North Dakota Legislative Council
Prepared for the Agriculture and Water Management Committee
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ECONOMIC ANALYSIS FORMULA FOR DRAIN PROJECTS STUDY - BACKGROUND MEMORANDUM

Section 3 of House Bill No. 1218 (2025) (appendix) requires the Legislative Management to study the formula for conducting an economic analysis for assessment drain projects and the projected cost threshold for conducting economic analyses.

As introduced, House Bill No. 1218 sought to raise the estimated cost threshold to conduct an economic analysis for an assessment drain or flood control project from $1 million to $5 million. The bill was amended in both the House and the Senate. The Senate amendments required the State Water Commission (SWC) to study its formula for conducting an economic analysis for assessment drain projects. The House failed to concur with the Senate amendments, and a Conference Committee was formed. The Conference Committee approved an amendment requiring the Legislative Management, not SWC, to study the formula for conducting an economic analysis for assessment drain projects and the projected cost threshold for conducting economic analyses. Testimony indicated the economic analysis formula should be studied to determine the appropriate threshold for conducting an economic analysis for an assessment drain project.

BACKGROUND

The 2017 Legislative Assembly enacted House Bill No. 1374, which created new requirements for conducting economic analyses for specific water projects. Section 1 of the bill clarified that, as part of SWC's comprehensive water development plan, a flood control or water conveyance project expected to cost more than $1 million is subject to an economic analysis. Section 3 of the bill defined economic analysis as "an estimate of economic benefits and direct costs that result from the development of a project." Section 12 of the bill required the State Engineer to develop an economic analysis process for water conveyance and flood-related projects expected to cost more than $750,000. House Bill No. 1020 (2017), the budget for SWC, amended Section 12 of House Bill No. 1374 by increasing the economic threshold from $750,000 to $1 million. On December 6, 2019, SWC adopted a policy requiring economic analysis on all flood control and water conveyance projects requesting cost-share with a total project cost of $200,000 or more.[1]

During the 2021 legislative session, House Bill No. 1353 established the Department of Water Resources (DWR). Under North Dakota Century Code Chapter 61-03, DWR serves as the primary state water agency and, upon request, shall cooperate with the board of county commissioners regarding the engineering work needed to plan, establish, and construct drain projects. The department consists of six divisions: Administration, Data and Atmospheric Resources, Planning and Education, Regulatory, Water Appropriation, and Water Development.[2] In addition to DWR, SWC has the responsibility and the obligation to influence water policies and projects in the state. During the 2025 legislative session, House Bill No. 1218 changed the economic analysis policy for assessment drains in the state. The bill prohibits SWC from conducting an economic analysis for an assessment drain project if the project is expected to cost $1 million or less. The bill also placed a moratorium on SWC and DWR from conducting an economic analysis for an assessment drain project within the state between August 1, 2025, and July 31, 2027.

[1] *Economic Analysis*, Department of Water Resources, July 2025. (https://www.swc.nd.gov/project_development/economic_analysis.html).
[2] *Department of Water Resources*, Department of Water Resources, July 2025. (https://www.swc.nd.gov/thedwr/).

Testimony indicated the purpose of the moratorium is to allow the Legislative Management to study, as required by Section 3 of the bill, and determine the appropriate formula and the projected cost threshold for conducting economic analyses for assessment drain projects.

NORTH DAKOTA PROVISIONS

North Dakota Century Code

Section 61-02-01.4 requires SWC to establish, maintain, and revise cost-share and project prioritization policies and review and consider cost-share requests from project sponsors seeking financial assistance from DWR. Under Section 61-02-04, SWC is comprised of the Governor, the Agriculture Commissioner, and eight gubernatorial appointees from each of the major drainage basins in the state. Section 61-02-05 designates the Governor as the SWC Chairman, authorizes the Governor to appoint the Vice Chairman, and requires the Director of DWR to serve as the Secretary of SWC.

Section 61-02-01.3 requires SWC to create and implement a comprehensive water development plan based on a river basin perspective. When developing the plan, SWC must implement an economic analysis mechanism for flood control and water conveyance projects expected to cost more than $1 million. Under Section 61-02-02(10), an assessment drain is considered a water conveyance project. Under Section 61-02-02(4), "economic analysis" is an estimate of economic benefits and direct costs resulting from project development. Section 61-03-21.4 discusses which projects are subject to an economic analysis. This section requires DWR to create an economic analysis process for water conveyance projects and flood-related projects expected to cost more than $1 million. Additionally, under Section 61-03-21.4, if an economic analysis is prepared for a water conveyance or flood-related project and SWC is considering funding the project, DWR is required to review the analysis and share with SWC its findings from the review. Despite several provisions in the Century Code requiring economic analyses for certain water projects, Section 61-02-01.6 implements a moratorium that halts the preparation of economic analyses for assessment drain projects. This section prohibits SWC or DWR from conducting an economic analysis for an assessment drain project from August 1, 2025, through July 31, 2027. Section 61-16.1-02(2) defines an assessment drain as "a drain financed in whole or in part by special assessment."

Executive Branch Policy

As required under state law, DWR and SWC are required to implement an economic analysis process for water conveyance projects, which includes assessment drain projects. To meet the statutory requirements of Section 61-03-21.4, SWC created a guidance document titled *Guidance for Economic Analysis of Flood Control and Water Conveyance Projects*.[3] The guidance document explains the concept of economic analysis, outlines the basic elements of an economic analysis process, provides an overview of the reasons and methods for conducting economic analysis, and offers a state perspective on conducting economic analysis. Economic analysis is described as the mechanism for maximizing the use of the state's natural resources by quantifying results in monetary terms. The analysis compares multiple alternatives for achieving a given objective under the test assumptions and constraints.

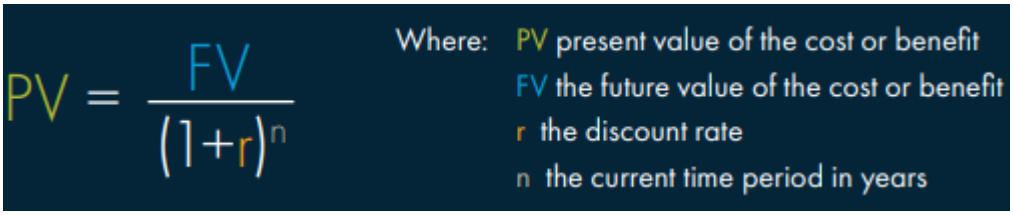
To conduct an economic analysis for a proposed project, DWR and SWC use a four-step process that consists of describing a baseline, identifying alternatives, identifying and quantifying benefits and costs, and computing economic metrics. According to the guidance document, the baseline describes the present scenario and how future variables will affect project components throughout the planning phase. The same baseline is used when considering multiple project scenarios and outcomes to compare project alternatives effectively. When identifying project alternatives, the alternatives should be precise, unique methods to achieve project objectives. To calculate alternatives, the person conducting an economic analysis calculates benefits and costs over the anticipated lifecycle of a proposed project.

Identifying a project's direct and indirect benefits and costs is a vital step in conducting an economic analysis for an assessment drain project. According to the guidance document, direct benefits become

[3]*North Dakota Guidance for Economic Analysis of Flood Control and Water Conveyance Projects*, Water Commission, December 2019. (https://www.swc.nd.gov/pdfs/economic_analysis_flood_control_water_conveyance.pdf).

apparent after a project is implemented and direct costs are out-of-pocket costs to construct and operate the project alternatives. In essence, economic analysis is a conceptual framework that quantifies as many of the costs and benefits of a project in monetary terms as possible attempts to quantify all relevant project costs and benefits in monetary terms through an organized, understandable framework. By calculating benefits, the calculation attempts to quantify impacts to communities subject to a proposed project, and determines whether these societies and economies are improved because of lower costs, fewer damages, or project enhancements. Additionally, a project or proposal is deemed "efficient" if the benefits to some are large enough to compensate for the losses of others.

The guidance document outlines several methods and metrics used in conducting an economic analysis. These metrics include the benefit-to-cost ratio, least-cost alternative or cost effectiveness, net benefits or net present value, internal rate of return, and the ultimate payback period. The current method of quantifying benefits and costs involves calculating the present value of the project. As provided in the SWC's *Guidance for Economic Analysis of Flood Control and Water Conveyance Projects* document, the formula for calculating present value is:



Once the present value of the project is calculated, an analysis of the economic metrics is conducted to determine which alternative is the most feasible option for the project's future implementation and operation.

FEDERAL LAW AND POLICIES

Beginning in 1983, federal agencies engaged in water and related land resources development were subject to the United States Water Resources Council's *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* when conducting economic analysis for covered projects.[4] The focus of these guidelines was to approve federal water resources investments based on national economic development while protecting the environment. According to these guidelines, contributions to national economic development are the monetary increases to the net value of national output of goods and services. The guidelines indicate North Dakota's economic analysis policy is similar to the national economic development model, but from a state perspective. The state model only accounts for direct, measurable benefits and costs. The state model does not account for secondary benefits because these benefits typically are not included in an economic efficiency test. Secondary benefits include jobs created, gross business volumes, or tax revenues generated.

In 2007, Congress sought to revise the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*. The Water Resources Development Act of 2007 [Pub. L. 110-114; 121 Stat. 1041; 33 U.S.C. 2201 et seq.] directed the Secretary of the Army to revise the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* consistent with several considerations enumerated in the Water Resources Development Act.[5] The Act created a three-part federal objective to replace national economic development by maximizing sustainable economic development, avoiding the unwise use of floodplains

[4]*Economic and Environmental Principles for Water and Related Land Resources Implementation* Studies, United States Water Resources Council, March 10, 1983. (https://www.usbr.gov/dso-dec/dec/pdf/authorities/guides_economic_andenvironmental.pdf).

[5]Notice of availability of final interagency Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, 79 Fed. Reg. 77460 (December 24, 2014). (https://www.federalregister.gov/documents/2014/12/24/2014-30170/economic-and-environmental-principles-and-guidelines-for-water-and-related-land-resources).

and flood-prone areas, and mitigating unavoidable damage to and protecting and restoring the functions of natural systems.[6]

These updated guidelines, which are known as the *Principles, Requirements, and Guidelines for Federal Investments in Water Resources*, do not supersede federal law but instead reflect Congress's intent for developing and evaluating federal water resource investments.[7] The agencies subject to the updated guidelines are required to develop agency-specific procedures to mirror congressional intent for developing and evaluating investments in federal water resources. These guidelines aim to establish board principles to guide investments; provide economic guidelines for formulating, evaluating, and comparing water resource projects; and outline specific procedures for incorporating the guidelines into federal agency missions and programs. Federal investment under these guidelines should aim to maximize public benefits while accounting for cost considerations. Public benefits include three goals relating to environmental, economic, and social considerations and include monetary and nonmonetary effects and quantified and unquantified measures. The three goals should be given equal weight and, as a result, trade-offs among all project alternatives should be considered.[8]

APPROACHES BY OTHER STATES

California

The California Department of Water Resources manages California's water resources, systems, and infrastructure. The department also provides economic analyses of proposed water management projects and programs to analyze local, regional, and statewide economic costs and benefits and determine socioeconomic impacts.[9] Historically, when conducting an economic analysis in California, the economic analysis factors have included cost-effectiveness, benefit-cost, and socioeconomic impact analysis.[10] A cost-effectiveness analysis determines the least costly and most efficient method for achieving project objectives. A benefit-and-cost analysis identifies whether the social benefits of a project are greater than its costs over the analysis period. Socioeconomic impact analysis is more extensive because it identifies the direct and indirect positive and negative effects of an action or project. The selection of these methods is determined by analyzing and reviewing the scope and objectives of the project and all relevant available data. According to the California Department of Water Resources, the department uses seven different economic analysis tools, which are: the Department of Water Resources Weather Normalization Modeling Tool, Flood Rapid Appraisal Model, Grasslands Drainage Reuse Network Flow Model, Least Cost Planning Simulation Model, Net Crop Revenue Model, Statewide Agricultural Production Model, and the California Urban Water Management Economic Tool. The models analyze different factors based on the nature of each proposed project. These factors include agricultural water use, urban water use, crop production revenues, effects on floodplain management practices, drainage feasibility, and cost-benefit analyses for water service projects. Similar to North Dakota, the California Department of Water Resources considers net benefits, benefit-to-cost ratio, and internal rate of return as factors when conducting a cost-benefit economic analysis.

South Dakota

Section 46A-10B of the South Dakota Codified Laws authorizes counties or municipalities to establish drainage basin utility districts to alleviate conditions in drainage basins that may "threaten human life, produce severe damage to property, seriously impact the environment, produce serious sociological impact, or cause serious adverse economic impacts in the basin" because of flooding or other surface drainage. Under Section 46A-10B-17, if a drainage basin utility district is formed, the district board is required to review and consider all benefits and costs of a proposed project. Under this statute, if the

[6]*H.R.1495 - Water Resources Development Act of 2007 - Section 2031*, United States Congress, November 2007. (https://www.congress.gov/bill/110th-congress/house-bill/1495).
[7]*Principles, Requirements, and Guidelines (PR&G) for Federal Investments in Water Resources*, Congressional Research Service, August 4, 2025. (https://www.congress.gov/crs_external_products/IF/PDF/IF10221/IF10221.13.pdf).
[8]*Id.*
[9]Economic Modeling and Analysis Tools, California Department of Water Resources, July 2025. (https://water.ca.gov/Library/Modeling-and-Analysis/Statewide-models-and-tools/Economic-Modeling-and-Analysis-Tools).
[10]*Economic Analysis Guidebook*, Department of Water Resources, State of California, January 2008. (https://cawaterlibrary.net/wp-content/uploads/2017/09/EconGuidebook_Appendices_w-bookmarks_withcovers.pdf).

analysis indicates the total benefits of the project are anticipated to exceed its cost, the project must be considered by the governing body of the district.

Section 46A-1-1 of the South Dakota Codified Laws requires the Board of Water and Natural Resources to create a state water plan for the general health, welfare, and safety of South Dakota residents. Section 46A-1-2 of the South Dakota Codified Laws consists of the State Water Facilities Plan and the State Water Resources Management System. While the 2025 State Water Plan mentions projects for which cost-benefit analyses will be conducted, it does not explicitly outline a formula or factors for evaluating the economic viability of each project.[11]

SUGGESTED STUDY APPROACH

The committee may wish to receive testimony from representatives of DWR, SWC, boards of water resource districts, interested water advocacy groups, commodity groups operating in the state, the California Department of Water Resources, and the United States Army Corps of Engineers.

ATTACH:1

[11] *2025 State Water Plan*, South Dakota Board of Water and Natural Resources, July 2025. (https://danr.sd.gov/Funding/EnviromentalFunding/docs/2025%20State%20Water%20Plan.pdf).