



# Policies, Perceptions, and Wood-based Bioenergy

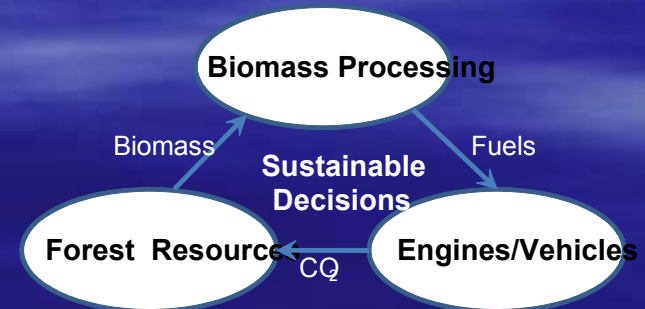
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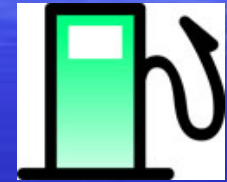
# Wood-based Bioenergy Studies

- Studies of upper Midwesterners and beliefs about energy, cellulosic ethanol and climate change
- Studies of upper Midwestern non-industrial private forest landowners and energy, environment, cellulosic ethanol, and climate change
- Study on successful forest-based bioenergy projects around the United States

# Michigan Technological University Wood-to-Wheels (W2W) Research Team Research Thematic Areas (Shonnard et al. 2008)



Sustainability  
Assessments /  
Decision-Making

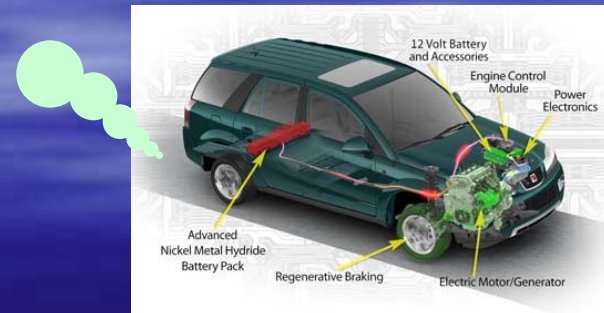


Bio-Processing Research  
Photo: Glacial Lakes Energy



Woody Biomass Resource Research

CO<sub>2</sub>



Vehicle Systems Research

# Background

- Mix of bioenergy-based heat, power, and fuels is practical
- Short term wastes and residues as feedstock
- Cellulosic ethanol is cost-competitive with gasoline and corn ethanol

# Background

- Long term adding in dedicated energy crops
- Regional mixes of feedstock types
- State and federal policies are critical
- Energy independence and stopping climate change are key underlying goals

# Public Perceptions and Support

- Bioenergy is economically viable with policy supports
- Effective climate change mitigation strategy
- With reduced environmental costs

# Public Perceptions and Support (cont)

- Given private and public land role and necessity of policy supports:
  - Public support for advanced bioenergy development is critical
  - Need to effectively communicate tradeoffs

# Public Perceptions and Support (cont.)

- Poor understanding of climate change causes, impacts, and solutions
- Can reduce support for effective policies and bioenergy



# UMW Residents' Beliefs

(Halvorsen et al. 2009)

- 72% concerned about climate change; 84% environmentally oriented
- 86% concerned about U.S. energy security; 75% believe U.S. should make all its energy

# UMW Residents' Beliefs

(Halvorsen et al. 2009)

- 68% believe biofuel development is good for local economy
- 79% willing to pay extra for cellulosic ethanol made from woody residues

# Forests and bioenergy

- “Feedstock-shed” supply issues; \$ per ton
- Public forests
  - Federal lands
    - Social acceptability varies by region (Becker et al. 2008a; Evans 2008)
    - NEPA, NFMA, and HFRA elements
    - Exclusion of federal land feedstock from federal renewable fuel standard
    - Large scale residue removal possible, difficult and complex

# Forests and bioenergy

- Public lands
  - State and county forests
    - Certification programs will set biomass removal standards
    - State guidelines for biomass utilization can protect sustainability (Minnesota)
    - Social acceptability less of an issue

# Forests and bioenergy

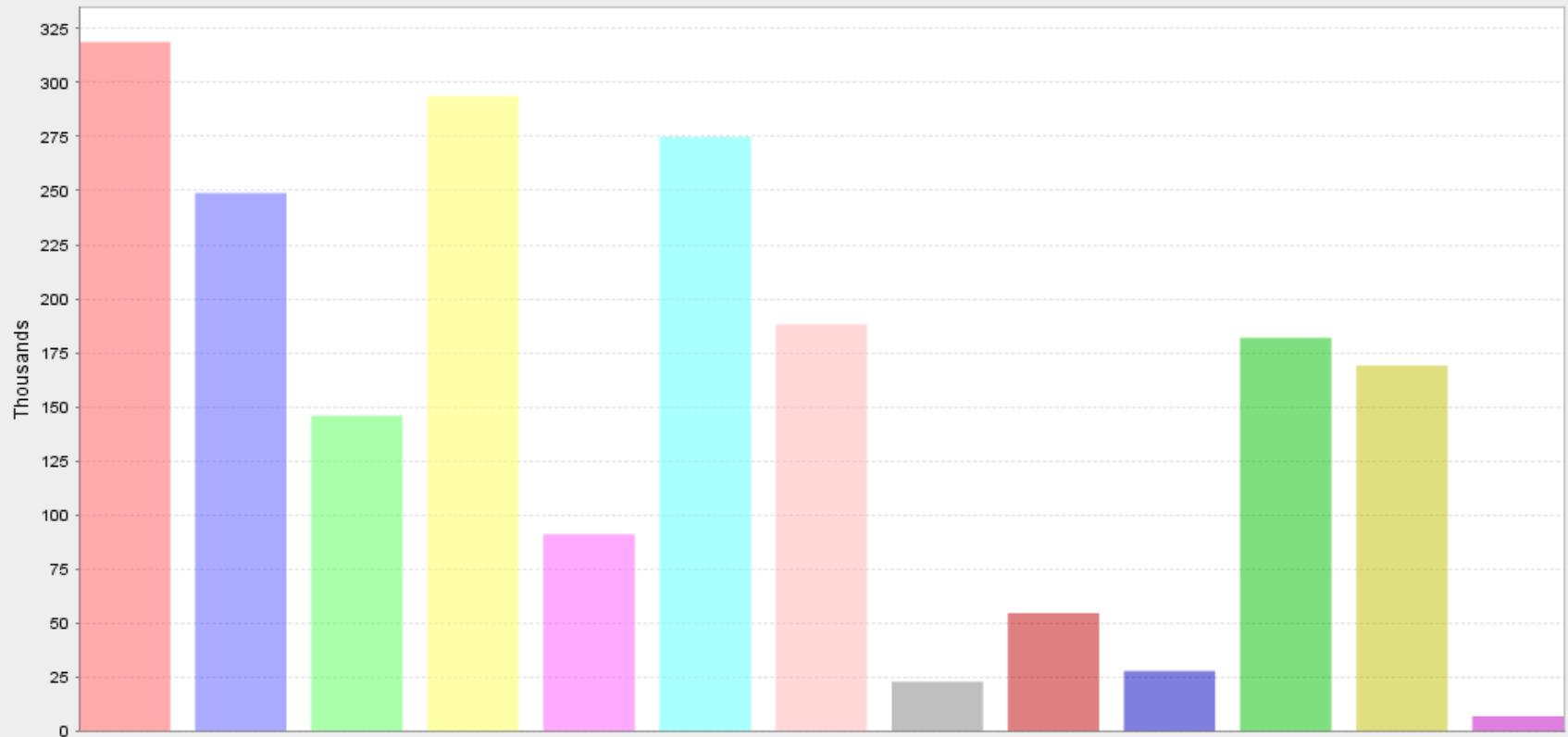
- Industrial forests
  - Industry contraction and infrastructure losses
  - Certification will set biomass removal standards
  - Concerns about high utilization and competition
  - Divestment and uncertainty regarding TIMO goals and practices

# Forests and bioenergy

- Non-industrial private or family forests
  - Most don't harvest, poor management, few plans (Germain 2008; Munsell and Germain 2007)
  - Supply dependability difficult
  - Energy independence argument powerful (Germain 2008)

# MI NIPFs Reasons for Owning Forestland (Butler et al. 2009)

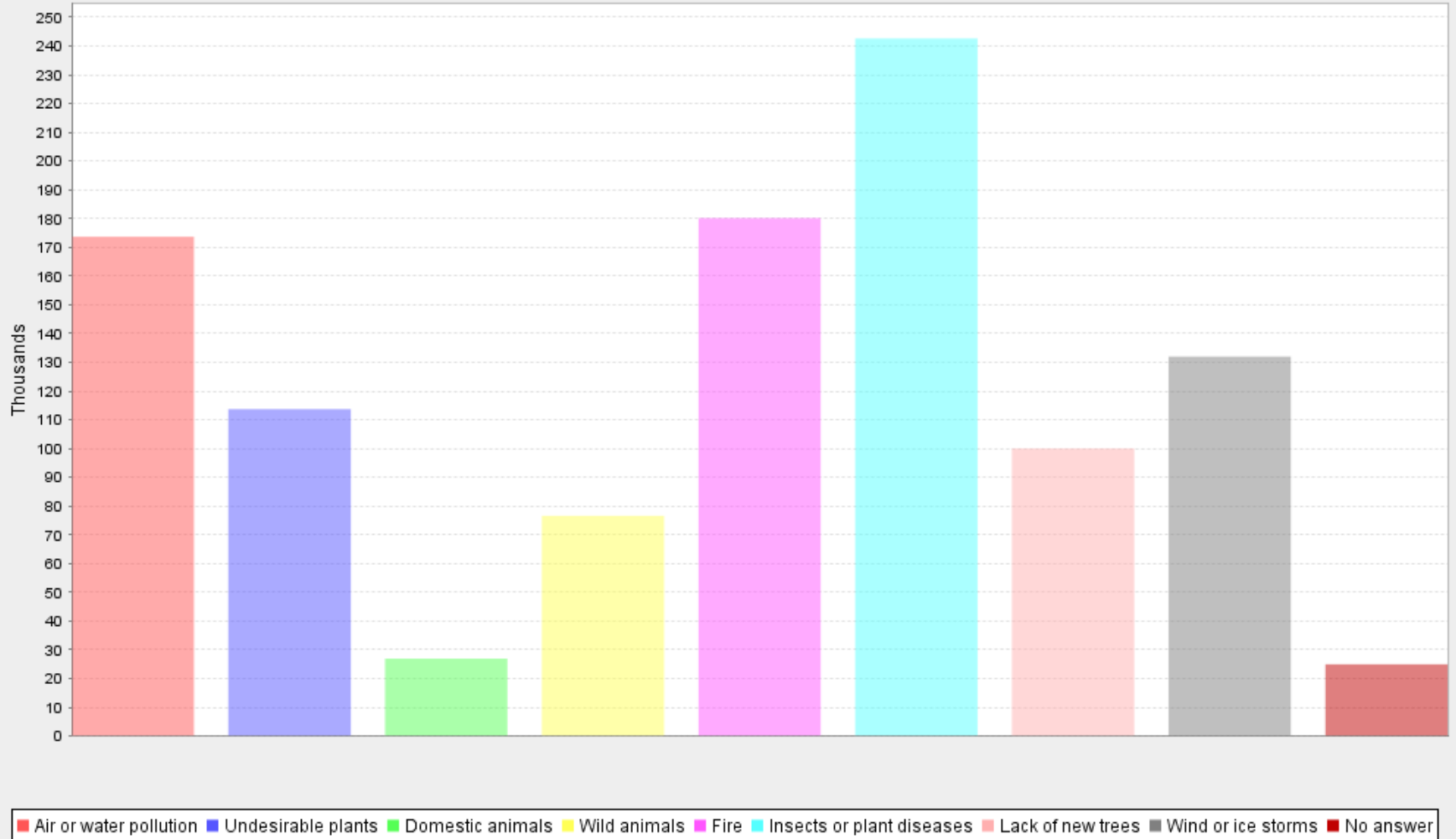
Number of family forest owners



■ To enjoy beauty or scenery 
 ■ To protect nature and biologic diversity 
 ■ For land investment 
 ■ Part of home or vacation home 
 ■ Part of farm or ranch 
 ■ Privacy  
■ To pass land on to children or other heirs 
 ■ To cultivate or collect nontimber forest products 
 ■ For production of firewood or biofuel  
■ For production of sawlogs, pulpwood or other timber products 
 ■ Hunting or fishing 
 ■ For recreation other than hunting or fishing 
 ■ No answer

# NWOS Michigan NIPFs and forest-related concerns (Butler et al. 2009)

Number of family forest owners

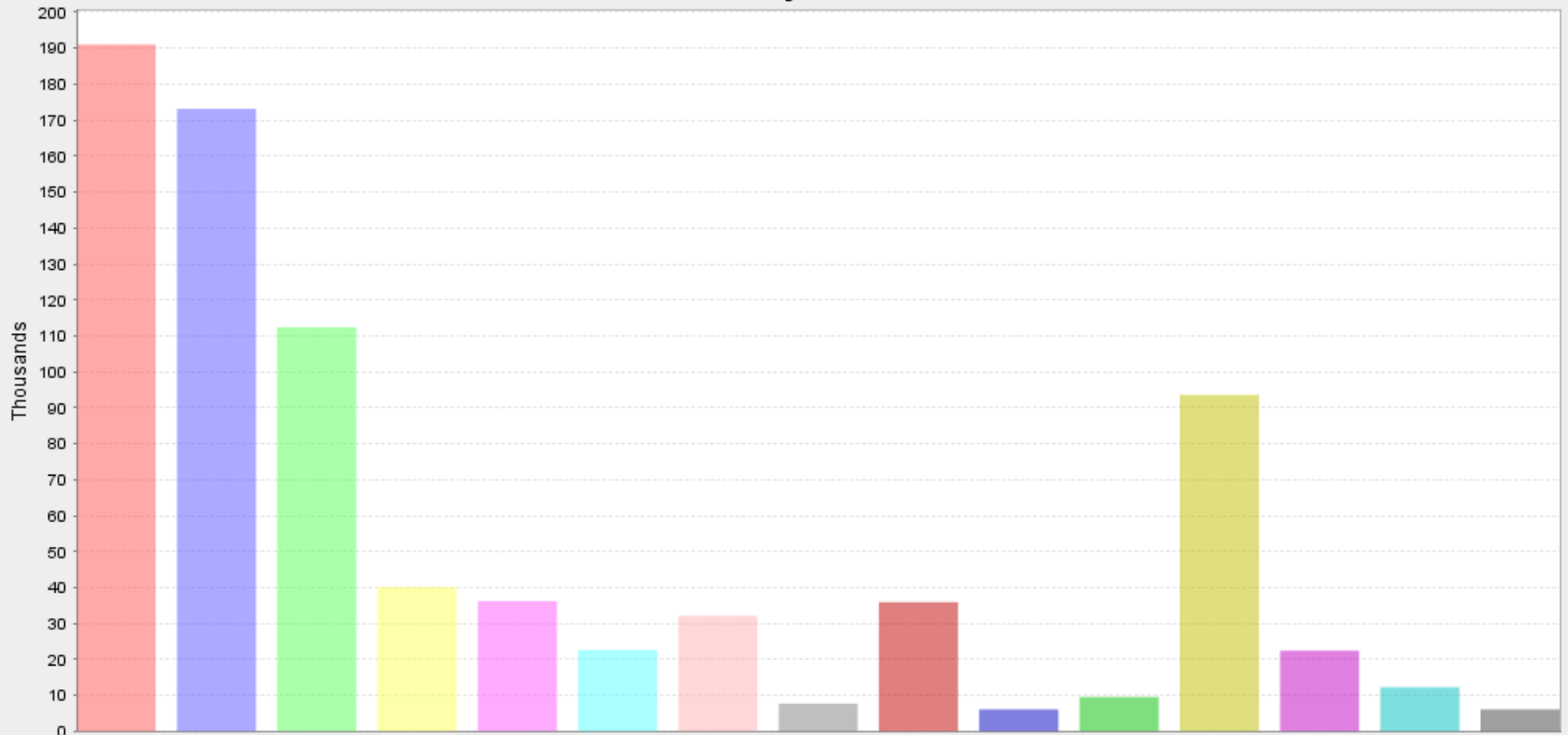




# MI NIPFs future plans for forest

(Butler et al. 2009)

Number of family forest owners



- Leave it as is - no activity
- Minimal activity to maintain forest land
- Harvest firewood
- Harvest sawlogs or pulpwood
- Collect nontimber forest products
- Sell some or all of their forest land
- Give some or all of their forest land to heirs
- Subdivide some or all of their forest land and sell subdivisions
- Buy more forest land
- Convert some or all of their forest land to another use
- Convert another land use to forest land
- No current plans
- Unknown
- Other
- No answer

# UMW NIPFs, Environment, and Climate Change (Halvorsen et al. 2009)

- 80% are environmentally-oriented
- 76% are somewhat to very worried about climate change

# UMW NIPF beliefs

(Halvorsen et al. 2009)

- 52% know fossil fuels cause it
- 91% concerned about U.S. energy security
- 81% believe U.S. should produce all its own energy

# UMW NIPF study

(Halvorsen et al. 2009)

- UMW NIPF survey:
  - 53% woody residue removal good fit,
  - 45% biofuels development would benefit them,
  - 69% somewhat to highly likely to sell woody residues for biofuels.

# UMW Public

- Concerned about climate change and energy security
- Supportive of bioenergy and cellulosic ethanol
- Don't understand connections to climate change

# UMW NIPFs

- Concerned about environment, climate change, energy security
- Most don't plan a harvest or have a management plan
- Linking harvesting, environmental protection, climate change, bioenergy opportunities, and energy security may be helpful

# We need to

- Effectively communicate and facilitate landowner participation linking (Germain 2008):
  - Economic value
  - Climate change mitigation
  - Energy security contribution
  - Ecological contributions
- While protecting investments

Questions?

