



Spring CAPCA
April 12, 2007

Overview

- Regional planning process
- Regional haze
 - BART
 - Reasonable Further Progress
 - SIP submittal / timeline

Benefits of RPOs

Regional Planning Process

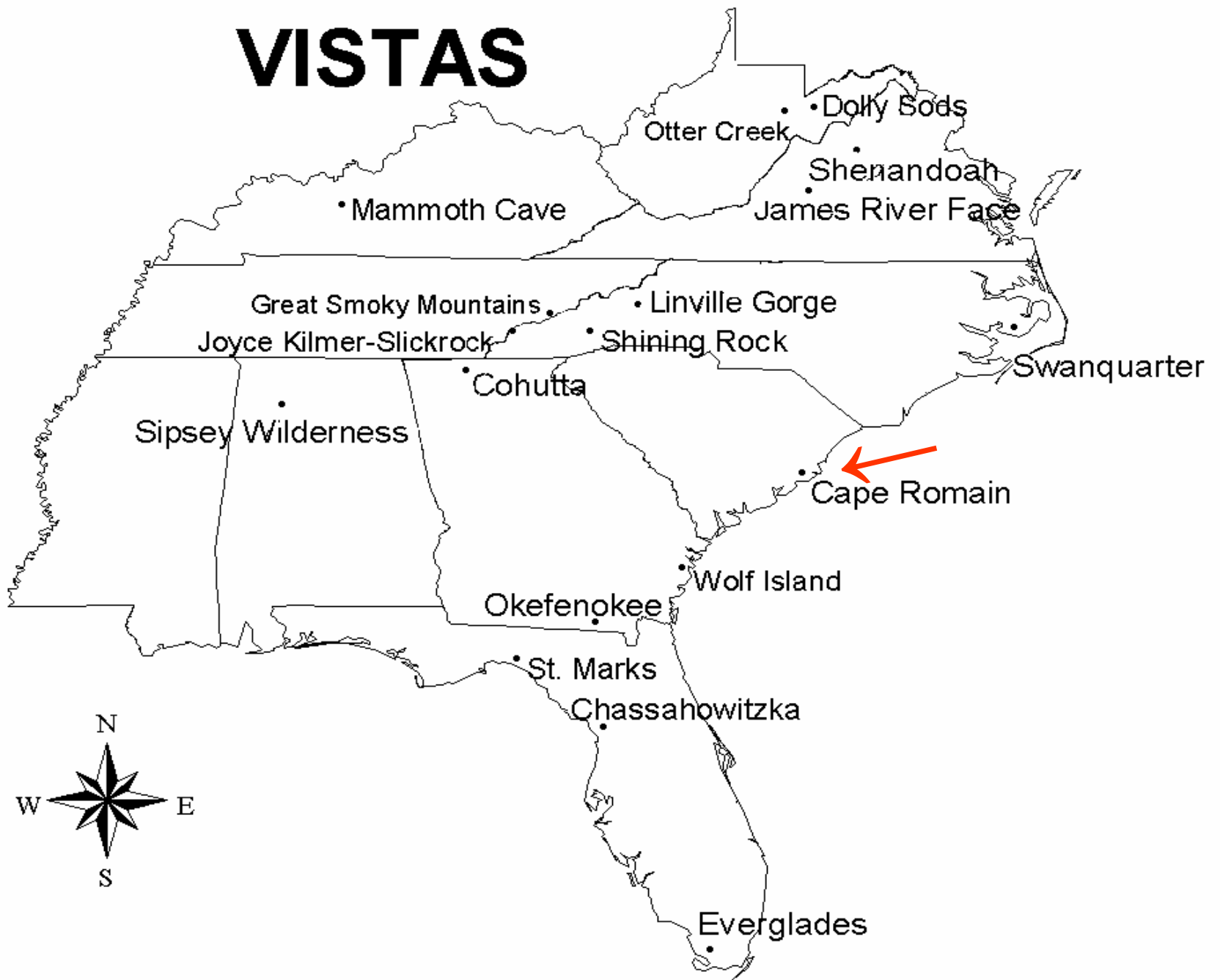
- Regional Planning Organizations
 - Regional Haze / VISTAS
 - Other uses?? Ozone/PM
- Many Benefits for SC
 - Resources.....!!!!
 - Communication
 - Coordination
 - Consistency

Regional Haze

State Responsibilities under Regional Haze Rule

- Submit State Implementation Plan - December 2007
- Establish baseline visibility and goals for improving visibility
- Improve visibility on 20% haziest days and protect visibility on 20% clearest days
- Develop long-term strategies for reducing emissions that cause haze
- Demonstrate reasonable progress by 2018

VISTAS



Best Available Retrofit Technology

aka BART

Best Available Retrofit Technology

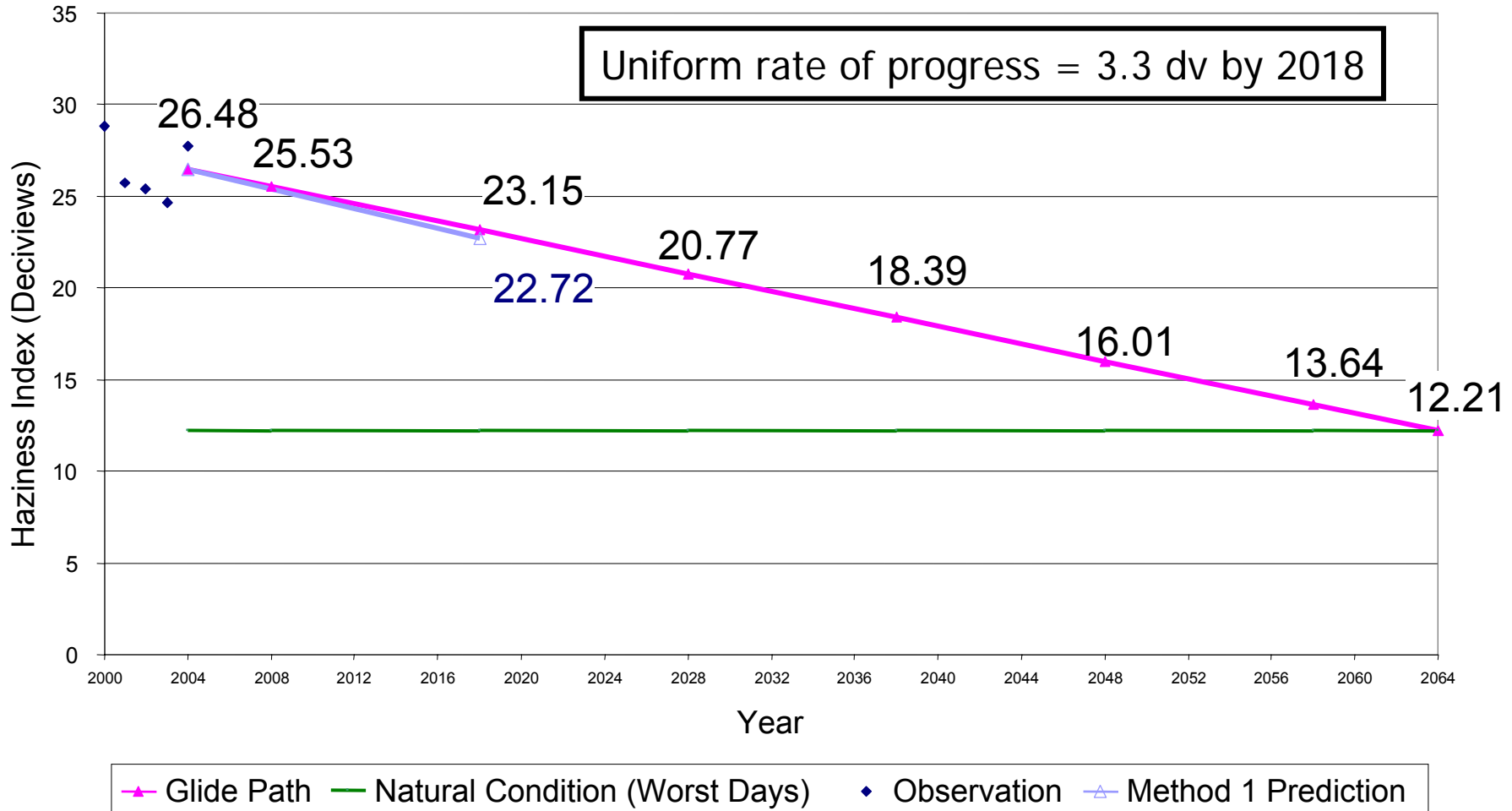
- SC had 6 Electric Utility and 20 Non-Utility sources identified as BART eligible
- 5 EGUs are still subject for PM
 - “5 factor analysis”
- Reviewing BART status with 4 sources
 - 1 EGU
 - 3 non-EGUs
- Remaining sources are exempt
 - VOC-only sources
 - “Model Plant”
 - VISTAS Exemption Modeling

Reasonable Progress Analysis

- States consider visibility improvement by 2018 compared to Uniform Rate of Progress

Uniform Rate of Progress Glide Path (Base G2a) Cape Romain - 20% Worst Days

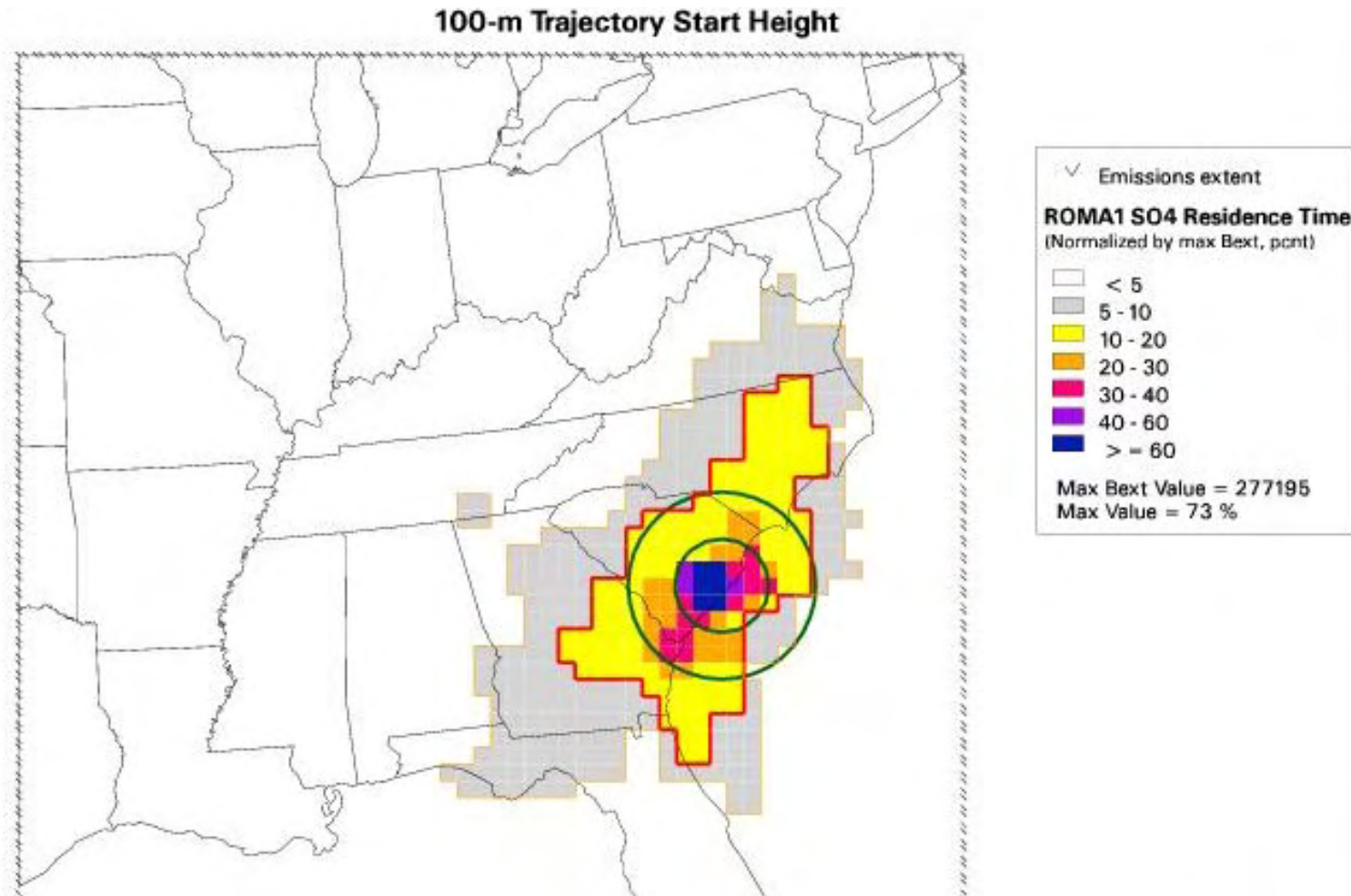
New IMPROVE equation



Visibility Impacts

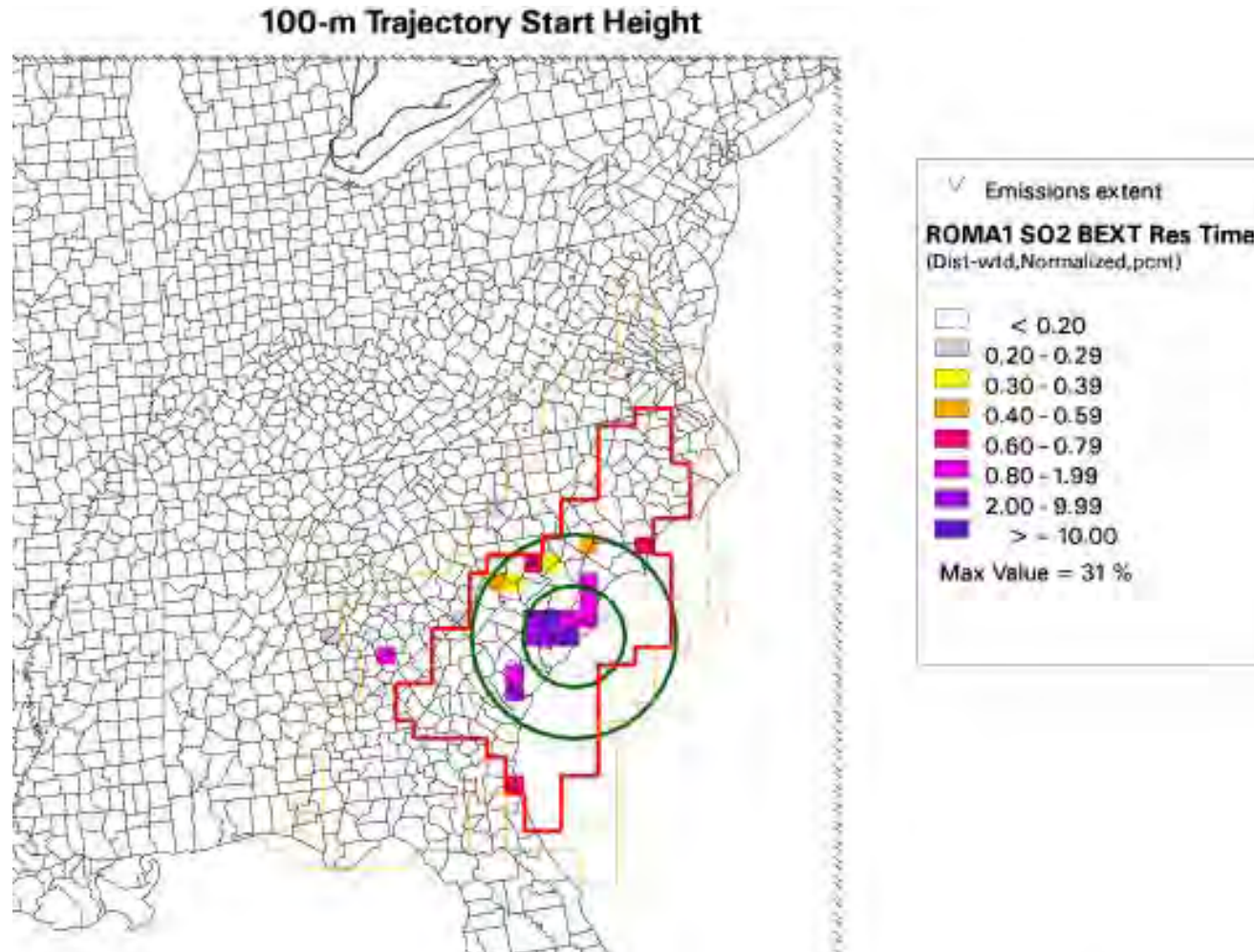
- VISTAS analysis indicates a focus on SO₂ control options as most effective to improve visibility during the first phase
 - Evaluate sources within SO₂ Area of Influence

SO2 Area of Influence for Cape Romain, SC



Green circles indicate 100-km and 200-km radii from Class I area.
Red line perimeter indicate Area of Influence with Residence Time $\geq 10\%$
Orange line perimeter indicate Area of Influence with Residence Time $\geq 5\%$.

2018 SO2 Emissions weighted by Residence Time Cape Romain, SC



Green circles indicate 100-km and 200-km radii from Class I area.

Red line perimeter indicate Area of Influence with Residence Time $\geq 10\%$.

Orange line perimeter indicate Area of Influence with Residence Time $\geq 5\%$.

Annual 2018 BaseG2 Emissions (%) Within Area of Influence Cape Romain, SC

Tier	VOC	NOX	CO	SO2	PM-10	PM-2.5	NH3
Fuel Comb. Elec. Util.	0%	20%	1%	46%	8%	16%	1%
Fuel Comb. Industrial	1%	17%	2%	34%	3%	5%	0%
Fuel Comb. Other	4%	5%	2%	6%	4%	7%	1%
Chemical & Allied Product Mfg	1%	1%	0%	4%	1%	1%	1%
Metals Processing	0%	0%	0%	1%	0%	0%	0%
Petroleum & Related Industries	0%	0%	0%	0%	0%	0%	0%
Other Industrial Processes	6%	6%	1%	6%	8%	9%	2%
Solvent Utilization	40%	0%	0%	0%	0%	0%	0%
Storage & Transport	7%	0%	0%	0%	0%	1%	0%
Waste Disposal & Recycling	4%	3%	7%	1%	7%	15%	0%
Highway Vehicles	19%	25%	41%	1%	1%	1%	11%
Off-highway	14%	19%	32%	1%	2%	4%	0%
Miscellaneous	4%	3%	14%	1%	65%	40%	84%

Annual 2018 SO2 Emissions (%) Within Area of Influence Cape Romain, SC

Additional breakdown of top 4 source categories from previous slide

Tier	SO2
Fuel Comb. Elec. Util.-Coal	44%
Fuel Comb. Elec. Util.-Oil	0%
Fuel Comb. Elec. Util.-Gas	0%
Fuel Comb. Elec. Util.-Other	2%
Fuel Comb. Elec. Util.-Internal Combustion	1%
Fuel Comb. Industrial-Coal	21%
Fuel Comb. Industrial-Oil	9%
Fuel Comb. Industrial-Gas	2%
Fuel Comb. Industrial-Other	2%
Other Industrial -Agriculture, Food	0%
Other Industrial -Textiles, Leather	0%
Other Industrial -Wood, Pulp & Paper	3%
Other Industrial -Rubber & Plastic	0%
Other Industrial -Mineral	3%
Other Industrial -Machinery	0%
Other Industrial -Electronic	0%
Other Industrial -Transportation	0%
Other Industrial -Construction	0%
Other Industrial -Miscellaneous	1%
Chemical and Allied Product Manufacturin	4%

Reasonable Progress Analysis

- States consider 4 Statutory Factors to determine what additional controls might be reasonable
 - Costs of Compliance
 - Time to Comply
 - Remaining Useful Life
 - Energy and Other Environmental and Impacts

SC's 4 Factor Analysis

- Evaluate source-specific costs, existing controls, remaining useful life, environmental and energy impacts
- SO₂ Area of Influence
 - Non-EGU sources
 - assume CAIR meets RFP for EGUs
 - Screened non-EGU in Aol for costs of control <\$10,000 but focusing review on <\$3000
 - If costs below threshold \$/ton then will further consider statutory factors

4 Factor Review Controls

- For Utilities and Industrial Boilers
 - Switch to fuel with lower sulfur content
 - Coal or oil
 - Post-combustion controls
 - Flue Gas Desulfurization
 - SO₂ reacts with calcium in sorbent (limestone or lime) in wet scrubber or spray dryer

4 Factor Review (continued)

- Costs of Compliance
 - Fuel switch for coal or oil
 - Price difference for lower S fuel
 - Cost of boiler modifications for lower S fuel
 - <\$1000/ton

4 Factor Review (continued)

- Costs of Compliance

- Flue Gas Desulfurization

- Construction costs: absorber tower, sorbent tanks, waste handling facility
 - Operational and maintenance costs
 - Costs per ton vary with boiler size, type, facility
 - Utility costs range \$1,000 - \$4,000/ton
 - Industrial costs range \$3,000 - \$20,000+/ton

4 Factor Review (continued)

- Time for Compliance
 - 2 years for fuel switching
 - 3+ years for post-combustion control
(dependent on market and availability of labor and materials)
- Remaining Useful Life
 - Facility specific

4 Factor Review (continued)

- Energy and Non-Air Environmental Impacts
 - Lower sulfur fuel may affect boiler operations
 - FGD slightly reduces energy production
 - Increase disposal of sludge, wastewater, ...
 - Increase carbon emissions
 - CO₂ is released as byproduct from CaSO₄ formation
 - burn more coal per unit energy produced

Reasonable Further Progress

- Reviewed cost and control information to determine if controls were reasonable
- At this point no further control measures are anticipated but continuing to evaluate and document control and cost information & other statutory factors
- Consistent with EPA's findings when promulgating the regional haze rule

Preamble to the Regional Haze Rule

“... EPA expects that in the eastern United States the reductions from measures implementing the CAA requirements will provide the visibility improvement and emissions needed for reasonable progress during the 1st Regional Haze SIP...”

State Planning Process

- Consider long term strategy to improve visibility at Cape Romain
- Define reasonable progress by 2018
- Consider SC contribution to visibility at neighboring Class I areas
- Consult with FLMs, EPA, neighboring states
- Complete draft State Implementation Plan
- Hold public hearing
- Submit State Implementation Plan by Dec 2007

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