

U.S. Department of the Interior

**Report on Prize Competitions
FY 2017-18**

October 2018

DOI Report on Prize Competitions, FY 2017–18

This report summarizes the U.S. Department of the Interior prize competition activities during FYs 2017 and 2018 undertaken under the authorities of the Stevenson-Wydler Technology Innovation Act of 1980, as amended (15 U.S.C. 3719). It is being submitted to the White House Office of Science and Technology Policy (OSTP) so that it can fulfill the requirements of Section 24 of that Act which requires the Director, Office of Science and Technology Policy, to submit a biennial report on prize competition activities during the preceding two years.

The bulk of the prize competition activities at DOI are undertaken by Reclamation’s Water Prize Competition Center. Stemming from the success of the “Desal Prize” in 2014, Reclamation developed the Water Prize Competition Center (WPCC), funded under the Research and Development Office’s Science and Technology Program, to leverage innovation from the citizen-solver community to further the agency’s mission to manage, develop, and protect water and related resources in an environmentally and economically sound manner for the benefit of the American public. Since the DesalPrize, Reclamation has launched 16 prize competitions through the WPCC, all of which have involved multi-agency partners within and outside the federal government.

Reclamation plans to launch 17 more competitions over the next few years.

Below are summary tables of competitions completed, underway, or launched, respectively, by DOI in FY 2017 and FY 2018. It includes fourteen from the WPCC and one jointly offered by the National Invasive Species Council, DOI’s Office of Hawaiian Affairs, and other DOI bureaus.

<i>FY 17 - 18 PRIZES COMPLETED</i>				
Prize Title	Purse	Partners	Winners	More Information
Downstream Fish Passage at Tall Dams	20k	Reclamation U.S Army Corps of Engineers U.S. Geological Survey NOAA-National Marine Fisheries Service	Briana Conners - Cincinnati, OH Ted Grygar - San Diego, CA Joseph Rizzi - Benicia, CA Kenneth Smith - Colfax, WI	https://www.usbr.gov/research/challenges/fishpassage.html
Detecting the Movement of Soils (Internal Erosion) Within Earthen Dams, Canals, Levees and their Foundations	20k	Reclamation U.S Army Corps of Engineers	Ted Grygar - San Diego, CA David Orlebeke - Ridgecrest, CA Michael Kardauskas - Billerica, MA Cliff Gilbert - Southborough, MA Jean-Louis Briaud - College Station, TX	https://www.usbr.gov/research/challenges/soilmovement.html
Preventing Rodent Burrows in Earthen Embankments	20k	Reclamation U.S Army Corps of Engineers State of Colorado Department of Natural Resources -Dam Safety Branch	Edem Tsikata - Cambridge, MA Lawrence Kearns - Chicago, IL John McNabb - Pocatello, ID Leaf Jiang - Lexington, MA David Orlebeke - Ridgecrest, CA Diana Matonis - Michiana, MI	https://www.usbr.gov/research/challenges/rodentburrows.html
Arsenic Sensor - Stage 1	50k	Reclamation U.S. Environmental Protection Agency Indian Health Service National Institute of Standards and Technology Agricultural Research Service U.S. Agency for International Development U.S. Geological Survey Xylem, Inc.	Jason Robosky - Pittsburgh, PA Natalie Cookson - Solana Beach, CA Pradeep Kurup - Lowell, MA Tom Ferguson - San Francisco, CA Elain Fu - Corvallis, OR Chih-hung Chang - Corvallis, OR	https://www.usbr.gov/research/challenges/arsenicsensor.html

More Water, Less Concentrate - Stage 1	150k	Reclamation Water Environment and Reuse Foundation Water Research Foundation U.S. Environmental Protection Agency	Edem Tsikata - Cambridge, MA David Orlebeke - Ridgecrest, CA Emily Tow - Cambridge, MA Lawrence Kearns - Chicago, IL Tzahi Cath - Golden, CO Johan Vanneste - Golden, CO William Krantz - Boulder, CO Zachary Hendron - Durham, NC Amy Childress - Los Angeles, CA	https://www.usbr.gov/research/challenges/morewater.html
Indirect Estimates of Reservoir Water Storage	75k	Reclamation U.S. Army Corps of Engineers	Jatinder Hanspal - Sammamish, WA	https://www.usbr.gov/research/challenges/waterstorage.html
DataApp: A Mobile App Framework for Field Data Capture	30k	U.S. Geological Survey	Stephen Deck - Cary, NC Shawn Ross - New South Wales, AU Alexis Cullen - Clinton Township, MI George Gruse - Brookeville, MD Bretton Holmes - Phoenix, AZ Cody Flagg - Boulder, CO Don Tjandra - Dublin, CA	https://www.usbr.gov/research/challenges/dataapp.html
Long-Term Corrosion Protection of Existing Hydraulic Steel Structures - Stage 1	75k	U.S. Army Corps Engineer R&D Center National Institute of Standards and Technology U.S. Naval Facilities Engineering Command	Brent Holmes - Phoenix, AZ Kirby Meacham - Cleveland, OH John Newport - Chadds Ford, PA David Orlebeke - Ridgecrest, CA Daniel Williams - Milltown, NJ	https://www.usbr.gov/research/challenges/corrosion.html

FY 17 - 18 PRIZES UNDERWAY

Prize Title	Purse	Partners	More Information
Colorado River Basin Data Visualization	60k	U.S. Geological Survey U.S. Department of Agriculture National Oceanic and Atmospheric Administration International Boundary and Water Commission	https://www.usbr.gov/research/challenges/datavis.html
Eradication of Invasive Mussels in Open Water - Stage 1	100k	U.S. Army Corps of Engineers U.S. Geological Survey Molloy & Associates, LLC	https://www.usbr.gov/research/challenges/mussels.html
Detecting Leaks and Flaws in Water Pipelines - Stage 1	75k	San Diego Water Authority Southern Nevada Water Authority Isle, Inc.	https://www.usbr.gov/research/challenges/leakpipes.html
Sub-Seasonal Climate Forecast Rodeo	800k	National Oceanic and Atmospheric Administration U.S. Army Corps of Engineers U.S. Geological Survey	https://www.usbr.gov/research/challenges/forecastrodeo.html
Pathogen Monitoring Challenge - Stage 1	80k	U.S. Environmental Protection Agency The Water Research Foundation Xylem	https://www.usbr.gov/research/challenges/pathogen.html
Saving the 'Ōhi'a – Hawai'i's Sacred Tree	70k	National Invasive Species Council DOI Office of Native Hawaiian Relations National Park Service U.S. Fish and Wildlife Service U.S. Geological Survey	https://conservationx.com/challenge/invasives/ohia

FY 17 - 18 PRIZES LAUNCHED

Prize Title	Purse	Partners	More Information
Powering Electronic Instruments on a Rotating Shaft	250K	U.S. Army Corps of Engineers Bonneville Power Administration	https://www.usbr.gov/research/challenges/shaft-power.html

Upcoming Prize Competitions for FY 2019 and Beyond

Infrastructure Sustainability Theme Area

- Prevent Corrosion of Hydraulic Steel Structures - Stage 2
- Detecting Leaks and Flaws in Water Transmission Lines - Stage 2
- New Hydropower Algorithms
- Water Delivery Canals - Extend Life & Reduce Seepage Losses - Stage 1
- Preventing Dam Foundation Liquefaction During Earthquakes

Maintaining Environmental Compliance Theme Area

- Sediment Removal Techniques for Reservoir Sustainability - Stage 1
- Better Fish Exclusion Technologies
- Eradicating Invasive Mussels in Open Water - Stages 2/3
- Sediment Removal Techniques for Reservoir Sustainability - Stage 2
- Water Temperature Management Downstream of Dams

Water Availability Theme Area

- More Water Less Concentrate- Stages 2/3
- Sub-Seasonal Climate Forecast Rodeo - Repeat with Different Solver Community
- Arsenic Sensor - Stage 2
- Pathogen Monitoring Challenge - Stage 2
- Lowering the Cost of Continuous Streamflow Monitoring - Stage 1
- Lowering the Cost of Continuous Streamflow Monitoring - Stage 2
- Water Concentrate Disposal/Beneficial Use - Stage 1

Appendix
to
DOI Report on Prize Competitions, FY 2017–18

This Appendix is a compilation of forms for each competition active during FY 2017 or 2018 that have been filled out per OSTP's instructions. In this compilation, data for each competition appears in the same order as it is listed on the summary tables in the above report.

Title	Downstream Fish Passage at Tall Dams								
Link	https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=59159 https://www.usbr.gov/research/challenges/fishpassage.html https://www.innocentive.com/ar/challenge/9933648 https://www.challenge.gov/challenge/downstream-fish-passage-at-tall-dams/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input checked="" type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation, U.S. Department of the Interior								
Federal Partners (if applicable) (optional)	<p>U.S. Geological Survey</p> <p>NOAA-National Marine Fisheries Service</p> <p>U.S. Army Corps of Engineers</p>								
Non-Federal Partners (if applicable) (optional)	N/A								

Total Prize Purse	Total Prize Purse Offered: \$20,000 Total Prize Purse Awarded: \$20,000
Non-Monetary Incentives	N/A

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.05 Funding: \$20,000 for prizes
	FY2018	Full Time Equivalents (FTEs): 0 Funding: 0
Estimated Value of Partner Contributions	FY17 - \$24,000 FY18: \$0	
Submissions Open Date (optional)	3/31/2016	
Submissions Due Date (optional)	5/10/2016	
Winners Announced Date (optional)	5/3/2017	

Phases (optional)	N/A
Submissions (optional)	44
Participants (optional)	180
Number of Prizes (optional)	4
Winners (optional)	4

1. Proposed Goals

Reclamation sought new ideas for ensuring successful and cost-effective downstream passage of juvenile fish at tall (high-head) dams. The solutions addressed reducing: stress (e.g. crowding, removal from water, disorientation); physical damage on fish; interference with the operation of the dam (flood control, energy, water distribution); and total costs.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Reclamation and other Federal, state, and local organizations have a stake in recovering threatened and endangered fish. This prize competition was developed to help migrating juvenile fish get over or around tall dams. Moving migrating juvenile fish past tall dams will ensure habitat connectivity that many threatened and endangered fish populations need to survive and reproduce.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment. Budget consumption by prize competition vendor service occurred prior to FY17.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$20,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Cash prizes of \$20,000 were distributed to 4 winning solvers as determined by the judging panel. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Four solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine. |
| <input checked="" type="checkbox"/> Press release | |
| <input type="checkbox"/> Day-long event(s) prior to the competition | |
| <input checked="" type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

10. Evaluation of Submissions

The prize competition was advertised as an “Ideation Challenge.” Competitors were required to submit a written proposal including a detailed description and rationale for why the proposed solution met or exceeded the performance criteria stated in the challenge posting. Submissions were evaluated by a Judging Panel composed of scientists, engineers, and other technical subject matter experts affiliated with Federal and state entities. The Panel had consultation access to technical experts outside of their expertise, as deemed necessary, to evaluate specific submissions. The judging was conducted by blind review as all submissions were identified solely by a number assigned by InnoCentive. Judges were provided with scoring sheets to be completed independently after reviewing each proposed solution. The judges assessed the merits of each solution by the degree upon which they meet the technical requirements. They also assessed the feasibility, flexibility, cost, and scalability of the proposed concept. At the end of the independent judging the individual scores were tallied and combined. The Panel convened several conference calls and then attended an all-day web conference to discuss the strengths and weaknesses of each submission and arrive at a consensus judges opinion. Solutions that did not meet all criteria, but were deemed novel, interesting, and potentially worth pursuing, were eligible to win a partial prize.

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11. Partnerships (optional)

U.S. Geological Survey, NOAA-National Marine Fisheries Service, and the U.S. Army Corps of Engineers provided in-kind support for design and judging of the prize competition. The federal agencies also provided assistance with marketing and outreach. One subject matter expert from State of California Department of Water Resources also provided in-kind design and judging assistance. No monetary or non-cash awards were provided by partners.

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

For prize competitions, such as this one, where a successful system needs to solve a suite of different problems to successfully meet system requirements, a separate prize for each piece of the problem should be considered. Alternatively, consider a competition that focuses only on the most difficult part of the system problem. For fish passage, this is likely the ability to guide fish through a reservoir and successfully attract them to the fish collection and conveyance feature of the system. A tighter, sharper focus on the critical pieces of the problem may help solvers better focus and deliver.

Title	Detecting the Movement of Soils (Internal Erosion) Within Earthen Dams, Canals, Levees and their Foundations								
Link	https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=60541 https://www.usbr.gov/research/challenges/soilmovement.html https://www.innocentive.com/ar/challenge/9933649 https://www.challenge.gov/challenge/detecting-soil-movement-in-embankments/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input checked="" type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Army Corps of Engineers								
Non-Federal Partners (if applicable) (optional)	State of Colorado Dam Safety Program								

Total Prize Purse	Total Prize Purse Offered: \$20,000 Total Prize Purse Awarded: \$20,000
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.05 Funding: \$20,000 for prizes
	FY2018	Full Time Equivalents (FTEs): 0 Funding: \$0
Estimated Value of Partner Contributions	FY17: \$7000 FY18: \$0	
Submissions Open Date (optional)	3/31/2016	
Submissions Due Date (optional)	5/10/2016	
Winners Announced Date (optional)	9/18/2017	

Phases (optional)	N/A
Submissions (optional)	29
Participants (optional)	133
Number of Prizes (optional)	5
Winners (optional)	5

1. Proposed Goals

The quality of life for many people around the globe depends on water storage behind earthen dams, water movement within earthen canals, and flood-protection behind levees. However, earthen dams, canals and levees are prone to internal erosion of soils caused by seepage, either through or under the structures. The internal erosion process is largely invisible as it occurs below the ground surface. By the time visible signs are present, damage has likely occurred to the structure that will require mitigation or repair. Earlier detection is required to increase the time available to intervene, and to decrease the extent and cost of repairs.

While there are a number of specific erosion mechanisms, they all share a common feature: the erosion results in the movement of soils from an initiation point to an exit point. The distance from the initiation point to the exit point can be as small as a few meters, or as large as hundreds of meters. If soil movement can be detected earlier, problems can be corrected and damage avoided.

The Bureau of Reclamation (Reclamation), in collaboration with the U.S. Army Corps of Engineers (USACE), is seeking new methods for detecting the movement (erosion) of soils in earthen structures and foundations. These methods may detect internal erosion either directly or indirectly (detecting properties that typically indicate internal erosion is taking place). The goal is to detect soil movement earlier than occurs by current visual inspection and instrumentation methods.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

This prize competition sought methods to detect the movement of material earlier than observable by currently used visual inspection and instrumentation methods. This could help prevent the loss of life, property and interruption of the service the infrastructure provides. Furthermore, the reliability of our water infrastructure is improved.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize

furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern

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6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$20,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Cash prizes of \$20,000 were distributed to 5 winning solvers as determined by the judging panel. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine. |
| <input checked="" type="checkbox"/> Press release | |
| <input type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

10. Evaluation of Submissions

The prize competition was advertised as an “Ideation Challenge.” Competitors were required to submit a written proposal including a detailed description and rationale for why the proposed solution met or exceeded the performance criteria stated in the challenge posting. Submissions were evaluated by a Judging Panel composed of scientists, engineers, and other technical subject matter experts affiliated with Federal and state entities. The Panel had consultation access to technical experts outside of their expertise, as deemed necessary, to evaluate specific submissions. The judging was conducted by blind review as all submissions were identified solely by a number assigned by InnoCentive. Judges were provided with scoring sheets to be completed independently after reviewing each proposed solution. The judges assessed the merits of each solution by the degree upon which they meet the technical requirements. They also assessed the feasibility, flexibility, cost, and scalability of the proposed concept. At the end of the independent judging the individual scores were tallied and combined. The Panel convened several conference calls and then attended an all-day web conference to discuss the strengths and weaknesses of each submission and arrive at a consensus judges opinion. Solutions that did not meet all criteria, but were deemed novel, interesting, and potentially worth pursuing, were eligible to win a partial prize.

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11. Partnerships (optional)

The U.S. Army Corps of Engineers and State of Colorado Dam Safety Program provided in-kind support for design and judging of the prize competition. The agencies also provided assistance with marketing and outreach. No monetary or non-cash awards were provided by partners.

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

For prize competitions, such as this one, where a successful system needs to solve a suite of different problems to successfully meet system requirements, a separate prize for each peive of the problem should be considered. Alternatively, consider a competition that focuses only on the most difficult part of the system problem.

Title	Preventing Rodent Burrows in Earthen Embankments								
Link	https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=60543 https://www.usbr.gov/research/challenges/rodentburrows.html https://www.innocentive.com/ar/challenge/9933763 https://www.challenge.gov/challenge/preventing-rodent-burrows-in-earthen-embankments/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input checked="" type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Army Corps of Engineers								
Non-Federal Partners (if applicable) (optional)	State of Colorado Department of Natural Resources Dam Safety Branch								

Total Prize Purse	Total Prize Purse Offered: \$20,000 Total Prize Purse Awarded: \$20,000
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.29 Funding: \$20,000 for prizes
	FY2018	Full Time Equivalents (FTEs): \$0 Funding: \$0
Estimated Value of Partner Contributions	FY 17: \$40,000 FY 18: \$0	
Submissions Open Date (optional)	8/29/2016	
Submissions Due Date (optional)	10/11/2016	
Winners Announced Date (optional)	09/19/2017	

Phases (optional)	N/A
Submissions (optional)	75
Participants (optional)	224
Number of Prizes (optional)	5
Winners (optional)	5

1. Proposed Goals

Rodent burrows can fill with water when the water levels change, creating seepage paths, which can lead to internal erosion in embankments resulting in the potential for catastrophic failure. Embankment failures can cause property damage, loss of life, and interrupt crucial deliveries of water in the West and across the nation.

Trapping or baiting rodents on earthen embankments are short-term remedies, and experience has shown that within a short time, the rodents inevitably return. Annual programs of rodent removal over thousands of miles of earthen embankment are cost prohibitive and only marginally successful. Solvers are asked to “dig deeper” than the rodents and offer creative, cost effective, long-term solutions to this real and serious problem.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Rodents can burrow through both sides of an embankment providing a pathway for water to move through and erode the embankment, potentially causing serious issues for the surrounding communities. Burrows may also intersect or expose other anomalies in the embankment that may result in a failure of the embankment and interruption of water supply to clients. This prize competition advanced the agency's mission of reliable water delivery by proposing new solutions to solve failures of canal embankments due to rodent burrows.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment; budget consumption by prize competition vendor service occurred prior to FY17.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$20,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Cash prizes of \$20,000 were distributed to 5 winning solvers as determined by the judging panel. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

10. Evaluation of Submissions

The prize competition was advertised as an “Ideation Challenge.” Competitors were required to submit a written proposal including a detailed description and rationale for why the proposed solution met or exceeded the performance criteria stated in the challenge posting. Submissions were evaluated by a Judging Panel composed of scientists, engineers, and other technical subject matter experts affiliated with Federal and state entities. The Panel had consultation access to technical experts outside of their expertise, as deemed necessary, to evaluate specific submissions. The judging was conducted by blind review as all submissions were identified solely by a number assigned by InnoCentive. Judges were provided with scoring sheets to be completed independently after reviewing each proposed solution. The judges assessed the merits of each solution by the degree upon which they meet the technical requirements. They also assessed the feasibility, flexibility, cost, and scalability of the proposed concept. At the end of the independent judging the individual scores were tallied and combined. The Panel convened several conference calls and then attended an all-day web conference to discuss the strengths and weaknesses of each submission and arrive at a consensus judges opinion. Solutions that did not meet all criteria, but were deemed novel, interesting, and potentially worth pursuing, were eligible to win a partial prize.

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11. Partnerships (optional)

The U.S. Army Corps of Engineers and State of Colorado Natural Resources Dam Safety Branch provided in-kind support for design and judging of the prize competition. The agencies also provided assistance with marketing and outreach. No monetary or non-cash awards were provided by partners.

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

For prize competitions, such as this one, where a successful system needs to solve a suite of different problems to successfully meet system requirements, a separate prize for each peive of the problem should be considered. Alternatively, consider a competition that focuses only on the most difficult part of the system problem.

Title	Arsenic Sensor – Stage 1								
Link	https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=61730 https://www.usbr.gov/research/challenges/arsenicnsensor.html https://www.innocentive.com/ar/challenge/9933765 https://www.challenge.gov/challenge/arsenic-sensor-challenge-stage-1/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input checked="" type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Environmental Protection Agency Indian Health Service National Institute of Standards and Technology Agricultural Research Service U.S. Agency for International Development U.S. Geological Survey								
Non-Federal Partners (if applicable) (optional)	Xylem, Inc.								

Total Prize Purse	Total Prize Purse Offered: \$50,000 Total Prize Purse Awarded: \$50,000
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.12 Funding: \$0
	FY2018	Full Time Equivalents (FTEs): 0 Funding: \$0
Estimated Value of Partner Contributions	FY 17: \$57,000 FY 18: \$10,000	
Submissions Open Date (optional)	12/13/2016	
Submissions Due Date (optional)	03/13/2017	
Winners Announced Date (optional)	03/02/2018	

Phases (optional)	N/A
Submissions (optional)	39
Participants (optional)	217
Number of Prizes (optional)	5
Winners (optional)	7 (1 award paid by non-federal partner, Xylem, Inc.)

1. Proposed Goals

Measuring arsenic in the environment and in drinking water is important for protecting human health. Drinking water and wastewater treatment facilities are subject to arsenic regulations in order to limit human exposure and environmental contamination. While current analytical methods are suitable for ensuring regulatory compliance, there is a need for rapid, low-cost monitoring of arsenic that would benefit water treatment plant operations, wastewater monitoring, contaminated site remediation, private well owners, scientific research and other interested parties.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input checked="" type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Stage 1 of the Arsenic Sensor prize competition sought concepts for rapidly, accurately, and cost-effectively measuring arsenic in water through improved sensor technologies. Current analytical methods are suitable for ensuring regulatory compliance, but there remains a need for rapid, low-cost monitoring of arsenic. These selected ideas are a positive step forward to better understand and manage water quality, potentially opening up more usable supplies for the West and the country.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize

furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment; budget consumption by prize competition vendor service occurred prior to FY17.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$50,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Cash prizes of \$50,000 were distributed to 6 winning solvers as determined by the judging panel with 1 winner paid \$10,000 by non-federal partner, Xylem, Inc. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

10. Evaluation of Submissions

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

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11. Partnerships (optional)

U.S. Environmental Protection Agency - design and judging
Indian Health Service - design and judging
National Institute of Standards and Technology - design and judging
Agricultural Research Service - design
U.S. Agency for International Development - design
U.S. Geological Survey - design and judging
Xylem, Inc. - (paid 10K purse award to one winner) - judging

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

For prize competitions, such as this one, where a successful system needs to solve a suite of different problems to successfully meet system requirements, a separate prize for each peive of the problem should be considered. Alternatively, consider a competition that focuses only on the most difficult part of the system problem.

Title	More Water, Less Concentrate - Stage 1								
Link	https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=61912 https://www.usbr.gov/research/challenges/morewater.html https://www.innocentive.com/ar/challenge/9933762 https://www.challenge.gov/challenge/more-water-less-concentrate-stage-1/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input checked="" type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Environmental Protection Agency U.S. Army Corps of Engineers U.S. Army								
Non-Federal Partners (if applicable) (optional)	The Water Environment and Reuse Foundation Water Research Foundation								

Total Prize Purse	Total Prize Purse Offered: \$150,000 Total Prize Purse Awarded: \$150,000
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.14 Funding: \$0
	FY2018	Full Time Equivalents (FTEs): 0 Funding: \$0
Estimated Value of Partner Contributions	FY 17: \$96,000 FY 18: \$0	
Submissions Open Date (optional)	12/13/2016	
Submissions Due Date (optional)	3/13/2016	
Winners Announced Date (optional)	04/04/2018	

Phases (optional)	N/A
Submissions (optional)	66
Participants (optional)	282
Number of Prizes (optional)	8
Winners (optional)	10

1. Proposed Goals

Innovative solutions were sought to expand usable water supplies by maximizing fresh water production from inland desalination systems in a cost effective and environmentally sound manner. Currently, significant and desirable water supplies are trapped in concentrate streams that are a byproduct of desalination technologies. The cost to manage or dispose of concentrate is rather large and very limiting to utilization of desalination in inland applications. Solutions can be novel technologies or approaches that build upon existing technologies. Solutions should address one of the following objectives, 1) ways to improve overall system recovery of existing desalination technologies, 2) ways to treat concentrate streams to extract additional useable water and thus to increase overall system recovery, or 3) new high recovery desalination technologies or processes that increase overall system recovery beyond current desalination technologies.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input checked="" type="checkbox"/> Find and highlight innovative ideas | <input type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Currently, significant and desirable water supplies are trapped in concentrate streams that are a byproduct of desalination technologies. The cost to manage or dispose of concentrate is rather large and limiting to utilization of desalination in inland applications. This challenge sought innovative concepts to expand usable water supplies by maximizing fresh water production from inland desalination systems, and thereby reduce the volume of concentrate.

The National Academy of Sciences identified developing cost-effective approaches for concentrate management that minimize environmental impacts as one of their highest priority research topics to enable the more widespread use of desalination to expand water supplies in the United States.

The demand for fresh water will be increasing, and we need to be able to develop new water supplies from non-traditional water sources, like brackish groundwater and surface water using desalination and novel technologies. The competition sought innovative concepts to expand usable water supplies by maximizing fresh water production from inland desalination systems in a cost-effective and environmentally sound manner.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment; budget consumption by prize competition vendor service occurred prior to FY17.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$150,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Cash prizes of \$150,000 were distributed to 10 winning solvers as determined by the judging panel. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input checked="" type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

10. Evaluation of Submissions

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11. Partnerships (optional)

U.S. Environmental Protection Agency - design
U.S. Army Corps of Engineers - design and judging
U.S. Army - design and judging
The Water Environment and Reuse Foundation - design, judging, and outreach
Water Research Foundation - outreach

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

For prize competitions, such as this one, where a successful system needs to solve a suite of different problems to successfully meet system requirements, a separate prize for each peive of the problem should be considered. Alternatively, consider a competition that focuses only on the most difficult part of the system problem.

Title	Indirect Estimates of Reservoir Water Storage								
Link	https://www.usbr.gov/research/challenges/waterstorage.html https://www.innocentive.com/ar/challenge/9933766 https://www.challenge.gov/challenge/estimating-reservoir-water-storage/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input checked="" type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Army Corps of Engineers								
Non-Federal Partners (if applicable) (optional)	N/A								

Total Prize Purse	Total Prize Purse Offered: \$75,000 Total Prize Purse Awarded: \$1,000
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.09 Funding: \$1,000 (only paid one solver partial-prize)
	FY2018	Full Time Equivalents (FTEs): 0 Funding: 0
Estimated Value of Partner Contributions	FY 17: \$40,000 FY 18: \$0	
Submissions Open Date (optional)	2/22/2017	
Submissions Due Date (optional)	5/22/2017	
Winners Announced Date (optional)	10/26/2017	

Phases (optional)	N/A
Submissions (optional)	20
Participants (optional)	280
Number of Prizes (optional)	1
Winners (optional)	1

1. Proposed Goals

Water storage in reservoirs behind dams is a vital component for water management, and the amount available defines the delivery of benefits from reservoirs. Available water storage, over time, decreases as sediment deposition occurs, thus decreasing the capacity for storage. This sediment deposition, known as sedimentation, also adversely affects reservoir infrastructure operation and maintenance such as outlet works and water intakes. Assessing the loss of storage capacity currently is an expensive and time consuming process performed directly by in-field surveys.

The Bureau of Reclamation, in collaboration with the U.S. Army Corps of Engineers, was seeking a cost effective method to indirectly estimate the storage capacity and/or sediment volume (storage loss) in reservoirs. This is a Reduction-to-Practice Challenge required written documentation, source code, and delivery of an executable application.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Measurement of reservoir storage loss due to sediment accumulation is paramount in supporting Reclamation's mission. Reservoir sedimentation is a chronic problem that has become more visible and has continually increasing impacts with the aging of dams. Sediment deposition in reservoirs limits the active life of reservoirs by reducing reservoir storage capacity and impacting structures such as outlet works and water intakes. In order to determine the magnitude and rate of sedimentation to assess future impacts, direct measurements, such as a bathymetric (below water) survey in combination with a topographic (above water) survey are necessary. This process can be costly and time consuming. As of 2015, less than 40% of Reclamation reservoirs have had at least one resurvey since first filling to estimate storage loss as a result of sedimentation. The alternative to direct measurements of storage loss is indirect estimates of storage loss. Developing an efficient and accurate indirect estimate model of reservoir storage would result in a better, faster, and cheaper solution to support Reclamation in meeting water and power deliveries now and into the future.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment; budget consumption by prize competition vendor service occurred prior to FY17.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$75,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). A partial cash prize of \$1,000 was distributed to 1 winning solver as determined by the judging panel. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input checked="" type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input checked="" type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

10. Evaluation of Submissions

The prize competition was advertised as an “Ideation Challenge.” Competitors were required to submit a written proposal including a detailed description and rationale for why the proposed solution met or exceeded the performance criteria stated in the challenge posting. Submissions were evaluated by a Judging Panel composed of scientists, engineers, and other technical subject matter experts affiliated with Federal and state entities. The Panel had consultation access to technical experts outside of their expertise, as deemed necessary, to evaluate specific submissions. The judging was conducted by blind review as all submissions were identified solely by a number assigned by InnoCentive. Judges were provided with scoring sheets to be completed independently after reviewing each proposed solution. The judges assessed the merits of each solution by the degree upon which they meet the technical requirements. They also assessed the feasibility, flexibility, cost, and scalability of the proposed concept. At the end of the independent judging the individual scores were tallied and combined. The Panel convened several conference calls and then attended an all-day web conference to discuss the strengths and weaknesses of each submission and arrive at a consensus judges opinion. Solutions that did not meet all criteria, but were deemed novel, interesting, and potentially worth pursuing, were eligible to win a partial prize.

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11. Partnerships (optional)

The U.S. Army Corps of Engineers provided in-kind services for 2 subject matter experts to design and judge the prize competition including an in-person judges meeting. The U.S. Army Corps of Engineers assisted with marketing and outreach. No monetary or non-cash prize awards were provided by partners.

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

For prize competitions, such as this one, where a successful system needs to solve a suite of different problems to successfully meet system requirements, a separate prize for each peive of the problem should be considered. Alternatively, consider a competition that focuses only on the most difficult part of the system problem.

Title	DataApp: A Mobile App Framework for Field Data Capture								
Link	https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=62551 https://www.usbr.gov/research/challenges/dataapp.html https://www.innocentive.com/ar/challenge/9933881 https://www.challenge.gov/challenge/dataapp-a-mobile-app-framework-for-field-data-capture-stage-1/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input checked="" type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	<p>U.S. Geological Survey</p> <p>U.S. National Park Service</p>								
Non-Federal Partners (if applicable) (optional)	N/A								

Total Prize Purse	Total Prize Purse Offered: \$30,000 Total Prize Purse Awarded: \$30,000
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.31 Funding: \$40,000
	FY2018	Full Time Equivalents (FTEs): 0.02 Funding: \$30,000
Estimated Value of Partner Contributions	FY 17: \$110,000 FY 18: \$0	
Submissions Open Date (optional)	5/23/2017	
Submissions Due Date (optional)	7/6/2017	
Winners Announced Date (optional)	5/26/2018	

Phases (optional)	N/A
Submissions (optional)	24
Participants (optional)	167
Number of Prizes (optional)	7
Winners (optional)	7

1. Proposed Goals

Data collection is fundamental to water and environmental science and management. Streamflows, reservoir elevations, and flows in canals and conduits, for example, are continuously monitored to support water management decisions ranging from real-time operations to long-term planning. Data are routinely collected to monitor infrastructure conditions and identify maintenance priorities, and a wide range of environmental data are collected to characterize habitat conditions, monitor fish and wildlife populations, and support ecosystem restoration programs.

Scientists, engineers, and technicians are increasingly using mobile devices such as tablets and smartphones to record measurements, document site locations via GPS, and take photos and notes in the field. Although numerous apps are already available to support general data collection on mobile devices, these existing apps do not provide the functionality and flexibility needed to support the broad range of current water and environmental monitoring needs. More importantly, these existing apps do not support the development, integration, and sharing of new and unique features and functions to meet the specialized needs of individual data collection scenarios and communities of practice.

DataApp Challenge Stage 1 was the first stage of a planned three-stage challenge seeking development of new and improved software application (app) frameworks to support electronic data collection and capture using mobile devices (i.e., smartphones and tablets) across a diverse range of water and environmental data collection situations.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Development of a flexible, extensible, and open source data collection app framework for mobile devices will facilitate the use of mobile devices for field data collection, which in turn will improve data collection efficiency, lower data collection costs, and improve data quality, transparency, and dissemination for applications to management, decision making, and scientific discovery. Flexibility and extensibility will allow the use of mobile devices for across broader range of data collection situations, whereas use of open source software will allow data collection communities of practice to develop common protocols and standards for data collection, management, and sharing.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

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- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment; budget consumption by prize competition vendor service occurred prior to FY17.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$30,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Cash prizes of \$30,000 were distributed to 7 winning solvers as determined by the judging panel. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
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- | | |
|--|--|
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| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input checked="" type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

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11. Partnerships (optional)

U.S. Geological Survey - design and judging

U.S. National Park Service - judging

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

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Title	Long-Term Corrosion Protection of Existing Hydraulic Steel Structures – Stage 1								
Link	https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=62570 https://www.usbr.gov/research/challenges/corrosion.html https://www.innocentive.com/ar/challenge/9933879 https://www.challenge.gov/challenge/long-term-corrosion-protection-of-existing-hydraulic-steel-structures-stage-1/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input checked="" type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Army Engineer Research and Development Center National Institute of Standards and Technology Naval Facilities Engineering Command								
Non-Federal Partners (if applicable) (optional)	North Dakota State University								

Total Prize Purse	Total Prize Purse Offered: \$75,000 Total Prize Purse Awarded: \$47,500
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.21 Funding: \$0
	FY2018	Full Time Equivalents (FTEs): 0 Funding: \$47,500
Estimated Value of Partner Contributions	FY 17: \$70,000 FY 18: \$0	
Submissions Open Date (optional)	6/13/2017	
Submissions Due Date (optional)	9/5/2017	
Winners Announced Date (optional)	6/27/2018	

Phases (optional)	N/A
Submissions (optional)	30
Participants (optional)	171
Number of Prizes (optional)	5
Winners (optional)	7

1. Proposed Goals

Common hydraulic steel structures such as hydroelectric penstocks and gates corrode, or degrade, without a properly applied corrosion control method. This degradation produces a localized or general thinning of material, which reduces the structure's ability to support load, carry water, etc. Failure of hydraulic steel structures can cause extensive downtime, loss of productivity, property damage, and even loss of life.

The cost of maintenance and replacement of existing corrosion control systems has increased greatly in recent decades due to increasing health, safety, and environmental concerns associated with coatings that have performed well in the past as well as the decreased life cycles of commercially available alternative coatings. New long-term solutions to protect steel structures in water immersion service will help to reduce the high cost incurred to keep steel infrastructure reliable and functional.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

The annual estimated cost of corrosion in the U.S. is \$451 billion or 2.7% of the nation's GDP (IMPACT Study, NACE International, 2016). This enduring cost is in spite of the development of numerous technologies dedicated to providing corrosion protection. The Bureau of Reclamation is seeking new corrosion control methods or technologies to curb the rising costs of protecting its steel structures and ensure safe and reliable operation of its water infrastructure.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment; budget consumption by prize competition vendor service occurred prior to FY17.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$75,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Five cash prizes of \$47,500 were distributed to seven winning solvers as determined by the judging panel. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input checked="" type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

10. Evaluation of Submissions

The prize competition was advertised as an “Ideation Challenge.” Competitors were required to submit a written proposal including a detailed description and rationale for why the proposed solution met or exceeded the performance criteria stated in the challenge posting. Submissions were evaluated by a Judging Panel composed of scientists, engineers, and other technical subject matter experts affiliated with Federal and state entities. The Panel had consultation access to technical experts outside of their expertise, as deemed necessary, to evaluate specific submissions. The judging was conducted by blind review as all submissions were identified solely by a number assigned by InnoCentive. Judges were provided with scoring sheets to be completed independently after reviewing each proposed solution. The judges assessed the merits of each solution by the degree upon which they meet the technical requirements. They also assessed the feasibility, flexibility, cost, and scalability of the proposed concept. At the end of the independent judging the individual scores were tallied and combined. The Panel convened several conference calls and then attended an all-day web conference to discuss the strengths and weaknesses of each submission and arrive at a consensus judges opinion. Solutions that did not meet all criteria, but were deemed novel, interesting, and potentially worth pursuing, were eligible to win a partial prize.

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11. Partnerships (optional)

U.S. Army Engineer Research and Development Center – planning and judging
National Institute of Standards and Technology – planning and judging
Naval Facilities Engineering Command – planning and judging
North Carolina State University - judging

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, “Can this work?”
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

For prize competitions, such as this one, where a successful system needs to solve a suite of different problems to successfully meet system requirements, a separate prize for each peive of the problem should be considered. Alternatively, consider a competition that focuses only on the most difficult part of the system problem.

Title	Colorado River Basin Data Visualization								
Link	https://www.usbr.gov/research/challenges/datavis.html https://www.innocentive.com/ar/challenge/9933882 https://www.challenge.gov/challenge/colorado-river-basin-data-visualization-challenge/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Geological Society National Oceanic and Atmospheric Administration U.S. Department of Agriculture International Boundary and Water Commission								
Non-Federal Partners (if applicable) (optional)	N/A								

Total Prize Purse	Total Prize Purse Offered: \$60,000 Total Prize Purse Awarded: \$60,000
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.59 Funding: \$15,134
	FY2018	Full Time Equivalents (FTEs): 0.37 Funding: \$60,000
Estimated Value of Partner Contributions	FY 17: \$50,000 FY 18: \$50,000	
Submissions Open Date (optional)	9/7/2017	
Submissions Due Date (optional)	11/17/2017	
Winners Announced Date (optional)	Pending	

Phases (optional)	N/A
Submissions (optional)	24
Participants (optional)	254
Number of Prizes (optional)	9
Winners (optional)	12

1. Proposed Goals

The Bureau of Reclamation plays a significant role in managing the Colorado River, including operating dams and canals to deliver water and generate power, overseeing water allocations and water use, and protecting and restoring habitat for endangered and threatened species. Management of the Colorado River is governed by numerous compacts, laws, court decisions and decrees, and regulatory guidelines collectively known as the "Law of the River." Reclamation relies on a broad range of Colorado River Basin (CRB) data to support short-term water management and long-term planning, including data on historical, current, and projected weather and climate conditions, reservoir storage and releases, and streamflows and diversions. State and local agencies, water users, recreationists, researchers and other stakeholders and partners also rely on CRB data for a wide variety of uses. Reclamation is currently working to make CRB data open and accessible to both Reclamation and non-Reclamation users; however, better approaches to visualizing CRB data are needed to improve data exploration, analysis, interpretation, and communication by internal and external users. In particular, better visualization approaches are needed to improve understanding and communication of current and projected conditions in the basin and the water management actions that affect those conditions. The objective of the visualization tool is to support exploration and understanding of climate, hydrology, river, and reservoir conditions across the CRB, as well as how these conditions vary in space and time. The tool should also help users understand how fluctuations in river and reservoir conditions relate to user interests, such as water supply and recreation opportunities.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input checked="" type="checkbox"/> Improve government service delivery | <input checked="" type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Successful development of innovative, interactive, and user-driven visualizations of CRB data will facilitate improved data analysis and decision making by Reclamation and non Reclamation users. Integrated visualization of CRB data and ancillary information will improve interpretation and understanding of basin conditions, management actions that affect those conditions, and legal and regulatory factors that influence management actions. Reclamation anticipates implementing the winning solution(s) as part of a new web-based data analysis and visualization tool; a successful solution will help to make this tool a common platform for communication and collaboration between Reclamation and CRB stakeholders and partners.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment; budget consumption by prize competition vendor service.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$60,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Nine cash prizes of \$60,000 were distributed to 12 winning solvers as determined by the judging panel. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input checked="" type="checkbox"/> Analytics, visualizations, algorithms |
| <input type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input checked="" type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

10. Evaluation of Submissions

The prize competition was advertised as an “Ideation Challenge.” Competitors were required to submit a written proposal including a detailed description and rationale for why the proposed solution met or exceeded the performance criteria stated in the challenge posting. Submissions were evaluated by a Judging Panel composed of scientists, engineers, and other technical subject matter experts affiliated with Federal and state entities. The Panel had consultation access to technical experts outside of their expertise, as deemed necessary, to evaluate specific submissions. The judging was conducted by blind review as all submissions were identified solely by a number assigned by InnoCentive. Judges were provided with scoring sheets to be completed independently after reviewing each proposed solution. The judges assessed the merits of each solution by the degree upon which they meet the technical requirements. They also assessed the feasibility, flexibility, cost, and scalability of the proposed concept. At the end of the independent judging the individual scores were tallied and combined. The Panel convened several conference calls and then attended an all-day web conference to discuss the strengths and weaknesses of each submission and arrive at a consensus judges opinion. Solutions that did not meet all criteria, but were deemed novel, interesting, and potentially worth pursuing, were eligible to win a partial prize.

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11. Partnerships (optional)

U.S. Geological Society – design and judging
National Oceanic and Atmospheric Administration – design and judging
U.S. Department of Agriculture – design and judging
International Boundary and Water Commission – design and judging

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, “Can this work?”
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

For prize competitions, such as this one, where a successful system needs to solve a suite of different problems to successfully meet system requirements, a separate prize for each peive of the problem should be considered. Alternatively, consider a competition that focuses only on the most difficult part of the system problem.

Title	Eradication of Invasive Mussels in Open Water - Stage 1								
Link	https://www.usbr.gov/research/challenges/mussels.html https://www.innocentive.com/ar/challenge/9933880 https://www.challenge.gov/challenge/eradication-of-invasive-mussels-in-open-water-stage-1/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input checked="" type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input checked="" type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competitions Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Geological Survey U.S. Army Corps of Engineers								
Non-Federal Partners (if applicable) (optional)	Molloy & Associates, LLC								

Total Prize Purse	Total Prize Purse Offered: \$100,000 Total Prize Purse Awarded: \$100,000
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.01 Funding: \$15,134
	FY2018	Full Time Equivalents (FTEs): 0.25 Funding: \$100,000
Estimated Value of Partner Contributions	FY 17: \$0 FY 18: \$120,000	
Submissions Open Date (optional)	12/14/2017	
Submissions Due Date (optional)	2/28/2018	
Winners Announced Date (optional)	Pending	

Phases (optional)	N/A
Submissions (optional)	67
Participants (optional)	238
Number of Prizes (optional)	3
Winners (optional)	4

1. Proposed Goals

Two species of dreissenid mussels, *Dreissena polymorpha* (zebra mussel) and *Dreissena rostriformis* “bugensis” (quagga mussel), have become established in freshwater lakes, reservoirs, and rivers in the United States. Invasive dreissenid mussels pose significant challenges for Reclamation and all agencies and industries that manage water. Invasive mussels are prolific breeders and settle on or within water facility infrastructure such as water intakes, gates, diversion screens, hydropower equipment, pumps, pipelines, and boats. Infested water and hydropower infrastructure can fail or choke off water transmissions. Invasive mussels negatively impact the natural ecology, which can be detrimental to native and endangered species, including native fisheries. Maintaining and operating water supply and delivery facilities, water recreation, and other water dependent industries and economies in mussel infested water bodies are dramatically more expensive and complex. Public recreation may also be severely impacted by mussel infestations, from shell fragments degrading swim beaches to increased requirements and cost for boaters. Management of invasive mussel infestations can also lead to restricted public access, in some cases through a complete ban on public use of infested waters. Currently, no practical methods exist for large-scale eradication of invasive dreissenid mussel populations once they become widely established in a reservoir, lake, or river (referred to as “open water”). Reclamation sought innovative solutions for 100% eradication of zebra and quagga mussels in open water through direct mortality or through non-lethal treatment that lead to their eventual eradication. Proposed treatments must be specific to invasive mussels without significant harm to non-target organisms such as native mussels or threatened and endangered species.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Invasive dreissenid mussels pose significant challenges for Reclamation and all agencies and industries that manage water. Invasive mussels are prolific breeders and settle on or within water facility infrastructure such as water intakes, gates, diversion screens, hydropower equipment, pumps, pipelines, and boats. Infested water and hydropower infrastructure can fail or choke off water transmissions. Invasive mussels negatively impact the natural ecology, which can be detrimental to native and endangered species, including native fisheries. Maintaining and operating water supply and delivery facilities, water recreation, and other water dependent industries and economies in mussel infested water bodies are dramatically more expensive and complex. Public recreation may also be severely impacted by mussel infestations, from shell fragments degrading swim beaches to increased requirements and cost for boaters to have their watercraft inspected and decontaminated, and potential impacts on populations of game fish. Management of invasive mussel infestations can also lead to restricted public access, in some cases through a complete ban on public use of infested waters. Eradication of invasive dreissenid mussels ensures Reclamation's ability to meet water and power deliveries now and into the future.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY, divided by \$200,000 per FTE; work represents finalizing design, launch support, competition judging and final reporting.

Budget reported excludes FTE staffing, and includes purse payment and budget consumption by prize competition vendor service for design support.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse of \$100,000 was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.).

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input checked="" type="checkbox"/> Scientific |
| <input checked="" type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website.

10. Evaluation of Submissions

The judging was conducted by blind review as all submissions were identified solely by a number assigned by InnoCentive. Judges were provided with scoring sheets to be completed independently after reviewing each proposed solution against the criteria stated in the prize competition posting document.

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11. Partnerships (optional)

U.S. Army Corps of Engineers, U.S. Geological Survey, and Molloy & Associates LLC provided in-kind support for design and judging of the prize competition. Partners also provided assistance with marketing and outreach. One subject matter expert from Portland State University also provided in-kind design and judging assistance, but the university was not a full partner. No monetary or non-cash awards were provided by partners.

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

Title	Detecting Leaks and Flaws in Water Pipelines - Stage 1								
Link	https://www.usbr.gov/research/challenges/leakypipes.html https://www.innocentive.com/ar/challenge/9933883 https://www.challenge.gov/challenge/detecting-leaks-and-flaws-in-water-pipelines-stage-1/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input type="checkbox"/> Launched</td> <td><input checked="" type="checkbox"/> Launched</td> </tr> <tr> <td><input type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input type="checkbox"/> Completed
FY2017	FY2018								
<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Launched								
<input type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	N/A								
Non-Federal Partners (if applicable) (optional)	<p>San Diego County Water Authority</p> <p>Southern Nevada Water Authority</p> <p>Isle Utilities</p>								

Total Prize Purse	Total Prize Purse Offered: \$75,000 Total Prize Purse Awarded: \$75,000
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.30 Funding: \$15,134
	FY2018	Full Time Equivalents (FTEs): 0.07 Funding: \$0
Estimated Value of Partner Contributions	FY 17: \$30,000 FY 18: \$90,000	
Submissions Open Date (optional)	3/8/2018	
Submissions Due Date (optional)	5/8/2018	
Winners Announced Date (optional)	Pending	

Phases (optional)	N/A
Submissions (optional)	54
Participants (optional)	294
Number of Prizes (optional)	5
Winners (optional)	5

1. Proposed Goals

Reclamation's water conveyance system includes over 20,000 miles of buried pipelines made of various materials including metal, plastic, concrete, and composite. Municipal water utility collaborators also have extensive transmission and distribution pipeline networks. Pipeline components, such as joints, fittings, valves, linings, and individual pipe sections are subject to leakage due to damage, corrosion, and other types of degradation. Detecting water loss from pipelines will trigger appropriate maintenance, allowing conservation of scarce water resources and more reliable service to clients.

Presently, the available water pipeline leak detection techniques might be suitable for determining general system delivery information or for close evaluation of small pipeline sections, none accommodate the needs to efficiently inspect thousands of miles of pipelines and to precisely determine leak location and severity. In addition, many of the techniques are unable to inspect the pipe while it is in service (pressurized, flowing water in pipe) or cannot overcome operational complications such as limited pipe entry points, diameter changes, elevation changes, or lateral bends.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Reclamation seeks methods and technologies that can reliably and easily detect leaks and flaws in operating, pressurized water pipeline infrastructure regardless of size, depth of burial, pipe material or interior lining. Our primary focus is finding condition assessment solutions for 48-inch or greater pipe diameters and for steel and prestressed concrete cylinder pipe types, although solutions for all pipe types and diameters greater than 24 inches will be considered. This competition advances the agency's mission to reliably deliver water to our clients by allowing the agency to be proactive in pipeline leak detection and repair.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment; budget consumption by prize competition vendor service.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$75,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Five cash prizes from the \$75,000 were distributed to 12 winning solvers as determined by the judging panel. Non-cash prize awards were not offered for this competition.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website. Nevertheless, submissions included all solvers regardless of whether they are U.S. citizens/entities. Meritorious submissions from non-U.S. citizens and entities, were recognized in publications issued by Reclamation announcing the results of the competition, such as press releases, as applicable.

10. Evaluation of Submissions

The prize competition was advertised as an "Ideation Challenge." Competitors were required to submit a written proposal including a detailed description and rationale for why the proposed solution met or exceeded the performance criteria stated in the challenge posting. Submissions were evaluated by a Judging Panel composed of scientists, engineers, and other technical subject matter experts affiliated with Federal and state entities. The Panel had consultation access to technical experts outside of their expertise, as deemed necessary, to evaluate specific submissions. The judging was conducted by blind review as all submissions were identified solely by a number assigned by InnoCentive. Judges were provided with scoring sheets to be completed independently after reviewing each proposed solution. The judges assessed the merits of each solution by the degree upon which they meet the technical requirements. They also assessed the feasibility, flexibility, cost, and scalability of the proposed concept. At the end of the independent judging the individual scores were tallied and combined. The Panel convened several conference calls and then attended an all-day web conference to discuss the strengths and weaknesses of each submission and arrive at a consensus judges opinion. Solutions that did not meet all criteria, but were deemed novel, interesting, and potentially worth pursuing, were eligible to win a partial prize.

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11. Partnerships (optional)

Design Team In-kind Partners:
San Diego County Water Authority
Southern Nevada Water Authority
Isle Utilities

Judging Team In-kind Partners:

The panel consisted of subject matter experts from Reclamation, U.S. Army Corps of Engineers, Calleguas Municipal Water District, Central Arizona Project, Denver Water, Great Lakes Water Authority, Isle Utilities, Southern Nevada Water Authority, and the San Diego County Water Authority.

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

For prize competitions, such as this one, where a successful system needs to solve a suite of different problems to successfully meet system requirements, a separate prize for each peive of the problem should be considered. Alternatively, consider a competition that focuses only on the most difficult part of the system problem.

Title	Sub-Seasonal Climate Forecast Rodeo								
Link	https://www.usbr.gov/research/challenges/forecastrodeo.html https://www.drought.gov/drought/sub-seasonal-climate-forecast-rodeo https://www.innocentive.com/ar/challenge/9933764 https://www.challenge.gov/challenge/sub-seasonal-climate-forecast-rodeo/								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input checked="" type="checkbox"/> Launched</td> <td><input type="checkbox"/> Launched</td> </tr> <tr> <td><input checked="" type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input type="checkbox"/> Completed
FY2017	FY2018								
<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Launched								
<input checked="" type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	National Oceanic and Atmospheric Administration U.S. Army Corps of Engineers U.S. Geological Survey								
Non-Federal Partners (if applicable) (optional)	None								

Total Prize Purse	Total Prize Purse Offered: \$800,000 Total Prize Purse Awarded: Pending
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.30 Funding: \$64,757
	FY2018	Full Time Equivalents (FTEs): 0.15 Funding: 104,926
Estimated Value of Partner Contributions	FY 17: \$15,000 FY 18: 15,000	
Submissions Open Date (optional)	12/20/2016	
Submissions Due Date (optional)	5/3/2018	
Winners Announced Date (optional)	Pending	

Phases (optional)	N/A
Submissions (optional)	TBD
Participants (optional)	TBD
Number of Prizes (optional)	TBD
Winners (optional)	TBD

1. Proposed Goals

Water managers need more skillful information on weather and climate conditions with lead-times ranging from 15 days to 45 days and beyond. Lacking skillful sub-seasonal information limits water managers' ability prepare for shifts in hydrologic regimes, such as the onset of drought or occurrence of wet weather extremes. The challenge of sub-seasonal forecasting is that it encompasses the time frame where initial state information (e.g., coupled land-atmosphere processes) becomes less important and slowly varying long term states (e.g., sea surface temperatures, soil moisture, snow pack) become more important to prediction skill.

This is a Reduction to Practice Challenge. Solvers will have three months to develop their system before the forecasting rodeo begins, at which point they are asked to provide forecasts every two weeks over a 13 month period, with the first month being a "pre-season" to become familiar with the submission and evaluation processes. Including judging, awarding of prizes, and identification of next steps, the expected completion is mid-2018. It is possible that another competition may be a recommended next step, perhaps focusing on extremes or a longer outlook. A variety of prizes may be awarded as part of this competition, the total of which is approximately \$800,000. Prize categories are based on skill at two outlook timescales (weeks 3&4 and weeks 5&6) and for temperature as well as precipitation.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Techniques that outperform current forecast practices are expected to offer valuable insight as to how operational forecasts can be improved at the sub-seasonal timescale. This in turn will offer a variety of sectors – not just water management – much needed information to better manage resources and prepare for extreme events. A few examples include advanced emergency preparedness, enhanced water order scheduling, and wildfire management.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY. Work represents competition judging and final reporting. Budget reported excludes FTE staffing, and includes only purse payment; budget consumption by prize competition vendor service.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse was \$75,000 and was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Judging is in progress.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input checked="" type="checkbox"/> Analytics, visualizations, algorithms |
| <input type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input checked="" type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website.

10. Evaluation of Submissions

Judging is in progress

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11. Partnerships (optional)

The National Oceanic and Atmospheric Administration's (NOAA) co-led the design of this Challenge along with Reclamation. NOAA will also host the leaderboard and assist with evaluating the submissions. NOAA's mission includes science, service and stewardship. Specifically, NOAA aims to understand and predict changes in climate, weather, oceans, and coasts; to share that information and knowledge with others; and to conserve and manage coastal and marine ecosystems and resources (www.noaa.gov).

The U.S. Geological Survey (USGS) and the U.S. Army Corps of Engineers (USACE) contributed subject matter experts to review and assist with the design of this Challenge. The mission of the USGS is to serve the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life (www.usgs.gov). The mission of the USACE is to deliver vital public and military engineering services; partnering in peace and war to strengthen our Nation's security, energize the economy and reduce risks from disasters (www.usace.army.mil).

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

Title	Pathogen Monitoring - Stage 1								
Link	https://www.usbr.gov/research/challenges/pathogen.html https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=62175 https://www.innocentive.com/ar/challenge/9933767								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input type="checkbox"/> Launched</td> <td><input checked="" type="checkbox"/> Launched</td> </tr> <tr> <td><input type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input type="checkbox"/> Completed
FY2017	FY2018								
<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Launched								
<input type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Environmental Protection Agency								
Non-Federal Partners (if applicable) (optional)	Xylem, Inc. The Water Research Foundation								

Total Prize Purse	Total Prize Purse Offered: \$40,000 Reclamation, \$40,000 Xylem Total Prize Purse Awarded: Pending
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0.21 Funding: \$15,134
	FY2018	Full Time Equivalents (FTEs): 0 Funding: \$0
Estimated Value of Partner Contributions	FY 17: \$30,000 FY 18: \$92,000	
Submissions Open Date (optional)	5/10/2008	
Submissions Due Date (optional)	8/8/2018	
Winners Announced Date (optional)	Pending	

Phases (optional)	N/A
Submissions (optional)	TBD
Participants (optional)	TBD
Number of Prizes (optional)	TBD
Winners (optional)	TBD

1. Proposed Goals

As western U.S. water demands grow and water supplies become more scarce, water reuse is becoming an increasingly important water management strategy. Wastewater is a drought-resistant and reliable water source that is readily available in urban centers for beneficial reuse. While advanced water treatment technologies exist to produce high quality, potable water from wastewater, there is a need to better ensure treatment process integrity through improved pathogen detection and monitoring. Waterborne pathogens (e.g., bacteria, viruses, protozoa, and helminths) are regulated due to the risk they pose to human health, and their presence must be limited in water intended for potable use.

The Bureau of Reclamation, with financial support from Xylem, Inc, in collaboration with The Water Research Foundation and the Environmental Protection Agency, are seeking the development of rapid, accurate, and preferably on-line/on-site monitoring techniques to provide added protection of public health and optimize the design and operations of advanced water treatment facilities. Success could result in reliable, effective pathogen detection technologies that can facilitate public and regulatory acceptance of direct potable reuse systems.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input checked="" type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input type="checkbox"/> Stimulate a market |
| <input type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

We seek to enable the development of rapid, more accurate, and preferably on-line/on-site monitoring techniques to provide added protection of public health and optimize the design and operations of advanced water treatment facilities. Success could result in reliable, effective pathogen detection technologies that can facilitate public and regulatory acceptance of direct potable reuse systems.

Stage 1 of the competition is seeking technical proposals for how to rapidly, accurately, and cost-effectively detect viruses in water reuse treatment plants. Reclamation will award an \$80,000 prize purse (\$40,000 of which is provided by Xylem Inc.), among winning eligible U.S. solvers. Winning eligible international solvers may receive meritorious recognition.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY, divided by \$200,000 per FTE; work represents finalizing design, launch support, competition judging and final reporting. Budget reported excludes FTE staffing, and includes only budget consumption by prize competition vendor service for design support. Purse consumption will occur in FY19, where maximum purse will be \$80,000 with 50% involving BOR budget consumption and 50% involving partner contribution by Xylem.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse of \$40,000 was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). Xylem, Inc. offered \$40,000 in partner contribution. Judging is in progress.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input type="checkbox"/> Scientific |
| <input type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This prize competition targeted the Challenge.gov and InnoCentive solver communities. This challenge was conducted under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S.C. § 3719). The Act states that awards for this Prize Competition may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States. Other restrictions were published in the Challenge Specific Agreement on the InnoCentive website.

10. Evaluation of Submissions

Judging is in progress.

The judging will be conducted by blind review as all submissions will be identified solely by a number assigned by InnoCentive. Judges will be provided with scoring sheets to be completed independently after reviewing each proposed solution against the criteria stated in the prize competition posting document.

The prize competition was advertised as a “Theoretical Challenge.” Submissions consist of a written proposal including a detailed description and rationale for why the proposed solution met or exceeded the performance criteria stated in the prize competition posting.

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11. Partnerships (optional)

U.S. Environmental Protection Agency - design and judging
Xylem, Inc. - design and judging
The Water Research Foundation - design, judging, and outreach

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, "Can this work?"
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.

Title	Saving the ‘Ōhi‘a – Hawai‘i’s Sacred Tree								
Link	Posted on Challenge.gov and additional information at: https://conservationx.com/challenge/invasives/ohia								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input type="checkbox"/> Launched</td> <td><input checked="" type="checkbox"/> Launched</td> </tr> <tr> <td><input type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input type="checkbox"/> Completed
FY2017	FY2018								
<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Launched								
<input type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway								
<input type="checkbox"/> Completed	<input type="checkbox"/> Completed								
Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Kaiini Kaloi</p> <p>Email address: kaiini.kaloi@ios.doi.gov</p> <p>Phone number: 202-208-7462</p>								
Lead Sponsoring Agency	U.S. Department of the Interior								
Federal Partners (if applicable) (optional)	National Invasive Species Council Secretariat, U.S. Department of the Interior Office of Native Hawaiian Relations, National Park Service (specifically, Hawaii Volcanoes National Park), U.S Fish and Wildlife Service, and U.S. Geological Survey.								
Non-Federal Partners (if applicable) (optional)	Conservation X Labs and Hawaii Division of Forestry and Wildlife.								

Total Prize Purse	Total Prize Purse Offered: \$70,000 Total Prize Purse Awarded: \$70,000 (anticipated)
Non-Monetary Incentives	Recognition and networking.

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0 Funding: \$0
	FY2018	Full Time Equivalents (FTEs): 0.15 Funding: \$100,000
Estimated Value of Partner Contributions	\$0 to-date, but ongoing work with Conservation X Lab will be used to pursue other contributors.	
Submissions Open Date (optional)	8/28/2018	
Submissions Due Date (optional)	4/1/2019	
Winners Announced Date (optional)	7/1/2019	

Phases (optional)	Single phase.
Submissions (optional)	TBD after challenge completes.
Participants (optional)	TBD after challenge opens.
Number of Prizes (optional)	1
Winners (optional)	TBD after challenge completes.

1. Proposed Goals

An extremely serious threat to Hawai'i's native forests, as well as the ecology, hydrology, economy, and cultures of Hawai'i, the Rapid 'Ōhi'a Death (ROD) disease currently requires a \$10+ million response through 2019 and could prove to be even more costly if it is not contained, eliminated, and prevented in the near future. The goal of the 'Ōhi'a Challenge is to create new technologies to identify and eradicate the ROD disease.

In particular, this challenge seeks tools and solutions to advance:

1. Field-based detection of rapid 'Ōhi'a death in asymptomatic trees
2. Detection of the fungus at the landscape level
3. Environmental pathway identification, including predictive assessment

Further details are available at: <https://conservationx.com/challenge/invasives/ohia>

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input checked="" type="checkbox"/> Inform and educate the public |
| <input checked="" type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input checked="" type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input checked="" type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency’s Mission

Meets the Following Priorities of the Secretary	Discussion
Creating a Conservation Stewardship Legacy Second Only to Teddy Roosevelt	Four National Parks and one Fish and Wildlife Refuge are already affected by ROD. Without immediate action, the fungi has the potential to spread to the rest of the Hawaiian Islands National Parks and Refuges as well as other natural areas.
Restoring Trust with Local Communities	The ROD fungi know no borders. It is through partnerships with state and local government, private entities, and the Native Hawaiian Community, that these invasive fungi can be controlled and eventually eradicated from the Hawaiian Islands.
Generating Additional Revenues to Support DOI and National Interests	According to the State of Hawai‘i biosecurity plan, Ko‘olau Mountain Watershed on O‘ahu provides \$14B in economic and ecosystem services. ROD, which is currently limited to Hawai‘i Island, if it migrates to O‘ahu would deeply affect the Ko‘olau watershed.

4. Why Prizes?

Limited funds (\$100K) require unlimited thinking. We create this well of unlimited thinking by motivating individuals and organizations both in and outside of the traditional fungicide field to compete for these funds. Where, with a traditional grant or contract for \$100K, we might possibly get one or two people working on a very complex issue, with the challenge prize we can bring in multiple organizations who will compete both for the prize and distinction of winning the prize. Also, challenges only pay for successful performance of a task, which makes sure the taxpayer only pays for results.

5. Budget and Resources

Total funding for the challenge was \$100,000, all from FY 2018 funds. Of this, \$30,000 was obligated to be used to support the contract with Conservation X Labs (CXL) to help manage the challenge, including proper formulation of the challenge's public material, rules, and guidelines. In addition, the total activity will require 0.15 FTE with one-third each from NPS, NISC-Secretariat and DOI. The above figures exclude any additional resources that may be obtained by CXL to support the prize activity. [CXL's interest and potential to garner additional funding to support this activity was a factor in its selection as the contractor.]

6. Cash Prize Purses and/or Non-Cash Prize Awards

The total prize purse is \$70,000 to be awarded to one or, possibly, as many as three winners, depending on the Judges and Challenge administrators. The prize money will be delivered to the winner(s) through challenge.gov.

The funding for this prize is all from FY 2018.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
| <input type="checkbox"/> Creative (design & multimedia) | <input type="checkbox"/> Analytics, visualizations, algorithms |
| <input checked="" type="checkbox"/> Ideas | <input checked="" type="checkbox"/> Scientific |
| <input checked="" type="checkbox"/> Technology demonstration and hardware | <input type="checkbox"/> Other: Please specify |
| <input type="checkbox"/> Nominations | |

8. Solicitation of Submissions

Application will be solicited via Challenge.gov. We will have a better idea about the effectiveness and lessons learned after the competition has finished in FY 2019.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input type="checkbox"/> Other: Please specify |
| <input checked="" type="checkbox"/> Press release | |
| <input type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

This Challenge is being conducted by DOI under the authority of the America COMPETES Reauthorization Act of 2010 (15 U.S. C. § 3719) as amended by the American Innovation and Competitiveness Act of 2017 (PL-114-329). Accordingly, cash prize awards for this Challenge may only be given to an individual that is a citizen or permanent resident of the United States, or an entity that is incorporated in and whose primary place of business is in the United States.

10. Evaluation of Submissions

A panel of experts from conservation, industry, and technological innovation sectors will judge the Challenge entries against several criteria. Primary criteria for selecting the winner(s) include scalability and ease of use, and cost efficacy. Secondary criteria include cultural acceptability, sustainability, feasibility, and expected contribution to solving the ROD problem.

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11. Partnerships (optional)

This challenge brings together a range of federal, state, and private stakeholders committed to battling Rapid Ohia Death (ROD). Panelists on the challenge include members of the interagency ROD working group and the outreach and education group, specifically from NPS, USGS, USFWS, as well as the University of Hawaii and State of Hawaii Division of Forestry. We are reaching out to other partners, including Office of Hawaiian Affairs and University of Hawaii to leverage our efforts to promote the challenge and find innovative solutions to this problem.

12. Plan for Upcoming 2 Fiscal Years

ROD and other invasive species pose some of the greatest threats to the fulfillment of the NPS mission in Hawaiian parks. The potential losses due to ROD are irreversible and will threaten our economy and way of life. There is widespread support among Hawaii's land managers in NPS and other organizations of the threat posed by ROD, and a genuine willingness to cooperate and share information. ROD research and management is a top priority for scientists and land managers in NPS, USGS, and USFWS, and will remain so for the next decade unless a solution is found to eliminate this disease.

Title	Powering Electronic Instruments on a Rotating Shaft - Stage 1								
Link	https://www.usbr.gov/research/challenges/shaft-power.html https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=63143 https://www.innocentive.com/ar/challenge/9933885								
Status	<p>Please select the status of the prize competition for each FY (select all that apply):</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">FY2017</td> <td style="width: 50%;">FY2018</td> </tr> <tr> <td><input type="checkbox"/> Launched</td> <td><input checked="" type="checkbox"/> Launched</td> </tr> <tr> <td><input type="checkbox"/> Underway</td> <td><input checked="" type="checkbox"/> Underway</td> </tr> <tr> <td><input type="checkbox"/> Completed</td> <td><input type="checkbox"/> Completed</td> </tr> </table>	FY2017	FY2018	<input type="checkbox"/> Launched	<input checked="" type="checkbox"/> Launched	<input type="checkbox"/> Underway	<input checked="" type="checkbox"/> Underway	<input type="checkbox"/> Completed	<input type="checkbox"/> Completed
FY2017	FY2018								
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Authority	<p>Please select the authority under which the prize competition was conducted:</p> <p><input checked="" type="checkbox"/> Section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (i.e., COMPETES authority)</p> <p><input type="checkbox"/> Other authority: Please specify authority used.</p>								
Primary Point of Contact Within Your Agency for Prize Competition or Challenge	<p>Name: Ronda Dorsey, Acting Prize Competition Program Administrator</p> <p>Email address: rdorsey@usbr.gov</p> <p>Phone number: 303-445-2624</p>								
Lead Sponsoring Agency	Bureau of Reclamation								
Federal Partners (if applicable) (optional)	U.S. Army Corps of Engineers								
Non-Federal Partners (if applicable) (optional)	Bonneville Power Administration								

Total Prize Purse	Total Prize Purse Offered: \$250,000 Total Prize Purse Awarded: Pending
Non-Monetary Incentives	None

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Agency Resources	FY2017	Full Time Equivalents (FTEs): 0 Funding: \$0
	FY2018	Full Time Equivalents (FTEs): 0.35 Funding: \$0
Estimated Value of Partner Contributions	FY 17: \$0 FY 18: 40,0000	
Submissions Open Date (optional)	9/6/2018	
Submissions Due Date (optional)	12/6/2018	
Winners Announced Date (optional)	Pending	

Phases (optional)	N/A
Submissions (optional)	TBD
Participants (optional)	TBD
Number of Prizes (optional)	TBD
Winners (optional)	TBD

1. Proposed Goals

Reclamation's hydropower generating units are expected to safely and reliably produce the power that is delivered to the western electric grid. Equipment monitoring techniques provide a critical advancement toward keeping these units operational and reducing costly outages. However, the monitoring equipment requires a continuous power source in order to keep it online and performing its key role. New solutions are needed to permanently install low power electronics on the generator's rotating shaft in order to collect continuous data pertinent to operation and performance of the machine.

Presently, the available power sources for electronics on rotating shafts include batteries and contact solutions. Powering the electronic equipment with a battery does not provide continuous operation and requires downtime of the equipment to replace them, resulting in lost power generation. Existing contact solutions, such as slip rings, have unacceptable installation and maintenance requirements. Non-contact solutions include emerging technologies that may prove beneficial but are not yet explored for this application.

2. Goal Type

Please select which of the following goal types, if any, were applicable to the challenge (select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Improve government service delivery | <input type="checkbox"/> Inform and educate the public |
| <input type="checkbox"/> Find and highlight innovative ideas | <input checked="" type="checkbox"/> Engage new people and communities |
| <input checked="" type="checkbox"/> Solve a specific problem | <input type="checkbox"/> Build capacity |
| <input checked="" type="checkbox"/> Advance scientific research | <input checked="" type="checkbox"/> Stimulate a market |
| <input checked="" type="checkbox"/> Develop technology | <input type="checkbox"/> Other: Please specify |

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3. Advancing the Agency's Mission

Reclamation and our collaborators seek novel methods and technologies to reliably provide direct current power for loads of up to twenty watts to electronics on rotating shafts. Proposed solutions must be applicable to rotating shafts that are 18- to 144-inch diameter, whether at rated speed (80 to 550 revolutions per minute), standstill, or when ramping up or down. Small, lightweight solutions are preferred, and could be achieved via multiple methods, including air movement, light, vibration, magnetic induction, kinetic motion, or wireless energy transfer.

A successful solution would make online, continuous monitoring of hydropower generating units possible, which increases the reliability of power delivery and reduces costly outages.

4. Why Prizes?

A prize competition was selected as a preferred method to achieve the aforementioned because it helps engage a non-traditional, national solver community while also complementing traditional research designed to target the most persistent science and technology challenges. Competitions also can incentivize the submission of solutions. They are made open to a national, non-Federal solver community including citizens, businesses, and other organizations.

Reclamation selected a prize competition to address this technical challenge because it:

- allowed the agency to pay only for results
- established an important goal without having to limit approaches or teams that are most likely to succeed
- increased the number and diversity of the individuals, organizations, and teams that would address the problem or challenge of national/international significance
- can stimulate private sector investment that is many times greater than the cash value of the prize
- furthered Reclamation's mission by attracting more interest and attention to a defined program, activity, issue or concern.

5. Budget and Resources

FTE reported is based on labor budget consumption during the indicated FY, divided by \$200,000 per FTE; work represents finalizing design, launch support, competition judging and final reporting.

Budget reported excludes FTE staffing, and includes only budget consumption by prize competition vendor service for design support. Phase 1 purse consumption (\$50,000 of the total \$250,000 purse) will occur in FY19; Phase 2 purse consumption will occur in FY19 or FY20.

6. Cash Prize Purses and/or Non-Cash Prize Awards

The cash prize purse of \$250,000 was funded via Reclamation's Science and Technology Program, Research and Development Office as per Federal Acquisition Regulation (FAR, as codified at Chapter 1 of Title 48 of the Code of Federal Regulations, 48 C.F.R.). The prize competition is open to solvers.

7. Types of Solutions

Please select which of the following types of solutions were sought under this challenge (select all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Software and apps | <input type="checkbox"/> Business plans |
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8. Solicitation of Submissions

Reclamation created a unique webpage as well as cross-posted at Challenge.gov and InnoCentive sites. A video was created and shared via YouTube to support social media outreach, while a webinar was hosted to accompany the launch news release. InnoCentive was the prize competition administrator. The advantages of contracting with InnoCentive was the ability to bundle and brand the portfolio of Reclamation's Water Prize Competition Center while leveraging InnoCentive's global network of 380,000+ individuals. Overall, the quality and types of proposed solutions varied significantly. Many submissions, any of whom could be a potential winner, proposed technologies or methods already in practice with little or no potential to improve existing capabilities. Others, although some might be considered novel or different, were judged to not meet solution requirements or not feasible. No new, ready-to-implement, silver bullet was found to solve this difficult problem; although Reclamation understands this is not a realistic expectation for a single-stage ideation prize completion. Five solutions were considered worthy of a prize award consistent with the stated prize competition rules and criteria. Lessons learned include: the need for casting a wider solver net as well as more support for payments process. With this in mind, Reclamation is pursuing an Interagency Agreement (IA) with NASA's Center of Excellence for Collaborative Innovation (CoECI) to allow access to trending models, infrastructure, expertise and multiple external competition crowdsourcing services.

Please select which of the following methods were used by the agency to market the prize competition, mobilize potential participants, and ensure high quality submissions (select all that apply).

- | | |
|--|--|
| <input checked="" type="checkbox"/> Social media (e.g., Twitter, Facebook) | <input checked="" type="checkbox"/> Partnership with outside organizations (e.g., private companies, non-profit organizations, other Federal agencies) |
| <input checked="" type="checkbox"/> Email (e.g., listservs) | <input checked="" type="checkbox"/> Other: Advertisement in Reclamation's Knowledge Stream R&D magazine |
| <input checked="" type="checkbox"/> Press release | |
| <input type="checkbox"/> Day-long event(s) prior to the competition | |
| <input type="checkbox"/> Live video streaming | |

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9. Participation Requirements (optional)

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10. Evaluation of Submissions

The prize competition is open to solvers.
The judging will be conducted by blind review as all submissions will be identified solely by a number assigned by InnoCentive. Judges will be provided with scoring sheets to be completed independently after reviewing each proposed solution against the criteria stated in the prize competition posting document.

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11. Partnerships (optional)

U.S Army Corps of Engineers – judging
Bonneville Power Administration - judging

12. Plan for Upcoming 2 Fiscal Years

Future consideration to increase the effectiveness and efficiency of conducting prize competitions include:

- incorporating a methods for judges to quickly set aside solutions that have no merit, such as a quick initial reality check on the question, “Can this work?”
- in addition to the stated judging criteria, incorporate a free format field for each judge to characterize the merits of the solution in their own words based on the strengths and weaknesses they see.