Show me: Engaging citizens in planning for shale gas development

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Penn State University

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WARNING
Do not lease your gas & oil rights to a SL EAZY Co. called Pennview Exploration Inc.

Brad Little, owner
175 McKnight Road
Blairsville
Owner Brad Little is CHEEZY
Land manager Marvin D. Hogue, WILL LIE TO YOUR FACE
Sullivan County, Pennsylvania

- 6,428 people, 15/square mile
- Projected gas wells in Sullivan County—6,000
- Lifetime estimated royalty per well—$1.6m
- $1.6m x 6,000/6428 = $1.5m/person

Pennsylvania population density

Gas activity and income projections: marcellusgas.org
“Mr. Penn State LANDSCAPE ARCHITECT - how are you qualified to address forest sustainability issues?”

“What (are you) going to do for Jenny Skinner? What are (you) prepared to do to fix the muddy brown strip [that's] the telltale sign of a buried pipeline right through her land?”
What should we do for Jenny?

• Does she know as much as she needs to about her current situation?
• How does she describe her concerns in ways that ensure they are heard?
• Does she know what options she has for the future?
• How does Jenny decide what she wants her future to be like?
• Does she feel motivated and empowered to influence plans and decision-making?
The technical problem

- Too much new information
- Too many moving parts
- Too many options to consider

The people problem

- Regular people...
  - Making choices about complex issues in the face of big industry
  - Needing to believe that solutions are possible
  - Being informed and empowered to seek help in finding solutions
What **should** we do for Jenny?

- Does she know as much as she needs to about her current situation? *Show existing conditions*
- How does she describe her concerns in ways that ensure they are heard? *Illuminate likely impacts*
- Does she know what options she has for the future? *Provide insights into the possible*
- How does Jenny decide what she wants her future to be like? *Examine and test the options*
- Does she feel motivated and empowered to influence plans and decision-making? *Provide a compelling and jointly-held vision of the future*
The role of visualization

- **Show** the landscape context in which people live and discuss its current condition
- **Illuminate** the likely outcome of changes that are anticipated
- **Provide insights** into the options and possibilities facing the landscape and its decision-makers
- **Examine and evaluate** alternate design and planning ideas
- **Envision** the future that motivates citizens to act
How geology shapes gas development

- Drilling units are created to maximize production
  - Predict and show how and where impacts occur
How gas infrastructure shapes the land

• Locate pipelines and well pads to minimize cost
  – *Show* how choice of placement affects landscape
Well location dictates pipeline routing

- Pipelines connect well pads to markets
  - Illuminate where pipelines will likely have to go

Demonstrate shortest pipeline routing avoiding wetlands
Pipelines affect more area than well pads

- Forest cover is impacted by linear right-of-ways
  - *Illuminate* projected changes in visual quality rating

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**Regression model projects visual quality implications of land use change**

Geodesign analysis and images: Michelle Zucker, Brianna Hammond
Evaluate pipeline locations and impacts

- Different location strategies, different outcomes
  
  - **Examine** the implications of routings

<table>
<thead>
<tr>
<th>Location Strategy</th>
<th>Stream Crossings</th>
<th>Homes Displaced</th>
<th>Wetlands Impacted</th>
<th>Properties Impacted</th>
<th>Miles per Well</th>
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<td>Shortest-distance</td>
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Geodesign analysis and images: Megan Prikockis, Danielle Sette
Evaluate stormwater management

- Downstream impacts of land cover change
  - Examine implications for flood-prone communities

Montoursville, PA
Tropical Storm Lee, Fall 2011

Reduced land cover, full gas build-out
Pipeline corridor BMP mitigation

TR-55 projections

Geodesign analysis and images: Emily Carlson, Elliott Shibley
Pipeline corridors vs. natural resources

- Landscape change brings costs and benefits
  - Interactive tools provide insights into trade-offs
Design for resource conservation

- Reduce new openings for roadways, pipelines
  - Provide insights regarding improved practices

Interrupts core habitat, creates pathway for invasive species

Diminishes core habitat and reduces scenic amenity

Interrupts water access and shade, threatens water quality

Minimizes access roads, avoids bisecting core habitat

Consolidate activities to minimize disturbed edges

Maintains core and shaded silt-free streamside habitat.

Images: Nick Monroe
Visualize shared understandings

• Communicate sprawl vs. controlled development
  – Envision shared community goals
Visualize new opportunities

• Freedom from following old patterns
  – **Envision** new livelihoods and lifestyles

Land suitability for wind, solar, biomass—and return on investment
1. **Show** the existing situation,
2. **Illuminate** the changes that are anticipated,
3. **Provide insights** into alternative ways to address the changes facing the community,
4. **Examine and evaluate** the options and any trade-offs that need to be considered,
5. **Envision** a future shaped by informed community values, and...

6. Start designing and planning to achieve those visions.

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