

Final Draft Technical Support Document

Hawaii Area Designations for the 2010 SO₂ Primary National Ambient Air Quality Standard

Summary

Pursuant to section 107(d) of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA, or the Agency) must designate areas as either “unclassifiable,” “attainment,” or “nonattainment” for the 2010 1-hour sulfur dioxide (SO₂) primary national ambient air quality standard (NAAQS). Section 107(d) of the CAA defines a nonattainment area as one that does not meet the NAAQS or that contributes to a NAAQS violation in a nearby area, an attainment area as any area other than a nonattainment area that meets the NAAQS, and an unclassifiable area as any area that cannot be classified on the basis of available information as meeting or not meeting the NAAQS.

July 2, 2016, is the deadline established by the D.C. District Court for the Northern California District for the EPA to designate certain areas. This deadline is the first of three deadlines established by the court for the EPA to complete area designations for the 2010 SO₂ NAAQS. Because monitors in the county of Hawaii were recording violations of the standard prior to recent exceptional events concurrence, the EPA is including the area in this round of designations.

Hawaii submitted recommendations on May 19, 2011. Table 1 below lists Hawaii’s recommendations and identifies the county in Hawaii that the EPA is designating at this time. This final designation is based on an assessment and characterization of air quality through ambient air quality data, air dispersion modeling, other evidence and supporting information, or a combination of the above.

Table 1 – Hawaii’s Recommendation and the EPA’s Final Designations

Area	State’s Recommended Area Definition	State’s Recommended Designation	EPA’s Final Area Definition	EPA’s Final Designation
Hawaii County, Hawaii	Hawaii County	Unclassifiable	Same as State’s Recommendation (Hawaii County, HI)	Unclassifiable/ Attainment

Background

On June 3, 2010, the EPA revised the primary (health based) SO₂ NAAQS by establishing a new 1-hour standard at a level of 75 parts per billion (ppb) which is met at an ambient air quality monitoring site when the 3-year average of the 99th percentile of 1-hour daily maximum concentrations does not exceed 75 ppb. This NAAQS was published in the *Federal Register* on June 22, 2010 (75 FR 35520), and is codified at 40 CFR 50.17. The EPA determined this is the

level necessary to protect public health with an adequate margin of safety, especially for children, the elderly, and those with asthma. These groups are particularly susceptible to the health effects associated with breathing SO₂. The two prior primary standards of 140 ppb evaluated over 24 hours, and 30 ppb evaluated over an entire year, codified at 40 CFR 50.4, remain applicable.¹ However, the EPA is not currently designating areas on the basis of either of these two primary standards. Similarly, the secondary standard for SO₂, set at 500 ppb evaluated over 3 hours, codified at 40 CFR 50.5, has not been revised, and the EPA is also not currently designating areas on the basis of the secondary standard.

General Approach and Schedule

Section 107(d) of the CAA requires that not later than 1 year after promulgation of a new or revised NAAQS, state governors must submit their recommendations for designations and boundaries to EPA. Section 107(d) also requires the EPA to provide notification to states no less than 120 days prior to promulgating an initial area designation that is a modification of a state's recommendation. If a state does not submit designation recommendations, the EPA may promulgate the designations that it deems appropriate without prior notification to the state, although it is our intention to provide such notification when possible. If a state or tribe disagrees with the EPA's intended designations, it is given an opportunity within the 120-day period to demonstrate why any proposed modification is inappropriate. The EPA is required to complete designations within 2 years after promulgation of a new or revised NAAQS, unless EPA determines that sufficient information is not available, in which case the deadline is extended to 3 years. The 3-year deadline for the revised SO₂ NAAQS was June 2, 2013.

On August 5, 2013, the EPA published a final rule establishing air quality designations for 29 areas in the United States for the 2010 SO₂ NAAQS, based on recorded air quality monitoring data from 2009 - 2011 showing violations of the NAAQS (78 FR 47191). In that rulemaking, the EPA committed to address, in separate future actions, the designations for all other areas for which the Agency was not yet prepared to issue designations.

Following the initial August 5, 2013, designations, three lawsuits were filed against the EPA in different U.S. District Courts, alleging the Agency had failed to perform a nondiscretionary duty under the CAA by not designating all portions of the country by the June 2, 2013 deadline. In an effort intended to resolve the litigation in one of those cases, plaintiffs Sierra Club and the Natural Resources Defense Council and the EPA filed a proposed consent decree with the U.S. District Court for the Northern District of California. On March 2, 2015, the court entered the consent decree and issued an enforceable order for the EPA to complete the area designations according to the court-ordered schedule.

¹ 40 CFR 50.4(e) provides that the two prior primary NAAQS will no longer apply to an area 1 year after its designation under the 2010 NAAQS, except that for areas designated nonattainment under the prior NAAQS as of August 22, 2010, and areas not meeting the requirements of a SIP Call under the prior NAAQS, the prior NAAQS will apply until that area submits and EPA approves a SIP providing for attainment of the 2010 NAAQS. These situations do not apply to Hawaii County, Hawaii.

According to the court-ordered schedule, the EPA must complete the remaining designations by three specific deadlines. By no later than July 2, 2016 (16 months from the court's order), the EPA must designate two groups of areas: (1) areas that have newly monitored violations of the 2010 SO₂ NAAQS and (2) areas that contain any stationary sources that had not been announced as of March 2, 2015, for retirement and that according to the EPA's Air Markets Database emitted in 2012 either (i) more than 16,000 tons of SO₂ or (ii) more than 2,600 tons of SO₂ with an annual average emission rate of at least 0.45 pounds of SO₂ per one million British thermal units (lbs SO₂/mmBTU). Specifically, a stationary source with a coal-fired unit that as of January 1, 2010, had a capacity of over 5 megawatts and otherwise meets the emissions criteria, is excluded from the July 2, 2016, deadline if it had announced through a company public announcement, public utilities commission filing, consent decree, public legal settlement, final state or federal permit filing, or other similar means of communication, by March 2, 2015, that it will cease burning coal at that unit.

The last two deadlines for completing remaining designations are December 31, 2017, and December 31, 2020. The EPA has separately promulgated requirements for state and other air agencies to provide additional monitoring or modeling information on a timetable consistent with these designation deadlines. We expect this information to become available in time to help inform these subsequent designations. These requirements were promulgated on August 21, 2015 (80 FR 51052), in a rule known as the SO₂ Data Requirements Rule (DRR), codified at 40 CFR part 51 subpart BB.

Updated designations guidance was issued by the EPA through a March 20, 2015 memorandum from Stephen D. Page, Director, U.S. EPA, Office of Air Quality Planning and Standards, to Air Division Directors, U.S. EPA Regions 1-10. This memorandum supersedes earlier designation guidance for the 2010 SO₂ NAAQS, issued on March 24, 2011, and it identifies factors that the EPA intends to evaluate in determining whether areas are in violation of the 2010 SO₂ NAAQS. The guidance also contains the factors the EPA intends to evaluate in determining the boundaries for all remaining areas in the country, consistent with the court's order and schedule. These factors include: 1) Air quality characterization via ambient monitoring or dispersion modeling results; 2) Emissions-related data; 3) Meteorology; 4) Geography and topography; and 5) Jurisdictional boundaries. This guidance was supplemented by two non-binding technical assistance documents intended to assist states and other interested parties in their efforts to characterize air quality through air dispersion modeling or ambient air quality monitoring for sources that emit SO₂. Notably, the EPA's documents titled, "SO₂ NAAQS Designations Modeling Technical Assistance Document" (Modeling TAD) and "SO₂ NAAQS Designations Source-Oriented Monitoring Technical Assistance Document" (Monitoring TAD), were available to states and other interested parties. Both of these TADs were most recently updated in February 2016.

On March 22, 2007, the EPA adopted a final rule, Treatment of Data Influenced by Exceptional Events (EER), codified at 40 CFR 50.1, 50.14, and 51.930, to govern the review and handling of certain air quality monitoring data for which the normal planning and regulatory processes are

not appropriate.² Under the rule, a state may request that the EPA exclude monitored data from use in determinations of NAAQS exceedances and violations if a state demonstrates that an “exceptional event” caused the monitored exceedances. Before the EPA can exclude monitored data from these regulatory determinations, the state must flag the data in the EPA’s Air Quality System (AQS) database and, after notice and opportunity for public comment, submit a demonstration to justify the exclusion. After considering the weight of evidence provided in the demonstration, the EPA decides whether or not to concur with each flag.

On December 17, 2015, the Hawaii Department of Health (HDOH) submitted documentation to the EPA to demonstrate that exceedances of the 2010 1-hour SO₂ NAAQS that were recorded in 2012-2014 at the Hilo (AQS ID: 15-001-1006), Mountain View (AQS ID: 15-001-2023), Ocean View (AQS ID: 15-001-2020), and Pahala (AQS ID: 15-001-2016) air monitoring stations located on the island of Hawaii were due to exceptional events because they resulted from volcanic emissions (“Documentation for Natural Events Excluded Data: Hilo Air Monitoring Station, AQS ID 15- 001-1006, Mountain View Air Monitoring Station, AQS ID 15-001-2023, Ocean View Air Monitoring Station, AQS ID 15-001-2020, Pahala Air Monitoring Station, AQS ID 15-001-2016, 2012-2014 Sulfur Dioxide (SO₂) Exceedances,” hereafter referred to as Hawaii’s 2012-2014 SO₂ Exceptional Events package).³ The EPA’s then-Regional Administrator, Jared Blumenfeld, on February 4, 2016, sent a letter to Nolan Hirai, Manager of HDOH’s Clean Air Branch, concurring that the exceedances met the criteria for an exceptional; event in the EER.⁴ The technical support document for EPA’s February 4, 2016, concurrence, included in the docket for this designation, sets forth the basis for the EPA’s concurrence with HDOH’s claim that the exceedances summarized in Table 2 and listed in Hawaii’s 2012-2014 SO₂ Exceptional Events package, Appendix D⁵, were the result of volcano-related exceptional events.

Table 2. Number of Days and Hours for EPA Exceptional Events Concurrence by Monitor

	2012		2013		2014		Totals, 2012-2014	
	# days	# hrs	# days	# hrs	# days	# hrs	# days	# hrs
Hilo (AQS ID: 15-001-1006)	20	57	14	42	10	35	44	134

² 72 FR 13560, March 22, 2007. On November 20, 2015, the EPA proposed revisions to the 2007 EER; the public comment period for this proposal closed February 3, 2016 (80 FR 224, November 20, 2015). The review in this document is based on the 2007 EER requirements and current EPA guidance.

³ “Documentation for Natural Events Excluded Data Hilo Air Monitoring Station, AQS ID 15-001-1006, Mountain View Air Monitoring Station, AQS ID 15-001-2023, Ocean View Air Monitoring Station, AQS ID 15-001-2020, Pahala Air Monitoring Station, AQS ID 15-001-2016, 2012-2014 Sulfur Dioxide (SO₂) Exceedances, Final Report, January 2016” (Hawaii’s 2012-2014 SO₂ Exceptional Events package).

⁴ Letter from Jared Blumenfeld, Regional Administrator, to Mr. Nolan Hirai, manager, Clean Air Branch, State of Hawaii, Department of Health, February 4, 2016 (included in the docket for this action).

⁵ Several pages were inadvertently omitted from Appendix D and are included in an email attachment from Lisa Young, HDOH, to Randall Chang, EPA, dated January 13, 2016, and included in the docket for this designation. “Appendix D” refers to Hawaii’s 2012-2014 SO₂ Exceptional Events package and the email attachment.

Mountain View (AQS ID: 15-001-2023)	20	78	17	42	27	65	64	185
Ocean View (AQS ID: 15-001-2020)	177	484	116	280	93	232	386	996
Pahala (AQS ID: 15-001-2016)	293	1,725	214	906	174	600	681	3,231
Totals, All Monitors:	510	2,344	361	1,270	304	932	1,175	4,546

Based on monitored ambient air quality data collected between 2012 and 2014 and the EPA’s February 4, 2016, concurrence on Hawaii’s 2012-2014 SO₂ exceptional events submittal regarding volcanic emissions, no violations of the 2010 SO₂ NAAQS have been recorded at a monitor in any undesignated part of the state for calendar years 2012-2014. Consequently, the EPA finds that Hawaii County is not violating the NAAQS, and is designating the area as unclassifiable/attainment. In this final technical support document, the EPA discusses the basis for designating Hawaii County unclassifiable/attainment.

The following are definitions of important terms used in this document:

- 1) 2010 SO₂ NAAQS – the primary NAAQS for SO₂ promulgated in 2010. This NAAQS is 75 ppb, based on the 3-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations. See 40 CFR 50.17.
- 2) Attaining monitor – an ambient air monitor meeting all methods, quality assurance, and siting criteria and requirements whose valid design value is equal to or less than 75 ppb, based on data analysis conducted in accordance with Appendix T of 40 CFR part 50.
- 3) Design Value – a statistic computed according to the data handling procedures of the NAAQS (in 40 CFR part 50 Appendix T) that, by comparison to the level of the NAAQS, indicates whether the area is violating the NAAQS.
- 4) Designated nonattainment area – an area which the EPA has determined has violated the 2010 SO₂ NAAQS or contributed to a violation in a nearby area. A nonattainment designation reflects considerations of the state’s recommendations and all of the information discussed in this document. The EPA’s decision is based on all available information including the most recent 3 years of air quality monitoring data, available modeling analyses, and any other relevant information.
- 5) Designated unclassifiable area – an area for which the EPA cannot determine based on all available information whether or not it meets the 2010 SO₂ NAAQS.
- 6) Designated unclassifiable/attainment area – an area which the EPA has determined to have sufficient evidence to find either is attaining or is likely to be attaining the NAAQS. The EPA’s decision is based on all available information including the most recent 3 years of air quality monitoring data, available modeling analyses, and any other relevant information.
- 7) Modeled violation – a violation based on air dispersion modeling.
- 8) Recommended attainment area – an area a state or tribe has recommended that the EPA designate as attainment.
- 9) Recommended nonattainment area – an area a state or tribe has recommended that the EPA designate as nonattainment.

- 10) Recommended unclassifiable area – an area a state or tribe has recommended that the EPA designate as unclassifiable.
- 11) Recommended unclassifiable/attainment area – an area a state or tribe has recommended that the EPA designate as unclassifiable/attainment.
- 12) Violating monitor – an ambient air monitor meeting all methods, quality assurance, and siting criteria and requirements whose valid design value exceeds 75 ppb, based on data analysis conducted in accordance with Appendix T of 40 CFR part 50.

Technical Analysis for Hawaii County, Hawaii

Introduction

Prior to the EPA's review and concurrence on exceptional events, regulatory SO₂ monitors on the Big Island of Hawaii showed violations of the 2010 SO₂ NAAQS. The area was therefore included for analysis along with other areas in the country subject to the July 2, 2016 consent decree designation.

In its May 2011 recommendation, Hawaii recommended that all counties in the State of Hawaii be designated as unclassifiable for the 2010 SO₂ NAAQS, based on monitored air quality from 2008-2010. As discussed in the EPA's February 4, 2016 concurrence letter and accompanying technical support document, Hawaii's 2012-2014 SO₂ Exceptional Events package was submitted on December 17, 2015 to address 2012-2014 monitored exceedances of the 2010 SO₂ NAAQS attributed to volcanic emission on the Big Island of Hawaii. The 2012-2014 design value of 75 (calculated for both the Ocean View and Pahala monitors) used to determine the unclassifiable/attainment area designation for Hawaii County, Hawaii reflects the EPA's concurrence on multiple exceptional events claims influencing monitored concentrations at monitors in Hawaii County, Hawaii. Consequently, the monitored air quality data do not indicate any violation of the 2010 SO₂ NAAQS in Hawaii County in calendar years 2012-2014.⁶

On February 16, 2016, the EPA notified Hawaii that we intended to designate the Hawaii County, Hawaii area as unclassifiable/attainment. Additionally, we informed Hawaii that our intended boundaries for the unclassifiable/attainment area consisted of the island of Hawaii. Our intended designation and associated boundaries were based on, among other things, consideration of the information presented in Hawaii's 2012-2014 SO₂ Exceptional Events package. Detailed rationale, analyses, and other information supporting our intended designation for this area can be found in the draft technical support document for Hawaii, and this document along with all others related to this rulemaking can be found in Docket ID EPA-HQ-OAR-2014-0464. The EPA is explicitly incorporating and relying upon the analyses and information presented in the draft technical support document for the purposes of our final designation for this area.

Assessment and Conclusion

In our February 16, 2016 notification to Hawaii regarding our intended unclassifiable/attainment designation for the Hawaii County, Hawaii area, the EPA requested that any additional information that the Agency should consider prior to finalizing the designation should be submitted by April 19, 2016. On March 1, 2016, the EPA also published a notice of availability and public comment period in the *Federal Register*, inviting the public to review and provide input on our intended designations by March 31, 2016 (81 FR 10563).

⁶ See, Hawaii's exceptional events demonstration for 2012-2014 (docket number EPA-HQ-OAR-2014-0464-0100) and EPA's concurrence letter and associated technical support document (docket number EPA-HQ-OAR-2014-0464-0193).

The EPA did not receive any additional information from Hawaii, nor did we receive any public comments regarding our intended unclassifiable/attainment designation for the Hawaii County, Hawaii area.

Therefore, based on the information available to the EPA at this time including the analyses performed for the purposes of the draft technical support document and in the absence of any new information that would otherwise lead to a different conclusion regarding air quality in the area or any new information that would otherwise lead to a different conclusion regarding the area boundaries, the EPA is designating the Hawaii County, Hawaii area as unclassifiable/attainment for the 2010 SO₂ NAAQS. This designation is based on the EPA’s February 4, 2016, concurrence on the multiple exceptional events claims regarding ambient air quality influenced by local volcanic emissions at monitors in Hawaii County, Hawaii. Consequently, the monitored air quality data do not indicate any violation of the 2010 SO₂ NAAQS in Hawaii County in calendar years 2012-2014. As explained in the EPA’s February 4, 2016, letter, “EPA’s AQS will not count [the violating] days as exceedances when generating user reports, or include them in design values estimates, unless the AQS user specifically indicates that they should be included[,]” and that although the “data from the monitors will continue to be publicly available, [...] EPA’s publications and public information statements on the status of air quality in the affected area will not reflect these data in any summary statistic of potential regulatory application, unless inclusion is specifically noted.”⁷

None of the design values for Hawaii County, Hawaii calculated excluding the data subject to the multiple exceptional events indicate a violation of the 2010 SO₂ NAAQS in Hawaii County in calendar years 2012-2014. These design values are listed in Table 3 below. The method for calculating SO₂ design values for comparison to the 2010 SO₂ NAAQS, including the handling of data affected by exceptional events which have been approved for exclusion by the Administrator is documented in 40 CFR Part 50, Appendix T. Data affected by exceptional events are included in the determination of whether a day’s data is complete (at least 75% of the values must be present). Data affected by exceptional events are excluded from the determination of the day’s daily maximum value. Daily maximum values from days affected by exceptional events are then used in the design value calculation exactly the same as daily maximum values from days not affected by exceptional events.

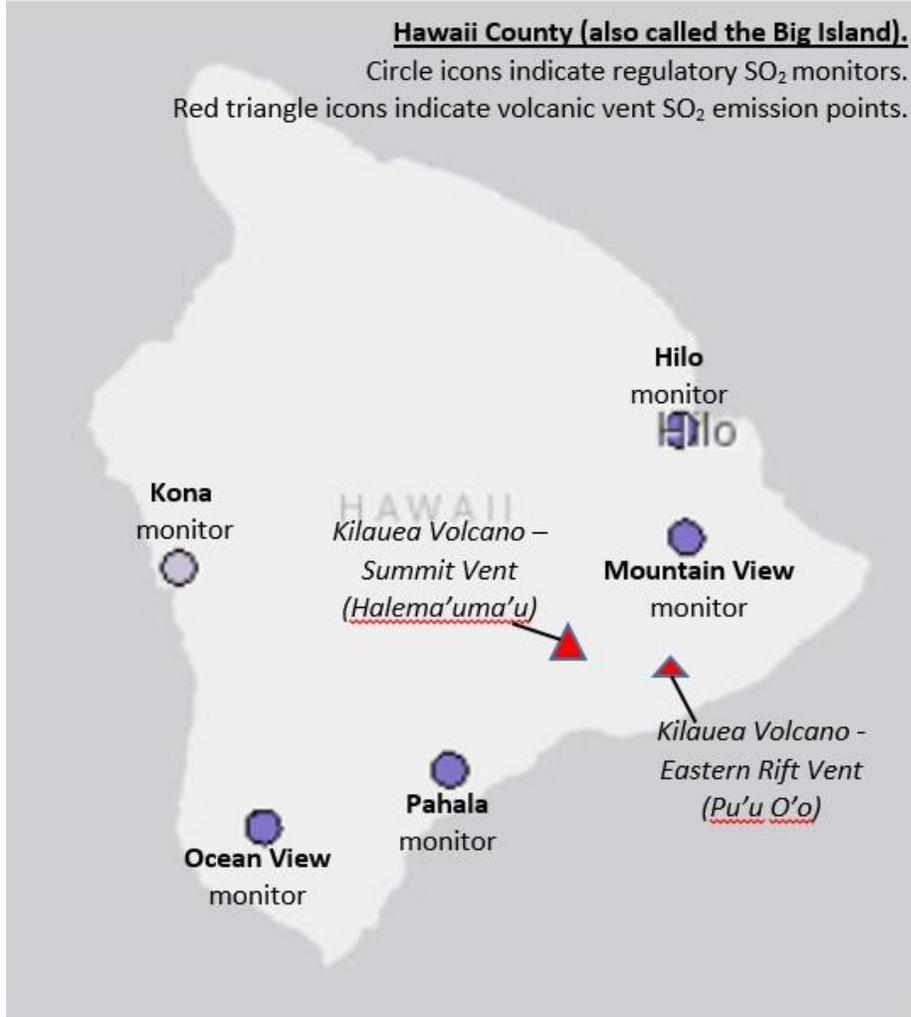
Table 3. Hawaii County, Hawaii 2012-2014 SO₂ Design Values

Site Name	Site ID	2012-2014 Design Value (ppb)
Hilo	15-001-1006	70
Pahala	15-001-2016	75
Ocean View	15-001-2020	75
Mountian View	15-001-2023	72

The boundaries for this unclassifiable/attainment area consist of the island of Hawaii, and are shown in the figure below. Also included in the figure are nearby emitters of SO₂ and regulatory SO₂ monitors.

⁷ February 4, 2016, letter at 2.

Figure 1: The EPA's final unclassifiable/attainment area: Hawaii County, Hawaii



At this time, our final designation for the state only applies to this area. Consistent with the court-ordered schedule, the EPA will evaluate and designate all remaining undesignated areas in Hawaii by either December 31, 2017, or December 31, 2020.