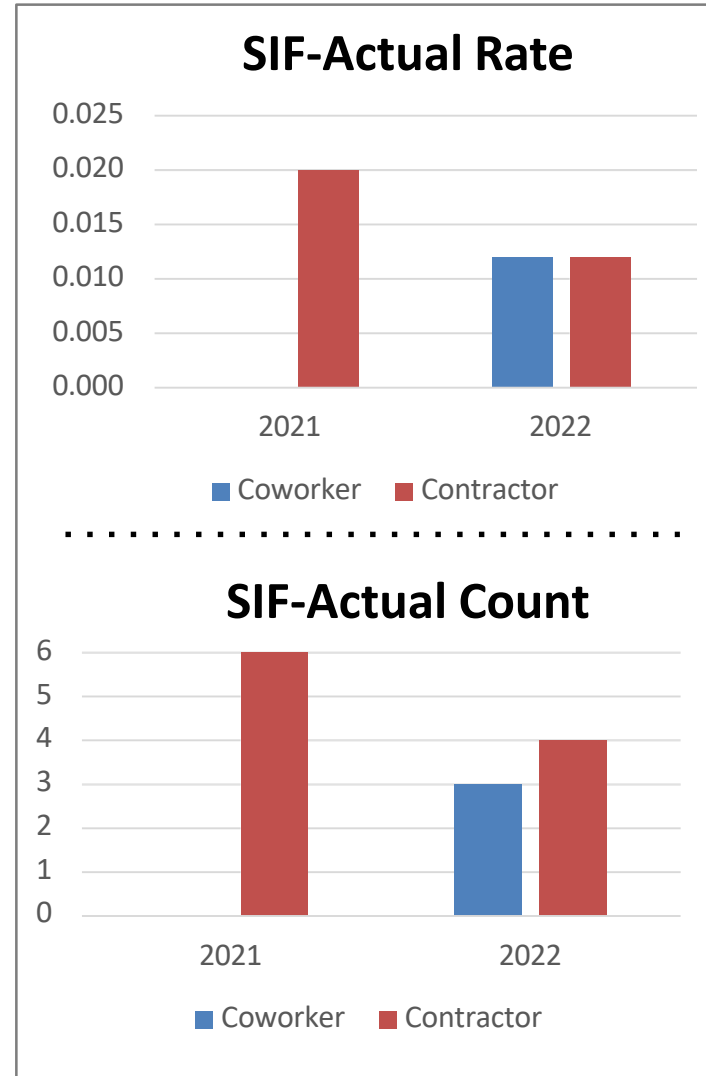
Reduce Risk From Hostile Resident Interactions

- Formed Oakland Incident Management Team and developed best practice playbook to expand coworker support across the enterprise

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

Workforce Safety

We are not satisfied with our SIF actual and potential performance **and have more work to do.**

We are focused on addressing common causes and influencing culture.

- **24% reduction** in SIF-P rate when excluding contractor motor vehicle incidents (MVI)[1]

- **9% increase** in SIF-A rate (includes coworkers and contractors)

SIF-Actual Rate

SIF-Actual Count

SIF-Potential Rate

SIF-Potential Count

[1] Contractor MVIs were not reported consistently until 2022

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.
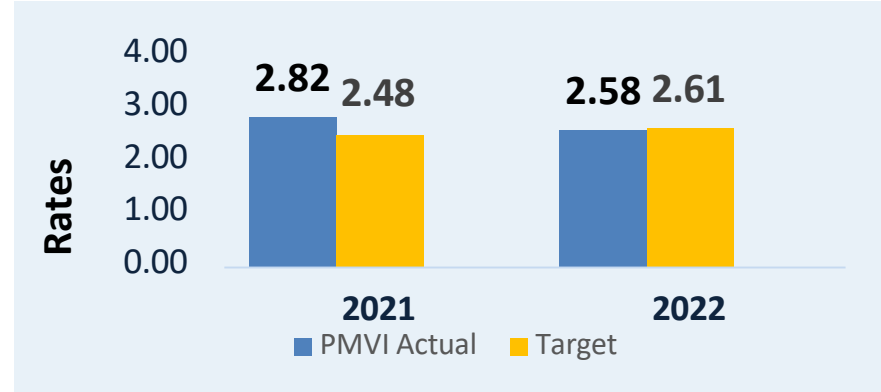
Safety Improvements

Safety actions have decreased **preventable motor vehicle incidents**, improved **DART** performance and increased our ability to identify and mitigate risk.
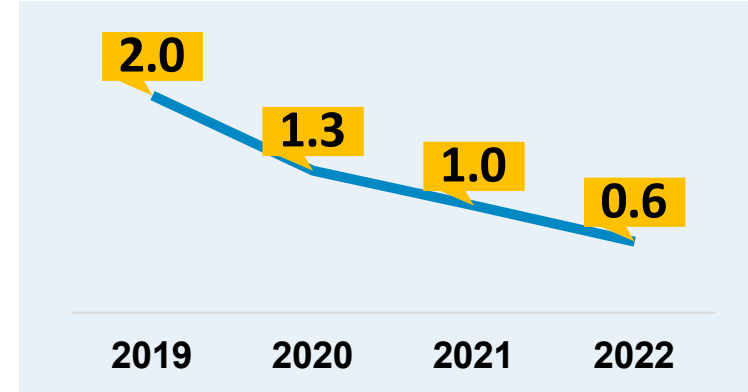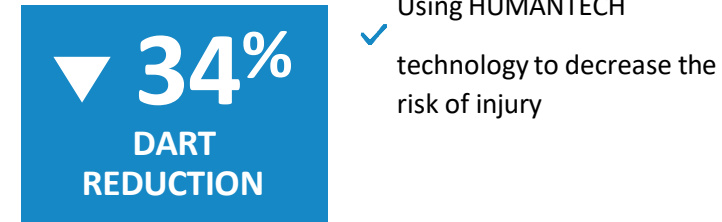
Preventable Motor Vehicle Incidents (PMVI)

▼ **9%**

PVMI DECREASE*
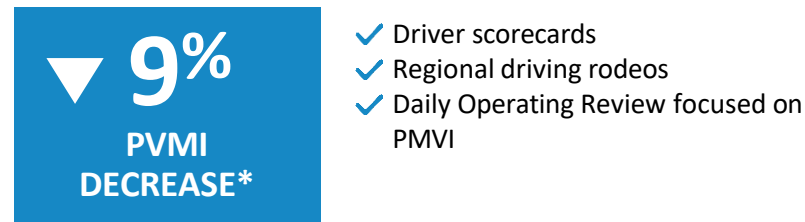
*Compared to 2021 YTD performance

- ✓ Driver scorecards
- ✓ Regional driving rodeos
- ✓ Daily Operating Review focused on PMVI

Chart: Rates

Year	PMVI Actual	Target
2021	2.82	2.48
2022	2.58	2.61

(Y-axis: 0.00, 1.00, 2.00, 3.00, 4.00)

■ PMVI Actual   ■ Target

Days Away, Restricted or Transferred (DART)

▼ **34%**

DART REDUCTION

- ✓ Using HUMANTECH technology to decrease the risk of injury

Chart:

2019	2020	2021	2022
2.0	1.3	1.0	0.6

Before: Using a strap

Risk score: 41

After: Using new tool

Risk score: 17

Enhanced Risk-Modeling

- ✓ Using artificial intelligence to determine real-time risk exposure
- ✓ Helping us to deploy field safety personal and ensure safe work practices are being conducted

4.5 **times increase in high/life-threatening find rate**
Through pilot with our Vegetation Management Program

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

Progress on Wildfire Safety Efforts

We are implementing new and expanded efforts this year to further reduce risk:

Down Conductor Detection to respond to risk beyond EPSS

Focused Tree Inspection work in areas of higher risk and more frequent outages

Transmission Pole Clearing

Transmission Operational Controls

PROGRAM	COMPLETED IN 2022	TOTAL COMPLETED	2023 PLAN
Undergrounding Our Lines Undergrounding powerlines to reduce wildfires caused by equipment	**180** Miles	**300** Miles	**350** Miles
System Hardening Strengthening our electric system through overheard hardening, undergrounding and line removals	**483** Miles	**1,224** Miles	**420** Miles
EPSS Enhanced settings detect powerline faults and help prevent wildfires	**~44,300** Miles*	**~44,300** Miles*	Continuing to protect 100% of HFRA line miles
Enhanced Vegetation Management Addressing vegetation that poses a higher potential for wildfire risk	**1,924** Miles	**8,283** Miles	Addressing areas of concern
Sectionalizing Devices and Transmission Switches Separating the grid into smaller sections and narrowing PSPS scope	**142** Devices/Switches	**1,351** Devices/Switches	As needed to reduce outages
Weather Stations Better predicting and responding to severe weather threats	**111** Stations	**1,424** Stations	Program goal met
High-Definition Cameras Monitoring and responding to wildfires through increased visibility	**100** Cameras	**602** Cameras	Enable AI Data Processing
Temporary Distribution Microgrids Keeping customers energized during a Public Safety Power Shutoff	**13** Sites	**13** Sites	Program goal met

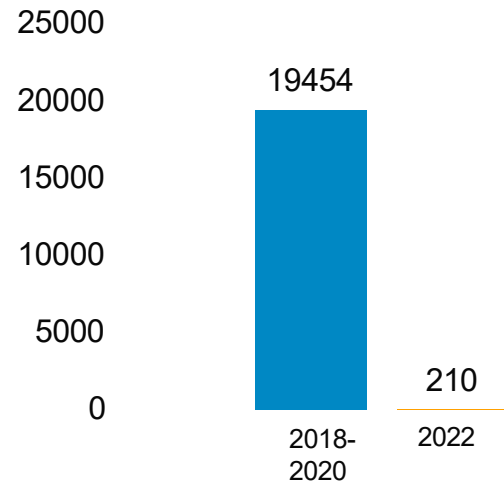*Data is approximate and as of 2/13/2023*

*Circuit-capable miles
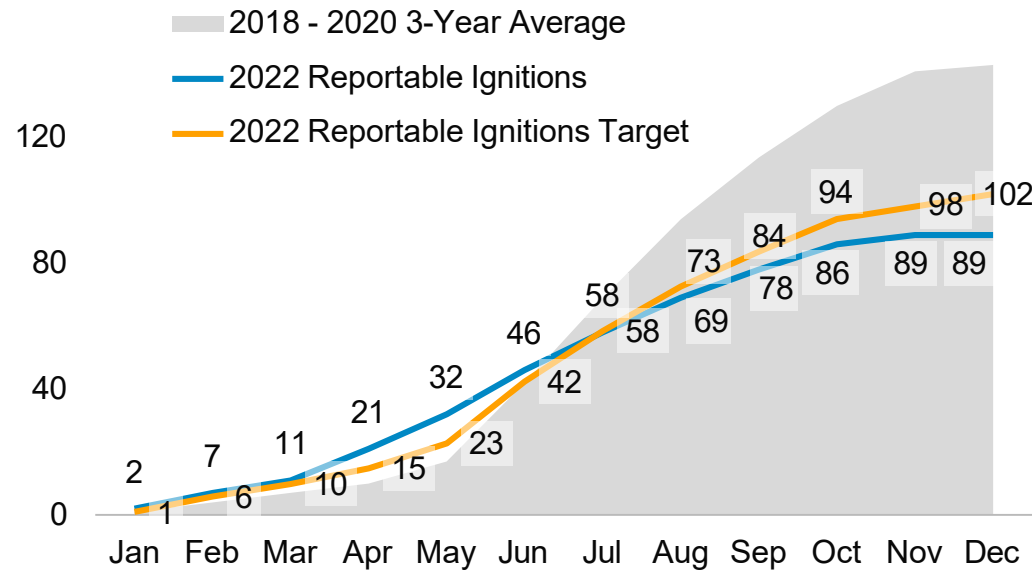
2022 Wildfire Season Performance

PG&E achieved **36% reduction in CPUC reportable ignitions** compared to 2018-2020 and a **99% reduction for the ignition impact** measure (in acres burned)

Average Annual Acres Burned

Bar chart with values:
- 2018-2020: 19454
- 2022: 210

	Distribution Primary
Baseline Average per Year (2018-2020)	19,454
2022 Acreage	210

CPUC Reportable Ignitions in HFTD[1]

Legend:
- 2018 - 2020 3-Year Average
- 2022 Reportable Ignitions
- 2022 Reportable Ignitions Target

Monthly data (2022 Reportable Ignitions / Target):
- Jan: 2 / 1
- Feb: 7 / 6
- Mar: 11 / 10
- Apr: 21 / 15
- May: 32 / 23
- Jun: 46 / 42
- Jul: 58 / 58
- Aug: 69 / 73
- Sep: 78 / 84
- Oct: 86 / 94
- Nov: 89 / 98
- Dec: 89 / 102

1. Ignitions data preliminary – incidents are under investigation
   Impact measured in acres burned.

Key Impacts in 2022

- Enhanced Powerline Safety Settings (EPSS) drove significant reductions in ignitions resulting in a **99% reduction in ignition impact measure** relative to 2018-2020

- PG&E experienced an increase of 31% in R3+ days[1] and an increase of **11% in R3+ Acre Days** compared to the 2018-2020 average

- **There were 27% fewer Red Flag Warning Days** resulting in decreased frequency of PSPS events and risk of wind driven fires, as compared to the 2018-2020 average

1) R3+ Days are based on PG&E's Fire Potential Index (FPI). R3+ is the FPI rating that results in EPSS being with no other contributing weather conditions

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

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- Align Wildfire Safety Culture Assessment with other regulatory survey processes such as the Safety Culture OIR

Potential Benefits:
- Opportunity to leverage National Safety Councils Safety Barometer Survey which aligns with the Institute of Nuclear Power Operations (INPO) 10 Traits of a Healthy Nuclear Safety Culture. INPO is the recommended framework put forth by IOUs in the OIR proceeding

- By focusing on a "best practices" safety culture assessment process, learnings will apply to all safety risks including those that are wildfire-related

- Improve workforce clarity and buy-in by focusing on one plan to address safety culture

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

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CREATING A SAFETY CULTURE DAY BY DAY

Louise K. Comfort, CITRIS, University of California, Berkeley. Email: lcomfort@berkeley.edu

AGENDA

Concept of Safety as a Learning Process

Collective Cognition of Risk

Cognition and Action in Complex Systems

Collective Cognition in Complex Time

Managing Risk in Dynamic Conditions

Summary: Managing multihazard risk

day by day

UNDERSTANDING SAFETY AS A LEARNING PROCESS

- What constitutes safety in an organization?

- An itemized list of rules and procedures?

- A qualitative list of risks in the operating environment, ranked by severity?

- A prioritized list of resources needed to manage risk?

- **A learning process for discovering discrepancies, recognizing risk, matching resources to risks, creating a work environment that actively reduces risk**
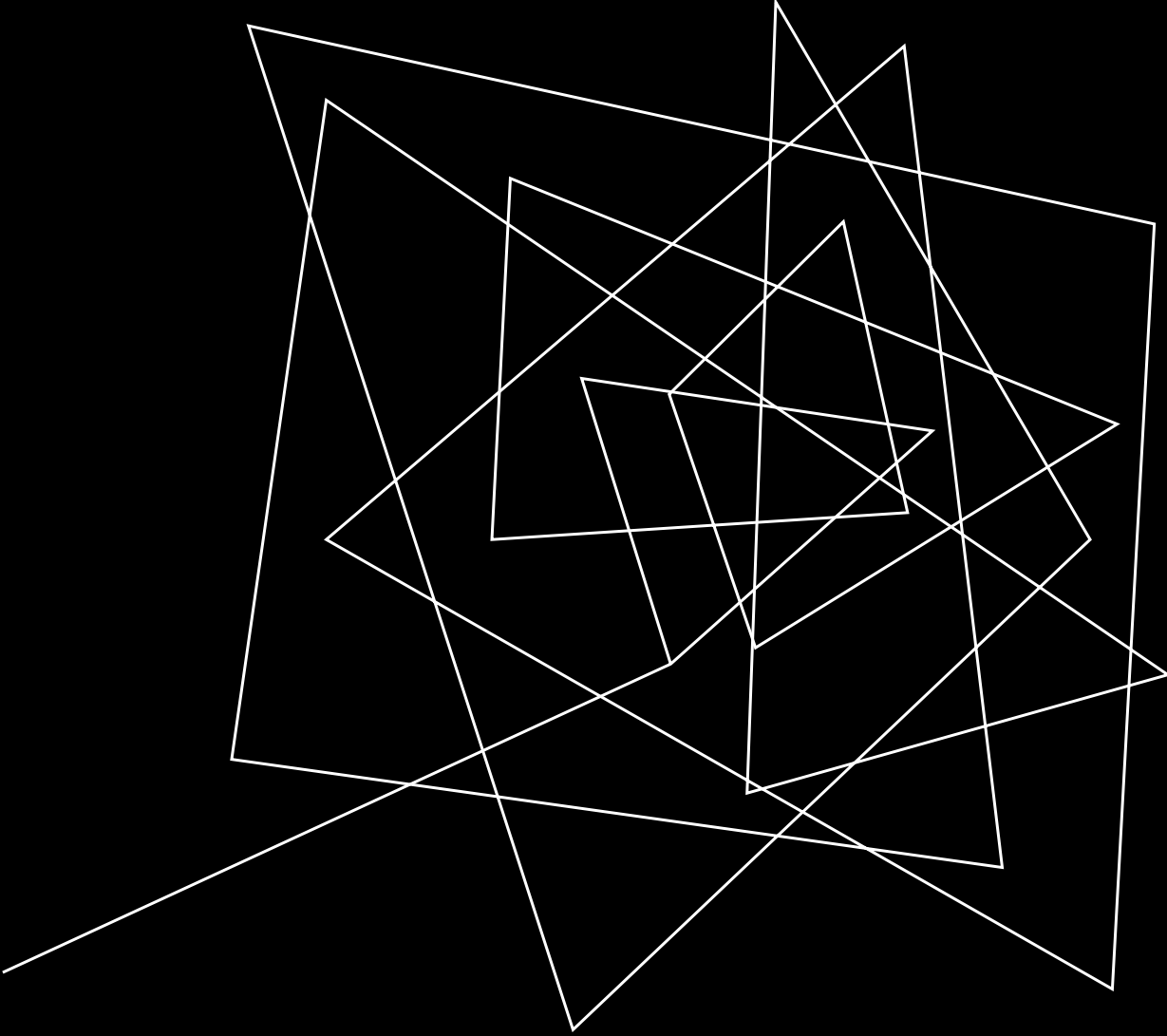
COGNITION OF RISK

Represents that flash of comprehension in a complex situation that leads to action

Structures information needed to achieve a clear goal

Derives from both social and cultural conditions

Includes empathy to understand impact of one's actions on others and ...

... the cost to others of failure to act

COLLECTIVE COGNITION...

- Initiates a learning process among individuals, groups, organizations to adapt to unknown threats

- Represents gain in shared understanding among diverse groups that enables collective action in unfamiliar contexts

- Constitutes the first step in solving complex problems

- Depends on intersection of time to absorb new information and rate of change in risk situation

- Builds on shared understanding of risk that threatens the system and the values that underlie social coherence

Dynamic — Conditions change rapidly: Wind, temperature, rate of fire progression

Uncertain — Unknown characteristics: How many people are at risk? Where?

Complex — Jurisdictions, organizations interact: Who depends on whom?

Urgent — Lives at risk: Personnel, residents, visitors, unhoused

THE CONTEXT OF WILDFIRE...
***TIME* IS CRITICAL**

IN UNCERTAIN CONDITIONS, FLOW OF INFORMATION SHAPES ACTION IN COMPLEX SYSTEMS

Technical devices

What types of communication devices are used by which groups of people?

Radio
Television
Internet
Cell phone
Landline
Word of mouth

Organizational policies, procedures

Who sends information to whom?

Who confirms receipt of information?

How frequently are updates given?

How is information verified?

Actors' knowledge of risk, system values

What level of prior knowledge of wildfire risk do different units have?

What degree of understanding, empathy do different units have for impact of their actions on others?

How does commitment to goal of safety for *whole* system overcome uncertainty to enable action?

COMPLEX TIME

- Classic conception of time: 'arrow' of time moves only forward, never back
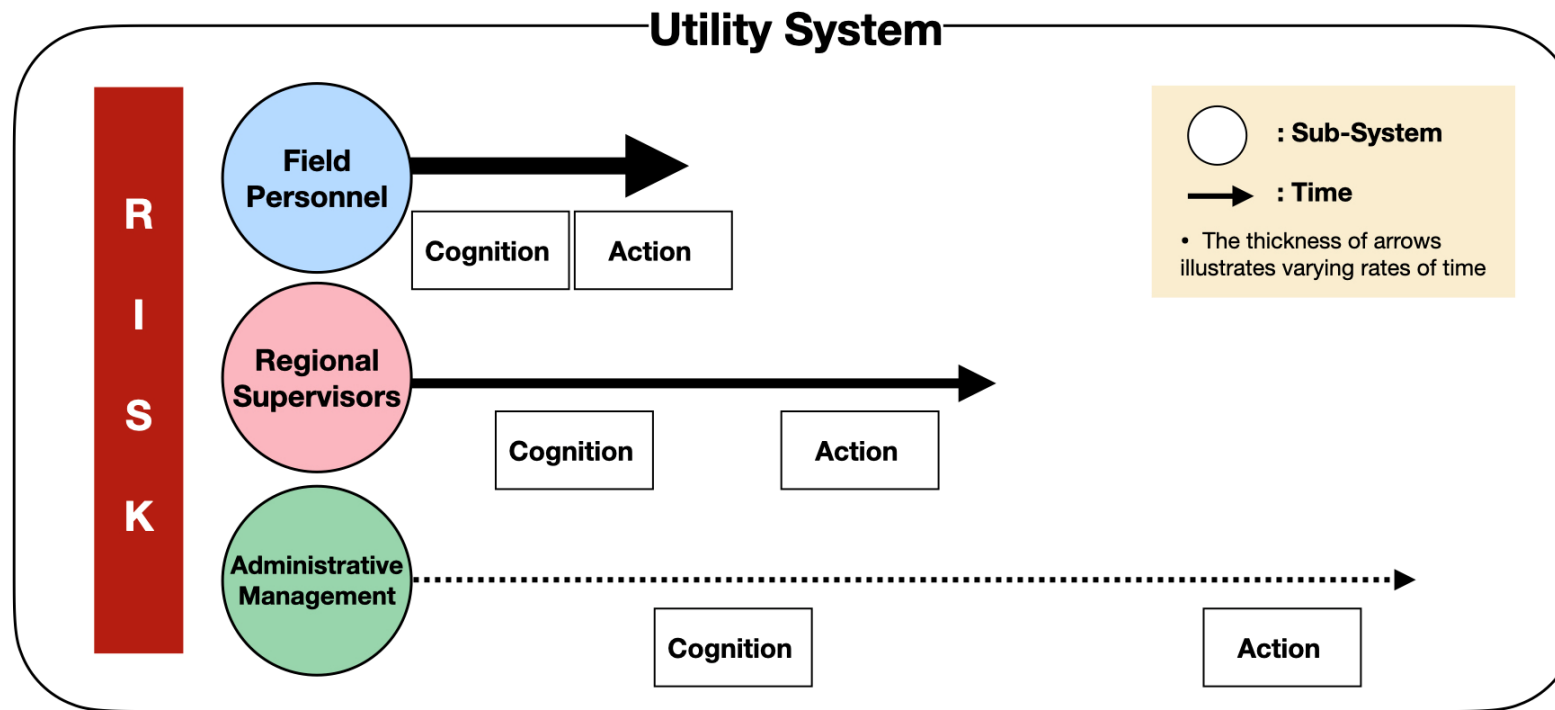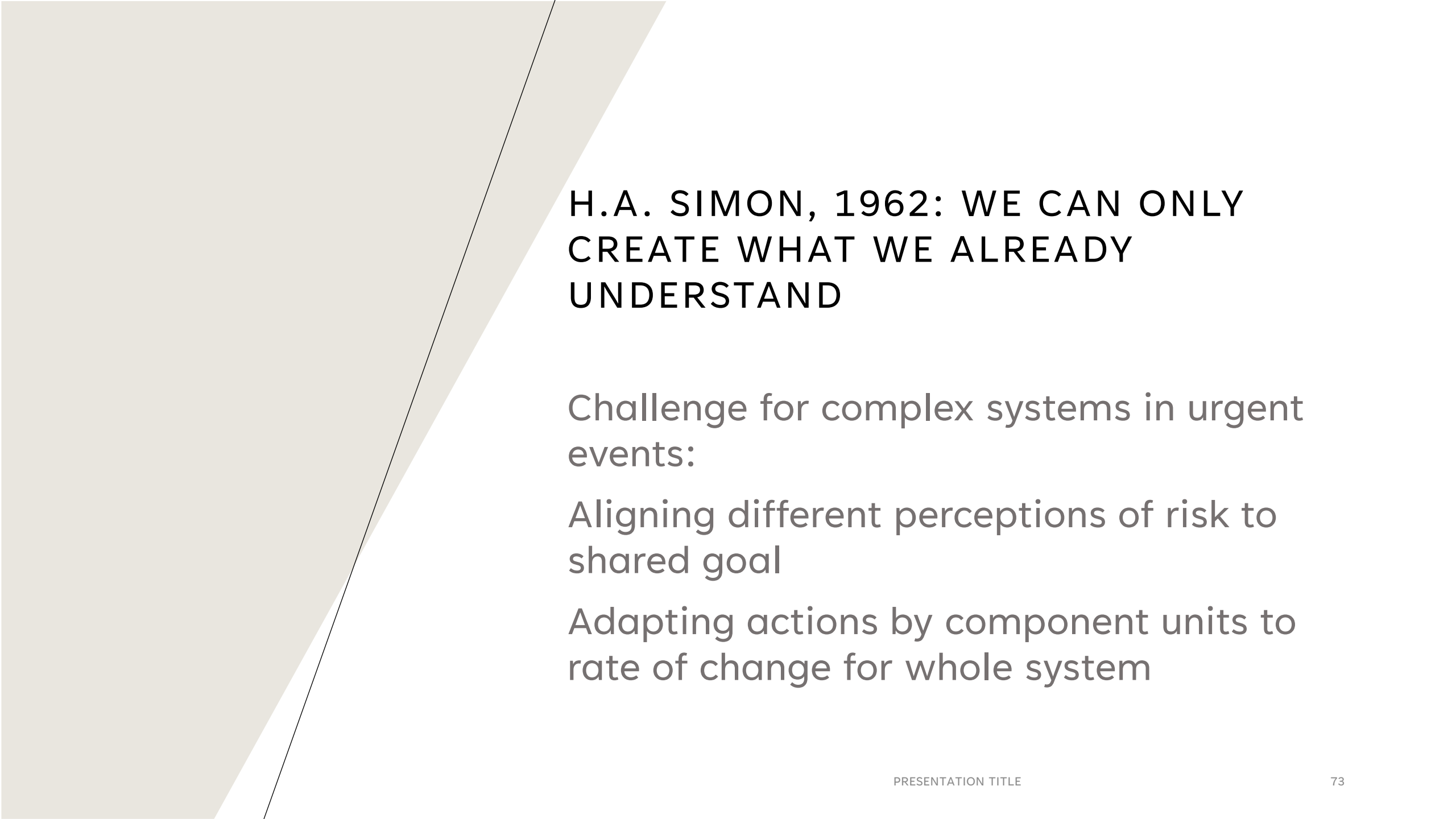- In complex adaptive systems, time is perceived differently in different contexts

Figure by Sae Mi Chang

H.A. SIMON, 1962: WE CAN ONLY CREATE WHAT WE ALREADY UNDERSTAND

Challenge for complex systems in urgent events:

Aligning different perceptions of risk to shared goal

Adapting actions by component units to rate of change for whole system

HOW WE GET THERE

Build on existing networks

Identify existing patterns, means of communication within system

Connect with experienced managers at each level within system

Focus on responsibilities in wildfire to underscore dynamic network

Link service responsibilities in wildfire to routine agency training

Add relevant external actors to extend operational system when needed

Create an adaptive network that can expand, contract in actual wildfire

Update data collection processes

Request regular performance updates from system units

Resources: lists of equipment, personnel, information systems,

Risks: list of known hazards, locations, # of people, facilities at risk; rate of change in risk conditions

Identify discrepancies, missing links

Verify data with on-site visits, conversations with team leads

Monitor flow of information as network expands

Working collaboratively, using GIS technologies, display system risks and resources on local maps

Schedule meetings with mid-level personnel to review, evaluate maps of risks, resources for whole system

Make recommended corrections, adaptations to fit system goal

Set schedule for regular updates, include review in training exercises

Build coherent capacity as a system

RESULTS

Benefits

Update comprehensive GIS database of risks and resources for wildfire mitigation that directly benefits utilities, communities they serve

Use visual modeling to convey risk among utility personnel; enhance collaborative relationships among units within utility as a system

Demonstrate mode of risk assessment, learning, performance adaptation that increases capacity for collective action in uncertain contexts

Increase coherence for utility systems operating in uncertain, dynamic, complex wildfire contexts

Costs

Initial cost of system-wide performance review may be supplemented by in-kind services as part of regular learning exercises

Program is subject to flux of ongoing change; values, skills need to be re-learned day by day

Sustainability of safety program requires time, attention, investment, evaluation at all levels of operation on regular basis over time

Failures will happen, but can be turned into opportunities for enhanced system-wide learning

SUMMARY

A safety culture is recreated day by day

In complex systems, different units learn at different rates of time; minimize difference among units

Aligning perceptions of risk among varying units is critical to coherent action in dynamic contexts

Flow of information through complex systems shapes capacity for sustainable adaptation, action

A safety culture integrates structure with flexibility to adapt to unexpected conditions

THANK YOU!

References:

Comfort, L.K., K. Soga, M. McElwee, C. Ecosse, B. Zhao. 2021. Collective Action in Communities Exposed to Recurring Hazards: The Camp Fire, Butte County, California, November 8, 2018. *Int'l Jrnl of Advanced Science, Engineering, and Information Technology,* Vol.11, No. 4. ISSN: 2088-5334..*17 February.*

Comfort, L.K. *2007.* Crisis Management in Hindsight: Cognition, Communication, Coordination, and Control. *Public Administration Review.* Special Issue: 189-197.

Other references are available on request. E-mail: lcomfort@berkeley.edu

Break

California Wildfire Safety Advisory Board

WE ARE BACK!

4 – Discussion and scheduling of activities for 2023

a. Discussion of P.U.C. §8389-mandated activities

b. Discussion of approach to policy papers on existing and emerging policy topics

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Advisory Board

Discussion of P.U.C. §8389-mandated activities

P.U.C. §8389.b sets a June 30 annual deadline for:

1) Appropriate performance metrics and processes for determining an electrical corporation's compliance with its approved wildfire mitigation plan.

2) Appropriate requirements in addition to the requirements set forth in Section 8386 for the wildfire mitigation plan.

3) The appropriate scope and process for assessing the safety culture of an electrical corporation.

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Discussion of Initial Recommendations for WMPs

1. Developing metrics to measure the effectiveness of IOU community outreach that determine the success of each outreach effort;

2. Coordination with communities -- has this been achieved? How do the guidelines reflect this?

3. Accessibility of WMP information to the general public.

4. Additional thoughts

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Options for of P.U.C. §8389-mandated activities

- **Format –**
  - **Long report format (20-50 pages) (current format)**

  - **Presentation to Energy Safety**

  - **Short report with matrix of recommendations**

No.	Recommendation	Justification
1	Recommendation W	Justification X
2	Recommendation Y	Justification Z

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Policy Papers for Emerging Topics

- **Format –**
  - 1-2 pages, describes challenge, existing literature, propositions, and recommended courses of action for Energy Safety/State of CA

- **Potential Topics –**
  - Enhanced vegetation management
  - Alternative approaches to system hardening
  - Accelerating wildfire mitigation workforce training

- **Goals –**
  - Complete 2-3 papers in 2023
  - Host workshops with discussions from experts on these topics

California Wildfire Safety
Advisory Board

Recess into Closed Session

California Wildfire Safety Advisory Board

6 - Adjourn Board Meeting

- **For more information:**

- **Website:**
  www.energysafety.ca.gov/wsab

- **Email: WSAB@energysafety.ca.gov**

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