

Natural Resources  
Research Institute

UNIVERSITY OF MINNESOTA DULUTH  
Driven to Discover™

*House Testimony*  
**NRRI Background**  
**HF1895**

*Committee on Higher Education Finance and Policy*

**24 March 2021**

**SPILL-KIT  
STATION**

Innovative Research • Minnesota Value • Global Relevance

- **University applied research, economic development and commercialization engine**
- **Long-term relationships with institutions, agencies, business and industry**
- **Collaborative partnerships with UMN, academics, government, agencies, NGO's, citizens**



## Natural Resources Research Institute

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**NRRI CHARTER:** To foster the economic development of Minnesota's natural resources in an environmentally sound manner to promote private sector employment.

*Minnesota State Legislature, 1983*

**NRRI MISSION:** Deliver integrated research solutions that value our resources, environment and economy for a sustainable and resilient future.

**NRRI VISION:**

**Discover the Economy of the Future**



# NRRI Research Platforms

Research that addresses forest, land, water and mineral resources.



1. Applied Ecology and Resource Management
2. Minerals and Metallurgy
3. Materials and Bioeconomy
4. Data Collection and Delivery
5. Commercialization Services

# NRRI Research Facilities



## NRRI DULUTH

19 labs for land, forestry, wildlife, water and minerals research, materials development and process technology development



## NRRI COLERAINE

15 building, 27-acre industrial laboratory site focused on minerals characterization, minerals processing, metallurgy, biomass processing, energy and materials research

**These unique assets allow scale progression from lab to pilot to demonstration.**

**Over \$75M Capital Investment in Minnesota.**

# NRRI Innovation Goals:

*Good Decisions for the Economy of the Future*

- ✓ **Understand Our Resources**
- ✓ **Diversify the Product Portfolio**
- ✓ **Convert Waste to Value Opportunity**
- ✓ **Embrace Life Cycle Thinking**



# NRRI Engagement in Minnesota's Challenges

## Climate Change & Resource Management

- Impacts on forests, waters, communities & economy
- Impact mitigation & adaptation
- Carbon market definition
- Natural Resources Atlas; information access

## Water Quality

- Ecosystem characterization & modeling
- Wildlife & fish impacts
- Sulfate reduction
- Nutrient reduction (phosphorous, nitrogen)
- PFAS, organics
- *E. coli*
- Heavy metal sequestration
- Harmful algal blooms
- Stormwater management
- Road salt

## Forests and Land

- Forest composition, health & productivity
- Harvest modeling tools
- Carbon sequestration & storage
- Wildlife impacts (populations, migration, habitat)
- Mineland rehabilitation

## Business & Industry

- Decarbonization
- Renewable energy storage options
- Development of high value market portfolio
- Entrepreneur support

## Minerals

- Industry support
- Resource characterization
- Advanced mineral processing technology
- Water & waste management
- Higher value products

## Bioeconomy

- Industry support
- Thermally-modified wood market development
- Biomass conversion to high value carbon products
  - Beetle-killed trees, secondary species utilization
  - Co-production of energy and materials
- Novel wood products and testing
- Bio-refinery – renewable fuels and materials

FOR WHAT'S AHEAD



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[WWW.NRRI.UMN.EDU](http://WWW.NRRI.UMN.EDU)

# Thank You

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