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Sea Level Rise Considerations in Washington State Capital Grant Programs

Inventory and Lessons Learned

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The Washington Coastal Resilience Project (WCRP) is a three-year effort to rapidly increase the state's capacity to prepare for coastal hazards, such as flooding and erosion, which are related to sea level rise. The project will improve risk projections, provide better guidance for land use planners, and strengthen capital investment programs for coastal restoration and infrastructure. Partners include:

Washington Sea Grant
Washington Department of Ecology
Island County
King County
NOAA Office for Coastal Management
Padilla Bay National Estuary Research Reserve
The City of Tacoma
The Nature Conservancy
U.S. Geological Survey
University of Oregon
University of Washington Climate Impacts Group
University of Washington Department of Earth and Space Sciences
Washington Department of Fish and Wildlife
Pacific Northwest National Laboratory

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Introduction

Washington's 3,300 miles of coastal and marine waters play a vital role in our state by providing economic, environmental, and social benefits to communities. Washington's coastal areas are also inherently vulnerable to the dynamic nature of coastal processes. Flooding, erosion, and landslides already adversely affect our coastal communities and resources, and rising sea levels will only intensify these hazards. Sea level is rising along much of Washington's coast and is projected to rise at an accelerating rate as the climate continues to warm¹.

State capital grant programs fund a range of activities along our coast, including critical facilities and infrastructure construction, toxic cleanup of hazardous sites, habitat restoration and protection, recreation opportunities, and other important community assets. Capital investments by the state and communities are important to consider because they are often expensive, have a long-term design life,² and take several years to plan, engineer, permit and construct.

These important activities are located in areas that are vulnerable to the impacts of changing climate conditions. Coastal infrastructure is likely to experience more problems as sea levels rise, including saltwater intrusion, corrosion, flooding, and sedimentation. Changes in the water cycle could also compound these impacts. These changes have significant implications for transportation networks, facility operating costs, reduced asset lifespan, and potential threats to human health.³

State agencies recognize opportunities to promote the integration of future sea level conditions into capital projects. However, many questions remain about how to encourage the development of projects that consider future conditions, and how to use state grant programs to support climate-resilient capital investments.

Purpose

The purpose of this study is to explore existing efforts by state agencies in Washington to incorporate sea level rise considerations into state capital funding guidelines and projects. This rapid study identified successes, challenges, needs, and opportunities.

¹ Miller, I.M., Morgan, H., Mauger, G., Newton, T., Weldon, R., Schmidt, D., Welch, M., Grossman, E. 2018. Projected Sea Level Rise for Washington State – A 2018 Assessment. A collaboration of Washington Sea Grant, University of Washington Climate Impacts Group, Oregon State University, University of Washington, and US Geological Survey. Prepared for the Washington Coastal Resilience Project.

² The design life is the period of time during which the item is expected by its designers to work within its specified parameters; in other words, the life expectancy of the item.

³ Mauger, G.S., J.H. Casola, H.A. Morgan, R.L. Strauch, B. Jones, B. Curry, T.M. Busch Isaksen, L. Whitely Binder, M.B. Krosby, and A.K. Snover. 2015. State of Knowledge: Climate Change in Puget Sound. Report prepared for the Puget Sound Partnership and the National Oceanic and Atmospheric Administration. Climate Impacts Group, University of Washington, Seattle. doi:10.7915/CIG93777D

Methods

Inventory of Washington State capital grant programs

We created a baseline inventory of applicable capital grant programs (i.e., programs funding projects within areas potentially vulnerable to sea level rise). We assessed how these programs incorporate sea level rise and climate change considerations within their funding guidelines and evaluation criteria.

We reviewed the list of programs funded under the 2017-2019 State Capital Budget and 2018 Supplemental Budget to identify capital grant programs that fund projects potentially vulnerable to sea level rise. This list is available on the [Office of Financial Management \(OFM\) budget website](#). OFM also provided us with a list of 2017-19 capital appropriations that were categorized as grants in their budgeting database. In addition, we explored the websites of the state agencies listed, which allowed us to verify if we missed any eligible grant programs.

From these different data sources, we identified capital grant programs that fund projects that could be affected by sea level rise. We looked at *action* verbs describing activities related to work on facilities and infrastructure, and the environment, such as: to renovate, to build, and to clean-up, to restore, and to preserve. These represent actions that could potentially alter the existing state of the coastal environment (e.g., by building new infrastructure, renovating existing infrastructure, or by preserving and restoring habitat).

We assumed that these programs were applicable statewide (unless stated otherwise, such as the Chehalis Basin Strategy) and could therefore be vulnerable to sea level rise depending on where funded projects are implemented.

We compiled a baseline inventory of all the capital grant programs we identified (Appendix A). This inventory may not be exhaustive, as we only reviewed the list of programs funded under the 2017-2019 State Capital Budget and the 2018 Supplemental Budget.

Finally, we reviewed the inventoried capital grant programs for sea level rise and climate change considerations (i.e., what language and where) in their funding guidelines and evaluation criteria. We specifically searched for the terms “sea level rise” and “climate change” and identified six programs using this language (Appendix B).

Interviews

In 2019, we conducted qualitative interviews with state capital grant program administrators and project applicants to gather information and lessons learned about their experiences with addressing sea level rise and climate change.

Because this was a rapid assessment, the interview list was selected to represent diverse interests, rather than the quantity of the sample size. Due to limited time and scope, this assessment does not represent all parties that could be involved in sea level rise and climate change resilience

efforts. A consistent set of open-ended interview questions was used for all individual interviews (Appendix C). In all, we conducted 18 interviews involving 25 participants (Appendix E).

We spoke with 16 capital grant program staff members, representing 12 capital grant programs across eight state agencies. We also interviewed Washington State Parks, although they do not have any capital grant programs. We requested their input because they receive funds from the legislature for parks that may be affected by sea level rise.

Another interview involved the non-profit organization Washington Trust for Historic Preservation, which is contracted by Washington State Department of Archaeology and Historic Preservation to manage their capital grant programs.

In addition to capital grant program administrators, we conducted seven interviews with nine project applicants. We targeted project applicants who applied to capital grant programs using sea level and climate change language. The goal was to understand how they perceived this language and addressed sea level rise and climate change effects within their capital project grant proposals.

We prepared a qualitative assessment of the interview results. We summarized issues, perspectives, and ideas that arose frequently across all interviews, as well as those that were notable for their diversity or originality.

Key Findings

Inventory of Washington State capital grant programs

We identified 59 capital grant programs across 14 state agencies that fund projects in areas potentially vulnerable to sea level rise (Table 1).

Table 1. Number of capital grant programs that fund projects within areas potentially vulnerable to sea level rise

Agency Name	Number of Programs
Department of Archaeology and Historic Preservation (DAHP)	3
Department of Commerce (Commerce)	9
Department of Ecology (Ecology)	9
Department of Fish and Wildlife (DFW)	1
Department of Natural Resources (DNR)	4
Department of Social and Health Services (DSHS)	3
Department of Transportation (DOT)	3
Office of Financial Management (OFM)	1
Pollution Liability Insurance Agency (PLIA)	1
Recreation and Conservation Office (RCO)	14
State Conservation Commission (SCC)	4
Superintendent of Public Instruction (SPI)	3
Washington State Historical Society (WSHS)	1
Washington State Transportation Improvement Board (TIB)	3
TOTAL	59

Six of the 59 capital grant programs explicitly state the terms “sea level rise” and/or “climate change” within their request for proposals (RFPs).⁴

1. [Floodplains by Design](#) (Washington Department of Ecology).
2. [Puget Sound Estuary and Salmon Restoration Program](#) (ESRP) (Washington Department of Fish & Wildlife and the Recreation & Conservation Office).
3. [Puget Sound Acquisition and Restoration \(PSAR\) Large Capital Projects](#) (Puget Sound Partnership and the Recreation & Conservation Office).
4. [Aquatic Lands Enhancement Account](#) (ALEA) (Washington Department of Natural Resources and the Recreation & Conservation Office).
5. [Salmon Recovery Grants](#) (Recreation & Conservation Office).
6. [Remedial Action Grants](#) (Toxics Cleanup Program; Department of Ecology)

⁴ Analysis was only conducted on capital grant programs with guidelines and application materials that were accessible.

Lessons learned

These findings highlight and summarize opinions on the incorporation of sea level rise and climate change language within capital grant program funding guidelines and evaluation criteria. The lessons learned represent common themes that were shared across capital grant program administrators and project applicants, as well as key insights expressed by specific subsets of interviewees.

Successes:

- *Willingness to address sea level rise in capital grant programs and projects.* All interviewees recognized sea level rise and climate change as important issues to consider in capital grant programs. Grant programs that have already included considerations (Appendix B) did not encounter any strong opposition from project applicants. However, sea level rise and climate change considerations were avoided in most funding guidelines, and questions directly inquiring about climate change were worth only a small portion of the overall application score. If these considerations become more robust and increase in weight, project applicants may become more resistant to them.
- *Initial efforts have been well received.* Project applicants who submitted proposals to the Estuary and Salmon Restoration Program (ESRP), the Puget Sound Acquisition and Restoration (PSAR) fund, the Salmon Recovery Grants (SRGs), and Floodplains by Design program thought that their funding guidelines and evaluation criteria were complete, clear, provided instructive examples, and had a transparent scoring system.
- *Continued learning and improvement with time.* Grant program staff noticed that project applicants have grown more comfortable and better at responding to sea level rise and climate change application questions and managing projects that deal with climate change over time. For example, we compared the distribution of scores on the Estuary and Salmon Restoration Program's climate change question across three grant cycles. We found that the percentage of highly scored responses doubled by the third grant cycle (Appendix D).

Challenges:

- *Where to include sea level rise requirements.* Grant programs using sea level rise and climate change language incorporated it in various locations, including: program overview or guiding principles, woven within multiple criteria categories, or in a stand-alone climate change question. However, there was no consensus on where sea level rise and climate change considerations should be located or how they should be incorporated. Programs identified tradeoffs with different approaches.
- *Developing application evaluation metrics.* Capital grant program administrators expressed that developing evaluation metrics and deciding how to rank or prioritize the relative importance of sea level rise criteria posed an added challenge. There is no single metric applicable in all settings. A common difficulty is finding the correct balance between establishing meaningful measurement criteria and allowing for flexibility of metrics that

work best for particular grant program contexts. Metrics need to be designed to allow program administrators to evaluate consistently and equitably across project applications.

- *Perception of deterrence from the added burden.* Some of the capital grant programs that have not included sea level rise or climate change language expressed concerns that these elements or requirements could deter applicants from applying for funding because of the added burden. Some capital grant program managers were more comfortable using broad terms such as “resiliency,” “natural infrastructure,” or “sustainable design” to incentivize consideration of climate impacts.

Needs:

- *Research to understand the anticipated costs.* Many of the capital grant programs that have included sea level rise or climate change requirements have not prioritized these elements in the scoring or evaluation criteria. Therefore, there has not been a noticeable increase in administrative and application development costs. There are concerns that an increase in the weight or score for the criteria could lead to additional costs to both parties, although there is little data to support this concern.
- *Take intentional and inclusive steps with partners to prepare a programmatic approach before adding new requirements.* There are many considerations that need to be taken into account to address the effects of new sea level rise and climate change requirements on capital grant programs and project applicants. A collaborative process to develop a joint strategy with program staff and project applicants will help support feasible and effective implementation.
- *Adopt a strategy and invest in coordinated multi-organizational technical assistance to help funding programs and applicants integrate sea level rise into capital projects.* There is a demonstrated need for additional support from technical experts (outreach/stakeholder engagement, climate change science, engineering, planning, regulatory, funding, etc.) to help programs and applicants address sea level rise and climate impacts in capital projects. Grant program managers and administrators expressed that support is needed for developing funding guidelines and guidance, answering technical questions during the application process, and evaluating/ranking this element of projects. The University of Washington Climate Impacts Group has been a valuable resource for programs that have already included sea level rise or climate change language. Project applicants identified that more support is needed during pre-design phases of projects and that broadened assistance would help to align key resources and expertise, spearhead cross-fertilization of ideas, enhance collaboration, and stitch/leverage different funding programs together to get projects constructed. Interviewees pointed toward a recent publication by the William D. Ruckelshaus Center⁵ that recommended a “Coastal Hazards Organizational Resilience Team” (COHORT)⁵ as a relevant model for this level of assistance. Assistance services to support

⁵ William D. Ruckelshaus Center - Washington State Coastal Resilience Assessment Final Report (2017): https://s3.wp.wsu.edu/uploads/sites/2180/2013/06/Washington-Coast-Resilience-Assessment-Report_Final_5.1.17.pdf

communities can also help to address equity issues in capital grant programs, especially in a sea level rise and climate change context.

- *Conduct project-scale data collection and analysis.* Project applicants expressed the challenges with applying science at a project scale and the complexities of understanding the full range of effects to consider in site planning and design. While sea level rise and climate change information is growing, there is still a need for site-specific data collection and analysis to best address the unique conditions at each site and individual project goals, or guidance to help use the tools that are available to evaluate risk and alternatives.
- *Create centralized information repositories.* Both capital grant program staff and project applicants said it would be helpful to have a central location for current science and research, modeling methods, project examples and lessons learned, and recommended best practices. This would help support projects, raise awareness, and encourage a community of practice that can support each other's efforts. The Coastal Hazards Resilience Network⁶ or the University of Washington Climate Impacts Group⁷ were identified by a number of applicants as possible options that could provide this capability, but they would need further investment to build out and maintain this capacity.
- *Build long-term monitoring and feedback loops that support effective adaptive management.* Grant programs are not structured to support long-term monitoring and adaptive management of projects, which is critical for evaluating if capital grant programs are achieving desired outcomes and informing data-driven adjustments. Project applicants highlighted the need to have grant funds specifically allocated to the long-term monitoring of their projects. This would allow project applicants to assess the effectiveness of the design in place, to adapt to emerging concerns, and to develop appropriate short- and long-term solutions. This will become increasingly important as local sea level rise and climate conditions continue to evolve over time. In addition, some project applicants believed that resulting datasets could be used to leverage more funds.
- *Offer pilot programs to test concepts and provide models of best practices.* Offering separate experimental or pilot “program enhancement” sections to existing capital grant programs, or monetary incentives to project applicants, could promote learning opportunities and knowledge exchange. This approach would also provide a more robust baseline of examples to inform the appropriate integration of sea level rise and climate change in capital grant programs and projects.
- *Broaden eligible activities under existing capital grant programs.* There might be additional benefits of addressing sea level rise more strategically if projects could take a more holistic, multi-benefit approach by increasing the range of activities eligible for funding. Several interviewees identified the Floodplains by Design Program⁸ as a relevant example. However,

⁶ The Coastal Hazards Resilience Network website: <https://wacoastalnetwork.com/>

⁷ University of Washington Climate Impacts Group website: <https://cig.uw.edu/>

⁸ Washington State Floodplains by Design Program: <https://ecology.wa.gov/About-us/How-we-operate/Grants-loans/Find-a-grant-or-loan/Floodplains-by-design>

designing these types of projects takes additional preparation and planning. Funding different phases of project development (project-scale data collection and analysis, capacity building, pre-construction documentation, feasibility and design, etc.) may increase opportunities for applicants to complete the necessary steps to evaluate risk and address sea level rise impacts.

- *Identify state policy options for a sea level rise risk management framework, including adaptation metrics.* Interagency coordination is needed to identify common interests and recommended methods for determining the appropriate level of risk and sea level rise projection likelihoods to use in the planning and design of capital projects. This includes the timing/time horizon of climate change - over what timeframe are applicants expected to have identified and addressed climate change impacts? A state-recommended framework will create more consistency for programs and applicants. This includes carefully considered metrics or meaningful measures of change. When applied during the project planning process, decision-makers can use the metrics to evaluate adaptation options based on risks and benefits for near- and long-term implementation outcomes. Metrics can also help decision-makers assess the extent to which implemented measures have been effective (or failed). Metrics can help to engage both stakeholders and policymakers in the assessment of the levels of risk and vulnerability for a variety of sectors (e.g., water, agriculture, public health, and infrastructure) by helping to describe and, in some cases, quantify the effectiveness of changes in management practices and planned adaptation strategies.⁹
- *Create a new capital grant program that provides funding for sea level rise assessment and project planning.* Several interviewees thought that a new capital grant program focused specifically on sea level rise assessment and project planning would complement existing programs and would better prepare applicants to apply for additional funding. In particular, upfront investment in the early stages of project development using an integrated and multi-benefit framework could help to evaluate alternatives and involve a more diverse group of stakeholders to comprehensively address impacts. Project applicants would then be eligible for a wider range of existing state and federal funding opportunities and have more competitive grant applications for final design, permitting, and project implementation.

Opportunities:

- *Institutionalize sea level rise and climate adaptation into more existing state capital grant programs.* There are 59 capital grant programs that support projects located in areas that might be vulnerable to sea level rise impacts. Programs cover a wide range of project types that represent a diverse portfolio of investments. There are strategic opportunities for the state to leverage these established programs, monitor outcomes, and use lessons learned to inform future decision-making and provide examples for others. In addition to the six grant programs that already include explicit sea level rise and climate change language, there are many other programs that include language that could be interpreted to address future

⁹ Center for Climate Strategies Adaptation Guidebook: Comprehensive Climate Action. Available at: <http://www.climatestrategies.us/library/library/view/908>

impacts. However, additional guidance might be needed to clarify expectations and encourage consistency.

- *Leverage existing state agency coordination groups to deepen partnerships, share best practices, and coordinate investments.* Both capital grant program staff and project applicants thought that coordination of investments and activities between programs and agencies should be improved. For example, the Align Grant Coordination Workgroup¹⁰ has been meeting since 2015. Its mission is to “provide an interagency forum to increase coordination and collaboration among Washington State grant programs that benefit water quality and salmon recovery while recognizing the unique role and authorities of each agency.” Some interviewees suggested considering sea level rise and climate change from a multi-program and multi-project perspective. The goal would be that projects in the same area could complement one another, which would amplify their effects, increase their longevity, and help in leveraging funds.

¹⁰ Washington State Natural Resource Grant Program Coordination : Mission, Strategy, and Key Results (2015): https://salishsearestoration.org/images/e/e9/RCO_%26_WDOE_2015_water_and_salmon_charter.pdf

Appendices

Appendix A. Baseline inventory table of state capital grant programs funding projects potentially vulnerable to sea level rise.

Table 2. State capital grant programs funding projects potentially vulnerable to sea level rise.

State Agency	Capital Grant Program	2017-19 Capital Budget Appropriations (\$)
Department of Archaeology and Historic Preservation (DAHP)	Historic County Courthouse Grants Program	1,137,000
Department of Archaeology and Historic Preservation (DAHP)	Heritage Barn Preservation Program	515,000
Department of Archaeology and Historic Preservation (DAHP)	Historic Cemetery Grant Program	500,000
Department of Commerce	Housing Trust Fund Program (HTF)	56,190,757
Department of Commerce	Housing Preservation Program	
Department of Commerce	Low-Income Home Rehabilitation Revolving Loan Program	
Department of Commerce	Behavioral Health Community Capacity	65,600,000
Department of Commerce	Building for the Arts (under Community Capital Facilities program)	12,000,000
Department of Commerce	Youth Recreational Facilities (under Community Capital Facilities program)	6,907,000
Department of Commerce	Building Communities Fund (under Community Capital Facilities program)	30,900,000
Department of Commerce	Public Works Assistance Account Construction Loans	97,103,000
Department of Commerce	Early Learning Facility Grants	15,500,000
Department of Ecology	Catastrophic Flood Relief	50,000,000
Department of Ecology	Stormwater Financial Assistance Program (SFAP)	37,000,000
Department of Ecology	Clean Water Act Section 319 Federal Program	
Department of Ecology	Centennial Clean Water Program	35,000,000
Department of Ecology	Washington State Water Pollution Control Revolving Fund Program	210,000,000
Department of Ecology	Floodplains by Design	35,389,000
Department of Ecology	Remedial Action Grants (Toxics Cleanup Program)	43,615,000
Department of Ecology	Watershed Plan Implementation and Flow Achievement	5,000,000
Department of Ecology	Flood control assistance account program (FCAAP)	

Department of Fish and Wildlife	Migratory Waterfowl Habitat	600,000
Department of Fish and Wildlife	Puget Sound Estuary and Salmon Restoration Program (ESRP)	8,000,000
Department of Natural Resources	Aquatic Lands Enhancement Account (ALEA)	1,000,000
Department of Natural Resources	Family Forest Fish Passage Program	5,000,000
Department of Natural Resources	Forest Legacy	15,000
Department of Natural Resources	Trust Land Transfer Program	10,000,000
Department of Natural Resources	Forestry Riparian Easement Program (FREP)	3,500,000
Department of Natural Resources	Rivers and Habitat Open Space Program (RHOSP)	1,000,000
Department of Social and Health Services	Drinking Water Construction Loans	118,000,000
Department of Social and Health Services	Source Water Protection	
Department of Social and Health Services	Drinking Water State Revolving Fund (including emergency loan fund)	
Department of Transportation	Aviation Revitalization Loans	5,000,000
Department of Transportation	Airport Grants Program	
Department of Transportation	Public Transportation Grants (Consolidated Grant Program, Formula Grant program, Regional Mobility Grant Program, Vanpool Investment Program)	
Office of Financial Management	Water Resources Project Account	20,000,000
Pollution Liability Insurance Program Trust Account	Underground Storage Tank Capital Financial Assistance Program	12,700,000
Puget Sound Partnership	Puget Sound Acquisition and Restoration	40,000,000
Recreation and Conservation Office	Washington Wildlife Recreation Grants	80,000,000
Recreation and Conservation Office	Brian Abbott Fish Passage Barrier Removal Board	19,747,000
Recreation and Conservation Office	Salmon Recovery and Puget Sound Acquisition and Restoration	69,711,000
Recreation and Conservation Office	Boating Facilities Program	17,175,000
Recreation and Conservation Office	Washington Coastal Restoration and Resiliency Initiative	12,500,000
Recreation and Conservation Office	Trails-No highway and Off-Road Vehicle Activities	11,300,000
Recreation and Conservation Office	Recreational Trails Program	5,000,000

Recreation and Conservation Office	Youth Athletic Facilities	4,077,000
Recreation and Conservation Office	Land and Water Conservation	4,000,000
Recreation and Conservation Office	Firearms and Archery Range Recreation	813,000
State Conservation Commission	Natural Resource Investment for the Economy & Environment	5,000,000
State Conservation Commission	Dairy Distillation Grants	4,000,000
State Conservation Commission	Improve Shellfish Growing Areas	4,000,000
State Conservation Commission	Shellfish Program	
Superintendent of Public Instruction	School Construction Assistance Program	1,002,563,000
Superintendent of Public Instruction	Small Rural District Modernization Grants	35,000,000
Superintendent of Public Instruction	Emergency Repairs and Equal Access Grants for K-12 Public Schools	6,000,000
Washington State Historical Society	Heritage Capital Grants Projects	8,986,000
Washington State Transportation Improvement Board	Urban Programs (Urban Arterial Program (UAP), Sidewalk Program (SP), Arterial Preservation Program (APP))	
Washington State Transportation Improvement Board	Small City Programs (Small City Arterial Program (SCAP), Small City Sidewalk Program (SCSP), Small City Preservation Program (SCPP), and the Relight Washington Program (LED)).	
Washington State Transportation Improvement Board	Complete Streets Program	

Appendix B. The six capital grant programs with sea level rise and climate change considerations: examples of language used

Six capital grant programs use sea level rise and climate change language within their funding guidelines and evaluation criteria. This appendix highlights examples of how this terminology is used in these capital grant programs. For the purposes of this report, the terminology is indicated in bold. This added emphasis is not reflected in the capital grant program documents. The examples are not exhaustive; rather, they serve to illustrate how climate change considerations have been included within capital grant program guidance and criteria.

[Aquatic Lands Enhancement Account](#)¹¹ (ALEA) (Washington Department of Natural Resources and the Recreation & Conservation Office)

Examples of climate change and sea level rise language used in the grant program's introduction, overview, or background sections:

- This terminology is not used in these sections.

Examples of climate change and sea level rise language used in Section 4: Project Evaluations:

- 'Question 5: Suitability for Protection' and 'Question 6: Suitability for Public Accesses both include the following suggestion: "*Possible impacts to address could include flooding, extreme tides, storms, sources of contamination, and long-term impacts due to development and **climate change**.*" (Evaluation Questions, p. 42-43)

[Floodplains by Design \(FbD\)](#)¹² (Washington Department of Ecology)

Examples of climate change and sea level rise language used in the grant program's introduction, overview, or background sections:

- "*FbD projects must develop solutions that address existing flood risk and also consider the effects of projected change to river flows, **sea level rise**, sediment delivery and other factors that could increase flood risk in the future.*" (Characteristics of FbD Projects – Reduce Flood Risk and Damage, p. 10)
- "*Strong FbD proposals should consider the **effects of climate change** and address future changes to hydrology, sediment delivery, **sea level rise**, and other factors...*" (Characteristics of FbD Projects: Climate Change, p. 14)
- "*Proposals that discuss the **specific effects of climate change** in the project or planning area, and describe how this information was used in project selection and design will*

¹¹ Washington State Recreation & Conservation Funding Board. 2020. Manual 21. Aquatic Lands Enhancement Account Grant Program. Available at <https://rco.wa.gov/wp-content/uploads/2019/06/ALEA-Manual21.pdf>.

¹² Washington State Department of Ecology. 2018. Funding Guidelines Floodplains by Design. Publication No. 15-06-019. Available at <https://fortress.wa.gov/ecy/publications/documents/1506019.pdf>.

result in more points than general regional concepts of climate change.” (Characteristics of FbD Projects: Climate Change, p. 14)

Examples of climate change and sea level rise language used in the Application Scoring Guidance:

- *“Describe how you have considered **climate change impacts** on the ecosystem and addressed those impacts.”* (Floodplain ecosystem protection or restoration question, p. 48)
- *“Projects that accommodate future anticipated changes to land use, river flows, **sea level rise** and sediment delivery will receive higher scores than those that do not.”* (Agricultural benefits question guidance, p. 50)

Puget Sound Acquisition and Restoration (PSAR) Large Capital Projects¹³ (Puget Sound Partnership and the Recreation and Conservation Office)

Examples of climate change and sea level rise language used in the grant program’s introduction, overview, or background sections:

- This terminology is not used in these sections.

Examples of climate change and sea level rise language used in the Final PSAR Large Capital Project Scoring Criteria:

- *“Project highly likely to be self-maintaining and resilient to **projected climate impacts**.”* (Project objectives and success, p. 1)
- *“[The project is] designed to be flexible over time as habitat and **climate conditions change**.”* (Habitat quality, p. 1)
- *“[The project] identifies known **effects of climate change** relative to project location, implementation and management” and “Project design adequately addresses the primary **climate change concerns**.”* (Climate change, p. 2)

¹³ Puget Sound Partnership. 2018. Final PSAR Large Capital Projects RFP and Scoring Criteria. Available at <https://pspwa.app.box.com/s/5w1nrd6dhnw3q5a5jxh7py5tacizeqnz/file/538120588839> and <https://pspwa.app.box.com/v/2018PSAR/file/271968153282>.

[Puget Sound Estuary and Salmon Restoration Program](#)¹⁴ (ESRP) (Washington Department of Fish & Wildlife and the Recreation & Conservation Office)

Examples of climate change and sea level rise language used in the grant program's introduction, overview, or background sections:

- This terminology is not used in these sections.

Examples of climate change and sea level rise language used in Appendix B: Evaluation Criteria:

- *“Does the project help address **climate change issues**? – The action increases the resilience of both natural and human systems or fosters adaptation to **anticipated sea level rise and local climate change**. 0 – 5 points possible.”* (Technical Merit and Readiness, p. 28)
- Sea level rise is mentioned several times in a section describing how project proposals are differentially evaluated based on recommendations developed for each landform. For example, under the provision for embayment's: *“**Sea level rise** potentially affects both the sustainability of wetlands (similar to deltas) and increases the importance of sustained sediment supply.”* (Tailoring Proposal Review to Landform, p. 23)

[Remedial Action Grants](#) (Toxics Cleanup Program; Department of Ecology)¹⁵

Examples of climate change and sea level rise language used the grant program guidance:

- Category #5, Redevelopment and Reuse in Cleanups: *“Potential reuse considers **climate change projections** (such as **sea-level rise**, extreme weather events, and wildfires).”* (Independent Remedial Action Grant Scorecard, p. 39)
- Section 6.2, What Criteria Will Ecology Use to Prioritize Applications for Oversight Remedial Action Grants: *“The design considers **climate change projections** (i.e. **sea level rise**, extreme weather events, etc.)”* (Chapter 6: Oversight Remedial Action Grants, p.43)

Examples from questions within the application materials: *

- *Does the project consider **climate change projections** (i.e., **sea level rise**, extreme weather events, wildfires, etc.)? If yes or maybe, please describe how (maximum five points).*

¹⁴ Estuary & Salmon Restoration Program. 2018. Request for Project Proposals. 2019-21 Investment Plan. Available at http://www.pugetsoundnearshore.org/esrp/files/2018_ESRP_RFP.pdf.

¹⁵ Washington State Department of Ecology. 2018. Remedial Action Grants for Local Governments, 2018-2021 Guidance. Publication No. 18-09-049. Available at <https://fortress.wa.gov/ecy/publications/documents/1809049.pdf>.

* These questions cannot be accessed directly. Capital grant program staff provided us with this information.

Salmon Recovery Grants (Recreation & Conservation Office)¹⁶

Examples of climate change and sea level rise language used in the grant program manual:

- This terminology is not used in these sections.

Examples from questions within the application materials: *

- *Does your project address or accommodate the anticipated effects of **climate change**? If yes or maybe, please describe how (not scored).*

¹⁶ Salmon Recovery Funding Board, Washington State Recreation and Conservation Office. 2020. Manual 18. Salmon Recovery Grants. Available at <https://rco.wa.gov/wp-content/uploads/2019/05/SAL-Manual18.pdf>.

* These questions cannot be accessed directly. Capital grant program staff provided us with this information.

Appendix C. Questionnaires used to collect data for this report

Objectives, as explained to interview participants

- Gather examples and lessons learned from existing capital grant programs to improve the state's understanding and use of sea level rise (SLR) criteria.
- Develop clear program criteria that will incentivize climate smart investments and improve coastal communities' resilience.
- Provide information needed in funding guidance to help project proponents meet climate change/sea level rise grant criteria. Provide examples and tools on how to integrate these criteria into project proposals.

Questions for program administrators – programs with sea level rise and climate change language in their funding guidelines

A. Introduction

1. Could you please give me with a short overview of the program history, scope, and funding sources?
2. For how long have you been managing this program?

B. Incorporation of climate change/ SLR language within funding guidelines

1. Why did inserting climate change or sea level rise (SLR) language in your program funding guidelines and evaluation criteria become a priority and how much time and how many resources were dedicated to this work?
2. When did you add this language to the funding guidelines?
3. What challenges did you encounter?
4. How did you decide on what climate change/ SLR language to use in your funding guidelines? What challenges did you encounter?

C. Project evaluation

1. Overall, were the submitted proposals well aligned with the funding guidelines/ evaluation criteria?
2. Did they include some climate change/ SLR language? If yes, how was this language evaluated (e.g., weight of the sea level rise and climate change language used, technical review)?

D. Resources needed

1. Once a project is funded, is there any financial/ technical support/ resources provided by the program to help the project proponent in identifying actions to implement the climate change/ SLR language?

2. What resources (technical assistance, guidance, information, scoring criteria, etc.) would incentivize the development of climate smart investments?
3. What resources would aid and support your current or future efforts?

E. Project proponents

4. Could you describe your relationship with project proponents?
5. Could you describe some barriers that project proponents/applicants may have toward the inclusion of climate change/ SLR language within their project (e.g., policy constraints)?

F. Tools assessment

1. Do you think that developing the climate change/ SLR language within the funding guidelines will incentivize climate smart investments and increase coastal communities' resilience overtime? Why and how?
2. What tools could be created at the state level as incentives (e.g., compliance with local regulations and requirements)?

G. Recommendations & final thoughts

1. Based on your experiences, what three recommendations would you give a program manager/ state agency interested in undertaking a similar effort?
2. Any final thoughts or concerns you would like to share.

Questions for program administrators – programs without climate change and sea level rise language in their funding guidelines

A. Introduction

1. Could you please give me with a short overview of the program history, scope, and funding sources?
2. For how long have you been managing this program?

B. Incorporation of climate change/ SLR language within funding guidelines

1. Have you thought of or been encouraged to incorporate climate change or sea level rise (SLR) language in your program funding guidelines and evaluation criteria? Explain.
2. Do you expect the inclusion of climate change/ SLR language in your program funding guidelines during the next round of RFPs? Why?
3. Do you foresee some challenges/ barriers to the development and inclusion of this language into your program funding guidelines?

C. Project evaluation

1. Overall, were the submitted proposals well aligned with the funding guidelines/ evaluation criteria?

2. Did they include some climate change/ SLR language? If yes, how was this language evaluated (e.g., weight of the sea level rise and climate change language used, technical review)? If not, how would you evaluate this language if it were mentioned within the text of the proposal?

D. Resources needed

1. What resources (technical assistance, guidance, information, scoring criteria, etc.) would incentivize the development of climate smart investments?
2. What resources would aid and support your current or future efforts?

E. Project proponents

1. Could you describe your relationship with project proponents?
2. Could you describe some barriers that project proponents/applicants may have toward the inclusion of climate change/ SLR language within their project (e.g., policy constraints)?

F. Tools assessment

1. Do you think that developing the climate change/ SLR language within the funding guidelines will incentivize climate smart investments and increase coastal communities' resilience overtime? Why and how?
2. What tools could be created at the state level as incentives (e.g., compliance with local regulations and requirements)?

G. Final thoughts

1. Any final thoughts or concerns you would like to share.

Questions for project applicants

A. Introduction

1. Could you please give me with a short overview of the history, scope, and funding sources of some of the projects, you have recently managed?
2. For how long have you been working as a project manager?

B. Incorporation of climate change/ SLR language within funding guidelines

1. Did you recently apply for a capital grant? If yes, which one?
2. Where did you learn about this capital grant program?
3. Did the funds from this capital grant program cover most of your expenses or did you have to apply for other fund sources (e.g., matching funds, funds from other agencies)?
4. Was it recommended that you use climate change/ sea level rise (SLR) language in your project proposal? Explain. How did you perceive this recommendation?
5. If you included climate change/ SLR language in your project proposal, how did you decide on what language to use? What challenges did you encounter?

6. Why was it important (or not) to use this language?

C. Resources needed

1. If you used climate change/ SLR language, how much time and what resources were dedicated to this aspect of the project proposal. What challenges did you encounter?
2. What resources would aid and support your current or future efforts?
3. How programs funding guidelines could be improved to help, your projects meet the grant program climate change/sea level rise criteria.
4. Who was your contact person when you applied to this capital grant program (e.g., program manager, other agency staff, and lead entity coordinator)?
5. Could you describe some barriers that program administrators may have toward the inclusion of climate change/ SLR language within their program funding guidelines?

D. Tools assessment

1. Do you think that developing clear program criteria and funding guidance will promote the development of climate smart investments and increase coastal communities' resilience overtime?
2. What other funding sources, tools, or resources have you used to address climate change/ SLR issues?
3. Based on your experiences, what are three recommendations that you would you give to a project proponent interested in undertaking a similar effort?

E. Final thoughts

1. Any final thoughts or concerns you would like to share.

Appendix D. Estuary and Salmon Restoration Program climate change responses analysis

The Estuary and Salmon Restoration Program (ESRP) has asked a climate change question in their last three grant cycles (2015-2017, 2017-2019, and 2019-2021). Responses to this question were scored from zero to five by the grant program administrators (see below). Comparing the distribution of scores across all three-grant cycles presented an opportunity to assess if considerations toward climate change have changed or improved over time.

ESRP 2018 RFP climate change question & guidance

Does the project help address climate change issues? Points possible: **0-5**
Points.

The action increases the resilience of both natural and human systems or fosters adaptation to anticipated sea level rise and local climate change.

Evaluation Guidance and Best Practices

Ideal projects have some or all of the following:

- Proponent demonstrates understanding of how climate change is likely to affect site processes and functions and demonstrates how the information has been considered in the site selection and design process, and monitoring.
- Opportunities to facilitate landward movement of coastal ecosystems subject to dislocation by sea-level rise and other climate change impacts are considered. For example:
 - Beach projects allow for landward migration area of shorelines within the project and sustained sediment supply necessary to adjust beach elevations.
 - Adequate opportunities for landward migration of tidal wetlands are available with the project area.
 - The project design and system conditions allows for adequate and timely delivery of sediments to support marsh accretion within the project area and drift cell.
- Proposal identifies and addresses potential impacts of the project to adjacent land uses under climate change scenarios.

Due to time constraints, we were only able to examine the scores assigned to each response, but not the content of the narratives. The grant program determined the final score for each response by averaging the scores of all reviewers. Each proposal had between five and ten reviewers. Between 18 and 29 project proposals were submitted for each grant cycle. The averaged climate question scores were organized in five bins:

1. 0.0 to 0.9 points
2. 1.0 to 1.9 points
3. 2.0. to 2.9 points
4. 3.0 to 3.9 points
5. 4.0 to 5.0 points

Eighteen project proposals were submitted in the 2015-2017 grant cycle and were scored by six to eight reviewers. No projects received between 0.0-0.9 points. Two projects (11%) received between 1.0-1.9 points. Three projects (17%) received between 2.0-2.9 points. Eight projects (44%) received between 3.0-3.9 points, and five projects (28%) received between 4.0-5.0 points (Figure 1).

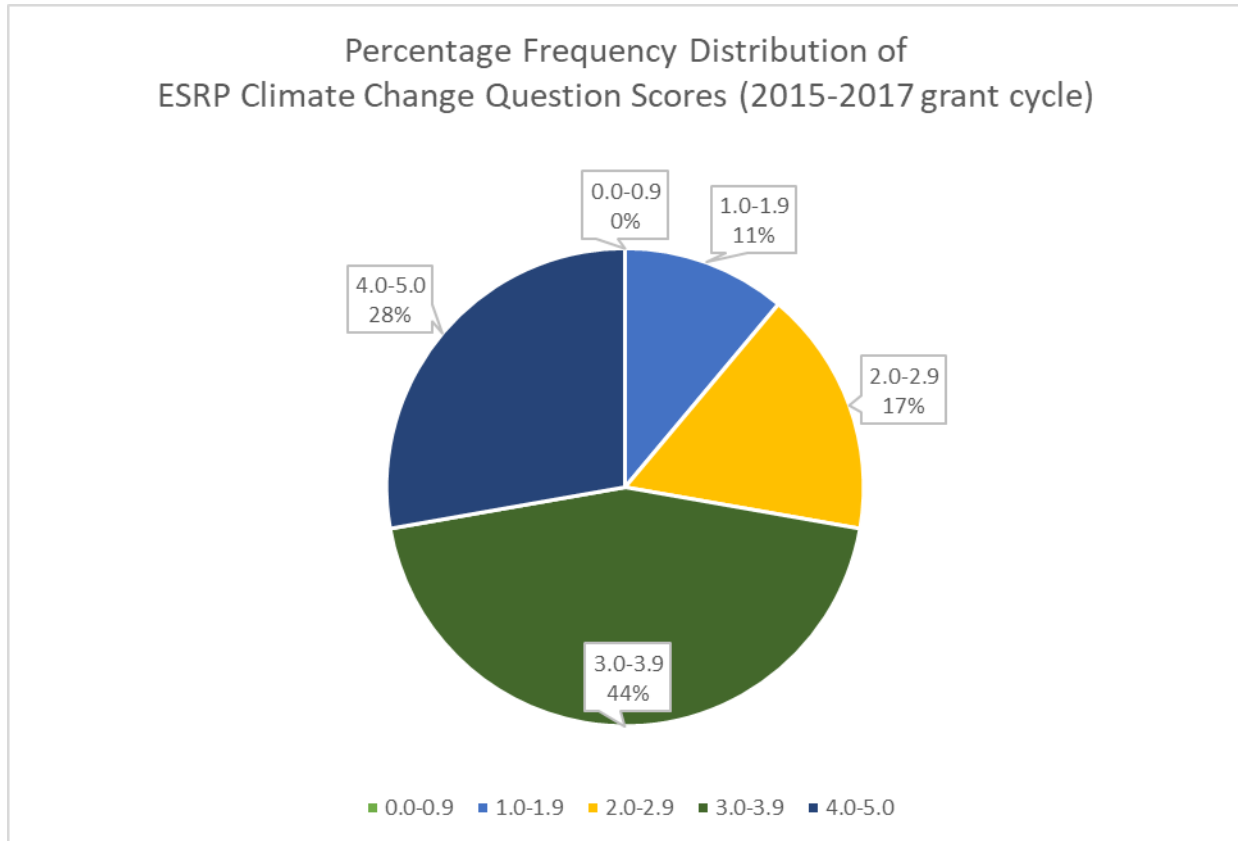


Figure 1. Percentage frequency distribution of scores for the ESRP climate change question in the 2015-2017 grant cycle.

Twenty-five project proposals were submitted in the 2017-2019 grant cycle, and were scored by five to eight reviewers. No projects received between 0.0-0.9 points. One project (4%) received between 1.0-1.9 points. Four projects (16%) received between 2.0-2.9 points. Eight projects (32%) received between 3.0-3.9 points, and 11 projects (44%) received between 4.0-5.0 points (Figure 2).

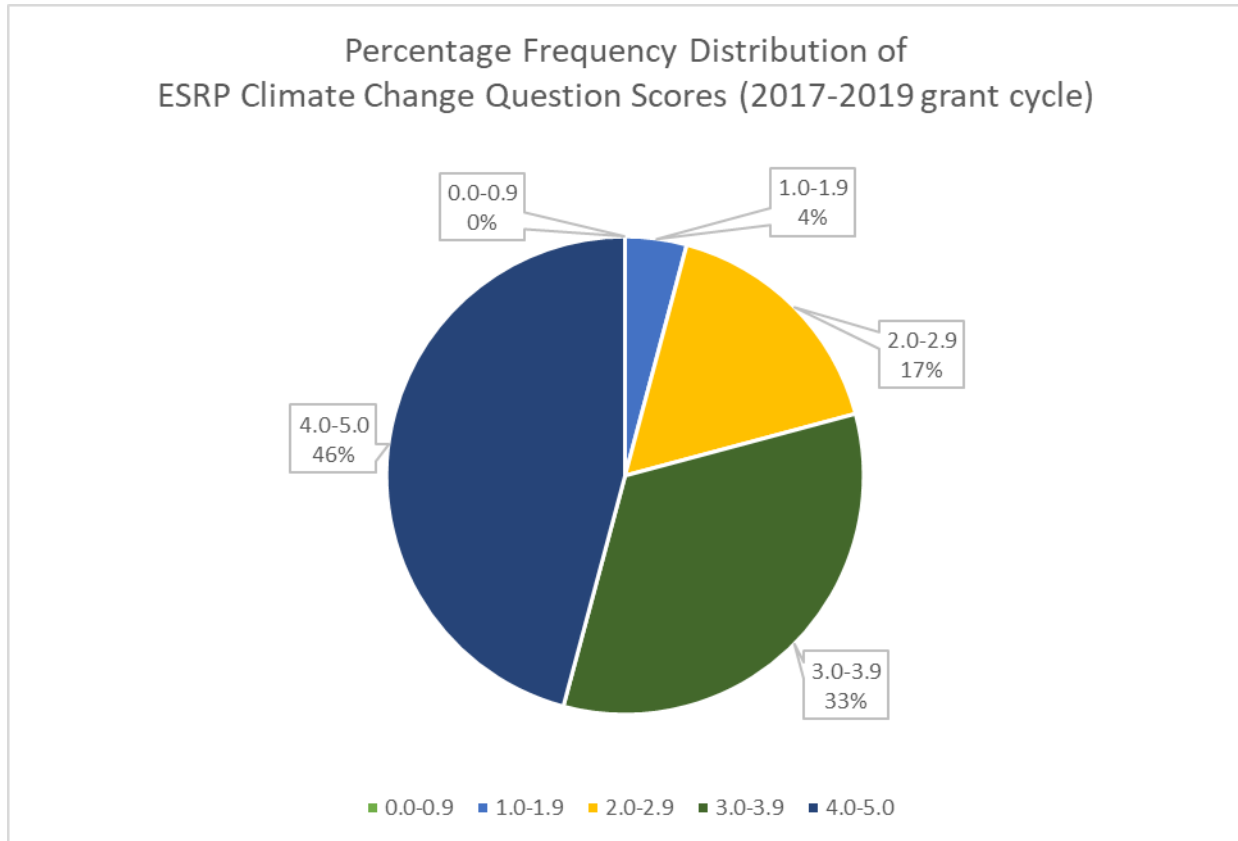


Figure 2. Percentage frequency distribution of scores for the ESRP climate change question in the 2017-2019 grant cycle.

Twenty-nine project proposals were submitted in the 2019-2021 grant cycle, and were scored by seven to ten reviewers. No projects received between 0.0-0.9 points or 1.0-1.9 points. One project (3%) received between 2.0-2.9 points. 10 projects (34%) received between 3.0-3.9 points, and 18 projects (62%) received between 4.0-5.0 points (Figure 3).

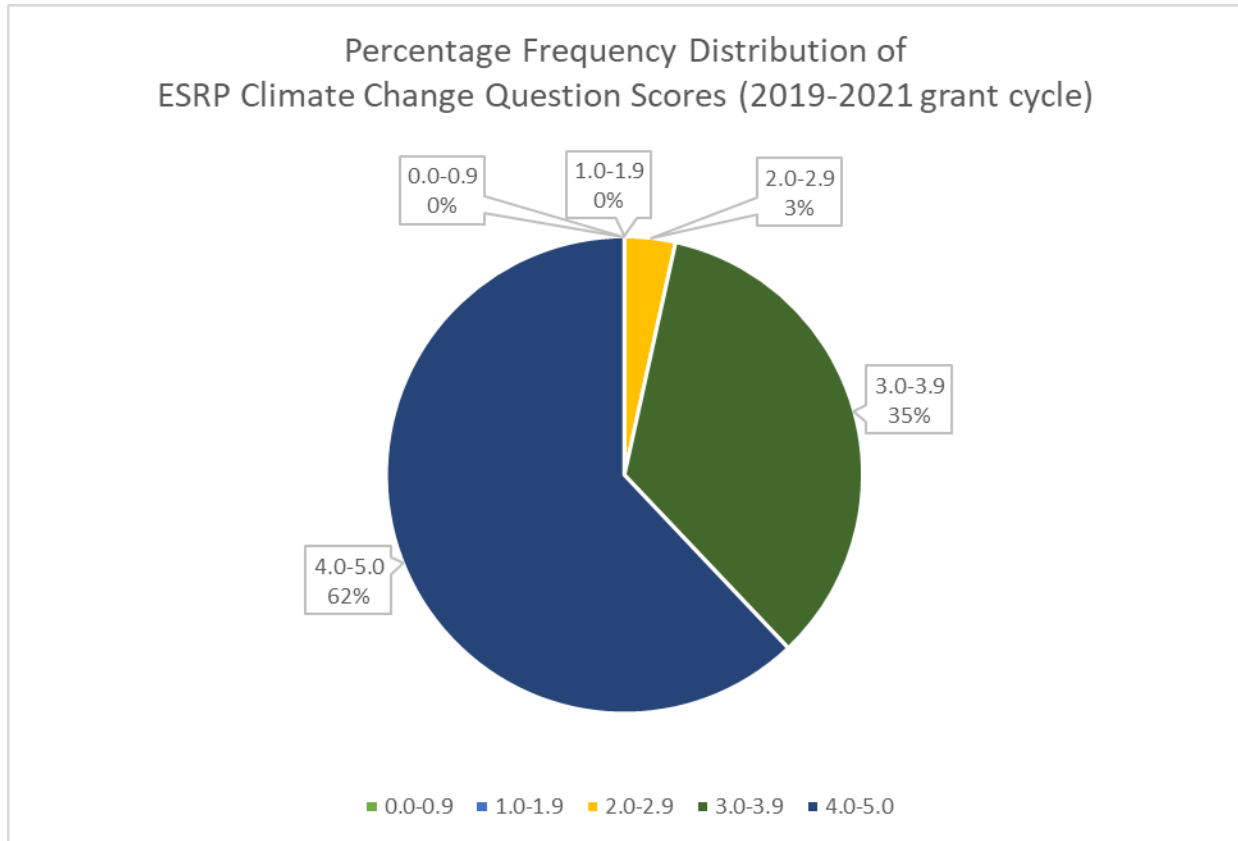


Figure 3. Percentage frequency distribution of scores for the ESRP climate change question in the 2019-2021 grant cycle.

For the 2015-2017 grant cycle, 28% of project proposals received between four and five points for their climate change considerations (Figure 1). This percentage increased to 46% for the 2017-2019 grant cycle (Figure 2), and to 62% for the 2019-2021 grant cycle (Figure 3). On the other end, the percentage of answers with less than two points decreased from 28% in 2015 to 21% in 2017, and to 3% in 2019 (Figure 1-3).

Over three grant cycles, the percentage of answers with four or more points doubled. However, we cannot conclusively determine the reasons for the observed increases at this time. Further analysis is required to determine if, for example, these increasing scores are related to better guidance from the ESRP grant program, increased access to relevant climate change data and information, or some other factor(s).

Next Steps

An analysis of the narratives to the climate change question could help identify trends (e.g., how well this question has been answered over time and what terms have been used) and explain

differences in score from answer to answer (e.g., what elements were commonly found in highly scored answers).

Conducting such, an analysis could help address some concerns from both capital grant program administrators and project applicants such as:

- What climate change considerations should be addressed in a project proposal, and how should they be addressed?
- How to score these considerations?
- What elements make a good answer?

Appendix E. Interview participants and acknowledgements

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