NSF ASCEND Engine in Colorado and Wyoming

Developing **innovative** solutions to increase **community resilience** and drive **economic growth** by leveraging advanced data acquisition and analytics

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NSF-ASCEND Engine in **Colorado and Wyoming**

We are building a regional, place-based innovation ecosystem using the **Advanced Sensing and Computation for Environmental Decision-making (ASCEND)** framework to guide the development of cutting-edge tools to address pressing environmental and societal challenges in the region

This ecosystem will:

- Strengthen national competitiveness
- Expand economic opportunities
- Lay the foundation for long-term resilience and sustainability

10 Year expected outcomes aim to generate significant economic impact:

18K
New Jobs

$2.7B
GDP Boost

$2B
Capital Raised

140
Translation, Emergent Grants Awarded

750
Internships/ Apprenticeships

1,500
Upskilled

50
Post-Docs Placed

400
Student Trained Systems Engineering

Accomplishments in Years 1-2

Ecosystem Development

- Funded the Metro-Denver Economic Development Corporation to recruit companies to Colorado
- Hosted 60+ events, including monthly Innovation after Hours sessions, Competitiveness Conversations, and outreach and education.

Research and Development

- Invested $5M in use-inspired R&D and translation projects will support

Startup Support

- Launched the Innosphere Wyoming Innovation Fund, venture capital fund dedicated to providing early-stage financing for Wyoming-based startups
- Established the Digital Twins Accelerator for early-stage startups that use digital twinning as part of their solution. We welcomed our inaugural cohort of six companies in March 2025.

Workforce Development and Regional Engagement

- Placed over 50 interns/apprentices in climate resilience through MSU Denver and Colorado Community College
- Upskilling efforts: partner with Wyoming Innovation Partnership Software Dev Program to fast-track software developers, established the Gener8tor Upskill program in Wyoming.
- STEM Education: partnered with University of WY and 4-H to support k-12 robotics and drone programs
- OEDIT-funded program to place 120 systems engineering interns, support four advance engineering competitions, and expand formal SE certs at CSU

NSF Innovation Ecosystem Life Cycle

Phase 2: NASCENT

Solidify organization and partnerships

Ramp up innovation activities

Phase 3: EMERGENT

Scale technological products and services

Scale workforce capabilities

Attract sizeable external funding to promote innovation-based economic activity

Phase 4: GROWTH

Grow innovation ecosystem as a national leader

Attract increasing levels of economic activity and business creation

Support from state, local and federal governments

Phase 5: MATURE

Innovation ecosystem is well established and can sustain itself without NSF funding

Year 1-2
NSF $7.5M/Year
Cost Share $7.5M/Year

Years 3-5
NSF $15M/Year
Cost Share $30M/Year

Years 6-10
NSF $20M/Year
Cost Share $60M/Year

Pillar One: Regional Ecosystem Building

The NSF ASCEND Engine is a place-based innovation ecosystem that transforms research in Advanced Sensing and Computation for Environmental Decision-making (ASCEND) into scalable technologies, economic opportunity, and community resilience.

Pillar Two: Research & Development

- Uses the Advanced Sensing and Computation for Environmental Decision-making (ASCEND) framework
- ASCEND recognizes that our region is uniquely differentiated in its ability to (1) develop and deploy advanced sensing capabilities, and; (2) exploit large volumes of data through advanced computational techniques
- Our R&D investments will be divided into Technical Areas (TAs) based upon the ASCEND Framework: Advanced sensing (TA1), Computation (TA2), and Decision Support (TA3).

This framework will be used to support 2-4 programs, whose solutions will generate outcomes within our one or multiple of our use cases:

Wildfire Preparedness and Response	Water Quality and Availability	Soil Health and Productivity	Air Quality

Pillar Three: Translation

Translation bridges the gap between research and market adoption.

Key Components of Translation Research:

Advancing ASCEND Technologies Through TRLs 4-6.

1. Facilitate Technology De-Risking
2. Explore and Define Commercial Pathways
3. Provide Market and Customer Insights
4. Determination for Pilot Readiness

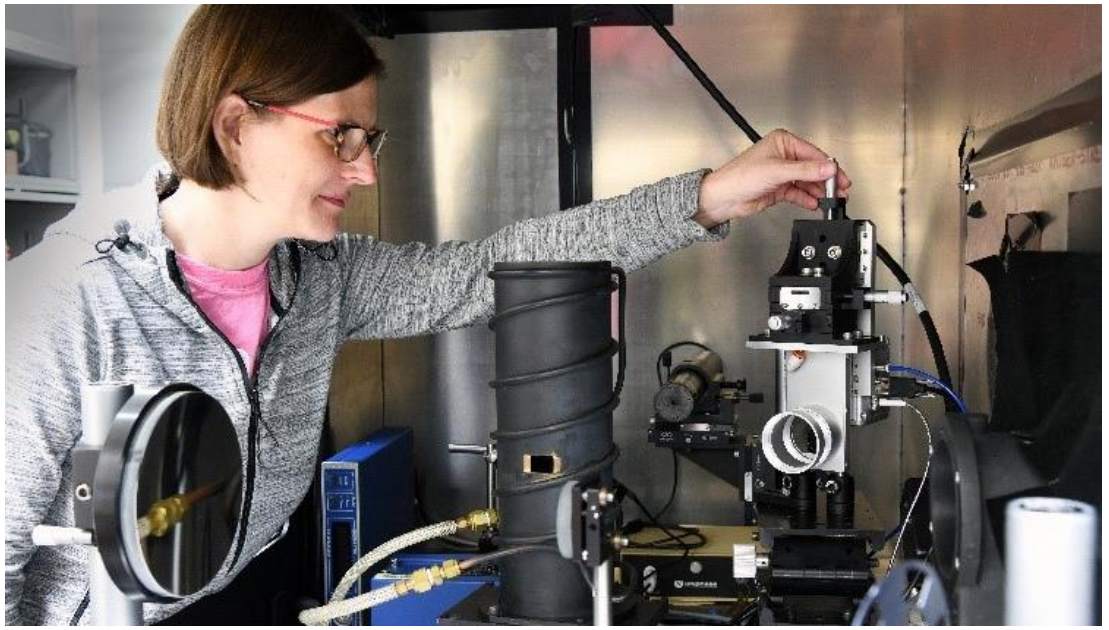
The Key Components of Translation-to-Market:

Advancing ASCEND Technologies Through TRLs 7-9.

1. Facilitating pilots
2. Market Intelligence and Customer Discovery
3. Business Model Viability and Planning
4. Access to Capital
5. Manufacturing and Supply Chain Readiness
6. Partnerships and Customer Adoption

Pillar 4: Workforce Development

A skilled workforce is integral to the Engine's vision of an ASCEND Technologies-focused innovation ecosystem. The CO-WY Engine collaborates with industry partners, universities, and community colleges to develop training programs supporting ASCEND education and technologies across Colorado and Wyoming.



Secondary STEM Programs: Building Foundations for Future Innovation in ASCEND

Activating Degreed and Non-Degreed Workforce

Expanding Career Pathways in ASCEND Technologies

Q&A

Follow the QR code to download today's presentation and to access any of our handouts.

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