

New NO₂ and SO₂ NAAQS and Their Impacts on Permitting

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Background

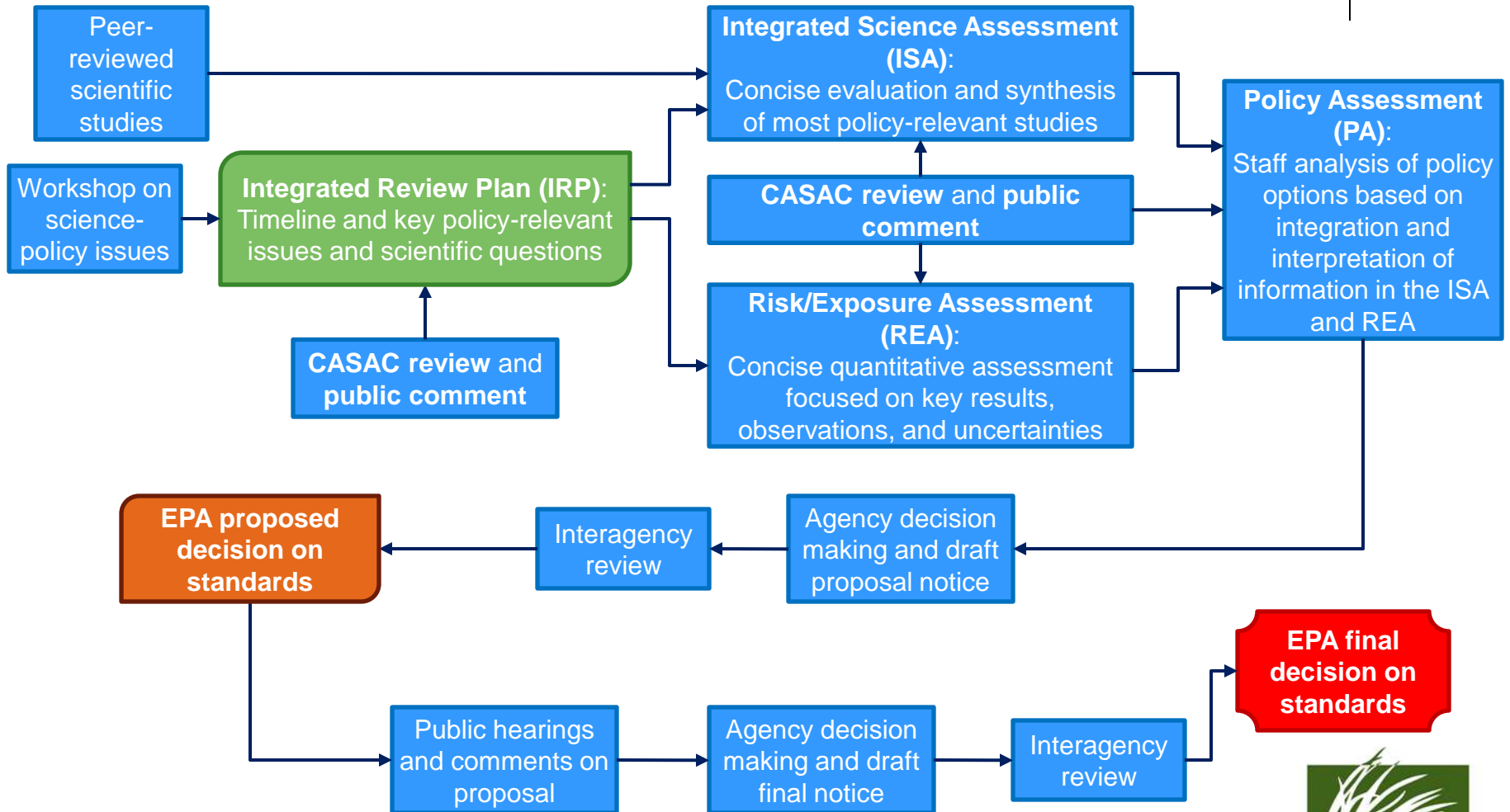


- National Ambient Air Quality Standards (NAAQS)
 - Criteria pollutants
 - Attainment vs. Non-attainment
 - Permitting implications

NAAQS Development – Old Process



Current NAAQS Review Process



Areas for Involvement

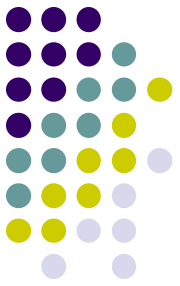


- Planning
 - Kick-off workshop
 - CASAC, EPA-contracted scientists, and the public
 - Results in the preparation of an Integrated Review Plan (IRP)
- Integrated Science Assessment (ISA)
 - First and second drafts will be released for CASAC review and public comment
 - Special Outreach to the following:
 - National Institutes of Health
 - Centers for Disease Control and Prevention
 - Agency for Toxic Substances and Disease Registry
 - National Institute for Occupational Safety and Health
 - National Park Service

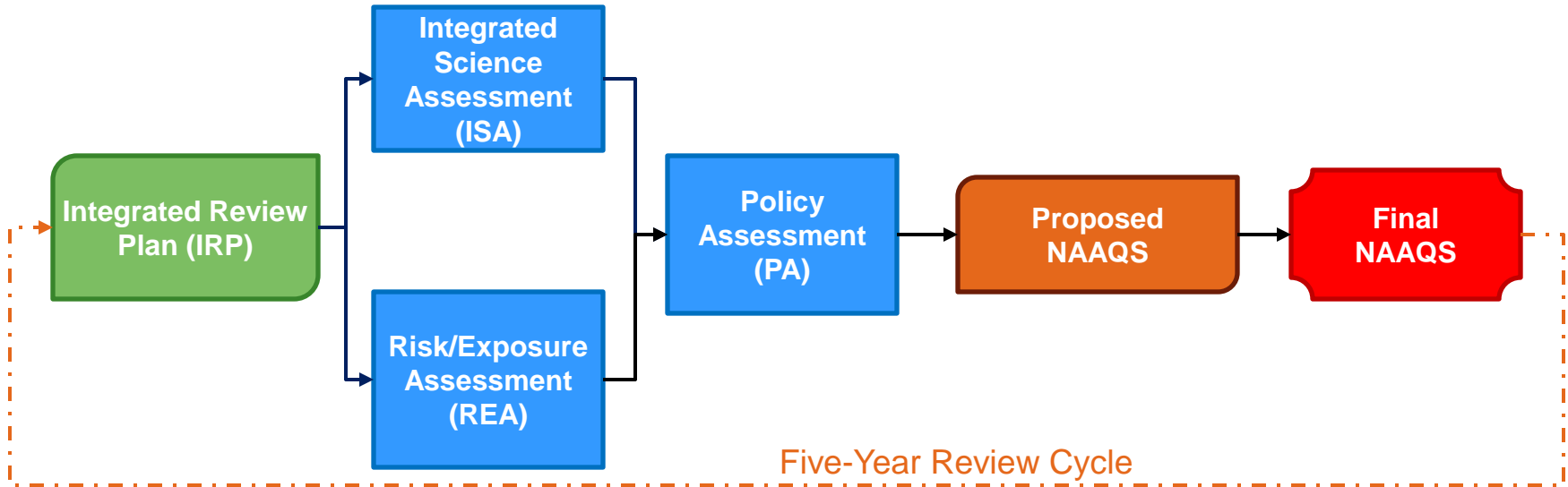
Areas for Involvement



- Risk/Exposure Assessment (REA)
 - Focused on human health or welfare-related impacts
 - CASAC review, public comment, and special outreach, similar to ISA
- Policy Assessment (PA)
 - Combines information from ISA and REA
 - “Bridges the gap” between Agency’s assessments and the judgments of the Administrator
 - Released in draft form for CASAC review and public comment
- Rulemaking
 - Proposed rule for public comment

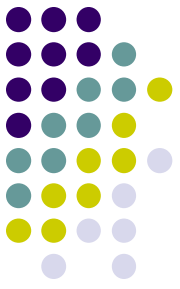


Five-Year Review Cycle



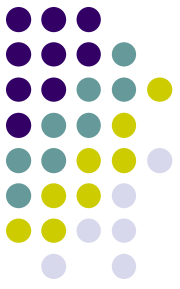
| Pollutant/ Standard | IRP | ISA | REA | PA | Proposed NAAQS | Final NAAQS |
|---------------------------|------|------|-------|------------------|-------------------|----------------|
| NO ₂ – Primary | 8/07 | 7/08 | 11/08 | N/A ³ | FR 7/15/09 | FR 2/9/10 |
| SO ₂ – Primary | 9/07 | 9/08 | 9/09 | N/A ³ | FR 12/8/09 | FR 6/22/10 |

1-Hour NO₂ NAAQS – Background



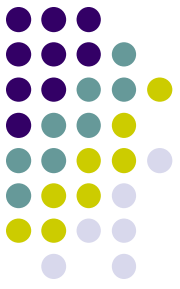
- Issued January 22, 2010
- Effective Date – April 12, 2010
- Primary standard
- 100 ppb = 188 µg/m³
- 3 year average of the 98th percentile of daily maximum 1-hour concentrations

1-Hour NO₂ NAAQS – Background



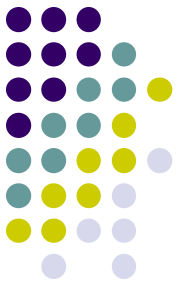
- Additional ambient air monitors are required
- Current monitors
 - Show attainment of the existing annual standard (53 ppb) and the new hourly standard in almost all counties
- 60% of NO₂ emissions from mobile sources
 - Sources near major roadways face compliance challenges

NO₂ Air Dispersion Modeling Challenges



- NO_x to NO₂ Conversion
 - Tier 1 – Assume total conversion
 - Tier 2 – Ambient Ratio Method
 - Default = 0.75
 - Tier 3 – Ozone Limiting Method
 - Case-by-case justification

1-Hour SO₂ NAAQS – Background



- Issued June 2, 2010
- Effective Date – August 23, 2010
- Primary standard
- 75 ppb = 196 µg/m³
- 3 year average of the 99th percentile of daily maximum 1-hour concentrations
- 24-hour and annual SO₂ standards were revoked

1-Hour SO₂ NAAQS – Background



- Additional ambient air monitors are required
- Current monitors
 - Show that 60 out of 249 monitored counties violate the new 1-hour standard
- Air dispersion modeling data to be used in addition to monitored data
 - New EPA memo issued March 24, 2011
 - States initially focusing on sources ≥ 100 tpy of SO₂
 - If either modeling OR monitoring data predicts a violation of the 1-hour standard, the area will be classified as non-attainment

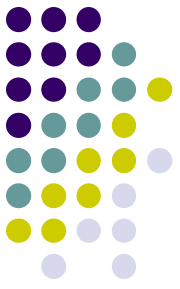


Additional Modeling Challenges



- High Background Concentrations or Lack of Representative Background Data
- Significant Impact Levels (SILs)
 - $\text{NO}_2 = 10 \mu\text{g}/\text{m}^3$
 - $\text{SO}_2 = 7.8 \mu\text{g}/\text{m}^3$

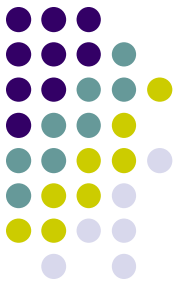
Additional Modeling Challenges



- More Complex Averaging Periods
 - NO₂ – 3 year average of the 98th percentile of the daily maximums
 - SO₂ – 3 year average of the 99th percentile of the daily maximums
 - Applies to both background and modeled concentrations

Examples of Permitting Impacts

- 1-hr SO₂ NAAQS
 - Required stack height increase of 28 feet, a velocity increase of 24 ft/sec, and moving the stack a significant distance from preferred location
- 1-hr NO₂ NAAQS
 - Required stack height increase of 5 feet, moved location of hot oil heater further towards center of the facility

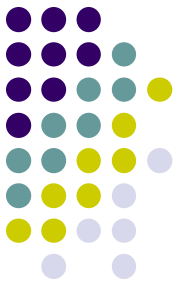


Conclusions



- Air permitting challenges may arise from both new NAAQS
 - Typically require significant time and resources to resolve, especially compliance demonstrations related to air dispersion modeling
 - Potential Solutions
 - Revised equipment locations
 - Control devices
 - Adjusted stack parameters
 - Increasing site footprint

Questions?



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