

EXPEDITED DRINKING WATER GRANT FUNDING PROGRAM PROJECT PROPOSAL FORM ATTACHMENT 2 – ENGINEERING DOCUMENT GUIDANCE

The applicant must submit an Engineering Report, Technical Memo, or similar document that includes a description of alternatives considered (referred to as the “Engineering Document”) appropriate to the project. The contents of the Engineering Document should provide the Division of Financial Assistance (DFA) with adequate information to evaluate whether the project is eligible for funding under the Expedited Drinking Water Grant Funding Program Guidelines (Guidelines), meets applicable technical requirements, and is likely to meet applicable safe drinking water objectives and standards. The Engineering Document may consist of multiple documents (e.g., feasibility studies, preliminary engineering reports, technical memos).

The Engineering Document is expected to include the following elements:

I. Executive Summary – Provide a clear and concise summary of the Engineering Document. The summary should include the purpose of the project, key results of the alternative analysis (if applicable), financial implications, and other essential project information.

II. Background Project Information – Provide background information regarding the proposed project.

1. Describe the Existing Facilities

a. The Engineering Document must include a description of the water system and its facilities, including details relating to sources, storage, treatment, and distribution. Describe the water system’s present condition, suitability for continued use, adequacy of water supply, current water system capacity, age of facilities, and water quality.

b. Attach a schematic and map of the water system. The schematic and map must include all the water system’s facilities, including the facilities described in subsection 1.a above. The schematic and map must be legible. Photographs and sketches may be included as needed.

2. Water Demand – Provide an analysis of the water system’s current water demand. You must provide a description of the methodology used to determine the water system’s demand. The analysis should include but may not be limited to maximum daily demand (MDD), fire flow, water demand resultant from growth, and peak hourly demand (PHD). The analysis should also describe how industrial and commercial water users impact the water demand.

3. Operations and Maintenance (O&M) – Describe existing water system O&M practices. Describe how these practices impact the water system’s finances. Describe any financial or technical challenges that may impact water system operations and state any preventive practices that are in place to address these challenges.

III. Problem Description – Describe the problem being addressed by the project and attach documents supporting the ranked problem, such as the last two (2) years of water quality data (if applicable), most recent compliance orders, violations, citations, and sanitary surveys.

IV. Consolidation Analysis – A consolidation evaluation must be included in the Engineering Document. All funding applicants must evaluate the feasibility of consolidation as an alternative solution. If consolidation is deemed infeasible, the applicant must fully and completely discuss the reasons for that determination.

V. Alternative Analysis – Describe each alternative considered to correct the problem identified in Section B, as outlined in this section below.¹ The alternative analysis must address the following items for each alternative considered.

1. Description – Describe all the facilities associated with the alternative. The description must be full and complete, including all necessary details pertinent to the proposed design.

2. Design criteria – State the design parameters and assumptions used in the evaluation.

3. Environmental impacts – Provide a short description of any environmental impacts that may prevent the alternative from being considered.

4. Land requirements – Identify sites and easements required to implement the alternative. Specify whether or not these properties are currently owned, currently leased, or if either the property or lease needs to be acquired prior to implementing the alternative.

5. Construction and site considerations – Discuss any concerns that may adversely affect the construction cost or facility operations. The concerns may include issues like site conditions, water table level, access to premises, or vulnerability to climate change effects.

¹ DFA may determine that certain project types (e.g., master meter consolidations, water meter installation, replacing existing infrastructure) do not require an extensive alternative analysis if there are no feasible alternatives. DFA may consult with the local regulatory agency (e.g., Division of Drinking Water, Local Primacy Agency) to determine the extent of alternative analysis required.

6. Cost estimate – Include cost estimates for each of the alternatives considered. This section should include the following information. This information should be used in conjunction with the information above to determine the most cost-effective alternative.

- a. Construction
- b. Non-construction and other related costs
- c. Annual operations and maintenance costs
- d. Cost effective present worth analysis
- e. Life-cycle cost analysis

7. Advantages/Disadvantages – Describe the alternative’s advantages and disadvantages relating to its ability to comply with regulatory requirements, meet the water system’s O&M needs, be financially viable, satisfy public concerns, and meet environmental requirements.

8. Alternative Evaluation and Selection – Evaluate the alternatives based on the selection criteria. Describe the selection of the most suitable alternative for the project.

VI. Selected Project – It is expected that a single alternative be selected based on the alternative analysis described above (if applicable). Once selected, additional information should be provided regarding the selected project. The fully described selected project should include the following items.

1. Description – Describe all the facilities associated with the selected project. This description should incorporate all components of the selected project and may be more detailed than the description provided in the alternatives analysis.

2. Schematic and map of system’s proposed facilities – Attach a schematic and map of the system which includes the proposed facilities as described above.

3. Justification – Describe how this project will solve the problem and provide an analysis of its effectiveness. The justification for the selected project should address its advantages over the other alternatives and state why it is the most cost-effective solution (if applicable).

4. O&M – Describe O&M challenges that the selected project may encounter and describe the proposed solutions needed to meet these challenges.

5. Drought Resiliency and Response – Describe if this project includes any drought resilient components. Resilience looks to the future rather than the immediate delivery of assistance to a system following an extreme event. Describe whether this project is necessary to respond to drought conditions.

6. Comprehensive Response to Climate Change – Identify how the proposed project and facility are vulnerable to climate change and the impact they may have on climate change.

a. *Vulnerability* – Identify effects of climate change to which the facility may be susceptible (e.g., sea level rise, water supply depletion, water supply quality, flooding/storm surges, drought, and/or other effects)

b. *Adaptation* – Identify measures taken in response to climate change (e.g., alternative energy sources, drought resiliency and flood contingency, permeable pavements, elevated construction, sea walls, and levees, green roofing, fire resistant water connections and hydrants, additional storage, and/or other measures).

c. *Mitigation* – Identify actions taken to reduce concentration of greenhouse gases in the atmosphere (e.g., renewable energy sources, energy conservation, water conservation, and/or other actions).

7. Subsumed Water System(s) – If the selected project is a consolidation project, list all parties involved and identify the restructuring water system that will remain after the project is complete.

8. Land Acquisition – List any land, easements, or other access rights that will need to be purchased or acquired to complete the construction project. Discuss the necessity for such land and justify the appropriateness of the size of the land being purchased. (NOTE: Only land or land access that is integral to the construction of source, treatment or distribution facilities is eligible for funding.)

9. Water Demand - Provide water demand and capacity analysis for the water system that includes the existing facilities and selected project. The analysis should include but may not be limited to max daily demand, fire flow, water demand resultant from growth, and peak hourly demand. The analysis should also describe how industrial and commercial water users impact the water demand. DFA will determine eligible capacity of the project and related facilities using the metrics and limits established in Appendix H to the Policy for Implementing the Drinking Water State Revolving Fund.

10. Estimated Useful Life – List all major project components and identify their estimated useful life. Describe the basis for determining the useful life of each component.

11. Detailed Cost Estimate for the selected project – Attach a detailed cost breakdown for the project which lists:

- a. An itemized breakdown of all construction line items, including description of line item, unit, quantity, unit price, and total price.
- b. Non-construction costs, including pre-purchased material / equipment (if applicable), purchase of land / easements (if applicable), change order contingency, force account (if applicable), planning, design, construction management, administration, and other additional costs (please specify).

12. Proposed Schedule – Include a project schedule.

13. Schematic and map of system's proposed facilities – Include a schematic and map of the proposed project that show all the facilities of the project described above.