

Statement of
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Good morning. My name is Mary O'Neill. I currently serve as the manager of the Office of Remote Sensing at South Dakota State University and as the principal investigator of the South Dakota View consortium. I would like to thank Chairman Costa for inviting me to testify at today's hearing on H.R. 2489, the AmericaView Geospatial Imagery Mapping Program Act. I would also like to thank my South Dakota Congresswoman, Stephanie Herseth Sandlin, for her long-standing support of the AmericaView program and her sponsorship of the AmericaView legislation that is our focus today.

AmericaView is a program that is near and dear to me. More importantly, however, it is a program that is a model of the way our country should be utilizing the investment it has made in earth observation aircraft and satellites and the data they acquire. Remotely sensed imagery is no longer esoteric, something used exclusively by gray-bearded university researchers. Rather, it is a tool that contributes to the quality and safety of each of our lives on a daily basis. As with many new technologies, potential users need to be educated on the value of the technology and how it can help them do their jobs more effectively, more efficiently, more economically, and more sustainably. That is the role of AmericaView – to be the conduit of remote sensing technology transfer. The shape and size of that conduit varies from state to state. That is the beauty of AmericaView. As our charter proclaims, we are locally controlled and nationally coordinated. The conduit for South Dakota will look different than the conduit for Maryland because our populations and landscapes are very different. Our national coordination, however, means that we get together to share ideas, experiences and data that will benefit one another – the synergistic nature of the AmericaView organization.

The Education Component of AmericaView

The mission of AmericaView, according to its Charter, is "...to advance the availability, timely distribution, and widespread use of remote sensing data and technology...through education, research, outreach and sustainable technology transfer to the public and private sectors." It is the education and outreach portion of the AmericaView mission that I would like to focus on this morning. As I mentioned earlier, education is a vital part of the technology transfer process. Each of the 36 current AmericaView states engages in education and outreach activities. The pie chart in Figure 1 shows the various categories of educational activities proposed by

AmericaView member states for the program year starting in September 2009 along with the percentage breakdown of these activities.

The list of educational past, current and proposed educational activities in the AmericaView member states is long and diverse. Here is a sampling of those activities:

- CaliforniaView, IowaView, and GeorgiaView have worked collaboratively to develop an on-line remote sensing tutorial as part of a remote sensing certification program
- MarylandView and PennsylvaniaView are working together to update and revise the Mid-Atlantic from Space lessons developed earlier by MarylandView
- PennsylvaniaView is creating university lessons in conjunction with a private-sector software vendor
- LouisianaView, along with the USGS National Wetlands Research Center, annually offers a data mining workshop entitled "Louisiana Hurricane Season National and Local Geospatial Imagery Data Availability"
- NewMexicoView, in its next program year, plans to demonstrate to state and federal agency personnel the acquisition of digital remote sensing images and video for rangeland assessment and monitoring using an Unmanned Airborne System (UAS)
- TexasView, in the summer and fall of 2010, will provide a comprehensive Level III geospatial training program to the Texas State Guard, focusing on geospatial technology for command and control
- WyomingView plans to train tribal government personnel from the Wind River Indian Reservation on image processing techniques
- The AmericaView Education Working Group, comprised of members from several states, is currently planning activities for Earth Observation Day in the spring of 2010
- New Mexico, Kentucky, Colorado, North Dakota and Hawaii will be using Google Earth technology to assist teachers, students and the general public in understanding remote sensing applications
- HawaiiView will conduct remote sensing workshops at Na Pua Noevau Super Saturday Events, in collaboration with the Native Hawaiian Science and Engineering Mentorship
- NebraskaView plans to provide a hands-on geospatial activity for 60-80 students who will be participating in the 4-H Big Red Summer Camp
- OhioView, which has been offering its summer SATELLITES (Students and Teachers Exploring Local Landscapes to Interpret the Earth from Space) institute for the past nine years, will expand the institute to the states of Pennsylvania and Maryland
- SouthDakotaView recently offered its eleventh annual Geospatial Technology for Educators workshop. This four-day workshop, held at the USGS Center for EROS, exposed K-12 teachers to remote sensing and other geospatial technologies and how they can be integrated into their classroom curriculum
- SouthDakotaView will, during its next program year, prepare a presentation suitable for service clubs that will create awareness of AmericaView and SDView and the general public services they provide.

Who Benefits from AmericaView's Education Efforts?

As you can see from the list above, our services are provided to several different groups of current and future users of geospatial imagery and associated technologies. K-12 teachers comprise one of those groups. Training the next generation of scientists, technologists, engineers and mathematicians – the STEM disciplines – is one of the awesome tasks required of K-12 teachers. It is imperative, therefore, that the teachers themselves have adequate and state-of-the-art knowledge in these disciplines along with the tools and enthusiasm required to engage their students. Workshops, such as the Geospatial Technology for Educators workshop shown in Figure 2, are offered by many of the AmericaView states to give teachers the opportunity to learn about geospatial technologies such as remote sensing, geographic information systems (GIS), and global positioning systems (GPS). At the workshops they also learn how to incorporate these technologies into their curriculum, i.e., how to use the technologies to enhance what they are required to teach. Our vision is that one day the use of geospatial technologies in the classroom will be as common as the present-day use of word processing, spreadsheets, and PowerPoint – technologies that as recent as 10 years ago were also new to teachers.

The current popularity of GPS and Google Earth among the general public is a hook that can be used to further the geospatial knowledge of both teachers and their students. Many AmericaView workshops demonstrate to teachers how these commonly available geospatial tools can be effectively used in their classrooms. Many workshops also require that the teachers create lesson plans that use one or more geospatial technologies in their discipline area. These disciplines include physical science, Earth science, chemistry, geography, mathematics, and even the social sciences, music and art. These lesson plans are then shared with other teachers at the workshop and in their school districts; thus the technology transfer continues.

Another user group we work with is students. K-12 teachers will often ask us to come to their school to tell their students about geospatial technology and/or do hands-on activities such as GPS treasure hunts or geocaching with their students. We also often do hands-on activities with students who are a part of organizations such as 4-H and the Boy Scouts. We, of course, also work with post-secondary students in community colleges, tribal colleges, and our universities. Interaction with these students may be in the classroom, in a research lab, or as an advisor. AmericaView is of benefit to these students in many ways. Some of them are able to do classroom and research projects because of the data that are freely available to them in the AmericaView image archives. Some of them find their classroom lectures more interesting and relevant because of the real-world experience of their AmericaView-associated professors or guest lecturers. Some of them have received assistantships, internships or mini-grants from AmericaView. Some of them will benefit from the software licenses that another university within their state consortium was able to share with them. And some of them will find jobs because of the connection their instructor or advisor has to the

AmericaView network. Figure 3 shows some of the students we have recently worked with in South Dakota.

The current workforce is another group that benefits from AmericaView's education efforts. This group includes farmers, ranchers, state and federal agency personnel, school district administrators, local government personnel, tribal government officials, disaster response teams, natural resource managers, military personnel, and extension educators. An example of the latter is the two-day training session sponsored by South Dakota View at the USGS Center for EROS near Sioux Falls in 2007. Approximately 16 extension educators from the South Dakota Cooperative Extension Service attended this workshop and learned about the role of geospatial technologies in precision agriculture. These educators in turn transferred their new-found knowledge to the thousands of constituents they serve in the state. An example that involves a combination of military and disaster response officials is the training delivered by TexasView for the Texas National Guard and Texas State Guard. Three levels of training enable the Guardsmen to become proficient in using geospatial technologies in their unit facilities and in the field in response to natural or man-caused disasters in order to safeguard human life and restore critical services such as electrical power and clean water.

The general public can be thought of as yet another education group. This group learns about geospatial technologies by viewing displays in museums and other public places, by attending events that provide hands-on experience, and by viewing AmericaView member state websites. The value of this type of learning is documented in a study recently published by the National Academy of Sciences entitled "Learning Science in Informal Settings: People, Places, Pursuits." This study found evidence that informal education programs involving exhibits, new media, and hands-on experiences – such as public participation in research – increase interest in science, technology, engineering and mathematics and related careers for both children and adults.

The AmericaView Geospatial Image Mapping Program Act

Although the list of current and planned educational activities is already impressive, passage of the AmericaView Geospatial Image Mapping Program Act will make it possible to enhance the quantity and quality of AmericaView's education, training and outreach efforts. These enhancements include:

- Extending the AmericaView program to all 50 states and territories, thus making it possible for many more students, teachers and workforce personnel to learn about geospatial data and technologies
- Expanding the number of remote sensing and other geospatial technology courses taught at universities, community colleges, historically black colleges and universities, and tribal colleges
- Providing additional and easy-to-use geospatial tools for educators
- Expanding geospatial imagery mapping research at research universities
- Allowing greater access to remotely sensed imagery and image processing tools
- Providing more training for current workforce personnel

- Promoting imagery formats that are compatible with commonly used software
- Building training partnerships with all levels of government
- Supporting student research and development activities

The United States Department of Labor in 2004 identified the geospatial technology industry as a high-growth industry. The criteria used for this designation were: (1) the industry is projected to add substantial numbers of new jobs to the economy or affect the growth of other industries, or (2) the industry is an existing or emerging business being transformed by technology and innovation requiring new skills for workers. Both criteria lend credence to the importance of AmericaView's role in geospatial education. The US Department of Labor, in its High Growth Industry Profile of Geospatial Technology, notes that "Geospatial products and specialists are expected to play a large role in homeland security activities." This same document states that "Increasing demand for readily available, consistent, accurate, complete and current geographic information and the widespread availability and use of advanced technologies offer great job opportunities for people with many different talents and educational backgrounds (US Geological Survey and US Bureau of Labor Statistics)."

The current and projected demand for workers with geospatial technology skills is evident. As we look at the challenges that our children and grandchildren will face in the future - energy supply, climate change, natural resource availability and distribution, and even national security – we know that the role of geospatial technology will become more important with each passing decade. AmericaView is proud of the role it has played in training the current and future geospatial technology workforce and in preparing for our future. We look forward to Congress's continued and expanded support of our country's critical geospatial education needs.

Thank you, Mr. Chairman, for this opportunity to testify before you and this Subcommittee.

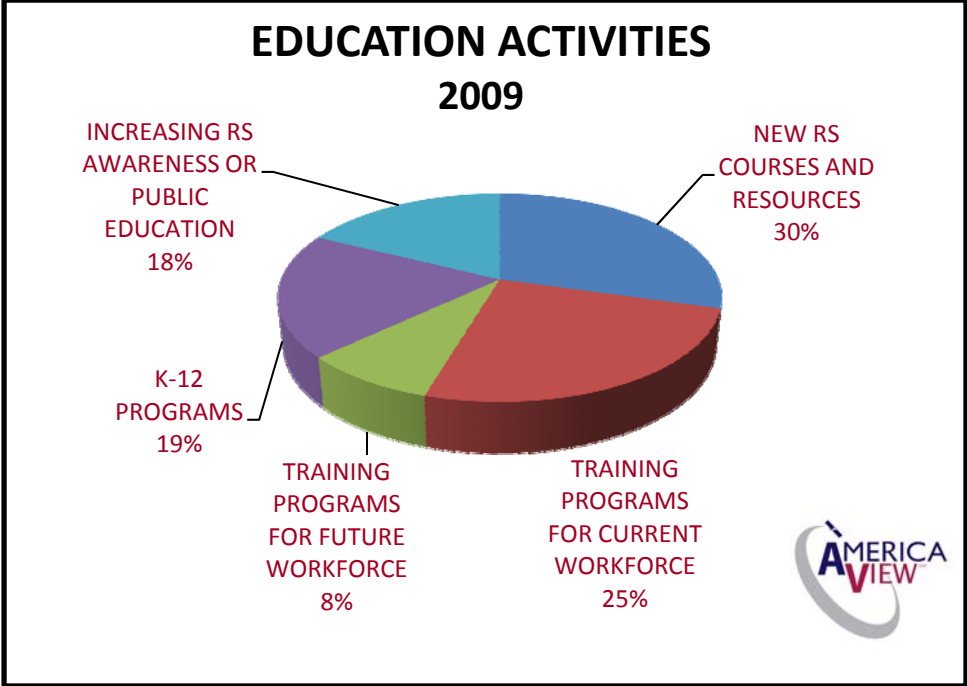


Figure 1. Proposed educational activities of AmericaView member states for 2009



Figure 2. Teachers and AmericaView instructors at the 2009 Geospatial Technology for Educators workshop at the USGS Center for EROS



Figure 3. Students of all ages learning about GPS and remote sensing