



Center for Advanced
Energy Studies

*A research
partnership between
Boise State University,
Idaho National
Laboratory, Idaho
State University and
University of Idaho.*

Center for Advanced Energy Studies

Transmission Siting and Options for Improvement: Incorporating GIS Tools and Social Risk

*David Solan, Center for Advanced Energy Studies'
Energy Policy Institute – NW Wind and Wildlife
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dauidsolan@boisestate.edu

<http://epi.boisestate.edu/>

(208) 426-4845



Drivers for the “Transmission Imperative”

- Upgrading the system and new construction
 - Edison Foundation \$298 billion by 2030
 - NERC – 11,000 miles must be built for reliability in the next 10 years, mostly for renewables
- Bringing new generation sources to load
 - State Renewable Portfolio Standards - WECC
 - Regional planning for renewables
 - Federal incentives and stimulus funds

Terrible Trio for Transmission Siting

- Public Opposition
- Cost Allocation
- Interconnection Animus - You want us to serve out-of-state customers?!
 - Krapels (2009)

Gordian Knot Solutions(?)



- Federal preemption or aggressive backstopping through FERC
 - *Piedmont Environmental Council v. FERC*
 - NIETC setbacks for DOE

Old and New Federal Legislative Toolbox



Pragmatic and Process Approaches

- Improvements *within* the existing siting system
- Requires improvements by each level of government, developers, and public stakeholders
 - Best practices
 - Regional planning
 - Better stakeholder engagement practices
 - Opportunities for streamlining and coordination
 - Incorporating decision support tools

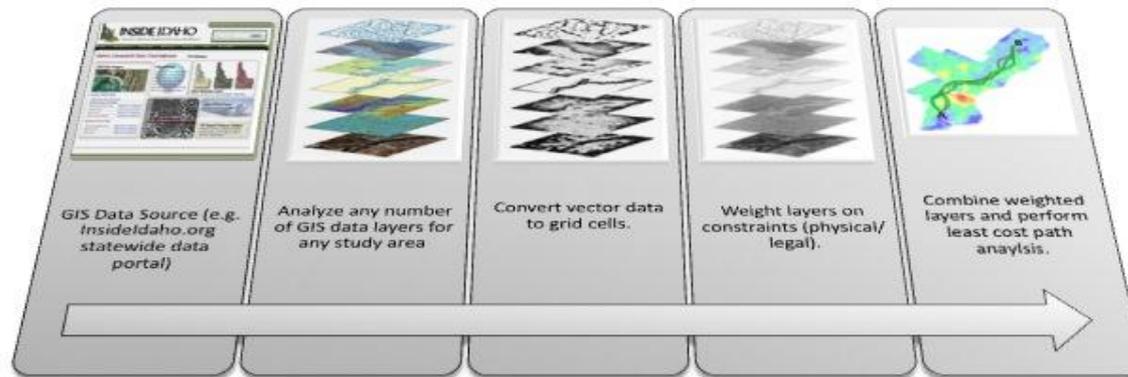
Need for Tool

- What is it for?
 - Delays are frequent issues with proposed projects –costs \$\$ and government time
 - Common problems – Affected parties perceive they were not consulted or informed, or opted not to provide input because the original options did not affect them
 - Provides a “check” on traditional methods (expert/consultant weighting) and managerial decision making – the tool does not replace the decision process
- Who may use it?
 - Developers, government, interested stakeholders
 - Open source, online forum and user groups through LineSiter

Transmission Siting Decision Support Tools

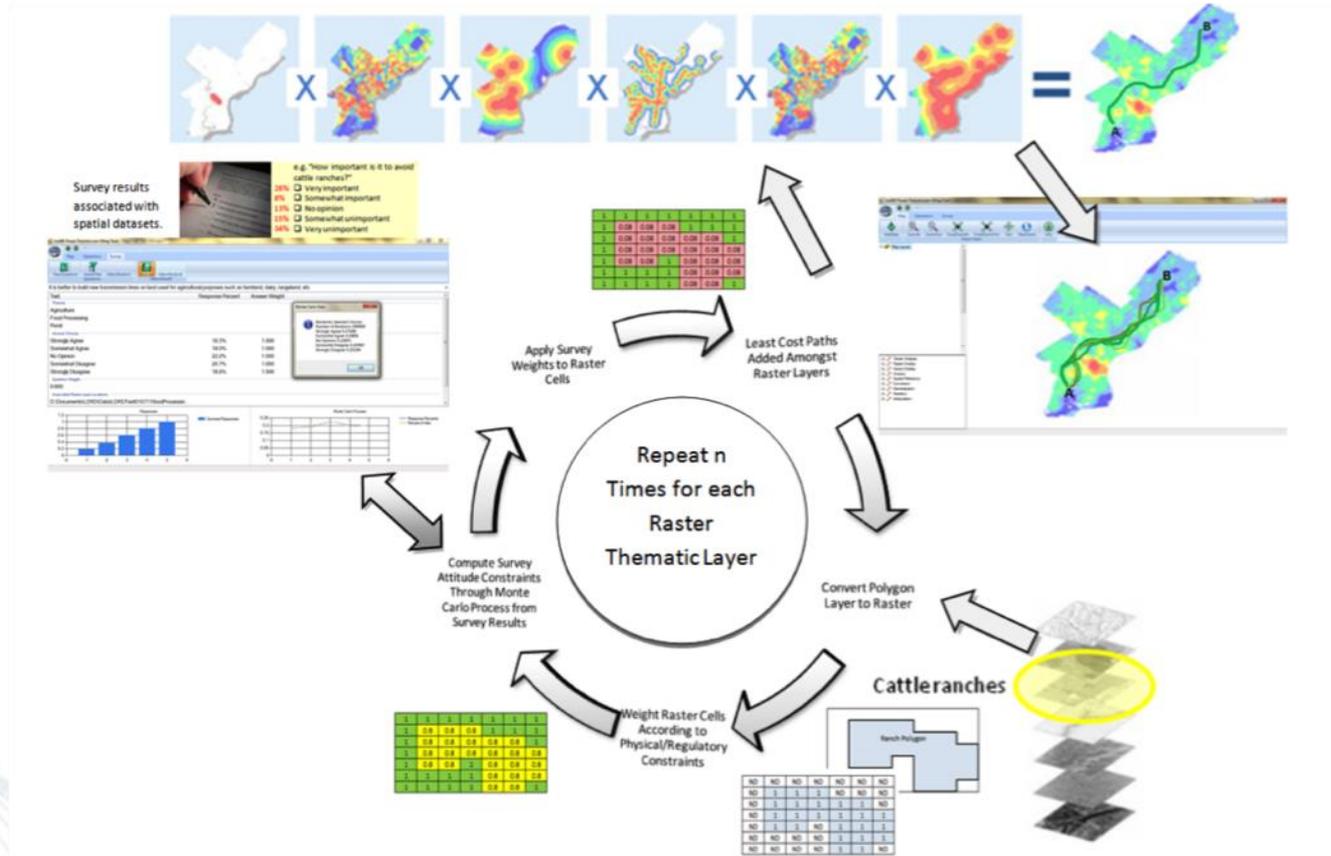
- No one tool is a perfect “black box” solution – requires a toolbox
 - A number of GIS tools exist but many focus on “no go” areas
 - When it comes to public objections, the problems are with the “go” areas
 - Public may place different values on different routes depending on where the lines traverse, which in turn places pressure to site lines in socially acceptable corridors
 - + or – for wildlife and habitat depending on situation and segment

Transmission Siting Decision Support Tool



LineSiter - A custom, open source (DotSpatial platform) GIS software tool that incorporates the analysis of social attitudes with geographic information

LineSiter Model Workflow



Project Team

- Idaho National Laboratory – human factors and survey specialist; PI
- Idaho State University – 2 faculty, one PhD candidate
 - GIS lead and student from Geospatial Software Lab – creator of MapWindow
 - Faculty energy siting survey specialist
- Boise State University – 1 faculty member, 1 professional researcher
 - Overall project design
 - Project management and survey coordination
- University of Idaho – Social Science Research Unit
 - Survey execution
 - Survey sample

Project Status

- Surveys completed by end of April, being coded and analyzed
 - 689 completed phone surveys of southern Idaho residents (land line and cell numbers)
 - To deal with line length, oversampled rural counties so that respondents were approximately equal between urban and rural areas
 - Upcoming Workplan – Integrate survey with GIS tool, develop Monte Carlo algorithm, finish demonstration tool and apply it, develop LineSiter website and user forum

- dauidsolan@boisestate.edu
 - epi.boisestate.edu
 - (208) 426-4845