

# Regional Economic Modeling: Some (Maybe Not So) Big Ideas

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# Data Development

- Open-source regional social accounting matrices organized by state. Data at finer scales are proprietary and prohibitively expensive
- Goal: spatial disaggregation to county aggregates. How do we prepare?
  - What regions to prioritize for test cases?
  - What economic sectors are most important?
  - What are useful sub-state geographic disaggregations that balance detail, computational tractability and fidelity?
- Interfaces: what linkages need to be established between economic and biophysical accounts to model shocks/facilitate coupling?
  - These depend on the characteristics of IAV/natural science process simulation models. Can these be reasonably anticipated?



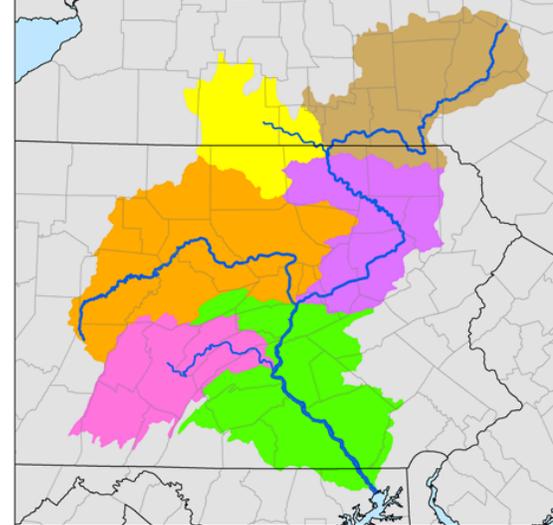
## GETTING STARTED

### Utilities and Dataset Description

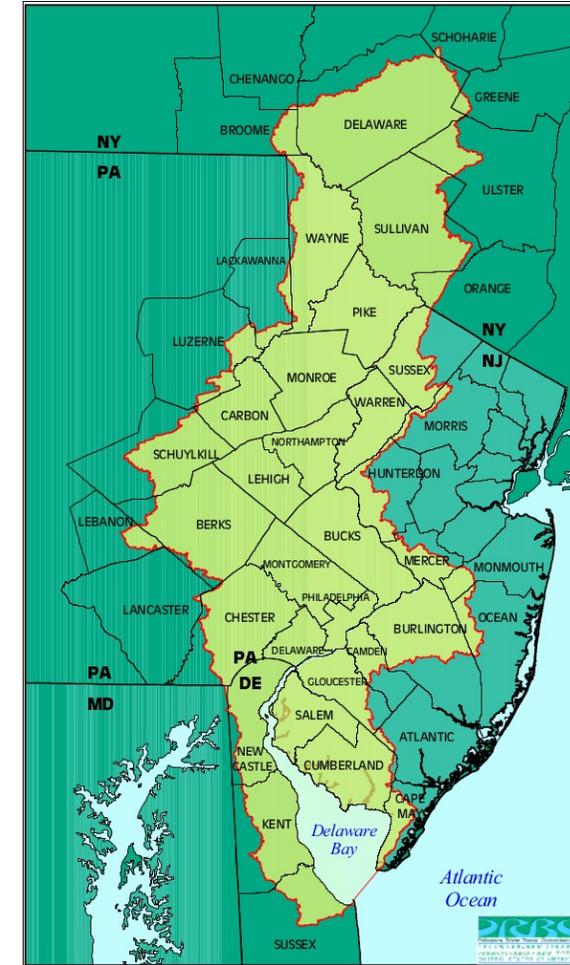
The WiNDC build routine is a collection of GAMS programs for producing sub-national economic accounts for input-output or computable general equilibrium model of the United States economy. All code and data necessary for producing subnational accounts are provided in this repository. Currently, the routine can produce state level

We begin with the national [input-output table](#) of the Bureau of Economic Analysis and downscale to the regional level using publicly available economic statistics from governmental agencies. We use additional data from the BEA on regional [GDP](#) and [consumer expenditures](#) and data from the Census Bureau on [foreign trade](#) and [state government expenditures](#). For illustrative purposes, we show how to complement the core input-output tables with physical energy quantities and

List of counties in the Susquehanna River watershed



### Counties within the Delaware River Basin



# Equilibrium vs Disequilibrium Approaches

- Temporal disaggregation: Alfred Marshal's "short period" (~6 months): shocks and agent decisions vs. price adjustments and market clearing
- Equilibrium
  - What is the best way to build on experience in PCHES to estimate and specify location choice models, and then integrate them in ICGE models?
  - How can new data be brought to bear in this process to simulate long-run state-level growth/structural change?
- Disequilibrium
  - A different type of modeling may be required to investigate short run consequences of localized shocks at sub-state scales (e.g., population displacement/return due to extreme events, population/industry attraction due to short term resource booms)
  - Key question is hysteresis: how long a shadow is cast by "large" disequilibrating events, and what is the ultimate impact on regional economic evolution?



# Bridging Scales

- Extensive experience downscaling outputs of global/national models (e.g., GCAM) to sub-national geographic scales.
- Caveat is unidirectional nature of information flow. Are there feedbacks? How do we think about them?
- Urban areas generally contain bulk of population/economic output within a state. To what extent do urban dynamics (e.g., agglomeration, congestion, sprawl) influence both the long-run economic development of their surrounding hinterlands, and in turn the equilibria being computed by coarser-scale models such as ICGEs?
- What are mechanisms and consequences of the transmission of business interruption impacts of localized extreme events to the broader national economy? How are these modulated by long-run evolution of sub-state scale infrastructure development/population distribution?