The AQMD: A Rulewriter's Perspective on Air Pollution

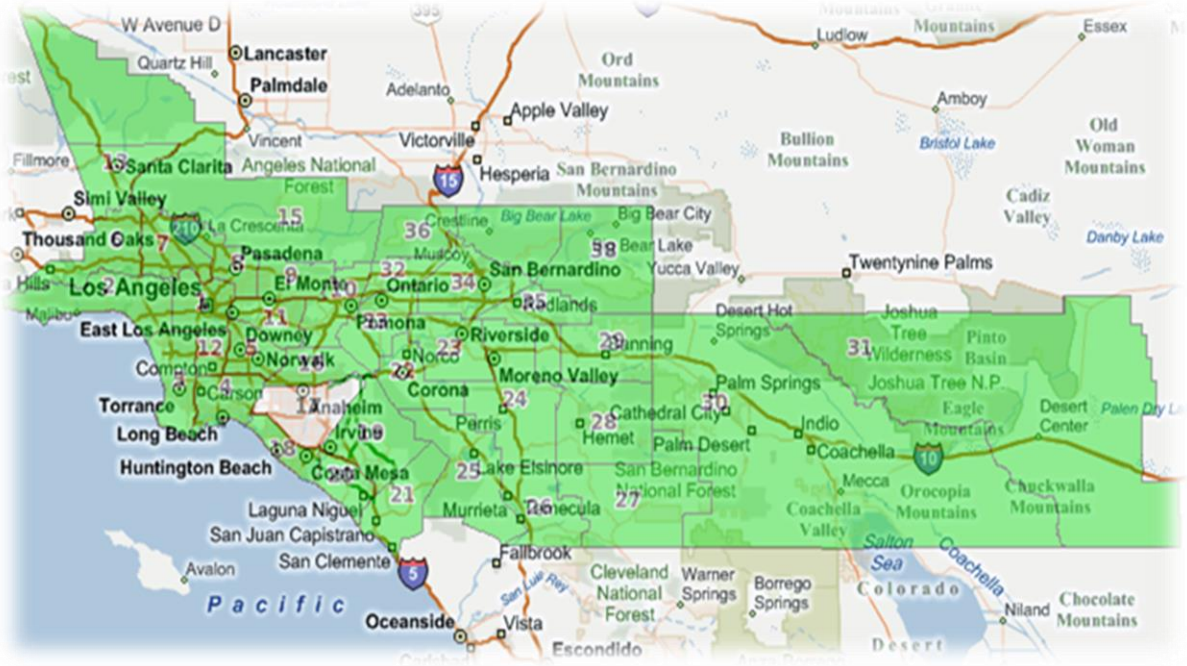
October 27, 2020

Agenda

- What is the AQMD?
- Who Are Rule Writer's and What Do They Do?
- Anecdotes from Metal Manufacturing Industry
- Recent Progress and Future Outlook

What Is the AQMD? A Brief History

What is the South Coast AQMD?

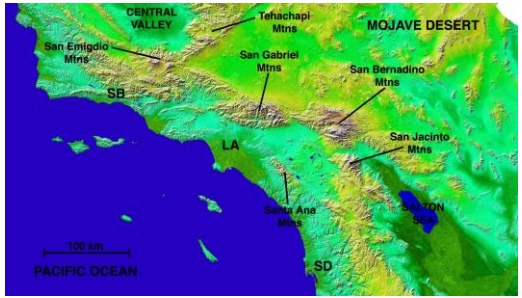


- **Air pollution control agency**
  - Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino counties
- **Responsibilities**
  - Control emissions from stationary sources (e.g., from power plants, refineries, gas stations, painting facilities, etc.)
  - Comply with EPA's air quality standards
  - Permit and inspect 28,400 affected businesses

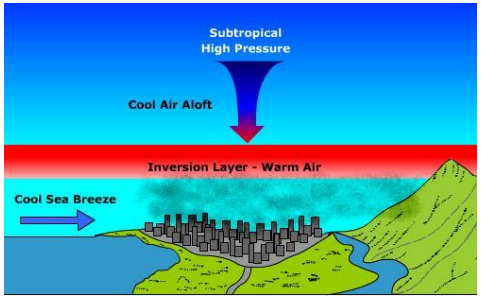
Why Los Angeles?

Los Angeles is primed for harmful air pollution due to 3 factors

Geography
(surrounded by mountains)

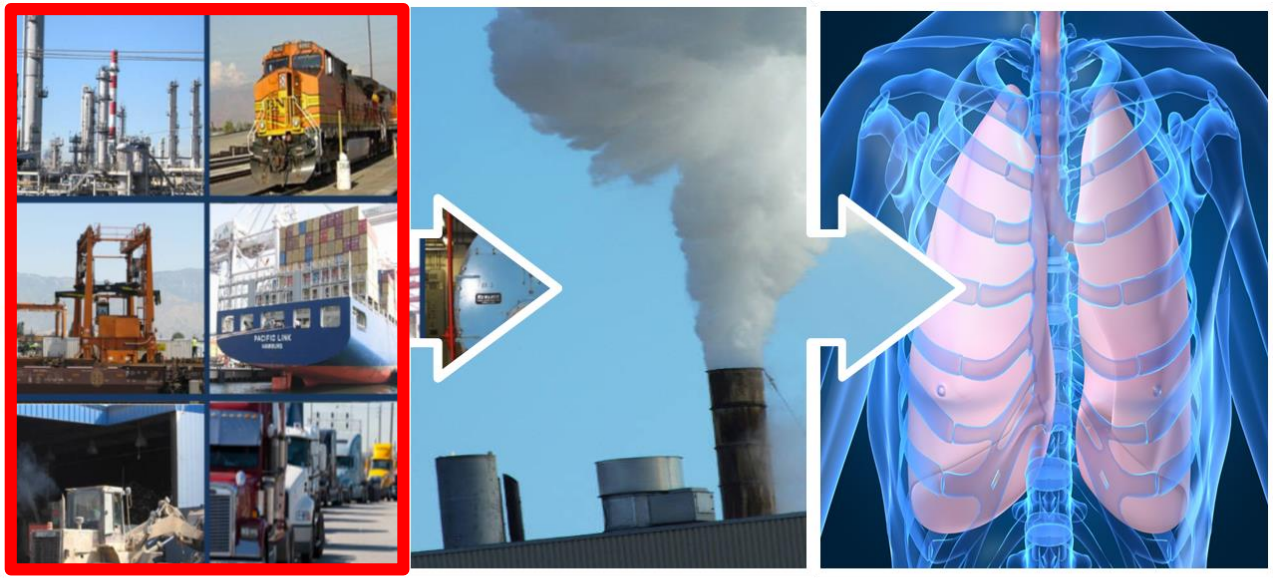


Climate
(sunshine city with inversion layer)



Population
(cars, emissions)

What Is In Our Control



Sources Air Quality Health

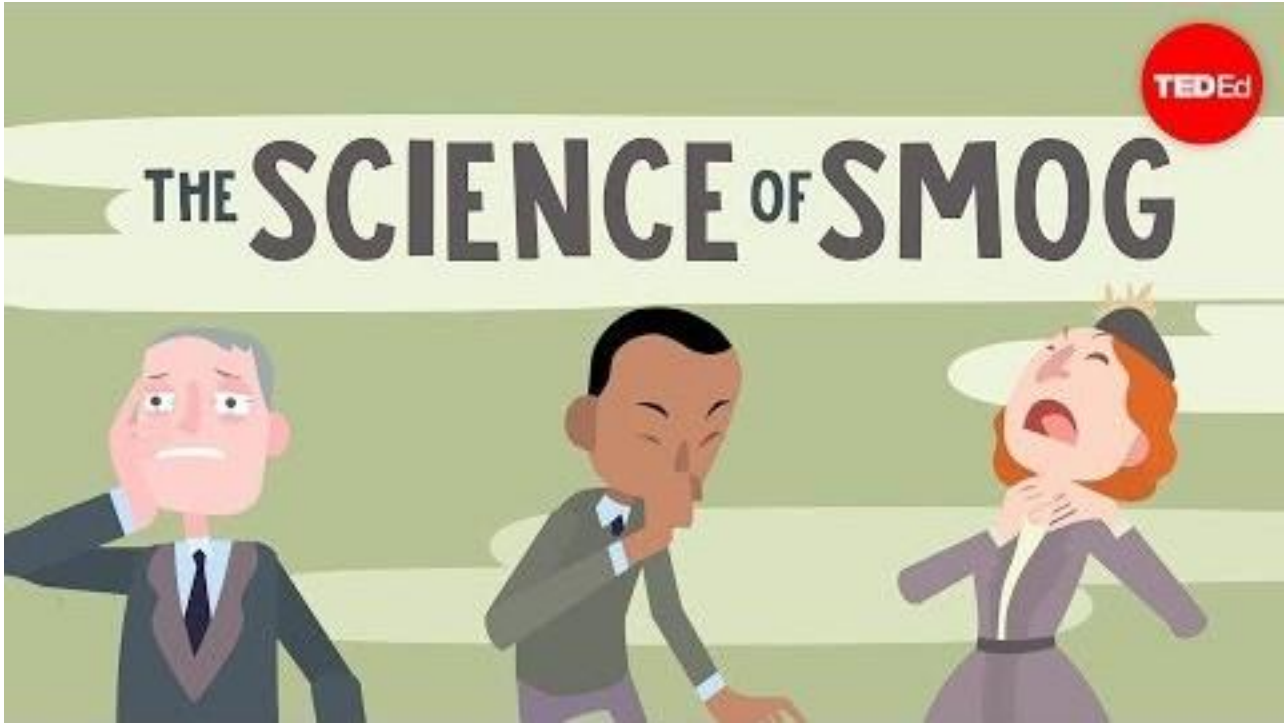
What's the Smog?

- Los Angeles mushrooming industry and population began the rise of thick and dangerous air pollution where even as early as 1903 smog clouds began to block out the sun
- World War II poured gasoline on Los Angeles and armaments and equipment manufacturing accelerated even further

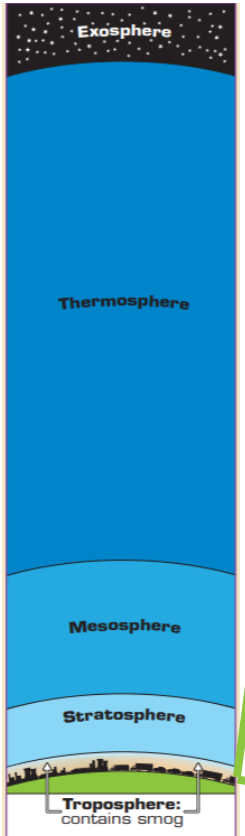
First recorded photo of smog in *Los Angeles Times* 1943 newspaper

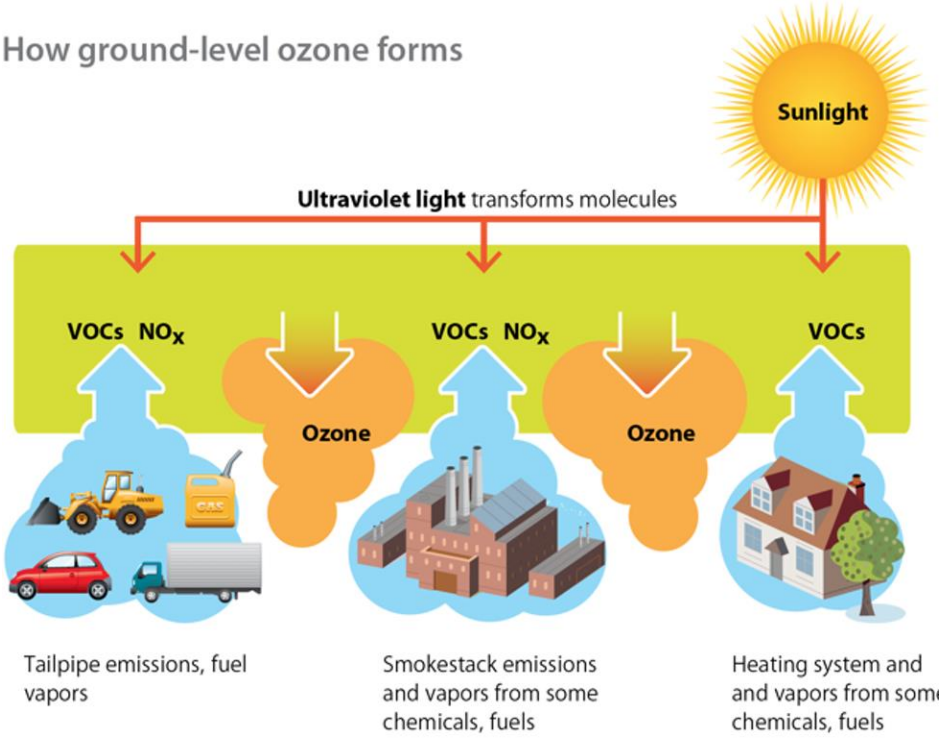
How Bad Was It?

Smoggy Science

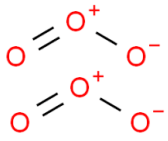


Smoggy Science





90% of ozone is in the stratosphere



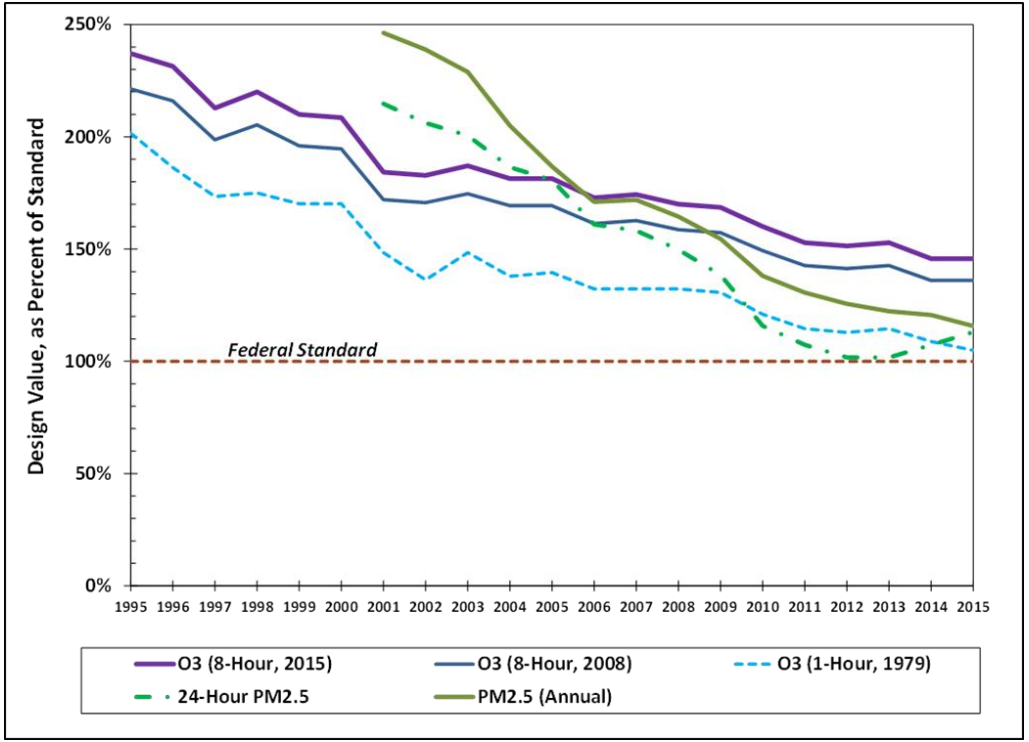
The First Steps of Progress

- In 1943, the Los Angeles County Board of Supervisors appointed a Smoke and Fumes Commission to study smog
- In 1945, the Board banned emissions of dense smoke and established an office of Director of Air Pollution Control
  - The City of Los Angeles additionally adopted a smoke regulation but the 45 other county cities took little to no action
- Dr. H.O. Swartout arguing smog produced from multiple sources, not just factories
- Raymond R. Tucker published a series of 23 recommendations in the Los Angeles times that would implement much of what Dr. H.O. Swartout identified
- In the early 1950, California Institute of Technology chemist Arie Haagen-Smit finally proved the chemistry between fuel combustion exhaust and ozone formation

The Barking Dog Gets the Bite

- In 1947, Los Angeles Air Pollution Control District (APCD), the first in the U.S.
- The APCD began to require all major industries to have air pollution permits and began reducing smokes from factories, SO2 emissions from oil refineries and began regulating open burning
- Open burning regulations
- The APCD began regulating “stationary sources” but ozone levels were still elevated; the automobiles needed to be addressed
- The need to provide a cohesive strategy across the entire region – as smog is a regional problem – led to the creation of the four-county-wide Air Quality Management District (AQMD)

Where We Are Today



Ozone Attainment Status

- U.S. EPA “classifies” areas of ozone nonattainment based on how much an area exceeds standard
  - Extreme
  - Severe-17
  - Severe-15
  - Serious
  - Moderate
  - Marginal
- Affects the required date of attainment
  - The higher the current exceedance, the more time given to attain, but stricter planning and compliance requirements

8-Hour Ozone (2015 Standard) Classifications

Extreme
Area has a design value of 0.163 ppm and above.

Severe-17
Area has a design value of 0.111 up to but not including 0.163 ppm

Severe-15
Area has a design value of 0.105 up to but not including 0.111 ppm

Serious
Area has a design value of 0.093 up to but not including 0.105 ppm.

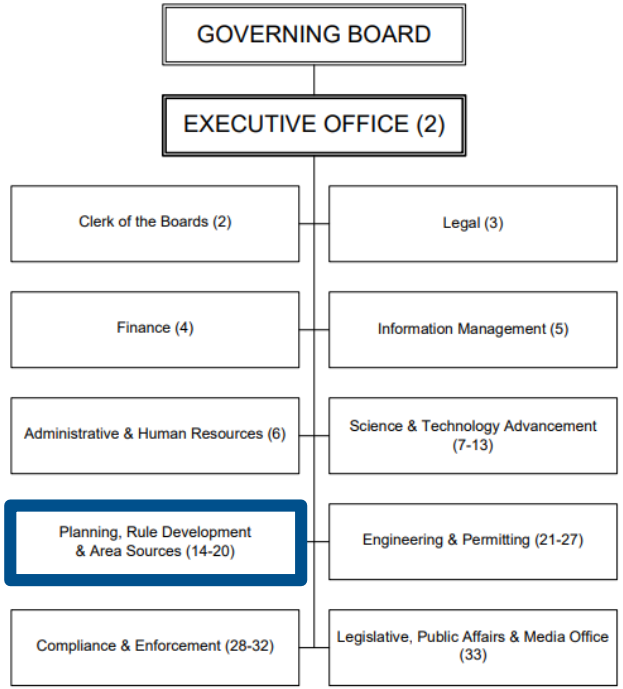
Moderate
Area has a design value of 0.081 up to but not including 0.093 ppm.

Marginal
Area has a design value of 0.071 up to but not including 0.081 ppm.

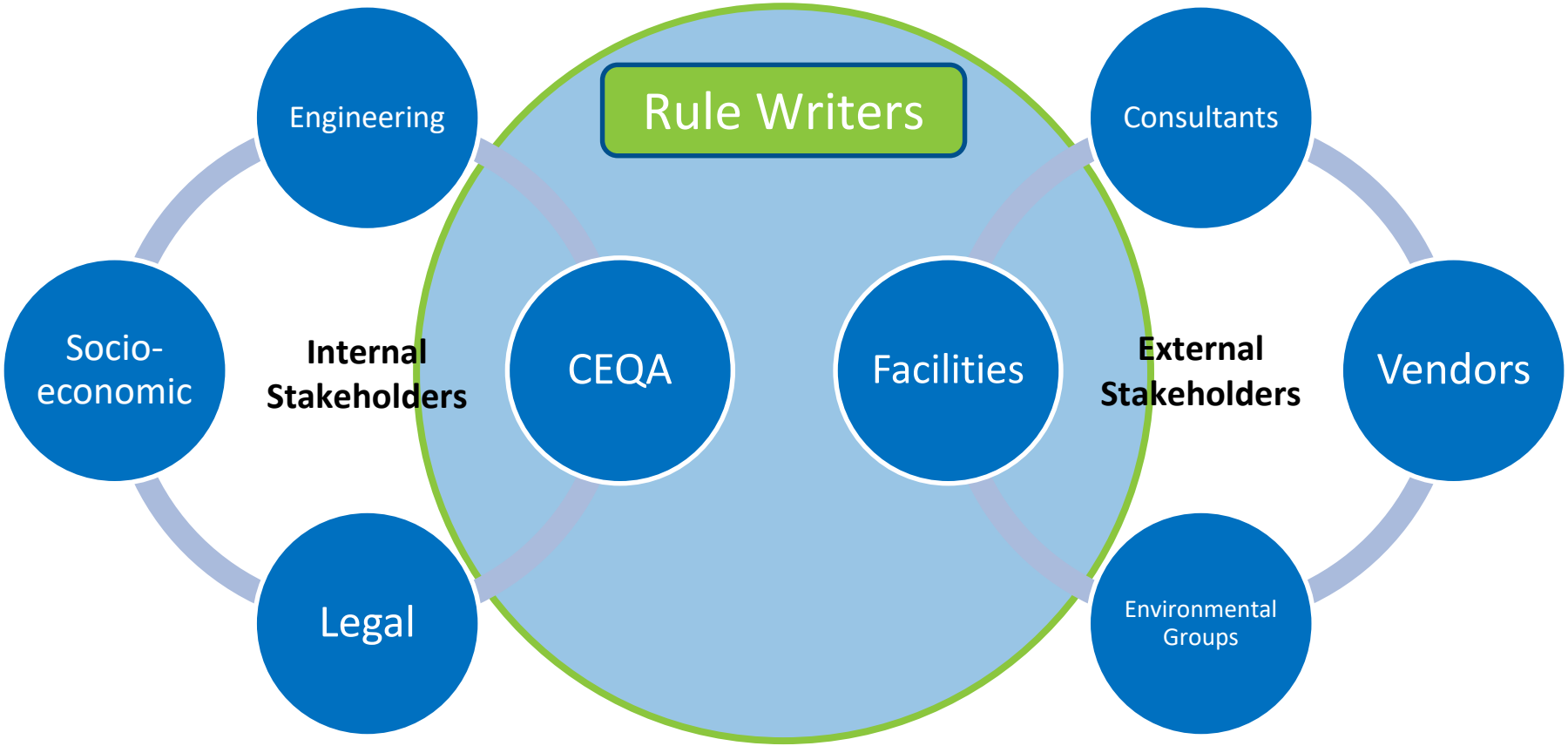
Who Are Rule Writers and What Do they do?

The Need for Rules

- Rules are the legislation of the South Coast AQMD's regulatory function requiring what individuals, groups, or facilities must to in order to comply with air pollution or other environmental-related issues
  - Examples: Reducing toxic emissions and exposures or implementing state or federal law
- As one of the most important functions of the South Coast AQMD, once a rule is adopted by a Governing Board it becomes law, with criminal or civil prosecutions for violations

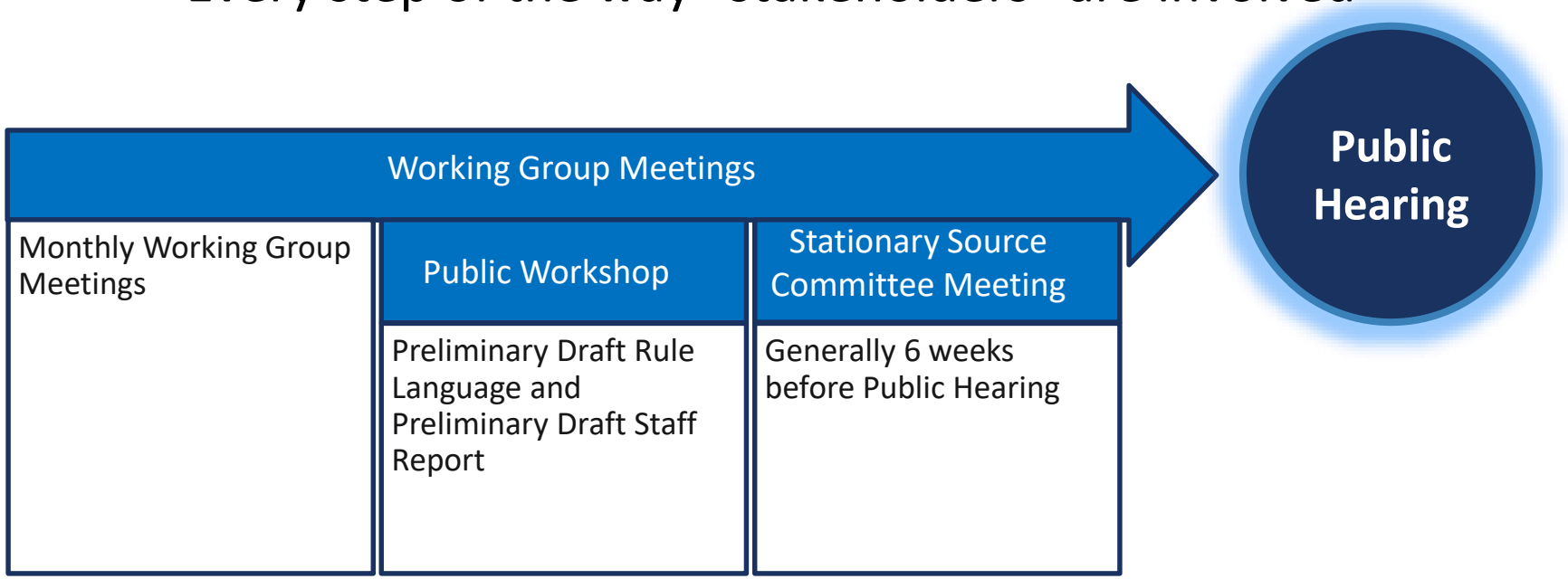


The Rule Writer's Nexus

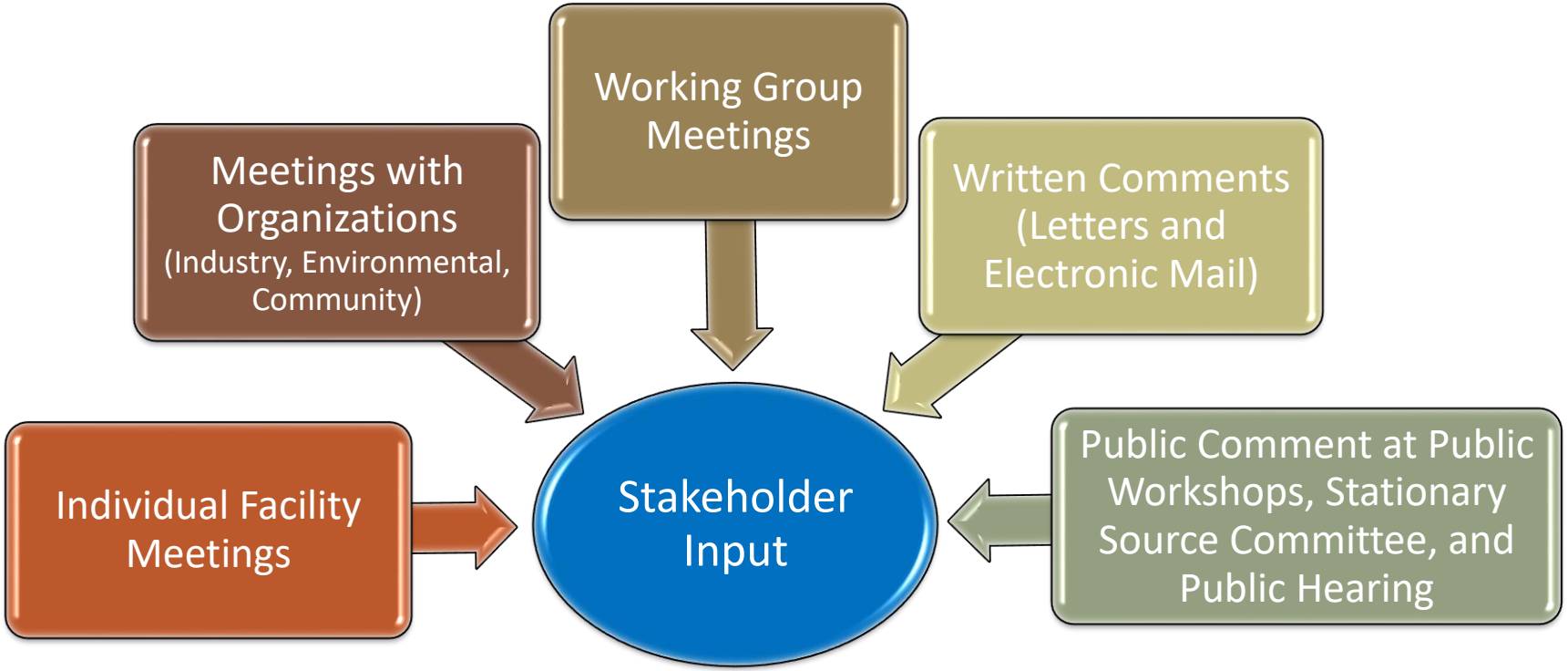


Rulemakers: Public Servants

The Rulemaker's role is a public one
Every step of the way "stakeholders" are involved



Stakeholder Input Opportunities of the South Coast AQMD



The Rulewriter Job Description

1. Conduct Technology Research
2. Gather Equipment Data
3. Conduct Stakeholder Meetings/Issue Resolution
4. Hold Working Group Meetings
5. Write & Delegate Rule Language, Staff Report, and Supporting Documents
6. Hold Public Hearing

Step 1: Conduct Technology Research

1 Conduct Technology Research

- Your objective is to become a SME (Subject Matter Expert) through the course of the rule
  - Know the major facets and operations
  - Understand the major capabilities and limitations
- Maintain a curious mind, much research is involved
  - Scientific articles and literature
  - Case studies and white papers
  - Industry/trade publications
  - Face to face meetings with equipment manufacturers

Step 2: Gather Equipment Data

2 Gather Equipment Data

- The “universe” is what describes the scope of your rule; what equipment types are under your rule’s jurisdiction
- Your universe can vary from a few pieces of equipment to thousands of units!
- A great deal of time is spent in reviewing equipment data and documenting technical and regulatory aspects
  - Physical size
  - Heat input rating (MMBtu/hr)
  - Equipment sub-type
  - Permit limit
  - Source test result
- Multiple avenues are used to document as many units as possible
  - Permits
  - Permit applications
  - “BCAT” codes: South Coast AQMD unit type classification
  - “Business Intelligence” tool to use means of queries
  - Online web search for undocumented facilities
  - Equipment universes from other South Coast AQMD rules

Step 3: Conduct Stakeholder Meetings

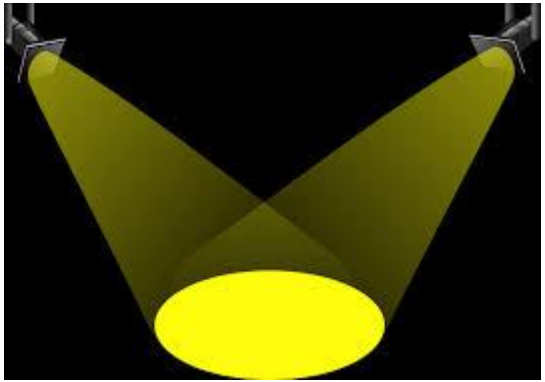
3 Conduct Stakeholder Meetings/Issue Resolution

- Stakeholder Meetings are one-on-one or focus group in setting
- Allows a consultant, facility, or individual to share challenges, considerations, and insights in a confidential manner
- Our role involves both sharing and confidentiality, and its important to know the difference and when one is appropriate over another
- As public servants, we make ourselves available whenever and however as much as possible
- Some particularly challenging issues require multiple meetings, but when conducted properly, these serve to strengthen the relationship between the rule writer/South Coast AQMD and the stakeholder

Step 4: Hold Working Group Meetings

4 Hold Working Group Meetings

- Public meetings that allow for facilitated interaction between the South Coast AQMD and interested parties and stakeholders
  - Are collaborative in nature with the objective to build mutually agreeable directions and decisions in the rule making process
- Involves much preparation beforehand
  - Presentation
  - Notices
  - Administrative setup
- Internal Working Group Meetings are also held prior to Working Group Meetings to allow for an internal discussion and revision of presented content ahead of what will be presented to the public
- Opportunity for rule writers to shine as they demonstrate their public speaking and issue resolution skills



Step 5: Write & Delegate Rule Documents

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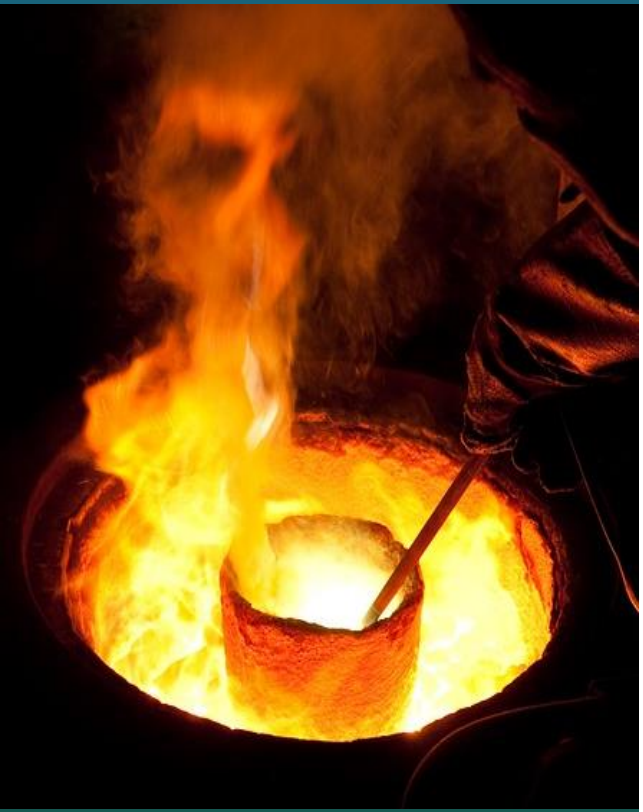
Write & Delegate Rule Language, Staff Report, and Supporting Documents

- Rule language is the letter of the law
  - Can oftentimes be quite lengthy to account for edge cases and conceivable aspects of interpretation and enforcement
  - Addresses major areas of rule writing such as emission limits; operating parameters; measuring, monitoring, and reporting requirements; exemptions; and other unique rule-specific provisions
  - Can be amended in the future to account for technology changes (generally leading to lower limits) or revisions to other aspects of the rule to modernize the rule
- Staff Reports are the rationale and basis for that law
  - Are also oftentimes quite lengthy (50+ pages)
  - Explain how limits were arrived at, why specific operating parameters were chose, how exempt statuses were determined, etc.
  - Is a rule writer's white paper equivalent, detailing everything discussed, analyzed, and concluded throughout the entire rule development process
- Rule language is the law, and Staff Report is the process and substantiation of the law

Step 6: Hold Public Hearing

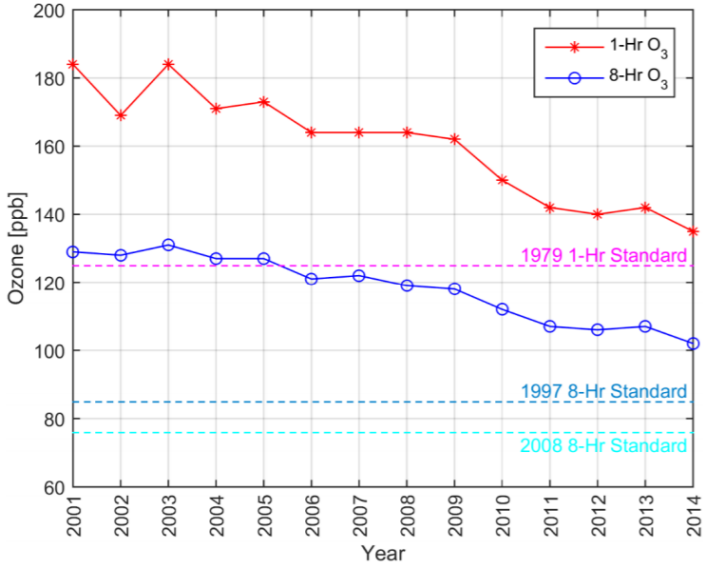
6 Hold Public Hearing

- Public meeting involving stakeholders as well as the South Coast AQMD Governing Board ("Governing Board" or "Board")
  - Requires a public workshop (another public meeting where final stakeholder inputs are listened to and rule language is discussed)
- The Board is comprised of supervisors and other city and county officials that preside over the South Coast AQMD and serve as final approval, denial, and suggestions for staff's rule making efforts
- Often involves another presentation and can be very high stakes depending on the nature of the rule as well as how smoothly was the rule development process
- Rule writer's work doesn't stop here, there are often other administrative tasks that must be completed
  - Even years after a rule is passed, a rule writer may still serve as the designated person for inquiries related to that rule's subject matter



What Lies Ahead for the South Coast AQMD

Further Ozone Decreases



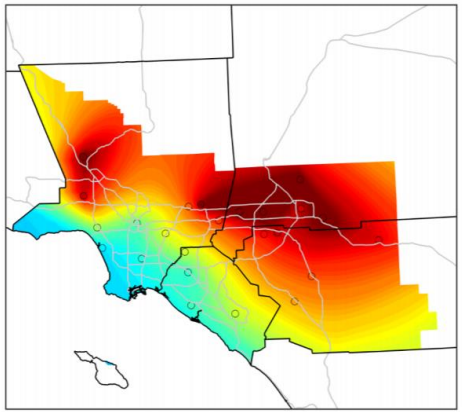


FIGURE 5-8
2012 OBSERVED 5-YEAR WEIGHTED 1-HOUR OZONE DESIGN VALUES (ppb)

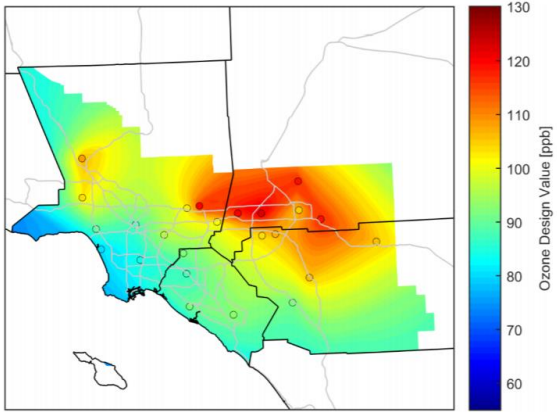


FIGURE 5-10
MODEL-PREDICTED 2022 CONTROLLED 1-HOUR OZONE CONCENTRATIONS (ppb)

U.S. EPA NAAQS and California CAAQS

- Clean Air Act of 1970 established National Ambient Air Quality Standards (NAAQS) on a federal level
  - Clean Air Act amended in 1990 to address other topics such as acid rain, ground-level ozone, stratospheric ozone depletion, visibility, and air toxics
  - Specific NAAQS were updated in the early- to mid-2010s
- CAAQS: California Ambient Air Quality Standards
  - First created in 1959

U.S. EPA NAAQS and California CAAQS

- Ozone
  - NAAQS: 8-hr standard updated in 2015
  - CAAQS: 8-hr standard updated in 2005

Standard	1-hr Avg	8-hr Avg
NAAQS	--	0.070 ppm
CAAQS	0.09 ppm	0.070 ppm

- NOx
  - NAAQS: 1-hr standard updated in 2010
  - CAAQS: 1-hr standard updated in 2007

Standard	1-hr Avg	8-hr Avg
NAAQS	100 ppb (0.100 ppm)	0.053 ppm
CAAQS	0.18 ppm	0.030 ppm

South Coast AQMD Regional Attainment Status

CRITERIA POLLUTANT	STANDARD	AVERAGING TIME	DESIGNATION [a]	ATTAINMENT DATE [b]
1-Hour Ozone	NAAQS	1979 1-Hour (0.12 ppm)	Nonattainment (Extreme)	2/6/2023 Originally 11/15/2010 (not attained)[c]
	CAAQS	1-Hour (0.09 ppm)	Nonattainment	N/A
8-Hour Ozone[d]	NAAQS	1997 8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
	NAAQS	2008 8-Hour (0.075 ppm)	Nonattainment (Extreme)	7/20/2032
	NAAQS	2015 8-Hour (0.070 ppm)	Nonattainment (Extreme)	8/3/2038
	CAAQS	8-Hour (0.070 ppm)	Nonattainment	Beyond 2032
CO	NAAQS	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
	CAAQS	1-Hour (20 ppm) 8-Hour (9 ppm)	Attainment	6/11/2007 (attained)
NO_2[e]	NAAQS	1-Hour (0.10 ppm)	Unclassifiable/Attainment	N/A (attained)
	NAAQS	Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
	CAAQS	1-Hour (0.18 ppm) Annual (0.030 ppm)	Attainment	---

CRITERIA POLLUTANT	STANDARD	AVERAGING TIME	DESIGNATION [a]	ATTAINMENT DATE [b]
SO_2[f]	NAAQS	1-Hour (75 ppb)	Designations Pending (expect Uncl/Attainment)	N/A (attained)
	NAAQS	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)
PM10	NAAQS	1987 24-hour (150 $\mu g/m^3$)	Attainment (Maintenance)[g]	7/26/2013 (attained)
	CAAQS	24-hour (50 $\mu g/m^3$) Annual (20 $\mu g/m^3$)	Nonattainment	N/A
PM2.5 [h]	NAAQS	2006 24-Hour (35 $\mu g/m^3$)	Nonattainment (Serious)	12/31/2019
	NAAQS	1997 Annual (15.0 $\mu g/m^3$)	Attainment	8/24/2016
	NAAQS	2012 Annual (12.0 $\mu g/m^3$)	Nonattainment (Serious)	12/31/2025
	CAAQS	Annual (12.0 $\mu g/m^3$)	Nonattainment	N/A
Lead	NAAQS	3-Months Rolling (0.15 $\mu g/m^3$)	Nonattainment (Partial)[i]	12/31/2015
Hydrogen Sulfide (H_2S)	CAAQS	1-Hour (0.03 ppm/42 $\mu g/m^3$)	Attainment	---
Sulfates	CAAQS	24-Hour (25 $\mu g/m^3$)	Attainment	---
Vinyl Chloride	CAAQS	24-Hour (0.01 ppm/26 $\mu g/m3$)	Attainment	---

Focus and Ingenuity Clean The Air

- Remarkable progress has been made in the Los Angeles Air Basin, the cleanest it has ever been
- Much work is left to do and our work will never end until we achieve clear skies and zero air-pollution-related illnesses
- With cities around the world following suit, clear skies can be the norm
- Take a deep breath, because the future is coming