Preparing Control Case Emission Inventory Projections with EPA's Control Strategy Tool (CoST)

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What is the Goal of this Briefing?

- Share information on:
  - What the Control Stategy Tool (CoST) does
  - How it helps prepare Control Case Projection Emission Inventories

Why are we moving to CoST from AirControlNET?

- Greater flexibility - regarding addition and editing of emissions inventories & control measures
- New software platform - to better respond to changing needs
- More transparency - easier access to underlying data and assumptions

What does CoST do?

- Supports preparation & analysis of future year emission control strategies for point, area, and mobile sources

- Reports co-impacts for other pollutants in addition to target pollutant (currently limited to criteria pollutants)

- Tracks information on control measures, their costs, and the emission sources to which they apply

Note: Engineering costs only, no economic impacts (outputs to EMPAX)

What is the Control Measures Database?

A repository for control measure information

Summary Info – Describes each Control Measure (SCR, LNB, etc)

Control Efficiency & Cost Info – For each Pollutant

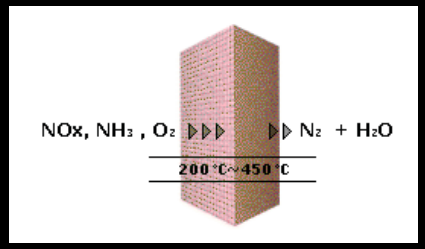
Cost Equations – w/ Capital and O&M inputs

Source Category Codes – Links to the inventory

References

Example Control Measure Application

Industrial Boiler



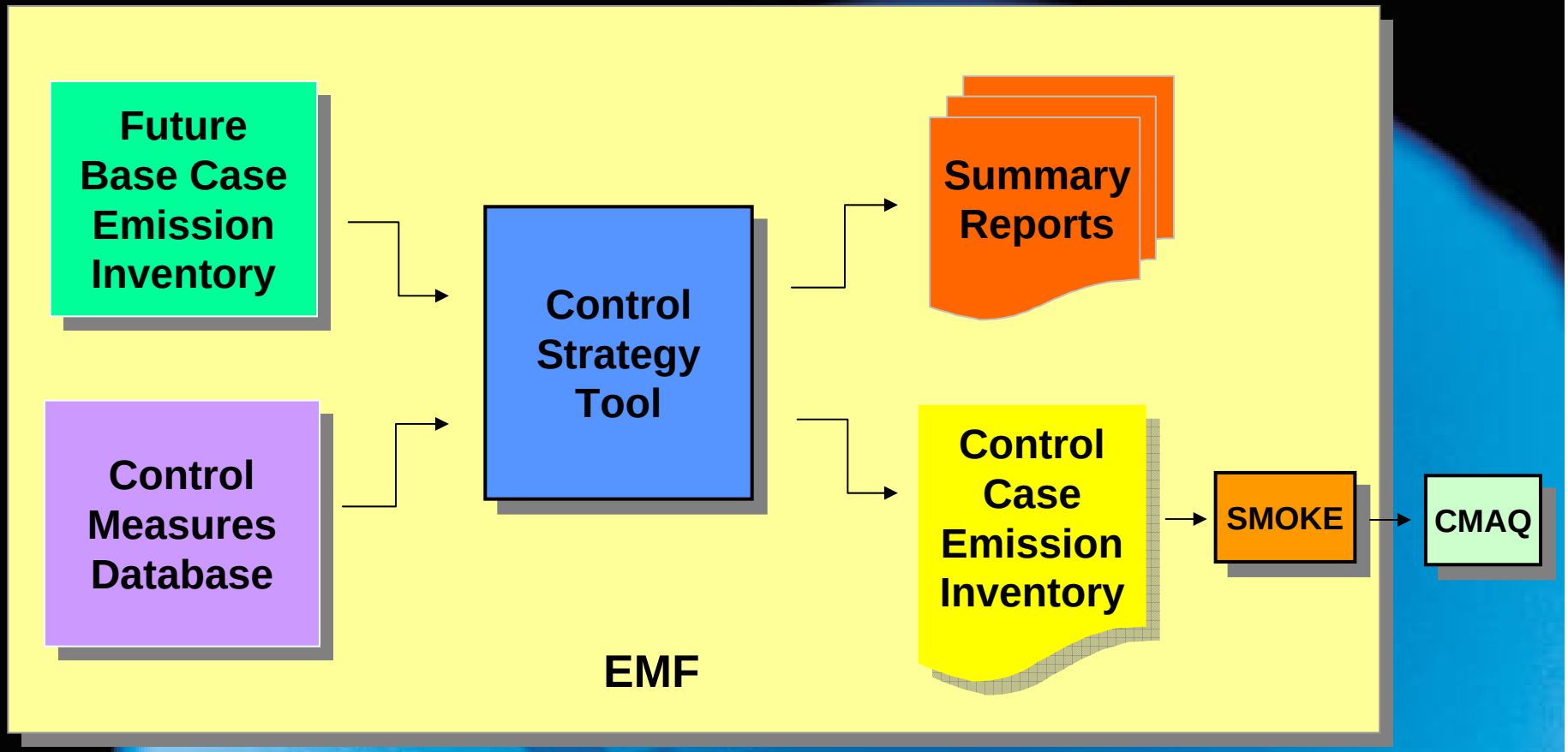
SCR

Plant:	International Paper
Industry:	Pulp & Paper Mill
SCC:	Indust. Boiler - Bit/Subbit Pulv Coal Dry Bottom
Pollutant:	NOx

Control:	Selective Catalytic Redxn
CE:	75%
CPTon:	$1,319

Reduction:	133 tons/yr
Final Emis:	44 tons/yr
Cost:	$175,000

What does CoST do ?



Key Steps for Running a Control Strategy ?

1) Input Basic Parameters (e.g.):
- Type of Analysis
- Cost Year
- Target Pollutant

2) Select Strategy Algorithm (e.g.):
- Max Emissions Reduction
- Least Cost
- Least Cost Curve

3) Select Inventory Dataset(s):
- Sectors (EGUs, point, area, mobile)
- Projection year (2020, 2030)
- Filters for specific SCCs, geographic areas, etc.

4) Select Control Measures:
- Default is to include known measures
- Can select certain technologies

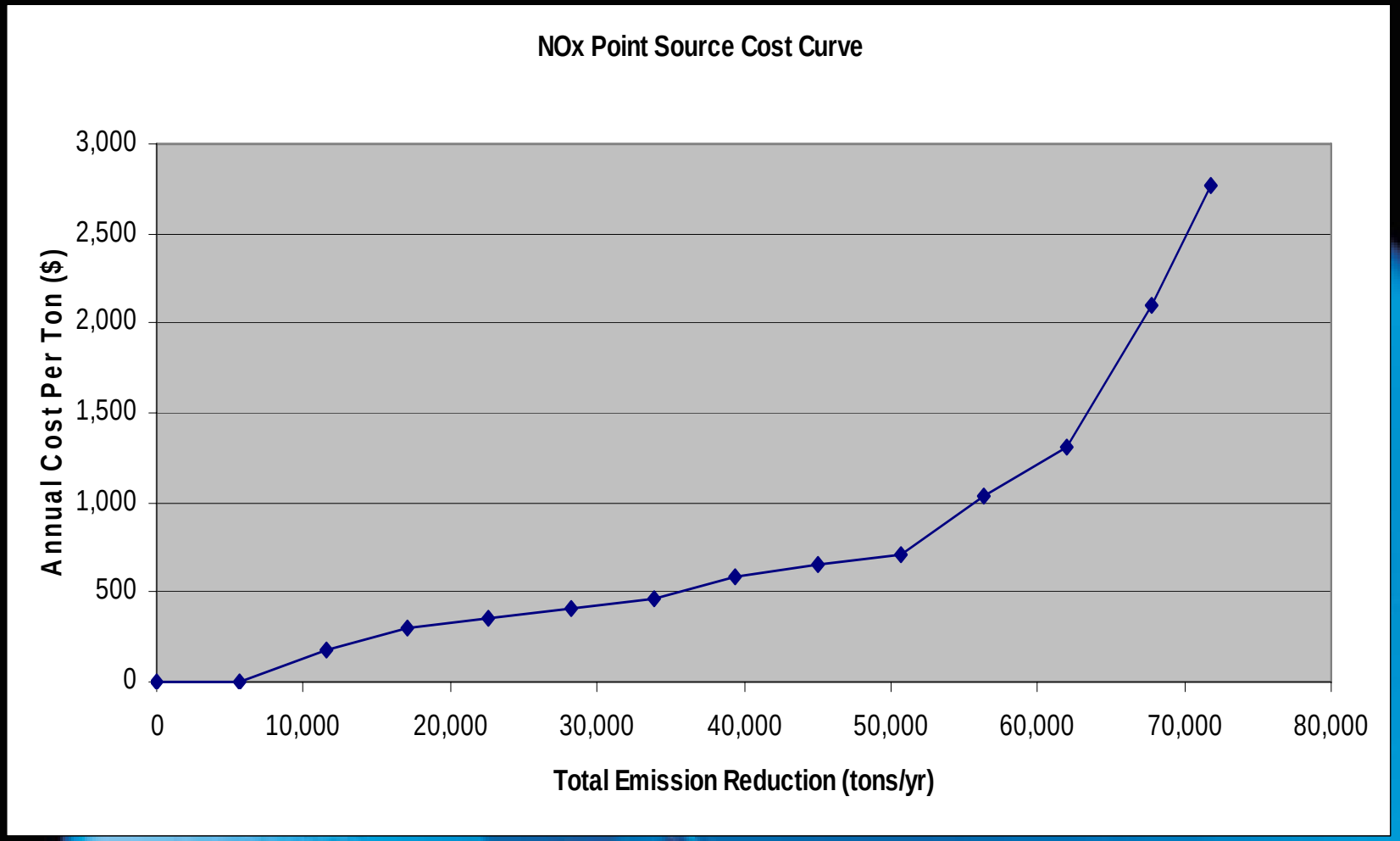
5) Select Constraints (e.g.):
- Max cost/ton controls (e.g., $20K/ton)
- Min emissions size (e.g., 10 tpy)

6) Run Strategy Query

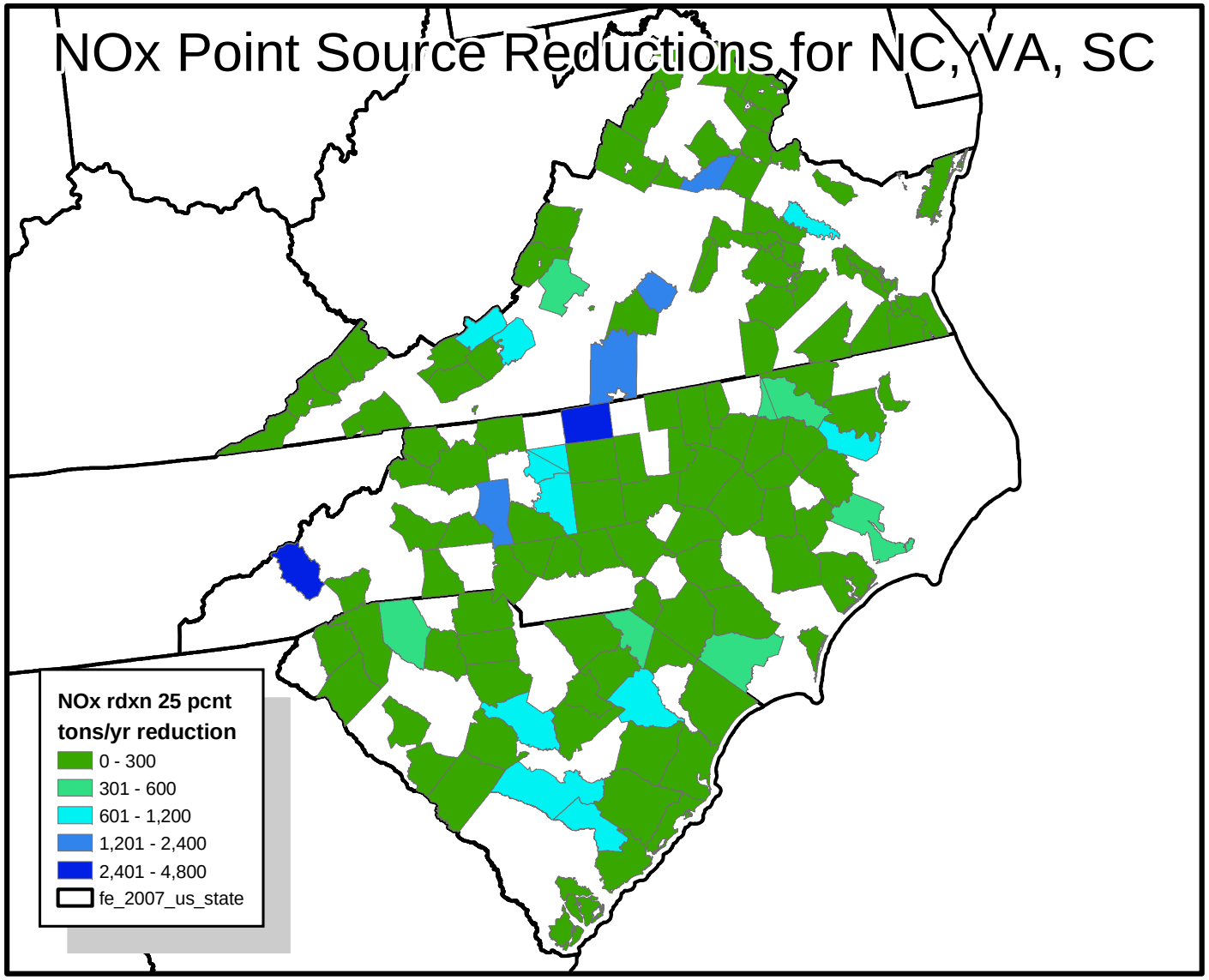
Outputs:

- **Detailed Pairing of Measures to Sources**
- **Summary Files**
- **Control Case Emissions Inventory**

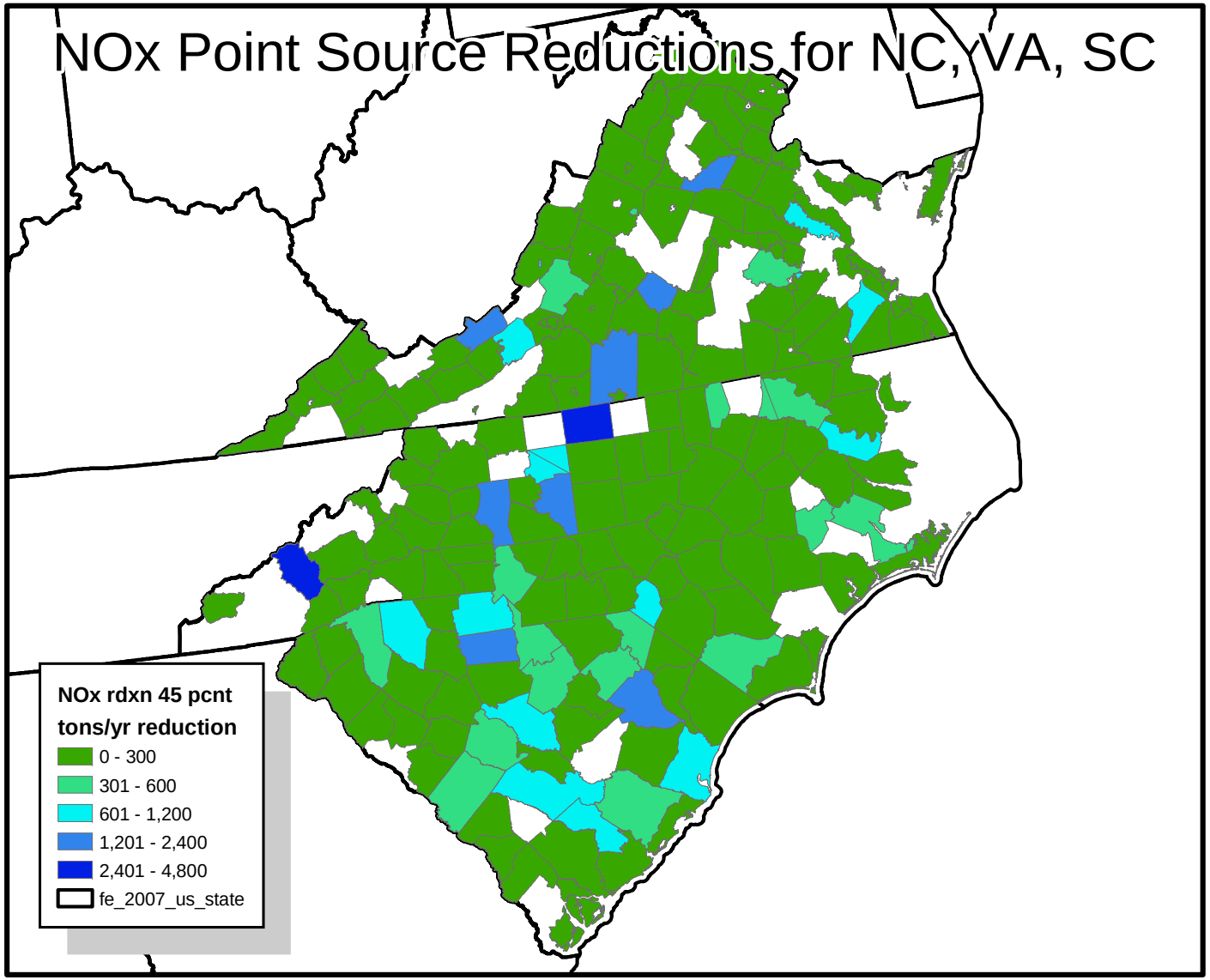
CoST Outputs



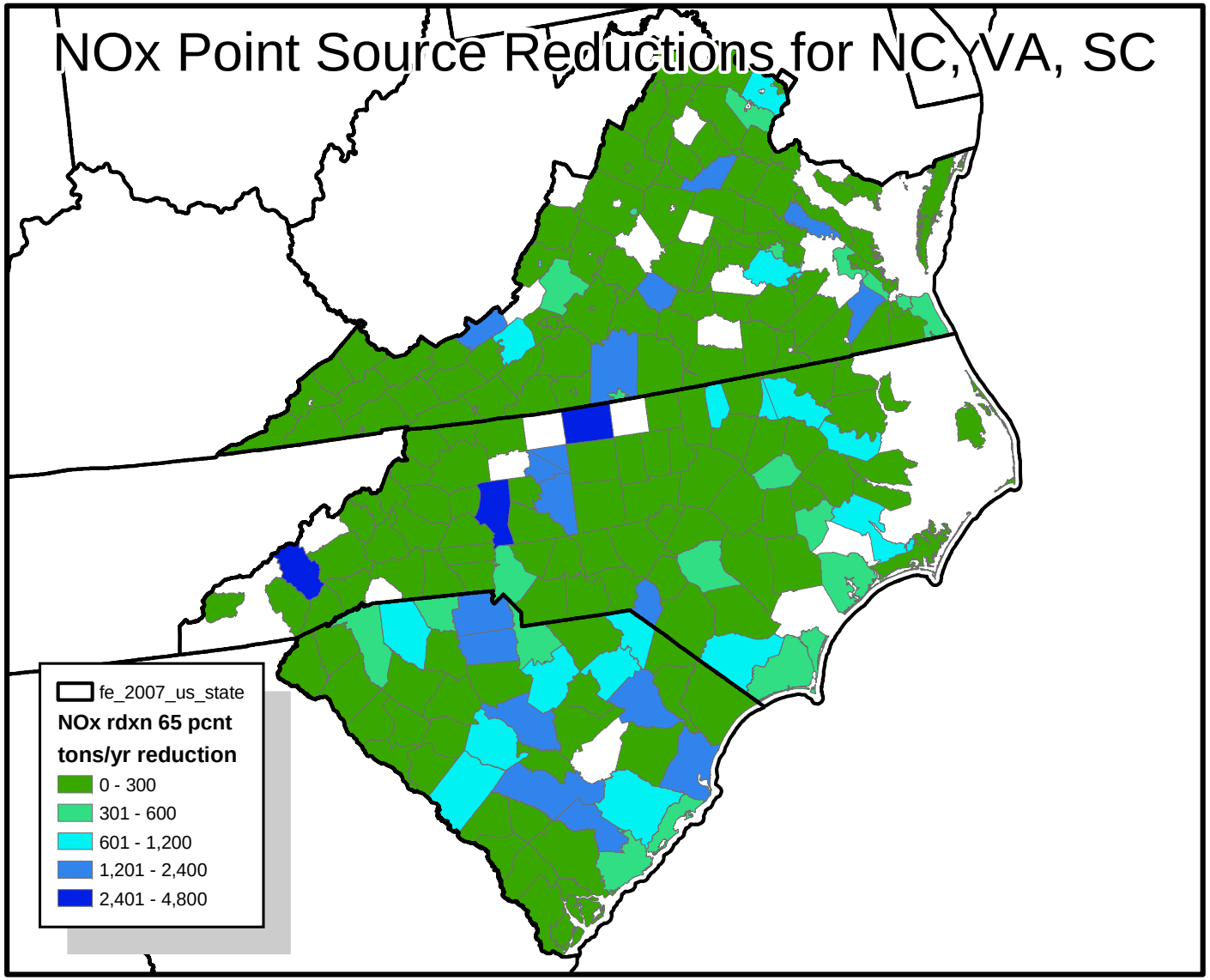
CoST Outputs

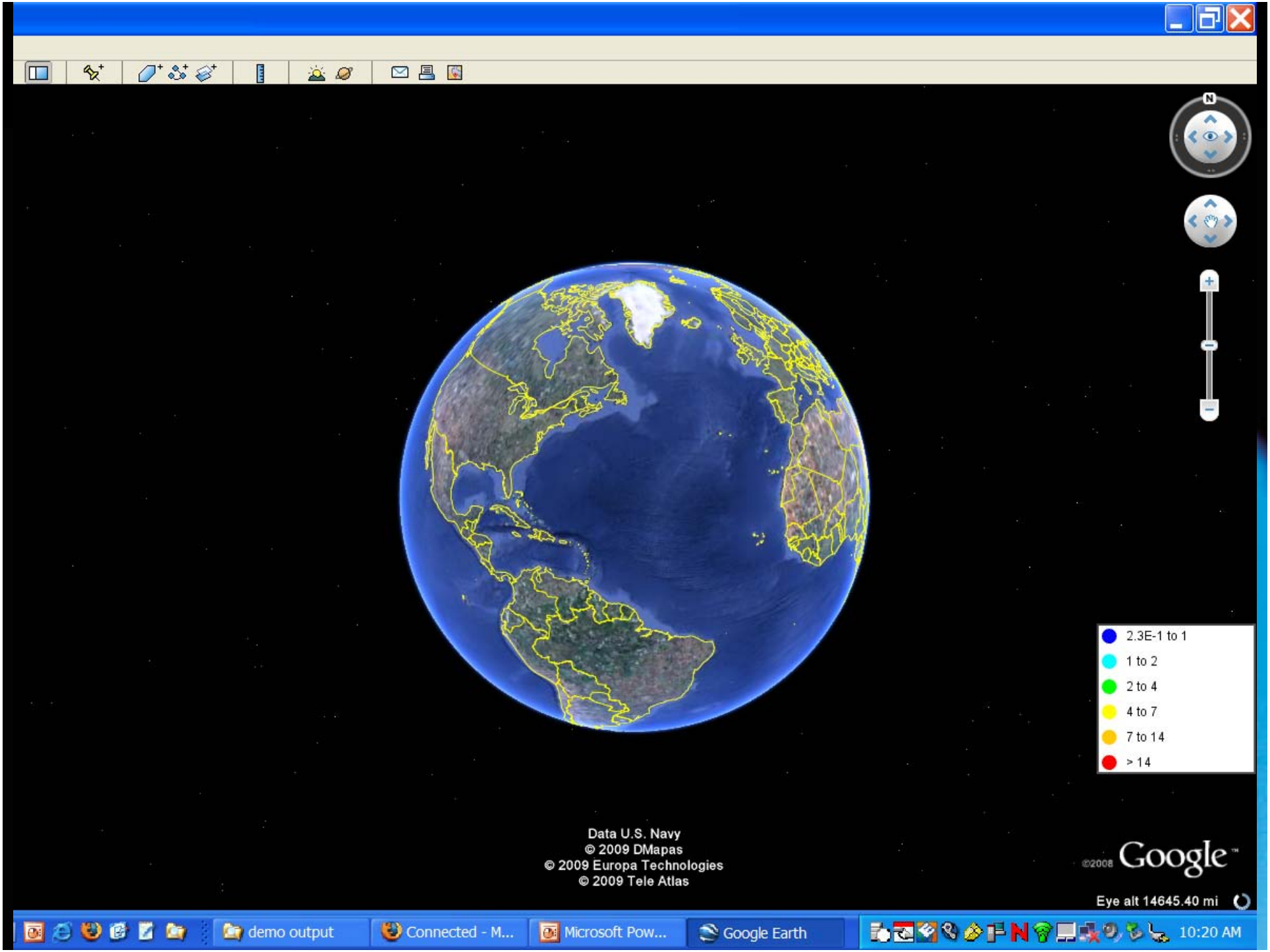


CoST Outputs



CoST Outputs

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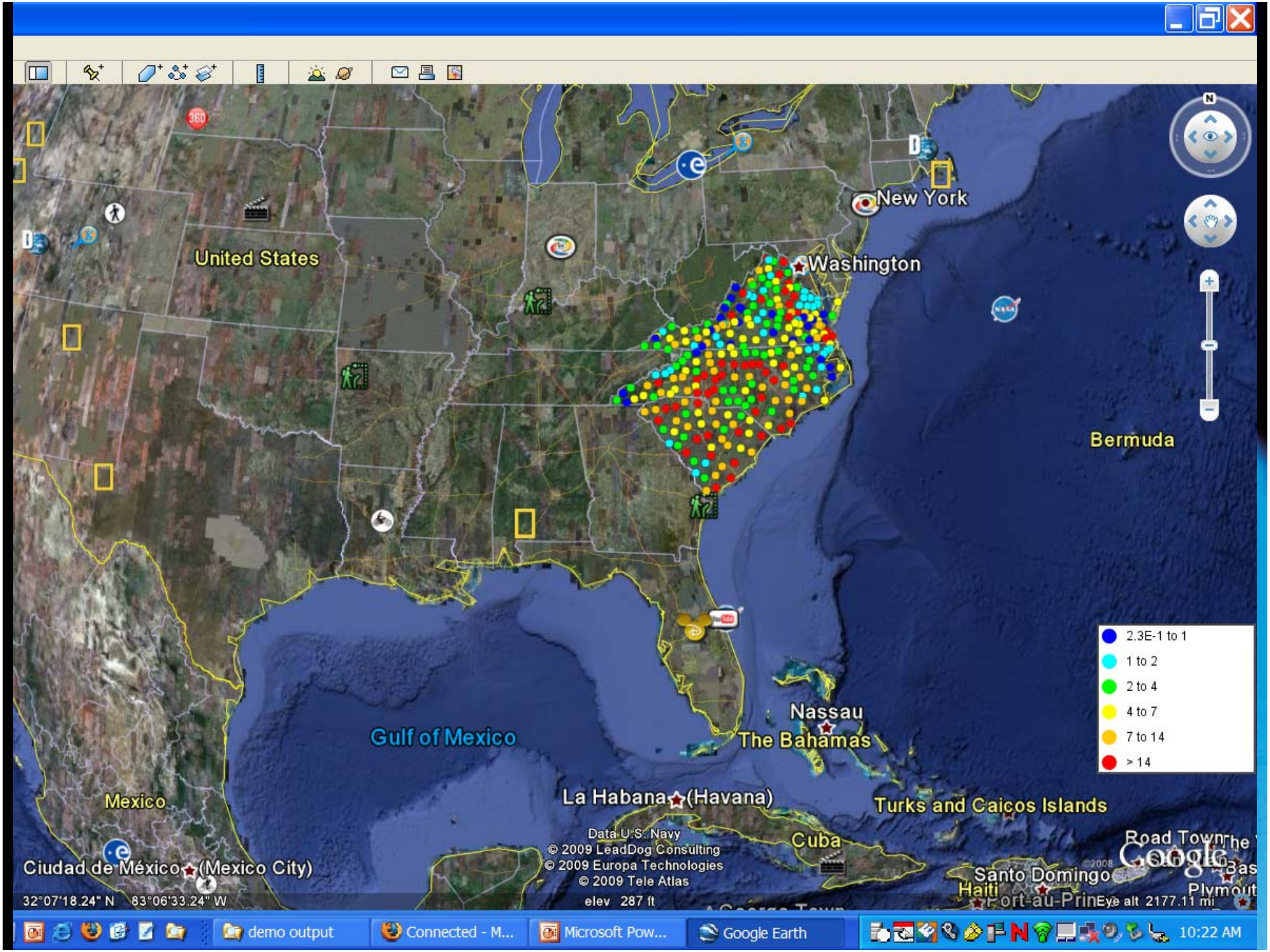
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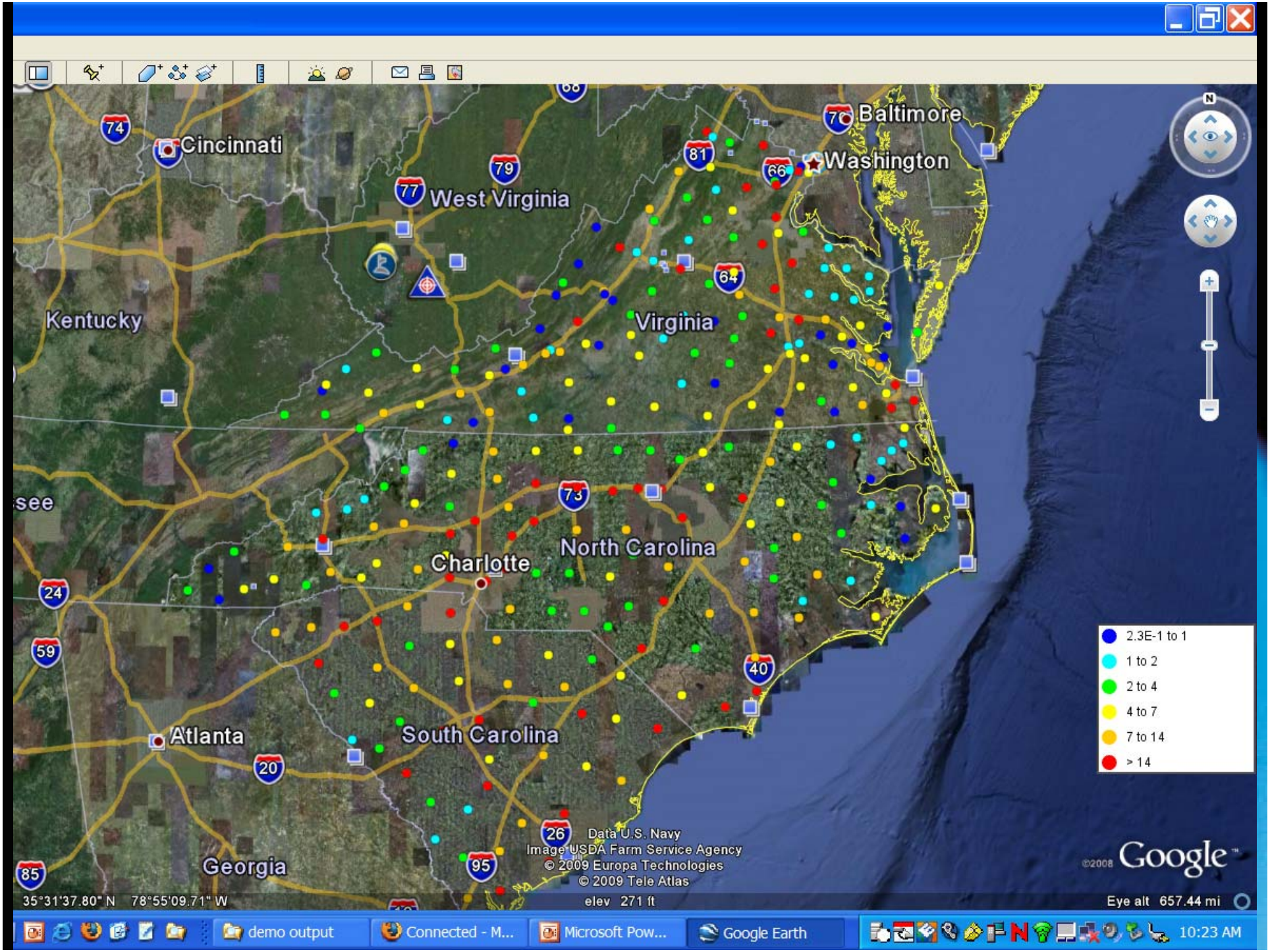
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Image USDA Farm Service Agency
© 2009 Europa Technologies
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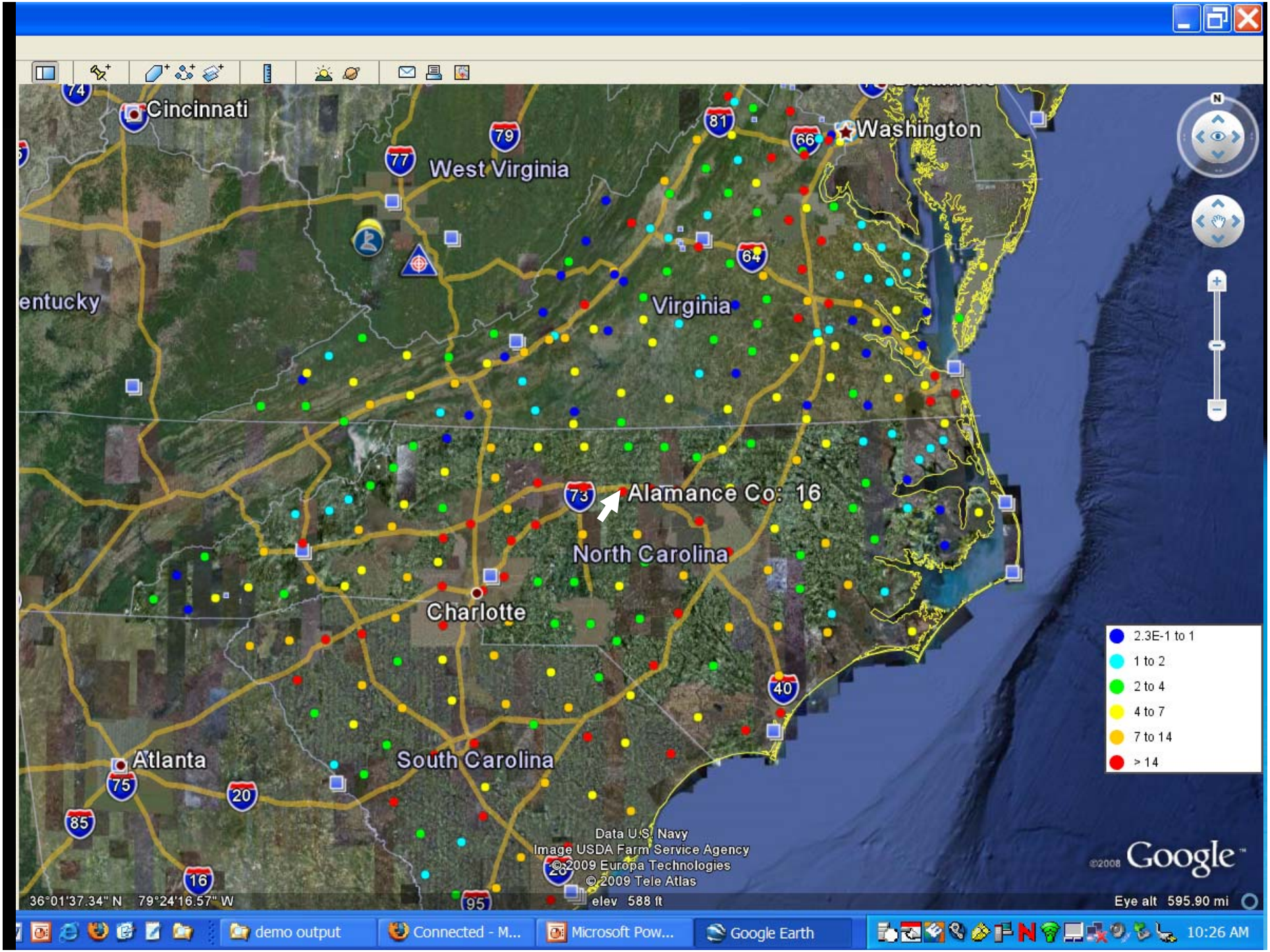
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Data U.S. Navy
Image USDA Farm Service Agency
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demo output
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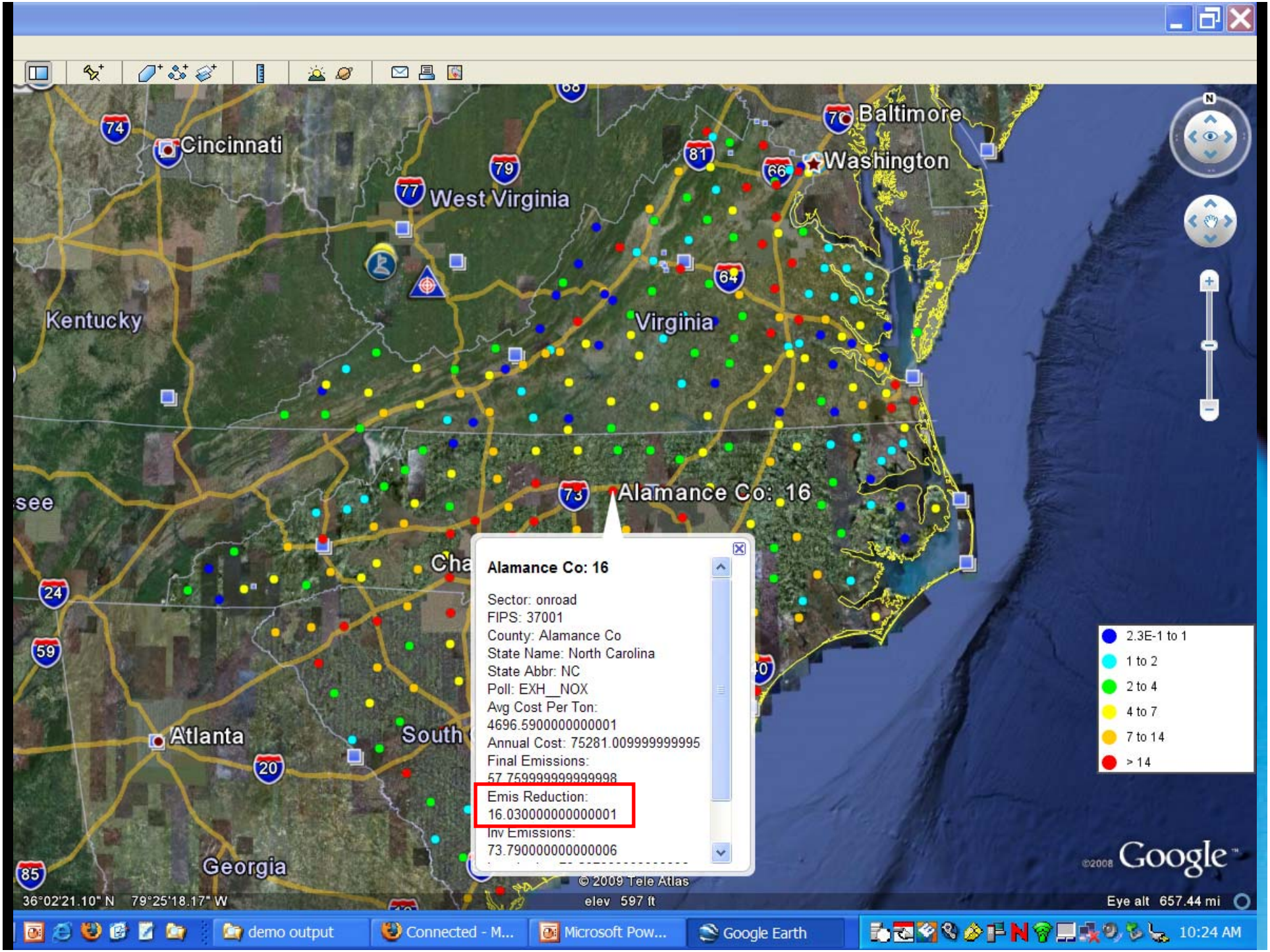
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State Name: North Carolina
State Abbr: NC
Poll: EXH__NOX
Avg Cost Per Ton:
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Annual Cost: 75281.009999999995
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CoST Outputs

Control Technology	Sector	Pollutant	Emission Reductions (tons/yr)	Total Cost ($/yr)	Cost/Ton
Continuous Inspection	Onroad	NOx	1,290	$ -	$ -
Eliminate Long Duration Idling	Onroad	NOx	955	$ -	$ -
Diesel Retrofits	Onroad	NOx	809	$ 2,560,635	$ 3,165
Commuter Programs	Onroad	NOx	805	$ 15,296,977	$ 18,997
NRRetrofit	Nonroad	NOx	330	$ 1,392,596	$ 4,225

Final Output: Control Case Inventory

1) Input Basic Parameters (e.g.):
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2) Select Strategy Algorithm (e.g.):
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Outputs:

Detailed Pairing of Measures to Sources

Summary Files

Control Case Emissions Inventory

Control Case Emission Inventory

Control Case Emissions Inventory

- Complete Emission Inventory, including sources with and without additional controls applied
- ORL Format (One Record per Line) for Input to SMOKE
- Ready to be processed for input to CMAQ Air Quality Model

Contact Information

- Website with description and limited documentation:

  http://www.epa.gov/ttn/ecas/cost.htm

- Project Lead:

David Misenheimer
Air Benefit and Cost Group
HEID/OAQPS/EPA

Currently Available Strategy Analysis Types

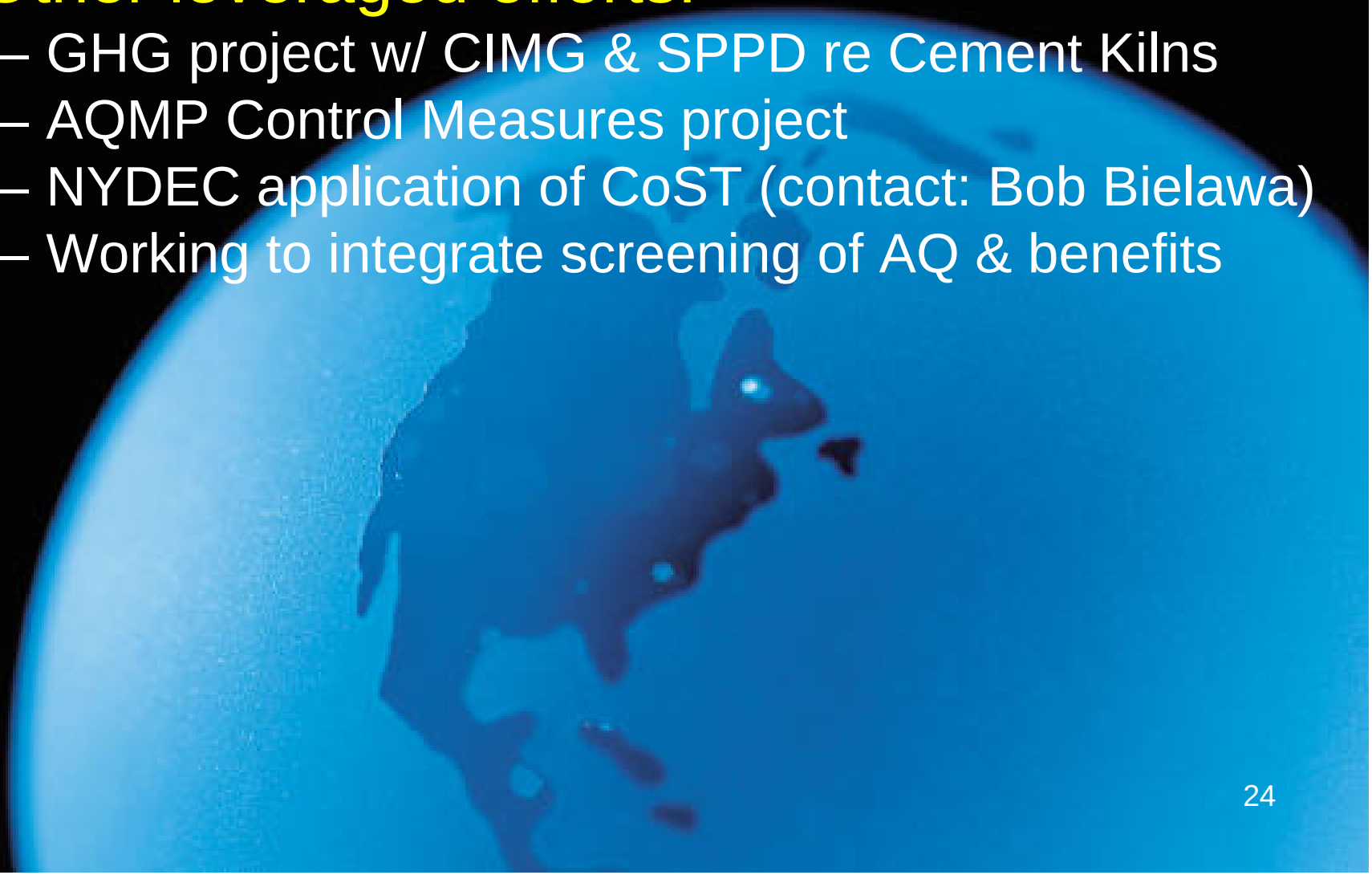
- Maximum Emissions Reduction
  - Determine the most reduction of target pollutant that is possible using the specified measures
- Apply Measures in Series
  - Applies all specified measures in chosen order
- Least Cost (added FY08)
  - Determine the minimum cost way to achieve a specified reduction of the target pollutant
- Least Cost Curve (added FY08)
  - Runs least cost analysis for a series of reductions
- Annotate Inventory (added FY08)
  - Find measures that provide specified efficiencies

What Did We Do in FY08?

- Added:
  - Least Cost Analysis & Least Cost Curve
  - KML outputs for mapping in Google Earth
  - Shapefile outputs for mapping in ArcInfo
  - Started incorporating control programs function for creating future year baseline emission inventories
  - “Annotate Inventory” function for identifying likely existing controls (where limited data exists in the inventory)
  - Incorporated Cost Equations
  - Initiated internal review of Control Measure Database
  - Performed QC by comparing Ozone NAAQS RIA analyses with CoST outputs

What Did We Do in FY08?

- Other leveraged efforts:
  - GHG project w/ CIMG & SPPD re Cement Kilns
  - AQMP Control Measures project
  - NYDEC application of CoST (contact: Bob Bielawa)
  - Working to integrate screening of AQ & benefits



What Do We Need To Do in FY09 and beyond?

- Complete the Software Development
  - Add non-equipment based control strategies (e.g., fuel switching and energy efficiencies)
  - Add ability to optimize control strategies for multiple goals
  - Add versioning and sensitivity analysis support
- Expand Control Measures Database
  - Add information for new control measures and for multiple pollutants (criteria, GHGs, HAPs)

What Do We Need To Do in FY09 and beyond (continued)?

- Other Tasks
  - Documentation
  - Peer review
  - Support for external users
  - Sector-specific support