

Sustainable Energy Parks: A New Land Use for Mined Land

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Mountaintop Mining In West Virginia

- Dozens of mines cover from 4,000 to 12,000 acres
- Operate up to 20-30 years
- After mining, communities need development options to sustain their economies

Land Status after Mining

- Until recently most mountaintop mines were reclaimed to rolling topography with grass/shrub vegetation intended for wildlife habitat
- Other uses include:
 - Pasture
 - Residential/light industrial
 - Municipal uses such as schools
 - Forestry (at least 60 years for first crop)

Mountaintop Mining and Reclamation



Economic Drivers?



Reclaimed Landscape



Development Potential: Cons

- Remote locations
- Unsuitable terrain for many uses (too steep)
- Poor access to site
- No utilities
- Subject to future oil and gas development

Development Potential: Pros

- Large blocks of land
- Few competing land uses
- Relatively simple ownership
- Excellent access on site
- Local workforce

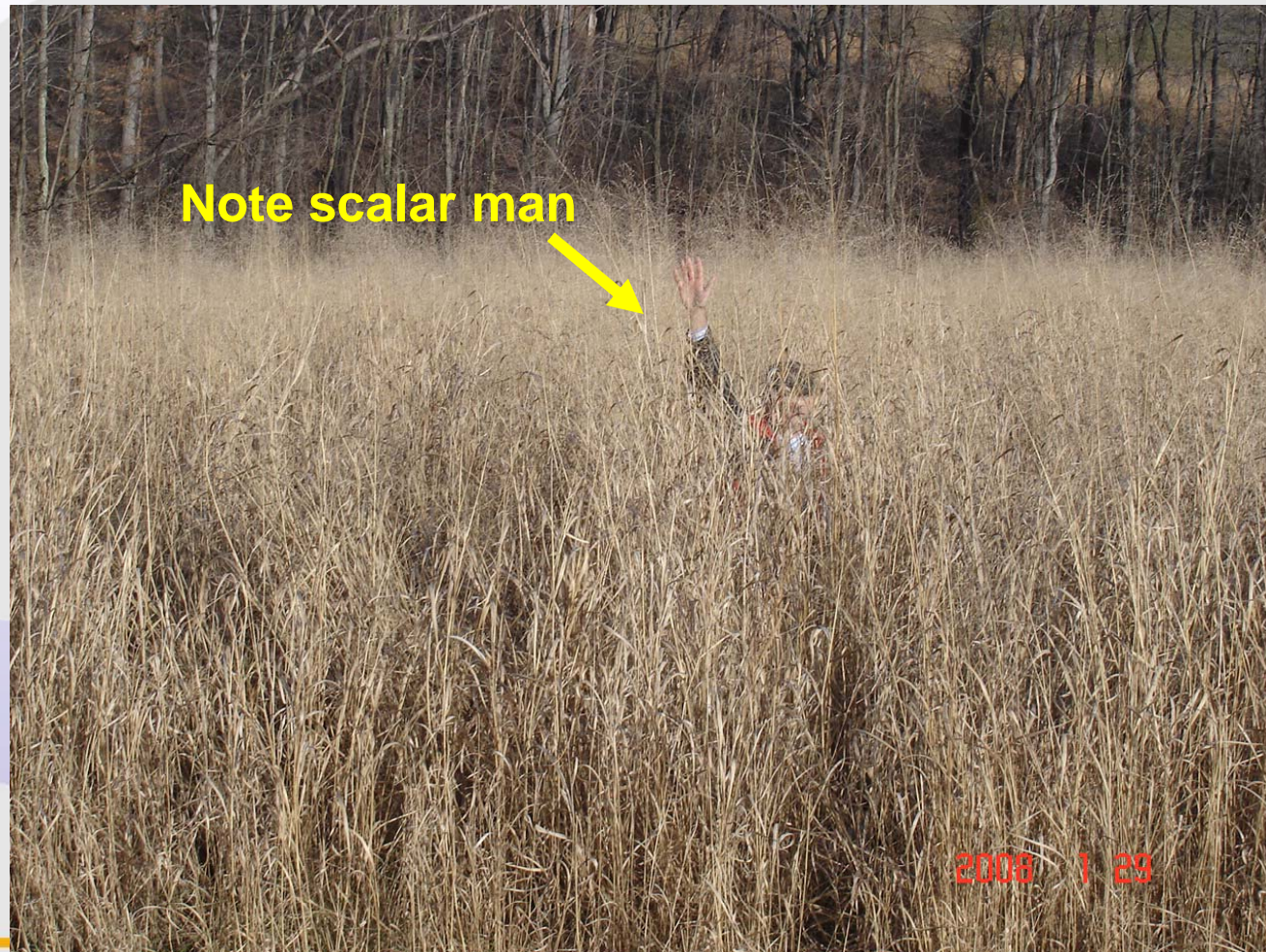
Economic Drivers: A mix of products is often best

- Switchgrass
 - Cellulosic Ethanol
 - Hay
 - Pellet Fuels
- Forestry
 - Wood products
 - biofuels
- Wind Power

Modest Switchgrass Production: 3-5 tons/acre



High Switchgrass Production: 7-10 tons/acre



Cellulosic Ethanol

ethanol revenue per	3,000 acres
Biomass yield	5 tons/ac
Conversion rate	100 gal ethanol/ton
Ethanol yield	1,500,000 gal/yr
Value @ \$3/gal.	\$4,500,000

Example of Revenue Streams

Revenue per:	5,000	acres
Biomass yield	5	tons/ac
	25,000	tons
Conversion rate	100	gal EtOH/ton
Ethanol yield	2,500,000	gal/yr
Ethanol value @ \$3/gal.	\$7,500,000	Per year
Hay value @ \$100/ton	\$2,500,000	Per year
Pellet Fuel @\$60/ton	\$1,500,000	Per year

Or Forestry

- Commercial hardwoods could be planted on slopes that are too steep for cultivation
- Although harvesting would occur only every 60 to 90 years it could be significant
- Assume: 11.8 MBF/acre for red oak at a stumpage rate of \$196. That would recover \$2,313/acre every 60 years

Wind Power: 16 turbines on 572 acres of reclaimed surface mined land



Assume

- 20% of the land would be suitable for wind turbines
- The rental fee is about \$2,000/turbine/year
- Then you could fit about 28 turbines on 5,000 acres
- Value: \$56,000/year
- Wind power and biofuels production are compatible

Project Tasks

1. Identify large tracts of potentially usable mine-scarred land.
2. Develop site selection criteria.
3. Develop Inventory of Candidate Sustainable Energy Parks.
4. Develop a Prioritization Tool.
5. Perform Site Assessments.
6. Engage, educate, and train communities.

Project Tasks

7. Develop and release a Request for Proposals.
8. Review proposals and select one community.
9. Develop Comprehensive Development Plan.
10. Showcase a Pilot Sustainable Energy Park Project.

Thank You

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