

# CLEARING THE AIR

## Air Quality Planning

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Clearing the Air Workshop #4: August 10, 2021



GOVERNMENT OF THE  
DISTRICT OF COLUMBIA  
**MURIEL BOWSER, MAYOR**

TAG THIS PRESENTATION @DOEE\_DC

# Goals

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- Understand what Air Planning is
- Learn when to get involved in Planning/Rules process
- Explore what emits pollution in the District
- Understand how much we are affected by upwind pollution
- Examine Covid-19 impact on Ozone in the District

# Outline

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- What is Air Quality?
- What are Criteria Pollutants?
- What is Planning?
- 4 Planning Areas
  - Emissions Inventory
  - Modeling
  - Regulations
  - State Implementation Plans (SIPs)
- Regional Collaboration

# What is air quality? Why is it important?

Defined as a measure of how clean or polluted the air we breathe is

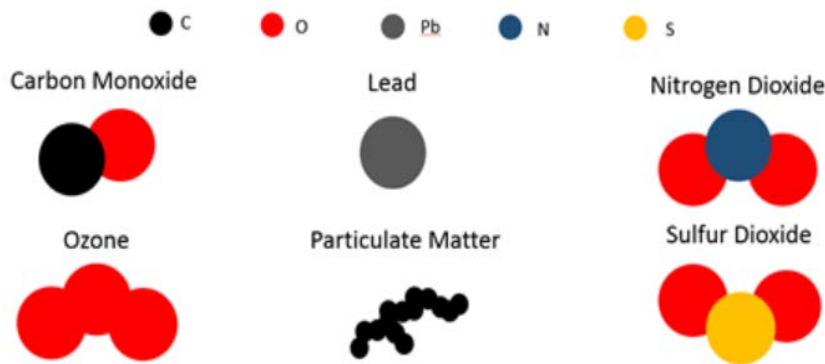
Why planning is important:

- Protect public health;
- Identify sources of pollution;
- Develop pollution control strategies.

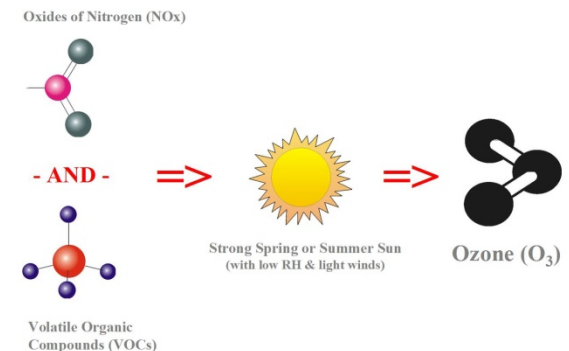
# What are the Criteria Pollutants?

EPA established health-based standards for these **SIX** harmful air pollutants, called the criteria air pollutants:

- Carbon Monoxide (CO)
- Sulfur Dioxide (SO<sub>2</sub>)
- Ground-level Ozone (O<sub>3</sub>)
- Lead (Pb)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Particulate Matter (PM<sub>10</sub> & PM<sub>2.5</sub>)



## Formation of Ground-level Ozone



\*<https://www.csusb.edu/ehs/occupational-health-and-safety/indoor-air-quality>

# National Ambient Air Quality Standards (NAAQS)

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Pollutant	NAAQS
Ozone	70 ppb
Fine PM (PM <sub>2.5</sub> ) Coarse (PM <sub>10</sub> )	35 µg/m <sup>3</sup> & 12 µg/m <sup>3</sup> 150 µg/m <sup>3</sup>
Carbon Monoxide	35 ppm & 9 ppm
Nitrogen Dioxide	100 ppb & 53 ppb
Sulfur Dioxide	75 ppb
Lead	0.15 µg/m <sup>3</sup>

Source: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

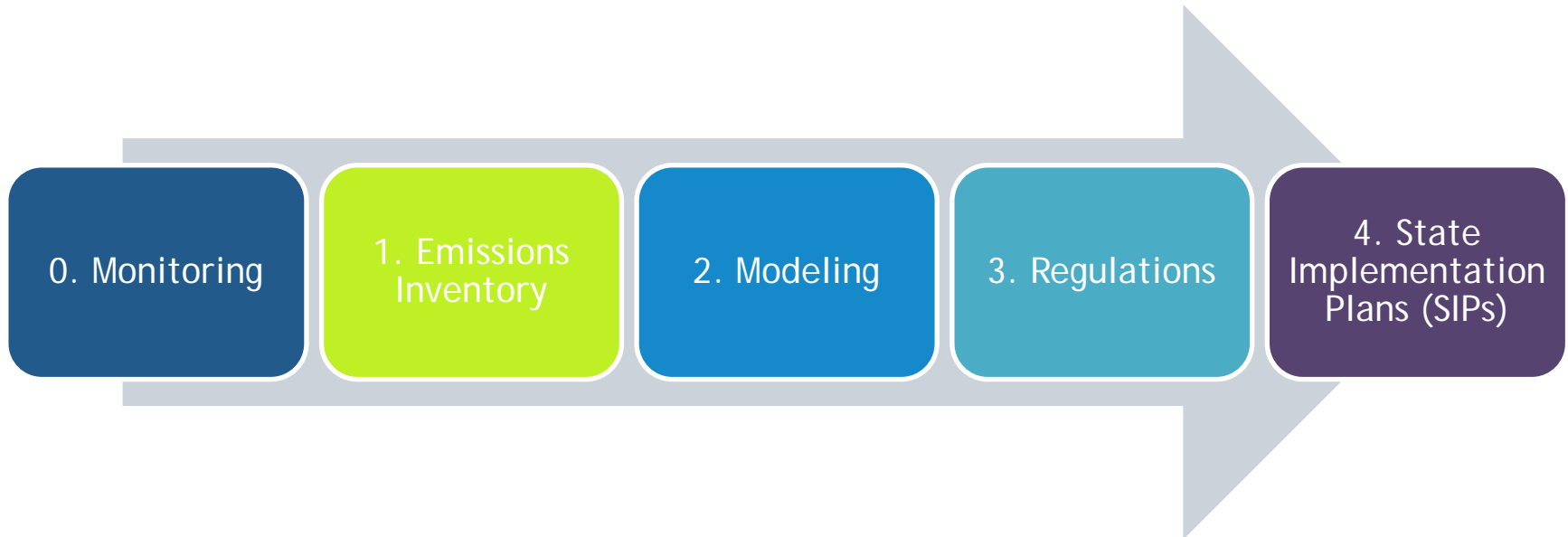
# What is Planning?

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- Until everything is powered by renewable electricity, cleaning the air comes with great complexity
- The pollutants that persist as problems ozone, particulate matter, and toxics are not straightforward to control:
  - Numerous types and quantity of sources
  - Complex photochemistry
  - Impacts of natural world
  - Less straightforward regulations
- Focused on “District-wide” pollution
- To deal with all of this we need to use science to determine the best approaches and then write the regulations to solve the problems - that is “planning”

# Planning Process

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This is the process air agencies undertake, but explaining it makes more sense backwards. So we are going to start at the summit and work our way downhill.

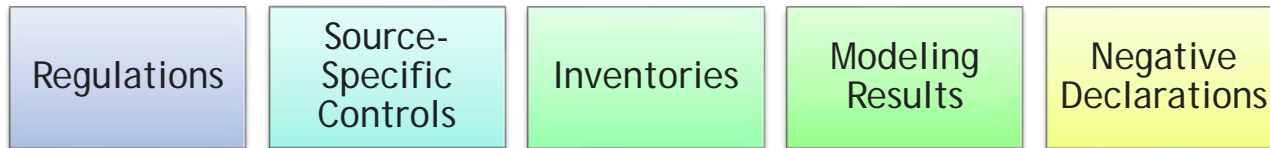
We will also skip monitoring since that has been discussed in previous sessions. <https://doee.dc.gov/event/clearing-air-community-workshop-series>



# Planning Area 4 – State Implementation Plans (SIPs)

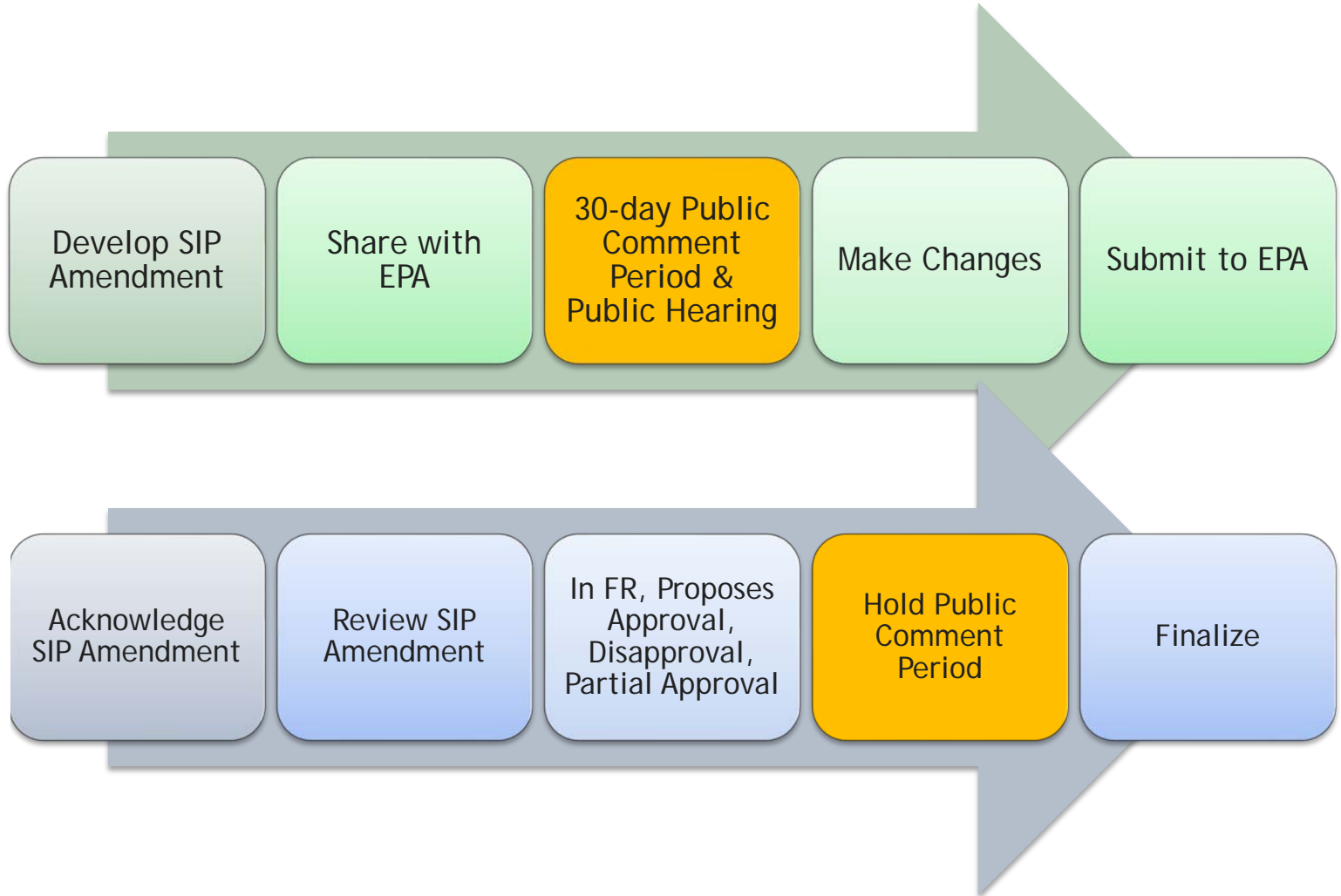
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- What goes in the SIP:



- The State Implementation Plan:
  - Does not get replaced, it just gets amended
  - Is federally enforceable
  - Does not allow for backsliding
- SIP amendments come with technical and legal analysis, often called a “certification”
- You can see what regulations are in DC’s SIP here: <https://www.epa.gov/sips-dc>

# Planning Area 4 – SIP Process



# Planning Area 3 – Regulations

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- DOEE writes regulations to:
  - Benefit the health and welfare of District residents and visitors
  - Give clarity to sources as to what is required of them and how DOEE will enforce noncompliance
  - Implement legislation from the District Council
  - Comply with federal requirements
- Regulations that go into the SIP must be:

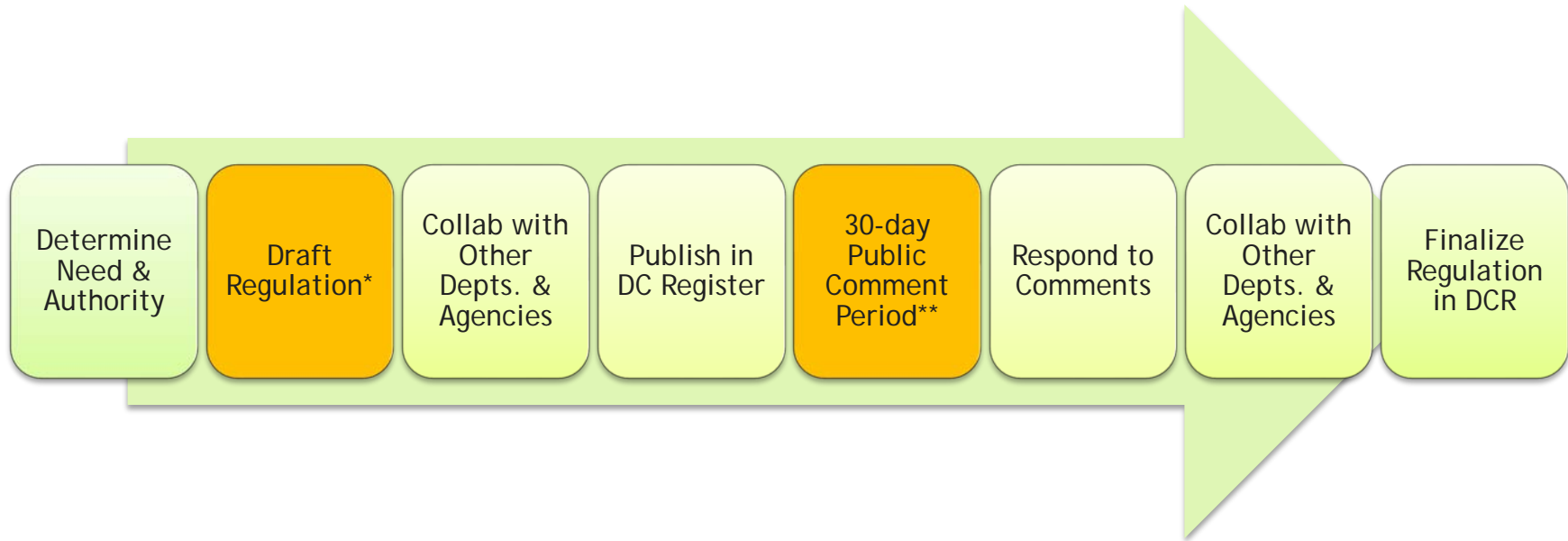
Quantifiable

Surplus/  
Additional

Permanent

Enforceable

# Planning Area 3 – Reg. Process



\* For some regulations we will hold public listening sessions prior to drafting

\*\* If regulations is for a SIP a public hearing will be held, often in conjunction with the end of the comment period

# Planning Area 2 – Modeling

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- In planning we look at modeling for pollutants that are relatively well mixed
  - Ozone, secondary fine PM, visibility
  - Fine PM hot spots are very important, but are more often examined by Permitting
- Modeling is very resource intensive
  - DOEE relies on regional partners to run the models, but supplies in kind resources and review
- Source Apportionment Modeling is the most useful for planning purposes – will show a slide after the inventory

# Planning Area 1 – Emission Inventories (EI)

- Many Inventories Required by CAA

National Emissions  
Inventory (NEI)

Base Year SIP  
Emissions Inventory  
(nonattainment  
areas)

Rate of Progress  
Inventory  
(moderate + ozone  
areas)

Photochemical  
Modeling Inventory  
(moderate + ozone  
areas)

Maintenance Plan  
Inventory (re-  
designation)

Toxics Release  
Inventory

Greenhouse Gas  
Inventories

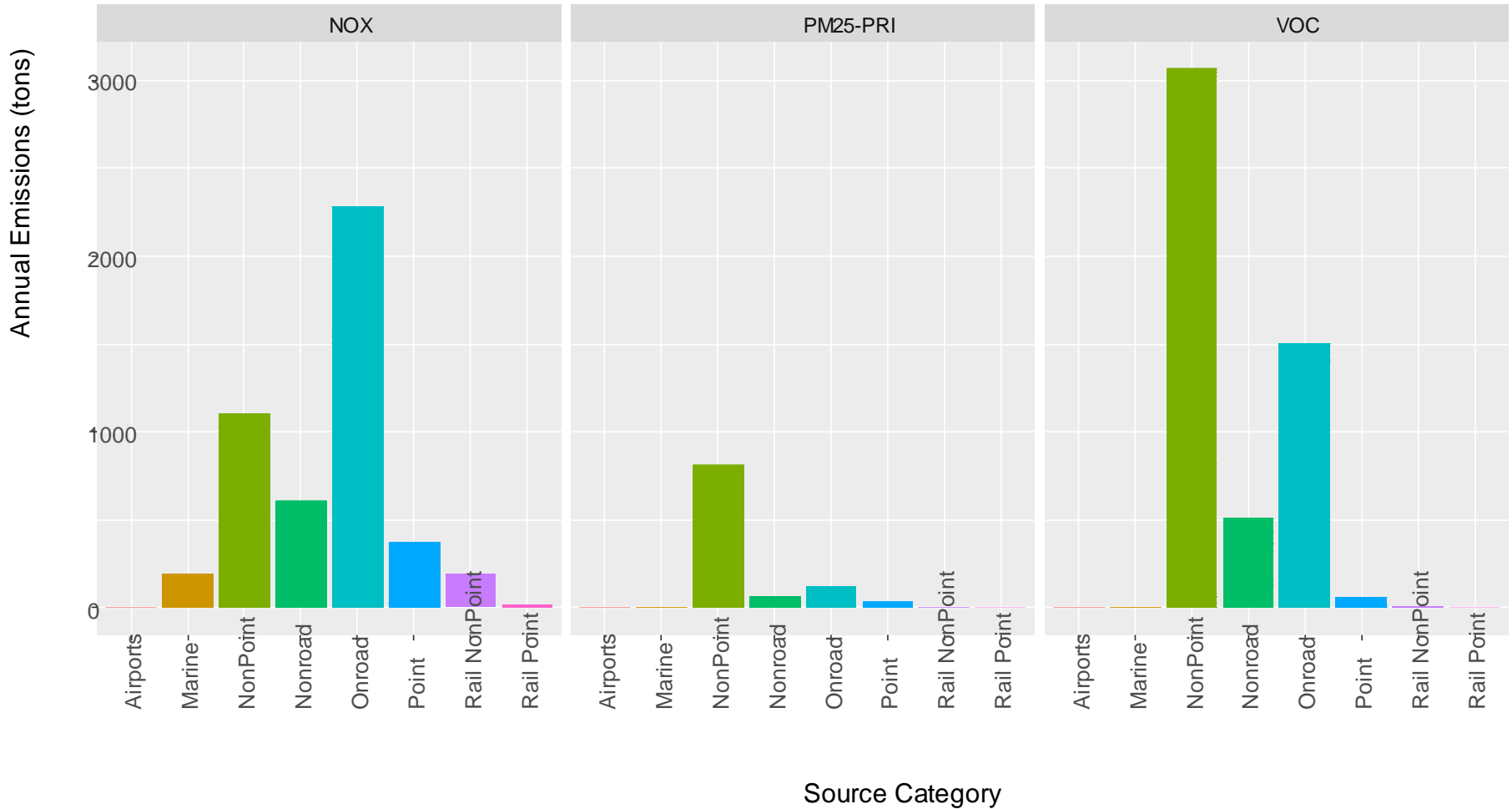
# Planning Area 1 EI – About NEI

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- Six non-ozone criteria pollutants + VOCs
- Submission schedule
  - Every year: large “Title V” sources (~45) to EPA
  - Every three years: all sources to EPA
- Working on submission of 2020 data
  - Due to EPA early 2022
  - Public could see summer 2022
- NEI heavily relied upon (EJScreen, researchers, etc)
- Data and more information here:  
<https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei>

# Planning Area 1 EI – NEI Data

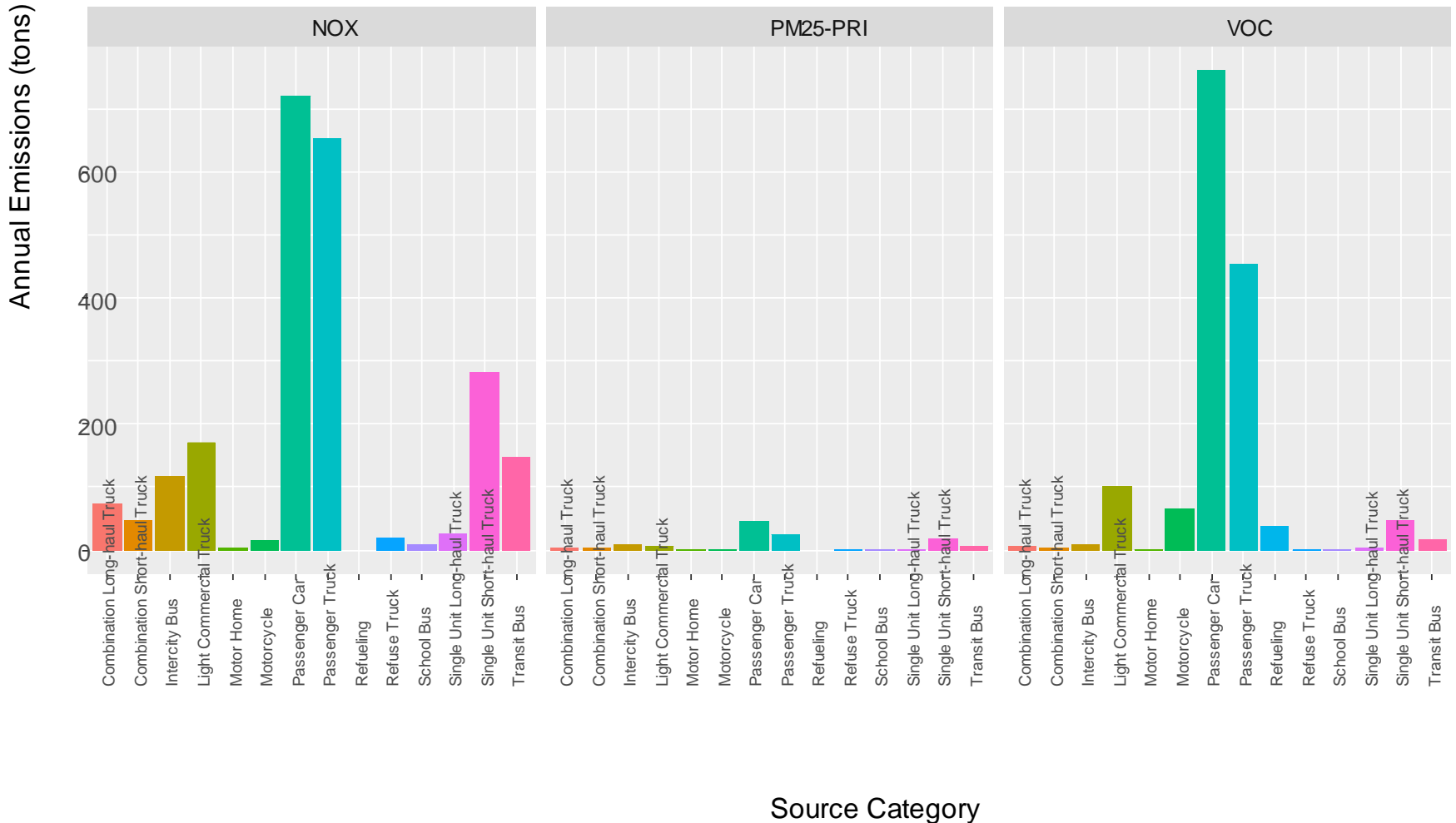
2017 NEI Emissions in the District





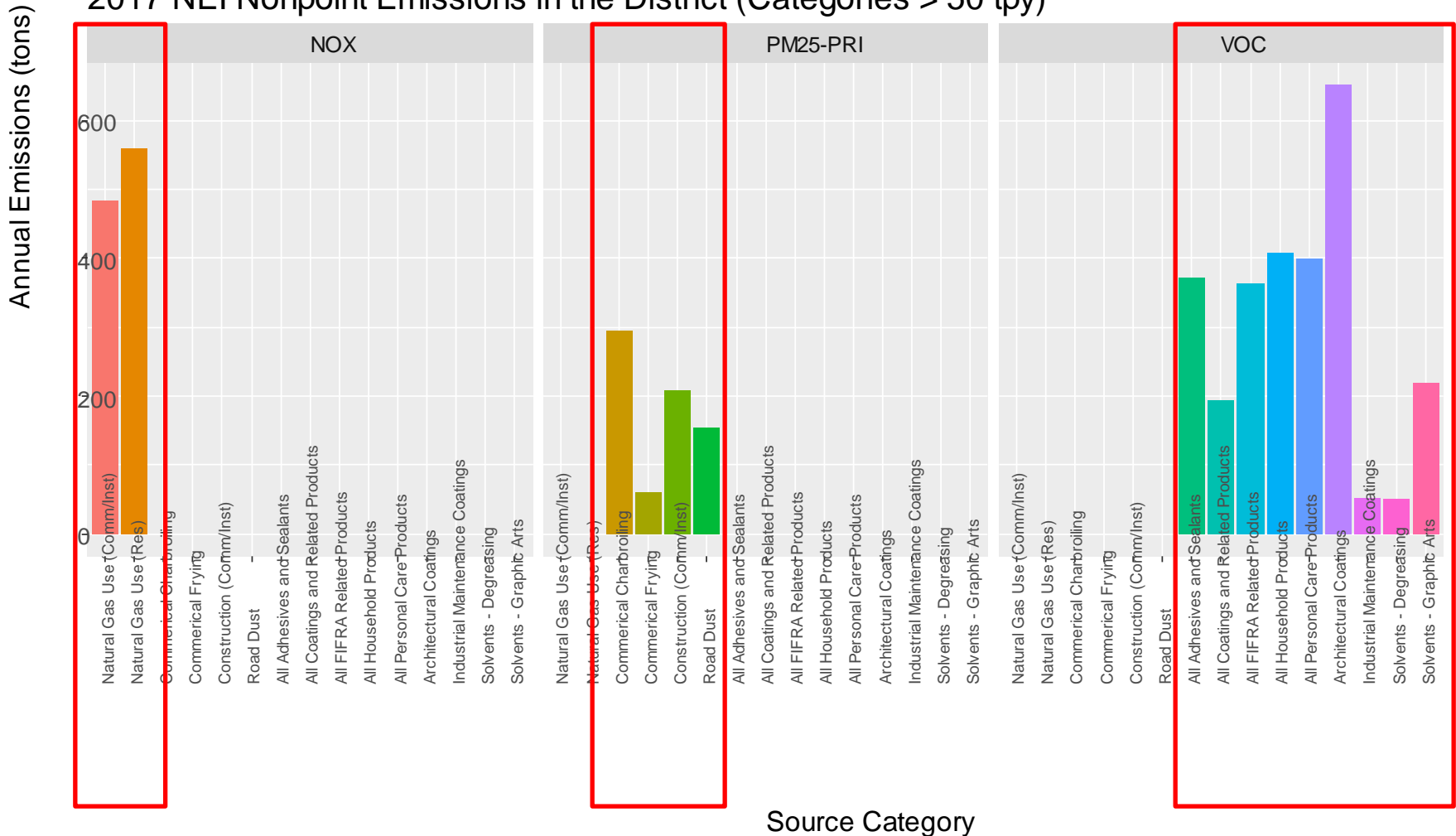
# Planning Area 1 EI – NEI Onroad Data

2017 NEI Onroad Emissions in the District



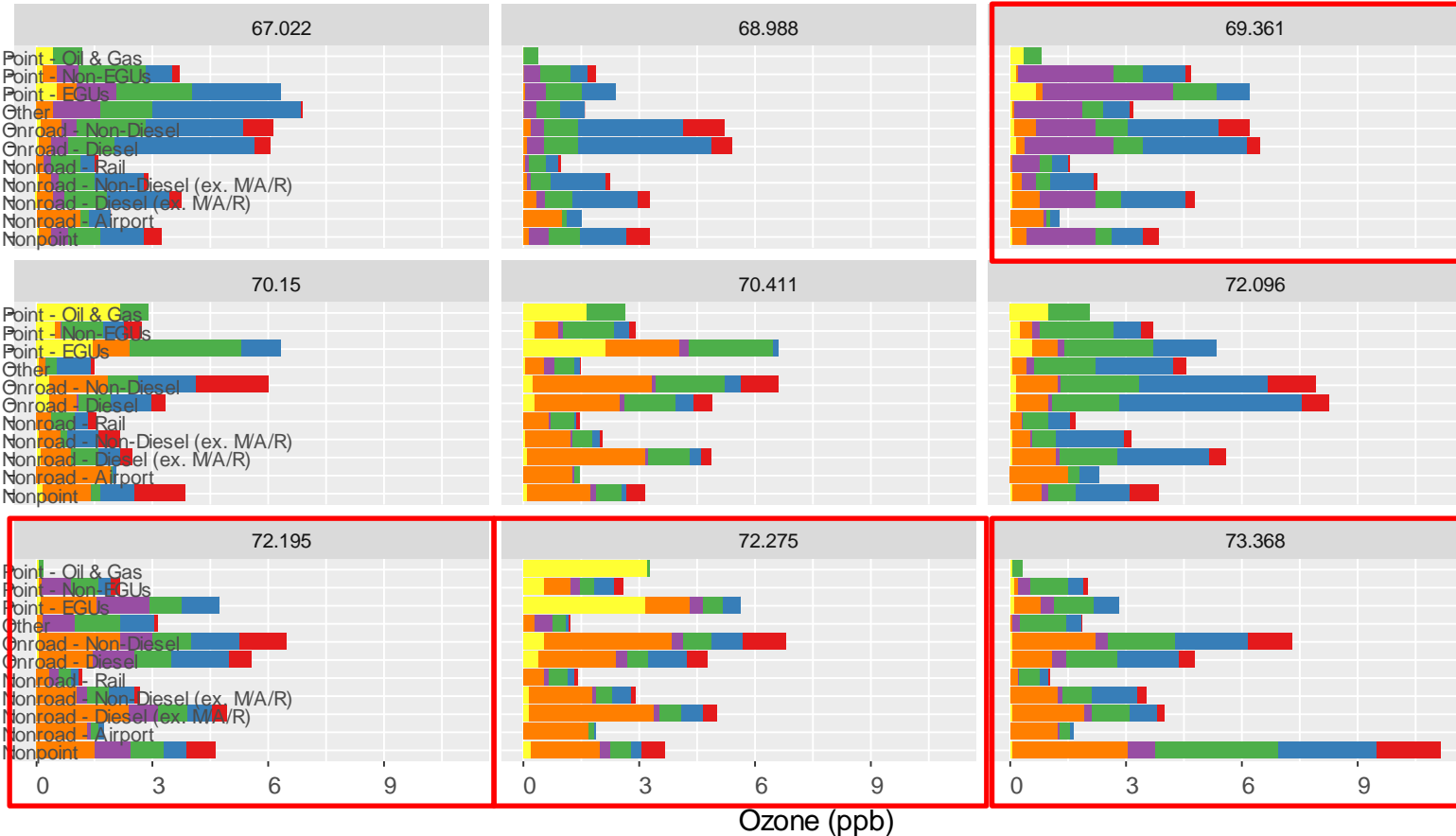
# Planning Area 1 EI – NEI NonPoint Data

2017 NEI Nonpoint Emissions in the District (Categories > 50 tpy)



# Planning Area 2 - Apportionment

Ozone contribution by US anthropogenic sector on 9 days by highest maximum 8-hr ozone



# Regional Partnerships

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- Air doesn't stop at the District border
  - In fact, over 90% of our ozone pollution comes from outside of our borders
  - Necessary to plan regionally to an extent
- We work regionally to:
  - Ensure consistent regulations among states
  - Develop implementation plans with MD & VA
  - Share resources and learn best practices
  - Strive to reduce pollution from upwind states



**MARAMA**  
Mid Atlantic Regional Air  
Management Association, Inc.



# Questions?

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# Planning Area 3 – Reg Status

	Intra-Agency	Inter-Agency	Published
Proposing	Clean Air Zones	Stage II Removal	CA Low Emissions Vehicles (LEV)
Re-Proposing	NSPS Updates	Odor Enforcement	
Finalizing	NOX RACT (Medium to Large Boilers, Combustion Turbines, Stationary Generators)	Screen Printing	
		GHG Intensity	

Red indicates required to comply with federal regulations/Clean Air Act