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"FEDERAL GEOSPATIAL DATA MANAGEMENT;" AND H.R. 2489, "AMERICAVIEW GEOSPATIAL IMAGERY MAPPING PROGRAM ACT."

OVERSIGHT AND LEGISLATIVE HEARINGS

BEFORE THE

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

Thursday, July 23, 2009

Serial No. 111-29

Printed for the use of the Committee on Natural Resources

Available via the World Wide Web: http://www.gpoaccess.gov/congress/index.html
or
Committee address: http://resourcescommittee.house.gov

U.S. GOVERNMENT PRINTING OFFICE

51-572 PDF WASHINGTON : 2009

For sale by the Superintendent of Documents, U.S. Government Printing Office
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OVERSIGHT HEARING ON "FEDERAL GEOSPATIAL DATA MANAGEMENT."

Thursday, July 23, 2009
U.S. House of Representatives
Subcommittee on Energy and Mineral Resources
Committee on Natural Resources
Washington, D.C.

The Subcommittee met, pursuant to call, at 10:10 a.m. in Room 1324, Longworth House Office Building, Hon. Jim Costa [Chairman of the Subcommittee] presiding.

Present: Representatives Costa, Lamborn, Holt, Sablan, Sarbanes, Tsongas and Lummis.

Also Present: Representative Blackburn.

Mr. COSTA. Good morning, everybody. Thank you for being here this morning for the House Subcommittee on Energy and Mineral Resources meeting.

Today is a two-fer. First, we are going to have an oversight hearing on Federal geospatial data management. When we complete the testimony from our panel members and questions that are asked by Members of the Subcommittee, we will conduct a legislative hearing to formally consider the measure from our colleague from South Dakota, Stephanie Herseth Sandlin, who has been working on this for some time.

It will be a good opportunity to discuss the AmericaView Act and where the oversight, I think, needs to be applied as it relates to the Federal efforts on geospatial issues that involve so many areas of national policy in terms of resources, in terms of defense policy, in terms of general planning and our relationship at the state and local level, and also the private/public intersection because so much has changed. So much has changed.

So we will be holding two hearings back-to-back today. The first will discuss the geospatial data, and then when that is over we will officially reconvene for a legislative hearing with a panel of experts to discuss the AmericaView bill in more detail.

But first let me make some observations as it relates to the subject matter at hand.

STATEMENT OF HON. JIM COSTA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. COSTA. In this field, believe it or not, five years can literally feel like a lifetime. You might ask why. Well, those of you who are

in the audience obviously know because this is an issue near and dear to your heart.

Google Maps, Google Earth, iPhone, all of these things that we seem to take for granted these days, didn't exist five years ago. The people's iPhone they have there, they can have the ability to provide directional course in your automobile or wherever you are going. We take that for granted, but five years ago that didn't exist.

So how we use the state-of-the-art technology in our everyday lives that now seems to be taken for granted is really the subject matter at hand and so while most Americans may not know what geospatial means, what we do know is they use it every day in their lives.

We all use it every day in our lives, whether it is, as I said, looking at instructions on an outline or whether it is a complex way of figuring out how our regions and our states deal with forest fires, for example, or the complex way to deal with information for fisheries, our resource management, whether it be oil or natural gas.

The Federal government's role in geospatial information mapping has changed significantly over 200 years. It has come a long way since Thomas Jefferson sent Lewis and Clark in one of the first expeditions, as they said, to map this great expanse of the United States that resulted in the Louisiana Purchase from France, and to find out whether or not there was a passage that connected the great river systems of the Continental Divide on the east to the river systems of the Continental Divide on the west.

Clearly the ability to link the Missouri River and the Columbia River was not to be, not nearly in the way that President Jefferson had hoped or that Lewis and Clark later discovered was not available.

Nonetheless, today the Federal government still has and collects voluminous amounts of geospatial data. The Department of the Interior estimates that roughly 80 percent of the Federal data that they have on record has a geospatial component to it.

Unfortunately, like a number of things, one hand of the government doesn't necessarily know what the other hand of the government is doing. The Department of the Interior estimates that 50 percent of the money the government spends on geospatial efforts is redundant. Agencies oftentimes do not know what other agencies have already done and therefore can't use the existing data because it wasn't collected with the right information necessary to make it work.

There have been efforts to better coordinate these agencies that have been going on record of gathering and collecting this data for really over 50 years, but I think Congress has learned that in the last set of geospatial hearings in this decade that the efforts have moved very slowly and have been very, very ineffective. So today we stand here to try to figure out how we can try to fix these things.

Before I yield to the Ranking Member for his opening statement, I would like to do something that I think makes it much more informative and interactive.

When I was talking about some of the stuff that we see on the news where they use geospatial and they will take you right to a

specific location, whether it be in Mumbai, India, or whether it be in Pakistan or whether it be the flooding of the Red River up in the Dakotas where all of a sudden you are zoomed in on a region and, all of a sudden, you are right on the site. Well, all of that is done as a result, in part, of this mapping.

I—my staff I should say—give credit where credit is due—we have a five-minute video that will bring home, I think, to everyone the subject matter at hand. We will see how good we are with Marcie's efforts to make this happen. If it is successful, I will take all credit. If it doesn't work, it is because Marcie couldn't figure out how to get the computerized video thing going.

Let us see how it works here. We will show you what we are talking about today. It is from Penn State.

[Whereupon, a video was played.]

Mr. COSTA. I like that. "The location of anything is becoming everything," and we want to thank Penn State University for this trailer for the geospatial documentary that they are producing. I think it does a nice job of setting up today's hearing in terms of the subject matter at hand.

With that, I would like to thank our witnesses and recognize the Ranking Member, Mr. Doug Lamborn from Colorado, for any opening statement that he would like to make.

[The prepared statement of Mr. Costa follows:]

Statement of The Honorable Jim Costa, Chairman, Subcommittee on Energy and Mineral Resources, on "Federal Geospatial Data Management"

Good morning, and welcome to the Energy and Mineral Resources Subcommittee hearing on geospatial information. Officially this is a the first hearing of a double-header that we will be holding this morning, so those of you in the audience and watching online will be getting your money's worth. The second hearing will be a legislative hearing on a bill sponsored by my good friend and fellow Blue Dog, Congresswoman Stephanie Herseth-Sandlin, and I will have more to say about that bill a little later.

This is the first time that I have had the opportunity to chair a hearing on this important topic, and, to the best of my knowledge, the first Congressional hearing directly on geospatial issues since 2004. While five years might not seem like a huge gap, when it comes to technology it is a lifetime. Five years ago, Google Maps and Google Earth did not exist, nor did iPhones. Today, Americans take it as a given that they should be able to get instantaneous driving directions across a city, state, or the entire country, or, if they have a GPS-enabled device, they should be able to find out the location of the nearest restaurant or gas station. Most people probably could not explain what "geospatial" means, but they know what it does, and it has become an increasing part of our everyday lives.

Also, most people probably have no idea what goes in to collecting that data and making it available in a useful form. I think we take for granted that every road will be there when we search for directions, or that the U.S. Geological Survey topographical maps will be there when we want to go on a hike in the forest, or that there will be a map showing what areas are being affected by severe drought. But a tremendous amount of time and money is required to make sure these maps exist, that they are accurate, and that they match up properly. Often times, such as when emergency responders need to know where to go, and where hazardous utility lines may be buried, this can be a matter of life and death.

Historically, the federal government has been the primary collector, manager, and integrator of geospatial data. Over 200 years ago, Thomas Jefferson signed the bill creating the United States Coast Survey, and the need to understand the shapes of our coastlines and the boundaries of our frontiers made mapping a truly federal affair. But recently the situation has changed, and the federal government has fallen from its preeminent position. This is not necessarily a problem in and of itself. In many cases, state and local governments need a much higher level of detail than the federal government, so it is fitting that they now create some of the highest resolution geospatial data sets. And often times the private sector is better equipped

to efficiently collect or process the data. I believe the variety of geospatial information on the web provides excellent examples of that.

But the federal government has a number of other significant problems in this field. Government Accountability Office reports from five years ago point out that data duplication and a lack of coordination are a serious problem for the federal government. Earlier this decade, the Department of the Interior estimated that about 50 percent of the federal government's spending on geospatial data is redundant. Numerous examples exist where one agency spends considerable money collecting data that, with a little extra coordination between different parts of the federal government, could have been useful for a number of different agencies. But the federal government has failed to manage this coordination effectively, and the American people pay the price, either through wasted money or inadequate data.

In theory, the federal government has been working towards resolving these issues, and establishing something called the National Spatial Data Infrastructure, since the early 1990s. But progress has been extremely slow, and some people have doubts that we even know what the National Spatial Data Infrastructure really is, or if we would know when it is completed. The dramatic advances in technology over the past several years raise questions about whether we need to reevaluate how the federal government manages geospatial data and activities.

I look forward to hearing from all our witnesses about how they believe the federal government can make improvements in the years ahead, and I now yield to the Ranking Member, Mr. Lamborn, for his opening statement.

STATEMENT OF HON. DOUG LAMBORN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. LAMBORN. Yes. Thank you, Mr. Chairman. I enjoyed that also.

Before anything else, I would like to ask unanimous consent that the gentlewoman from Tennessee, Mrs. Blackburn, be allowed to sit on the dais and participate in the hearing, especially for the purposes of an introduction when it comes time to bring up the first panel of witnesses.

Mr. COSTA. Without objection.

Mr. LAMBORN. And thank you for having this hearing also. I appreciate doing this so we can examine the acquisition and management of our Federal geospatial data. My state of Colorado is proud to be the home to many outstanding geospatial and mapping companies, including DigitalGlobe, CompassData and others. We know the importance of this science and industry to America.

Today's hearing will hopefully provide us with answers regarding how much money the Federal government spends on geospatial data; what, if any, improvements in coordination between Federal agencies for data collection have been implemented recently; and how we can ensure the Federal government is getting the most out of our citizens' tax dollars.

One of the key questions we will try to answer at this hearing is how can we improve the coordination between our Federal agencies when collecting geospatial data. One of the key agencies responsible for enforcing this coordination is the President's Office of Management and Budget, OMB. I am certain that their testimony on this issue would be particularly enlightening.

Unfortunately, we will not be hearing from OMB today. Although they were apparently invited to attend, OMB must have decided the issue was not important enough to participate in this hearing. This unwillingness by OMB to come before this hearing and help us answer the important questions facing Federal geospatial data management will leave us with many unanswered questions,

regardless of how enlightening and informative our witnesses will be today.

The lack of OMB's willingness to testify is particularly troublesome when you consider that the so-called stimulus bill authorizes billions of dollars for mapping and could end up wasting hundreds of millions of precious taxpayer dollars on duplicative and needless surveys.

On our Federal lands in the West where many of us use the motto "Take only memories, leave only footprints," the mapping community likes to use the motto, "Map once, use many times." Unfortunately, collectively, Federal agencies seem to use the motto," Map many times, hoard the data." This mentality by our agencies wastes taxpayer dollars.

When the Department of Transportation spends money on maps, which duplicates work done by the Department of Agriculture or Commerce, that means less money for roads and infrastructure. Eliminating this sort of duplication is exactly why we are here today and again one of the reasons OMB should have been here with us as well.

I want to welcome the witnesses, and I look forward to their testimony. Mr. Chairman, I yield back.

I think now would be an excellent time to do any introductions.

[The prepared statement of Mr. Lamborn follows:]

Statement of The Honorable Doug Lamborn, Ranking Republican, Subcommittee on Energy and Mineral Resources, on "Federal Geospatial Data Management"

Thank you Mr. Chairman, I appreciate you holding this hearing today to examine the acquisition and management of our federal geospatial data. My state of Colorado is proud to be the home to many outstanding geospatial and mapping companies, including DigitalGlobe, CompassData and others. We know the importance of this science and industry to America.

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I want to welcome the witnesses and I look forward to their testimony.

Mr. COSTA. All right. I will defer to our colleague who has one of our first panel members from her district who she knows. Mrs. Blackburn?

STATEMENT OF HON. MARSHA BLACKBURN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

Mrs. BLACKBURN. Thank you, Mr. Chairman. I do want to thank you and Ranking Member Lamborn for allowing me to be here this morning. I do appreciate the courtesy that you are extending.

I come before the Subcommittee with the distinct honor this morning of welcoming my constituent, and long-time friend, I will have to add to that, even though we will not tell you how long because it would date us, and women who are over 50 years old don't talk about such things.

But Susan Marlow will offer some expert testimony for you, and she will provide this Committee with a unique perspective on geospatial coordination in governance at the Federal level. There is a reason that her testimony is so well placed for this Committee. She is the president and CEO of Smart Data Strategies, Inc.

Now, that business started in 1989, and it is a woman owned and woman run business in Tennessee's seventh congressional district. She is a well-known professional in Middle Tennessee, and she is sought after for her expertise regarding geospatial business and technology. The Committee will no doubt benefit from having access to her experience.

There is no other voice in our state and certainly in Tennessee's seventh congressional district, which goes from Memphis to Nashville, all the way to Fort Campbell, Kentucky, and there is no voice more knowledgeable or well versed on the issues that are before this Committee in the geospatial and mapping discipline.

Susan, we are thrilled that you would take your time, that you would step away from your business. As we know, for small business people the clock never calls it a day. You are always working.

So we are thrilled that you are here. I know you all have a busy schedule, so I will welcome my constituent and will yield back my time, and I thank you for the courtesy.

Mr. COSTA. Thank you, Congresswoman Blackburn. We look forward to hearing your constituent as a part of this panel.

Ms. Marlow, you are to be advised, with all the members of the panel, that we have a rule that limits you to five minutes. Your statement won't be as long as your introduction was.

[Laughter.]

Mr. COSTA. I am sorry, but we do have a written statement that we will be anxious to read.

But for all panel members, those of you who have not testified before here, it is a five-minute rule. Right in front of you, there is a timer. The green light will be on for the first four minutes, and then when the yellow light goes on, you have one minute left. When the red light goes on, then your time is expired.

The Chair generally gives points for those that are within the five minutes. Correspondingly, if you go beyond the five minutes you get demerits so we hope and appreciate that you will comply with our rule, and obviously we look forward to the question and answer time where we get a chance to further provide information and learn from the testimony that you provide.

So with that understood, we have in the order that the introductions began Mr. John Palatiello. Is that right?

Mr. PALATIELLO. Palatiello.

Mr. COSTA. Palatiello.

Mr. PALATIELLO. Very good.

Mr. COSTA. OK. Executive Director for Management Association for Private Photogrammetric Surveyors, known as MAPPS; Mr. Michael Byrne, Geospatial Information Officer from my home state of California. It is good to have you here. And Ms. Karen Siderelis. Is that correct?

Ms. SIDERELIS. Siderelis. Almost correct.

Mr. COSTA. Siderelis. OK. The Geospatial Information Officer for the U.S. Department of the Interior.

As the Ranking Member noted, we had hoped that the representative from the Office of Management and Budget would have testified. Staff made a serious effort to try to get them to be here today. It is unfortunate that they were not able to be here.

We will hold them to that because their information and their testimony is an important part of this discussion, so we hope in the future that they will provide that opportunity to testify before the Subcommittee and that we can go from there.

So why don't we begin at the beginning—that is usually a good place to begin—with Ms. Karen Siderelis, the Geospatial Information Officer from the Department of the Interior. We look forward to your five-minute testimony and also some explanation as to how we can deal with this issue of redundancy.

So, Karen, you are on first.

STATEMENT OF KAREN C. SIDERELIS, GEOSPATIAL INFORMATION OFFICER, U.S. DEPARTMENT OF INTERIOR

Ms. SIDERELIS. Excuse me. I am the Geospatial Information Officer——

Mr. COSTA. Speak in closer to the mic. We all want to hear you.

Ms. SIDERELIS. Is this better?

Mr. COSTA. Yes.

Ms. SIDERELIS. OK. I thank you for the opportunity to be here this morning and to provide testimony for the hearing on Federal geospatial data management and look forward to contributing positively to a dialogue about the value of geospatial information and the efforts to create a National Spatial Data Infrastructure.

Mr. Chairman, I would particularly like to thank you for using the video this morning to help us understand the value of geospatial data to the nation. It was quite impressive and I think a very nice beginning to the hearing.

This morning I would like to briefly discuss the status of Federal efforts to create a National Spatial Data Infrastructure, alert the Members to opportunities and challenges that we face in establishing a coordinated NSDI and describe some of the current direc-

tions that the Administration is pursuing to address the opportunities and challenges.

Over the last decade, significant Federal progress has been made to an NSDI. My written testimony provides information about advancements in seven key areas, work that we have done in strategic planning, improving Federal governance and accountability, developing partnerships with the non-Federal community, developing data sharing mechanisms, streamlining our investment management, developing approaches for sharing operational data assets and supporting key national issues.

Please allow me to call your attention to just a few noteworthy accomplishments that are in my written testimony. Firstly, through the Federal Geographic Data Committee we have provided partial funding for more than 600 projects to support the NSDI. Since 1984, we have invested more than $18 million in our partners to leverage their investments, and they have more than matched that investment of $18 million.

We have contributed seed money to help states develop geospatial strategic and business plans as part of the 50 state initiative, and that helps us in the Federal agencies understand how we might leverage the investments of our partners.

We have supported NSDI training through a distributed network of partners. We have endorsed 24 geospatial standards and initiated another 14. We have registered almost 200,000 records in the geospatial one-stop portal, making it easier for users to find and use geospatial data.

We have established a SmartBUY contract vehicle to consolidate purchases of geospatial software, and we have developed a draft plan for the Imagery for the Nation Initiative that could provide significant cost savings in the acquisition of aerial imagery across the entire country.

And we have established the National Geospatial Advisory Committee to provide a forum for non-Federal advice. Two of my colleagues on the panel today, Michael Byrne and John Palatiello, are currently serving as members of that committee.

And perhaps most important, we have used geospatial technologies and data to monitor, respond and prepare for a number of national issues. Geospatial technologies and data are being used to address many key national issues, including climate change, economic recovery, energy, homeland security and managing our natural resources and critical infrastructure.

And I think your opening remarks, Mr. Chairman, and the examples we saw in the video were wonderful examples of some of the things that we also are doing in the Federal agencies to use this information. I have provided as an attachment to my written testimony a document providing web links to some of the outstanding uses of geospatial data in the Federal agencies.

Regardless of our achievements, the United States still has work to do to achieve an effective National Spatial Data Infrastructure, and the Federal government must provide competent and appropriate leadership. We must continue to develop and refine spatial data policy, increase our understanding of the collective geospatial capacity of the Federal government and our partners and provide the means to oversee our investments.

Mechanisms to ensure performance and accountability and incentives for participation in a collaborative and coordinated NSDI must continue to be a focus. We have tremendous opportunities to leverage the intersection of an era of "unprecedented transparency and accountability," a renewed commitment to innovative government, an increasingly geospatially literate society, as you described, Mr. Chairman, and a period of unparalleled technological sophistication in order to put geospatial information at the fingertips of the Nation.

The Administration is committed to the National Spatial Data Infrastructure and considers fully embedding geospatial information into the business of government as an obvious and essential direction. We will do this through encouraging innovation both in the use of new technologies and transformed business processes, ensuring broad and effective collaboration with state, local and tribal governments, leveraging progress made in industry with our partners, our commercial partners, clearing policy obstacles and providing a focus on performance.

In the short term, the Administration will concentrate in three areas. Firstly, we will engage the Nation in a dialogue about its geospatial future. We intend to hold a national geospatial open forum using new media to garner input from all corners of the country to seek out the best ideas for enhancing the NSDI.

Second, we will bring creative energy to making Imagery for the Nation a reality. We will work with our partners to demonstrate the principles and concepts of the NSDI through the Imagery for the Nation Initiative and thereby meet a key national need.

And, third, we will bolster the geospatial governance structure that we have in place and assure that the Federal Geographic Data Committee is successful in providing unprecedented leadership in the twenty-first century.

Today American society demands and expects geospatial information to be at their fingertips. Leveraging advancements in the private sector and leadership from our partners in state, local and tribal government, the Nation stands ready and poised to enjoy the benefits of a robust National Spatial Data Infrastructure.

I look forward to working with Members of the Subcommittee on any further efforts toward the NSDI and appreciate your leadership in convening this hearing today.

I thank you for the opportunity to present testimony and would be pleased to answer any questions.

[The prepared statement of Ms. Siderelis follows:]

Statement of Karen C. Siderelis, Geospatial Information Officer, U.S. Department of the Interior and Acting Chair of the Federal Geographic Data Committee

I thank The Honorable Chairman Costa and the Members of the Subcommittee on Energy and Mineral Resources for the opportunity to provide testimony for this hearing on Federal Geospatial Data Management and to contribute positively to the dialog about the value of geospatial data to the nation and efforts to create the National Spatial Data Infrastructure (NSDI).

My experience with the subject of geospatial data includes my present position as Geospatial Information Officer for Department of the Interior (DOI) and my current role as Acting Chair of the Federal Geographic Data Committee (FGDC). I also have served as Associate Director for Geospatial Information and Chief Information Officer for the U.S. Geological Survey and worked a number of years in the State of

North Carolina as the Director of the Center for Geographic Information and Analysis.

Chairman Costa's letter of invitation stated that this hearing will examine 1) the usefulness of geospatial data to the nation; and 2) the status of federal efforts to create a National Spatial Data Infrastructure, reduce redundant geospatial data investments, promote data sharing, and increase coordination of geospatial data gathering activities within the federal government and between federal agencies and non-federal entities.

To address the first point of the usefulness of geospatial data to the nation, I will briefly share with you some examples of how geospatial information and technology have and are being used to address issues of national significance, and invite you to explore with me the possibilities of the future National Spatial Data Infrastructure.

To address the second point, my testimony includes observations of the Federal progress that has been made over the last decade to ensure more effective investments in geospatial data, promote data sharing, and improve coordination both within the federal government and between federal agencies and non-federal entities. I will also alert you to opportunities and challenges we face in realizing a robust and coordinated NSDI, and describe directions the current Administration is pursuing to address these opportunities and challenges. The testimony is centered on efforts of the FGDC and its responsibilities outlined in OMB Circular A-16 and Executive Order 12906.

USEFULNESS OF GEOSPATIAL DATA TO THE NATION

A report prepared by the National Geospatial Advisory Committee entitled The Changing Geospatial Landscape states a remarkable truth:

> "Practically overnight, access to terabytes of geographical information, much of it in three dimensions, has changed the way people work, live, and play."

Geospatial information and technology are now ubiquitous and embedded in numerous aspects of society. They support planning, decision-making, and action in many disciplines, professions and organizations literally around the world. Geospatial information is being used to address the nation's critical issues and applications include natural resource management, land records management, conservation and environmental restoration, facility management, transportation and logistics, human health, security, natural and human disasters, humanitarian relief, climate and environment—just to name a few. Today the consumer market has exploded and geospatial information and technology are being used in ways never imagined even a decade ago.

Geospatial information has been a valuable tool in the Nation's response to the events of September 11, 2001, Hurricane Katrina, the annual fire season, avian influenza, Census data collection and analysis, weather forecasting, and now the economic recovery. The impact and benefits of this information in each of these efforts was significant.

However most of these uses and applications still arise issue-by-issue and project-by-project and require extensive time to prepare and synthesize information. Imagine the United States with a National Spatial Data Infrastructure that enables easy access to current, high quality, application-ready information—information that is produced once, used many times, and satisfies a broad range of users from scientists to end consumers. The National Spatial Data Infrastructure of the future could place geographic knowledge at the fingertips of the nation.

FEDERAL PROGRESS, ACHIEVEMENTS, AND STATUS

Over the last decade remarkable Federal progress has been made toward a National Spatial Data Infrastructure. I call your attention to achievements in 7 key areas: strategic planning, improved Federal governance and accountability, partnerships with the non-Federal community, data sharing mechanisms, streamlined investment management, shared operational data assets, and support to key national issues.

Strategic Planning

Over the past several years federal partner agencies have conducted two significant efforts to develop strategic approaches for geospatial coordination.

NSDI Strategic Directions

In 2004, the FGDC launched the NSDI Future Directions Initiative to craft a national geospatial strategy and implementation plan to further the development of

the NSDI. The resulting document, "NSDI Future Directions Initiative, Towards a National Geospatial Strategy and Implementation Plan", drew on the collective insights and contributions of the geospatial community at-large and requires a variety of organizations and individuals to become involved and share the responsibility for implementation in order to achieve success. This report provides a context for action to address the needs of the geospatial community, built on past successes and providing the blueprint for collective action. The strategy described in the report:

- Is based on communication, cooperation, and partnerships;
- Reflects an integrated approach to access critical geospatial data and products;
- Recognizes the need to communicate the NSDI's value beyond current constituents;
- Emphasizes coordination of resources and appropriate technical services for all Federal and non-federal entities;
- Focuses on achieving interoperability and framework standards compliancy and adoption; and
- Outlines procedures, defined more concretely in its accompanying Action Plans, for achieving each objective and serves as a starting point to address the issues.

Geospatial Line of Business

Subsequent to development and execution of this National Strategy, the FGDC embarked on a follow-up effort to enhance coordination across federal agencies. The FGDC used a business process approach in developing the next iteration of its strategic efforts in 2006 through the OMB sponsored Geospatial Line of Business Initiative. The Geospatial Line of Business is a government-wide initiative, sponsored by the Office of Management and Budget that focuses on improving government effectiveness by promoting the use of geospatial information in order to improve both the policy decisions and the internal business processes of Federal agencies. This initiative has produced a Common Solutions and Target Architecture document that has served as the operational framework for federal geospatial coordination over the past three years. Two of the major accomplishments that this initiative produced are the Geospatial SmartBUY Blanket Purchase Agreements (BPAs) and the OMB Circular A-16 Supplemental guidance. These specific accomplishments will be described in more detail later in this testimony.

Improved Federal Governance and Accountability

Implementation of the strategic vision required executive participation and concurrence from partner agencies, a mechanism to guide the Steering Committees efforts, clarification of the Federal roles and responsibilities directed in A-16, and recognition of the importance of managing geospatial investments. Improved governance and accountability mechanisms include the following items.

Senior Agency Officials for Geospatial Information

In March of 2006, OMB directed select executive departments and agencies that produce, maintain, or use geospatial information to designate a senior agency official who has agency-wide responsibility, accountability, and authority for geospatial information issues, referred to as a Senior Agency Official for Geospatial Information or SAOGI. Each SAOGI is responsible for internal coordination and implementation of geospatial-related initiatives and activities in their agency and also serve as the policy-level official to represent the agency on the FGDC Steering Committee.

FGDC Executive Committee

In April 2008, a subset of the Steering Committee members, along with the Chair and Vice-chair were chartered as an Executive Committee. The Executive Committee meets frequently and is responsible for providing guidance, making recommendations and helping move forward critical issues for the Steering Committee. The Executive Committee member agencies are the seven agencies with the majority of the Federal geospatial investments, including: Department of the Interior (DOI), Department of Agriculture (USDA), Department of Commerce (DOC), Department of Defense (DoD), Department of Homeland Security (DHS), Environmental Protection Agency (EPA), and National Aeronautics and Space Administration (NASA). OMB serves as the Vice-chair. The Executive Committee has taken the lead on advancing Federal geospatial initiatives, such as Imagery for the Nation (IFTN), and has enabled the FGDC to progress efficiently and maintain continuity during the administration transition period.

A-16 Supplemental Guidance

Draft Supplemental Guidance for OMB Circular A-16 has been developed to clarify roles, responsibilities, and management processes to help lead agencies more systematically and effectively implement their geospatial management responsibilities.

The Guidance sets the framework for lifecycle-based portfolio management and establishes a reporting process to increase transparency in the development and maintenance of nationally significant geospatial datasets. It also provides a standard lexicon of terms for use in this process. It offers a decision process for adding, modifying, or deleting specific themes or datasets from the Circular based on alignment with long-term national strategies or goals, specific business requirements, benefits, and costs. Most importantly it establishes a meaningful process for continuously improving nationally important geospatial data.

Individual Agency Governance Improvements

Many improvements in geospatial governance have occurred within individual agencies. For example in 2008, DOI issued a Secretarial Order entitled "Enhanced Geospatial Governance" that, among other things, established the position of Geographic Information Officer. This formally recognizes the importance the Department places on the need for strategic oversight and management of geospatial investments and operations. Two other examples of Federal Departments establishing GIO positions are the EPA and the U.S. Army.

Partnerships with the Non-Federal Community

Non-Federal partners are key to the success of the NSDI. Advancements in Federal coordination with these important stakeholders are described below.

National Geospatial Advisory Committee

One of the most effective new developments to enhance our partnership and governance process has been the establishment of the National Geospatial Advisory Committee (NGAC). The NGAC is a Federal Advisory Committee established by the Interior Department in 2008 to provide external advice and recommendations to the member agencies of the FGDC. Two of my colleagues on the panel today, Michael Byrne and John Palatiello, currently serve as members of the committee. The NGAC includes a balanced membership of 28 committee members representing a variety of organizations involved in geospatial issues, including the private sector, non-profit organizations, academia, and all levels of government. The NGAC has staggered membership terms, and Secretary Salazar issued a call for nominations earlier this month for the next round of appointments to the committee.

In the short period that the NGAC has been in existence, it has proven to be an invaluable source of advice and feedback for the FGDC. The NGAC promotes two-way communication on issues of common interest to the national geospatial community and provides a forum to convey views representative of our partners and stakeholders. The NGAC meets on a quarterly basis and has established subcommittees that conduct research and develop draft products between committee meetings. Over the past year, the NGAC has analyzed and provided recommendations on Imagery for the Nation, Geospatial Line of Business, National Land Parcel Data, Transition Recommendations, "Changing Landscape" of Geospatial Technology, Economic Stimulus, and FGDC Governance. For next steps, the NGAC is working with us to conceptualize an approach for a new National Geospatial Policy and Strategy. This is a very complex activity, and I anticipate that this issue will be a major focus of the NGAC's work over the coming year.

Cooperative Agreements Program

The NSDI Cooperative Agreements Program (CAP) was established by FGDC to help form partnerships among organizations to implement the NSDI. The CAP funds innovation in the GIS community to build the NSDI. This broad effort includes a focus on people, organizational know-how, best business practices, collaboration, education, tools, technology, the Internet, standards and data. The NSDI CAP is a success story for the NSDI, FGDC, and our constituents.

CAP participation is now open to all sectors, except for Federal agencies, and has included: Federal agencies (prior to 2008), State governments, county and city governments, Tribal organizations, academic institutions, regional organizations, and private organizations. Since 1994, $18 million has been spent on CAP, funding over 600 projects, each of which is matched by non-Federal funds in the form of in-kind services. These matches typically range from 25 percent to 100 percent of the award.

50 States Initiative

This initiative provides seed money, requiring in-kind matches from the awardees, to help states develop geospatial strategic and/or business plans in support of the NSDI. These plans can then be utilized by the Federal agencies who can, through their programs and state liaisons, improve the integration of efforts between and across levels of government and between agencies. Currently, 46 states have received awards.

NSDI Training

The FGDC supports NSDI training through a distributed network of partners including State GIS Coordinators, university GIS programs, independent consultants, and Federal programs including the National Biological Information Infrastructure (NBII) and the National Oceanic and Administrative (NOAA) Coastal Services Center. NSDI training focuses on Geospatial Metadata and NSDI Clearinghouse implementation to aid individuals in documenting and publishing their geospatial data resources. An Online Training Initiative provides training modules on Geospatial Data Discovery and Access, Geospatial Data Integration, Geospatial Partnerships, Policy and Planning, the NSDI, GOS, geospatial web services, NSDI Standards, NSDI data themes, geospatial business planning, and the CAP. The FGDC also provides "train-the-trainers" sessions where attendees can learn the methods and materials for specific topics and become "certified" trainers. These trainers can then train others in their agencies, organizations, or geographic areas.

Data Sharing Mechanisms

We have advanced our capabilities for data sharing within and among Federal agencies, and also between Federal agencies and our not-federal partners.

Geospatial Standards

Standards are critical to the sharing of geospatial information. The FGDC in cooperation with partners develops geospatial standards for implementing the NSDI. These include standards on: thematic data content, metadata, transfer protocols, positional accuracy, cartographic representation, and others. The FGDC's standards process incorporates established Federal requirements, and complements other National and International standards development efforts including the International Organization for Standardization (ISO), the American National Standards Institute (ANSI), and the InterNational Committee on Information Technology Standards (INCITS).

There are currently 24 FGDC endorsed geospatial standards and another 14 currently in development. Since 2003, the 7 Framework data themes, and 4 additional data themes, have been endorsed. These include cadastre, digital orthoimagery, elevation, geodetic control, governmental unit boundaries, hydrography, transportation, bathymetry, geology, vegetation, and wetlands.

A significant amount of data collected by non-Federal partners becomes part of the NSDI. FGDC standards facilitate the contribution of data to the NSDI by non-Federal partners and provide guidance for the partners producing their own data. For example, last year, only one third of the new and updated data added to the wetlands layer of the NSDI was produced using funds appropriated to the U.S. Fish and Wildlife Service's National Wetlands Inventory. The rest was contributed by cooperators.

Geospatial One Stop

Geospatial One-Stop (GOS) is an e-government initiative sponsored by OMB. GOS makes it easier, faster, and less expensive for all levels of government and the public to access geospatial information. The GOS portal, also known as geodata.gov, serves as a public gateway for improving access to geospatial information and data. It provides a robust geospatial data catalog and tools for searching Federal and non-Federal geospatial information. It also includes a "Marketplace" where geospatial data purchase/development efforts are posted to foster partnerships for data collection and reduce costs. Use of the GOS continues to grow. From 2004 to 2008 the number of records registered with the GOS has increased from 11,000 to 188,000.

Data.gov and Recovery.gov

Geospatial technology and expertise have been used to support Data.gov and Recovery.gov, two new Administration initiatives to increase public access to government information and activities. Data.gov deals specifically with access to high-value government generated data sets. For example the USGS's "Global Visualization Viewer" provides access to 1.5 million aerial photographs of U.S. sites and 8.5 million images captured worldwide by U.S. Earth-observing satellites. Recovery.gov specifically provides information about the American Recovery and Reinvestment Act, providing information to the public about the use of stimulus funds.

Streamlined Investment Management

In the last few years, several important steps have been taken to streamline Federal investments in geospatial information and technology.

Geospatial SmartBuy

The Geospatial Line of Business, through the FGDC, has established a SmartBuy contract vehicle to consolidate purchase of geospatial technology. The acquisition initiative is led by the Department of the Interior and GSA. Multiple Blanket Purchase Agreements, provide significant cost savings and greatly improve the government's access to high quality commercial geospatial software, packaged data, and related products. BPAs will be available to Federal civilian and defense agencies as well as state, local, and Tribal governments.

Investment Reporting

As a part of the Geospatial Line of Business, a 2008 data call was issued to the Lead Agencies responsible for each of the 34, OMB Circular A-16 Data Themes of National Significance. This information is being used to develop a framework for geospatial data portfolio management.

The FY 2007 budget passback guidance issued by OMB to all Federal agencies directed agencies to "update and report to OMB by March 30, 2007, their inventories of geospatial data and systems using a common set of investment definitions". Agency information obtained through this investment reporting request was intended to be used to coordinate agency investments in geospatial data and services through FY 2009. Analysis of agency responses is contained in the "2007 Data Call Analysis Report" and some of the key findings were:

- For the specific data sets included in the reporting request, the Federal government financed or plans to invest, directly or indirectly, $1.89 billion in spatial data and geospatial services during the FY 2007—FY 2009 period.
- The level of geospatial investment each year was relatively consistent.
- Fifty two percent (52%) of agencies reported a three year average of less than one million ($1M) per year in geospatial data and services investments within the scope of the investment data request.
- DHS, DOC, DOI, and USDA investments when combined total over 90% of total reported federal geospatial data and services investments and these agencies are lead federal agencies for 87% of the data themes within the scope of the 2007 geospatial investment reporting request.
- A high degree of redundant investment types was not readily apparent in comparison with other LoB initiatives (i.e. Human Resources LoB, Financial Management LoB, Grants, etc.)

Shared Operational Data Assets

The FGDC has provided leadership to align the efforts of the Federal agencies and worked collaboratively with our non-Federal partners to move toward a national goal of shared operational data assets being available on-line for multiple uses and purposes.

Imagery for the Nation

Imagery for the Nation (IFTN) is a proposed Federal program, to be conducted in partnership with State and local governments, to address the nation's basic business needs for imagery. The vision for IFTN is that the nation will have a sustainable and flexible digital imagery program that meets the needs of local, State, regional, Tribal and Federal agencies. Imagery is used for countless applications in all levels of government and sectors, and has been embraced by the public through its use in online tools such as Google Earth and Microsoft Virtual Earth. Partnerships between levels of government to acquire imagery data have been successful and growing because the benefits of a coordinated approach are clear: lower costs, reduced duplication of effort, greater standardization and more data available for the full spectrum of uses and users. IFTN has been endorsed by the National Geospatial Advisory Committee and many other stakeholder groups. We are finalizing a project plan for IFTN and working with our partner agencies to develop a funding strategy.

National Land Parcel Data

Land parcel data is another key data asset that has received focus by the FGDC. Digital land parcel data are a critical component supporting key national programs and priorities. Parcel information, combined with other geographic information, is used to support numerous other programs such as management of emergency situations (including wildland fire and hurricanes), the development of domestic energy resources, management of private and public lands, support of business activities, and monitoring regulatory compliance. A recent National Research Council report, "National Land Parcel Data: A Vision for the Future" provided a set of recommendations on the development of a national approach to parcel data. The NGAC has also reviewed and endorsed the recommendations in the report. The FGDC has begun

to address the parcel data recommendations. For example, the NGAC and other stakeholders have identified how parcel level information across the country can be used in developing effective responses to the current mortgage crisis. The FGDC Cadastral Subcommittee convened an outreach conference in May with partners and stakeholders in the financial community to demonstrate how parcel information can help support a data-driven response to the mortgage crisis. We are working with our partner agenciues to address the recomendations that resulted from the meeting.

Support for Key National Issues

Geospatial technologies and data are used at all governmental levels and by non-Federal constituents to monitor, respond, and prepare for a multitude of issues. Geospatial technologies and data are currently being used to address many key national issues including: climate change, economic recovery, energy exploration, homeland security, and managing our environmental resources and critical infrastructure. During the 9-11-2001 response, daily monitoring and mapping of "ground zero" using aerial imaging was performed to monitor structural stability and locate heat signatures of survivors and fires. The most costly U.S. natural disaster, Hurricane Katrina was both tracked prior to its landfall and responded to using geospatial technologies. The Indonesian Tsunami's impact and response by U.S. Federal, private sector, and international agencies relied on geospatial technologies. During the recent wildfires in the west, public postings online of minute-by-minute fire location changes utilized online mapping technologies. The question is no longer where can geospatial data help, but how can we more efficiently prepare and manage our geospatial portfolio and increase our spatial readiness to be prepared for, respond to, and minimize time, expense and loss.

I call your attention to an attachment to this testimony that provides web links to some outstanding geospatial activities in the Federal agencies that are supporting critical national issues. For example, the National Geospatial Program (NGP) in the U.S. Geological Survey collects and integrates base national geospatial datasets, maintains standards, coordinates data discovery and access, and ensures consistent and current data are available for the Nation. Two of NGP's primary products are The National Map and The National Atlas, which present current, accurate, and consistent geospatial data and map services online. These products contain data and information describing the landscape of the U.S. and locational features that can be fused or integrated and displayed online or in a traditional map format. The National Map represents the starting point—the basic framework—from which land and resource decisions and economic and environmental policies can be made.

Coastal habitats are among the most important habitats for fish and wildlife. The large number of National Wildlife Refuges along coasts are tremendously important to myriad migratory birds and endangered species. In its draft climate change action plan, the U.S. Fish and Wildlife Service recognizes that and states that it will use the Sea Level Affecting Marshes Model (SLAMM) to develop adaptive strategies for coastal Refuges. Absent Federal geospatial data readily available over the internet, the use of SLAMM would be limited due to cost and limited access to the data. These data sets include wetlands data from the U.S. Fish and Wildlife Service, elevation from the U.S. Geological Survey, and tide data from the National Oceanic and Atmospheric Administration.

OPPORTUNITIES AND CHALLENGES

In spite of this record of achievement, the United States still has work to do to achieve a cost effective National Spatial Data Infrastructure that ensures the nation's geospatial readiness to address critical issues across all sectors and disciplines. Although there has been a dramatic shift from the Federal government being the primary producer of geospatial data, the expectation remains that the Federal government will provide competent and appropriate leadership to realize a coordinated NSDI. We must continue to refine and develop spatial data policy, increase our understanding of the collective geospatial capacity of the Federal government and its partners, and provide the means to oversee and control Federal investment in geospatial data and technology. Mechanisms to ensure the accountability of Federal agencies and incentives for non-Federal participation in a collaborative, coordinated NSDI must continue to be a focus.

At the same time there are tremendous opportunities to leverage the intersection of an era of "unprecedented transparency and accountability", a renewed commitment to innovative government, geospatially literate society, and a period of unparalleled technological sophistication in order to put geospatial information at "the fingertips of the nation."

THE ADMINISTRATION'S GEOSPATIAL DIRECTIONS

The Administration is committed to the National Spatial Data Infrastructure and considers "geo-enabling the government" an obvious and essential direction. We will do this through:

- Encouraging innovation, both in the use of new technologies and transformed business practices;
- Ensuring broad and effective collaboration with State, local and tribal governments;
- Leveraging industry progress;
- Clearing policy obstacles; and
- Focusing on performance.

In the short term we will concentrate in 3 areas:

1. We will engage the nation in a dialog about its geospatial future. We plan to hold a "National Geospatial Open Forum", using new media, to garner input from all corners of the country to seek out the best ideas for enhancing the National Spatial Data Infrastructure.
2. We will bring creative energy to making Imagery for the Nation (IFTN) a reality. We are listening to the non-Federal stakeholders and concur that this important project can serve as a superb demonstration of the principles and concepts of the NSDI and meet a key national need.
3. We will bolster the geospatial governance structure that we now have in place. We will ensure that the FGDC is successful in providing unprecedented leadership to meet the geospatial needs of the Federal government and of the nation in the 21st century.

SUMMARY

Today, American society demands and expects geospatial information to be at their fingertips. Leveraging advancements in the private sector and leadership from state, local and tribal governments, the Nation stands poised to enjoy the benefits of a robust National Spatial Data Infrastructure.

As I have discussed through this testimony, highlighting numerous accomplishments over the last decade, the Federal Government is continuing and will continue to play a key role in the NSDI. We are making significant strides towards meeting user expectations, leveraging private sector innovation, collaborating with non-Federal partners, and managing our investments. While there is substantial work to be done to realize the National Spatial Data Infrastructure, we have advanced national geospatial efforts in order to:

- quickly and effectively respond to the Nation's priorities;
- be the leader in the global spatial data infrastructure;
- stay at the forefront of technology;
- respond to disasters and national security events;
- meet the increasing demand for access and use of geospatial information; and
- provide transparency and accountability to citizens.

I look forward to working with the Subcommittee on any further efforts toward the National Spatial Data Infrastructure and appreciate your leadership in convening this hearing. Thank you for the opportunity to present this testimony. I would be pleased to answer any questions.

Response to questions submitted for the record by Ms. Siderelis

Response to Questions from Chairman Jim Costa from the State of California

1. **Ms. Siderelis, you mentioned that the administration had recently appointed a Chief Performance Officer to try to improve agency compliance with federal geospatial directives, such as those outlined in Circular A-16. Could you provide more specifics on what the Chief Performance Officer will do in an attempt to increase agency compliance, and what other specific actions this administration is going to take to improve the situation with federal geospatial activities and data management?**

Response: OMB Director Peter Orszag describes the role of the Chief Performance Officer (CPO) as leading efforts "in reforming government hiring practices and in retaining highly skilled and effective employees" as well as "contracting reform, program evaluation, and e-government" performance. Each of these areas of focus is relevant to improving performance of the geospatial activities of the Federal agen-

cies. The CPO will work with the Chief Information Officer, the Chief Technology Officer, and the chair and members of the Federal Geographic Data Committee (FGDC) to improve agency compliance with Circular A-16 and other directives. The FGDC subcommittees' chairs will work with their respective OMB examiners and the new Chief Performance Officer to ensure that all agencies use applicable FGDC standards developed to support Circular A-16 data themes. These standards are critical to the sharing of geospatial information within and among Federal agencies, and between non-Federal and Federal sources. This, in turn, fosters consistency among data sets and furthers compliance and accomplishment of Circular A-16 directives.

One specific action the administration intends to take is the development of a set of government-wide and agency-specific geospatial metrics that will be monitored through a variety of means including a geospatial "dashboard" that will present Federal agency investments and performance in geospatial activities.

2. **Ms. Siderelis, please provide more details on the administration's plans or intentions for the Imagery for the Nation project. How would such an implemented Imagery for the Nation program improve the aerial imagery situation for different stakeholders, such as the federal government, state governments, local governments, and the private sector? How much money would an Imagery for the Nation initiative, as envisioned by the administration, cost? Would that be all new money, or would there be opportunities to repurpose existing money that already goes to aerial imagery? When does the administration envision an Imagery for the Nation program being operational?**

Response: We plan to fully explore the available options to make Imagery for the Nation (IFTN) a reality. We are listening to the non-Federal stakeholders and concur that this important project can serve as a demonstration of the principles and concepts of the NSDI and meet a key national need. Imagery is used for countless applications in all levels of government and sectors, and has been embraced by the public through its use in online tools such as Google Earth and Microsoft Virtual Earth.

Partnerships between levels of government to acquire imagery data have been successful and the benefits of a coordinated approach are clear: lower costs, reduced duplication of effort, greater standardization and more data available for the full spectrum of uses. Imagery for the Nation is designed to improve coordination, minimize duplication, and maximize taxpayer dollar investments in imagery through a reliable, sustained Federal program conducted in partnership with State and local government.

Based on a draft plan for IFTN developed by a team of Federal agencies working with our non-Federal partners, costs for fully implementing Imagery for the Nation are currently estimated at $100 million per year. Most of this would be new money, but there are opportunities to repurpose some existing money that already goes to aerial imagery. One of the goals of the IFTN program is to better define and understand Federal imagery expenditures with the intention of improving the use of existing funding where appropriate. The funding strategy in the draft IFTN plan includes making a determination in FY2010 of the difference between the total program costs and the existing expenditures in order to define the level of new funding required.

Establishment of an Imagery for the Nation program management office is being planned for Fiscal Year 2010, with the goal to implement the funding and coordination infrastructure called for in the IFTN draft plan by Fiscal Year 2011. Negotiations and discussions with the affected agencies are now underway.

3. **Ms. Siderelis, what role do you see the National Agricultural Imagery Program playing in the Imagery for the Nation initiative?**

Response: The Imagery for the Nation plan proposes to build upon and align USDA's National Agriculture Imagery Program (NAIP) and the USGS-NGA Urban Area Imagery Partnership, to implement a sustainable and flexible national digital imagery program. The high resolution (1 meter) component of the Imagery for the Nation program would evolve from NAIP and be managed by USDA, and the very high resolution component (1 foot or better) would be managed by the USGS.

4. **Ms. Siderelis, could you please describe the role that the National Geospatial Advisory Committee (NGAC) plays with regard to the FGDC? Does the FGDC follow priorities established by the NGAC, and if so, what are those priorities?**

Response: The National Geospatial Advisory Committee is a Federal Advisory Committee established by the Interior Department in 2008 to provide external ad-

vice and recommendations to the member agencies of the FGDC. The NGAC includes a balanced membership of 28 committee members representing a variety of organizations involved in geospatial issues, including the private sector, non-profit organizations, academia, and all levels of government. The NGAC Charter defines the role of the Committee:

> "The Committee will provide advice and recommendations related to management of Federal and national geospatial programs, the development of the National Spatial Data Infrastructure, and the implementation of Office of Management and Budget Circular A-16 and Executive Order 12906. The Committee will review and comment upon geospatial policy and management issues and will provide a forum to convey views representative of non-federal stakeholders in the geospatial community."

In the short period that the NGAC has been in existence, it has proven to be a valuable source of advice and feedback for the FGDC. The NGAC meets on a quarterly basis and has established subcommittees that conduct research and develop draft products between committee meetings. Over the past year, the NGAC has analyzed and provided recommendations on Imagery for the Nation, Geospatial Line of Business, National Land Parcel Data, Transition Recommendations, the "Changing Landscape" of Geospatial Technology, Economic Stimulus, and FGDC Governance. The FGDC reviews and considers the priorities expressed in the recommendations very seriously. In FY2010, the NGAC will work with the FGDC to conceptualize an approach for developing a new National Geospatial Policy and Strategy. We anticipate that this complex activity will be a major focus of the NGAC's work over the coming year. Additional information about the NGAC is available at: www.fgdc.gov/ngac.

5. Ms. Siderelis, what can be done to more clearly identify the component pieces of the National Spatial Data Infrastructure so that goals can be identified and so that we can effectively measure progress towards its completion?

Response: The component pieces of the NSDI, as described in OMB Circular A-16, include data themes, metadata, the National Spatial Data Clearinghouse, standards, and partnerships. Perhaps the greatest obstacle in achieving the vision of the National Spatial Data Infrastructure, however, is the lack of a clear and unified understanding of what a successful NSDI would look with respect to these components and the priority activities. As a first step to address this challenge, we plan to hold a "National Geospatial Open Forum", using new media, to garner input and seek out the best ideas for the NSDI. We are working with the National Geospatial Advisory Committee to plan the Forum and to identify additional opportunities and approaches to update and enhance our geospatial policies and practices.

6. Ms. Siderelis, what are the unique barriers to the inclusion of tribal governments in the National Spatial Data Infrastructure? How are the DOI and FGDC working to address these barriers? How well are tribal voices being represented on the National Geospatial Advisory Committee?

Response: The FGDC and its partner agencies have an active program to support inclusion of tribal governments in the NSDI. For example, in partnership with the FGDC, DHS/FEMA has institutionalized the training courses "Emergency Management Framework for Tribal Governments" and "Emergency Management Operations for Tribal Governments" at FEMA's Emergency Management Institute (EMI). The courses are offered several times a year at EMI and field offerings are also delivered twice a year. The courses include sessions that focus on the importance of the NSDI, metadata, and building partnerships.

In partnership with the FGDC, USGS, NASA, and Tribal Colleges, the Tribal College Forum VIII will be held in Bellingham, WA, in August 2009. Forum sessions will include training on NSDI Awareness, Metadata, and the North American Profile.

FGDC has successfully integrated the "First Nations NSDI Training Session" to be included in ESRI regional and national user conferences. Sessions are either lecture or computer lab style, depending on the facility. The number of requests has been significant and the NSDI track at ESRI conferences is now a 2-day event held during the ESRI conference.

FGDC has also partnered with the National Congress of American Indians (NCAI) in developing and delivering NSDI workshops at NCAI's mid-year and annual meetings/conferences. Plans for the future include institutionalizing this session in all NCAI mid-year and/or annual meetings. FGDC recently delivered the first workshop

in partnership with the Canadian DNR to share NSDI boundary and metadata issues.

One of our goals in creating the NGAC was to ensure a balanced membership that includes a wide variety of viewpoints, including tribal and Native American perspectives. One of the members of the Committee is Dr. Timothy Bennett, who serves as the President and CEO of the North Dakota Association of Tribal Colleges. Dr. Bennett was appointed to the Committee to represent a tribal perspective. We are currently going through the next round of appointments to the NGAC, and we will continue to seek tribal representation.

7. **Ms. Siderelis, the National Geospatial Advisory Committee produced a number of recommendations for the new administration, including establishing a geospatial leadership and coordination function within the executive office of the President, establishing Geographic Information Officers within agencies, and more. Has the administration taken a look at these recommendations, and what does it think of them? Does it plan to act on any of those recommendations?**

Response: The Administration appreciates the thoughtful recommendations that were prepared by the National Geospatial Advisory Committee, which address these governance issues as well as the need for statutory review and attention to workforce and education issues. The administration concurs with the spirit and intent of the recommendations—to utilize geospatial information and technologies to their fullest potential—and will be responsive to each of these recommendations. Precisely how we act on all of these recommendations is still under consideration.

8. **Ms. Siderelis, earlier this decade the Department of the Interior reported that up to half of all federal geospatial investments may be redundant. However, during the hearing you mentioned that after the recent data calls, you believe that the degree of redundancy might be lower than that previously believed. Do you have a more accurate estimate for how much of the federal geospatial investment is redundant?**

Response: Since the time earlier this decade when it was postulated that a significant portion of federal geospatial investments may be redundant, significant strides have been made in improving understanding and management of Federal geospatial investments.

The FY 2007 budget passback guidance issued by OMB to all Federal agencies directed agencies to update and report inventories of geospatial data and systems using a common set of investment definitions. Analysis of the responses revealed the following key findings:

- For the specific data sets included in the reporting request, ("themes providing the core, most commonly used set of base data known as framework data, specifically geodetic control, orthoimagery, elevation and bathymetry, transportation, hydrography, cadastral, and governmental units") the Federal government financed or planned to invest, directly or indirectly, $1.89 billion in spatial data and geospatial services during the FY 2007—FY 2009 period.
- The level of geospatial investment each year was relatively consistent.
- Fifty two percent (52%) of agencies reported a three year average of less than one million ($1M) per year in geospatial data and services.
- DHS, DOC, DOI, and USDA investments when combined total over 90% of total reported federal geospatial data and services investments.
- A high degree of redundant investment was not readily apparent.
- A major shortcoming of the responses was that many investments failed to specify investment-type, data theme, and service components as directed in OMB's request. This fact limited readily identifiable opportunities for LoB collaboration.

It may also be surmised that improvements in Federal geospatial investment management are supported by the increasing use of FGDC's data search and discovery tools, the geospatial application registry, government-wide geospatial SmartBUYs, and increased coordination and integration of geospatial programs).

Federal investments that may be redundant with non-Federal efforts in the geospatial community are problematic to measure also. The FGDC has not performed a widespread study of redundant investments between federal and non-federal efforts but does try to identify and address these issues on an initiative-by-initiative basis and through leadership on large opportunities such as Imagery for the Nation.

9. Ms. Siderelis, can you explain how the geospatial "dashboard" will work? How will it differ from Geospatial One Stop?

Response: The geospatial "dashboard" is envisioned to be a high-level snapshot into the efforts and health of the federal geospatial OMB Circular A-16-based activities. The "dashboard" will present information based on key initiative status and progress and will rely on the consistent and sustained reporting of the federal agencies. This effort will require both a defined set of metrics, and a mechanism for ensuring prompt and accurate reporting from the agencies. The FGDC will work with OMB and the new Chief Performance Officer to identify the requirements for the geospatial dashboard to begin providing transparency into the federal geospatial portfolio.

Geospatial One Stop (GOS) is a web-based tool for finding and publishing geospatial data and map services, and for facilitating cooperative data acquisitions. Within GOS is a "statistics" page that displays certain performance statistics and graphs about the use and content of the GOS site.

10. Ms. Siderelis, for a number of years, numerous studies by the National Research Council, National Academy of Public Administration, and others have recommended some form of consolidation of Federal geographic information activities, such as moving the activities, or at least the coordination, currently performed by FGDC, out of the Department of the Interior. What are your views on such recommendations?

Response: The advantages of consolidation and/or relocation of Federal geographic information responsibilities have been well-expressed by other entities such as the National Research Council and the National Academy of Public Administration. Conversely, consolidation/relocations may have disadvantages in that they are often very complex and time-consuming. My view is that our focus should be on developing a spatial data infrastructure for the Nation that effectively underpins decisions about key issues at the national and local level. That requires attention not only to structure but to clarity of purpose and roles; focus on outcomes and performance; adequate technical, humans and financial resources; and viable partnerships with the non-Federal community.

Response to Questions from Ranking Member Doug Lamborn from the State of Colorado

1. Can you attempt to estimate for the Committee how much the Federal government spends on geospatial activities?

Response: The FY 2007 budget passback guidance issued by OMB to all Federal agencies directed agencies to update and report inventories of geospatial data and systems using a common set of investment definitions. Agency information obtained through this investment reporting request was intended to be used to coordinate agency investments in geospatial data and services through FY 2009. Analysis of agency responses is contained in the "2007 Data Call Analysis Report", which estimates that, for the specific data sets included in the reporting request ("themes providing the core, most commonly used set of base data known as framework data, specifically geodetic control, orthoimagery, elevation and bathymetry, transportation, hydrography, cadastral, and governmental units"), the Federal government financed or planned to invest, directly or indirectly, $1.89 billion in spatial data and geospatial services during the FY 2007—FY 2009 period.

This data call primarily captured investments that are recorded in agency submissions under OMB Circular A-11, Exhibit 300 (Planning, Budgeting, Acquisition, and Management of Capital Assets., We recognize that other geospatial expenditures, which may be components of agency program funding, were not fully documented by this data call.

2. Why have the Geospatial Lines of Business data calls been suspended and do you expect them to resume? Will the results of the data calls be released to the public? This is historic data, not pre-decisional data, therefore such information should be provided publicly.

Response: The Geospatial Line of Business conducted data calls in 2006 and 2007 as an attempt to establish a baseline of the use of geospatial technology and data within Federal agencies. The data calls demonstrated that we needed a more directed study and analysis to accurately measure use and spending since geospatial information use is not considered a primary activity within most agencies. The FGDC Geospatial LoB is working to develop more effective means to accurately capture this information. These means may recommend use of financial coding standards and other methods to distinguish expenditures separating hardware, geospatial applications and geodata. While the use of future data calls is one mechanism to

compile this information, there are no FGDC data calls currently scheduled. We are considering options for the possible use of data calls or surveys during the FY10 period.

The "2007 Data Call Analysis Report" is posted on the Geospatial Line of Business web page. The direct URL is http://www.fgdc.gov/geospatial-lob/geospatial-lob-data-call-analysis-071406.pdf.

3. Does the Federal government have the necessary national geospatial data to monitor, implement, and manage a national healthcare program, such as that contemplated in H.R. 3200, currently before the House Energy and Commerce Committee?

Response: The health insurance reform proposals included in H.R. 3200 are far-reaching. As such, there are numerous opportunities to use geospatial information and technology to monitor, implement, and manage the health care programs described in the bill. One can imagine a myriad of health care decisions being underpinned by geospatial data: decisions about the geographicc distribution of health care services, professionals, and education opportunities; and the locations of program beneficiaries and health hotspots. One can also imagine the benefits of understanding where program investments are being made and the impacts of those investments. There are considerable geospatial assets (data, technology and expertise) in the Federal government and with non-Federal partners that could be focused on this issue of national significance. However those assets currently are not coordinated and directed to meet the needs of the health insurance reform efforts described in H.R. 3200. Speaking on behalf of the Federal Geographic Data Committee members, we stand ready to contribute to the success of health insurance reform in any way possible.

4. At the hearing, witnesses discussed serious concerns about overlap and duplication by the federal government regarding stimulus money spending. Can you outline for the Committee specific steps which your office is taking or has taken to reduce the waste and duplication of stimulus spending on geospatial acquisition? Can you outline for the Committee the steps being taken by OMB to reduce waste and duplication in geospatial purchasing?

Response: The specific example hearing witnesses described of overlap and duplication by the federal government regarding stimulus money spending was that of geo-coded address information. Address information is being developed to support the 2010 Census but is not available to support the Broadband Mapping program called for in the American Recovery and Reinvestment Act because of limitations posed by Title 13 of the U.S. Code. The possible duplication of effort is due to legal constraints rather simply than a lack of coordination.

Through the auspices of the Federal Geographic Data Committee, my office has worked with OMB to reduce the waste and duplication of stimulus spending on geospatial acquisition in the following ways:

- FGDC Executive Committee and Coordination Group deliberations—Monthly meetings of the FGDC Executive Committee and the Coordination Group have consistently included agenda items related to the American Recovery and Reinvestment Act. There has been a focused effort among the agencies to keep one another informed and to provide assistance to one another as needed.
- Broadband Mapping and Broadband Technical Opportunities Program—Through the auspices of the FGDC, the Senior Agency Officials for Geospatial Information of Interior, Agriculture and Commerce were convened immediately following signing of ARRA to discuss ways that FGDC member agencies could assist in ensuring that the Broadband Mapping program is successful. We have held technical planning meetings, met jointly with NTIA and stakeholder organizations, and provided various kinds of support and assistance both to the Broadband Mapping and Broadband Technical Opportunities programs. Currently we are assisting in the review process for the mapping program.
- Recovery.gov—Geospatial technology and expertise from across the Federal agencies have been used to support Recovery.gov, "a user-friendly, public-facing website to foster greater accountability and transparency in the use of covered funds". The mission of the ARRA includes "providing information to the public to monitor the progress of the stimulus package". The FGDC, with guidance from the Office of Management and Budget, established an ad-hoc "Georecovery.gov Team" to coordinate Federal agency response to the ARRA requirements and the use of supporting geospatial tools. During the site's initial development stage, the team provided use cases to the Recovery.gov developers, created a forum for Federal agencies to identify and share common implementa-

tion solutions for geospatial reporting to provide consistency and reduce redundant development, and provided geospatial technical experts to provide guidance and support to the Recovery.gov development efforts. The FGDC Secretariat as detailed a geospatial architect to the Recovery Accountability and Transparency Board (RATB) that is now overseeing Recovery.gov.

While overlap and duplication of effort are serious concerns with respect to ARRA, an equally valid concern is that Federal agencies will fail to take advantage of geospatial information and technology to inform decisions about ARRA investments and their impact and outcomes.

5. Is it true that agencies such as the Corps of Engineers manage aerial photography and mapping programs, as does the USGS, the Department of Agriculture, FEMA and others—and they do not own airplanes and cameras, but rather, they contract with the private sector for aerial imagery and mapping services?

Response: The Corps of Engineers, USGS, Department of Agriculture, and FEMA manage aerial photography and mapping programs. The programs all differ in scope of work, requirements, and degree of program management. They each contract with the private sector for aerial imagery collection.

a. Is it not true that under your leadership, there is a memorandum of agreement between the Department of Homeland Security and the Department of the Interior that the USGS will provide imagery to FEMA in particular for hurricanes and other emergencies, to do response, recovery, and damage assessment?

Response: There is a Memorandum of Understanding (MOU) between the Department of the Interior, acting through the U.S. Geological Survey, and the Department of Homeland Security to coordinate geospatial information and remote sensing activities as related to homeland security. The MOU was signed March 31, 2006 by Michael Chertoff, then-Secretary of DHS, and Gail Norton, then-Secretary of DOI.

The MOU outlines the shared responsibilities of DOI and DHS in "coordinating assured access by first responders to geospatial and remote sensing data", and specifically states that DHS will coordinate with DOI for:

> "classified/unclassified domestic geospatial and remote sensing data to support the needs of homeland security and related emergency response requirements",
>
> "acquiring, maintaining, and disseminating homeland security mission-specific geospatial information of all kinds through ties and partnerships with other Federal, State, local and commercial data providers and users", and
>
> "providing services for data integration, information visualization, and situational awareness supporting homeland security planning and operations",

and that DOI will:

> "serve as a source for domestic collection of unclassified remotely sensed data from any airborne or satellite systems, including commercial sources, in support of homeland security requirements.

b. And does the USGS have contracts, with emergency response services in these MOUs, whereby private firms provide aerial imagery and mapping in support of hurricanes and other emergencies?

Response: The USGS administers a Geospatial Products and Services Contract (GPSC) that currently uses six contractors who are all full-geospatial-service providers. One of those services is the ability to provide image acquisition and processing in times of emergencies.

Following are some examples of recent tasks for emergency-related imagery acquisition:

- Verdigris River (KS) Oil Spill Emergency Imagery Acquisition, July 5, 2007—digital image acquisition and rectification over the Kansas counties of Miami, Montgomery, Neosho, and Wilson, an area comprised of approximately 2391 square miles.
- Linn County (IA) Emergency Ortho Acquisition, June 13, 2008—digital image acquisition and rectification over the Linn County Iowa, an area comprised of approximately 264 square miles.
- Hurricane Ike Emergency Pre-position and Ortho Acquisition, September 11, 2008—pre-positioning of assets for post-event Hurricane Ike and digital image acquisition and orthorectification.
- Lake Delton (WI) Emergency Ortho Acquisition, June 14, 2008—digital image acquisition and rectification over the Lake Delton Wisconsin, covering two sepa-

rate areas, one approximately 16.8 square miles and the other 4.64 square miles.

The following is a list of recent tasks for National Special Security Events (NSSE) imagery acquisition:

- Yankee Stadium (NY), February 1, 2008—very high resolution imagery for approximately 4 1/2 square mile area surrounding Yankee Stadium, collected and processed in support of security for the Pope's visit to New York.
- Imagery acquisition for both the Democratic National Convention and the Republican National Convention.
- Imagery acquisition related to the Presidential Inauguration.

c. Do you have any reason to believe NOAA needs to be buying planes and cameras, ostensibly for emergency response, when the private firms have this equipment and these capabilities, and other agencies successfully contract with these firms?

Response: Neither the Department of the Interior nor the FGDC have authority over how other agencies meet their missions and conduct their procurement activities. I respectfully refer you to NOAA for further information regarding their needs.

Response to Questions from Congressman Gregorio Kilili Camacho Sablan, from the Commonwealth of the Northern Mariana Islands

1. What is the status of geospatial issues in the insular areas? Do we get the same sort of coverage that the rest of the states get?

Response: The status of geospatial information in the insular areas is variable, as it often is with many of the states. Some Federal programs create geospatial information that is consistent across the states and insular areas. For example, the Census TIGER files include coverage of the insular areas. Other Federal programs do not always create geospatial data that is uniform and comparable across all of the states and insular areas. This is generally due to technical complexity associated with any given location and/or the lack of sufficient resources. In addition, earlier this year, the DOI Office of Insular Affairs provided a $350,000 grant to Guam for an Enterprise License Agreement (ELA) for ESRI geospatial software.

2 When we speak about programs like "The National Map" or "Imagery for the Nation" are you including the Commonwealth of the Northern Mariana Islands in those programs?

Response: Due to the costs and complexity of mapping projects in the insular areas they are not mapped on a regular schedule by the USGS and its national mapping program (The National Map).

The Imagery for the Nation plan includes acquiring imagery for the insular areas with a 3 year cycle for both high resolution (1-meter) and very high (1-ft) imagery. In addition, I understand that USDA, in partnership with other funding agencies, has acquired satellite imagery for many of the islands in the Pacific Basin, including the Commonwealth of the Northern Mariana Islands.

Mr. COSTA. Well, we will look for those questions. You exceeded the time limit by——

Ms. SIDERELIS. Yikes.

Mr. COSTA.—several minutes.

Ms. SIDERELIS. Demerits.

Mr. COSTA. We will try not to hold that against you.

Ms. SIDERELIS. Thank you.

Mr. COSTA. I was interested in the three points you are going to be following up on. I thought it was important that you lay those out to the Subcommittee.

The next witness is, by example we don't want you to follow, Mr. Byrne from California. We look forward to your five-minute testimony.

We are glad that you came all the way here. We know California is having a lot of challenges, our state, these days, and the fact that you are here I think underlines the importance of this subject matter.

Mr. Byrne, would you please begin your testimony? I am going to be out for about 10 minutes. I have a group from the District that I want to say hello to.

Mr. Sablan will do an able job of continuing this hearing with my Ranking Member and the other Subcommittee Members that are here.

Please begin.

STATEMENT OF MICHAEL BYRNE, GEOSPATIAL INFORMATION OFFICER, STATE OF CALIFORNIA

Mr. BYRNE. Mr. Chairman, Ranking Member Lamborn and Subcommittee Members, thank you for the opportunity to offer testimony on Federal geographic data management activities as they affect state government.

My name is Michael Byrne. I am the Geographic Information Officer for the State of California. I also serve on the board of directors for the National States Geographic Information Council, which helps me speak knowledgeably on behalf of state governments. Finally, as Ms. Siderelis mentioned, I am on the National Geospatial Advisory Committee. Today I am speaking as the GIO for the State of California.

I have submitted written testimony for the record. My written testimony gives detailed recommendations for improving geospatial data management. In particular I address the California perspective when it comes to geospatial data management and coordination, the state's perspectives on the same, what the framework of the National Spatial Data Infrastructure is and how we know when a successful NSDI exists.

I am convinced that geospatial technology is one of the most important technologies of our time. Governor Schwarzenegger is convinced enough that he asked one of his Cabinet members to develop a statewide strategy for geospatial data. GIS is important to the Governor because it allows him to visualize inordinately complex situations that ask the question why and where.

The intent of the National Spatial Data Infrastructure is to provide the basic framework to manage and illustrate business and policy decisions. Much like our transportation infrastructure is a catalyst for interstate commerce, the NSDI, if properly implemented, will stimulate better policy outcomes for the entire nation.

California would not be the agricultural center that it is if it were not for the highway and rail network allowing us to export our products and agriculture. Similarly, we require a network of data providing for decision transactions. The better the data infrastructure, the better the decisions. If we know where things are, we make better decisions.

The NSDI is important because it means that all levels of government will make better decisions for all policy sectors. To illustrate the point, consider the following examples in California. The California Partnership for the San Joaquin Valley is using GIS to illustrate water supply demands in the region. This effort illustrates the struggle of scarce resource before the decision occurs.

In particular, new maps are showing which areas have significant declines in groundwater depth and which ones require stream

flow for sensitive habitat. This is critical information for managing an increasingly scarce and vital resource, water.

Additionally, consider the example from the California Broadband Task Force. It developed a map prior to making its full set of recommendations. Because of this map, the policy discussion could strategically target where broadband isn't available and then move to locations in which broadband is available, but adoption is low. One result has been an effort in digital literacy. Were it not for the mapping, the policy decision would have focused perhaps in the wrong place.

We can answer policymakers' questions better if we have the spatial information infrastructure in place which delivers the data to decision makers before the policy discussion. We answer them poorly if we do not have that infrastructure.

My position was created in an effort to better coordinate California's state spatial data. My position is housed in the Office of the State Chief Information Officer, a Cabinet agency in California, for several reasons. First, GIS technology is a technology component. That means it has to be aligned with information technology.

Second, the CIO serves all state government. If my position were located in, say, the Natural Resources agency, I would be inclined to focus on natural resources mapping issues and not health or education. Because my position is in the CIO's office, I can serve the mapping needs of all state agencies.

Third, the Governor recognizes that for GIS to be successful there needs to be a champion at a high enough level in government to allow cross-agency collaboration. We still have a long way to go in California.

In order for the NSDI to be successful, I think several things need to happen. First, geospatial data needs to be coordinated with state, regional and local governments. This is critical to our success in California.

Second, governance of the NSDI at the national level needs to be elevated above the Department of the Interior. Geospatial needs to be able to serve all government. When governance is housed in one department, it tends to by nature focus on the business needs of that department.

Third, geospatial governance and the NSDI stewardship need to have a mandate and line item funding. We must have a program that is mandated to provide effective leadership and is authorized to perform essential management tasks.

Thank you for the opportunity to speak here today.

[The prepared statement of Mr. Byrne follows:]

Statement of Michael Byrne, Geographic Information Officer, State of California

Geographic Information Systems (GIS) technologies are critical tools for improving the quality, accuracy, efficiency and responsiveness of government services. Using the concept of an "electronic" or digital map, GIS records, stores and analyzes multiple layers of spatial data and relates this data to locations of interest (e.g. communities, neighborhoods and people that live there. These layers can be viewed and analyzed in various combinations to identify underlying relationships not otherwise seen. Management of GIS data is critical to successfully using the technology. For the purposes of this paper, GIS data, digital maps, and geographic information are used interchangeably.

This written testimony discusses the 1) California perspective when it comes to geospatial data management and coordination; 2) what other states are doing; 3) what the framework of the National Spatial Data Infrastructure is and 4) how we know when we are successful with the NSDI.

California Perspective

This section presents the California perspective on the National Spatial Data Infrastructure, where California's success and challenges are, its current condition, and finish by describing our future direction.

The California Perspective on NSDI

From California's perspective, The National Spatial Data Infrastructure (NSDI) is the Data, People, Information Technology Infrastructure and Policies and Standards governing geospatial data in the nation. In order for it to be successful, it must meet local and state government needs; in essence a NATIONAL approach. By focusing on the needs of local government first, the NSDI will ensure that the taxpayer will only be required to pay for the production of geospatial data one time as opposed to duplication of data collection at every level. If properly instituted, the NSDI will also ensure that all levels of government will have the best possible data (highest resolution) to meet their business requirements. Finally, with this approach, the NSDI will result in data that has a far greater value to both the business of government and the private sector. High resolution data will enable literally thousands of commercial applications that will also provide benefit to the taxpayer and stimulate economic growth. For this approach to be successful, significant local, state and Federal coordination are essential. This approach must be collaborative in nature.

California's Successes and Challenges

California's experience with the NSDI offers an excellent foundation in the following areas:

- Standards for describing information (e.g. metadata) and defining some data elements.
- Partnership grants for state participation (although this is underfunded, many success stories have come out of this effort and California has used them to our advantage).
- Direct liaisons and partnerships within California for leveraged local and regional data investments.

California has failed to meet NSDI goals in the following areas:

- An uncoordinated approach to imagery collection across all of the Federal government.
- The lack of government produced data in the public domain which meets state and local needs for several framework layers.
- An unclear central point for geospatial data assemblage at the Federal level. Is it the Geospatial One Stop the National Map or something else? Is our NSDI metadata node (CalAtlas - http://www.atlas.ca.gov/) being harvested by the right portal? Furthermore, we are unsure where the new data.gov fits into the Federal model.

California's Current Condition

California itself has experienced both success and failures when developing our own State Spatial Data infrastructure. Governor Arnold Schwarzenegger is a proponent and supporter of mapping technology. In 2008 he said this:

> *"During last year's firestorm [GIS] allowed firefighters to see through the smoke, giving them a more accurate real-time view of the conditions on the ground. And because of that, many of them told me that saved lives and it saved an endless amount of homes. And this is just the start."* Gov. Arnold Schwarzenegger, May 2008.

His statement set a new tone for coordination of geographic information in California; it demonstrated that California had a leader at its highest level who recognized the value of mapped data. The State of California, its regional, local and education entities have long demonstrated mapping science innovation and capacity. California is a large state with a highly complex political, demographic and natural landscape. Mapping technology brings much of this complexity into view for our policy decision makers. Below is a brief assessment of GIS use and capacity in California.

- GIS technology and data is being employed in nearly 40 state departments and agencies.
- California has a central repository of GIS data and services called CalAtlas which enables the discovery of thousands of data layers resulting from thousands of government projects.

- There are more than 11,000 GIS databases or projects currently in state government.
- Our recently adopted California Information Technology Strategic Plan (See http://www.itsp.ca.gov/) identifies geospatial technologies as one of the six top technologies to further develop in the state.
- California has GIS Council (See http://gis.ca.gov/council/) with representation from state, Federal, and regional partners which advises GIS collaboration and coordination.
- The GIO is housed in the Office of the State Chief Information Officer, a Cabinet level agency in state government. The CIO directs information technology resources and has authority over IT policy. Importantly, the GIO is housed here rather than a specific business unit like Natural Resources, to ensure alignment of geospatial issues and program-neutral coordination amongst ALL government interests.
- California has successfully implemented seven of the nine National States Geographic Information Council (NSGIC) success factors (See http://www.nsgic.org/hottopics/fifty_states.cfm).
- Of the seven framework (See http://www.fgdc.gov/framework) data layers defined by the Federal Geographic Data Committee (FGDC), we have efforts towards statewide coordination for the following.
  - Geodedic Control
  - Elevation
  - Hydrography
  - Parcels (new)
- Many local and regional efforts within the state are further advanced than state government in terms of mapping technology development and use; most notably Los Angeles County and the San Diego region.

California now has a recognized central data store, called CalAtlas, which is free to all users. This GIS hub is a library of data that began to deliver substantial benefits when the old "cost recovery" data model was removed and the data portal opened such that users could describe, publish and discover data for download at no cost. While the CalAtlas is not used by all state, regional and local entities, it provides a single location for the discovery of information. CalAtlas is a success because the state has a budget "line-item" dedicated for it. This budget status, while underfunded given the size of the state is working. Moreover, our approach is collaborative rather than a command and control approach. This collaborative approach has contributed to the advanced GIS use by many entities.

Most recently staff at the California Natural Resources Agency, which houses CalAtlas, has developed a common operating picture (COP) for the state. The COP was used by the California Department of Fire Protection, the California Emergency Management Agency and the Department of Public Health during statewide emergency exercise last fall and the fires that erupted shortly thereafter. Having a common picture allows all emergency operations centers across the state to view the same relevant local authoritative data during an emergency. We have also used the COP during the recent H1N1 flu outbreak and expect to use it again as related pandemic flu activities ramp up in the fall.

Our collaborative approach to GIS has been very successful. California has developed as many as 16 regional GIS collaboratives that are self forming and self chartering. Some have become full-fledged non-profit organizations (501(c)3) while others are more loosely organized. In addition we have a non-profit professional association, the California Geographic Information Association (CGIA), which has provided a means to apply for grants, receive and spend money on behalf of state GIS initiatives before the GIO position was formally established. Finally, our California GIS Council has been in place for nearly 10 years, now on its second charter. The Council has provided a forum for Federal, state and regional goals to be developed and implemented. The Council, with support from the CGIA and state and Federal funding has published the following documents (1) the California Framework Data Plan, (2) the California GIS Strategic Plan and (3) an Imagery Business Plan (See http://www.cgia.org for all three papers).

California's Future Direction

California now has a formally recognized GIO and leadership support from the CIO, but there remains much more work to do. The following represents a minimum set of goals:

- Direct Agencies to establish GIS leads (e.g. Agency GIOs) responsible for data coordination and collaborate with the state GIO to align GIS investments with local and regional government.

- Establish appropriate state agency leads to collect and steward data layers for which they have logical responsibility and business interests; and coordinate the flow of appropriate related data to and from local and Federal levels.
- Establish a competitive GIS matching grant program to support the broader and collaborative use of GIS to solve significant public policy issues in communities and regions throughout California.

We are moving forward. The state CIO has identified an objective in the state IT Strategic Plan to manage statewide data as an asset, much like we manage buildings, roads and common infrastructure as an asset. As such, California is in the process of releasing a new strategy to assemble and manage these data. Central to the data strategy is managing geospatial data, in particular address data, at a central place with state government access. This approach, based on the concept of data as a service, will allow California to manage data more efficiently and reduce costs. The plan recognizes that the foundation of nearly ALL data has a geographic component. We need to collect and manage data such that we can apply the power of GIS to analyze these data assets geographically. Management of this common store will be driven by state government business needs rather than some technology specific drivers.

To sum up, California strongly endorses the concept of the NSDI (one that meets local and states needs in a coordinated way), and is on its way to ensuring a robust State Spatial Data Infrastructure, but still has more work to do with respect to coordination and funding.

States Perspective

This section presents the collective states perspective on the National Spatial Data Infrastructure, in particular some direction from the National States Geographic Information Council and the Western Governors' Association regarding the requirements for a robust NSDI.

States Perspective on NSDI

There is a high degree of variability from state to state. As an example, compare California to the District of Columbia. California is the third largest state (164,000 square miles) and D.C. is a major metropolitan municipality (61 square miles). California has approximately 37 million people and D.C roughly 600,000. One thing that these two places share is a common vision for the NSDI. Both California and D.C. recognize that business needs drive the need for efficient mapping technologies and, in particular that, a national approach to data collection should be driven by local and state business needs. One thing that makes this complicated, is that the states and local government are all in varying stages of development and have adopted different approaches. This makes the job of coordinating the NSDI incredibly complex and its gets more complex each year that passes without effective Federal leadership. There are few incentives for local and state agencies to "retool" their efforts when they are heavily invested in their current operations.

In order to further develop a common goal, the states formed the National States Geographic Information Council (NSGIC) in 1991. NSGIC is an organization committed to efficient and effective government through the prudent adoption of geospatial information technologies. As such, NSGIC gathers state GIS coordinators to provide a common voice for GIS infrastructure and future recommendations. NSGIC has developed criteria for successful GIS coordination within states (called the Fifty States Initiative) and keeps a survey of GIS activities for states in order to measure progress. Finally NSGIC develops an advocacy agenda each year to focus the community on the most important GIS activities. Currently the NSGIC advocacy agenda, which is adopted by a vote from each state, lists the following as core issues for 2008:

- Imagery for the Nation (IFTN)—IFTN (See http://www.fgdc.gov/iftn) would create two effectively coordinated imagery collection programs for the nation and would establish basic standards for imagery collection and distribution. These programs will, annually capture 1 meter data leaf-on, and less frequent hi-resolution leaf-off data with buy-up options for states and locals who need additional features. This program would eliminate duplication of effort and reduce national costs. The National Geospatial Advisory Committee has endorsed ITFN. Imagery provides the picture from which most other data are derived, making it the single most critical data layer.
- Nationwide Parcel Mapping—This initiative would create a seamless parcel dataset for the nation. Parcels are a framework data theme under the FGDC yet there is no national data layer available for government use. The National Research Council recently published a paper outlining what should be done, and those recommendations have been endorsed by the National Geospatial Advi-

sory Committee. If created a national parcel database could be effectively used to monitor the health of the mortgage industry in the future, among other uses.

- Transportation for the Nation—This initiative calls for the Federal government creating a seamless nationwide addressable roads dataset that is built in a collaborative and shared environment. While the U.S. Department of Transportation has authority to do this under OMB Circular A-16, a regular annual program does not exist.
- NSDI Cooperative Agreement Grants—The FGDC manages this competitive grant program in order to increase capacity for geospatial management in each state. The program budget for FY 2009 was $1.3 million with individual grants at about $50,000. The budget for this program, in order to be successful, needs to be significantly increased.
- Technology for the 21st Century—GIS is an advanced technology and as such needs to have ancillary technologies in place in order to be successful. NSGIC has identified increases in broadband availability and the reauthorization of the E-Gov act as critical to the success of the NSDI.

NSGIC's Recommendations

Since the adoption of this advocacy agenda in September 2008, NSGIC has developed specific recommendations along two lines. First, it is clear that the lack of a comprehensive imagery program inhibits further geospatial development. Second, with the release of the American Reinvestment and Recovery Act (ARRA) and in particular the National Telecommunications Information Administration (NTIA) notice of fund availability for broadband mapping releasing the highly accurate address point database from the U.S. Census Bureau is critical. Below are suggested actions for each of these issues.

Imagery for the Nation

- Congress should fund Imagery for the Nation through the President's Budget at the full amount needed for national coverage. "Line items" are required in the USDA/FSA and DIO/USGS budges, and statutory language is required to protect funds from being diverted to short-term agency needs, unwarranted management fees or new priorities. An annual appropriation of $95.6 million is required; current expenditures likely exceed $30 million, but increased funding on an annual basis is critical.
- Ensure the business requirements of all levels of government can be met through buy-up options that allow government agencies to procure what THEY need (e.g. high resolutions, increased accuracies).
- Provide active leadership for the FGDC to implement IFTN and use it as a model to build the NSDI in concert with state and local governments.

Address Points from the Census Bureau

- Congress should remove addresses and address point locations from the Title 13 restrictions and instruct the U.S. Census Bureau and other Federal agencies (e.g. the U.S. Postal Service and the Department of Health and Human Services) to work together to develop a common file and make the data available throughout government levels.
- Give the U.S. Census Bureau funds and granting authority to work with state and local governments to create and maintain a national address file.
- Address and coordinate data should be updated by local address authorities as building permits are issued, thereby capturing new construction developments. Data should be developed locally, with local and state custodians acting as regional integrators that merge local data into region-wide databases.

Western Governors' Association Recommendations

Finally, the Western Governors' Association (WGA) recently released a Geospatial Policy Statement (See http://www.westgov.org/wga/policy/09/GIS.pdf). The WGA first identified the key business issues facing the western states: economic downturn, renewable energy zones/energy reform, wildland fire protection, and water delivery. The WGA statement goes on to say that in order to affect these issues from a public policy perspective, the western governors require "timely, accurate and multilayerd geographic data." The WGA statement calls for the following to occur:

- Implement effective policies in geographic technology that will help inform effective policies in economic, energy, fire and water agendas.
- Encourage regional, state and interstate data sharing, in particular for the Bureau of Land Management to lead and complete the national parcel dataset.
- Support IFTN and urge Congress to fully fund it.
- Support Federal, state, tribal and local coordination through Coordinating Councils.

- Support the National Geospatial Advisory Committee and the Geospatial Line of Business which is analyzing geospatial investment across the Department of Interior.
- Western Governors believe in an intergovernmental approach to the development and governance of geospatial activities is necessary to a successful NSDI.

State and local government inclusion in managing the NSDI is imperative. A working solution must include the lowest common denominator of data collection (e.g. city/local) and, at a minimum, must include regular collection and maintenance of imagery, parcels, elevation, hydrography, transportation, geodedic control, political boundaries and address point data. At a maximum, the data must be developed, coordinated and published such that interstate collaboration exists to evaluate and analyze landscape public policy issues.

National Spatial Data Infrastructure Framework

This section describes the promise of a robust NSDI and provides specific steps Congress can take to make the NSDI real.

Production of geospatial data and technologies has shifted from the Federal government to state and local government and the private sector. However, the United States is still using a Federal-centric governance model for the National Spatial Data Infrastructure (NSDI). We cannot build the NSDI without eliminating the "silos" and duplication of effort in Federal government, and implementing an inclusive governance model. This requires strong leadership that is independent of the specific agencies and has the authority to regulate geospatial budgets.

The FGDC and its participating agencies understand the role of state and local governments and the private sector in building the NSDI, but since there is no clear definition of the NSDI or effective business plans to build it, focus has remained solely on Federal business needs instead of national objectives that include local and state government benefits. In large part, this has been driven by the lack of a national policy, effective strategic and business plans, and the unwillingness to approach Congress for adequate appropriations to do the job.

Only those agencies with missions clearly tied to geospatial data are successful in securing budget appropriations are subsequently protective of their own targeted efforts. The FGDC has no authority or power to interfere with the budget processes in these agencies. For example, perhaps the largest public policy debate facing the 111th Congress will be healthcare reform. Healthcare represents the largest growth sector in the U.S. economy currently representing about 15.2 percent of the Gross Domestic Product (GDP) projected to reach 19.5 percent of GDP by 2017, making it the single largest industry in the nation. Geospatial technology advancements can substantially improve the policy debate around health care by; 1) better understanding fraud and waste, 2) identifying high risk areas and providing focused outreach and prevention in those areas, 3) more accurately mapping quality and cost to provide better health outcomes and accessibility and 4) providing transparent information in a global pandemic (like H1N1) for better response and control of disease.

The NSDI is very complex and efforts to effectively describe it or its significance to decision makers often fail. It must also be understood by policy makers that the vision of the NSDI can't be achieved until local government data (i.e. parcel maps at local scales) are fully integrated to meet Federal business needs.

The FGDC does not currently allow state and local governments or the private sector a significant voice. This lack of input is contrary to the new vision of a more open and transparent government.

No one is willing to acknowledge the true cost of building an effective NSDI and its ultimate cost and value are difficult to quantify. NSGIC believes that the price tag is over $8 billion with an annualized maintenance cost of approximately $2.5 billion. For context, the global geospatial market is estimated at $30 billion dollar a year and growing. The largest part of this expenditure is born by state and local governments, largely because no effective incentives from the Federal government cause them to conform to national standards or spend additional money to share data. A large portion of the initial $8 billion has already been expended.

No Congressional committee has oversight for national geospatial activities or the NSDI. You can make significant improvements through the following actions:

1. Immediately create a Federal Geographic Information Officer (GIO) position in OMB with funding and the staff required to investigate and understand Federal agency expenditures. Give this individual the authority to require that agencies work together to define, develop and manage an effective NSDI.
2. Fund and task the GIO to develop a credible research report within 18 months that details the value of geospatial technologies and a shared NSDI to the nation, including all levels of government, the private sector, and the public.

3. Establish an oversight committee that deals with geospatial activities to ensure a point of contact in Congress with a clear understanding of the issues that can take appropriate action. Focusing on the needed improvements to E.O. 12906 and OMB Circular A-16 would be a positive start.
4. Build a governance structure for the NSDI that includes equal representation by the private sector (service providers and consumers); Federal, state, regional, tribal and local government; academia; utilities; and the general public. The FGDC should focus on Federal agency coordination working with the GIO.

What does success look like?

A successful NSDI is reached when decision makers are regularly using digital mapped data in policy discussions every day. This section will outline what a successful NSDI implementation would look like. In particular it addresses two main ideas; 1) the leadership required given the drastic advances in technology and 2) the vision described by the NGAC.

Leadership

Recently the NGAC published "The Changing Geospatial Landscape" (See http://www.fgdc.gov/ngac). This paper outlines specifically the changes and advancements the GIS community has witnessed over the pass thirty plus years. The paper captures the major milestones and identifies several of the major issues that lie ahead. These milestones were reached in large part due to innovation in the Federal government (e.g. the U.S. Census Bureau, the Global Positional System and the advancement of the World Wide Web). However, in conclusion the paper says:

> *"If we as a country are sincere about resolving universal concerns such as global warming, sea level rise, and affordable health care, the Federal government needs to adopt innovative policies supporting a dynamic and robust spatial data infrastructure, an initiative that was promised more than 15 years ago."*

Since President Clinton signed Executive Order 12906 in 1994 and OMB Circular A-16 was reauthorized much of the technology that GIS and geospatial activities is built on has changed dramatically. The "Changing Geospatial Landscape" paper identifies how a new collaborative approach to leadership is required to fully develop the NSDI. Further, it articulates how government data is being used for commercial applications particularly in social media and web 2.0 tools. One does not have to look far to see how the Obama Administration has opened to Web 2.0 tools for a more efficient and effective government. The NGAC have illustrated how GIS tools are fundamentally collaborative tools for advanced policy decisions.

To illustrate just how much has changed, nearly every Department, Division, and line unit in Federal, state and local government employ a Web master or and individual whose job duties include Web publication. Indeed this hearing is now being webcast. These advances are intended to make government more transparent to the public. Yet, the World Wide Web was not even an implemented technology 20 years ago. At the same time, in today's government, we do not have GIO's in each line unit similar to Web masters. GIOs would make significant advances in decision making through coordinating mapped data.

Vision

The NGAC's "Strategic Vision" document clearly outlines what success looks like for the full implementation of the NSDI. The desired outcome is "The Nation and its citizens value and are empowered by geospatial resources." A lengthy list of vivid descriptions for this future state is listed in this document. To get there, the Federal government needs to 1) lead with the collaboration of state and local partners, 2) publish ALL government owned data (that is publishable) as geographic data, 3) train the next generation workforce, and 4) set a clearly defined plan for the data and computing infrastructure required to manage this data.

When the NGAC vision is reached, all citizens will be relying on spatial data. Indeed all decision makers will be consulting map based data for decisions. In short, we know there is a successful NSDI when executive, commission and legislative bodies are using geospatial data in real time for collaborative decision making and policy recommendations.

Response to questions submitted for the record by Mr. Byrne

Questions from Chairman Jim Costa from the State of California

1. Mr. Byrne, how useful are the National Map and Geospatial One-Stop to non-Federal stakeholders?

From my perspective, the National Map and the Geospatial One-Stop are not very useful products and have "missed the mark." I will deal with them separately, since they are very different in scope and purpose. The National Map attempts to bring together a limited number of data products to create a modern version of the USGS topographic map series. Those maps are produced at relatively small scales compared to the scales used by state and local governments. Therefore the products of the system have limited uses. It was originally envisioned as a system that would bring together state and local partner data into seamless national coverages, but that has proven to be more difficult than expected. The private sector (e.g. Google and Microsoft) have been much more successful in assembling disparate data. Every level of government tends to do the same thing and some are more successful than others. While The National Map may be useful to some Federal agencies, and even states and local governments in particular situations, its generally utility to state and local government is highly questionable.

Some (not all) of the data inside The National Map are very useful. The Federal Government should concentrate more on data production, distribution and proper archiving. It is unlikely that Federal agencies will ever compete effectively with the private sector in providing access to map services for public consumption. Federal agencies should work in closer partnership with state and local governments through initiatives like Imagery for the Nation that are designed to simultaneously meet the business needs of all levels of government.

The Geospatial One Stop is similar in concept to a library card catalog. It provides information about available maps and geospatial data, online map services, and even paper map products. In addition, it strives to service many other needs by offering features such as communities of interest and a market place to link potential partners. The concept is good, but the execution is difficult. The Federal metadata standard on which it is built 1) allows a great deal of "flexibility" in documenting data, and 2) can be difficult for many users to understand. Often a user can't find information in the system, because the steward of the metadata records didn't understand how to document their information properly, or they use "odd" terms that don't result in any "hits" when searches are conducted. As with all Internet search engines, the information you seek can be right at your finger tips, but miles away. It's a very frustrating situation. The concept is good, but we probably need some changes in approach. Modifying the metadata standard and approaching the inventory as a database instead of a "search engine" would be a good start.

2. Mr. Byrne, do you think the States speak with one voice when it comes to geospatial issues? What problems are there aligning the differing interests of non-Federal stakeholders?

I think the states generally do speak with one voice. The state GIOs network and speak to each other on an almost daily basis, seeking advice on the full range of issues that confront them. The common voice for state issues comes from the National States Geographic Information Council (NSGIC). While there is a great deal of variability in states (e.g. Rhode Island is not like Alaska), geospatial data issues are generally similar and these issues are well addressed through NSGIC. It is still a fact that the states are at differing stages of development, and have different business drivers that cause them to react differently to more immediate opportunities. This is sometimes judged as significantly divergent view points. The most significant problems arise in aligning all non-federal stakeholders. The "go to" organization is unclear to these stakeholders. NSGIC is attempting to bring stakeholders together (with assistance from FGDC and its CAP grants process) in statewide coordination councils, but there is significant variability across the nation in this effort. FGDC might be the "go to" organization, but its effectiveness in building the National Spatial Data Infrastructure is questionable and it does not operate in a manner that accommodates widespread participation by non-federal stakeholders. In part, this is due to the concerns about Federal advisory committees. There are several Federal agencies outside of the FGDC structure (and indeed outside of The National Map and Geospatial One-stop), that build clearinghouses for geospatial data (for instance the Health Resources Services Administration has a geospatial clearinghouse). From a non-federal stakeholder point it is confusing with whom a stakeholder should engage. I am optimistic that the new Data.Gov portal will provide more useful tools in the future, but clear policy needs to be set and enforced with regard to these activities.

One of the greatest problems the states face in working with the Federal government is the rapidly changing programs and standards or projects that come and go. It takes a great deal of coordination effort to pull the entire community together to work on a program with Federal agencies and it is very discouraging when the Federal agencies change direction, because it causes statewide coordinators to lose credibility with the community.

3. Mr. Byrne, what can be done to more clearly identify the component pieces of the National Spatial Data Infrastructure so that goals can be identified and so that we can effectively measure progress towards its completion?

I can think of several specific points;

Identify a Geographic Information Officer who has the authority and responsibility to develop and implement strategic and business plans for the NSDI. This Office should be able to collaborate across agencies, and be above a single department (e.g. at the Office of Management and Budget).

Clearly articulate in all new legislation a line item for geospatial data and infrastructure to adequately fund development of the framework and other data that are required to implement the legislation. Have the GIO oversee the development of these data by the agencies and publish them in the public domain.

Use the eGovernment reauthorization act to identify exactly how the GIO would interact with eGovernment activities allowing geospatial technologies to become part of the enterprise approach.

Institutionalize Congressional oversight of the GIO so there is accountability outside of the administration.

Fund a competent economic analysis of the current and future value of geospatial technologies to the national economy in terms of their contributions to the GNP. The purpose of this study would be to provide additional focus on priority setting efforts.

Some form of score card or maturity assessment should be required for each Federal agency with a 360 degree evaluation process available to their stakeholders. Something similar should also be used to evaluate the contributions of the states. NSGIC has used a score card for the states in the past without a 360 degree review. It is currently working on a maturity assessment for future efforts.

4. Mr. Byrne, are there any incentives for state and local governments to share their data with each other, and with the federal government, and are there any particular incentives that you would suggest to improve the situation?

The incentive for data sharing is that data becomes more valuable with more use. No event ever stops at a jurisdictional boundary. Earthquakes, floods, fires, tornados, disease, education, homeland security and more all have in common their geography that spans multiple cities, counties, regions and states. It is in the best interest of California to understand the full set of geographic data in Oregon, Nevada, Arizona and Mexico. As a data owner and steward there is intrinsic value and incentives to make my data available for any consumer. My data becomes more valuable as more people use it. The incentive is clearly there. For government to government (at any level) there is intrinsic value. However, there are many local, county, regional and state mandates requiring cost recovery for data.

This is the result of as many as 35 years of investment being made by local and state government in digital geospatial technologies with little return on their investment from past partnership opportunities. Effective data sharing will only be fully realized when data are created once to meet the needs of all levels of government and the private sector. This requires a serious commitment by state and Federal agencies to support the production of data by local government agencies that can be aggregated for use by state and Federal agencies as necessary. Currently, our partnership opportunities are opportunistic and not part of a cohesive national plan. We must fundamentally change the way we work together to build the NSDI. Adequate funding is essential to ensure stable partnerships and mandates will be required to do the job right. Again, well thought out programs like Imagery for the Nation need to be implemented and funded for long-term successes.

5. Mr. Byrne, could you provide some examples as to why having detailed address data, such as from the census, available more broadly would be in the public interest?

Nearly every single business process in government and private applications deals with the address as a common data element. MediCare sends benefits to beneficiaries. Labor departments track employment by address. The IRS collects taxes by address in addition to social security numbers. In all cases there is an underground economy taking place. Using the address point data, business intelligence

analytics could be performed to assist in the audit and investigation of these systems. Identifying addresses by location which are outside of the range of known variability for a given area/time (either high or low) will help auditors identify investigation requirements and save tax payer money. This type of analysis cannot be performed when address (e.g. the X and Y location on a map) information is missing. The government value alone for audits using the address location from Census is likely in the hundreds of millions of dollars annually.

In the private sector, address information is critical for innovative web and smart phone applications. Nearly all of these applications rely on address information. Mapping addresses, even in applications like Yahoo Maps and Google Maps, currently uses a linear reference system where the location of the street address is estimated based on the length of the street and number of addresses in the range. In rural areas these estimates can be miles away from their actual location. Even in urban areas, these estimates can be significantly off. Take for instance the location of the Sacramento County Emergency Operations Center at 3720 Dudley Blvd McClellan, CA 95652. A Google Map and Yahoo Map location of this facility is over 1.5 miles from its actual location. Providing the actual address points collected by the Census Bureau at the front door of all households is an invaluable benefit to business and society. Inaccurate address locations cost time, money and most importantly—lives.

The most serious issue surrounding address points is the duplication of effort to collect this data. The Federal government likely invested hundreds of millions of dollars to create these data. State and local governments will invest similar amounts in coming years to obtain the same data. Most of these efforts will result in the data being placed in the public domain. This is a perfect example of government waste that must be avoided. The values associated with the Census Bureau data are 1) completeness, 2) quality/consistency, 3) currency, and 4) they come from an authoritative source.

Questions from Ranking Member Doug Lamborn from the State of Colorado

1. Would you recommend that the Federal government implement a government-wide Geospatial Information Office, like your position in the State of California?

Yes, most definitely. I believe the full vision of the NSDI has not been attained because there has not been a single office accountable for this effort. Simply appointing a GIO will not solve the problem. The GIO needs a clear mandate, authority and responsibility for Federal agency oversight. They will also need a strong political champion. Many states have established GIO positions through legislation or Executive Order. Clearly, a legislative solution is preferred and the GIO must be properly resourced to conduct the required work.

2. What carrots or sticks to do have at your disposal to assure coordination and to avoid duplication?

In California we value GIS as part of our Information Technology enterprise. As such, I have two sticks at my disposal. First, the Office of the State Chief Information Officer, where my position is housed, has the statutory authority to write state IT policy. We have the ability to include, in the State Administrative Manual policies, standards and procedures that all IT functions in the state must follow as a matter of state policy. Since GIS is an IT solution, our policies can guide the further development of the enterprise. Second, all IT projects require, as a matter of state practice, a Feasibility Study Report. This report must describe the technology solution, the business case for the technology solution and management plan for the technology solution. The OCIO is one of the approving entities of these reports, and provides the regulatory oversight for these projects.

At this time there are no defined carrots. However, incentives are usually defined through collaborative opportunities for multiple departments to leverage investment in IT and GIS projects by joining forces for combined effects and increased economies of scale.

The "ultimate" carrot will be when we actually "turn the corner" on business as usual and we are able to show that all agencies save money by working effectively together. There are many issues related to trust and agency missions that must be put behind us. When they are, the carrots will be much more obvious to the point of not being required. That's the end state that I seek.

Questions from Congressman Gregorio Kilili Camacho Sablan from the Commonwealth of the Northern Mariana Islands.

1. What is the status of geospatial issues in the insular areas? Do we get the same sort of coverage that the rest of the states get?

I must speak while wearing my NSGIC hat on this question. NSGIC provides "state" membership in its organization to each of the insular areas and Washington DC. The only active insular area is the U.S. Virgin Islands, but we do have communication with Puerto Rico. Unfortunately, there has been little or no interaction with the insular areas in the Pacific Rim, so we do not know the status of their activities. NSGIC would be pleased to have the other insular areas join the organization which would help us provide information and services to them. I would be pleased to follow-up on this personally if contact information is provided.

With regard to Federal programs, I suggest this question should be directed to Mr. Ivan DeLoatch, Staff Director of the FGDC to poll all Federal Agencies.

2. When we speak about programs like "The National Map" or "Imagery for the Nation" are you including the Commonwealth of the Northern Mariana Islands in those programs?

Again, I must speak through NSGIC on this question. The Imagery for the Nation initiative does include the insular areas. They are exceptionally difficult to acquire using aircraft and aerial cameras. Therefore, the general thinking is that they should be acquired via satellite imagery which meets the same technical specifications.

Upon cursory examination of The National Map, it does not appear that the Commonwealth of the Northern Mariana Islands is included. This program is run by the U.S. Geological Survey and specific questions should be addressed to the Director of the USGS.

Mr. SABLAN [presiding]. Thank you very much, Mr. Byrne.

I would like to now recognize Mr. John Palatiello. Palatiello?

Mr. PALATIELLO. Very good.

Mr. SABLAN. Thank you.

STATEMENT OF JOHN PALATIELLO, EXECUTIVE DIRECTOR, MANAGEMENT ASSOCIATION FOR PRIVATE PHOTOGRAMMETRIC SURVEYORS [MAPPS]

Mr. PALATIELLO. Thank you, Mr. Chairman, Members of the Subcommittee. My name is John Palatiello, and I am the Executive Director of MAPPS, a trade association of more than 170 private geospatial firms throughout the United States and around the globe.

I would like to offer some perspective on where we are and where we need to be with regard to fully embracing the technology that you saw in the video at the opening of the hearing.

Reference has already been made to the National Spatial Data Infrastructure, NSDI. The NSDI was established or the goal and vision of an NSDI was established by President Clinton in an Executive Order in 1994. It established seven framework layers of data that you saw in the video represented in sort of a GIS sandwich, geographic information sandwich, of layers.

Unfortunately, we have not made the progress that we should in making the NSDI a reality. It has not been well funded. It has not been completely implemented and so we are not fully seeing the benefits that we saw in the video.

Why has that occurred or why has that not occurred? First of all, we don't have a national geospatial strategy in this country. Our investments are made on a very ad hoc basis. We have extraordinarily well built, impenetrable stovepipes in the Federal govern-

ment, and efforts to try to break them down and share data across those stovepipes simply are not occurring.

We are not tying our geospatial activities to national priorities. For example, the climate change bill passed by the House a few weeks ago does not have a provision creating a process by which we measure, monitor, verify or validate whether the phenomena of climate change is indeed occurring or at what rate it may be occurring.

The mortgage crisis. We should have seen it coming. We should have had an early warning system, and if we had had a parcel-based land information system, that cadastral layer of the NSDI, we would have seen it and we could have taken corrective action on a small problem before it became a large, multi-national, multi-trillion dollar problem.

My fear is we are going to do the same thing in Congress with regard to health care. There is no provision in the legislation before the Energy and Commerce Committee that creates an epidemiology GIS or a way of locating and identifying where uninsured Americans reside so we can deliver services to them.

Part of the reason is that we lack that policy. For example, the USGS operates under the Act of 1879. The Congress hasn't passed a National Mapping Act of 2004 or 2005 or 2009, so we are still operating under a very antiquated framework, and there is no statutory policy framework for many of today's geospatial activities in the Executive Branch.

We have not defined roles and responsibilities. Government very often is neither a teammate nor the umpire, and all too often it is the opposing team. Nothing frustrates my members, owners of small- and mid- and large-sized businesses, more than when government competes with the private sector.

We have some very good people like Ms. Siderelis and others in the Federal agencies who are good people that are unfortunately working in a very, very unfortunate circumstance in terms of structure. Coordination, duplication, a lack of coordination, too much duplication.

For example, when you look at the broadband mapping initiative that was in the stimulus bill and you look at what the Census Bureau has already collected, we have an example of where the taxpayers have already paid for geospatial data, but yet it is not being shared with another agency and we are going to spend part of $350 million to collect it once again.

Mr. Byrne mentioned no champion. We have no champion. We don't have accountability. The buck stops nowhere. There are neither carrots nor sticks at Ms. Siderelis' disposal to enforce the standards or assure coordination. We don't have metrics. You can't manage what you can't measure, and we don't have metrics in place to see what our progress is.

Private insurance companies are mapping house locations as was indicated in the video to do ratings and to quantify their risk, yet, as I said, the government can't measure the effects of climate change.

I will end there and say that we would like to work with the Committee to make sure that we have quality data, that we have timely data and we have accurate data, and we think Congress

needs to step in and play a role, and we would like to work with you on that.

Thank you for the opportunity to appear.

[The prepared statement of Mr. Palatiello follows:]

Statement of John M. Palatiello, Executive Director, Management Association for Private Photogrammetric Surveyors (MAPPS)

Mr. Chairman, members of the subcommittee, I'm John Palatiello, Executive Director of the Management Association for Private Photogrammetric Surveyors (MAPPS) the nation's only national association exclusively comprised of private sector firms in the mapping, spatial data and geographic information systems field. The more than 170 member firms of MAPPS are engaged in mapping, photogrammetry, satellite and airborne remote sensing, aerial photography, hydrography, aerial and satellite image processing, GPS and GIS data collection, integration and conversion services.

We appreciate this opportunity to testify today on the Federal government's geospatial information activities and areas where improvement is needed in order for the citizens of our Nation to receive the full benefit that geospatial technologies has to offer.

Executive Order 12906, issued by President Clinton and reaffirmed by President Bush established seven framework layers of geospatial data for Federal investment—geodetic control, parcels (cadastral), orthoimagery, elevation, hydrography, administrative units, and transportation—and constituting the National Spatial Data Infrastructure (NSDI). Sadly, now fifteen years later, not only is the NSDI not complete, but there is no record of how much progress has been made on any of the framework layers.

One of the shortcomings of the government's current geospatial management is the limited structure and participation in the Federal Geographic Data Committee (FGDC). Neither state and local government, nor the private sector, has a seat at the table. Broader participation by private sector interests in setting policy and strategy for FGDC will result in a stronger offering that better represents the interests of the American public and American business, and will engage all stakeholders.

Under the current structure, for Federal agencies the FGDC is essentially voluntary and secondary. Agencies are focused on their own missions, not a broader national strategy. Coordination, data sharing, interoperability and duplication-avoidance are secondary to meeting the agency's own program needs. They are after-thoughts or low priority items. For all agency employees, other than the very small staffs at FGDC, these goals are no one's full time responsibilities. There is neither a carrot nor a stick to incentivize or mandate conformance. A change in the charter and implementation of FGDC in particular must provide either incentives or penalties to assure compliance.

Delegating responsibility for implementation of these coordinating mechanisms to entities within the Department of the Interior is not the most effective model. The widespread perception is that these are Interior or USGS activities, not OMB activities affecting all Federal agencies. We believe a stronger OMB role must be established to make coordination, inter-operability, duplication-avoidance and data-sharing a reality.

Prior to the promulgation of the first version of OMB Circular A-16 in 1953, the old Bureau of the Budget had a much stronger role in coordinating Federal geographic information activities. Executive Order 3206, issued on December 30, 1919, established the Board of Surveys and Maps of the Federal Government to coordinate and promote improved surveying and mapping activities by Federal agencies. It was a Bureau of the Budget entity. Its name was changed to the Federal Board of Surveys and Maps by Executive Order 7262 on January 4, 1936. Under that authority, in 1941, the Bureau of the Budget issued the "United States National Map Accuracy Standards," which applied to all Federal agencies that produce maps. The standards were revised several times, and the current version was issued in 1947. They are still used today. The Board was abolished by Executive Order 9094, on March 10, 1942 and functions were transferred to the Bureau of the Budget. An office in the Bureau of the Budget coordinated Federal geographic information activities. Those responsibilities were devolved to voluntary coordination activities of the agencies when Circular A-16 was issued in 1953. We believe the reestablishment of an OMB office should be considered by Congress or by OMB itself.

Bold, decisive action is needed to eliminate the extraordinary waste, duplication and inefficiency in the Federal government's geospatial activities, the lack of a

strong partnership in Federal agencies' relationship with State and local government, and the insidious extent to which there continues to be unfair government competition with the private sector.

Efforts by the Bush Administration to revise OMB Circular A-16, create Geospatial One-Stop, launch the Geospatial Lines of Business (GLOB), and establish the National Geospatial Advisory Committee (NGAC), as well as the Clinton Administration's restructuring of the Federal Geographic Data Committee (FGDC) and creation of the National Spatial Data Infrastructure (NSDI), and the enforcement of OMB Circular A-16 all have one thing in common: they attempted to treat the symptoms, rather than the disease.

There are dozens of Federal agencies engaged in geospatial activities. Neither the agencies, nor OMB, have a comprehensive understanding of what agencies are involved in geospatial activities. No one in the Federal government has a current, accurate accounting of the annual geospatial expenditures. It is virtually impossible to determine how many Federal employees are involved in these activities. There is no balance sheet, performed to accepted cost accounting standards, of the capital investment made in equipment and plant (office space, etc.). There is no accurate data base on the amount of geospatial work performed in-house and by contract. GLOB attempted to gather this data. However, due to a poor structure and internal systems within the agencies and the Federal government generally, GLOB failed. In fact, none of the historic budget data gathered from the agencies through numerous annual data calls have ever been released to the public. In fact, the annual data call process has been terminated, due to the paucity of data OMB received from the agencies. While the NGAC has recommended that the data calls be resumed, and that the data be released, those recommendations have not been implemented.

The relationship of each agency with other Federal agencies and with State, local and foreign government agencies, needs improvement. There is considerable duplication and redundancy, little sharing of data, and development of standards for "interoperability" of data has been far too slow. The obstacles are not technical; they are political and organizational. There are some bright, dedicated professionals working in geospatial positions in Federal agencies who are trapped in an unworkable structure.

There are far too many Federal agencies operating geospatial production capabilities that are expensive, inefficient, and which duplicate and compete with the private sector. There is in the geospatial structure, no uniform application of the federal policy that the government will not compete with the private sector. There is no accurate record of the extent to which the Federal government utilizes (or duplicates or competes with) the private sector (including the dollar amount and percentage contracted to the private sector and whether that has increased in the recent past and can increase in the future). Although mapping-related activities are consider "commercial" in nature, agency compliance with the FAIR Act, Office of Management Budget Circular A-76 and Executive Order 12615 has been minimal. The relevant provisions of the Economy Act and the Intergovernmental Cooperation Act, intended to prevent unfair government competition with the private sector, are routinely ignored. There is no cross reference to these policies in NSDI, A-16, FGDC, GLOB or Executive Order 12906.

Federal agencies provide grants or other Federal financial assistance to non-Federal entities (including but not limited to State, local and foreign government) to perform surveying and mapping activities. Many of these activities could be performed by the private sector. Moreover, Federal agencies provide grants and other Federal financial assistance to universities to perform surveying and mapping activities or research. In fact, these activities could be performed by the private sector and the "research" is on activities already commercially available. Much of this expenditure is outside the FGDC and A-16 structure.

With the advent of new airborne and space-based remote sensing and imaging technologies, there are new business models under which government agencies can now buy licenses to commercial off the shelf maps and images, rather than the government owning data. However, civilian Federal agencies are very slow to embrace this concept. We were encouraged by developments, including the "Tenet memo" and the White House Policy on Commercial Remote Sensing, and we were hopeful they could help stimulate new thinking and new ways of doing business in the government, as well as a new paradigm for government utilization of the private sector. However, despite the remote sensing policy language on utilization of the private sector, government duplication of and competition with the private sector persists. We are disappointed that no Federal agency has been assigned the role of enforcing that provision in the policy.

Given the failure of the NSDI to become a reality, numerous new initiatives have been launched to complete some of the framework. These include National Land

Parcel Data, Imagery for the Nation, National Lidar Initiative and Elevation for the Nation, Transportation for the Nation, and others. While these are all worthy programs, their proliferation indicates the failure of the NSDI. A strategy must be developed to either fund and complete the NSDI as a holistic approach or to fully implement these individual initiatives.

There is also a need for Congress to comprehensively address the confusion in some agencies on the application of the qualifications based selection (QBS) process codified in the "Brooks Act" (40 USC 1101) to geospatial services. The current Federal Acquisition Regulation (48 CFR 36.601-4) does not accurately reflect the deep legislative history or the intent of Congress. MAPPS brought an action to Federal Court (MAPPS v. United States 1:06cv378) to address this important matter, but we were denied standing. We urge Congress to provide unequivocal clarification of the need for demonstrated competence and qualifications in the acquisition of geospatial services in data acquisition, production and related activities.

Mr. Chairman, the issue is not just that we built solid, impenetrable stovepipes in Executive Branch agencies, but I must say the problem begins here in Congress. There are more than 30 subcommittees and full committees of the Congress that have some oversight or legislative jurisdiction over geospatial activities. If we are to implement a better process for carrying out geospatial activities in the Executive Branch, then we must also implement a better committee structure for the authorization and appropriations of geospatial programs by the Legislative Branch.

Mr. Chairman, numerous studies have been conducted which detail the lack of coordination of Federal mapping and geospatial activities, and the government's duplication of and competition with the private sector. These studies date back to the 1930s. The time for action is long overdue. We hope this hearing will help stimulate that action. We commend you for your interest and leadership and we stand ready to work with Congress and the Executive Branch to better serve the geospatial needs of the American people in economic development, resource management, environmental protection, infrastructure, construction and maintenance, homeland security and a variety of other national needs and applications.

Response to questions submitted for the record by Mr. Palatiello

Questions from Chairman Jim Costa from the State of California

1. Mr. Palatiello, what can be done to more clearly identify the component pieces of the National Spatial Data Infrastructure so that goals can be identified and so that we can effectively measure progress towards its completion?

Answer: The component pieces of the NSDI are well defined. The only data layer that the NSDI omits that should be added is underground utilizes and infrastructure. The challenge is not identifying or defining the SDI, but rather it is in actually implementing the NSDI. There has never been authorizing legislation enacted. There has never been an OMB funding strategy. Too often, Congress passes legislation that requires the NSDI data in order to be successful, the Cap and Trade bill being the most recent and glaring example, but doesn't authorize or appropriate the funds to build the NSDI. With regard to metrics to measure progress on the NSDI, I would suggest: Currency; Completeness (which may include interoperability & metadata); Scale/Resolution; Accessibility.

2. Mr. Palatiello, how useful are the National Map and Geospatial One-Stop to non-Federal stakeholders?

Answer: The National Map (TNM) is a sound and useful program. Studies by the National Research Council and other organizations have demonstrated the need for and benefits of TNM. If fully implemented, it would provide a considerable portion of the data envisioned by the NSDI. It would also accomplish the goals of initiatives like the National LIDAR Initiative to provide elevation data and Imagery for the Nation to provide orthoimagery. USGS has established an effective public-private partnership to collect TNM data, through its Geospatial Products and Services Contracts (GPSC). These multiple-award, indefinite delivery/indefinite quantity (ID/IQ) contracts, awarded via the qualifications based selection process (QBS), pursuant to 40 USC 1101 and 48 CFR 36.6, are vehicles to provide professional geospatial services to USGS, other DoI agencies, other federal agencies, as well as state and local government. USGS also fosters partnerships with other federal agencies, as well as state and local government, on the use of the GPSC contracts and to populate TNM data. However, TNM is another example of a program that has not been specifically authorized by Congress and a successful funding strategy has not been developed or implemented. Thus, TNM is languishing. Geospatial One-Stop (GOS) has been a

disappointment. There is no longer much discussion in the geospatial community about GOS and it is not widely used. One of its major shortcomings has been its failure to successfully capture private data. As a result, it does not provide true "one-stop" shopping for available geospatial data. MAPPS has tried to work with USGS to provide a cost-effective means to include commercial data, but that effort has not proven fruitful. Finally, the "market place" feature of GOS, wherein agencies are to theoretically post their upcoming geospatial data requirements, in order to facilitate collaboration and prevent or reduce duplication, has never been successful.

3. Mr. Palatiello, are there any incentives for state and local governments to share their data with each other, and with the federal government, and are there any particular incentives that you would suggest to improve the situation?

Answer: The greatest incentives for sharing should be cost avoidance, cost savings, and partnering. If two governmental units with common data and geographic interests can share the cost of data collection, they both benefit financially. We would support greater emphasis on forging partnerships, facilitating cost-sharing arrangements, and conducting needs assessments by government agencies, and providing policy and management mechanisms and financial incentives ("carrots") to do so, and, if necessary, penalties ("sticks") for agencies' failure to do so. Moreover, government agencies should be focused on these activities, rather than government agencies completing with and duplicating the private sector. Government agencies should not be engaged in commercially available activities, such as data collection and value-added services.

4. Mr. Palatiello, you mentioned that a lot of the imagery in GoogleMaps comes from the federal government. Do you know what percentage of Google's imagery data is from the federal government, and what agencies or programs within the federal government provide that imagery?

Answer: I do not have an accurate estimate of the percentage of Google's imagery that comes from the federal government, but it is my understanding that there are millions of sq km of ortho imagery and terrain published to Google Earth and Maps that has been contributed to Google through partnerships with local, state, and federal programs. These include: USDA-FSA (NAIP), USGS/EROS (DOQQs, current and historical aerial imagery, historical satellite imagery, terrain), and the National Archives. It is also my understanding that the largest single source of sub-meter aerial coverage that Google has is the direct result of USGS partnerships with state, regional, and local governments for aerial collections.

5. Mr. Palatiello, you discussed your concerns with the federal government competing with private industry when it comes to collecting geospatial data. However, you also discussed the usefulness of federal data because it is "authoritative" data. Also, privately collected data is typically proprietary, requiring the purchase of licenses in order to use the data, while federal data is typically in the public domain. How should the federal government determine when it is in the public interest to collect data itself, so as to be an authoritative, freely-available source that can be accessed by many users, and when it is better to allow private companies to collect the data?

Answer: There are widespread misconceptions about licensed geospatial data. While this is a relatively new business model in the geospatial field, there is considerable literature to support the increased use of licensed data by federal agencies in order for such agencies to fulfill their statutory missions. Federal agencies use commercial software (such as Microsoft Word) on a regular basis. However, the government does not own that software, it owns a license to the software. That license does not in any way inhibit the ability of a government agency to serve the public or fulfill its mission. The same is true about licensed data. In 1999, MAPPS was provided a grant by USGS to host a conference, "Licensing Data, Licensing People" that addressed the policy issues and mechanisms for using licensed data in government agencies. Additionally, the National Research Council was funded by federal agencies to conduct a study on this issue, resulting in the publication of the NRC report, "Licensing Geographic Data and Services" (2004). This study found that licensed geographic data is not an inhibitor to government agencies. Unfortunately, very few of the NRC's recommendations have been implemented by the federal government.

6. Mr. Palatiello, could you provide some examples as to why having detailed address data, such as from the census, available more broadly would be in the public interest?

Answer: The most explicit example of the utility of address data was demonstrated when New Orleans flooded as a result of Hurricane Katrina and the levee breaches. We all saw news footage of rooftops with the entire road system flooded-out and obliterated. Maps without addresses were virtually useless. Had address data been available, emergency response deployment would have been exponentially more timely and effective. In its report "Land Parcel Data: A Vision for the Future" (2007), the National Research Council did an excellent job of describing the uses of cadastral (or parcel and address) level data. These include improved land records, more efficient property tax assessment, better planning and engineering, improved environmental management, enhanced economic development, better statistical and demographic data, better government service delivery, improved management of mortgages and home ownership data, better land title procedures, and greater development of location based businesses. There is almost no data that is not improved when it is given a geographic attribute. The more that geographic data is address-based, the more valuable it becomes.

7. Mr. Palatiello, please describe your thoughts on how a parcel-based national system could have provided an early warning system of the mortgage crisis.

Answer: Today, there is no common, enforced national standard for parcel information. The 3200 counties, plus the cities and towns all collect and manage their parcel information to their own standards. It is estimated that 20 percent of the data in the U.S. (mostly in less prosperous jurisdictions) is not even in a digital format. Therefore, there is now data set upon which to monitor disruptions, anomalies or significant changes or trends in our housing, home ownership, or real estate financing system. We only have episodic data or samplings of activities. Had the United States operated a national parcel-based system, agencies such as the Federal Reserve, HUD, Fannie and Freddie, and others could have seen the small, incremental increases in foreclosures and taken early remedial actions, rather than not realizing the problem until it had become a large, trillion dollar international crisis. With the federal government now managing a portfolio of hundreds of billions of dollars in mortgages, it is absolutely necessary that a national parcel system be in place so that this asset can be properly managed. There are a number of experts, including Dr. Ian Williamson at the University of Melbourne and The Honorable Gary Nairn, a member of Parliament in Australia and a professional surveyor, have been critical of the United States on the lack of a national parcel system (see: http://www.mycoordinates.org/july09/spa.php).

Questions from Ranking Member Doug Lamborn from the State of Colorado

1. How does the Federal government compete with the private sector?

Beginning in 1955 (Bureau of the Budget Bulletin 55-4), it has been the policy of the Federal government that "will not start or carry on any commercial activity to provide a service or product for its own use if such product or service can be procured from private enterprise through ordinary business channels". Surveying, mapping and geospatial "related activities have always been considered commercial activities. Nevertheless, federal agencies employ personnel, acquire and operate equipment, and carry on geospatial activities that duplicate and compete with firms in the private sector. As long ago as 1932, a committee of the House of Representatives expressed concern over the extent to which the government engaged in activities which might be more appropriately performed by the private sector. Among the activities identified as engaged in government competition with the private sector was mapping. A 1973 OMB report of its Task Force on Mapping, Charting, Geodesy and Surveying found "in-house mapping, charting and geodesy capabilities demand care and feeding once they are in place. And so they are fed—in perfect conformance to the principles of Parkinson's Law. Parkinson's Law suggests (1) the number of subordinates increases regardless of the amount of work produced; and (2) work expands so as to fill the time available for completion." The report recommended, "private cartographic contract capability is not being used sufficiently. We found this capacity to be broad and varied and capable of rendering skilled support ... Contract capability is a viable management alternative ... Its use should be encouraged in lieu of continued in-house build-up." Since that report, the extent to which federal agencies have performed surveying, mapping and geospatial activities that are otherwise available from the private sector has continued. And, also since that report, numerous other government studies have advocated increased contracting with the

private sector for the government's surveying, mapping and geospatial needs. Nevertheless, the government still cares for and feeds its in-house capability. As I indicated in my verbal testimony, we are seeing it again with the ARRA (Stimulus) money being used by agencies to buy equipment so that commercially available geospatial services are performed in-house, rather than contracting for services for the private sector. This increases unemployment in the private sector and results in government duplication of and competition with private firms, particularly small business.

2. How would you define the roles of the various sectors and stakeholders in the geospatial field?

Government should be the demand for geospatial data to perform the inherently government functions set forth in the Constitution and which the citizenry has come to expect—such as the Census, national defense, regulating interstate commerce and providing for the general welfare. Government should not be the supply of geospatial data. The role of government should be to conduct analysis of its geospatial data needs, establish standards, award and manage contracts, oversee the data quality of that produced by its contractors, and apply the data to produce the solutions it needs to perform its inherently governmental functions. Universities should be engaged in education and research, but not do so in a manner that duplicates or competes with the private sector or results in the performance of services that are otherwise commercially available. The private sector should be meeting the demand for geospatial data generated by government and other users and meeting that demand with services, data, products, applications, and value-added solutions.

3. What would you recommend that Congress to do improve Federal geospatial data management?

There have been a number of studies by OMB. The National Research Council, the National Academy of Public Administration and others that have concluded that the current management structure in the government does not work. There is overwhelming support in the community for the creation of a management office in the Executive Office of the President (OMB, OSTP, OIRA, etc.), rather the current system wherein the Federal Geographic Data Committee (FGDC) is operated in the Department of the Interior. MAPPS has suggested a geospatial management office modeled after the Office of Federal Procurement Policy (OFPP), with a national board (not advisory committee) to set policy and priorities (the model of the National Capitol Planning Commission (NCPC) has been suggested) made up of private citizens with expertise and experience in the geospatial field. I would recommend legislation to implement such a structure. MAPPS supported the legislation that resulted in the creation of a Geospatial Management Office (GMO) in the Department of Homeland Security (DHS) and would recommend similar offices in other departments and independent agencies. Finally, bills have been introduced over the years, but not enacted, that have sought to strengthen geospatial activities and the role of the private sector. MAPPS supports the FLAIR Act introduced by Mr. Kind and Mr. Bishop (H.R. 1520—in the current Congress) and the Freedom from Government Competition Act (H.R. 2682 in the current Congress) and has supported legislation such as S. 4006 (Senator Allen 109th Congress), H.R. 4461 (Mr. Young of AK 102nd Congress), H.R. 3639 (Mr. Rahall 101st Congress). Legislation of this nature would be helpful in reforming management of federal geospatial activities.

Questions from Congressman Gregorio KiWi Camacho Sablan from the Commonwealth of the Northern Mariana Islands

1. What is the status of geospatial issues in the insular areas? Do we get the same sort of coverage that the rest of the states get?

I am not the most qualified individual to answer that question. I believe a more comprehensive response can be provided by the Department of the Interior. I am aware that USGS programs, such as the National Atlas, include the Northern Mariana Islands. I do know that private firms on the mainland do deploy aircraft and perform mapping and geospatial activities when contracted by clients (government or commercial) in the insular areas. I am aware of more activity in Puerto Rico and the U.S. Virgin islands, but when there is a need for data and funding is available, firms do provide services in the insular areas of the Pacific.

2. When we speak about programs like "The National Map" or "Imagery for the Nation" are you including the Commonwealth of the Northern Mariana Islands in those programs?

While much of the focus and discussion of these programs has been on the 50 states, it is my understanding that in insular areas and the Northern Mariana Is-

lands would be included. I would, however, make two additional points. First, compared to the lower 48 states, Alaska is a terribly under-mapped portion of the United States. It is my observation that the lower 48 states get much more attention than Hawaii, Alaska and the insular areas. Second, I have been involved in the geospatial profession for more than 25 years and I have not had a lot of interaction with representatives of the insular areas generally and the Northern Mariana Islands in particular at professional conferences and similar venues. It would be helpful for the Northern Mariana Islands to be involved in organizations like the National States Geographic Information Council (NSGIC) and other organizations so that their interests are known. Moreover, the USGS has an excellent program of liaisons to interface with the states on geospatial programs. It is my understanding the USGS Geospatial Liaison based in Hawaii is responsible for the Northern Mariana Islands. That is the individual the islands should be working with on their participation in programs such as The National Map and Imagery for the Nation.

Mr. SABLAN. Thank you. Thank you very much, Mr. Palatiello.

And last, but certainly not least, and the most best introduced witness we have today, I would like to recognize Ms. Marlow.

STATEMENT OF SUSAN MARLOW, CHIEF EXECUTIVE OFFICER, SMART DATA STRATEGIES, INC.

Ms. MARLOW. Thank you so much, Mr. Chairman, Members of the Subcommittee. It is my privilege to testify before you today on behalf of Smart Data Strategies, a woman business enterprise specializing in geospatial solutions established in 1989.

I know that when we refer to geospatial it becomes confusing. Even with the video, we have so many professional acronyms and nomenclature, but when you put it in the context of the video and Google Earth and things like that it becomes much more understandable.

The Federal government has long recognized the need for geospatial data for decision making purposes. In 1990, the Federal Geographic Data Committee was formed. This committee, in turn, identified seven base layers that are critical to the U.S. Government, now known as the National Spatial Data Infrastructure or the NSDI framework that so many people are talking about today.

Each one of these layers was assigned to a lead agency to oversee the development of context standards. While this was good in concept, it has not been completed. The primary obstacles are lack of funding and intergovernmental agency coordination.

As stated already today, we are now funding a $350 million broadband mapping through the stimulus. While this is a great initiative, the framework layers are still incomplete. It is time to move from concept to action. Much like you need to frame up a house before the roof and walls go up, you need these base layers as the building blocks to all other layers.

Today I am going to talk to you about the parcel layer, which is my expertise. While much of what I will discuss will pertain specifically to the parcel layer, many parallels exist with other framework layers.

The ability and privilege to own land is an important characteristic of any free and democratic society. It is why we refer to it as the American Dream. The current mortgage crisis leaves no doubt that land ownership and the associated rights, interests and value of property is fundamental to our entire socio-economic sys-

tem, yet the parcel layer remains the least successful of the seven framework layers.

Local jurisdictions across the United States have the statutory responsibility for maintaining an inventory of the parcels used primarily for equitable taxation. With approximately 3,200 counties in the United States, this creates the challenge of 3,200 puzzle pieces that do not all fit together, but with the proper coordination they certainly could.

The State of Tennessee and Alabama are very good examples of coordination between local jurisdiction and state agencies. However, there is very little coordination between local, state and Federal agencies except when there is a national emergency such as a hurricane or a wildfire. It is during these times of crisis that the Federal government discovers that the pieces don't fit together, and often times the data is nonexistent in those areas.

Here is an example. I will point you to the PowerPoint here. Here is an example of what happens when there is no coordination between the framework layers. In this example, the parcel layer and the orthoimagery layer were collected at two different times for different purposes. You can see that the parcels are in the streets, which is obviously not an accurate representation of what is on the ground. But the problem is you don't really know which one of these is wrong. Again, another example of the need for coordination.

Nearly 30 years of reports have called for a national property layer. Fourteen years before the NSDI identified the parcel layer as a must have, the National Research Council identified the critical need for it in the study, The Need For a Multi-Purpose Cadastre. And, yes, the word cadastre is another word for the parcel layer.

In 2007, the NRC report came to the same conclusion that a national property database is necessary, feasible and affordable. Billions of American tax dollars have provided funding to foreign countries to develop spatial data, leaving the U.S. behind most industrial nations as it relates to the parcel layer and the information associated with it.

In both the 1980 report and the 2007 report, the problems identified were political and institutional, not technical. In addition, the 2007 report included a coordination and implementation plan as part of its recommendation. I believe this model could serve as an example for all of the framework layers.

One of the recommendations called for the Federal government to provide an inventory of its own property. Yes, the Federal government does not have an accurate inventory of its own property. This was documented in a GAO report in 2004 and remains true today.

It should be noted that this is the fourth consecutive Congress in which GAO placed managing Federal real property in the high risk series, those Federal programs most at risk for waste, fraud and abuse.

There is, however, pending legislation, H.R. 1520, the Federal Land Asset Inventory Reform Act, otherwise known as the FLAIR Act, introduced in a bipartisan manner by full Committee Members Ron Kind and Rob Bishop. While this legislation is important and

I respectfully urge you to enact it, I would also urge you to support additional legislation that would fund the creation of all framework layers and to establish Federal leadership roles and responsibilities.

It is time to accept the research and start acting. This is not a technical problem. If FedEx can track the location of millions of packages per day moving around the world, the Federal government should be able to track the location of land.

Thank you very much.

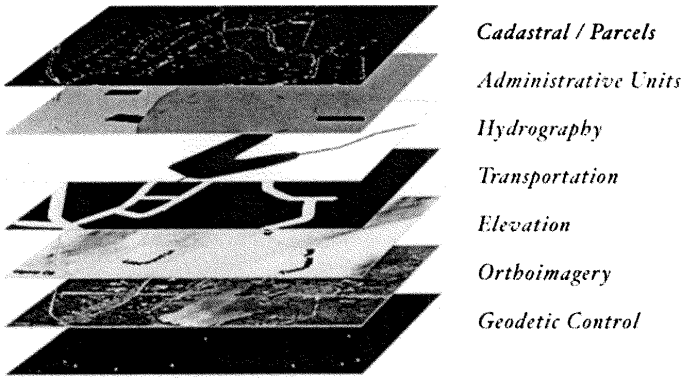
[The prepared statement of Ms. Marlow follows:]

Statement of Susan Marlow, President, Smart Data Strategies, Member, National Academy of Sciences Committee Land Parcel Databases: A National Vision

Mr. Chairman, members of the Subcommittee, it is my privilege to testify before the subcommittee on behalf of Smart Data Strategies, Inc, a woman owned enterprise established in 1989.

As the owner of a small geospatial business with many government clients, I have seen the geospatial market mature, both technologically and professionally. The introduction of Google Earth and Microsoft Virtual Earth and the disasters of 9/11 and Hurricane Katrina have all had a significant impact on the rapid adoption and application of location based technologies. The geospatial market is expanding into every area of business through the enhancement of visualization and analytical capabilities. Any database with an address has the ability to be georeferenced to a location on the earth. The use of this decision support technology has been identified as critical to all levels of government. While significant milestones have been accomplished by federal agencies, such as the creation of the FGDC and the concept of the National Spatial Data Infrastructure (NSDI), there is still much to do in order to complete these initiatives. All levels of government (local, state, federal, tribal) spend millions of dollars each year for single purpose geospatial data collection. One of the missing components of making the NSDI a reality is a model and governance plan for data sharing and geospatial coordination. By comparison, most industrialized nations throughout Europe, Asia, and Latin America already have a coordinated national geospatial database with many of them being funded by U.S. tax dollars through the World Bank. The U.S. has the intellectual capital and the technology necessary to create the most accurate geospatial database in the world by coordinating efforts and funding.

Created in 1994 through Executive order 12906, the NSDI defined seven base framework layers as critical information that needed to be centralized. These include hydrography, elevation, cadastral, digital orthoimagery, governmental units, transportation, and geodetic control layers. The vision of the FGDC in creation of the NSDI was designed by thought leaders throughout the geospatial community. Each layer has a defined set of standards and a lead agency responsible for that particular layer.



We have spent years and countless hours with some of the brightest people in the geospatial profession defining what the framework should be as well as the standards associated with each layer. While that is good in concept, it has not been car-

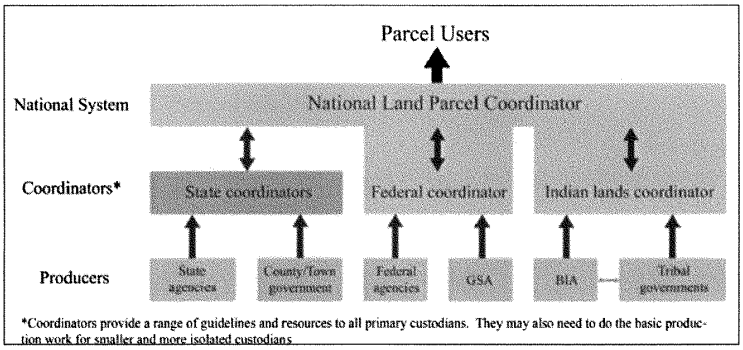
ried out in practicality. After 14 years, the framework layers are still incomplete. While I won't speak to every layer, I will draw some parallels to all layers using the parcel layer as an example of failed coordination and a lack of standardization.

1. The parcel layer is collected at a local level primarily for tax purposes. This means that each local jurisdiction has the ability to define their own data standard based on their unique needs. The end result is 3200 plus puzzle pieces that don't quite fit together. While millions of dollars are spent on the creation and maintenance of this data at the local level, the investments are not being realized at the federal level due to a lack of coordination.
2. The Bureau of Land Management (BLM) has been assigned the parcel layer (cadastral layer), however it is not part of BLM's core mission to collect parcel information for the entire country. They manage only the property owned by the U.S.
3. Appropriate accuracy levels must be considered as part of standardization. The parcel layer is the most detailed and requires a higher level of accuracy. As an example, the USGS quad maps are at an accuracy of plus or minus 30-40 feet depending on the terrain. Now imagine if your property lines were at the same accuracy level, it's obvious that you and your neighbors may have a few issues with that.

Similar issues exist for each layer. If the NSDI is to be a reality we need to provide each lead agency the proper funding, governance structure, and coordination authority to move beyond the development of content standards into data creation, implementation, and maintenance. This should be accomplished in coordination with the private sector which has the resources and expertise to partner with government agencies to complete the framework layers.

An example of how this can work has been presented by the National Research Council's study National Land Parcel Data: A Vision for the Future. These recommendations define a strategy for developing sustained coordination between government agencies and stakeholders to create and maintain the parcel layer. While these are specific to the parcel layer, they can serve as a road map to complete all seven framework layers. The recommendations are as follows:

1. In order to achieve nationally integrated land parcel data, there should be both a federal land parcel coordinator and a national land parcel coordinator. A panel should be established to determine whether BLM has the necessary and sufficient authority and capacity to serve as the federal and/or national land parcel coordinator, and if not, either it should be given the authority and resources, or some other agency should be named. The panel should conduct a review of BLM's existing stewardship responsibilities for cadastral and federal land ownership status under OMB Circular A-16, as well as its current legislative authorities and budget priorities.
2. As part of the Geospatial Line of Business process, the FGDC should identify the role of parcel data in the collection and maintenance of the following data themes: Buildings and Facilities, Cultural Resources, Governmental Units, and Housing.
3. The Federal Land Parcel Coordinator should coordinate the development and maintenance of a single, comprehensive, and authoritative geographically referenced database for land parcels managed by the federal government, including public lands. This database should include the ownership, area, and use of all federally managed lands. (H.R. 1520, the Federal Land Asset Inventory Reform Act of 2009)



4. The National Land Parcel Coordinator should develop and oversee a land parcel data business plan for the nation. This plan should serve as the basis for evaluation of the program and as a model for state and local governments. Metrics should be based on the FGDC Parcel Management Program Business Plan Template.
5. The Office of the Special Trustee for Tribal lands should establish an Indian Lands Parcel Coordinator who would manage a program to coordinate and fund the development and maintenance of a geographically referenced database for Indian trust parcels. The data should then be made available to the National Land Parcel Coordinator to be integrated with national land parcel data.
6. Congress and the Bureau of the Census should explore potential policy options, including modifications to Title 13, that would allow its digital data on building addresses and their geographical coordinates to be placed in the public domain while also maintaining important privacy protections. If publicly available, these street addresses and coordinates could be used to assist in the development of parcel data in areas where parcel data sets do not exist.
7. The National Land Parcel Coordinator should embrace the Fifty States Initiative and require that every state formally establish a state parcel coordinator. State coordinators should develop a parcel data business plan and manage the relationships among all levels of government involved in parcel production. The plan and program should achieve comprehensive border-to-border parcel coverage for all public and privately owned property within the state. The state parcel coordinator should either work with the state office responsible for the Census Bureau's Boundary and Annexation program or with local government offices if a statewide program does not exist.
8. The National Land Parcel Coordinator should develop a plan for a sustainable and equitable intergovernmental funding program for the development and maintenance of parcel data. The plan must provide financial incentives to local governments that will produce and maintain the majority of the parcel data. Many of the funds for this program should come from existing federal programs that require parcel data; however, new funding will be required to establish an initial baseline, integrate the data, and make them available through a web interface.
9. To participate in federal geospatial programs such as federal collection and dissemination of orthoimagery, a local or state government should be required to make the parcel geometry and limited set of attributes needed for the national land parcel data system available in the public domain. Further, in order to be eligible to receive federal funds that are directly associated with property, such as for disaster relief or community development assistance, digital land parcel data necessary to effectively administer the program should be made available by local and state governments.

Of these nine recommendations, only recommendation number three has pending legislation. On March 16th, 2009 Representatives Kind (D-WI) and Bishop (R-UT) introduced H.R. 1520, the Federal Land Asset Inventory Reform (FLAIR) Act of 2009. This legislation called for the federal government to act on the recommendations by the Government Accountability Office and the National Research Council to create an inventory of all federally owned properties. The current status of existing inventories of federal properties is known to be unacceptable. They are incomplete, outdated, and inaccurate thus resulting in excess and underutilized property, deteriorating buildings, and the continuation of costly accounting and leasing errors. The FLAIR Act will only impact the current status of the federal government's effort to properly inventory property if government agencies agree to coordinate geospatial data management efforts.

If the government decides to coordinate efforts and complete the NSDI, the available data and potential combinations of data would provide numerous opportunities for research, strategic planning, and ongoing data accuracy efforts and utilization initiatives. For example, the following results were identified as potential benefits of a national parcel layer to the federal government in the 1983 and 2007 National Research Council studies:

- Provides a flow of standardized data for updating federal maps and statistics, e.g., for the federal censuses
- Provides a database for monitoring objects of national concern, e.g., agricultural land use and foreign ownership of U.S. real estate
- Provides a reliable record of the locations of federal ownerships or other interests in land
- Provides standardized records for managing federal assistance to local programs such as housing, community development, and historic preservation

In addition to benefitting the federal government, a completed national parcel layer would provide long reaching benefits to other jurisdictions and stakeholders.

Potential Benefits to Local Governments

- Assures that the best available data are used in each public transaction
- Avoids conflicts among land records of different public offices
- Improves accuracy of real-property assessments
- Provides base maps for local planning and preliminary engineering studies
- Provides a standardized data base for neighborhood, municipal, county, or regional development plans
- Avoids costs of maintaining separate map systems and land-data files
- Encourages coordination among separate map systems affecting land
- Improves public attitudes toward administration of local government programs

Potential Benefits to State Governments

- Provides accurate inventories of natural assets
- Provides accurate locational references for administration of state regulations such as pollution controls
- Accurately locates state ownership or other interests in land
- Provides a standardized database for management of public lands
- Provides large-scale base maps for siting studies
- Simplifies coordination among state and local offices

Potential Benefits to Private Firms

- Produces accurate inventories of land parcels, available as a public record
- Produces standard, large-scale maps that can be used for planning, engineering, or routing studies
- Speeds administration of public regulations

Potential Benefits to Individuals

- Provides faster access to records affecting individual rights, especially land title
- Clarifies the boundaries of areas restricted by zoning, wetland restrictions, pollution controls, or other user controls
- Produces accurate maps that can be used for resolving private interests in the land
- Reduces costs of public utilities by replacing present duplicative base-mapping programs
- Improves efficiency of tax-supported government services as described earlier in this table

Currently, there exist numerous reports, analyses, and studies that endorse coordination at a national level. Of particular note are the following studies:

The Need for a Multipurpose Cadastre (1980) recommended a nationwide land parcel system with strong coordination from the federal government.

Toward a Coordinated Spatial Data Infrastructure for the Nation (1993) helped define the National Spatial Data Infrastructure (NSDI) which identified the parcel layer as one of seven critical layers.

National Land Parcel Data: A Vision for the future (2007) conducted by the National Research Council reviewed the 1980 report as well as the current status parcel data in the United States, concluding that a national property database is necessary, feasible, and affordable.

Land Parcel Data for the Mortgage Crisis: Results of the Stakeholders Meeting (2009) concluded that there are three key recommendations that could improve the ability to track and monitor the status and progress of mortgage and property value conditions in the U.S.: 1. Add the local Parcel ID to the Home Mortgage Disclosure Act (HMDA) data, 2. Develop a Parcel Early Warning System, 3. Complete the standardization and availability of parcel data nationwide.

Mr. Chairman, 30 years of reports and research have called for the parcel layer yet it remains unfunded and incomplete. The problem is not technical, it is political and institutional. While FedEx can track the location of millions of packages per day moving around the world, the federal government does not track the location of land, and it is stationary. The ability and privilege of land ownership is an important characteristic of any free and democratic society; it's why we refer to it as the American Dream. The current mortgage crisis leaves no doubt that land ownership and the associated rights, interests, and value of property is foundational to our entire socioeconomic system. While the federal government has identified numerous needs for parcel data such as efficient emergency preparedness and response, disease tracking, agricultural management and land use, community development and zoning, energy and resource development, there still is only sporadic use due to the lack of availability and accessibility of usable parcel related data as a result of failed

coordination between local, state, federal, and tribal agencies. I urge Congress to accept the research and enact legislation to provide funding and agency coordination to complete the parcel layer and all other NSDI framework layers.

Response to questions submitted for the record by Ms. Marlow

Questions from Chairman Jim Costa from the State of California

1. Ms. Marlow, what can be done to more clearly identify the component pieces of the National Spatial Data Infrastructure so that goals can be identified and so that we can effectively measure progress towards its completion?

There are seven framework layers in the NSDI. Each one of these layers may have different uses requiring different levels of accuracy for various agencies. In order to measure the progress of the NSDI, I believe we need to identify what accuracy levels are needed for each framework layer and then make all layers accessible through the National Map and Geospatial One-Stop.

2. Ms. Marlow, how useful are the National Map and Geospatial One-Stop to non-Federal stakeholders?

The National Map and the Geospatial One-stop are not widely adopted or used by non-federal stakeholders.

3. Ms. Marlow, how much would it cost to fund the national parcel data layer that you described in your testimony?

According to the National Academy of Sciences study Land Parcel Databases; A National Vision, the cost to complete is $294.6 million.

4. Ms. Marlow, please describe your thoughts on how a parcel-based national system could have provided an early warning system of the mortgage crisis.

If property information was accessible, organized, and current regardless of jurisdictional or political boundaries, land property data (including but is not limited to value, loan type, loan status, and interests of real property) would be searchable, accessible and analyzable across the Nation.

The accessibility of property data would have allowed the federal government to:

- Run automated analyses to track and investigate negative market movements before trends emerge, such as:
  - Foreclosures.
  - Loan/Tax defaults.
  - Land devaluation and inflation or deflation.
- Create visual representations of movements and trends on maps providing an early warning system.
- Manage property foreclosure inventory.

This type of system would have also allowed the government to monitor the value of homes against a known trend line like the GNP gross national product and alert the nation when the trends begin to diverge.

5. Ms. Marlow, can you provide any examples of where implementation of parcel systems, digital tax mapping systems, or other GIS has provided a favorable, quantifiable return on investment to a states or units of local government?

The Los Angeles County Assessors Office has reduced their yearly overtime hours from 1200 to zero. The cost and staff saving have been generated by a more automated assessor map creation and reproduction methodology with GIS.

The state of Wyoming used its GIS to audit the mass appraisal process and found that approximately 250,000 parcels were not on the tax rolls.

The Metropolitan Sewer District (Cincinnati, OH) used GIS to find parcels with sewer connections which were not being billed. The District generated thousands of dollars of missing revenue that more than covered the cost of their GIS.

Santa Clara County, CA conducted a study to determine the possible cost savings that could be achieved by implementing a multi-participant GIS system it was discovered that if data were exchanged electronically the County estimated that staff time would be reduced by 75 percent, resulting in an annual savings of $720,000. In addition, it was estimated that if all agencies and departments used the same base map and map updates were coordinated to eliminate duplication of effort approximately $684,000 in map maintenance costs could be saved annually.

St. Paul, MN participated in the Local Update of Census Addresses (LUCA) program. This program allows communities to ensure that the Census Bureau has accurate information. The City used GIS and identified 1,099 housing units that the Census Bureau had not accounted for. The 2,900 people residing in the additional housing will result in the City receiving an additional estimated $5 million in federal funding over a ten-year period.

Baltimore County conducted a thorough cost benefit analysis of their GIS system and discovered that they saved 119,377 man hours every year which results in a net benefit of $1,944,845.

6. Ms. Marlow, are there any incentives for state and local governments to share their data with each other, and with the federal government, and are there any particular incentives that you would suggest to improve the situation?

Almost all sharing of parcel data by local, state, and federal government is on an ad-hoc basis and is totally voluntary. This usually works in times of disaster but the problem is that the data from one local jurisdiction to another is not necessarily in a standard and usable format. It is like trying to put two puzzle pieces together that don't quite line up. Most parcel data is created at a local level and local governments don't have any incentive to create or modify the data to a national standard.

One suggestion would be to enact a provision calling for the establishment of an integrated, inter-governmental land information system based on compliance with a set of national land data standards.

7. Ms. Marlow, you discussed your concerns with the federal government competing with private industry when it comes to collecting geospatial data. However, you also discussed the usefulness of federal data because it is "authoritative" data. Also, privately collected data is typically proprietary, requiring the purchase of licenses in order to use the data, while federal data is typically in the public domain. How should the federal government determine when it is in the public interest to collect data itself, so as to be an authoritative, freely-available source that can be accessed by many users, and when it is better to allow private companies to collect the data?

I certainly believe the federal government should collect the data from an authoritative source and make it publically available. However, I also believe the federal government should not use government employees to create the data. I believe the federal government should contract with the private sector mapping professionals to create the data for the local state and federal governments.

Questions from Ranking Member Doug Lamborn from the State of Colorado

1. Does the Federal government have the necessary national geospatial data to provide an early warning system for the mortgage crisis or to manage the vast mortgage portfolio it now owns?

No. The federal government needs a national property database to monitor the mortgage industry and the valuation of property.

2. What challenges in securing contracts with from the government does your company face as a result of the lack of coordination and oversight?

The federal government is so big and geospatial contracting is in so many departments it is a challenge for small company to be able to afford to spend the time and money to visit so many agencies and visit with so many departments.

3. Is government competition with your company real and what challenges does it create?

Government competition is very real and it is very hard if not impossible to compete with the government.

Questions from Congressman Gregorio KWH Camacho Sablan from the Commonwealth of the Northern Mariana Islands

1. What is the status of geospatial issues in the insular areas? Do we get the same sort of coverage that the rest of the states get?

It varies depending on what procedures and systems are in place in these areas.

2. When we speak about programs like "The National Map" or "Imagery for the Nation" are you including the Commonwealth of the Northern Mariana Islands in those programs?

I don't believe so.

Mr. SABLAN. Thank you. Thank you very much, Ms. Marlow. Thank you, all of you, for your testimony.

I am going to reserve the Chairman's time for his questions, but for now I would like to recognize the Ranking Member, Mr. Lamborn of Colorado, for his own questions.

Mr. LAMBORN. Thank you, Mr. Chairman. I will just jump right in and we will get going here. Mr. Palatiello?

Mr. PALATIELLO. That is fine, but you can call me John.

Mr. LAMBORN. OK, John. What would you recommend that Congress do to improve Federal geospatial data management?

Mr. PALATIELLO. You know, we have thought long and hard about this, Mr. Lamborn, and, quite frankly, over the years a number of studies have been done. I brought a couple of them with me today.

This is a 1973 OMB report that called for the creation of a Federal Survey and Mapping Administration. This is a 1998 National Academy of Public Administration report that called for the creation of a National Spatial Data Council.

I think we have come to the conclusion, as at least my colleagues to the left and right indicated in their testimony, that while the very well-placed intentions of a lot of good folks in the Federal government are there, the current structure doesn't work, and we need to elevate the coordination of spatial data out of the Department of the Interior and into someplace like the Executive Office of the President.

Someone who has carrots and has sticks and has the authority to make sure that there is coordination and that we avoid duplication and that we are making those investments in as strategic a manner a possible. So I think legislation would be necessary or a reorganization plan from the President.

Mr. LAMBORN. OK. Thank you.

Now, Ms. Siderelis, you have heard some of those comments and you have heard discussion of the stovepipes and so on. What would be your perspective, and how do you think we could make the sharing between Federal agencies work better?

Ms. SIDERELIS. Thank you for the question. I think the comments I provided earlier in my testimony with respect to what the Administration intends to do are the things that I think would make our situation better.

And those include, and if I could repeat those, but maybe elucidate on them slightly, is that I think that we need to encourage innovation. As you well know, this Administration is very much about bringing technological innovation and innovation to our business processes and so I think that we have to look at the NSDI anew, in a different way, and be flexible and innovative in our approaches.

I think we also need to continue our efforts toward ensuring broad and effective collaboration with our non-Federal partners in state and local government, and I think that is absolutely key to the success of the NSDI.

We also need to leverage innovation and developments that have occurred both with our state partners and local government partners and with industry. We need to look at the NSDI as a National

Spatial Data Infrastructure and work to leverage progress in all sectors.

And, last, I would like to say that we think that focusing on performance is going to be a key to the success of the NSDI. As you are aware, the Senate just confirmed Jeffrey Zients as the government's first Chief Performance Officer and Deputy Director in the Office of Management and Budget. Mr. Zients will work with the Chief Information Officer in OMB, Vivek Kundra, and the Chief Technology Officer in OSTP, Aneesh Chopra, to improve the performance of the Federal government.

As I said, this is our first CPO for the government and so we would look for these three individuals to work effectively with the FGDC to help improve the agency's performance.

And there are many tools and mechanisms that we might use to manage government performance. I am going to share with you today that we intend to deploy a geospatial dashboard for making geospatial performance transparent to the public.

It would be similar to the recently launched IT dashboard that provides the public an on-line window into Federal investments, and we are hoping to do a rapid deployment of a similar dashboard for monitoring and managing performance as well.

Mr. LAMBORN. OK. Thank you.

Now, Mr. Byrne, with your experience with the State of California. Within California, what carrots and sticks do you have that maybe we could learn lessons from at the Federal level to prevent duplication and ensure the maximum efficiency of resources in taxpayer dollars?

Mr. BYRNE. Yes. Well, as I mentioned in testimony, my position is in the Office of the State Chief Information Officer, and the Office of the State Chief Information Officer has the authority over directing IT investments in the state, so clearly geospatial information has a very significant information technology component.

We have a process called the feasibility study report process, and that process, aligned with our capital IT improvement plans, requires all departments to illustrate for us, the CIO, where they are going to invest capital improvements in IT.

So we have authority over approving those plans, and those plans often incorporate data management issues like geospatial data. That is where our biggest carrot and stick opportunity come into play.

Mr. LAMBORN. OK. And, John, do you think that the stimulus bill is going to be wasting taxpayers' dollars because of duplicative mapping?

Mr. PALATIELLO. Well, I can think of at least one instance, a couple of instances.

Number one, we have a very deep concern about several procurements that we have seen in the last couple of days and, I guess, rumors at this point of further procurements where stimulus money is going to be used by Federal agencies to buy mapping equipment.

That is going to increase unemployment because you have private companies that have already made the investment in that equipment struggling to keep people employed, and if the work for services, contracts for services, isn't coming out of the government

to keep people employed or to create jobs in the services sector then those equipment purchases are actually going to have the opposite than desired effect.

The second point with regard to stimulus that Ms. Marlow referenced, as well as I, in our statement is the broadband mapping.

Mr. LAMBORN. John, I see that my time is up. If there is going to be a second round, I would be happy to wait.

Mr. PALATIELLO. OK. I understand.

Mr. LAMBORN. Yes. Since there is a good likelihood that we will have a second round of questioning, I will reserve the follow up and your follow up to that time. Thank you.

Mr. SABLAN. Thank you. Thank you, Mr. Lamborn. I will leave that decision to Mr. Costa. Chairman Costa will be here.

I would like to recognize Ms. Tsongas of Massachusetts at this time.

Ms. TONGAS. Thank you all for your testimony, and I think my question would probably be directed to all of you.

I have to say, much of what you are discussing is new to me, but we do have the example of a company like Google that all of us have come to depend on and use with great frequency, and I am curious as to your thoughts as to why—I have heard some indication, but why the Federal government has lagged so far behind.

But, more importantly, is it even worth it for the Federal government to try to catch up or should we simply look to the resources and the expertise of private sector companies like Google?

I don't know if you want to start.

Mr. BYRNE. I will go first. We refer to a company like Google as offering a presentation layer. It presents information to us. However, it is built mostly on government collected and managed data.

So the National Spatial Data Infrastructure is an intent to build nationally recognized and integrated data. That includes several components. It requires a data component, the actual collection of the data, and government does that spectacularly well.

It requires an IT component. It requires a human component. People actually have to be there managing information, understand how that information is developed and produced, and it requires a standards component. We have to have government developed standards.

A company like Google and others have been able to be very successful because they can be elegant in presentation. They can take lots of that information and make it available to us in a very simple and easy-to-use form.

It is not, however, a geographic information system. It doesn't provide the full analytical capability that we really need to develop policy decisions before they are made like the ones I quoted in my testimony.

Mr. PALATIELLO. Ms. Tsongas, first of all I want to reiterate a point that Mr. Byrne made so that everyone on the Subcommittee understands.

A lot of the imagery in Google is from the government. My organization is a great advocate of privatization. However, this is not really a question of do we just leave this to the private sector or do we leave this to the government. There has to be a partnership. There is a role for both, so it is not an either/or question.

I think the great question is should government be the demand for geospatial data or should government be the supply of geospatial data, and we come down on the side of it ought to be part of the demand.

It has real problems, whether it is the mortgage crisis or land management or climate change or health care services or building roads. The government needs the data, but when the government gets on the supply side of the data I think that is where it runs into difficulties.

So I think there is a very strong difference between Google and the government. As Mr. Byrne indicated, I think Google serves a very important function as a visualization tool. I believe Google is moving toward on-line GIS, and I think they will do a lot of that integration.

A lot of those data layers in the sandwich I think you are ultimately going to get from Google, and there is a certain level of GIS analysis that anyone will be able to do right on the web. I think we will see that in the next two to three years.

I hope that helps answer your question.

Ms. TONGAS. Thank you.

Ms. MARLOW. One of the things that I would refer to that Michael referred to. In the community again we have a lot of nomenclature and a lot of our very specific verbiage, but one of the things that we refer to as the government data is authoritative data.

So data that is created for decision making purposes for the government should be authoritative data, not necessarily the presentation data that Google or someone like Google has presented to the general public.

So quite often the data that the government needs to make decisions is not the data that is available on Google because you really don't know where all those sources came from, so you really need authoritative data to make decisions on that at a government level.

Ms. TONGAS. Thank you all.

Ms. SIDERELIS. I might just add in response to the question is it worth it for the government to try to catch up, and I would say that the government doesn't intend to catch up or compete, but leverage what we have learned from Google and the advancements that they have actually contributed to our Nation and take advantage of those advancements and the literacy that they have actually brought to our society by their success.

Mr. COSTA [presiding]. All right. Thank you very much.

Why don't we begin with Mr. Sarbanes? We saw you earlier on the video. You did an excellent job.

Mr. SARBANES. Thank you.

Mr. COSTA. I didn't realize we were going to give you a cameo role, but now you actually have five minutes.

Mr. SARBANES. Thank you, Mr. Chairman. Well, as you gathered from my cameo in that thing, I am a map fiend, and any member of my staff will attest to that. I think I drive them crazy sometimes because I am trying to get every little piece of information that affects my life onto a map one way or the other.

I have spent a lot of time focusing on these issues, and it is fascinating to hear where some of the issues are in terms of coordination so I am going to ask just a bunch of random questions here.

First of all, you have alluded, a number of you, to the new Administration and its focus on technology and taking that to the next level. I am just curious. How optimistic are you that there will be a focus on this issue of geospatial mapping and analysis and so forth that will be new and different from what you have seen up to now and I gather has been frustrating to you?

Maybe a quick answer on that would be good because I have some other ones.

Mr. BYRNE. Very. I point to in particular The Changing Landscape paper by the National Geospatial Advisory Committee, which at the end of it concludes for us to move forward we have to be innovative, and I think we are at that tipping point.

Mr. SARBANES. OK.

Mr. PALATIELLO. I don't know if I am yet at the point of optimistic, but I am certainly at the point of hopeful.

Ms. MARLOW. Well, the wheels of government typically move very slowly, so maybe I am less optimistic probably as a small business owner.

Even today, while we are very hopeful of seeing some of the effects of the stimulus, it is still a little bit slow in coming. I mean, I am definitely guardedly optimistic.

Mr. SARBANES. OK. There is a discussion in our Committee memo about a GAO finding that, despite the Circular, there were only 4 out of 17 agencies fully complying with the A-16 Circular and that there were not sufficient incentives in place for agencies to do that.

I was curious. Are there certain agencies that you regard as candidates to be as it were the lead agency or first among equals in terms of making sure this gets pushed forward? I would imagine, for example, like the Census Bureau and things like that would be ones that you would want to be on the forefront.

Are there certain agencies that have kind of shown themselves to be leaders in this? If not, are there ones that you would give that responsibility to as a way of trying to help with this coordination effort?

Again, anybody? Why don't we start there?

Mr. PALATIELLO. I think the difficulty is, number one, that the current process is that first and foremost for any agency is its mission. That is what the employees were hired to do. That is what they are paid to do.

Anything with regard to coordination under A-16 is secondary and it is pretty much voluntary so it becomes an afterthought, and that is why we have had these stovepipes created. So putting it in an operational agency, whether it is in USGS or in Census, I think doesn't work because of those biases and those priorities.

I think that is what Mr. Byrne's experience is in California, and that is why his job is in the Office of the Chief Information Officer, which is part of the Executive Office of the Governor.

Mr. SARBANES. So this clearinghouse, this structure, this kind of super structure needs to be set up kind of next to or outside of, but connected to, the kind of agency configuration?

Mr. PALATIELLO. That would be our view, sir. Yes, sir.

Mr. BYRNE. The coordination for sure.

Mr. SARBANES. Right.

Mr. BYRNE. There are specific departments that have business operations in framework data that make sense.

Mr. SARBANES. Right.

Mr. BYRNE. Like U.S. EPA clearly has jurisdiction from Clean Water Act over waterways, and they have done a spectacular job on the National Hydrography Dataset.

Mr. SARBANES. Let me ask you another quick question because my time is going to run out.

There has been some discussion at Google, which is obviously a fascinating visioning tool for this geospatial presentation and so forth, but do you advocate partnerships between the government and entities like Google to speed up the goals that you have set forth here? If so, how does that work?

Mr. BYRNE. Yes, we do advocate partnerships, and in particular those partnerships in my mind have to be driven through local and regional and state government first, but there is clearly a role for private-sector partnerships in a number of things.

We have developed some in California around particular mapping efforts, broadband in particular is one, but there clearly has to be partnerships amongst several opportunities, not just the private sector.

Mr. SARBANES. Thank you.

Mr. COSTA. Thank you, Mr. Sarbanes. I, too, have had a longtime interest in mapping, both historical mapping and present day mapping, so we share that.

Mr. Lamborn for some comments or questions and then around to Mr. Holt and myself.

Mr. LAMBORN. Thank you, Mr. Chairman.

John, we were talking when my time ran out earlier, so I appreciate this opportunity for another round. To clarify, first of all, you were about to make a second major point. If you could briefly make that, and then I will continue on.

Mr. PALATIELLO. Thank you, Mr. Lamborn. The point is that the Congress provided $350 million for broadband mapping in the stimulus bill. One of the datasets that is going to need to be collected for that is address data, virtually address data on every American.

The Census Bureau already has that data. They have collected that in something called MAF/TIGER. It is their database for the 2010 census. Census' position is that Title XIII—it is actually Section 9 of Title XIII—of the U.S. Code is the provision that assures the confidentiality of the Census data.

But if you read that provision, that talks about the specific response that you or I or any citizen put on the Census form or give to the enumerator. The address data, and there is point data—there is what is called a centroid that is a location point on that address. It doesn't tell anything about you or me—or any other American— other than a piece of property.

So Census is withholding that address data from any other entity. You can't get it. I can't get it. Mr. Byrne can't get that data on the State of California. The USGS can't get it. So when the broadband program is implemented, they are not going to be able to access that Census data. They are going to spend money to collect it again.

Mr. LAMBORN. OK. Now, when we talk about the amount of money that the stimulus package—or I say the so-called stimulus—will be potentially wasting are we talking about millions, hundreds of millions or even into the billions?

Mr. PALATIELLO. I think it is difficult to put a number on it, but I think there is certainly going to be tens of millions of dollars that will be spent under broadband mapping that will duplicate something that we already have.

I think the examples that I gave before about agencies buying equipment to perform mapping activities in-house when there are private companies that already have that equipment and provide that capability in the marketplace, if you can quantify how much of that actually goes on by the agencies that is going to be in the millions of dollars as well, so we do have a concern in that area.

Mr. LAMBORN. OK. Thank you.

Ms. Siderelis, I would like to ask you the question OMB and GAO were asked in the last congressional oversight hearing on geospatial activities in 2004. How much does the Federal government spend on geospatial activities?

Ms. SIDERELIS. Yes, sir. I would like to answer that question, if I might, in three ways. First, as I said earlier, the Administration intends to focus on performance, and our metrics will be attentive to outcomes, not simply expenditures, so just one point.

Second, we feel that as we saw in the video today that if the NSDI will be considered a success it will be when geospatial information and technology are really thoroughly embedded in the business practices of agencies and organizations and in some way access to the data is transparent and an assumed commodity.

And so if you think about in our personal lives, we don't necessarily account for all of our expenditures, some that the Chairman described this morning that go into geospatial data. We use Google Maps and paper road maps to plan trips. We use navigation systems in our cars. We use globes and atlases to help our children with school projects. And so perhaps it is the same in the government that we would like to see geospatial part of the business of the government.

But the last point I want to make is that we do know through analysis of some recent data calls, one through an OMB passback request, that for specific datasets that we have queried the Federal agencies in reporting requests that the Federal government planned to invest, directly or indirectly, through the period of 2007 to 2009, this three year period, about $1.89 billion in spatial data and services.

This was not a complete reporting, but it is more information than we have known in the past, and then further analysis of these recent data calls actually was starting to show, based on the results of the data calls, that there is not as high a degree of redundant data investment. It was not readily apparent that there was as high a degree of redundancy as perhaps we might have imagined.

Mr. LAMBORN. OK. Thank you.

Mr. COSTA. OK. The gentleman from Colorado and I obviously have a different perspective on the stimulus package, but we do I

think share a similar concern that the money be used and that we not be redundant.

I am pleased to note that Earl Devaney, who served as the Auditor General in the previous Administration, has been selected by President Obama as the Chairman of the new Recovery Act Transparency and Accountability Board, so the Transparency and Accountability Board that will now be chaired by Earl Devaney, who I think has been respected on a bipartisan level, will try to ensure, and we will probably need to follow up with him on a letter to the issue of the redundancy and that monies, whether you supported the Stimulus Act or you didn't, nonetheless that those monies are spent to the most cost effective way possible.

I will now recognize the gentleman from New Jersey, our colleague, Mr. Holt.

Mr. HOLT. Thank you, Mr. Chairman, and let me just add a comment. I think the issue here is not whether the Recovery Act is good or bad, but whether redundancy has existed in this program for years and years and whether the various agencies are actually working together under some sort of leadership to avoid redundancy.

Let me ask a couple of questions, the first one having to do with the flow of data to and from state and local governments. There is some expertise and some data that are out in the states. How does that get to the Federal government? Does it get to the Federal government? Is it done in a useful way? Would the Federal government use those data if they got them?

I am not sure who is best able to answer that question, so let me throw it open and ask you to choose among yourselves who should answer it.

Mr. BYRNE. Yes. So I will take a first cut at it. We do consume and produce data both ways. Probably the most current example of producing data from state to Federal that I am aware of and involved in is the HSIP program in the U.S. Department of Homeland Security.

It was an effort to collect critical infrastructure data, and state government worked collaboratively with local government—in California we did anyway—to really define some of the key critical infrastructure locations, the locations of all the schools, all the hospitals, all of those key locations that we knew about that was provided to the Federal government and produced through a contractor so that Homeland Security would have an accurate picture nationwide of all that data.

On the consumption side——

Mr. HOLT. I mean, did they say that it came in the right format? Did they have appropriate guidelines to give to you and to other states about——

Mr. BYRNE. I believe so.

Mr. HOLT.—what they could use and in what format it should be provided?

Mr. BYRNE. Yes. I am under the impression that that was a successful operation.

On the consumption side, again we consume lots of the framework data. Probably the best one that we are involved with from

Federal production to local includes the National Hydrography Dataset that I mentioned earlier as a program out of EPA.

We have invested time in our own organization, the Department of Water Resources, to help steward that data so that it works both ways. We say we are the most knowledgeable about stream locations and stream flow in California, and there is a potential to make that transformation work both ways. It is working reasonably well.

Mr. HOLT. Would others care to add to that?

Ms. SIDERELIS. I might add just one other example if I might and just to preface my example by saying that Michael Byrne referenced earlier the paper that was developed by the National Geospatial Advisory Committee entitled The Changing Landscape.

And in that document and part of the testimony today we find that there really has been a dramatic shift over the last few years from the Federal government being the primary producer of data to much of the data being produced at different levels of the government and the Federal government becoming more of a consumer of data than provider.

And so given that shift, it is incredibly important that we be able to take data from the state and local governments and use it in the Federal system as much as going the other way, and I would just like to give one example, one recent example, because I think it is partially a success story, and that is with the national wetland data layer that is overseen by the Fish and Wildlife Service and the Department of the Interior.

They will make the point that only about a third of the data that has been added to that national dataset over the recent years has been from the Federal agency itself; that two-thirds of the information is actually provided by state and local government.

So that is a success in that we are working together to create a national dataset, and I think it is partly a testament to the benefits of standards that we have worked through in the Federal Geographic Data Committee that we have a standard that enables that data sharing.

Mr. HOLT. Let me get another question in—that they may have a short answer. Does the Geospatial Advisory Committee that you referenced and you have talked about today have broad enough representation?

There were some comments in the past about whether the Federal Geographic Data Committee had enough representation from the private sector, from local governments and so forth. Has that been addressed? If it is not a short answer, maybe we will have to take that for the record.

Mr. PALATIELLO. I think I can do it quickly. The NGAC and the FGDC are two entirely different entities. The FGDC is Federal only. The NGAC has two Federal members, but the rest is state, local, private, academia.

I think it has a very good—I am a member, Mr. Byrne is a member—cross section of representation of non-Federal stakeholders, but we are only advisory, and FGDC is who makes the policy, and that is Federal only.

Ms. MARLOW. I would like to say something on behalf of state and local government because that is a lot of my client base.

One of the issues at the state and local government is that if they don't get some type of carrot from the Federal government then they don't really want to have to roll up their data or create a standard that the feds may have created for them.

And so especially as it relates to the property information, a lot of local governments, they are maintaining that data. They feel like that they are the ones who have made the investment in it and so there is a big divide in the parcel community about whether the data is free and publicly available or whether you should pay me for it because I collected it at a local level.

Mr. HOLT. Thank you.

Mr. COSTA. They view it as proprietary information.

Ms. MARLOW. Yes. They feel like they had——

Mr. COSTA. Even if it is a local public agency.

Mr. PALATIELLO. Mr. Chairman, can I add something to that in response to Mr. Holt's question?

Mr. COSTA. If it is brief.

Mr. PALATIELLO. First of all, there are 50 different answers to that question because there are 50 different states.

Mr. COSTA. That is not brief.

[Laughter.]

Mr. COSTA. How about one of the 50 answers?

Mr. PALATIELLO. Well, the point that I was making is that in some state law that data is permitted to be treated as proprietary by a state or a county, and they either have a cost recovery requirement so they have to charge for it, or in some states it is free, or in some states they actually copyright it and license it so it does vary.

Mr. COSTA. Thus 50 answers. It is obvious. Why didn't I think of that?

Anyway, we have been joined by the Congresswoman from Wyoming, Congresswoman Lummis, and it is your turn for questions. Five minutes.

Mrs. LUMMIS. Thank you, Mr. Chairman.

Mr. Palatiello, can I ask you to clarify an earlier statement? It seems to me that when we talk about the stimulus bill and the Federal government buying mapping technology aren't we really talking about the government hiring employees that will then subsequently drive private small businesses out of business?

Mr. PALATIELLO. That is our concern, and there has been a long history of that in the government. There is a lack of definition of roles and responsibilities.

I have never heard a government employee say we intend to compete with the private sector. That is never their intent, but that is often the outcome of the way the Federal government tries to exercise what it perceives as its role is that it ends up competing with and duplicating the private sector.

Mrs. LUMMIS. At one point I was the Director of State Lands in Wyoming, and inventory, Mr. Chairman, was always an issue that we spent time on too.

Mr. COSTA. Would the gentlewoman yield as a follow up to your point?

Mrs. LUMMIS. I will yield.

Mr. COSTA. Mr. Palatiello, could you provide an example where the Federal government has duplicated work that the private sector has done and some cases where it would make sense to provide some framework in terms of public/private partnerships?

Mr. PALATIELLO. Well, I will give you two examples to illustrate two different types of ways in which the government competes with the private sector.

One is a company either in or certainly has employees living in Mr. Lamborn's district in our membership that is flying elevation data of the entire United States. They were contracted by the insurance industry in the U.K. and flew the entirety of the U.K. and then sold a license to that data. They are now trying to replicate that with a project they call NEXTMap. It is a company called Intermap Technologies just south of Denver.

They are selling a license to the data, and the government has been very reluctant to buy that and therefore going out and collecting its own simply because Intermap is selling a license to their data and not just willing to turn it over to the government for unlimited reproduction or distribution.

Mr. COSTA. But this is proprietary information that this company has developed? They haven't taken information that the government had paid for?

Mr. PALATIELLO. That is correct. That is correct. They are doing it on their own.

Mr. COSTA. I will yield back. I am sorry, but I thought it would be nice to have an example.

Mrs. LUMMIS. Thank you, Mr. Chairman.

I also have a question for Ms. Marlow. As I was saying, I had been Director of State Lands in Wyoming. We have 3.8 million acres of surface, and even we were struggling with the costs of doing an inventory of state lands that are intermingled among Federal lands and private lands.

My question is this. Is a single, current, accurate inventory of the land owned by the Department of the Interior or land owned by the Federal government feasible from a technology standpoint?

Ms. MARLOW. Absolutely from a technology standpoint it is feasible. I think that we have proved that in many, many instances.

The State of Tennessee is an obvious example of that—the entire state is mapped to one single standard—so it is definitely feasible technically.

Mrs. LUMMIS. OK. Mr. Chairman, those are the only questions I have. Thank you.

Mr. COSTA. I thank the gentlewoman, and it is good to have you here.

I am going to, since I really didn't get a chance to ask any questions, try to hit on a few here, and then we will go to the next panel and have our colleague, Congresswoman Herseth Sandlin, talk about her bill and we will go from there.

Quickly here, Mr. Byrne, you recommended that Congress lift Title XIII restrictions on the Census Bureau giving out its address data. Do you think if that happens that we are still going to be able to protect the issue of privacy?

Mr. BYRNE. I do indeed. You know, what I recommended in my written testimony is that the address data and the XY location, the

actual doorstop or centroid as Mr. Palatiello recommended, be released.

And in no way does that infringe on the full other set of records or fields identified in Title XIII, the tomography and economics that are collected there, so just the address and the location would be very useful to a whole suite of other data and wouldn't infringe on privacy.

Mr. COSTA. All right. I love the whole technology and the gathering that has come, but I think part of the issue of redundancy and trying to figure out what the appropriate roles are between the private sector and the public sector, whether we are talking about at the Federal level or at the state level or local, is what a completed National Spatial Data Infrastructure looks like.

I mean, all in your heads, and we had the nice video and stuff, but what would a national data infrastructure for spatial data—can any of you describe it to me so that we can make maybe some distinctions what is the appropriate role of the public sector and what is the appropriate role of the entrepreneur, the private sector?

Who wants to take a first crack at that?

Mr. PALATIELLO. First of all, an NSDI would not be a static thing. It would be something very dynamic over time.

The landscape of the Nation changes virtually every day. Every time a new house is built, every time a subdivision is created, every time a road is built the map changes, so it is not do it once and then check the box and move on to something else.

Mr. COSTA. Every time a flood changes the course of a river?

Mr. PALATIELLO. Absolutely. Absolutely.

Mr. COSTA. A forest fire.

Mr. PALATIELLO. So when we have a dataset that is current, however you define currency—in terms of temporal resolution, in terms of accessibility—then we will have a National Spatial Data Infrastructure.

Mr. COSTA. Does anyone else want to——

Mr. BYRNE. I agree with John.

Mr. COSTA.—describe what success would look like?

Mr. BYRNE. I agree with John. I think there are again I mentioned four components—data, IT, people and standards.

And where I see it being successful is when my son, who is seven, is in my position or your position. He has a laptop open and has the ability to dynamically query all that data prior to the policy decision. That is when I think we have an NSDI.

Mr. COSTA. Ms. Siderelis?

Ms. SIDERELIS. Well, I share the opinions of my colleagues here, but I also think that we will be successful when the geospatial information is an assumed commodity. It is just built into the way we make our decisions, the way we run our agencies, and in some ways it is just totally transparent, that there is a whole back end of professionals and standards and infrastructure supporting the NSDI and a research agenda.

And so I think it really will be beyond where we are today in terms of an operational capacity. The data will be there at our fingertips. It can be assumed to be of high quality and relevant to a whole range of decisions that need to be made.

Mr. COSTA. A follow up on that again dealing with the issue of the redundancy.

There are a lot of different Federal mapping programs that we are aware of that are out there. Often times the difference between them is not very clear. How does the Imagery for the Nation differ from the National Map, and how do they both differ from the National Agricultural Imagery Program that we support with USDA?

If we map the whole Nation, doesn't that also include imagery? This is a layperson asking. And would it automatically cover agricultural areas?

Ms. SIDERELIS. I will take a shot at that if I might. So if we think about how it all fits together, at the broadest level we are talking about the National Spatial Data Infrastructure, so the overarching framework for building out spatial data for the country.

As Mr. Byrne said, there are different elements of the NSDI. Part of that is data. Part of it is technology. Part of it is process and standards. But if we focus just on the data of the National Spatial Data Infrastructure there are a number of different data layers that we saw in the graphics and in the video that are pulled together for the National Spatial Data Infrastructure, and part of those are basic foundational datasets that underpin all of the other data—framework data.

The National Map is an effort to pull together for the country that basic framework data in a unified and integrated kind of way, and the National Map, this base data, includes just basic datasets such as the streams and water bodies, the transportation networks, imagery and political boundaries and other basic framework datasets. So that would be the National Map. As I said, imagery is a part. It is one of those layers in the National Map.

We have several programs across the country that are contributing imagery into this basic National Spatial Data Infrastructure. We could talk for hours about imagery alone and the whole portfolio of imagery assets that the Nation has, but two of our programs in the Federal government that are geared toward high resolution imagery so that we could see a resolution of about a foot or a meter on the ground are being bundled together in what we call Imagery for the Nation.

And the goal of Imagery for the Nation is to create a program of imagery, high resolution imagery that we develop on an ongoing cyclical basis so that in Wyoming you can predict that in this period of time you would refresh your data and that we would do this in collaboration across the Federal agencies.

IFTN is being built on, is being formed around and combining the efforts of the National Agricultural Imagery Program, the NAIP program.

Mr. COSTA. So you would be collaborating with the USDA in that instance?

Ms. SIDERELIS. The idea would be that we would be working together from Agriculture and Interior programs, working with the other Federal agencies to build out a sustainable, predictable program of high resolution imagery for the country, so it would be across the——

Mr. COSTA. That is a good idea, but to what degree is the collaboration taking place?

Ms. SIDERELIS. Well, I think, Mr. Chairman, on Imagery for the Nation that is probably the one thing that there is the most consensus on in our community that it is technologically feasible that you had asked, that there is a common understanding of the need.

We worked on a draft plan for how we host that data, the technical plan of how we put together what areas of the country we might cover at what resolutions. We have worked on mechanisms for contracting and so forth, so I think that it is a feasible plan that we are putting a lot of effort into at the moment.

Mr. COSTA. More to follow?

Ms. SIDERELIS. I hope so if we can help it.

Mr. COSTA. Yes. I want to thank all the members of the panel here. There are I think probably a number of questions certainly that I have, maybe other Members have, that we will submit to the panel folks.

We would like you to respond as expeditiously as you can. Ten working days is what we usually allow for timely response back to those questions that we weren't able to ask this morning.

And now let us begin moving to our next panel. This is the twofer where we will have a legislative hearing on H.R. 2489, otherwise known as AmericaView, the Geospatial Imagery Mapping Program Act.

The Subcommittee will now recess.

[Whereupon, at 11:41 a.m. the Subcommittee proceeded to other business.]

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LEGISLATIVE HEARING ON H.R. 2489, "AMERICAVIEW GEOSPATIAL IMAGERY MAPPING PROGRAM ACT."

Thursday, July 23, 2009
U.S. House of Representatives
Subcommittee on Energy and Mineral Resources
Committee on Natural Resources
Washington, D.C.

The Subcommittee met, pursuant to call, at 11:41 a.m. in Room 1324, Longworth House Office Building, Hon. Jim Costa [Chairman of the Subcommittee] presiding.

Present: Representatives Costa, Lamborn, Holt, Sablan, Sarbanes, Tsongas and Lummis.

STATEMENT OF HON. JIM COSTA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. COSTA. The Subcommittee on Energy and Mineral Resources will now come to order for the purpose of hearing H.R. 2489.

We are joined by our colleague, the Congresswoman from South Dakota, Stephanie Herseth Sandlin, who does an excellent job in so many areas. This is an issue that she has had a keen interest in for some time now, and we are pleased that she has joined us.

H.R. 2489, as the members of the new panel are coming before us, this is a bill that would authorize the AmericaView program for the U.S. Geological Survey specifically. We have just heard about the need for special coordination on Federal geospatial data activities in general. This measure, H.R. 2489, lets us examine one specific way in which the Federal agency is expanding the use of some of the geospatial information data it collects.

AmericaView is a program that the U.S. Geological Survey has been involved in for decades. It is a core program of the U.S. Geological Survey in maintaining the vast archive of satellite imagery that has been developed by USGS.

Through AmericaView, it provides that data about the earth. It also provides information that allows state partnerships, typically with colleges and universities. There is a specific example that I know that our colleague, Stephanie Herseth Sandlin, will describe to us at an appropriate time.

The state partners, in turn, provide training and technology to help all sorts of people, from farmers to resource managers, to use remote sensing information to answer policy and management questions. For example, what fields should be irrigated? What can images and maps determine based upon soil, moisture, and composition?

And so I am looking forward to hearing more about H.R. 2489, which in a nutshell, as we like to say, cuts to the bottom line, directs the Secretary of the Interior to advance the availability and distribution of this geospatial imagery through the AmericaView program.

So I am sure that the witnesses that we have here that hail from three different states that are partners with the AmericaView program can tell us about the impact of this legislation within their state, and I want to thank the witnesses for being here.

I will recognize the Ranking Member, the gentleman from Colorado, for an opening statement.

[The prepared statement of Mr. Costa on H.R 2489 follows:]

Statement of The Honorable Jim Costa, Chairman, Subcommittee on Energy and Mineral Resources, on H.R. 2489

We will turn now to H.R. 2489. This bill would authorize the AmericaView Program at the U.S. Geological Survey. We have just heard about the need for better coordination on federal geospatial data activities in general. H.R. 2489 lets us examine one specific way in which a federal agency is expanding the use of some of the geospatial information it collects.

AmericaView is a program that USGS has been involved in for about a decade. A core program of the USGS is maintaining a vast archive of satellite imagery. Through AmericaView, USGS provides that satellite data about the earth, along with grants, to state partners—typically colleges or universities. Those state partners, in turn, provide training and technology to help all sorts of people, from farmers to resource managers, use that "remote sensing" information to answer policy and management questions. For example, what fields should be irrigated? What can the images and maps tell an agency about how to plan for wildfires?

The program also helps students of all ages learn how to work with mapping technologies and satellite images. For example, in California, state partners in AmericaView are developing a remote sensing certificate program to enable community colleges to certify geospatial mapping technicians. As an added bonus, this certificate program can be used by AmericaView partners in all states.

I look forward to learning more about H.R. 2489, which—in a nutshell—directs the Secretary of the Interior to advance the availability, distribution, and use of geospatial imagery through its AmericaView Program. I am sure the USGS, and the witnesses who hail from three different state "partner" programs with AmericaView, can tell us what impact this legislation could have on the ground.

STATEMENT OF HON. DOUG LAMBORN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. LAMBORN. Thank you, Mr. Chairman. Thank you for holding this important hearing.

Today we are going to hear about the AmericaView Geospatial Imagery Mapping Program Act, H.R. 2489, introduced by our colleague from South Dakota, Representative Stephanie Herseth Sandlin. I appreciate the chance to learn more about the AmericaView program and the legislation before us.

While I won't reiterate the history of the AmericaView program, I would point out that we are examining a program that was started by the Appropriations Committee through an earmark. Since its inception without authorizing legislation, the program has received more than $30 million.

Regardless of how worthy a program may be, I believe that the authorizing committee of jurisdiction should be responsible for establishing Federal programs, not the Appropriations Committee, and that is one reason I am happy that we are here today to discuss the long overdue authorization of this program.

There are a number of questions I will have about it and the legislation we are considering, and I am looking forward to hearing from the witnesses.

Thank you, Mr. Chairman, and I yield back.

[The prepared statement of Mr. Laamborn on H.R 2489 follows:]

Statement of The Honorable Doug Lamborn, Ranking Republican, Subcommittee on Energy and Mineral Resources, on H.R. 2489

Thank you, Mr. Chairman, for holding this important hearing. Today we are going to examine the AmericaView Geospatial Imagery Mapping Program Act (H.R. 2489) introduced by our colleague from South Dakota. I appreciate this hearing and the chance to examine the AmericaView program and the legislation before us.

While I won't reiterate the history of the AmericaView program, I would point out that we are here examining a program started by the Appropriations Committee through an earmark. Since its inception without Authorization the program has received more than $30 million dollars. Regardless of how worthy a program may be, I believe that the Authorization committee should have a strong oversight role over federal programs and that is one reason why I am happy that we are here today to address the long overdue authorization of this program.

There are a number of questions I will have about this program and the legislation we are considering and I am looking forward to hearing from the witnesses.

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As we hear the witnesses' testimony, I hope they will address what the actual cost of this legislation may be, since it authorizes "such sums" are we approving $10 million, $50 million, $100 million or more annually for this program?

Does this program require a cost share from the state partners and if so should we require those cost sharing provisions in the legislation?

Mr. COSTA. Thank you, my friend and colleague from Colorado.

I would now like to recognize our colleague who has introduced this legislation from South Dakota, Stephanie Herseth Sandlin, who we are very appreciative can be here this morning to give us a description as to why this legislation is important.

STATEMENT OF HON. STEPHANIE HERSETH SANDLIN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF SOUTH DAKOTA

Ms. HERSETH SANDLIN. Well, thank you, Mr. Chairman. I thank you and the Ranking Member for holding today's hearing on Federal geospatial data management and today's legislative hearing on my bill, H.R. 2489, the AmericaView Geospatial Imagery Mapping Program Act.

As you heard from the first portion of today's hearing, the Federal government has invested billions of taxpayer dollars to collect vast amounts of geospatial data. My bill would facilitate the ability for the private and public sectors to more fully utilize geospatial imagery resources.

The purpose of the AmericaView program is to advance the availability, the distribution and the widespread use of geospatial imagery for education, research and monitoring. Since its inception nearly a decade ago, the AmericaView Consortium has partnered with the USGS to increase the accessibility of remote sensing data by the public and private sectors within each member state. H.R. 2489 would authorize the AmericaView program for five years.

As it is designed, the StateViews that belong to the AmericaView Consortium have the flexibility to offer educational programs and other resources designed to meet the needs of stakeholders in their state. At the same time, because the AmericaView Consortium is a nationwide program, the Consortium is able to facilitate the sharing of ideas among StateViews.

H.R. 2489 is important because AmericaView serves a unique role in ensuring that geospatial imagery and related resources are available to educators. There has been an effort to expand resources in South Dakota through K-16 educators, to local, state and tribal governments—in South Dakota there are nine sovereign Sioux tribes—to researchers and to other possible stakeholders. So, by authorizing this partnership, we would recognize and strengthen the important function that AmericaView provides to communities throughout the country.

I also would like to take a moment to welcome one of my constituents, Mary O'Neill, the Principal Investigator for South Dakota View. Ms. O'Neill has been involved in a variety of applied research, development and outreach programs for the past 37 years.

In addition to her role as Principal Investigator for South Dakota View, she is the Manager of the Office of Remote Sensing within the Engineering Resource Center at South Dakota State University.

I am confident that Ms. O'Neill's testimony, based on her years of involvement with the AmericaView Consortium, coupled with the wide array of activities she has spearheaded as the Principal Investigator for South Dakota View, will contribute significantly to today's hearing.

Again, thank you, Mr. Chairman, for holding today's hearing. I appreciate your interest in Federal geospatial data management and H.R. 2489, and I look forward to working with you and all of our colleagues here on the Subcommittee to secure passage in the House on this important legislation.

Thank you.

Mr. COSTA. Thank you, and thank you for your excellent testimony and all the good work that you do.

We welcome all of the panel members, including the constituent of yours who is obviously going to provide testimony now.

I have been informed that we are going to have votes here within the next 15 minutes, so let us try to see how quickly we can get through our panel members here. There are four to five votes that are being advertised, so we will use that to allow our panel members to have an opportunity to have a little lunch break because once we go for that series of votes it will be probably about 45 minutes before we are able to return.

So with that said, we have Ms. Suzette Kimball, Acting Director for the U.S. Geological Survey; Ms. Rebecca Dodge, the Associate Professor of the Department of Geosciences from Midwestern State University; Ms. Mary O'Neill, who has already been introduced, who is the Principal Investigator for South Dakota View and Manager of the Office of Remote Sensing for South Dakota State University; and Mr. Sam Batzli—is that right, Batzli—the WisconsinView Director and Geospatial Information Scientist at the Space Science Center for the Engineering School of the University of Wisconsin, Madison. That is important. I didn't want to leave that out.

Anyhow, let us begin with Ms. Kimball, Acting Director for U.S. Geological Survey. You know the rules I think. It is five minutes. The green light is on for four. Yellow means you have a minute

left, and the red light means you are in trouble if you are still speaking.

So thank you very much. Ms. Kimball.

STATEMENT OF SUZETTE M. KIMBALL, ACTING DIRECTOR, U.S. GEOLOGICAL SURVEY

Ms. KIMBALL. Good morning, Mr. Chairman and Members of the Subcommittee. My name is Suzette Kimball. I am the Acting Director of the U.S. Geological Survey.

Mr. COSTA. A little closer into the mic? There you go.

Ms. KIMBALL. Yes, sir.

Mr. COSTA. We want to hear you.

Ms. KIMBALL. All right. Thank you very much for providing me with this opportunity to speak to H.R. 2489, the AmericaView Geospatial Imagery Mapping Program Act.

The Department of the Interior supports the goals of the AmericaView program, although it does not believe as a Department that further legislative authority is necessary to meet these goals and objectives. However, if legislation is discussed, we would very much appreciate the opportunity to consult with the Committee on appropriate language.

In this testimony I will provide a brief overview of AmericaView from the Federal government's perspective. Then I will address the role that AmericaView plays in advancing the Department of the Interior and Federal government goals.

In 1998, the U.S. Geological Survey received appropriated funds to demonstrate the technology and capability for high speed processing and delivery of satellite data among academia and public agencies in the State of Ohio.

This OhioView prototype, a university-led consortium in the State of Ohio consisting of 10 research universities distributed across the state, was intended to facilitate and expand the use of Landsat satellite data and imagery from other earth observing satellites, including NASA satellites.

The OhioView Consortium in turn established computer systems and network infrastructure to redistribute the satellite data to member institutions and to also make it available to Ohio citizens. The goal of the USGS was to establish this prototype as a pilot for a nationwide program.

The prototype with OhioView created a rapid data delivery infrastructure at the USGS Earth Resources Observation and Science Center, known as EROS, that was capable of near real-time data distribution of satellite data. It also reduced the cost of acquiring imagery to the OhioView Consortium members, in turn facilitating access to USGS data products and encouraging their widespread use.

It developed a multi-sensor reception capability at the EROS Center. Perhaps most important, it grew the OhioView Consortium to include additional university participants, including several minority participants, thereby expanding the research and education community that was able to access remotely sensed data, in turn facilitating the development of a broad-based user constituency.

In 2000, Congress determined that the single state prototype was well positioned to begin fulfilling the vision for a nationwide pro-

gram. Accordingly, in Fiscal Year 2000 appropriations language for the Department of the Interior, Congress instructed the USGS to pursue a national concept, initially entitled Gateway to the Earth, based on the ongoing OhioView prototype.

In 2001, Gateway to Earth, renamed AmericaView, remained a fairly loose concept in which informal gatherings of interested parties briefed each other on local developments. Initiatives were then established in other states, such as South Dakota, Alaska and Texas.

Since 2002, AmericaView has continued to emerge from its status as a USGS prototype project. Its members have worked intensively with the USGS to develop AmericaView into an independent organization capable of partnering with not only the USGS, but other Federal agencies in support of mutually beneficial goals and objectives.

Today there are more than 35 states with hundreds of members actively participating in a national program dedicated to expanding access to and uses of our nation's earth observation satellite assets for education, research, hazards monitoring and natural resources management. Other Federal agencies have also benefitted from this investment in AmericaView.

Some of the benefits that AmericaView has provided to USGS and the Federal government include a partnership supporting our USGS mission to serve the Nation by providing reliable scientific information to describe and understand the earth; minimize loss of life and property from natural disasters; manage water, biological, energy and mineral resources; and enhance and protect our quality of life.

The AmericaView Consortium also supports the National Research Council's recommendation from its 2007 report, which stated that the USGS should pursue innovative approaches to educate and train scientists and users of earth observations and applications.

It has provided that network of state partners to enhance the science of remote sensing and data sharing, accomplished needed research in the earth sciences and supplemented the USGS capability to deliver data to a growing user community.

Based in part on the suggestions that we received from the AmericaView members, the USGS has improved its computer systems and network infrastructure and its ability to meet our customers' needs. These enhancements have facilitated the web enabling of the entire Landsat archive.

The USGS and the Nation have benefitted from the research that has been performed by the AmericaView members and from the students that have been educated by AmericaView not just in the field of remote sensing, but in science and engineering fields as well. It has been a highly successful partnership from which the USGS, AmericaView members and the American public have all benefitted.

This concludes my statement this morning, Mr. Chairman. I will be happy to answer any questions as the testimony proceeds. Thank you.

[The prepared statement of Ms. Kimball follows:]

Statement of Suzette M. Kimball, Acting Director, U.S. Geological Survey, U.S. Department of the Interior

Good morning Mr. Chairman and Members of the Subcommittee. My name is Suzette Kimball, and I am the Acting Director of the U.S. Geological Survey. Thank you for providing me the opportunity to testify on H.R. 2489, the AmericaView Geospatial Imagery Mapping Program Act. The Department supports the goals of the AmericaView program, but does not believe further legislative authority is necessary to meet these goals and objectives. If further legislation is discussed, we would like the opportunity to consult with the committee on appropriate legislation.

I will provide a brief history of AmericaView from the Federal Government's perspective. Then I will address the role that AmericaView plays in advancing the Department of the Interior and the Federal Government goals. Finally, I will provide a few comments on the Act itself.

In 1998, the U.S. Geological Survey (USGS) received appropriated funds to demonstrate the technology and capability for high speed processing and delivery of satellite data among academia and public agencies in the State of Ohio. This "OhioView" prototype, a University-led consortium in the State of Ohio consisting of 10 research universities distributed across the state, was intended to facilitate and expand the use of Landsat satellite data and imagery from other earth observing satellites, including NASA satellites. The OhioView Consortium, in turn, established computer systems and network infrastructure to redistribute the satellite data to member institutions and also make it available to Ohio citizens. The goal of the USGS was to establish the prototype as a pilot for a nationwide program.

This prototype with OhioView created a rapid data delivery infrastructure at the USGS Earth Resources Observation and Science (EROS) Center, capable of near real-time data distribution of satellite data and it reduced the costs of acquiring imagery to the OhioView Consortium members, in turn facilitating access to USGS data products and encouraging their widespread use. It developed a multi-sensor reception capability at the EROS Center. Perhaps most important, it grew the OhioView Consortium to include additional university participants, including several minority participants, thereby expanding the research and education community able to access remotely sensed data and in turn facilitating the development of a broad-based user constituency within the State of Ohio.

In 2000, Congress determined that the single-state prototype was well positioned to begin fulfilling the vision for a nationwide program. Accordingly, in FY 2000 appropriations language for the Department of the Interior, Congress instructed the USGS to pursue a national concept initially entitled "Gateway to Earth," based on the ongoing OhioView prototype. In 2001, "Gateway to Earth"—renamed "AmericaView"—remained a fairly loose concept in which informal gatherings of interested parties briefed each other on local developments that utilized the OhioView model. Initiatives were established in other states, such as South Dakota, Alaska and Texas.

Since 2002, AmericaView has continued to emerge from its status as a USGS prototype project. Its members have worked intensively with the USGS to develop AmericaView into an independent organization capable of partnering with the USGS and other Federal agencies in support of mutually beneficial goals and objectives. Today, there are more than 35 states with hundreds of members actively participating in a national program dedicated to expanding access to and uses of our Nation's Earth observation satellite assets for education, research, hazards monitoring, and natural resources management. Other Federal agencies, such as the Bureau of Land Management and the U.S. Forest Service, as well as state agencies have benefited from the investment in AmericaView.

Now I will address some of the benefits that AmericaView has provided to the USGS and the Federal Government. The USGS-AmericaView partnership supports the USGS mission to serve the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. The AmericaView Consortium also supports the National Research Council's recommendation from its 2007 report entitled "Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond" that the USGS should "...pursue innovative approaches to educate and train scientists and users of Earth observations and applications." It has provided a network of State partners for enhancing the science of remote sensing and data sharing, accomplished needed research in the Earth sciences, and supplemented the USGS capability to deliver data to a growing user community.

Based in part on the suggestions the USGS received from the AmericaView members, the USGS has improved its computer systems and network infrastructure and

its ability to meet our customers' needs. These enhancements facilitated the web enabling of the entire Landsat archive. The USGS and the Nation have benefited from the research that has been performed by the AmericaView members and from the students that have been educated by the AmericaView members, not just in the field of remote sensing but in the science and engineering fields as well. It has been a highly successful partnership from which the USGS, AmericaView members, and the American public have all benefited.

The USGS Fiscal Year 2009 budget included $1 million for competitive grants awarded to AmericaView members. The USGS Fiscal Year 2010 budget justification for Land Remote Sensing maintains the funding level of $1 million to continue these competitive grants for national education outreach and research activity.

The USGS Science Strategy emphasizes societal benefits—namely, better understanding of the role of the environment on human health, understanding ecosystems and the effects of ecosystem change, quantifying and forecasting the Nation's freshwater resources, and risk assessment due to natural hazards. AmericaView achieves this goal across the Nation by educating large sectors of the population across States and territories and leveraging assets for research issues that affect pressing issues on our society. The USGS is continually increasing the breadth and volume of geospatial imagery available to the public for education, research, assessment, and monitoring at the State level. It is essential that our future workforce has a firm foundation in the Earth sciences and the role that historic and present day remote sensing data and technology has on effective decision-making.

This concludes my statement, Mr. Chairman. I will be happy to answer any questions you and other members may have. I appreciate this opportunity to testify before you and this Subcommittee.

Response to questions submitted for the record by Ms. Kimball

Questions from Chairman Jim Costa from the State of California

1. Please provide details on AmericaView's funding by year since the program's inception. Also, please provide an estimate of the amount and percentage of annual funding which USGS passes on to StateView programs.

Answer: The historical funding of today's USGS AmericaView (AV) program began as an earmark included in the USGS FY 1998 appropriation of $3 million for an OhioView initiative to develop a capability to process and deliver Landsat 7 data in near real-time to the State. Funding for the OhioView project continued through FY 2000 at the $3 million level. In FY 2001, funds were specifically earmarked for the Texas Natural Resources Information System ($0.2 million), the Mississippi Space Commerce Initiative ($0.15 million), the California Land Science Information Partnership ($0.2 million), and the National Interagency Fire Center ($0.2 million) in an effort to transition from a pilot project into a national program. In FY 2002, USGS awarded competitive grants to 10 individual State educational institutions/organizations to continue efforts in delivering satellite data to meet State needs. The FY 2003 appropriation again earmarked funds for the USGS AmericaView project.

The table shows the USGS funds appropriated for the AmericaView program by fiscal year, the amount available to AmericaView, the number of StateViews receiving AV funds, and the amount each StateView received. Prior to FY 2007, a portion of these funds were used to support infrastructure augmentation at EROS to improve data delivery and provide customer support to StateViews for products and services.

Fiscal Year	Appropriated Funds	Amount to AV for grants [a]	# of StateViews funded	Grant amount to StateViews
	($s in millions)			*(In whole dollars)*
2003 [b]	$3.00	$1.52	10	$93,500
2004	$3.00	$1.60	14	$89,500
2005	$3.00	$1.70	16	$89,500
2006	$2.97	$1.80	18	$84,000
2007	$1.65	$1.20	18	$51,000
2008	$0.98	$0.97	29	$23,989
2009	$1.00	$0.97	31	$23,152

[a] Includes administrative costs.

[b] In FY 2003, the USGS awarded individual grants to State entities since AmericaView was not yet incorporated. Nine states each received the $93,500 and $584,184 to OhioView.

2. H.R. 2489 refers to an "AmericaView Program" as well as the "AmericaView Project" and once simply to "AmericaView." Can you help clarify the definitions of each of these entities, and which entity, particularly the Department of the Interior, is responsible for what activities?

Answer: H.R. 2489 sets forth a framework that reflects the management of the AmericaView program in existence today.

AmericaView is a 501(c)(3) non-profit corporation established under the laws of the Commonwealth of Virginia. AmericaView, Inc. manages a national consortium of universities located in the States that possess communications networks, facilities, and capabilities for acquiring and sharing remotely sensed data with users and among themselves. The AmericaView Consortium, as it is known, works to "help the university, secondary-education, and public sectors in each State identify, develop, and distribute the kinds of applications each State needs most." (See http://www.americaview.org/about.htm.) AmericaView Consortium universities are grouped into StateView affiliates of AmericaView, Inc.

The USGS AmericaView program as described in H.R. 2489 refers to a federal satellite imagery program activity within the Discipline of Geography at the USGS. The program is dedicated to working with AmericaView, Inc. to fulfill the objectives of the Department of the Interior in promoting the use of land imagery to better achieve the goals of the Department in land and natural resource management. This program is managed in concert with the USGS operation of the Landsat satellites and their archival records. Under P.L. 102-555 Land Remote Sensing Policy Act of 1992, the USGS is charged with archiving and distributing Landsat data to all "civilian, national security, commercial, and international" users. The Department of the Interior funds the program as part of the program management responsibilities assigned to the Department under P.L. 102-555 and PDD/NSTC-3 Amendment to Landsat Remote Sensing Strategy, 2000.

The USGS AmericaView project as described in H.R. 2489 is the USGS image processing and distribution, science, and data archive activity managed by the Center for Earth Resources Observation and Science (EROS). EROS provides technical coordination and support for the implementation of the AmericaView program.

Under H.R. 2489, these roles would continue, although the USGS may award multiple grants to AmericaView affiliates rather than a single grant as is performed today.

3. H.R. 2489 proposes an extensive list of activities for the Secretary of the Interior to undertake "acting through the AmericaView Program." The list includes expanding the number of mapping courses, expanding mapping research, building partnerships, and developing mapping standards. How do the specific responsibilities proposed for USGS in H.R. 2489 compare to the kinds of activities USGS currently undertakes through AmericaView? Is the USGS already undertaking these activities, or would some be new? If so, which? Do you have any concerns or comments about this list of proposed activities and how it might challenge USGS' capacities?

Answer: AmericaView, Inc. plays an essential role in support of the Secretary, consistent with P.L. 102-555 and PDD/NSTC-3 as amended. Historically, the Secretary, working through the USGS, has assigned authorities to AmericaView related to acquiring, managing, and distributing imagery to the States as is expressed in section 4(b).

Because educational institutions play a vital role in service to communities, the Secretary sponsors the AmericaView, Inc. activities cited in section 4(c). However, the Department does not view the activities cited in section 4(c) as exclusive activities—since there are many organizations throughout the States that carry out these roles both on behalf of the Secretary and independently of the Department. Therefore, we do not believe that section 4(c) should be linked to the purposes the Secretary carries out through this legislation.

One change that we would propose in the draft bill would relate to setting standards for geospatial applications of imagery. We propose that AmericaView, Inc. affiliates should "promote the use of nationally consistent standards" but should not be assigned authorities or activities to develop standards in each State. While we do not think that development of such standards should be a responsibility assigned to AmericaView, Inc. we do believe that educational institutions participating in the AmericaView Consortium will be a useful resource to State and Federal agencies in developing such standards.

Many of the activities identified in H.R. 2489 are already being undertaken by the USGS. The USGS is working to identify new requirements for geospatial im-

agery, developing new applications of geospatial imagery, expanding the knowledge and use of geospatial imagery, promoting the use of standards, and educating users on geospatial imagery. The proposed bill would expand these activities to include more State, local and tribal involvement, as well as increasing the scope of these activities, such as more research into geospatial imagery applications focused on tribal issues. The proposed bill would also include some new activities, such as transferring geospatial imagery and applications back to the USGS. Although these represent new activities for the AmericaView program, they support the mission of the USGS.

4. H.R. 2489 directs the Secretary of the Interior to cooperate with the AmericaView Project "to develop nationally consistent standards for geospatial imagery mapping in each state." However, the development of standards for mapping seems like the kind of activity that should involve more stakeholders than the Department of the Interior and AmericaView. Could you clarify the role you think would be appropriate for AmericaView in the development of standards for mapping? Would AmericaView's focus be more appropriately described as development of standards for the distribution of images, information, and technology, rather than for mapping?

Answer: Please see the response to question #3.

5. This bill would expand AmericaView to all 50 states. Is that realistic? Why is it important for this program to be in all 50 states and territories?

Answer: The Department has no opinion as to whether AmericaView, Inc. should be established in all 50 States as it is conceivable that some States could acquire AmericaView services from multi-state consortia or through sharing provisions that exist among educational institutions in different States. However, it is important that the land and natural resource management expertise unique to each region of the United States be adequately reflected by the location of the AmericaView affiliates and that each State find itself adequately represented by AmericaView, Inc.

6. How do you see AmericaView interacting with ongoing image-collection initiatives like Imagery for the Nation and USDA's NAIP aerial photography program? Please explain the differences between the Imagery for the Nation Initiative and the NAIP Program and the activities that will be authorized through H.R. 2489.

Answer: The Imagery for the Nation (IFTN) initiative was proposed by the National States Geographic Information Council (NSGIC) and endorsed by the multi-agency National Digital Orthoimagery Program (NDOP) as a comprehensive program to acquire high-resolution imagery of 1-meter resolution and higher for the entire nation, including Alaska, Hawaii and the territories, on a cyclical basis.

The Federal Geographic Data Committee (FGDC) is currently developing a phase 1 plan to implement IFTN by building upon and enhancing two existing programs, USDA's National Agriculture Imagery Program (NAIP) and the USGS-NGA Urban Area Imagery Partnership (UAIP). Under IFTN, the FGDC would provide governance and ensure overall coordination, USDA will manage the 1-meter, leaf-on component, and USGS will manage the 1-foot and higher, leaf-off component.

In comparison, the AmericaView program is not a data collection program, per se, and has not been used by the Department to distribute high- and very high-resolution data to the States nor to perform other services related to these data. AmericaView distributes satellite data whereas IFTN and NAIP focus primarily on distributing aerial data. AmericaView is dedicated to distributing satellite data through the nation's educational community whereas IFTN and NAIP provide imagery directly to government users.

State and local governments are experienced users of high- and very high-resolution aerial imagery, and therefore have well established and standard approaches to handling this type of data. Satellite imagery is not standardized and is more complex, requiring formatting, processing, interpretation and analysis steps that are largely unfamiliar to State and local governments. Thus AmericaView serves an important role in acting as a bridge between the academic community and government users of satellite imagery.

For these reasons, we recommend that the definition of imagery in H.R. 2489 be restricted to data acquired by satellite since this is the primary purpose for which the Department would rely on AmericaView, Inc.. This is not to restrict AmericaView, Inc. affiliates from otherwise performing distribution of aerial data independently or in support of other Department and Federal Government objectives, but it is to indicate that the distribution of aerial data is not the exclusive

and intended purpose of the federal satellite imagery program proposed in H.R. 2489.

Questions from Ranking Member Doug Lamborn from the State of Colorado

1. The National Cooperative Geologic Mapping Program has a state match funding requirement. Do you believe that you could continue to operate this program with a similar requirement for the America View Geospatial Imagery Mapping Program

Answer: State governments indirectly provide matching funds by providing facility space, salaries, and communication services to Stateview programs. The Department would pursue additional matching fund arrangements in its review of competitive grant proposals under this Act.

Questions from Congressman Gregorio Kilili Camacho Sablan from the Commonwealth of the Northern Mariana Islands

1. How are the territories involved in AmericaView?

Answer: U.S. territories have not been involved in AmericaView, Inc., to date.

2. Is there going to be a "Territory View" or other program relevant to the Commonwealth of the Northern Mariana Islands?

Answer: The Commonwealth of the Northern Mariana Islands is included in the definition of "State" in the proposed legislation, so a StateView program could be formed to provide AmericaView program services to a territory under this Act.

Mr. COSTA. We will look forward to that. You exceeded your time by a little bit, but we will forgive that.

Our next witness is Ms. Rebecca Dodge, the Associate Professor in the Department of Geosciences at Midwestern State University. Rebecca, please.

STATEMENT OF REBECCA L. DODGE, Ph.D., ASSOCIATE PROFESSOR, THE DEPARTMENT OF GEOSCIENCES, MIDWESTERN STATE UNIVERSITY

Dr. DODGE. Thank you. I would like to thank you and Ranking Member Lamborn for having us here today and for giving me this opportunity to testify, and I would also like to thank Committee Member Lummis for her support, as well as Representative Herseth Sandlin.

I would like to first comment a little bit about AmericaView's growth and then to explain how the activities to be supported by this bill will sustain and expand the benefits provided by AmericaView.

As the pilot for a nationwide program, OhioView was designed to prove the concept that a statewide network of universities and their partners could develop new scientific and educational applications for geospatial data that would improve the lives of citizens of their states.

OhioView provided a very solid proof of this concept. Within two years, OhioView's successes led to planning for the national AmericaView Consortium. The AmericaView Consortium incorporated as an educational nonprofit in 2003 with 10 founding members. Since officially going national, steady growth of new StateViews each year has increased the membership to 36.

With this steady growth across the country, the time has come for this bill to be passed. Thanks to the leadership of Representatives Regula and Herseth Sandlin in the previous Congress, as well as Herseth Sandlin and LaTourette in this Congress, H.R. 2489

was introduced in the House in May. A companion bill was introduced in the Senate by Senators Johnson and Voinovich.

The bill is designated to authorize a comprehensive national program and a set of activities that will promote the application of geospatial imagery for a broad range of applications and purposes through education, workforce development and training and applied research.

Within the proposed legislation there is listed a set of activities that are the heart of the legislation. These are keyed to the existing strengths, activities and contributions of AmericaView. A subset of these activities is going on in each member state now. H.R. 2489 will ensure that the impact will improve in each state.

In a few moments you will hear more about these activities, such as the development of applications, education and training infrastructure in each state spanning K-12 education through professional development. You will also hear examples of activities that address expanding geospatial imagery mapping courses that are being taught at the university level.

CaliforniaView in particular is leading several StateViews in a project focused on the community and tribal college level. StateViews continue to expand geospatial imagery mapping research at educational institutions beginning at the undergraduate level.

StateViews are expanding the use of geospatial imagery through outreach programs to groups ranging from private industry to Federal and state emergency response employees, natural resource management personnel and K-12 teachers. AmericaView is also promoting the sharing of techniques and tools among and within participating states.

H.R. 2489 will enable AmericaView to expand such activities within each state and to all 50 states and the U.S. territories. It will also ensure a workforce prepared to apply the geospatial imagery being made available by the USGS toward effective decision making.

In fact, the AmericaView program is built on the precept that there are remote sensing needs that are best understood and addressed at the state level, and these are well handled by a workforce that has acquired local knowledge and skills to select and apply that appropriate data and technology.

As Acting Director Kimball pointed out, the National Research Council recommended that the USGS should pursue innovative approaches to educate and train scientists and users of earth observations and applications. At that time, the USGS had already been involved in developing and expanding the AmericaView program for over 10 years.

I would like to thank the USGS for their foresight and to echo Acting Director Kimball's sentiments that ours has been a successful partnership. The cooperation with each state has benefitted the American public, as has the cooperation among states and between both the government and nonprofit sides of the AmericaView program.

We look forward to welcoming the remaining states and territories into our family. H.R. 2489 will help make that happen.

Thank you for your consideration. I would be glad to answer any questions.

[The prepared statement of Dr. Dodge follows:]

Statement of Rebecca L. Dodge, PhD, Outreach Director for AmericaView, on H.R. 2489

I would like to thank Chairman Costa and the committee members for giving me the opportunity to testify with respect to the AmericaView Geospatial Imagery Mapping Program Act. My name is Rebecca L. Dodge and I teach Geology and Environmental Science at Midwestern State University in Wichita Falls, Texas. I have been actively involved in the development and leadership of AmericaView for the past seven years.

Today I would like to add a few remarks to Acting Director Kimball's comments about AmericaView's history, from the AmericaView members' perspective, and then to explain how the activities to be supported by H.R. 2489 will sustain and expand the benefits provided by AmericaView.

As described earlier, OhioView was the pilot for a planned nationwide program, designed to prove the concept that a statewide network of universities and their partners involved in applied research could develop new scientific, educational, and practical applications for geospatial data to improve the lives of citizens of their state. OhioView, comprised of 10 Ohio Universities in partnership with the U.S. Geological Survey, provided very solid proof of this concept.

This pilot focused on education and on applied research emphasizing solutions to state needs. To date, OhioView partners have educated thousands of students at both the university and K-12 levels, while also providing training for hundreds of K-12 teachers and university faculty. OhioView's applied research concerning natural resource management has set the standard for new StateView efforts across the nation, providing new ways to solve problems in forestry, agriculture, city planning, and water quality. Within two years OhioView's successes led to planning for the national AmericaView Program; recruitment was (and still is) facilitated by the focus on addressing individual state needs.

The AmericaView consortium has been in development since 2000, incorporating as a 501c3 non-profit educational organization in 2003 with 10 founding members (OH, SD, AK, KS, TX, AR, MS, GA, WV, and WY). Since officially "going national" in 2003, steady growth of new StateViews each year has brought membership to the current level of 36 StateViews.

With this organic growth across the country, the time has come for H.R. 2489. Thanks to the leadership of Representatives Regula and Herseth Sandlin in the previous Congress as well as Representatives Herseth Sandlin and LaTourette in this Congress, H.R. 2489 was introduced in the House in May; a companion bill, S 1078 was introduced in the Senate by Senators Johnson and Voinovich. The bill is designed to authorize a comprehensive national program and set of activities that will promote the application of geospatial imagery for a broad range of mapping purposes, through education, workforce training and development, and applied research. AmericaView is already engaged in activities prescribed in H.R. 2489 in 36 states, and this Act will ensure the program's activities and impact will spread within each member state and to all 50 states and the Territories.

As you read the legislation you saw this set of activities listed. These activities are the heart of this legislation and they are keyed to the existing strengths and contributions of AmericaView; at least several of these activities are going on in each state now. H.R. 2489 activities that are designed to promote imagery mapping applications begin with 1) the development of geospatial mapping applications, education and training infrastructure in each state. Applications and education and training infrastructure development have gone hand in hand, as new applications technologies and tools that are developed for applied research are transformed into classroom and laboratory teaching instruments and then become available for training the existing workforce to apply the new tools and technologies.

CaliforniaView's applications-oriented Remote Sensing Certificate Program, under development with support from GeorgiaView, VirginiaView, IowaView, and TexasView, will serve not only undergraduates at the University and College level, but also returning students and others already in the workforce. AlaskaView makes its training infrastructure available to private companies that train the Alaskan workforce. Peter Hickman, CEO and Principal GIS/GPS Consultant for GeoApps, Inc. stated that

> Providing training has been fundamental to the success of GeoApps as a startup small business. In the past year alone, 83 students from across the

> academic, government, and private sectors in and around Fairbanks have successfully completed our ESRI Authorized training in the GINA RS Lab. The continued use of the GINA RS Lab for instruction is an integral part of accomplishing our goals. (2007)

The addition of geospatial student internships as part of the educational infrastructure in many states has created positive effects, as indicated by Dawn Liverman, undergraduate Geosciences major at the University of West Georgia. She participated in a GeorgiaView internship for rural Carroll County, Georgia and studied the impact of historical tree canopy changes to establish baseline maps prior to extensive proposed residential development.

> This internship has given me a new way of looking at the environment, invaluable experience with geospatial software, self-confidence in speaking publicly about the findings of my research, and professional skills that will be a definite help in my future professional life. This experience will be very important to me when looking for employment after graduation when so many companies want an employee with previous experience in the geospatial field. (2006)

Existing educational infrastructure has benefitted from South DakotaView's efforts according to MaryJo Benton Lee, Diversity Coordinator for South Dakota State University College of Engineering, who complements them for reaching 200 American Indian high school students participating in a college preparatory program in a 2007 SDSU-Flandreau Indian School Success Academy students.

> Your presentations were hands-on, interactive, and highly successful in interesting and exciting freshman high school students in your discipline. I especially appreciate the many ways you made your workshop culturally relevant, starting with the title "Technology and Tradition: New and Old Ways of Viewing Mother Earth". Also I commend you for employing two of our Native SDSU engineering students to assist you....these Native American college students were strong positive role models of American Indian professionals. Your excellent workshops are truly models for all of us who try through our work to attract minority students to science, math, engineering and technology disciplines. (2007)

K-12 teacher training infrastructure is broadly enhanced and supported by StateViews. Todd Ensign from the NASA IV&V Facility Educator Resource Center (ERC) complements West VirginiaView for its support, saying that

> the ERC has received assistance in downloading and using geo-referenced imagery, developing and delivering teacher workshops, producing educational podcasts, and in the successful bid for educational grants to expand the program. The ERC greatly appreciates the services of West VirginiaView and hopes to continue our strong partnership into the future. (2006)

West VirginiaView also received kudos for its support of K-12 pre-service education. According to Dr. James A. Rye, West Virginia University Interim Associate Dean for Research and Technology:

> We have begun to integrate global positioning (GPS), geographic information systems (GIS), and remote sensing into our undergraduate and graduate science methods course for pre-service and in-service teachers. West ViginaView has provided an invaluable expert resource...they have also developed and provided an extended RS/GPS/GIS experience that integrated a project GLOBE hydrology application in our undergraduate science methods course. Geospatial science and technology are integral with such 21st Century content as "global awareness" and the skill area of "information and communication technology" literacy. Dr. Landenberger's assistance and associated West VirginiaView projects are critical to integrating into our methods courses experiences that prepare teachers to facilitate 21st Century learning in their future and current classrooms.

Dave Varner, an Extension Educator with the University of Nebraska-Lincoln Extension Service, reported that 4-H youth and leaders at the 2006 National 4-H Science and Technology Conference presentation were impressed with NebraskaView's presentation

> regarding capabilities and exploration into future applications of remote sensing technologies that took this session to a whole new level. Participants were impressed with both the technology and applications discussed. Your Google Earth demonstration provided participants more hands-on experience using imagery collected via remote sensing technologies. The group connected well with this topic and will certainly share their experiences with their communities which represent approximately 20 states. We appre-

> ciated NebraskaView helping enhance the knowledge and skills of the outstanding 4-H audience that UNL had the opportunity to host in July. (2007)

AmericaView members have all benefitted as new applications as well as training programs for K-12 teachers, University faculty, youth groups, state and local government employees, and private industry are developed, refined, and shared among our membership. We are also expanding geospatial imagery mapping courses and provide training, remote sensing data, and teaching tools to educators. Expanding courses and curriculum has been the goal of John C. Kostelnick, GIS Instructor in the Department of Natural and Social Sciences at Haskell Indian Nations University who states that

> This letter comes in support of the KansasView Program. Haskell Indian Nations University (HINU), a four year university that serves students from federally recognized Indian Tribes in the United States, is among the many institutions that have benefited greatly from the services and data sources provided by KansasView. In recent years, HINU has worked to develop a program in Geographic Information Systems (GIS) and related remote sensing applications to support the environmental science curriculum as well as in response to the growing need for geospatial technology in tribal lands. The KansasView Program has provided numerous benefits to this endeavor by providing HINU students with internship opportunities and allowing HINU faculty to collaborate with faculty and staff at the Kansas Applied Remote Sensing (KARS) Program at the University of Kansas. The continued involvement of HINU in programs such as KansasView is key to ensuring that HINU is successful in its efforts to sustain and to expand the existing GIS program. (2006)

StateViews are all working to expand geospatial imagery mapping research at research educational institutions. Dr. Sylvio Mannel, GIS/Remote Sensing Manager at Oglala Lakota College, recognized South DakotaView's provision of Landsat imagery that

> enabled us to map possible Mountain Lion habitat on the Pine Ridge Reservation. In addition, the Landsat imagery archive is a very user friendly source of data. Before it became available we had to contact other researchers and other institutions to ask for any data they might have available. This was not very efficient and often unsuccessful. I hope the Landsat depository will be available in the future to conduct Remote Sensing education and research at Oglala Lakota in an efficient way. (2006)

Russ Brinsfield, Executive Director of the Harry R. Hughes Center for Agro-Ecology at the University of Maryland, praises MarylandView's assistance

> in developing geospatial approaches to a more accurate understanding of agriculture and its environmental implications and for providing a more precise agricultural cropland data layer for our area and for assisting us in researching innovative geospatial methods for cropping practices, nutrient applications, pesticide usages and other significant agricultural characteristics of interest to our program. (2009)

Gregory S. Vandeberg, Assistant Professor of Geography at University of North Dakota reports that he is

> currently overseeing a grant from the North DakotaView program: Geographic Variables Affecting Bald Eagle Nest Locations in the Red River Valley of ND and MN. This grant has provided the funding for Josh Johnston, MS Candidate in geography, to investigate the distribution of bald eagle nests. The grant covers both his graduate research assistantship as well as costs for an aerial survey of the northern part of the Red River Valley. The information gathered in his study will be very useful to federal, state and local conservation officials, as well as for the completion of his thesis. This project would have been severely limited without the North DakotaView grant. I strongly urge the managers of the AmericaView Program to continue funding to state programs such as North DakotaView. (2006)

AmericaView is also *expanding the knowledge and use of geospatial imagery map products through outreach programs* to diverse groups ranging from USDA extension agents to the National Forest and National Park Services, and including emergency management and natural resource management personnel as well as State and National Guard troops. MinnesotaView's outreach to natural resource managers has provided new data and tools for lake clarity analysis, as reported by Bruce Wilson, the program manager at the Minnesota Pollution Control Agency:

> We have used every trick of the trade, with a large body of volunteers and lab tests, but the truth is we can only monitor about 1,200 lakes a year. And now, out of the sky—literally—has come this opportunity to help pro-

> vide the information we are asked for thousands of times a year by citizens, business owners, and local units of government. (2009)

AlabamaView has been coordinating statewide conferences as part of its outreach effort. H. Craig Seaver, U.S. Geological Survey Liaison to Alabama, thanks them for their

> efforts in organizing training and presentations at the 3rd annual GIS meetings at Auburn this year....Based on my observations, the participation level was significant, with representation from federal, state/local and private sector entities....The wide scope of geospatial topics presented allowed one to choose both professionally related training and presentations and intriguing new ones as well. I look forward to getting involved with AlabamaView and promoting it within the state with USGS partners. (2006).

WyomingView's outreach presentations at workshops for farmers and ranchers have expanded applications across the state. Chuck Duncan, an Agriculturist for Wyoming Sugar Company who councils growers about how to raise a better crop, attended a workshop put on by WyomingView in cooperation with the University of Wyoming County Agent and with farmers and scientists from North Dakota. There he was introduced to the remote sensing technology and its applications for agriculture. He indicates that

> I was pleased that they brought to this workshop some sugar beet farmers from ND who have used this technology. They actually did most of the training and were able to answer questions from their own experiences. I believe that this technology could be useful in managing farm land through out my district. I believe that the activities of WyomingView (workshops and image distribution) are the wave of the future in farming and therefore should be used the best we can. They can assist growers to do a better job on their own farms and increase production, therefore keeping their viability in coming years. (2006)

Another private sector client impacted by WyomingView's outreach effort, Chris Jesson, P.G., Geologist/GIS Analyst with States West Water Resources Corporation, states that

> I would like to express my support for the services provided by WyomingView. It has been extremely beneficial to our efforts to serve our clients (with oftentimes much needed efficiency) with readily available satellite imagery. We have used WyomingView Services to assist a number of irrigation districts in Wyoming, the State of Wyoming, and many individual land owners with documentation of historical irrigation. Access to this information serves to dispel much doubt from proceedings that may otherwise lead to burdensome, expensive legal ventures for Wyoming and its citizens. It is my belief that this provision of taxpayer-funded information enables simple evenhandedness in the face of litigious issues. Moreover, it speaks to responsible and efficient utilization of taxpayer resources to serve information that provides for a basis of truth (that has already been funded by taxpayers) for the equal benefit of all citizens. States West endorses continued funding for Wyoming View Services.

StateViews are building partnerships with governments to carry out pilot mapping projects concerning coastal erosion, invasive species, wildfire prevention, volcanic hazards, drought extent and impact, to name a few. John F. Fry, the National Park Service's Chief of Resources Management the Cumberland Island National Seashore in Georgia, reported on a pilot project supported by GeorgiaView and performed by University of Georgia graduate student C.J. Jackson:

> Back-barrier shoreline erosion is a highly critical issue on Cumberland Island, as it threatens significant natural and cultural resources. C.J.'s final report, maps, and graphics provide exactly the sort of information the park staff needs in addressing the erosion problem. His research indicates the scope of the problem over the entire expanse of the Cumberland Island back-barrier, where critical hot spots are, how the issue has developed over an extensive (145 year) period, and what potential agents are for the erosion. C.J. went well above and beyond what was anticipated. He has provided us with an extremely valuable tool that is remarkably thorough and technically sound. The Park Service is most fortunate to have had C.J. working on this project". In my twelve years of NPS Science and Resource Management experience I cannot recall being more impressed with the quality and thoroughness of a research project than what C.J. has completed for the park. (2006)

C.J. Jackson won the Georgia URISA Thomas Mettille Student Achievement Award, for this work on the "Assessment of Back-Barrier Shoreline Erosion for Re-

source Management: Cumberland Island National Seashore, Georgia". This technique has wide applications for barrier islands managed by both Federal and State agencies. While mapping applications development has focused on addressing each state's unique needs, applied researchers have found solutions that cross borders to meet regional and national needs.

The national AmericaView leadership, in concert with working groups composed of StateView members, is promoting cooperation and sharing of data, expertise, techniques, and tools regarding geospatial imagery among and within participating States. Individual StateViews are sharing data among diverse users. Sandy M. Ebersole, a geologist with the Mapping and Hazards Section of the Geological Survey of Alabama, informed the AlabamaView Director that

> We currently have a number of Landsat scenes and will likely be acquiring MODIS and other satellite data in the near future for some of our research here at the survey. AlabamaView is a very impressive website, and a wonderful tool for researchers. I was wondering if you would accept other satellite imagery to be posted to your site as well so that it can also be shared with others. The data we have was not purchased through the AlabamaView project, but we would like to make it available for download for public use. (2009)

Dr. A. Kim Ludeke, Texas Parks and Wildlife Department GIS Lab Manager expressed strong support for TexasView as a

> valuable source of statewide datasets at no cost to the Texas Parks and Wildlife Department (TPWD) and the Texas Natural Resources Information System (TNRIS). Moreover, this updated imagery has allowed TPWD scientists and planners to document change in the natural and cultural environment of Texas. In addition, the TPWD game wardens have found these products to be invaluable, whether in investigations of environmental crimes, in prosecuting game and fish law violations, or in planning and executing Homeland Security exercises along the border with Mexico. This includes both training and real-life situations. Finally, the TexasView scientists have always been available for technical assistance and advice. It would be a major loss to Texas to lose the services of TexasView. This imagery provides a very important base for work on TPWD properties as well as with private landowners with whom TPWD field biologists are developing Wildlife Management Plans. These plans benefit private land owners as well as the natural resources of Texas for all Texans.

Consortium members in each StateView are active in state-level geospatial planning activities to promote cooperation and sharing, establishing strong contacts with State agency personnel. John Ellison, Agency Technology Officer for the California Resources Agency, commented in 2007 that the CRA

> looks to projects such as CaliforniaView to provide outreach and educational materials to ensure that geospatial data are utilized to their fullest extent. We also look to CaliforniaView to provide expertise and support in incorporating these data into a working environment. (2007)

Steve Bauserman, Chair of the Northern Shenandoah Valley Regional Commission whose responsibilities span the Virginia/West Virginia border, reports the approval of a cross-border cooperative study in which VirginiaView and West VirginiaView will

> prepare a pilot project for the Shenandoah Valley, VA-WV which is an historical land cover/land use view of the Shenandoah Valley footprint. A compilation of 1930 USDA aerials, more recent photography or Landsat imagery, would give a base from which to analyze land cover and land use change over the last 75 years for the region, counties and municipalities. This would serve as a base for future monitoring for drought onset, water quality, movement of pollutants in the air, comparison of small watersheds for runoff after rain, and other analysis. (2006)

James P. Verdin, Manager of the U.S. Geological Survey Early Warning and Environmental Monitoring team, wrote that

> As the lead of the Early Warning and Environmental Monitoring team at the U.S. Geological Survey's Center for Earth Resources and Science, I would like to express our appreciation to the Kansas Applied Remote Sensing (KARS) Program and KansasView in this letter....During the last six months, KARS provided a valuable remote sensing data set to us and to our collaborators at the National Drought Mitigation Center. This data consisted of preprocessed (mosaicked and projected) MODIS Vegetation Index data covering the entire North American Continent. The work performed by KARS...probably saved our organization approximately 120 person hours of

labor...we look forward to investigating the future potential to partner further in remote sensing research and applications with KARS. (2007)

H.R. 2489, the AmericaView Geospatial Imagery Mapping Program Act, would enable AmericaView to expand activities such as these to all 50 states and the U.S. Territories, addressing each state's unique needs by educating and training educators and professionals who will perform applied Earth observations. StateViews will also be instrumental in developing key applications that serve educators and transferring the technologies and tools developed to a wide range of state and federal agencies, private industry, and the general public.

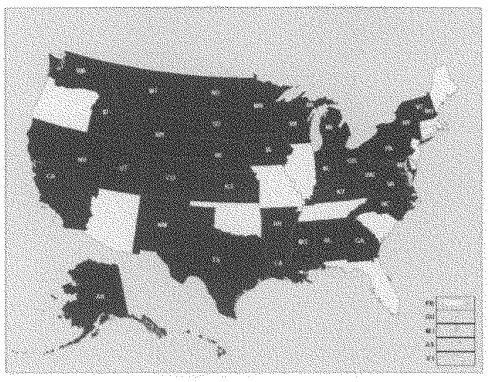
As Acting Director Kimball has pointed out, the USGS is continually increasing the breadth and volume of geospatial imagery available to the public for education, research, assessment and monitoring at the State level. H.R. 2489 will ensure that the workforce is provided with the ability to apply remote sensing data and technology towards effective decision making in each state. In fact, the AmericaView Program is built on the precept that there are remote sensing needs that are best understood and addressed at the state level, while other aspects are best addressed at the national level. Operating satellites and maintaining centralized global data archives are critical national priorities well handled by USGS. Education, emergency response, and support of local natural resource managers are local issues that are well handled by a workforce that has acquired local knowledge and the skills to select and apply the appropriate data and technology.

The National Research Council's Strategy for Earth Science Applications from Space (2007) recognized that a robust program to train users on the use of these observations will result in a wide range of societal benefits ranging from improved weather forecasts to more effective emergency management to better land-use planning. The report recommended that the USGS should pursue innovative approaches to educate and train scientists and users of Earth observations and applications. At the time of these recommendations, the USGS had already been involved in developing and expanding the AmericaView program for over 10 years. I would like to echo Acting Director Kimball's sentiments that ours is a great partnership. The cooperation within each state has benefitted the American public, as has the cooperation among states and between both the government and non-profit sides of the AmericaView Program. We look forward to welcoming the remaining states and territories into the family.

Thank you again for your consideration and attention, Mr. Chairman and Committee members. My Outreach Committee members and I will be happy to answer any questions you and other members may have.

[The StateView Consortia Summaries submitted for the record by Dr. Dodge follows:]

STATEVIEW CONSORTIA SUMMARIES



AMERICAVIEW MEMBER STATES AND LEAD INSTITUTIONS

ALABAMA
Auburn University

ALASKA
University of Alaska—Fairbanks

ARKANSAS
University of Arkansas—Fayetteville

CALIFORNIA
University of California—Davis

COLORADOVIEW
Colorado State University

GEORGIA
University of West Georgia

HAWAII
University of Hawaii

IDAHO
University of Idaho

INDIANA
Purdue University

IOWA
University of Northern Iowa

KANSAS
University of Kansas

KENTUCKY
Morehead State University

LOUISIANA
University of Louisiana—Lafayette

MARYLAND
Towson University

MICHIGAN
Michigan Tech Research Institute

MINNESOTA
University of Minnesota

MISSISSIPPI
University of Mississippi

MONTANA
Montana State University

NEBRASKA
University of Nebraska—Lincoln

NEVADA
University of Nevada - Reno

NEW HAMPSHIRE
University of New Hampshire

NEW MEXICO
New Mexico State University

NEW YORK
SUNY Syracuse

NORTH CAROLINA
East Carolina University

NORTH DAKOTA
University of North Dakota

OHIO
Cleveland State University

PENNSYLVANIA
California University of Pennsylvania

SOUTH DAKOTA
South Dakota State University

TEXAS
Stephen F. Austin University

UTAHVIEW
Utah State University

VERMONT
University of Vermont

VIRGINIA
Virginia Tech

WASHINGTON
Washington State University

WEST VIRGINIA
West Virginia University

WISCONSIN
University of Wisconsin--Madison

WYOMING
University of Wyoming

STATEVIEW CONSORTIA SUMMARIES

The **AlabamaView** vision is to benefit the economic development of the state through the use of satellite and aircraft remote sensing information and technologies and their application to pressing issues in the state. AlabamaView is working with state agencies on to save dollars and insure homogeneous airborne coverage of all areas of the state with full high resolution coverage of the state every four years. It is also working with the Alabama Cooperative Extension Service in training Extension agents together with farmers in the use of geospatial technologies in general and remote sensing in particular. It is supporting workforce development through scholarships for undergraduate students at the partner universities and colleges. It is supporting K-12 learning experiences in collaboration with the Alabama Science in Motion (ASIM) program and begun development of a program that will utilize satellite imagery in modules developed for ASIM. It is posting surface temperature and biomass information from MODIS updated weekly on its website, and developing products from RS data such as an improved drought index based on surface temperature. AlabamaView also recently partnered with a private

firm named Galileo in a pilot research study to map invasive species utilizing hyperspectral imagery.

AlaskaView is the leading source of satellite imagery and geographic data for Alaska. Implemented through the University of Alaska's Geographic Information Network of Alaska AlaskaView captures and distributes real-time satellite imagery to emergency responders, operational agencies, and the general public. A key element is an ongoing collaboration with USGS EROS to receive Landsat 5 data at FCDAS. This data will populate the National archive, covering currently unserved areas of Alaska. This data will also be available in less than 24 hours for emergency response, including wildfire and volcano hazard management. AlaskaView also houses the most comprehensive collection of high-resolution imagery for Alaska and is the top distribution site for the state. Frequent users include wildfire fighters tracking smoke and hot spots, meteorologists forecasting weather, flooding, and sea ice, and marine operators transiting the sea ice. AlaskaView also plays an important role supporting the training needs of Alaskan users by hosting of university and professional training courses in our training facility.

The **ArkansasView** consortium includes universities, the EAST initiative, state and federal agencies, and non-profit organizations that continue to build Arkansas' remote sensing community. We 1) develop and distribute online satellite and airborne remote sensor data products of significance to Arkansans; 2) transfer remote sensing technology to education, government, and the private sectors; 3) create and maintain remote sensing-related public outreach; and 4) build Arkansas' capacity for near real-time remote sensor data products and autonomous online remote sensor data processing. In the long term the ArkansasView consortium seeks to encourage cooperation and collaboration among its state members and across borders to other "StateView" programs. Our members cooperate regularly on educational and outreach activities such as sponsoring informational seminars, developing appropriate curricula for K-12 education, and offering professional short courses on user-recommended remote sensing topics. Our members collaborate on identifying and obtaining funding and publication opportunities. Through cooperation, collaboration, and the effective leveraging of existing resources within and between "Stateview" programs, we will best accomplish AmericaView's mission to build a stronger and more viable remote sensing community in Arkansas and America.

The main emphasis of **CaliforniaView** is on higher education, workforce development and outreach in the field of remote sensing. We are currently developing a remote sensing certificate program to become the online intersection of education and internships for remote sensing career development in California. CalView is supported by partnerships with the Space Grant Consortium, University of Berkeley, the California Community College and Economic Workforce Development (CCCEWD) as well as the California Community Colleges Geospatial Information Support (C3GIS). The Baseline Remote Sensing Certificate is offered at no cost to each AmericaView State Member. Additionally CalView is developing certificates at the intermediate and advanced levels to enhance workforce retraining.

ColoradoView recently attained status as a full member of the AmericaView consortium of states and is excited to join the mission of individually, and collectively, promoting remote sensing and GIS. Colorado is a hot-bed of geospatial science and technology, and boasts many world class academic, governmental, and private entities. We will draw upon this expertise to incrementally build a vibrant and useful resource for all Coloradoans involved with remote sensing and GIS. Our first goal is to leverage expertise and resources provided by AmericaView to develop a web portal that will facilitate the dissemination and exchange of Colorado-specific remote sensing and GIS data, information, and educational materials.

The **GeorgiaView** consortium has played very important roles in serving the citizens of Georgia since 2003, by 1) setting up the framework of sharing mid-resolution satellite imagery, 2) preparing Georgians for the geospatial information technology careers, and 3) by applications focused on local and regional issues. Projects have included Georgia 2007 wildfire mapping and analysis, urban sprawl, land cover change impacts on drinking water reservoirs, and Georgia shoreline changes. We have constantly supported and promoted internships for students, workshops for faculty in K-12 and higher education, and top-level satellite image data sharing mechanisms. GeorgiaView will continue to help more Georgians prepare their careers in the geospatial technology fields and to research Georgia's environmental issues with satellite and other remotely-sensed images. Finally, one of GeorgiaView's goals is to help disaster responses (ex. wildfire, hurricane, flooding, etc.) in Georgia using timely satellite imagery.

HawaiiView's activities continue to focus on educational outreach, training, and research. Learning more about the local environment, including the link between the terrestrial and coastal ocean systems, is of great interest to Hawaii's middle and

high school students. HawaiiView engages in numerous activities as conduits for introducing and connecting local students to remote sensing technologies and science. The PI will present a workshop activity at the School of Ocean, Earth Science, and Technology's bi-annual Open House event (16-17 October 2009). The workshop will use the PI's FLIR thermal imaging camera to demonstrate thermal imaging applications of remote sensing. In January 2009 the PI has been invited to teach on the subject "Thermal remote sensing of volcanoes" at an NSF funded workshop in Costa Rica, which will focus on training students and professionals from North, South, and Central America in the use of remote sensing for hazard mitigation. We will also continue to make remote sensing data available via the HawaiiView website.

IdahoView's goals establish IdahoView as the primary coordinating entity for remote sensing data management, training, and applications for Idaho. The AmericaView and IdahoView programs have stimulated active communication in the state of Idaho as well as coordination that has already led to significant success in building the cyber infrastructure critical for remote sensing data management in the state. Other activities include enabling both national participation as well as state participation across our diverse geographic regions that encompass a wide variety of biophysical settings, land management entities, and environmental monitoring needs. A strong focus will remain on establishing communication and coordination of activities being funded from a variety of sources. IdahoView will develop coordinator tasks and means for leveraging in-state initiatives with those underway across the AmericaView program. A final goal for the coming year will be to become more active in service to the national AmericaView program through attendance at the meetings, outreach, and participation in AV working committees. IdahoView is committed to the collective vision of the AmericaView program and active participation.

IndianaView is a state-wide consortium of 14 universities and institutions in Indiana. IndianaView facilitates and promotes the sharing and use of public domain remotely sensed image data (from both aerial and satellite platforms) by Indiana universities, four-year colleges, community colleges, K-12 institutions, libraries, museums, government agencies and the private sector through tutorials and training. IndianaView provides mini-grants to support research and technology education to member institutions and provides free access to near real-time satellite images to the community. We also promote the use of remote sensing data to monitor statewide issues such as crop development, water quality, urban development, and flooding.

IowaView is presently working with several federal, state, local and tribal agencies in Iowa on remote sensing related research, education and outreach activities. The main goal is to continue to build partnerships and infrastructure to conduct remote sensing education, research, and outreach activities in the State of Iowa with the following goals and objectives: 1) continue to develop advanced remote sensing education and training programs that are tailored to the needs of academic staff, local and state government agencies and private sectors, 2) to promote and support collaborative remote sensing application research effort, develop techniques and tools for local as well as state government agencies, 3) to transfer remote sensing data to educational institutions, local and state agencies, and the private sector in Iowa, 4) to provide remote sensing research opportunities for students, and finally 5) to establish a synergistic relationship with other AmericaView states on educational and research activities.

The overarching goal of **KansasView** is to advance the availability, timely distribution, and widespread use of remotely sensed data and geospatial technologies to support the needs of the state's public agencies, research and education communities, tribal colleges, private enterprise, and the general public. KansasView has helped create and maintain several key imagery databases, and has customized all imagery data sets to correspond with other geospatial databases; data sets are available without charge. KansasView also continues to support the training and education of undergraduate and graduate students, consistently funding graduate students and providing data to numerous research projects. We have reached out to K-12 educators by working cooperatively with programs that bring together networks of teachers in both science and geography that have allowed us to capitalize on their interest in introducing new technology to their students.

The primary focus of **KentuckyView** is on the use of images collected from satellites and aircraft, as well as other geospatial technologies, to support K-16 education, public outreach, applied research, and data distribution. The KentuckyView consortium currently comprises six universities and two state agencies in Kentucky. Via its mini-grant program for students and faculty at member universities, KentuckyView strives to bring remote sensing materials to formal and informal educational curricula at all levels through workshops and student projects; reaches out

to the public via presentations and our website; and distributes and applies remote sensing data and technology to help solve pressing environmental (e.g., forest health) and societal (e.g., water quality) issues in the Commonwealth. Particular emphasis is placed on providing students (the future workforce) with training and research opportunities.

LouisianaView is a state consortium of geospatial science, education, and natural resource management organizations that work together to advance remote sensing and related geospatial technologies in ways that leverage federal and private investment in remote sensing instruments and data. Louisiana View activities are designed to: 1) strengthen a Louisiana consortium of data users, 2) actively build an archive of multi-sensor satellite imagery, aerial photography, etc. and a user-friendly dissemination mechanism, 3) provide continuing education opportunities at the University of Louisiana at Lafayette for end users, 4) collaborate in remote sensing research, and 5) provide technological support and technology transfer to data users. LouisianaView serves Louisiana by working in Natural Disaster Response and Training. We also work to develop and apply Imagery and Geospatial technologies with the USGS-National Wetlands Research Center, the Louisiana National Guard, the Governors Office of Homeland Security, FEMA, the State of Texas, and many of our local Parish Governments.

The mission of the **MarylandView** Consortium is to ensure that educational institutions, government agencies, non-government organizations, and businesses in Maryland make the fullest use of remotely sensed imagery and other digital geospatial data and technologies. The goals of the MarylandView Consortium are to 1) serve as a Consortium of users and suppliers of remotely sensed data in the State of Maryland; 2) serve as a remote sensing education and outreach program for the State of Maryland; 3) make appropriate data, software, and pedagogical materials on remote sensing and digital image processing available for use by K-16 teachers; 4) serve as a conduit for research into new applications of remotely sensed data in academia, government, and business; 5) develop pilot projects in cooperation with the U.S. Geological Survey and other end users to demonstrate the application and benefits of remotely sensed data; and 6) facilitate the use of remote sensing data to monitor statewide issues such as urban sprawl and forest fragmentation.

MichiganView seeks to provide needed resources for building a workforce that is more skilled in science and technology. The purpose of MichiganView is to promote the use of remote sensing technology in Michigan by supporting research, education, workforce development, and technology transfer. The consortium consists of academic, non-profit, and government organizations that are involved in remote sensing and are interested in the public sharing of educational resources, research activities, and dataset sharing. Activities for the MichiganView consortium that will further promote the use of remote sensing technologies in Michigan include 1) expanding the membership of MichiganView to other organizations within Michigan, 2) provide IT infrastructure to enable collaboration among members within Michigan, and support collaboration among AmericaView members, 3) maintain a no-cost publicly accessible data archive of remote sensing data for Michigan, focusing on providing easy to user data formats and access protocols, and 4) developing web-based tutorials for processing and distributing remote sensing data.

MinnesotaView was approved for funding by AmericaView for 2008. Its vision is to work with state agencies and universities in Minnesota to advance remote sensing research, education and outreach. The consortium, led by the University of Minnesota, includes the Minnesota Land Management Information Center, Minnesota Department of Natural Resources, and Minnesota State University—Mankato. Its goals include 1) Increased access to and application of remote sensing data and imagery by agencies, schools and colleges, and citizens, 2) Enhanced understanding of the characteristics and uses of remote sensing data with information on its website, 3) linking potential users to remote sensing specialists so that sensors and data are well matched to user needs and applications, 4) development of improved linkages between remote sensing and GIS to make the best use of geospatial data, 5) promotion of collaboration among agencies for development and application of remote sensing, and 6) participation in and support AmericaView activities and program.

MississippiView, in combination with other Mississippi educational institutions, provides support and resources to further remote sensing and GIS activities throughout the state. MississippiView works with partners in Mississippi to support a high school outreach project in which partner educational institutions work with local high schools to introduce students to remote sensing and geospatial concepts and to complete geospatial projects of benefit to the local community. Through this program, MississippiView and its partners have introduced more than 100 high school students to potential careers in the geospatial industry. MississippiView pro-

vides support across all aspects of the geospatial community in Mississippi by supporting training courses, summer camps, after school programs, and other activities.

MontanaView is a state-wide consortium of 9 universities, non-profit organizations and government agencies working within Montana to advance the availability and timely distribution of remotely sensed data. MontanaView works with farmers and ranchers on applying sight-specific agriculture techniques to reduce environmental impacts and economic outputs. We support wildfire management by aplying innovative science and technology to on-the-ground natural resource incidents. MontanaView is also establishing a network of geospatial professionals and resources to respond during emergency disasters. Working with our partners, we support geospatial education and workforce development including training and geospatial resources for K-12 school teachers, agencies, and other professionals as well as support to tribal collages in meeting their geospatial needs and course offerings.

NebraskaView works to ensure that Nebraskans make full use of satellite imagery, geospatial data and technologies such as geographic information systems (GIS) and remote sensing for mapping, monitoring and managing our cities and rural lands, and protecting our natural resources. NebraskaView collaborates with the Nebraska GIS Council and the Nebraska GIS/LIS Association to coordinate the implementation of geospatial technologies by state and local governments in Nebraska. We also promote the use of geospatial technologies to the general public through community outreach activities and museum displays. We work with our partners at all of Nebraska's state colleges and universities to support geospatial education and workforce development. Our educational activities have included training and geospatial resources for K-16 school teachers, Nebraska 4H educators, and the state's Science Olympiad.

NevadaView will ensure ongoing, readily available, access to a growing amount of remote sensing and other geospatial data sets. Educational outreach programs in remote sensing and geospatial analysis will increase as will the variety of web enabled remote sensing tools that will become available to the States data users. NevadaView will allow us to bring more remote sensing resources online, continue the growth and development of the Keck state geospatial data set repository web site, allow for remote sensing outreach workshops for a variety of government and public entities, and help support teaching and research labs by insuring access to up-to-date image processing and GIS software. These goals, implemented together, will increase the availability and use of remote sensing data and technology throughout Nevada to an ever growing list of users and applications. In accomplishing these goals NevadaView will be implementing the its mission to provide to all levels of government and the private sector increased access to training, remote sensing data, and imagery applications. This will allow greater integration of the geospatial data and technology into everyday decision making.

New Hampshire View provides a means to bring many groups that use remotely sensed imagery and other geospatial data together in a formal way to aid communication and sharing of resources. In addition, the consortium provides a single point of access for anyone in the state needing imagery or wishing to learn more about geospatial technology resources within New Hampshire. For its members, the consortium provides networking and collaboration infrastructure, educational support and outreach. The ongoing goal of New Hampshire View is to continue to develop and expand activities that will increase awareness among and collaboration between users of remotely sensed and other geospatial information in New Hampshire. We will continue to document and demonstrate the benefits of remote sensing education, outreach, and research activities throughout the state. We propose to achieve the following outcomes: (1) bring together all those in New Hampshire interested in using remotely sensed data to solve real problems, (2) develop a collaborative relationship between all academic institutions in the state that can then benefit state and local agencies, the private sector, and the public, (3) increase awareness and foster opportunities to work together among all remotely sensed data stakeholders in New Hampshire, and (4) expose those who may not know about the uses of remote sensing and other geospatial technologies to their many benefits and possibilities.

New Mexico View, a consortium of 11 institutions including universities and public agencies, is committed to expanding the knowledge and use of remote sensing data and technologies through outreach programs. These programs are designed to facilitate the training of the existing and future high tech workforce of New Mexico. Our sponsored workshops and online tutorials are designed to educate and train a wide variety of users in remote sensing and geospatial concepts, data use, and applications of advanced technologies. In the 3 years since New Mexico view was established, we have successfully conducted educational training events to communities,

public agencies, and students throughout the state. New Mexico View mini-grant funds have allowed member institutions to develop educational materials and demonstrations on a range of geospatial concepts that support technology careers within the state.

New YorkView joined in our AmericaView consortium in 2009. New YorkView focuses on two major activities: 1) establishing strong research groups in diverse applications of remote sensing particularly focusing on urban landscape and terrestrial ecology, and 2) promoting the use of remote sensing in academia and user communities by facilitating education as well as access to remote sensing data and products. New YorkView also plans to provide education and training opportunities to non-professionals and K-12 students. These activities will provide great benefit to various levels of the remote sensing user communities by improving remote sensing infrastructure of the state and nurturing good quality remote sensing scientists of the future.

The objective for the **North Carolina View** consortium is to remove barriers between willing cooperating providers and users, to promote and expand the further development of applied remote sensing for local issues and problems, to cooperatively nurture the intellectual and technical capacity of users through higher education and outreach, and to engage with and educate the public about remote sensing through outreach and educational activities. North Carolina View's participation as a full member in the national AmericaView will enable remote sensing data users in North Carolina to 1) utilize a more efficient and effective means to locate, access, and retrieve existing and future remotely sensed data and applications statewide, 2) develop and enhance collaborative relationships of academic, federal, state, county, city, and public and private sector users, and 3) further the use of remote sensing in North Carolina to address critical issues the State faces, with emphasis on land use and land cover type change, and environmental and coastal resources.

The **North DakotaView** consortium continues to focus on work with geospatial technology educators at tribal colleges serving American Indian groups with land holdings in North Dakota. In 2008, for example, we received an NSF Advanced Technology Education grant to work with educators at Turtle Mountain Community College that will ramp up geospatial technology education at that school. We continue to work to raise awareness about remote sensing and geospatial technologies among the general citizenry of North Dakota through various outreach and training efforts. In 2008 we awarded four $500 scholarships to students using geospatial technologies in their research. Many of those students completed their work successfully and presented results at regional and/or national conferences (duly acknowledging their funding from AmericaView). North DakotaView purchased an ERDAS Imagine HEAK license that will be shared among consortium members involved in higher education. In Fall 2009, North DakotaView will co-sponsor the North Dakota GIS Users' Conference in Grand Forks. We have seen an increased demand in the state for people trained in geospatial technologies and spatial reasoning, and we are pleased that AV funding helps us to fill that need.

The goals of **PennsylvaniaView** are to 1) build partnerships within the Commonwealth to support interests in satellite remotely sensed data, 2) create resources for K-12 teachers to utilize in their classrooms to educate students about satellite imagery, 3) promote the sharing of data through connections with existing resources and acquisition of new data resources, 4) promote the annual Pennsylvania Workshop on Remote Sensing, and 5) work with undergraduate educators and institutions through the Commonwealth to enhance access to satellite data and encourage its use in their courses. The current economic situation has precluded many organizations from moving forward in their development and deployment of educational and training resources. The strong history of California University of Pennsylvania's role in such activities will allow CUP as the principal organization to provide leadership in this area. In addition, members of the PennsylvaniaView team have also led the way in developing and providing access to LIDAR data for Pennsylvania.

In Ohio, **OhioView** is contributing to economic development and redevelopment of the economy through remote sensing and geospatial technology. Ohio's manufacturing base has shrunk considerably and Ohio is one of the hardest hit states due to the recession. Training of workers, teachers and students is an important step in preparing workers for the new economy. In Ohio, OhioView is also contributing to detection of water contamination through algal bloom detection in drinking water supplies and farmland/urban analysis. OhioView is contributing to disaster preparedness from oil spills on Lake Erie to installation security.

The strength that has emerged from the **South Dakota View** program is its education, training and outreach activities. South DakotaView annually sponsors a Geospatial Technology for Educators workshop for K-12 teachers, hosted at the USGS Center for Earth Observation and Science (EROS). At this workshop, and at

other similar training and outreach events, educators learn how to incorporate remote sensing and related geospatial technologies into their classroom curriculum. South DakotaView's educational efforts also extend to the university classroom and to various user communities such as extension educators and agricultural producers. The extensive archive of remotely sensed imagery maintained by South DakotaView is utilized by a wide variety of users in South Dakota and beyond, including students, researchers, farmers and ranchers, and natural resource managers.

As a founding member of the AmericaView Consortium, TexasView has a long and well established record of leadership and accomplishment. TexasView is patterned after the OhioView model. It is a consortium of universities, federal, state and local entities, dedicated to promoting remote sensing through a comprehensive program of research, education and outreach activities. This mission is closely aligned with the mission of TexasView host institution, the Columbia Regional Geospatial Service Center System, housed at Stephen F. Austin State University. TexasView is the remote sensing arm of the Columbia Center System. TexasView now includes 14 university members as well as an assortment of state and local agency affiliates. TexasView provides a remote sensing voice for the strong GIS community in Texas. TexasView provides strong support for state, regional and local agencies through data buys, archiving and distribution services. An on-going program of education and outreach is helping prepare a new generation of technologically savvy leaders. Finally, TexasView supports research by providing seed grants to member institutions.

UtahView has developed Virtual Utah (http://earth.gis.usu.edu/utah/), which was designed so that the public could appreciate changes in the Utah landscape through multi-temporal digital aerial photography. The map server provides users with aerial imagery (photography) for most of the state from 1993/97, 2003, 2004 and 2006. In addition it provides an easy-to-use interface for other forms of satellite imagery for the state, such as MODIS and Landsat. The Intermountain Region Digital Image Archive Center (IRDIAC; http://earth.gis.usu.edu/) is a user-friendly website designed to assist research, land management and educational institutions with the development of tools and decision support systems for natural resource management using remote sensing. The archive also stores, processes, and disseminates, through the Internet, remotely sensed information to state and federal collaborators and the public within the Intermountain Region.

Although **VermontView** has not been funded yet our AmericaView consortium has been actively involved in insuring a return on investment on the high resolution imagery and LiDAR datasets that exist by 1) making them publically accessible and 2) generating usable products such as high resolution land cover. With funding we would really like to become more involved in disaster response. There is no agency in the state that has robust image exploitation capabilities. As a result imagery has not been used extensively for disaster response in the past.

VirginiaView's goals are to distribute Landsat and related geospatial data to a broad spectrum of users; cultivate the user community through informational programs, workshops, development of educational resources and Landsat-related products; and strengthen and enlarge the coalition of VirginiaView partners through sharing of goals, mutual support, and close communication. Current topics for Virginia include applications of geospatial data to (a) improve understanding environmental implications of the karst landscapes of the Shenandoah Valley and neighboring West Virginia, (b) work with the Virginia Department of Health to investigate relationships between landscapes and occurrence of Lyme Disease, and (c) develop applications of night-time imagery to improve safety and community planning. Current activities are focused on delivering materials that support educational activities in K-12 classrooms and Virginia's Community Colleges. These activities are designed to exploit developments that permit data streaming in precollege educational institutions and the capabilities of Enterprise GIS capabilities to greatly increase the availability of these resources to middle and high school educators, among others.

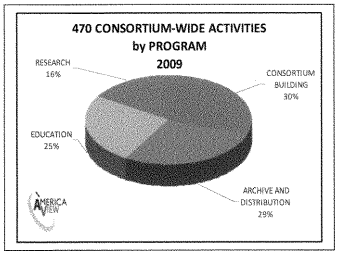
WashingtonView is the most recent affiliate member consortium of AmericaView. While a young program, WashingtonView has been active in developing educational materials for K-12 education and in linking remote sensing professionals and services throughout the state of Washington. We plan to provide quality materials to educators throughout the state by collaborating with school districts and educational non-profit groups. WashingtonView also functions as a networking community to connect researchers for the purpose of developing grants of all sizes related to regional remote sensing applications.

West Virginia View's emphasis has been on supporting and strengthening K-12 and higher education throughout the state. Over the past five years, working with five academic institutions and numerous K-12 science teachers, West Virginia View

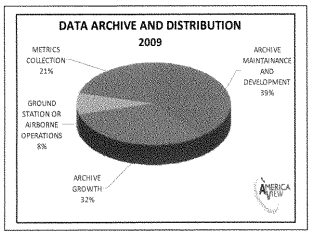
has supported the development of new college courses, leveraged lab resources and software licenses, supported dozens of graduate students in remote sensing, and trained over 100 K-12 science teachers in geospatial science and technology. We are currently developing a new two-course sequence at West Virginia University for pre-service science teachers, focusing on geospatial technology and Earth system science applications. Our emphasis on science and technology education is paying dividends in schools, colleges, and in the state's technology workforce.

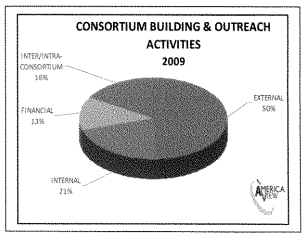
The overall vision of **WisconsinView** has been to build and grow a remote sensing community in Wisconsin. WisconsinView adds remote sensing imagery to our online archive on a daily basis with the near real-time MODIS acquisitions that we clip and process to conform to our standard state projection. WisconsinView continues to develop and distribute GIS/RS instructions for educators that can be used in curricula to teach at the K-12 level. We have developed "How-To" instructions to accompany MODIS imagery available through WisconsinView and companion websites. Three of WisconsinView's best success stories involve 1) technology transfer that has resulted in the operational use of remote sensing by our Wisconsin DNR, 2) facilitating growth in the applications of RS data by making remote sensing data and imagery available for free download, and 3) support of Wisconsin emergency management for the flooding of 2008 that demonstrated the value of AmericaView and WisconsinView and the application of remote sensing data.

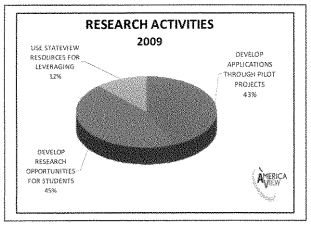
WyomingView promotes the use of remote sensing technology for mapping and monitoring Wyoming's wildlands, rangelands, croplands and water resources. WyomingView also collaborates with federal, state, and tribal (Wind River Environmental Quality Commission) government agencies, with participation from the University of Wyoming (UW) students, for incorporating satellite images for natural resource management issues. Every year UW students receive internships to work on Wyoming's natural resource monitoring and mapping issues that are of interest to federal and state government agencies. Since 2003, more than 15 UW undergraduate and graduate students have been trained in the use of satellite images for natural resource management issues. WyomingView continues to provide technical support to governmental agencies, private companies and UW students and faculty in the use of remote sensing technology.

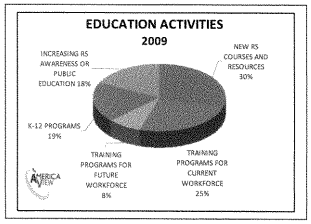


DISTRIBUTION OF EFFORTS WITHIN ACTIVITY CATEGORIES PROPOSED BY STATEVIEWS FOR FY2009 CONSORTIUM STATEMENTS OF WORK









Response to questions submitted for the record by Dr. Dodge on H.R. 2489

Questions from Chairman Jim Costa from the State of California

1. How much annual funding does a StateView typically receive?

Beginning with the AmericaView incorporation as a 501c3 non-profit in 2003, StateViews received $89,500 each for three years, as membership expanded from 10 to 18. As AV funded new members, funding dropped to $84,000, then to $51,000. For the last two years, as we have grown to fund over 30 StateViews, the funding levels have dropped to $24,000 and now to $23,000 for this funding year.

Also, please provide information on any contribution, including in-kind support, that the state or lead institution in your StateView Program provides.

While I was Director of GeorgiaView (until 1 year ago), my University allowed me to direct the 9-member consortium out of my office, rent free. Computer, phone, and all other utility services were also provided free, including free long distance and conference call services. Since I was still a University employee, I had access to state-provided health, dental, and retirement programs, instead of having to find those independently. I had access to the software and hardware needed for pilot applied research projects, for free. I had access to University laboratory facilities for offering workshops to State and private industry employees, rent free. The University also waived overhead charges on the grant by accepting the AV overhead limit of 15% (vs. standard rate of 48%); for several years, I asked for and got a complete waiver (0% overhead) because the funding rate had dropped to the point that I could not support StateView activities effectively. I believe that the overall value of these services and waivers is approximately equivalent to a 25% match.

2. Expanding AmericaView to additional states and activities would seem to require more funding. Have you considered soliciting non-federal sources of support for AmericaView? Why or why not?

We have considered seeking funding from private foundations that support science, technology, engineering and math education. As our funding levels have continually dropped, the actual existence of AmericaView has come into question over the past several years, and that has made it a bit difficult to argue for the sustainability of our organization as a future player in STEM education. We have turned that attitude around and are actively working now towards this goal of funding for our education activities. Since the rest of our work really involves helping a federal agency to meet its strategic plan goals in our states, private support for those activities is less likely.

Some StateViews assist the private sector with geospatial analysis and technology. Would it be possible for AmericaView to solicit support from private sector beneficiaries of the program, or create some form of public private partnership for AmericaView? Why or why not?

We have had, in several StateViews, partnerships that involve internships for students who perform pilot projects using geospatial technologies. This is an avenue that might be implemented very successfully with private industry. Both the students and the private sector host organizations would benefit. This can be pursued StateView-by-StateView, or among StateViews with similar applications needs (range management; forestry management, coastal zone management).

We do have partnership MOUs with private corporations that supply data and software that we use for teaching and for applied research. These relationships give us discounted prices for data, software, and training. All of these partnership activities with private industry better enable StateViews to perform their primary task, which is using our education, training, and outreach capabilities to support local, state, and federal agencies by transferring technology.

3. AmericaView has existed for about 10 years. Why does H.R. 2489 need to be passed by Congress for AmericaView to continue?

The USGS AmericaView Program has existed since 1998. The AmericaView academic consortium has existed, with focused funding, since 2003. Funding levels have dropped continuously, and are now 25% of what they were in 2003. The consortium has more than tripled in size during the same period.

The Authorization Bill will not only make us accountable to Congress in the appropriate way, but it will also ensure that a realistic analysis of the funding needs for the program described in the "AmericaView Geospatial Imagery Mapping Program Act" will be developed by Congress. Without the Authorization process, the levels of activity that can be achieved in each StateView Program have been re-

stricted and funding has dropped to unsustainable levels. Although the StateViews do a lot with very little, as shown by the remaining activities that are going on at current funding levels, meeting all of the needs for bringing federally-funded satellite data and technology to bear on state problems is not possible at current funding levels.

In my opinion, as a former StateView Director, the fact that passage of the Act has instigated an analysis is at multiple levels of what is meant by "such sums as are necessary to carry out this Act" is an important step in prioritizing what levels and ranges of activity are expected of the StateViews. Due to low levels of funding, StateViews have not been active in all of the areas listed in the Act. Funding at levels that allow StateViews to engage fully in 4 to 6 of the activities listed would ensure a very high impact in every State (requiring ~$15 - $25 million/year to be distributed among 50 states and territories). This is not to say that high levels of impact in some activity areas have not been achieved at lower levels of funding, just to say that wider impact in ongoing activities and expansion into new activities is possible as funding increases. Bringing funding back to levels to the ''original'' levels received by StateViews ($85,000/StateView/year) available during the first three of years of the program (requiring $5 million/year to be distributed among 50 states and territories) would result in high impacts in 2 to 3 areas. Passage of the Act will result in the cooperative clarification of expectations about activity levels, and enable StateView programs to meet them. Assessment strategies can be developed and implemented effectively, which will expand and sustain state-focused efforts in each StateView.

4. H.R. 2489 directs the Secretary of the Interior to cooperate with the AmericaView Project "to develop nationally consistent standards for geospatial imagery mapping in each state." However, the development of standards for mapping seems like the kind of activity that should involve more stakeholders than the Department of the Interior and AmericaView. Could you clarify the role you think would be appropriate for AmericaView in the development of standards for mapping? Would AmericaView's focus be more appropriately described as development of standards for the distribution of images, information, and technology, rather than for mapping?

It would be more appropriate for AmericaView's focus to be on helping to investigate existing standards and needs for the distribution of data, on advising during the formulation of new standards. It is also appropriate for AmericaView to focus mainly on promoting the new standards through various outreach, training, and education efforts. Finally, we believe that it is appropriate to limit this direction to apply to remotely sensed data, rather than mapping in general. We understand that this was raised as an issue by the USGS as well, and believe that it is being clarified in subsequent language.

5. This bill would expand AmericaView to all 50 states. Is that realistic? Why is it important for this program to be in all 50 states and territories?

The expansion of AmericaView to all 50 states is very realistic. Currently, 36 states are members of the AmericaView Consortium (we are only able to fund 33 states at this time) and our Executive Director is engaged in discussions with an additional four states regarding their potential membership. One significant drawback to recruiting new StateViews at this time is the limited funding available to support AmericaView activities.

A major focus of the AmericaView consortium has been helping to meet the goals of the USGS Strategic Plan, in each member state. Furthermore, we StateViews work synergistically, and are beginning to address multiple-state projects and issues that are not confined to state boundaries (drought, floods, fires, hurricanes). As a federally-supported effort to bring federal resources of imagery, applications and technology into the member states while at the same time developing new applications, it's important to include all the states (and territories, as per the definitions section of the Act). It's also true that with each state we add, we gain new expertise, teaching resources, and methodologies that can be disseminated among all the members.

6. How do you see AmericaView interacting with ongoing image-collection initiatives like Imagery for the Nation and USDA's NAIP aerial photography program? Please explain the differences between the Imagery for the Nation Initiative and the NAIP Program and the activities that will be authorized through H.R. 2489.

The primary distinction is that Imagery for the Nation and NAIP emphasize collection and archive of data at the national level while AmericaView emphasizes education, outreach, and application of that data at the state level. Collection and ar-

chive within AmericaView is limited to meeting specific local needs. The programs are, therefore, highly complementary.

The Imagery for the Nation initiative has great potential to bring about the kinds and levels of coverage that states need to solve many problems. AmericaView enthusiastically supports the goals of this initiative. We stand ready to ensure that the data delivery, applications development, training, outreach, and education infrastructure we have developed and are continuing to develop is available to support this initiative. Many StateViews already deliver NAIP imagery across their states through StateView websites. For example, WisconsinView's consortium member, USDA - Wisconsin Farm Service Agency, will be providing 1-meter statewide 2008 NAIP GeoTIFF imagery by the end of 2009. WisconsinView will put that data online in early 2010.

Just as with other federally-funded imagery, AmericaView is the bridge between the NAIP and IFTN imagery and the end user. We identify needs, educate and train the end user, and develop and demonstrate new applications of all kinds of imagery. Our function is complementary to these two programs, and in no way competitive.

Questions from Ranking Member Doug Lamborn from the State of Colorado

1. The National Cooperative Geologic Mapping Program has a state match funding requirement. Would you support a similar requirement for the America View Geospatial Imagery Mapping Program? Would you support a 25% federal/75% state share requirement? Would you support a 50/50 cost share requirement?

Effectively, the StateView host Universities, already make an in-kind match at the 25% level. While I was Director of GeorgiaView (until 1 year ago), my University allowed me to direct the 9-member consortium out of my office with no direct cost to GeorgiaView. Computer, phone, and all other utility services were paid for by the University, again at no cost to GeorgiaView, including no direct-cost long distance and conference call services. I had access to the software and hardware needed for pilot applied research projects, at no direct cost. I had access to University laboratory, computer, instrument, and audiovisual facilities for offering workshops to County, State Federal, and private industry employees. The University also waived overhead charges on the grant by accepting the AV overhead limit of 15% (vs. standard rate of 48%); for several years, I asked for and got a complete waiver (0% overhead) because the funding rate had dropped to the point that I could not support StateView activities effectively. I believe that the overall value of these services and waivers is approximately equivalent to a 25% match.

Often, when the lead institution gives grants to other member institutions, they require that the 15% overhead rate be adhered to by the institution receiving the grants (putting even more funds to applied rather than administrative use). StateViews actually husband our limited resources quite well, and I think it might be difficult to squeeze more match out of our already-budget-challenged institutions.

2. What other sources of funding do the States receive for this program? Do you receive grants from other federal agencies?

There is "a whole lotta leveraging" going on in each StateView, and in each StateView's member institutions. Training programs, scholarship programs, pilot projects, outreach events—all these and other efforts are pursued in cooperation with private industry, other funded groups such as NASA Space Grant, state and federal agencies needing pilot project, and users groups. This leveraging effectively extends our funding for specific applications and events. StateView Directors, where such a position still exists, are typically funded more than 50% by grant funds from non-AmericaView/USGS sources. Of course they have the attached responsibilities for that "outside" funding, diminishing their focus on AmericaView goals and activities.

3. Would you support a sunset provision in the authorizing legislation to allow Congress to review this program again in 10 years? 20 years?

We believe that it is appropriate for the program to be reviewed on a regular basis, although the annual review provided by the USGS as part of the competitive grant provision of the Act provides an excellent mechanism for federal oversight. In addition, we are reviewed annually by our peers from the other StateViews, prior to approval for another round of annual funding.

The needs in the states are going to change over time, and such reviews should be required. The Act actually authorizes AmericaView for 5 years, although with the time required to bring all states and territories into the program and fully operational suggests that the suggested 10-20 years might be more appropriate.

Questions from Congressman Gregorio Kilili Camacho Sablan from the Commonwealth of the Northern Mariana Islands

Is there going to be a "Territory View" or other program relevant to the Commonwealth of the Northern Mariana Islands?

Yes, this should be the case. The predicted changes in coastal management issues could impact our Territories profoundly; it's not just lower 48, Hawaii, and Alaska coastlines undergoing retreat. Coastal wetlands, mangroves, coral reefs, salt marshes, and estuaries—these are all national resources that must be monitored and protected across the entire nation. Citizens in the Territories need education, training, and applied research efforts in order to accomplish these goals.

The term State, as defined in the Act, includes:

(A) each of the several States of the United States;
(B) the District of Columbia;
(C) the Commonwealth of Puerto Rico;
(D) Guam;
(E) American Samoa;
(F) the Commonwealth of the Northern Mariana Islands; and
(G) the United States Virgin Islands.

I assume that applies to the "State" in "StateView".

AmericaView is one key USGS effort that engages stakeholders through

1. **outreach**
2. **education**
3. **applied research**
4. **data distribution**

USGS strategic plan goals that AmericaView addresses in each state:

1. Understanding ecosystems and predicting ecosystem change
2. Climate variability and change
3. National hazards, risk, and resilience assessment
4. The role of the environment in wildlife and human health
5. A water census of the U.S.—quantifying, forecasting, and securing freshwater for America's future
6. "New methods of Investigation and discovery"
    1. Planning for long-term data management and dissemination into multidisciplinary science practices
    2. Developing a sustainable data-hosting infrastructure to support retention, archiving, and dissemination of valuable USGS data sets in accordance with open standards
    3. Identifying and leveraging national and international efforts to promote comprehensive data information management and foster sharing of knowledge and expertise
    4. Enhancing workforce expertise in evolving technologies
    5. Identifying and establishing external partnerships with scientists and technologists
    6. Developing "communities of practice" that share resources and actively seek to deploy evolving technologies
    7. Accelerating the introduction and piloting of new technologies

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Mr. COSTA. Thank you. You were within the time allotted, so you get extra points. We will look forward to the questions.

Ms. Mary O'Neill, Principal Investigator for South Dakota View, Manager for the Office of Remote Sensing at South Dakota State University. This is now your third introduction, so we are looking forward to your testimony.

STATEMENT OF MARY O'NEILL, SOUTH DAKOTA VIEW DIRECTOR AND MANAGER, OFFICE OF REMOTE SENSING, SOUTH DAKOTA STATE UNIVERSITY

Ms. O'NEILL. Thank you and good morning.

Mr. COSTA. Good morning. It is almost afternoon now.

Ms. O'NEILL. It is. Thank you, Chairman Costa and Ranking Member Lamborn, for inviting me here today to testify, and thanks

also to my South Dakota Congresswoman, Stephanie Herseth Sandlin, for her introduction this morning and for her longstanding support of the AmericaView program and her sponsorship of the AmericaView legislation that is our focus here today.

AmericaView is a program that is a model of the way our country should be utilizing its investment 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.

Like 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, economically and 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. 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 can share ideas, experiences and data that benefit one another.

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.

Each of the 36 current AmericaView states engages in education and outreach activities. The pie chart that you see on the screen shows the various categories of educational activities proposed by AmericaView member states for the coming year. The list of past, current and proposed educational activities in the AmericaView member states is long and diverse and includes:

Collaboratively developing an on-line remote sensing tutorial, offering workshops such as the Hurricane Season Imagery Workshop in Louisiana, demonstrating to state and Federal agency personnel the use of an unmanned airborne system for rangeland assessments, providing geospatial training to the Texas National Guard and State Guard, training tribal government personnel from the Wind River Indian Reservation, providing a hands-on geospatial activity for students participating in a 4-H camp and offering summer training for K-12 students and teachers.

AmericaView's education services are provided to several different groups of current and future users of geospatial technologies. K-12 teachers comprise one of these groups. Training the next generation of scientists and citizens is one of the awesome tasks required of K-12 teachers. It is imperative, therefore, that the teachers themselves are adequately prepared.

Another user group we work with is students. We are often invited into K-12 classrooms to make presentations and do hands-on activities such as GPS treasure hunts or geocaching, and we also work with students in organizations such as 4-H and the Boy Scouts. We of course also work with postsecondary students in community colleges, tribal colleges and our universities.

The current workforce is another group that is served by AmericaView. This group includes farmers, ranchers, state and Federal agency personnel, school district administrators, local and tribal government officials, disaster response teams, natural resource managers, military personnel and extension educators.

Passage of H.R. 2489 will make it possible to enhance the quantity and quality of our AmericaView education efforts, including extending the AmericaView program to all 50 states and territories, expanding the number of courses taught in universities and colleges, providing additional geospatial tools for educators, allowing greater access to imagery and building training partnerships with all levels of government.

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 national security—we know that the role of geospatial technology will become more important.

AmericaView is proud of the role it has played thus far in training the current and future workforce. We look forward to Congress' continued and expanded support of our country's critical geospatial education needs.

Thank you, Mr. Chairman, for this opportunity to testify today.

[The prepared statement of Ms. O'Neill follows:]

Statement of Mary O'Neill, Principal Investigator, South Dakota View, and Manager, Office of Remote Sensing, South Dakota State University

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 U.S. 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 U.S. 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.

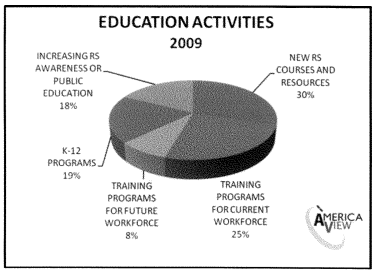


Figure 1. Proposed educational activities of AmericaView member states for 2009

[NOTE: Figures 2 and 3 (photographs) have been retained in the Committee's official files.]

Response to questions submitted for the record by Mary O'Neill

Questions from Chairman Jim Costa from the State of California

1. How much annual funding does a StateView typically receive? Also, please provide information on any contribution, including in-kind support, that the state or lead institution in your StateView Program provides.

Since FY03 every StateView has received an equal amount of funding. The amounts are:

FY03-FY05 — $89,500
FY06 — $84,000
FY07 — $51,000
FY08 — $23,989
FY09 — $23,100 (anticipated amount)

South Dakota State University (SDSU), the lead institution for SouthDakotaView (SDView), provides office space, telephone, computer hardware and software, utilities, and all of the other services normally included in a university's indirect cost structure. Since FY06, SDSU has allowed a reduced indirect cost rate of 15% for SDView. Because SDSU would normally charge an indirect rate of 44.5%, it is, in essence, making an in-kind contribution of 29.5% of our SDView direct costs. Previous to FY06 when funding levels were much higher than they are now, SDSU allowed an indirect cost rate of 25%.

Although the level of StateView funding has decreased dramatically in the past few years, many StateViews have tried hard to maintain the level of services provided in previous years. This has necessitated innovative types of leveraging and other means of unofficial in-kind support. Although this may be effective for the short term, it is not sustainable and, for many StateViews, is not possible.

2. Expanding AmericaView to additional states and activities would seem to require more funding. Have you considered soliciting non-federal sources of support for AmericaView? Why or why not? Some StateViews assist the private sector with geospatial analysis and technology. Would it be possible for AmericaView to solicit support from private sector beneficiaries of the program, or create some form of public private partnership for AmericaView? Why or why not?

AmericaView will indeed require more funding to expand the number of StateViews and their activities. We have considered soliciting non-federal sources of support for AmericaView, including state and local governments, foundations, and private industry. Currently, state and local government agencies are not in a position to fund AmericaView activities and, in fact, are often the recipients of AmericaView services. Our mission is to show them how they can use our country's huge investment in remotely sensed imagery to do their jobs more cost-effectively and efficiently, with a hoped-for result of more demand for the imagery and perhaps the creation of value-added industries that will contribute to economic development.

AmericaView already has agreements in place with some private-sector vendors. These agreements make it possible for StateView consortium members to purchase imagery and software at reduced prices for education and applied research purposes. As with the federal government, the ultimate goal of these vendors is to cultivate more users of remote sensing data and associated technologies. Since AmericaView is, in a sense, creating customers for the private sector, we may be able in the future to create a public-private partnership that could partially fund AmericaView activities. However, my belief is that this possibility is many years down the road and contingent upon continued and enhanced federal funding to create a critical mass of customers.

3. AmericaView has existed for about 10 years. Why does H.R. 2489 need to be passed by Congress for AmericaView to continue?

As evidenced by the hundreds of highly leveraged cooperative projects that AmericaView undertakes each year and the testimonials regarding those projects in our annual reports to USGS, AmericaView is providing a valuable and unique service to many individuals and groups. Passage of H.R. 2489 will provide congressional recognition of what AmericaView has accomplished and its potential for continued and enhanced services. An AmericaView program that has been authorized by Congress will create greater awareness of the program, give it more visibility and legitimacy, and make it more accountable. It will hopefully also be the impetus for increased funding that will allow the program to grow to include all 50 states and territories and increase the services provided by each StateView.

4. H.R. 2489 directs the Secretary of the Interior to cooperate with the AmericaView Project "to develop nationally consistent standards for geospatial imagery mapping in each state." However, the development of standards for mapping seems like the kind of activity that should involve more stakeholders than the Department of the Interior and AmericaView. Could you clarify the role you think would be appropriate for AmericaView in the development of standards for mapping? Would AmericaView's focus be more appropriately described as development of standards for the distribution of images, information, and technology, rather than for mapping?

Developing mapping standards is not an appropriate role for AmericaView. Entities such as the National Spatial Data Infrastructure, the Federal Geographic Data Committee and the USGS National Geospatial Programs Office have developed national mapping standards and are charged with updating them as necessary. A more appropriate role for AmericaView is to be cognizant of the mapping standards and to make sure that state and local agencies and other "clients" with whom we work are in compliance with the standards. As you suggest, it would also be appropriate for AmericaView to be involved in the development of standards for the distribution of remotely sensed imagery, information and technology.

5. This bill would expand AmericaView to all 50 states. Is that realistic? Why is it important for this program to be in all 50 states and territories?

It would seem unfair to deny any of the states or territories the benefits that result from an AmericaView presence in their state or territory. AmericaView is described as a program that is nationally coordinated and locally controlled. This means that even though there are common requirements among the StateViews, each has the flexibility to adapt its program to meet the needs within its state. Na-

tional coordination also means that synergy exists among the states, enabling the sharing of resources and ideas that result in savings of time, effort and money. As more states and territories are added, the knowledge base increases, more "customers" are created, and the utilization of remotely sensed products is expanded. All of our states and territories deserve a StateView that can work with them in utilizing remotely sensed imagery for purposes such as better natural resource management and inventory, increased levels of precision agriculture, a greater understanding of climate change, and more effective response to natural disasters.

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—in all 50 states and territories.

6. How do you see AmericaView interacting with ongoing image-collection initiatives like Imagery for the Nation and USDA's NAIP aerial photography program? Please explain the differences between the Imagery for the Nation Initiative and the NAIP Program and the activities that will be authorized through H.R. 2489.

Imagery for the Nation (IFTN) and NAIP are programs that acquire aerial photography and make it available for distribution and utilization. AmericaView is a program that creates awareness (and supports the use) of the imagery available from IFTN, NAIP, and several other government and private industry sources. AmericaView strives to connect imagery and users through education, outreach, and applications. Because each StateView is university-based, the AmericaView community is well-connected to remote sensing research and researchers. It is the mission of AmericaView to transfer the results of this applied research to the user community, including K-12 and university students who are our next generation of citizens, scientists and data consumers.

Questions from Ranking Member Doug Lamborn from the State of Colorado

1. The National Cooperative Geologic Mapping Program has a state match funding requirement. Would you support a similar requirement for the America View Geospatial Imagery Mapping Program? Would you support a 25% federal/75% state share requirement? Would you support a 50/50 cost share requirement?

With the current downturn in state and university economies, it would be extremely difficult to cost share at either a 25/75 or 50/50 level. However, StateView host universities are already providing a form of cost sharing by agreeing to an indirect cost rate of 15%. South Dakota State University, for example, would normally charge an indirect rate of 44.5%. It is, in essence, making an in-kind contribution of 29.5% of our SDView direct costs.

2. What other sources of funding do the States receive for this program? Do you receive grants from other federal agencies?

In general, the StateView programs do not receive any other direct sources of funding for their AmericaView activities. In order to provide an adequate level of service, most StateViews do, however, highly leverage other programs that allow them to share resources, create travel efficiencies, and maximize their exposure to the user community. As noted in question 1 above, host universities also in essence provide funding by accepting an indirect cost rate of 15%.

3. Would you support a sunset provision in the authorizing legislation to allow Congress to review this program again in 10 years? 20 years?

I would support a sunset provision in H.R. 2489 because of the potential for change in remote sensing technology, its applications, and user needs and because of the accountability that is necessary for any program such as this. The education and outreach needs in the user community will likely still exist far into the future, but the types of remotely sensed data, delivery methods, and processing techniques will change. Reviewing the program in 15 to 20 years seems to be appropriate given the fact that only 36 states are currently within the AmericaView program and many of them are in the initial stages of their StateView development. This period of time would be sufficient for all 50 states and territories to come on board and develop a mature program.

Mr. COSTA. Thank you, and I know why your Congresswoman is so high on the good work you are doing. Clearly it has made a difference in South Dakota.

Ms. O'NEILL. Thank you.

Mr. COSTA. We appreciate your testimony.

Our last witness on this panel, but certainly not the least, is Dr. Sam Batzli. We look forward to hearing your testimony. Dr. Batzli is the Geospatial Information Scientist at the Space Science & Engineering Center of the University of Wisconsin-Madison. Did I get that right? That is a mouthful.

Dr. BATZLI. Yes, that is right. Thank you.

Mr. COSTA. OK. Five minutes. You are on.

STATEMENT OF SAM BATZLI, WISCONSINVIEW DIRECTOR, SPACE SCIENCE & ENGINEERING CENTER, UNIVERSITY OF WISCONSIN—MADISON

Dr. BATZLI. Good morning. My name is Sam Batzli. I am a scientist at the University of Wisconsin-Madison, Director of WisconsinView and a member of the AmericaView board of directors. I would like to thank Chairman Costa and Ranking Member Lamborn for inviting me to testify today.

Why does AmericaView matter? Two main reasons. First, AmericaView bridges a gap. To a significant extent, satellite imagery is available to the public from Federal agencies like USGS, but satellite imagery is not plug-and-play. Experts in universities, governmental agencies and the private sector require sophisticated software and processing techniques to extract information for end users.

What has been missing is the infrastructure to implement that knowledge at a local level where it can be used on a daily basis to improve the lives of people, and that is where AmericaView comes in. AmericaView has become that infrastructure and bridges that gap.

Second, AmericaView helps deliver a greater return on the billions of dollars already invested in our Federal earth observation systems, data warehouses and university science. It extends the reach of USGS and other agencies.

Let us look at AmericaView's support for disaster response and recovery. As you can see here, satellite imagery and air photos provide what no other technology can. With just a glance, managers can see what they are dealing with.

Here are some examples. In June of 2008, all of southern Wisconsin experienced severe flooding. As the crisis developed, Chris Diller of the Wisconsin Department of Military Affairs—and Chris is here with us today as a guest—requested the USGS activate the international charter, an agreement with foreign nations to share satellite imagery at times of emergency.

The charter is especially important for floods and hurricanes because the U.S. does not have a civilian satellite system that can see through clouds and measure the extent of flooding below as radar systems can.

Within a day, radar imagery of the flooding became available from the Canadian space agency. Tapping into the expertise of WisconsinView and AmericaView, the Wisconsin DMA had the map

it needed within 48 hours. Attachment 2 of my written material includes a statement by Chris.

LouisianaView supported Katrina relief with rapid deployment of a website to access air photography, among other support activities. TexasView processed international charter imagery for mapping Hurricanes Dolly, Gustav and, here, Ike. AlaskaView supports firefighters every summer with daily satellite imagery processed to detect hot spots. KansasView mapped the aftermath of the Greensburg tornado. WisconsinView mapped the aftermath of the Stoughton tornado.

Let us look more closely at why AmericaView works. I think there are three main reasons. First, the equality-based funding philosophy promotes cooperation. We are colleagues, not competitors. There is a rich exchange of ideas at our twice annual meetings and through working group teleconferences, and there is significant sharing of data and educational materials among StateViews. I would be happy to provide examples in questions if there is time.

Second, we fulfill a need. AmericaView extends the reach of the USGS, bridging the gap between Federal and local, removing educational and technical barriers and leveraging our StateView networks.

Third, each state has the flexibility within AmericaView to adapt its programs to the unique needs of its state.

These are the three things that have brought success to AmericaView, but AmericaView is in a sense becoming a victim of its own success. As states join, we are slicing our budget pie into smaller and smaller wedges. Over the past three years, our per state allocation has diminished to critical levels.

H.R. 2489 and this hearing today gives me hope because I see that the importance of our contributions is now being recognized and understood by those who can help shape our future.

I have hope that we will be able to continue to inspire awe for science and technology in our young students, to prepare college students and the current workforce to assist our country with the geospatial challenges it faces and to make our government work better by paving that final mile between our Federal remote sensing investments and our classrooms and worksites all across America.

In the end, AmericaView is about connecting remote sensing science and technology with American citizens for the greater good, and that is why H.R. 2489 is important.

Thank you again, Mr. Chairman, for the opportunity to share my views on AmericaView, H.R. 2489. I am happy to answer questions that the Committee may have.

[The prepared statement of Dr. Batzli follows:]

Statement of Dr. Sam Batzli, Director, WisconsinView, Space Science & Engineering Center, University of Wisconsin—Madison

Good morning. My name is Sam Batzli and I am a staff scientist at the Space Science & Engineering Center at the University of Wisconsin-Madison, director of WisconsinView, and a second-term member of the AmericaView board of directors. I would like to thank Chairman Costa and the committee members for giving me the opportunity to testify on behalf of the AmericaView consortium concerning H.R. 2489, the AmericaView Geospatial Imagery Mapping Program Act. I would also like to thank Wisconsin Representatives Ron Kind, and Gwen Moore for their support and encouragement of WisconsinView and AmericaView and especially my

own Representative Tammy Baldwin for her long-standing and consistent support of our efforts.

This morning I would like to offer my perspective on the importance, uniqueness, and value of AmericaView with examples from Wisconsin and my fellow StateView partners. I will touch on three topics 1) support for disaster response and recovery; 2) cooperation among StateViews; and 3) AmericaView's connection to end-users.

Support for Disaster Response and Recovery

The State members of AmericaView (StateViews) provide each state with a network of expertise both within each state and nationally to enable timely response to urgent needs.

Let me start with the story of the June 2008 floods in Wisconsin. On June 5th 2008 a severe weather pattern evolved over the Midwest. For the next 10 days much of the Midwest including all of southern Wisconsin witnessed an unprecedented rain event. Melt-off of the record 100-inches of snow from the previous winter had already saturated the soil. During those 10 days in June, areas saw upwards of 17-inches of rain, and every river system in southern Wisconsin was flooded. Many areas of Wisconsin experienced a 500 year flood event. Thirty counties were initially declared a "state of emergency" by Governor Doyle and as the situation escalated, 31 of our 72 counties received federal disaster declarations.

As the crises developed, Mr. Chris Diller of the Wisconsin Department of Military Affairs (DMA) requested the U.S. Geological Survey (USGS) activate the International Charter. The International Charter is "An International agreement among Space Agencies to support...relief efforts in the event of emergencies caused by major disasters." These satellite resources are provided at no cost to countries requesting help. A second related program is provided by the U.S. Air Force known as "Eagle Vision." This program allows U.S. States and Territories to access even more satellite resources that are not covered under the International Charter. Both programs are coordinated by the USGS and made available to states and territories at no cost greatly enhancing access to remote sensing imagery.

Over the past few years, satellite and airborne remote sensing imagery has become a very important part of Wisconsin's disaster response and recovery activities. Remote sensing provides what no other technology can. When merged with mapping technologies, it provides emergency managers improved situational awareness, the ability to see on a map the areas that are affected, and a fuller understanding of the scope and scale of a disaster. With just a glance, managers can see what they are dealing with (Attachment A).

But remote sensing imagery is not plug-n-play. Experts require sophisticated software and processing techniques to extract useful and accurate information relevant to an end-user's needs. And that is where AmericaView comes in.

Once the International Charter was activated, radar imagery of the flooding became available from the Canadian Space Agency. Mr. Diller called me at WisconsinView for help with the processing. However, I work with optical sensors rather than radar sensors and so I tapped into the AmericaView network and coordinated the processing with radar expert Dr. Jon Chipman at NewHampshireView. Within 48 hours of the Charter activation, Mr. Diller and Wisconsin DMA had the map it needed. I am including a statement from Mr. Diller regarding this flood event and remote sensing support form WisconsinView/AmericaView (Attachment B).

Use of the International Charter in 2008 was new to Wisconsin, but WisconsinView had experience mapping tornado paths with satellite imagery in support of emergency management including mapping of the August 18, 2005 Stoughton tornado (Attachment C). Fellow stateviews in hurricane-prone areas such as TexasView and LouisianaView have been forced to utilize the International Charter more frequently and are at the center of emergency management activities in their states. In fact, a mere 10 days after the Stoughton Tornado, a disaster of larger proportions was imminent.

LouisianaView found itself on the front lines of the Katrina response in 2005. Facing catastrophic infrastructure failures along the coast and in New Orleans, LouisianaView tapped into its network of resources to deliver hard copy air photo maps of New Orleans during recovery operations. Rapid deployment of a website for access to the LouisianaView archive of air photography taken both before and after the disaster proved invaluable for response and recovery operations (Attachment D).

TexasView responded to multiple tropical events in quick succession during the summer of 2008: Hurricane Dolly, Tropical Storm Edouard, Hurricane Gustav, and Hurricane Ike. The University of Texas at Austin Center for Space Research (CSR), a member of the TexasView university consortium, provided geospatial support to the Texas Governor's Division of Emergency Management (GDEM) during all four

activations of the State Operations Center and Emergency Management Council. The International Charter was invoked by CSR during the three major hurricane events that impacted the Texas and Louisiana Gulf Coast (Attachment E).

AlaskaView supports emergency responders include wildfire fighters who use daily satellite imagery for tracking smoke and hot spots that would otherwise be impossible to locate. This ongoing service allows wildfire managers to make informed decisions for directing resources within the vast territory of Alaska (Attachment F).

KansasView has supported emergency response and preparedness activities for a variety of natural disasters and training exercises. Utilizing an aerial imaging system, KansasView was able provide emergency managers with a complete map of the aftermath of the May 2007 Greensburg tornado. KansasView staff also serve as the state project manager for the International Charter- Space and Major Disasters, and work closely with the USGS disaster response coordinator, the USGS geospatial liaison for the state, the Kansas Division of Emergency Management, and other others in all phases of disaster preparedness and response (Attachment G).

Cooperation Among StateViews

AmericaView provides the necessary infrastructure for cooperation within the remote sensing community of expertise.

Within AmericaView, we learn from each other. We are colleagues not competitors. AmericaView funding is distributed equally to all qualified StateViews. This promotes the sharing of technical expertise, curriculum materials, and lessons learned. We exchange ideas at our twice-annual meetings and through our working groups' monthly teleconferences.

Some notable examples of cooperation and sharing include:

- WisconsinView has experience mapping tornado swaths with satellite imagery. These techniques have been shared with other tornado-prone states such as KansasView.
- After the 2008 floods in Wisconsin, KansasView offered to process post event data from WisconsinView with a special flood modeling program they had developed for KansasView. The results will help Wisconsin in planning for future flood events.
- AlaskaView and WisconsinView develop leading-edge web-mapping technology (using GoogleEarth and GoogleMaps) to display their imagery for end-users. They have generously shared their technical expertise to great advantage within the consortium and with USGS.
- MississippiView hosts the AmericaView online user forum for StateView interaction and communication.
- MichiganView hosts the AmericaView wiki online collaboration tool.
- WyomingView and MontanaView have hosted and managed the AmericaView website.
- GeorgiaView hosts the online reporting tool for AmericaView states.
- IowaView, GeorgiaView, and CaliforniaView have developed online introductory remote sensing courses that are shared throughout the AmericaView consortium.
- IndianaView and WisconsinView have access to in-house satellite imagery receiving stations. Both programs provide daily imagery to all of the 36 AmericaView states in user-friendly formats that are not available anywhere else.
- TexasView, LouisianaView, AlaskaView, KansasView and WisconsinView have shared their experience and lesson's learned in coordinating remote sensing contributions to emergency management with each other and beyond at special sessions of national conferences (such as the 2008 Pecora conference in Denver, Colorado).

Reaching End Users

AmericaView connects the network of remote sensing expertise in each member state to the citizens of the state to meet end user needs.

The final theme I would like to touch on is the reach of remote sensing to end-users and the role of AmericaView. To a significant extent, remote sensing imagery is available to the public from federal agencies like USGS. The knowledge on how to use that imagery resides with the experts in the universities, governmental agencies, and the private sector. What has been missing is the infrastructure to implement that knowledge at a local level where it can be used on a daily basis to improve the lives of people. That is, perhaps, the primary value of AmericaView: to bridge that gap, to be the conduit, to simplify the process by removing technical barriers and taking advantage of our intrastate networks and internal state consortia.

This is especially valuable with regard to emergency management where local knowledge is crucial.

The federal air photos and satellite images archived and provided to the public without charge through low barrier internet access by the StateViews are used across the state for a variety of purposes. Uses include, but are not limited to, agricultural field management, construction site evaluation, environmental management, drinking water intake management, recreation planning, transportation planning, private consulting, and natural resource management.

The imagery is widely popular. At WisconsinView I have established a login system that records users and downloads. Our total number of registered users topped 8,000 earlier this year. The total volume of downloaded imagery in Wisconsin through July of 2009 alone is a staggering 5.19TB (the equivalent of nearly 7,800 CDs). Back in February I asked the most frequent of these users for feed back and received over 30 testimonials and letters of support. Here are some examples.

Agro-Industry
2/27/2009
I use the WisconsinView to download imagery which I then use to assist in making maps for Code 590 Nutrient Management Plans as well as CNMP's. The imagery is saved and loaded into our GIS program. (Farmworks Sitepro) We then can layer the field boundaries and other mapped objects on the imagery. This greatly enhances our field maps as well as maps we make to show restricted areas and other areas. Other imagery is available, but it is in black and white, and most of all, very outdated, not showing some land features that have changed.
Mike Plucinski
MP Services
Ostby MBA Inc.
KOW Consulting Association

Natural Resource Management
3/1/2009
[WisconsinView] is a great source for aerial photography which is needed for map making duties (management plans, demonstrations, surveying, etc). "[It] always has worked perfectly and allows great access. Don't know what I'll do if it is removed.
Wade Oehmichen
Wildlife Biologist
Wisconsin Department of Natural Resources

Utility Infrastructure
3/2/2009
Access to WisconsinView digital resources has improved our efficiency and greatly reduced our costs in terms of both dollars and time. Our reviews are conducted more rapidly and at a lower cost while maintaining a high level of accuracy. Continued support for AmericaView and WisconsinView will be important in the coming years as efforts to upgrade our nation's transmission system move forward.
William Fannucchi
Public Service Commission—Wisconsin

K-12 Education
3/2/2009
I am a teacher and director of a school that uses GIS throughout the curriculum. We regularly visit your site for GIS data and download coverage for student use. "Your site is easy to access, user friendly and very important to the GIS community in Wisconsin. "This type of site has allowed our students to work on projects that help build 21st century skills and an awareness of our state that is unparalleled by other opportunities.

Paul Tweed
Wildands School
Augusta School District
Augusta, WI 54722

Summary

Why AmericaView Works:

I became involved with AmericaView in 2004 and have served on the board of directors since 2006. Right away I discovered that there was something different going on here, that the collegial spirit and optimism of this organization goes beyond business as usual in government or academia. I think there are two reasons for this: 1) the equality-based funding philosophy promotes cooperation, and 2) AmericaView

is an education and service-based endeavor that attracts like-minded people who want to share technology and knowledge for the benefit of others.

We take great pride in our work because we see the tangible benefits. We are on the front lines of workforce development, at the earliest stages, when at our outreach events we see our young students, inspired and awed by the magic of science and technology. We are there giving the lectures and workshops for undergraduates and graduate students, helping as they develop skills for the geospatial information technology job sector. We are there running the professional workshops and conferences where early- and mid-career professionals incorporate new techniques and technologies that enable their companies or agencies to improve and optimize their access and use of the rich and indispensable remote sensing imagery resources provided by USGS (as well as NASA, USDA and other federal agencies). And we are there, fostering cooperation among state and federal agencies within our states, making government more efficient and responsive to the people it serves.

To reiterate what my colleagues have already said this morning, AmericaView is built on the knowledge that there are remote sensing needs best understood and addressed at the national level, while other aspects are best addressed at the state level. Operating satellites and maintaining centralized national and global data archives are critical national priorities well handled by USGS. Education, emergency response, and support of local natural resource managers, for example, are more state and local issues that are not well handled by a centralized effort, but that require local knowledge and adaptation. AmericaView is the only organization established to do this throughout the country. This is how AmericaView effectively extends the reach of the Department of the Interior and the USGS.

It is a well-known paradox that the process of making things easy and simple can be very hard and complex. But we are good at that; AmericaView is a university-based consortium, experts in technology but also education-based, working in cooperation with governmental agencies and private sector members of our state consortia. And by removing technical and financial barriers, AmericaView extends the value of federal remote sensing investments, reaches across the final mile to the end-users. We are coordinated nationally and implemented locally. And the flexibility each StateView has to adapt to the needs of its locale is the key to our success.

But AmericaView is in a sense becoming a victim of its own success. As we have grown in the number of member states, with the goal of ultimately including the full 50 states and six territories, we are slicing our budget pie into thinner and thinner wedges. Over the past three years our per-state allocation has diminished to critical levels.

H.R. 2489 and this hearing today gives me hope because I see that the importance of our contributions are now being recognized and understood by those who can help shape our future. I have hope that we will be able to continue inspiring awe for science and technology in our young students, preparing our college students and current workforce to assist our country with the geospatial challenges it faces, and making our government work better by "paving" that final mile between our federal remote sensing investments and our classrooms and worksites all across America. In the end, AmericaView is about connecting remote sensing science and technology with American citizens for the greater good (Attachment H).

Thank you again for the opportunity to share my views on AmericaView and H.R. 2489. I am happy to answer any questions the Committee may have.

[A letter submitted for the record by Dr. Batzli from the State of Wisconsin Department of Military Affairs to Chairman Jim Costa follows:]

State of Wisconsin / DEPARTMENT OF MILITARY AFFAIRS

P.O. BOX 14587
MADISON 53714-0587

TELEPHONE (608) 242-3000
DSN 724-3000

OFFICE OF THE ADJUTANT GENERAL

Date: 17 July 2009

Chairman Jim Costa
Subcommittee on Energy and Mineral Resources Committee on Natural Resources
US House of Representatives
1324 Longworth House Office Building
Washington D.C. 20515

Subject: Support for the AmericaView Geospatial Imagery Mapping Program Act

Dear Representative Costa:

Hello, my name is Chris Diller. I am the Geospatial Coordinator for the Wisconsin Department of Military Affairs (DMA). I am writing to express my support for House Resolution 2489: The AmericaView Geospatial Imagery Mapping Program Act.

The Department of Military Affairs is home to the Wisconsin National Guard and Wisconsin Emergency Management. The primary state mission of the Department of Military Affairs is to help civil authorities protect life and property and preserve peace, order, and public safety in times of natural or human-caused emergencies. My job is to oversee and coordinate the department's mapping activities.

Over the past six years my agency's computerized mapping capabilities, more commonly known as a Geographic Information System or GIS, have evolved to a point where the State Emergency Operations Center and the Wisconsin National Guard's Joint Operation Center not only create and use maps, but depend on them to make effective and efficient decisions. For example, knowing the best location to safely insert a disaster strike team into an affected area is critical. Maps can show access points, critical infrastructure locations such as dams, and tell us who should be evacuated in case there is a breach in that dam.

Our GIS capabilities continue to evolve, and remote sensing has become a very important part of Wisconsin's response and recovery activities. Remote sensing provides what no other technology can provide. It provides emergency managers improved situational awareness, the ability to see affected areas on a map, and gain a full understanding of the gravity of a situation. It gives everyone geographic context during a disaster.

The relationship between DMA and the WisconsinView program began in 2005 when Dr. Sam Batzli (Executive Director of WisconsinView) and I worked on ways to support emergency operations with remote sensing. In August of 2005, our theories were put to the test when Stoughton, Wisconsin was hit by a F3 tornado.

With the assistance of Dr. Batzli and his students, we investigated ways in which we could identify not only the tornado path, but the extent of the damage. With the assistance of the USGS and NASA we were able to access additional satellite resources. Through the combination of the WisconsinView staff expertise, and access to new satellite resources Dr. Batzli was able to provide an after action analysis of the damage extent. Without the WisconsinView program in place, it's likely we would not have been able to generate this valuable product.

Two years later, in 2007, Wisconsin was inundated by floodwaters that resulted in 14 counties being declared a federal disaster area. Again I called on the WisconsinView program to help provide analysis assistance. With the use of Landsat and MODIS satellites we were able to provide detailed maps of the affected areas in Southern Wisconsin. We learned a great deal with how remote sensing can apply to a flood disaster. Little did I know how valuable that experience would become starting in June of 2008.

On June 5th 2008 a severe and lengthy weather pattern evolved over the Midwest. For the next ten days much of the Midwest, including all of southern Wisconsin, witnessed a 500 year flood event. Some areas saw upwards of 17 inches of rain, and every river system in southern Wisconsin was flooded. Many rivers set records for high water marks. Some records that were set in the floods of 2007 were broken again in 2008.

I again called on Dr. Batzli and the WisconsinView program to provide support. This time Dr. Batzli and I had two previous experiences to draw from, and we now had access to a wider range of satellite resources made available to us through two programs provided to states by the USGS Disaster Response Team based in Sioux Falls, SD.

It's important to note the significance of these two programs and why the AmericaView program is an important partner. The International Charter is "An International agreement among Space Agencies to support.....relief efforts in the event of emergencies caused by major disasters." These satellite resources are provided at no cost to countries requesting help. The Eagle Vision program is a domestic program operated by the Air Force National Guard that allows states to access even more satellite resources during emergencies that are not covered under the International Charter. While the USGS provides excellent access to raw satellite data, they do not have the capacity to offer remote sensing expertise.

As the flood waters began to rise we knew there was a need to fully understand the extent of the flooding. What does the landscape look like when 17 inches of rain fall over a large area of the state? While we knew it was technically possible to map flood extents, no one in Wisconsin knew how to properly process and analyze data we received. Dr. Batzli reached out to the AmericaView community and found an expert who specialized in radar-based remote sensing. Not only did Dr. Batzli find someone who specialized in radar data, but the work was done in less than 48 hours. We developed a map showing floodwaters, thereby giving emergency managers a much better picture of the situation.

Wisconsin is not the only state to incorporate remote sensing technology into disaster response activities. We are seeing this in many other states. After hurricane Katrina, states became resourceful in finding ways they can better prepare for and respond to disasters. While remote sensing is a proven technology, it is also a highly-specialized field. AmericaView provides an important network of expertise and access to data that would not otherwise exist. I can say with confidence that our response and recovery activities have been enhanced through the assistance provided by WisconsinView, and the AmericaView Consortium.

Thank you,

Chris Diller
GIS coordinator
Wisconsin Department of Military Affairs

[NOTE: The documents listed below have been retained in the Committee's official files.]

- WisconsinView image of June 2008 Flooding in Wisconsin
- WisconsinView image of August 2005 Tornado Path
- LouisanaView image of Hurricane Katrina 2005
- TexasView image of Hurricane Ike 2008
- AlaskaView image of wildfires 2005
- KansasView image of May 2007 Greensburg tornado
- WisconsinView photographs from youth education programs

Response to questions submitted for the record by Dr. Sam Batzli

Questions from Chairman Jim Costa from the State of California

1. How much annual funding does a StateView typically receive? Also, please provide information on any contribution, including in-kind support, that the state or lead institution in your StateView Program provides.

Funding

Since 2003 funded StateViews have all received the same amount of funding (an equal distribution from AmericaView). WisconsinView started with $89,500 per year in 2004 but that amount dropped (along with the amounts for other stateviews) as new States were admitted to membership and the AmericaView budget declined. Since 2005, annual funding for each StateView has dropped from $89,500 to $84,000, to $51,000, to $23,989, to $23,000 where it is expected to be for FY2010 [see Attachment 1].

Each year AmericaView has looked for ways to tighten its administrative budget in an effort to keep costs low and to fund as many qualified StateViews as possible at the highest level possible. At the same time, to operate under these reductions, StateViews have been forced to reduce services and staff positions.

Contributions and In-Kind Support

Most Universities require an overhead rate on extramural funding between 45% and 50% for Federal grants (at UW-Madison it is 48.5%). The overhead cost keeps the universities running and pays for general infrastructure. Most Universities recognize that smaller organizations such as not-for-profits like AmericaView grant relative small amounts of money for public service projects and should be allowed a lower rate. Facing budget pressures in 2005, AmericaView decided to require a lower overhead rate for lead institutions to 15% to help keep as much of the grant money available for StateView programs. By accepting this rate (which I'm told is actually quite rare), the lead institutions of StateViews are effectively contributing

between 15% and 20% in funds to the StateView programs. In this way WisconsinView receives an 18% contribution from UW-Madison.

StateViews have been creative in finding other ways to help keep their organizations going in light of shrinking budgets. At WisconsinView we received help in the form of donated graduate Project Assistants (nearly a $40,000 annual value [including tuition waiver and fringe benefit costs] to the project) in three of the past four years. In 2007 WisconsinView hosted a GIS Certificate Student summer intern 20hr per week for university credit (a $4,000 value).

Another approach is to conduct internal technology transfer. That is, technologies such as imagery processing techniques, or curriculum modules developed under different funding for different grants within the same department or university are adapted for use by WisconsinView with very little effort or cost. It is difficult to put a value on these contributions but some examples include the following:

A. The Space Science & Engineering Center receives a NASA grant to operate a satellite receiving station for MODIS imagery. The receiving station has developed software to "subset" imagery for specific regions on a daily basis. WisconsinView takes advantage of that system and service by requesting and receiving a custom made daily satellite image that would otherwise have been very expensive to develop independently. Now that the infrastructure is in place and the algorithms have been developed, it is relatively easy to add new subsets to the processing stream. This service has been expanded to include daily satellite imagery subsets for all AmericaView states by special arrangement through WisconsinView. [Attachment 2—screen shot of MODIS for AmericaView page]

B. My role as director of WisconsinView is a 25% position. I am also the principal investigator on a NASA grant and a co-investigator on a USDA grant. When the technology I help develop for the NASA and USDA grants complements the needs of WisconsinView, that technology is applied at no cost to WisconsinView.

The consortium is continually looking for efficiencies and cost-savings opportunities through "inter-stateview" technology transfer. For example curriculum developed by CaliforniaView, GeorgiaView, and IowaView is shared with all other StateViews for online teaching.

2. Expanding AmericaView to additional states and activities would seem to require more funding. Have you considered soliciting non-federal sources of support for AmericaView? Why or why not? Some StateViews assist the private sector with geospatial analysis and technology. Would it be possible for AmericaView to solicit support from private sector beneficiaries of the program, or create some form of public private partnership for AmericaView? Why or why not?

AmericaView will require additional funding to expand to full membership. Yes AmericaView has considered a number of alternative funding scenarios. However, the mission and goals of AmericaView are public service oriented. The return on the investment in AmericaView is education, improved workforce, improved efficiency of local government, and improved economic performance of small and large businesses. The benefits are spread across a broad spectrum of users. While all groups and individuals may benefit financially, no single group benefits financially in a large enough way to justify a significantly large fee. It has been difficult to find industry sponsors willing to support the public service mission of AmericaView. We have considered charging for imagery, but it goes against the core philosophy of our organization. We are removing barriers (economic, educational, and financial) that stand between the public and federal imagery. Adding a fee would create a barrier.

StateViews are encouraged to augment their budgets with contributions solicited from their membership. But we cannot depend on those gifts to maintain core operating budgets and programs.

I support the concept of base federal funding (such as 90K per year for each state view as has been shown to work) with encouragement of supplemental gifts and contributions from private sector and state and local government.

I would also add that AmericaView has been a national program designed to advance the goals and objectives of the USGS. We are actively and constantly seeking additional and alternative funding, but it has been difficult to convince other organizations to support AmericaView when the parent organization is decreasing its funding. USGS has repeatedly expressed its support for the program and has maintained that the decreased funding is more a matter of fiscal realities than an issue of organizational support, but this is a "hard sell" with respect to outside organizations.

3. AmericaView has existed for about 10 years. Why does H.R. 2489 need to be passed by Congress for AmericaView to continue?

AmericaView has demonstrated through its success that it fulfills a unique and important national need. It deserves to be recognized as the national program it is with a Congressional authorization. Now is the time to act because AmericaView is at a crossroads with its funding and growth. Add-on appropriations are no longer generating sufficient support for this national program to continue if current trends in appropriations and USGS budget continue. Without H.R. 2489, AmericaView will not receive the level of funding it needs to complete its growth in membership and to maintain a sustainable and stable future.

AmericaView was established through a Congressional appropriation, which as has been pointed out is not the optimal way to provide Congressional direction and oversight. AmericaView now has a majority of all 50 states and territories in membership and should no longer be considered an experimental program. Clear priorities and direction from Congress will enable the states and USGS to set appropriate objectives and metrics against which to measure the success and value of the program and appropriations made with respect thereto. In addition, numerous Congressional offices have stated that, while they support the principles of AmericaView, they find it difficult to support appropriations without authorizing language.

4. H.R. 2489 directs the Secretary of the Interior to cooperate with the AmericaView Project "to develop nationally consistent standards for geospatial imagery mapping in each state." However, the development of standards for mapping seems like the kind of activity that should involve more stakeholders than the Department of the Interior and AmericaView. Could you clarify the role you think would be appropriate for AmericaView in the development of standards for mapping? Would AmericaView's focus be more appropriately described as development of standards for the distribution of images, information, and technology, rather than for mapping?

I feel it is appropriate for AmericaView to "cooperate" with the development of nationally consistent standards. I would agree that AmericaView as an organization is not focused on, nor should be focused on, standards-setting activities. AmericaView's distribution activity is primarily to facilitate the education, outreach, workforce development, and to encourage the use of satellite imagery in the civilian private sector and the implementation of remote sensing technology to help meet societal needs. AmericaView will continue to work with appropriate agencies and organizations to provide any appropriate input on remote sensing aspects of mapping or distribution standards. I would feel comfortable if the standards language were dropped all together, but as it stands I don't see it as a conflict within the context of "cooperation" as it is stated in Sec 4(c)(2)(B).

5. This bill would expand AmericaView to all 50 states. Is that realistic? Why is it important for this program to be in all 50 states and territories?

Expanding to 50 States and the territories is realistic. One thing we have learned as we have grown to include 36 StateViews, is that the benefits of AmericaView in each state vary in type depending on the needs of each State and the strengths of each StateView consortium. Each StateView is unique and delivers tremendous quality and value at very low cost. It would seem arbitrary and unfair to deny membership in this national organization to the remaining states if qualified applications are submitted. Drawing the line at 36 or 40 or 45 states would deprive citizens in those remaining states access to the federal resources (multi-billion dollar land remote sensing infrastructure) they have already paid for with tax dollars but have difficulty accessing without a StateView to bridge the gap.

It is incumbent upon the remaining states to express interest in AV, to organize their remote sensing scientists and educators within their state, and to compile a quality application, in order to earn membership. It has to start within the state. That is what makes it work. That being said, AmericaView as a national organization with a mission to reach out to all United States and Territories to help them develop their own StateView consortia.

Ultimately, AmericaView provides a structure where each state can organize the remote sensing assets within that state to take full advantage of those assets and advance them for the benefit of the citizens of that state. By providing a national structure, all states can benefit from the developments within each of the other states. AmericaView will best serve its mission when all states and territories are represented in the organization.

6. How do you see AmericaView interacting with ongoing image-collection initiatives like Imagery for the Nation and USDA's NAIP aerial photography program? Please explain the differences between the Imagery for the Nation Initiative and the NAIP Program and the activities that will be authorized through H.R. 2489.

AmericaView is excited about and supportive of the idea and of an "Imagery for the Nation" program because the improved coverage and frequency of imagery collected and archived by this program would fully complement the workforce development, imagery access, education, and outreach activities of AmericaView.

As I understand it, "Imagery for the Nation" is about coordinating the systematic and standardized acquisition of aerial imagery. AmericaView is the mechanism by which imagery from these other programs moves from imagery to applications at the state level.

The primary goal of AmericaView when it was founded was data archive and distribution. However AmericaView has always had the broader goal of generally advancing remote sensing within each state through education, outreach, emergency response, research, and other activities. The AmericaView program has been crucial in the development of the current web-enabled distribution system operated by the USGS, and to some extent this has reduced the data archive and distribution activities within AmericaView as USGS systems (such as the AmericaView-developed GloVis) came online. The need to make the state and national archives, including Imagery for the Nation and NAIP, more beneficial for the citizens of the U.S. has not abated. Indeed, as data have become more available through these programs, the need for AmericaView to support data applications to benefit people's daily lives has increased.

I would also like to point out that many StateViews currently cooperate with their state Farm Service Agencies to distribute imagery from the NAIP program of the USDA. In Wisconsin, this is our most popular data-download. This relieves the distribution burden for FSA and supports the education and outreach activities of AmericaView. AmericaView is well positioned to host additional imagery that might be collected by the Imagery for the Nation program in the same way it distributes NAIP imagery.

Questions from Ranking Member Doug Lamborn from the State of Colorado

1. The National Cooperative Geologic Mapping Program has a state match funding requirement. Would you support a similar requirement for the America View Geospatial Imagery Mapping Program? Would you support a 25% federal/75% state share requirement? Would you support a 50/50 cost share requirement?

Adding a requirement for a state share to AV would adversely affect the participation of StateViews. While it is true that state agencies often benefit form the StateView programs in most states, they do so in varying degrees in different states, depending on the unique nature of each individual StateView program. Adding a required specific cost-share amount would not be appropriate for the heterogeneous nature of the AV program. Unlike NCGMP, AmericaView does not produce a specific state-oriented product (like a geology map) that states would be willing to contribute for ownership of.

I support the concept of base federal funding (such as 90K per year for each state view as has been shown to work) with encouragement of supplemental gifts and contributions from private sector and state and local government.

The current model that includes base funding through the AmericaView federal grant distributed evenly to all the StateViews, augmented by the lead university contributions, leveraging, and in-kind contributions uniquely adapted to the circumstances of each StateView works well, produces tremendous value and return on investment for citizens, small businesses, K-12 educators, state and local government, and large businesses, and should not be changed.

2. What other sources of funding do the States receive for this program? Do you receive grants from other federal agencies?

StateViews are actively leveraging resources at their lead university institutions and pursuing in-kind cost sharing throughout their consortia.

Contributions and In-Kind Support

Most Universities require an overhead rate on extramural funding between 45% and 50% for Federal grants (at UW-Madison it is 48.5%). The overhead cost keeps the universities running and pays for general infrastructure. Most Universities recognize that smaller organizations such as not-for-profits like AmericaView grant rel-

ative small amounts of money for public service projects and should be allowed a lower rate. In 2005 AmericaView decided to require a lower overhead rate from lead institutions of 15% to help keep as much of the grant money available for StateView programs. By accepting this rate, the lead institutions are effectively contributing between 15% and 20% to the StateViews. In this way WisconsinView receives an 18% contribution from UW-Madison.

StateViews have been creative in finding other ways to help keep their organizations going in light of shrinking budgets. At WisconsinView we received help in the form of donated graduate Project Assistants (nearly a $40,000 annual value [including tuition waiver and fringe benefit costs] to the project) in three of the past four years. In 2007 WisconsinView hosted a GIS Certificate Student summer intern 20hr per week for graduate credit (a $4,000 value).

Another approach is to conduct internal technology transfer. That is, technologies such as imagery processing techniques, or curriculum modules developed under different funding for different grants within the same department or university are adapted for use by WisconsinView with very little effort or cost. It is difficult to put a value on these contributions but some examples include the following:

A. The Space Science & Engineering Center receives a NASA grant to operate a satellite receiving station for MODIS imagery. The receiving station has developed software to "subset" imagery for specific regions on a daily basis. WisconsinView takes advantage of that system and service by requesting and receiving a custom made daily satellite image that would otherwise have been very expensive to develop independently. Now that the infrastructure is in place and the algorithms have been developed, it is relatively easy to add new subsets to the processing stream. This service has been expanded to include daily satellite imagery subsets for all AmericaView states by special arrangement through WisconsinView [see Attachment 2].

B. My role as director of WisconsinView is a 25% position. I am also the principal investigator on a NASA grant and a co-investigator on a USDA grant. When the technology I help develop for the NASA and USDA grants complements the needs of WisconsinView, that technology is applied at no cost to WisconsinView.

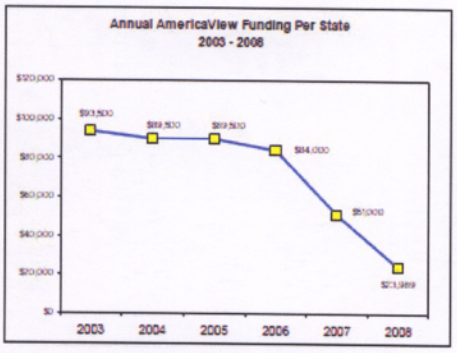
The consortium is continually looking for efficiencies and cost-savings opportunities through "inter-stateview" technology transfer. For example curriculum developed by CaliforniaView, GeorgiaView, and IowaView is shared with all other StateViews for online teaching.

3. Would you support a sunset provision in the authorizing legislation to allow Congress to review this program again in 10 years? 20 years?

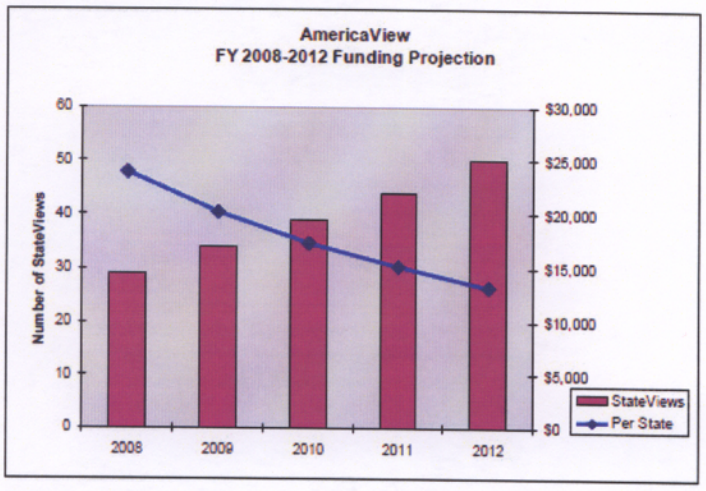
I support the idea of a 10-year review of the program legislation to ensure that AmericaView is continuing to meet important contemporary societal needs, as it does now. It is fair to assume that the geospatial "revolution" that our country is currently experiencing will evolve over time. As I read it, the current authorizing language of H.R.2489 covers 2010-2014. Currently, the AmericaView consortium competes nationally for a 5-year grant from USGS. I think an additional sunset or expiration provision would not be necessary given the current 5-year cycle, but I would welcome and even prefer a 10-year cycle for congressional review.

Attachment 1

AmericaView Funding History



Year	Number of States	Annual Funding
2003	3	$93,500
2004	14	$89,500
2005	16	$89,500
2006	18	$84,000
2007	18	$51,000
2008	29	$23,989



Attachment 2

WisconsinView - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.wisconsinview.org/imagery/AV_modis.php

WISCONSIN VIEW

WISCONSINVIEW

coordinating remote sensing imagery access and use in Wisconsin

Home
Imagery
Hazard Support
Education
Research
Membership
Feedback
Contact

MODIS Imagery for AmericaView

WisconsinView is fortunate to have access to the MODIS Direct Readout facility here at the Space Science & Engineering Center. MODIS subset products are prepared daily for AmericaView states by the MODIS-Today team.

Downloads are available for both Aqua and Terra MODIS imagery through FTP pull for 7 days from these two locations:

ftp://ftp.ssec.wisc.edu/pub/eosdb/terra/modis/[folder for date]/subsets/
ftp://ftp.ssec.wisc.edu/pub/eosdb/aqua/modis/[folder for date]/subsets/

File name pattern: example: a1.09051.AV_AL.143.1000m.jpg
a1 = aqua; 09051 = date in yyddd; AV_AL = AmericaView_AlabamaView; 143 = band combination; 1000m = resolution; jpg = file format.

Automated "harvester": if you would like to keep local copies of the files for your StateView and build an archive, I suggest running an automated script that does the downloading for you. I am running a version of this Linux bash script for WisconsinView every day using a "cron" process on a Linux machine. You are welcome to download it and modify it for your needs. Documentation is included in the comments of the file. If you are running Windows XP, try this Windows batch script (Windows XP automation instructions here).

30 products are available: JPEGs and GeoTIFFs are available for each state nearly every day, 15 from Terra, 15 from Aqua. All are Geographic, WGS84, Lat, Lon.

Image Examples from Yesterday (1000m)
[Alaska and Hawaii are outside of our range]:
Terra:
AL AR CA CO GA IA ID IN KS KY LA MD MI MN MS MT NC
ND NE NH NM NV NY OH PA SD TX UT VA VT WA WI WV WY
Aqua:
AL AR CA CO GA IA ID IN KS KY LA MD MI MN MS MT NC
ND NE NH NM NV NY OH PA SD TX UT VA VT WA WI WV WY

MODIS Products for AmericaView

Bands	4000m	2000m	1000m	250m	250m
143	True Color JPEG	True Color JPEG	True Color JPEG	True Color JPEG	True Color GeoTIFF
214	NIR JPEG	NIR JPEG	NIR JPEG	NIR JPEG	NIR GeoTIFF
721	Mid IR JPEG	Mid IR JPEG	Mid IR JPEG	Mid IR JPEG	Mid IR GeoTIFF

	MODIS Spectral Bands Used (nm)	Comparable Landsat TM Bands (nm)	Comparable Landsat ETM+ Bands (nm)
Red	Band 1: 620-670	Band 3: 630-690	Band 3: 630-690
NIR	Band 2: 841-876	Band 4: 760-900	Band 4: 775-900
Blue	Band 3: 459-479	Band 1: 450-520	Band 1: 450-515
Green	Band 4: 545-565	Band 2: 520-600	Band 2: 525-605
MIR	Band 7: 2105-2155	Band 7: 2080-2350	Band 7: 2090-2350

Done

Mr. COSTA. Thank you, Doctor, and we appreciate your succinct testimony within the time limit.

At this time, Members of the Subcommittee, we have had votes that have been called. We have a little over nine minutes left for the first measure. This sequence of votes is four, so my estimate is that it will take about 20 minutes.

So for the panel, when we have completed that we will come back for the questioning of the panel members, and the Chair will entertain a round or two based upon the interest and I know there is interest in our colleague's legislation, and then following that we will adjourn the hearing.

So that is the intent of the Chair. Let us go and vote. We will come back in about 20 minutes, 25 minutes, so if you want to take a little coffee break downstairs at the basement you can get coffee or water or a quick sandwich or an apple or whatever your heart desires.

So we will be back in about 20 minutes, 25 minutes. Thank you very much. The Committee is now in recess.

[Recess.]

Mr. COSTA. The Subcommittee on Energy and Minerals as part of the Natural Resources Committee will now come to order.

The vote sequence took a bit longer than I had anticipated. I apologize for that. I hope some of you got a chance to get a little bit refreshed and get a cup of coffee or that apple you were craving. We will now begin with the question and answer period of the hearing and we will go from there.

Let me begin by indicating that obviously the measure before us proposes an extensive list of activities for the Secretary of the Interior to undertake, acting through the AmericaView program. The list includes expanding the number of mapping courses, expanding the mapping research, building partnerships and developing mapping standards. That is what is contained in the bill.

I would like to ask the panelists your thoughts as to how those responsibilities proposed for the U.S. Geological Survey in this measure, H.R. 2489, compare to the kind of activities that currently USGS undertakes with AmericaView.

Who would like to begin? Let us begin with USGS. That is probably the best place to start.

Ms. KIMBALL. OK. Thank you. I think that the most important element here is that we in USGS feel we have established a very effective working relationship with the states that participate in AmericaView and that we have developed a governing mechanism through the AmericaView board of directors that allows us to systematically consider activities that would take place and how that effort would be distributed from between USGS and the particular states.

And I see that that mechanism would continue to work effectively. The program itself was reviewed by OMB as part of our Fiscal Year 2006 program review, and in that review we received a 100 percent rating on elements associated with AmericaView that went to planning, vision, long-term goals and performance metrics and methods to evaluate the effectiveness of the program, and so I believe that we would have——

Mr. COSTA. So are you saying this comports with the current activities that U.S. Geological Survey is undertaking or this complements it, or is it redundant?

Ms. KIMBALL. I would say that it both comports with and complements. It will allow us to extend the activities in the states as new technologies and new analytical methodologies are developed in the university community. It will allow us to expand and enhance.

Mr. COSTA. In your opening testimony you talked about some concerns. Do you think that they could be addressed if this legislation was modified in terms of roles and responsibilities and clarification from your agency's perspective?

Ms. KIMBALL. Yes, sir, we do.

Mr. COSTA. Will you please provide that to the Committee and to the author of the measure?

Ms. KIMBALL. Absolutely.

Mr. COSTA. All right.

Ms. KIMBALL. We will submit that for the record.

Mr. COSTA. All right. Do the three of you want to take a quick crack at that? I have some additional questions.

Dr. DODGE. I would just like to add to the comments about how the activities in the states come into being. We actually every year every state puts in a statement of work, and this is reviewed anonymously by members of the StateViews and also by the board of directors.

I am an advisor to the board of directors and a former member of the board of directors and also a former StateView director, so I have submitted those statements of work and also reviewed them. You know, we make sure that things are being done in a practical and economical way, and it works very well.

Then all of that goes up to the U.S. Geological Survey, who also reviews everything, so it is very well assessed what is going to happen and how it works.

Mr. COSTA. South Dakota, what do we think? Are you worried about the redundancy?

I keep harping on this, but it is still not clear in my mind how we define the roles between the private and the public partnerships.

Ms. O'NEILL. I think that the roles are quite clearly defined. We don't in any way pretend to compete with the private sector. Rather, we like to think of our role as contributing to the job that they do, training the people that they need to do their job and in some cases finding the right people for them when they have an open position.

Also, I think we don't compete with them in terms of projects, but we can help them. We can find data sources for them. So I think our roles are very complementary, and in no way do we intend for those roles to be competitive.

Mr. COSTA. All right. My time has expired.

The gentleman from Colorado, Mr. Lamborn?

Mr. LAMBORN. Thank you, Mr. Chairman. This would be for any one of you. As drafted, the legislation before the Committee provides such sums as is necessary to operate the program.

I am wondering how much you think should be appropriated for the program. If any of you wish to answer that, could you just give me a dollar amount?

Dr. DODGE. We have discussed this extensively, and what we have done is gone through the list of activities that are recommended in this legislation, and it is a lengthy list, and in each StateView each StateView is doing some of these things at a relatively low level of funding.

There are eight things on the list. We have actually determined by looking at the distribution of activities that if we were appropriated $5 million and spread it out among 50 states and territories that each StateView or TerritoryView would be able to engage in two or three of these activities at a good level of effort.

If we were to get something like $25 million, we could probably in each StateView be doing four, five of these, maybe six, at a full level of effort, and if we got $50 million—not to be greedy—then every StateView could be doing all of these things with a very high level of effort.

And that would be the K-12 education, the training of people who are already in the professional workforce. Student internship programs could be initiated at all of the universities so that the students would go out and get practical experience.

Mr. LAMBORN. OK. I think you have answered my question.

Dr. DODGE. Thanks.

Mr. LAMBORN. No. Thank you. Now, the National Cooperative Geologic Mapping Program has a state matching fund requirement. Would you support a similar requirement for the AmericaView Geospatial Imagery Mapping Program? For any one of you.

Dr. DODGE. I would say that that is something that we would definitely have to look at. We and some of the states are funded by state funds, but we are a really young program and in a lot of our states that outreach into the state agencies is still ongoing.

Most of our StateViews have only been members for a couple of years, and they are still doing the outreach to connect well with the state government, so that is something that I think that we would have to take a hard look at and see if that was appropriate. I don't think we would oppose something like that, but right now——

Mr. LAMBORN. Thank you. What about the two of you who represent a state here today?

Ms. O'NEILL. In the case of South Dakota and specifically my position, I think that that match is already happening, even though we don't report it on paper.

Part of my salary is paid with state funding, and even though I am funded at let us say 25 percent on AmericaView, I probably put in much more effort than that, so I think the match is already happening. It is just not a formal requirement at this point.

Mr. LAMBORN. OK. And Wisconsin?

Dr. BATZLI. I think that to a great extent our consortiums, our state consortia, are highly leveraged right now in terms of taking advantage of common goals and vision of complementary programs within our universities.

For example, when WisconsinView was started in 2004 we had a budget of $89,000. We were able to afford to have a coordinator. When our budget got smaller over adding new states and such, we

no longer could afford that coordinator, but I get some money from my university to help support that position because they believe in our program and they recognize the value that it brings to the whole university and the state.

I would be a little uncomfortable with a requirement for a specific match from the state because our states are so different and have such different structures, and I believe that we really do a lot with the resource we have now in terms of leveraging.

Mr. LAMBORN. OK. Now, both of you have just touched on this. Can you be more specific as to how much money your two respective states have put into this program?

Dr. BATZLI. How much we have received?

Mr. LAMBORN. No. How much state money have you put into the program? I am not talking about Federal money from any source, but state money.

Dr. BATZLI. I would have to get back to you with a specific figure, but I would say that there is probably a 10 percent or 15 percent addition to our effort through mostly in kind contributions.

Mr. LAMBORN. OK. Ma'am?

Ms. O'NEILL. A similar situation in South Dakota. I would say at least 10 to 20 percent contribution in terms of state dollars, mostly in salary dollars.

Mr. LAMBORN. OK.

Dr. DODGE. I could say the same thing for GeorgiaView. I was the founder of GeorgiaView, and it was probably 20 percent to 25 percent. It was in kind office space, telephone, computer hookup. Everything that we needed to run the consortium was made available by the university, the state university.

Mr. LAMBORN. OK. Thank you. Mr. Chairman, I yield back.

Mr. COSTA. All right. The gentleman's time has expired.

The gentlelady, the only Member of Congress, from South Dakota where you have real power.

Ms. HERSETH SANDLIN. Thank you, Mr. Chairman.

Mr. COSTA. Congresswoman Stephanie Herseth Sandlin.

Ms. HERSETH SANDLIN. Thank you. Again, I thank each of you for your testimony today.

I want to direct my first question to Ms. O'Neill, and if you could elaborate for the Chairman and Ranking Member and Subcommittee staff on the work that South Dakota View has done or hopes to do with the state's Federally recognized tribes and with Federal and state public land management agencies?

Ms. O'NEILL. Thank you. We do a lot of work with tribal government, tribal colleges and universities and also with Indian schools in the state. We make data available to these various entities.

In the case of the educational institutions, we work closely with them in developing lesson plans, developing curriculum for their courses. We sometimes actually go into the classroom and work with their students. They bring students to campus, and we do various activities with them with the ultimate goal of encouraging them to become university students.

We also try to in some ways influence economic development on the reservations. I think there are a lot of economic development opportunities in terms of using the geospatial technologies on the reservations within tribal government, training students that go

back into their tribal government and do good things in terms of developing the reservation lands that they are required to manage.

We also work with a program at the Flandreau Indian School, which is close to our university at Brookings, where they bring students to campus every spring semester, all four years of high school students, and teach them about various opportunities that are available to them at the university and opportunities for furthering their education.

So, yes, we interface in a lot of different ways with tribal folks.

Ms. HERSETH SANDLIN. And then further on, are you looking at trying to develop partnerships or how you can make your data available that has been archived to public land management agencies?

Ms. O'NEILL. Yes. They have the same access to our data that anyone else has from students and teachers on to folks in the Federal and state agencies and local governments as well.

So it is not just data. Data is certainly an important part of it, but it is helping them use and understand the data. As I mentioned in my testimony, it is often a case of educating folks about what can be done with the data.

There is a lot of data there that people just need to understand, and often we can help them figure out what they can do with that data, how it can help them in performing their jobs.

Ms. HERSETH SANDLIN. My understanding is that, as an example, in terms of how the imagery and the data have been used in monitoring activities because of some of the invasive species that we have had on state or Federal land with regard to our grasslands, and that has been again one area where you have had to sort of educate and inform them how the data could be useful in monitoring circumstances such as that, correct?

Ms. O'NEILL. That is right. It is one of those cases where a picture is worth a thousand words.

Within a very short period of time it is easy with the right kind of imagery and data to see where the invasive species are and the extent, the spread from year-to-year, the change analysis. That is an example of why it is important to have new data on an annual or somewhat frequent basis.

Ms. HERSETH SANDLIN. Very good. And then just a final question in the time remaining for both Ms. Dodge and Dr. Batzli.

Can you elaborate on if your states are looking at adding additional activities to your current efforts or different stakeholders that you would like to involve and how this authorization might assist in doing so?

Dr. DODGE. Yes. I can comment now that I am in Texas and I am working with TexasView, we are reaching out and doing a lot more training for people who are working in government.

That has been one of the strengths of TexasView for many years, but we are trying to reach out to even more agencies because we have learned about new techniques and new technologies, for example, for monitoring the impact of hurricanes that have taken place in Mississippi and Louisiana, and we want to train people on those technologies on the Texas coast.

So we are constantly working between the states and learning from one another and then implementing things in our states that have been successful in other states.

Dr. BATZLI. I would like to expand on the workshops that we do to help train various professionals within the state to work with the kinds of data that are required for emergency management and to expand our capability within the WisconsinView network so that we can respond quickly to the kinds of disasters that we have been having in recent years and do a better job with that.

Ms. HERSETH SANDLIN. Thank you. Thank you, Mr. Chairman.

Mr. COSTA. Thank you very much for your legislation and for your efforts. I want to thank the panel members as well.

We have had a very good hearing today. I thank the Ranking Member and both the Minority and Majority staff for the preparation they did to put this together.

I especially liked the visuals to really explain how important geospatial planning is and the tremendous technology gains that have taken place over just the last five years. Marcie, you done good.

Anyway, I want to thank everyone for being here, and we will work together with the Congresswoman from South Dakota to see that her legislation gets an opportunity to do its intent.

Before you came here, Stephanie, I had asked U.S. Geological Survey—I don't know if you were here at the time—to make recommendations of what changes and modifications they would recommend on your legislation, and they said that they would provide that information to us. Please make sure you provide it to the author and to us.

So we will go from there and do our best work, and at this time the Subcommittee is now adjourned.

Ms. HERSETH SANDLIN. Thank you.

[Whereupon, at 1:18 p.m. the Subcommittee was adjourned.]

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