

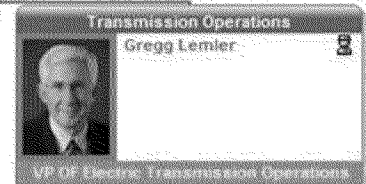
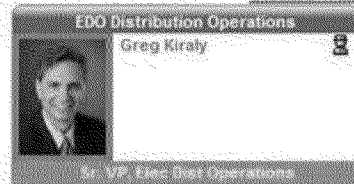
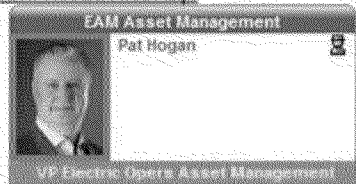
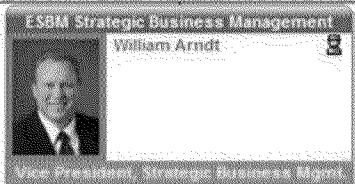
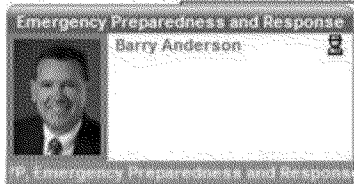
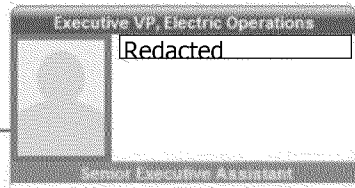
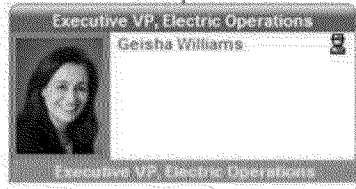


CPUC SED / PG&E Quarterly Meeting

July 1, 2014

- Introductions
- Electric Operations organization
- Electric Operations performance
- CEMA update
- Closing/Next steps/Round table on format and topics

Executive VP, Electric Operations



- Preparedness & Response Support
- Emergency Management PMO
- Business Continuity
- Partnership & Outreach

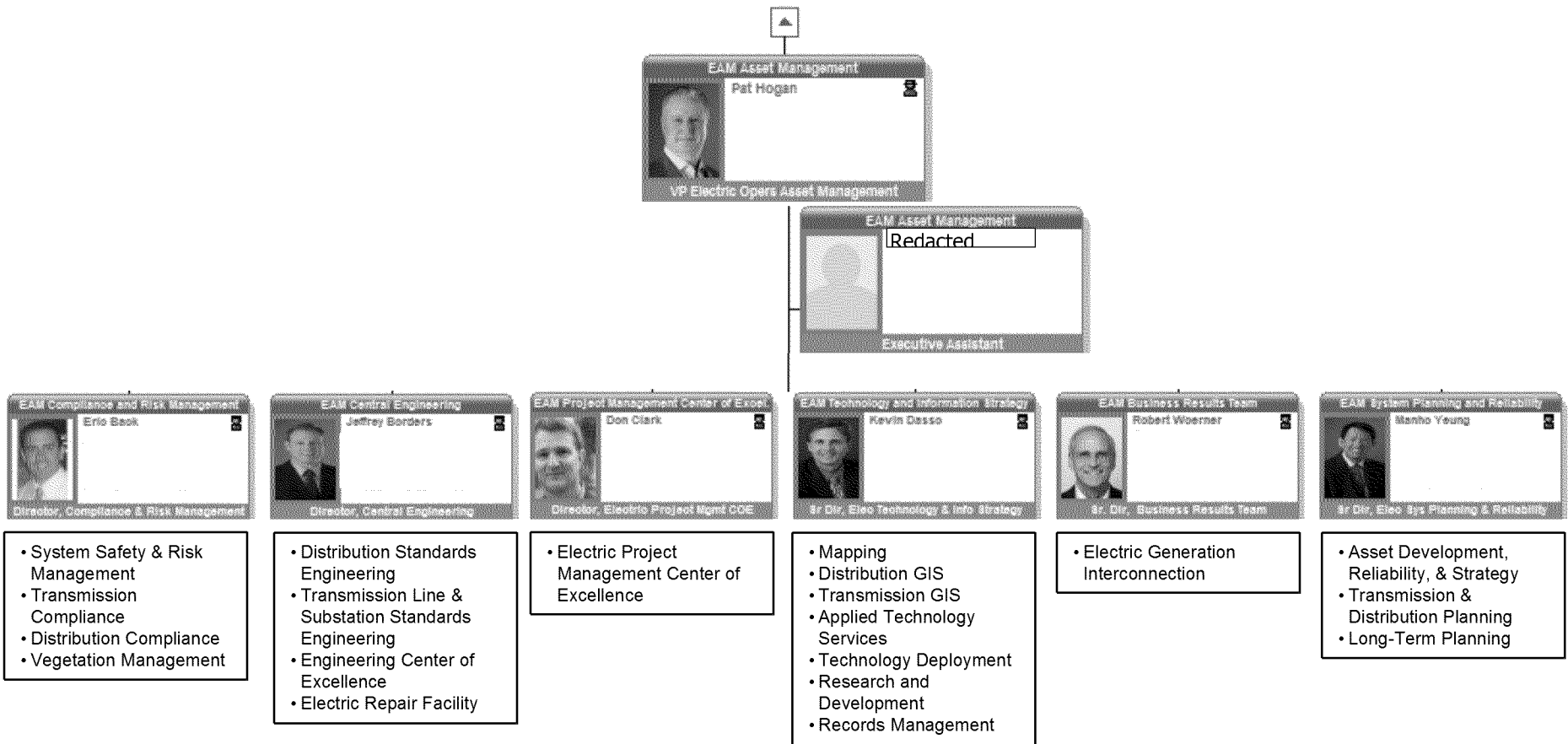
- Operations, Work & Resource Planning
- Process Improvement & Performance Management
- Project Governance
- Business Strategy

- Central Engineering
- System Planning & Reliability
- Compliance & Risk Management
- Technology and Information Strategy
- Third party generation interconnections
- Project Management Center of Excellence

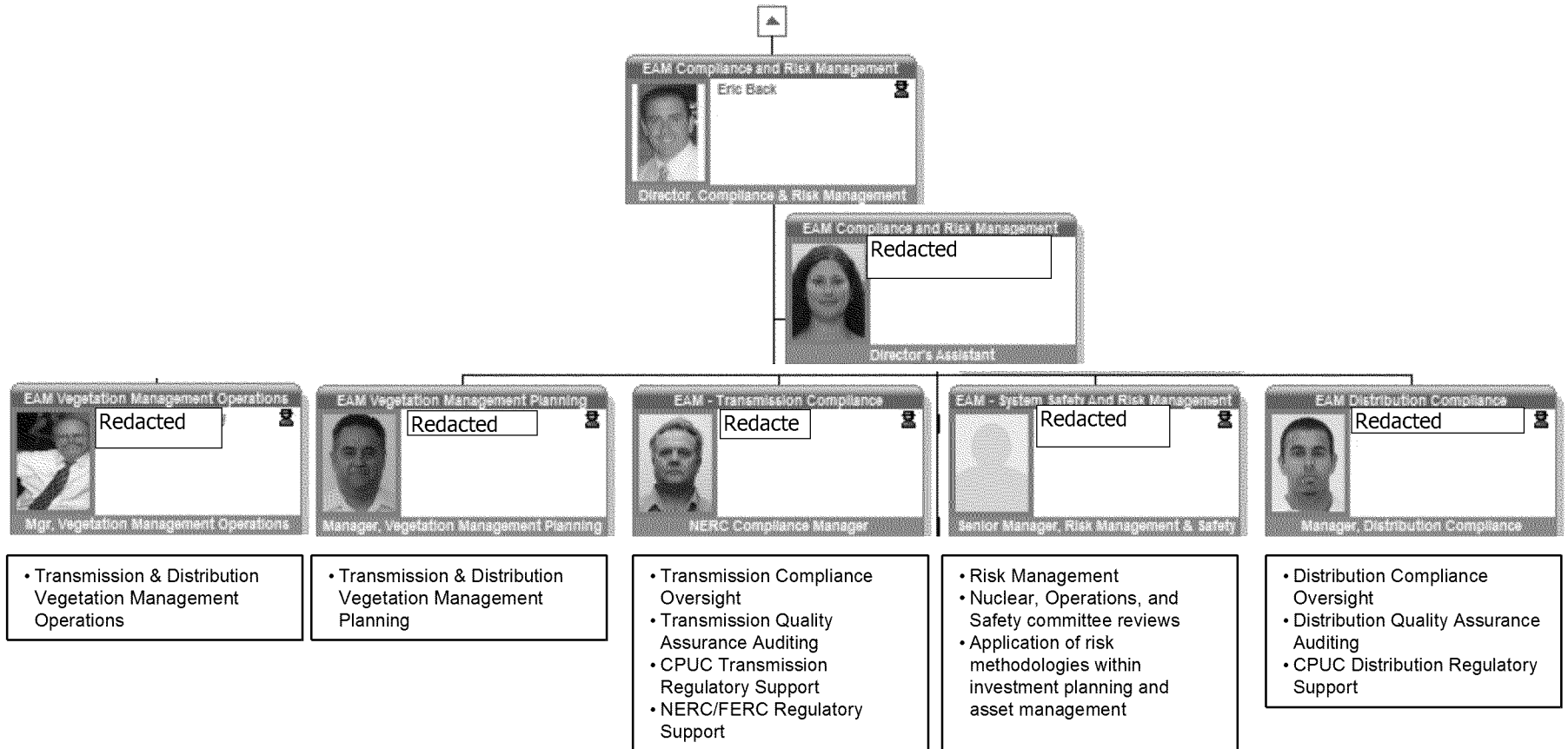
- Distribution Maintenance & Construction
- Customer Service Delivery
- Distributions System Operations

- Transmission Line Maintenance & Construction
- Substation Maintenance & Construction
- Transmission System Operations
- Transmission Project Development & Special Projects

EAM Asset Management



EAM Compliance and Risk Management





Electric Operations 2015-2019 Plan




Electric Operations will deliver safe, reliable and affordable electric service to our customers

Key Goals

Key Strategies

1st Quartile Public Safety Performance	<ul style="list-style-type: none"> Leverage risk-based prioritization framework Invest in data quality 	<ul style="list-style-type: none"> Prioritize public & system safety work activities Engage customers about safety
1st Quartile Workforce Safety	<ul style="list-style-type: none"> Engage all employees, creating a positive culture and climate of trust Improve workplace ergonomics 	<ul style="list-style-type: none"> Regularly refresh knowledge and skills Focus on leading indicators
100% Compliance & Risk Mitigation	<ul style="list-style-type: none"> Implement technology to track and manage risks and compliance obligations Leverage asset analytic tools to assess and mitigate asset-based risks 	<ul style="list-style-type: none"> Engage with regulators on compliance requirements Embed risk management into all EO processes
Effective Emergency Preparedness & Response	<ul style="list-style-type: none"> Plan, model and drill for all hazards, across the enterprise Enable a fast & scalable response strategy 	<ul style="list-style-type: none"> Prioritize community needs Focus Business Continuity on vital business processes
2nd Quartile Reliability	<ul style="list-style-type: none"> Enhance and leverage system automation Leverage risk-based prioritization framework to improve asset performance 	<ul style="list-style-type: none"> Communicate reliability improvements Improve timeliness and accuracy of customer outage communications
2nd Quartile Affordability	<ul style="list-style-type: none"> Streamline cost structure Improve operational efficiency 	<ul style="list-style-type: none"> Drive continuous improvement
1st Quartile Customer Satisfaction	<ul style="list-style-type: none"> Deliver an excellent customer experience Meet our customer commitments 	<ul style="list-style-type: none"> Engage our customers Make customer our priority

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	2011	2013
	PUBLIC SAFETY	
911 Emergency Response Calls Responded to within 1 hour	72.0%	92.2%
Wires Down	2,778	2,400
Network System Failures	12	5
	2008	2013
Venting Manhole Covers Installed	0	2,150
	2008	2013
	RELIABILITY	
SAIDI (annual outage minutes for average customer)	181.5	116.8
SAIFI (annual number of outages for average customer)	1.301	1.070
Customers Experiencing Sustained Outages	6,924,000	5,760,000
	2011	2013
CEMI5 (# and % customers experiencing 5 or more outages)	131,500 (2.43%)	98,000 (1.82%)
	2011	2013
	SYSTEM AUTOMATION	
Circuits Enabled with FLISR (Fault Location, Isolation and Service Restoration)	0	514
SCADA Visibility (% of Substation Circuit Breakers with remote monitoring enabled)	57.8%	77.1%
	2008	2013
Electric SmartMeters Installed	330,000	5,081,000



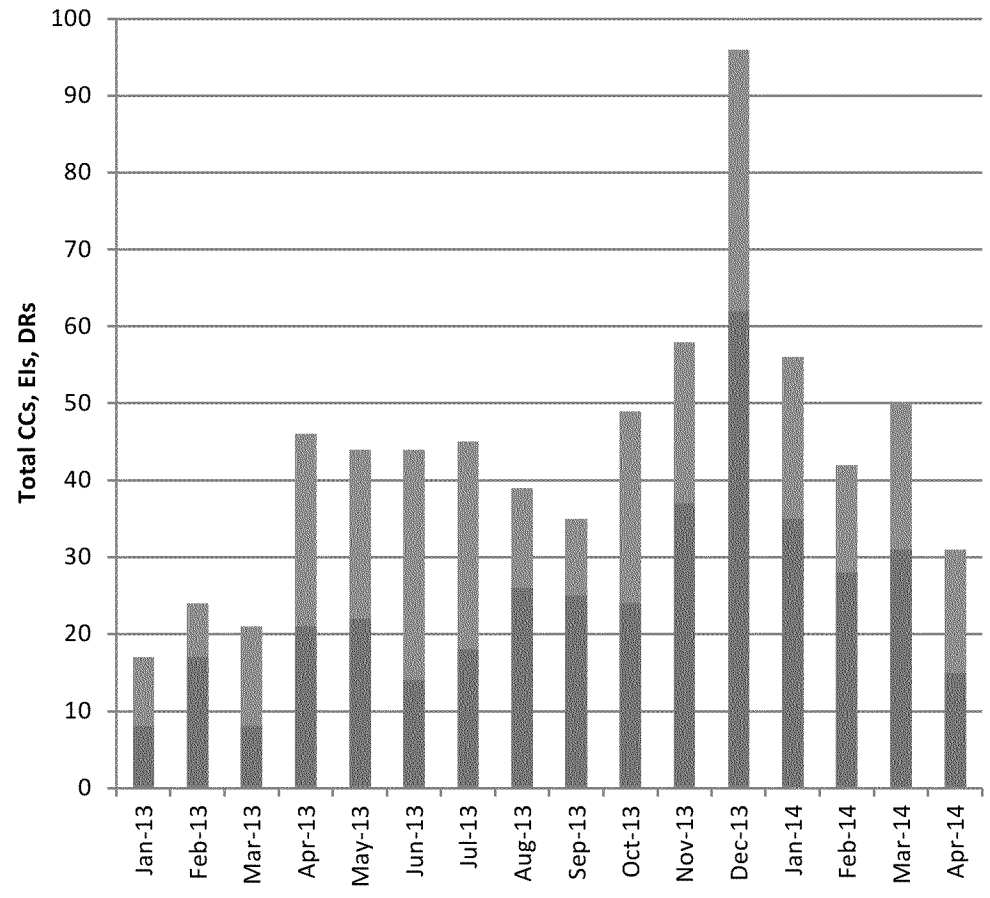
CPUC Distribution Audit Notice of Violations (NOVs)

Violation Description	Division	Legacy			Current			
		2008	2009	2010	2011	2012	2013	2014
Electric Corrective (EC) Maintenance Program Notifications – Backlog	2013 Total	4,315	10,527	10,322	5,157	1,913	338	-
	2014 Kern - Projected	0	1,968	1,521	1,934	685	5	0
	2014 Mission - Projected	0	1,884	1,241	352	96	2	0
Electric Corrective (EC) Maintenance Program Notifications – Steady State	2013 Total	0	0	1,389	1,017	877	64	-
	2014 Kern - Projected	0	0	225	331	267	326	2
	2014 Mission - Projected	0	0	216	43	55	5	0
Notifications – Emergency	2013 Total	1,241	1,213	1,683	1,979	1,802	579	-
	2014 Kern - Projected	0	264	280	437	341	283	27
	2014 Mission - Projected	0	179	214	87	139	131	13
Late Patrols and Inspections	2013 Total	1,128	4,249	1,628	801	2,038	0	-
	2014 Kern - Projected	77	25	1	300	2,478	0	0
	2014 Mission - Projected	1	0	0	0	5	0	0
OH/UG Field Items	2013 Total	0	0	0	0	2	29	-
	2014 Kern - Projected	0	0	0	0	0	8	0
	2014 Mission - Projected	0	0	0	0	0	0	1
Miscellaneous Items (Tally Marks, Equipment Tests, Map Corrections, Pole Loading Calc Data)	2013 Total	1	1	1	10	9	9	-
	2014 Kern - Projected	0	0	0	0	0	0	0
	2014 Mission - Projected	0	0	0	0	0	0	5
Total		6,763	20,310	18,721	12,448	10,707	1,779	48

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Regulatory Status



Data Requests
 Electric Incident Reports (I/F)

Total CPUC Distribution Submittals

Month	Total Submitted	Late	On Time Performance
January	69	2	97.1%
February	27	1	96.3%
March	40	0	100%
April	31	0	100%
May	20	0	100%
Total	187	3	98.4%



CEMA and drought initiatives update

July 2014

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Planned Vegetation Management Initiatives

Initiative Name	Planned Cost	Lead Name
Enhanced Vegetation Inspection and Mitigation	\$6M	Redacted
Wild Land Urban Interface Protection	\$1.7M	Redacted
High Fire Risk Tree Identification and Mitigation	\$10M	Redacted
Fuel Reduction and Emergency Response Access	\$5M	Redacted
Early Detection of Forest Disease/Infestation	\$2M-\$5M	Redacted
Early Detection and Response to Wildfires	\$3M	Redacted



Enhanced Vegetation Inspection and Mitigation

Lead and Scope

Initiative Lead: Redacted

Initiative Scope: Implement a series of enhanced and redundant vegetation patrols to provide an additional level of assurance that changing forest conditions do not result in a vegetation and power line conflicts

Cost Status

Plan	Forecast	Actual	Comments
\$6M	\$6M	\$6M	

Mitigation Components

1. Aerial inspection of 6,700 line miles (5% of total) to identify hazard trees.
2. Redundant ground patrols of facilities in fire prone SRA areas
 - Phase 1 – identify targeted facilities, define scope of work and determine resource needs
 - Phase 2 – initiate patrols, patrols ongoing through 2014 dry season
 - Phase 3 – initiate mitigation work , ongoing through 2014 dry season

Key Activities and Milestones

Description	Plan Date	Forecast Date	Actual Date	Comment
Aerial Patrol	7/21/14	7/21/14		On Schedule
Enhanced Patrol-Phase 1	6/12/14	6/12/14	6/12/14	Complete
Enhanced Patrol-Phase 2	6/12/14	6/12/14	6/12/14	In progress
Enhanced Patrol-Phase 3	6/30/14	6/30/14		On Schedule
Red Flag, Pre-Event, After Hours	7/1/14	7/1/14		On Schedule

Significant Events/Challenges

- Patrol Scope Release to use in the field
- Inspection started on 06/13/2014
- Resource coordination

Status Summary



Wild Land Urban Interface Protection

Lead and Scope

Initiative Lead: Redacted

Initiative Scope: Focus areas are portions of electric distribution circuits within Local Responsibility Areas (LRA) overlapped by Urban Wildland Interface (WUI) zones. The initiative includes two components 1) Enhanced patrol for tree hazards and listing/implementation of tree work to mitigate potential tree caused fires, and 2) Patrol for non-exempt equipment and clearing of vegetation around poles supporting certain equipment considered non-exempt.

Cost Status

Plan	Forecast	Actual	Comments
\$1.7M	\$1.7M	\$1.7M	

Mitigation Components

1. Work in collaboration with Local Fire Agencies and Fire Safe Councils to identify and prioritize additional high risk fire areas within LRA areas.
2. Conduct enhanced patrols in prioritized LRA areas to inspect for:
 - Poles with 'non-exempt' equipment and cylinders with flammable material in Local Responsibility Areas, mirroring Public Resource Code (PRC) 4292 in State Responsibility Areas
 - Trees that may have developed a threat to the lines (broken limbs or sudden disease) since the last annual patrol

Key Activities and Milestones

Description	Plan Date	Forecast Date	Actual Date	Comment
WUI/LRA Focus Area Distribution Circuits/Portions of Circuits Identified	6/16-6/20	6/16-20	6/24	Includes creation of patrol maps.
Implement Enhanced Patrol for Tree Related Hazards and VC Pole Clearing	6/30-9/15	6/30-9/15		On schedule
Listed Tree Work	7/15-10/31	7/15-10/31		On schedule
Listed Pole Clearing Work	6/30-10/31	6/30-10/31		VC patrol and clearing work will occur at one visit

Significant Events/Challenges

- GIS Analysis and identification of highest risk areas within LRA areas completed.
- GIS Web based viewer showing the Wildland Urban Interface (WUI) areas of high risk due to vegetation has been created.
- List of electric distribution circuits and portions of circuits within the LRA/WUI has been created.
- Creation of PMD circuit projects has begun with first projects to start around the Bay Area.. VC inspections and pole clearing to be accomplished during one field visit.
- Resource coordination

Status Summary

- Portions of 975 distribution circuits identified within the LRA/WUI focus areas system wide.
- Enhanced tree patrol/tree work and VC pole patrol/pole clearing will occur as two separate inspections and work processes.
- Scope document complete



High Fire Risk Tree Identification and Mitigation

Lead and Scope

Initiative Lead: Redacted

Initiative Scope: Implement sophisticated tree hazard identification and mitigation measures in high fire danger areas to reduce the risk of power line cause fires. Includes LiDAR (like transmission) and Hyperspectral Imaging techniques and ground-based tree evaluation methods not used in routine vegetation management operations.

Cost Status

Plan	Forecast	Actual	Comments
\$10M	\$10M	\$10M	

Mitigation Components

- In high fire risk SRA areas, initiate a more aggressive approach during the enhanced ground patrols to identify and mitigate specific tree species that have known failure profiles.
- In certain identified SRA high fire risk areas, perform LiDAR imagery flights to target 1-2 species with known failure tendencies or susceptibility to pests and vectors. Desktop analysis of imagery and follow-up field inspection done to confirm need for mitigation.
- In certain identified high fire risk areas, perform flights with LiDAR + Hyperspectral fusion imagery to detect stressed trees. Desktop analysis of imagery and follow-up field inspection done to confirm need for mitigation
- Contract with specialized consulting arborists to evaluate potential hazard trees for decay using the Resistograph and/or Sonic Tomography decay detection devices. Mitigate as needed.

Key Activities and Milestones

Description	Plan Date	Forecast Date	Actual Date	Comment
LiDAR Areas identified and scope of work defined.	6/25/14	6/25/14		
LiDAR flight, analysis and ground patrol complete	9/15/14	9/15/14		
LiDAR = Hyperspectral flight, analysis and ground patrol complete	9/1/14	9/1/14		
Tree Work complete	10/15/14	10/15/14		
Consulting arborists under contract and available as needed.				

Significant Events/Challenges

- Vendor onboarding process is slow; we are working to speed this up.

Status Summary

- Vendors determined: DRG, QSI, InspecTools and Pictometry
- CWAs being created for DRG and QSI. **InspecTools onboarding in process and Pictometry onboarding to begin 6/25.**
- Planning meetings scheduled with DRG on 6/25 and with InspecTools on 6/26
- Initial data/imagery acquisition flights TBD



Fuel Reduction and Emergency Response Access

Lead and Scope

Initiative Lead: Redacted

Initiative Scope: Utility ROW corridors can serve as fire breaks for fire agencies to utilize in fire containment and to protect communities at risk; but, they are typically not managed for that purpose. Fuel reduction work to create a fire break in the ROW is above and beyond the normal routine work associated with creating and maintaining the ROW corridors.

Access to the fire break corridors by existing Utility access roads is insufficient for safe ingress and escape for emergency vehicles. New roads should be established and some road re-construction may also be needed.

Cost Status

Plan	Forecast	Actual	Comments
\$5M	\$5M	\$5M	

Mitigation Components

- Identify and prioritize projects that are within FRAP Fire Hazard Severity Zones of High and Very High, Urban Wildland Interface. Projects may include:
 - Fuel load reduction and creation of firebreaks under and adjacent to overhead distribution facilities
 - Opening existing roads for safe ingress and escape for emergency vehicles
 - New access and escape routes for remote facilities in high fire danger areas.
- Fund fuel reduction/road access projects that are being performed by other entities.
- Complete PG&E-initiated fuel reduction/road access projects

Key Activities and Milestones

Description	Plan Date	Forecast Date	Actual Date	Comment
Project Identification and Prioritization Complete	6/9-6/13	6/16-6/20	6/16	Project proponents notified of first round of project funding
Agency-initiated Projects Funded	6/23-8/1	6/23-8/1		
PG&E Initiated Projects – Setup Complete	8/1	8/1		
PG&E Initiated Projects – Work Complete	10/31	10/31		

Significant Events/Challenges

- 95 “shovel ready”** Fire Safe Council and Fire Agency fuel reduction, shaded fuel break, emergency access roads and community chipper program projects identified system wide.
- Project proponents notified of first set of funding awards for fuel reduction projects totaling approximately \$700 thousand.
- Fire Safe Council fuel reduction projects include ingress/egress access roads for community evacuations and emergency fire engine access.

Status Summary

- Fire Safe Council and Fire Agency projects prioritized and project awards to occur in at least 2 stages.
- Road access projects are being developed outside of Fire Safe Council projects.
- Separate PG&E initiated electric facility ROW fire break projects to be developed and set up by professional services foresters.



Early Detection of Forest Disease or Infestation

Lead and Scope

Initiative Lead: Redacted

Initiative Scope: Partner with USFS, Cal-Fire, Universities & NGO's monitoring forest health to identify and mitigate areas at risk from drought stress resulting in likely tree mortality. Use information to augment annual work, conduct follow up work and capture risk as it occurs.

Cost Status

Plan	Forecast	Actual	Comments
\$2M-\$5M	\$2M-\$5M	\$2M-\$5M	

Mitigation Components

1. Wild-land & urban forest health is already being monitored and data may be available from USFS, Calif. Forest Pest Council and Cal-Fire. Use existing data to inform enhanced patrols and annual work.
2. Where data is incomplete partner with USFS, Cal-Fire, Universities & NGO's to foster communication, identify data gaps and create a mutual alert system as data collection or field inspections occur. Where useful offer cost share opportunities to Universities and USFS researchers.
3. Develop and maintain relationships with USFS local and regional forest health personnel, Cal-Fire forest advisors, tribal land managers and private forests management to get current information on forest health conditions.

Key Activities and Milestones

Description	Plan Date	Forecast Date	Actual Date	Comment
Identify contacts and initiate information sharing	6/10/14	6/10/14	6/10/14	Kamran and Joel developed specific plan.
Receive existing data and distribute to support enhanced, wildland and high fire risk patrols.	6/10/14	6/10/14	6/10/14	Ongoing
Develop mechanism and schedule for ongoing information sharing.	6/10/14	6/10/14	6/10/14	Ongoing

Significant Events/Challenges

- Academic research tends to be long term, so care must be taken to engage in efforts from which near term benefits can be realized.
- Partnerships may require sharing sensitive PG&E asset information with public agencies. Precedent for non disclosure agreement arrangements with university personnel is unknown.
- Targeted organizations may not have personnel limitations affecting their ability to take on new projects (on PG&E's behalf.)

Status Summary

- 6/10/14 - Engaged USFS State Forestry Division regarding aerial survey information. (PG&E is now in receipt of bi-monthly updates, etc.)
- 6/11/14 - Inquiry communication to thirteen colleges across California.
- 6/15/14 - Entered discussions with HSU contact. (Partnership next steps call on 6/25/14.)
- 6/19/14 - Entered discussions with UC Davis contacts. Partnership viability under consideration currently.



Early Detection and Response to Wildfires

Lead and Scope

Initiative Lead:

Initiative Scope: Fund early detection and fire response across PG&E's Service Area in cooperation with agencies such as USFS, CalFire, State Parks, NPS, BLM. Includes, and NGO's.

Cost Status

Plan	Forecast	Actual	Comments
\$3M	\$3M	\$3M	

Mitigation Components

1. Coordinate with agencies to fund re-opening and staffing of the most important lookout tower locations. Includes possible facility restoration and equipment upgrades.
2. Partner with agencies to place high resolution remote cameras, change detection software, and infrared cameras on unstaffed fire lookouts, towers, substations, top of buildings on high hills, other strategic locations to provide remote feed data to a central location.
3. Fund dedicated fire detection flights during extreme fire hazard conditions. Partner with existing flights such as aerial photo flights, "puddle jumper" commercial flights, commuter flights, and utility inspections to add a fire detection component.
4. Facilitate standby crews during large fires to support local areas for initial attack by funding training and equipment for volunteer fire depts. PG&E crews, retired firemen and potentially recruiting private fire suppression companies.

Key Activities and Milestones

Description	Plan Date	Forecast Date	Actual Date	Comment
Meet with fire agencies to collect information and develop plan.	7/2	7/2		In contact for several weeks
Develop, prepare and fund lookout agreements.	6/30	6/30		
Develop, prepare and fund remote sensing agreements.				
Develop, prepare and fund fire detection flight agreements				
Develop, prepare and fund standby crew agreements.				

Significant Events/Challenges

- Northern Fire Coop no longer performs Aerial Fire Patrols after the litigation of the Moonlight fireType
- Planning to work with Mendocino Coop to coordinate additional flights
- ADVANCED FIRE INFORMATION SYSTEM (AFIS)
- **Satellite over California** in geostationary orbit to monitor for fires, returning images back earth every 15 minutes.
 - A. They vendor wanted \$90K for a pilot
 - B. 74,000 sq miles would run \$220K/year

Status Summary

- 20 lookouts submitted for remote camera locations (Cal Fire/USFS)
- Cost/location is ready - \$41,500
- Meeting schedules with CalFire on 07/02/14



Discussion