

Guide to CWSRF Cost and Effectiveness Analysis



SC Department of Health and Environmental Control

The 2014 Amendments to the Federal Water Pollution Control Act (FWPCA) set forth the requirement for cost and effectiveness (C&E) analysis in the CWSRF by adding section 602(b)(13) to the FWPCA:

(13) beginning in fiscal year 2016, the State will require as a condition of providing assistance to a municipality or intermunicipal, interstate, or State agency that the recipient of such assistance certify, in a manner determined by the Governor of the State, that the recipient—

(A) has studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is sought under this title; and

(B) has selected, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account—

(i) the cost of constructing the project or activity;

(ii) the cost of operating and maintaining the project or activity over the life of the project or activity; and

(iii) the cost of replacing the project or activity;

Potential SRF loan recipients with projects submitted for scoring and ranking after October 1, 2015 are required to certify that the recipient has examined and evaluated the cost and effectiveness of the project for which SRF financial assistance is being received, taking into consideration water and energy efficient practices. The C&E analysis must be completed and determined as valid for the project by the SRF Section before CWSRF assistance will be provided for construction.

While there is no established right or wrong way to complete the C&E analysis, a suggested procedure is presented below in Attachment A¹. Other methodologies may be used, as long as the resulting analysis considers water and energy efficiency in addition to expected benefits.

SC SRF requires that a summary of the C&E analysis be included in the Preliminary Engineering Report (PER). Additionally, certification that the C&E analysis has been completed and addresses CWSRF requirements must be submitted with the PER (see DHEC form 3152 in Attachment B¹). The cost of the C&E analysis is an eligible SRF project cost.

For More Information:

For more information, contact the SRF project manager or the SRF section (803-898-4300 or SRF-Info@dhec.sc.gov).

¹ "Attachments A & B are taken from, and may also be found in, DHEC's "Guide to PERs for Clean Water SRF."

Attachment A

Cost and Effectiveness (C&E) Evaluation of CWSRF Project Alternatives to include Water and Energy Efficiency

Section 602(b)(13) of the Federal Water Pollution Control Act was amended by the Water Resources Reform and Development Act, 2014 to require study and evaluation of the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out a proposed project or activity to be funded with Clean Water (CW) SRF assistance. The cost of such analysis is an eligible SRF project cost. The SC CWSRF is requiring the results of the cost and effective analysis to be presented in the Preliminary Engineering Report (PER).

EPA's interpretive guidance for Section 602(b)(13) says:

The statute requires that a cost and effectiveness analysis involve, at a minimum:

- the study and evaluation of the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is sought under this title; and
- the selection, to the maximum extent practicable, of a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account—
 - the cost of constructing the project or activity;
 - the cost of operating and maintaining the project or activity over the life of the project or activity; and
 - the cost of replacing the project or activity.

The Department presents the following C&E methodology as an example; however, alternate methods of analysis may be used. Contact the SRF Project Manager assigned to the project for more information.

NOTE: *The **C&E Certification Form, DHEC 3152 (see Attachment B) and the summary table, as described in Item 4 of the PER Guide, to include assessment of water and energy efficiency, are required to be part of the PER.***

Cost and Effectiveness Analysis

1. Perform for each technically feasible alternative (including the no action alternative).
2. The analysis should convert all costs to present day dollars.
3. The planning period is typically 20 years but may be longer or shorter depending on the type of project components.
4. The discount rate to be used should be the "real" discount rate taken from Appendix C of OMB circular A-94 and found at www.whitehouse.gov/omb/circulars/a094/a94_appx-c.html.

5. The total capital cost (construction plus non-construction costs) should be included.
6. Annual O&M costs should be converted to present day dollars using a uniform series present worth (USPW) calculation.
7. The salvage value of the constructed project should be estimated using the anticipated life expectancy of the constructed items using straight line depreciation calculated at the end of the planning period and converted to present day dollars.
8. The present worth of the salvage value should be subtracted from the present worth costs.
9. The net present value (NPV) is then calculated for each technically feasible alternative as the sum of the capital cost (C) plus the present worth of the uniform series of annual O&M ($USPW_{O\&M}$) costs minus the single payment present worth of the salvage value ($SPPW_S$):

$$NPV = C + USPW_{O\&M} - SPPW_S$$

10. A summary table showing the analysis components: capital cost, annual O&M cost, salvage value, present worth of each of these values, and the NPV, should be developed for review and must be included in the PER. All factors (major and minor components), discount rates, and planning periods used should be presented within the table. The table should also incorporate an explanation of each alternative's potential for water and energy efficiency¹ and associated cost savings.
11. Short lived asset costs should also be included in the life cycle cost analysis if determined appropriate by the consulting engineer or agency. Life cycles of short-lived assets should be tailored to the facilities being constructed and be based on generally accepted design life. Different features in the system may have varied life cycles.

SRF-required Certification

12. Provide a completed Cost & Effectiveness Certification Form (DHEC 3152) as an attachment to the PER. (See Attachment B.)

¹ Water efficiency efforts to consider include water reuse, water efficient devices, water meters, water audits and conservation plans. Energy efficiency efforts to consider include energy audits and assessment results, energy use of proposed alternatives, emissions of various alternatives and greenhouse gas reductions, and use of renewable energy. If SRF's Green Project Reserve (GPR) is being pursued, water and energy efficiency can be addressed via the GPR discussion and/or business case.



Cost and Effectiveness Certification



SRF Project Number _____

Project Name _____

Project Sponsor _____

Section 602(b)(13) of the Federal Water Pollution Control Act (FWPCA) requires a recipient of a loan to certify that the recipient:

- 1) has studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is sought under the Clean Water State Revolving Fund Loan Program; and
- 2) has selected, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account –
 - (i) the cost of constructing the project or activity;
 - (ii) the cost of operating and maintaining the project or activity over the life of the project or activity; and
 - (iii) the cost of replacing the project or activity.

Pursuant to Section 602(b)(13) of the FWPCA, all Project Sponsors will evaluate and certify that cost and effectiveness has been addressed as part of the Preliminary Engineering Report.

Certification

Pursuant to Section 602(B)(13), we certify that the requirements of Section 602(B)(13), as set forth in items (1) and (2) above, have been completed.

Signature of Project Engineer

Printed Name of Project Engineer

Signature of Project Sponsor's Representative

Printed Name of Project Sponsor's Representative

Submit by email to DHEC project manager or by mail to:
SRF Section - Water Facilities Permitting Division, S.C. DHEC, 2600 Bull Street, Columbia, SC 29201

INSTRUCTIONS – DHEC 3152

PURPOSE: The *Cost and Effectiveness Certification* is used to certify that an SRF Project Sponsor has complied with the actions required by Section 602(b)(13) of the Federal Water Pollution Control Act (FWPCA).

GENERAL INFORMATION: Pursuant to Section 602(b)(13) of the FWPCA, US EPA requires SRF Project Sponsors to conduct a cost and effectiveness analysis and to select, to the maximum extent practicable, a project or activity that maximizes the potential for water and energy conservation, as appropriate. This requirement applies to any Clean Water project (e.g., wastewater, stormwater, non-point source) where the Project Questionnaire was submitted on or after October 1, 2015.

INSTRUCTIONS: The Project Engineer or the Project Sponsor's Representative enters the project information. The Project Engineer and the Project Sponsor's representative sign the Certification.

Submit this form with the Preliminary Engineering Report for the proposed project.

DHEC REVIEW AND FILING: The SRF Section will use this form to document compliance with Section 602(b)(13) of the FWPCA by an SRF project. The form will be kept in the PER file for the named project and will be retained for twenty years following the final SRF disbursement to the Project Sponsor - per Retention Schedule 15796.