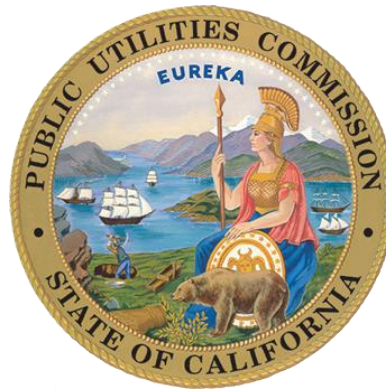




# California Public Utilities Commission Committee on Finance and Administration



Strategic Directive 02 -- Safety

May 29, 2019

Lee Palmer, Deputy Director SED



# Strategic Directive 02 -- Safety

The CPUC secures health and safety with a goal of achieving zero accidents and injuries across all the entities it regulates, and within the CPUC workplace.

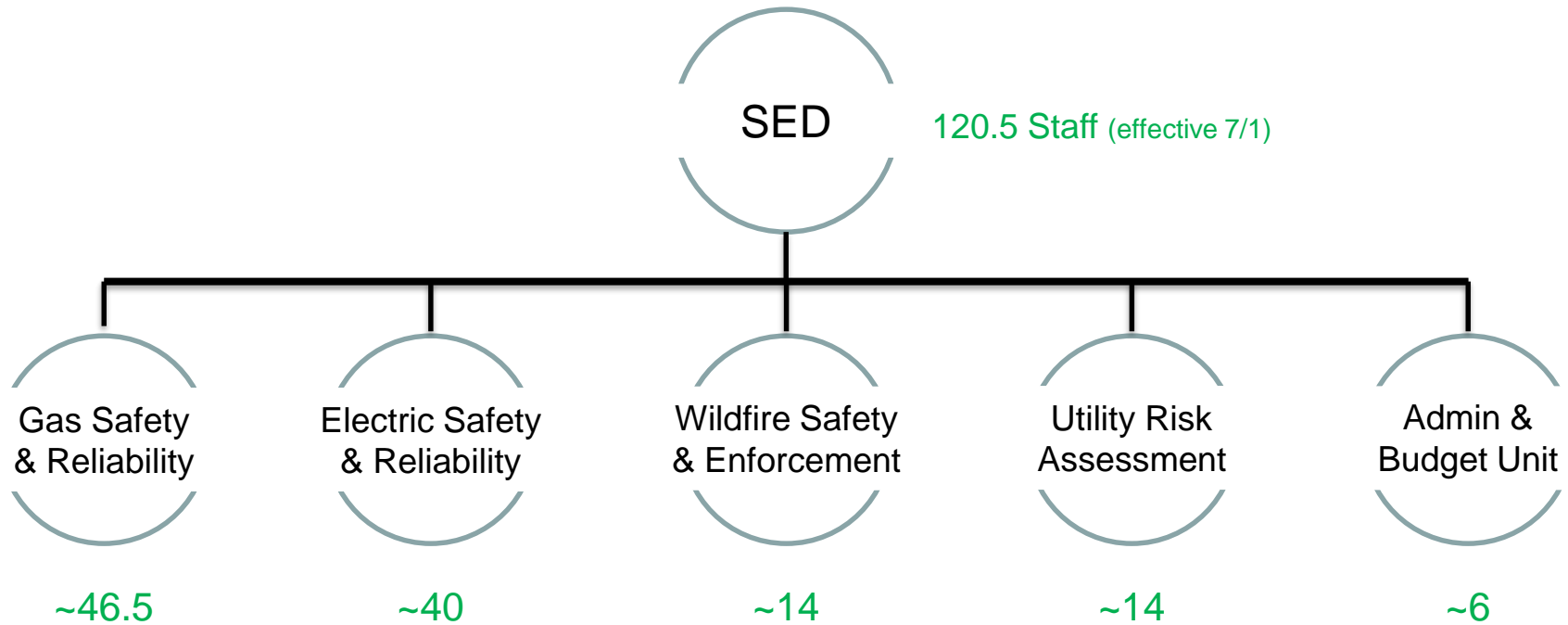
Within its jurisdictional authority, the CPUC will focus on an organization-wide systematic approach to safety that:

1. Continuously improves the safety culture within the entities the CPUC regulates through:
  - a. **Risk Management:** Continually identifying, assessing, and mitigating or eliminating the safety risks faced or posed by the entities the CPUC regulates;
  - b. **Safety Quality Improvement:** Continuously improving safety oversight and outcomes and learning from experience—including near misses, incidents and investigations, audit proceedings, consumer feedback and complaints;
  - c. **Safety Assurance:** Assuring that the entities the CPUC regulates comply with the law and have sufficient training and resources to ensure the safety of the public, their workers, and the environment;
  - d. **Safety Promotion:** Supporting efforts to assure that the public and CPUC- regulated entities, including their workers and customers, are able to make informed choices and know how to respond to unsafe situations.
2. Ensures that CPUC employees and contractors work safely by developing an effective safety management system.





# Safety and Enforcement Division Overview



## Mission

The CPUC's Safety and Enforcement Division (SED) works diligently to ensure that regulated services are delivered in a safe and reliable manner.





# Safety Culture Maturity Model\*



\*SCE's RAMP filing (p.3-2), November 15, 2018





# Strategic Directive 02 -- Safety

- 1) Continuously improves the safety culture within the entities the CPUC regulates through:
  - Risk Management;
  - Safety Quality Improvement;
  - Safety Assurance; and
  - Safety Promotion.

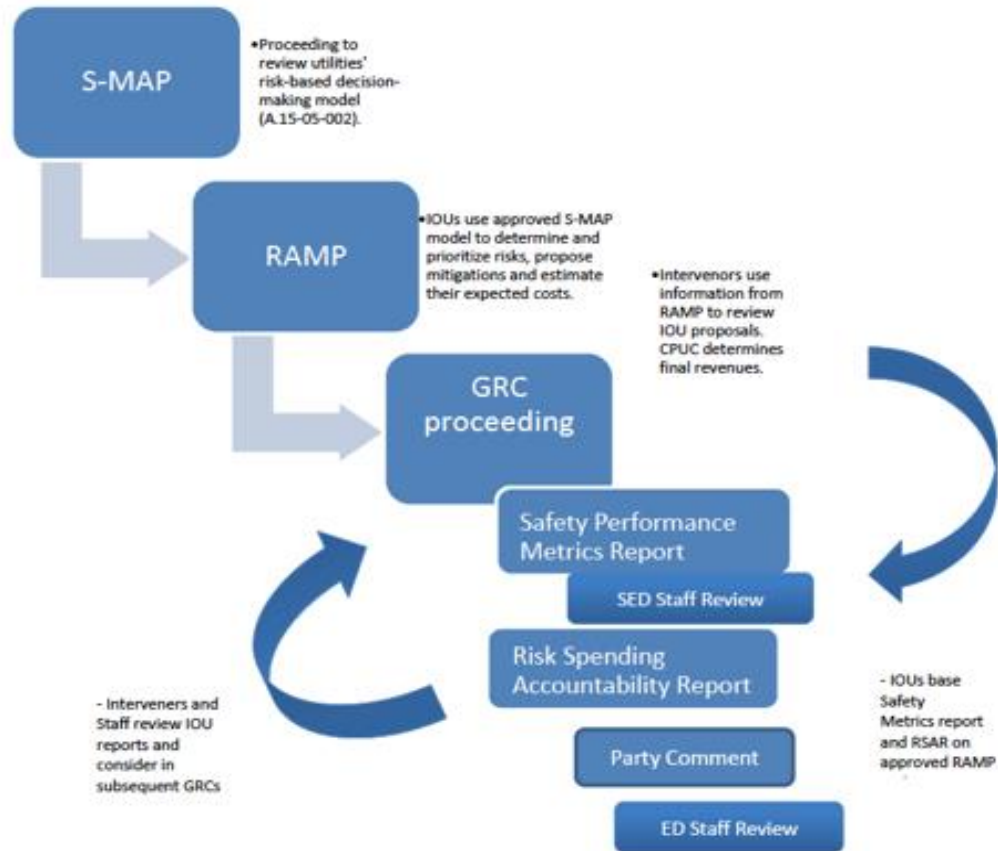
2) Ensures that CPUC employees and contractors work safely by developing an effective safety management system.





# Risk Management

Figure 1: S-MAP - RAMP - RSAR - Safety Performance Metrics Cycle





# Managing Cybersecurity Risk

- Threat of a cyberattack is identified as a top utility risk
  - Using a risk management approach, the utilities identify the magnitude of cybersecurity risk and calculate a risk spend efficiency to quantify the effectiveness of proposed mitigation plans.
  - For example, SCE’s RAMP 2018 filing proposes funding to address cyber security threats across five mitigation measures with associated risk impacts. (The table below is from SED’s report on SCE’s RAMP.)

**Table Twelve: SCE Proposed Cybersecurity Mitigation**

ID	Name	Implementation Period		Cost Estimates (\$M)		Expected Value (MARS)		Tail Average (MARS)	
		Start Year	End Year	Capital	O&M	MRR	RSE	MRR	RSE
<b>Cyberattack</b>									
C1:	Perimeter Defense	2018	2023	\$81	\$35	1.51	0.013	9.13	0.079
C2:	Interior Defense	2018	2023	\$48	\$24	0.91	0.013	5.83	0.082
C3:	Data Protection	2018	2023	\$31	\$17	0.02	0	0.03	0.001
C4:	SCADA Cybersecurity	2018	2023	\$20	\$20	0.46	0.012	3.04	0.077
C5:	Grid Modernization Cybersecurity	2018	2023	\$169	\$34	1.41	0.007	9.28	0.046
<b>TOTAL</b>				<b>\$348</b>	<b>\$129</b>	<b>4.31</b>	<b>0.009</b>	<b>27.32</b>	<b>0.057</b>

- IOUs have partnered with local law enforcement, state and federal authorities with a cyber nexus, conducted cyber exercises, and conducted third-party assessments of security protocols
- Commission staff conducted site visits to ensure IOUs are assessing and enforcing cybersecurity practices that address known and foreseeable risks
- Ongoing coordination with IOUs to allow information sharing without creating new vulnerabilities by exposing the cybersecurity protections of utility infrastructure





# Safety Quality Improvement

Commissioners requested the following statistics as a metric of the safety culture of the IOUs:

## ➤ Gas

- Number of leaks
- Percentage of lines inspected
- Number of dig ins [or % of dig-ins per underground service alert tags?]
- Significant injuries & fatalities – for contractors, employees, public
- Reportable incidents
- Backlog: Percentage of inspections & preventative maintenance work orders completed according to schedule

## ➤ Electric

- Reportable electric incident caused by overhead conductor, connector, and splice failures
- Reportable electric incidents caused by underground cable, connector, and splice failures
- Reportable electric incidents caused by pole, tower, and transformer failures
- Reportable electric incidents caused by vegetation contacting overhead conductor
- Number of fires by cause for three large IOUs in the last five years
- Fatalities and significant injuries of utility employees, contractors, and third parties as a result of reportable electric incidents
- Reportable electric incidents by major causes in the last three years
- Reportable electric incidents by levels in the last three years







# Safety Quality Improvement

## Gas Safety Quality Metrics: Gas Leaks

### Number of leaks: 2017

Transmission Leaks Eliminated / Repaired in 2017	Known transmission leaks at the end of 2017 schedule for repair	Distribution Leaks Eliminated / Repaired in 2017	Known distribution leaks at the end of 2017 scheduled for repair
236	123	63,146	10,515

### Number of leaks: 2018

Transmission Leaks Eliminated / Repaired in 2018	Known transmission leaks at the end of 2018 schedule for repair	Distribution Leaks Eliminated / Repaired in 2018	Known distribution leaks at the end of 2018 scheduled for repair
306	89	70,038	10,405

**Source:** Operator annual reports filed at PHMSA





# Safety Quality Improvement

## Gas Safety Quality Metrics: Inspections

Leak Surveys and Cathodic Protection (CP) surveys

Inspection	2017 miles	2017 coverage	2018 miles	2018 coverage
Transmission Leak & CP Surveys	10,400	100%	10,490	100%
Distribution CP* (steel pipelines)	200,466	100%	201,410	100%
Distribution Leak	200,466	100% **	200,410	100%**

\* Cathodic Protection (CP) surveys assess corrosion protection

\*\* By law the Distribution Survey frequency required is every 5 years. So 100% represents 100% of the annual obligation which is 20% of the total. *Note*, Distribution leak survey frequency will increase in the future for gas leak abatement (SB 1371).





# Safety Quality Improvement

## Safety Quality Metrics: Gas

Significant injuries & fatalities – for contractors, employees, public

Year	Significant Injuries	Fatalities
2017	4	2
2018	2	0

Number of dig ins

Year	Number of damages per 1,000 locates
2017	2.99
2018	2.82





# Safety Quality Improvement

## Gas Safety Quality Metrics: Reportable Incidents

Year	Level 1	Level 2	Level 3	Level 4	Total
2017	175	110	11	7	303
2018	156	64	6	4	230

Level 1: The incident did not result in injury, fatality, fire or explosion.

Level 2: The incident did not result in injury, fatality, fire or explosion; may have been reported due to Operator judgement.

Level 3: The incident resulted in the release of gas but did not result in injury, fatality, fire or explosion.

Level 4: The incident resulted in injury, fatality, fire or explosion caused by release of natural gas from the Operator's facilities.





# Safety Quality Improvement

## Gas Safety Quality Metrics: Backlog

Backlog is the percentage of inspections and preventative maintenance work orders completed to according to schedule

### % of Inspections & Preventative Maintenance Completed to Schedule

	2017	2018
<b>PG&amp;E</b>	91.75%	94.10%
<b>SWG</b>	99.88%	99.95%
<b>SDG&amp;E</b>	99.88%	100%
<b>SoCal Gas</b>	99.76%	100%





## Number of Electric Incidents by Cause and Year\*

Cause of Incident	2017	2018	2019**	Total
Overhead Conductor, Connector, Splice Failures	10	6	2	18
Pole/Tower Failure	3	1	0	4
Third Party	7	9	1	17
Transformer Failure	2	5	1	8
Tree Trimmer	3	6	2	11
Underground Conductor, Connector, Splice Failures	4	3	0	7
Utility Contractor	2	6	0	8
Utility Working Overhead	7	2	0	9
Utility Working Underground	0	1	0	1
Vegetation	27	7	4	38
Other	61	68	7	142
<b>Total</b>	<b>126</b>	<b>114</b>	<b>17</b>	<b>263</b>

\* Source: ESRB's database which tracks all reportable electric incidents

\*\* January through April







## Fatalities and Injuries Caused by Electric Incidents by Year

Year	Fatalities*	Injuries*
2016	19	23
2017	12	28
2018	17	51

## All Electric Incidents by Level and Year

Level	2016	2017	2018	Total
4	32	37	54	123
3	29	54	29	112
2	23	25	19	67
1	15	10	12	37
<b>Total</b>	99	126	114	339

\*Excludes fatalities and injuries associated with pending investigations.

Note: Statistics are based on electric incidents that are reportable to ESRB as defined with different levels below.

**Level 4:** Incident resulted in a fatality or injury requiring hospitalization and that was caused, at least in part, by the utility or its facilities

**Level 3:** Incident involved damage estimated to exceed \$50,000 and caused, at least in part, by the utility or its facilities

**Level 2:** Incident involved a power interruption not due solely to outside forces

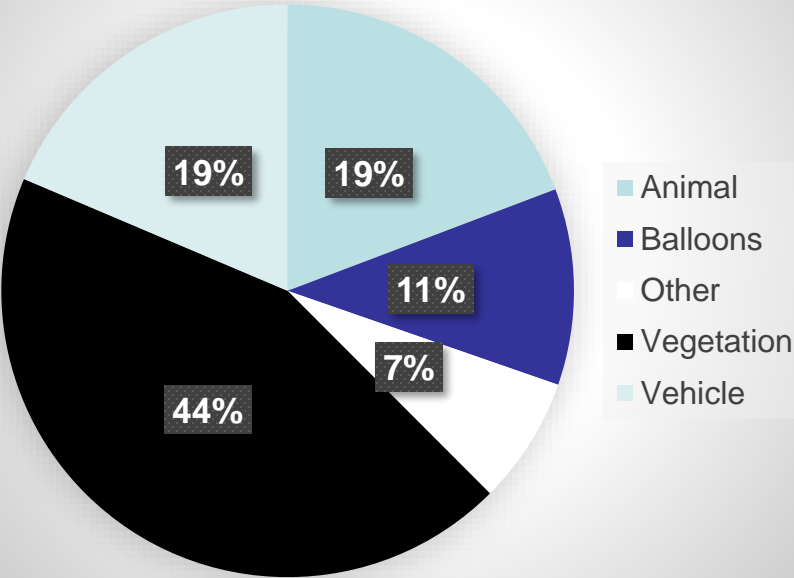
**Level 1:** A safety incident that doesn't meet Level 2, 3, or 4 criteria.





# Number of Fires\* from 2014 through 2018

Fires Suspected to be Ignited from Object Contact - Listed by Object Type



Year	PG&E	SCE	SDG&E
2014	254	36	30
2015	435	107	32
2016	362	96	30
2017	501	105	23
2018	434	109	26
<b>Total</b>	<b>1986</b>	<b>453</b>	<b>141</b>

Contact Object	PG&E	SCE	SDG&E	Total
Animal	227	45	9	281
Balloons	66	77	19	162
Other	51	17	37	105
Vegetation	556	63	22	641
Vehicle	206	39	27	272
<b>Total</b>	<b>1106</b>	<b>241</b>	<b>114</b>	<b>1461</b>

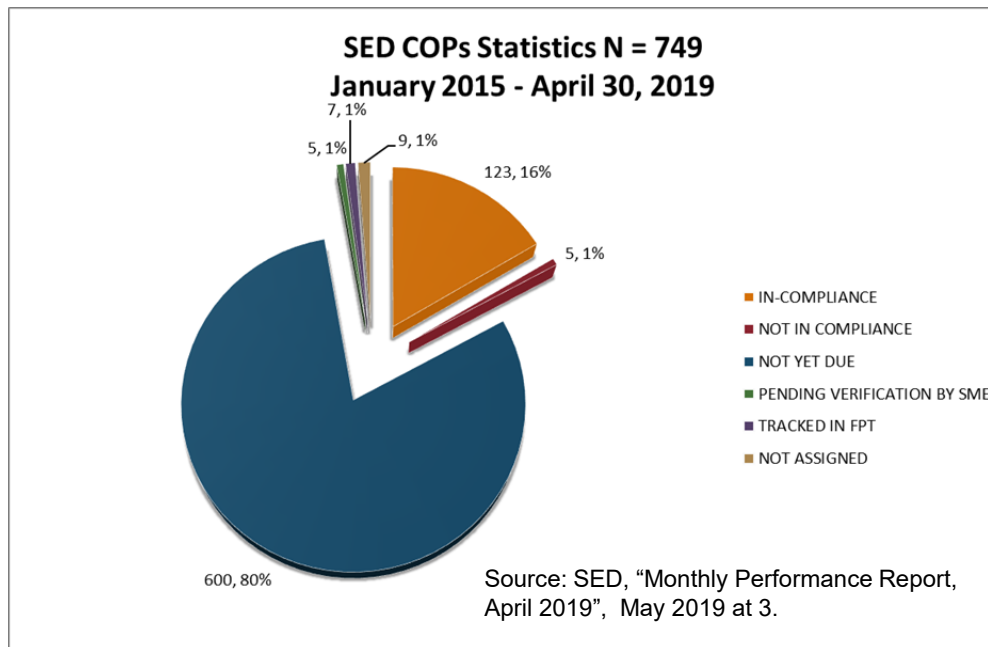
\* Based on Fire Incident Data collected from IOUs that contains all fires greater than one linear meter



# Safety Quality Improvement

## Compliance with Ordering Paragraphs

- Through April 30, 2019, SED shows 749 total entries in the COPS system; with 123 reaching compliance (16%), 600 (80%) not yet due for compliance, and 5 (1%) currently remaining out of compliance. As of today, only 1 item remains out Compliance and is in the process of being addressed.
- 739 (99%) of all Ordering Paragraphs are assigned to members of staff.

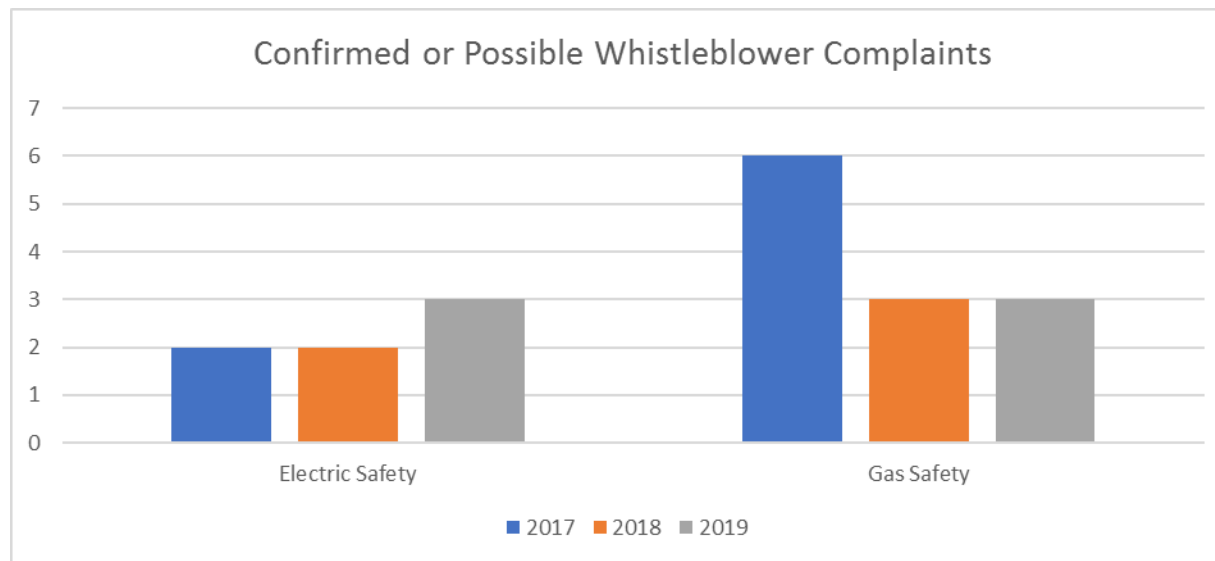




# Safety Quality Improvement

## Monitoring the Whistleblower Website

- The Risk Section has been overseeing intake for complaints that arrive via a “whistleblower” application on the Commission’s web site.
- Whistleblower protections are afforded to utility employees and contractors who report potentially unsafe or illegal practices.





# Safety Assurance

**Safety Assurance: Assuring that the entities the CPUC regulates comply with the law and have sufficient training and resources to ensure the safety of the public, their workers, and the environment.**

- **ESRB assures safety training enhancements from incidents:**
  - **Subcontractor fatality in a SCE underground vault in Huntington Beach:** In I.15-11-006, SCE agreed to implement agreed-upon enhancements to its safety program for contractors and subcontractors.
  - **Subcontractor fatality at PG&E Kern Generating Plant:** In I.14-08-022, PG&E agreed to implement an agreed-upon enterprise-wide contractor safety program and an agreed-upon enterprise causal evaluation standard.
- **GSRB inspects / audits Gas Utilities' Qualification programs for compliance with § 192.805 Qualification program:**
  - 2016 Operator Qualification Program inspection performed on SWG, SoCal Gas, & SDG&E
  - 2015 Operator Qualification Program inspection performed on PG&E, SWG, & SoCal Gas / SDG&E





# Safety Assurance

**Safety Culture Oil** – From SED/NorthStar Consulting safety culture evaluation includes recommendations for training; D.18-11-050 directed PG&E to implement recommendations in the Northstar Report by July 1, 2019

2. **Profile training participants so that field-oriented personnel get safety training ahead of office-based employees.**
  
4. **Conduct mandatory refresher training for Electric T&D, Gas Operations and Power Generation field resources on fundamental safety-related topics such as confined space, safety at heights and PPE.**
  
6. **Develop a monthly Operator Qualification (OQ) status report for the Senior Vice President of Gas Operations and the President of Gas Operations. Include such information as number and type of examinations conducted, pass fail rates, number of qualifications expiring (in 90, 60, 30 and 5-days), the number of OQ scans conducted and the results.**
  
7. **Conduct a review of 2014 OQs to determine if contract employees were working on PG&Es system with other expired OQs. Conduct additional re-inspections as necessary.**







# Safety Promotion

Supporting efforts to assure that the public and CPUC-regulated entities, including their workers and customers, are able to make informed choices and know how to respond to unsafe situations.



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# Strategic Directive 02 -- Safety

1) Continuously improves the safety culture within the entities the CPUC regulates through: Risk Management; Safety Quality Improvement; Safety Assurance; and Safety Promotion

2) Ensures that CPUC employees and contractors work safely by developing an effective safety management system.





# Ensure Employees and Contractors Work Safely

## The Four SMS Components

### Safety Policy

Establishes senior management's commitment to continually improve safety; defines the methods, processes, and organizational structure needed to meet safety goals

### Safety Assurance

Evaluates the continued effectiveness of implemented risk control strategies; supports the identification of new hazards

### Safety Risk Management

Determines the need for, and adequacy of, new or revised risk controls based on the assessment of acceptable risk

### Safety Promotion

Includes training, communication, and other actions to create a positive safety culture within all levels of the workforce



**Safety Policy:** SED published Safety Field Guide Procedures Manual.

**Safety Risk Management:** Guide identifies the need for safety guidance in accordance with industry standards.

**Safety Assurance:** Guide is reviewed annually to validate relevancy.

**Safety Promotion:** Procedures are incorporated with the on-boarding process and “all-hands” meetings at the branch level.





# Ensure Employees and Contractors Work Safely

## SED Workplace Injuries

Calendar Year	North SED	South SED
2018	3 Injuries	2 Injuries
2019	1 Injury	0 Injuries





# Compliance with Strategic Directive 02—Safety

SED staff believe the organization is in compliance with SD-02 and acknowledges that further analysis and actions must be taken to maintain compliance.





**Questions?**







# Backup Slides





# Risk Management

**SCE Top RAMP Risks:** Building Safety, Contact with Energized Equipment, Cyber Attack, Employee, Contractor & Public Safety, Hydro Asset Safety, Physical Security, Wildfire, Underground Equipment Failure, Climate Change

- SED workshop on SCE's RAMP in I.18-11-006 will be on May 29, 2019

**PG&E Top RAMP Risks:** Overhead Conductors-Distribution, Climate Resilience, Maintaining Gas System Pressure, Employee Safety, Wildfire, Insider Threats, Overhead Conductors-Transmission, Motor Vehicles, Distribution Non-Cross Bore, Contractor Safety, Cyber Attack, Hydro Dams

- PG&E's RAMP I.17-11-003, Workshop conducted April 17, 2018

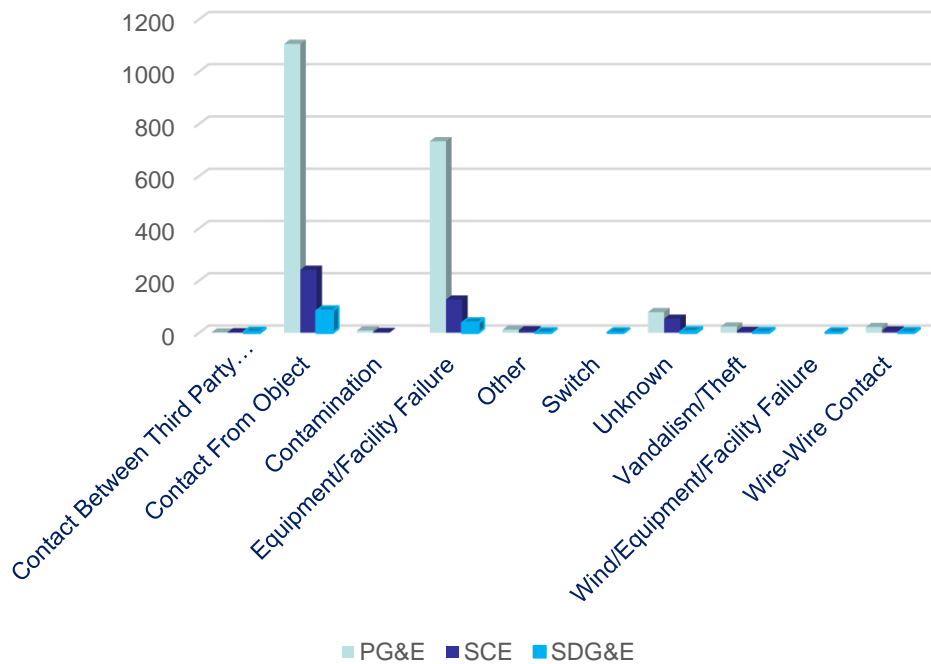
**SEMPRA Top RAMP Risks:** Third Party Dig-ins, Wildfire, Employee/Contractor Safety, Cyber Security, High Pressure Pipelines, Active Shooter, Physical Security, DER Operations, Workforce Planning

- Sempra's previous RAMP adopted on April 26, 2018, in D.18-04-016
- Sempra's 2019 Preliminary RAMP Workshop was held March 5, 2019





# Fire Ignitions by Suspected Initiating Event 2014-2018



Cause	PG&E	SCE	SDG&E
Contact Between Third Party Facility on Pole and Supply Lines	1	2	3
Contact From Object	1106	241	85
Contamination	9	3	0
Equipment/Facility Failure	733	127	39
Other	12	10	1
Switch	79	54	5
Unknown	24	7	2
Vandalism/Theft	22	9	2
Wind/Equipment/Facility Failure	1	0	0
Wire-Wire Contact	0	0	0





# Safety Assurance

- **GSRB inspects/audits Gas Utilities' Qualification programs for compliance:**
- **§ 192.805 Qualification program.**
  - “Each operator shall have and follow a written qualification program. The program shall include provisions to:
    - **(a)** Identify covered tasks;
    - **(b)** Ensure through evaluation that individuals performing covered tasks are qualified;
    - **(c)** Allow individuals that are not qualified pursuant to this subpart to perform a covered task if directed and observed by an individual that is qualified;
    - **(d)** Evaluate an individual if the operator has reason to believe that the individual's performance of a covered task contributed to an incident as defined in Part 191;
    - **(e)** Evaluate an individual if the operator has reason to believe that the individual is no longer qualified to perform a covered task;
    - **(f)** Communicate changes that affect covered tasks to individuals performing those covered tasks;
    - **(g)** Identify those covered tasks and the intervals at which evaluation of the individual's qualifications is needed;
    - **(h)** After December 16, 2004, provide training, as appropriate, to ensure that individuals performing covered tasks have the necessary knowledge and skills to perform the tasks in a manner that ensures the safe operation of pipeline facilities; and
    - **(i)** notifications to the Administrator or a state agency participating under [49 U.S.C. Chapter 601](#) if the operator significantly modifies the program..”.

