

Dear reader,

From the beginning of our history, Alaskans have relied on innovation. Surviving cold, dark, and distance requires constant creativity. Our extreme environment and unique challenges have made our people inventors, and our land has been a center of natural observation and a proving ground for new technologies. Everything we do in Alaska is knowledge-based: the prosperity of our culture, preservation of our environment, and economic growth depend upon sound science and inventive thinking. We understand that our resources include not just what's beneath our feet, but what's between our ears.

With this two-part report, Alaska's State Committee on Research (SCoR) aims to celebrate our innovative culture and to foster further invention and creativity by highlighting areas in Alaska that are ripe for further research, development, and technological advancement. It is the culmination of a long process that began with a 2003 state legislative request for a research and development plan, and re-emerged in 2011 as a SCoR priority.

First, SCoR has commissioned *Northern Innovators*, an exciting collection of stories about Alaska's inventors. From the first Alaskans who fashioned "sunglasses" to prevent snow blindness or built kayaks to withstand rough seas, to contemporary Alaskans' chemical engineering discoveries and pioneering inventions in wireless technology – Alaskans find a way. *Northern Innovators* tells a history of inventive Alaskans that will inspire future generations.

But the continued success of Alaskans' innovation, research and development depends upon strong cohesion between federal and state agencies, the University of Alaska system, primary and secondary educators, and private industry and business. It depends upon a robust STEM (science, technology, education, and mathematics) education initiative in our state. It depends on access – access to lands and seas for study, to resources for exploration, to infrastructure, transport and telecommunication, to labor, and to capital funding. These needs, and promising research areas in Alaska, are detailed in SCoR's science and technology plan, *To Build a Fire*.

This report is a call to action. The committee hopes it will inspire lawmakers, academics, business folks, and those Alaskans tinkering in their garages or on their computers – the state's young explorers and the seasoned adventurers – to recognize the importance of filling in the gaps of our knowledge, of working together to ensure a bright future for Alaska.

Our vision – and call to action – has six components:

1. A closer relationship between Alaskans, lawmakers, businesses and academia in using science and technology to improve Alaska's economy, health, safety, and environment. A cohesive bond among these sectors will help to capitalize on what each offers and to fill in gaps of knowledge. Our citizens offer innovation and creativity. Lawmakers can clear paths of opportunity to put those ideas into action. The business sector can put those ideas on the grand scale by providing capital. And the university is where it all begins, training a new generation of researchers, and supporting the work they do.

2. A solid foundation of basic research in Alaska. If we don't have a firm grasp on the facts about our world, we'll never dream about innovative ways to improve our economy, health, safety and, environment. Applied research (invention) requires basic research (knowledge).

3. A robust STEM education system in Alaska. Many efforts are already underway around the state and in our schools. We would like to see these efforts evaluated, supported, improved and expanded with defined metrics and goals, so we can have a home-grown STEM-educated workforce in the state.

4. An Alaska that maintains and builds upon its leadership roles in polar research, energy, geology, telecommunications oil spill prevention and response, transportation, and health. Addressing the cost and sustainability of energy in the Arctic may be the single largest contribution Alaskan researchers can make to the state and the world.

5. A 10- or 20-year plan to graduate from the National Science Foundation's EPSCoR program. NSF support of the Experimental Program to Stimulate Competitive Research has been vital to growing the University of Alaska's capacity for research and development, but the time is coming when we should stand on our own.

6. An Alaskan Innovators Hall of Fame. SCoR envisions a venue that honors Alaskans and their inventions, and encourages the creation of new technologies and applications.

This is no small task list. But it's one we believe can be achieved in the next decade. The beginning of that road map is in the pages that follow. It is up to Alaskans to take up the momentum, to embrace the challenges, and to reap the rewards of a strong, sustainable economy and environment.

Sincerely,

Mead Treadwell

Lieutenant Governor, State of Alaska