Response to Attachment 5 Table 2, Row 7 (Section 1.2)

Data request: Estimated greenhouse gas emission from utility-ignited wildfire.

Methodology and Response:

1. The methodology used to calculate emissions from wildfire follows that of Wiedinmyer, *et al.*, as described in https://doi.org/10.1016/j.atmosenv.2006.02.010. Primary and secondary greenhouse gas emissions considered include the following species: CO2, CO, PM10, PM2.5, NOx, NH3, SO2, NMHCs and CH4.

2. The governing equation is as follows

$$\text{Emission}_i = A \times B \times \text{CE} \times e_i$$

   where A is the area burned, B is the fuel loading (mass of biomass per area), CE is the combustion efficiency, or fraction of biomass fuel burned, and e_i is an emission factor for species i (mass of species per mass of biomass burned).

3. In the model above, B and e_i are functions of the land cover classification. The GLC2000 dataset is used for this calculation: https://forobs.jrc.ec.europa.eu/products/glc2000/products.php.

4. The CE is a function of the tree cover and is determined from USFS LANDFIRE data.

5. Emissions are dominated by the 176-acre Emerald Fire that occurred in October 2016.

6. Applying the above methodology, the total amount of greenhouse gas emissions from the Emerald Fire is approximately 6,500 tons of CO_2.

Underlying data:

See file “Attachment 5 Table 02 Row 7.xlsx” in attached .zip archive.

Response to Attachment 5, Table 5 (Section 1.3)

Data request:

- Fire weather, last 5 years and historical average
  - Number of red flag warning days
  - Average annual proprietary fire potential index or similar fire risk index measure
  - Average maximum value reached in utility's proprietary fire potential index or similar fire risk index measure (i.e., the highest FPI that circuit experienced in a given year)
- Extreme weather near circuit
  - 95th percentile wind conditions (average of all weather stations within 10 miles of a circuit)
  - 99th percentile wind conditions (average of all weather stations within 10 miles of a circuit)

Methodology and response:

1. For RFW methodology description, please see Response to Attachment 1, Table 10.

2. Average and maximum FFWI was used as a proxy for a proprietary fire risk index measure. Data was analyzed by year in FF+ and tabulated.

3. Extreme weather by circuit was determined by locating circuits within FWZ, then assigning yearly 95th and 99th percentile values per FF+ calculations based upon RAWS stations within the respective FWZ.

Underlying data:

See Excel spreadsheet "Attachment 5 Table 05.xlsx" contained in the attached .zip archive. Reax is still working on this as of 1/29 but the work should be complete by 1/30.

Response to Attachment 5, Table 7 (Section 1.4)

Data request: Underlying data for weather patterns (top 30% of fire risk index, difference between forecast and actual wind), fuel measurements (average distribution and mass, average distribution and mass below 62% live fuel moisture content, average distribution and mass below 5% live fuel moisture content), potential impact of ignitions (date of recent ignitions and potential impact), and implemented 2019 WMP initiative activity over the last 5 years where applicable (location of completed 2019 WMP initiative activity).

Methodology and response:

GIS data associated with Attachment 5 Table 7 are contained in the folder "Attachment 5 Table 07" contained in the attached .zip archive.

1. *Average annual number of fire risk ratings:* For top 30% of fire risk index, please see Attachment 1, Section 3.1, Table 10.

2. *Differences between forecast and actual wind:* Differences between forecast and measured wind were not analyzed.

3. *Average distribution and mass of fuel:* Information regarding average distribution and mass of fuel loading is not available.

4. *Average distribution and mass below 62% live fuel moisture:*
   a) Average distribution and mass below 62% live fuel moisture for 2015-2018 was approximated using records from two sampling sites in the National Fuel Moisture database at URL: http://www.wfas.net/nfmd/public/states_map.php?state=CA. If more than one sampling occurred during a month, an average was taken. If no data was available, the cell was left empty. See file "Attachment 5 Table 07 2015-2018.xlsx" in attached folder.
   b) Average distribution and mass below 62% live fuel moisture for 2019 was calculated from in-situ field sampling initiated in 2019. See file "Attachment 5 Table 07 2019.xlsx" in attached folder. ESRI shapefile of all sampling locations is included in the folder as well.

5. *Average distribution and mass below 5% live fuel moisture:*
   a) "Average distribution and mass below 5% live fuel moisture" was interpreted to be a typographical error and we have interpreted this data request to refer to 1000-hr dead fuel moisture content below 5%. 1000-hr dead fuel moisture for 2015-2018 was approximated using records from two sampling site in the National Fuel Moisture database. If more than one sampling occurred during a month, an average was taken. If no data was available, the cell was left empty. See file "Attachment 5 Table 07 2015-2018.xlsx" in attached folder.
   b) Average distribution and mass below 5% dead fuel moisture for 2019 was calculated from in-situ field sampling initiated in 2019. See file "Attachment 5 Table 07 2019.xlsx" in attached folder.

6. *Potential impact of ignitions:* Potential impact of ignitions could not be determined because the number of persons in the evacuation zone, assuming there was one, is unknown.

Response to Attachment 5, Table 9 (Section 1.5)

Data request: Report live and dead fuel measurements for moisture content and density for the past 5 years.

Methodology and response:

1. *Live and dead fuel moisture content:* The methodology used is identical to that used in Attachment 5, Table 7, with the addition of the 5-year average. See files in "Attachment 5 Table 9" folder.

2. *Live and dead fuel moisture density:* Live and dead fuel moisture density is not available from the National Fuel Moisture database and cannot be retroactively calculated.