

## **Request to Close the Kahe (KE) SLAMS/Data Requirements Rule Air Monitoring Station (150034001)**

The State of Hawaii is requesting EPA approval to permanently discontinue the Kahe ambient air monitoring station (150034001). The state is required by 40 CFR Part 51, Subpart BB, Data Requirements Rule (DRR), to characterize maximum 1-hour ambient concentrations of SO<sub>2</sub> through either ambient air quality monitoring or air quality modeling analysis. This monitor is operated solely for the purpose of satisfying the 2015 SO<sub>2</sub> DRR (80 FR 51052) for Hawaiian Electric Company's Kahe Generating Station, the Kalealoa Cogeneration Plant, and AES Hawaii, Inc.'s Cogeneration Plant. This station is located in Makakilo on the hillside south of Palehua Road and started operating on January 1, 2017.

The state currently has three SLAMS SO<sub>2</sub> stations in the Honolulu MSA. With this station closure, there will be two SO<sub>2</sub> monitoring stations remaining in the Honolulu MSA, which meets the state's minimum requirement for SO<sub>2</sub> monitoring. DOH is requesting approval from EPA to permanently shut down this station.

The Kahe station has operated for more than three years and thus the concentrations may be used for NAAQS comparison. According to 40 CFR 58.14, the state may request for discontinuance of a SLAMS station if any of the stated criteria are met and if requirements of Appendix D to Part 58 continues to be met. The Kahe station meets the following requirement for shutdown:

Any criteria SLAMS monitor which has been in attainment during the previous five years, has a probability of less than 10 percent of exceeding 80 percent of the applicable NAAQS during the next three years, and which is not specifically required by an attainment or maintenance plan.

### **II. Data in Support of Discontinuing the Kahe Station**

To comply with the removal requirements based on past and future expected attainment for all applicable NAAQS, the following tests must be met:

- 1) The SO<sub>2</sub> monitor is currently in attainment and has been in attainment during the previous five years;
- 2) The probability is less than 10% that the monitor will exceed 80% of the applicable NAAQS during the next three years based on past concentrations, trends, and variability;
- 3) The monitor is not required by an attainment or maintenance plan; and
- 4) The monitor is not the last monitor in a nonattainment or maintenance area plan.

The State of Hawaii is in attainment for all NAAQS and therefore, Kahe is not specifically required for any attainment, non-attainment, or maintenance plan.

The following data is presented in support of station shutdown based on past compliance with, and the expectation that the monitors would not exceed, all applicable NAAQS in the future.

**Table 1. 2017-2021 Attainment of SO<sub>2</sub> NAAQS at KE**

Pollutant Standard	2017		2018		2019		2020		2021	
	Max	2 <sup>nd</sup> Max	Max	2 <sup>nd</sup> Max	Max	2 <sup>nd</sup> Max	Max	2 <sup>nd</sup> Max	Max	2 <sup>nd</sup> Max
SO <sub>2</sub> 1-hr Average (<75 ppb)	69	64	56	50	70	68	70	69	65	60
SO <sub>2</sub> 3-hr Average (<500 ppb)	43	36	31	25	44	39	46	43	47	42

To demonstrate a less than 10% probability that the monitors would exceed 80% of the applicable NAAQS, the following equation<sup>a</sup> was applied:

$$\bar{X} + \frac{t^*s}{\sqrt{n}} < 0.8 * NAAQS$$

Where:  $\bar{X}$  = the average design value for the last 5 years  
*t* = student's *t* value for *n*-1 degrees of freedom at the 90% confidence level  
*s* = standard deviation of the design values  
*n* = number of records  
 NAAQS = applicable standard

<sup>a</sup> Equation used is from the EPA-454/D-07-001 document titled "Ambient Air Monitoring Network Assessment Guidance"

**Table 2. Applicable NAAQS**

Pollutant	Form of NAAQS	NAAQS	80% of NAAQS
SO <sub>2</sub>	1-hour	75 ppb	<b>60 ppb</b>
	3-hour	500 ppb	<b>400 ppb</b>

Conservatively using the 2017 to 2021 design values for all applicable NAAQS from Table 1, the probability that any monitor would exceed 80% of the NAAQS was computed.

**Table 3. Probability Computations for Applicable NAAQS at KE**

Pollutant & Averaging Time	Average ( $\bar{X}$ ) 2017-2021	Standard Deviation (s)	Student's <i>t</i> value ( <i>t</i> )	No. of values ( <i>n</i> )	90% upper confidence interval	Is the result <80% of NAAQS?
<b>SO<sub>2</sub></b>						
1-hour <sup>1</sup>	52 ppb	3.51	2.13	5	<b>54.9</b>	<b>Yes &lt;60 ppb</b>
3-hour <sup>1</sup>	32 ppb	2.19	2.13	5	<b>34.5</b>	<b>Yes &lt;400 ppb</b>

<sup>1</sup> Design value.

### III. Continued Compliance with 40 CFR Part 58 Appendix D

Closing the Kahe air monitoring station will not affect compliance with the requirements of 40 CFR Part 58 Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring."

### **SO<sub>2</sub> Design Criteria**

40 CFR Part 58, Appendix D Section 4.4.2, requires the use of the Population Weighted Emissions Index (PWEI) calculation to determine SO<sub>2</sub> monitoring requirements, and accordingly, Hawaii is currently required to operate one SO<sub>2</sub> monitor in the Honolulu MSA. The state currently has three SO<sub>2</sub> monitors in the Honolulu MSA, with one SLAMS (DH), one SLAMS/DRR (KE), and one SLAMS/NCore trace SO<sub>2</sub> monitor at Kapolei (KA/NCore). This meets the minimum number of required SO<sub>2</sub> stations. With the discontinuation of SO<sub>2</sub> monitoring at Kahe, the network would continue to meet SO<sub>2</sub> design criteria.

### **IV. Summary**

Based on attainment with all applicable NAAQS in the past five or more years, a less than 10% probability of exceeding any NAAQS in the future, and continued compliance with network design criteria, closing the Kahe air monitoring station would meet the SLAMS discontinuance requirements of 40 CFR Part 58.