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**Energy Efficiency
and Renewable Energy**

Bringing you a prosperous future where energy
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Improving Regional Air Quality with Wind Power



National Renewable Energy Laboratory



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Overview

- Clean Air Act (CAA) framework
- Air quality challenges
- CAA policies as market drivers
- Met. Wash. Council of Governments (MWCOCG) case study
- Environmental Protection Agency (EPA) guidance on State Implementation Plan (SIP) credit for EERE
- Model SIP documentation for wind purchases
- Related marketing innovations



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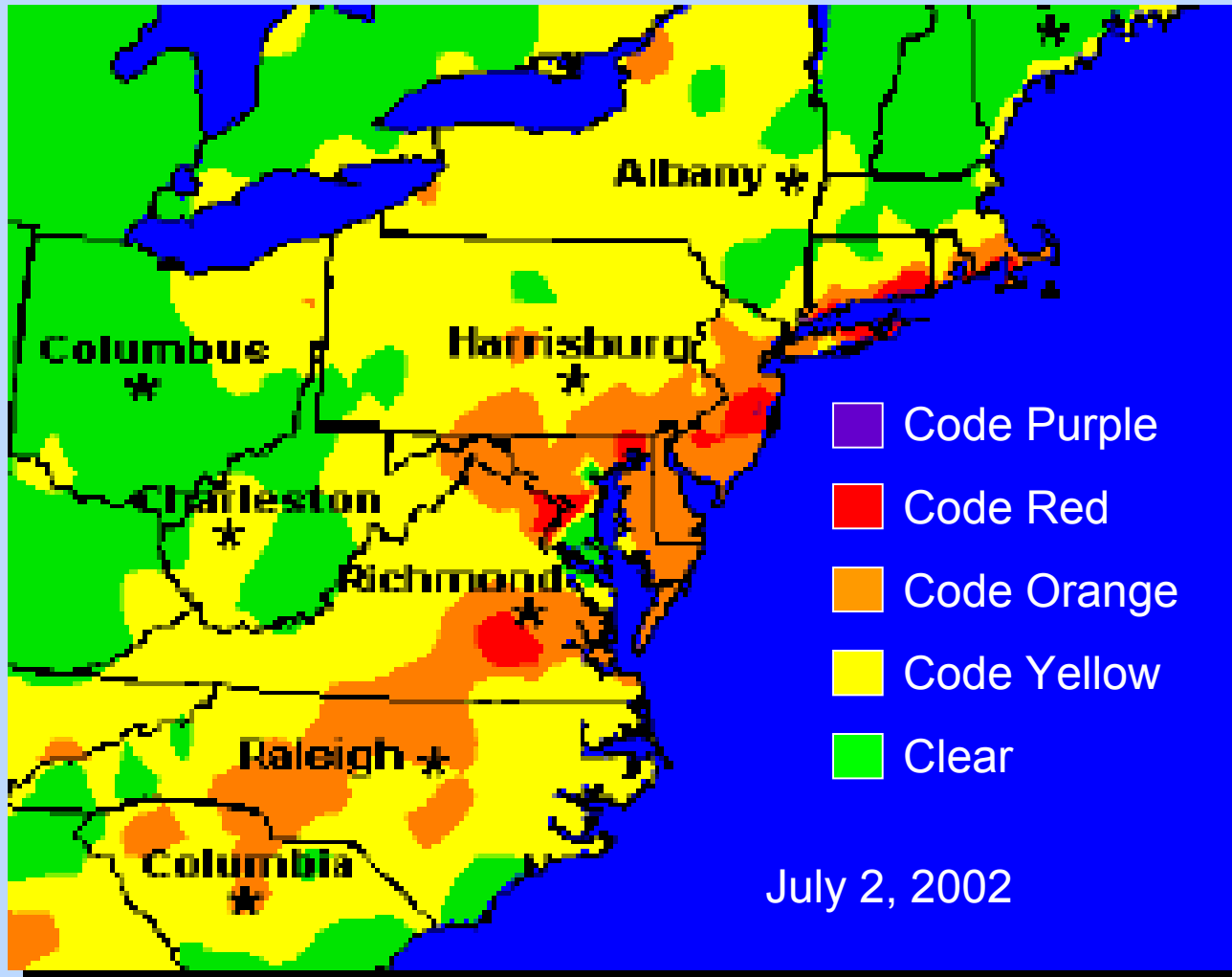
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Clean Air Act Framework

- CAA requires regional air quality plans (SIPs)
- “Window of opportunity”
 - Revised SIPs required by 2006/2007 to meet new 8-hour ozone and PM standards
 - August 2004 EPA guidance and NREL model SIP documentation for wind purchases

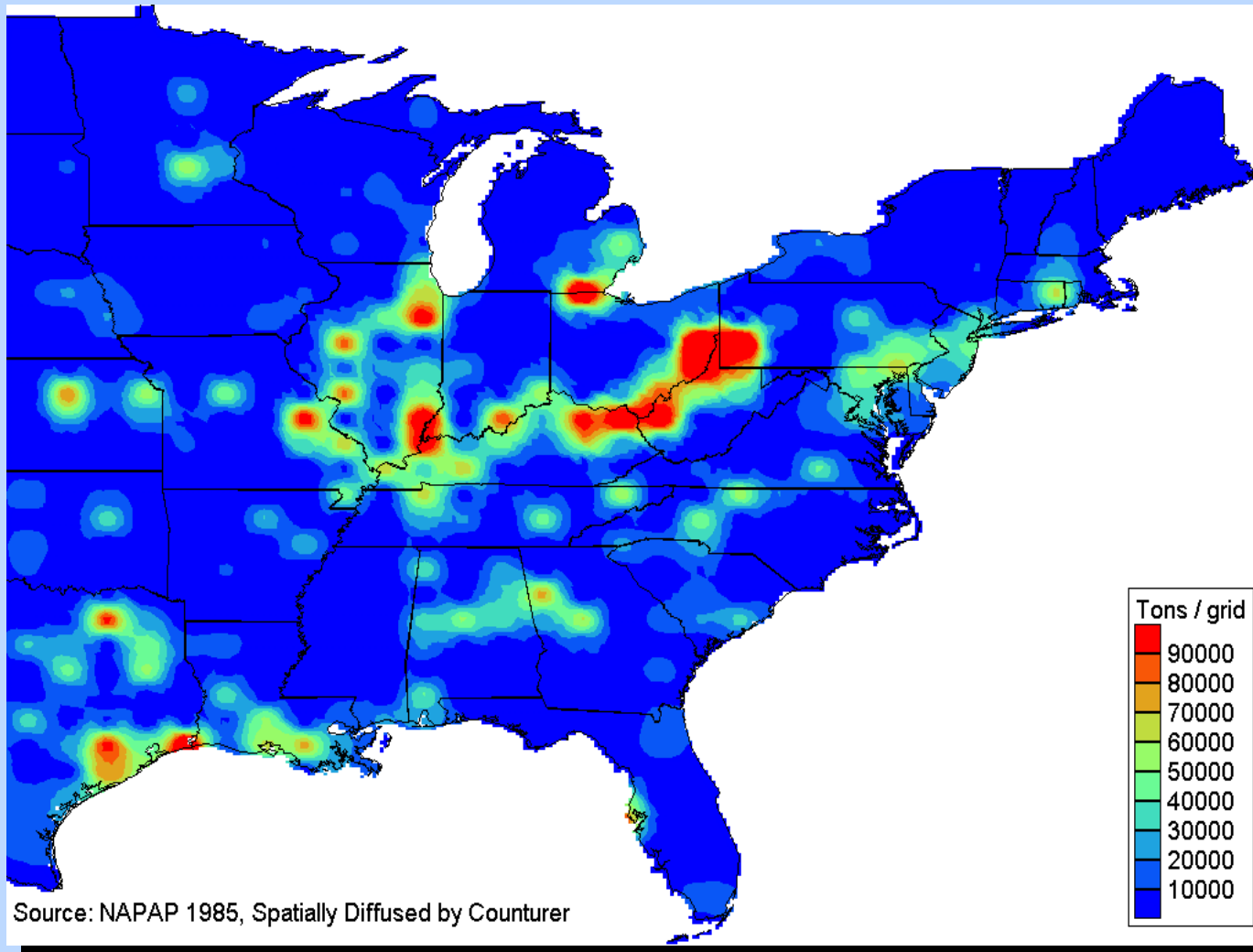


Air Quality Challenges – Ozone





NO_x Point Source Emissions

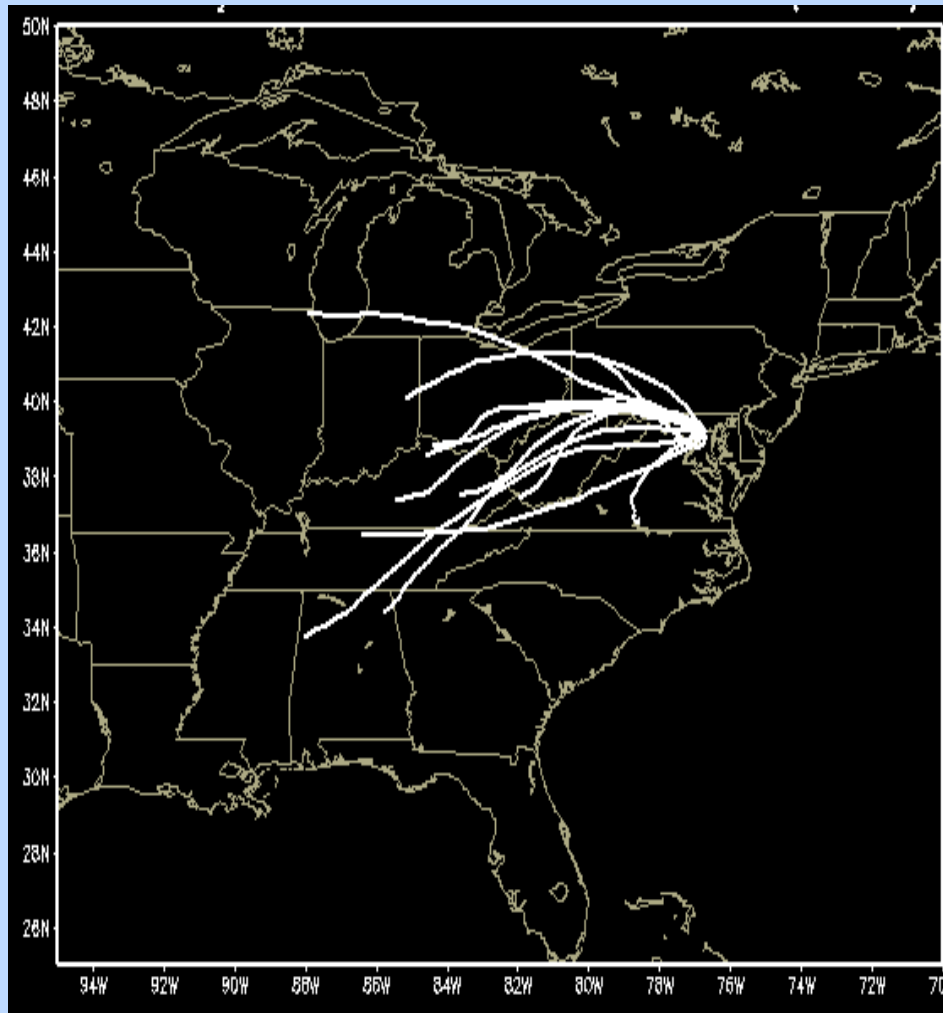




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Back Trajectories 90th Percentile BWI 2000 (550 m)



Source: Maryland Department of Environment



CAA Policies as Market Drivers

- State/local governments choose from wide range of air pollution control measures
- Emission reductions from traditional control measures largely exhausted in dirty air areas
- States and municipalities interested in air quality benefits of wind power
- Lowering nitrogen oxides (NO_x) emissions results in reduced ozone transport and regional haze



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CAA Policies as Market Drivers

- Regional air quality plans to meet 8-hour ozone standard in Midwest and East
 - Marketing window of opportunity in next two years
 - Wind energy as important option
 - SIP plans due April 2007
- Regional air quality plans to meet regional haze regulations in West



CAA Policies as Market Drivers

- State and local governments are key market for wind power
 - Increasing market demand is the “linchpin” for wind power development
 - Wind plants are financed based on the future revenue stream from wind purchases
 - Municipalities and states often serve as important “anchor” customers (e.g., Montgomery County, City of Chicago)



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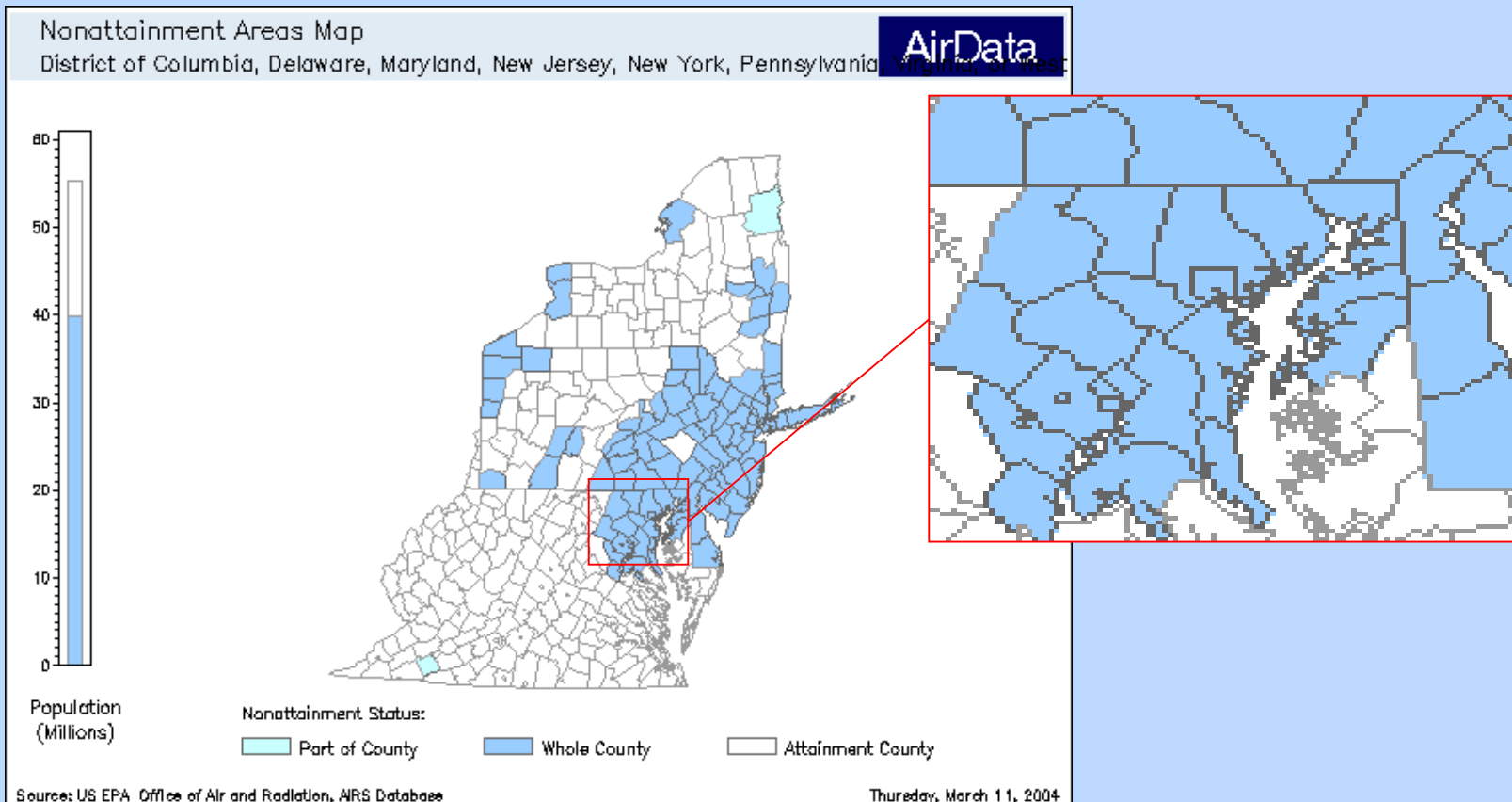
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MWCOG Case Study

- Metropolitan Washington (MW) area (MD-DC-VA) designated as “severe” ozone non-attainment area under 1-hour standard
- MWCOG submitted revised regional air quality plan (SIP) to EPA Region III in February 2004
- First-ever submission to EPA of wind energy as a control measure
- Measure designed to reduce ozone transport



Region under Federal Court Order to Reduce Ozone



Metro Area designated "severe" non-attainment



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MWCOG Case Study

- Purchasing group, led by Montgomery County, Maryland, will purchase 5% of its total energy from wind power
- Purchase is largest U.S. municipal wind purchase – 38,400 megawatt-hours per year
- Montgomery County named EPA/DOE Green Power Partner of the year in October 2004
- Energy conservation planned to offset “green power” premium
- Maryland agrees to retire NO_x allowances from renewable energy (RE) set-aside to ensure improved air quality



EPA Guidance on SIP Credit for EERE

- Issued in August 2004
- Sets forth MWCOG wind purchase as its RE example
- Intended to promote the use of RE to improve air quality
- Requirements for emission reductions
 - Quantifiable
 - Surplus
 - Enforceable
 - Permanent



Model SIP Documentation for Wind Purchases

- Prepared by Environmental Resources Trust and partners under contract to NREL
- Model based on MWCOG SIP and subsequent EPA guidance
- Intended to assist state and local governments
- Particularly relevant to states that have drafted RE set-asides in their NO_x emission trading programs: Indiana, Maryland, Massachusetts, New Jersey, New York, and Ohio
- Includes SIP model as well as model RFP and sample methodology



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Related Marketing Innovations

- Promote increased cost-effectiveness of wind purchases through:
 - Bundling with energy efficiency and innovative financing approaches
 - Blending with landfill gas and other lower-priced renewable energy



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Questions?

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