The Impact of “Green” Energy Development on Rural Community Sustainability

Setting the Stage:

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Regional proliferation of new energy initiatives?

- Carbon sequestration through reforestation
- Biofuels
  - Short rotation agriculture
  - Woody biomass
- Geothermal
- Wind power development
- Natural gas
Impacts Poorly understood…

- Research Gaps
  - Neglect of socio-economic impacts to rural communities
  - Neglect of coupled-systems frameworks and secondary effects (feedback loops)
  - Neglect of comparative analyses
  - Neglect of long term impact monitoring
  - Neglect of cumulative impacts

- Research HAS:
  - utilized case-by-case analysis—single set of impacts of single energy initiative in single place
Three Types of Effects

- **Direct effects**, which are caused by the action and occur at the same time and place;
Three Types of Effects

- **Indirect effects**, which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable.
Three Types of Effects

- "Cumulative impacts, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions."

- "individually minor by collectively significant actions"… (NEPA 1979)

- Often entail complex systems and uncertainty, resulting in ‘surprises’
Why here?
Allegheny Plateau as laboratory?

- All the forms of energy development present
- High quality environment
  - surface and groundwater resources
  - agricultural land
  - high value hardwood forests
  - Tourism draws, including abundant public land
- Persistent rural poverty, outmigration, unemployment: attractive development options
Complex systems demand multi-disciplinary teams.
Enter the Cornell Center for a Sustainable Future (CCSF)

- Convene a working group:
  - Multi-disciplinary:
  - Multiple locations

- Initiate literature review

- Create a matrix of energy + community attribute interactions: use to develop impact scenarios

- Begin to assemble a composite data set on key development, ecological, and socio-economic variables
What have we done...

- Assembled working groups:
  - Cornell and Penn State

- Created a matrix of impacts (Jacquet, next)

- Initiated research, teaching, and outreach (Marcellus shale work is ‘out in front’)
  - Cornell Ag. Experiment Station
  - Penn State College of Ag. Sciences
Research, Teaching, and Outreach

- **Research:**
  - Landowner interviews, survey research in NY and PA (perceived risks and benefits, willingness to lease)
  - Separate study on formation of landowner coalitions

- **Teaching:**
  - CRP (Susan Christopherson) renewable energy industry analysis

- **Outreach**
  - Numerous CCE events: “roadshows”, statewide summit on Marcellus shale
  - Web-based outreach: gasleasing.cce.cornell.edu