**NIPP Security and Resilience Challenge Submission Template**

1. **Project Name**

**Improving Cybersecurity in Small and Medium-sized Water Utilities**

1. **Principal Investigator Or Submitter**
   1. Name

Dr. John Doe

* 1. Organization

QPRS

* 1. Organization Type (Federal, State, Local, Private Sector, Non-profit, other \_\_\_\_\_)

Non-profit

* 1. Complete Contact Information
     + Full Name

Dr. John D. Doe

* + - Phone Number(s)

O: 123-456-7890

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* + - Email Address

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* + - Mailing Address

QPRS

123 UK Drive

Lexington, KY 40511

1. **Project Participants**
   1. Project Participants

John Doe-PI

John Doe is the principal investigator and will act as the primary subject matter expert for the effort. Doe is respected for advancing the security and preparedness of the nation's critical infrastructure. He worked with the CIPAC Water Sector Cybersecurity Strategy Workgroup to improve the resiliency of the water sector by developing a strategy to promote and facilitate use of the NIST Cybersecurity Framework. He facilitated the expansion of mutual aid and assistance via the Water/Wastewater Agency Response Network (WARN) initiative. Prior to QPRS, he worked with Delon Hampton & Associates on several security projects, including water utility vulnerability assessments and perimeter security evaluations for key federal installations. Dr. Doe received his PhD from George Mason University for research assessing the resilience of the water sector, and he holds an MS from SUNY College of Environmental Science and Forestry and a BA from Syracuse University.

Jane Smith-PM

Jane Smith is the project manager for the effort and will ensure that all objectives are met. Jane is Director of Engineering & Technical Services at the American Water Works Association. Ms. Smith oversees and directs the activities of the QPRS Engineering & Technical Services (ETS) department. She serves as the most senior staff technical expert on water utility management and operations for QPRS, managing an annual budget of $3,000,000 and a department of 25 technical and administrative positions. She serves as the principal investigator (PI) for two USEPA grants projects for the development of training and technical assistance programs on issues facing small water utilities, including compliance with the Safe Drinking Water Act and achieving financial and managerial sustainability. She holds a Master’s of Environmental Engineering (concentration in Environmental Policy) degree from Johns Hopkins University, Baltimore, and a BS Civil Engineering, Minor–Environmental Engineering, degree from Pennsylvania State University, State College, Pennsylvania. She is a Registered Professional Engineer in the state of Maryland. She has worked with QPRS for the past eight years; her efforts are supported by QPRS staff.

Bob Jones-Task Lead

Bob Jones is the Education and Workforce Manager at the American Water Works Association who will create the training, webinar, and survey content. He is tasked with enhancing the educational outcomes of QPRS conferences, webinars, and eLearning programs as well as increasing the coordination between the Association and Section education programs. He has also served as staff liaison for the Small Systems Division. He is an experienced instructional designer, specializing in adult learning with blended delivery. Before QPRS, Mr. Jones designed and delivered programs of instruction for national audiences such as the National Guard Family Program, Big Brothers Big Sisters of America, and the U.S. Anti-Doping Agency. Mr. Jones holds a Bachelor of Science degree in Health and Exercise Science from Colorado State University and a Master of Arts degree in Education, Curriculum and Instruction from the University of Phoenix.

* 1. Organization Affiliation

Dr. John Doe - QPRS

Jane Smith – QPRS

Bob Jones – QPRS

* 1. Role Each Participant Will Play in the Project [Concept/design, Test and Evaluation, Implementation, Metrics/reporting, Finance)

Dr. John Doe - PI

Jane Doe-Project management

Bob Jones-concept/design

1. **Sector / Council Relationships**
   1. Primary Critical Infrastructure Sector(s) Impacted

Water

* 1. Additional/Interdependent CI Sectors

Energy, Food and Ag

* 1. NIPP Council(s) With Which Your Organization is Affiliated

Water and Wastewater Systems Sector

* 1. Organization’s Title and Contact Person
     + *Organization title and contact person to be confirmed with the Council(s)*

QPRS

Dr .John Doe – President and CEO

1. **Prior NIPP Security & Resilience Challenge Awards**
   1. Has your organization previously received a NIPP Security & Resilience Challenge award? (Yes or No) If Yes:

No

* + - What was title of the project and the beginning date of the subcontract award?
    - Does this submission support the work of the previous project? (Yes or No)
      * If Yes,
        + Explain how it supports the work of the previous project.
        + Explain the added value this project will bring to the previous project.

1. **Gap / Problem Statement**
   1. Describe the gap/problem your project addresses. Identify the specific need the project will address.

Throughout the United States, there are 13,820 small water systems that serve populations ranging from 501 to 3,300 persons. Medium-sized systems in the U.S. number 4,871 and serve populations ranging from 3,301 to 10,000. Combined, these two categories represent more than one third of all community water systems and, collectively, they serve drinking water to 48 million Americans daily. Small and medium-sized water sector utilities often lack the cybersecurity capacity needed to ensure operational continuity of drinking water and wastewater utility treatment operations, both critical lifelines for the communities they serve. Many of these utilities also lack access to the educational resources necessary to implement QPRS’s Cybersecurity Guidance and Use-Case Tool to protect their utilities from cyber threats.

This project would equip water sector utility managers and operators with the knowledge and skills needed to effectively use QPRS’s Cybersecurity Guidance document and Cybersecurity Use-Case Tool to support implementation of a robust cybersecurity risk management program.

* 1. Indicate which type of threat this would mitigate [Cyber, Natural Hazard, Malevolent Actor]

Cyber

* 1. Indicate which phase in the incident spectrum this would address [Prevention, Protection, Mitigation, Response, Recovery]

Prevention, Protection, Mitigation, Response and Recovery

* 1. Identify the requirements that will address the need.

Executive Order 13636 (Improving Critical Infrastructure Cybersecurity) directed the National Institute of Standards and Technology (NIST) to work with stakeholders in developing a voluntary framework for reducing cyber risks to critical infrastructure. QPRS’s cybersecurity resources have been endorsed by the Water Sector Coordinating Council and the US Environmental Protection Agency (USEPA) as the foundation of a voluntary, water sector–specific approach for implementing the NIST Cybersecurity Framework. A review by a Water Sector Critical Infrastructure Partnership Advisory Council (CIPAC) identified gaps in sector cybersecurity capabilities and recommended that efforts to close the gaps center on education and training to increase use of the QPRS Cybersecurity Guidance document and Cybersecurity Use-Case Tool described below. A coordinated and directed education and training program will support the water sector in its efforts to close the gaps and make the NIST Cybersecurity Framework more accessible to water utilities.

1. **Innovation**
   1. Explain how your project is innovative. For example, explain how the problem is addressed today and how your solution compares to that. What’s new about your solution? How will your solution bring added value to addressing the identified capability gap?

Currently, most small and medium-sized utilities do not have the resources or the skill-set to face cyber security threats at the community level. This project provides resources and a skill-set to meet that need. This project will advance the current state-of-the-art / practice by ………. This project will introduce a new practice / product, to which ……

1. **Project Outputs**
   1. Describe the outputs [the physical product(s)] that are anticipated from the project. What is the material product that will result from the project?
2. Four-hour, face-to-face research consultation that introduces the QPRS Cybersecurity Guidance Document with the accompanying application of the QPRS Cybersecurity Use-Case Tool.
3. A train-the-trainers webinar to ensure consistency in content delivery, and set expectations for a highly interactive learning experience.
4. Content on Improving Cybersecurity in Small and Medium-Sized U.S. Water Utilities at 37 no-cost research consultations covering 50 states. Use evaluations to measure attendance, changes in learning, and changes in behavior. Success measured in stakeholder feedback.
5. Two 90-minute no-cost webinars to provide access to utility staff that are unable to attend local research consultations. Measure rates of participation in the webinar, as well as changes in learning, and the actions water utilities will take in the two months following the training to adopt recommended cybersecurity practices.
6. **Project Objectives and Outcomes**
   1. Describe the objective(s) of the project. What do you hope to achieve?

QPRS staff will design, develop, and deliver no-cost educational research consultations to equip water sector managers and operators with the skills needed to effectively use QPRS’s cybersecurity resources. Effective use of these resources will result in identification of gaps in cybersecurity coverage as well as discovery of detailed, actionable steps to address such gaps to increase security and preparedness.

* 1. Explain how the proposed project aligns to one or more of the Joint National Priorities for Critical Infrastructure Security and Resilience and/or NIPP Calls to Action.

Executive Order 13636 (Improving Critical Infrastructure Cybersecurity) directed the National Institute of Standards and Technology (NIST) to work with stakeholders in developing a voluntary framework for reducing cyber risks to critical infrastructure. QPRS’s cybersecurity resources have been endorsed by the Water Sector Coordinating Council and the US Environmental Protection Agency (USEPA) as the foundation of a voluntary, water sector–specific approach for implementing the NIST Cybersecurity Framework. A review by a Water Sector Critical Infrastructure Partnership Advisory Council (CIPAC) identified gaps in sector cybersecurity capabilities and recommended that efforts to close the gaps center on education and training to increase use of the QPRS Cybersecurity Guidance document and Cybersecurity Use-Case Tool described below. A coordinated and directed education and training program will support the water sector in its efforts to close the gaps and make the NIST Cybersecurity Framework more accessible to water utilities.

* 1. Identify the anticipated outcomes. “Outcomes” are the results of applying and using the project’s outputs/products. If your project is successful, from research, through development to transition to use, what impact will it have? Who are the end users who will care about this work?

QPRS staff will design, develop, and deliver no-cost educational research consultations to equip water sector managers and operators with the skills needed to effectively use QPRS’s cybersecurity resources. Effective use of these resources will result in identification of gaps in cybersecurity coverage as well as discovery of detailed, actionable steps to address such gaps to increase security and preparedness.

* 1. How does the proposed project contribute to a body of knowledge that could have broader benefits for the critical infrastructure community?
     + How does the proposed project integrate physical-cyber, cross-sector, or other types of critical infrastructure dependencies?

Much of the nation’s critical infrastructure is only as protected as the water supply. Water is used for energy, emergency services, food and ag, etc. By providing water sector managers and operators with skills and resources needed to protect the small and medium-sized water utilities, other sectors benefit as well.

* + - How does the proposed project integrate cross-sector partnerships or expand into new stakeholder groups?

The concepts of the research consultations could apply to other sectors by providing actionable steps to address security gaps in those sectors to increase security and preparedness. The research consultations could be tailored for energy, food and ag, etc.

* 1. Include a Concept of Operations

Thirty-seven half-day, face-to-face, no-cost research consultations will equip utility managers and operators with the knowledge and skills needed to effectively use the QPRS cybersecurity resources to address gaps in coverage. Trainers selected for each research consultation location are required to participate in a 90-minute train-the-trainer webinar conducted by QPRS staff. The train-the-trainer webinar addresses how to deliver content, describing marked usage of available cybersecurity resources to an audience of executive management, operators, and cybersecurity staff at water utilities located in 50 states. The secondary audience for this training comprises state primacy agencies and technical assistance providers. Each participant will be provided with access to the Web-based resources.   
  
QPRS will design and develop the content of the research consultation, including slides used in the presentations and speaker notes to accompany each slide. Each research consultation will feature interactive discussion of how to specifically apply the resources to address the needs of the utility participants attending the research consultation. The training research consultations will target small to medium-sized water utilities with limited internal capacity. Utilities with high existing capacity will be invited to offer success stories in their cybersecurity risk management. The training will also profile how water utilities are using the QPRS cybersecurity resources.   
  
In addition to no-cost, face-to-face research consultations, two no-cost webinars will be created to provide access to utilities that are unable to attend local research consultations. The first webinar will describe data that needs to be assembled in order to use the cybersecurity resources. The second webinar will describe real use of the resources and will present case studies of utilities’ applications of the resources. The webinars will be archived for participant access after the research consultations are delivered.   
  
The 37 QPRS Sections (chapters) serving the 50 states are partners in this project. The 4,000 water utilities that provide water to 80% of the U.S. population are members of local QPRS Sections. Each Section will furnish a meeting space for the research consultation, market the research consultation to the water utilities in its area, provide local logistical support for the research consultations, and coordinate with QPRS to designate a trainer. The Concept of Operations for this project models highly effective research consultations delivered by QPRS to small water systems under a grant from USEPA on topics of compliance and best practices.

1. **White Paper / Statement of Work to Address the Gap / Problem**
   1. Briefly explain your approach to the project, including your research process, and provide a brief statement of work with task descriptions.

Task 1 – Design and develop a four-hour, face-to-face research consultation that introduces the QPRS Cybersecurity Guidance Document with the accompanying application of the QPRS Cybersecurity Use-Case Tool.   
  
Task 2 – Conduct a train-the-trainers webinar to ensure consistency in content delivery, and set expectations for a highly interactive learning experience.   
  
Task 3 – Deliver content on Improving Cybersecurity in Small and Medium-Sized U.S. Water Utilities at 37 no-cost research consultations covering 50 states. Use evaluations to measure attendance, changes in learning, and changes in behavior.   
  
Task 4 – Create and deliver two 90-minute no-cost webinars to provide access to utility staff who are unable to attend local research consultations. Measure rates of participation in the webinar, as well as changes in learning, and the actions water utilities will take in the two months following the training to adopt recommended cybersecurity practices.

1. **Transition-to-Use Plan**
   1. Explain how the outputs of the project will be transitioned to use and applied in a practical manner to address the identified need. Explain how you will determine if your organization has been successful in filling the identified capability gap.

As a result of this project, new cybersecurity training content (face-to-face and online) will be available for qualified trainers to deliver to utilities to uncover gaps in cybersecurity protection and address those gaps. QPRS will seek stakeholder feedback to determine success and based on that feedback would l seek further funding to continue to provide no-cost training to utilities to equip them with the skills needed to protect against cybersecurity threats in their delivery of water services to U.S. citizens, if determined the project was successful.

* 1. Identify what external needs you may have (e.g., resources, tools, capabilities) beyond those that are inherent in your organization to transition-to-use.

DHS participation in stakeholder feedback, as well as cross-sector participation.

1. **Project Cost**
   1. Provide an estimated cost for the project. A detailed budget is not required at this point. However, the cost estimate should be based on calculations that could be the basis for project financing. Provide here only the Federal contribution being requested. Include in your costing the expense for two trips to Washington, DC, for project review activities in addition to any other project-related travel expenses.

**Salaries & Wages**

Senior QPRS Personnel: **$42,870**

Dr. John Doe, SME, 164 hours @ $105 rate

Jane Smith, Learning Design Manager, 285 Hours @ $90 rate

Other QPRS Personnel: **$110,256**

QPRS Staff Deployment Event Evaluation Team, $25,500

QPRS Staff eLearning Creation Team, $51,250

QPRS Staff Marketing, $7,406

QPRS Staff Project Management, $20,100

QPRS Staff Administration, CEUs, $6,000

Category Subtotal: **$153,126**

(Hourly rates of QPRS employees include base salary, fringe benefits, indirect costs.)

**Cash Expenses**

Cybersecurity Support SMEs, $50,624

Trainers and Local Deployment Logistics (provided by QPRS Sections), $36,000

Travel

Staff Air, $5,490

Staff Lodging, $3,510

Staff Per Diem, $2,250

(SMEs, travel, and support for event logistic costs do not include fringe benefits or indirect costs.)

Category Subtotal = **$97,874**

**Total Costs: $251,000**

1. **Resource- and Cost-Sharing Opportunities**
   1. Provide plans for resource- and cost-sharing for the project, either direct financial contributions or in-kind contributions. What is the dollar amount and the source associated with the cost-sharing?

The cost-sharing opportunities of this project total $101,500. In-kind contributions include meeting space and AV tools ($18,500, or $500 per research consultation) and QPRS cost to update the Cybersecurity Guidance and Use-Case Tool is estimated at $83,000.

1. **Period Of Performance (In Terms of Months)**

18 months