



# Overview of Urban-Focused Visibility Assessment

Presentation for CASAC Review Meeting

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# Overview of the UFVA: Goals

- Identify a range of urban visibility conditions, i.e. candidate protective levels (CPLs), based on information available from existing public preference studies
- Characterize current urban visual air quality (VAQ) conditions as compared with selected CPLs
- Compare the potential for improvement in urban VAQ conditions when meeting alternative PM light extinction and PM mass concentration based NAAQS scenarios



# Overview of the UFVA: Approach

- Reassess past urban visibility preference study data to identify a reasonable range of light extinction CPLs
- Develop various PM light extinction and mass concentration NAAQS scenarios for evaluation
- Generate daylight hourly averaged light extinction estimates for 3 years in 15 urban areas to characterize current visibility conditions, in lieu of light extinction measurements
- Rollback current PM condition estimates to meet various PM NAAQS scenarios



# Issues Highlighted for CASAC Review (1)

- Reanalysis of urban visibility preference studies
  - Is the inclusion of each study appropriate?
  - Is selection of the 50<sup>th</sup> percentile acceptability criteria for distinguishing between acceptable and unacceptable levels of urban VAQ appropriate?
  - Is the rationale for selecting low, middle and high CPLs reasonable?
  - Is the characterization of similarities and differences in preference study results and comparability across studies appropriate?



## Issues Highlighted for CASAC Review (2)

- Were the selected NAAQS components used in the assessment appropriate?
  - Metrics: PM light extinction, PM<sub>2.5</sub> mass concentration
  - Diurnal periods: Daylight hours only; 24-hour average
  - Averaging times: 1-hour, 24-hour
  - Statistical forms: maximum daily; 90<sup>th</sup> and 95<sup>th</sup> percentile over three years
  - Possible restrictions at high relative humidity (>90% or >95%) for light extinction form?



## Issues Highlighted for CASAC Review (3)

- Are current hourly light extinction estimates for the 15 cities adequate?
  - Is the methodology for generating light extinction estimates credible?
  - Are the resulting estimates reasonable?
  - Are there suggestions for alternative approaches and methods to test the utility of the results?
  - Is the display of results clear and useful?
  - Are there suggested approaches for conducting uncertainty assessment?



## Issues Highlighted for CASAC Review (4)

- Adequacy of rollback approach to assess the impacts of just meeting various PM NAAQS scenarios
  - Is the rollback methodology for calculating hourly light extinction, including methods to generate and use PRB, credible?
  - Are the resulting estimates reasonable?
  - Are there suggested alternative approaches and methods to improve the utility of the results, including characterization of results?
  - Is the display of results clear and useful?



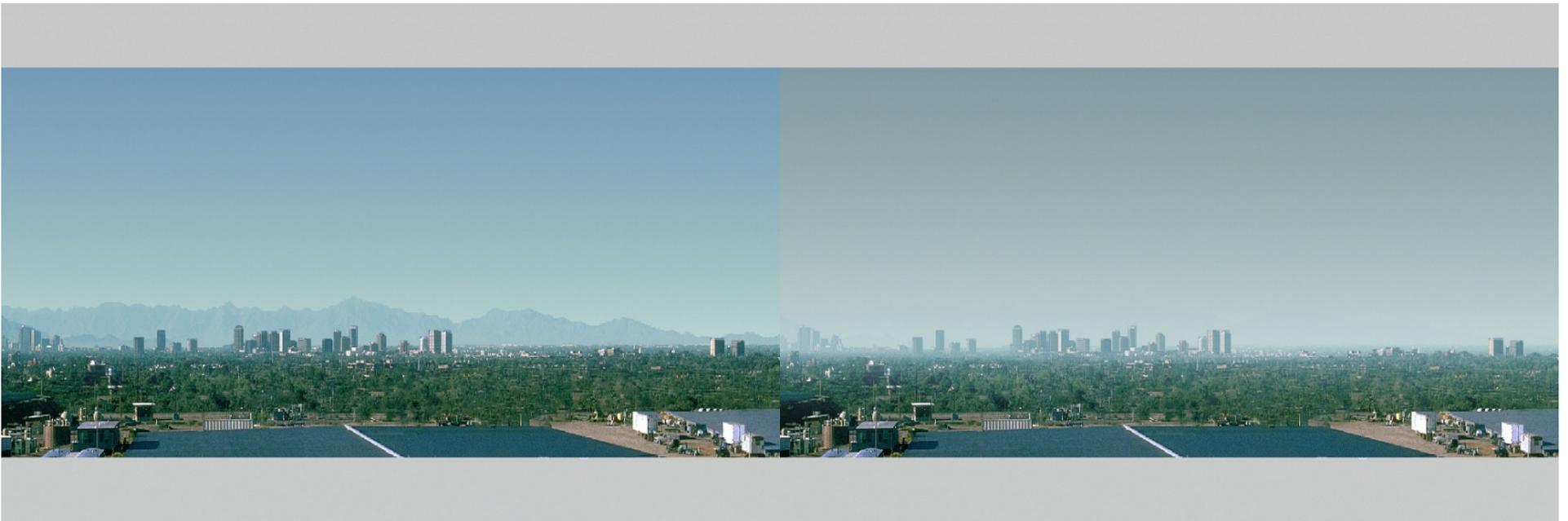
# WinHaze Photographs to Display the Candidate Protective Levels (CPLs)

# Phoenix



0 deciview –  $10 \text{ Mm}^{-1}$

25 deciview –  $122 \text{ Mm}^{-1}$



20 deciview –  $74 \text{ Mm}^{-1}$

30 deciview –  $201 \text{ Mm}^{-1}$

# Washington, DC



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# Dallas



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25 deciview – 122  $\text{Mm}^{-1}$



20 deciview – 74  $\text{Mm}^{-1}$



30 deciview – 201  $\text{Mm}^{-1}$