

AGENDA

SEISMIC MONITORING ADVISORY COMMITTEE

December 12, 2019 @ 9:30 a.m.
Calpine Geothermal Visitors Center
15500 Central Park Road, Middletown

Call In: 1-240-454-0887; Participant Passcode: 925412486#

- I. Introductions
- II. Approval of SMAC minutes from **May. 13, 2019** meeting
- III. Update of SE Geyser pipeline operations – Ed Voge
- IV. Calpine – Craig Hartline
- V. Report on DOGGR – Amar Rao
- VI. Report on US Geothermal – Western Geo Power – Scott Nichols
- VII. Anderson Springs Community Service District – Rose Knudsen
- VIII. Cobb Area Water – Ben Murphy
- IX. Middletown Community Input – Linda Diehl Darms
- X. Anderson Springs Public Input – Jacquelyn Bartlett

- XI. Cobb Area Public Input – Robert Stark
- XII. General Public Input
- XIII. Schedule Next Meeting for **Monday, May 18, 2020**
- XIV. Adjournment

SEISMIC MONITORING ADVISORY COMMITTEE (SMAC)

Monday, May 13, 2019
Calpine Geothermal Visitor Center
15500 Central Park Road
Middletown, California

MINUTES

Meeting Called to order by Jan Coppinger, Committee Chair (Lake County Special Districts) at 9:30 a.m.

Minutes recorded by Yolanda Garibay and transcribed to Draft Minutes.

I. **Introductions**

Conducted by Coppinger:

Present: Jan Coppinger, Committee Chair (Lake County Special Districts), Craig Hartline (Calpine), Bruce Carlsen (Calpine), Ed Voge (Northern California Power Agency) Amar Rao, (***Division of Oil, Gas & Geothermal Resources DOGGR***), Baxter Tackett (***Division of Oil, Gas & Geothermal Resources***), Jerry Salera, DOGGR, Brett Lehman, DOGGR, Colin Lawson, DOGGR, Charlene Wardlow, DOGGR, Mike Sherman, DOGGR, Meriel Medrano, (***Anderson Springs Community Service District ASCSD***), Rose Knudsen, ASCSD, Jacquelyn Bartlett, ASCSD, Joseph Austin, ASCSD, Joan Clay, ASCSD, Becky Davis, ASCSD, Kirby Vance, ASCSD, Linda Darms, (Middletown Community), Robert Stark, (***Friends of Cobb Mt.***), Rev. Christopher Nettles, California Tender Buddhists.

There was a consensus to move the agenda around by moving Ed Voge, NCPA to report 1st under item: III, and moving, Craig Hartline, Calpine to report 2nd under item. IV.

II. **Approval of SMAC minutes from Nov. 13, 2018 meeting**

Motion made by Jacquelyn Bartlett to approve the minutes, seconded by Joan Clay, all in favor. Motion carried.

III. **Update of SE Geyser Pipeline Operations, Ed Voge (Figures 1-7)**

- Historical SE Geysers Effluent Pipeline Deliveries To The Geysers
 - Total Daily Delivery = 59.02 billion gallons at an average rate of 5,216 gpm
 - **Reporting period, October 1, 2018 ~ April 30, 2019**
 - Average Daily Injection = 7.35 MGD or 5,101gpm
 - SEGEP Availability = 90.7%
- Observed Seismicity
 - The USGS Recorded 82 Seismic Events of Magnitude 1.5 and Greater, this is a 24% increase over the previous six month reporting period.
 - Steam Production for the area in the reporting period was 17.67 billion pounds mass for this reporting period. This value is down 3% from the previous reporting period.
- Seismic Activity in The Geysers (KCGRA)
 - 503 events of magnitude 1.50 and greater.

- o Even Locations is the last 6 months (see map for distances & magnitude ranges)

Maintenance work on the pipeline was noted to be in the months of October & December 2018. There was much discussion on each figures noted above. Please see presentation on Calpine website for additional data details

IV. Calpine Report, Craig Hartline (Figures 2-63)

Reporting period, October 01, 2018 ~ March 31, 2019

- California ISO* Electrical Monthly Renewables Performance
Calpine's Geyser Geothermal Facility Generates nearly Six Terawatts-Hours * Per Year of Renewable Energy.
- Geyser Geothermal Field & Nearby Communities
- Status of Seismic Networks
 - o LBNL Seismic Monitoring Networks
 - o USGS Northern California Seismic Network
 - o Strong Motion Station
- Strong Motion Databases, Analysis and Equipment
- Yearly Field-Wide Water Injection and Seismicity
- Field wide Seismicity Analysis
- Water Injections and Induced Seismicity Animations
- Community Hotline
- 3D Structure Model Building
 - o Fault/Fracture Analysis
 - o Compartmentalization
 - o Well Planning Examples
- Additional Seismic Monitoring and Research

There was much discussion on each figure noted above. Please see presentation on Calpine website for additional data details.

V. Report on DOGGR, Amar Rao

No report given

VI. Report on LBNL, Kurt Nihei

Not present

VII. Summary of Seismic Data from USGS Network, Linda S. Gee

Not Present

VIII. Report on US Geothermal – Western Geo Power, Scott Nichols

Not Present

IX. Anderson Springs Community Service District, Meriel Medrano

Meriel reported that she is retiring and Rose Knudsen will be taking her place. It was also noted that the Chair of this ACSD is Rebecca Davis and Todd Sierra is the new Manager

X. Cobb Area Water, Ben Murphy

Not Present

- XI. Middletown Community Input, Linda Darms**
Linda explained that she was looking for hydrology studies for Middletown.
- XII. Anderson Springs Public Input, Jacquelyn Barlett**
Jacquelyn stated that there is a lot of building going on now. There is a hotline sponsored by Calpine for seismic events for the area and people are not calling in.
- XIII. Cobb Area Public Input, Robert Stark**
Mr. Stark explained that he has seen Calpine's social media outlets showing hotline information.
- XIV. Schedule Next Meeting for Monday, November 18, 2019** Motion made to schedule the next meeting, all in favor for next meeting date.
- XV. General Public Input – None to report**
- XVI. Adjournment**
There was a consensus to adjourn the meeting at 11:50 a.m.

Next Meeting for Monday, November 18, 2019

Meeting Agenda and Full Presentations are available online at:
<http://www.geysers.com/smac.aspx>