



March 21, 2017

Hearing to Receive Testimony on Opportunities to Improve and Expand Infrastructure Important to Federal Lands, Recreation, Water, and Resources

Committee on Energy and Natural Resources, United States Senate, One
Hundred Fifteenth Congress, First Session

HEARING CONTENTS:

Member Statements

Lisa Murkowski
[View Statement](#)

Maria Cantwell
[View Statement](#)

Witnesses

Marcia Argust
Director, Restore Americas Parks Campaign
The Pew Charitable Trusts
[View Testimony](#)

Bob Bonar
President, Snowbird Ski & Summer Resort
Chairman, National Ski Areas Association Public Lands Committee
[View Testimony](#)

** Please Note: External links included in this compilation were functional at the time of its creation but are not maintained thereafter.*

*This hearing compilation was prepared by the Homeland Security Digital Library,
Naval Postgraduate School, Center for Homeland Defense and Security.*



Jill Simmons
Executive Director
Washington Trails Association
[View Testimony](#)

David B. Spears
President
Association of American State Geologists
[View Testimony](#)

Chris Treese
External Affairs Manager
Colorado River Water Conservation District
[View Testimony](#)

Brad Worsley
President
Novo Power, LLC
[View Testimony](#)

Available Webcast(s)*:

[Watch Full Hearing](#)

Compiled From*:

<https://www.energy.senate.gov/public/index.cfm/2017/3/hearing-to-receive-testimony-on-opportunities-to-improve-and-expand-infrastructure-important-to-federal-lands-recreation-water-and-resources>

** Please Note: External links included in this compilation were functional at the time of its creation but are not maintained thereafter.*

*This hearing compilation was prepared by the Homeland Security Digital Library,
Naval Postgraduate School, Center for Homeland Defense and Security.*



2005 Market Street, Suite 1700 215.575.9050 Phone
Philadelphia, PA 19103-7077 215.575.4939 Fax

901 E Street NW, 10th Floor 202.552.2000 Phone
Washington, DC 20004 202.552.2299 Fax
www.pewtrusts.org

**Testimony of Marcia Argust
Director, Restore America's Parks campaign, The Pew Charitable Trusts
Before the Senate Committee on Energy and Natural Resources
March 21, 2017**

**On Opportunities to Improve and Expand Infrastructure Important to Federal Lands, Recreation,
Water, and Resources**

Chairman Murkowski, Ranking Member Cantwell, and Members of the Committee, thank you for inviting me here today to discuss infrastructure within our national park sites. I would like to submit my full written testimony for the record.

The Restore America's Parks campaign at The Pew Charitable Trusts seeks to conserve the natural and cultural assets of the National Park System by providing common sense, long-term solutions to the deferred maintenance challenge facing the National Park Service (NPS).

Established in 1916, today the NPS manages more than 400 nationally significant sites in all 50 states and several territories. The Park System encompasses wild landscapes, historic and cultural sites, scenic byways, trails, military parks, and iconic monuments that celebrate and commemorate the remarkable people, heritage, and ongoing story of America.

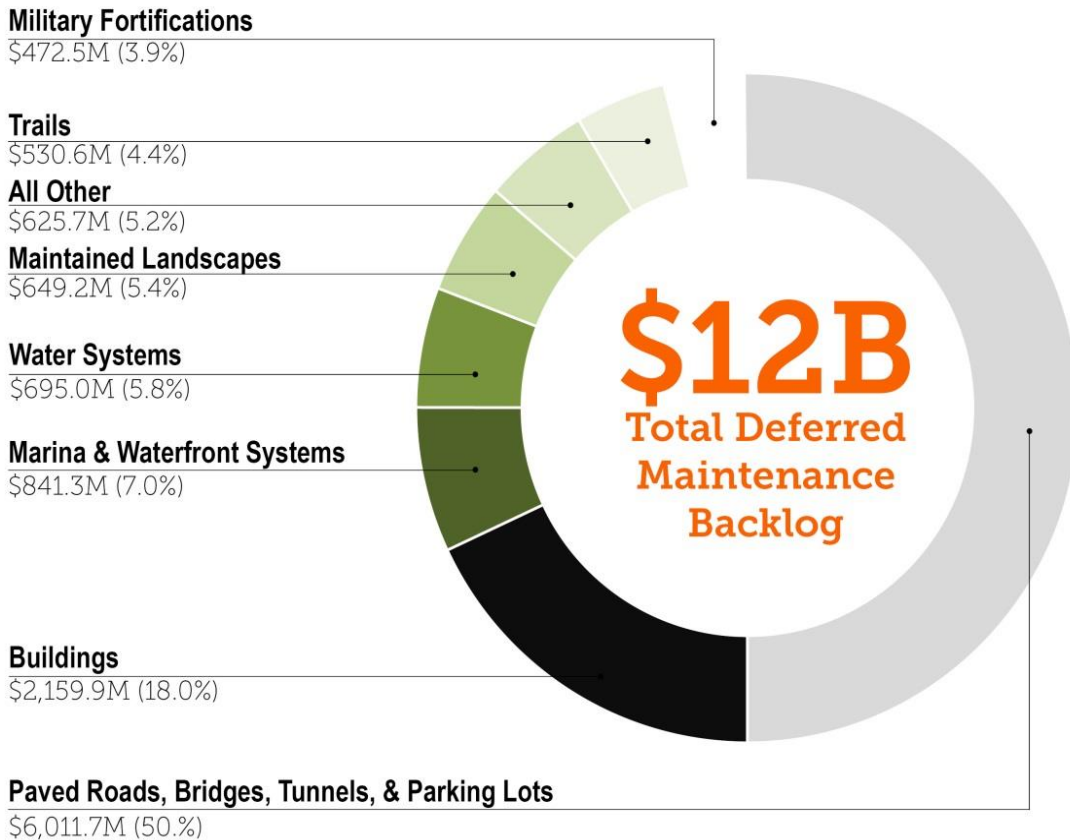
Our parks also encompass infrastructure. NPS maintains 10,000 miles of roads (over 5,000 of which are paved), nearly 1,500 bridges and 60 tunnels, 18,000 miles of trails, more than 24,000 buildings, and over 2,000 sewage systems, as well as former military installations, parking lots, waterfronts, campgrounds, electrical and water systems, interpretive facilities, and iconic monuments and memorials.

What Is Deferred Maintenance?

National parks often have the same infrastructure as a city or town, and as a result face the same deterioration and maintenance needs. In total, the agency is responsible for protecting and managing over 75,000 assets, while also ensuring that visitors can safely access and enjoy these resources. NPS assets are tangible properties that serve a specific park function and can include: roads and bridges, trails, historic buildings, employee housing, wastewater and electrical systems, military fortifications, monuments and memorials, and seawalls.

Maintenance is required at regular intervals to ensure acceptable park facility conditions; when this maintenance is delayed for more than a year, it's considered to be "deferred."

NPS Deferred Maintenance by Asset Type



The Causes of Deferred Maintenance

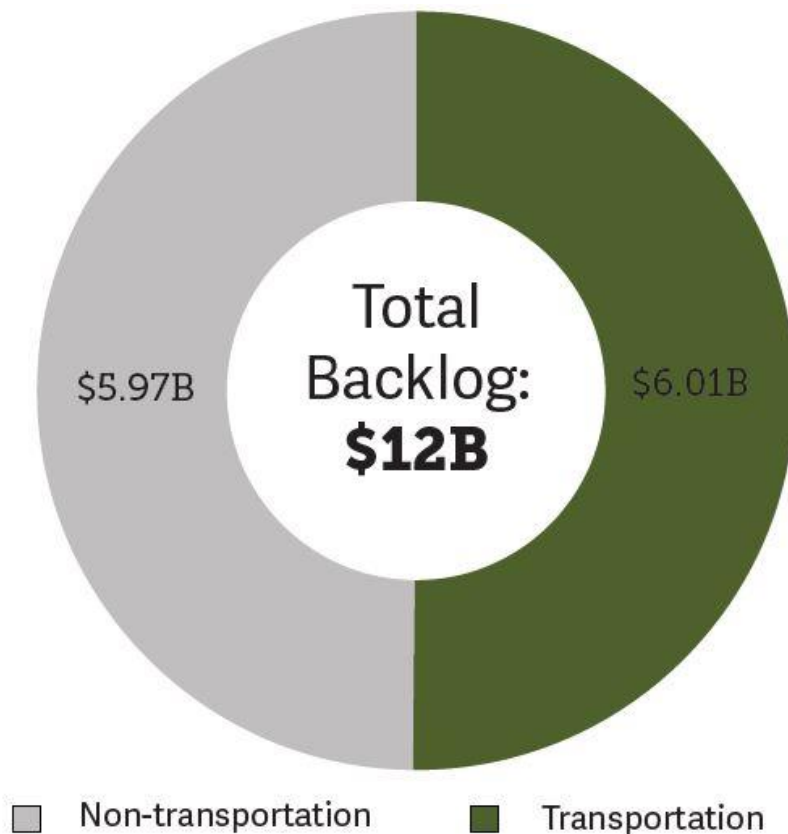
Due to aging facilities, strain on resources caused by increased visitation, and unreliable funding, NPS has been unable to keep pace with necessary infrastructure repairs. Based on 2015 data, the agency estimates it would cost \$11.9 billion if it were to fix all of the items on its deferred maintenance list.

Aging Infrastructure. Last year the National Park Service celebrated its 100th anniversary. Many units of the National Park System are older than 50 years, and their facilities and infrastructure are showing their age. According to a December 2016 Government Accounting Office (GAO) report, most of the NPS maintenance backlog is attributed to older park sites, stating specifically that “about \$10.5 billion in deferred maintenance was for park units established more than 40 years ago.” Most infrastructure has a finite lifespan, due to factors such as material longevity, weather, use, and design.

For example, at Grand Canyon National Park, more than \$150 million is needed to repair the Trans-Canyon Pipeline, an essential piece of infrastructure that brings water from a spring located in the North Rim to the South Rim. Built in the 1960s, the 16-mile pipeline is the sole potable water supply for five million park visitors, local residents, and concession operations. Its reliability is therefore an issue of public health and safety, as well as the maintenance of park assets since it is the only water source should a fire break out and threaten any of the park’s hundreds of historic structures. Annual fixes are costly and inconvenient. A 1995 flash-flood caused significant damage to the pipeline, requiring that it be shut down for 28 days; emergency measures were employed and 23 million gallons of water per day (85

trucks) had to be hauled in, at an expense of approximately \$5 million. In 2013, multiple breaks required the closure and evacuation of guests and employees from Phantom Ranch on the Canyon floor.

Mirroring the infrastructure problems of both urban and rural areas across the country, transportation needs comprise half of the backlog, roughly \$6 billion, and represent some of the most costly infrastructure projects.



Denali National Park in Alaska—one of our national jewels—just celebrated its 100th birthday. The park has \$53 million in deferred maintenance and its most pressing need is the 92 mile Denali Park Road, the only way to access the heart of the park. The harsh freeze-and-thaw cycles of the Alaskan climate have caused the paved and non-paved sections to deteriorate, requiring \$26 million in repairs.

Similarly, in Olympic National Park in Washington, the most visited park in the Northwest, the park has \$140 million in deferred maintenance and one of the highest cost needs is \$30 million in repairs to a section of Highway 101 (the primary route through the Olympic Peninsula) around the popular Lake Crescent area of the park.

Denali and Olympic National Parks are both national jewels that provide spectacular recreation opportunities and generate significant economic benefits for local communities in Alaska and Washington. It's critical to ensure that these parks and others like them are safe and well-maintained.

Rising Visitation Pressures. In addition to aging infrastructure, the NPS is experiencing visitation at record levels. According to data released this month by Secretary of the Interior Zinke, the National Park

System had 331 million visits in 2016, a seven percent increase from 2015. The National Park System must continue to be welcoming to visitors, providing unmatched recreation, wildlife viewing, and educational experiences. But, we must acknowledge and prepare for the increased wear that rising visitation can put on resources that are often already showing signs of deterioration.

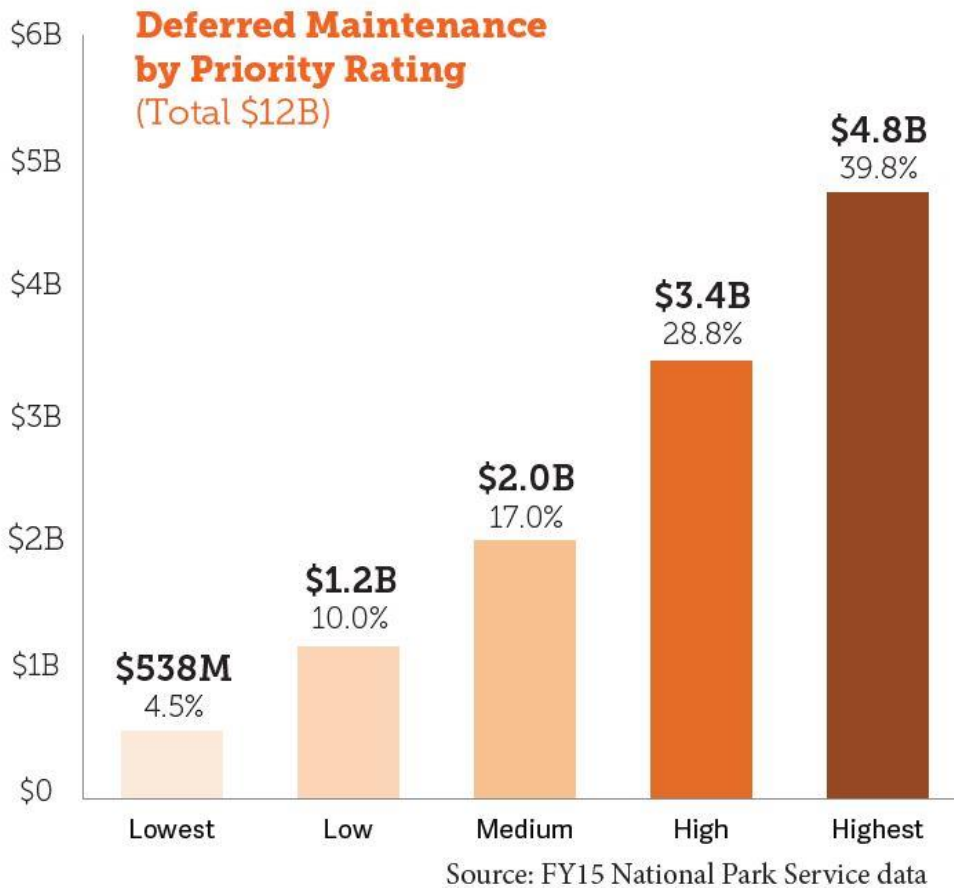
Unreliable Funding. Years of underfunding compound the challenges of preserving the physical integrity of NPS assets. From FY2006-FY2015, federal funding for the repair and rehabilitation, cyclic maintenance, and line-item construction portions of the NPS budget declined by 33 percent; this number increases to 43 percent when inflation is taken into account. The agency is typically \$250 - \$320 million short of the \$800 million it estimates it needs each year to maintain transportation and non-transportation assets at existing conditions.

The scenario of increased visitation at the same time that infrastructure is declining is not new to NPS. During the 1950s, there was significant visitor surge to our national parks. At 50 years old, early park infrastructure was showing signs of disrepair and the public noticed. There was a public outcry over the state of the parks, including the lack of visitor centers, inadequate bathrooms, and poor roads. Congress responded with an initiative referred to as Mission 66 and, from 1956 to 1966, invested a total of \$900 million to improve facilities within the National Park System. That figure is the equivalent of \$7.4 billion (1966) to \$8.8 billion (1956) in today's dollars (based on <http://www.dollartimes.com/inflation/inflation.php?amount=1&year=1985>).

Prioritizing Deferred Maintenance

Executive Order 13327, issued in 2004 by President G.W. Bush, required agencies to identify and categorize assets with the goal of improving overall operations and financial management. In compliance with this Executive Order, NPS began to develop a system to review its more than 75,000 assets, resulting in a deferred maintenance figure that is updated annually to reflect on-the-ground data.

Based on 2015 data, 41,000 of the National Park System's assets have deferred maintenance. As noted previously, the cost to address these repairs is estimated at \$11.9 billion. Approximately \$4.8 billion of the \$11.9 billion backlog is attributed to highest priority assets, or assets NPS deems critical to its mission.



Highest priority assets include memorials, historic buildings, visitor centers, key infrastructure, and other properties that a park unit may have been established to preserve. Specific examples include items like President Lincoln’s boyhood home, the portico at the Jefferson Memorial, the main entry road to Mt. Rainer NP, and Martin Luther King’s birth home. Maintenance shops, administrative buildings, and warehouses are examples of assets that typically serve a secondary role in supporting park facilities with a direct agency mission.

Using an approach referred to as the *Capital Investment Strategy*, the NPS prioritizes assets by looking at the overall importance a park facility or property has to the agency mission, in addition to other considerations, such as an asset’s importance to resource protection, visitor experience, safety, and accessibility. By identifying its priority assets and projects, NPS is able to more strategically allocate limited resources to areas of greatest need.

The Path Forward

Preventing the escalation of the NPS maintenance backlog is not an insurmountable feat. But Congress and the Administration must pursue multiple approaches to ensure success, including federal funding, policy reforms, and increased opportunities for public-private partnerships. Focusing limited resources on priority assets must continue to be part of common sense solutions.

With the enactment of the NPS Organic Act in 1916, Congress mandated the agency “to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of

the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” So while collaboration must be a part of the equation to resolve deferred maintenance, it should complement, not replace Congress’s responsibility to fund park infrastructure needs.

Pew recommends a multi-pronged approach to addressing deferred maintenance that includes:

Congressional Appropriations. Reliable annual appropriations for transportation needs and NPS park maintenance—specifically, line-item construction, cyclic, and repair and rehabilitation—are needed, as well as adequate staff capacity to implement projects. This would provide more certainty for planning and integration of projects, allowing for more cost-effectiveness. We appreciate initial recommendations in the President’s budget blueprint to ensure “that the National Park Service assets are preserved for future generations by increasing investment in deferred maintenance projects.”

Dedicated Annual Federal Funding. The establishment of a dedicated federal fund that would direct resources to the NPS maintenance backlog each year, both for non-transportation and transportation needs, is crucial. We propose federal funding of \$500 million per year over a period of 10 years. This fund should not be used to supplant annual appropriations. Piggybacking on the successful Centennial Challenge program, public-private matches would be encouraged by allowing maintenance projects with a non-federal match to be expedited.

Infrastructure Package. Any potential national infrastructure package, such as the one proposed by the Administration, must include deferred maintenance provisions specific to the parks, recognizing that national park buildings, roads, trails, aging electrical and water systems, and monuments need significant updating.

User Fees. The Federal Lands Recreation and Enhancement Act (FLREA), the law which authorizes the government to charge user fees on public lands, is due for reauthorization in 2017. Its reauthorization is an opportunity to consider user fee increases (including park entry fees, filming fees, and commercial buses fees). FLREA might also consider more efficient ways for NPS to collect fees, making it more cost-effective for a greater number of park units to collect entry fees.

Volunteerism. NPS’s largest volunteer initiative, the Volunteer in the Park (VIP) program, had over 330,000 participants who contributed over eight million hours of volunteer work, with over 1.16 million of those hours spent on maintenance in 2016. This translates to a savings of \$27.3 million to NPS, based on an independent sector model of \$23.56 per hour for each volunteer hour contributed. NPS could benefit from one to two volunteer coordinators in each of its seven regions, enabling the agency to better leverage and coordinate its growing volunteer force.

Programs like the Student Conservation Association (SCA) should be encouraged. The SCA is modeled after the federal Civilian Conservation Corps program, which built much of our national park infrastructure in the 1930s and 1940s. SCA student crews repair and enhance federal lands, particularly parks, while receiving job training. In 2016, 9,638 SCA participants contributed 1.3 million hours of service. In Alaska, SCA placed 250 young adults at national parks throughout the state, where they learn stewardship skills while undertaking maintenance work.

Partnerships.

NPS currently has authority to enter into various types of partnerships and agreements, which has led to alliances with Park Friends Groups, corporations, and non-governmental organizations. These

opportunities need to occur more broadly throughout the National Park System, achieving a cost-savings while reducing the maintenance backlog.

Job Training for Veterans

There are several examples of programs in national parks that provide job training for veterans or active duty service members while drawing down deferred maintenance—these initiatives are a win-win and need be replicated in more park units.

The *Mission Continues* is a new partnership with NPS, the National Park Foundation and Boeing that is aimed at protecting, restoring, and rebuilding America's natural and cultural resources by working with veterans. The program is intended to expand opportunities for volunteer service and career development for post-9/11 veterans within national parks across the country. Veterans have recently worked on projects such as improving accessibility at Fort Ricketts in Washington, DC, clearing trails at Ebey's Landing National Historical Reserve in Washington State and tending the hallowed grounds at Battleground National Cemetery in Washington, DC.

The Concrete Preservation Institute (CPI) is a non-profit that partners with the Department of Defense and the NPS to train soon-to-be-discharged active duty military personnel for careers in the construction industry. CPI currently operates in Golden Gate National Recreation Area (CA) and World War II Valor in the Pacific National Monument Pearl Harbor, where participants undergo a 12-week, hands-on program acquiring skills and training in the concrete and construction industry while they do deferred maintenance work on historic assets within the park sites. CPI receives financial and material support from some of the largest construction firms in the country. These firms recognize the desperate need for skilled labor in the concrete industry and work closely with CPI to place program alumni after they complete training and military service. CPI is a win for parks, veterans, and companies; investments in programs such as this should be strongly encouraged—with businesses, foundations, philanthropists—so there is capacity to provide training to more service members as well as address park maintenance.

Corporate Partnerships. Pew supports opportunities for appropriate corporate partnerships that enable NPS to reduce deferred maintenance costs. There are numerous examples of successful partnerships and more should be encouraged.

One example of a successful partnership is that with Musco Lighting, a company known for lighting major sporting events such as the Olympics and the Super Bowl. Musco has partnered with NPS to light some of the country's most iconic landmarks, such as the White House and Washington Monument, the Statue of Liberty, and Mount Rushmore. The updated lighting systems enhance visitor experience, improve resource protection, preserve the dark sky environment, and reduce costs. At Mount Rushmore, the lighting system installed by Musco reduced energy consumption by 90 percent resulting in major sustainability achievements and cost savings for the park.

Another example occurs in Yellowstone National Park, our nation's first national park. The Lamar Buffalo Ranch Battery Project is a partnership with Toyota, Indy Power Systems, Sharp USA SolarWorld, Patriot Solar, Yellowstone Forever, and the NPS. Initiated in 2014, the project reuses hybrid vehicle car batteries to sustainably power a remote field station in the park. Solar panels are used to generate energy and the renewable energy is then stored in the re-purposed battery packs and used to power the ranger station and environmental education center at the Ranch. Previously, the remote field station relied on noisy, polluting diesel and propane generators for electricity. The Yellowstone-Toyota partnership is the type of innovative corporate collaboration we should be encouraging to address deferred maintenance projects.

Community Collaboration. Communities adjacent to park units are benefactors of park tourism; in 2015, park visitors spent nearly \$17 billion in local communities, translating to tax revenue and jobs. Most gateways recognize this benefit and want to ensure that their park neighbors continue to provide a safe, positive visitor experience. In the case of Bandelier National Monument in New Mexico, Los Alamos County has stepped up to address a safety issue facing the monument. NPS is in the process of replacing the primary electrical system at Bandelier National Monument; the electrical lines are over 50 years old and severely deteriorated, leading to safety-risks for visitors and fire-risks for the park and surrounding community including the Los Alamos National Laboratory.

NPS and the staff at Bandelier negotiated with Los Alamos County, their current power provider, to replace the electrical system to the County's standards. NPS is in the process of burying these upgraded power lines, using specialized sleeves that make repairing and replacing more efficient and less costly. Once replaced, Los Alamos County will assume ownership and maintenance for the lines. Historically, a "burn-out" on a section of the line would cost approximately \$10,000 for a repair; in the future, the County will be responsible for identifying and fixing any power issue, typically within 24 hours, providing a cost-savings for NPS, as well as increased safety for visitors and community members. Collaboration between individual parks and local communities should be considered more frequently, where feasible.

Historic Leasing Credit

Over 46 percent of the assets on the deferred maintenance list are considered historic. We support the increased use of historic leasing to repurpose and reuse park sites. One successful example is the block of historic houses within the Martin Luther King, Jr. National Historic Site in Atlanta. NPS funds the maintenance for all of the federally-owned houses within the park unit with revenue generated by leasing 29 of the federally-owned historic buildings for private residential purposes. These structures include apartments, duplexes and single family homes and the leasing program has proven to be very popular.

New Technologies. As NPS enters its second century, the agency should be a showcase for smart technology and sustainable practices. Implementation of new technologies provide an opportunity for more efficient management and cost savings, as well. Examples might include sensor technologies that provide real-time data on road conditions, trash collection, and electrical outages. The opportunity to purchase park passes online should be implemented on a large-scale, and user-friendly technology to allow for more efficient collection of fees at park entrance booths should be considered. While remaining consistent with historic preservation requirements, when designing or repairing facilities, NPS should consider using materials and techniques that prolong an asset's lifespan.

The Importance of Improving Infrastructure Within the National Park System

Restoring the infrastructure and physical integrity of our national park assets is a common sense investment:

- **Preservation.** Our national park units document our nation's history—both the high and low points. This history must be protected and preserved for current and future generations to experience and learn from.
- **Accessibility.** Park resources can only be experienced by visitors if they are accessible. Park roads, bridges, trails, and historic resources need to be routinely maintained to ensure accessibility and safety.
- **Revenue.** Parks are proven economic generators. Local gateway communities received \$16.9 billion in direct park visitor spending in 2015 with a cumulative nationwide boost of \$32 billion and 295,000 jobs. It's critical that parks continue to be destinations that provide a positive experience for visitors and sustain neighboring communities.

- Cost Savings. Repairs become more costly with delay.
- Job Creation. Addressing park maintenance has the potential to create a significant number of infrastructure-related jobs in the U.S.

Conclusion

Our National Park System showcases America’s spectacular natural resources and documents our heritage. From stories that are important to Native American tribes and military veterans, to sites that capture the painful history of the Civil War, Japanese internment, and the Civil Rights movement, to iconic landscape parks, we must invest in the maintenance of park infrastructure, ensuring the integrity of America’s “best idea” for generations to come.

I appreciate the opportunity to share these views and am happy to answer any questions the Committee may have.

Statement of Bob Bonar
President, Snowbird Ski & Summer Resort
Chairman, National Ski Areas Association's Public Lands Committee
Before the United States Senate
Committee on Energy & Natural Resources
***Opportunities to Improve and Expand Infrastructure Important to Federal Lands,
Recreation, Water and Resources***
March 21, 2017

Chairman Murkowski, Ranking Member Cantwell and members of the Committee, thank you for the opportunity to provide written testimony. On behalf of Snowbird Ski & Summer Resort and the National Ski Areas Association (NSAA), I am pleased to provide testimony on the important issue of private investment in infrastructure on public land.

Snowbird was founded in 1971 by the late Dick Bass in Little Cottonwood Canyon on the Wasatch Cache National Forest in Utah. We operate on a year round basis accommodating 480,000 skier/snowboarder visits per year. Snowbird has made significant capital investments on the mountain over the past 46 years totaling \$ 300M. We have plans to make significant investments in the future as well totaling \$55M. With the help of this Committee and our partners in recreation, the U.S. Forest Service, we hope to be able to make those investments, and do so in an efficient and timely fashion. I serve as Chair of the NSAA Public Lands Committee. NSAA's member resorts include the 122 ski areas that operate on National Forest System lands. These public land resorts are in the states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Hampshire, New Mexico, Oregon, Utah, Vermont, Washington and Wyoming. Collectively we make significant capital investments in infrastructure on public land, and we need Congress' help to remove impediments to allow more investment in the future.

Background

Public land resorts work in partnership with the U.S. Forest Service to deliver an outdoor recreation experience unmatched in the world. Our longstanding partnership—dating back to the 1940s, is a model public-private partnership that greatly benefits the American public. The recreation opportunities provided at public land ski areas provide a boost to rural economies, improve the health and fitness of millions of Americans of all ages, promote appreciation for the natural environment, and deliver a return to the US government through fees paid for use of the land.

Ski areas are the economic drivers in the rural communities in which they operate. They are frequently the largest employers in mountain communities and contribute greatly to their economies. Over the past five years, the US ski industry has averaged 57 million skier/snowboarder visits annually, and about 60% of those visits occur on public land. In total, the US ski industry (resorts, equipment, apparel and retailers) supports \$62 billion in tourist-related revenue, 964,000 jobs and \$4.6 billion in annual retail sales.

Ski areas are *developed* sites that are designed to accommodate very large numbers of visitors. Ski areas pay for all of the on-site improvements including roads, parking lots, bathrooms, trails, chair lifts, dining areas and lodges, guest services facilities (rental and ski school), maintenance

facilities, patrol facilities and other needed facilities. While ski areas pay for all review processes as well as the capital improvements themselves, our improvement projects are not moving forward like they used to. Our testimony below will elaborate on why the process is hamstrung and what solutions might be applied to allow us to invest *more and sooner* in much needed infrastructure at public land resorts.

Ski Area Investments in Infrastructure

Ski areas are poised to invest in infrastructure on public lands. The economy is favorable and skier/snowboarder visits have been strong as a result of positive economic conditions and great snow. Congress opened up authority for year round uses at ski areas by enacting the Ski Area Recreational Opportunity Enhancement Act (SAROE) in 2011, and demand for summer and shoulder season activities is sharply on the rise. Examples of infrastructure investments at ski areas include:

Chairlifts. Ski areas are constantly looking to invest in lift infrastructure to improve our guests' experience and uphill capacity, improve circulation on the mountain and remove bottlenecks, replace aging lifts for safety reasons, and to serve new terrain. Snowbird is planning two new lifts in the near future in Mary Ellen Gulch in the American Fork Canyon, which will total \$ \$17M. Like many resorts, we hope to replace two older lifts totaling \$12M. Lift infrastructure investments are absolutely critical to our business, and unfortunately they produce lengthy and expensive review processes.

Snowmaking and Water Facilities. Ski areas need to upgrade snowmaking systems for more consistent, dependable and reliable conditions, especially early in the season in time for holiday visitation - and to improve snowmaking capacity and efficiency. Water facilities related to snowmaking are also critical infrastructure that we need to invest in. The snow we make benefits the entire community in winter. Not just the ski area, nearby restaurants, hotels, gas stations and retail, but also the electricians and the plumbers and all of the jobs that stem from a healthy economy.

On-Mountain Facilities. Ski areas need to invest in on-mountain facilities for restrooms, rentals, ski school and dining to enhance guest experience. Last season, Snowbird opened a new 23,000 square foot lodge at the top of Hidden Peak called "the Summit" as part of a \$35 million capital investment project that took seven (7) years to approve.

Four-Season Operations. Ski areas are investing heavily in non-skiing related infrastructure such as zip lines, ropes courses, mountain coasters, alpine slides, mountain bike parks and other amenities in our transition to 4-season operations. Snowbird already has many of these activities and is planning to add two more zip lines. Vail Resorts expects to invest a total of \$80-\$85M company-wide in their summer "Epic Discovery" program utilizing SAROE. This summer, Aspen Skiing Co. will be installing a mountain coaster, challenge course, canopy tour, climbing wall, 14.4 miles of bike trails and teaching terrain and related facilities and structures through an \$8.5M investment (plus \$800,000 for process) at Snowmass Resort. Ski area investments in year round facilities can transform both the ski area and the local community from single season destinations into year-round destinations for the public. There is great potential for resorts to expand their offerings of year-round recreation activities, but snags in process have hindered the transition to four seasons that Congress envisioned in passing SAROE in 2011.

Employee Housing. Ski areas already have some employee housing on their permit areas, but demand for employee housing in mountain communities has never been higher. A combination

of factors have resulted in a shortage of employee housing creating a crisis in mountain communities, including lack of availability of private land and the emergence of VRBO, Air BnB and other online rental portals which have eliminated season-long rentals for employees. Countless newspaper articles over the past few years have featured images of employees living in cars in mountain communities. According to a recent NSAA survey, 65% of resort respondents were interested in investing in employee housing on their permit areas or on nearby federal lands. Vail Resorts has set aside \$30 million to partner in mountain communities to address critical shortages of housing. Ski areas are ready to invest in employee housing, but are waiting for Forest Service clarifying guidance to the field in order to proceed with proposals.

Lengthy and Expensive Process

When ski areas are ready to build something and capital is available to fund it, we need the approval process to be predictable and move quickly. Unfortunately, even though the ski area pays for all of the capital improvements and all of the review process to make those improvements, we still are not getting project approvals done in a timely fashion. In fact, resorts in some regions, particularly the Pacific Northwest, face a situation where no new projects are being considered by the Forest Service. We highlighted the example of Mt. Hood Meadows in Oregon in the attachment to this testimony, where the ski area proposed a new \$12M lodge (\$14M with review costs) in 2016 to meet guest service demands and address overcrowding in current rental, dining and ski school facilities. In response, the ski area received a denial letter from the agency (attached) stating that 40 projects are in line ahead of it “and there are no resources to process this request.” Similarly, Timberline Lodge & Ski Area in Oregon proposed a project of replacing an aging lift at the resort, but was declined due to lack of capacity to staff the review process, which was expected to require an EIS. The upshot of having no process or even slow process for ski area projects is that money that would be invested in infrastructure to benefit the public remains on the sidelines.

The Forest Service recreation program is understaffed and underfunded. Current recreation program staffing levels are at 40 percent of what they were in the year 2000, due to firefighting costs and the resulting downsizing and fragmentation of jobs among special uses administrators. Day-to-day permit administration has suffered as a result, and it has become close to impossible to move ski area improvement projects forward. Key employees are often put on “detail” in another location or are diverted to do firefighting work, and there is literally no one in the desk to move ski area projects along.

The review process is also overkill for sites like ski areas that are highly developed and quite frankly have likely been reviewed more than any other acres on the national forests. We have too many EISs rather than EAs or CEs. When we are replacing a chair lift in the same alignment and merely increasing it from a 2 passenger to a 4 passenger lift, we should not start from square one in the NEPA review process, and we should not be required to do an EIS. Lift replacements should have their own category under NEPA Categorical Exclusions because they have minimal environmental effects and the effects are known. This simple change would save millions nationwide in dollars and time spent for both the industry and the agency. The case of Timberline Lodge, noted previously, is particularly troubling. Replacement of an aging lift is a safety issue, and it should be moved to the front of the line in terms of agency review. Likewise, replacing a building in an existing footprint, such as Mt. Hood Meadow’s proposal highlighted in the attachment, should not require an EIS. Again, this kind of project has minimal incremental environmental effects, and the effects are already known.

Another good example of excessive regulation is the arduous process the agency applies to the removal of trees from our permit area. Even though the amount of trees that we remove is tiny

in comparison to the agency's overall timber program – our resorts are subjected to a full blown timber sale when we remove trees. Whether we are widening a run, removing trees for safety or removing *dead* trees, agency policy requires excessive tree measurement, tree marking, and environmental review. This can, and should be fixed for both of our benefits. Every hour the USFS spends on our timber removal projects is an hour that could be redirected to addressing either an actual timber sale or a fuels mitigation project or other agency priorities.

Solutions

I have been saving the good news for last. There are solutions to reduce the hurdles to private investment in infrastructure at ski areas: (1) dedicating more resources to agency staffing and training; (2) simplifying and streamlining the process; and (3) using more private sector contracting to perform agency functions in the review process.

The first solution I mentioned - dedicating more resources to agency staffing and training - is the most important one. Congress could enact legislation to locally retain a percentage of ski area permit fees paid to the Forest Service to support ski area permit administration and facilitate project approvals. We want to thank Senator Wyden and Senator Gardner for their leadership on the topic of ski fee retention to date. We look forward to working with all of the Senators on this committee from ski states on ski fee retention in the future. Fee retention would allow the agency to have adequate and trained staff to focus on ski area permit administration and eliminate the backlog of critical ski area infrastructure projects. A cadre of winter sports or developed recreation specialists on staff with the agency could help streamline and expedite the NEPA review process, consistent with legal requirements of course, particularly on projects that occur in already impacted or disturbed areas. They could also greatly streamline the timber removal approval process at ski areas. Finally, increased use of third party technical consultants, instead of overwhelmed USFS staff, to perform NEPA studies and prepare NEPA documents for proposed projects at ski areas should be explored. Ski areas already pay third parties to assist with the NEPA process, but this new alternative would entail hiring pre-approved private sector specialists, such as soils engineers and botanists, to complete the work which often presents bottlenecks due to lack of agency specialists. The agency would still make the ultimate decision of whether to approve the project, but the bulk of the review work would be performed by outside specialists, at the expense of the ski area, in a more efficient and expedited manner.

There are many benefits associated with applying these solutions. Private investment in infrastructure that can: accommodate millions of visitors and help US ski areas remain world class destinations; provide significant economic boosts to rural economies; provide year round employment opportunities in mountain communities; increase fee receipts by the agency; and foster a better guest experience for visitors of all ages.

Thank you for the opportunity to provide this testimony.



Washington Trails Association

705 Second Avenue, Suite 300, Seattle WA 98104 • 206.625.1367 • wta.org

Statement of Jill Simmons, Executive Director, Washington Trails Association
Before the Senate Committee on Energy and Natural Resources
Regarding Recreation Infrastructure on Federal Lands

March 21, 2017

Executive Summary

- Washington Trails Association is the nation's largest state-based trail maintenance and hiking advocacy nonprofit organization with more than 15,000 member households.
- 54 percent of Washington state residents go for a hike each year¹; 72 percent of Washington state residents participate in outdoor activities that take place on or involve trails.²
- Outdoor recreation drives \$646 billion nationally in annual consumer spending, employing 6.1 million Americans and contributing \$39.9 billion in federal taxes and \$39.7 billion in state and local taxes.³
- A Government Accountability Office report describes how the Forest Service's trail system, one of the primary ways people access federal lands, has an incredible backlog of trail maintenance needs. The GAO estimates the "trail maintenance backlog to be \$314 million in fiscal year 2012, with an additional \$210 million for annual maintenance, capital improvement, and operations."
- For nearly 25 years, Washington Trails Association has led volunteer trail maintenance on federal, state and local public lands in Washington state, resulting in more than 1.6 million hours of donated work by more than 28,000 volunteers. The value of this volunteer labor is equal to a \$32 million investment in recreation infrastructure on public lands.
- Washington Trails Association believes public-nonprofit partnerships, like our volunteer trail maintenance program, are key to reducing the infrastructure backlog on federal lands, but volunteers cannot do it alone. In order to increase our volunteer trail work, there must be additional investment in land management agencies to address the maintenance backlog for trails, campgrounds and access roads on federal lands.
- Washington Trails Association stands ready to leverage increased federal investment in recreation infrastructure on federal lands with the sweat equity of our thousands of volunteers who are eager to help steward the places they love.
- The Administration's proposed budget takes us in the wrong direction, exacerbating chronic agency underfunding. Budget cuts to the Department of Interior and the Department of Agriculture will have a negative impact on trail users and the agencies trying to manage our public lands.

¹ http://www.rco.wa.gov/documents/rec_trends/2013-2018SCORP-FullRpt.pdf

² http://www.rco.wa.gov/documents/rcfb/2013-2018Trails_Plan&Appendices.pdf

³ <https://outdoorindustry.org/resource/the-outdoor-recreation-economy-2012>

Introduction

Good morning Chairman Murkowski, Ranking Member Cantwell and Members of the Committee. Thank you for the opportunity to discuss the importance of recreation infrastructure on federal lands. My name is Jill Simmons and I am the Executive Director at Washington Trails Association.

Founded in 1966, Washington Trails Association (WTA) is the nation's largest state-based trail maintenance and hiking advocacy nonprofit organization with more than 15,000 member households. Washington Trails Association's mission is to preserve, enhance and promote hiking opportunities in Washington state through collaboration, education, advocacy and volunteer trail maintenance. Each year more than 4,700 Washington Trails Association volunteers perform 150,000 hours of trail maintenance across Washington. That equates to \$3.9 million in donated labor to our public lands annually. More than 50 percent of the 150,000 hours of volunteer trail maintenance is provided on federal lands, including national forests and parks.

In addition to the on-the-ground impact on trails, Washington Trails Association's reach is profound. We have an expansive website with trail suggestions and trip reports. Each year more than 4.5 million people go to Washington Trails Association's website in search of recreation opportunities and the chance to protect wild places for their children's children. This incredible number reflects the fact that 54 percent of Washington state residents go for a hike each year.⁴ Through Washington Trails Association's online trip reports, our dedicated community tells us about their hiking experiences, regularly highlighting the need to invest in our federal lands, create more equitable access to the outdoors and preserve quality hiking experiences.

Washington Trails Association's community extends to partnerships with organizations around the state and nation. We work closely with our federal land managers – namely the United States Forest Service and National Park Service – to build and maintain sustainable trail systems. We also work with the recreation industry, such as outdoor retailer REI, to invest in our wild places and the recreation economy.

Washington state is rapidly growing. Our state population was 4.1 million in 1980.⁵ Today it has nearly doubled to approximately 7.3 million and is estimated to grow to 9.1 million by 2040.⁶ With this growth comes increased demand for outdoor recreation opportunities. In recent years, our federal land management partners have seen a dramatic increase in the number of visitors to their lands, including on trails.

The trend of growing visitorship and use of the National Forest System for recreation can be seen across the country. Since 1977, the number of recreation visitor days on national forest trails has increased 376 percent.⁷ And, the Forest Service has reported that recreation is by far the single greatest use of the National Forest System.⁸ Recreation and visitor spending on national forests contributes \$13 billion to the economy annually and provides 205,000 jobs.⁹

Washington Trails Association believes that a thriving future for Washington state, and the rest of the nation, will come from embracing recreation not only as a way of life but also as a key economic driver. In fact, recreation already has a significant economic impact, which will only increase as more people get outside to enjoy our public lands.

⁴ http://www.rco.wa.gov/documents/rec_trends/2013-2018SCORP-FullRpt.pdf

⁵ <https://www.census.gov>

⁶ <http://www.ofm.wa.gov/pop/forecasts.asp>

⁷ USDA Forest Service. *Fiscal Year 2013 President's Budget*

⁸ USDA Forest Service. *A Sustainable Recreation Future. Draft 12/16/2015. Page 1.*

⁹ <https://www.usda.gov/media/press-releases/2016/06/17/forest-service-makes-it-easier-visitors-enjoy-national-forests-and>

The Recreation Economy in Washington State & Nationally

Whether a lifelong Washingtonian or a newcomer to the state, hiking and outdoor recreation is a key part of their identity for many Washingtonians. The mountains not only lure individuals interested in a weekend adventure, they also call to the technology industry transplants and small business startups to set up shop and make Washington home. Beyond attracting new talent and businesses to our state, the recreation economy in Washington generates \$21.6 billion in annual consumer spending and \$2 billion in state and local tax revenue. Additionally, nearly 200,000 Washington residents are employed thanks to the recreation economy.¹⁰ These economic benefits reach every county of our state.

Many rural towns in Washington are nestled against the boundaries of our national forests and parks. These “gateway communities” rely on outdoor recreation visitors spending money on food, gas, lodging and gear. Washington communities such as Darrington, Bellingham, Winthrop, Skykomish and Trout Lake see recreation as crucial to sustaining their livelihoods.

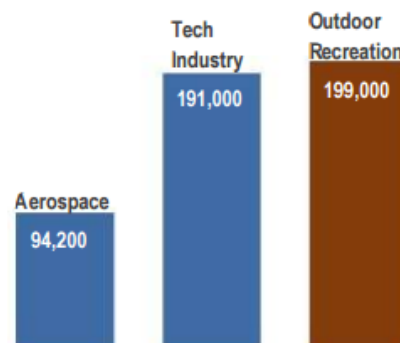
For example, the town of Trout Lake, Washington, is at the base of Mount Adams and next to the Yakama Nation. In 2015, catastrophic fires destroyed miles of trail and wildlands on the Gifford Pinchot National Forest. The community of Trout Lake felt the loss of visitors and the recreation tourism economy in the aftermath of the fires. This year Washington Trails Association, local community groups and the Yakama Nation are working together to open trails and spark renewed interest in this beautiful region of Washington state. As popular trails reopen on federal lands with Washington Trails Association’s help, the town of Trout Lake expects to see its tourism numbers rebound as hikers and campers stop by for the famous huckleberry milkshakes at the local gas station. And the story of this community is not unique. There are thousands of “Trout Lakes” across Washington state and the rest of the nation.

The value of the recreation economy can also be seen on a national scale. Outdoor recreation drives \$646 billion in annual consumer spending, employing 6.1 million Americans and contributing \$39.9 billion in federal taxes and \$39.7 billion in state and local taxes.¹¹

A good example of the purchasing power of outdoor enthusiasts can be seen by recent earnings from REI, a Washington-based and nationally recognized outdoor retailer. The retailer reported annual revenues of \$2.56 billion in 2016, a 5.5 percent increase over 2015. REI recognizes the necessity of investing in our public lands, as illustrated by annual donations of millions of dollars to support efforts nationwide to build and maintain trails, clean up beaches and restore local parks.

While REI is a great example of the purchasing power of the outdoor retail economy, many more examples are bound to come to light thanks to the passage late last year of the “Outdoor REC Act.” The new federal law will ensure that, for the first time, the outdoor recreation economy is counted as part of the U.S. Gross Domestic Product. This change will provide new measures of the impact outdoor recreation has on the overall U.S. economy. Washington Trails Association believes that the numbers will demonstrate conclusively that investing

Jobs in Washington



Sources: Washington Aerospace Partnership, 2012; TechAmerica Foundation, 2012; Washington Recreation and Conservation Office, 2015.

¹⁰ <http://www.rco.wa.gov/documents/ORTF/EconomicAnalysisOutdoorRec.pdf>

¹¹ <https://outdoorindustry.org/resource/the-outdoor-recreation-economy-2012>

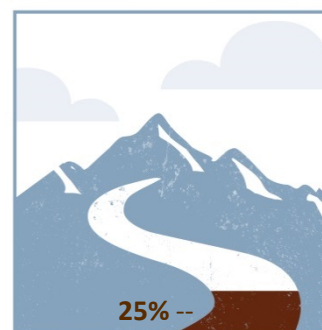
in trails, campgrounds, and access roads on federal lands is an investment in a significant and growing economic driver.

In fact, without investments in infrastructure, such as trails and recreational access roads on our public lands, we run the risk of diminishing recreation's economic impact. Trail maintenance backlogs in the hundreds of millions of dollars mean that people soon may no longer be able to visit their favorite lake or mountain vista. And without that hike to draw them, they will not stop for a meal at the mom-and-pop burger joints that are scattered throughout the gateway communities in Washington state and around the country.

Federal Lands Recreation Infrastructure and Chronic Underfunding

For more than 20 years, federal land budgets have been chronically underfunded. This underfunding has decreased land management agencies' resources and staffing and, therefore, their ability to maintain trails, campgrounds, recreational road access and other recreation infrastructure.

In 2013, the United States Government Accountability Office (GAO) produced a report outlining the negative impacts of the maintenance backlog on United States Forest Service trails. Forest Service data show that national forests receive about 165 million visits each year, 40 percent of which are visitors coming to hike on trails. The report describes how the Forest Service's trail system, one of the primary ways people access federal lands, has an incredible backlog of trail maintenance. The report estimated the value of the Forest Service "trail maintenance backlog to be \$314 million in fiscal year 2012, with an additional \$210 million for annual maintenance, capital improvement, and operations." One of the most startling revelations in the report was that the Forest Service has only been able to keep a quarter of its 158,000 miles of recreational trails up to the agency's standards.¹² Due to the lack of adequate funding in the five years since the report was published, the backlog of maintenance needs has undoubtedly increased.



Only 25% of Forest Service trails are maintained to standard, creating unsafe trails and loss of access to hikers and other trail users.

Similarly, the National Park Service has reported an infrastructure repair backlog estimated at \$11.9 billion (FY 2015). This estimate includes vital repairs to aging historical structures and thousands of miles of roads and trails, bridges, tunnels, sewers, drainage and other infrastructure. Trail infrastructure needs, such as placing crucial footbridges over rivers and fixing trail-closing washouts, are estimated at \$482 million.

At a time when visitation to our public lands is at an all-time high, this cycle of chronic underfunding cannot continue. Land management agencies cannot see their budgets further reduced. But that is exactly what the Trump Administration's budget proposal does — a 12 percent cut to the Department of Interior, home to our National Park Service, and an even greater 21 percent cut to the Department of Agriculture, which manages our national forests. These cuts will only deepen the maintenance backlog issues on our federal lands, resulting in trail closures, washed out roads and shuttered ranger stations.

¹² <http://www.gao.gov/assets/660/655555.pdf>

The Need for Investment

Due to dwindling resources and staffing, federal land management agencies have increasingly relied on partner organizations, such as Washington Trails Association. As an organization that has led more than 1.6 million volunteer hours on trails in Washington state involving more than 28,000 volunteers (totaling \$32 million in donated labor), Washington Trails Association values these partnerships. We are committed to caring for our public lands, but our volunteers cannot do it alone.

Washington Trails Association will continue to work hard to chip away at the backlog of maintenance needs, but we rely on federal support to make our volunteer trail maintenance programs work. Washington Trails Association and other organizations that conduct maintenance on federal lands receive government grants to fund, in part, our trail work. We leverage those dollars significantly through private funding and volunteer hours to have an even greater impact. As an example, since 1996, the federal Recreational Trails Program (funded through the transportation budget) has contributed more than \$2.3 million to Washington Trails Association's volunteer trail projects. Coupling this investment in these projects with our volunteers' donated time valued at about \$9 million, the total investment going into federal lands is worth nearly \$12 million. Imagine the impact we could have if additional investments were made to improve and expand recreation infrastructure and support volunteer trail maintenance programs on federal lands.

In addition, in order for community organizations to effectively work on federal lands, there must be adequate staffing within land management agencies and sufficient construction and maintenance budgets to facilitate the on-the-ground efforts of our volunteers. From expertise on federal regulations to site-specific knowledge of preferred use and management policies, federal employees are vital to the success of volunteer work on public lands. Further, there are critical projects that cannot be carried out by volunteers, such as the installation of major bridges, but that are needed to get to other places on federal lands where volunteers can do the work.

Washington Trails Association has been partnering with the Forest Service and National Park Service for nearly 25 years. During this time our expertise has grown along with our volunteer hours of service. Some people think that trail work is as simple as shoveling a little dirt, but we understand it is much more complex, which is why these agencies trust us to perform well. And Washington Trails Association is not alone; many other nonprofit organizations have also answered the call to help care for our public lands, including Back Country Horsemen of Washington, Evergreen Mountain Bike Alliance, Pacific Crest Trail Association and Washington Conservation Corps, to name a few.

Together, we are answering the call for increased volunteerism on federal lands highlighted in the National Forest System Trails Stewardship Act, which passed into law late last year. And we stand ready to do so again in response to increased federal investment in recreation infrastructure. We will leverage those investments many times over by bringing the sweat equity of the many trail users who want to help care for the places they love.

With increased support, we are confident that together we can create the trail and recreation system that is being demanded by the millions of visitors to our public lands. In turn, this will foster Washington state's and local communities' outdoor recreation economies, keeping them competitive and sustainable in this rapidly changing world.

This concludes my testimony. I thank the Committee for providing me this opportunity to testify. I would be happy to answer any questions the Committee may have.

David B. Spears, P.G.
President, Association of American State Geologists
Testimony on “Opportunities to Improve and Expand Infrastructure Important to Federal Lands,
Recreation, Water, and Resources”
U.S. Senate Committee on Energy and Natural Resources
March 21, 2017

Chairman Murkowski, Ranking Member Cantwell, and Members of the Committee:

My name is David Spears and I am President of the Association of American State Geologists. Our members are the chief executives of the state geological surveys. Almost every one of your states has a geological survey, either in an executive branch agency or in a state university. Like the U.S. Geological Survey, our activities are focused on geologic and topographic mapping, identification and assessment of mineral, energy, and water resources, and the reduction of risk from geologic hazards such as earthquakes, volcanoes, and landslides. We collaborate closely with the USGS on these topics, often through cooperative programs such as the National Cooperative Geologic Mapping Program, the National Earthquake Hazards Reduction Program, and the National Geological and Geophysical Data Preservation Program. We are proud of the positive impact our activities have on our nation’s economic prosperity, national security, and environmental protection.

We’re here today to talk about infrastructure, and no input is more essential to infrastructure than minerals. I’m using the term “minerals” broadly to include all nonfuel mineral materials: sand, gravel, crushed stone, metals, and industrial minerals. These are the raw materials essential to building almost anything. Road construction and maintenance require large quantities of crushed stone for the road base, and either asphalt or concrete for the road surface. Constructing one mile of two-lane highway requires between 20,000 and 40,000 tons of sand, gravel, and crushed stone. According to the United Nations, *“Sand and gravel represent the highest volume of raw material used on earth after water.”* These materials have a relatively low unit price, but because they are bulky, transporting them is expensive. Therefore, having adequate supplies available locally is important to the economy of every community.

Constructing buildings, bridges, airports, power plants, and water infrastructure requires limestone and aggregate for concrete, clay for bricks, copper for wiring, and steel for framing, along with other minerals for paint, fixtures, pipes, and appliances. With changing technology, demand for new mineral commodities is growing. We’ve all heard about the rare earth elements which are essential for cell phones, solar panels, wind turbines, and military applications.

Currently, the U.S. is one hundred percent reliant on imports for the rare earths. According to the USGS, in 2016 there were twenty essential mineral commodities on which the U.S. was 100% import-reliant. The largest supplier of minerals imported to the U.S. was China.

Much of our nation's mineral production comes from federal lands, especially in the West. Potash for fertilizer is produced from federal land in Utah. Lithium for batteries is produced from federal land in Nevada. Metals such as copper and gold are mined in Alaska, Arizona, Nevada, and Montana. These are just a few examples of the dozens of mineral commodities contributed to the U.S. economy by federally-owned land. According to USGS, the value of nonfuel mineral raw materials produced at mines in the U.S. in 2016 was nearly \$75 billion. These raw materials, combined with domestically recycled materials, were consumed by downstream industries to produce products worth an estimated \$2.78 trillion.

The primary source of information about the location and quantity of mineral materials for infrastructure construction is geologic mapping. Geologic maps also help reduce infrastructure costs by identifying landslides, sinkholes, and otherwise unstable ground which should be avoided early in the planning stages of construction. State and federal geoscience agencies have produced geologic maps to cover about half of the U.S. at a level of detail sufficient for making wise land-use decisions, but large data gaps remain.

Airborne data-collection technologies such as magnetics, radiometrics, gravity, and LiDAR are helping to expand our knowledge of the nation's geology, and are leveraging investment in "boots-on-the-ground" geologic mapping and physical sampling. Detailed mapping enables smart decisions on which lands to protect, and which lands to develop.

In summary, expanding and maintaining our nation's infrastructure will require minerals. Responsibly managing our mineral resources, reducing reliance on imports, and reducing the risk of natural hazards will require cooperation between state and federal geological surveys to fill the significant gaps in our current knowledge. Investment in infrastructure will require investment in geology. Thank you.

Chris Treese
Manager, External Affairs, Colorado River Water Conservation District
Board Member, National Water Resources Association
Advisory Committee Member, Family Farm Alliance

Testimony Before the United States Senate
Committee on Energy and Natural Resources

Hearing to receive testimony on opportunities to improve and expand infrastructure
important to federal lands, recreation, water, and resources.

March 21, 2017

Chairman Murkowski, Ranking Member Cantwell, and Members of the Committee:

Thank you for the opportunity to appear before you to discuss the importance of water infrastructure in the Western United States. My name is Chris Treese, and I am the external affairs manager for the Colorado River Water Conservation District (River District), located in Glenwood Springs, Colorado. The River District is the principal water policy and planning agency for the fifteen counties of northwest and west central Colorado. We are responsible for the conservation, use, protection, and development of Colorado's apportionment of the Colorado River. The River District comprises approximately 29,000 square miles, roughly 28% of the land area of Colorado. Seventy percent of our district is made up of lands managed by the federal government.

Our district belongs to the National Water Resources Association (NWRA) and the Family Farm Alliance (Alliance), two organizations that I also represent with this testimony. NWRA represents state water associations, irrigation districts, municipal water providers, end water users and their collective interests in the management of irrigation and municipal water supplies throughout the western United States and portions of the South. NWRA advocates for federal policies, legislation, and regulations promoting protection, management, development, and beneficial use of water resources in these regions. The Alliance advocates for family farmers, ranchers, irrigation districts, and allied industries in seventeen Western states. The Alliance is focused on one mission – to ensure the availability of reliable, affordable irrigation water supplies to Western farmers and ranchers.

The NWRA and the Alliance are organizations that represent the water users that are the cornerstone of western communities and their economies.

In the world of Western water, a massive flood event or devastating drought is sure to get policy makers focused on the need to update and create more effective water management policy. The recent, multi-year drought in the arid Southwest has ramped up Congressional interest in legislation that would allow Western water providers to better address the current drought as well as improve preparations for future dry times. Now, the heaviest rains in a decade have

overwhelmed parts of the West Coast underscoring the critical importance of having modernized infrastructure in place to optimize water resources management.

Many communities of the semi-arid and arid West – as well as the farms and ranches they are intertwined with – owe their existence, in large part, to the certainty provided by water stored and delivered by the Bureau of Reclamation and other state and local water storage projects. The federal government has an enduring role in water supply infrastructure development and management that, consistent with state water laws, includes working with local water managers on a policy level and, in partnership with them, providing available federal funding and federal cost-share opportunities in support of their efforts to secure a stable and sustainable water supply.

Importance of Water Infrastructure

I appreciate the opportunity to testify about the importance of water infrastructure before the Committee today. This historically Western Committee also has strong representation from the Eastern and Southern United States. Water challenges vary from region to region; however, water's importance is paramount regardless of location.

Today's hearing, and the chance to discuss water infrastructure, is especially timely as it coincides with Water Week 2017, a week when water and wastewater organizations from around the nation travel to D.C. to highlight the national importance of water. Like members of this Committee, the groups participating in Water Week recognize the critical importance of water to every part of our nation and society. They recognize that different communities have different kinds of water needs and that an "all of the above" response to our nation's water challenges is necessary to solve important but complex and varied water problems.

Water managers from throughout the West are actively investing in new water supply options, embracing technology, utilizing green infrastructure and looking to use water as efficiently as possible. Thanks in large part to these efforts, water usage in the U.S. for agricultural, industrial and municipal uses have declined since the mid 1980's while at the same time populations, crop production, and demands have increased. Local water managers are looking to their federal partners to ensure that this impressive track record of water innovation can continue and be improved.

As a part of this "all-of-the-above" solution, it is critical that water infrastructure for both agricultural and municipal water providers is recognized as nationally important and qualified as such in potential infrastructure legislation. We believe qualifying projects should include water conveyance, surface water storage, aquifer storage and recovery, wastewater, water reuse, desalination, and efficiency investments. We also believe that infrastructure legislation must apply to the remediation of aging infrastructure as well as to the development of new infrastructure. Moreover, meaningful infrastructure legislation should encourage integrated water planning from watershed to wastewater discharge. Investments in forest health and watershed management can have as high or greater returns as traditional brick-and-mortar capital investments.

Water is the lifeblood of our nation. Without reliable water, every sector of our economy would suffer – from agriculture, to manufacturing, to high-tech. Food cannot be grown, businesses cannot operate, and homes and schools cannot be built or operate without water. Critical water infrastructure must be maintained and modernized to ensure the delivery and safety of water today and for future generations. As Congress discusses the development of an infrastructure package, it is of paramount importance that maintenance and rehabilitation of water infrastructure is a high priority.

Western water managers face significant regulatory and policy-related challenges. Water infrastructure that was built early in the last century is aging, and once-reliable federal grant and loan programs have been greatly diminished. Meanwhile, little progress has been made at the federal level towards developing new and improved water infrastructure to keep up with the growing water demands of expanding cities, energy production, and environmental needs. While water conservation, water efficiency, and water transfers are important tools for addressing certain water supply challenges, these tools must be balanced with supply enhancement measures that provide long-term solutions for the varying and specific circumstances in the West.

Water infrastructure is perhaps the most important, yet overlooked, form of infrastructure in our nation. An investment in water infrastructure is an investment in the very foundation of our nation's economy, its health, and its future. Access to a sustainable supply of water is a fundamental necessity for all economic development. Conversely, adverse economic consequences are certain if we do not invest and reinvest in our water infrastructure. According to the American Society of Civil Engineers 2016 Infrastructure Report Card, released last week, lack of investment in water and wastewater systems will cause the U.S. to lose nearly 500,000 jobs by 2025 and 956,000 jobs by 2040. This lack of investment will also lead to a loss of \$3.2 trillion in GDP by 2040.

Western irrigated agriculture is a significant contributor to the national economy. The Family Farm Alliance in 2015 published "The Economic Importance of Western Irrigated Agriculture" (prepared by the Pacific Northwest Project), a white paper specifically drafted for policy makers seeking to better understand the direct economic impact of Western irrigated agriculture and to acknowledge the growing chorus of voices bringing attention to food security and irrigated agriculture as a national economic issue. For the 17 Western states studied in the 2015 report, the total household income impacts from irrigated agriculture, associated service industries, and food processing sectors is \$172 billion annually. Irrigated farming and ranching is a huge economic driver in the West, particularly in rural communities. Further the fact that Americans spend less of their disposable income on food than any other nation in the world ensures a vibrant, consumer-driven economy. However, this economic force would virtually disappear, along with the rural American communities dependent on farming and ranching, if the water infrastructure that supports it crumbles. Given the magnitude of the food security issue to the nation's economic and social wellbeing, policy makers must prioritize protection of our water infrastructure.

This economically critical infrastructure is aging and is in need of improvement. Many of the Bureau of Reclamation facilities are between 50 and 100 years old. Reclamation has reported an infrastructure and maintenance backlog of approximately \$3 billion. Such aging infrastructure presents a further challenge because it requires ever increasing maintenance and replacement investments. As of 2013, the replacement value of Reclamation's infrastructure assets was \$94.5 billion. As the saying goes, an ounce of prevention is worth a pound of cure. Investing in this infrastructure on the front end will save taxpayers' money in the long run and allow us to preserve it, and the many benefits it provides, for future generations.

In addition to maintaining existing infrastructure, there are also numerous opportunities to expand water supply operations in a manner that supports the economy, ecosystems and western communities.

Case Studies in “All of the Above” Infrastructure Investment Opportunities

New Surface Water Storage: Sites Reservoir

Sites Reservoir is designed to be a large, off-stream reservoir located west of Colusa in the Sacramento Valley of Northern California. The estimated water yield would be between 470,000 to 640,000 acre-feet per year. The reservoir would be operated as part of the California State Water Project and is projected to cost between \$2.3–3.2 billion. According to a 2013 Bureau of Reclamation study, it would provide economic benefits of between \$248.8–276.2 million per year, while annual operating costs would be in the range of \$10–20 million.

Infrastructure for Water Delivery: Columbia Basin Project East Low Canal Widening

The Columbia Basin Project delivers water to over 670,000 acres in central Washington state allowing land to flourish providing specialty crop production worth over \$1.6 billion through the economy. The local irrigation districts and the State of Washington are working with the Bureau of Reclamation to boost water delivery by expanding the East Low Canal bringing a sustainable surface water supply to an area that suffers from a declining aquifer. The Washington State Department of Ecology estimates moving irrigators from groundwater, to surface water, prevents 3,600 jobs from being lost and saves \$840 million each year in agricultural production.

Integrated Water Management: Yakima Basin

The Yakima Basin in Washington State is home to some of the most productive agricultural land in the world. Yakima County ranks first in the nation in the production of numerous crops, including apples and hops. The importance of the hop crop should be especially apparent to those that just celebrated St. Patrick's Day. Agricultural producers, state, tribal and local governments, and the federal government are working through the implementation of the Yakima Basin Water Enhancement Project. This basin-wide integrated water management project has brought diverse groups together to work on water management and is supporting agricultural industries in the Yakima basin that produce more than \$1.8 billion in crops and \$1.4 billion in food processing while supporting more than 5,700 jobs. This type of integrated planning could benefit other water

projects as well. I know that water managers in the Yakima Basin greatly appreciate Senator Cantwell's work and dedication to this process.

Surface Water Delivery to Move Rural Communities off Impaired Groundwater: Arkansas Valley Conduit

The Arkansas Valley Conduit would utilize clean water stored in the Bureau of Reclamation's Pueblo Reservoir to replace groundwater supplies for 50,000 people in rural southeastern Colorado. Those groundwater supplies are contaminated with radionuclides at levels which violate the Safe Drinking Water Act, and the water providers are under enforcement orders from the Colorado Department of Public Health. This project, now in final feasibility, has a revenue stream sufficient to fully repay the capital costs, as defined in PL 11-111.

Expansion of Existing Surface Storage: Fontenelle Reservoir

The Fontenelle Dam, located in southwest Wyoming on the Green River, is a principal feature of the federal Seedskafee Project. The current active storage capacity of the reservoir is 260,000 acre-feet. Since 2011, Wyoming has proposed expanding the active storage capacity of the reservoir. The House of Representatives recently passed H.R. 648, this bill allows the Fontenelle Dam to be modified to increase the active storage capacity to 345,000 acre-feet. The expansion of this project will increase storage without noticeable change to the environmental footprint of the project.

Reallocation of Existing Storage: Chatfield Reservoir

Chatfield Reservoir in metro Denver, Colorado is a U.S. Army Corps of Engineers' (Corps) facility with flood control as its primary purpose. The Corps determined Chatfield Reservoir can accommodate an additional 20,600 acre feet of water storage for water supply without compromising its flood control function. This additional storage space will be used by municipal and agricultural water providers to help meet the diverse needs of the state. Project participants will undertake recreational modifications and environmental mitigations at Chatfield State Park to address the impacts of additional water storage.

Innovative Aquifer Storage: Groundwater Recharge in California and Arizona

Metropolitan Water District of Southern California (MWD) has been exploring a water purification project to reuse water currently discharged to the ocean to recharge regional groundwater basins. Through a partnership with the Sanitation Districts of Los Angeles County, MWD is expected to build a new water purification plant and up to 60 miles of distribution lines to convey the water to four groundwater basins in Los Angeles and Orange counties, allowing for additional natural filtration. According to MWD, the estimated construction cost is \$2.7 billion. The program would produce up to 168,000 acre feet per year (150 million gallons of purified water per day), enough water to serve more than 335,000 homes.

In Arizona, the Salt River Project (SRP) has partnered with cities to develop two groundwater recharge facilities. These facilities, the Granite Reef Underground Storage Project and the New River Agua Fria Underground Storage Project, enable Arizona to use its allocation of Colorado River Water. These facilities are permitted to store 168,000 acre-feet of water each year. SRP has been working in aquifer storage since 1994 and continues to look for innovative options to store water underground.

The Role of the Federal Government in Modernizing and Expanding Water Infrastructure

We need new water storage to adapt to our changing hydrology and develop usable and sustainable supplies to meet growing demands for water. Even with downward pressures on the budget, the federal government must be a partner with non-federal water users in solving water problems in the West by developing innovative policy and financing mechanisms with a very low federal cost. These types of programs should make water infrastructure development more attractive and affordable for non-federal interests to invest in projects the federal government can no longer fund. New water supply infrastructure must be developed to capture water in good years and replace diminishing snowpack during drought conditions, provide for growing recreational and environmental needs, address climate change and variability, allow for continued economic and population growth, and protect the vitality of the West and the Nation.

a) Federal Funding and Competitive Cost-Shared Grant Programs

Western water providers have invested billions in local and regional projects and strategies in recent years to improve water supply reliability. Those investments have been a major factor in the West's ability to manage through years of severe drought.

New federally-backed tools to assist in financing new and improved water infrastructure will be needed in the coming years. Water infrastructure is a long-term investment, and longer repayment and lower interest terms will be crucial to attracting investment in these water supply facilities. Such arrangements could include investments in everything from new water storage reservoirs (both on- and off-stream as well as groundwater storage), regulating reservoirs, canal lining, piping open channels, computerized water management and delivery systems, real-time monitoring of ecosystem functions and river flows to manage limited water supplies to benefit both fish and people, and watershed-based integrated regional water management project planning and implementation.

We need to develop innovative ways to encourage non-federal investments in new water infrastructure without requiring that the federal government actually build or fully fund that infrastructure. We believe such investments would allow for more cost-effective construction and operation and maintenance of much needed new water supply infrastructure and not impact federal budgets. Bridging the overall funding gap will require a partnership between the federal, state and local governments. This partnership will necessitate diverse revenue streams to ensure that communities, both large and small, along with agricultural, municipal and industrial water providers are all able to meet the water infrastructure needs of the future.

We encourage Congress to:

- **Make water infrastructure a high priority in any infrastructure legislation.**
- **Maintain the tax-exempt status of municipal bonds, one of the most valuable financing tools used by our nation’s water suppliers to build and improve infrastructure.**
- **Maximize the use of State Revolving Funds (SRF) for investments in drinking water and wastewater management.**
- **Strategically target funding increases for the Bureau of Reclamation and the Army Corps of Engineers to assist in the development of projects that increase water supply, address current and future drought and water shortage concerns, meet aging infrastructure needs, address rural water needs, and increase project operational efficiency.**
- **Fully fund the Water Infrastructure Finance and Innovation Act (WIFIA).** The WIFIA program was recently updated by the 114th Congress in the passage of the Water Infrastructure Improvements for the Nation (WIIN) Act of 2016 and WIFIA loans were funded for the first time to the tune of \$17 million in the continuing resolution funding the federal government through April 28, 2017.
- **Consider a “WIFIA-like” alternative for agricultural water providers.** The proposed Reclamation Infrastructure Finance and Innovation Act (RIFIA) and the New WATER Act (H.R. 434) would authorize a new affordable financing mechanism for certain large water supply projects in the West. The RIFIA provisions would be similar to WIFIA but focused on water supply infrastructure.
- **Jump start investments authorized by WIIN that provided critical new authorizations for water infrastructure development.**
- **Expand Reclamation’s Water SMART grants to include a larger (up to \$20 million) competitive 50-50 cost-shared grant for water supply management projects integrated into a regional watershed plan could help fund larger water conveyance and conservation infrastructure.**
- **Find ways to improve coordination of WaterSMART and other water management programs at Reclamation with existing conservation programs at the U.S. Department of Agriculture’s Natural Resources Conservation Service (NRCS).** This would lead to more effective federal investments in on- and off-farm water management improvements.
- **Make maximum use of existing financing tools for project beneficiaries, including direct loans and loan guarantees, such as those authorized by The Rural Water**

Supply Act of 2006 (PL 109-451). Efforts must continue to compel Reclamation and the Office of Management and Budget to implement this program, that is already authorized by Congress, and to investigate opportunities to develop similar loan and loan guarantee programs that can help fund new water infrastructure projects.

- **Fully funding the State Revolving Fund (SRF) programs for new and modernized drinking water and wastewater infrastructure.** SRF programs provide vital, grants and low interest loans to predominantly rural communities to ensure safe drinking water and compliance with evolving Clean Water Act requirements.

We fully understand that the federal funding mechanisms used in the past to build Reclamation water infrastructure may be gone. We view the future of water infrastructure as one where local districts plan, design, finance, construct, operate and maintain new water facilities, sometimes on federally-owned lands, as integrated features of existing federal projects. Innovative ideas currently being explored (and potentially in need of federal legislative authorities) include long-term leases of federally owned property, full or partial title transfers of federal property to project beneficiaries. We need to encourage the innovative nature embedded in private-public partnerships (P3) to build non-federal water infrastructure, while also recognizing that a P3 relationship may not work for many smaller or rural water providers. More can be done to engage the unique relationships Reclamation has with project water users who depend on Department of the Interior infrastructure.

We also encourage Congress to look for opportunities to reduce costs without adverse ecosystem impacts. Water users are responsible members of the regulated community. We recognize that reasonable regulations provide warranted environmental protections without creating unnecessary regulatory burdens or delays. Nevertheless, Congress should look for opportunities to improve the federal regulatory process by streamlining regulations, improving coordination, reducing duplication, and increasing transparency. Clarity on rule development and better-coordinated federal permitting processes would reduce permitting timelines and save taxpayer dollars without compromising environmental protections.

b) Bureau of Reclamation Policy Recommendations

Of all federal agencies, Western water users work closest with the Bureau of Reclamation, whose core mission is to provide for the delivery of water and power from its Western U.S. facilities in a manner that meets applicable requirements of state and federal law. Essential components of the core mission are: 1) providing for the operation and maintenance of existing facilities that are likely to remain in federal ownership; 2) providing for the rehabilitation and replacement of infrastructure that is likely to remain in federal ownership; and 3) possessing the ability to manage the construction of new projects that Congress may fund through Reclamation.

Even casual observers would note that Reclamation has carried out few major new construction projects in recent decades. Even though the designers and builders of Reclamation's most

impressive works have long since retired, Reclamation staff members from regional and area offices can continue to play a key role in helping to find the right path to make multi-agency processes and projects work, as well as direct strategic investment in capital maintenance and rehabilitations. When strong relationships are developed between Reclamation employees (especially those in area or regional offices) and local water users, strong, cooperative and innovative solutions can and have been reached (such as in the Yakima River Basin (Washington)). There are other models in the West where successful projects have been completed as well. A template for success might be one where state and federal agency regulators establish criteria, federal and non-federal funding agencies write the checks, and local districts and their consultants implement and satisfy regulatory criteria and funding-eligibility requirements.

The Bureau of Reclamation must either hire skilled and experienced engineers and managers or turn to their non-federal project managers and the private sector partners to provide the human resources necessary to maintain and improve Reclamation's facilities. Meeting the challenge of modernizing the West's aging water infrastructure will require highly qualified professionals serving in the public and private sectors. Reclamation's February 2006 *Managing for Excellence* Action Plan should be updated and used as a key resource to help address these concerns.

Congress should work to establish a simpler approach to facilitate transferring the title from federal ownership to non-Federal ownership of small-scale, single-purpose Reclamation projects and facilities. Title transfers are a positive means of strengthening control of water resources at the local level. In addition, they help reduce federal costs and allow for a better allocation of federal resources. Reclamation should work with Congress to develop a legislative concept for a programmatic approach intended to simplify transfer of "non-complicated" facilities. This would greatly reduce the hurdles and expense that can impede title transfers beneficial to local interests and to the federal government. NWRA and the Alliance are happy to commit to working with Congress to accomplish this.

c) Forest Health Threats to Water Supply and Infrastructure

Improving the condition of our nation's forested lands is of primary importance to water providers. National Forest lands are overwhelmingly the largest, single source of water in the U.S. and, in most regions of the West, contribute nearly all of the water that supplies our farms and cities. In addition, water infrastructure can be severely damaged or rendered useless by fire and post-fire flooding and debris flows.

The unhealthy state of our national forests, which were reserved specifically to protect water resources, has led to catastrophic wildfires that threaten the reliability, volume, and quality of water for tens of millions of Americans, along with the wildlife, recreational, and multi-purpose values of these lands. Large-scale, catastrophic wildfires today are more frequent and significantly larger than in the past. In Colorado alone, from 2004 through 2007, fires burned an average of 40,000 acres annually. However, from 2008 to 2015, that annual average jumped to 140,000 acres.

Unfortunately, Colorado is not alone. Increasingly, wildfires are threatening water supplies and water infrastructure throughout the west. In recent years:

- Denver Water has spent tens of millions of dollars to remove around 1 million cubic yards of fire related debris from Strontia Springs Reservoir,
- In Arizona, water providers have had to upgrade water treatment facilities by adding carbon filtration to handle the increased levels of organics and sediment at a cost of hundreds of millions of dollars.
- The Greater Wenatchee Irrigation District in Washington lost power to pump irrigation water during a critical growing time due to wildfire threatening crops and the livelihoods of farmers that depend on them.
- Placer County Water Agency and other local agencies in California spent \$8 million to repair and protect water and energy infrastructure following the King Fire.

We believe it is critical that both forest management reforms and resolution of the “fire borrowing” issue are addressed in comprehensive legislation focused on improving the health and resiliency of our federal forests. Only by addressing both issues together can we ensure that on-the-ground forest management and restoration activities will proceed at the pace and scale equal to the problem and begin to improve the forest conditions that led to the recent devastating and costly fire seasons.

d) Opportunities for Water Storage Infrastructure Development

For many reasons – political, economic, societal, environmental – the construction of traditional surface storage projects is undertaken on a much more limited basis than in decades past. The most frequent reasons center around economics or an inadequate water market associated with the given facilities. In other cases, environmental, safety or geologic challenges came to light during a project’s development, and rendered its construction, completion or operation unfeasible. Political opposition often contributed to a project’s demise, leaving the facilities “on the books” awaiting further action, but with external events and new priorities passing them by. Even if funding and authorization is secured for a new storage project, the existing procedures for developing additional water supplies can make project approval incredibly burdensome and time consuming with companion costs outstripping the ability of local water providers to accommodate.

Individual surface storage proposals must be evaluated and the associated benefits and risks must be viewed in a net, comprehensive manner. While some critics of new storage projects focus on perceived negative impacts associated with new facility construction (e.g., loss of habitat, disruption of “natural” stream flow patterns, and potential evaporative losses), these perceived impacts must also be compared to the wide range of multi-purpose benefits that storage projects provide. Properly designed and constructed surface storage projects provide additional water management flexibility to better meet downstream urban, industrial and agricultural water needs,

improve flood control, generate clean hydropower, provide recreation opportunities, and create additional instream flows that benefit downstream habitats.

The aforementioned WIIN Act contains provisions that allow irrigation districts to voluntarily prepay contracts with the federal government. The funding that is expected to be generated by these prepayments over the next ten years would be placed into an account to fund (finance) either the construction of new state-led water storage projects or the expansion of current federally-owned water storage reservoirs. The WIIN Act also authorizes Reclamation to implement a water storage enhancement program to fund new or expanded surface and groundwater storage construction for the purposes of increased municipal supply, agricultural irrigation, and to reduce impacts to fish and wildlife. The Trump Administration's Bureau of Reclamation should work to ensure that these authorities are implemented as a priority.

Conclusion

In closing I want to re-emphasize the importance of water infrastructure to our nation, its economy, and its health. A strong commitment to water infrastructure must be made in any infrastructure package that Congress and the Administration considers.

The infrastructure challenges our Nation faces are daunting, and they will require innovative solutions. The infrastructure investments made by prior generations have benefited this country for over a hundred of years. Now it is this generation's responsibility to invest in infrastructure and invest for future generations. It is our hope that you and others in the 115th Congress will embrace a core philosophy shared by the River District, Family Farm Alliance and NWRA: the best solutions are driven locally by people with an "on-the-ground" reality who are willing to partner with state and/or federal agencies to achieve our national goals of safe, reliable and sustainable water supplies.

Thank you again for the opportunity to testify and for your attention to the many infrastructure challenges facing our nation. Please know that the NWRA, the Family Farm Alliance and our members stand ready to assist you in your efforts.

Mr. Bradley Worsley
President
Novo Power, LLC
PO Box 2649
Snowflake, AZ 85937

Biomass Power: A Critical Element of Forest Maintenance
The Story of Novo Power in Snowflake, Arizona

My name is Brad Worsley and I am here on behalf of my family's biomass power facility, Novo Power, located in Snowflake, Arizona. It is my firm belief that biomass power and healthy forests and watersheds go hand-in-hand, and that the benefits of biomass power go far beyond electricity on the grid. Investing in biomass power helps fund badly needed forest and watershed maintenance, saves money for the U.S. Forest Service and taxpayers, and supports local economies. I am going to tell you some of the lessons we have learned through our experience in Arizona – but many of these lessons are directly applicable to federal and private lands across the country.

In the face of massive high intensity forest crown fires, Novo Power has chosen to act. Our story is personal. We built a multi-generational home on a small homestead deep in the Apache-Sitgreaves Forest. In 2002, the Rodeo Chediski fire changed the landscape around our home for the next several generations. The deep loss we felt led us to educate ourselves on the issues. We learned that the condition of the dense green forests of Northern Arizona are far departed from their historical range. We obtained a census on the Territory of Arizona from the early 1900's and learned that the forest looked very different when the pioneers arrived and began to settle the country. Acreage with 5-15 trees per acre and gaps large enough to drive a covered wagon through, now are made up of dog hair thickets where as many as 2,000 trees per acre fight for the nutrients, sunlight, and water that used to support a tiny fraction of the current tree population. We were saddened by the U.S. Forest Service policies on fire suppression that all but eliminated the natural form of cleansing and forest management. We were irritated by the fighting and ensuing inaction caused by the "timber wars" of the 80's and 90's. We decided that if no one was going to act, we would.

In 2006, we entered Power Purchase Agreements with Salt River Projects (SRP) and Arizona Public Services (APS) to build a 28 megawatt (MW) Biomass facility to assist in the restoration of our National Forests. By June of 2008 we were operational. The first few years were laden with challenges, the most significant of which was the changing debt markets. The economy was about to enter the worst recession since the Great Depression and the Biomass plant came in 1.5 time over projected build budget. In 2010, the bank took the plant into receivership in hopes of running the plant more efficiently. Our family was relegated to the sidelines until an opportunity to repurchase the plant surfaced in early 2013. We were more than willing to finish what we started and we jumped back in with both feet. We had learned so much and were determined to not repeat the mistakes of the past. Since July of 2013, we have profitably run the facility while increasing output by over 10% with uptime levels that rival the best run facilities in the country.

This Novo Power Biomass facility is the keystone of the successful accelerated, industry-funded, landscape-scale restoration of Arizona national forests under the Four Forest Restoration Initiative

(4FRI). Over 90% of all acres thinning under this contract in 2016 was made possible by having the biomass from those acres burned at our facility. The great success of 4FRI to date has been the spirit of collaboration that has brought Industry, Environmentalists, Academia, USFS, and others to the same negotiating table. No one is getting everything they want but everyone is getting most of what they want. What we all realized is that no one won in the catastrophic forest fires that burned through Arizona over the last 20 years. The social consensus between the parties is based on the realization that restoration, starts with the removal of the excess biomass which causes the dangerously high fuel load on the landscape, and that this is impossible to accomplish without a place to dispose of the biomass responsibly and ecologically, such as a biomass facility with controlled emissions. If the forest products industry wanted the small round wood, they would need to find a solution to the removal and disposal of biomass – pre-commercial trees and brush, tree tops, limbs and logging residues that have little or no value other than as fuel. These materials, also known as “high hazard fuel” to foresters, increase exponentially the risk of catastrophic wildfire if not removed from the landscape. This is the reason why best available science forest restoration, such as implemented under the 4FRI project, requires the removal of biomass during mechanical thinning treatments. We support this position and believe that science, as well as common sense support it as well. Consequently, two of the challenges of forest restoration in Arizona, are that biomass represents more than 50% of the woody mass that must be removed from every acre treated with mechanical thinning, and that there are very few utilization opportunities for biomass that are economically viable enough to fund the restoration treatments. Therefore, biomass removal and utilization become a limiting factor on the implementation of restoration. We affectionately call this the biomass bottleneck.

To date, almost all acres thinned in the 4FRI area have been made possible by bringing the low value biomass to our facility to be burned. The challenge is twofold.

First, we have reached our capacity. Our facility, at best, can only resolve the biomass bottleneck for approximately 15,000 acres of National Forest each year. This is one of the two reasons why 4FRI only treated around 17,000 acres in 2016. With a goal of 50,000 acres per year, we are woefully underperforming our objectives in 4FRI. The two solutions to this problem are to add contractor capacity, and to add biomass disposal infrastructure in the state. The small round wood utilization infrastructure will follow, if we can find a way to handle the biomass.

The second problem is the changing power markets. When we repurchased the facility in 2013 we immediately began an effort to extend the life of our current power purchase agreements and increase our capacity, but the changing renewable energy markets have decreased interest by the Utilities in biomass power because they can buy intermittent solar and wind for half the price. This market change in the macro level environment has lead me to campaign for biomass power with a simple slogan “not all electrons are created equal!”

Although every electron will do the same thing, the process of creating that electron varies significantly along with its benefit to the environment and to society. My opinion is that the megawatts we generate at Novo Power are the most valuable megawatts produced in the state. Here is some critical data to support that assertion:

- By funding forest and watershed restoration, biomass electricity addresses directly the two Arizona priorities of Fire and Water. Forest restoration mitigates the risk of catastrophic fires,

and prevents the further loss of watershed functions. It may even help a little bit with water augmentation.

- Biomass truly meets the definition of green energy, being produced locally and supporting directly the local economy and residents of the community where it is produced. Novo Power sources all of their raw feed stock from within 150 miles of our facility, which means all of the jobs are created and maintained in AZ. The number of indirect employees that work fulltime to support our little facility exceeds 100.
- Novo Power has a major impact on the rural economy of the White Mountain communities with ~40 direct employees. 2016 numbers show:
 - Novo Power Payroll with Benefits: \$3.4M
 - Wood Supplier Payments: \$7.9M
 - 3rd Party Services/Supplies: \$3.97M
- The Bureau of Economic Statistics states that a 1.33 revenue multiplier applies to our direct economic impact to the economics of the local communities. Our overall economic impact therefore totals \$27.8 million (M).
- Novo Power is also a 50% owner of Novo Star Wood Products, a local sawmill. We have an additional 20 employees and revenues in excess of \$4.7M at NovoStar.
- Our feedstock is the no value/low value biomass that is making our forest unhealthy. Every ton we process improves the health of our National Forest:
 - Over 25% (~1 Million Acres) of the Ponderosa Pine National Forest in Arizona has burned in catastrophic wildfire in the last 15 years.
 - Prior to Novo Power going online, the cost to suppress these two fires along with private property damage exceeded costs of \$250M.
 - In comparison, the San Juan fire of 2014 had similar potential but was limited to 7,000 acres and a cost of only \$6.5M because it ran into acres where we had carried out restoration services.
 - We received a letter of endorsement from the Apache-Sitgreaves National Forest stating that we save over \$1M annually in prescribed burning cost by removing and disposing of the biomass generated through restoration logging, as compared to leaving it in the forest.
 - The ~15,000 acres annually we assist in restoring are critical habitat for endangered animals such as the Goshawk and Mexican Spotted Owl.
- Our National Forest is the mechanism for capturing, storing, and releasing the rainfall in our state. In a state where the vast majority of its citizens live in a desert, the National Forest is perhaps the most important asset to the state. Beyond the real risk of burning more capacity to the ground, we protect the critical water infrastructure that exists in the state. Our reservoirs

are in real risk of “silting out” in the next generation along with the increasing cost to treat waters following forest fire.

- Our forest also generates some \$3Billion dollars of revenue from hunting, fishing, hiking, tourism, etc. The work we do protects this industry by making the land friendlier to tourists and by removing potentially hazardous trees.
- Burning this wood in a controlled environment has the following benefits:
 - Methane is generated when biomass decays naturally in the woods. Methane is 25x more potent in capturing greenhouse gases in the atmosphere than CO2. When burned in a biomass facility, CO2 is released instead of Methane. Whereas fossil fuels release new carbon into the atmosphere from underground, the CO2 released by a biomass facility is already part of the atmosphere, having been absorbed over the past few decades by growing trees.
 - By burning in a controlled and filtered environment, particulate matter emissions are reduced by 90-98%.
 - SO2 emissions release acid into the environment and are a cause of acid rain. Our Biomass plant emits less than 10% of SO2 per megawatt in comparison to a coal powered facility.
 - NOx emissions generally create the "haze" seen in major cities and around industrial facilities. Our biomass plant emits less than 50% NOx per megawatt in comparison to a coal powered facility.
- We produce a renewable accredited power. We provide a baseload power at all times to the grid rather than the intermittent power generated by wind and solar. Biomass can be an excellent complementary power source to wind and solar and can take the place of natural gas or coal powered facilities.

The most important forest restoration next step in Arizona is to build additional infrastructure to process biomass. It is my opinion that one of the most economical and practical ways to process the biomass is to take it in raw form and make power from it. The more process steps we add to the biomass utilization, the more we make its disposal cost prohibitive. A simple example of this reality is based in the following data. One megawatt of power requires one bone dry ton of biomass to generate in our plant. We pay approximately \$38 per bone dry ton for the biomass prepped to enter our boiler. If you were to pelletize this biomass to co-burn in a coal facility the cost on locally sourced pellets would be in the range of \$120-\$150 per bone dry ton. We generate a finished power product for significantly less than the raw cost of pellets alone. We have proven in the last 4 years that a biomass plant facilitates restoration and brings increased investment in higher value uses for the round wood. The Apache-Sitgreaves forest cannot keep enough wood in front of our industry and they provide \$0 in subsidy for those acres. In fact, as stated above, they receive a \$1 million benefit.

At this point, Arizona needs your help. Until we get our next major biomass facility built we will likely stagnate in a prolonged stalemate to solve this problem. Conversely, if a biomass solution is

implemented soon, the remaining objectives will be met in short order and we will see the largest restoration project in the country provide the impact we all hoped for. Here is how you can help:

- **Advance the pace and efficiency of Forest Service action.** This could involve moving to a more efficient and faster preparation process (Designation by Description (DxD) or Designation by Prescription (DxP)) and by adopting technology that allows for the limited funds to prep more acres (digital prescription technology). We cannot allow prep to “become the new NEPA” as the bottleneck to restoration implementation.
- **Insure that biomass electricity, generated from forest biomass removal, remains classified as a renewable energy.** The carbon foot print and emission impacts of a biomass facility are minimal – especially if you consider one of its key benefits: the reduction of risk for catastrophic forest fires, which release massive amounts of carbon into the air.
- **Provide fiscal incentives to make biomass power cost-competitive with other renewable energy sources.** Biomass power has long received half the benefits of other renewable energy sources through the Section 45 tax credit program, which expired for biomass on December 31, 2016. When facilities were eligible for benefits, it was harder for them to take advantage given the length of time it takes to build a facility. A new approach to tax incentives for biomass is needed.
- **Work with us to reduce the cost of transporting fuels to facilities, which is one of our biggest expenditures.** This can come in the form of matching payments or transportation credits like the Biomass Crop Assistance Program (BCAP), or in the form of a price per megawatt generated incentive. This ought to be tied directly to biomass harvested off National Forest so as not to incentivize the facilities that run on byproducts from other forest industry. This subsidy ought to come in the form of spending tied to preventive vs reactive restoration measures. If done right, this could help the U.S. Forest Service greatly reduce the amount it spends on fire suppression. For example, if we spend \$1 Billion fighting fires in 2017, there should be a fund of \$100 Million in 2018 for restoration services targeted at reducing catastrophic fire. The Biomass Power Association is lobbying for a similar fund for removing high hazard fuels from USFS lands with \$117 Million in annual funding.
- The US government can provide power purchase agreements directly to the biomass facility to power government facilities like military bases, educational and administrative buildings. For example, Fort Drum in New York is powered by a biomass facility.
- Implement a pilot project in Arizona, as previously done in a few northwestern states that would allow a higher maximum truck weight on interstates for biomass related industry, in order to bring costs down through more cost effective transportation.
- Require that the Forest Service release by September 2017 a new RFP of 300,000 to 500,000 acres within the 4FRI area, in order to attract additional investments in round wood and biomass utilization in Arizona in order to meet the 50,000 acres annual objective of 4FRI.

The end goal is to restore the forest to a condition where we can reintroduce low intensity fire back into the ecosystem and let it play its indispensable role in preventing catastrophic wildfire. In the meantime, we use mechanized thinning as a first treatment that allows subsequent controlled burns. We remove the fuel load and restore the acres to pre-settlement reference condition and we do so while mitigating the risk of catastrophic fire, and at a fraction of the cost to fighting such fires. I often find it ironic that we focus on the cost of suppressing fire while not recognizing the enormous loss in natural resources in these mega-fires. We lose timber, water, animal life, recreational revenues, personal property, cultural identity and way of life, while emitting a horrific amount of particulate

matter and carbon into the atmosphere, and destroying the very mechanism that could recapture it. We have to fund the ecological services required to restore this national resource, and biomass removal and disposal has a big part to play in this restoration effort. If we deal with this issue correctly, industry will quickly do at landscape scale in Arizona what it has already done in the White Mountain: that is fund and implement industry-funded ecological restoration. What we have accomplished in East Arizona can be replicated in other areas of the state, the West, and across the entire country.