

### NRRI Legislative Charter

NRRI was created by the state legislature to inform decisions on our natural resources, with the charter to foster “*economic development of Minnesota’s natural resources in an environmentally sound manner to promote private sector employment.*”

- Minnesota State Legislature, 1983

### NRRI Base Funding

- Base (state special) funding increased from \$2.4M to \$4.4M in 2017, but has not kept pace with inflation and cost increases.
- NRRI has grown from 30 to >140 researchers; from 20 to >140 projects; from one facility to three semi-industrial sites.
- Minimal significant investment in physical plant infrastructure

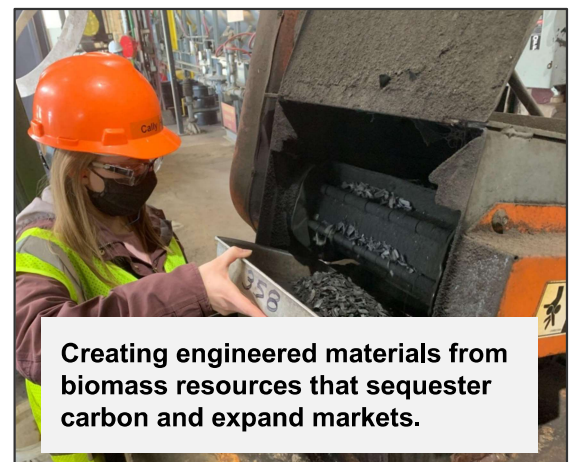
### NRRI Critical Investment Targets

The funds will allow NRRI to sustain delivery of applied research solutions for Minnesota into the future by increasing research capacity and competitiveness that will:

- Attract and retain top talent
- Provide match funds for federal grants
- Upgrade infrastructure, equipment and training
- Expand entrepreneurial support and outreach

### Outcomes for Minnesota

- New economic opportunities for Minnesota
- Support for informed natural resource management decisions
- Attract enhanced federal support
- Accelerate commercialization; get NRRI research into communities
- Increased industry/business partnerships
- Enhanced state agency collaboration
- Alignment with Minnesota climate goals and community needs
- Increased UMN faculty and student engagement



# Introduction to NRRI

The Natural Resources Research Institute (NRRI), a nationally-unique entity, was established by the state in 1983. It delivers integrated research solutions to support the stewardship of Minnesota's natural resources via three strategic initiatives.

## NRRI Mission

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



## Iron and Minerals of the Future

Developing carbon-neutral mineral resource extraction and processing strategies with reduced water, energy and effluent to support a portfolio of high-value products.

- Characterize remaining ore reserves; develop beneficiation strategies
- Reduce energy, water, effluent, and environmental impacts of our mineral activities
- Decarbonize production of iron, steel, other metals and related products



## Future Forest Industries

Demonstrating technologies to transform renewable biomass and organic waste streams into refined, engineered carbon materials.

- Model forest composition, function, harvest scenarios and climate change
- Develop hybrid plant species for biomass, biofuels and bioplastics
- Develop partnerships in engineered forest product opportunities
- Convert biomass into energy and value-add carbon products



## Ecosystem Resilience

Understanding relationships between water, land and mineral resources to manage societal needs and impacts.

- Measure and assess ecosystem disturbances
- Understand ecosystem integration and interactions regarding land use issues and climate change
- Demonstrate strategies and technologies to mitigate impacts to land and water ecosystems

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**NRRI develops and maintains long-term working relationships with our partners in industry, agencies, academia, NGO, tribal governments, and the public to carry out our mission.**

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