Status of Attainment Modeling for 8-Hour Ozone SIP,

Washington, DC-MD-VA Nonattainment Area

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Presentation Topics

- **Review of Modeling Process**
  - Purpose of attainment modeling
  - Attainment modeling steps
- **Review of 2009 Modeling Results**
  - Ozone Transport Commission (OTC) 2009 future base case
  - VADEQ “adjusted” future base case simulations
- **Current On-going Work**
  - Sensitivity analyses
  - Future control case modeling
- **Modeling Schedule**

Purpose of Attainment Modeling

- **Meet EPA requirements & guidance**
- **Predict future air quality conditions**
- **Develop & test potential control strategies**
- **Translate emission reductions into air quality benefit**
- **Demonstrate desired air quality outcome**

Attainment Modeling Steps

- **Historical Base Case Modeling**
  - Select high ozone events/ozone season
  - Run event simulation(s)
  - Compare model results to observed levels (model validation)
- **Future Base Case Modeling**
  - Develop future year emissions
  - Include known existing/future control measures
  - Run simulation(s)
  - Perform sensitivity analyses
- **Future Control Case Modeling**
  - Develop potential control measures and reductions
  - Test control strategies (iterative process)
  - Perform attainment test

Attainment Modeling Platform & Status

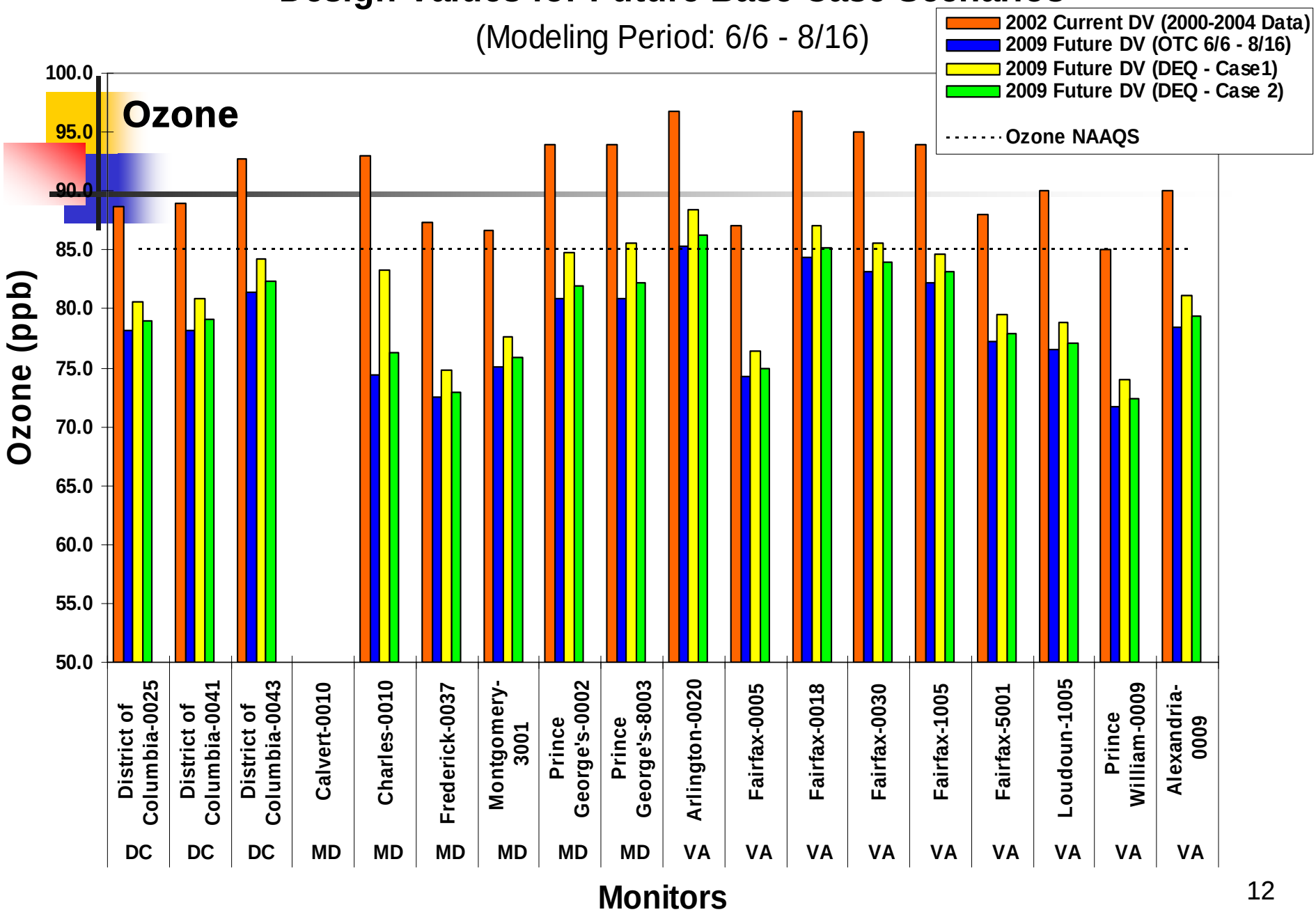
- **All analyses conducted with OTC modeling platform**
  - Community Multi-scale Air Quality (CMAQ) Modeling System
  - 12-km horizontal grid resolution
  - University of Maryland 2002 MM5 Meteorology
  - Shorter time period used to speed up the process
- **Modeling tasks already completed**
  - Modeling protocol
  - 2002 base case
  - 2009 future base case

2009 Ozone Base Case Modeling Scenarios

- **Adjusted base case #1**
  - Current controls plus growth for power plants
- **Adjusted base case #2**
  - Additional power plant controls (state estimates)
  - OTC measures in Northern VA
- **OTC base case**
  - Additional power plant controls (EPA estimates)
  - Reductions may be “overly optimistic”

Design Values for Future Base Case Scenarios

(Modeling Period: 6/6 - 8/16)



2009 Base Case Modeling Summary of Results

- **Adjusted base case #1**
  - Four DC area monitors above standard (85 to 88 ppb)
- **Adjusted base case #2**
  - Two monitors above standard (85 to 86 ppb)
- **OTC base case**
  - One monitor above standard (85 ppb)

Current On-going Work

- **Perform sensitivity analyses**
  - What's more effective to further reduce ozone?
  - What pollutants & source categories?
- **Association for Southeastern Integrated Planning (ASIP) sensitivities performed for DC**
  - Ground level NO_X reductions most effective
  - Point source NO_X reductions less effective
  - VOC reductions are least effective
- **Additional reductions needed for attainment may be difficult**
  - Not much left to control
  - Model not very sensitive to "local" reductions

Current On-going Work (continued...)

- **Future Control Case Modeling**
  - **Same control strategy runs - Two different tracks**
    - **UMD – Using OTC modeling platform**
    - **VDEQ – VDEQ adjusted base case platform**
  - 5 scenarios proposed
  - Scenario 1 complete – OTW/OTB + CAIR EGU controls
  - Scenario 2 – Scenario 1 + local controls
  - Scenario 3 – Scenario 2 + OTR wide controls
  - Local controls alone (Scenario #2) - very low benefits, don't show up in modeling results
  - So currently scenarios 2 & 3 being merged and run together

Current On-going Work (continued...)

- Emissions benefits for local and OTR controls quantified
- Additional emissions processing for modeling underway
- Attainment test will be performed
- Process will be repeated with other scenarios as needed to demonstrate attainment
- Supplemental analyses & Weight of Evidence (WOE) will be performed
- Analyses results will be documented for SIP

Ozone Attainment Modeling Schedule