

# PG&E Emergency Plan Review

Electric Operations Emergency Management





# Life Safety

- **Sign in Sheet**
- **Evacuation Plan and Assembly Point**
- **911 Notification**
- **CPR Certified**
- **Earthquake Response**



# Objectives

**To provide an overview of PG&E's Electric Emergency Response plans and to provide an opportunity for questions and feedback in compliance with Public Utility Code (PUC) 768.6**



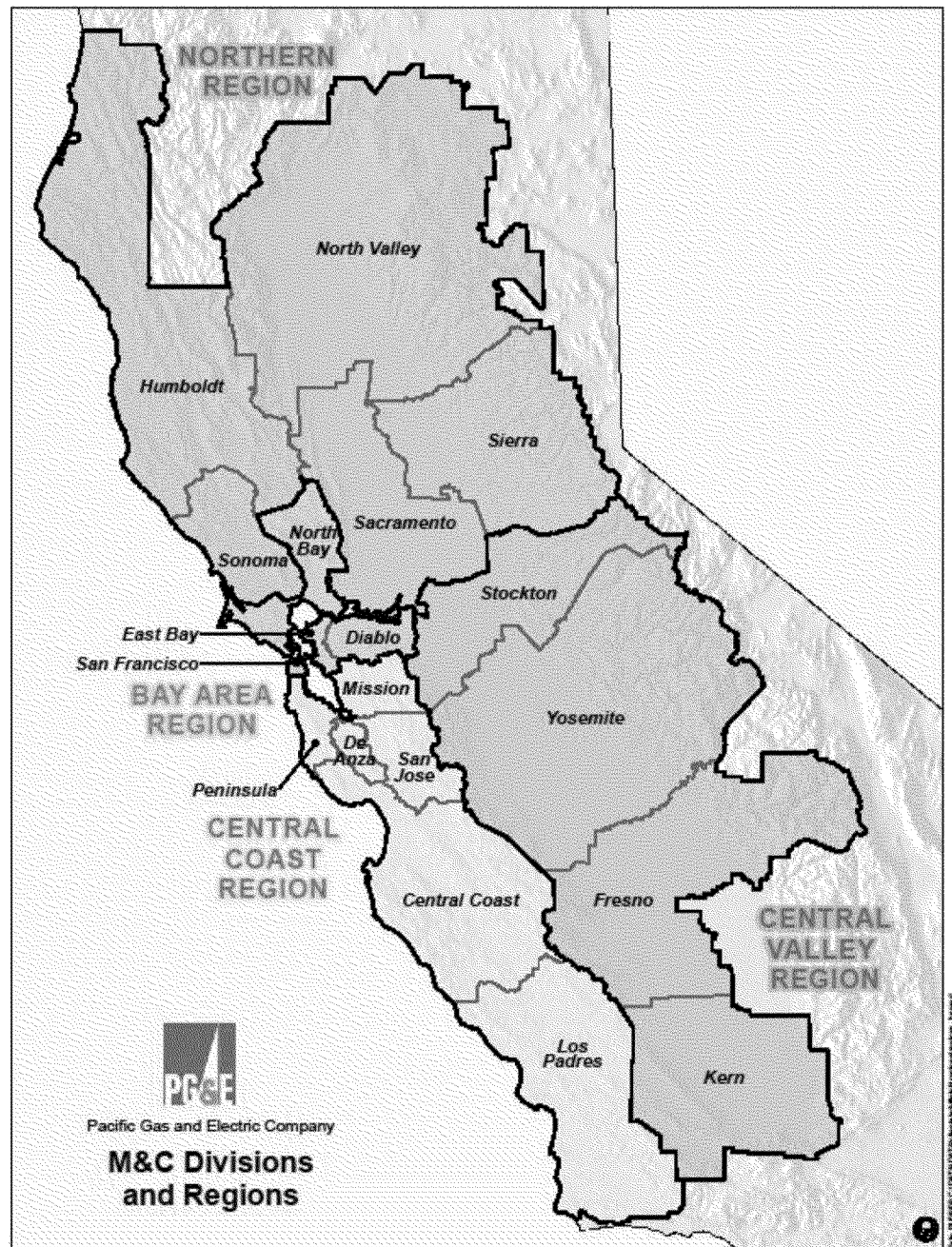
# Agenda

- **Welcome and Introductions**
- **Overview of requirements of PUC 768.6**
- **PG&E's Electric Emergency Operations Plan**
- **2013 Fire Prevention Plan**
- **Questions**



# PG&E

- 4 Regions, 19 Divisions, 70,000 square miles, 113,000 miles of overhead line
- Electric system is very sensitive to weather
  - 30,000 unplanned power outages per year
  - wind, rain, snow, lightning, heat are primary concerns
  - each division has a unique outage climatology



# Overview of PUC 768.6





# PUC 768.6 Requirements

## Requires PG&E to:

- **Solicit counties and cities within the service territory for points of contact (POC) to review all electric emergency plans**
- **Provide these POCs with copies of electric emergency plans to review**
- **Hold public meetings with the POCs to obtain feedback and answer questions about the plans**
- **Notify the CPUC of the schedule of meetings**
- **File a report confirming the completion of the scheduled meetings by April 1<sup>st</sup>**
- **Complete this process every 2 years**
- **Requires the CPUC to update General Order (GO) 166**



# 2013 Engagement

- Initiated request for the POC's from all city and counties within the service territory
- Sent electronic copies of EEOP and Fire Prevention Plans (with minor redactions)
- Scheduled 8 public meetings to be held throughout the service territory:

Date	Place	Hotel	Hotel Street	City	Time
Thursday, 2/28	San Ramon	San Ramon Marriott	2600 Bishop Ranch Dr	San Ramon	0900-1200
Tuesday, 3/5	Santa Rosa	Santa Rosa Courtyard	175 Railroad Street	Santa Rosa	0900-1200
Thursday, 3/7	Salinas	Holiday Inn Express	195 Kern Street	Salinas	0900-1200
Tuesday, 3/12	Fresno	LM-Holiday Inn	1055 Van Ness Ave	Fresno	0900-1200
Thursday, 3/14	Bakersfield	Hilton Garden Inn	3625 Marriott Dr	Bakersfield	0900-1200
Thursday, 3/14	Sacramento	Red Lion Woodlake	500 Leisure Lane	Sacramento	0900-1200
Tuesday, 3/19	SLO	Courtyard SLO	1605 Calle Joaquin	San Luis Obispo	0900-1200
Tuesday, 3/19	Redding	Red Lion	1830 Hilltop Dr	Redding	0900-1200

- Meetings are held in public venues to facilitate access
- Meeting schedule and confirmation of the completion must be communicated to the CPUC by 4/1/2013



# PG&E's Emergency Operation Plan





# Electric Emergency Operations Plan

## **1 Emergency Operations Plan Overview**

## **2 Emergency Plan Activation**

## **3 Emergency Management Organization (EMO)**

## **4 Emergency Response Process**

### 4.1 Readiness

### 4.2 Pre-Event

### 4.3 Assessment, Restoration and 911 Emergency Response

### 4.4 Resource Management Process

## **5 Communications**

## **6 Performance Indicators**

## **7 Training and Exercises**

## **8 After-Action Reports, Event Logs and Records**

## **9 OIS/OMT Workaround Process**



# Overall Priorities

- Protect health and welfare of the public, PG&E responders and other response personnel
- Protect property (both the public and utility)
- Safely restore gas and electricity
- Keep customers, local/state agencies, government reps, news media, and others informed
- Re-establish critical business functions and move towards business as usual.



# PG&E's Emergency Levels

<b>Activation Matrix</b>			
	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
<b>Description</b>	<b>Local Incident Day to Day</b>	<b>OEC/REC Activation</b>	<b>EOC Activation</b>
Incident	Local Incidents	Division/Region Wide Incident	Multiple Divisions/Region wide Incidents and High Profile Events
DSO SOPP MODEL FORECAST Outage Conditions	<b>CAT 1</b> Assume normal outage and crew expectations	Requires resources beyond routine 24/7 operations  <b>CAT 2 &amp; 3</b> Triggers weather advisories, watches or warnings, crew and Tman estimates are forecast	Major storms, wildfire, flooding, earthquake, pandemic, DCPD incident, terrorist attack, major media event  <b>Cat 4 &amp; 5</b> Triggers weather advisories, watches or warnings, crew and Tman estimates are forecast
Work Resources	Local Resources Resources moved within the Division	Resources moved within the Region Resources may move between Divisions within the Region <sup>1</sup>	Resources moved between Regions Significant need for outside resources such as; IBEW contractors, Mutual Aid (CUEA/WEI)
<b>Electric System Incident</b>			
Sustained Outages	N/A	SEE OEC Activation Guidelines	Multiple Divisions and Regions Impacted
Customers Out	N/A	>30,000 customers out at one time	>100,000 customers out at one time
Outage Restoration Duration Expected	1 Day	1-3 Days	>3 Days
Load Shed-EEP	N/A	Localized EEP	Localized EEP/System-wide EEP Event
Materials Inventory	Existing inventory adequate	Forecasted storm inventory may or may not be adequate. May need escalated support to procure material	Storm inventory monitoring requires escalating support to procure and deliver materials
<b>News Media Incident</b>			
Customer Experience	Normal	Increased attention with a Division or several Regions with potential national news attention	Increased attention local or Company-wide with national news exposure (e.g. manhole explosion, Super Bowl, Election Day)
<sup>1</sup> Resource requests across Divisions within a Region will be managed by the Logistics Chiefs within each Division or Region. Once resources arrive they will be tracked by the respective Resource Unit within the Planning Section. In the event the Resource Unit has not been activated, resource tracking would become the responsibility of the Plans Section Chief or the Incident Commander.			



# Emergency Preparedness

- Storm Outage Prediction Project (SOPP)
- 10 Day Weather Forecast
- Severe Weather Notifications
- Storm briefings
- Drill scenario preparation
- Historical analysis





# Adverse Weather at PG&E

- PG&E is exposed to risk during adverse weather
  - Power Outages / Customer Satisfaction / Performance Metrics
  - Risk of safety incidents
  - Financial risk (cost of restoration can be significant, cost of over preparing can also be significant)
  - Liability risk increases
- What are the main adverse weather factors at PG&E?  
wind, rain, snow, lightning, heat  
(Each has its own characteristics/impacts)
- What is the seasonal climatology of adverse weather risk?  
Where?  
Winter storm activity in the Santa Cruz mountains versus  
wildland fire risk in the Chico Area

# USO Storm Outage Prediction Project (SOPP)



# DSO SOPP Timeline

1995: the big year,  
developed basic qualitative  
forecast

1995 – 2008: forecasts of  
adverse weather were based  
on Area specific criteria

January 4, 2008: ...the big one  
2600 outages  
Jan 5 headline:



1995

2000

2008



February 2009: First SOPP forecast issued (based on Areas, no troublemen #'s included)

SOPP Model Output Beta Test 2

Outage Forecast for =>	Device Level Outages								
	Sunday 1/17/2010			Monday 1/18/2010			Tuesday 1/19/2010		
Outages by Division	SO	Tm	Cr	SO	Tm	Cr	SO	Tm	Cr
Area 1 Peninsula	<=5	N	N	24	10	5	16	7	3
San Fran	<=2	N	N	8	3	3	5	2	2
Area 2 Diablo	<=5	N	N	18	7	7	8	4	4
East Bay	<=3	N	N	10	4	4	9	4	3
Mission	<=3	N	N	10	4	4	7	3	3
Area 3 Cent. Coast	<=11	N	N	48	14	14	23	7	7
DeAnza	<=5	N	N	16	7	7	9	4	4
San Jose	<=6	N	N	10	7	7	8	4	4
Area 4 Fresno	<=9	N	N	20	5	5	13	4	3
Kern	<=5	N	N	18	5	5	8	2	2
Los Padres	<=6	N	N	34	10	9	11	4	3
Area 5 Stockton	<=7	N	N	40	10	10	17	5	4
Yosemite	<=8	N	N	38	10	7	13	4	3
Area 6 N. Valley	<=9	N	N	42	12	9	22	7	5
Sac	<=6	N	N	30	8	9	18	5	6
Sierra	<=11	N	N	40	10	10	24	6	6
Area 7 Humboldt	18	5	6	35	10	11	42	12	13
Sonoma	8	3	3	22	7	7	32	9	10
North Bay	8	3	3	24	7	8	31	9	11

Notes: SO = Sustained Outages, Tm = Troublemen, Cr = Crews, N = Normal

WindSOPP Model Outage Timing, by

Timing by Division	Sunday 1/17/2010	Monday 1/18/2010	Tuesday 1/19/2010
Area 1 Peninsula	10:00	10:00	04:00
San Fran	10:00	10:00	04:00
Area 2 Diablo	10:00	10:00	04:00
East Bay	10:00	10:00	04:00
Mission	19:00	19:00	04:00
Area 3 Cent. Coast	10:00	10:00	07:00
DeAnza	10:00	10:00	04:00
San Jose	10:00	10:00	04:00
Area 4 Fresno	10:00	10:00	07:00
Kern	10:00	10:00	07:00
Los Padres	10:00	10:00	07:00
Area 5 Stockton	12:00	12:00	07:00
Yosemite	12:00	12:00	07:00
Area 6 N. Valley	12:00	12:00	04:00
Sac	12:00	12:00	04:00
Sierra	12:00	12:00	04:00
Area 7 Humboldt	20:00	12:00	04:00
Sonoma	22:00	12:00	04:00
North Bay	22:00	12:00	04:00

Notes: Timing indicates time of strongest winds for any division with grey skies or

Storm Date: Sun Feb 22, 2009  
Based on 22 PST Wed Feb 18 Weather Model Runs

Area	Outage Range		Timing of Strongest Winds	Crew Xfmr	Crew Device	Total Crew outages	Crew Outage Ratio (per 24 Hrs)	Crews (avg)	Crews (Hi)
	24 Hour Outage* Forecast for Sunday, Feb 22, 2009								
Area 7	50	100	Sun 8 am to 2 pm	17	49	66	3	22	29
Area 6	50	100	Sun 10 am to 4 pm	17	49	66	3	22	29
Area 1	25	50	Sun 12 pm to 4 pm	8	24	33	4.5	7	10
Area 2	25	50	Sun 12 pm to 4 pm	8	24	33	4.5	7	10
Area 5	0	25	na	3	8	11	3	4	7
Area 3	25	50	Sun 12 pm to 4 pm	8	24	33	4	8	11
Area 4	0	25	na	3	8	11	3	4	7
All	175	400						74	103

\* Device level and above outages  
Preliminary indications are that 65% of device outages require crews  
Not for public distribution

Monday 1/18/2010  
First big forecast - MLK Storm

2008 - 2009: Initial SOPP feasibility Study

June 2009: HotSOPP created

Fall 2009: WindSOPP created

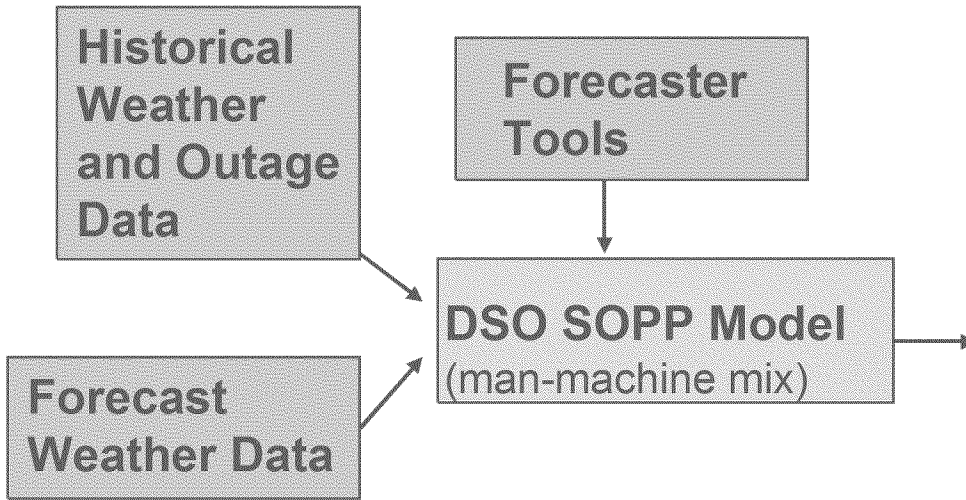
2008 2009 2010



# DSO SOPP Model

## Distribution System Operations - Storm Outage Prediction Project - Model

Developed to predict sustained outage counts, customer outage counts, timing of outages, and resource requirements necessary for restoration in order to better prepare for and mitigate total risk from storms



### DSO SOPP Model Forecast

Issued: Thursday, January 12, 2012 15:39

Transformer Level Outages and Above

Cat	Staffing	Qualitative Weather
Cat 1	Normal	Adverse weather unlikely
Cat 2	Normal, but have a plan	Adverse weather possible
Cat 3	Staffing & Timing as Directed	Adverse weather likely
Cat 4	Staff to Model, Timing as Directed	Extreme weather possible
Cat 5	Staff to Model, Timing as Directed	Extreme weather likely

Outages by Division	Thursday 1/12/2012				Friday 1/13/2012				Saturday 1/14/2012				Sunday 1/15/2012			
	SO	CESO	TM	CR	SO	CESO	TM	CR	SO	CESO	TM	CR	SO	CESO	TM	CR
Northern Humboldt	7	800	6	5	19	2800	11	10	3	300	3	2	3	300	3	2
Region Sonoma	7	1300	5	4	24	4600	11	10	4	600	3	2	4	600	3	2
N. Valley	16	3100	11	10	26	5000	15	13	5	500	4	3	5	500	4	3
Sac	15	3200	7	6	23	4900	7	6	2	200	2	1	2	200	2	1
Sierra	18	4000	9	8	36	8100	14	12	5	600	3	2	5	600	3	2
Bay North Bay	6	1100	5	4	33	9700	13	10	2	400	2	1	2	400	2	1
Area San Fran	4	2500	3	2	11	6900	5	4	1	600	2	1	1	600	2	1
Region East Bay	4	2300	3	2	6	3400	4	3	1	600	2	1	1	600	2	1
Diablo	6	2100	4	3	7	2500	4	3	2	600	2	1	2	600	2	1
Central Peninsula	8	4100	5	4	8	4100	5	4	3	800	3	2	2	600	2	1
Coast Mission	7	2100	4	3	6	1800	4	3	2	700	2	1	2	700	2	1
Region DeAnza	3	700	3	2	9	2400	6	5	2	500	2	1	2	500	2	1
San Jose	4	1200	3	2	10	3600	6	5	2	600	2	1	2	600	2	1
Cent. Coast	8	1400	6	5	40	10600	16	14	4	700	3	2	4	700	3	2
Los Padres	8	1600	5	4	34	6600	12	9	3	500	3	2	3	500	3	2
Central Stockton	9	2400	5	4	34	9200	9	8	3	500	2	1	3	500	2	1
Valley Yosemite	10	1700	5	4	30	5000	8	7	4	400	3	2	4	400	3	2
Region Fresno	12	2200	7	6	39	7300	12	9	6	800	4	3	6	800	4	3
Kern	9	1800	5	4	24	4900	6	5	3	400	2	1	3	400	2	1
<b>PG&amp;E TOTAL</b>	<b>161</b>	<b>39600</b>	<b>101</b>	<b>82</b>	<b>419</b>	<b>103600</b>	<b>168</b>	<b>140</b>	<b>57</b>	<b>10300</b>	<b>49</b>	<b>30</b>	<b>56</b>	<b>10100</b>	<b>48</b>	<b>29</b>

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Notes: SO = Sustained Outages, CESO = Customers Experiencing Sustained Outages, TM = Troublemens, CR = Crew



# DSO SOPP Model Sample Forecast

SO = Number of Sustained Outages (transformer level and above) forecast for the day

CESO = Number of Customers Experiencing Sustained Outages forecast for the day

Tm = Number of Troublemens needed to respond to outages \*

Cr = Number of Crews needed to repair outages \*

## DSO SOPP Model Forecast

Issued: Thursday, January 12, 2012 15:39

Transformer Level Outages and Above

Cat	Staffing	Qualitative Weather
Cat 1	Normal	Adverse weather unlikely
Cat 2	Normal, but have a plan	Adverse weather possible
Cat 3	Staffing & Timing as Directed	Adverse weather likely
Cat 4	Staff to Model, Timing as Directed	Extreme weather possible
Cat 5	Staff to Model, Timing as Directed	Extreme weather likely

		Thursday 1/12/2012				Friday 1/13/2012				Saturday 1/14/2012				Sunday 1/15/2012			
Outages by Division		SO	CESO	TM	CR	SO	CESO	TM	CR	SO	CESO	TM	CR	SO	CESO	TM	CR
Northern Humboldt Region	Sonoma	7	800	6	5	9	2800	11	10	3	300	3	2	3	300	3	2
	N. Valley	16	3100	11	10	26	5000	15	13	5	500	4	3	5	500	4	3
	Sac	15	3200	7	6	23	4900	7	6	2	200	2	1	2	200	2	1
	Sierra	18	4000	9	8	36	8100	14	12	5	600	3	2	5	600	3	2
Bay Area Region	North Bay	6	1100	5	4	33	9700	13	10	2	400	2	1	2	400	2	1
	San Fran	4	2500	3	2	11	6900	5	4	1	600	2	1	1	600	2	1
	East Bay	4	2300	3	2	6	3400	4	3	1	600	2	1	1	600	2	1
	Diablo	6	2100	4	3	7	2500	4	3	2	600	2	1	2	600	2	1
Central Coast Region	Peninsula	8	4100	5	4	8	4100	5	4	3	800	3	2	2	600	2	1
	Mission	7	2100	4	3	6	1800	4	3	2	700	2	1	2	700	2	1
	DeAnza	3	700	3	2	9	2400	6	5	2	500	2	1	2	500	2	1
	San Jose	4	1200	3	2	10	3600	6	5	2	600	2	1	2	600	2	1
	Cent. Coast	8	1400	6	5	40	10600	16	14	4	700	3	2	4	700	3	2
Central Valley Region	Stockton	9	2400	5	4	34	9200	9	8	3	500	2	1	3	500	2	1
	Yosemite	10	1700	5	4	30	5000	8	7	4	400	3	2	4	400	3	2
	Fresno	12	2200	7	6	39	7300	12	9	6	800	4	3	6	800	4	3
	Kern	9	1800	5	4	24	4900	6	5	3	400	2	1	3	400	2	1
PG&E TOTAL		161	39600	101	82	419	103600	165	140	57	10300	49	30	56	10100	48	29

Forecast is color coded based on Category level

**\* Note:**

Resource numbers are based on forecasted SO and how many crews/troublemen are needed to repair outages:

- within 12 hours for Cat 3 or lower outage conditions
- within 24 hours for Cat 4 or greater outage conditions

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Notes: SO = Sustained Outages, CESO = Customers Experiencing Sustained Outages, TM = Troublemens, CR = Crews



# DSO SOPP Model Sample Forecast

Timing indicates forecasted timing of most intense outage producing weather (rain, wind, snow, etc) for any division at Cat 2 or above

Colors correspond to the Category forecast

## DSO SOPP Model Forecast Timing, by Division

	Thursday 1/12/2012	Friday 1/13/2012	Saturday 1/14/2012	Sunday 1/15/2012
Timing by Division	Timing	Timing	Timing	Timing
Northern Humboldt Region		0:00 - 6:00		
Sonoma	14:00 - 24:00	0:00 - 6:00		
N. Valley	14:00 - 24:00	0:00 - 6:00		
Sac	14:00 - 24:00	0:00 - 6:00		
Sierra	14:00 - 24:00	0:00 - 6:00		
Bay Area Region		0:00 - 8:00		
North Bay		0:00 - 8:00		
San Fran	16:00 - 24:00	0:00 - 8:00		
East Bay		0:00 - 8:00		
Diablo	16:00 - 24:00	0:00 - 8:00		
Central Coast Region	16:00 - 24:00	0:00 - 8:00		
Peninsula	16:00 - 24:00	0:00 - 8:00		
Mission	16:00 - 24:00	0:00 - 8:00		
DeAnza		0:00 - 8:00		
San Jose		0:00 - 8:00		
Cent. Coast		0:00 - 10:00		
Los Padres	20:00 - 24:00	0:00 - 10:00		
Central Valley Region	20:00 - 24:00	0:00 - 12:00		
Stockton	20:00 - 24:00	0:00 - 12:00		
Yosemite	20:00 - 24:00	0:00 - 12:00		
Fresno	20:00 - 24:00	0:00 - 12:00		
Kern	20:00 - 24:00	0:00 - 12:00		

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Note: Timing reflects the most intense period of outage producing weather for any division at Cat 2 or above



# DSO SOPP Model Sample Forecast

## DSO SOPP Dissemination

- The DSO SOPP forecast is delivered each morning via email
- >3500 recipients
- Also posted to the PG&E intranet
- If adverse weather is imminent, afternoon and evening forecasts are produced

Distribution System Operations Weather Forecast: Friday March 30 – Sunday April 8...

From: [Redacted] Sent: Fri 3/30/2012 07:36

Subject: Distribution System Operations Weather Forecast: Friday March 30 – Sunday April 8, 2012

Message: DSO\_SOPP\_BB\_Image\_2012-03-30-0723.png (92 KB)

**Distribution System Operations Weather Forecast: Friday March 30 – Sunday April 8, 2012**

**Forecast Discussion:**

Showers continue today in Northern Region with dry conditions expected south of a Santa Rosa to Reno line. Showers will taper off this afternoon before the next storm approaches.

Very early tomorrow a developing Pacific storm will begin to impact Humboldt Division with increasing south winds and rain. This storm system will then sweep across the Service Area bringing heavy rain and gusty west to northwest winds to the Northern Region. Snow levels will start out at 4000' south by Saturday evening. Little snow expected north of the Yosemite line. Following the storm, rain will continue to fall from the coast further south into the San Joaquin on Sunday with the possibility of reaching outage producing thresholds.

Lingering snow showers in the Sierra Nevada are expected Sunday morning with dry conditions returning to all divisions Sunday afternoon through Tuesday morning. A weak system will move through on Tuesday or Wednesday next week with a chance of light showers continuing through the week and possible dry conditions returning next weekend.

**DSO SOPP Model Forecast**

Issued: Friday, March 30, 2012 07:23

Transformer Level Outages and Above

Cat	Staffing		Qualitative Weather
	Staffing	Staffing	
Cat 1	Normal		Adverse weather unlikely
Cat 2	Normal, but have a plan		Adverse weather possible
Cat 3	Staffing & Timing as Directed		Adverse weather likely
Cat 4	Staff to Model, Timing as Directed		Extreme weather possible
Cat 5	Staff to Model, Timing as Directed		Extreme weather likely

Outages by Division	Friday 3/30/2012				Saturday 3/31/2012				Sunday 4/1/2012				Monday 4/2/2012			
	SO	CESO	TM	CR	SO	CESO	TM	CR	SO	CESO	TM	CR	SO	CESO	TM	CR
Northern Humboldt Region	6	700	5	4	6	340	10	10	5	600	4	3	4	500	4	3
Sonoma	4	600	3	2	5	250	10	10	5	800	5	4	4	600	3	2
N. Valley	5	500	5	4	21	4000	15	15	5	500	4	3	6	500	3	4
Sac	4	400	3	2	2	1700	5	4	3	300	2	1	4	400	3	2
Sierra	7	800	4	3	23	3400	11	11	5	600	3	2	5	700	4	3
Bay Area	4	800	3	2	10	2500	7	6	5	1000	4	3	3	600	3	2
San Fran Region	1	600	2	1	3	1700	3	2	3	600	2	1	1	600	2	1
East Bay	1	600	2	1	6	3400	4	3	3	1700	3	2	1	600	2	1
Diablo	7	900	2	1	3	280	0	0	3	300	2	1	3	500	2	1
Central Peninsula	2	800	2	1	3	4600	6	5	3	900	3	2	2	600	2	1
Coast	2	700	2	1	5	1500	3	2	2	700	2	1	2	700	2	1
North Region	2	500	2	1	11	2800	4	3	3	700	3	2	2	600	2	1
San Jose	2	600	2	1	7	2500	4	3	3	300	3	2	2	600	2	1
Cent. Coast	6	1000	5	4	11	2900	8	7	7	1200	5	4	6	1000	5	4
Los Padres	4	600	3	2	4	800	4	3	3	600	4	3	4	600	3	2
Central Stockton	5	800	3	2	10	2700	5	4	6	1300	4	3	5	800	3	2
Valley Yosemite	5	700	3	2	3	1500	5	4	6	900	4	3	6	700	3	2

# DSO SOPP Model Performance

- The DSO SOPP Model helps PG&E more efficiently prepare for adverse weather ...but only if outage forecasts are accurate
- How has the model performed in recent events?





# DSO SOPP Model Performance

## 3/30/2012 forecast for 3/31/2012

**1400 Update: Distribution System Operations Weather Forecast: Friday March 30 – Sunday April 8, 2012**

**1400 Update Highlights:**

- **No significant changes to forecast**
- **A vigorous frontal system will sweep across the northern half of the Service Area Saturday morning bringing rain and south winds 30 to 40 mph, with higher gusts likely over elevated terrain**
- **Winds will shift to westerly and remain gusty throughout the day Saturday**
- **Main impacts still appear to be focused on Northern Region, with less certain impacts for areas south of a Bay Area to Tahoe line**
- **Snow levels will be initially high then lower to 3000 north and 4000 feet south by Saturday afternoon, however little snow accumulation is expected at the lower elevations and low snow outage conditions are not anticipated**
- **Chance of thunderstorms Saturday, most likely during the afternoon in Northern Region**
- **Breezy northwest winds 25 to 35 mph are possible Sunday along the coast, through the Bay Area, and down the San Joaquin Valley**
- **Fair weather with lighter winds expected Monday**

*ATS – Meteorology  
Services*



# DSO SOPP Model Performance

## 3/30/2012 forecast for 3/31/2012

### DSO SOPP Model Forecast

Issued: Friday, March 30, 2012 13:52

Transformer Level Outages and Above

Cat	Staffing	Qualitative Weather
Cat 1	Normal	Adverse weather unlikely
Cat 2	Normal, but have a plan	Adverse weather possible
Cat 3	Staffing & Timing as Directed	Adverse weather likely
Cat 4	Staff to Model, Timing as Directed	Extreme weather possible
Cat 5	Staff to Model, Timing as Directed	Extreme weather likely

Outages by Division	Friday 3/30/2012				Saturday 3/31/2012				Sunday 4/1/2012				Monday 4/2/2012			
	SO	CESO	TM	CR	SO	CESO	TM	CR	SO	CESO	TM	CR	SO	CESO	TM	CR
Northern Humboldt Region	4	500	4	3	37	5500	15	12	5	600	4	3	4	500	4	3
Sonoma	4	600	3	2	16	3100	10	9	6	900	5	4	4	600	3	2
N. Valley	6	500	5	4	21	4000	15	13	5	500	4	3	6	500	5	4
Sac	4	400	3	2	8	1700	5	4	3	300	2	1	4	400	3	2
Sierra	7	800	4	3	23	5200	13	11	5	600	3	2	6	700	4	3
Bay North Bay Area	4	800	3	2	11	3200	8	7	5	1000	4	3	3	600	3	2
San Fran	1	600	2	1	3	1700	3	2	1	600	2	1	1	600	2	1
Region East Bay	1	600	2	1	6	3400	4	3	3	1700	3	2	1	600	2	1
Diablo	3	900	2	1	8	2800	5	4	3	900	2	1	3	900	2	1
Central Peninsula	2	600	2	1	9	4600	6	5	3	800	3	2	2	600	2	1
Coast Mission	2	700	2	1	5	1500	3	2	2	700	2	1	2	700	2	1
Region DeAnza	2	500	2	1	11	2900	7	6	3	700	3	2	2	500	2	1
San Jose	2	600	2	1	7	2500	4	3	3	900	2	1	2	600	2	1
Cent. Coast	6	1000	5	4	11	2900	8	7	7	1200	5	4	6	1000	5	4
Los Padres	4	600	3	2	5	800	4	3	5	800	4	3	4	600	3	2
Central Stockton	5	800	3	2	10	2700	5	4	6	1000	4	3	5	800	3	2
Valley Yosemite	6	700	3	2	9	1500	5	4	8	900	4	3	6	700	3	2
Region Fresno	8	1100	5	4	9	1200	5	4	10	1300	6	5	8	1100	5	4
Kern	3	400	2	1	3	400	2	1	4	600	3	2	3	400	2	1
PG&E TOTAL	74	12700	57	38	212	51600	127	104	87	16000	65	46	72	12400	57	38

PG&E Internal Use Only

ATS - Meteorology Services

Notes: SO = Sustained Outages, CESO = Customers Experiencing Sustained Outages, TM = Troublemakers, CR = Crews

Elevated Outage activity was forecast to begin Saturday morning in the north and spread south during the day

### Most Intense Timing, by Division

Division	Saturday 3/31/2012 Timing	Sunday 4/1/2012 Timing	Monday 4/2/2012 Timing
DeAnza	04:00 - 16:00		
San Jose	06:00 - 20:00		
Cent. Coast	08:00 - 16:00		
Los Padres	08:00 - 16:00		
Stockton	08:00 - 16:00		
Yosemite	08:00 - 20:00		
Fresno	08:00 - 20:00		
Kern	08:00 - 20:00		
DeAnza	08:00 - 20:00		
San Jose	08:00 - 20:00		
Cent. Coast	10:00 - 24:00		
Los Padres	10:00 - 24:00		
Stockton	12:00 - 18:00		
Yosemite	14:00 - 24:00		
Fresno			
Kern			

PG&E Internal Use Only

ATS - Meteorology Services

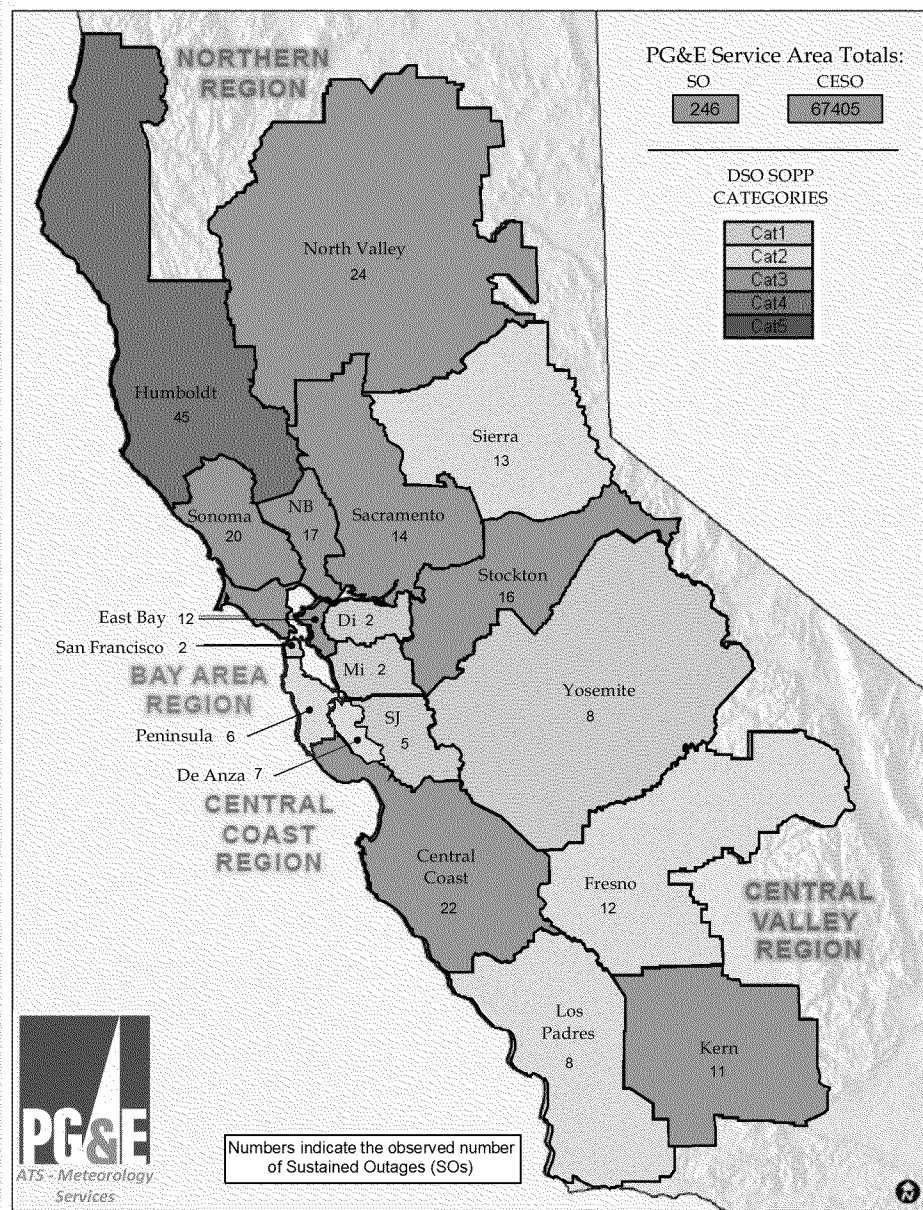
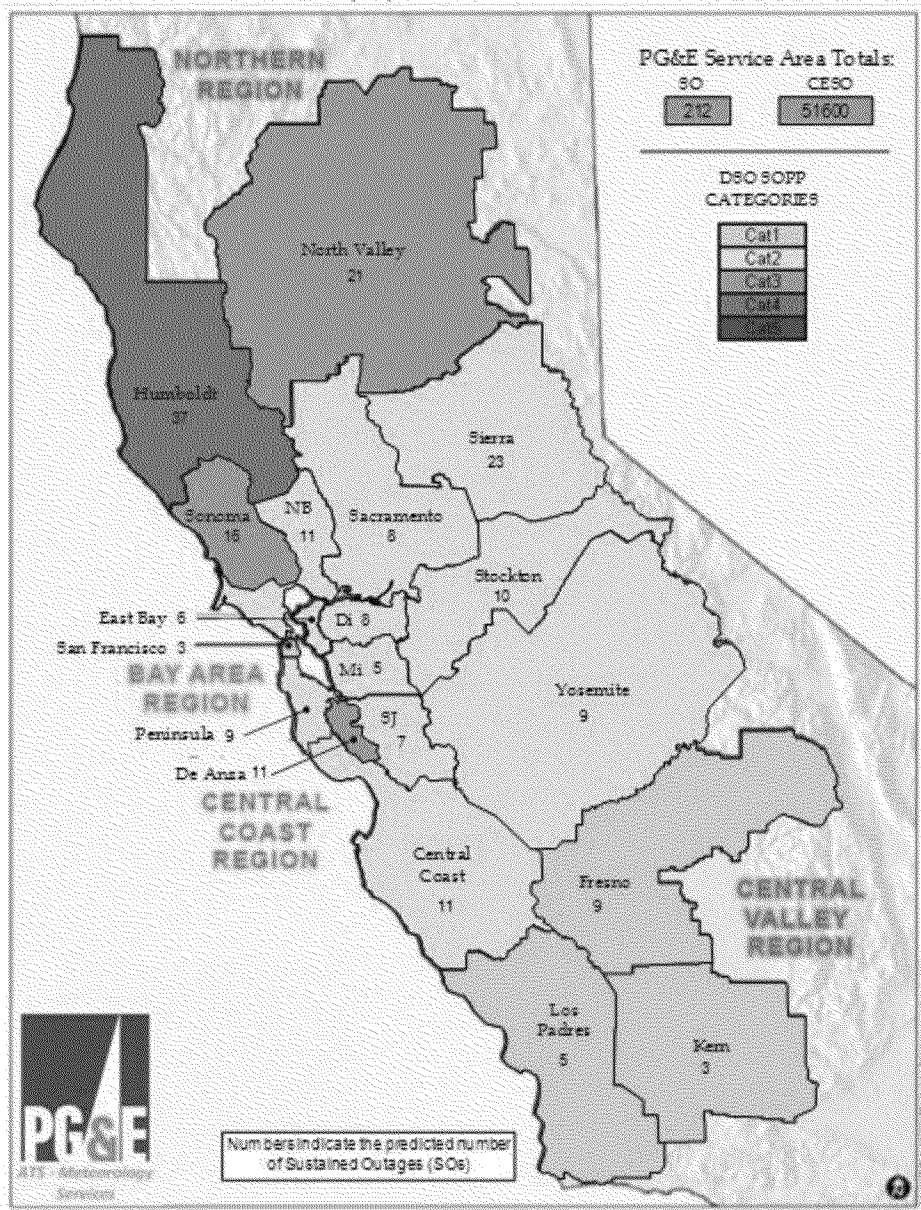
Note: Timing reflects the most intense period of outage producing weather for any division at Cat 2 or above



DSO SOPP Forecast Issue d: Fri - 03/30/2012 13:52

Valid: Sat - 03/31/2012

Observed Sustained Outages (SOs) on 3.31.2012



Actual Outages Observed from 03/26/2012 - 04/01/2012

ATS - Meteorology Services	Mon - 3/26/12		Tue - 3/27/12		Wed - 3/28/12		Thu - 3/29/12		Fri - 3/30/12		Sat - 3/31/12		Sun - 4/1/12		
	SO	CESO	SO	CESO	SO	CESO	SO	CESO	SO	CESO	SO	CESO	SO	CESO	
Humboldt	9	2042	37	4049	9	72	8	675	6	89	45	5333	10	176	Humboldt
Sonoma	2	16	18	632	6	134	1	1	7	301	20	4686	5	985	Sonoma
North Valley	6	643	5	319	18	1354	1	61	4	2068	24	4452	3	157	North Valley
Sacramento	8	314	7	591	17	717	2	225	8	1800	14	2049	6	65	Sacramento
Sierra	2	59	3	1234	7	205	3	216	3	39	13	2736	5	251	Sierra
North Bay	2	159	18	1628	2	186	1	149	1	1	17	8719	3	211	North Bay
San Francisco	1	7	3	450	0	0	0	0	1	50	2	1280	1	44	San Francisco
East Bay	2	92	2	613	2	87	0	0	2	2553	12	7053	4	255	East Bay
Diablo	1	8	5	2898	4	376	3	725	2	219	2	1782	1	18	Diablo
Peninsula	5	804	5	337	3	17	7	3227	1	4598	6	1814	3	62	Peninsula
Mission	1	2769	5	757	3	79	0	0	4	282	2	4451	1	10	Mission
DeAnza	3	38	5	491	5	1856	1	145	1	8	7	1694	2	2428	DeAnza
San Jose	1	6	3	3690	2	667	5	167	2	19	5	4304	3	57	San Jose
Central Coast	3	95	6	165	9	217	8	5312	2	51	22	10725	3	912	Central Coast
Los Padres	3	219	5	29	4	262	4	50	3	13	8	1107	8	218	Los Padres
Stockton	6	255	4	247	4	658	4	483	5	276	16	3859	2	143	Stockton
Yosemite	6	136	4	99	9	119	8	660	5	9	8	442	11	2556	Yosemite
Fresno	6	274	5	69	5	207	9	93	3	23	12	526	8	4463	Fresno
Kern	7	15	7	19	1	1	4	4	2	2	11	385	7	4682	Kern
<b>TOTAL</b>	<b>74</b>	<b>7951</b>	<b>147</b>	<b>18317</b>	<b>110</b>	<b>7214</b>	<b>69</b>	<b>12193</b>	<b>62</b>	<b>12401</b>	<b>246</b>	<b>67397</b>	<b>86</b>	<b>17693</b>	<b>TOTAL</b>

DSO SOPP FORECAST

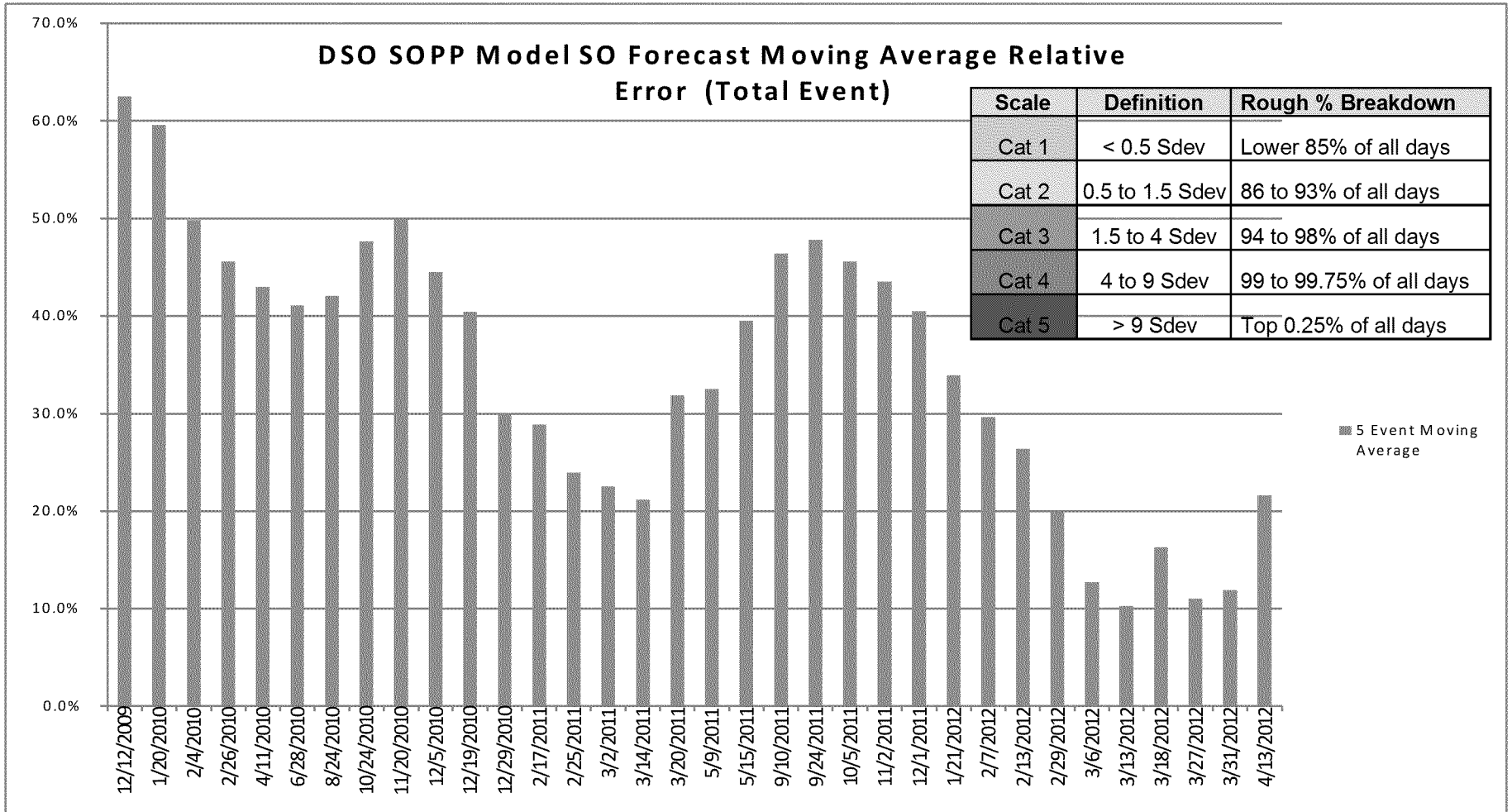
(Forecast numbers extracted from the previous day's forecast)

ATS - Meteorology Services	Mon - 3/26/12		Tue - 3/27/12		Wed - 3/28/12		Thu - 3/29/12		Fri - 3/30/12		Sat - 3/31/12		Sun - 4/1/12		
	SO	CESO	SO	CESO	SO	CESO	SO	CESO	SO	CESO	SO	CESO	SO	CESO	
Humboldt	10	1500	23	3400	7	800	8	1200	12	1800	37	5500	4	500	Humboldt
Sonoma	4	600	15	2900	5	800	4	600	4	600	16	3100	5	800	Sonoma
N. Valley	6	500	15	2900	7	600	6	500	6	500	21	4000	5	500	N. Valley
Sac	4	400	8	1700	5	500	4	400	4	400	8	1700	3	300	Sac
Sierra	6	700	15	3400	8	1000	6	700	7	800	23	5200	5	600	Sierra
North Bay	4	800	11	3200	4	800	4	800	4	800	11	3200	3	600	North Bay
San Fran	1	600	2	1100	1	600	1	600	1	600	3	1700	1	600	San Fran
East Bay	1	600	5	2800	2	1100	1	600	1	600	6	3400	1	600	East Bay
Diablo	3	900	8	2800	3	900	3	900	3	900	8	2800	3	900	Diablo
Peninsula	2	600	6	3100	3	800	2	600	2	600	9	4600	3	800	Peninsula
Mission	2	700	3	1100	3	1100	2	700	2	700	5	1500	2	700	Mission
DeAnza	2	500	3	700	3	700	2	500	2	500	11	2900	3	700	DeAnza
San Jose	2	600	4	1200	3	900	2	600	2	600	7	2500	3	900	San Jose
Cent. Coast	5	900	8	1400	8	1400	6	1000	6	1000	11	2900	6	1000	Cent. Coast
Los Padres	4	600	4	600	4	600	4	600	4	600	5	800	5	800	Los Padres
Stockton	5	800	5	800	5	800	5	800	5	800	10	2700	6	1000	Stockton
Yosemite	6	700	6	700	6	700	6	700	6	700	9	1500	8	900	Yosemite
Fresno	8	1100	8	1100	8	1100	8	1100	8	1100	9	1200	10	1300	Fresno
Kern	3	400	3	400	3	400	3	400	3	400	3	400	4	600	Kern
<b>TOTAL</b>	<b>78</b>	<b>13500</b>	<b>152</b>	<b>35300</b>	<b>88</b>	<b>15600</b>	<b>77</b>	<b>13300</b>	<b>82</b>	<b>14000</b>	<b>212</b>	<b>51600</b>	<b>80</b>	<b>14100</b>	<b>TOTAL</b>



# DSO SOPP Model Error History

- New categories were defined in Fall 2011, adjusted January 2012
- Increased sensitivity in DSO SOPP Model to smaller storms
- Drop in the relative error in recent months





# DSO SOPP Intangibles

The indirect and less quantifiable benefits besides more efficient restoration

## **The SOPP methodology, databases, and expertise has enabled:**

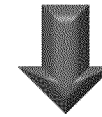
- Better situational awareness prior to and during weather events – meteorologist takes on valuable role in the Plans Section in the Technical Specialist role
- Vastly improved understanding of weather risk to the system
- What is really causing outages and where
- Better understanding of cost drivers for different kinds of storms
- New understanding of the relationships between weather (trends) and reliability (trends) scores (much more than just the obvious fact that weather negatively impacts reliability)

# Pre-Event





# Pre Event Timeline



- 10 Days:**
  - Daily weather forecast by Region
  - Tracking of impending weather with a focus on forecast accuracy and timing
- 96 Hour:**
  - Implement 2x a day weather forecasts
  - IC begins formulation of response strategies, key messages and objectives
  - Evaluate clearances and abnormal conditions
  - Customer messaging strategy
  - Environmental and Safety messages
- 48 - 72 Hour:**
  - Hold strategy session with T&D Officer Oversight team
  - Conduct Pre-event conference call with EMO
  - Update messaging
  - Review materials and equipment availability
  - Develop overall resource strategy
- 24 Hour:**
  - Finalize strategies, key messages and objectives
  - Conduct final pre-event call with EMO including pre-staging
  - Confirm resource adequacy for pre-staging via 215
  - Finalize analysis of resource needs and recommend pre-event resource movement of Contractor and Mutual Aid

## WindSOPP Model Outages, by Division

Issued: Sunday, January 17, 2010 07:49

Outage Forecast for #0	Device Level Outages					
	Sunday 1/17/2010		Monday 1/18/2010		Tuesday 1/19/2010	
Outages by Division	SO	Tm	Cr	SO	Tm	Cr
<b>Area 1 Peninsula</b>	<=5	N	N	24	10	3
<b>Area 2 Diablo</b>	<=2	N	N	8	3	3
<b>Area 3 Cent Coast</b>	<=11	N	N	48	14	14
<b>Area 4 Fresno</b>	<=8	N	N	20	5	5
<b>Area 5 Stockton</b>	<=8	N	N	40	10	10
<b>Area 6 N. Valley</b>	<=8	N	N	42	12	9
<b>Area 7 Humboldt</b>	18	5	6	35	10	13

Notes: SO = Sustained Outages, Tm = Troublemn, Cr = Crews, N = Norm

## WindSOPP Model Outage Timing

Timing by Division	Sunday 1/17/2010	Monday 1/18/2010	Tuesday 1/19/2010
Timing by Division	Timing	Timing	Timing

**Safety Message - August 9, 2012**

**LEADERSHIP MESSAGE:**

NOTE: Safety is a Company value that sits at the top of the list. Safety is a responsibility and a requirement for every employee. It is essential to protect the safety of our employees and the public. Safety is a shared responsibility. We are committed to providing a safe and healthy work environment for all our employees. We will continue to invest in safety training and resources to ensure that we are providing the best possible safety environment for our employees. We will continue to work with our employees to ensure that we are providing the best possible safety environment for our employees. We will continue to work with our employees to ensure that we are providing the best possible safety environment for our employees.

## Pre-Planning Available Resources

Reported time	Repair Crews (T-200 & T-20)											
	Tours			Pre			Sat			Sun		
	Crews on shift	Pre-arranged or held over	212 Call-out	Crews on shift	Pre-arranged or held over	212 Call-out	Crews on shift	Pre-arranged or held over	212 Call-out	Crews on shift	Pre-arranged or held over	212 Call-out
<b>Northern (NP)</b>	2	0	15	2	0	5	0	0	5	0	0	5
<b>Bay Area (BA)</b>	22	4	11	22	4	12	3	5	9	2	4	9
<b>Central Coast (CC)</b>	22	4	9	15	5	11	1	4	10	1	2	10
<b>Central Valley (CV)</b>	24	11	20	23	10	18	5	10	15	0	14	12
<b>Total</b>	70	19	54	67	27	46	9	25	39	3	20	41

Area	Outage Status	Notes
Area 1 Peninsula	SO	SO
Area 2 Diablo	SO	SO
Area 3 Cent Coast	SO	SO
Area 4 Fresno	SO	SO
Area 5 Stockton	SO	SO
Area 6 N. Valley	SO	SO
Area 7 Humboldt	SO	SO



# Pre-Event Checklist

## Based on supporting execution of the Electric Operations Emergency Operations Plan

- **96 hour-** is to be used when the SOPP model is forecasting escalated outage levels in approximately 96 hours out. The overall objective is to begin raising awareness with the Emergency Management Organization (EMO) and to begin the necessary planning activities.
- **48-72 hour-** Similar to the 96+ hours checklist, this checklist begins the transition from initial planning activities to tactical readiness. The objective of this checklist is to begin finalizing key strategies, messages, and readiness.
- **24 hour-** This checklist is generally focused on tactical readiness. The objective of this checklist is to validate that the line item approvals are still appropriate based on the latest SOPP output. It is also set up to begin tactical activities such as messaging, where possible.



# Pre Staging Resources

## **Pre staging is done based on SOPP model outputs**

- Field resource movements across the service territory
- Standby awaiting outage activity

## **Resources are staggered based on response role**

- Troublemens and Operators on shift with additional resources reporting just prior to peak weather activity
- 911 Standby resources
- Crew and estimating resources staggered to capture efficiency

## **Contractor resources included in pre-staging based on forecasted weather impact**





# Resource Staffing Plan

- Command and General Staff positions filled at all emergency room levels
- Staffing plans are updated weekly and used to populate the Incident Action Plan
- Incident Management Teams utilized to support headquarters with large outage volume
- Field Resources staffed to SOPP model outputs

Oncall Schedule for 09/21/2012 - 09/27/2012

EMO Northern Region						
REC	Humboldt	North Valley	Sacramento	Sierra	Sonoma	Incident Management
<b>Incident Command</b> Anthony Aker 530-326-9186 Tom Elder 530-410-5056	<b>Incident Command</b> Cynthia King-Palix 707-498-4171 Richard Tomble 707-799-3981	<b>Incident Command</b> Dan Hangan 530-698-4735 Brook Boyce 530-736-5647	<b>Incident Command</b> Eric Rubio 530-696-3304 Trevor Hennam 209-479-4176	<b>Incident Command</b> Marty Sunde 707-915-9244 Eric Marook 415-517-4541	<b>Incident Command</b> Allen Thorburn 707-322-6080 Ron Richardson 415-342-9160	
<b>Customer Strategy</b> Dale Schmidt 530-608-0119 Kris Heinrich 916-956-3476	<b>Customer Strategy</b> Robert Stern 707-498-1887 Neil Manoff 707-498-4920	<b>Customer Strategy</b> Denise Lee 530-432-2020 Deann Maranghi 530-701-2062	<b>Customer Strategy</b> Derek Bond 530-610-9156 Keith Smith 916-295-2985	<b>Customer Strategy</b> Derek Bond 530-610-9156 Keith Smith 916-295-2985	<b>Customer Strategy</b>	
<b>P&amp;I</b> Erik Shaw 530-626-7087 Brian Sweeney 916-605-0247	<b>P&amp;I</b> Celine Holsten 707-637-8288 David Wyle 707-606-4559	<b>P&amp;I</b> Loreta Weber 530-520-2176 Brian Agnew 530-410-7065	<b>P&amp;I</b> Denise Abayekona 530-667-1673 Ontario Johnson 916-619-4416	<b>P&amp;I</b> Denise Leggs 916-610-1157	<b>P&amp;I</b> Laura Aker 707-322-5957	
<b>Logistics</b> Joseph Manno 530-401-0801 Lynn Forette 916-402-0327	<b>Logistics</b> Sharon Mearns 707-466-0118	<b>Logistics</b> Liz Bravins 530-410-6472	<b>Logistics</b> Darryl Williams 530-648-1097	<b>Logistics</b> Joseph Abner 530-320-7071 Marty Hepper 530-226-4002	<b>Logistics</b> Denise Mearns 707-321-6392	

## Pre-Planning Available Resources

Reported time

	Repair Crews (T-200 & T-300)											
	Thurs			Fri			Sat			Sun		
	Crews on shift	Pre-arranged or held over	212 Call-out	Crews on shift	Pre-arranged or held over	212 Call-out	Crews on shift	Pre-arranged or held over	212 Call-out	Crews on shift	Pre-arranged or held over	212 Call-out
<b>Northern (NF)</b>	3	0	15	3	0	5	0	0	5	0	0	5
Humboldt	0	0	12	0	0	5	0	0	5	0	0	5
Sonoma	3	0	3	3	0	0	0	0	0	0	0	0
North Valley												
Sacramento												
Sierra												
<b>Bay Area (BA)</b>	22	4	11	22	4	12	3	5	9	2	4	9
North Bay	10	4	4	10	4	4	1	1	1	0	0	1
San Francisco	7	0	7	7	0	2	0	0	2	0	0	1
East Bay	3	0	1	3	0	1	0	0	1	0	0	1
Diablo	2	4	4	2	4	5	2	4	5	2	4	4
<b>Central Coast (CC)</b>	22	4	8	19	5	11	1	4	10	1	2	10
Peninsula												
Mission												
De Anza	3/3man	1/4man late	3/3man	3/3man	1/3man late	3/3man	1	1	3/3man	1	1	3/3man
San Jose	3	0	6	3	0	6	0	1	5	0	0	5
Central Coast												
Los Padres	14	4	2	11	4	2	0	2	2	0	1	2
<b>Central Valles (CV)</b>	24	11	20	23	18	18	5	16	15	0	14	17
Stockton	11	4	10	4	4	5	2	3	5	0	3	5
Yosemite	0	3	5	0	4	5	0	3	5	0	3	5
Fresno	13	6	6	12	8	8	2	6	6	0	6	8
Kern	2	5	2	2	6	1	2	4	4	0	3	4
<b>Total</b>	71	19	54	67	27	46	9	25	39	3	20	41

# During Event





# Overall Strategy

**Make Safe:** Field personnel act to address hazardous conditions to ensure public and employee safety.

**Assess:** Field personnel assess the outage location to:

- identify the outage cause
- determine the necessary (material, equipment, personnel)
- estimate the time necessary to make repairs.

**Communicate:** Field personnel and system operators work together to provide customers and public agencies with information: such as the cause of an outage and estimated time of restoration.

**Restore:** After making the condition safe, assessing the situation and beginning the communication process, field personnel and system operators work together to restore service



# Prioritization Guidelines

## Electric System

- Control area interconnections
- Generation
- Transmission
- Substation
- Distribution
- Customer level

## Special Considerations

- Essential and Critical Customers (e. g., life support, hospitals, water, sewage, schools)
- Make Safe and Wire Down Situations
- Extended Duration Outages

**Close coordination is required with local and state governments**



# Tactics Call

## **Audience: Emergency Management Organization**

EOC Command and General Staff, Region Directors, Division Superintendents and their respective command and general staff support

**Objective:** Organization leaders to set preliminary expectations for emergency centers, Incident Action Plan forms, and pre-staging requirements

## **Facilitated by the Planning Section Chief**

### **Agenda:**

- Safety -- Key Safety Topics and Safety Incident Report Out (Safety Officer)
- Weather -- (Meteorology)
- Operations Update
- Restoration Update
- Resourcing Plan
- Closing Comments

# Resource and ETOR Strategy

## SOPP model

**DSO SOPP Model Forecast**

Issued: Thursday, January 12, 2012 16:39

Transformer Level Outages and Above

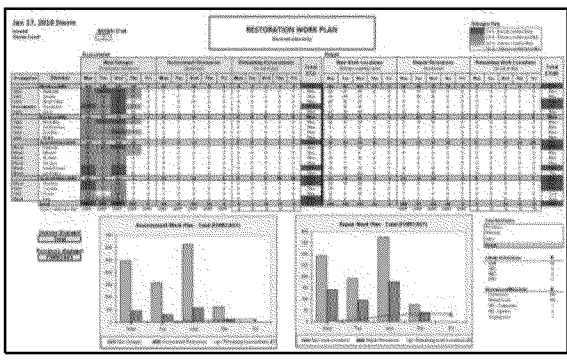
Cat	Staffing		Qualitative Weather	
	Cat 1	Cat 2	Cat 1	Cat 2
Normal	Normal, but have a plan	Adverse weather unlikely	Normal	Adverse weather possible
Starting & Timing as Directed	Staff to Model, Timing as Directed	Adverse weather likely	Starting & Timing as Directed	Adverse weather possible
Staff to Model, Timing as Directed	Staff to Model, Timing as Directed	Extreme weather likely	Staff to Model, Timing as Directed	Extreme weather possible
Staff to Model, Timing as Directed	Staff to Model, Timing as Directed	Extreme weather likely	Staff to Model, Timing as Directed	Extreme weather possible

Outages by Division	Thursday 1/12/2012				Friday 1/13/2012				Saturday 1/14/2012				Sunday 1/15/2012			
	SO	CEO	TM	CR	SO	CEO	TM	CR	SO	CEO	TM	CR	SO	CEO	TM	CR
Northern Humboldt	7	800	0	3	19	2600	11	10	3	300	3	2	3	300	3	2
Region Sonoma	7	1300	2	4	24	4600	11	16	4	500	3	2	4	600	3	2
N. Valley	16	3100	11	10	26	5000	15	13	5	500	4	3	5	500	4	3
Sac	18	3200	1	8	23	4600	7	8	2	200	2	1	2	200	2	1
Sierra	18	4000	0	6	36	8100	14	12	5	600	3	2	5	600	3	2
Bay North Bay	8	1100	5	4	53	10000	10	10	2	400	2	1	2	400	2	1
Area San Fran	4	2500	2	11	6000	5	4	1	600	2	1	1	600	2	1	
Region East Bay	4	2300	3	2	6	3400	4	3	1	600	2	1	1	600	2	1
Diablo	0	2100	4	3	7	2500	4	3	2	600	2	1	2	600	2	1
Central Peninsula	8	4100	5	4	8	4100	5	4	3	600	3	2	2	600	2	1
Coast Mission	7	2100	4	3	6	1800	4	3	2	700	2	1	2	700	2	1
Region DeAnza	3	700	3	2	8	2400	6	5	2	500	2	1	2	500	2	1
San Jose	4	1200	3	2	10	3000	6	5	2	600	2	1	2	600	2	1
Cent. Coast	3	1400	6	5	40	10600	10	10	4	700	3	2	4	700	3	2
Los Padres	8	1600	8	4	34	6800	12	8	3	500	3	2	3	500	3	2
Central Stockton	5	2400	5	4	34	6800	9	8	3	500	2	1	3	500	2	1
Valley Yosemite	10	1200	5	4	30	6000	8	7	4	400	3	2	4	400	3	2
Region Fresno	12	2200	7	6	36	7200	13	13	6	600	4	3	6	600	4	3
Kern	9	1800	5	4	24	4800	6	5	3	400	2	1	3	400	2	1
PG&E TOTAL	101	38600	101	82	419	103600	168	140	57	10300	49	39	56	10100	48	29

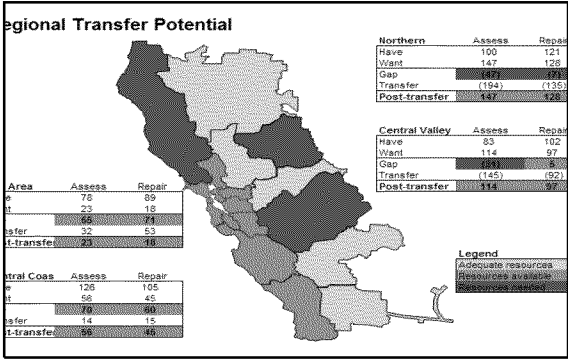
PG&E Internal Use Only  
 Notes: SO = Sustained Outages, CEO = Customers Experiencing Sustained Outages, TM = Troublen, CR = Cre

## Restoration Work Plan

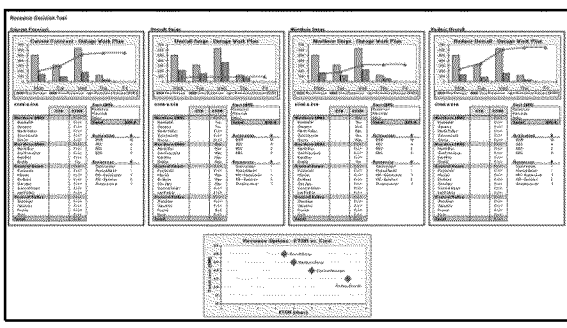


- Improving our ability to estimate infrastructure damage will:
  - improve our ability to provide timely and accurate outage information
  - expedite the outage restoration effort

## Resource Transfer Strategy

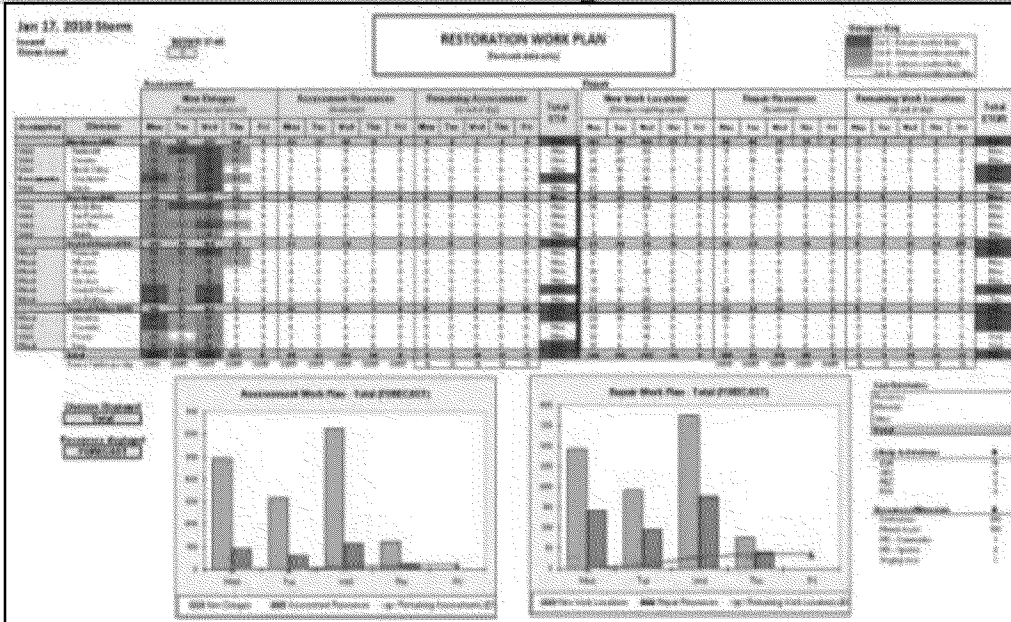


## Scenario Analysis



# Resource and ETOR Strategy

## Restoration Work Plan



### Inputs

- Weather
- Outage forecasts and real time outages
- Available resources
- Assessment and Restoration Rates

### Outputs

- Assessment Times
- Restoration Times
- Event ETOR

# Resource and Estimated Time of Restoration (ETOR) Strategy

## Resource Transfer Strategy

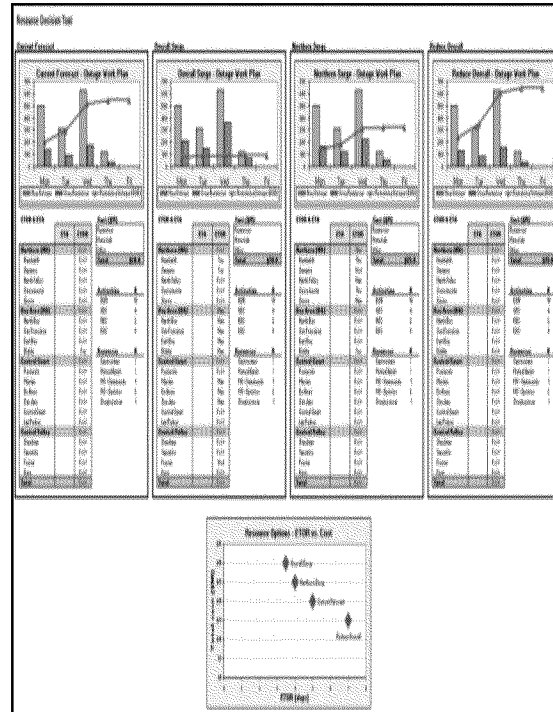
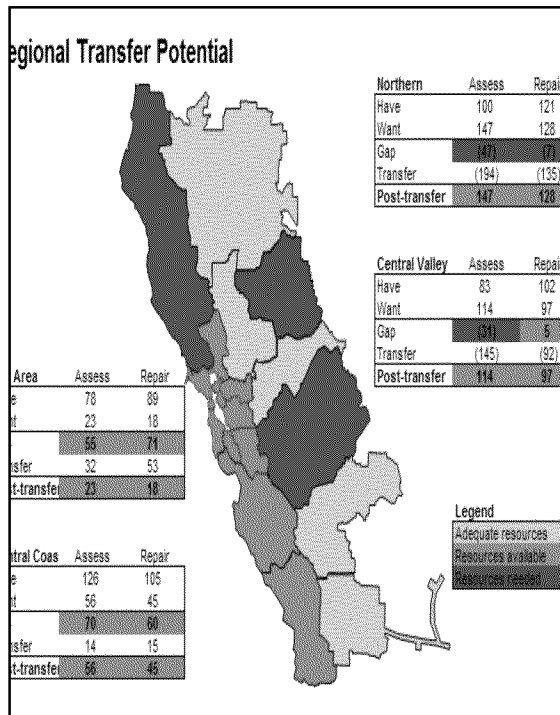
## Scenario Analysis

## Scenario Analysis

- Allows us to determine resource movement strategy to meet operational objectives

## Resource Transfer Strategy

- Takes input from scenario analysis and visually represents resource picture
- Identifies gaps in staffing levels.







# Mutual Aid

## Triggers for Mutual Assistance

Prior to and continuously through out an event, the EOC Director shall begin the process of evaluating and documenting the need for mutual assistance. The EOC Director will recommend the need for mutual assistance to the SVP of EDO when existing resources are determined to be inadequate. Conditions triggering this determination include, but are not limited to:

- All PG&E resources have or will be committed.
- Service restoration cannot be completed within 48 hours.
- It is the opinion of the EOC Director that additional resources will significantly reduce the time needed to complete restoration.
- Mobilization and travel time of Mutual Assistance Crews.

**Mutual Aid requests are prioritized to the closest available utilities**



# Smart Meter

## Restoration Validation

- Restoration Validation enables users to ping the SmartMeters of Single Customer outages to determine if power has been restored

## Manual Scoping

- Operators have the ability to ping meters to determine if additional customers are also out.

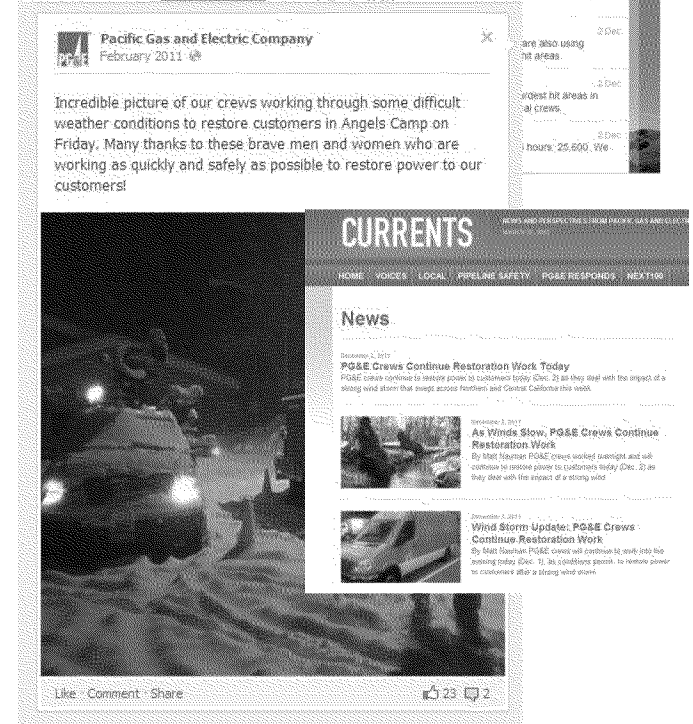
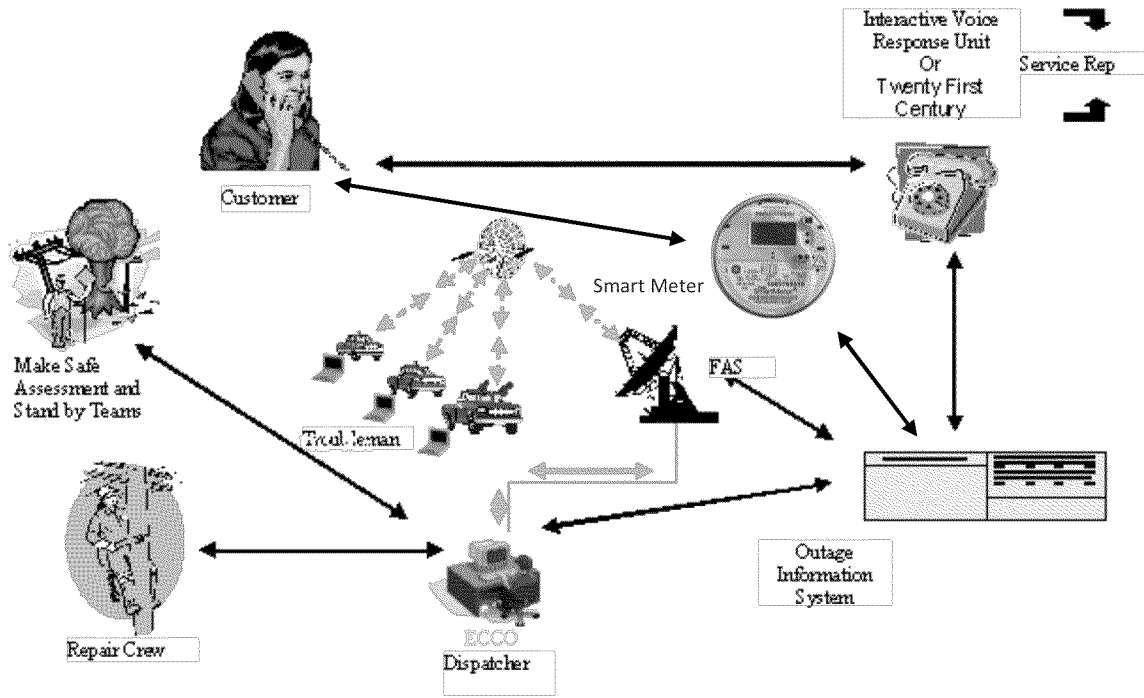
## Probable Inferred Location

- Identification of potential nested outages using the analysis of customer calls and the AMI (Advanced Metering Infrastructure) outage alarms

# Outage Communication Map

## Other Outreach Tactics:

- Door to Door
- Town Hall Meetings
- Extended Outage Outbound Calls
- Government and State Interactions
- Social Media
  - Twitter
  - Facebook
  - Currents



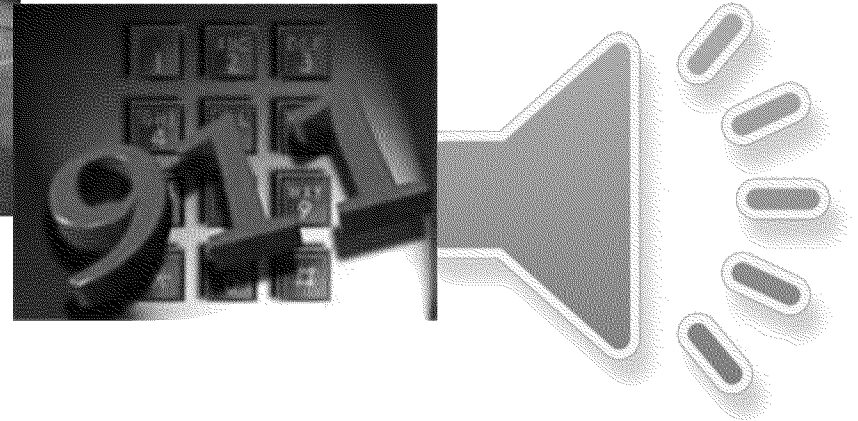
# 911 Standby Process



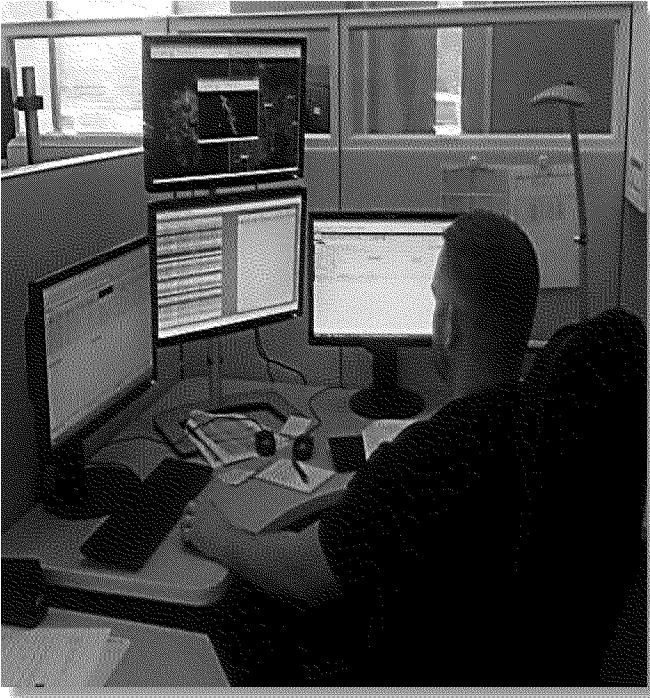
# 911 Emergency Response



- High profile events
- Coordination and prompt response supports public safety
- Public agencies can then respond to other public safety concerns

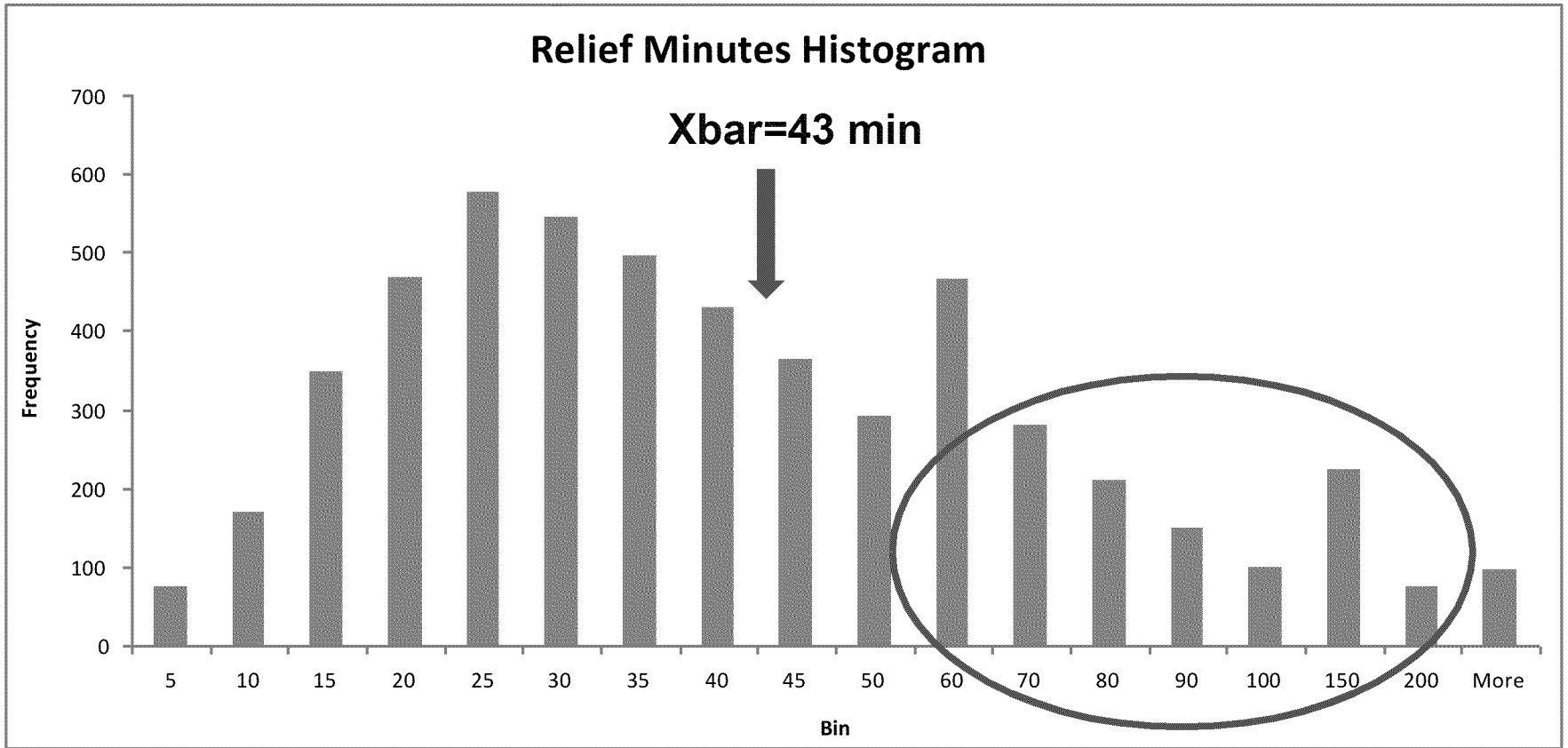


# Improving Performance



- Organizational focus has driven improved performance
- Daily metric on Daily Reliability Scorecard
- Weekly reviews on daily status calls and with local teams

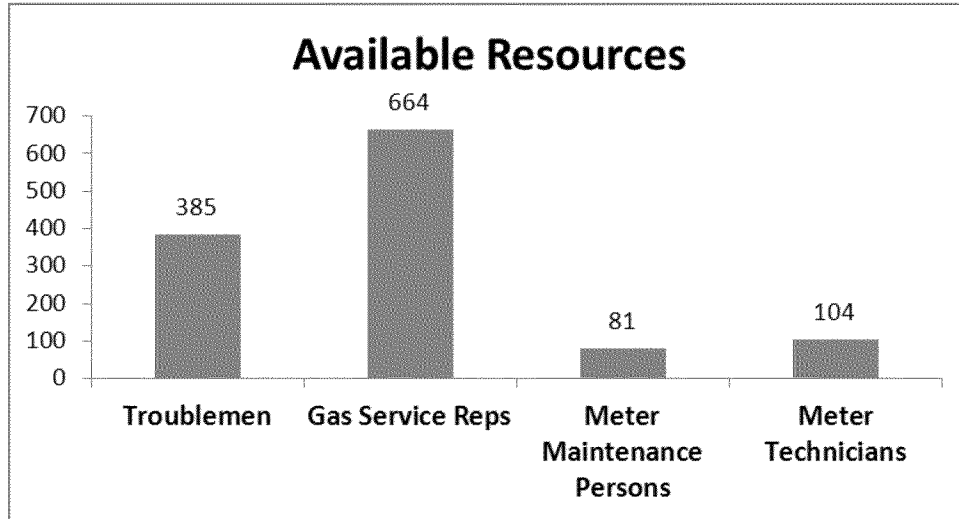
# Process Capability



2012 end of year performance 84.09%

# Improving Response Performance During Storm Events

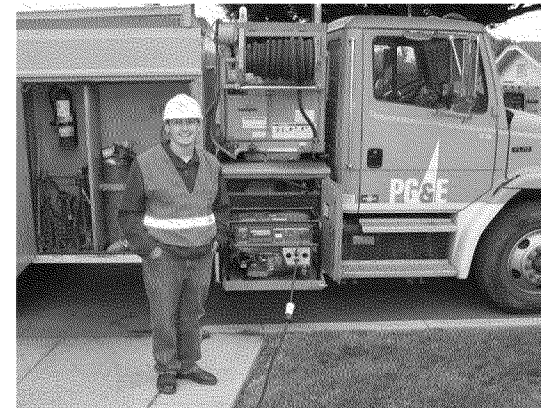
## Resource Deployment



- SOPP Forecast represents expected number of calls for each division
- Use of non-traditional resources (e.g., meter techs, GSRs) is critical during significant events\

## Storm Response Performance within 1 hour

2011 **40%**      2012 **80%**





# Public Agencies As Partners



- Training
- Pre-event Process Coordination
- Joint Exercises
- Joint Stakeholder 911 Committee
- Participation in PG&E exercises

# Joint Response Plans and Exercises

## PG&E has dedicated Public Safety Personnel to support training and exercise development

- Development of joint response plans based on identification of joint risk
- Utilization of Unified Command
- Joint exercise of developed response plans





# Adoption of Public Sector Best Practices

- **ICS and NIMS**
  - Command and General Staff ICS 100-400
  - Utilization of a written Incident Action Plan (IAP) including prioritization of goals and establishment of objectives
- **Homeland Security Exercise and Evaluation Program (HSEEP)**
  - All Emergency Preparedness personnel HSEEP certified
  - Application of the building block approach for training and exercises
  - Utilization of capabilities to drive development of exercise scenarios, supporting documents ( Sit Mans, Ex Plans), and Exercise Evaluation Guides
- **Formalized corrective action and improvement program**

# Fire Prevention Plan





# Fire Prevention Plan

- Pre-planning Activities
  - Public Outreach
  - Fire and Weather Intelligence
- Threat Mitigation
  - Vegetation Management
  - Patrols and Inspections
  - Operational Precautions during high risk periods
- Proactive Responses to Fire Incidents
  - Fire suppression support
  - Pole treatment and ground cover mastication
- Post Incident Recovery
  - Thorough event critiques
  - Joint agency debrief sessions
- An addendum which identifies the specific CPUC requirements for Santa Barbara County with which PG&E should comply.

# Fire Weather Forecasts

- Daily fire weather forecasts (8 AM DSO call)
- Weekly fire weather summary forecast
- Alert organization of current and future fire weather conditions, and provide awareness of critical fire weather conditions
- Spot forecasts for active wildfires which threaten PG&E assets



## Weekly Fire Weather Forecast 8/10/2012 – 8/17/2012

A strong ridge of high pressure is extending westward from the four corner regions over the Service Area and will dominate weather conditions through the weekend into early next week. Very hot temperatures are forecast across the interior valleys today and through the weekend with the warmest locations likely to exceed 105 degrees. During the afternoon hours today and through the weekend, relative humidities will drop to critical single digit values across the north creating conditions conducive for fire ignitions, extreme fire behavior and growth. Winds are expected to be light to moderate during this time frame with maximum gusts near 25 mph.



# Distribution Maintenance

- Performed additional annual enhanced patrols
  - Focus on facilities that can be a source of ignition and are near flammable vegetation- Completed by March 31<sup>st</sup>
- Maintenance identified by enhanced patrols rated as high priority and must be replaced or repaired by 7/31
- Performed overhead infrared inspections on all overhead line segments in the Urban Wildfire Areas by 6/30
- Vegetation contractor clears all Local Responsibility Area (LRA) locations in the Urban Wildfire (UWF) that have non-exempt equipment
- Proactive on non-exempt equipment in UWF area begins in 2012



# Routine T&D Vegetation Management Program Scope

**Annual ground inspection of every mile (100%) of overhead line. Address through trim or removal, any tree that will encroach within minimum clearance distances and any hazard tree to maintain regulatory compliance.**

- 113,000 miles of distribution line
- 19,500 miles of transmission line
- 70,000 square mile service territory
- Prune or remove ~2,000,000 trees annually

**5M trees in inventory with potential to “grow into” powerline**

**50M trees with potential to “fall into” powerline**

**Maintain fire breaks on 120,000 subject poles/towers**

**Maintain transmission right of way**

**625 contract tree crews and 350 utility arborists/foresters**





# Fire Season Preparedness

- Reinforced S-1464, Fire Danger Precautions in Hazardous Fire Areas with organization
  - Prohibits or limits certain maintenance activities (i. e., blasting, welding, open burning) in “very high” or “extreme” areas
  - Limits electric operations circuit testing
- Daily tailboard of fire weather forecast and fire index

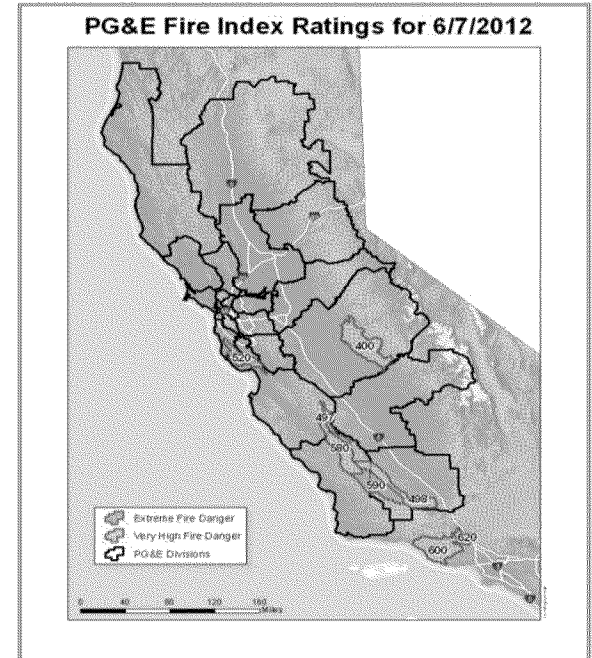
**Fire Adjective Index** Fire Season (May 18 to November 30)

Fire Adjective Index for Friday, June 15, 2012 Updated by LMG8 on 6/15/12 @ 0007

- System-wide Fire Index by Zoning Area Map (PDF)
- GIS Map of Fire Indexes and Lightning
- GIS Map of Fire Indexes, Active Fires, and Lightning
- GIS Map Gallery
- Call Fire Link
- Service Area Temperature Forecasts
- NOAA California Fire Weather Risk
- PG&E Meteorology Services
- City/County Look-up Tables (Excel spreadsheet)

Very High Fire Index Areas (Cities and Counties)		Extreme Fire Index Areas (Cities and Counties)	
430	MADERA	2,25	COLUSA
430	MARIPOSA	2,25	COLUSA
430	MERCED	2,25	COLUSA
430	TUOLUMNE	2,25	COLUSA
430	MONTEREY	2,25	COLUSA
430	KERN	2,25	COLUSA
430	SAN LUIS OBISPO	2,25	COLUSA
430	SAN LUIS OBISPO	2,25	COLUSA
430	SANTA CLARA	2,25	COLUSA
430	SANTA CRUZ	2,25	COLUSA
430	MONTEREY	2,25	COLUSA
430	SAN LUIS OBISPO	2,25	COLUSA
430	SAN LUIS OBISPO	2,25	COLUSA

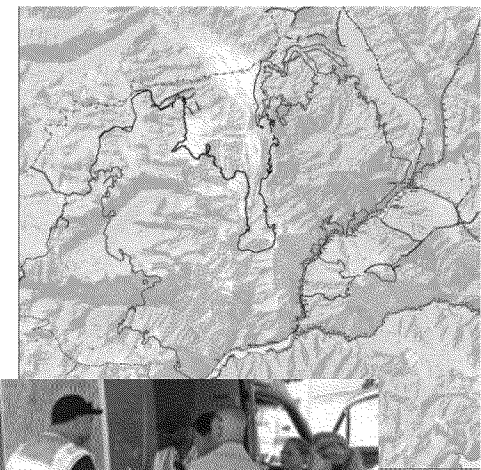
Very High and Extreme Fire Danger hours: 09:00 AM to two hours after sunset (local time)



- Conducting spring table top exercises for gas and electric
  - ICS response structures and scenarios
  - Table top Exercises focused on ICS coordination, heat events and wildland fire response

# Wildland Fire Lessons Learned

- PG&E's proactive initial response support has been invaluable in supporting responder and public safety and effective response strategy
- PG&E presence at the ICP has provided enhanced information and intelligence to the Command Team and other Cooperating Agencies and supports the execution of the incident objectives
- GIS maps and MCV support has been identified by responders as proof of PG&E's commitment to public safety and community recovery
- PG&E's implementation of ICS has provided a more coordinated response across the enterprise and has resulted in the development of sustainable relationships within PG&E and with the agencies.
- Cell communications not reliable in all areas resulting in the addition of satellite communications to the Sprinter fleet- Sept 2012
- Multiple technology issues including: router and network
- Increase of 2 additional Emergency Communications Trailers (ECT) units Q1 2013



# Questions



# In Summary

- We want you to be informed on PG&E Capabilities
- We want to strengthen working relationship and partnerships!
- PG&E is here to support you!
- You will be receiving a Survey from PG&E within 10 days – for your Comments and Input



# If you have additional questions or comments:

Redacted

**Manager, Electric Operations Emergency Preparedness and Public Partnerships**

Redacted

