UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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San Francisco, CA 94105-3901

FEB 16 2016

OFFICE OF THE
REGIONAL ADMINISTRATOR

The Honorable David Y. Ige
Governor, State of Hawaii
State Capitol Executive Chambers
Honolulu, Hawaii 96813

Dear Governor Ige:

On May 19, 2011, then-Governor Neil Abercrombie submitted air quality designation recommendations for the State of Hawaii for the 2010 revision to the primary National Ambient Air Quality Standard (NAAQS) for sulfur dioxide (SO_2). Reducing levels of SO_2 pollution is an important part of the U.S. Environmental Protection Agency's (EPA's) commitment to a clean, healthy environment. Exposure to SO_2 can cause a range of adverse health effects, including narrowing of the airways which can cause difficulty breathing and increased asthma symptoms. This letter is to notify you of the EPA's preliminary intentions regarding Hawaii's recommended designations.

On June 3, 2010, the EPA strengthened the health-based or "primary" standard for SO_2 by establishing a standard for 1-hour average SO_2 concentrations at a level of 75 parts per billion. Within one year after a new or revised standard is established, the Clean Air Act requires the Governor of each state to submit to the EPA a list of all areas in the state, with recommendations for whether each area meets the standard. Through an interactive process, the EPA considers the recommendations and then promulgates designations for all areas across the country. On July 25, 2013, the EPA designated 29 areas in 16 states as nonattainment, but did not at that time designate other areas. Pursuant to a March 2, 2015, court-ordered schedule,[1] the EPA must complete the remaining SO_2 designations by three specific deadlines: July 2, 2016, December 31, 2017, and December 31, 2020.

This current round of designations, to be completed by July 2, 2016, addresses two groups of areas: (1) areas that have newly monitored violations of the 2010 SO_2 NAAQS based on the most recent 3 calendar years of certified monitored ambient air quality data, and (2) areas that contain any stationary source that had not been announced as of March 2, 2015 for retirement and that, according to the EPA's Air Markets Database, in 2012 emitted either (i) more than 16,000 tons of SO_2, or (ii) more than 2,600 tons of SO_2 with an annual average emission rate of at least 0.45 pounds of SO_2/mmBTU.

After carefully considering Hawaii's recommendations and other available technical information, the EPA intends to designate as unclassifiable/attainment the following county:

Intended Unclassifiable/Attainment Area:
Hawaii County, Hawaii

[1] *Sierra Club v. McCarthy*, No. 3-13-cv-3953 (SI) (N.D. Cal. Mar. 2, 2015).

We acknowledge that in Hawaii's May 19, 2011 recommendation, Hawaii County is recommended to be designated as unclassifiable. However, based on all information available, including the recent exceptional events concurrences discussed below, the EPA intends to designate Hawaii County as unclassifiable/attainment.

On December 17, 2015, Hawaii Department of Health (HDOH) submitted documentation to the EPA to demonstrate that exceedances of the 2010 1-hour SO_2 NAAQS that were recorded in 2012-2014 at the Hilo, Mountain View, Ocean View, and Pahala air monitoring stations located in Hawaii County (consisting of the Big Island of Hawaii) resulted from volcanic-related exceptional events, rather than due to emissions from power plants in the vicinity of these monitors. On February 4, 2016, the EPA concurred on these volcanic emissions exceptional events. With these concurrences, monitors in Hawaii County show no violations of the 2010 SO_2 NAAQS for calendar years 2012-2014. Because monitors in the county of Hawaii were recording violations of the standard prior to the recent exceptional events concurrence, the EPA is including the area in this round of designations.

The enclosed Technical Support Document provides a detailed analysis that supports our intended designation decisions. If your state has additional information that the EPA should consider prior to finalizing these designations, please submit it to us by April 19, 2016. We also will be publishing a notice in the *Federal Register* announcing a 30-day period for the public to provide input on the EPA's intended designation decisions. We will promulgate the designations for these areas by July 2, 2016. We will designate all other previously undesignated areas in the state on a schedule consistent with the prescribed timing of the court order, i.e., by December 31, 2017, or December 31, 2020.

We look forward to a continued dialogue with you and your staff as we work together to complete the area designations and implement the 2010 primary SO_2 standard. For additional information regarding designations under the SO_2 standard, please visit our website at *www.epa.gov/so2designations*. Should you have any questions, please do not hesitate to call me, or have your staff contact Kerry Drake, Associate Director, Air Division, of my staff at (415) 947-4157 or drake.kerry@epa.gov.

Sincerely,

Jared Blumenfeld

Enclosure

cc: Nolan Hirai, Manager, Clean Air Branch, Hawaii Department of Health
Elizabeth Adams, Acting Director, Region IX Air Division
Janet G. McCabe, Acting Assistant Administrator for Air and Radiation
Stephen D. Page, Director, Office of Air Quality Planning and Standards

Draft Technical Support Document

Hawaii
Area Designations for the 2010 SO_2 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 one-hour sulfur dioxide (SO_2) primary national ambient air quality standard (NAAQS). The CAA defines a nonattainment area as one that does not meet the NAAQS or that contributes to a violation in a nearby area. An attainment area is defined as any area other than a nonattainment area that meets the NAAQS. Unclassifiable areas are defined as those that cannot be classified on the basis of available information as meeting or not meeting the NAAQS.

Hawaii submitted a designations recommendation on May 19, 2011, ahead of a July 2, 2016, deadline for the EPA to designate certain areas established by the U.S. District Court for the Northern District of California. On February 4, 2016, the EPA concurred on Hawaii's 2012-2014 exceptional events package for volcanic emissions affecting four monitors in Hawaii County. With this concurrence, further described below and included in the docket for this designation, monitors in Hawaii County show no violations of the 2010 SO_2 NAAQS for calendar years 2012-2014.

The July 2, 2016 deadline is the first of three deadlines established by the court for the EPA to complete area designations for the 2010 SO_2 NAAQS. Table 1 below lists Hawaii's recommendations and identifies the counties or portions of counties in Hawaii that the EPA intends to designate by July 2, 2016 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. State Recommendation and EPA's Intended Designation

Area	Hawaii's Recommended Area Definition	Hawaii's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Hawaii County, Hawaii	Hawaii County	Unclassifiable	Same as State's Recommendation	Unclassifiable/ Attainment

Background

On June 3, 2010, the EPA revised the primary (health based) SO_2 NAAQS by establishing a new one-hour standard at a level of 75 parts per billion (ppb) which is attained when the three-year average of the 99th percentile of one-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 SO_2. 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 SO_2, set at 500 ppb evaluated over 3 hours 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 Clean Air Act requires that not later than one year after promulgation of a new or revised NAAQS, state governors must submit their recommendations for designations and boundaries to the 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 will promulgate the designations that it deems appropriate. If a state or tribe disagrees with the EPA's intended designations, they are given an opportunity within the 120 day period to demonstrate why any proposed modification is inappropriate.

On August 5, 2013, the EPA published a final rule establishing air quality designations for 29 areas in the United States for the 2010 SO_2 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 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.

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 SO_2 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 SO_2 or (ii) more than 2,600 tons of SO_2 with

[1] 40 CFR 50.4(e) provides that the two prior primary NAAQS will no longer apply to an area one 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 the EPA approves a SIP providing for attainment of the 2010 NAAQS. These situations do not apply to the County of Hawaii.

an annual average emission rate of at least 0.45 pounds of SO_2 per one million British thermal units (lbs SO_2/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 states 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 SO_2 Data Requirements Rule (DRR).

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 I-X. This memorandum supersedes earlier designation guidance for the 2010 SO_2 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 SO_2 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 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 SO_2. Notably, the EPA released its most recent versions of documents titled, "SO_2 NAAQS Designations Modeling Technical Assistance Document" (Modeling TAD) and "SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document" (Monitoring TAD) in December 2013.

On March 22, 2007, the EPA adopted a final rule, Treatment of Data Influenced by Exceptional Events (EER), 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, the EPA may 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.

[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.

On December 17, 2015, Hawaii Department of Health (HDOH) submitted documentation to the EPA to demonstrate that exceedances of the 2010 1-hour SO_2 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 resulted from volcanic-related exceptional events ("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 (SO_2) Exceedances," hereafter referred to as Hawaii's 2012-2014 SO_2 Exceptional Events package).[3] The EPA's February 4, 2016 technical support document, 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 1 and listed in Hawaii's 2012-2014 SO_2 Exceptional Events package, Appendix D[4], were the result of volcano-related exceptional events.

Table 1. 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
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 SO_2 exceptional events submittal based on volcanic emissions, no violations of the 2010 SO_2 NAAQS have been recorded at a monitor in any undesignated part of the state for calendar years 2012-2014. Because monitors in the county of Hawaii (consisting of the Big Island of Hawaii) were recording violations of the standard prior to the recent exceptional events concurrence, the EPA is including the area in this round of designations. In this draft technical support document, the EPA discusses its review and technical analysis of Hawaii's recommendation for the area that we are addressing.

[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 (SO_2) Exceedances, Final Report, January 2016" ("Hawaii's 2012-2014 SO_2 Exceptional Events package").

[4] 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. Here forward "Appendix D" refers to Hawaii's 2012-2014 SO_2 Exceptional Events package and the email attachment.

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

1) 2010 SO_2 NAAQS – The primary NAAQS for SO_2 promulgated in 2010. This NAAQS is 75 ppb, based on the three year average of the 99th percentile of the annual distribution of daily maximum one-hour average concentrations. See 40 CFR 50.17.
2) 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.
3) Designated nonattainment area – an area which the EPA has determined has violated the 2010 SO_2 NAAQS or contributed to a violation in a nearby area. A nonattainment designation reflects considerations of state 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 analysis, and any other relevant information.
4) Designated unclassifiable area – an area which the EPA cannot determine based on all available information whether or not it meets the 2010 SO_2 NAAQS.
5) 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 analysis, and any other relevant information.
6) Modeled violation – a violation based on air dispersion modeling.
7) Recommended attainment area – an area a state or tribe has recommended that the EPA designate as attainment.
8) Recommended nonattainment area – an area a state or tribe has recommended that the EPA designate as nonattainment.
9) Recommended unclassifiable area – an area a state or tribe has recommended that the EPA designate as unclassifiable.
10) Recommended unclassifiable/attainment area – an area a state or tribe has recommended that the EPA designate as unclassifiable/attainment.
11) 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 the Hawaii County, Hawaii Area

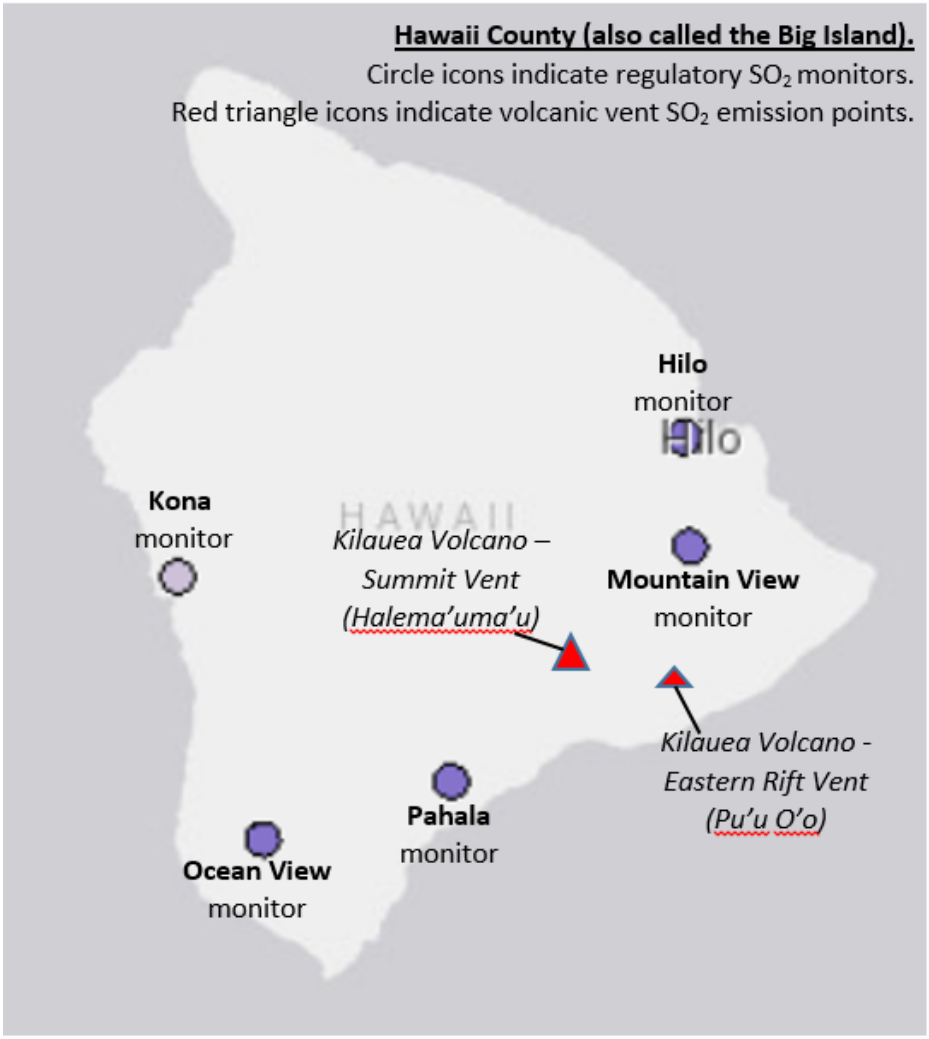
Introduction

In its May 2011 recommendation, the state recommended that all counties in the State of Hawaii be designated as unclassifiable for the 2010 SO_2 NAAQS, based on monitored air quality from 2008-2010. After careful review of the state's assessment, supporting documentation, and all available data including the EPA's concurrence with an Exceptional Events package described in this document and included in the docket for this designation, the EPA intends to designate Hawaii County, Hawaii as unclassifiable/attainment for the 2010 SO_2 NAAQS based upon data collected between 2012 and 2014. Our intended boundaries are consistent with the state's recommended boundaries with respect to Hawaii County, consisting of the island of Hawaii. EPA is not designating other portions of the State of Hawaii in this round of designations.

As discussed in the EPA's February 4, 2016 concurrence letter and accompanying technical support document, on December 17, 2015 HDOH submitted an exceptional events package ("Hawaii's 2012-2014 SO_2 Exceptional Events package"). Hawaii's 2012-2014 SO_2 Exceptional Events package addresses 2012-2014 monitored exceedances of the 2010 SO_2 NAAQS attributed to volcanic emissions on the Big Island of Hawaii (i.e. Hawaii County). The EPA concurred on the exceptional events requests; consequently, the monitored air quality data do not indicate any violation of the 2010 SO_2 NAAQS in Hawaii County in calendar years 2012-2014. The documents related to Hawaii's exceptional events request are included in the docket for this designations action.

The figure below shows the EPA's intended unclassifiable/attainment area boundary.

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



Detailed Assessment

Air Quality Data

This factor considers the SO_2 air quality monitoring data in Hawaii County. The table below shows information related to the regulatory monitors located in the County.

Table 2: Available Air Quality Data for Hawaii County

County	State Recommendation	Air Quality Systems (AQS) Monitor ID	Site name	Monitor Location	2012 – 2014 SO_2 Design Value (DV) in ppb*
Hawaii	Unclassifiable	15-001-1006	Hilo	1099 Waianuenue Ave., Hilo	70
Hawaii	Unclassifiable	15-001-2023	Mountain View	18-1235 Volcano Rd	72
Hawaii	**Unclassifiable**	**15-001-2020**	**Ocean View**	**Orchid Parkway, Hawaiian Ocean View Estates**	**75**
Hawaii	**Unclassifiable**	**15-001-2016**	**Pahala**	**96-3150 Pikake St.**	**75**
Hawaii	Unclassifiable	15-001-1012	Kona	81-1043 Konawaena School Rd	47

Monitors in **bold** have the highest valid 2012 – 2014 design values in the county.
2014 design values from AQS Design Value Report pulled February 5, 2016.
*The 2012-2014 DV for Hilo, Mountain View, Ocean View, and Pahala were derived from data that excluded the exceptional events days and hours discussed above. Had those exceptional events not been excluded, the 2012-2014 DV for these monitors would have been 180 ppb, 279 ppb, 533 ppb, and 712 ppb respectively.

The monitors listed in Table 2 are operated by HDOH in accordance with the EPA's monitoring regulations in 40 CFR part 50, 40 CFR part 58, and associated appendices, and are regulatory monitors.

In addition, there are two non-regulatory monitors located at Hawaii Volcanoes National Park, close to the summit of Kilauea Volcano (Visitor Center monitor, AQS ID: 15-001-0005; Observatory monitor, AQS ID: 15-001-0007). The Visitor Center and Observatory monitors had 2014 design values of 1,196 and 1,403 parts per billion (ppb), respectively, and are operated by the National Park Service (NPS). Exceptional events due to impacts from the volcano were not submitted for these monitors, as they are non-regulatory monitors and their design values are not appropriate for comparison to the NAAQS for regulatory purposes. An additional monitor, Puna E (AQS ID: 15-001-2010), which is not considered for regulatory use due to not meeting siting requirements of 40 CFR part 58 Appendix E, is located at 13-763 Leilani Avenue and had a 2014 design value of 19 ppb.

Based on available monitored ambient air quality data collected between 2012 and 2014 and consideration of exceptional events, the regulatory monitors in the Hawaii County do not indicate a violation of the 2010 SO_2 NAAQS in calendar years 2012-2014.

Emissions and Emissions-Related Data

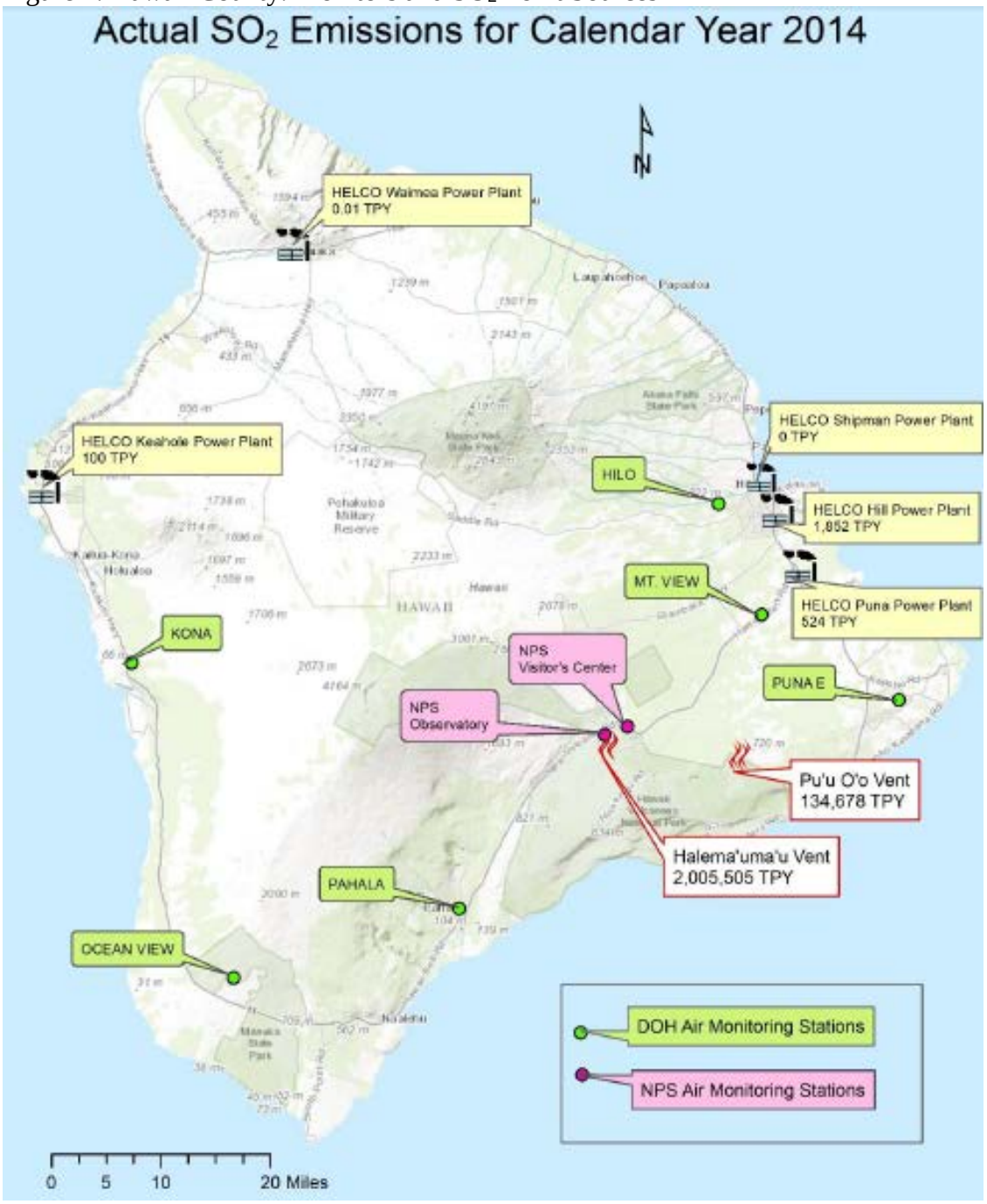
As part of Hawaii's 2012-2014 SO_2 Exceptional Events package, Hawaii included the annual emissions for all SO_2 point sources in Hawaii County, which are included below for informational purposes. As explained in Section 4.6.1 of Hawaii's 2012-2014 SO_2 Exceptional Events package, Hawaii obtained the data for these sources and their emissions from the yearly facility reports submitted to the state, permit requirements, or a mass balance calculation based on the fuel consumption and fuel sulfur content. These emissions data are summarized below.

Table 3: SO_2 Emissions at or above 100 tons per year (tpy) in Hawaii County

Facility Name	City	Facility Subject to the Emissions Criteria of the March 2, 2015 consent decree?	Facility Total SO_2 Emissions (Data source and tons per year)
HELCO Keahole Generating Station (Keahole)	Kona	No	2014 State Data – 100 tpy
HELCO Puna Generating Station (Puna)	Hilo	No	2014 State Data – 524 tpy
HELCO Kanoelehua Hill Generating Station (Hill)	Hilo	No	2014 State Data - 1,852 tpy

Hawaii's 2012-2014 SO_2 Exceptional Events package (page 15) includes the figure shown below as Figure 2. Note that the figure shows the location of the non-regulatory Puna E monitor (operated by HDOH, listed as "DOH" in the figure) and the two non-regulatory NPS monitors, in addition to the five regulatory monitors listed in Table 2 and Figure 1 above. The figure depicts the power plants on the island, both those listed in Table 3, and those with emissions less than 100 tpy in 2014: HELCO Shipman on the east side of the island, with 0 tpy; and HELCO Waimea on the north side of the island, with 0.01 tpy. Finally, it lists 2014 emissions from the Kilauea volcano: over two million tons of SO_2 emissions from the Halema'uma'u summit vent, and approximately 135,000 tons from the Pu'u O'o eastern rift vent.

Figure 2. Hawaii County: Monitors and SO_2 Point Sources



Emissions Controls

Hawaii's 2012-2014 SO_2 Exceptional Events package provides information on controls required for anthropogenic sources on the island. The majority of anthropogenic SO_2 emissions in Hawaii County are from three power plants: HELCO Kanoelehua Hill and HELCO Puna on the Hilo side of the island, and HELCO Keahole on the Kona side of the island. Regulations that apply to these sources and limit their SO_2 emissions include Hawaii Administrative Rules (HAR),

Prevention of Significant Deterioration/Best Available Control Technology (PSD/BACT), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP). These regulations are further described in Hawaii's 2012-2014 SO_2 Exceptional Events package (Table 4-1, pages 85-86; Tables 4-20 and 4-22, pages 104, 106-108).

Hawaii's 2012-2014 SO_2 Exceptional Events package also lists the existing control measures for limiting SO_2 from these sources in Table 4-21 (page 105) and Table 4-23 (pages 108-109). These measures consist of limits on the maximum sulfur content of fuels utilized at the various units at the plants, as shown in Table 4.

Table 4: Control Measures for Largest Anthropogenic SO_2 Sources in Hawaii County

Facility	Unit	Control Measure
HELCO Puna Generating Station	15.5 megawatt (MW) boiler	maximum fuel sulfur content of 2%
	600 kilowatt (kW) diesel electric generator	maximum fuel sulfur content of 0.5%
	20 MW combustion turbine	maximum fuel sulfur content of 0.4%
HELCO Kanoelehua Hill Generating Station	14.1 and 23 MW boilers	maximum fuel sulfur content of 2%
	11.6 MW combustion turbine	maximum fuel sulfur content of 0.4%
	One 2.0 and three 2.5 MW diesel electric generators	maximum fuel sulfur content of 0.0015% (ultra-low-sulfur diesel)
HELCO Keahole Generating Station	One 500 kW Black Start diesel electric generators	maximum fuel sulfur content of 0.0015% (ultra-low-sulfur diesel)
	Three 2.5 MW diesel electric generators	maximum fuel sulfur content of 0.0015% (ultra-low-sulfur diesel)
	One 18 MW and two 20 MW combustion turbines	maximum fuel sulfur content of 0.4%

The EPA has not received any additional information on emissions reductions resulting from controls put into place after the date of the emissions inventory data provided in Table 3 above. Future controls are discussed in the "Other Relevant Information" section of this document.

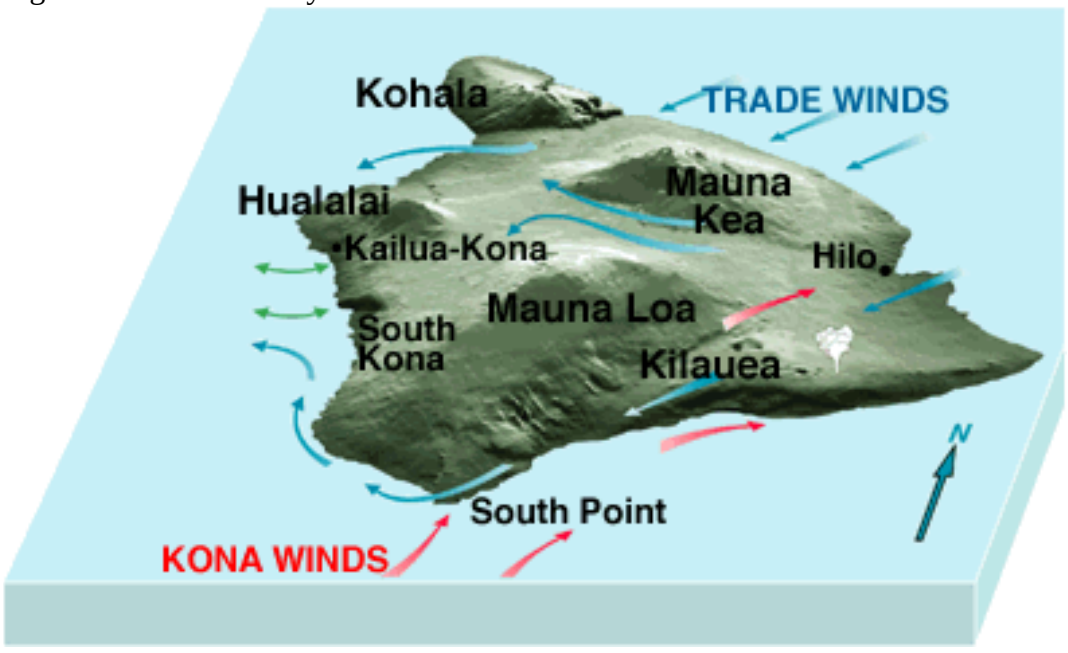
Meteorology (Weather & Transport Patterns)

Evidence of source-receptor relationships between specific emissions sources and high SO_2 concentrations in the surrounding area is another important factor in determining the appropriate extent of the EPA's intended designated area.

The island of Hawaii's complex weather and transport patterns are influenced by its location in the Pacific Ocean as well as its topography. The northeasterly trade winds are the dominant wind regime for the island. In the summer, an area of high pressure called the Pacific High is at its northern-most position. This results in strong trade winds from the northeast dominating the wind regime from May to September. These trade winds flow from the northeast to the southwest of the island, and through the valley between Mauna Kea and Mauna Loa. While the trade wind regime still exists in winter months, it diminishes somewhat as the Pacific High moves south during winter months. Also during winter months, subtropical cyclones, called Kona storms, occur more frequently, bringing winds from the south. Often referred to as Kona winds, these winds travel from the southern side of the island, over Kilauea and northward toward the eastern coast.

Figure 3, provided as part of Hawaii's 2012-2014 SO_2 Exceptional Events package, shows these wind patterns, peaks, and cities on the Big Island of Hawaii.

Figure 3: Hawaii County Wind Patterns



Average rainfall varies drastically from the Kona side of the island to the Hilo side of the island. According to Hawaii's 2012-2014 SO_2 Exceptional Events package (page 12), the average rainfall on the Kona side was 9 inches from 2000 to 2011, while the Hilo side received 114 inches of rain on average over the same time period. The lower flanks of Mauna Loa and Mauna Kea also receive higher amounts of rainfall.

Geography and Topography (Mountain Ranges or Other Air Basin Boundaries)

The island of Hawaii has complex terrain as well as complex meteorology, as shown above in Figure 3. The two largest peaks on the island are Mauna Loa and Mauna Kea. Both are over 4,000 meters above sea level. The Kilauea volcano, located to the southeast of Mauna Loa, is 1,247 meters in elevation. The relatively flat eastern portion of the island where Hilo is located contains the majority of the island's population.

Jurisdictional Boundaries

Once the above factors were examined, existing jurisdictional boundaries were considered for the purpose of informing our intended unclassifiable/attainment area, specifically with respect to clearly defined legal boundaries.

There are no previously designated nonattainment areas within Hawaii County for the 2010 SO_2 NAAQS. The area recommended by the State is comprised of clearly defined boundaries: the county of Hawaii, which consists of the island of Hawaii. The EPA finds these boundaries to be comprised of clearly defined legal boundaries, and to be a suitably clear basis for defining our intended unclassifiable/attainment area.

Other Relevant Information

Hawaii County's SO_2 situation is unique. In 2014, the volcano emitted a total of 2,140,187 tons of SO_2 from the Halema'uma'u and Pu'u O'o vents, while all anthropogenic emissions together accounted for just 0.1% of total emissions released on the island.[5] In response to health concerns associated with the levels of volcanic emissions, HDOH's extensive network of SO_2 monitors on the island and Hawaii's short-term SO_2 advisory webpage (developed with the EPA to provide Air Quality Index-type information for Hawaii County - available at http://hiso2index.info/) continuously provide alerts and health information to the public. The University of Hawaii also developed a model to forecast next-day concentrations downwind of the volcano (see http://mkwc.ifa.hawaii.edu/vmap/hysplit/).

The "Emissions Controls" section of this document describes controls in place when HDOH submitted Hawaii's 2012-2014 SO_2 Exceptional Events package. Additionally, under a Regional Haze Federal Implementation Plan issued by the EPA, the boilers at Hill, Shipman and Puna power plants will be subject to a collective emissions cap of 3,550 tpy SO_2 per year beginning in 2018 (see 40 CFR 52.633(d)). Finally, the State of Hawaii is on an aggressive schedule to generate 100 percent of its electricity sales from renewable energy resources by 2045. In August 2014, the Hawaiian Electric Companies submitted plans to the Hawaii Public Utilities

[5] Hawaii's 2012-2014 SO_2 Exceptional Events package, pg 102-103.

Commission describing how electric utility services will be offered to meet customer needs and produce higher levels of renewable energy. Of the three power plants in/near Hilo (HELCO Shipman Power Plant, HELCO Puna Generating Station, and HELCO Hill Generating Station), Shipman is already deactivated and is anticipated for decommissioning. According to the August 2014 Hawaii Electric Light Power Supply Improvement Plan[6], the Puna facility will be deactivated in 2018 and decommissioned in 2020, while Hill 5 will be deactivated in 2018 and decommissioned in 2022 and Hill 6 will be deactivated in 2022 and decommissioned in 2024. In total, emissions from power plants near Hilo are projected to decrease to a total of 1,852 tpy by 2018, 1,148 tpy by 2020, and 0.2 tpy SO_2 by 2022.[7] In comparison, Hawaii Electric Company's previous Integrated Resource Plan, finalized in 2008 prior to newer requirements and regulations, projected 2018 emissions from power plants near Hilo to be 4,996 tpy.[8]

While it is not possible for HDOH to site monitors such that they would not be affected by volcanic emissions, Hawaii's 2012-2014 SO_2 Exceptional Events package includes an analysis to evaluate the maximum SO_2 concentration measurement resulting from emissions from the Hilo power plants. Figure 4 shows the sources and monitors near Hilo, Hawaii. Hawaii's 2012-2014 SO_2 Exceptional Events package also includes distances between emission sources and the Hilo and Mountain View regulatory monitors. This information is provided in Table 5. The sources are 6.5 – 6.6 kilometers from the closest monitor.

[6] Available at http://files.hawaii.gov/puc/2_Dkt%202012-0212%202014-08-26%20HELCO%20PSIP%20Report.pdf
[7] Hawaii's 2012-2014 SO_2 Exceptional Events package, pg 88.
[8] "Technical Support Document for the Propose Action on the Federal Implementation Plan for the Regional Haze Program in the State of Hawaii", U.S. EPA Region 9 Air Division. May 14, 2012, pg 57-58.

Figure 4. Sources and monitors near Hilo, Hawaii.[9]

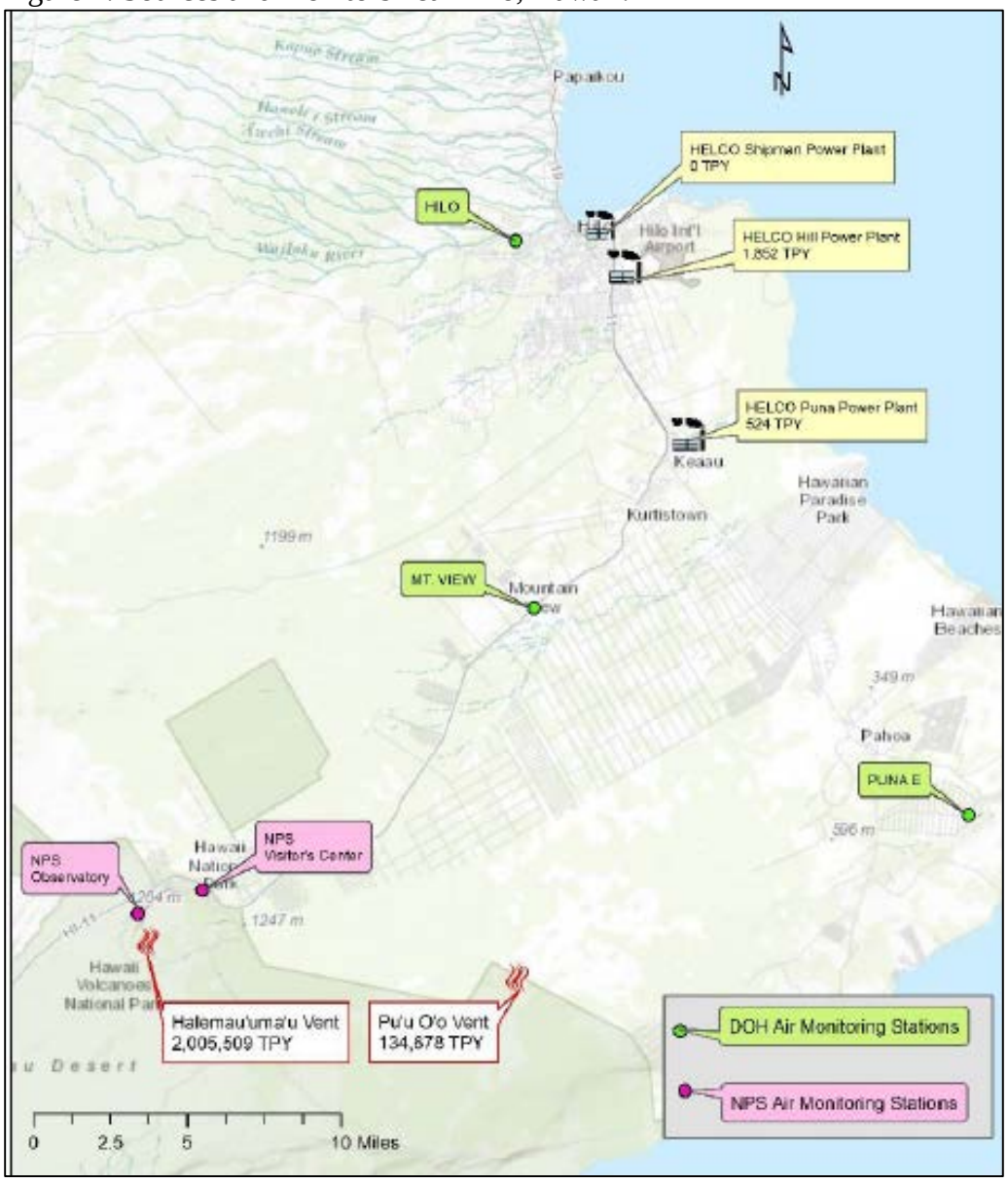


Table 5. Distances from SO_2 Sources to Regulatory Monitors, Hilo Area.

	To Hilo monitor (AQS ID: 15-001-1006) - in kilometers (km)	To Mountain View monitor (AQS ID: 15-001-2023) - in kilometers (km)
HELCO Shipman Power Plant	4.6 km	16.3 km
HELCO Kanoelehua Hill Generating Station	6.5 km	13.5 km
HELCO Puna Generating Station	14.6 km	6.6 km
Halema'uma'u Vent	38.6 km	27.8 km

[9] Hawaii's 2012-2014 SO_2 Exceptional Events package, pg 35.

Section 3.2.5 of Hawaii's 2012-2014 SO_2 Exceptional Events package includes an analysis to evaluate the maximum SO_2 concentration measurement consistent with emissions from the Hilo power plants. A detailed analysis for 2012-2014 that considers variables such as daily wind direction, daily average power generation data for the power plants, and monitored concentrations, found that the maximum concentration at Hilo resulting from non-summit volcanic emissions was 15.8 ppb, and 12.3 ppb at Mountain View. While Hawaii's analysis excludes impacts from emissions coming directly from the summit of the volcano, the analysis was unable to separate potential impacts from power plant emissions and those from volcanic eastern rift emissions, or emissions from volcanic summit emissions that had been recirculated. It is therefore conservative to assume that anthropogenic sources alone would result in these maximum concentrations. As a result, the EPA finds it unlikely that the anthropogenic sources in the Hilo area caused or contributed to a monitored violation of the NAAQS within Hawaii County in calendar years 2012-2014.

While not explicitly quantified in Hawaii's exceptional events package, the EPA also finds it unlikely that emissions from HELCO Keahole Generating Station in Kona caused or contributed to a monitored violation of the NAAQS in 2012-2014. As previously discussed, the 2012 – 2014 design value at the Kona monitor (AQS ID: 15-001-1012) was 47 ppb. Given that 2014 emissions from the Keahole Generating Station (100 tpy) were significantly less than those from either of the facilities in the Hilo area (524 and 1,852 tpy for Puna and Hill and respectively), the geographic location of the monitors and sources, and the previously discussed weather and transport patterns, the EPA does not believe that emissions from Keahole Generating Station caused or contributed to a monitored violation of the NAAQS at the Pahala, Ocean View, Mountain View, or Hilo monitors within Hawaii County in 2012-2014.

The information presented above as produced by HDOH provides useful insight into the contribution to ambient concentrations from anthropogenic sources in Hawaii County. Hawaii County has a unique mix of complex meteorology, topography, and volcanic emissions that are levels of magnitude greater than all of the anthropogenic source emissions on the island combined. Consequently, although the EPA's policy is to not generally rely exclusively on non-violating monitored data to support an unclassifiable/attainment designation under the 2010 SO_2 NAAQS (where there are significant sources of SO_2 in the area), absent additional support in the form of either a demonstration that the relevant monitors are located in expected sites of maximum ambient concentrations or a confirming dispersion modeling analysis, the unique facts presented by Hawaii's situation discussed above justify a state-specific departure from this general policy.

Conclusion

After carefully considering the factors described above, the EPA intends to designate Hawaii County, Hawaii as an unclassifiable/attainment area for the 2010 SO_2 NAAQS. The boundaries for this area consist of the Big Island of Hawaii. We believe that these boundaries encompass the appropriate area based on the available information.

At this time, our intended designations for the state only apply to this area. Consistent with the conditions in the March 2, 2015 court-ordered schedule, the EPA will evaluate and designate all remaining undesignated areas in Hawaii by either December 31, 2017, or December 31, 2020.