Translating PM Science into Policy within the Clean Air Act Framework: PM NAAQS Development and Policy Directions

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June 11, 2010

Policymaking Roundtable

- Focus on traditional EPA role: Setting standards based on health science, with specific implications for SJV air quality
- Will cover:
  - Status of PM NAAQS review
  - PM Integrated Science Assessment (ISA), draft Risk Assessment, and draft Policy Assessment
  - Key questions #1, 4, and 6: NAAQS revisions, implications of research on components and size fractions, vulnerability

National Ambient Air Quality Standards (NAAQS)

- Clean Air Act (CAA): Section 108 directs EPA Administrator to identify air pollutants "anticipated to endanger public health and welfare" and issue air quality criteria to "accurately reflect the latest scientific knowledge." Section 109 directs Administrator to promulgate and periodically review standards.

- Timing: PM NAAQS proposed rulemaking scheduled for February 2011, final rulemaking scheduled for October 2011.

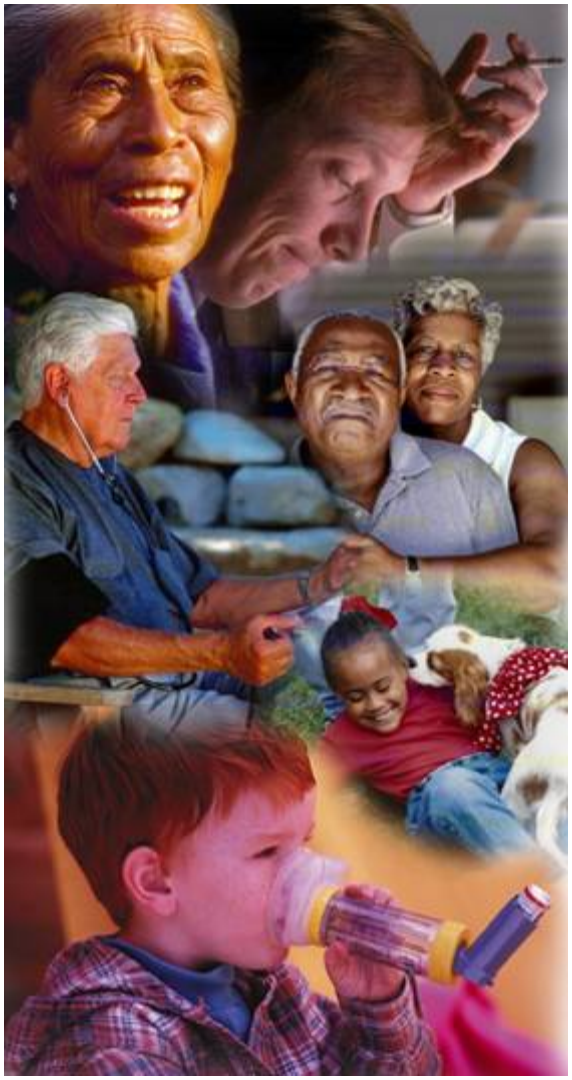
- Documents: Prior to proposed rulemaking, EPA with review and comment by the Clean Air Scientific Advisory Committee (CASAC), creates:
  - Integrated Science Assessment (ISA): finalized December 2009
  - Risk and Exposure Assessment: to be finalized June 2010
  - Policy Assessment: first draft to CASAC April and May 2010, released for public comment late June 2010, finalized September 2010

- For more information, see www.epa.gov/ttnnaaqs/standards/pm/s_pm_index.html

Integrated Science Assessment (ISA): Primary PM Standards

- Extensive new health evidence available on $PM_{2.5}$, including epidemiological studies of short- and long-term exposures; more limited data for $PM_{10-2.5}$ and ultrafine particles
- Weight of evidence judgments in the ISA:
  - $PM_{2.5}$
    - A *causal* relationship exists between long-/short-term exposures and cardiovascular effects and mortality
    - A causal relationship is *likely to exist* between long-/short-term exposures and respiratory effects
    - Evidence is *suggestive* of a causal relationship between long-term exposure and cancer and developmental effects
  - $PM_{10-2.5}$
    - Evidence is *suggestive* of a causal relationship between short-term exposures and cardiovascular effects, respiratory effects, and mortality
  - Ultrafine particles
    - Evidence is *suggestive* of a causal relationship between short-term exposures and cardiovascular and respiratory effects

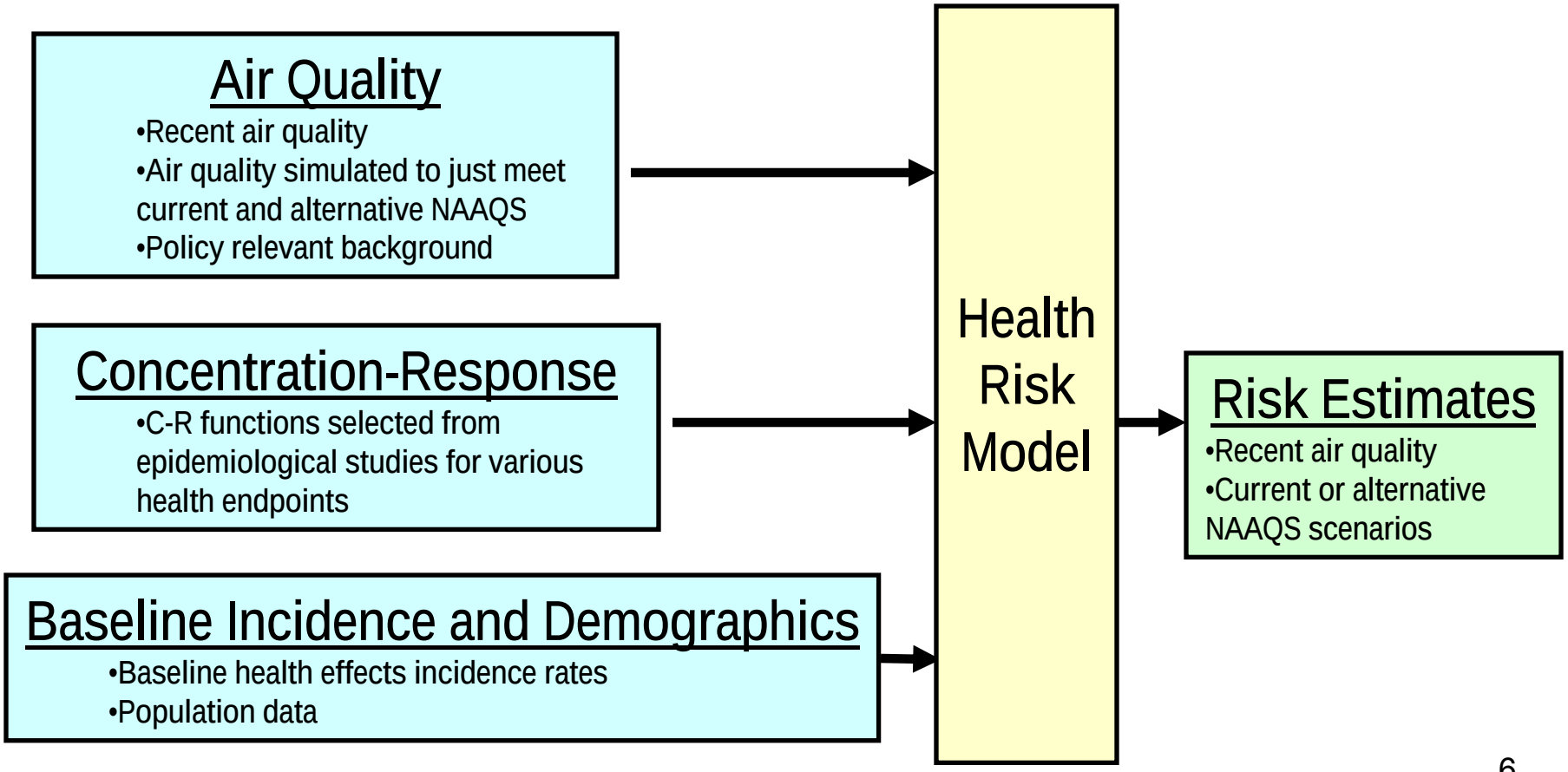
ISA for PM: Vulnerable Populations



Several factors were identified as increasing a population's susceptibility to PM exposure, including:

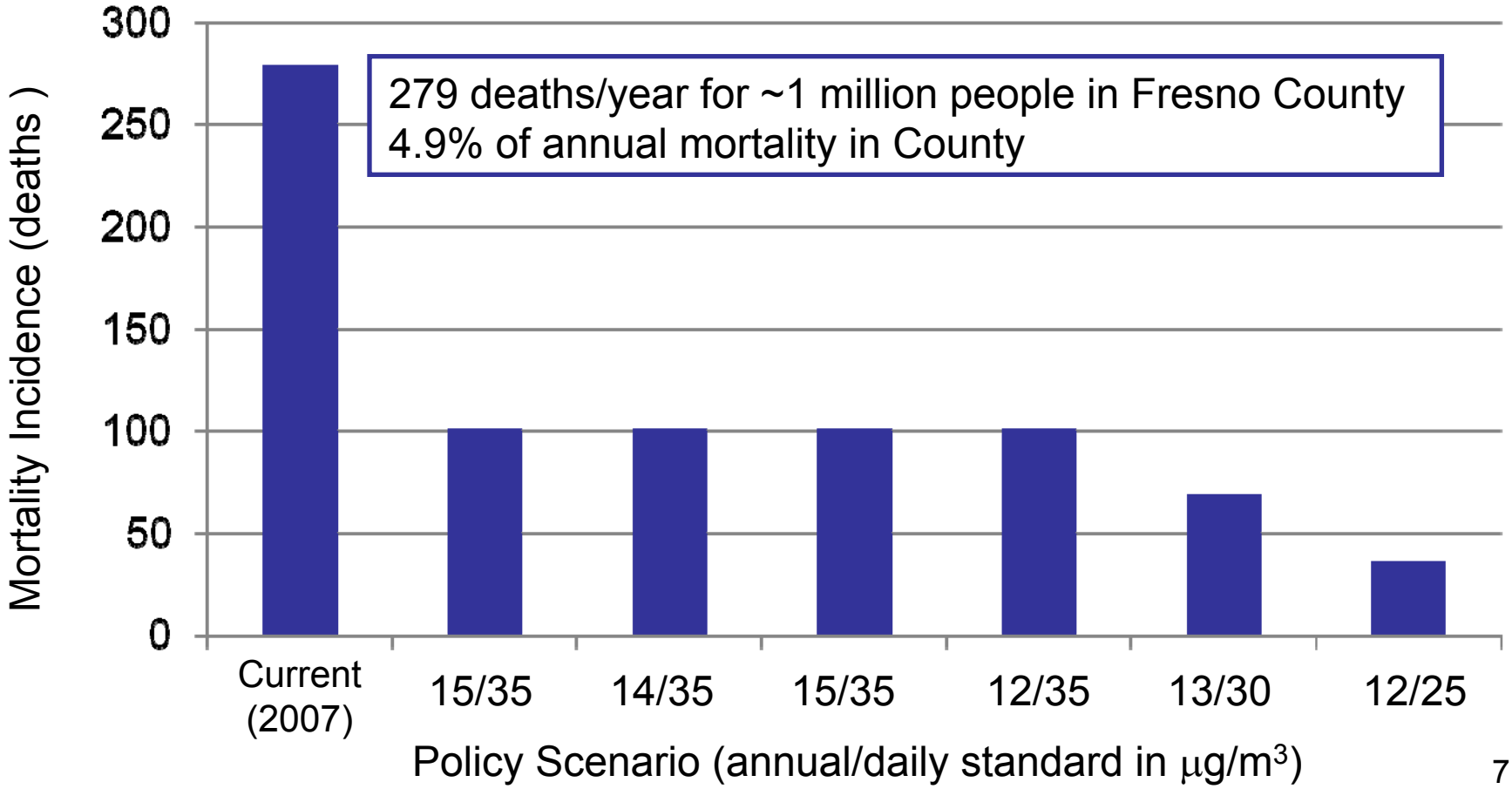
- Older adults (>65) and children (<18)
- Genetic factors
- Existing cardiovascular disease and respiratory illnesses,
- Socioeconomic status, including educational attainment, residential location, and nutritional deficiencies

Draft Quantitative Health Risk Assessment for PM: Risk Assessment Model



Draft Quantitative Health Risk Assessment for PM

Estimated Annual PM2.5-Related Mortality Incidence for Fresno County



$PM_{2.5}$ Standards: Draft Policy Assessment

- Adequacy of the current $PM_{2.5}$ standards
  - Associations with mortality/morbidity have been reported in locations that would meet the current $PM_{2.5}$ standards
- Indicators
  - Staff finds support for maintaining a $PM_{2.5}$ mass-based indicator
  - Staff finds insufficient evidence for health effects associated with ultrafine particle exposures and on the relative toxicity of some $PM_{2.5}$ components to support consideration for alternative indicators at this time
- Level
  - Staff supported approach of focusing on annual standard to provide general control, with supplemental protection against high days and hotspots with the 24-hour standard
  - Levels appropriate to consider:
    - Annual PM2.5 standard: 10-13 µg/m3
    - 24-hour PM2.5 standard: 25-35 µg/m3

Primary Coarse Particle Standards: Draft Policy Assessment

- Adequacy of the current PM_{10} standards
  - Associations with mortality/morbidity have been reported in locations that would meet the current PM_{10} standards
    - However, the number of health studies and air quality data in such locations are limited; the extent to which thoracic coarse particles themselves contribute to the reported health effects remains uncertain
- Indicator
  - First draft PA discusses both the continued use of PM_{10} and the adoption of $PM_{10-2.5}$ as potential options for indicator
- Levels
  - Second draft PA will consider ranges of potential alternative standard levels

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Backup Slides

Clean Air Act – Section 108

Directs Administrator to:

- Identify and list "air pollutants" that "in his judgment,
  - may reasonably be anticipated to endanger public health and welfare" and
  - whose "presence… in the ambient air results from numerous or diverse mobile or stationary sources"

- Issue air quality criteria to "accurately reflect the latest scientific knowledge useful in indicating the kind and extent of identifiable effects on public health or welfare which may be expected from the presence of [a] pollutant in ambient air…"

Clean Air Act – Section 109

Directs the Administrator to:

- Propose and promulgate standards for pollutants listed under Section 108
  - Primary (health-based)
  - Secondary (welfare-based)
- Periodically review (5 year intervals) and, if appropriate, revise NAAQS
- Establish independent scientific advisory committee, the Clean Air Scientific Advisory Committee (CASAC), to:
  - Review air quality criteria
  - Recommend to the Administrator any new standards and revision of existing criteria and standards as may be appropriate

Current Schedule for Ongoing NAAQS Reviews

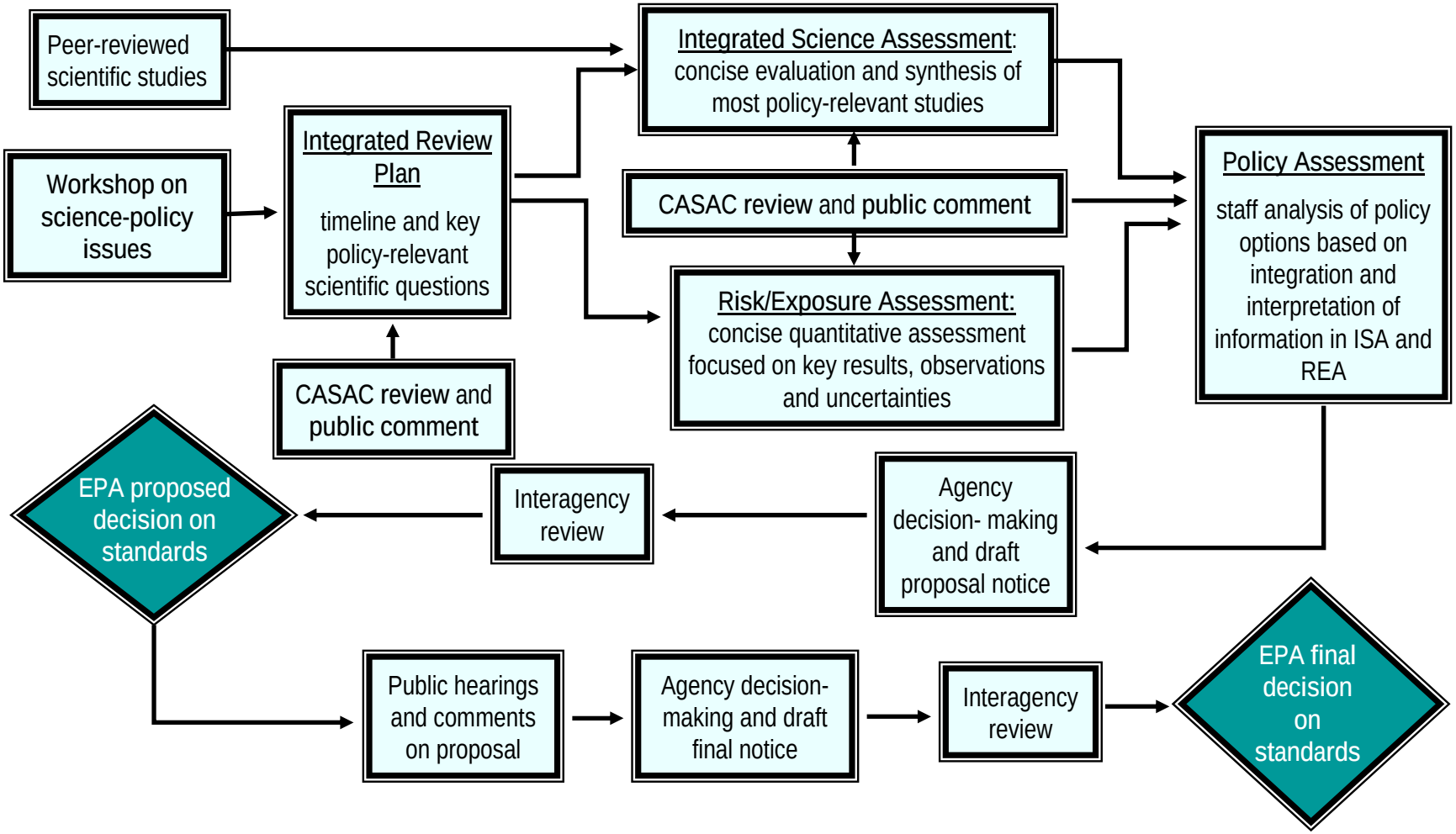
MILESTONE	POLLUTANT						
	NO_2 Primary	SO_2 Primary	Ozone Reconsideration	CO	PM	NO_2/SO_2 Secondary	Lead
NPR	Jun 26, 2009	Nov 16, 2009	Jan 6, 2010	Oct 28, 2010	Feb 2011	July 12, 2011	Nov 2013
NFR	Jan 22, 2010	Jun 2, 2010	Aug 31, 2010	May 13, 2011	Oct 2011	Mar 20, 2012	Sept 2014

NOTE:

Underlined dates indicate court-ordered or settlement agreement deadlines

Next Ozone Review: Proposal in May 2013 and Final in Feb 2014

Current NAAQS Review Process



Current PM NAAQS Review

- Integrated Science Assessment (ISA)
  - Finalized December 2009
- Risk and Exposure Assessments
  - To be finalized in June 2010
- Policy Assessment
  - First draft reviewed by CASAC on April 8-9 and May 7, 2010
  - Second draft to CASAC and public by late June 2010
  - Final document planned to be issued in September 2010
- Proposed rulemaking –February 2011
- Final rulemaking –October 2011
- For more information:

http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_index.html