

Written Testimony of Launch Alaska CEO Isaac Vanderburg

United States Senate

Committee on Energy and Natural Resources

**Hearing to Examine the Importance of Energy Innovation on Economic Growth and
Competitiveness**

Thursday, July 25th, 2019

10:00 A.M.

Good morning, Chairman Murkowski, Ranking Member Manchin, and members of the Committee:

It is a privilege to come before you today.

The topic of this hearing is particularly timely for my home state of Alaska which, after five decades of economic growth following the discovery of oil in Prudhoe Bay in 1968, is suddenly confronting a new and less certain economic reality. Due to a combination of low oil prices and a steady decrease in the volume of oil flowing through the Alaska Pipeline, oil revenues to the state are at historic lows and Alaskans are grappling with how to confront a new fiscal reality. Time will tell how the state decides to respond to this challenge. What is clear already is that a deep economic restructuring is underway, and Alaska will be managing its own energy transition over the coming decades.

This story may sound familiar to other members of this committee hailing from states reliant on a single energy resource. Changes to the way we produce, store and consume energy have profound impacts on the lives of people in communities throughout the country. For energy innovation to translate into true economic growth and competitiveness, we must find ways to ensure that people in communities from Farmington, West Virginia to Igiugig, Alaska reap the economic benefits from those innovations, rather than being left behind as bystanders.

This is at the heart of what Launch Alaska does. We find some of the country's most exciting cleantech startups and pair them with communities throughout the state. Rather than establishing a simple customer-vendor relationship, our startups work hand-in-hand with community members to iterate and validate their technologies as co-participants in the innovation process.

One example of this is BoxPower, a cleantech startup featured in Forbes 30 under 30, which manufactures easy to assemble solar generators in shipping containers as an alternative to diesel generators. Each system consists of a solar array, battery bank, and backup generator that sets up in 5 hours to provide power for less than the cost of operating a diesel generator. Spun out of a

Princeton University research project, BoxPower worked closely with the Northwest Arctic Borough (NAB) in Alaska to identify community partners and deploy the first units in the Fall of 2018. The NAB region has an overall poverty rate of 25.3% and a cost of living over four times that in Anchorage—among the highest levels in Alaska. BoxPower delivered two 50kW solar battery systems in these two communities, saving each community over \$800,000 in avoided fuel costs over the system life. The experience also provided BoxPower with critical tech validation and performance data as the units experienced a harsh Alaska winter.

Another example is 60 Hertz, an Alaskan startup that worked with power plant operators in rural villages to design a piece of operations and maintenance software to protect expensive diesel generators and generation assets on islanded microgrids. The software ensures that important maintenance happens accurately and on time, while easing the burden of paperwork for all involved. The 60 Hertz team worked closely with Alaskan utilities, native-serving nonprofits and tribes to design simple, culturally relevant software that does not require existing computer experience.

One final example of energy innovation that has transformative economic and climate potential is the development of advanced fission technologies, like what is being developed by Oklo. Oklo is working on very small reactors initially aimed at producing cheaper, reliable, and cleaner power for Alaskan communities and businesses. The Oklo reactor is designed to operate for 20 years without refueling, and since it is a fast reactor, it can reuse and recycle previously used fuel. The reactor is designed for deployment in areas like we have in Alaska, and can provide both electric power, as well as heat. Their technology builds on decades of research and development in advanced reactors in the US. Oklo combines that legacy of technology development with advances in materials, high performance computing, innovative business models that fit users' needs, and venture backing, to produce a product that is well suited to scale and meet Alaskans' needs, and the worlds' needs.

BoxPower, 60 Hertz and Oklo illustrate an important point about all innovation; it always begins by identifying a problem. In Alaska there are a host of problems to be solved. The state's largest electric utility cooperative, which serves 57 communities, is seeing its infrastructure fail as the tundra melts away and increasingly powerful storms batter coastal communities. Oil workers on Alaska's North Slope are finding their work complicated as the ice roads they depend on during drilling season are freezing later and thawing earlier, and ponds are showing up where they never did before. Meanwhile the entire village of Newtok is being relocated to a new location further inland as coastal erosion eats away at the shoreline.

Climate change is hitting Alaska hard, and the unpredictable costs to utilities, corporations, and people living in communities is increasing at an alarming rate. It is also recognized as a major threat to national security over the next 50 years. As one of my heroes Jigar Shah likes to point out, deploying the solutions to solve climate change also represents the biggest wealth creation opportunity of our lifetimes. Energy innovation and large scale deployment of ready-to-go technologies are a necessary component of our response to climate change. With the cost of solar energy declining by more than 70% over the past decade, and similar declining cost curves for storage and wind, the technologies we need to begin making rapid progress already exist.

Continued focus on energy innovation will enable us to more fully decarbonize the national energy system.

For the U.S. to retain its energy competitiveness and spur on future growth, the public sector must continue to invest in the research and innovation infrastructure that makes America the innovation engine of the world. Nearly all of the startups we work with are led by founders who honed their skills at America's universities, national labs or within the U.S. military - institutions sustained by decades of investment from the public sector. Now that these talented individuals are at the helm of high growth startups, the public sector can play an important role by supporting the wide scale deployment of their technologies with incentive programs, clear policy direction and technical support.

A sustained, coordinated (across multiple agencies), and multi-year commitment by federal entities for cooperative research agreements and technology demonstration and deployment projects can provide a win-win for the State and Federal entities. Recognizing the unique Arctic test bed that Alaska represents, the U.S. Navy's Office of Naval Research is a primary sponsor of our efforts and those of several partner organizations. Other parts of the U.S. Department of Defense are beginning to follow suit. On the other hand, in a state that is twice the size of Texas, with more contiguous coastline and offshore wind resources than the rest of the U.S. combined and more than 12% of the world's islanded microgrids, the entire U.S. Department of Energy presence in Alaska consists of only two full time employees. We are good friends with both of these individuals and they have provided valuable mentorship and connections to our companies. We need more of their colleagues with boots on the ground in-state. An Arctic Energy Office with representation from across the DOE is one approach to consider.

In conclusion, as the global transition to a decarbonized energy system gathers momentum, Alaska's high cost of energy and harsh environment offers an ideal deployment ground for startups to partner with communities, validate their technology, and scale to large global markets. This approach to energy innovation can support sustained economic growth and competitiveness for communities throughout the U.S. while also rising to the challenges posed by climate change.

Thank you very much for your time today. I look forward to answering your questions.