

2.0 General Requirements of the Engineering Report/Environmental Information Document

This section of the guidance provides information on the structure of the engineering report/environmental information document (ER/EID)¹ and sections of the ER/EID that are common to every ER/EID. Criteria for Upfront Information, Executive Summary, Purpose and Need, Present Worth Analysis, Alternatives Analysis Summary, Proposed Project Description, Financial Analysis, and Public Participation are included in this section (i.e., Sections 2.2.1 through 2.2.9). Sections 3 through 11 provide information on each of the topics that is specific to a project type (i.e., Existing Facilities and Project Planning and Alternatives Description).

2.1 Engineering Report/Environmental Information Document Structure

The structure of the ER/EID is crucial in allowing for an efficient review of the document. Not only does it present the information in an orderly manner, but it also allows for an ease of use both by the project reviewer and others who may be unfamiliar with the project. This section discusses information related to the ER/EID structure as well as figures.

2.1.1 General Information about ER/EID Structure

The structure of the ER/EID is similar to the structure historically used. However, the changes made enable a more efficient review of the ER/EID. Each section within the ER/EID guidance for specific project types follows this outline. **The structure outlined below must be used.**

- Upfront Information
- Section 1. Executive Summary
- Section 2. Existing Facilities and Project Planning
- Section 3. Purpose and Need
- Section 4. Alternatives Analysis
 - Section 4.1 Alternatives Description
 - Section 4.2 Present Worth Analysis
 - Section 4.3 Alternatives Analysis Summary
 - Section 4.4 Proposed Project Description
- Section 5. Environmental Information Document
- Section 6. Financial Analysis
- Section 7. Public Participation

The outline shown to the left *must be used* when preparing the ER/EID.

2.1.2 Reports Containing Multiple Project Components

Occasionally, some projects may contain multiple components that must be addressed in the ER/EID. If this occurs, then the ER/EID must be prepared in a manner that addresses each component in an orderly fashion.

¹ Please note that for the CDBG-I program, the environmental information document is prepared as a separate document; therefore, references to ER/EID for the CDBG-I program pertains only to the ER.

For example, a project may contain a water line extension, storage tank rehabilitation, and a WTP equipment repair and replacement component. A proposed outline for such an ER/EID might be as follows:

Upfront Information

- 1.0 Executive Summary
- 2.0 Existing Facilities and Project Planning
 - 2.1 Water line extension
 - 2.2 Storage tank rehabilitation
 - 2.3 WTP Equipment Repair and Replacement
- 3.0 Project Purpose and Need²
- 4.0 Alternatives Analysis
 - 4.1 Alternatives Description
 - 4.1.1 Water line extension
 - 4.1.2 Storage tank rehabilitation
 - 4.1.3 WTP Equipment Repair and Replacement
 - 4.1.4 Summary of Preferred Alternative
 - 4.2 Present Worth Analysis
 - 4.2.1 Water line extension
 - 4.2.2 Storage tank rehabilitation
 - 4.2.3 WTP Equipment Repair and Replacement
 - 4.2.4 Present Worth Analysis Summary
 - 4.3 Alternatives Analysis Summary
 - 4.3.1 Water line extension
 - 4.3.2 Storage tank rehabilitation
 - 4.3.3 WTP Equipment Repair and Replacement
 - 4.3.4 Summary of Preferred Alternative
 - 4.4 Proposed Project Description
 - 4.4.1 Water line extension
 - 4.4.2 Storage tank rehabilitation
 - 4.4.3 WTP Equipment Repair and Replacement
- 5.0 Environmental Information Document^{3,4}
- 6.0 Financial Analysis
- 7.0 Public Participation

In this situation, each component of the project should be described separately from the project description through the alternatives analysis. Then the preferred alternative for the overall project should be detailed in the Proposed Project Description and include an overall capital cost, as this figure will be carried forward into the financial analysis. The overall preferred alternative will be carried forward into the EID, financial analysis, and public participation sections. See

² Under the Need and Purpose, provide the purpose and need for each project component. See [Section 2.2.3](#) for more information.

³ The EID must cover current conditions and impacts for all project components. Some resource topics such as wetlands and streams and forest resources must be broken out into impacts by component and then summarized while others such as noise impacts and air quality impacts may be addresses for the whole project.

⁴ For projects funded under the CDBG-I program, this section may be omitted from the ER.

[Section 2.2.6](#) (Proposed Project Description) for more information regarding how to discuss the overall preferred alternative.

2.1.3 Tables in the ER/EID

The Minor ER/EID provides for the use of tables for the bulk of the information requested. Placing information in a tabular format allows for an efficient review by the review engineer, which keeps the funding process, moving on schedule. Tables should be numbered to go with the specific sections. For example, tables found in the Alternative Analysis (Section 4) should be numbered Table 4.1, Table 4.2, Table 4.3, etc.⁵ Tables in the appendices of this guidance are numbered accordingly but may be renumbered as needed.⁶

The appendices for the sections specific to each project type, the appendix related to the EID (see Section 12 for more information), and the workbooks all contain tables that should be placed in the body of the ER/EID. Tables in the appendices are numbered to go in the appropriate section. When possible, use the tables numbered as is. However, situations may arise where the tables must be renumbered. When this occurs, renumbering is permissible. These tables may be copied into the body of the ER/EID. For tables found in workbooks (e.g., for wastewater treatment plant expansion/upgrade/modification), the workbooks contain tables that have been formatted and numbered to go directly into the body of the ER/EID. If using these tables, then print the tables directly from the workbooks. The guidance for each project type will say where to find the tables referenced (in the appendices or the workbooks). *There is no need to duplicate tables found in the appendices of the guidance in an appendix of the ER/EID.*

Make sure that all tables have a number and title and that **all cells** within the tables are completed. Incomplete tables will generate comments. If more information is necessary to explain data provided in the table, then utilize footnotes or the additional information cells found in the tables. **Placement of additional text outside of the table should be avoided, as this slows the review process.** Additionally, please note that the primary focus of the review of the ER/EID will focus on the information in the tables and their associated footnotes, *not* in surrounding text.

All supporting information should go into an appropriate appendix in the ER/EID. Population information, flow records, etc. should go into appendices rather than into the body of the ER/EID. The guidance explains what types of supporting information should be in the appendices.

For example, if preparing an ER/EID for a water treatment plant expansion, tables related to the current population would be placed in the body of the ER/EID while the supporting documentation would be placed in an appendix of the ER/EID.

⁵ Tables in the workbooks have already been numbered; however, these numbers may be adjusted to fit the needs for that specific ER/EID.

⁶ Tables in appendices are protected; however there is no password. To unlock files to edit, go to review. In the far right-hand corner, click on Protect Document and click on Restrict Format and Editing. A Stop Protection button appears at the bottom right of the screen. Click on that, and editing will then be allowed.

2.1.4 Workbooks for Use in the ER/EID

For Financial Analysis and Present Worth Analysis workbooks *must be used* when completing a Minor ER/EID. For the Major ER/EID, their use is optional but is strongly recommended. These workbooks are in Excel format and are formatted so that upon completion, the tables may be printed and placed directly into the body of the ER/EID. Each workbook begins with an Input worksheet where the user enters the Applicant name, the project name, and any other information required. This information is then carried forward to the remainder of the workbook.

Each workbook contains cells in gray. Enter information into these cells only. White cells are protected to prevent accidental overwriting of formulas. If the Consultant and Applicant determine that white cells need to be altered, then unprotect the specific worksheet and make the change.⁷ *Note: Any changes in the worksheet must be clearly marked in the printouts and justified. Changes should only be made for Major ERs/EIDs. If changes need to be made for Minor ERs/EIDs, consult with the Division before making them.* Make sure that all gray cells contain the information requested, as this information is needed for full functionality of the workbooks.

2.1.5 Figures in the ER/EID

When appropriate, utilize figures to describe the project. Figures are also an easy way to describe the project and convey the location of associated resources and potential impacts.

A title, North Arrow, scale, and either a legend or labels to present information must be included in each figure. Each figure must also show the project components.

Figures should not be embedded in the text of the ER/EID but rather shown on a page a minimum size of 8.5 x 11 inches. Make sure that the figure is at an appropriate scale to show the required information. For example, a project vicinity map would be at a greater scale than a project location map that shows the details.

Proposed Project – The project that is proposed by the Owner to be constructed utilizing funding available from the Division of Water Infrastructure.

If a project is a large project such as a major interceptor, multiple maps may be required. If this is the case, provide an index map that shows the location of the different tiles in respect to the entire project. When preparing mapping, utilize 8.5 x 11 inch or 11 x 17 inch paper rather than larger sizes because larger maps have to be folded, may fall out, and may become lost during the review of the project.

When preparing figures, utilize the following tips:

- **Consistent basemapping.** Throughout all of the figures in the ER/EID, utilize a basemapping set that is easy to read. For example, if a set of roadway mapping is utilized as basemapping, continue the same basemapping throughout the remainder of the ER/EID.
- **Good color contrasts.** Make sure that all features on the figures have good contrast so that they are easy to discern. Use colors that are contrast strongly. For example, do not

⁷ To unlock workbooks for editing, go to the Review tab and click on [Unprotect Sheet]. Then edit as needed. No password is associated with the workbooks.

use blue and green and then a blue-green, as it may be difficult to determine the individual features. Use shapes that have contrasts such as circles and triangles rather than circles and octagons.

- **Aerial photography.** If aerial photography is used as basemapping, use black and white photography instead of color photography. This allows any features shown in color to stand out.
- **Good labeling.** Make sure to utilize good labeling or a good legend to differentiate between the different features of the figures.

At a minimum, the ER/EID must contain a project vicinity map, a project location figure, and an environmental features figure. Additionally, other figures may be required depending upon the project type. The sections specific to project type will contain requirements for these specific figures.

Project Vicinity Map. The project vicinity map allows the reviewer to gain a general understanding of the project area and is critical to the review of the project because the reviewer most likely is not familiar with the area. The vicinity map should be at an appropriate scale and should show the project, county/municipal limits as appropriate, major highways, and major waterbodies with the highways and waterbodies labeled. Please note that the project vicinity map may be used for environmental documents prepared by the Division. This map must be on 8.5 x 11 paper in order to meet submittal requirements at the State Clearinghouse (SCH).

Project Location Map. The second required map is the project location map. This map should be at a closer scale than the project vicinity map. It should show the following:

- Individual project components
- Waterbodies
- Roadways
- County/Municipal limits

If a roadway or waterbody is mentioned in the text, then it should be appropriately labeled on the figure for appropriate reference. The preferred format for a project location map is a USGS topographic map with the project location and each component (e.g., WTP expansion and collection system improvements) clearly marked. However, if other mapping would better suit showing the project, then it may be used so long as the above stated components are shown.

At a minimum, the ER/EID must contain a project vicinity map, a project location figure, and an environmental features figure. Additionally, other figures may be required depending upon the project type. The sections specific to project type will contain requirements for these specific figures.

Include an Environmental Features Figure as part of the Existing Environment section of the EID. The Environmental Features Figure should show the project area and components as well as any key environmental items that are relevant to the specific project. The most recent data must be used to create this figure. Example items to include on the figure include location

Labeling of project location, roadways, and water bodies is crucial for all figures.

of parks or public areas, wetlands and streams, identified locations of threatened and endangered species, areas of archaeological or historical value, or any other feature deemed important. All figures must include a figure number and title, scale, North Arrow, and a legend or labeling to clearly identify the various components included on the figure.

2.2 Sections Common to All Engineering Reports/Environmental Information Documents

While some of the sections in the ER/EID will be unique to project type (e.g., Existing Facilities and Project Planning), other sections will follow the same outline regardless of the project type (e.g., Executive Summary, Present Worth Analysis). The following sections discuss the methodologies to follow for upfront information, the Executive Summary, Purpose and Need, Present Worth Analysis, Alternatives Analysis Summary, and Financial Analysis.⁸ Information related to preparing the EID portion of the ER/EID is found in Section 12.⁹ Each project type discussed in Sections 3 through 11 is a self-contained set of guidance. Where sections are common to all project types are discussed, the guidance will reference the sections discussed below.

2.2.1 Upfront Information

The upfront information consists of information typically seen in the front of the ER/EID before the body actually begins. Include the following information:

If there is no seal on the ER/EID, it will be returned without a review.

- North Carolina Professional Engineer's seal on the cover or title page
- Title page
- Table of Contents
- List of Tables
- List of Figures
- List of Appendices

Owner – The local government unit or other entity that legally owns the facilities in which the project occurs.

A Professional Engineer licensed to practice in North Carolina must seal and sign either the cover or the title page just inside the cover. **If the Professional Engineer seal and engineer's signature is not present on the ER/EID, the ER/EID will not be reviewed until it is appropriately signed and sealed. If it is not signed and sealed within three days of the request, then the ER/EID will be returned.** During the ER/EID review, the point may be reached where individual pages may be submitted in response to comments. If this occurs, then the individual pages must be sealed and signed by the engineer. However, as stated in Section 1.3.2.1, a complete, final version of the ER/EID must be submitted before the ER/EID can be approved.

⁸ The methodology for financial analysis varies dependent upon whether the project is a wastewater infrastructure project (Sections 6 through 9) or a green project (Sections 10 through 12).

⁹ Section 12 applies only to project that are funded via the Drinking Water State Revolving Fund and State Grant Programs (High Unit Cost Grants). Projects funded via the CDBG-I program have their own separate environmental process.

Title Page: Title page must list the Owner, the project title, the consultant, and their contact information. The project title should describe the project being submitted.

Table of Contents, List of Tables, List of Figures. The ER/EID must also have a Table of Contents. The Table of Contents should list the sections that are in the report as well as the page numbers where these sections can be located. The List of Tables and Figures should list each table and figure found within the document and reference the page numbers where they may be found. If tables or figures take up an entire page and cannot be inserted into the body of the ER/EID, then it is acceptable to list the table or figure as “Found After Page X” or something similar.

List of Appendices. The List of Appendices must list a title for each appendix that describes what it contains. An example List of Appendices is below in Table 2.1. Use a colored slip sheet or tabs between each appendix. Page numbers where different appendices are located are not required.

Table 2.1. Example of List of Appendices
<p>Appendix A – Interlocal Agreements</p> <ul style="list-style-type: none"> • Interlocal Agreement between Anytown and Coast Town • Interlocal Agreement between Anytown and Small Town • Interlocal Agreement between Anytown and Big Town <p>Appendix B– Threatened and Endangered Species Lists</p> <ul style="list-style-type: none"> • U.S. Fish and Wildlife Service • North Carolina Natural Heritage Program

2.2.2 *Executive Summary*

The Executive Summary should provide a snapshot of the overall project. Draft the Executive Summary *after* drafting the ER/EID and use it to summarize the key points of the ER/EID. Keep it concise and, if possible, under ten pages. The Executive Summary should contain the following:

- **A brief description of the project.** Mention its location (county and/or city), and describe the various components of the proposed project that summarizes the description in [Section 2.2.6](#). List the current and proposed capacities (e.g., current booster pump station capacity and future booster pump station capacity), include a project vicinity and project location figure (See [Section 2.1.5](#)) and any other figures that would provide readers who would only review the Executive Summary with pertinent information about the proposed project.
- **The reasons for the proposed project.** Summarize the purpose and need for the proposed project. This may be one or two sentences that highlight what is described in more detail in Section 5 of the ER/EID. (See [Section 2.2.3](#) for a description of how to prepare the Purpose and Need section.)

Preferred Alternative – The alternative chosen to be implemented that best addresses the project’s need and purpose.

- **The results of the alternatives analysis.** Briefly describe each of the alternatives considered in the alternatives analysis, including the No-Action Alternative. Discuss why each was rejected in favor of the Preferred Alternative and why the Preferred Alternative was accepted. The rationale for acceptance/rejection may include environmental impact and cost. Note that these are generally the reasons on which acceptance or rejection is based. However, other reasons, such as compatibility with future plans or addressing safety issues, may play a role in the acceptance or rejection of an alternative. Make sure to include both feasible and infeasible alternatives.
- **A summary of the environmental impacts and mitigative measures.** Discuss the environmental impacts of the project. Include any potentially significant impacts of the proposed project and the mitigative measures that will be implemented to reduce these impacts. *If the Project is eligible for Categorical Exclusion please state so.*
- **Project funding and user fee increases.** Provided information about how the project will be funded. Include total cost, sources of funding, and the amount of funding from each source. Discuss how the proposed project will impact user fees, including how any loans from the Division will influence the user fees.

2.2.3 Need and Purpose

The Need and Purpose Statement, required for a NEPA or SEPA analysis, and crystallizes why the project is being proposed. The need and purpose for the ER/EID should clearly frame the problem and provide the basis for determining the solution.

Draft the Need and Purpose statement by utilizing the following steps.

1. Complete the analysis of the Existing Facilities and Project Planning according to the project type-specific guidelines in Sections 3 through 11.

The need and purpose should directly correlate to the analysis of the current situation and project planning. Clearly defining the current and future situations associated with the project will help to better define the purpose and need for the project.

2. Base the Need statement on the results of the Current and Future Situation analysis.

Use the Need Statement to answer: “Why do we need the project?” After the analysis of the current situation and future situation is complete, themes should emerge as needs for the project. Additionally, the Need statement should highlight why the project is a priority in the Applicant’s Capital Improvement Plan (CIP) or similar document. For example, if a town has a WTP that is in need not only of expansion to accommodate growth but also improved treatment to meet new water quality standards, a Need Statement might be as follows:

Need Statement – A brief description of the reason **why** an Applicant must construct a project.

Purpose Statement – A brief description of how the need for the project will be addressed.

The Town of Anytown is faced with an aging WTP which contains equipment that is beyond the recommended lifespan. The Anytown CIP has made replacing this equipment a priority because of the impacts to operations and maintenance costs and effluent quality. Additionally, the WTP treatment process has trouble

consistently meeting the Safe Drinking Water Regulations. Last, Anytown is experiencing growth at moderate levels, and the WTP is approaching 90 percent of the capacity and is therefore required to begin planning for future needs.

The above paragraph shows the need for the project as three reasons: (1) aging equipment, (2) more restrictive limits, and (3) expansion due to growth. These needs must be determined via an analysis of both the current and future situations.

3. Draft the Purpose Statement.

The Purpose Statement should be like a vision statement that answers the question: “How are we going to address the project need?” Explain why a particular project is being proposed. Also provide context in how the project fits with other related projects in the Applicant’s CIP (e.g., the funded project may address only portions of the need, and subsequent phases may address the remaining need). Based on the Need Statement above, the Purpose Statement could be as follows:

The purpose of the proposed project is to implement the Town’s asset management plan, meet our regulatory obligations, protect public health by improving treatment reliability, and accommodate future growth by the upgrade and expansion of the Anytown WTP through the XYZ process.

4. Correlate the Need to the Purpose.

Correlate the Need and Purpose Statements. Note that this section should be as short and succinct as possible; however, it should provide sufficient detail to correlate the Need and Purpose statement.

Minor ERs/EIDs

- Complete Table 5.1 for the Need and Purpose Statement in the appropriate appendix for the project type and include in the body of the ER/EID.

2.2.4 Present Worth Analysis

Minor ER/EID. For Minor ERs/EIDs, each section or step will provide direction as to what tables to complete and what other information is needed. ***The Present Worth Analysis workbook must be used to calculate the present worth.*** The first sheet of the workbook contains a Table of Contents, which is hyperlinked to other pages within the workbook for ease of use.

If choosing to use an alternative present worth analysis methodology, it is recommended that the Consultant and/or Owner meet with Division to share this information before preparing the present worth analysis.

$$PW_{Alt} = Cost_{Capital} + PW_{Replacement} \left(\frac{P}{F}, i, n \right) + PW_{O\&M\text{early}} \left(\frac{P}{F}, i, n \right) + PW_{O\&M\text{int}} \left(\frac{P}{F}, i, n \right)$$

- PW= Present Worth
- Alt= Each feasible alternative
- Cost_{Capital} = Total capital cost for the specific alternative
- PW_{Replacement} = Total present worth of replacement costs for the specific alternative
- PW_{O&M^{early}}= Total present worth of annual operations and maintenance cost for the specific alternative
- PW_{O&M^{int}}= Total present worth of operations and maintenance costs occurring intermittently throughout the life of the project
- P/F= Present worth single payment factor
- i= Current EPA discount rate (4.875%)
- n= Length of loan (20 years)

Equation 2.1. Present Worth Analysis

Major ER/EID. For Major ERs/EIDs, complete the requirements described in a narrative format. Where possible, use tables to display numerical information. Discussions must be succinct, and any supporting information should be placed in an appendix of the ER/EID. For calculations, it is recommended to use the supplied workbooks. If other methodologies are used, then provide the justification for the methodology, a clear description of the methodology, and the results in the body of the ER/EID. All assumptions, calculations, and supporting information must be placed in an appendix of the ER/EID.

Requirements

The present worth analysis is part of the alternatives analysis and should be conducted *only* for those alternatives that are considered to be *feasible* alternatives. Infeasible alternatives would be those where it would be impracticable to construct, *not* a project that may cost millions of dollars more than the preferred alternative. For example, for a collection system expansion, different route alignments must be considered. While the shortest alignment might be under an apartment building, it would be impracticable to construct that particular alignment, thus deeming it as infeasible.

- Feasible alternatives – Alternatives that fulfill the project’s purpose and need and could potentially be constructed regardless of the cost.
- Infeasible Alternative – An alternative that may fulfill the project’s purpose and need but would be impracticable to construct due to physical, or environmental constraints.

The present worth must be calculated for all feasible alternatives.

The present worth calculation is as shown in Equation 2.1 and is described step-by-step below. The workbook allows for the present worth calculation for up to six alternatives. On the Input worksheet of the Present Worth Analysis workbook. Enter up to six alternatives into the gray area. If more than six alternatives are considered for the present worth analysis, then the worksheets may be unlocked and additional sheets added as necessary.

1. Determine capital cost.

Requirements

Capital costs are costs related to the construction of the project and will be used not only for the present worth analysis but also for an analysis of total project cost. Include project administration costs.¹⁰ Contingency costs are defaulted to be ten percent but may be changed provided that a higher or lower contingency cost is properly justified. For engineering services costs, include actual costs even though the eligible reimbursement costs may be less. Include the costs associated with patent fees, engineering, start-up- services, land and easements, etc.

If using the Present Worth Analysis workbook, select the appropriate alternative using the pull-down menu. Then enter the project administration costs as well as information related to what will be used to construct the project by component, unit cost, unit, and quantity. The worksheet will calculate the total cost for each component.

Minor ERs/EIDs

- Use the tables found in the Present Worth Analysis to calculate the capital costs and include in the body of the ER/EID.

Major ERs/EIDs

Alternative methodologies may be used. If an alternative methodology is used, then the body of ER/EID must explain the methodology and show sample calculations. Present the results with supporting data, assumptions made, and calculations in an appendix of the ER/EID.

2. Determine Any Replacement Costs.

Requirements

Over the course of the 20-year project life, equipment may need to be replaced. Replacement costs for these plants should be accounted for in the present worth analysis. Provide a brief discussion of the life cycle for each component detailed under capital costs and the rationale for life cycle assumptions.¹¹

¹⁰ Not all may be eligible. See the SRF eligibility guidance document for additional information.

¹¹ Table 6.2.2 in the project-specific appendices may be renumbered as needed to accommodate for the number of feasible alternatives.

$$I_{CCI} = \frac{CCI_n - CCI_{n-1}}{CCI_{n-1}}$$

I_{CCI} = Inflation based on the Construction Cost Index
 CCI_n = Construction Cost Index in Year N.
 CCI_{n-1} = Construction Cost Index in Year N-1

Equation 2.2. Inflation Based on Construction Cost Index

$$\frac{P}{F} = \left(\frac{1}{(1 + i)^n} \right)$$

P/F = Single Payment Present Worth Factor
 i = EPA Discount Rate (4.875%)
 n = Year

Equation 2.3. Single Payment Present Worth Factor

To accurately determine the present worth of replacement costs over the life of the project, current replacement costs are inflated using the Construction Cost Index (CCI) (see Equation 2.2) and then discounted using the single payment present worth factor (see Equation 2.3).¹² Multiply each inflated replacement cost by the single payment present worth factor (P/F), which is shown in Equation 2.3 to bring it back to its present value (worth). If completing this in the Present Worth Analysis workbook, go to the Replacement Costs-Entry worksheet and enter a “Y” into each the appropriate cell to show when a replacement is expected to occur. The replacement costs for Years 1-20 will be calculated and totaled. The information will then be in presented in the Total Present Worth cell for that particular alternative.

Minor ERs/EIDs

- Complete Table 6.2.2 found in the project type-specific appendices for life cycle assumptions and include in the body of the ER/EID. The table may be renumbered as needed for each feasible alternative analyzed.
- Place any supplemental information in an appendix of the ER/EID.
- Use the Present Worth Analysis workbook located in the Toolbox to determine replacement costs and include the tables in the body of the ER/EID.

Major ERs/EIDs

Alternative methodologies may be used. Alternative methodologies may be used. If an alternative methodology is used, then the body of ER/EID must explain the methodology and show sample calculations. Present the results with supporting data, assumptions made, and calculations in an appendix of the ER/EID.

¹² Note that the CCI changes each year. DWI will update the inflation rate based on CCI once a year using data for the month of March.

3. Determine the Operations and Maintenance Cost.

Operations and maintenance (O&M) costs are composed of two different types of O&M: annual O&M and intermittent O&M.

Requirements

After calculating replacement costs, determine the annual and intermittent O&M costs *related to the project only*.

For annual O&M costs, examine the cost of each component on an annual basis. For example, if considering energy costs, calculate how much energy would be used for that year and how much it would cost. Also include normal salary and benefits increases for any new employees who would be hired to maintain the proposed project.

To accurately determine the value of annual O&M costs into the future, the costs are inflated using the Municipal Cost Index (MCI). Equation 2.4 shows the calculation of inflation based on the MCI. Once inflated costs have been calculated, then utilize the single payment present worth factor as shown in [Equation 2.3](#) to bring the costs back to the present value.

If using the Present Worth Analysis workbook, go to the Yearly O&M Costs 1-10 worksheet and enter the required information in the gray cells. The workbook will calculate the annual O&M costs for Years 1 through 20 and total them. The annual O&M costs will be carried forward by the worksheet into the Total Present Worth worksheet.

For intermittent O&M costs, review each component of the project to determine whether maintenance would occur for an item on an infrequent basis over the life of the proposed project. For example, if a pump station were being installed, then a major overhaul of the pumps might need to occur every five years to ensure that they reach the end of their useful life. Though this maintenance would be routine, it would not occur every year. For those types of O&M, utilize Equations 2.3 and 2.4 to calculate the present worth of all intermittent O&M costs. If using the Present Worth Analysis workbook, go to the worksheet entitled Inter O&M Entry. Enter each item that would be intermittent O&M. Then enter a “Y” to show the year in which this would occur. The spreadsheet will calculate the present worth as described above and will provide a total intermittent O&M present worth over the life of the project. The intermittent O&M costs will be calculated by the worksheet and carried forward into the Total Present Worth worksheet.

Annual O&M – Regular O&M that occurs on a yearly basis such as power usage and chemical purchase.

Intermittent O&M – O&M that occurs during the life cycle of the project but more infrequently than yearly such as equipment overhauls.

$$I_{MCI} = \frac{MCI_n - MCI_{n-1}}{MCI_{n-1}}$$

I_{MCI} = Inflation based on the Municipal Cost Index

MCI_n = Municipal Cost Index in Year N.

MCI_{n-1} = Municipal Cost Index in Year N-1

Equation 2.4. Inflation Based on Municipal Cost Index

Minor ERs/EIDs

- Use the Present Worth Analysis workbook to calculate the present worth of the annual O&M costs and include these tables in the body of the ER/EID.
- Use the Present Worth Analysis workbook found in the Toolbox to calculate the present worth of the intermittent O&M costs and include these tables in the body of the ER/EID.

Major ERs/EIDs

Alternative methodologies may be used. If an alternative methodology is used, then the body of ER/EID must explain the methodology and show sample calculations. Present the results with supporting data, assumptions made, and calculations in an appendix of the ER/EID.

4. Calculate Total Present Worth.

Requirements

After computing the capital costs, the replacement costs, the annual O&M costs, and the intermittent O&M costs, calculate the total present worth for each *feasible* alternative. Use [Equation 2.1](#) to calculate present worth. If the Present Worth Analysis workbook is being used, the total present worth will be calculated automatically for each feasible alternative.

Minor ERs/EIDs

- Use the Present Worth Analysis workbook to calculate the total present worth and include this table in the body of the ER/EID.

2.2.5 Alternatives Analysis Summary

The alternatives analysis summarizes alternative reviewed and whether the alternative is accepted or rejected. It encompasses the three following components:

- The alternatives description as discussed in Sections 3 through 11.
- The present worth analysis as described in [Section 2.2.4](#).
- The impacts documented in the EID (see Section 12) as discussed below.

Requirements

1. Complete the in-depth alternatives analysis.

The ER/EID provides an in-depth analysis of the Preferred Alternative. Complete the alternatives description for each alternative considered. More information related to the

alternatives description may be found in the sections of this guidance related to individual project type. Ensure that all cells are completed. Where possible, include a figure to visually show the alternative and reference the figure in the appropriate cell of the table. Additionally, include information about the present worth and capital costs for all feasible alternatives.

Part of the summary of the alternatives analysis is to provide a determination as to whether the rejected alternatives impact public health to a greater or lesser extent than the Preferred Alternative.

Public health benefits as well as impacts may play a role in selecting the Preferred Alternative. For example, the Preferred Alternative for a WTP equipment repair and replacement might be replacing a piece of worn-out equipment with a different piece of equipment that removes a certain contaminant to a higher degree. Though this new piece might be more expensive, the rationale for acceptance could read, "Equipment has higher costs but removes the contaminant at an amount needed to meet the water quality standards."

Once all alternatives have been described, determine the rationale for acceptance/rejection. Begin with the Preferred Alternative before moving on to the other alternatives and use the Preferred Alternative as a baseline against which the other alternatives are considered. Include factors such as cost and public health impact/benefit. Additionally, the rationale for acceptance may be other factors besides project cost and/or public health and environmental benefits/impacts. List Rationale for acceptance/rejection in the appropriate cell of the table.

No-Action Alternative – An alternative considered during the NEPA/SEPA process where nothing is implemented.

Once the alternatives description tables are complete, then proceed to complete Table 5.3.1 in the project type-specific appendices.

2. Discuss the No-Action Alternative.

In Table 5.3.1 of the project type-specific appendices, reference the No-Action Alternative description. Then discuss whether the No-Action Alternative is feasible or not. In some cases, such as an impaired stream where water quality is severely degraded, doing nothing may not be feasible. However, some situations may occur where improving water quality is not one of the needs. If this is the case, doing nothing might be feasible. Provide the rationale, as summarized from the Alternatives Description subsection, as to why the No-Action Alternative was rejected.

Every ER/EID must include the No-Action Alternative.

3. Summarize infeasible alternatives.

For each infeasible alternative, provide the alternative name and reference to the appropriate Alternatives Description section of Table 5.3.1. Check the box marked infeasible, and briefly summarize the rationale from the Alternatives Description subsection as to why the alternative was rejected.

4. Analyze the feasible alternatives.

Begin this part of the analysis with the Preferred Alternative. For the Preferred Alternative, provide the alternative name and reference to the appropriate Alternatives Description section, the project capital cost (from the present worth analysis calculated as discussed in [Section 2.2.4](#)), the present worth (see Section 2.2.4), a brief description of the environmental impacts (see Section 12.0)¹³, and a summary as to why this alternative was chosen as the Preferred Alternative. The summary should be based on the rationale for acceptance from the description of the Preferred Alternative.

Preferred Alternative – The alternative chosen to be implemented that best addresses the project’s purpose and need. This may or may not be the alternative with the lowest total present worth.

After analyzing the Preferred Alternative, review the remaining feasible alternatives in the same manner. However, for each rejected feasible alternative, summarize the rationale for rejection as described in the Alternatives Description subsection.

Minor ERs/EIDs

- Use 5.3.1 provided in the project type-specific appendices to summarize the alternatives analysis.
- Place this table in the body of the ER/EID.

2.2.6 Proposed Project Description

The project description is used in a number of ways by the Division staff, including for approval letters and environmental documents as well as for reporting purposes. Therefore, having an accurate description of the project is critical.

Requirements

Describe the **entire** proposed project in this section. If the proposed project is part of a larger project or master plan, explain how this portion of the project fits with the larger project. If the project is phased, briefly describe the past and future phases. Also, include a description of any interrelated projects, whether they will be funded by the Division or other sources. The EID review in Section 5 will encompass the entire project, not just the portions of the project funded by the Division. If the project is broken into different project types, then describe each component of the overall project.

Proposed Project – The project that is proposed by the Owner to be constructed utilizing funding available from the Division of Water Infrastructure.

As the project and reports are revised, be sure to update the project description so it reflects the most current situation.

The project description should include the following details **as applicable** to the specific project:

- Connections to existing utility and water lines and/or new utility installation

¹³ For the DWSRF and HUC grant programs only.

- Amount of paved or otherwise impermeable surface to be created
- Construction of any stormwater control devices
- New treatment processes that will be constructed
- Existing treatment processes that will be upgraded
- Level of treatment and capacity to be provided
- If the project will include construction of administrative facilities, discuss the square footage and height of the buildings, the proposed use(s) of buildings, the number of parking spaces in parking lots or decks associated with the buildings, and the amount of paved or otherwise impermeable surfaces.

The project description section must include both the project vicinity map and the project location map. See [Section 2.1.5](#) for more information regarding these maps. When drafting the project description, utilize bulleted lists where it makes sense. Additionally, break out the project description into sub-headings if it will allow for a clearer presentation of the project.

Minor ERs/EIDs

- Complete Table 5.4 in the project type-specific appendices and place this table in the body of the ER/EID.
- Complete the required figures and place them in the ER/EID.

2.2.7 Financial Analysis (Water Infrastructure Projects)

For Minor ERs/EIDs, each section or step will provide direction as to what tables to complete and what other information is needed.

For Major ERs/EIDs, complete the requirements described in a narrative format. Where possible, use tables to display numerical information. Discussions must be succinct, and any supporting information should be placed in an appendix of the ER/EID. For calculations, it is recommended to use the supplied workbooks. If other methodologies are used, then provide the justification for the methodology, a clear description of the methodology, and the results in the body of the ER/EID. Include all assumptions, calculations, and supporting information in an appendix of the ER/EID. Calculations must be replicable by Division staff.

The financial analysis determines how the proposed project will be funded and how any loan, especially those from the Division, will be repaid.

The financial analysis will answer two questions:

- Will the Owner's or Applicant's finances be able to service any debt incurred related to the proposed project?
- How will the proposed project impact user rates?

This section discusses how to conduct the financial analysis for projects where the revenue is generated across the entire user base.

If using the Financial Analysis workbook, then go to the Input Page and enter the project name, Applicant name, and Preferred Alternative name into the appropriate cells. This information will be carried forward into the rest of the workbook.

2.2.7.1 System Financial Condition

Before undertaking the planning and preparation for the proposed project, review the Applicant's financial condition. The [Environmental Finance Center at the University of North Carolina](#) has several [tools](#) that may be helpful. One of the tools offered is a [Rates Dashboard](#), which compares the Applicant's rates to those of other, similar systems. Before using the Dashboard, view the [webinar](#) that goes over not only the latest rates reports but also how to use the Rates Dashboard (view the last 30 or so minutes of webinar for just information on the rates dashboard).¹⁴

Requirements

As part of the financial analysis in the ER/EID, provide information regarding the Applicant's operating ratio and user rates as a percentage of median household income (MHI) as shown below.

1. Analyze the Applicant's operating ratio.

To analyze the operating ratio, divide the water and sewer revenue by the operating expenses and current debt. The water and sewer revenue as well as water and sewer expenses should be *from the most recently completed fiscal year*. Additionally, existing debt should be the debt paid in the most recently completed fiscal year as well. For example, if an ER/EID was prepared for the September 2014 DWSRF application cycle, then the water and sewer revenues and expenses as well as existing debt should be from FY 2012-2013, as this is the most recently completed fiscal year where data are available.

If the operating ratio is below 1.0, then the Applicant is spending more on the operations and maintenance of their system and debt than is earned via revenues. If this is the case, then review whether this is a temporary condition (e.g., one-time expenditures from a capital reserve account) or whether it is a more systemic condition (e.g., rates need to be adjusted higher). Provide a brief discussion in the Additional Information cell of the table and provide any additional supporting information in an appendix. If the operating ratio is between 1.0 and 1.2, then consideration should be given and discussed regarding the financial feasibility of the project without raising revenues (e.g., sewer rates).

2. Analyze user rates as a percentage of MHI.

Requirements

To analyze the Applicant's user rates as a percentage of MHI, determine what the monthly water and sewer bill is for the typical user who consumes 5,000 gallons a month. Note whether the rate structure for water rates is a uniform rate structure or some other (such as tiered) structure. If

¹⁴ See the Webinar from May 1, 2009.

using the worksheet in the Financial Analysis workbook, select either Uniform or Other by using the pull-down menu.

Uniform structures typically include a base charge and a volumetric charge. The base charge, which usually includes some minimum amount of usage, plus the remaining volumetric charge needed to have a 5,000 gallons per month usage, should be computed. For example, a base charge may be \$12.50, which includes 2,000 gallons per month usage and then \$3.50 per 1,000 gallons as a volumetric charge. Then the monthly water bill for a consumer using 5,000 gallons per month would be \$23.00.

$$UC_{\%MHI} = \left[\frac{(UC_{base} + [UC_{Vol} \times V])}{\left(\frac{MHI}{12}\right)} \right] \times 100$$

- UC_{%MHI}= User Charge as percentage of median household income
- UC_{Base}= Base user charge
- UC_{Vol}= Volumetric user charge per thousands of gallons
- V= Difference in volume to reach 5,000 gallons per month
- MHI= Median household income

Equation 2.5. User Charge as Percentage of Median Household Income Calculation

Some Applicants may not utilize a uniform rate system. If completing a Minor ER/EID, use the pull-down menu to select < Other> and enter the amount that would be charged per 1,000 gallons in the Volumetric Charge per 1,000 gallons cell. The worksheet will then multiply this value by five to obtain the monthly charge per 5,000 gallons of usage. Then in the Additional Information cell, explain how this amount was calculated. Repeat the same process for the monthly sewer bill.

After determining the monthly charge for a typical resident using 5,000 gallons per month, determine the Applicant’s monthly median household income. See the Division website for the most recent MHI rates for municipalities and counties within North Carolina. Use Equation 2.5 for this calculation. If the water bill as %MHI is greater than 2.0 percent, discuss the financial hardship on users in the Additional Information cell. This discussion should specifically reflect how the different alternatives shown in the alternatives analysis, including the No-Action Alternative, would impact user rates and why the Preferred Alternative was chosen over others, especially if the Preferred Alternative is more expensive than other alternatives.

Major ERs/EIDs

The user charge as a percent of MHI must be calculated in the same way as discussed above; however the manner of presentation may be different.

Minor ERs/EIDs

- Use the Financial Analysis workbook in the Toolbox to calculate the user charge as a percentage of MHI and include the table in the body of the ER/EID.

2.2.7.2 Funding and Loan Repayment

Determine the amount of the annual payment to repay *any* loans taken out through Division and/or through other sources. Loans that are made by the Division to the Applicant will come from the DWSRF, DWSRL and DWSEL programs and are simple interest loans with level principal that begin accruing interest after the completion of construction.

The following steps describe how to determine the amount of repayment on any loans taken out through the Division programs or other sources.

Please note that if *only* grants are funding a project, then only Step 1 in this section needs to be completed, as grants should not impact user rates.

1. Determine the sources of funding.

Requirements

Generally, the interest rates are the same whether the project is funded through the DWSRF, SRL, or SEL program. The current interest rate for drinking water program is set at zero percent. However, interest rate may change in the future and this can be found in the current Intended Use Plan (IUP) on the Division website; special financing conditions will be documented in the Intent to Fund letter.

For projects that have principal forgiveness through the base DWSRF program, the portion of the loan with the current interest rate must be listed in the table first and a worst-case scenario for the this portion of the loan analyzed as well.

For other sources of credit that have an interest rate *and are related to the proposed project*, provide the interest rate for each source of credit as well as the amount and funding type (e.g., loan, grant).

If using the Financial Analysis workbook, then go to the Loan Repayment Input worksheet. Use the pull-down menu to select from the funding sources. Then enter the amount, and use the pull-down menu under the Funding Type column to select the funding type. Under the interest rate column, enter the interest rate(s) for any loans and then the repayment period in years for any loans.¹⁵ If a funding source or type is inadvertently entered, the cell may be cleared by selecting the blank entry at the top of the list.

If a project is eligible for Principal Forgiveness, then enter this information on the Main Division Funding row and add any additional Division funding to the Funding 1 row and in the rows following Funding 1 (e.g., DWSRF base program, DWSRL).

¹⁵ If the project is eligible for Principal Forgiveness, then enter this funding type under the Main DWI Funding row.

Loans from the DWSRF program require a two percent closing fee. This fee *may not* be financed through the DWSRF loan. Additionally, DWSRL and DWSEL closing fees are also two percent. The workbook will calculate the total closing fee based on the type(s) of Division funding utilized. Note that for drinking water projects, the two percent closing fee may be paid by the loan. If this is the case, still show the closing fee as separate and make a footnote on whether or not the loan will fund it.

For High Unit Cost Grant (HUC) Funds, the grant administrative fee is 1.5% of the grant amount and this cannot be included in the total grant award. The applicant is responsible for paying this amount as their contribution to the project.

Please note that there is no grant administrative fee associated with projects funded through CDBG program.

Minor ERs/EIDs

- Use the Financial Analysis workbook to enter the funding amount(s), funding source(s), funding type(s), and any applicable interest rate(s) in the Loan Repayment worksheet and include this table in the body of the ER/EID.

Major ERs/EIDs

Alternative methodologies may be used. If an alternative methodology is used, then it must be explained in the body of ER/EID and a sample calculation provided to show how the calculations were made. The results must be presented. All supporting data, methodologies used, assumptions made, and calculations must be provided in an appendix of the ER/EID.

2. Determine interest and repayment for loans.

Note: If only grants are funding the project, then Steps 2 through 6 are not required. However, if any loans (including any loans outside of the purview of the Division) are involved with funding the project, then Steps 2 through 6 must be completed.

Requirements

After determining the sources of funding, then calculate the Year 1 principal and interest payments related to the main Division loan (DWSRF, DWSRL, or DWSEL).

Use Equation 2.6 to determine the first year's interest.

Additionally, the calculation of the worst-case interest rate of four percent is required since the interest rate at the time of the loan agreement is unknown and, if the Bond Buyers' 20 Index goes above eight percent, State law caps the interest rate at four percent. If utilizing the Financial Analysis workbook, then the workbook will calculate the loan repayment for both the current interest rate and worst-case scenarios.

Loans offered by the Division utilize a simple interest loan with a level principal payment. Typical loan terms are 20 years maximum.

$$I_{Year\ 1} = PR$$

$I_{Year\ 1}$ = Interest for Year 1
P = Principal
R = Interest Rate

Equation 2.6. Interest Calculation for Year 1

Minor ERs/EIDs

- Once data regarding the loan amount(s), funding source(s), loan type(s), and interest rate(s) are entered into the Financial Analysis workbook, the spreadsheet will calculate the Year 1 interest and repayment amounts for the DWI main loan.
- Include this table in the body of the ER/EID.

Major ERs/EIDs

Alternative methodologies may be used. If an alternative methodology is used, then it must be explained in the body of ER/EID and a sample calculation provided to show how the calculations were made. The results must be presented. All supporting data, methodologies used, assumptions made, and calculations must be provided in an appendix of the ER/EID.

Requirements

For other loans incurred, calculate the Year 1 interest using [Equation 2.6](#). The first year's repayment of the loan is calculated as shown in Equation 2.7. If using the Financial Analysis workbook, then the workbook will calculate the Year 1 loan repayment.

$$Repayment_{Year\ 1} = \frac{P + I}{20}$$

Repayment_{Year 1} = Amount of payment for Year 1
P = Principal
I = Total interest generated

Equation 2.7. Calculations for Simple Repayment

Minor ERs/EIDs

- Once data regarding the loan amount(s), funding source(s), loan type(s), and interest rate(s) are entered into the Financial Analysis workbook, the spreadsheet will calculate the Year 1 interest and repayment for any other loans.
- Print this worksheet and include it in the body of the ER/EID.

Major ERs/EIDs

Alternative methodologies may be used. If an alternative methodology is used, then it must be explained in the body of ER/EID and a sample calculation provided to show how the calculations were made. The results must be presented. All supporting data, methodologies used, assumptions made, and calculations must be provided in an appendix of the ER/EID.

2.2.7.3 User Fee Analysis

After determining the annual repayment, establish the change in user fees needed to construct the project. This section will determine the following:

- The change in user rates to accommodate any Division loans and other loans on the entire user base at the current interest rate.
- The change in user rates to accommodate any Division loans and other loans on the entire user base at the “worst-case” interest rate of four percent.
- The change in user rates to accommodate any Division loans and other loans on only the residential user base at the current interest rate.
- The change in user rates to accommodate any Division loans and other loans on only the residential user base at the “worst-case” interest rate of four percent.

The change to user rates based on the entire user population (e.g., residential, commercial, industrial) allows the Applicant the opportunity to examine how the proposed project would impact user rates under current conditions. Impacts to only residential users are used because it portrays a worst-case scenario of what would happen if all industry and commercial enterprises pulled out of an Applicant, leaving only residential customers to pay the cost of the project through user rate increases.

Requirements

The following steps describe how to determine the impact on user fees of any loans taken out. Steps 1 through 4 discuss how to determine the cost to treat 5,000 gallons of wastewater per month.

1. Calculate monthly water usage.

Since sewer charges are calculated based on the amount of water customers utilize during the month, information

Customer Type – Residential, commercial, and industrial customers who have water accounts within the local government unit who has sought funding from DWI.

related to water usage and the number of connections is critical in determining needed user fee increases due to the project. Determine both the average water usage per month and the number of connections for all three customer types (e.g., residential, commercial, industrial). Calculate the total water usage by utilizing Equation 2.8 below for each customer type and total. If using the worksheets of the Financial Analysis, enter the information into the gray boxes at the top of Table 8.4.

$$\begin{aligned}
 WaterUse_{Total} &= (MonthlyWaterUse_{Res} \times Connect_{Res}) \\
 &+ (MonthlyWaterUse_{Com} \times Connect_{Com}) \\
 &+ (MonthlyWaterUse_{Ind} \times Connect_{Indu})
 \end{aligned}$$

WaterUse_{Total}= Total water usage per month by customer type (e.g., residential, commercial, industrial)
 WaterUse_{Monthly}= Average water use per month by an individual connection for each customer type (e.g., residential, commercial, industrial)
 Connect= Number of connections by customer type
 Res= Residential
 Com= Commerical
 Ind= Industrial

Equation 2.8. Calculation of Total Water Usage within the Local Government Unit

2. Determine Year 1 Operations and Maintenance costs.

Go back to the present worth analysis for the Preferred Alternative and locate the Year 1 O&M costs for the proposed project only. This is the Year 1 O&M expense. If using the Financial Analysis workbook, then enter this information into the appropriate cell of Table 8.4.

4. Determine Year 1 monthly expenses for all scenarios.

Year 1 monthly costs only are calculated because the Local Government Commission (LGC) reviews the expenses in the first year that a project is implemented to ensure that the Applicant is able to take on additional debt. The Year 1 costs are the “worst-case” scenario in that it is the year when the principal and interest will be at their highest.

Local Government Commission – The governing body that oversees the approval, sale, and delivery of substantially all North Carolina local government bonds and notes and monitors certain fiscal and accounting standards prescribed for units of local government by the Local Government Budget and Fiscal Control Act.

Calculate the monthly expenses for Year 1 of project implementation *for the project only* for all users at the current interest rate. Specify the monthly repayment project cost expenses for the main loan taken out through (see [Section 2.2.7.2](#)) as well as the O&M costs *related to the project only* as calculated for Year 1 in [Section 2.2.4](#). Note that if grant funds are utilized, while there will be no monthly costs associated with the principal and interest of a loan, there will still be monthly costs associated with O&M expenses. Calculate Year 1 monthly costs for other funding sources. In this case, O&M costs are *not* included.

Repeat this calculation for the remaining three scenarios: (1) Year 1 monthly costs at the worst-case interest rate; (2) Year 1 monthly costs at the current interest rate for residential users only; and (3) Year 1 monthly costs at the worst-case interest rate for residential users only. If using the Financial Analysis workbook, the workbook will automatically calculate the monthly costs for these four scenarios.

5. Determine cost per 5,000 gallons to finance the project.

After determining Year 1 monthly expenses for the main loan and O&M costs plus any additional Year 1 debt related to other loans, then calculate the total cost per 5,000 gallons of wastewater plus the cost of the main loan per 5,000 gallons. To do this, first calculate the number of 5,000-gallon units that would be needed to finance the project for all customer types. This is done by dividing the total monthly water usage for all customer types by 5,000. To determine the number of 5,000-gallon units to finance the project based on residential customers only, divide the total water usage for residential customers only by 5,000. If the Financial Analysis workbook is being used, then the spreadsheet will automatically calculate these numbers.

Minor ERs/EIDs

- The Financial Analysis workbook will take the information entered in the above steps and calculate the monthly cost to treat 5,000 gallons of wastewater for each individual debt, including the main loan, and as a whole.
- Print and include this worksheet in the body of the ER/EID.

Major ERs/EIDs

Alternative methodologies may be used. If an alternative methodology is used, then it must be explained in the body of ER/EID and a sample calculation provided to show how the calculations were made. The results must be presented. All supporting data, methodologies used, assumptions made, and calculations must be provided in an appendix of the ER/EID.

6. Determine the impact of the project on user charges.

Requirements

Determine how the additional costs to treat 5,000 gallons of water *due to the project* will impact the water bill and total water and sewer bill. To do so, add the additional costs to the existing sewer bill determined in [Section 2.2.7.1](#) (see Equation 2.9). Then determine the percent increase as shown in Equation 2.10.

$$WaterCharge_{New} = WaterCharge_{Existing} + Cost_{5,000\ gal}$$

- WaterCharge_{New}= New user charge to treat 5,000 gallons of wastewater due to project
- WaterCharge_{Existing}= Existing water charge to treat 5,000 gallons of wastewater
- Cost 5,000 gal= Monthly cost to treat 5,000 gallons of wastewater with new project

Equation 2.9. New Water Charge Calculation Due to Project

After calculating the influence the project will have on the monthly water bill for the typical residential usage of 5,000 gallons, determine the potential water and sewer bill after the increase. To do so, add the existing monthly residential water bill for 5,000 gallons of consumption to the existing wastewater bill and to the increased user charge for the wastewater bill. Percentage increases are calculated in a manner similar to Equation 2.10. Again, the User Rate Increase worksheet will calculate the new user charge due to the project.

$$\%Increase = \frac{(SewerCharge_{New} - SewerCharge_{Existing})}{SewerCharge_{Existing}}$$

- %Increase= The percentage that the water bill for a typical user of 5,000 gallons of wastewater will increase due to the project
- WaterCharge_{New}= New user charge to treat 5,000 gallons of wastewater due to project
- WaterCharge_{Existing}= Existing water charge to treat 5,000 gallons of wastewater

Equation 2.10. Percentage Increase Due to Project

Minor ERs/EIDs

- The Financial Analysis workbook will take the information entered in Steps 1 through 5 and calculate the new water and water charges as well as the percent increase in the user charges due to incurring the debt required to finance the project.
- Print and include this worksheet in the body of the ER/EID.

Major ERs/EID

Alternative methodologies may be used. If an alternative methodology is used, then it must be explained in the body of ER/EID and a sample calculation provided to show how the calculations were made. The results must be presented. All supporting data, methodologies used, assumptions made, and calculations must be provided in an appendix of the ER/EID.

2.2.7.4 *Project Impacts to Water and Sewer Bills*

After calculating the impact of the project on user rates, determine how the costs related to the proposed project will impact the percent water and sewer bills in comparison to income. Showing the water and sewer bill as a percentage of MHI provides an indication of the burden that water and sewer users within a system currently bear. Calculating the new water and sewer bills as a percentage of MHI shows how a new project may add additional burden on water and sewer users. Typically, if a sewer bill is greater than two percent of the monthly median household income, then the financial burden is considered to be potentially significant. Likewise, if both the water and sewer bill is greater than four percent of the monthly MHI, then the financial burden is considered to be potentially significant. The following steps should be used to determine this potential burden on users.

1. Calculate the new water bill as a percentage of MHI.

Determine what the new water bill due to the project will be as a percentage of MHI. Do this for the water bill due to any Division loan(s) and the water bill due to all loans. Compare the new percent MHI with the old percent MHI. If the percent MHI is greater than two percent, then in the Additional Information cell of Table 8.6, discuss why the proposed project must be completed in light of the fact that it will cause a potentially significant financial burden on water customers. Additionally, if the Preferred Alternative was greater in cost than other alternatives, justify why the Preferred Alternative was selected despite the potentially significant financial burden on water users. If utilizing the Financial Analysis workbook, then the workbook will calculate this information. If there will be a potentially significant impact to the water bill, discuss any ramifications in the Additional Information cell.

2. Calculate the new water and water bill as a percentage of MHI.

Repeat Step 1 above, but for both the water and water bill instead of just the water bill. If utilizing the Financial Analysis workbook, then the workbook will calculate this information. If there will be a potentially significant impact to the water bill, discuss any ramifications in the Additional Information cell.

Minor ERs/EIDs

- The Financial Analysis workbook will take the information entered in the above steps and calculate the revenue generated as a result of the project.
- Print and include this worksheet in the body of the ER/EID.
- Additionally, data showing the number of residential, industrial, and commercial users must be included in an appendix of the ER/EID.

Major ERs/EIDs

Alternative methodologies may be used. If an alternative methodology is used, then it must be explained in the body of ER/EID and a sample calculation provided to show how the calculations were made. The results must be presented. All supporting data, methodologies used, assumptions made, and calculations must be provided in an appendix of the ER/EIDs.

2.2.8 Public Participation (not required for CDBG Programs)

Public participation plays a role in projects that are funded by the DWSRF program or if a project under the DWSRL and DWSEL programs exceeds the minor construction activity thresholds. This section discusses the types of public participation required for the various types of environmental documents.

2.2.8.1 Projects Below Minor Construction Activity Thresholds/EPA Criteria

For projects funded through the DWSRF programs that are under the minor construction activity requirements for either program, public notification must occur.

DWSRF Program. For projects under the minor construction criteria, DWI will prepare a Determination of Minor Construction Activity (DMCA), send a copy to the Applicant as part of the approval package, and post a copy on the DWI website. The APPLICANT should place a copy in their files in case a member of the public wishes to see it.

For DWSRF, SRL, or SEL projects below the SEPA minor construction activity, if user fee increases are greater than 25 percent for WTP construction/expansion/modification only, then a public meeting must be held.

When drafting the public participation section, state that DWI will prepare the DMCA, send a copy to the Applicant, and post a copy on the DWI website. Additionally, while not required, DWI encourages the posting of the DMCA on the Applicant's website in a place where users could locate it and view it.

The minor construction activities for the DWSRF and SRL/SEL programs are different than those for the CDBG program.

CDBG Program. For CDBG programs, public participation is done under the Environmental review process.

DWSRL/DWSEL Program. For projects that are under the SEPA minor construction activities criteria, the Division will draft and send an approval letter to the Applicant. A notification that the project has been approved will be posted on the Division website.

2.2.8.2 Projects Above Minor Construction Activity Threshold/EPA Criteria

For projects that are above the minimum criteria for any of the programs funded by the Division, the Environmental Assessment Coordinator will typically

Since FONSI's are on a timeline for completion, the public meeting must be timed so as not to delay the preparation of the FONSI and the review of the FONSI by the State Clearinghouse.

draft a FONSI/EA to document the impacts and to declare that no significant impact will occur. Because these types of projects result in impacts that must be mitigated, Division requires more public participation. When preparing for public meetings, follow these three steps:

- Advertise the public meeting.
- Hold the public meeting.
- Report on the public meeting.

1. Advertise the public meeting.

Provide a two-week notification by advertising it in a local newspaper whose coverage encompasses the project area. Consider utilizing additional means of advertisement such as the Applicant's website if one is available. The advertisement must contain the following information:

- The time and location of the public meeting
- When and where a copy of the ER/EID can be reviewed
- A brief description of the proposed project
- How much funding is required and the source(s) of funding

Upon advertisement, a copy of the ER/EID **must** be made available for review by the public at least two weeks prior to the public meeting. Consider placing it in a location such as the headquarters of the Applicant or the local public library.

2. Hold the public meeting.

The public meeting may be held either as part of a regularly scheduled Applicant meeting or as a separate event. When holding the public meeting, present the following information:

- An identification of the need and purpose (or purpose and need) of the project (e.g., the problem).
- A discussion of alternatives, including the selected alternative.
- An identification of the funding utilized and the amount(s) of funding sought.
- Any required interlocal agreements.
- The impact of the project on the monthly water bill for a typical residential user of 5,000 gallons per month (traditional projects)

If presenting information on a project where user rate increases will occur, in the presentation, be specific about the water rates before the project and after the project and show the amount and percentage of the increase.

Public meetings must be held before the FONSI can be completed and sent to the State Clearinghouse for review.

Also, the Owner may wish to present other relevant information such as benefits of other grants, interest rate benefit of Division of Water Infrastructure programs, regulatory requirements, etc. It is strongly recommended to have a slide presentation for the public hearing in addition to verbal communication. For example, a bullet in the presentation could read, "The water bills will increase from \$20.00/5,000 gal. To \$25.00 per 5,000 gal, a \$5.00 (25%) increase."

3. Report on the public meeting.

After completing the public meeting, send the Division the following:

- A copy of the affidavit of publication
- A copy of the advertisement
- A copy of any presentations made
- Minutes or a detailed summary of the meeting.

This information may be either e-mailed or postal mailed. Information from the public meeting is utilized when drafting the EA. The summary may be either meeting minutes or a certified copy of a transcript. However, Division *does not* require a court reporter's certified transcript unless that is typical procedure for the Applicant.

Division will be unable to send the FONSI/EA to the SCH without a copy of the advertisement and the affidavit of publication in Division's files.

Note that a public meeting does *not* entail the use of a court reporter. Instead, a copy of the meeting minutes is sufficient.

2.2.8.3 *Environmental Impact Statements*

In rare cases, the ER/EID will result in an EIS and require a Record of Decision (ROD) as its final environmental document. In those situations, more extensive public involvement will be required. DWI will consult with the Applicant on a case-by-case basis and advise the Applicant on the type and level of public involvement needed.

2.2.8.4 *General Recommendations*

Regardless of the type of environmental document required, DWI recommends additional public involvement beyond that required above as part of the project, especially if it will require a FONSI. Hold meetings with the public from early stages of the project so that its cost (e.g., user fee increases) and/or impacts to provide opportunities for involvement.