



PSEMS/ SIF CAPACITY & LEARNING

Playbook

ENTERPRISE CONTRACTOR SAFETY





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INTRODUCTION

LEADERSHIP COMMITMENT

"Everyone and Everything is always safe."

This commitment requires having a serious injury and fatality (SIF) prevention strategy that accounts for the realities of our work, including the fact that error is normal. Being human means we will never be able to eliminate accidents. Even our most experienced people will make mistakes.

PG&E's *SIF Capacity & Learning Model* aligns with leading industry partners and no longer sets unrealistic expectations and pressures on our frontline coworkers and contract workers that all accidents can and must be prevented. Instead, we have redefined safety to be measured by the presence of controls that provide workers the capacity to experience failures safely.

This change means we want to plan and execute work as if failure will happen today. **It is not a matter of if, but when** an accident occurs, we want to ensure all life-threatening, high-energy hazards have adequate controls in place that will provide coworkers and contract workers the capacity to recover safely.

Prevention will always be important, but no one is perfect. No matter how much we try to prevent failure, failure will happen. Building capacity with the presence of essential controls is how we will ensure that when an accident occurs, everyone and everything is Safe.

LEADERSHIP ENGAGEMENT

This playbook establishes the expectations and objectives of our SIF prevention strategy so that you may personally direct the process for continuous improvement, visibly demonstrate involvement and commitment, and engage with your workgroups. It directly aligns with the **PG&E Safety Excellence Management System (PSMES)** and explains in detail this very important relationship. As a leader, you are responsible for shaping our safety culture, and instilling this life-saving SIF prevention model within our operations is how we will eliminate workplace fatalities.

Thank you for putting safety first in all that you do.



Matt Hayes

Vice President, Enterprise Health and Safety
Chief Safety Officer



Jack Suehiro

Director, Enterprise Contractor Safety
Enterprise Health and Safety

PG&E SAFETY EXCELLENCE



INTRODUCING PSEMS

The most important tool to manage success and failure in an organization is understanding and controlling the context in which workers conduct work (**HOP Principle: *Context Influences Decisions – Systems Drive Outcomes***).

A good safety management system will help manage uncertain operational outcomes that can cause a serious injury or fatality. Plans, processes, and procedures are all part of the overall operational context that influences decisions and drives safety outcomes.

The key to success is managing context on purpose, this will drive desired outcomes and ensure PG&E's stands that **Everyone and Everything is Always Safe**.

Following international best practice, **PG&E Safety Excellence Management Systems (PSEMS)** is designed in alignment with the **International Standard Organization 45001 and 55001** and **American Petroleum Institute Recommended Practice 1173** standards.

PSEMS is the systematic management of our processes, assets and occupational health and safety to prevent injury and illness.

The PSEMS framework is the 13 elements that establish governance and operational requirements for how we operate our business to generate and deliver safe, reliable, affordable, and clean energy for our customers and hometowns. We will achieve industry-leading safety performance through the disciplined application of PSEMS.

The following 13 PSEMS elements encompass our requirements around safety that all workers shall follow to keep us safe:

- 1 Leadership Commitment and Engagement
- 2 Communications and Stakeholder Engagement
- 3 Risk Management
- 4 Strategy, Objectives and Planning
- 5 Operational Control
- 6 Training and Competence
- 7 Emergency Preparedness and Response
- 8 Incident Reporting, Investigation and Corrective Action
- 9 Contracted Services and Purchased Goods
- 10 Management of Change
- 11 Information, Documentation and Records Management
- 12 Performance Evaluation and Improvement
- 13 Assurance



THE 13 PSEMS ELEMENTS

The 13 PSEMS Elements are not unique to PG&E. In California every employer is required by law (Labor Code Section) to provide a safe and healthful workplace for his/her employees.

Title 8 (T8), of the California Code of Regulations (CCR), requires every California employer to have an effective Injury and Illness Prevention Program in writing that must be in accord with T8 CCR Section 3203 (www.dir.ca.gov/Title8/3203.html) of the General Industry Safety Orders.

The 13 PSEMS Elements are designed in alignment with Cal / OSHA's Injury and Illness Prevention Program requirements, the International Organization for Standardization 45001 and 55001 and American Petroleum Institute Recommended Practice 1173 standards.

THE 13 PSEMS ELEMENTS

1 - LEADERSHIP COMMITMENT AND WORKFORCE ENGAGEMENT:

Leaders establish expectations and objectives, personally direct the process for continuous improvement, visibly demonstrate involvement and commitment and engage coworkers and contractors to build a strong safety culture.

2 - COMMUNICATION AND STAKEHOLDER ENGAGEMENT:

Relationships with internal and external stakeholders are established and maintained through continuous and deliberate formal/informal communications and other activities. The needs and expectations of stakeholders, including linkage to legal requirements, are understood through ongoing and deliberate communications and engagement.

3 - RISK MANAGEMENT:

Risks are identified and evaluated using a defined process that includes associated hazards and consequences and the safeguards to prevent or mitigate the identified risks. A risk profile to prioritize risk reduction and assurance programs is maintained that considers the expectations of stakeholders. Lifecycle risks are evaluated, and risk reduction is achieved.

4 - STRATEGY, OBJECTIVES AND PLANNING:

Planning includes consideration of the financial, human and technology resources needed to realize the intent of the Safety Excellence Policy and objectives of PSEMS. It also considers relevant internal and external factors that affect PG&E's ability to achieve the desired outcomes established by PSEMS. The needs and expectations of all stakeholders are actioned, and resources needed for effective implementation of PSEMS are provided.

5 - OPERATIONAL CONTROL:

Hazards and risks are identified and associated work and work-related activities and processes are planned, controlled, resourced, supported, and adapted to the worker. Processes, procedures, programs, and tools are continually evaluated for improvement to reduce reliance on safeguards that require human intervention or action.

6 - TRAINING AND COMPETENCE:

Training provides the knowledge, skills, and abilities for personnel to perform their jobs proficiently. This element ensures that people are selected and placed into roles consistent with their abilities and job requirements, people are

trained to achieve and maintain competency, collective competency is maintained over time and human performance principles are applied to enable proficient work performance.

7 - EMERGENCY PREPAREDNESS AND RESPONSE (EP&R):

Emergency management plans and response capabilities exist to protect people, respond to emergencies, and communicate with stakeholders. EP&R plans identify procedures, processes, equipment, training, and personnel necessary for effective response to foreseeable emergency scenarios, non-routine tasks, and other crises.

8 - INCIDENT REPORTING, INVESTIGATION AND CORRECTIVE ACTION:

Incidents and near-hits are identified, reported, recorded, effectively investigated, and communicated. Learning from incidents occurs and drives corrective actions, mitigation and prevention of recurrence and ensures continuous improvement. A corrective action program is established for the management of corrective, preventive, and improvement actions.

9 - CONTRACTED SERVICES AND PURCHASED GOODS:

Contracted service providers' performance is improved through mandatory conformance to PG&E and regulatory safety requirements when providing services for PG&E on or off company property.

10 - MANAGEMENT OF CHANGE:

Changes to system, process or people could introduce risk and have unintended consequences. Management of Change (MOC) is a process that systematically identifies, evaluates, and manages changes to facilities, equipment, operations, procedures, and the organization by ensuring that unacceptable risks are not introduced into the business. Video on Management of Change.

11 - INFORMATION, DOCUMENTATION AND RECORDS MANAGEMENT:

The organization must ensure consistency and traceability in documents, procedures, records, and technical and other relevant non-financial data required to meet legal, regulatory, internal and stakeholder requirements and company objectives. Information should be current, accessible, traceable, and clear and comply with retention and security requirements.

12 - PERFORMANCE EVALUATION AND IMPROVEMENT:

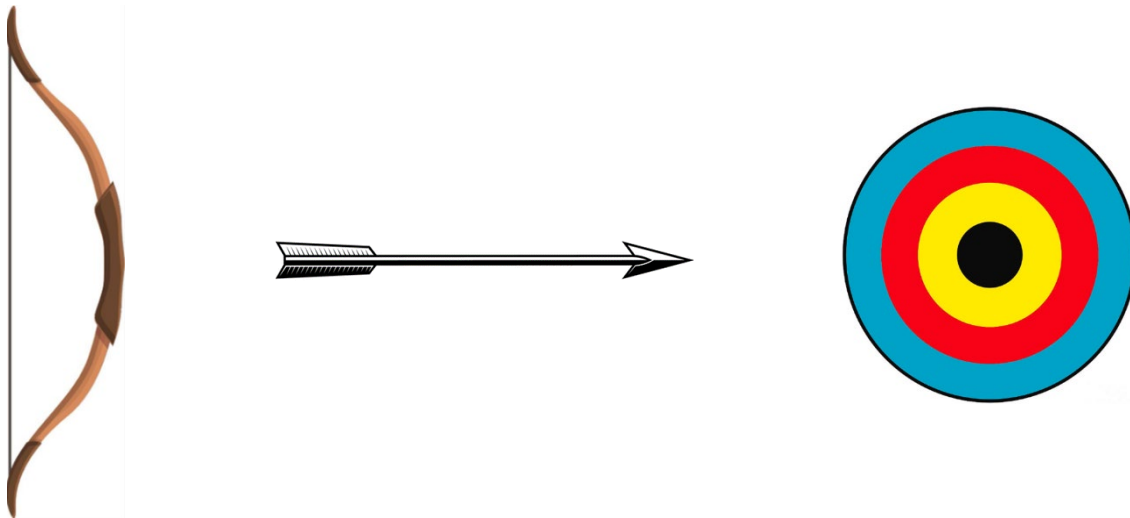
Evaluation of PSEMS performance is a systematic, planned approach used to drive continuous progress toward world-class safety excellence performance. It is an iterative approach to effectively integrate safety objectives, plans, requirements, and activities into daily operations through the lean operating model. Performance evaluation includes review of leading and lagging performance indicators and use of the Plan-Do-Check-Act (PDCA) cycle to drive improvement across the Enterprise.

13 - ASSURANCE:

Assurance registers are documented and implemented to identify the safety excellence requirements applicable to each functional area. The functional area ensures the registers are associated to the corresponding requirements, controls and verifications that manage or sustain compliance.

PSEMS + SIF CAPACITY = *SUCCESS!*

There is no daylight between **PG&E's Safety Excellence Management System (PSEMS)** and **The SIF Capacity & Learning Model**. The two go hand-in-hand establishing a robust safety management system that executes essential SIF prevention strategies of The SIF Capacity & Learning Model.



PSEMS + SIF CAPACITY MODEL = SIF PREVENTION

A simple analogy to help understand the relationship between PSEMS (our safety management system) and The SIF Capacity & Learning Model (SIF prevention principles and tools) is to think of it in terms of how a bow and arrow work together to hit your target.

In this case, the “Target” is preventing serious injuries and fatalities (SIF Prevention); the “Bow” is a comprehensive safety management system (PSEMS); and the “Arrows” are a set of well-crafted SIF prevention principles and tools (The SIF Capacity & Learning Model).

Just as an archer would pick up their bow, load it with an arrow, and take aim and fire upon their target, so must we take hold of a comprehensive safety management system, load it with essential SIF prevention principles and tools, and take aim and fire upon eliminating serious injuries and fatalities.

There is no daylight between PSEMS and The SIF Capacity & Learning Model. The two become one in how we approach SIF prevention and together they allow us to *Do Safety Differently* and achieve true safety excellence where *everyone and everything is always safe*.

It takes dedication and commitment to become proficient with a bow and arrow, and the same is true with SIF prevention.

PG&E is committed to partnering with our Contract Partners in this journey to safety excellence. In the following sections of this playbook, we will cover in detail **The SIF Capacity & Learning Model**, the 13 Elements of **PSEMS**, and how PG&E Contract Partners can incorporate the two into their existing safety management systems.

CAPACITY & LEARNING MODEL



THE CAPACITY & LEARNING MODEL

INDUSTRY PROBLEM

The Heinrich or Bird triangle, also known as the accident triangle, believes the number of non-fatal incidents that occur is inversely proportional to the severity of those incidents. This led to the conclusion that focusing efforts on minimizing the number of minor incidents will lead to a reduction in fatal injuries. In other words, if we take care of the near-misses, first-aids, and OSHAs, then the serious and fatal injuries (SIFs) will take care of themselves.

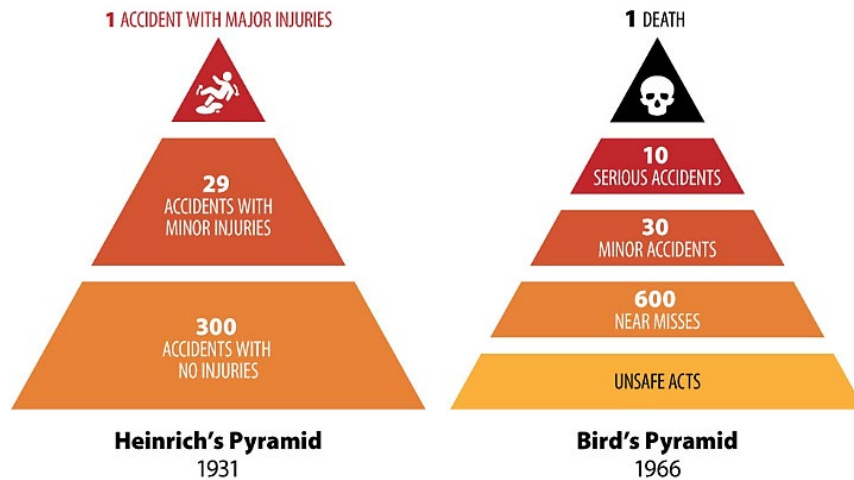


Figure 1: H.W. Heinrich and Frank E. Bird accident triangle

Injury and illness prevention programs have helped reduce the number of occupational injuries during the last several decades (OSHA.gov, 2012). But while the rate of non-fatal injuries has declined steadily, the rate of fatal injuries has plateaued, showing their theory to be ineffective in eliminating SIFs.

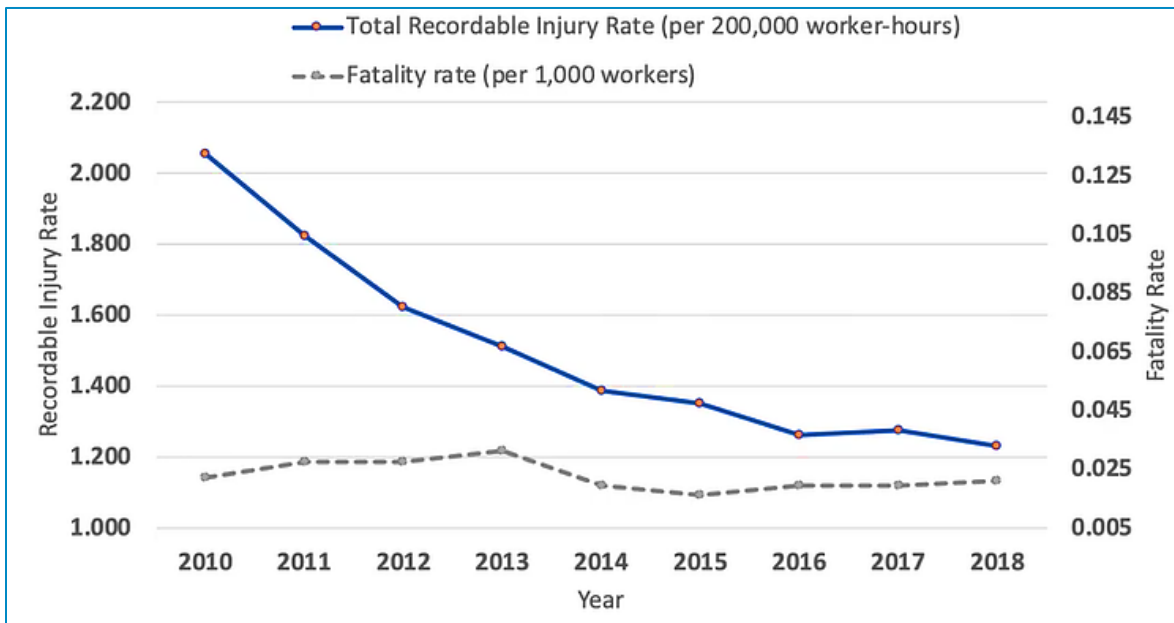


Figure 2: Injury and Fatality Trends for Electric Power Generation and Delivery (rolling 3-year average). From Edison Electric Institute Annual Safety Survey

REAL IMPROVEMENT REQUIRES REAL CHANGE

If focusing efforts on minimizing the number of minor incidents does not lead to a reduction in fatal injuries, we must change the way we understand and view safety. PG&E has worked with industry-leading experts (Todd Conklin, Ph.D., Matthew Hallowell, Ph.D.) to improve our SIF prevention strategy. From their teachings, we have implemented our **Capacity & Learning Model**. This model is an energy-based safety approach to preventing SIFs built on Human and Organizational Performance (HOP) principles. It is not an initiative but a real change in how we plan, execute, and learn from work.

HOP PRINCIPLES

A principle is a dependable, predictable basic truth. HOP principles reflect how humans perform (or will not perform) within our organization and are the foundation of PG&E's **Capacity & Learning Model**. HOP principles are also used in various industries outside of safety. Organizational leaders use these truths to create and manage resilient, stable, reliable systems and processes for work performed within it.

PG&E Guiding HOP Principles

- 1 Error is Normal**
Being human means we will never be able to eliminate accidents. Even our most experienced people will make mistakes. Accepting this truth leads to building reliable, resilient systems and processes that help ensure failure can occur safely. Catastrophic failure occurs when we ignore that truth and only focus on prevention.
- 2 Blame Fixes Nothing**
Fix *WHAT* failed, not *WHO*. Directing anger and blame toward a person may feel appropriate, but it does nothing to make the work safer and prevent the unwanted incident from happening again. As a leader, you must understand that employees do not intend to cause harm; violations are rarely, if ever, malicious. Coworkers who perform the work are our most valuable asset; they are not the problem but the experts who know the work best and can provide solutions.
- 3 Drift is Normal**
How we imagine work takes place in a standard is different from how it actually occurs. Work is complex, performed in adaptive dynamic work environments that require workers to improvise and drift from work plans and standards in real time.
- 4 Context Influences Behavior.**
Workers do what they do for a reason, and the reason makes sense to the worker, given the context of the situation. To learn about the context of an incident, shift your thinking from "*Who failed and why?*" to "*What failed and how?*"
- 5 How Leadership Responds to Failures Matters**
Leaders can either *blame and punish* or *learn and improve*, but they can't do both. As a leader, your response signals to coworkers whether it is safe to speak up about the realities of their work, hazards, near hits, and incidents. Asking questions that seek understanding about how work is performed, and the surrounding context and conditions demonstrate a clear commitment to learning and improvement.

SAFETY DIFFERENTLY

PG&E's HOP Principles shift our thinking away from traditional safety ideas toward a new contemporary view that results in thinking about safety differently.

Traditional Safety	Safety Differently
We can and must prevent all accidents. A metric of zero is how we know we are safe.	We must plan and execute our work as if failure will happen today.
Workers are the problem we need to fix.	Workers are not the problem - they are the problem solvers who know the work best.
We must tell workers what not to do.	We don't constrain workers to create safety; we ask our workgroups what they need to perform their work safely, reliably, and productively.
Respond to failure by asking: <ul style="list-style-type: none"> - Who failed? - Why? - What standard, rule, or procedure governs the work, and which ones were not followed? 	Respond to failure by asking: <ul style="list-style-type: none"> - What failed? - How? - What about your work made it difficult to successfully perform the task? What, not who, caused controls intended to build capacity to fail, not be in place, or be disabled?
Oversimplify how we imagine work is performed and believe it should never deviate from a standard, procedure, or rule.	Work is complex and dynamic, requiring those who perform and touch the work to improvise in real-time.



Figure 3: Traditional safety believed we can and must prevent all accidents, setting unachievable metrics that created pressures to not speak up, share and learn from incidents that occur.

Adopting a HOP mindset and practicing safety differently will result in cultivating a true speak-up culture where mistakes, shortcuts, and near-hits are freely shared, allowing us to learn how the work is really performed and make improvements to make it more resilient and tolerant to inevitable failures.

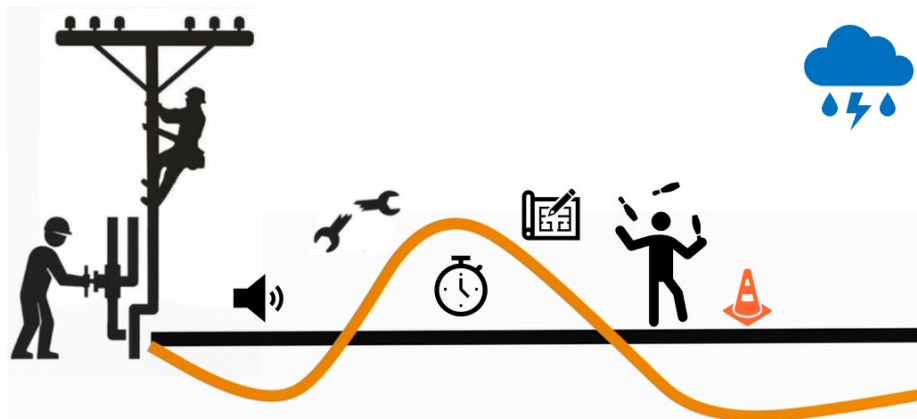


Figure 4: Drift in normal. Work standards are the map but are not the terrain traversed. Work is complex, and workers improvise to conditions that continually change.

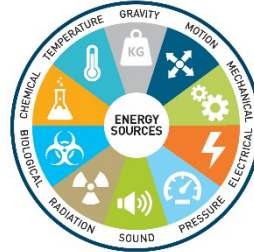
THE MAIN COMPONENTS OF THE CAPACITY & LEARNING MODEL

The Capacity & Learning Model is how PG&E plans to eliminate life-altering and life-ending incidents through better hazard identification, controls, and learning. These are the four distinct components that will get us there.

THE PG&E ENERGY WHEEL

We all have common limitations in the human brain that create blind spots to some hazards.

The energy wheel is a tool that helps us identify more hazards that we may normally be blind to and should be used before and during work.



STKY (STUFF THAT KILLS YOU)

High energy is a hazard that, when released or transferred to an unprotected person, would most likely result in a life-altering, life-threatening, or life-ending injury.

To simplify, we refer to these high-energy hazards at the worksite as SKTY.



Essential Controls

Specifically targets a STKY hazard, eliminates a person's exposure to it, or builds the capacity to safely recover when a failure occurs.

When installed, verified, and used properly, they are effective even when people make mistakes.



Operational Learning and Improvement

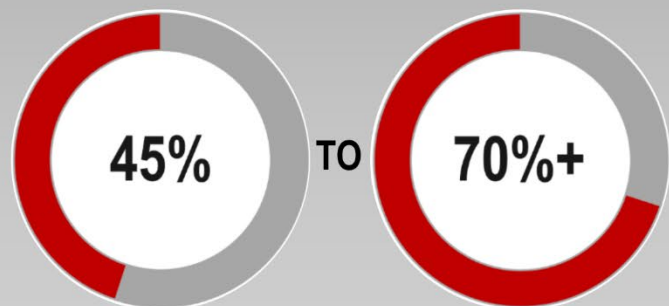
An approach to learning and improving that fosters speak-up learning environments from those who regularly perform the work; focuses on what failed, not who; makes the work safer and more resilient to failures; restores the local workgroups confidence that the work they are asked to perform is no longer vulnerable to the same failure. Some methods of learning include **STKY Discussions**, **4D Learning**, and **High Energy Controls Assessments (HECA)**.



ENERGY-BASED HAZARD IDENTIFICATION

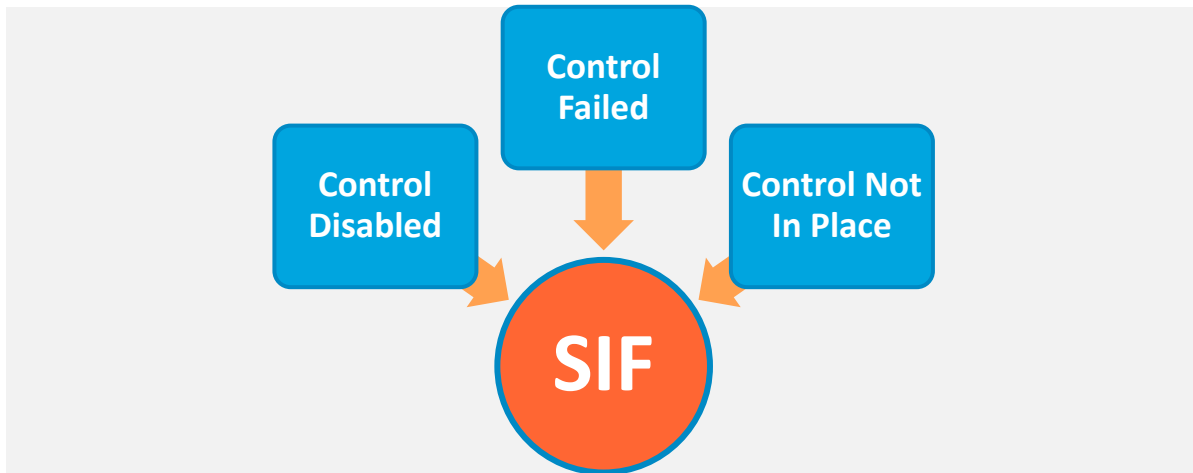
The Energy Wheel is a tool that improves high-energy **STKY** hazard identification so that **essential controls** can be put in place to build **capacity** for safe recovery *when* an incident occurs.

When this hazard identification tool is used, hazard recognition improves from 45% to over 70%.



THE 3 REASONS WHY A SIF OCCURS

Practicing safety differently, shifting our focus to high-energy STKY hazards and their controls intended to build capacity provides us the understanding that not “if” but “when” a high-energy STKY incident occurs, we suffer a SIF for one of three reasons: The control intended to build capacity for failure to occur safely either (1) failed, (2) was disabled, or (3) not put in place.



It can be dangerous to oversimplify complex contextual learning, and while many factors can cause any of these three reasons to occur, these are still truths. This understanding helps us improve how we plan, execute, and learn from work to improve our essential controls' efficacy, use, and management.

START WHEN SAFE PRE-JOB BRIEFING CHECK

Accidents are an action or inaction that results in an unexpected, unintended outcome. When an accident occurs, it is only in retrospect that we can see how we could have stopped work before it happened. While Stop Work is important and does catch many identifiable unsafe conditions, workers cannot always foresee every failure before it occurs, weakening the effectiveness of Stop Work as a prevention tool. Often, once the need to stop work has been identified, it is too late. Our **Start When Safe Pre-Job Briefing Check** puts our Capacity & Learning Model elements into practice so that we can proactively build capacity for failures before work starts.



The simple pre-job safety check also verifies that we are not vulnerable to two major factors known to cause controls to fail, not be in place, or be disabled:

- **A worker/crew with a low level of experience and familiarity performing the task.** These knowledge-based workers have little to no point of reference and a very high error rate; they have yet to build their competency and may not know what can kill them, resulting in incorrectly installing, unknowingly disabling, or not using life-preserving controls.
- **Inadequate resources.** A coworker or crew can “push through” or “make do” with less than adequate resources, which can make their tasks more difficult to complete. They can believe this is what they need to do or is normal, which can result in catastrophic failure.



START WHEN SAFE

PRE-JOB BRIEFING CHECK



Crew has the experience, knowledge, and resources needed to perform the task



All the high-energy stuff that kills you (STKY) has been identified



Essential controls are in place so that *WHEN* a failure occurs, you will have capacity to safely recover



QUESTIONING ATTITUDE - Are these controls enough? Have they been tested and verified to be in place?



STOP WHEN UNSAFE

Once we have identified what controls will be put in place to build capacity for failures around our STKY hazards before work starts, it provides us with the inverse of what should always trigger a stop work when performing the task.

STOP WHEN UNSAFE

- ✓ Essential controls are observed to be missing or in threat of failing - **STOP WORK!**
- ✓ A new STKY hazard is identified - **STOP WORK!**
- ✓ The planned task, work resources, or crew staffing changed - **STOP WORK!**

Having objective stop work triggers provides more space for anyone to feel comfortable speaking up to ensure work is paused until the unsafe condition is addressed and verified safe to resume.

SIF PREVENTION FIELD GUIDE

PG&E's SIF Prevention Field Guide provides our frontline coworkers and contract workers with our Capacity & Learning Model field tools and processes. As a leader, please make it a habit to always refer to it in your safety discussions. Use the information in this Leadership Playbook to enhance your understanding of our Capacity & Learning Model so that you can bring your workgroups along in our journey of practicing safety differently.

The figure shows the cover of the 'Serious Injury & Fatality Prevention Field Guide' (2023/2024 Edition) and a diagram titled 'SIF Prevention Connections: Plan • Perform • Recover'. The cover features three photos: a worker on a tower, workers in safety gear, and a worker in a trench. The diagram illustrates the SIF Capacity model with three interconnected circles: PLAN (Keys to Life), PERFORM (Human Performance Tools), and RECOVER (SIF Capacity). Below the diagram are fields for Name, Phone, Emergency Contact Name / Relationship, and Emergency Contact Phone.

Serious Injury & Fatality Prevention Field Guide
2023/2024 Edition

SIF Prevention Connections
Plan • Perform • Recover

PLAN
KEYS TO LIFE
Foundational safety tenets. When not followed, we can be seriously injured or killed.
Leverage pre-job briefings (Key # 1) to identify and control high energy hazards.

PERFORM
HUMAN PERFORMANCE TOOLS
Tools to reduce human error while performing work.
Help ensure essential controls are not missing, disabled or inadequate.

RECOVER
SIF CAPACITY
Direct, essential controls build capacity for safe recovery when an incident occurs.

Name: _____ Phone: _____
Emergency Contact Name / Relationship: _____ Emergency Contact Phone: _____

PG&E "PG&E" refers to Pacific Gas and Electric Company, a subsidiary of PG&E Corporation. ©2023 Pacific Gas and Electric Company. All rights reserved.

Figure 5: PG&E's SIF Prevention Field Guide



CAPACITY



WHAT IS AN ESSENTIAL CONTROL?

Specifically targets a STKY hazard, eliminates a person's exposure to it, *or* builds the **capacity** to safely recover when a failure occurs.

- It is effective even when people make mistakes.



HYPER-FOCUS ON

STKY AND CONTROLS

It's not *if*, but *when* a failure occurs, our essential controls build the capacity to safely recover.

WHAT IS STKY?

STKY stands for stuff that kills you. It includes sources of high energy that, when released or transferred to an unprotected person, would most likely result in a life-altering, threatening, or ending injury.



THE ROLE OF LEADERSHIP

To realize the full benefits of the **Capacity & Learning Model**, leaders must pave the way by fully supporting and promoting it. As a leader, persistently move your organization's culture away from blame and punishment to emphasize learning and improvement. This direction is necessary to integrate this SIF prevention strategy into your organizational systems, practices, and culture.

LEADERS SET THE TONE

At the outset, clearly define and communicate your vision and your organization's goals for building capacity. Continually empathize that this is not an initiative; it is a fundamental shift in how we plan, execute, and learn from work. If you've already started integration, you've likely noticed that the change will not come quickly or easily. There is no defined end-state but a continuous learning and improvement journey. Continually reinforce the **Capacity & Learning Model** concepts, particularly the HOP principles. This model is how PG&E plans to eliminate life-altering and ending incidents through better hazard identification, controls, and learning.

LEADERS SHAPE THE CULTURE

Fostering change in an organization begins with leadership. As a leader, you must understand the **Capacity & Learning Model** and be able to answer questions about its value and purpose. You can create the desired culture by moving your organization away from blame and punishment and toward learning and improvement. If you haven't already, identify ways your leadership team can help integrate this model into your organization. Talk to your people about the model's key elements: the Energy Wheel, STKY, Essential Controls, and Operational Learning and how we use them to Build Capacity. Please encourage your teams to generate their own ideas for operationalizing the concepts and practices of the **Capacity & Learning Model** into your organization and their daily lives.

LEADERS OPERATIONALIZE ENERGY-BASED CAPACITY & LEARNING

Your role as a leader is to own the change, set clear expectations, provide resources and support, and determine what Building Capacity means for your organization. Be a role model by demonstrating an unwavering commitment to learning and improvement. Have you considered:

- **How do I respond to incidents?** – is it a reflective response that seeks to learn and improve, or a reactive response that assigns blame and punishment?
- **What types of questions do I ask?** - do you ask who failed and why, or what failed and how?

ACTION: Engage with your field leaders and workgroups by:

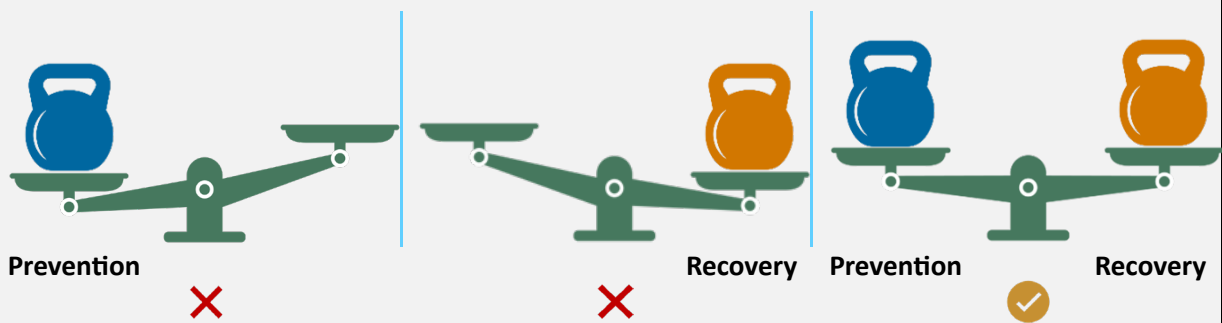
- Conducting routine **STKY Discussions** (page 24) with a focus on high-energy STKY hazards and Essential Controls.
- Align your pre-job safety briefings with the **Start When Safe Pre-Job Briefing Check** using the **Energy Wheel** to identify STKY hazards and determining what controls will build capacity for mistakes and failures to occur safely.
- Make time with workgroups to hold **4D Learning** sessions (pages 25, 26) to encourage honest conversations where you can learn how the work is really done and how you can make that work easier and safer to perform.



WE MUST BUILD CAPACITY TO FAIL SAFELY

MANAGING CAPACITY

Think of capacity as the balance between prevention and controls that build capacity for human error, mistakes, and failures to happen safely.



DISCUSSIONS

1. What's STKY on this job site?
2. What controls do you have in place to protect you from the STKY hazard?
3. When a failure happens, will those controls give you/the crew capacity to safely recover? Are they enough? Do you need more?

STKY DISCUSSIONS

Leaders and crews need to start focusing on STKY hazards and scenarios that could occur on their job sites. Every catastrophic incident results from a release or transfer of energy that can't be absorbed safely. We must build the capacity to fail safely when high energy exposure exists.

STKY discussions are informal chats with crews about the stuff that can kill them on their job site. These discussions focus on identifying STKY conditions and determining what controls should be in place to build capacity within the work, allowing coworkers to fail safely. Then ask, "Is that enough?", or "Do you need more?" STKY discussions highlight the hazards that have a history of killing individuals (electrical contact, being struck by moving equipment/vehicle, etc.). Compliance-based safety talk is not part of these discussions. Rather, they are focused on the present high-energy hazards and their controls.

4D LEARNING

4D conversations are a simple way to learn things coworkers believe are **dumb, difficult, different, or dangerous** about their work. These 4 Ds are a proactive approach to learning how the work is really done and how it can be made better, easier, and safer. It's a simple and easy conversation to have. However, the act of inviting honest conversations (and then making improvements based on the information received) will lead to greater engagement, better worker perceptions of leadership, and numerous opportunities to improve work processes, systems, and controls to be more resilient and tolerant to errors and failures achieving more reliably successful work outcomes.

Dumb

What doesn't make sense to you about our work or how we are doing it?

Difficult

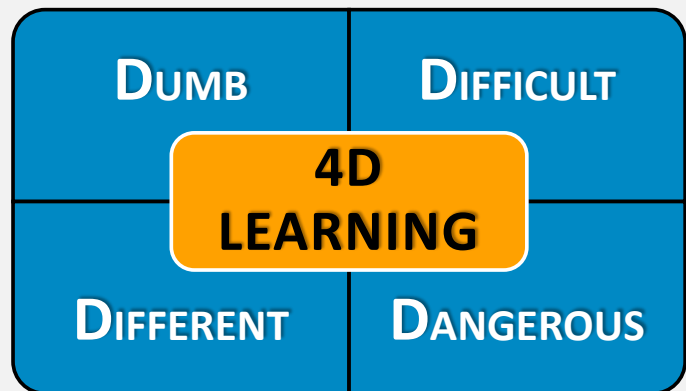
What tasks do you find difficult or hard to do well?

Different

What has changed or is changing relative to how things are usually done or should be done?

Dangerous

What feels risky to you about the work you do?



While still informal, these conversations should be held with coworkers and contract workers in a setting that provides them the space and time to communicate openly and honestly without fear of embarrassment or punishment. While it can be held after an incident occurs, these learning conversations should be held proactively before an incident occurs. Lastly, these questions are not focused on trying to fix the worker but on the work so that it makes sense and is easier and safer to perform.

4D CONVERSATIONS

What's Dumb? (Sense-making)

By asking what's dumb, we are not judging the intelligence of the individuals involved in planning a task or writing the procedure. Instead, we're encouraging workers to freely describe when something doesn't make sense to them. Workers may see task elements as unhelpful, redundant, overly obstructive, or unreasonable. In any case, having workers express their concerns and explore the intent behind the issue is the first step toward team alignment. It helps prevent workers from pushing forward with workarounds or shortcuts that may introduce additional risk to the task.

After an incident occurs, determining why an action or decision made sense at the time (based on their cues and their interpretation of the circumstances) is one of the most important things to learn. Making proactive inquiries into how people make sense of things and having them speak up about anything that doesn't make sense is critical information for the leader and the entire crew. This question can also lead to waste elimination and streamlining of processes.

What's Dangerous? (Risk)

We can accomplish two things by discussing what is dangerous about the work. First, we can learn about dangers we may not have been aware of and learn what common failures are experienced in the field. We can identify the critical failure points to a task with little to no room for error that must be performed perfectly to avoid catastrophic failure. This can empower us to identify how we can build more capacity for failures to occur safely in the work to make that danger safe.

Secondly, while we use our Energy Wheel as a tool to improve our ability to identify STKY hazards, individual risk perceptions and tolerances still exist. We cannot assume that we all perceive risk the same way, but only by actively discussing what workers perceive as dangerous and how that risk should be managed is how we overcome individual bias.

What's Different? (Change)

Sharing and discussing changes in the environment in which work is performed or how the task is being performed can be a quiet early indicator of an emerging issue that may not appear significant at the time but may become significant if left unshared.

Asking 'what's different or has changed' allows for an open conversation regarding how our original plan might need to change to account for things we hadn't intended. This helps avoid directing workers to follow a procedure or work plan that does not speak to the changes that have occurred in the work.

What's Difficult? (Challenge)

When a work task is difficult, many will simply just 'soldier on' and 'make do,' possibly assuming that difficulty is the nature of the task. They may overlook that the task method/process may be poor or that a knowledge or skill gap exists. Building a culture where workers can openly express what tasks are difficult to perform will minimize natural tendencies to accept that difficulty and push through it, which will give you the opportunity, as a leader, to remove the barriers for them to perform efficiently and safely.

High Energy Controls Assessment (HECA)

High-energy control assessment (HECA) is a new learning and monitoring metric that complements our Capacity & Learning Model's desired outcome – a control is in place for every STKY high energy hazard that builds capacity for human error. **This assessment collects and measures the proportion of high-energy STKY hazards that have a corresponding essential control in place.** When this data is collected through observations, HECA allows us to avoid using lagging data, no longer requiring us to wait for incidents to occur and be reported to measure our safety performance. HECA observations also allow us to collect a sufficient volume of data to be statistically stable and precise to measure and learn what STKY hazards we are failing and succeeding to implement and build capacity *before* an incident occurs. This information allows us to proactively deploy a **4D Learning** session or other learning and improvement processes to where we identify a need to improve *before* a SIF occurs.

PG&E has updated our Corrective Action Program (CAP) system to collect, measure, and monitor HECA with its near-hit and injury high-energy incidents. A visual monitoring dashboard has been built to help us learn and improve how we respond to these incidents. PG&E is aligning safety observations to the HECA method of data collection, learning, and monitoring to improve our ability to proactively learn where and how we can improve our management of STKY hazards and their essential controls before a SIF occurs.

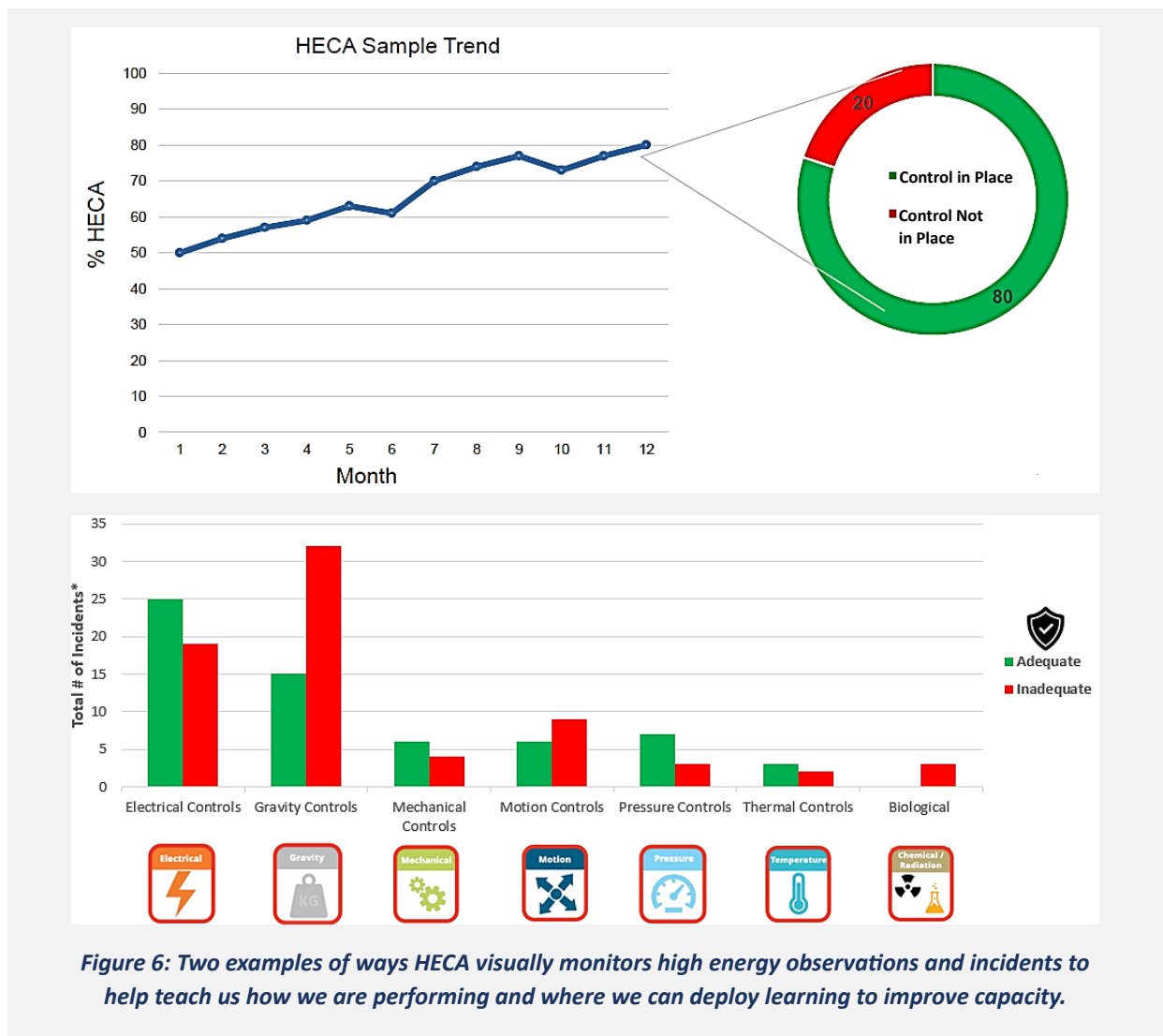


Figure 6: Two examples of ways HECA visually monitors high energy observations and incidents to help teach us how we are performing and where we can deploy learning to improve capacity.

ELEMENTS TO SUCCESS

Integration of **The SIF Capacity & Learning Model** should include the following six strategic elements. No integration elements will ever be complete. These require constant attention to prevent reversion back to the "old ways of doing things."

LEADERSHIP BUY-IN

Includes:

- Garnering leadership support
- Understanding the SIF Capacity & Learning Model and its value
- Creating a strategic organizational vision that necessitates incorporation of the SIF Capacity & Learning Model, which will endure personnel or organizational changes.

Questions associated with this component:

- Are all leaders in our organization engaged in this new view of safety?
- Do we have the support we need to embark on this journey?

BUILDING HOP FLUENCY

Includes:

- Grounding the organization in HOP principles that support the SIF Capacity & Learning Model and set the conditions for learning.
- Creating a culture that continuously learns and improves.

Questions associated with this component:

- Are we consistently focused on learning and improving?
- As leaders, do our actions match our words?

OPERATIONAL LEARNING

Includes:

- Learning how work is performed by leveraging the knowledge and experience of those who perform the work.

Questions associated with this component:

- How do we discuss STKY in our job briefings and during work?
- What do our corrective actions tell us about our organization?
- Do our actions seek to learn and improve the work or to blame and punish a worker?

CONTROL MANAGEMENT

Includes:

- Using operational learning intelligence gained through learning to continuously and collaboratively design, improve, iterate, and manage controls.
- Learning to anticipate failure and to understand, identify, and implement or enhance layers of control.

Questions associated with this component:

- While prevention remains fundamental, how are we planning and managing our controls to allow failure to occur safely?

CALIBRATION

Includes:

- Aligning the SIF Capacity & Learning Model elements with existing processes, programs, and practices.
- Realigning systems to create transformation and sustainable change.

Questions associated with this component:

- In what areas does the SIF Capacity & Learning Model complement and add to our current processes?
- Does it conflict with anything we are currently doing? How can we create a bridge?

CONTINUOUS IMPROVEMENT

Includes:

- Continuously adapting, adjusting, and innovating. There is no end point to this journey, and we must always look for ways to learn and improve.

Questions associated with this component:

- How can our organization continue to make the Capacity & Learning Model a part of our learning and improvement process?
- How can we ensure that the key elements of the Capacity & Learning Model remain present during personnel changes?

CLOSING THOUGHTS

During integration of **The SIF Capacity & Learning Model**, you might wonder how to assess the effectiveness of your efforts. Measure your progress by answering the following questions:

- Are you supporting and encouraging your employees to identify and control STKY high-energy hazards?
- Is your messaging as a leader, both verbal and non-verbal, improvement-oriented, rooted in learning, and focused on failing safely? Include the Capacity & Learning Model as a standing agenda item at meetings.
- Are **STKY Discussions** or **4D Conversations** taking place regularly? Do they suggest more controls and improvements are needed? Monitor the number of controls that are created, implemented, or improved based on these discussions.
- Do findings from incident investigations still cite mistakes or "failure to follow procedure" as a root cause and try to assign blame to a person? Do corrective actions aim to try and fix a person? Engage investigators to shift their focus on learning by understanding the context surrounding the incident and focus on improving the work, its systems, processes, and controls.
- Are your workers safe or just lucky? How do you know? Help your workers improve the way in which they identify and build capacity with control for all of their STKY high-energy hazards and share their stories of success.

No matter where you are in your journey, remember that **The SIF Capacity & Learning Model** is not about changing or fixing the workforce. It is an approach to planning, executing, and learning from work that requires buy-in from every employee, from leadership to frontline coworkers. With its focus on building the capacity for safe recovery from high-energy STKY hazards, this model helps us ensure everyone and everything is always safe.

FAQ

QUESTION

ANSWER

Is the expectation that every STKY hazard always has an essential control in place before work starts?

Ideally, we would always have a control in place for every STKY hazard to ensure we have the capacity for the inevitable failures we will encounter. However, there are tasks that our coworkers perform in proximity to a STKY hazard that do not allow for an essential control to be used or that do not yet exist for the task.

How do I manage work where STKY hazards exist, and essential controls cannot be used or do not yet exist?

Ideally, once these tasks are identified, we look for opportunities to not perform these tasks or change work methods to eliminate or minimize the worker's exposure to the STKY hazard. When that is not possible, extra care must be given to ensure the worker or crew has a high level of experience and competency, with adequate resources needed to avoid adding difficulty to their task, giving them the freedom not to perform the task when conditions are not to their satisfaction. Efforts should also be made to work with industry experts to see what advances in work methods and controls are possible to improve existing controls or create new ones to build capacity.

Do our standards and procedures always direct what essential controls must be in place?

No. Standards and procedures are generally written with a bias that nothing bad should happen if you follow the guidance perfectly. However, we know we will not always be able to follow standards perfectly. They also cannot foresee every variable condition the worker will face, including STKY hazards. For these and other reasons, they will not always include what controls will be needed to build capacity. Using our energy wheel at the worksite helps close this gap with many of our standards.

Where does crime like an active shooter or violent person fit on the energy wheel and The SIF Capacity & Learning Model?

The SIF Capacity and Learning Model and its energy wheel were studied, developed, and tested to help eliminate workplace accidents from resulting in life-altering or ending injuries. This model and its tools have not been tested and shown to effectively manage and prevent criminal activity. PG&E Security are the subject matter experts who provide us with our crime prevention tools.



