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Obama Administration Releases Updated Principles and Guidelines for Federal Investments in Water Resources

WASHINGTON, D.C. - The Obama Administration today released updated Principles and Guidelines (P&G) for Federal investments in water resources to accelerate project approvals, reduce costs, and support water infrastructure projects with the greatest economic and community benefits.

The modernized P&G, which were developed by Federal agencies and incorporate extensive public comment, will allow agencies to better consider the full range of long-term economic benefits associated with water investments, including protecting communities against future storm damage, promoting recreational opportunities that support local business, and supporting other local priorities, as well as their water delivery, navigation, and flood prevention functions. These updates to the P&G, called for in the 2007 Water Resources Development Act, will align Federal policies with the full-spectrum approach many communities are now taking toward water infrastructure projects, and will help the Federal government reduce bureaucracy and make it quicker and easier to pursue projects that communities support.

"Smart investments in America's rivers, lakes, wetlands, and coasts are essential to promoting economic growth, ensuring clean drinking water, and building thriving communities," said Nancy Sutley, Chair of the White House Council on Environmental Quality. "This much needed update of the 30-year-old Principles and Guidelines will help agencies better evaluate and expedite water projects that grow our economy and are essential for protecting our communities from floods, droughts, and storms."

Since 1983, the Principles and Guidelines have provided direction to Federal agencies when evaluating and selecting major water projects, including projects related to navigation, storm resilience, water supply, wetland restoration, and flood prevention. The 1983 standards used a narrow set of parameters to evaluate water investments that made it difficult for agencies to support a range of important projects that communities want, or in some cases precluded support for good projects. As a result, lack of local

support for selected projects has often led to substantial delays, costing taxpayers and leaving communities at risk.

The updated P&G consist of a final set of Principles and Requirements that lays out broad principles to guide water investments, as well as draft Interagency Guidelines for implementing the Principles and Requirements. Released for public review and comment in 2009, the Principles and Requirements incorporate extensive input from the public as well as the National Academy of Sciences. They will promote responsible taxpayer investments with a transparent, inclusive consideration of the long-term economic and community costs and benefits of projects and ensure that communities are engaged in designing projects that work for them.

The draft Guidelines, developed with Federal interagency input, will be available for 60 days of public comment and will incorporate feedback from the public and stakeholders before being finalized. These Guidelines will ensure smart, front-end, collaborative planning among Federal agencies, states, local communities, stakeholders, and the public so that projects move faster, stay on budget, and support community needs.

The updated P&G will foster consistency and informed decision-making across all Federal agencies engaged in water resources planning, including the U.S. Army Corps of Engineers, Environmental Protection Agency, Department of Agriculture, Department of the Interior, National Oceanic and Atmospheric Administration, Tennessee Valley Authority, Federal Emergency Management Agency, and Office of Management and Budget.

For more information and to view the updated Principles and Guidelines, please visit: [www.whitehouse.gov/administration/eop/ceq/initiatives/PandG](http://www.whitehouse.gov/administration/eop/ceq/initiatives/PandG)  
<<http://www.whitehouse.gov/administration/eop/ceq/initiatives/PandG>>

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Updated P&G Initiative page:

<http://www.whitehouse.gov/administration/eop/ceq/initiatives/PandG>

Press Release:

[http://www.whitehouse.gov/administration/eop/ceq/Press\\_Releases/March\\_22\\_2013](http://www.whitehouse.gov/administration/eop/ceq/Press_Releases/March_22_2013)

Final Principles & Requirements pdf link:

[http://www.whitehouse.gov/sites/default/files/final\\_principles\\_and\\_requirements\\_march\\_2013.pdf](http://www.whitehouse.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf)

Draft Guidelines pdf link:

[http://www.whitehouse.gov/sites/default/files/draft\\_interagency\\_guidelines\\_march\\_2013.pdf](http://www.whitehouse.gov/sites/default/files/draft_interagency_guidelines_march_2013.pdf)

# **Principles and Requirements for Federal Investments in Water Resources**

**March 2013**

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# Principles and Requirements

## Chapter I – Principles for Federal Investments in Water Resources

These Principles and Requirements are established pursuant to the Water Resources Planning Act of 1965 (Public Law 89-8), as amended (42 U.S.C.1962a-2) and consistent with Section 2031 of the Water Resources Development Act of 2007 (Public Law 110-114). They supersede the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies dated March 10, 1983.

### 1. Purpose and Scope

These Principles and Requirements, and the supporting Guidelines, are intended to provide a common framework for analyzing a diverse range of water resources projects, programs, activities, and related actions involving Federal investment as identified by the agencies in the context of their missions and authorities. These Principles were, in the past, limited in application to four agencies – U.S. Army Corps of Engineers, Bureau of Reclamation, Tennessee Valley Authority and Natural Resources Conservation Service. In order to increase consistency and comparability in Federal water resources investment decision making across the Federal government, the application of these Principles and supporting documents is hereby expanded to include other relevant projects, programs and activities undertaken by the Environmental Protection Agency, and the Departments of Commerce, the Interior, Agriculture, and Homeland Security (Federal Emergency Management Agency) consistent with statutory authorities as described in the Guidelines<sup>1</sup>.

It is intended that these Principles and the supporting Requirements and Guidelines be applied to a broad range of Federal investments that by purpose, either directly or indirectly, affect water quality or water quantity, including ecosystem restoration or land management activities. The kinds of Federal activities to which these Principles may apply include, but are not limited to, as relevant and appropriate: (1) grant programs, such as those associated with the Endangered Species Act, Coastal Zone Management Act, Coastal Wetlands Planning, Protection and Restoration Act, and Consolidated Farm and Rural Development Act, as well as those associated with the Sport Fish Restoration, Wildlife Restoration, National Coastal Wetlands Conservation, North American Wetlands Conservation, Hazard Mitigation Assistance and Public Assistance

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<sup>1</sup> The Principles, Requirements and Guidelines for Federal investments and activities discussed in this document refer to those described in the Guidelines which further clarify, scope, scale and thresholds.

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programs; (2) funding programs, such as Pacific Coastal Salmon Recovery Fund, Safe Drinking Water Act State Revolving Fund, Clean Water Act State Revolving Fund, Federal Financing Bank Guaranteed Loan Program and Renewable Loan Program; (3) studies or investigations leading to construction of infrastructure, including new facilities or modernization of existing facilities, dam safety or operational modifications, and ecosystem protection and restoration projects; and (4) proposals and plans that affect the management of Federal assets including National Wildlife Refuges, National Parks, National Forests and National Grasslands.

In general, these Principles do not apply to regulatory activities (such as the issuance of permits associated with Section 404 of the Clean Water Act) or research and monitoring activities.

For the purposes of this policy, “Principles” refer to the overarching concepts that the Federal government seeks to achieve through policy implementation. The “Federal Objective” specifies the fundamental goal of Federal investments in water resources. The “General Requirements” are inputs to alternative plans, programs, designs, strategies, or actions that should be incorporated into analyses for Federal investment. The Interagency “Guidelines” provide guidance to Federal agencies for determining the applicability of the Principles and Requirements and for developing agency-specific procedures to implement a framework for formulating, evaluating, and comparing water resources projects, programs, activities and related actions.

The scope and scale of applicability to Federal investments in water resources will be defined in more detail in the Interagency Guidelines that follow. The Interagency Guidelines by design are expected to be updated on a more regular basis than these Principles and Requirements, and as such, will ensure that the assessment of applicability remains current. It is important that such assessments capture evolving and emerging programs, as well as modernized processes.

These Principles and the supporting Requirements were developed through a collaborative interagency process that promoted the open exchange of information and perspectives. The process engaged the public through formal public reviews and workshops, and included an external peer review by the National Academies of Science as required by the Water Resources Development Act of 2007. The resulting modernized policy provides for: maximizing public benefits relative to costs; the use of quantified and unquantified information; broadened agency application to allow for integration and better coordination across the federal government; flexibility in decision-making to reduce burdens and promote freedom of choice; use of best available

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science and objectivity; and, a peer review process for the Interagency Guidelines, as well as the Agency Specific Procedures. The modernized policy advances transparency and consistency for Federal investments in water resources.

## 2. The Federal Objective

America's water resources – streams, rivers, wetlands, estuaries, lakes, and coasts – are at the heart of our environment, our economy, and our history. These water resources support billions of dollars in commerce, provide safe drinking water for millions of Americans, supply needed habitat for fish and wildlife, affect public safety, and provide a variety of other important benefits. The quality and quantity of America's water resources has wide-ranging impacts at all levels of government and for all living things. The quality and quantity of water resources affect all levels of our society from the national to the individual citizen.

The Federal Objective, as set forth in the Water Resources Development Act of 2007, specifies that Federal water resources investments shall reflect national priorities, encourage economic development, and protect the environment by:

- (1) seeking to maximize sustainable economic development;
- (2) seeking to avoid the unwise use of floodplains and flood-prone areas and minimizing adverse impacts and vulnerabilities in any case in which a floodplain or flood-prone area must be used; and
- (3) protecting and restoring the functions of natural systems and mitigating any unavoidable damage to natural systems.

In consideration of the many competing demands for limited Federal resources, it is intended that Federal investments in water resources as a whole should strive to maximize public benefits, with appropriate consideration of costs. Public benefits encompass environmental, economic, and social goals, include monetary and non-monetary effects and allow for the consideration of both quantified and unquantified measures.

Addressing the complex and often conflicting water resource needs of today and the future requires the formulation of a diverse range of solutions that need to be fully considered in the decision making process. Such solutions may produce varying degrees of effects relative to environmental, economic, and social goals. No hierarchal relationship exists among these three goals and as a result, tradeoffs among potential solutions will need to be assessed and communicated during the decision making process.

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## 3. Guiding Principles

The following Principles constitute the overarching concepts the Federal government seeks to promote through Federal investments in water resources now and into the foreseeable future. These Principles are presented in no particular order and their organization denotes no hierarchy or rank.

- A. Healthy and Resilient Ecosystems.** Federal investments in water resources should protect and restore the functions of ecosystems and mitigate any unavoidable damage to these natural systems. Ecosystems are dynamic complexes of plant, animal, and microorganism communities and the non-living environment interacting as a system. Ecosystems provide important services to humans both directly and indirectly, and they also encompass vital intrinsic natural values, such as biodiversity. In order to protect ecosystems, alternative plans should first seek to avoid any adverse environmental impact, and when that is not possible, alternatives should minimize environmental impacts. When damage to the environment is unavoidable, mitigation for adverse effects should be provided as required by law. Restoration of ecosystems can enhance the health and resilience of the natural environment and should be part of alternative plans, where feasible and appropriate. A resilient ecosystem has the capacity to respond to changes, including climate change. Healthy and resilient ecosystems not only enhance the essential services and processes performed by the natural environment, but also contribute to the economic vitality of the Nation.
- B. Sustainable Economic Development.** Federal investments in water resources should encourage sustainable economic development. Alternative solutions for resolving water resources problems should improve the economic well-being of the Nation for present and future generations through the sustainable use and management of water resources ensuring both water supply and water quality. Sustainable in this context means the creation and maintenance of conditions under which humans and nature can coexist in the present and into future. Federal investments in sustainable economic development activities contribute to the Nation's resiliency.
- C. Floodplains.** Floodplains are critical components of watersheds. They connect land and water ecosystems and support high levels of biodiversity and productivity. Floodplains that have not been adversely affected can sustain their natural functions and increase the resilience of communities. For this reason, Federal investments in water resources should avoid the unwise use of floodplains and flood-prone areas and minimize adverse impacts and vulnerabilities in any case in which a floodplain



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or flood-prone area must be used. Unwise use of floodplains is defined as any action or change that has an unreasonable adverse effect on public health and safety, or an action that is incompatible with or adversely affects one or more floodplain functions that leads to a floodplain that is no longer self-sustaining. Federal actions should seek to reduce the Nation's vulnerability to floods and storms. In instances where this is not achievable, the agency should identify and communicate the potential direct and indirect adverse effects on floodplain functions.

- D. Public Safety.** Threats to people, including both loss of life and injury, from natural events should be assessed in the determination of existing and future conditions, and ultimately, in the decision making process. Alternative solutions, which include structural and nonstructural elements, must avoid, reduce, and mitigate risks to the extent practicable and include measures to manage and communicate residual risks. The impact and reliability of alternatives on these threats must be evaluated and shared with the public and decision makers.
- E. Environmental Justice.** Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Agencies should ensure that Federal actions identify any disproportionately high and adverse public safety, human health, or environmental burdens of projects on minority, Tribal, and low-income populations. In implementing the Principles, Requirements and Guidelines, agencies should seek solutions that would eliminate or avoid disproportionate adverse effects on these communities. Specific efforts should be made to provide opportunities for effective public participation by minority, Tribal, and low-income communities in Federal planning and decision making processes. These efforts include identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, documents, and notices. Further, evaluation methods should eliminate any biases and fully display the effects of alternative actions on affected minority, Tribal, and low-income communities.
- F. Watershed Approach.** A watershed is land area that drains to a common waterbody. A watershed approach to analysis and decision making facilitates evaluation of a more complete range of potential solutions and is more likely to identify the best means to achieve multiple goals over the entire watershed. A watershed approach facilitates the proper framing of a problem by evaluating it on a system level to identify root cause(s) and its interconnectedness to problem symptoms. The approach enables the design of solutions that considers the benefits of water resources for a wide range of stakeholders within and around the

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watershed. It promotes the evaluation of effects within a watershed and other interconnected systems to understand a full range of public benefits. The effects evaluated should include cumulative effects which are the impacts on the watershed that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Finally, the watershed approach allows for consideration of upstream and downstream conditions, needs, and potential impacts of proposed actions.

The scope and scale of watershed assessments can vary. Watershed assessments should encompass a geographic area large enough to ensure that plans address cause and effect relationships among affected resources and activities that are pertinent to realizing public benefits. The scope and degree of evaluations across a watershed should reflect the nature of these relationships. It is imperative that assessments evaluate the interaction of a potential Federal investment with other water resources projects and programs within a region or watershed.

## Chapter II – Requirements

### 1. General Requirements

Federal investments in water resources should incorporate the Requirements described below. These Requirements supplement a myriad of requirements that are specified in other laws, such as the National Environmental Policy Act (NEPA), but are not repeated here. Federal investments in water resources through projects, programs or activities will often require NEPA analyses. The NEPA process should be integrated with the processes developed to implement these Principles and Requirements to facilitate the production of a single decision document that fulfills the requirements of both processes. The Interagency Guidelines will provide additional guidance regarding how to effectively integrate these two processes.

**A. Evaluation Framework.** It is important that potential Federal investments be evaluated for their performance with respect to the Federal Objective using a common framework. This common framework will allow for comparison among potential Federal investments and facilitate the overall decision making process. Evaluation methods should be designed to ensure that potential Federal investments in water resources are justified by public benefits, particularly in comparison to costs associated with those investments. Such methods should apply an ecosystem services approach in order to appropriately capture all effects (economic,

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environmental and social) associated with a potential Federal water resources investment. By design, such an approach traces the effects of a potential action through the watershed or ecosystem in order to capture its effects and feedbacks and better captures the values that ecosystems or watersheds contribute to our economy and well-being. The ecosystems services approach is a way to organize all the 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; and educational and cultural values. Changes in ecosystem services are measured monetarily and non-monetarily, and include quantified and unquantified effects. Existing techniques, including traditional benefit costs analyses, are capable of valuing a subset of the full range of services, and over time, as new methods are developed, it is expected that a more robust ecosystem services based evaluation framework will emerge.

Heretofore, Federal investments in water resources have been mostly based on economic performance assessments which largely focus on maximizing net economic development gains and typically involve an unduly narrow benefit-cost comparison of the monetized effects. Non-monetized and unquantified effects are often included in the overall analysis process, but are not necessarily weighted as heavily or considered key drivers in the final decision making process. As a result, decision making processes are, at this point in time, unnecessarily biased towards those economic effects that are generally more easily quantified and monetized. A narrow focus on monetized or monetizable effects is no longer reflective of our national needs, and from this point forward, both quantified and unquantified information will form the basis for evaluating and comparing potential Federal investments in water resources to the Federal Objective. This more integrated approach will allow decision makers to view a full range of effects of alternative actions and lead to more socially beneficial investments.

**B. Best Available Science and Commensurate Level of Detail.** Analyses to support Federal investments in water resources should utilize the best available science, data, analytical techniques, procedures, models, and tools in hydrology, engineering, economics, biology, ecology, risk and uncertainty, and other fields to the extent that sufficient funding is available. To the extent feasible, it is appropriate to quantify the

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effects of water resources projects. Agencies should continuously seek to update data and to modernize tools, models, and analytical techniques and not simply rely upon those used in the past because they are familiar. Though widespread use of some established tools may be appropriate, particularly as it promotes consistency and comparability among the agencies, it is also important to employ the evolving tools and methods in analyses in order to fully inform the decision-making process.

The level of detail required to support Federal investments in water resources may vary, but should not be greater than needed to inform the decision making process efficiently and effectively. The level of detail, scope, and complexity of analyses should be commensurate with the scale, impacts, costs, scientific complexities, uncertainties, risks, and other sensitivities (e.g., public concerns) involved in potential decisions.

**C. Collaboration.** Federal agencies should collaborate fully on water resources related activities with other affected Federal agencies and with Tribal, regional, state, local, and non-governmental entities, as well as community groups, academia, and private land owners (stakeholders) to realize more comprehensive problem resolution and better informed decision making. The water challenges facing the Nation are great and require a collaborative, transparent, and inclusive approach in order to responsibly address current and future needs. The Federal, State, regional, Tribal, and local governments, as well as stakeholders, share the responsibility of managing and protecting public water resources. Resolving water resources related problems will take time, funding, and commitment by decision makers and stakeholders at all levels. Integration of programs and engagement in the decision making process by relevant stakeholders is necessary for successful water resource decisions. This can further promote efficiency of effort and save resources, while enabling government at all levels to accomplish more.

The Federal government's role in water resources related activities has changed over time. In many cases, the Federal government is no longer the primary investor in, or developer and protector of, water resources related activities across the Nation. Increasingly, the solutions put forth to address the complex water resources problems facing the Nation involve activities by many other entities at varying levels of scale and scope. State, Tribal, and local governments, private entity and non-profit participation is to be actively encouraged in all aspects of water resources planning in the multitude of Federal projects and programs carried out by Federal agencies.

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Specific efforts should be made to provide opportunities for effective participation by minority, Tribal, and low-income communities in the Federal planning and decision making processes. Such efforts include improving the accessibility of public meetings, documents, and notices as well as consulting with affected communities to identify potential effects and mitigation measures. The intent of collaboration is to ensure that Federal activities reasonably consider the needs, interests, and concerns of stakeholders. Collaboration should provide adequate opportunities for all to participate throughout the decision making process.

The method and scope of the collaborative effort should be driven by the nature of the activity, problems, and likely solutions. Collaboration may include (but is not limited to): the sharing of science and data, analytical tools, or expertise unless protected from release by law; inclusion on interdisciplinary or inter-agency study teams; participation in independent or peer review of study products; development and implementation of complementary projects and programs by others; and post-project review and development of adaptive management strategies.

**D. Risk and Uncertainty.** When analyzing potential investments in water resources, areas of risk and uncertainty should be identified, described, and considered. Knowledge of risk and uncertainty and the degree of reliability of the estimated effects will better inform decision making. Risk and uncertainty inherent in the analyses performed as well as risk and uncertainty associated with the future conditions and potential effects of each alternative should be identified. Decisions should be made with knowledge of the degree of reliability and the limits of available information, recognizing that even with the best available engineering and science, risk and uncertainty will always remain.

Risks and uncertainties should be identified and described in a manner that is clear and understandable to the public and decision makers. This includes describing the nature, likelihood, and magnitude of risks (including quantitatively where feasible), as well as the uncertainties associated with key supporting data, projections, and evaluations for competing alternatives. This should also include a concise discussion of what must occur, including the related probability or likelihood to the extent these can be determined, in order to realize any projections. When there are considerable uncertainties concerning an alternative's ability to function as desired and produce desired outputs, its capacity to produce potential undesired outputs, and/or the general acceptability of the alternative, the option of pursuing improved data, models, and analyses should be considered. Reducing risk and uncertainty may involve increased costs or loss of benefits. The advantages and costs of reducing risk and uncertainty should be explicitly considered in both the formulating

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of alternatives, and in the overall decision making process. The items below identify and provide further explanation of areas of risk and uncertainty that should be evaluated, as well as a tool with which to address them.

- i. **Climate Change.** Climate change poses a significant challenge for water resources planning and conditions resulting from a changing climate should be accounted for and addressed. Varying degrees of uncertainty are associated with climate change impacts on water resources. The increased variability in temporal and spatial patterns of precipitation and water availability will challenge water resource systems serving all human and ecological needs. From specification of existing problems and opportunities to the formulation, evaluation and selection of plans, projected accelerating changes in aquatic systems and sea level resulting from a changing climate should inform the understanding of water resource needs and how these needs can be realistically addressed. Analysis of climate change impacts should be informed by both historical records and models of projected future impacts of an altered climate on water resources.
- ii. **Future Land Use.** Future land use patterns should be assessed and analyzed as part of the evaluation process. The best available data and forecasts should be used to complete an analysis of these uncertain conditions. Future land use patterns should be evaluated based on historical trends and projections. An assessment of any approved local master plan or other land use plans that guide community growth and development should be included in the evaluation in order to promote full disclosure of effects.
- iii. **Adaptive Management.** Adaptive management is a deliberate, iterative, and scientific based process of designing, implementing, monitoring, and adjusting an action, measure, or project to reduce uncertainty and maximize one or more goals over time. Adaptive management should be evaluated and incorporated into alternatives where warranted to avoid and minimize adverse impacts on the environment. Adaptive management measures should be clearly identified and evaluated as part of alternative actions or strategies in order to further reduce uncertainty, particularly when more detailed information and better tools are not readily available. Adaptive management approaches should be used to the extent they are commensurate with the significance of the proposed activity and available resources.

**E. Water Use.** Water supplies will continue to be subject to annual variability in precipitation and runoff, and subject to the uncertain effects of climate change on global weather patterns. As such, it is critical to consider water availability and promote water efficiency with all Federal investments in water resources. The

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efficient use of water and the consideration of multiple uses and competing demands on water resources should be taken into account when designing solutions to water resources problems. Alternative actions or plans, where applicable, should first consider opportunities to improve water efficiency with respect to existing water infrastructure and supplies. When efficiency alone will not suffice, the reuse and reclamation of water should be promoted.

The effect of Federal investments on water quality should also be considered and evaluated for all alternative plans or actions. Utilizing a watershed approach will help identify unintended adverse effects on water quality, and opportunities to minimize them. For many projects, some adverse effects may be unavoidable; these should be presented in the final array of alternatives. Potential tradeoffs between water efficiency and water quality should be considered and the impact of water resource investments on both water efficiency and water quality should be identified and examined as appropriate.

**F. Nonstructural Approaches.** Nonstructural approaches to water resources problems alter the use of existing infrastructure or human activities to generally avoid or minimize adverse changes to existing hydrologic, geomorphic, and ecological processes. Nonstructural approaches can often be the most cost-effective and environmentally protective alternative to implement. Nonstructural measures are particularly effective in minimizing adverse effects on floodplain functions and the aquatic environment. Such approaches are typically linked to floodplain projects but can also be appropriate for ecosystem restoration, water supply, water quality, and other water resource projects. Nonstructural measures include, but are not limited to, modifications to public policy, regulatory policy and pricing policy, as well as management practices, including green infrastructure.

A nonstructural measure or measures may in some cases offer a more effective alternative to a traditional structural measure. In other cases, nonstructural measures may be combined with fewer or smaller traditional structural measures to produce a complete alternative plan. Full consideration and reporting on nonstructural alternative actions or plans should be an integral part in the evaluation of Federal investments in water resources.

**G. International Concerns.** Federal water resources investments must consider treaty and other international obligations and develop alternatives that are consistent with meeting such obligations. Analyses should identify any way in which an international obligation constrains choices or precludes selection of a better plan to meet the Federal Objective. In all cases, timely consultations with relevant foreign governments should be undertaken when a Federal action is likely to have a

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significant impact on any land or water resources within its territorial boundaries or on the high seas.

**H. Design of Alternatives.** Alternative plans, strategies, or actions are to be formulated in a systematic manner to ensure that a range of reasonable alternatives are evaluated. The final analysis should include, at a minimum, the following concepts in order to support full disclosure and promote transparency in the decision making process. Each alternative plan, strategy or action is to be formulated to consider the following four criteria: completeness, effectiveness, efficiency, and acceptability.

## Final Array of Alternatives

- a. In some cases, plans, strategies, or actions may be formulated which require changes in existing statutes, implementation authority, administrative regulations, and/or established law and policies (including existing cost-sharing requirements). Such required changes are to be identified.
  - b. Alternative plans, strategies, or actions that can effectively address a problem through the use of nonstructural approaches, if they exist, must be fully considered and carried forward to the final array of solutions. Such solutions must be given full and equal consideration in the decision making process.
  - c. An alternative plan, strategy, or action that is preferred by a local interest with oversight or implementation responsibilities must be included in the final analysis.
  - d. The environmentally preferred alternative, where required by the National Environmental Policy Act, must be included in the final analysis.
  - e. Mitigation of unavoidable adverse effects associated with each plan, strategy, or action is to be an integral part of all alternatives.
- I. Transparency in Decision Making.** These modernized Principles, Requirements and Guidelines are intended to significantly increase the transparency of and consistency in the planning and implementation process for Federal investments in water resources in this country. By providing a common framework for describing the effects of alternatives, Federal investments can be more easily viewed and compared within and among Federal programs. Both qualitative and quantitative



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information should be considered and displayed, including monetized and non-monetized effects, when alternatives are compared and evaluated.

**J. Plan Selection.** Any recommendation for Federal investments in water resources to address identified water resources needs must be justified by the public benefits when compared to costs. The basis for selection of the recommended plan should be fully reported and documented, including the criteria and considerations used in the selection of the recommended course of action by the Federal government. It is recognized that most of the activities pursued by the Federal government will require an assessment of tradeoffs by decision makers and that in many cases the final decision will require judgment that considers the extent of both monetized and non-monetized effects.

The rationale supporting Federal investment in water resources at the programmatic or project levels should summarize and explain the decision rationale leading from the identification of need through to the recommendation of a specific action. This should include the steps, basic assumptions, methods and results of analysis, criteria and results of various screenings and selections of alternatives, peer review proceedings and results, and the supporting reasons for other decisions necessary to execute the planning process. The information should enable the public to understand the decision rationale, confirm the supporting analyses and findings, and develop their own fully-informed opinions and/or decisions regarding the validity of the analysis and any associated recommendations. This information should be presented in a decision document or documents, and made available to the public in draft and final forms. The document(s) must demonstrate compliance with the National Environmental Policy Act (NEPA) and other pertinent Federal statutes and authorities.

## 2. Interagency Guidelines

The Council on Environmental Quality (CEQ) will issue Interagency Guidelines to provide direction to agencies for developing agency specific procedures to implement these Principles and Requirements. The draft Guidelines will be subject to public review and comment prior to finalization. Further, the draft Guidelines will be subjected to peer review, similar to the independent peer review conducted on a prior draft of this document. Following completion of the Interagency Guidelines, each Federal agency will develop Agency-Specific Procedures to direct the implementation of these Principles, Requirements and Guidelines to their pertinent missions and authorities. These Agency-Specific Procedures will be approved by Agency Department Heads, in consultation with the Council on Environmental Quality prior to implementation.

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Completion of this overall process will take deliberative action and, therefore, time. To the extent possible, agencies are encouraged to begin implementing the concepts laid out in these modernized Principles and Requirements consistent with law.

## **3. Effective Date**

These Principles and Requirements shall take effect 180 days after the publication of the final Interagency Guidelines.

## **4. Approval**

The Principles and Requirements for Federal Investments in Water Resources are hereby approved.

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## GLOSSARY

**Acceptability** is the viability and appropriateness of an alternative from the perspective of the Nation's general public and consistency with existing Federal laws, authorities, and public policies. It does not include local or regional preferences for particular solutions or political expediency.

**Adaptive management** is a deliberate, iterative, and scientific based process of designing, implementing, monitoring, and adjusting an action, measure, or project to address changing circumstances and outcomes, reduce uncertainty, and maximize one or more goals over time.

**Completeness** is the extent to which an alternative provides and accounts for all features, investments, and/or other actions necessary to realize the planned effects, including any necessary actions by others. It does not necessarily mean that alternative actions need to be large in scope or scale.

**Cumulative effects** are the impacts on the environment which result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non- Federal) or person undertakes such other actions.

**Ecosystem** is the dynamic complex of plant, animal, and microorganism communities and the non-living environment interacting as a system.

**Ecosystem functions** are the interactions among organisms and between organisms and their environment.

**Ecosystem services** are the direct or indirect contributions, including economic, environmental and social effects, which ecosystems make to the environment and human populations.

**Effectiveness** is the extent to which an alternative alleviates the specified problems and achieves the specified opportunities.

**Efficiency** is the extent to which an alternative alleviates the specified problems and realizes the specified opportunities at the least cost.

**Federal Objective** specifies the fundamental goal of Federal investments in water resources.

# Principles and Requirements

**Interagency Guidelines** provide guidance, in the form of more detailed procedures, to Federal agencies in designing and evaluating potential Federal investments in water resources at project, program and activity scales.

**Local interest** is a non-Federal entity with some implementation responsibility associated with a water resources investment.

**Master plan** is used to guide the growth and development of a community.

**Nonstructural approaches** alter the use of existing infrastructure or human activities to generally avoid or minimize adverse changes to existing hydrologic, geomorphic, and ecological processes.

**Principles** are overarching concepts that the Federal government seeks to achieve through policy implementation.

**Public benefits** encompass environmental, economic, and social goals, include monetary and non-monetary effects and allow for the inclusion of quantified and unquantified measures.

**Regulatory** activities are generally those activities subject to legal restrictions promulgated by the Federal government.

**Resilience** is the capacity of an ecosystem or community to respond to changes, including climate changes.

**Restore** means to return to a less degraded state.

**Requirements** are inputs to alternative plans, programs, designs, strategies, or actions that should be incorporated into analyses for Federal investment.

**Sustainable** means the creation and maintenance of conditions under which humans and nature can coexist in the present and into future.

**Unwise use of floodplains** is any action or change that diminishes public health and safety, or an action that is incompatible with or adversely impacts one or more floodplain functions that leads to a floodplain that is no longer self-sustaining.

**Watershed** is a land area that drains to a common waterbody.



**EXECUTIVE OFFICE OF THE PRESIDENT  
COUNCIL ON ENVIRONMENTAL QUALITY  
WASHINGTON, D.C. 20503**

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**FOR IMMEDIATE RELEASE:  
December 17, 2014**

**[press@ceq.eop.gov](mailto:press@ceq.eop.gov)**

**Obama Administration Releases Final Principles, Requirements and  
Guidelines for Federal Investments in Water Resources**

WASHINGTON, D.C. – The Obama Administration today released final Principles, Requirements and Guidelines (PR&G) for Federal investments in water resources, marking the first update to these important guidelines in more than three decades. In addition to helping cut costs and accelerate project approvals, the modernized PR&G guides Federal agencies to support water infrastructure projects with the greatest economic and community benefits.

By involving local communities and soliciting their input, the modernized PR&G will make it easier for the Federal Government to support water infrastructure projects that communities want while helping avoid conflict and project delays by encouraging early, front-end engagement to address problems before they develop. Federal agencies incorporated extensive public comment to develop the updated guidelines, which were called for in the 2007 Water Resources Development Act. The updates allow agencies to better consider the full range of long-term economic benefits associated with water investments. This includes protecting communities against future storm damage and promoting recreational opportunities that support local business, as well as their water delivery, navigation, and flood prevention functions.

“By making smart investments in water infrastructure, the Federal Government can save taxpayer money and promote economic growth while protecting communities against extreme weather and other disasters,” said Mike Boots, who leads the White House Council on Environmental Quality. “With this update of the 30-year-old Principles, Requirements and Guidelines, we are ensuring that communities have a voice in selecting the water projects that will help them thrive.”

Since 1983, the Principles and Guidelines have provided direction to Federal agencies when evaluating and selecting major water projects, including projects related to navigation, storm resilience, water supply, wetland restoration, and flood prevention. The 1983 standards used a

narrow set of parameters to evaluate water investments, making it difficult for agencies to support a range of important projects that communities want, or in some cases precluding support for good projects. Lack of local support for selected projects can lead to substantial project delays, costing taxpayers and leaving communities at risk.

The PR&G consist of Principles and Requirements, finalized in 2013, which lay out broad principles to guide water investments, and Interagency Guidelines, finalized today, which provide direction to agencies on implementing the Principles and Requirements. Released for public review and comment in 2009, the Principles and Requirements incorporate extensive input from the public as well as the National Academy of Sciences. They will promote responsible taxpayer investments with transparent, inclusive consideration of the long-term economic and community costs and benefits of projects and ensure that communities are engaged in designing projects that work for them. The Guidelines, which were released in draft form for public comment in 2013, will ensure smart, front-end, collaborative planning among Federal agencies, states, local communities, stakeholders, and the public so that projects move faster, stay on budget, and support community needs.

The updated PR&G will foster consistency and informed decision-making across Federal agencies engaged in water resources planning, including the U.S. Army Corps of Engineers, Environmental Protection Agency, Department of Agriculture, Department of the Interior, National Oceanic and Atmospheric Administration, Tennessee Valley Authority, Federal Emergency Management Agency, and Office of Management and Budget.

To view the updated Principles, Requirements and Guidelines, click [here](#).

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# Chapter III - Interagency Guidelines

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## 1. INTRODUCTION

The Water Resources Development Act of 2007 (Public Law 110-114) called for revisions to the 1983 Principles and Guidelines for Water and Land Related Resources Implementation Studies (1983 Principles and Guidelines).<sup>1</sup> Along with the Principles and Requirements (P&R) issued in March 2013,<sup>2</sup> these Interagency Guidelines, and the soon to be released Agency Specific Procedures comprise the Principles, Requirements and Guidelines (PR&G). The PR&G revise and replace the 1983 Principles and Guidelines. The PR&G constitute the comprehensive policy and guidance for Federal investments in water resources.

The PR&G modernize and lay the framework for how the Federal government analyzes Federal investments that impact water resources in light of economic, environmental, and social impacts. This framework helps ensure a comprehensive analysis to support decision making on a diverse range of water Federal investments that, either directly or indirectly, affect water quality or water quantity, including ecosystem restoration or land management activities. Although these documents do not impose any legally binding requirements on Federal agencies or the public and they are not regulations, they are intended to provide a clear articulation of the expectations for the internal management of the Executive Branch entities identified below. Therefore, mandatory language such as “must”, “required to” and “shall” is used to provide clear guidance to agencies.

These Interagency Guidelines further build upon the policy established in the March 2013 Principles and Requirements and are intended to be used in conjunction with that document. By using the PR&G, the federal government will increase consistency and compatibility in Federal water resources investment decision making, including analysis of the public benefits and costs to the Nation and tribal trust responsibilities, consideration of distributional impacts, and use of full cost<sup>3</sup> accounting to understand the tradeoffs between investment alternatives.

Specifically, the full Principles, Requirements and Guidelines (PR&G) promotes better investment of taxpayer dollars by analyzing a broader range of long-term costs and benefits. The PR&G gives communities and tribes a greater voice through enhanced collaboration, more thorough and transparent risk and uncertainty analyses, and improved resilience for dealing with emerging challenges, like climate change, water scarcity, and water related health impacts on communities and the Nation.

The PR&G applies to the following:

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<sup>1</sup> 42 USC 1962-3 (Section 2031).

<sup>2</sup> The P&R was updated and released in March 2013, see:

[http://www.whitehouse.gov/sites/default/files/final\\_principles\\_and\\_requirements\\_march\\_2013.pdf](http://www.whitehouse.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf)

<sup>3</sup> Full cost accounting refers to the collection and presentation of information about the economic, environmental, and social costs and benefits related to a particular policy decision.



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1. Department of the Interior
2. Department of Agriculture
3. Department of Commerce
4. Environmental Protection Agency
5. Army Corps of Engineers
6. Federal Emergency Management Agency
7. Tennessee Valley Authority

Agencies shall design their investment alternatives based on the Federal Objective<sup>4</sup> and incorporate the Guiding Principles articulated in the March 2013 Principles and Requirements. Agencies shall engage and work collaboratively with experts to create better alternatives that meet the scope and purpose of the Principles and Requirements. Projects that raise issues such as environmental justice, climate change, tribal trust responsibilities, and ecosystem services can especially benefit from such collaboration and engagement.

Consistent with existing laws, regulations, procedures, tribal trust responsibilities, and Executive Orders, the PR&G are intended to accommodate unique agency missions. As explained in the P&R, Federal agencies engaged in water resources projects, programs, activities, or related actions will further refine these Interagency Guidelines into Agency Specific Procedures to implement the PR&G. While differences among agencies' missions and legal requirements necessitate flexibility, Agency Specific Procedures shall be based on the Federal Objective, Guiding Principles, and General Requirements as described in the P&R. These key concepts help ensure that planning, design, and evaluation of Federal investments are as consistent as practicable across agencies. Agencies are expected to consult with the Office of Management and Budget (OMB) and the Council on Environmental Quality (CEQ) and to collaborate with other agencies, as appropriate, in developing their Agency Specific Procedures. To the extent practicable, OMB and CEQ will work to ensure consistency in how Agency Specific Procedures direct agencies to implement the PR&G.

The PR&G 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 only articulates expectations for the internal management of the Federal government.

## 2. APPLICABILITY TO WATER RESOURCES INVESTMENTS

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<sup>4</sup> As defined in the Principles and Requirements, a Federal Objective specifies the fundamental goal of Federal investments in water resources. See P&R, page16: [http://www.whitehouse.gov/sites/default/files/final\\_principles\\_and\\_requirements\\_march\\_2013.pdf](http://www.whitehouse.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf). The PR&G are intended to provide a common framework for analyzing a diverse range of water resources projects, programs, activities, and related actions involving Federal investment as identified by the agencies in the context of their mission and authorities.

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The PR&G apply to a diverse range of water resources investments. The term “Federal investment” is broad and intended to capture a wide array of activities—projects, programs, and plans—that the Federal government directly undertakes relating to water resources. As stated in Principles and Requirements, Federal investments are those that by purpose, either directly or indirectly, affect water quality or water quantity, including ecosystem restoration or land management activities.”<sup>5</sup> From this broad suite, the PR&G applies to those investments which by purpose, directly or indirectly, alter water resources. Figure 1 provides a flowchart that agencies can use to determine the applicability of the PR&G to Federal investments. Agencies should determine what level of analysis meets the purpose and scope of the PR&G while keeping in mind potential cumulative effects. Agencies shall describe the process for determining appropriate levels of analyses in their Agency Specific Procedures.

The term “projects” includes:

1. New or existing Federal investments to construct new infrastructure, modify or replace existing infrastructure, or implement major changes to the operations of Federal assets;
2. Ecosystem restoration activities that will have a direct or indirect impact on water quality or quantity;
3. Existing assets that may not result in a change in water quality or quantity by themselves, but without which unintended changes to water resources may occur. These situations may occur when an existing infrastructure may fail or degrade in the absence of additional Federal investment, resulting in a change in quality or quantity of the water resources, or the level of service provided. Examples include dam safety modifications to existing projects, and major rehabilitation or replacement of facilities that have exceeded their useful life; and
4. Activities where the Federal government is responsible for implementation of an action, or when another party is responsible for implementation using Federal funds.

The term “programs” includes grant or funding programs.

The term “plans” includes, but is not limited to, studies or plans for potential new actions that meet threshold criteria, management plans for Federal lands, and operational plans for existing Federal water resources infrastructure. Management plans could be analyzed as a whole or as individual activities on the landscape, as appropriate for the specific agency. Such plans could be analyzed at either the programmatic- or project-level, as described later in these Interagency Guidelines.

### Equivalent Pathways

There are many existing agency procedures that meet the purpose and intent of the PR&G for Federal investments. Examples may include land management planning processes or management activities conducted under a Federal land management plan, such as the 2012 Forest Service planning rule. Thus, Agency Specific Procedures may

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<sup>5</sup> See P&R, page 1:

[http://www.whitehouse.gov/sites/default/files/final\\_principles\\_and\\_requirements\\_march\\_2013.pdf](http://www.whitehouse.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf).

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be used to identify any agency-specific processes, planning requirements, or types of analyses that are equivalent to the PR&G. If an agency wishes to exempt a Federal investment from analysis under the PR&G because of those existing processes and requirements, agencies shall fully document how agency-specific processes, requirements, or analyses meet the Federal Objective, Guiding Principles, and General Requirements. To the extent practicable, OMB and CEQ will consult with agencies regarding ASP application, including equivalent pathways and exemptions.

### Excluded Activities

Agency investments that fall in the categories below are outside the scope of the PR&G. Agencies can further identify, with explanation, in their Agency Specific Procedures any additional programs, plans, or projects for which they do not intend to use the PR&G.

1. Regulatory actions: Regulatory actions are outside the scope of the PR&G. These actions generally work to protect existing Federal assets and include, but are not limited to: permits under sections 402 and 404 of the Clean Water Act, Endangered Species Act Consultations and incidental take or similar permits, and requirements under the Safe Drinking Water Act. Generally, work performed under a regulatory program does not need further documentation of non-applicability.
2. Research or monitoring: The PR&G are not intended to cover activities that gather or create knowledge but do not accomplish additional, permanent site specific actions. These actions include, but are not limited to: research on water efficiency, studies to examine the role of water, and monitoring stream characteristics. While not covered under the PR&G, PR&G analysis for certain projects, programs, or plans may result in monitoring requirements.
3. Emergency actions: Actions that are undertaken in the short-term to remove immediate danger to public health and safety or to prevent imminent harm to property or the environment may be excluded. Examples include emergency repair of dams or levees to prevent flood breach, wildland firefighting and actions taken after wildland fire to stabilize the site, and short-term containment and clean-up of toxic chemical spills. An agency should ensure that any action for which it is seeking to use this exclusion meets the agency's criteria for emergency action. 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 PR&G.
4. Monetary Thresholds: Projects, programs, or plans that meet agency-modified threshold criteria for exclusion or that fall below the thresholds identified in Table 1 in this document may also be excluded from coverage under the PR&G. Table 1 is indexed to inflation. A number of activities, such as the majority of land management plans, are not likely to be covered by the PR&G because their development costs fall below the minimum threshold.

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## Timing

These Interagency Guidelines shall take effect 180 days after their date of publication in the Federal Register. Any Federal investments beginning after that date are expected to use the PR&G framework. Federal investment activities that are ongoing at the time these Guidelines take effect may also be evaluated using this new framework. Agency Heads, through their Agency Specific Procedures, will determine if such on-going activities should be analyzed using the PR&G.

## **3. TYPE AND SCALE OF ANALYSIS**

After determining applicability, agencies have the discretion to select an appropriate level of analysis that is commensurate to the nature of the water resources investment and sufficient to inform the decision-making process efficiently and effectively.

Agencies can have flexibility in their analyses by: 1) selecting between project- and programmatic-type analysis; 2) applying standard analysis, scaled analysis, or exclusion of a water resources investment as appropriate; and 3) developing agency-modified threshold tables, if applicable. Each of these flexibilities is further described below.

Elements agencies should consider when determining the appropriate level of analysis include:

- a. Magnitude and significance of specific problems and opportunities the investment seeks to address;
- b. Significance of natural resources within the study area;
- c. Magnitude and significance of expected impacts of the investment;
- d. Expected investment scale and/or costs;
- e. Complexity in science, engineering, ecosystems, cultural values, resource management;
- f. Projected service or operational life of the project or facility;
- g. Stakeholder concerns;
- h. Authority under which the investment decision/recommendation is made;
- i. Uncertainty in decision variables and resulting risk exposure;
- j. Degree of performance or irreversibility of potential investment decision;
- k. Nature and extent of tribal trust responsibilities in the study area;
- l. Best scientific information available; or
- m. Cumulative effects of, or controversy associated with, any of the above

### **a. Selection of project- or programmatic-level analysis**

#### Project-level analysis

Agencies should generally apply a project-level analysis to water resources investments for which they have discretion in designing site-specific investment decisions. Project-level analyses typically require more detail and focus on a narrower scope and/or scale.

#### Programmatic-level analysis

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Programmatic-level analyses require the detail necessary to ensure decision-makers have sufficient information to make an informed decision, but the approach may be different from project-level analyses. For example, the scale and/or scope will likely be greater with a similarly broader level of detail. Circumstances that may warrant the use of programmatic-level analyses include, but are not limited to, situations where an agency:

1. 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 resources needs (e.g., wetland restoration, fish passage improvements);
2. Funds another entity (e.g., state, tribe, locality) to carry out projects or issue grants to address a specific water resources challenge; or
3. Proposes a set of similar actions analyzed under one decision document. Such actions may include those that individually do not have consequential water resources effects, but have cumulative effects on water resources.

### **b. Descriptions of standard analysis, scaled analysis, and exclusion**

#### Standard analysis

Standard analysis is a more comprehensive application of the PR&G to a water resources investment than scaled analysis. A standard analysis is typically used for new or significantly modified projects, programs, or plans. Steps to be included in Agency Specific Procedures for standard analysis are discussed in Sections 6 and 7 of these Interagency Guidelines.

#### Scaled analysis

Scaled analysis involves a more limited scope investigation. It is appropriate for low risk/low cost projects, programs, or plans, as well as those with minimal consequences of failure and which pose a minimal threat to human life or safety, or do not result in significant impacts to the environment. An agency using scaled analysis will likely need to demonstrate fewer alternatives. Investment alternatives should be commensurate to the level of detail necessary to support a recommendation. A scaled analysis still involves a systematic decision process adhering to the PR&G. In general, the formulation process is streamlined and justification procedures reflect the scope and complexity of the problem being assessed.

#### Exclusion

The PR&G are not intended to apply to certain Federal actions. Specifically, agencies may choose not to use the PR&G for actions that fall under the thresholds for applicability described in these Interagency Guidelines or that fall under agency-modified thresholds, particularly when investments are routine and have inconsequential effects on water resources. However, agencies should ensure that cumulative effects of many small, routine actions would not elevate those investments to be more appropriately analyzed using a scaled or standard analysis.

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### **c. Integration with existing, but non-equivalent pathway<sup>6</sup>, planning processes, including the National Environmental Policy Act (NEPA) and land management planning efforts**

Agencies should integrate, to the extent possible, their PR&G analysis into existing planning processes, in the same way the NEPA process and land management planning are integrated into larger planning processes. Agencies could integrate the PR&G and NEPA analyses by producing an analytical document that reflects both analytic processes, if that is the most efficient method for fulfilling NEPA and the PR&G. Agencies should rely on the same information when performing their PR&G and NEPA analyses, as appropriate. Although the PR&G is not a regulation and does not substitute or supersede any NEPA requirements or any other planning requirements required by law, integrating PR&G planning efforts into existing project planning efforts reduces the risk of duplicative analyses. A single analytical document could help ensure consistency across the alternatives analyzed and the other components common to the two processes, as well as reduce the workload for reviewers.

An agency's Agency Specific Procedures shall complement its existing NEPA processes, although the analyses conducted under NEPA and the PR&G processes may not always overlap. For example, if an alternative being considered as part of the NEPA process is found to be in conflict with the Federal Objective or Guiding Principles as described in the Principles and Requirements, the agency may wish to eliminate this alternative from further study and should explain why it is doing so in its NEPA documentation.

Agency Specific Procedures must adhere to any decision processes mandated by law. Federal agencies should integrate these requirements within their Agency Specific Procedures or should include parallel processes to avoid duplicative efforts and to maximize agency resources and any resulting information.

### **d. Financial constraints**

Governments at all levels have limited financial resources. However, such limits should not be used to unnecessarily constrain the development of a reasonable range of alternative investments, even if an alternative investment is beyond the implementation authority of the involved agency or agencies. For alternatives that would be the responsibility of another entity (Federal, state, or local), those alternatives should be developed jointly with those parties. Agencies should develop a portfolio of potential alternative investments that the Federal government or others can implement, which can provide the greatest overall value to the taxpayer and the Nation's economy, ecosystems, and communities.

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<sup>6</sup> As described in Section 2 of this document, Applicability to Water Resources Investments, an equivalent pathway may be any agency-specific processes, planning requirements, or types of analyses that are equivalent to the PR&G in that they meet the Federal Objective, Guiding Principles, and General Requirements.

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### e. Thresholds for standard analysis, scaled analysis, and exclusion

Agencies should use a level of analysis commensurate with the significance of the investment and the potential environmental impacts. For example, if the investment requires either an Environmental Impact Statement (EIS) or Environmental Assessment (EA) pursuant to NEPA, then the environmental impacts may be significant enough that the investment meets the threshold for a PR&G analysis. However, cases may arise where an investment qualifies for a NEPA categorical exclusion but could still be relevant for a PR&G analysis.

Investments that are excluded on the basis of financial thresholds may still be elevated to scaled or standard analysis if a significant concern is anticipated in any one of the Guiding Principles or General Requirements emphasized in the Principles and Requirements. Projects that are of broad geographic scope, cross state boundaries, significantly impact environmental justice populations or tribal communities, or are substantially vulnerable to the effects of climate change may warrant an increased level of analysis, regardless of where their general financial impacts place them on the default table. Additionally, if agencies analyze investments as a program, but at least one of the individual projects in that program is significant, they may evaluate that specific project individually.

#### Monetary Threshold Table

The monetary thresholds provided in Table 1 are designed to be relevant to all the agencies implementing the PR&G to provide a common framework and baseline. In using Table 1, agencies first determine whether their Federal investment is a project, program, or plan. The second column, Federal Investment (\$M), includes all capital and labor costs associated with the implementation of the investment, as appropriate to the specific agency. Agencies then determine whether to include either the annual appropriations of a program or plan or the plan development costs in the third column, Annual Appropriations or Plan Development Costs (\$M).

#### Operations and Maintenance Activities

Agencies should use thresholds to address operations and maintenance activities on existing Federal investments. Some operations and maintenance activities may call for standard analysis, while others may be excluded. The PR&G specifically applies to operational modifications, modernization of existing facilities, dam safety modifications, culvert replacements, water conveyance, and fish ladder modifications. In the absence of changed conditions, activities that are generally expected as part of normal, planned operations may be excluded from PR&G analysis using an appropriate threshold if they have been analyzed during the original project or program analysis. However, compliance with other Federal statutes and laws is still required.

Operations and maintenance activities resulting in consequential effects on water quantity or quality that have not been previously analyzed should be appropriately analyzed using either project- or programmatic-level processes. More significant

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operational changes, such as adding a new project purpose or significantly modifying project outputs, would normally warrant analysis under the PR&G.

### Agency-Specific Thresholds

Agencies may revise or supplement the default threshold table, in consultation with CEQ and OMB, to create agency-specific tables and/or thresholds to help identify and analyze the applicable water resources investments at level of detail necessary for each agency's specific mission and statutory obligations. Agency Specific Procedures should articulate a clear rationale, justification, and the implications of using revised thresholds or threshold tables.

Any agency-specific thresholds should be sufficiently adaptable to encompass the range of missions and authorities, yet should not burden agency efforts with requirements beyond what is needed to inform the decision making process. At a minimum, agency-specific thresholds must include:

1. Thresholds relevant to the specific activities of the agency
2. Criteria relevant to the specific agency for determining the level of analysis, including exclusion
3. Tables for both programmatic- and project-level analyses

<b>Table 1<sup>7</sup>: Monetary Threshold Criteria<sup>8</sup></b>			
<b>Type of Activity</b>	<b>Federal Investment (\$M)</b>	<b>Annual Appropriations or Plan Development Costs (\$M)</b>	<b>Level of Analysis</b>
<b>Projects</b> All new or existing Federal investments, such as infrastructure, ecosystem restoration, new construction, modifications or replacements to existing facilities, and operations and maintenance <sup>9</sup> .	>20	--	Standard analysis
	10 – 20	--	Scaled analysis
	<10	--	Excluded
<b>Programs</b> Grant or funding programs	--	>100	Standard analysis
	--	50 – 100	Scaled analysis
	--	<50	Excluded

<sup>7</sup> Agencies may choose to analyze the effects of a Federal investment at a higher level of detail than called for by Table 1. For example, if an agency considers an investment to be high risk, it could undertake a scaled analysis for that investment which might otherwise be excluded from the PR&G.

<sup>8</sup> The financial threshold amounts will be indexed to inflation to stay relevant.

<sup>9</sup> Operations and Maintenance (O&M) activities that are included in the original project authorizations do not require separate analysis as long as the activity is carried out in a manner that is consistent with that authorization. Significantly changed O&M plans or those changed to meet new goals may require a new analysis and potentially authorization.



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<b>Individual Plans</b> Management plans, such as watershed, master, landscape, etc.	--	>50	Standard analysis
	--	10 – 50	Scaled analysis
	--	<10	Excluded

## 4. COLLABORATION

Agency Specific Procedures should anticipate that addressing water resources problems and opportunities in a systems context may require, or at a minimum benefit from, a broader partnership to effectively address them. Collaboration can enhance the potential for developing more integrated solutions and to advance newer requirements, such as taking ecosystem services into account.<sup>10</sup> Agency Specific Procedures should also assess and evaluate the potential interaction with other Federal and non-Federal water resources investments within a region or watershed to ensure consistency of purpose, maximize effectiveness, and reduce costs.

When a water resources project, program, or plan is funded by two or more federal agencies, those agencies will cooperate to achieve the most efficient implementation of the PR&G. A process similar to that used for multiple agency coordination under the National Environmental Policy Act should be adopted. The agencies investing in the water resources project, plan, or program shall determine by letter or memorandum which agency shall be the lead agency and which shall be cooperating agencies. The following factors (which are listed in order of descending importance) can be used to determine lead agency designation:

1. Magnitude of agency's involvement.
2. Expertise concerning the action's environmental and economic effects.
3. Duration of agency's involvement.
4. Sequence of agency's involvement.

The lead agency has primary responsibility for completing PR&G analysis. The cooperating agencies can assist in analysis, as jointly determined. Cooperating agencies may refer to the lead agency's final analysis to document agency adherence to the PR&G. The monetary threshold table in the Agency Specific Procedures for the lead agency shall determine the level of analysis, using the total investment of the lead and cooperating agencies as the investment level.

## 5. IMPLEMENTATION OF THE GUIDING PRINCIPLES

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<sup>10</sup> As stated in the Principles and Requirements, Federal agencies should collaborate fully on water resources related activities with other affected Federal agencies and with Tribal, regional, state, local, and non-governmental entities, as well as community groups, academia, and private land owners (stakeholders) to realize more comprehensive problem resolution and better informed decision making. See P&R, page 8:

[http://www.whitehouse.gov/sites/default/files/final\\_principles\\_and\\_requirements\\_march\\_2013.pdf](http://www.whitehouse.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf)

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Agency Specific Procedures must evaluate alternatives, whether at the project- or programmatic level, with respect to each of the six Guiding Principles and their contributions to the Federal Objective quantitatively and/or qualitatively, as appropriate. The Guiding Principles are dynamic and evolving; agencies should use current literature to guide their analyses. Overlap may occur among the Guiding Principles and other analyses as described in the Interagency Guidelines, so agencies should note where the overlap occurs. Not all alternatives will perform the same against all the Guiding Principles, and professional judgment should be exercised to evaluate the tradeoffs.

In evaluating investment alternatives against the six Guiding Principles, agencies should consider the following:

### Healthy and Resilient Ecosystems

The health of an ecosystem is a measure of the performance of complex and interrelated systems. A healthy ecosystem has ecological processes functioning normally, such as within the range of natural variability. Ecosystem health is often expressed in terms of ecosystem functions, as reflected in the third part of the Federal Objective in the Principles and Requirements. Ecosystem services are a preferred way of expressing ecosystem function in the broad evaluation context required by the PR&G. However, a healthy ecosystem is more than a set of optimized functions; the concept also includes organization, structure (sometimes expressed as biodiversity), and resilience.

Ecosystems are resilient when they are able to respond to and maintain their structure and function under external stress, including climate change and invasive species. Measures of ecosystem resilience often address its two basic components: (1) the magnitude of stress an ecosystem can absorb before fundamentally and irrevocably changing; and (2) the amount of time required before an ecosystem returns to its pre-stressed condition or another stable condition that functions in ways similar to its original state. Some simple measures of ecosystem resilience include floodwater storage capacity and population recovery time for appropriate, scientifically sound surrogate for designated species. However systems-level models are needed to accurately describe the interactions of ecosystem components under stress and predict their response. No standard methods or models for measuring ecosystem resilience currently exist. Research on ecosystem resilience is rapidly changing how it is described and measured.

When evaluating water resources investment alternatives, the health of the affected ecosystem should be measured in its current condition (baseline) and projected under the alternatives being considered. Where feasible and appropriate, alternatives should be developed that restore the health of damaged ecosystems to an improved state.

### Sustainable Economic Development

Where feasible and appropriate, the analysis for sustainable economic development should present (1) information about the environmental resources in the project area or the area where the activities are occurring, and (2) how the resources and their value

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might be expected to change over time. Information on physical capital (value, costs to maintain, etc.) could also be presented if relevant. In addition, the analysis would include information on socio-economic conditions (incomes, demographics, etc.) and how they might be anticipated to change over time with the investment.

There is no standard set of metrics used in analyzing sustainable economic development. Rather, agencies should use measures that apply to the nature of the investment, as well as the desired outcome. For PR&G analysis, the measures should be used to evaluate the performance of viable alternatives against the Guiding Principles. Some measures that could be considered include, but are not limited to:

1. **Economic measures:** These include net economic benefits and their distribution across vulnerable populations; personal income; household income; median personal income; median household income; distribution of income; unemployment rate; average duration of unemployment; estimates of the number or percent of discouraged workers; establishment churn; establishment sizes; job growth (e.g., over the past year, over the past 5 years); employment distribution by sector; percentage of firms in each sector; revenue by sector contributing to gross state product.
2. **Social (including health) measures:** These include unemployment rate (by gender, by age, race/ethnicity); labor force participation rates (by gender, age, race/ethnicity); household poverty rate; educational attainment (for the population, by gender, by race/ethnicity); average commute time; crime rate (property crime; violent crime); disease disparities; health-adjusted life expectancy; access to health care and prevention opportunities.
3. **Environmental measures:** These include measures of air pollution (e.g., sulfur dioxide, nitrogen oxides, particulates, etc.); presence of selected priority pollutants; hazardous wastes; change in land use/land cover; indications of water quality issues, such as those waters listed under the Clean Water Act Section 303d.

Agencies are encouraged to examine the available literature for relevant applications and additional potential metrics.

### Floodplains

When evaluating potential activities impacting a floodplain, agencies should work to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of flood-plains. Also, as stated in Executive Order 11988, *Floodplain Management*, agencies should work to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

As reflected in the Principles and Requirements, Federal actions should seek to reduce the Nation's vulnerability to floods and storms. To promote consistency across agencies and ensure that Federal investments are resilient to changing flood risk, flood

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risk reduction strategies should incorporate considerations such as sea-level rise and rely on the best available science<sup>11</sup> on both current and future risk.

Decades of development in areas at risk of flooding have created complex challenges when considering how to make future investments. Areas prone to flooding may contain unique resource advantages and represent significant economic drivers. As floodplain occupancy rates increase, agencies should make best efforts to balance local economic development with management of risk.

To support such decisions, agencies should avoid, where possible, the "unwise use" of floodplains. Unwise uses are those that could include increase or transfer flood risks, resulting in adverse impacts to human health, safety, welfare, property, natural resources, or functions of floodplains.

Regulations, programs, policies, or practices that could be considered unwise use of floodplains could include (but are not limited to) actions that:

1. Are inconsistent with the provisions of the E.O. 11988 and associated federal guidance;
2. Increase or transfer flood risk geographically, governmentally, socio-economically, or generationally;
3. Fail to consider a systems approach (e.g., integrated water resource management, ecosystem-based management, or context-sensitive solutions);
4. Disproportionately affect minority, low-income, or vulnerable populations; or
5. Fail to consider relevant current, future, and potential economic, environmental, and social risks, costs, impacts, and benefits.

### Public Safety

Agencies should incorporate reasonable and appropriate public safety practices in formulating and evaluating water resources investments. Appropriate risk-based analysis techniques to identify, address, and avoid potential public safety issues resulting from investments should be used in evaluating alternatives. Quantitative risk analysis facilitates risk communication and improves both agency recommendations as well as decisions made to protect the public and avoid loss of life and property. Assessing, analyzing, and managing risk improves the decision process by:

1. Developing better risk reduction alternatives or recommending more appropriate courses of action to address potential safety issues;
2. Improving capability to plan, prioritize, and implement appropriate public safety risk reduction actions; and
3. Identifying and communicating residual risk.

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<sup>11</sup> As articulated in the Principles and Requirements, analysis to support Federal investments in water resources should utilize the best available science, data, analytical techniques, procedures, models and tools in hydrology, engineering, economics, biology, ecology, risk and uncertainty, and other fields to the extent that sufficient funding is available. See P&R, Page 7:

[http://www.whitehouse.gov/sites/default/files/final\\_principles\\_and\\_requirements\\_march\\_2013.pdf](http://www.whitehouse.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf)

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Risk analysis to address public safety issues, including public health issues, should include relevant external factors, site-specific considerations, and quantified and non-quantified approaches to evaluate risks to public safety.

### Environmental Justice

Because the concerns of overburdened populations and tribal communities may be unique to each community or Tribe, each agency's analysis should include information to address the following:

1. How the agency provides transparency and meaningful engagement and participation for minority, low income, and other disadvantaged communities;
2. How the agency identifies and addresses existing and new disproportionate environmental and public health impacts on minority, low income, and other disadvantaged communities; and
3. How tribal and indigenous populations are actively engaged in 1 and 2, above.

Existing agency and interagency guidance on environmental justice analysis should be used along with public involvement to inform the PR&G analysis. Agencies should also evaluate social (including health) factors during the planning process. These steps include (1) identifying the potentially affected environmental justice communities and/or tribal and indigenous populations, and (2) engaging them in a meaningful way from investment scoping to identifying potential impacts. The impacts to environmental justice communities and/or tribal and indigenous populations may be different than to the general population, and these differences should be identified. For example, these communities could be exposed to more environmentally harmful contaminants, or they could lack access to factors that would benefit them. Such an evaluation process helps agencies assess risk and economic measures by using scientific factors in risk assessments to characterize the nature and magnitude of human health and ecological risk from contaminants and other stressors that may be present.

Potential environmental justice concerns that may be evaluated during the planning process could include, but are not limited to: factors that might make a community relatively more susceptible to poorer health, including disproportionate health and environmental factors; subsistence fishing; cultural resources; community values; income level; school siting; and crime.

In analyzing each alternative's potential environmental justice impacts, agencies can also use these tools to ensure a holistic view of the potential broader social effects.

### Watershed Approach

A watershed approach to water resources management requires a structured consideration of watershed needs and how alternatives under consideration serve those needs. Minimally, the study area should include the watershed, but could also include other areas since there may be impacts outside of it. Numerous frameworks, tools, and methods have been developed for implementing a watershed approach. Like the methods for implementing other aspects of the PR&G, agencies are expected to convey

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their approaches in Agency Specific Procedures with the full understanding that methodologies are expected to change with time and advances in science. Analyses should always strive to incorporate the best available science and methodology.

A key aspect of a watershed approach is the analysis of information regarding watershed conditions and needs. Such information includes, but is not limited to: current trends in aquatic habitat loss or conversion; cumulative impacts of past water resources development activities as well as activities unrelated to water resources development; current and future projected water resources utilization trends; the present, needs and opportunities to conserve sensitive species and other natural resources; special conditions that favor or hinder the success of any alternative under consideration; and chronic environmental problems such as flooding or poor water quality. In the context of water resources investment, watershed conditions and needs should also include relevant economic and social characteristics of the watershed.

### 6. DEVELOPMENT OF AGENCY SPECIFIC PROCEDURES

These Interagency Guidelines provide direction to agencies for the development of Agency Specific Procedures to:

- Determine the applicability of the Principles and Requirements to agencies' water resources investments in the context of their missions and authorities;
- Implement the common framework summarized in the Principles and Requirements and Interagency Guidelines for analyzing applicable potential and existing water resources investments; and
- Ensure that project planning and analysis and agency programs adequately address issues in the Guiding Principles identified in the Principles and Requirements.

Agencies must document the missions, programs, and investments to which the Principles and Requirements will apply. Further, agencies must review their existing planning, design, and evaluation processes. Where practicable and appropriate, agencies must update, revise, or replace these processes, in accordance with the Interagency Guidelines. 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.

#### Project- and Programmatic-Level Procedures

Systems are complex, changeable, and interconnected. Proposed water resources actions must be considered in a watershed, ecosystem, or systems context to identify the best alternatives for achieving desired public benefits, as well as to reduce the likelihood of undesirable or unintended consequences.

Agencies must develop procedures for applying the Principles and Requirements at the project- and/or programmatic-levels in a similar way to ensure they meet the purpose and intent of the Principles and Requirements. Project- and programmatic-level

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procedures must reflect systems approaches that explicitly recognize the interconnectedness within and among physical, ecological, economic, and social/cultural systems.

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

- Incorporate the purposes and need for the investment;
- Provide for quantitative and qualitative analysis at the appropriate commensurate level of detail, including cumulative effects;
- Describe the assumptions used in the analyses;
- Provide for identification of the sources of residual risk; and
- Identify a transparent process to make and document the Federal Investment decision.

## Interagency Coordination

The Federal agencies are expected to coordinate in the development of their Agency Specific Procedures to promote consistency of water resources investment decisions across the Federal government. Such efforts may include both formal and informal coordination mechanisms. Agencies shall consult with OMB and CEQ in the development of their Agency Specific Procedures, as OMB and CEQ will look to ensure consistency in how the PR&G is applied, to the extent possible.

Each agency's procedures must undergo an interagency review process prior to approval by their respective Agency Department Head. Agency Specific Procedures must also be reviewed and updated, if necessary, when the Interagency Guidelines are modified. The Agency Specific Procedures are to be updated more frequently than the Interagency Guidelines as science and best practices evolve, especially for concepts including, but not limited to: watershed, ecosystem, or systems approaches; ecosystem services; climate change; and environmental justice.

## **7. CONTENTS OF ANALYSIS**

### **a. Developing project- and programmatic-level procedures**

#### **i. Developing scope and challenge(s)**

Project-level procedures should begin with a clear definition of the water resources and economic challenge(s), including a statement of the problems and/or opportunities to be addressed, the cause or causes of the problem(s), any constraints related to them, and their relationship 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 better position agencies to determine whether

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there is a Federal investment that could be a solution in light of the goals identified in the PR&G.

Programmatic-level analyses should begin with defining the scope of the Federal investment as well as the challenge(s) it seeks to address.

The definition of the water resources challenge should be developed through a watershed, ecosystem, or systems approach, to the extent practicable. In this process, agencies should provide a clear definition of:

1. The defined study area as the geographically affected area framed in a watershed/ecosystem/systems context, where applicable;
2. How the boundaries of the study area were determined;
3. The identified other water resources investments within the watershed, including the study area, that could be affected, as practicable; and
4. The identified stakeholders affected by the potential federal investment and how the planning process ensured collaboration with them, including collaboration on identifying the study area and key terms.

### ii. Identifying existing conditions

Agencies must provide the baseline from which future conditions will be altered by the project, program, or plan. Project-level procedures will likely need more detailed information than programmatic-level procedures. Agencies should use professional judgment to determine the commensurate level of detail necessary for programmatic-level procedures to be complete, effective, efficient, and acceptable.

To determine baselines, agencies should identify the existing conditions and the baseline levels of ecosystems services and, to the extent practicable, current trends and variability in key environmental and economic indicators and conditions such as climate, population, urbanization, and land use. Key resources and services to be analyzed can be determined by including and recognizing local and traditional natural knowledge; taking stock of the quantity and quality of current and potential environmental, economic, and social (including health) resources and services found in the study area and the surrounding watershed, and the relationships and connections between them. 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 resources. These inventories also provide an opportunity to identify potential alternative investments. The development of inventories should be done at the commensurate level of detail with the rest of the analysis, and may range from development of a conceptual model to detailed surveys and fieldwork.

Agencies must provide an explicit list of the services that flow from the existing study area ecosystems and infrastructure (including operational plans) with identification of those services that are likely to meaningfully change within the larger context of the



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watershed because of the Federal investment. The inventories facilitate analysis of ecosystem services, described in section (v) Evaluate Alternatives.

### Conceptual Models

Agencies should appropriately document the relationships and linkages of key resources and services, drivers of change, and impacts of proposed investments. One method is 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 helps analysts and the public clearly understand how ecosystems contribute to the provision of services.

### **iii. Projecting future conditions of the study area**

Agencies should project the future conditions of the study area using a watershed, ecosystem, or systems approach to ensure all relevant impacts, derived from a similar methodology used to determine baselines, are analyzed. The period of projection should be comparable to the expected service or operational life of the investment. To improve transparency and understanding of the long-term effects of a Federal investment in its local or regional context, projected land and resource use patterns should be assessed when projecting future conditions as appropriate and applicable to the specific investment. Agencies should project the future conditions of the study area absent the investment, but include reasonably foreseeable actions by public and private entities to:

1. Understand how key resources and services will change in the future;
2. Better compare with a future condition without the investment; and
3. Serve as a project baseline to assess the effects of each proposed investment alternative.

### Uncertainty

Because projections of future conditions are inherently uncertain, the degree of uncertainty should be characterized (quantitatively and/or qualitatively at the commensurate level of detail) for all projections. Key assumptions used in the projections should be explicitly stated. Where uncertainty may meaningfully affect the baseline and could affect the investment decision, multiple baselines can be used, with a clear explanation of the basis and assumptions underlying each. Agencies are expected to explain the residual risk that remains to the decision makers. Climate change and climate variability are key sources of uncertainty for water resources.

### Climate Change and Climate Variability

The discussion of future conditions without the investment should also include a reasonable projection of how climate change may affect the study area. The agency should analyze what is relevant, what is reliable, and what is practical. Using this framework, agencies have the flexibility to examine the impacts of climate change or climate variability that are relevant for the specific investment, make a professional

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judgment about what information is reliable to use, and determine what is practical to analyze.

Projections of future conditions should account for expected environmental, social, and economic changes as a result of climate variability and climate change. Consideration of climate-related changes to water resources is especially important for projects with relatively long (a decade or more) service or operational lives, as these projects are most likely to be affected by climate variability and change. If appropriate, predictions should consider intergenerational issues due to climate variability and change. Where the service or operational life of that investment is likely to be renewed at the same site, the effects of climate variability and change should be considered over the likely period of use of the site for the investment or a renewal of the investment, recognizing that the period of use may itself be a potential source of uncertainty.

### iv. Formulating a range of investment alternatives

The PR&G calls for agencies to formulate a reasonable range of viable alternatives, with significantly different approaches to address the defined water resources challenge or defined scope, and achieve the Federal Objective, Guiding Principles, and General Requirements outlined in the PR&G. Alternatives should comprehensively integrate multiple objectives for water resources investments. They should reflect a range of scales and management measures, and be assessed against the formulation criteria presented in the Principles and Requirements: completeness, effectiveness, efficiency, and acceptability. Project-level procedures generally need more alternatives because agencies have more options for developing them. On the other hand, programmatic-level procedures generally have fewer alternatives because agencies have a different level of detail and consequently fewer ways to develop additional alternatives. Programmatic-level alternatives could be based on changing components like the composition of projects encompassed in the program, the funding levels, or the criteria by which the programs are evaluated, among others. Data availability may also be more limited for programmatic-level analysis; nevertheless, agencies should strive to include the appropriate level of information needed to make a decision.

The range of alternatives provides a reasonable basis for comparing the relative effectiveness and efficiency of the alternatives. Agencies should consider them within the purview of state, local, or other Federal agencies and seek input as appropriate. Among the more promising alternatives, the agencies should formulate alternatives of varying scales to enable the evaluation of incremental efficiency.

#### Mitigation

Agencies must design alternatives to achieve environmental, economic, and social (including health) goals. Tradeoffs involved in addressing complex water resources problems mean that some alternatives may involve actions that produce unavoidable adverse environmental, economic, and/or social impacts. In these cases, alternatives must include how to avoid, minimize, or mitigate these effects as described in the Principles and Requirements. Social impacts—particularly those impacting tribal and

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indigenous populations, or minority, low-income, or other disadvantaged communities—should also be mitigated.

### Institutional Barriers

When an alternative requires 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 environmental, economic, or social (including health) 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.

### Discrete Measures

If an alternative has multiple discrete measures, those measures should be evaluated as discrete units. These evaluations should focus on whether the alternative is an effective and efficient means of achieving the study objectives. These evaluations and any subsequent tradeoff analyses and selections must also fully consider the array of economic, environmental, and social effects—quantifiable (monetary and non-monetary) and non-quantifiable effects—and must be displayed in a transparent manner to help inform the public and the decision makers. Plan formulation needs to describe the features and capabilities of any discrete measures as well as the full alternatives.

## **v. Evaluating alternatives**

Agencies must ensure that alternatives evaluate environmental, social (and health), and economic factors. The alternatives shall contain sufficient detail to be useful in decision making. Agencies shall also comprehensively evaluate the formulated array of alternatives to assess the contributions of each alternative to the Federal Objective and the Guiding Principles. Agency evaluation procedures shall incorporate methods to evaluate:

1. How public benefits of an alternative compare to its costs;
2. How alternatives perform with respect to the Guiding Principles; and
3. How alternatives perform against the four formulation criteria: completeness, effectiveness, efficiency, and acceptability.

### Ecosystem Services

The goal of an assessment is a complete accounting of the costs and benefits expected from the Federal investment. A complete accounting would consider whether and how ecosystems at or proximate to the investment sites are impacted relative to a no-change baseline.

Ecosystems provide services to people. Thus, Federal investment impacts on the environment or ecosystem may be understood in terms of changes in service flows. The process of identifying, evaluating, and comparing these changes provides a useful organizing framework to produce a complete accounting. Reduced service flows over time amount to costs, and increased services flows over time amount to benefits.

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A complete accounting identifies, at a minimum, impacted services and the projected trend of each service flow. Where practicable, impacts should be quantified. When it can be done well and it is appropriate to do so, quantified impacts should be monetized.

There are three general kinds of ecosystem services to consider:

1. Provisioning services refer to the food, fuel, fiber, and clean water that ecosystems provide.
2. Regulating services refer to specific ecosystem processes for which people are willing to pay. Examples include pollination, storm protection, climate regulation, and water regulation.
3. Cultural services refer to the benefits ecosystems confer that do not directly relate to our physical health or material well-being. Examples include recreation, aesthetic, spiritual, existence, and option "values." Whereas the first two of these are experiential, the latter "non-use" values depend simply on the continued survival of the ecosystem and its attributes.

Estimating the value of provisioning services is relatively straightforward because market data can typically be used. Estimating the value of regulating and cultural services is relatively challenging and typically involves willingness to pay studies applying techniques particular to the service in question and as a result may not be used in all PR&G analyses.

### Describing Benefits and Costs

The differences in services provided by each alternative, relative to the baseline, are the basis for comparing public benefits. To the extent practicable changes in use and non-use services resulting from a proposed alternative must be quantified in a scientifically valid and accepted way. Whenever appropriate, quantified effects should be monetized. Monetization should follow sound economic principles and practices (See OMB Circulars A-94 and 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 Circulars A-94 and A-4).

Those services 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. In these cases, professional judgment is expected to 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 qualitative services are most important and why.

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## vi. Displaying the effects/comparison of alternatives

The procedures shall display the effects of alternatives in a manner that allows for the unbiased comparison of alternatives for their contributions to the Federal Objective and each of the Guiding Principles. This comparison should be documented in both display and narrative form, and include a discussion of trade-offs.

### Displays

Displays may include graphs, charts, tables, drawings, photographs, summary statements, or other indications of impacts. For transparency and ease of use, the method of display for a specific category shall be the same across all alternatives. The display should also present the performance of each alternative, relative to the baseline, the study objectives, the four formulation criteria, and any other screening or selection criteria used in the analyses. 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.

Additionally, common displays that are used across agencies enhance transparency and clarity about the decision making process. Agencies should collaborate to develop these common displays, and could develop several depending on the scale, scope, and type of Federal investment.

### Tradeoffs

The tradeoffs—monetary, quantitative, and/or qualitative—among and within economic, environmental, and social goals shall be explicitly identified across alternative plans. Tradeoffs are compared from the perspective of the specific circumstances of each study, including the study area, resources, impacted populations, and study authority, to form the basis for deciding which plan best addresses the Federal Objective and Guiding Principles.

Some effects measured are likely to be more relevant than others to the achievement of the investment objective, and these should be noted and separated from incidental effects. Agencies are expected to note effects that are irreversible or that have high end-of-lifecycle costs to reverse (including decommissioning costs).

Different project components may be justified based on different types of public benefits. 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

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be sufficient to inform the decisions to be made and to provide transparency to the decision making process.

### **vii. Selection criteria that conform to the Principles and Requirements and any Agency Specific Procedures**

Agency Specific Procedures shall include criteria to guide the selection of an investment that conforms to the Guiding Principles, the General Requirements, and the Federal Objective. The selected alternative shall:

- a. Provide a complete discussion of the tradeoffs involved in making a decision regarding the proposed Federal investment;
- b. Provide a discussion of how economic, environmental, and social (including health) benefits (monetary and non-monetary, quantified and unquantified) justify the costs (monetary and non-monetary, quantified and unquantified); and
- c. Adequately attain the goals outlined in the Guiding Principles, recognizing how tradeoffs between the various goals affect the level of attainment within each Guiding Principle.

In this analysis, agencies shall clearly identify the alternative that reasonably maximizes the public benefits to the Nation relative to costs. It is possible for there to be more than one alternative that reasonably and approximately maximizes the public benefits relative to costs, when agencies consider the full array of economic, environmental and social effects of an alternative in both quantitative and qualitative terms. The information required by these three steps should also be developed for any separable measures contained within the competing alternatives. The selection criteria shall reflect each agency's specific legal requirements in statutes or regulations as well as applicable guidance (e.g. OMB Circulars A-94 and A-4).

If the agency has parallel planning processes that have decision criteria that may differ from those described in the Principles and Requirements, agencies should determine in their Agency Specific Procedures how to reconcile these differences.

### **viii. Iteration within the process**

Decisions or recommendations involving Federal investments affecting water resources, quantity, or quality should be made through a dynamic process, 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. Additional elements specific to programmatic-level procedures**

- **Potential Programmatic-Level Approaches**

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

### Tiered programmatic analysis:

- Appropriate for: Grant programs that solicit water resources 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 PR&G. The programmatic analysis is expected to characterize typical project types; describe the effects of typical project types; describe how typical projects perform with respect to the PR&G; 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 resources needs.
- 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 PR&G. The Federal agency periodically reviews a collection of funded projects to assess whether they perform appropriately with respect to the PR&G. Based on the review, the Federal agency is expected to 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.

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- 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 PR&G. Whenever possible, the programmatic-level procedures for a grouped analysis should mirror the project-level procedures.
- **Outlier projects**

Programmatic-level procedures should account for circumstances where an individual project, evaluated under a programmatic-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 programmatic 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.

- **Funding a third party**

In circumstances where agencies fund water resources investments through a third party 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 PR&G and take action, where appropriate, to ensure sound performance.

### 8. INVESTMENT DECISIONS

In making investment decisions, agencies should strive to maximize the public benefits, relative to public costs, using the applicable selection criteria. The entire selection process shall be properly documented and transparently explained, including a discussion of stakeholder and/or sponsor preferences. The decision rationale should be clearly explained so the public can understand how the final selection was made. Professional judgment is critical in making decisions among tradeoffs. The ultimate investment decision is expected to be framed differently when developed with a project-level approach versus a programmatic-level approach.

Through this process, the PR&G helps the Federal government improve decision-making by accounting for long-term costs and benefits; developing investments to withstand or adapt to climate change; creating better, more resilient communities; and avoiding conflicts and project delays by including local input.

### 9. CONCLUSION



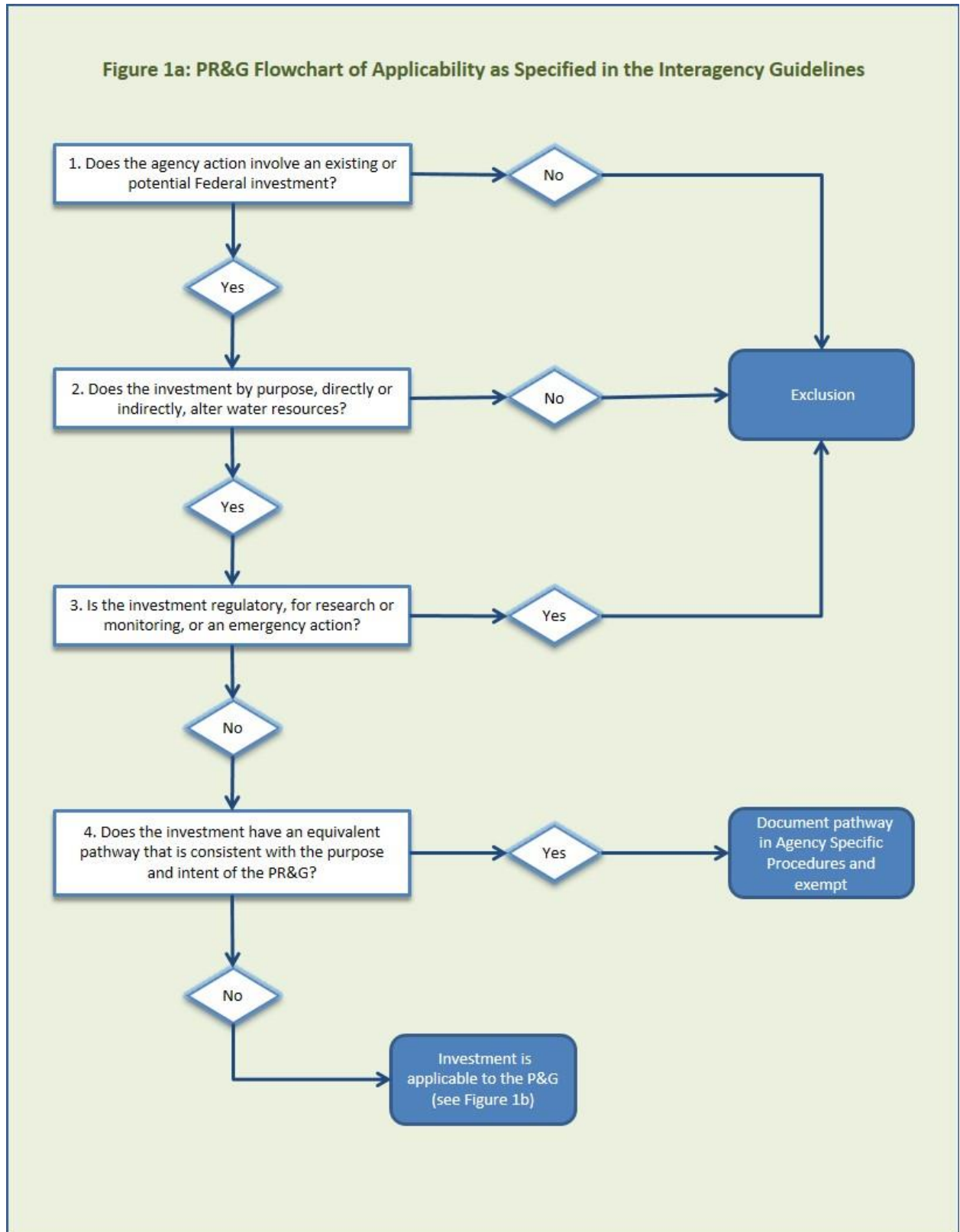
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The Principles and Requirements and the Interagency Guidelines do not direct agencies to develop Agency Specific Procedures that require the selection of a particular alternative investment, but rather to evaluate a range of alternatives. When evaluating these alternatives, agencies shall keep in mind a number of key aspects, including:

1. Environmental, economic, and social impacts are interrelated, and there is no hierarchy among their goals in a PR&G analysis;
2. Not all impacts can be monetized, and qualitative impacts should be given equal weight ; and
3. There could be more than one alternative that reasonably and approximately maximizes the public benefits relative to costs.

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## 10. FIGURE 1: DETERMINING THE APPLICABILITY OF THE PRINCIPLES, REQUIREMENTS AND GUIDELINES



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Figure 1b: PR&G Flowchart of Applicability to be Specified in the Agency Specific Guidelines

