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REQUEST FOR PROPOSALS (RFP)

Back to the Future: Guidance for Adaptive and Scenario Supply Planning Approaches (RFP 5184)

Due Date: Proposals must be received by **3:00 pm Mountain Time on December 13, 2022**

WRF Project Contact: Lyndsey Bloxom, lbloxom@waterrf.org

Project Sponsors

This project is funded by The Water Research Foundation (WRF) as part of WRF's Research Priority Program.

Project Objectives

- Identify the institutional processes and frameworks utilities are using to monitor how supply conditions change over time. Identify what indicators are being tracked, considering reservoir storage, water demand, financial resources, climate, hydrology, water quality, regulations (i.e., SDWA, CWA, ESA), equity, etc., and determine best practices.
- Describe and provide guidance on how utilities identify and monitor drivers of change, develop scenarios, and incorporate them into adaptive planning approaches.
- Describe the value and limitations of trigger points and monitoring (e.g., ability to plan for large disruptive events).
- Describe and provide guidance on how utilities establish resiliency goals, use adaptive and scenario planning to identify infrastructure needs and make investment decisions, and quantify and develop performance metrics to measure the level of resiliency achieved.
- Describe examples of tools and models used in adaptive and scenario planning and provide guidance for utilities in selecting the appropriate tools/models for their situation.
- Describe and provide guidance on how utilities incorporate public involvement into the adaptive planning process, particularly in dealing with sensitive issues around alternative/contaminated supplies, the use of less preferred strategies, and in situations of significant public opposition.

Guidance developed to meet the project objectives should be sensitive to utility size (identifying differentials in approaches) and the project should consider inclusion of international examples, as well as other sectors for identification of best practices.

Budget

Applicants may request up to \$250,000 in WRF funds for this project.

Background and Project Rationale

Scenario Planning is a strategic planning method that organizations of all sizes and diverse customer bases can use to make flexible long-term plans, and account for future uncertainties. Adaptive Planning entails monitoring or conducting adaptive management to adjust plans to account for changing conditions. Employing Adaptive and Scenario Supply Planning approaches can help utilities plan for resilient water systems and uncertainties by adjusting to changing water demand, as well as climate, economic, social, and financial conditions. Utilities to date have applied different methods of Adaptive Planning to their long-term water supply and infrastructure plans. Planning has evolved beyond the assessment of supply needs and alternatives to include additional drivers of change and co-benefits that were historically viewed as constraints (e.g., climate resiliency, environmental protections, social equity, and community vision). Research and case study examples are needed to assess what type of Adaptive and Scenario Planning approaches are most effective at helping water utilities make supply investment decisions (i.e., developing new supplies, infrastructure upgrades/retrofits, facility expansions/modifications, etc.), and to provide best practices and guidance to utilities in implementing these methods for resilient water supplies.

Building off existing practices in the water sector, this project will develop Adaptive and Scenario Planning guidance sensitive to system size, including recommendations of best and tested practices for utilities, and how these practices factor into planning for significant disruptors to the delivery of safe and affordable water supplies. Developed guidance should include examples from small, medium, and large water utilities on successful planning methods, as well as the challenges presented by Adaptive Planning, plus strategies to overcome these. The outcomes will include identifying example drivers of change for the water sector, outlining the processes for developing scenarios, developing adaptive planning processes, monitoring conditions over time, and describing the value and limitations of decision points or triggers for supply projects. This guidance will include ways to incorporate additional objectives, such as climate resiliency and social equity, into supply planning, consistent with One Water themes.

Research Approach

This RFP is partially flexible in the specified research approach to encourage creativity and originality from proposers. The following research approach outline is provided as a starting point. The suggested approach items below should be included in the proposal and proposers are encouraged to provide additional/modified approaches. Proposers should describe how they will conduct the research to meet the objectives listed above.

- Literature review regarding water supply planning approaches that consider uncertainty and flexibility, including scenario planning, adaptive planning, decision-scaling, robust decision making, and other similar water supply planning approaches and case studies.
- In-depth interviews (or small to large-scale workshops) for case study development with utility experts to ask why scenario/adaptive planning approaches are effective at helping utilities make supply investment decisions, including what worked, what didn't work, and why.
- Identify best practices, limitations, and possible solutions to overcome those limitations.
- Develop planning guidance (with communications guidance).

Expected Deliverables

The deliverables from this project are flexible and we encourage creativity and originality from the proposers. Proposers should describe how the proposed deliverables best serve the objectives listed above. Example deliverables could include, but are not limited to, the following:

- Guidance document including case study examples and best practices
- Literature Review (to include academic sources, utility case studies, etc.)
- Hosted workshop and/or trainings videos for utility staff on use of the guidance document
- Case Study Summaries
- Research Report
- Peer-Reviewed Journal Article
- Webcast, Conference Presentation, etc.
- Fact Sheet, Infographic, Video, etc.
- Project workshop (consider plan to document workshop)

Communication Plan

Please review WRF's *Project Deliverable Guidelines* for information on preparing a communication plan. The guidelines are available at <https://www.waterrf.org/project-report-guidelines>. Conference presentations, webcasts, peer review publication submissions, and other forms of project information dissemination are typically encouraged.

Project Duration

The anticipated period of performance for this project is up to 24 months from the contract start date. Proposers should provide a proposed high-level schedule that fits within this timeframe.

References and Resources

The following list includes examples of research reports, tools, and other resources that may be helpful to proposers. It is not intended to be comprehensive, nor is it a required list for consideration. If a proposer does not have access to any WRF research reports or resources, they can be made available upon request.

- Basdekas, L., and Hayslett, R. 2021. *Improving Tradeoff Understanding in Water Resource Planning Using Multi-Objective Search*. Project 4941. Denver, CO: The Water Research Foundation. URL: <https://www.waterrf.org/research/projects/improving-tradeoff-understanding-water-resource-planning-using-multi-objective>
- Marchau, V.A.W.J., Walker, W.E., Bloemen, P.J.T.M., and Popper, S.W. 2019. *Decision Making under Deep Uncertainty*. Springer Cham. URL: <https://link.springer.com/book/10.1007/978-3-030-05252-2#bibliographic-information>
- Paulson, E.G., Badruzzaman, M., Triana, E., Cherchi, C., Stewart, N., Sun., Y.H., Jacangelo, J.G. 2018. *Framework for Evaluating Alternative Water Supplies: Balancing Cost with Reliability, Resilience, and Sustainability*. Project 4615. Denver, CO: The Water Research Foundation. URL: <https://www.waterrf.org/research/projects/framework-evaluating-alternative-water-supplies-balancing-cost-reliability>
- Vano, J.A., Arnold, J.R., Nijssen, B., Clark, M.P., Wood, A.W., Gutmann, E.D., Addor, N., Hamman, J., and Lehner, F. 2018. "Dos and Don'ts for using climate change information for water resource planning and management: guidelines for study design." *Climate Services*. 12. 1-13. URL: <https://www.sciencedirect.com/science/article/pii/S2405880717301176?via%3Dihub>
- Raucher, K., and Raucher, B. 2017. *Insights into the Use of Uncertain Information in the Water Utility Sector*. Project 4696. Denver, CO: The Water Research Foundation. URL: <https://www.waterrf.org/research/projects/insights-use-uncertain-information-water-utility-sector>
- Kiefer, J.C., Yoe, C., Clayton, J.M., and Leonard, J.C. 2016. *Uncertainty in Long-Term Water Demand Forecasts: A Primer on Concepts and Review of Water Industry Practices*. Project 4558. Denver, CO:

The Water Research Foundation. URL: <https://www.waterrf.org/research/projects/uncertainty-long-term-water-demand-forecasting>

- Raucher, K., and Raucher, R. 2015. *Embracing Uncertainty: A Case Study Examination of How Climate Change is Shifting Water Utility Planning*. Prepared for the Water Utility Climate Alliance, American Water Works Association, Water Research Foundation, and Association of Metropolitan Water Agencies. URL: <https://www.wucaonline.org/assets/pdf/pubs-uncertainty.pdf>
 - Groves, D. J. Fischbach, N. Kalra, and E. Molina-Perez. 2014. *Developing Robust Strategies for Climate Change and Other Risks: A Water Utility Framework*. Project 4262. Denver, CO. URL: <https://www.waterrf.org/research/projects/developing-robust-strategies-climate-change-and-other-risks-water-utility>
 - US Environmental Protection Agency and CA Department of Water Resources. 2011. "Climate Change Handbook for Regional Water Planning." URL: <https://www.epa.gov/arc-x/climate-change-handbook-regional-water-planning-pdf>
 - Mauger, G. 2021. *Using Climate Information in Water Utility Planning. Completed in partnership with NOAA*. Project 5054. Denver, CO; The Water Research Foundation. URL: <https://www.waterrf.org/research/projects/using-climate-information-water-utility-planning>
 - Kiefer, J. Forthcoming. *Long Term Water Demand Forecasting Practices for Water Resources and Infrastructure Planning*. Project 4667. Denver, CO: The Water Research Foundation. URL: <https://www.waterrf.org/research/projects/long-term-water-demand-forecasting-practices-water-resources-and-infrastructure>
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Proposal Evaluation Criteria

The following criteria will be used to evaluate proposals:

- Understanding the Problem and Responsiveness to RFP (maximum 20 points)
- Technical and Scientific Merit (maximum 30 points)
- Qualifications, Capabilities, and Management (maximum 15 points)
- Communication Plan, Deliverables, and Applicability (maximum 20 points)
- Budget and Schedule (maximum 15 points)

Proposal Preparation Instructions

Proposals submitted in response to this RFP must be prepared in accordance with the WRF document *Guidelines for Research Priority Program Proposals*. The current version of these guidelines is available at <https://www.waterrf.org/proposal-guidelines>, along with *Instructions for Budget Preparation*. The guidelines contain instructions for the technical aspects, financial statements, indirect costs, and administrative requirements that the applicant must follow when preparing a proposal.

Proposals that include the production of web- or software-based tools, such as websites, Excel spreadsheets, Access databases, etc., must follow the criteria outlined for web tools presented in the Web Tool Criteria and Feasibility Study for The Water Research Foundation Project Deliverables at <https://www.waterrf.org/project-report-guidelines#deliverables>.

Eligibility to Submit Proposals

Proposals will be accepted from domestic or international entities, including educational institutions, research organizations, governmental agencies, and consultants or other for-profit entities.

WRF's Board of Directors has established a Timeliness Policy that addresses researcher adherence to the project schedule. The policy can be reviewed at <https://www.waterrf.org/policies>. Researchers who are late on any ongoing WRF-sponsored studies without approved no-cost extensions are not eligible to be named participants in any proposals. Direct any questions about eligibility to the WRF project contact listed at the top of this RFP.

Administrative, Cost, and Audit Standards

WRF's research program standards for administrative, cost, and audit compliance are based upon, and comply with, Office of Management and Budget (OMB) Uniform Grants Guidance (UGG), 2 CFR Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, and 48 CFR 31.2 Contracts with Commercial Organizations. These standards are referenced in WRF's *Guidelines for Research Priority Program Proposals*, and include specific guidelines outlining the requirements for indirect cost negotiation agreements, financial statements, and the Statement of Direct Labor, Fringe Benefits, and General Overhead. Inclusion of indirect costs must be substantiated by a negotiated agreement or appropriate Statement of Direct Labor, Fringe Benefits, and General Overhead. Well in advance of preparing the proposal, your research and financial staff should review the detailed instructions included in WRF's *Guidelines for Research Priority Program Proposals* and consult the *Instructions for Budget Preparation*, both available at <https://www.waterrf.org/proposal-guidelines>.

Budget and Funding Information

The maximum funding available from WRF for this project is \$250,000. The applicant must contribute additional resources equivalent to at least 33 percent of the project award. For example, if an applicant requests \$100,000 from WRF, an additional \$33,000 or more must be contributed by the applicant. Acceptable forms of applicant contribution include cost-share, applicant in-kind, or third-party in-kind that comply with 2 CFR Part 200.306 cost sharing or matching. The applicant may elect to contribute more than 33 percent to the project, but the maximum WRF funding available remains fixed at \$250,000. **Proposals that do not meet the minimum 33 percent of the project award will not be accepted.** Consult the *Instructions for Budget Preparation* available at <https://www.waterrf.org/proposal-guidelines> for more information and definitions of terms.

Period of Performance

It is WRF's policy to negotiate a reasonable schedule for each research project. Once this schedule is established, WRF and its sub-recipients have a contractual obligation to adhere to the agreed-upon schedule. Under WRF's No-Cost Extension Policy, a project schedule cannot be extended more than nine months beyond the original contracted schedule, regardless of the number of extensions granted. The policy can be reviewed at <https://www.waterrf.org/policies>.

Utility and Organization Participation

WRF encourages participation from water utilities and other organizations in WRF research. Participation can occur in a variety of ways, including direct participation, in-kind contributions, or in-kind services. To facilitate their participation, WRF has provided contact information, on the last page of this RFP, of utilities and other organizations that have indicated an interest in this research. Proposers are responsible for negotiating utility and organization participation in their particular proposals. The listed utilities and organizations are under no obligation to participate, and the proposer is not obligated to include them in their particular proposal.

Application Procedure and Deadline

Proposals are accepted exclusively online in PDF format, and they must be fully submitted before 3:00 pm Mountain Time on December 13, 2022.

The online proposal system allows submission of your documents until the date and time stated in this RFP. To avoid the risk of the system closing before you press the submit button, do not wait until the last minute to complete your submission. Submit your proposal at:

<https://forms.waterrf.org/222556224440853>.

Questions to clarify the intent of this RFP and WRF's administrative, cost, and financial requirements may be addressed to the WRF project contact, Lyndsey Bloxom at 571-384-2106 or lbloxom@waterrf.org. Questions related to proposal submittal through the online system may be addressed to Caroline Bruck at (303) 347-6118 or cbruck@waterrf.org.

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The following utilities have indicated an interest in possible participation in this research. This information is updated within 24 business hours after a utility or an interested organization submits a volunteer form, and this RFP will be re-posted with the new information. **(Depending upon your settings, you may need to click refresh on your browser to load the latest file.)**

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