

Chapter III - Interagency Guidelines

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¹ This document is a statement of policy, is not a regulation, concerns only expectations for the internal management of the government, does not impose any legally binding requirements on federal agencies, and does not create any rights in third parties.

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1. PREAMBLE

These Interagency Guidelines provide direction to agencies for the development of agency-specific procedures to:

- a. Determine the applicability of the Principles & Requirements for Federal Investments in Water Resources (P&R) to agencies' water resource investments in the context of their missions and authorities; and
- b. Implement the common framework summarized in the Principles and Requirements (P&R) for analyzing those potential and existing water resource investments to which the P&R are determined applicable.

Federal agencies engaged in water resources projects, programs, activities, or related actions are required to develop agency-specific procedures to implement the P&R. Agencies must document the missions, programs, and investments to which the P&R will apply.

Agencies are responsible for ensuring, through the agency-specific procedures, that the spirit and intent of the P&R are carried out in a way that is compatible with that agency's mission and within the framework of the applicable statutes, laws, regulations, and policies that govern the agency's activities. Some agencies may find it appropriate or desirable to develop procedures by department or other unit. The Agency Head or equivalent Executive must make that determination, in consultation with CEQ and OMB.

The P&R applies to the following agencies:

- the Department of the Interior
- the Department of Agriculture
- the Department of Commerce
- the Environmental Protection Agency
- the Army Corps of Engineers
- the Federal Emergency Management Agency
- the Tennessee Valley Authority

Actions by these agencies subject to the P&R are often covered by other laws and regulations. Some laws and regulations, such as the requirements of the National Environmental Policy Act (P.L. 91-190) (NEPA), are applicable to all agencies while others may apply to only a few agencies or a single agency. While these differences among agencies' legal requirements necessitate a certain level of flexibility in the procedures used to meet the goals laid out in the P&R, all agency-developed guidance must be based on a single set of key concepts: the Federal Objective, Guiding Principles, and General Requirements of the P&R. These key concepts help ensure that the planning, design and evaluation of Federal investments are as consistent as possible across agencies.

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Agencies must review their existing planning, design, and evaluation processes. Where practicable and appropriate, agencies should update, revise, or replace them, in accordance with these Interagency Guidelines.

2. APPLICABILITY TO WATER RESOURCES INVESTMENTS

The Principles and Requirements apply to a diverse range of water resources investments. Per the P&R, this applicability includes potential or existing Federal investments that by purpose, either directly or indirectly, affect water quality or water quantity, including ecosystem restoration or land management activities. Figure 1 provides a flowchart for determining the applicability of the P&R to Federal investments.

The term “federal investment” is broad, and is intended to capture the wide array of projects, programs, and plans that the federal government undertakes in the arena of water resources. Potential federal investments include decisions or recommendations in which the federal government is responsible for implementation of an action, or when another party is responsible for implementation, but uses federally contributed funds. These would include, but not be limited to, infrastructure projects, grant programs, funding programs, and studies and plans for potential new actions. Existing federal investments are decisions or recommendations for modifications or updates to existing federal assets. These include, but are not limited to, the management plans for federal lands and operational plans for existing federally authorized water resources infrastructure.

From this broad suite of Federal investments, the P&R applies to those which are made to directly or indirectly use, alter, or manipulate water resources. This includes, but is not limited to: ecosystem restoration, land management activities, municipal and industrial water supply, agricultural water withdrawals, flood damage reduction, hydropower generation, inland and deep-draft navigation, and recreation.

A special case is activities involving existing infrastructure which may not result in a change in water quality or quantity by themselves, but without which, unintended changes to water resources may occur. This includes circumstances where existing infrastructure may fail or degrade without an activity, resulting in a change in water resources. Examples include dam safety modification to existing projects, which are specifically covered by the P&R, and major rehabilitation or replacement of facilities that have exceeded their useful life.

Agency investments that fall in the following categories are excluded from the P&R: regulatory actions; research or monitoring; or emergency actions. These exclusions are further described below. In addition to the categories excluded below, program or project exemptions may be identified in the agency specific procedures.

- a. Regulatory actions are those that restrict private behavior and include, but are not limited to: permits under sections 402 and 404 of the Clean Water Act, Endangered Species Act Consultations, and requirements under the Safe Drinking Water Act.

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Generally, work performed under a regulatory program does not need further documentation of non-applicability.

- b. Research or monitoring activities that gather or create knowledge that is general in nature, but that do not accomplish additional, permanent site specific actions may be excluded from coverage by the P&R. These actions include, but are not limited to: research on water efficiency, studies to examine the role of water in providing benefits, and monitoring stream characteristics.
- c. Emergency actions are those that are undertaken to remove immediate danger to public health and safety or to prevent immanent harm to property or the environment such as, for example, emergency repair of dams or levees to prevent flood breach and short-term containment and clean-up of toxic chemical spills. Agencies must certify that actions carried out as emergency actions meet the agency's established criteria for emergencies. In many cases a short-term action to address an immediate emergency may be followed up by longer term actions to rehabilitate damaged resources or better prepare for similar emergencies in the future. Such longer term actions would generally be subject to the P&R.
- d. Projects and programs that meet agency specific threshold criteria for exclusion or that fall below the project and program thresholds identified in Tables 1 and 2 in this document may also be excluded from coverage by the P&R.

In addition, agencies, through their agency specific procedures and in consultation with CEQ and OMB, may deem specific processes, planning requirements, or types of analysis as compliant with the goals of the P&R and Guidelines, document how the processes, requirements, or analyses are compliant, and exempt them from further requirements.

These Interagency Guidelines shall apply to relevant investment decision activities which have commenced 180 days after the date of issuance and, at the discretion of the Agency Head, any ongoing investment decision activities. These Interagency Guidelines shall not affect the validity of investment decisions initiated prior to the issuance.

These Interagency Guidelines are not intended to, and do not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents, or any other person.. This document is a statement of policy, is not a regulation, and concerns only expectations for the internal management of the government.

3. TYPE AND SCALE OF ANALYSIS

Agencies have discretion to select an appropriate level of analysis that is commensurate to the nature of the water resource investment. Agencies can have flexibility in their analyses by: 1) selecting between project and programmatic type

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analysis, and 2) applying full analysis, simplified analysis, or exclusion of a water resources investment as appropriate.

a. Selection of project or program analysis

Agencies can scale their analyses using a project or programmatic level analysis. When circumstances warrant an analysis of a collection of project investments, agencies may choose to use a programmatic-level analysis. In certain circumstances, such an approach can provide efficiencies by combining analyses for multiple projects.

- Project-level analysis: Agencies should generally apply a project-level analysis to water resources investments for which they have discretion in designing site-specific alternatives.
- Programmatic-level analysis: Agencies should apply programmatic-level analysis in circumstances when agencies lack project-level discretion, or when multiple related actions can be better analyzed under one decision document. The program-level process will generally be used when the investment involves grant or funding programs, as well as for some types of Federal asset management plans. Programmatic-level analysis may also be appropriate for a number of projects generally under the same authorization. In some circumstances, individual projects that are evaluated using a programmatic-level process may warrant a separate project-level analysis due to the atypical nature of the particular project relative to the other projects in the program. Agencies should develop a process for identifying these types of atypical projects.

b. Thresholds for full analysis, simplified analysis, and exclusion

Agencies, in coordination with CEQ and OMB, should develop thresholds that will allow them to identify and analyze the applicable water resource investments. Agencies should consider appropriate threshold criteria for both the program and the project processes.

Tables 1 and 2 display baseline threshold criteria that agencies should build upon when developing their agency-specific procedures. An appropriate addition to this table within the agency specific procedures would be the inclusion of mission-specific thresholds and criteria for selecting between full analysis, simplified analysis, and exclusion. The agency-specified thresholds should be sufficiently adaptable to encompass the range of missions and authorities, yet not burden agency efforts with requirements beyond what is needed to inform the decision making process efficiently and effectively at a chosen level of confidence. Agency may also modify the thresholds below through the development of their agency-specific procedures.

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Table 1. Baseline threshold criteria to use in selection of the appropriate level of analysis for projects.

PROJECT SPECIFIC ANALYSIS	Financial Considerations		Environmental Considerations
	Implementation Costs (\$M)	Cost-share/ Federal Involvement	Level of NEPA Analysis ¹
<i>Predecision/Preauthorizaion</i>			
Full Project Analysis/Reporting	>20	≥ 50%	EIS
Simplified Project Analysis/Reporting	10 - 20	< 50%	EA
<i>Postdecision/Postauthorization</i>			
Full Project Analysis - Not Required	-	-	-
Simplified Project Analysis/Reporting	>10	≥50%	EA or EIS
<i>Operations and Maintenance²</i>			
Full Project Analysis - Not Required	-	-	-
Simplified Project Analysis/Reporting	>5	≥50%	EA

¹EIS = Environmental Impact Statement; EA = Environmental Assessment . The level of P&R analysis should be identified when the level of NEPA analysis is decided, in order than NEPA and P&R review may be done concurrently.

²Operations and Maintenance activities that are included in original project authorizations do not require separate analysis as long as activity is carried out consistent with authorization. Significantly changed O&M plans will require new analysis and potentially authorization.

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Table 2. Baseline threshold criteria to use in selection of the appropriate level of analysis for programs and plans.

PROGRAMMATIC LEVEL ANALYSIS	Financial Considerations		Environmental Considerations
	Annual Appropriations or Plan Development Costs (\$M)	Cost-share/ Federal Involvement	Level of NEPA Analysis ¹
<i>Grant Programs</i>			
Full Program Analysis/Reporting	>50	≥25%	EIS or EA
Simplified Program Analysis/Reporting	10 - 50	<25%	EA
<i>Funding Programs</i>			
Full Program Analysis/Reporting	>50	≥50%	EIS or EA
Simplified Program Analysis/Reporting	10 - 50	>25%	EA
<i>Plans (Watershed, Master, Landscape, etc.)</i>			
Full Program Analysis/Reporting	>50	≥25%	EIS or EA
Simplified Program Analysis/Reporting	10 - 50	<25%	EA

¹EIS = Environmental Impact Statement; EA = Environmental Assessment. The level of P&R analysis should be identified when the level of NEPA analysis is decided, in order that NEPA and P&R review may be done concurrently.

The criteria identified in Tables 1 and 2 should be considered "and" criteria; if all of the criteria in a row are met, then the specified level of analysis should generally be applied. If an investment does not meet all of the criteria in a row (cost, cost-share, or level of NEPA analysis), then a lower level of analysis may be applied. Projects or programs that fall below the thresholds identified in the tables may be excluded from analysis under the P&R (analytical requirements under other authorities may still apply). This does not prevent any agency from applying a higher level of analysis to particular programs or projects, if the agency deems a higher level of analysis to be warranted. Project level analysis can also be used for any individual project supported by grant or funding programs that meet the criteria set forth here.

Although Tables 1 and 2 provide baselines for agencies to use in their selection of appropriate analysis type, they are not meant to be comprehensive. Agencies may revise or supplement this table within their agency-specific procedures with thresholds that are relevant to their missions and authorities, and use professional judgment when selecting the appropriate level of analysis for an investment. Projects or programs that are excluded from the requirements of project or programmatic-level analysis on the basis of financial or environmental considerations (with NEPA analysis as a proxy for this consideration) may still be elevated to simplified or full analysis if a significant

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concern is anticipated in any one of the areas emphasized in the Principles and Requirements. Additionally, projects that are of broad geographic scope, cross state boundaries, or are substantially vulnerable to the effects of climate change may warrant an increased level of analysis, regardless of where their general financial or environmental considerations place them on Tables 1 and 2.

Water resource investments that fall below the defined threshold may be excluded from the analytical process described below, similar to the NEPA categorical exclusion framework. In addition, through development of Agency Specific Procedures, agencies, in coordination with CEQ and OMB, can determine certain activities that will not require analysis.

Agencies should use thresholds to deal with operations and maintenance activities on existing Federal investments. Some operations and maintenance activities may call for full analysis and others may be excluded from full analysis. The P&R specifically applies to operational modifications, modernization of existing facilities, and dam safety modifications. In the absence of changed conditions, activities that are generally expected as part of normal, planned operations like mowing of levees; painting of structures, including bridges; periodic nourishment of beaches; and maintenance dredging of channels, for example, may be excluded from P&R analysis using an appropriate threshold if they have been analyzed during the original project analysis and thus would already be covered. However, compliance with NEPA is still required. Those activities that result in consequential effects on water quantity or quality that have not been previously accounted for should be appropriately analyzed using either project or program-level processes. These activities may include major reconfiguration of assets like installing a fish ladder, or major rehabilitations of an asset. More significant operational changes, such as adding a new project purpose or significantly modifying project outputs, would normally warrant analysis under the P&R. Agencies should also determine if operational changes warrant a review and/or update of the NEPA and other environmental compliance documents.

c. Descriptions of full analysis, simplified analysis, and exclusions

Full analysis is a complete application of the P&R to a water resources investment. The steps to be included in agency-specific procedures for full analysis for project and programmatic-level analysis are discussed in Section 5.

Simplified analysis involves a more limited scope investigation and are appropriate for low risk/low cost projects or actions, as well as those with minimal consequences of failure and which do not pose a threat to human life or safety, or result in significant impacts to the environment. Under simplified analysis, fewer alternative plans will be required. Alternative plans should be developed to the level of detail necessary to support recommendation of a justified and implementable action. In general, the formulation process is streamlined and justification procedures reflect the scope and complexity of the problem being assessed.

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Actions that fall under the thresholds for applicability may be excluded, particularly when the activities are routine and have inconsequential effects on water resources. Agencies should ensure that the cumulative effects of many small, routine actions would not elevate those activities to simplified or full analysis.

d. Commensurate level of detail

Commensurate level of detail is a concept described in the P&R. Within both full analysis and simplified analysis, the appropriate level of detail for a given water resources investment may vary. The appropriate level of detail, including levels of effort in data collection, number and types of analyses to be performed, and models to be used, is a function of a wide variety of factors, including but not limited to:

- Magnitude and significance of specific problems and opportunities the investment seeks to address
- Significance of natural resources within the study area
- Magnitude and significance of expected impacts of the investment
- Expected investment scale and/or costs
- Complexity in science, engineering, ecosystems, culture, resource management
- Projected service or operational life of the project or facility
- Stakeholder concerns
- Authority under which the investment decision/recommendation is made
- Uncertainty in decision variables and resulting risk exposure
- Degree of permanence or irreversibility of potential investment decision
- Controversy associated with any of the above

These factors should be evaluated holistically. No single factor is necessarily determinative. However, in some cases, a single factor could drive a decision process to a higher level of detail if it were especially significant. The level of detail must also be adequate for determination of cumulative environmental, economic and social impacts. The requirement to use the best available science does not dictate using the highest level of detail in all situations. Rather, the best available science should be used to provide results with an acceptable confidence level appropriate to the level of detail needed to inform the necessary decisions.

e. Integration of existing planning processes, including the National Environmental Policy Act (NEPA) and land management planning efforts

Agency-specific procedures must integrate the requirements of the existing planning processes required by law or regulation, including NEPA and land management planning. Integration in this case means that the production of a single decision document for the NEPA and P&R analyses should be typical.

The P&R and these Interagency Guidelines are intended to be consistent with the policies and goals of NEPA. However, agency specific procedures and NEPA processes are not interchangeable. While it is possible and desirable for agencies to

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develop their agency-specific procedures in a way that will satisfy or complement their existing NEPA process, the NEPA process alone will not necessarily satisfy the requirements of P&R. For instance, a broad consideration of public benefits versus costs is not required as an element of the NEPA process, but is an element of P&R analysis.

In cases where other decision processes are mandated by statute or regulation, Federal agencies should integrate these into the agency-specific procedures to the extent possible. If full integration is not achievable, the parallel processes should be coordinated to avoid duplicative efforts and make maximum use of the information resulting from the processes.

f. Financial constraints

To help achieve a more effective and strategic allocation of resources at the Federal, state, and local levels, agencies should look for cost-beneficial options over long-term horizons when developing their project and program plans. Agencies therefore should ensure that each element of a proposed investment will provide substantial net benefits (which include environmental, economic and social benefits minus costs). The objective is to develop a portfolio of proposed investments that the Federal government or others can implement, which together would provide the greatest overall value to the taxpayer and the nation's economy, ecosystems and communities from the available funds. Lower cost investments with large benefits may be preferable to large scale investments with smaller benefits at the margin. The analysis should account for the economics of a potential investment, and fully consider the benefits and costs to communities and ecosystems as set out in the P&R. For instance, a proposed investment that seeks to reduce a community's damages from flooding should consider a full range of options, including smaller scale solutions or those that may not traditionally be within the Federal government's authority to implement, such as floodplain acquisitions. Floodplain acquisitions may be the most appropriate long term investment strategy when the full range of costs and beneficial effects are considered in the analysis, and as a result, need to be fully considered as part of the decision making process.

4. DOCUMENTATION

In agency-specific procedures, agencies must clearly document: the water resources investments within the agency to which the P&R will apply, the thresholds used to determine P&R applicability, and the analytical procedures the agency will use to implement the P&R and these Interagency Guidelines. Such documentation will improve transparency of federal water resource investment decisions.

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5. DEVELOPMENT OF AGENCY-SPECIFIC PROCEDURES

Agencies must develop procedures for applying the P&R at either the project or program-levels. Some agencies may have both types of procedures depending on their missions and authorities. More detail on these procedures is provided below.

Project and program-level procedures must reflect systems approaches that explicitly recognize the interconnectedness within and among physical systems, ecological systems, economic systems, and social/cultural systems. Systems are complex, changeable, and interconnected. Proposed water resources actions must be considered in the context of the greater whole in order to identify the best alternatives for achieving desired public benefits as well as to reduce the likelihood of undesirable or unintended consequences. Agency procedures should anticipate that addressing water resources problems and opportunities in a systems context may require a broader partnership to effectively address them.

a. Development of project-level procedure

The project-level procedures should reflect agency-specific authorities, missions, and statutory or regulatory constraints, as well as budget resources. This procedure must, at a minimum, contain a written planning process that provides a systematic and structured approach to informing the Federal investment decision. The procedure must address the overarching concepts:

- Incorporate the Federal Objective, Guiding Principles, and General Requirements.
- Incorporate the purposes and need for the project.
- Provide for quantitative and qualitative analysis at the appropriate commensurate level of detail.
- Identify a transparent process to make and document the Federal Investment decision.

The project-level procedure must embody the following key steps:

i. Define the water resources challenge(s) to be addressed

The procedure must begin with a clear definition of the water resources and economic challenge(s) being faced: stating the problems and/or opportunities to be addressed, the cause or causes of the problem(s), any constraints related to the problem(s), and the relationship of the problem(s) to the missions, statutory authorities, and other specific statutory or regulatory requirements of the agency or agencies involved. Clearly defined problems, needs, opportunities, and constraints will help determine whether there is a national interest in finding a means for managing the problem in light of the goals identified in the P&R. The definition of the water resource challenge must be developed through a watershed, ecosystem or systems approach, to the extent practicable.

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While a single perceived problem or opportunity may lead to an investment decision by a single agency, collaboration can enhance the potential for developing more integrated solutions in a more complete, acceptable, effective, and efficient way. The procedure should also assess and evaluate the potential interaction with other Federal and non-Federal water resources projects, programs, and investments within a region or watershed to maximize effectiveness and reduce costs.

ii. Define the decision context

The procedure must require a clear definition of the decision context. This includes:

- Defining the study area, the geographically affected area framed in a watershed/ecosystem/systems context where applicable
- Identifying the other water resource investments within the study area
- Describing how stakeholders in the decision will be identified and collaboration realized

iii. Identify existing conditions

Identifying the existing condition and the baseline levels of ecosystems services (which include economic services) in an investment decision study will provide the basis for confirming the needs to be addressed in the investigation, and provide the project baseline for forecasted future conditions. Inventories of the quantity and quality of current and potential environmental, economic, and social resources and services found within the study area, and the relationships and connections between them can identify the key resources and services for analysis. Inventories should focus not only on the targeted water resources but also on all of the interconnected resources that may be affected by a change in the targeted water resource. These inventories will also provide an opportunity to identify potential alternative investments. The development of inventories will be done at the commensurate level of detail with the rest of the analysis, and may range from development of a conceptual model (described below) to detailed surveys and fieldwork.

Inventories must include an explicit list of the services that flow from the existing study area ecosystems and infrastructure (including operational plans) with identification of those that are likely to meaningfully change because of the Federal investment. The inventories will facilitate analysis under the ecosystem services approach, described in section (f) Evaluate Alternatives.

Agencies should appropriately document the relationships and linkages of key resources and services, drivers of change, and impacts of proposed actions. One method of documenting these components is through a conceptual model. A conceptual model is a simplified visual representation and written description of interactions among natural, social, and economic systems that affect or are affected by identified actions. Such documentation will help analysts and the public clearly understand how ecosystems contribute to the provision of services.

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iv. Forecast future conditions of the study area

The procedure must require the forecast of future conditions of the study area absent the investment to understand how key resources and services will change in the future. This forecast will also serve as a project baseline with which to assess the effects of each proposed investment alternative. The evaluation of any Federal water resources investment is dependent on contrasting how future conditions would differ with and without the investment. A forecast of future conditions in the absence of a Federal investment, but including all reasonably foreseeable actions by public and private entities other than the Federal government, provides the project baseline condition. The period of this forecast should be comparable to the expected service or operational life of the project. This is the equivalent of the NEPA “no action” alternative and is the standard to which all federally sponsored alternatives are compared to determine the effects of each alternative investment. Because forecasts of future conditions are inherently uncertain, the degree of uncertainty must be characterized (quantitatively and/or qualitatively at the commensurate level of detail) for all forecasts. Key assumptions used in the forecasts must be explicitly stated. Where uncertainty may meaningfully affect the baseline in a manner that could affect the investment decision, multiple baselines can be used, with a clear explanation of the basis and assumptions underlying each. However, comparisons of social benefits and costs must be based on the same baseline.

Forecasts of future conditions should account for expected changes in hydrologic and other conditions as a result of a changing climate when these are likely to be significant. Expected increases in variability in temporal and spatial patterns of precipitation and water availability (e.g.: increased flooding in some areas and water scarcity in other areas) may challenge water resource systems. In addition, inundation of coastal land areas as sea levels rise may pose a long-term threat to water resources infrastructure located in these areas. Forecast of climate changes and analysis of impacts should be informed by both historical records and the best available models of projected future conditions. Consideration of climate related changes to water resources is especially important for projects with relatively long design life as these projects are most likely to experience significant climate related impacts.

The forecasts of future conditions should consider the effects of climate change on the water resources in question by applying the best available science. These forecasts should be designed to enable the subsequent evaluation of each alternative’s impacts on ecosystem resilience, the sustainability of critical ecosystem services, and the vulnerability of human and natural systems to climate change.

Future land use patterns should also be assessed when forecasting future conditions. Using historical trends, projections, and approved local land use plans will improve transparency and understanding of the long-term effects of a Federal investment in its local or regional context.

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v. Formulate a range of alternative investments

The procedure must require the formulation of a range of alternative investments that will address the defined water resource challenge and achieve the objectives, principles and requirements outlined in the P&R. A range of alternatives is necessary to ensure the analysis of significantly different approaches. It is also necessary to provide a reasonable basis for comparing the relative effectiveness and efficiency of the alternatives, and thus identify or bracket the most appropriate solutions from Federal and non-Federal perspectives for more detailed evaluations. The procedure must encourage the formulation of alternatives that will comprehensively integrate multiple objectives for water resource investments. Agencies should consider alternatives within the purview of state, local, or other Federal agencies. Among the more promising alternatives, the agencies should formulate alternatives of varying scale to enable the evaluation of incremental efficiency. Alternatives should only be considered valid for more detailed analyses and/or selection when they are considered complete, effective, efficient, and acceptable.

Alternatives must be designed to achieve environmental, economic, and social goals. Given the tradeoffs involved in addressing some of the complex water resources problems facing our Nation, some alternatives may involve actions that produce unavoidable adverse environmental, economic and social impacts. In designing solutions to such complex problems, agencies shall first seek to avoid and/or minimize adverse effects. When damage to the environment is unavoidable, mitigation for, adverse effects must be provided as required by law to the extent practicable. Such mitigation or restoration measures to address effects on the natural environment must be determined in accordance with applicable laws, regulations, and Executive Orders, in consultation with Federal and State fish and wildlife agencies, or other appropriate authorities.

When mitigation is necessary, agencies should use appropriate techniques based on best available science to mitigate for a broad range of impacts resulting from the investment. This range could go beyond those impacts traditionally considered, and could include services such as cultural importance and carbon storage.

When an alternative includes a proposal that relies upon removal of an institutional barrier, (i.e. the alternative would only be acceptable with the proposed change, such as a statutory revision), it should also include a description of any other effects of removing the institutional barrier to be considered complete. With the exception of proposals that explicitly identify changes in legal requirements as part of the alternative, all alternatives should comply with existing laws and regulations.

When an alternative investment consists of multiple discrete measures and one or more of those measures could perform in a beneficial and sustainable manner without other measures in the alternative (i.e., there are no obvious dependencies or a scientific need to implement all of the measures as a system), those measures should be evaluated as

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discrete units. These evaluations should focus on whether the alternative investment is an effective and efficient means of achieving the study objectives. As with the evaluation of full alternatives, these evaluations and any subsequent tradeoff analyses and selections must fully consider the array of economic, environmental and social effects - quantifiable (monetary and non-monetary) and non-quantifiable effects, and they must be displayed in a transparent manner to help inform the public and the decision-makers. In many cases, the most efficient investment will be one that selects a subset of discrete features with the greatest public benefits. Plan formulation needs to describe the features and capabilities of any discrete measures as well as the full alternatives.

The procedure must require the formulation of a range of alternative investments that will address the defined water resource challenge and achieve the policies and goals outlined in the P&R. To achieve these policies and goals, the procedure must encourage the development of alternatives that will comprehensively address the range of problems and opportunities associated with the defined water resource challenge. Alternatives must be formulated to reflect a range of scales and management measures, and be assessed against the formulation criteria presented in the Principles & Requirements: completeness, effectiveness, efficiency, and acceptability.

vi. Evaluate alternatives

Agency procedures for evaluating alternatives must require the comprehensive evaluation of the formulated array of alternatives to assess the contributions of each alternative to the Federal Objective and the Guiding Principles. Agency evaluation procedures must incorporate: 1) methods to evaluate how public benefits of an alternative compare to its costs, and 2) methods to evaluate how the alternative performs with respect to the Guiding Principles.

As described in the P&R, alternatives should be evaluated through an ecosystem services approach that organizes all the relevant potential effects of an action (economic, environmental and social) within a framework that explicitly recognizes their interconnected nature. The services considered under this approach include those flowing directly from the environment and those provided by human actions. Services and effects of potential interest in water resource evaluations could include, but are not limited to: water quality; nutrient regulation; mitigation of floods and droughts; water supply; aquatic and riparian habitat; maintenance of biodiversity; carbon storage; food and agricultural products; raw materials; transportation; public safety; power generation; recreation; aesthetics; economic growth; and educational and cultural values.

- Public benefit and cost comparison

The public benefits of alternatives are evaluated in terms of differences in the quality and value of ecosystem services (which include economic services) provided between the expected future condition with the alternative in place and the most likely “future without” conditions (the No Action alternative). The following general framework must be

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employed: 1) measuring the economic, environmental, and social changes in the watershed or ecosystem condition between a future condition with and without the investment alternative in place, 2) measuring how those changes affect the quantity and quality of ecosystem and economic functions, processes, outputs, and resulting services, and 3) where valid and practical, applying monetary valuation to those changes in ecosystem and economic services. Agencies should strive to focus their analyses on the most important consequences, using current and relevant information about economic, ecological, and social importance, likely human and social consequences, and public concerns. This evaluation framework recognizes that services are produced through the interrelationships of various biophysical and social components. Agencies should focus their analyses on impacts that are relevant in terms of institutional, public, and/or scientific importance. In determining which impacts are most important, agencies should consider characteristics such as reversibility, retrievability, and sustainability.”

For example, if a proposed water resource alternative impacts a wetland marsh, the ecosystem services approach could be structured as follows. The agency should identify the wetland impact among the effects of the action and measure the nature of the wetland impact, including areal extent. Next, the agency should gather information on the role of the wetland in producing services important within the watershed or ecosystem in question. Such services may include flood control, groundwater replenishment, recreation and tourism, fish habitat, and carbon storage. Next the agency should describe (quantitatively, where appropriate) how the impact to the wetland would affect the services in question. Lastly, the agency should attempt to place an economic value on the change in the identified ecosystem services. If the wetland impact leads to a reduction in ecosystem services, the agency should consider the full range of lost services provided by the impacted wetland in designing appropriate mitigation. Note that the impact to the wetland may be one of several effects that should be analyzed in a similar manner.

These differences in services provided (i.e. the effects of the alternative) are the basis of comparison in terms of public benefits. Public benefits and costs should be measured in monetary terms, when possible, and in non-monetary terms, when this is not possible. To the extent possible, changes in services resulting from a proposed investment must be quantified in a scientifically valid and accepted way. Those effects that cannot be acceptably quantified must be qualitatively described in sufficient detail so that the decision maker can understand the importance and magnitude of the changes. Descriptions that merely list and/or laud the benefits of the affected services are less useful to decision makers than descriptions that allow meaningful differentiation of more and less important services. Whenever valid and practical, quantified effects should be monetized. Monetization should follow sound economic principles and practices (See OMB Circular A-4 for examples of currently accepted monetization practices and a discussion of the opportunity cost and willingness to pay concepts of value). Discounting is to be used to convert future monetary values to present or annualized values, consistent with the statutory requirements for the agency and relevant agency or Administration guidance (e.g., OMB Circular A-4).

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It will not always be possible to express in monetary units all of the important benefits and costs. When it is not, the most efficient alternative will not necessarily be the one with the largest quantified and monetized net benefits estimate. In such cases, professional judgment must be exercised in determining how important the non-quantified benefits or costs may be in the context of the overall analysis. If the non-quantified benefits and costs are likely to be important, "threshold" or "break-even" analyses are approaches that may be useful to evaluate their significance. Whatever analytical technique is used, reports should indicate, where possible, which non-quantified effects are most important and why.

While quantification of all important ecosystem service effects might not be possible, these effects should remain instrumental in the analysis. Additionally, important ecosystem services may flow beyond an immediate project site; thus, effects beyond that immediate area are also important to consider.

- Performance against guiding Principles

Alternatives must be evaluated for their performance with respect to each of the six Guiding Principles. This requires an assessment of how each alternative contributes to the overarching concepts the Federal government seeks to promote through investments in water resources. Such an evaluation must include quantified effects to the extent feasible, but must also give full and equal consideration to important effects that cannot be quantified and/or monetized, to inform the valuing of the tradeoffs among the various alternatives.

Agencies must continually strive to employ and advance the best available techniques and best available science for accounting for the full range of ecosystem services. Agencies should attempt to evaluate the services that are important in a given situation. These evaluations may extend beyond the services traditionally evaluated to account for services, like carbon storage and cultural values, which may not have been evaluated in the past.

Agency procedures for evaluating alternatives must require the comprehensive evaluation of the formulated array of alternatives to assess the contributions of each alternative to the Federal Objective and the Guiding Principles. Agency evaluation procedures must incorporate: 1) methods to evaluate how public benefits of an alternative compare to its costs; 2) methods to evaluate how the alternative performs with respect to the Guiding Principles; and 3) methods to evaluate the alternative against the four formulation criteria: completeness, effectiveness, efficiency, and acceptability.

vii. Display the effects/comparison of alternatives

The procedures must display the effects of investment alternatives in a manner that allows for the unbiased comparison of alternatives for their contributions to the Federal

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Objective and Guiding Principles. This comparison highlights the similarities and differences in plans and identifies the trade-offs and quantified and unquantified costs.

These comparisons may be best communicated through effective displays. Displays may include graphs, charts, tables, drawings, photographs, summary statements, or other indications of impacts. The method of display for a specific category must be the same across all alternatives. A matrix where all alternatives and all evaluation categories are shown in one display is desirable. Displays help the public and the decision-maker to understand the similarities and differences among alternatives, the effectiveness of alternatives in addressing the project purpose or purposes, and the trade-offs in quantified and unquantified benefits and costs among the various alternatives.

The tradeoffs among and within economic, environmental, and social goals must be explicitly identified across alternative plans. These tradeoffs include monetary, non-monetary, quantified, and unquantified benefits and costs. Tradeoffs are compared from the perspective of the specific circumstances of each study, including the study area, resources, and study authority, to form the basis for deciding which plan best addresses the Federal Objective and Guiding Principles.

Some effects measured will be more relevant than others to the achievement of the investment objective(s), and these must be noted and separated from incidental effects. Agencies will note effects that are irreversible or that have high end-of-lifecycle costs to reverse (including decommissioning costs). The display must emphasize the contribution of each alternative to the Federal Objective as well as to each of the Guiding Principles. This comparison should be documented in narrative form in addition to the display, and include a discussion of trade-offs. The display should also present the performance of each alternative relative to study objectives, the four formulation criteria, and any other screening or selection criteria used in the analyses.

Different project components may be justified based on different types of public benefits - for example, public safety may be the primary justification for one component, whereas a mix of economic and environmental benefits may support the justification for another component. Similarly, justification may be based on a combination of quantifiable (monetary and non-monetary) and non-quantifiable effects. The tradeoffs among the goals and objectives of separable project components should also be identified to provide a basis for the rationale supporting their inclusion in or exclusion from the alternative.

The level of detail in assessing separable components and the associated description of the specific tradeoffs among the goals and objectives of the investment decision should be sufficient to inform the decisions to be made and to provide transparency to the decision making process.

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viii. Selection criteria that conform to the P&R and any agency specific requirements

Agency procedures must include criteria to guide the selection of an investment. The criteria must conform to the Guiding Principles, the General Requirements, and the Federal Objective. The selected alternative shall be justified as follows: 1) a complete discussion of the tradeoffs involved in making a decision regarding the proposed Federal investment; 2) a discussion of how economic, environmental, and social benefits (monetary and non-monetary, quantified and unquantified) justify the costs (monetary and non-monetary, quantified and unquantified) and 3) the selected alternative shall adequately attain the goals outlined in the Guiding Principles, recognizing how tradeoffs between the various goals will affect the level of attainment within each Guiding Principle. In this analysis, the plan that reasonably maximizes the public benefits to the nation relative to costs must be clearly identified. It is recognized that the valuing of tradeoffs among alternatives could result in the identification of more than one plan that reasonably maximizes public benefits relative to costs. If the plan that reasonably maximizes public benefits is not selected for implementation, the rationale must be clearly outlined in the decision document (for example, because of institutional barriers that cannot be removed). The information required by these three steps should also be developed for any separable measures contained within the competing alternatives. The selection criteria will reflect agency-specific legal requirements in statutes or regulations as well as applicable guidance. The entire selection process must be properly documented and transparently explained, including a discussion of stakeholder and/or sponsor preferences. Transparency will be critical for the public to understand how the final selection was made.

ix. Iteration within the process

Decisions or recommendations involving Federal investments affecting water resources, quantity or quality should be made through a dynamic process, one both iterative and progressive. The process should be responsive to significant changes in information, conditions, and/or objectives. These can occur at any point in the process and, depending on the potential consequences of the changes, may dictate that previous decision points, assumptions, and forecasts be reviewed in light of these changes.

b. Development of program-level procedures

Certain circumstances may warrant the use of a program-level procedure to implement federal water resource investments. Such circumstances include, but are not limited to, situations where an agency:

- Funds project level activities but has limited discretion in designing site-specific alternatives for addressing water resources issues. These situations include federal grant programs that solicit project proposals to address specific types of water resource challenges (e.g., wetland restoration, fish passage improvements).

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- Funds another entity (e.g., state, tribe, locality) to carry out project grants to address a specific water resource challenge.
- Undertakes a set of actions similar in nature that can be analyzed under one decision document. Such actions may include those that individually do not have consequential water resources effects, but in the aggregate have cumulative effects on water resources. This may include situations where an agency has project-level water resource activities that do not meet agency-defined thresholds for individual P&R applicability, but have cumulative effects that warrant a P&R analysis.

The program-level procedures must embody the following key elements:

- i. Program-level procedures do not relieve agencies from designing and evaluating water resources investments consistent with the P&R; however, program-level processes may warrant different approaches to investment design and evaluation than those used for project-level procedures. These different approaches must incorporate in concept the same key elements of the project-level procedure.
- ii. Program-level procedures should account for circumstances where an individual project, evaluated under a program-level analysis, may need further evaluation using project-level procedures. Such circumstances address “outlier” projects that are not typical of other projects evaluated at the program level. Such outlier projects may include those that, with respect to the typical program projects, are larger in size, greater in impact, more costly, more controversial, employ novel techniques, or address new problems not typically addressed through the program in question. Agencies should develop thresholds to identify outlier projects and evaluate them using a project-level procedure. Depending on the circumstance and as defined by agency guidance, the project-level procedures may need to be applied in part or in whole to the outlier projects.
- iii. In circumstances where agencies fund water resources investments through another entity (e.g., state, tribe, locality), agencies should regularly evaluate (subject to available resources), in conjunction with the third party, how those investments perform with respect to the P&R and take appropriate action to ensure sound performance.
- iv. Program-level procedures must, at a minimum, contain:
 - a written process that provides a systematic and structured approach to informing the Federal investment decision and
 - the agency’s approach to:
 - Designing and evaluating water resource programs consistent with the P&R.
 - Transparently making and documenting the water resources investment decision.

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v. Program-Level Approaches:

Agencies have some discretion to design their program-level procedures to accommodate agency-specific circumstances. While there are potentially many valid approaches to structuring program-level procedures, a few approaches are described below:

- **Tiered programmatic analysis:**

- Appropriate for: Grant programs that solicit water resource projects through a request for proposals.
- How it works: The agency conducts a programmatic analysis of typical projects within a program to understand how they perform with respect to the P&R. The programmatic analysis will characterize typical project types; describe the effects of typical project types; describe how typical projects perform with respect to the P&R; and determine whether the typical level of performance is acceptable. If typical level of performance is determined to be acceptable, the agency will use a checklist, tiered from the programmatic analysis, to review the effects of proposed actions or projects and determine whether they are typical. If a proposed action or project is determined to be typical, then it is covered by the programmatic analysis and may move forward in agency decision-making. If the project is determined to be atypical, then the agency will need to further supplement the programmatic analysis before moving the project forward.

- **Retrospective analysis:**

- Appropriate for: Funding programs, such as Safe Drinking Water Act State Revolving Fund and the Clean Water Act State Revolving Fund, where the federal government funds another entity to carry out a program to address specific water resource challenges.
- How it works: The federal agency structures its program guidance to other parties to require, to the extent that statutory authority allows, that funded projects reflect the P&R. The federal agency will periodically review a collection of funded projects to assess whether they perform appropriately with respect to the P&R. Based on the review, the federal agency will take appropriate action to structure its program guidance so that appropriate performance is achieved.

- **Grouped analysis:**

- Appropriate for: Known actions similar in nature that can be analyzed under one decision document. Such actions may include those that individually do not have consequential water resource effects, but have cumulative effects on water resources.
- How it works: In a programmatic analysis, the agency characterizes the nature of the proposed actions, their individual and combined effects on water resources, and how those effects perform with respect to the P&R.

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6. INTERAGENCY CONSISTENCY

The Federal agencies will collaborate in the development of their agency-specific procedures to promote consistency of water resource investment decisions across the Federal government. Such efforts may include both formal and informal collaboration mechanisms. Collaboration will be especially important to advance newer requirements like the ecosystem services approach.

Each agency's procedures must undergo an interagency peer review process prior to approval by their respective Agency Department Head. Agency-specific procedures should also be reviewed and updated, if necessary, when the Interagency Guidelines are modified.

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Figure 1. Determining the applicability of the Principles and Requirements.

