



Congressional Research Service

Assisting the Congress with its deliberations and legislative decisions

Three GIS Case Studies

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CRS in Brief

CRS serves the Congress throughout the legislative process by providing comprehensive and reliable legislative research and analysis that are timely, objective, authoritative and confidential, thereby contributing to an informed national legislature.



Importance of Accuracy

"...lives are at stake if errors of judgment occur or if data and analysis do not accurately predict actual outcomes."

Daniel P. Mulhollan
CRS Director
Annual Address, 2009



Sources and Collaboration

For GIS data, CRS relies on the collections of

- Geography & Map Division of the Library of Congress
- Federal agencies
- State and local data managers
- Non-governmental organizations
- Commercial data providers



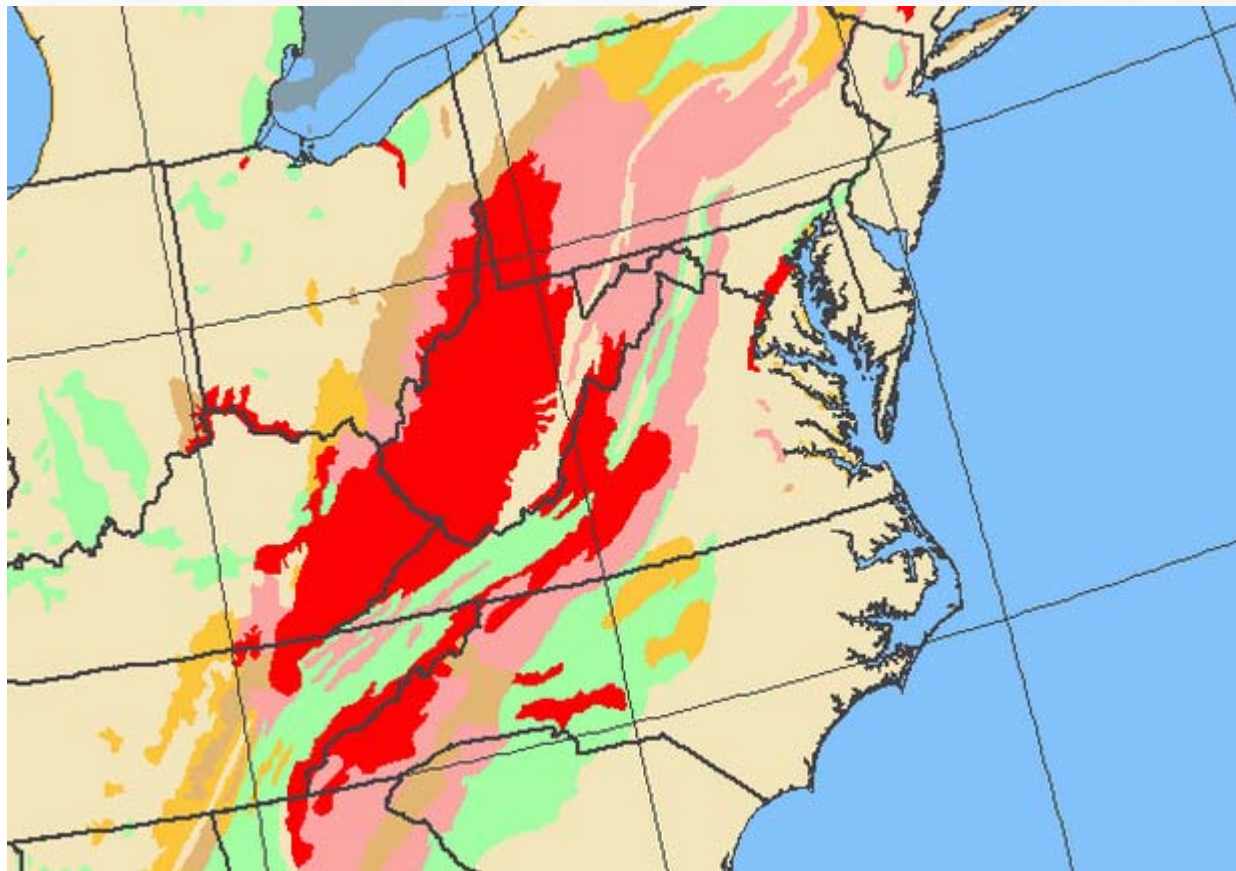
GIS in Public Policy – Three Cases

Because of our commitment to maintaining confidentiality, each case has been altered to protect the identity of the requestor

- Creating geospatial data from legislation
- Analyzing relationship between poverty and carbon emissions controls
- Exploring policy issues related to California water management



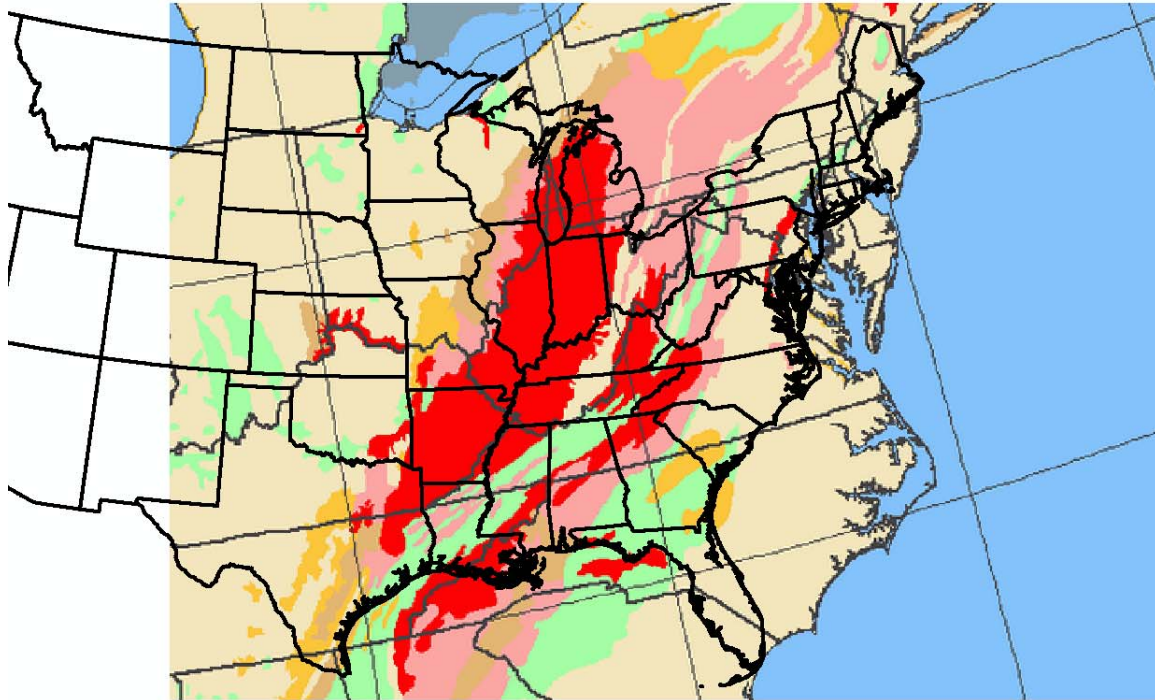
Creating Geospatial Data From Legislation



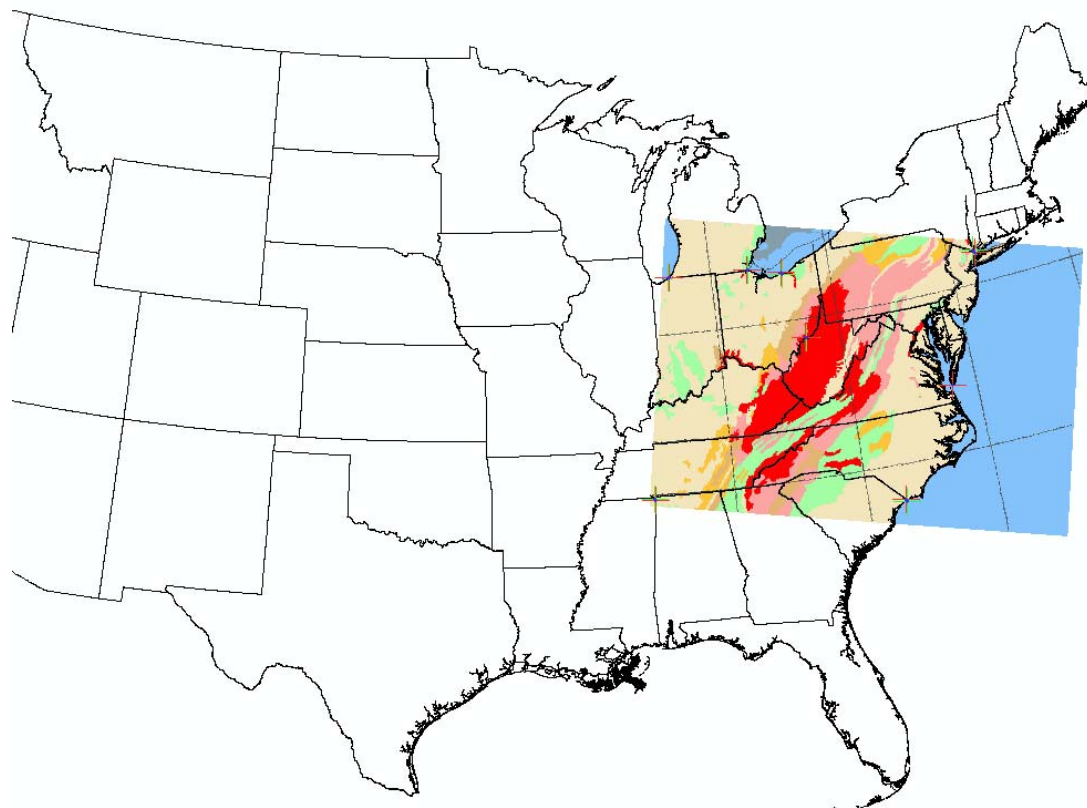
Extraction



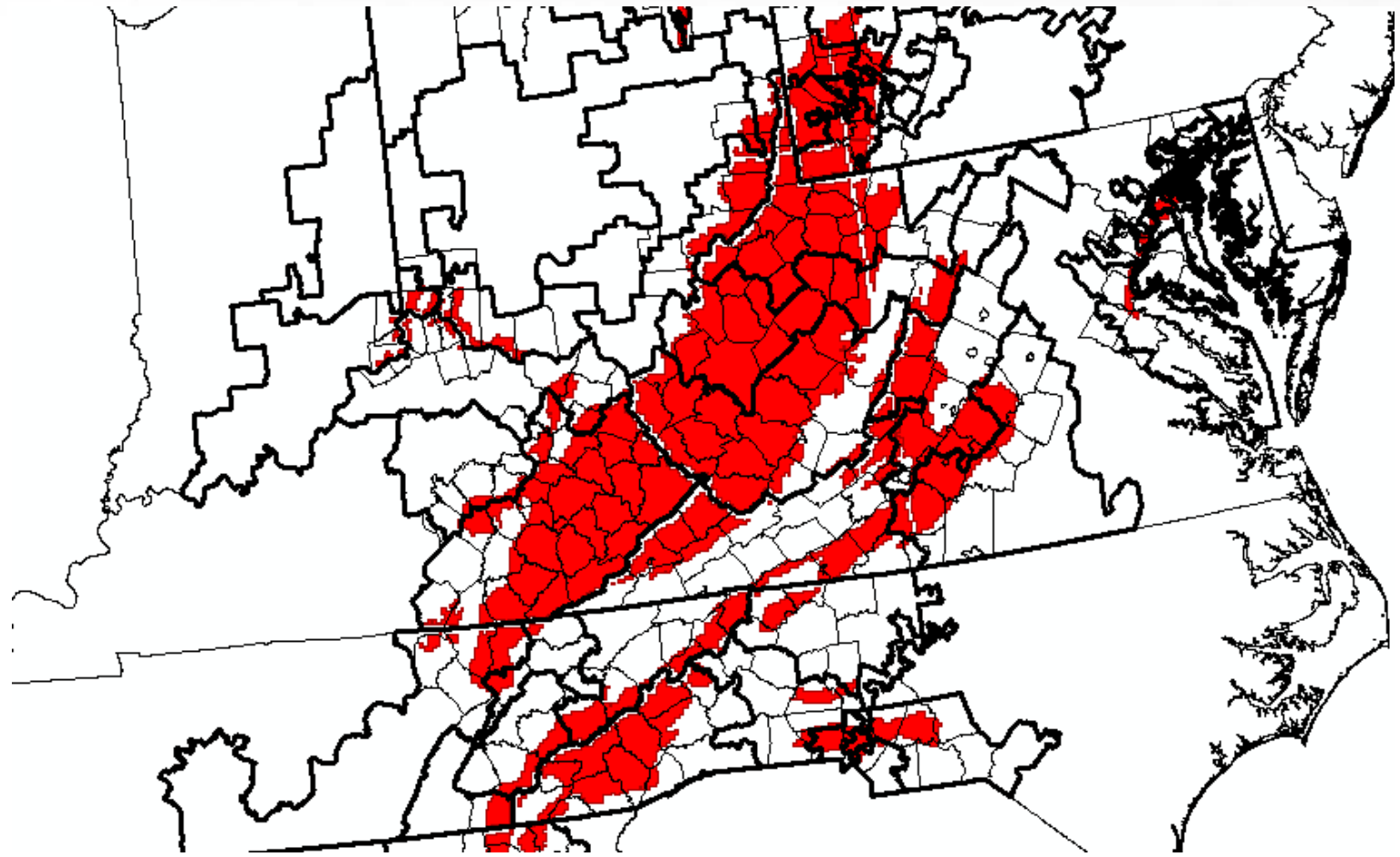
Overlay



Georectify



New GIS Data From Legislation



Analyzing Relationship Between Poverty and Carbon Emissions Controls

Questions

- Ranked by carbon intensity, **where** is electricity generated
- Ranked by quality of home insulation, **where** do Low-Income Home Energy Assistance Program (LIHEAP) recipients live
- Ranked by type of home heating source, what is the necessary LIHEAP adjustment for a given carbon tax
- Can carbon tax impacts for LIHEAP recipients be cost-effectively offset by home insulation subsidies



Population-dependent Data Masking

The Challenge

- The US Census Public Use Microdata Sample (PUMS) includes geographies called Public Use Microdata Areas (PUMAs) with a minimum threshold population of 100,000
- In less densely populated areas, geographic data of this geographic granularity doesn't support relating people to place because one can impute private information



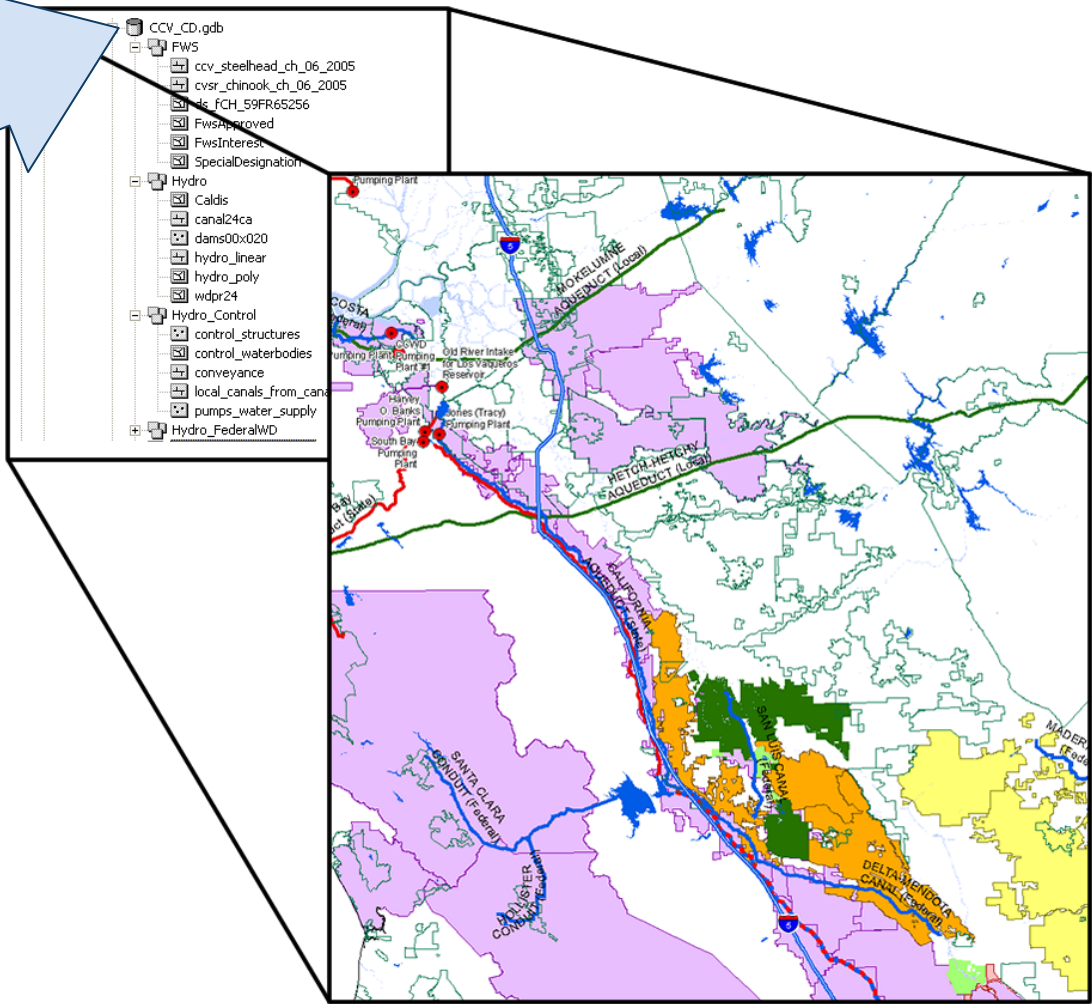
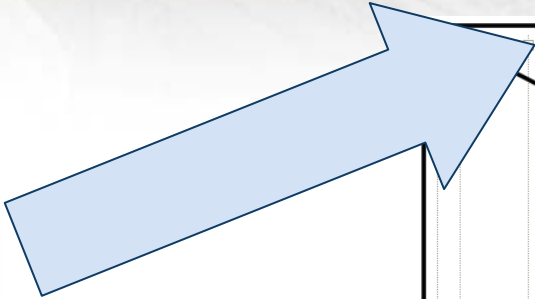
California Water Management

Relate data from municipal, state and federal sources for long-term water supply analysis including

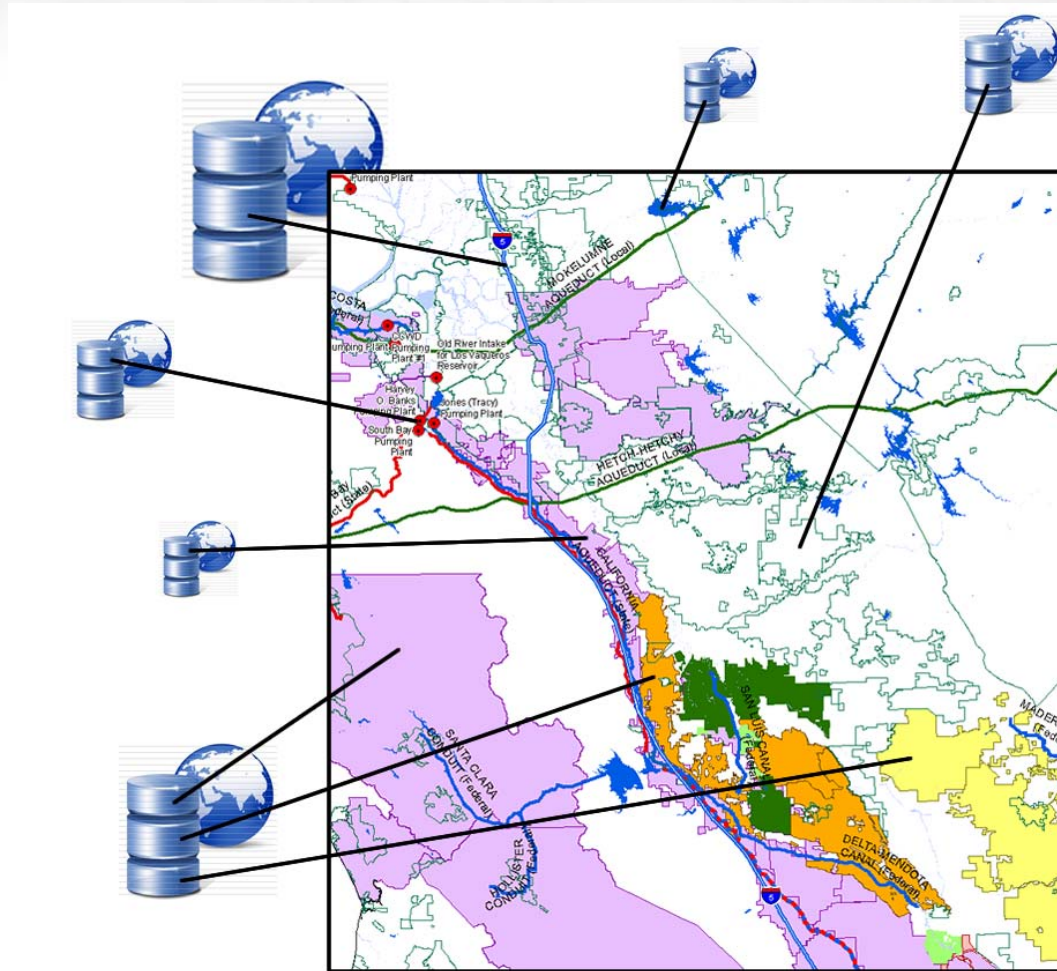
- Regulatory
- Climatological
- Ecological
- Economic
- Demographic
- Creating the water analysis nexus of databases
 - Take database snapshots
OR
 - Make dynamic database connections
Choice contingent on trust



Data Custody Versus Data Connection



Data Custody Versus Data Connection



Conclusions

- Legislation contains geographic terms that may be used to create geospatial data
- Congress's analytical needs require granular data which may conflict with survey privacy
- Relying on data connections for public policy analysis requires trusted repositories
- End users of GIS data like CRS want to be part of initial preservation planning

