

# Review of the O<sub>3</sub> NAAQS: Schedule and Preview of the REA and PA

Presentation to CASAC O<sub>3</sub> Panel  
1/09/2012





# Anticipated Schedule

Stage of review	Major milestones	Schedule
Integrated Science Assessment (ISA)	1 <sup>st</sup> Draft ISA : Document released for CASAC and public review CASAC meeting on 1 <sup>st</sup> Draft ISA	Mar 2011 May 19-20, 2011
	2 <sup>nd</sup> Draft ISA: Document released for CASAC and public review CASAC meeting on 2 <sup>nd</sup> Draft ISA	Sept 2011 Jan 9-10, 2012
	Final ISA	Feb/Mar 2012
Risk/Exposure Assessments (REAs)	Scope and Methods Plans: Document released for CASAC and public review CASAC meeting on Scope and Methods Plans	Apr 2011 May 19-20, 2011
	1 <sup>st</sup> Draft REAs: Document released for CASAC and public review CASAC meeting on 1 <sup>st</sup> Draft REAs	Mar 2012 Late May/early June 2012
	2 <sup>nd</sup> Draft REAs: Document released for CASAC and public review CASAC meeting on 2 <sup>nd</sup> Draft REAs	Nov 2012 Jan/Feb 2013
	Final REAs	Apr 2013
Policy Assessment (PA) and Rulemaking	1 <sup>st</sup> Draft PA: Document released for CASAC and public review CASAC meeting on 1 <sup>st</sup> Draft PA	Apr 2012 Late May/early June 2012
	2 <sup>nd</sup> Draft PA: Document released for CASAC and public review CASAC meeting on 2 <sup>nd</sup> Draft PA	Dec 2012 Jan/Feb 2013
	Final PA	May 2013
	<b>Proposed Rule</b>	<b>Oct 2013</b>
	<b>Final Rule</b>	<b>July 2014</b>



# Structure of 1<sup>st</sup> Draft Risk and Exposure Assessment (REA)

- Air Quality Characterization

## Part I: Primary Standard

- Characterization of Human Exposure to Ozone
- Characterization of Health Risks (clinical-based and epidemiological-based)
- Discussion of Key Findings

## Part II: Secondary Standard

- Assessment of Welfare Risk and Exposure
- Discussion of Key Findings



# Summary of Analytical Components of the REA

- Exposure Assessment
  - Air Pollutants Exposure Model (APEX)
  - Populations: general population, school-age children, asthmatic school-age children, outdoor workers & elderly people
  - Years of ambient data: 2006-2010 with calculation of DVs for rollback for 2006-2008 and 2008-2010
- Clinical-based Risk Assessment
  - Using APEX and same populations and years of ambient data included in exposure assessment
  - Updating the exposure-response function of the last review with the results of new studies
- Epidemiological-based Risk Assessment
  - City-specific analyses
    - Use the Benefits Mapping & Analysis Program (BenMAP) to evaluate short-term ozone exposure: premature mortality and morbidity
    - Years of ambient data: 2006-2010 with calculation of DVs for rollback for 2006-2008 and 2008-2010



# Summary of Analytical Components of the REA (cont.)

- Epidemiological-based Risk Assessment
  - National-scale analyses
    - National-scale spatial surface of fused model (2007) and monitored data (2006-2008)
    - Use BenMAP to evaluate short-term ozone exposure: premature mortality
    - Better understand representativeness of 12 selected cities
- Assessment of Welfare Risk and Exposure for Secondary Standard
  - National-scale W126 spatial surface of fused model (2007) and monitored data (2006-2008)
  - Assessment of ecological risk and exposure (biomass loss and visible foliar injury), including specific case-study areas for more refined analyses
  - Ecosystem services risk assessment based on ecological effects and modeling



# Key Issues in REA: Air Quality, Background and City-selection

- Background and Risk
  - Assess total health effects incidence without consideration for background concentrations
- Estimation of ozone concentrations to meet current and alternative standards
  - Primary Standard
    - Quadratic rollback method in the 1<sup>st</sup> draft with concentration lower bound of US background
    - Evaluating use of air quality models for rollback and alternative rollback scenarios that reflect alternative NO<sub>x</sub> and VOC emissions reductions for 2<sup>nd</sup> draft
  - Secondary Standard
    - Currently evaluating rollback techniques for W126 metric for the 2<sup>nd</sup> draft.
- 12 Case Study Cities for Exposure and Risk Assessment
  - **Atlanta**, Baltimore, Boston, Cleveland, **Denver**, Detroit, Houston, **Los Angeles**, New York, **Philadelphia**, Sacramento, St. Louis (only bolded cities included in 1<sup>st</sup> draft for exposure assessment and clinical-based risk assessment)
  - Selection Criteria: (1) data availability; (2) current air quality; (3) inclusion of vulnerable populations; and (4) geographical heterogeneity
  - Provide evaluation of the representativeness of the 12 selected cities



# Key Issues in REA: Primary Standard

- Exposure Assessment
  - Characterization of activities and environments associated with high exposures and risk
  - Include qualitative analysis of exposure avoidance behavior in response to air quality alerts
  - 2<sup>nd</sup> draft to include expanded uncertainty and sensitivity analyses
- Risk Assessment (Clinical-based and Epidemiological-based)
  - Evaluating the use of a new FEV1 model by McDonnell, Stewart, and Smith (2010)
  - Estimation of total ozone risk without use of threshold
  - Characterization of national distribution of risk across major urban areas for recent ozone levels
  - 2<sup>nd</sup> draft to include expanded uncertainty and sensitivity analyses
- Long-term risk metrics
  - Evaluation of air quality metrics and availability of health study information
  - Based on evaluation results and CASAC recommendations, may include sensitivity analysis for long-term endpoints in 2<sup>nd</sup> draft.



# Key Issues in REA: Secondary Standard

- Assessment of Welfare Risk and Exposure
  - 1<sup>st</sup> Draft
    - Species specific ecosystem services analyses (timber, critical habitat, recreation, and other products)
    - Forest and Agricultural Sector Optimization Model (FASOM) and i-Tree models for larger scale ecosystem effects
  - 2<sup>nd</sup> Draft
    - W126 exposure data for meeting the current standard and alternate levels
    - Selection and inclusion of additional case study areas
    - Addition of the i-Tree model results (if not included in 1<sup>st</sup> draft)
    - Additional modeling with FASOM for rollback exposure data



# Structure of 1<sup>st</sup> Draft Policy Assessment

- **Chapter 1: Introduction and Background**
  - Will include discussion of the O<sub>3</sub> ambient monitoring network and O<sub>3</sub> air quality

## Part I: Primary Standard

- **Chapter 2: Consideration of Health Evidence**
  - Focus on studies with O<sub>3</sub> concentrations at or below current standard level
- **Chapter 3: Consideration of Human Exposure and Risk Results**
- **Chapter 4: Staff's Preliminary Conclusions on the O<sub>3</sub> Primary NAAQS**
  - Will include discussion of approach to reviewing O<sub>3</sub> NAAQS

## Part II: Secondary Standard

- **Chapter 5: Consideration of the Environmental Effects Evidence**
- **Chapter 6: Consideration of Ecosystem Exposure and Risk Results**
- **Chapter 7: Staff's Preliminary Conclusions on the O<sub>3</sub> Secondary NAAQS**



# Key Issues in Policy Assessment: Primary Standard

- **1<sup>st</sup> draft**
  - Adequacy of the public health protection provided by the current 8-hour O<sub>3</sub> standard against short-term and long-term O<sub>3</sub> exposures
    - Consider evidence for health effects following short-term and long-term exposures
    - Consider estimated O<sub>3</sub> exposures and O<sub>3</sub>-related health risks in areas that just meet the current O<sub>3</sub> NAAQS, from 1<sup>st</sup> draft REA
  - Identify the range of potential alternative standards appropriate for assessment and consideration in the 2<sup>nd</sup> draft REA and PA
- **2<sup>nd</sup> draft**
  - Adequacy of the public health protection provided by the current O<sub>3</sub> standard, and by potential alternative standards
    - Consider health evidence
    - Consider estimated O<sub>3</sub> exposures and O<sub>3</sub>-related health risks in areas that just meet the current O<sub>3</sub> NAAQS and in areas that just meet potential alternative standards, from 2<sup>nd</sup> draft REA



# Key Issues in Policy Assessment: Secondary Standard

- **1<sup>st</sup> draft**
  - Risks to ecosystem services under current conditions
    - Consider scientific evidence and analyses in 1<sup>st</sup> draft REA
  - Identify the range of potential alternative standards appropriate for assessment and consideration in the 2<sup>nd</sup> draft REA and PA
- **2<sup>nd</sup> draft**
  - Adequacy of the ecosystem protection provided by current 8-hr O<sub>3</sub> standard and by potential alternative standards, based on W126
    - Consider scientific evidence
    - Consider estimated exposures and risks to ecosystem services in areas that just meet the current standard and in areas that just meet potential alternative standards, from the 2<sup>nd</sup> draft REA