

State of South Carolina

Office of the Governor

NIKKI R. HALEY
GOVERNOR

1205 PENDLETON STREET
COLUMBIA 29201

June 2, 2011

Gwendolyn Keyes Fleming, Esq.
Regional Administrator
US EPA Region 4
Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, GA 30303-8909

Re: South Carolina Recommendations for Sulfur Dioxide (SO₂) Boundary Designations

Dear Ms. Fleming,

This letter is in response to the United States Environmental Protection Agency's (EPA) request to submit boundary recommendations for the revised 1-hour primary National Ambient Air Quality Standard (NAAQS) for Sulfur Dioxide (SO₂) established by the EPA via *75 Federal Register* 35520, June 22, 2010. **Pursuant to this request, I recommend that each county in the state of South Carolina be designated as attainment for the new 1-hour primary NAAQS for SO₂.**

Background and Rationale

Let me first say, with the EPA Administrator's commitment to uphold the values of transparency and openness in conducting EPA operations, I am disappointed in the way that EPA introduced the use of air dispersion modeling as the principal indicator for implementation of the SO₂ NAAQS. Failure to openly and adequately engage the public in decisions that have far reaching economic implications during these difficult budgetary times is not in the public's best interest. In addition, I am concerned with EPA's historical practice of using guidance in lieu of rulemaking to impose regulatory requirements on the states, as guidance is not developed through a robust public involvement process.

In terms of historical practices, the EPA states in its February 1994 (EPA-452/R-94-008) *SO₂ Guidance Document*, that "modeling may be necessary to determine the representativeness of the monitored data," and that these factors "should be considered interdependently." The new designation stance taken by the EPA in its March 24, 2011, memo *Area Designations for the 2010 Revisions to the Primary Sulfur Dioxide National Ambient Air Quality Standards* is not in line with its historical practices with regard NAAQS implementation and is contrary to the explicit expression of the standard.¹ Based on the current guidance it appears that EPA will be making attainment decisions based entirely on modeled concentrations using federally enforceable maximum allowable

¹ 40CFR §58.50.17(b)

emissions.² This is a departure from the way in which attainment modeling has been done for all other NAAQS, which instead uses actual/typical emissions.³ For example, Section 17.3, p. 172 of EPA's current attainment modeling document states: "For point sources, hourly Continuous Emissions Monitoring data are recommended for use in model-evaluation runs. For future-year runs, we recommend creating an 'average-year' or 'typical year' temporal allocation approach that creates representative emissions for the 'baseline inventory' but that also includes similar daily temporal variability as could be expected for any given year." With EPA's new approach, contrary to attainment demonstrations based on monitoring data, attainment decisions will be based on simulated concentrations based on fictional operating scenarios rather than empirical data based on the actual operation of these sources and ambient air quality monitor measurements. Further, this overly conservative modeling approach will falsely identify areas as not meeting the new standards, wasting resources on additional modeling efforts and/or emission controls/operating changes that could have been directed at priorities deemed important to bring about air quality improvements. South Carolina already has a monitoring network and permitting program addressing NAAQS attainment review with flexibility to address implementation of the new SO₂ standard. The permitting process for new and modified sources (including PSD projects) should drive sources to show they do not cause or contribute to an exceedance of a NAAQS, not the NAAQS attainment designation process.

The South Carolina Department of Health and Environmental Control (SCDHEC) currently requires, under State Implementation Plan (SIP) approved State Regulation 61-62.1 *Definitions and General Requirements*, Section II.C.3.n and Section II.H.i, that all construction permit applications (along with modifications) include "An air dispersion modeling analysis or other information demonstrating that emissions from the facility, including those in the application, will not interfere with the attainment or maintenance of any ambient air quality standard." Let me reinforce that our state's review requirement applies to any new or modified source requiring an air construction permit and assures that facilities do not cause or contribute to an exceedance of a NAAQS and applies to all sources – not just the very largest Prevention of Significant Deterioration (PSD) sources that EPA requires to be modeled. SCDHEC has had this process in place for over twenty (20) years and requiring SCDHEC and businesses to rerun dispersion modeling for all potential SO₂ sources in the state, especially at a time when our state has faced unprecedented budget cuts, is unnecessary and redundant.

With regard to monitors, South Carolina currently operates seven SO₂ monitors: Greenville ESC (45-045-0015), Long Creek (45-073-0001) Irmo (45-063-0009), Parklane (45-079-0007), Congaree (45-079-0021), Jenkins (45-019-0003), and Cape Romain (45-019-0046). A map of these monitors is included in Attachment 1. Six of these seven monitors are currently documenting design values below the 75 parts per billion (ppb) 1-hour standard. The Irmo monitor has indicated a design value of 80 ppb based on data from 2008, 2009 and 2010.

Evaluation by SCDHEC of available data indicates that the predominant cause of high values at this monitor is emissions from the SCE&G McMeekin facility (Title V Permit 1560-0003). The Irmo SO₂ monitor, located approximately 3.5 miles due east (see Attachment 1) of the facility, was sited to specifically monitor SO₂ impact from the facility's units. In an effort to achieve cleaner air sooner than would otherwise be required by processes outlined in the Clean Air Act, SCDHEC began meeting with SCE&G last year to discuss options to control air emissions at this source. As a result, SCE&G has agreed to and is currently implementing the use of lower sulfur content coal than that which the McMeekin facility is currently permitted to use. They are also making other operating restrictions which will further reduce SO₂ emissions. A Memorandum of Agreement (MOA) between the state and SCE&G outlining these requirements has been executed. (The facility's title V permit is under review for renewal and the MOA will be addressed during this review.) A copy of this MOA is included as Attachment 2.

² *Area Designations for the 2010 Revisions to the Primary Sulfur Dioxide National Ambient Air Quality Standards*, March 24, 2011, Page 4 "Identifying attainment areas."

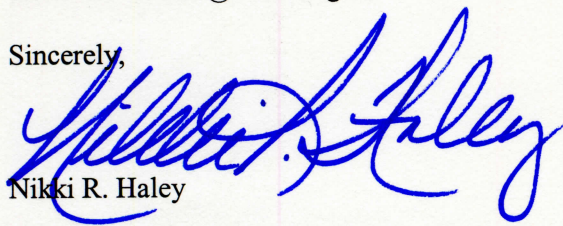
³ *Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze* (EPA -454/B-07-002), April 2007.

The EPA continues to remind us that many new federal rules will further reduce SO₂ ambient air concentrations throughout the nation and will help most areas attain the SO₂ NAAQS. The "Transport Rule" as proposed August 2, 2010, would reduce power plant SO₂ emissions by 71 percent over 2005 levels by 2014.⁴ As a co-benefit of air toxics reductions, the *National Emission Standards for Hazardous Air Pollutants From Coal and Oil-Fired Electric Utility Steam Generating Units* standard as proposed May 3, 2011, will reduce SO₂ emissions from power plants by up to 55 percent once fully implemented,⁵ and *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial/Commercial/Institutional Boilers and Process Heaters* (as proposed) and *National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry* standards are expected to reduce annual SO₂ emissions by 340,000⁶ tons and 110,000⁷ tons, respectively.

Based on the decreased SO₂ emissions from the changes at the McMeekin facility and the new federal rules, downward trends in SO₂ concentrations throughout the state are expected. Because of these decreased SO₂ emissions, the Irmo monitor is expected to meet the revised SO₂ NAAQS before area designations must be finalized on June 3, 2012. SCDHEC expects to submit 2011 monitoring data which demonstrates full attainment of the 75 ppb 1-hour standard in early 2012.

I would like to thank you for considering this designation request and should you have any questions regarding the state's recommendation, please contact Myra Reece, Chief, Bureau of Air Quality, at (803) 898-4123 or by email at reecemc@dhec.sc.gov.

Sincerely,



Nikki R. Haley

cc: Mr. C. Earl Hunter, Commissioner, SCDHEC; Mr. Robert W. King, Jr., P.E., Deputy Commissioner, EQC, SCDHEC; Ms. Myra C. Reece, Chief, BAQ, SCDHEC

Attachments:

1. Data illustrating the contribution of SCE&G's McMeekin facility (TV Permit #1560-0003) to levels at the Irmo monitor (45-063-0009).
2. MOA and/or Proposed Title V amendments for SCE&G's McMeekin facility.

⁴ As indicated in the preamble of *Federal Implementation Plans To Reduce Interstate Transport of Fine Particulate Matter and Ozone* (75 FR 52210, August 2, 2010).

⁵ Preamble, *National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial- Institutional, and Small Industrial- Commercial-Institutional Steam Generating Units* (76 FR 24976, May 3, 2011).

⁶ As indicated in the preamble of *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters* (76 FR 15608, March 21, 2011).

⁷ As indicated in the preamble of *National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants* (75 FR 54970, September 9, 2010).

Attachment 1
Data Illustrating the Contribution of SCE&G's
McMeekin Facility to Levels at the Irmo Monitor

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I. Background

South Carolina currently has seven SO₂ monitors: Greenville ESC (45-045-0015), Long Creek (45-073-0001), Irmo (45-063-0009), Parklane (45-079-0007), Congaree (45-079-0021), Jenkins (45-019-0003), and Cape Romain (45-019-0046).

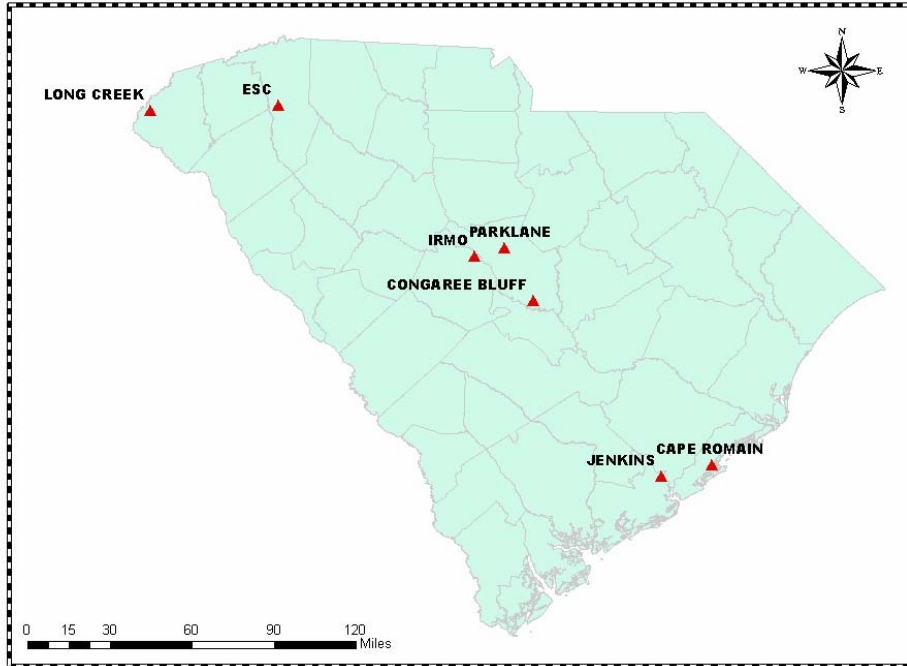


Figure 1: Map of monitors located in the state.

As illustrated in Figure 2, the state's historical design values have shown an overall downward trend. Six of these seven monitors are currently showing design values below the 75 parts per billion (ppb) 1-hour standard; however, the Irmo monitor is showing a design value of 80 ppb which is 5 ppb above the current standard.

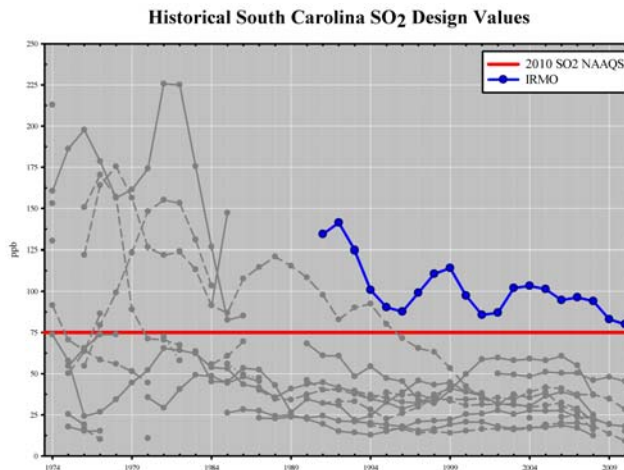


Figure 2: Historical Trends in SO₂ Design Values at the Irmo Monitor

The Irmo monitor's SO₂ design values have had the highest design values statewide since it began monitoring in 1989, and has consistently been greater than the new SO₂ NAAQS. However, from 1991 – 2010, there was a 40 percent reduction in SO₂ design values in Irmo from 134 ppb to 80 ppb, which is similar to the statewide average reduction of 37 percent during the same time period.

Evaluation of available data indicates that the cause of high values at this monitor is due to emissions from the SCE&G McMeekin facility.

II. McMeekin Facility Description

The McMeekin facility (TV Permit #1560-0003) is a Title V electric steam generating facility located immediately east of SC Hwy 6 and the Dreher Shoals dam in Lexington County, approximately 3.5 miles due west of the Irmo SO₂ monitor and is flanked by a river valley which funnels into a relatively flat plane where the monitor is situated. The facility has an elevation of approximately 210 feet above sea level, and has primary stack which is 400 feet tall.

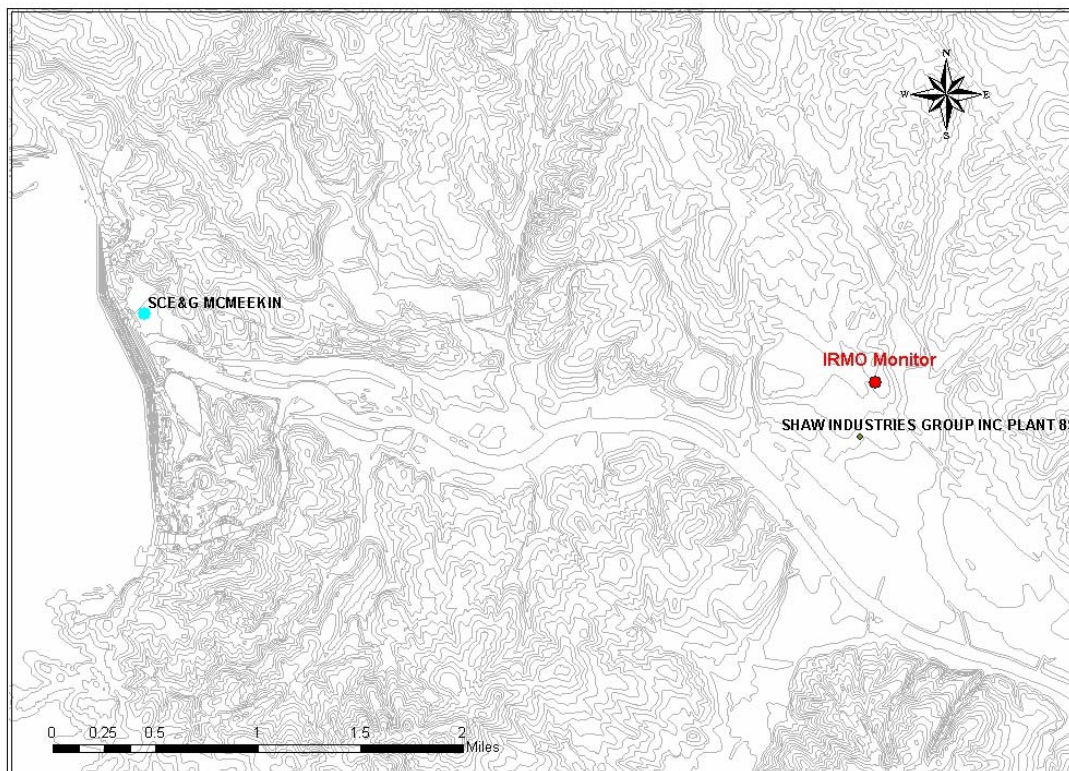


Figure 3: Topographical Map of the Irmo Monitor/McMeekin Facility Area.

Operations at the McMeekin facility consists of coal handling systems, two coal-fired boiler units and associated ash handling facilities. Each boiler is a Combustion Engineering model WT pulverized coal, water-tube boiler rated at $1,134 \times 10^6$ Btu/Hr (910,000 pounds of steam/hr). Each boiler is coupled to two steam turbines. The high-pressure and medium-pressure turbines are on a common shaft driving a General Electric (GE) 75 MW generator. Low-pressure steam exiting the first turbine is routed over to a secondary turbine that drives a 25 MW GE generator. Total nominal output is 125 MW per boiler,

and it is currently permitted to emit 3.5 lb SO₂/10⁶ BTU at each unit (7 lbs SO₂ /10⁶ BTU total). This emission limit allows for the use of approximately 2.3 percent sulfur coal based on current pollution controls.

III. Evaluation of Meteorological and Monitoring Data at Times of Exceedences

Wind patterns in the Columbia area show dominant winds from the west, though there are significant southwestern and northeastern components. Figure 4 is a wind rose of 2007-2009 data from the Columbia/Metro Airport, approximately 7 miles away from the McMeekin facility and Irmo monitor respectively.

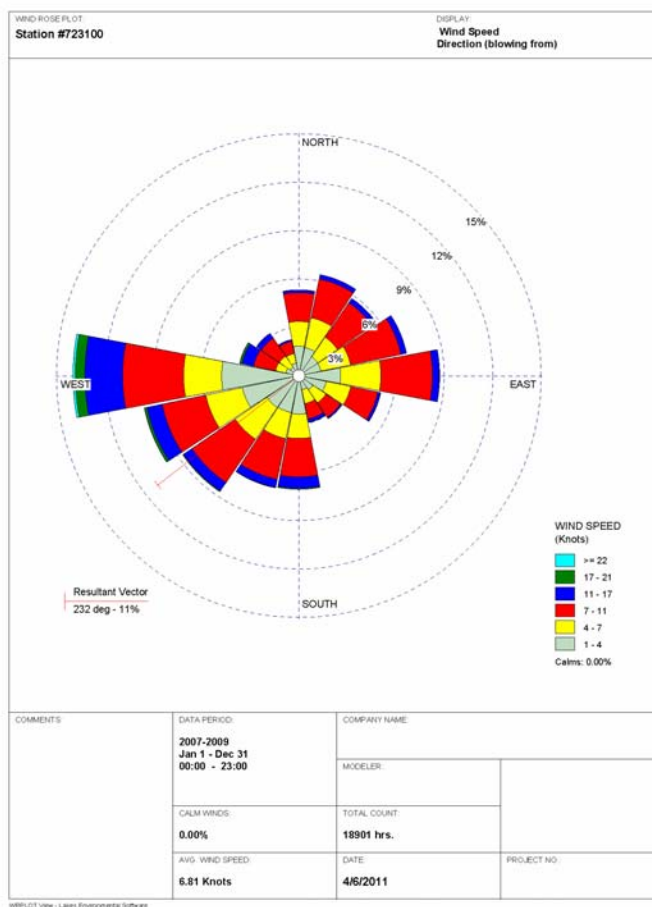


Figure 4: Wind Rose of all Meteorological Data from Columbia/Metro Airport Station (2007-2009)

Wind patterns before, during, and after times of exceedences of the 75 ppb standard, however, are almost completely out of the west as indicated in Figure 5.

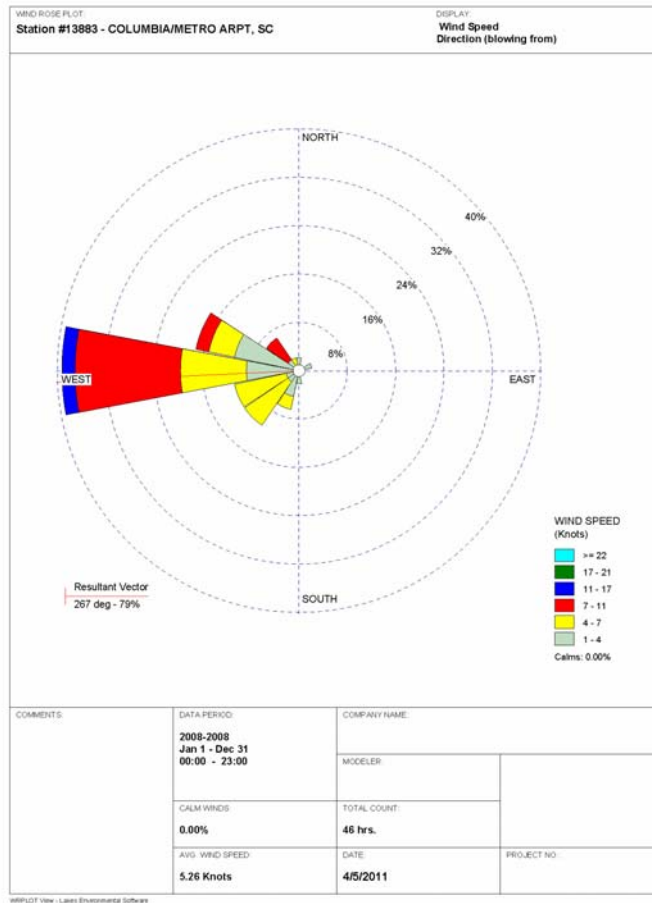


Figure 5: Wind Rose of Meteorological Data Before, During and After Exceedences of the 75 ppb standard from Columbia/Metro Airport Stations (2007-2009)

The clear wind bias at the time of exceedences indicates that high readings at the Irmo monitor are entirely due to a source to the west of the monitor. This would implicate the SCE&G McMeekin facility as the primary contributor to high ambient SO₂ concentrations at the monitor as it is the primary producer of SO₂ emissions in the area and is situated approximately 3.5 miles due west of the Irmo monitor. The only other major facilities (Title V) emitting SO₂ are nearly 50 kilometers east of the Irmo monitor.

V. Comparison of Emissions from Other Local Facilities

The only other major (Title V) source located near the monitor is the Shaw Industries Group, Inc., Plant 8S (TV Permit # 1560-0016) floor manufacturing facility. Actual emissions from this facility were less than 7 tpy when last evaluated in 2003. The facility has since not been required to report their actual emissions to the Department of Health and Environmental Control (Department), due to being below the thresholds required in State Regulation 61-62.1 Section III. This facility, though closer to the monitor, has very little effect on monitored readings when compared to the nearly 13,000 actual tpy that were emitted from the McMeekin facility in 2008. This is further reinforced by all but one of 32 hours over 75 ppb (between 2007 and 2009) occurred while winds were from the west as illustrated in Figure 5.

Included on the same property as the McMeekin facility is the SEFA Group fly ash processing plant. This facility is a conditional major facility and has SO₂ emissions below 100 tpy. Again, these emission are dwarfed by the 13,000 tpy emitted by the McMeekin facility.

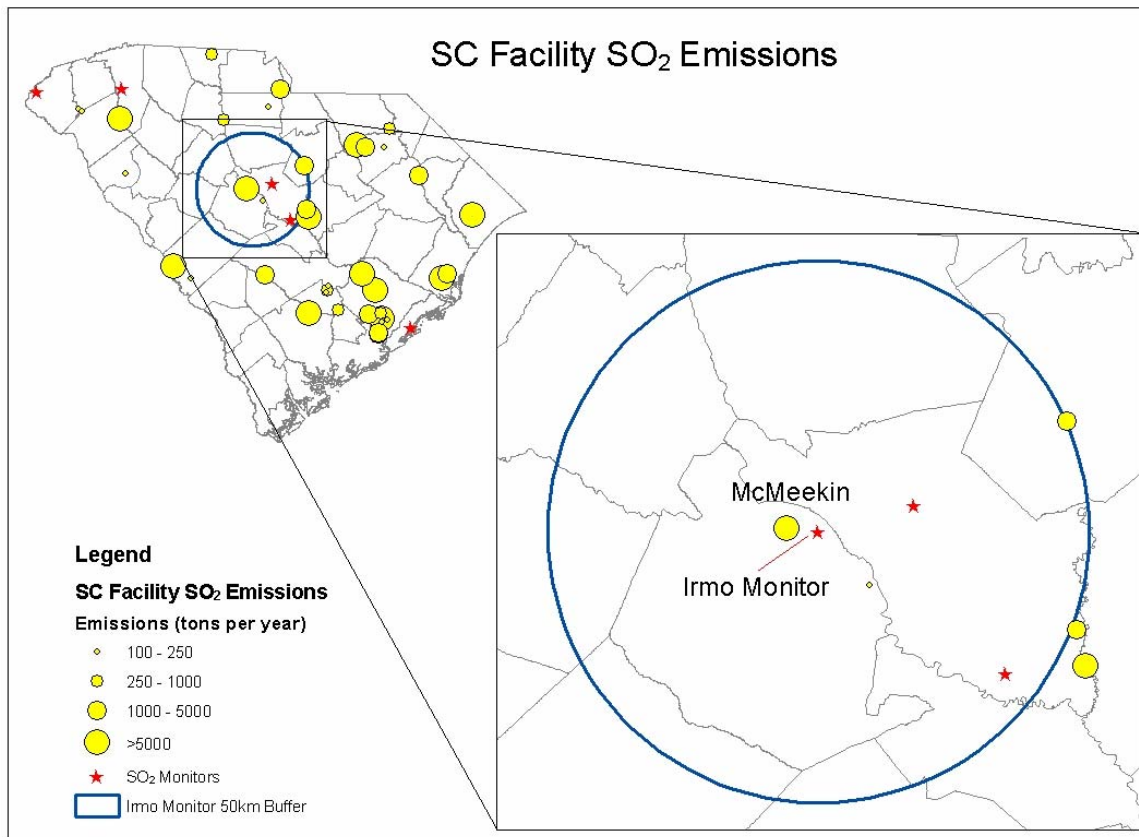


Figure 6: Illustration of Statewide SO₂ Sources Based on Actual Emissions with a Detail of Those Sources Within 50 km of the Irmo Monitor.

VI. Conclusion

Based on available emissions, meteorological, and monitoring data, exceedences at the Irmo monitor are almost entirely attributed to emissions from SCE&G's McMeekin facility. Exceedences have consistently occurred when winds are out of the west and at times when the atmospheric mixing layer passes a height of 600 feet. This facility, with its western orientation to the monitor, 600 feet-above-sea-level stack, and actual SO₂ emissions, which are several orders of magnitude above all other large facilities in the area, is the primary cause of exceedences at the Irmo monitor.