

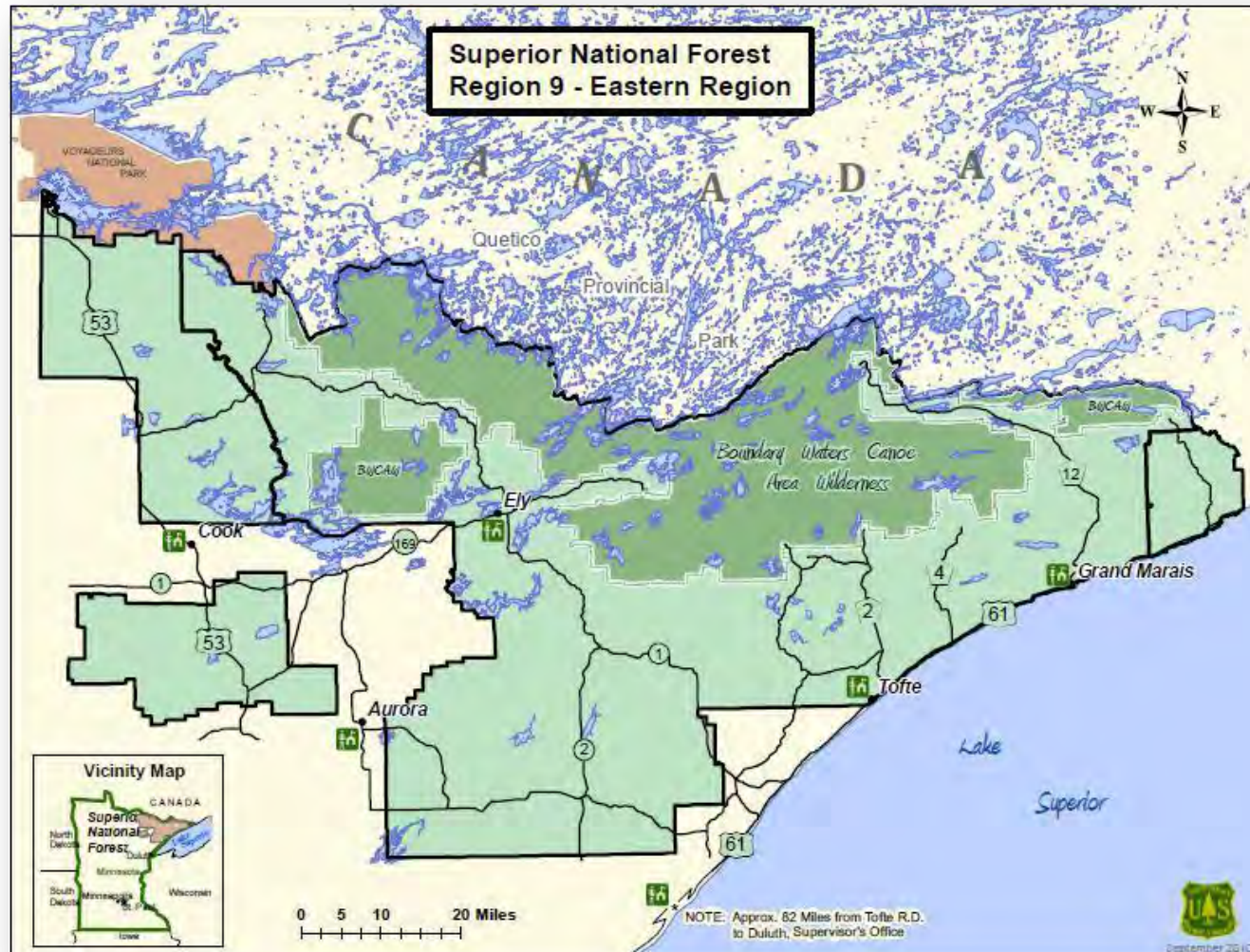


# Supporting Community-Driven, Sustainable Bioenergy Projects

# Today's presentation

- Brief overview of each community, their respective approaches and feasibility study conclusions
- Focus on roles as local coordinators in each community
  - ▣ Front line experience with community outreach and response
  - ▣ The good, the bad and the “not so pretty”

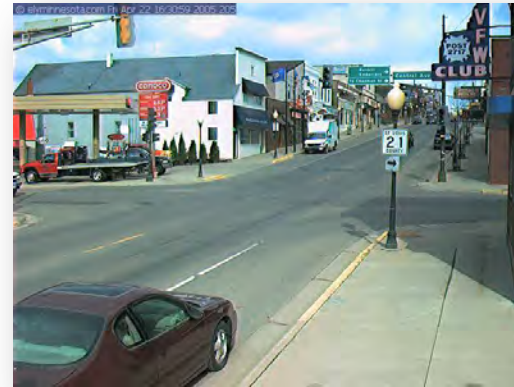
# Project Areas - Ely and Grand Marais, Minn.



# Ely, Minn.

Located in the Vermillion Iron Range of Northern Minnesota, Ely was founded on iron ore mining and logging. Now it's better known for being one of the entry points to the Boundary Waters Canoe Area Wilderness (BWCAW).

- ❑ Population – 3724
- ❑ City households - 1912
- ❑ 916 families in city
- ❑ Median income for city household \$27,615
- ❑ Median income for family \$36,047
- ❑ Per capita income for city - \$16,855



# Ely – economy & energy demand

- ▣ Tourism and related services presently employ approximately 26% of the workforce.
  - Educational services, healthcare and social assistance programs employ the next largest portion with 20%.
- ▣ Facilities targeted for biomass project
  - K-12 school      Hospital. Clinic & Assisted Living
  - City Hall      Joint Garages
  - Vermillion Community College
- ▣ 177,000 gal. fuel oil & 183,000 gal. propane
- ▣ 40,000 mmBtu per year
- ▣ \$600K - \$800K current fuel costs

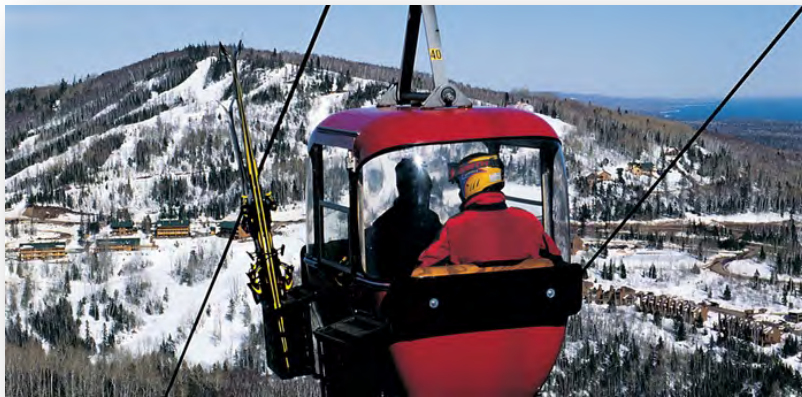
# Ely characteristics

- Many old and poorly constructed building structures.
- Infrastructure in dire need of updating.
- Much of the governmental funding has been cut.
- Property taxes and utilities costs are on the rise.

# Cook County & Grand Marais

Cook County, Minn. - origins lay in logging and commercial fishing. Tourism and related services now employ 23%

- Population – 5176
- Households - 2707
- Median household income \$47,933



*Lutsen Mt. Ski Area*



*Grand Marais Harbor*

## City of Grand Marais

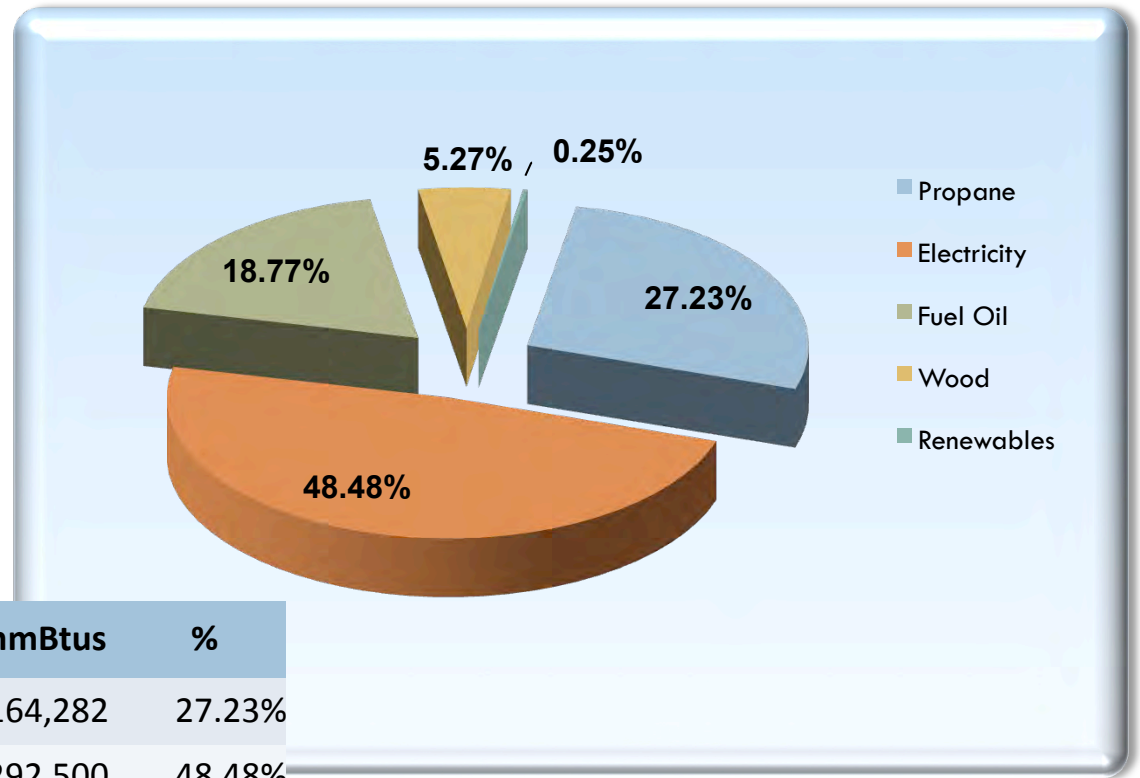
- Population – 1351
- Households - 639
- Median household income \$40,772

# Cook County characteristics

- An abundance of forest biomass
  - ▣ 54% (545,000 acres) Superior Nat'l Forest & DNR
  - ▣ 28% (262,000 acres) BWCAW (reserved)
- County has 4 distinct areas defined by economies, housing, interests and attitudes:
  - ▣ West End                      ▣ Gunflint Trail
  - ▣ Grand Marais                ▣ East End/Hovland
- Large percentage of households are seasonal or part-time



# Cook County energy profile



Fuel Type	Amount	UOM	mmBtus	%
Propane	1,793,472	gal./yr	164,282	27.23%
Electricity	85,701,766	kWh/yr	292,500	48.48%
Fuel Oil	838,724	gal./yr	113,228	18.77%
Wood	1,271	cords/yr	31,810	5.27%
Renewable	n/a		1,535	0.25%
			603,355	100.00%

# In the beginning ...

- Two citizen-driven efforts
  - ▣ Ely: Energy Efficient Ely (E3) approaches City Council with Renewable Energy District Heat idea. Ely City Council establishes a Alternative Energy Task Force (AETF). Members include Mayor, City Engineer, Public Utilities representative, forest service representative, retired engineers, and interested citizens.
  - ▣ Grand Marais: Cook County Local Energy Project (CCLEP) & FIREWISE committee members pursue biomass energy co-generation feasibility fired by hog fuel.

# Both communities faced with similar energy dilemma

- Beyond the reach of natural gas pipeline networks
- Dependent on “trucked in” fossil fuel
- Anticipating the benefits of biomass energy
  - ▣ reduced dependency on fossil fuels
  - ▣ energy dollars stay in county; other added economic benefits
  - ▣ use of local resource which are otherwise wasted
  - ▣ contribute to forest health; reduce wildfire risk
  - ▣ reduction in GHG and emissions

# Moving forward ...



- Ely and Grand Marais each explored the feasibility of district heat through studies conducted by Chuck Hartley and LHB of Duluth, MN.
- July, 2009 - Apply jointly for a National Energy Technology Laboratory grant to fund construction of CHP district heat for both communities.
- Grant application unsuccessful – Ely and Grand Marais pursue different paths

# Ely focuses on CHP

- Ely continues to work with LHB on a feasibility study for a CHP plant for Ely.
- Funding for feasibility study obtained from grants from the Blandin Foundation, Iron Range Resources & Rehabilitation Board (IRRRB), CERTS (Clean Energy Resource Teams), and the Ely Utilities Commission (EUC), and a large grant obtained from the Office of Energy Security.

# Summary findings from LHB study

- State-wide biomass availability – est. 400,000 tpy in northern Minn.
- Amount of biomass needed to supply the energy needs of a District CHP plant
  - ▣ 1000 kWe Turboden ORC plant recommended
  - ▣ Initially 13,000 tpy; 23,000 tpy at full build-out
- Projected capital cost - \$12,700,000; estimated savings - \$1,798,751 per year
- Study completed November 2010

# Cook County Biomass Energy Feasibility Study (Phase I)

- 2009 study reveals a need for a county-wide approach to biomass energy. New study objectives were to determine...
  - ▣ county-wide biomass availability
  - ▣ technology options and various scales of use
  - ▣ predicted financial performance of configurations
- Project partners: Dovetail Partners, Inc. (project management), University of MN, LHB, CCLEP with funding provided by Cook County Commissioners
- Completed September, 2011

# Cook County Feasibility Study findings

- Based on 2010 Cook County data, harvest residuals alone are nearly sufficient to meet biomass requirements of largest configuration.
- Maximum demand of 45,000 mmBtu equates to about one truckload/day of hog fuel (7,667 tpy @ 40% mc ÷ 22 tons/truck = 349 trucks/yr)
- Depending on scale/fuel/technology combination, simple payback periods ranged from 6 yrs to >20 yrs



# Ely and Cook County paths reunite

- “Supporting Community-Driven Sustainable Bioenergy Projects” (Cook County Phase II)
  - ▣ will provide additional information on biomass supply issues and impacts.
  - ▣ will describe life cycle impacts of biomass energy systems, including environmental impacts
  - ▣ will assess stakeholder and community attitudes
  - ▣ extensive community engagement and outreach

*Funding for this project was provided by the Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR).*

# Community concerns & issues

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- “How will this affect me?”
- Financial viability
- Forest and ecological impacts
- Emissions

# The outreach challenges

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- Clarifying feasibility study vs. project development work
- Overcoming political and philosophical prejudice
- Communicating with and motivating the public and local government entities

# Challenges (cont'd.)

- For Ely –
  - ▣ reconciling “old” and “new” Ely – very different attitudes about what the future of Ely should look like.
- For Cook County –
  - ▣ history of questionable project execution
  - ▣ competition with other projects for public interest and support
  - ▣ overcoming negative perceptions of biomass energy impacts
  - ▣ offsetting bad memories of wood chip heating failures

# Outreach and community engagement strategies

- Steering committees and advisory groups
- “How will it affect me?” – tackling supply chain consultations with key stakeholder groups
- Series of “fact sheets” (5)
  - ▣ Communication tools for use with community members, consumers, and stakeholder groups
  - ▣ Intended to provide clear and focused information which will serve as background and explanatory material during community outreach effort

# Outreach (cont'd.)

- Print and radio outlets with press releases and feature pieces
- Project and organization websites and social media
- Forums for information exchange and public input
  - ▣ Fall 2012 “town hall” panel discussion with representation from study team and stakeholder groups
  - ▣ Visibility at local events

# Where are we now?

- Ely –
  - ▣ Presently evaluating possible “heat only” large unit or two smaller “heat only” units as alternatives to CHP. (With assistance from the USDA Forest Service, Lew McCreery, NE Area State & Private Forestry and Dan and Tom Wilson of Wilson Engineering Services)
  - ▣ Can a biomass energy project be adequately funded without raising property taxes or utility rates?

# Where are we now? (cont'd.)

- Cook County –
  - ▣ focusing on district heat options for Grand Marais.
- Wrestling with how to transition from feasibility to project development.
- Results of the present LCCMR state-funded study are due by year-end 2012 and will inform decision-making in both communities.



# What would we do differently?

- Invest heavily in public outreach and educational effort prior to any feasibility work.
- Be more aware of a perceived lack of “transparency” and take early steps to offset it.
- Greater effort to present study results in terms readily understood by the public.

# Questions?

For the COOK COUNTY BIOMASS FEASIBILITY STUDY:

[www.cookcountylep.org/new/home.html](http://www.cookcountylep.org/new/home.html)

[www.dovetailinc.org/cookcounty](http://www.dovetailinc.org/cookcounty)

For the ELY STUDY:

[www.eeely.org](http://www.eeely.org)