Statement of Fran Ulmer, Chair U.S. Arctic Research Commission

Submitted for the Record in Conjunction with The Senate Oceans, Atmosphere, Fisheries, and Coast Guard Subcommittee Hearing on "Defending U.S. Economic Interests in the Changing Arctic: Is There a Strategy?"

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Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to offer comments on this important topic. As you know, federal, state and local governments, as well as private industry and non-profit organizations, are in the process of creating strategies to economically and sustainably develop the Arctic. It is important to support scientific research in the Arctic in order to implement informed policy that capitalizes on economic opportunities as well as implements environmental protections to ensure social and economic viability for future generations in the Arctic.

My name is Fran Ulmer, and I was recently appointed Chair of the U.S. Arctic Research Commission (USARC).[1] My testimony represents the view of USARC, an advisory body to the President and to Congress. The Commission formulates its positions independently in public meetings and publishes these in reports, referred to below.

The Arctic Ocean is increasingly accessible, and transformational economic opportunities are emerging. Opportunities include oil and gas exploration and development, tourism, and commercial shipping. Ice coverage is shrinking in the Arctic, and shipping lanes are relatively ice-free during the summer for longer periods than in the past.

Climate change is easily observable in the Arctic: consistently warmer temperatures, thawing permafrost (permanently frozen ground), melting glaciers, earlier spring thaws and later winter freeze ups, less predictable ice cover on interior rivers, more powerful storms and dramatic coastal erosion imperiling dozens of coastal villages, and a slow but consistent march northward of flora and fauna seeking cooler temperatures. The impacts on communities and infrastructure are expensive. A few examples follow. Ice cover on the Arctic Ocean serves as a blanket, reducing the power of winter storms and wave action. The retreat of sea ice means that the storm surges and waves are more powerful and more damaging to the coast. As a result of that, and higher sea levels, communities are losing private and public infrastructure and several dozen villages are seeking funds to reinforce coastlines in hopes of protecting people and buildings. Other villages are in the process of moving or planning to move. Some areas are increasingly inaccessible

[1] Under the Arctic Research and Policy Act of 1984, the seven Commissioners of the USARC are appointed by the President and report to the President and the Congress on goals and priorities of the U.S. Arctic Research Program. The program is coordinated by the Interagency Arctic Research Policy Committee, (IARPC), a National Science and Technology Council subcommittee, that is chaired by National Science Foundation Director Dr. Subra Suresh, who is also an *ex-officio* member of the Commission. *See* www.arctic.gov for Commission publications, including the Commission's Goals Report.

because permafrost is thawing, making the ground "soft" for many of the warmer months. Soft, boggy ground jeopardizes the limited roads, airports, pipelines, and buildings that exist in the Arctic, and reduces the months that both residents and oil companies can use ice roads for access.

Climate change, tourism development, and international investment in the Arctic are moving faster than our limited understanding of arctic ecosystem functions. The pace of change in both natural systems and human use patterns demands increased focus on and attention to arctic research. Scientific research must inform policy decisions to maximize economic opportunities while ensuring long-term sustainability and environmental protection. Timely examples are marine transportation, adventure cruises, and oil and gas exploration, all of which need shore-based infrastructure to be safe and reliable. Research can better inform decisions about where to develop ports that will be safe from dramatic coastal erosion or how to address oil spills more effectively in an ice-filled environment.

Baseline mapping of Arctic lands, both on- and offshore is essential to improve safety and inform decisions. Arctic observations, with an emphasis on weather, climate and environment, and how they are evolving, are needed to accurately plan for development in the Arctic.

There are many Arctic research efforts worth noting and I highlight a few. The Alaska Ocean Observing System addresses regional and national needs for ocean information-including Arctic regional data. This system, primarily funded by the National Oceanic and Atmospheric Administration, is a network of air-, land-, and sea-based instruments that collects a host of valuable oceanographic, atmospheric, and biological data, which are then turned into information and tools for the use of the nation.

The Sea Ice Zone Observing Network (SIZONET) is an interdisciplinary project, supported by the National Science Foundation, and led by the University of Alaska Fairbanks. SIZONET has implemented an integrated program to observe seasonal ice in the context of the sweeping environmental, geopolitical, and socio-economic change in the North. By assessing the nature and extent of sea ice system services, SIZONET is building an integrated observation network that will lead to prediction of key trends that provides maximum benefit for the broadest range of affected parties.

Internationally, Sustaining Arctic Observing Networks (SAON), a group important in the coordination of Arctic observing data on an international scale, has entered a second phase of its work. The continuing process consists of representatives from the eight Arctic countries, permanent participants in the Arctic Council, and Arctic Council working groups. With the inclusion of representatives from the International Arctic Science Committee and the World Meteorological Organization, SAON is also connected to the Arctic science, observing, data management activities and interests of the non-Arctic countries, as well as to global observing systems.

I attach the US Arctic Research Commission's *Report on Goals and Objectives* to provide a more comprehensive overview of Arctic research priorities for the nation.

Research also provides the data necessary to advance responsible development plans and to help protect against potential impacts related to development of the Arctic's vast natural resources. The Commission is encouraging research in oil spill prevention and containment, response and fate/effects. I attach a white paper from the Commission on oil spill research priorities that makes specific recommendations on these issues.

The Commission appreciates this Subcommittee's interest in research to maximize Arctic economic opportunities in the Arctic. Timely Arctic scientific research is key to inform pivotal strategic decisions at this time in our history.