Statement of John M. Palatiello
On behalf of the 3D Elevation Program (3DEP) Coalition
Before the House Committee on Appropriations Subcommittee
on Interior, Environment and Related Agencies
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Madam Chair, members of the subcommittee, I am John Palatiello and I am honored to appear before you today on behalf of the 3D Elevation Program (3DEP) Coalition. I serve as Government Affairs Consultant to the National Society of Professional Surveyors (NSPS), the national professional society of individual licensed surveyors, and Founder and President of U.S. GEO, an informal coalition of leading geospatial firms. The 3DEP Coalition is comprised of representatives of a broad cross section of stakeholders, including over 40 organizations from surveying, mapping and geospatial; real estate; home building; flood management; emergency response; environmental; science; mining; insurance; telecom; agriculture; and infrastructure. The 3DEP Coalition enthusiastically supports the U.S. Geological Survey (USGS) 3DEP, or 3-dimentional elevation program.

3DEP

3DEP is satisfying the growing demand for consistent, high-quality topographic data and a wide range of other three-dimensional representations of the Nation's natural and constructed features, primarily through elevation data collected with Light Detection and Ranging (LiDAR). Among the applications that benefit from 3DEP data are flood risk management; infrastructure; landslides & other hazards; water resources; aviation safety; telecom; homeland security; emergency response; precision agriculture; energy; pipeline safety; and other areas.

Indeed, USGS has identified more than 600 applications that benefit from such enhanced elevation data and the list is growing every day. 3DEP promotes economic growth, facilitates responsible environmental protection and resource development and management, assists with infrastructure improvement, and generally enhances the quality of life of all Americans. The USGS, with involvement from the private sector and other stakeholders, conducted a National Enhanced Elevation Assessment (NEEA) to determine and document the need for national elevation data within government and private markets. The results indicated that enhanced elevation data have the potential to generate $13 billion in annual benefits, at a benefit:cost ratio of 4.7 to 1.

Congress provided an innovative mechanism for cooperative activities in elevation data when it enacted the Biggert-Waters Flood Insurance Reform Act, in the MAP-21 Act, Public Law 112-141. It included section 100220, which can be utilized to pool funding from Federal, state and local government entities for elevation data. USGS was specifically named in that provision.

USGS Public-Private Partnership

3DEP stands out as a best practices model for coordination, inter-agency and inter-governmental cooperation, and a strong definition of government and private sector roles and responsibilities in a public-private partnership. There is significant capacity and capability in the private sector to support the program and USGS currently has contract vehicles in place to efficiently implement the program. The USGS manages a

series of Geospatial Products and Services Contracts (GPSC) with ten main contractors, which include six large businesses and four small businesses, to perform a variety of surveying, mapping and geospatial services. These Qualifications Based Selection (QBS) contracts are competitively awarded under the "Brooks Act" (40 USC 1101 et. seq. and part 36.6 of the Federal Acquisition Regulation (FAR), 48 CFR 36.6) and task orders are negotiated directly with selected firms to provide contract services. The primary data currently procured via the GPSC contracts is for the 3DEP program. This features LiDAR data in the conterminous United States and interferometric synthetic aperture radar (IFSAR) in Alaska.

3DEP has been acquiring three-dimensional information across the United States using light detection and ranging (LiDAR) technology - an airborne laser-based remote sensing technology that collects billions of LiDAR returns while flying - and making results available to the public. Since 2015, over 200 federal, state, local and non-government partners have collaborated to support over 1.5 million square miles of 3DEP acquisition across the nation, and 3DEP data is now available or in-work for nearly 67% of the nation. The 3DEP BAA provides an opportunity for continued collaboration across the nation so that government at all levels, the private sector, and citizens may have access to and derive the benefits of 3D elevation data.

Funding Status

Optimally, USGS views this program to be funded at $146 million annually. 3DEP has been a recent success as the trend for certain budgets for other civilian agency programs have been reduced. In FY 2013, this Subcommittee helped 3DEP to achieve $20 million in data collection efforts. By FY 2018, data collection efforts reached $120 million, thanks in large part to the continued support of this Subcommittee as well as to additional funding provided from other Federal agencies outside of this Subcommittee's jurisdiction, particularly FEMA. It is our understanding that USGS received nearly $40 million in FY 2019 for all 3DEP-related activities. The recently enacted funding agreement for FY 2020 included an additional:

> *"$7,722,000 for the Alaska mapping initiative and the following increases: $5,000,000 for the 30 Elevation program (3DEP) to accelerate achievement of 100 percent coverage of the Great Lakes region; $2,000,000 for the US Topo program to procure product-on-demand updates; and $3,000,000 to produce digital surface models using unclassified satellite optical data for the U.S. and territories not mapped with LiDAR in 2021. ... . $10,598,000, the budget request, for the critical minerals Earth Mapping Resources Initiative, (Earth MRI)."*

We deeply appreciate the leadership of this Subcommittee to achieve those levels. We also want to highlight that the single agency within Interior to contribute to 3DEP from its budget is USGS. However, public land states in the West are largely not mapped to the 3DEP standard. Given that elevation data, including a focus on slope and topographic data are vital to wildfire mapping, rural broadband deployment and other forms of rural infrastructure, then this Subcommittee should also encourage other Interior agencies such as the Bureau of Land Management, as well as the Forest Service in USDA, to participate and contribute in, or increase its level in 3DEP.

Added Benefits

The feedback we've received from 3DEP stakeholders has been overwhelming. Let me share a sampling.

First, 3DEP is a model of efficiency due to its well-designed, consistent approach from data acquisition through development of deliverables and derivative products. As you may know, GAO has been critical of some Federal agency geospatial activities for the lack of coordination and inattentiveness to duplication. USGS has implemented a strategy and governance framework that efficiently engages partners and stakeholders. This is a model for the concept to "map it once, use it many times".

USGS has done an excellent job making the source data and derivative products readily available to the public via its website and other means, which is an accomplishment in and of itself (compared to most other Federal agencies). 3DEP data are used regularly by many entities (including software manufacturers that include ready access to the data via links within the software) which many believe makes the ROI even greater than USGS first projected and results in a "bang for the buck" from this program.

The contracting strategy implemented by USGS is exemplary. A premium is placed on quality, qualifications, competence, and performance, yet USGS staff is assuring that prices paid to contactors are negotiated to be fair and reasonable to the government, as the law and regulations require. 3DEP has particularly been a lifeline to the success of numerous small businesses, both at the prime and subcontractor levels. Small businesses have reported that larger business prime contractors have been very accommodating to include small business subcontractors on their team and provided them with plentiful work.

3DEP is in high demand to meet many needs and applications. I recently had a conversation with the Secretary of Planning in a Governor's Cabinet and I asked, "Is there any geospatial data you don't have for your state that you would like to have?" and without hesitation he said, "LiDAR".

Moreover, 3DEP is meeting needs that were not evident, or did not receive significant attention when the NEEA study was done that are now in the forefront. For example, to meet the need for critical minerals, as outlined in the President's Executive Order, and included in the Earth Mapping Resources Initiative (Earth MRI), for use in the production of a wide range of products in modern society, has never been greater. Today's consumer demand for personal high-tech devices, applications of alternative energy solutions, national defense and many more essential needs, make the demand for critical minerals central to the U.S. economy a significant concern. Locating these minerals to reduce our risk of reliance on imported minerals, particularly from less-than-friendly nations, is dependent on 21st century tools such as LiDAR from 3DEP.

Wildfires have been increasingly devastating in some parts of the country, especially in the West. 3DEP, through the USGS partnership with the Federal Emergency Management Agency (FEMA), enabled, for example, the contracting with Woolpert, a USGS contractor, to collect, process, and deliver roughly 9,500 square miles of LiDAR data across Southern California immediately following the wildfires that raged across the region in 2018. Similar USGS contracting with other firms have occurred as well.

This data was collected to enable wildfire risk mapping assessment and planning, identify fuel load reduction programs and escalate the emergency assessment of post-fire debris flow hazards. 3DEP data provided the necessary LiDAR information about the forest canopy and vegetation structure, which is used to map wildfire fuel like trees and clusters of trees that are more likely to burn and escalate a wildfire.

Wildfire risk mapping and planning assessment requires analysis of a LiDAR dataset in order to determine the vegetation, fuel load, and potential structures that are in danger for future events. From analysis of the

LiDAR data, fuel-load reduction programs are developed to lessen the material that contributes to the propagation of a wildfire. One way to decrease the fuel load is to reduce the understory that grows beneath the forest canopy. By identifying, creating, and maintaining fire breaks, a wildfire can be mitigated, slowed, or even redirected. By strategically decreasing these fuels from targeted areas, like near homes and businesses, the likelihood that the wildfire will destroy those structures is considerably lessened. Wildfires also spark other potentially devastating natural disasters. FEMA reports that wildfires dramatically alter the terrain and greatly increase the risk of flooding from heavy rains and mudflows. Post-wildfire LiDAR data collection helps develop predictive models of flood and mudflow hazards that result from steep terrain that has been stripped of vegetation. When the vegetation, whose root network holds the dirt together, is burned off it can turn into mudslides. LiDAR data supports the fundamental science of how flows initiate, how they grow and evolve, and where they go. Statistical debris flow models, generated by LiDAR data, illustrate the likelihood and rainfall intensity thresholds of a region.

Across much of the western United States, invasive vegetative species are a threat to native plants, wildlife, and public safety. For example, Cheatgrass displaces native grasses and shrubs, initiates nutrient loss, reduces agriculture productivity and, most imperatively, leads to a higher risk of fire and perpetuates potentially larger and more frequent fires. LiDAR data from 3DEP is vital before, during, and after wildfires, supporting prevention, mitigation and analysis. Following the LiDAR data acquisition, surveyors and remote sensing scientists have worked to create a highly useful data set that is utilized to map Cheatgrass infestations. Utilizing LiDAR, imagery, ground truth surveys, and remote sensing data analytics areas of Cheatgrass are detected and defined. The resultant data help mitigate the spread of the invasive species across the state using a highly focused and efficient approach.

Conclusion

As mentioned in the beginning of my statement, 3DEP has supported numerous programs, applications and activities. The benefits from this enhanced elevation data include those mentioned previously, as well as water supply and quality management, rangeland management, wildfire management, geologic resource assessment and hazard mitigation, energy resource development, wildlife and habitat management, floodplain mapping and flood-risk management, agriculture and precision farming, natural resource conservation, invasive species mapping and mitigation, infrastructure, transportation, and many, many others. In fact USGS is conducting a follow-on to the NEEA study to document those recent, new,and emerging applications and benefits.

In conclusion, we respectfully urge the Subcommittee to work with other relevant subcommittees to fully fund this important program to meet the extraordinary demand for current, accurate elevation data for the nation. Our request and recommendation to the Subcommittee is to appropriate funds for the 3DEP program at its optimal annual level of $146 million among all participating agencies.

Thank you for the opportunity to share our views and we look forward to working with the subcommittee to continue the work to build on past success and further improve the Interior Department's surveying, mapping and geospatial activities including the collection, management and dissemination of enhanced elevation data through the USGS 3DEP.