

# Place-Based Integrated Water Resources Planning

## **DRAFT** Guidance for Planning Step 4

### *Develop Integrated Solutions for Meeting Current and Long-Term Water Needs*

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OREGON



WATER RESOURCES  
DEPARTMENT

*Water is a finite resource with growing demands; water scarcity is a reality in Oregon. Water-related decisions should rest on a thorough analysis of supply, the demand/need for water, the potential for increasing efficiencies and conservation, and alternative ways to meet these demands.*

**Oregon's Integrated Water Resources Strategy Policy Advisory Group (2016)**

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## Introduction

During Planning Steps 2 and 3, the planning group worked to understand the water resources and the current and future water needs in the planning area. The critical water issues facing the community are becoming clear. Planning Step 4 is the time and opportunity to explore a wide range of “water solutions” and determine which solutions (and corresponding recommended actions) the planning group wants to pursue in order to address the identified critical water issues.

### What is a “Water Solution”?

Water solutions are the strategies, practices, programs, projects, studies, management actions, and other efforts taken to address a critical water issue.

This guidance is intended to highlight planning process steps to consider during Planning Step 4 and introduce planning groups to a broad spectrum of potential solutions to address critical water issues. However, planning groups may customize the planning process and develop innovative solutions to best fit the geographic circumstances - while also adhering to the key planning principles described in the 2015 Draft Place-Based Planning Guidelines.

This document contains two major sections plus appendices:

1. **Process Guidance.** The process guidance provides a suggested framework for completing Planning Step 4. The guidance is designed to set planning groups up for success in navigating what can be challenging conversations around water solutions. The components of the process guidance will help the planning group achieve consensus on its selection of critical water issues and solutions as well as set the group up to effectively implement those solutions.
2. **Water Resource Solutions Toolbox.** [Forthcoming] This section provides information and resources for understanding and exploring a variety of potential solutions. Most of the categories of solutions were introduced in the 2015 Draft Guidelines beginning on Page 11. Please review that section of the 2015 Draft Guidelines which describes many - but certainly not all - solutions that can be explored, considered, and applied as appropriate, to the critical water issues identified by the planning group.

## Disclaimer

This DRAFT guidance and toolbox is intended to assist you in completing the place-based planning process as outlined in the 2015 DRAFT Guidelines. It is up to the conveners and the planning group how they use this information in their respective planning processes. This is a DRAFT resource that will be refined and improved over time as planning groups use it and provide feedback. It can serve as a conversation starter as groups begin to think about these complex concepts, but it is not meant to be all inclusive or exhaustive. Each planning group and their planning partners will identify the questions, approaches, data, and tools that are relevant and useful to their planning effort. In terms of how work is accomplished, each partner is responsible for determining how they will contribute to the planning process and what they may be able to contribute in terms of assistance.

## Requesting Assistance for Planning Step 4

If you intend to request assistance from partners or state and federal resource agencies, please note that each organization is responsible for determining 1) whether they can provide assistance, and 2) the process by which groups can request assistance. Partners may have limited capacity to provide assistance. Planning groups requesting technical assistance from OWRD must follow the process outlined in the Requesting Coordinated Technical Assistance Memo developed by OWRD.

## Feedback and Continuous Improvements

This resource will be continuously revised and updated as information changes. We welcome your feedback at any time on anything contained in the process guidance or toolbox. Over the next year we will consult with members of the planning groups as well as other external content experts to refine and improve upon these materials. If you would like to contribute a planning question, please do so by filling out [this form](#). If you would like to provide input on this guidance, please email your thoughts or feedback to [placebasedplanning@wrd.state.or.us](mailto:placebasedplanning@wrd.state.or.us).

## Planning Step 4 Process Guidance

### Set the Foundation for Success

At this phase in the planning process, it is important to ensure the stage is set to gain a clear understanding of the critical water issues facing the community and to conduct a deliberate analysis of potential solutions. The following three sections offer guidance on setting a solid foundation for success.

#### Establish a Clear Process and Work Plan

In order to proceed smoothly and efficiently through Planning Step 4, it is important to develop a clear process and work plan that participants understand. The process should provide participants the opportunity to engage at key decision points according to the planning group's governance agreement. The call out box to the right provides an example of what steps a planning group might take to complete Planning Step 4.

The work plan should address who will do which pieces of work, in what timeframe, and also describe the opportunities for broader input and review of the work. Some stakeholder engagement considerations are described in Appendix A. Planning participants need adequate time to review, comment, and discuss key work products. Some participants may need a month or more to review larger documents and provide substantial review and feedback. Below are some questions that may help establish a clear process and work plan:

1. **Goals** – What are our goals during this step? What do we hope to accomplish?
2. **Scope** – What will we do to accomplish our identified goals? What is the scope and scale of that work? How can we be strategic in our focus?
3. **Work Products** – What work products will be developed? What deadlines do they have?
4. **Schedule** – What is the timeline or schedule for accomplishing this work? What are some important milestones?
5. **Cost** – What is the budget for this work? What financial resources are available to complete this work? Are there any financial constraints?

#### Planning Step Process Laid Out in this Guidance

1. Scope the planning step & develop work plan
2. Revisit meeting protocols and expectations
3. Define the critical water issues
4. Develop a system for evaluating solutions
5. Learn about many potential solutions
6. Evaluate solutions using the system
7. Identify recommended actions for priority solutions
8. Document findings

6. **Resources** – What expertise do we have in our group? What is the capacity of our partners to assist? Do we have the right people to work on this task/work product?
7. **Organization/Roles** – Who will work on this task? How will they be organized? What is their assignment? How often will they meet and what are the time expectations?
8. **Communication** – When and how will we report back to the larger group about our progress?
9. **Quality assurance** – How will we ensure the validity of information used? What are our quality assurance standards as a group?
10. **Review** – What is the review process for work produced? What are the decision-points?
11. **Engagement** – Do we have at least one representative for each water interest/user group in our process to help inform our process? What is the larger engagement strategy to involve other stakeholders?
12. **Decision-making** – What process will we use to make decisions? What are the key decision-points?
13. **Conflicts and risk management** – What risks do we anticipate and how will we manage them? What process will we use to resolve conflicts?

### Revisit Meeting Protocols and Expectations

Revisiting ground rules, meeting protocols, and other planning group norms and expectations will help maintain respectful and cooperative conversations when discussing various solutions. The group might revisit their governance agreement to make sure it still fits their needs, and revise it if needed. Reviewing the governance agreement provides an opportunity to remind partners and other participants about how the group will work to reach consensus when identifying a set of solutions. Clarity around the process, the work plan, and protocols will help planning participants know what is expected of them, what to expect from the conveners or coordinating/steering committee, and what they can expect from each other.

The convener(s) and facilitator(s) should take an active role in guiding an open and productive discussion. Participants will likely have questions, ideas, and concerns along the way that need to be considered in order to gain a clear understanding and agreement. It is important that the facilitator keep everyone engaged; participants who are quiet and reserved should be given alternative ways to engage. Do not mistake silence for agreement.

At some point in the process of evaluating solutions it may become apparent that the group is stuck short of consensus and further progress cannot be made. Use of a skilled outside mediator may be necessary to work through this challenge or refocus the group on the areas where there is agreement. The planning group may want to consider finding a mediator before beginning the planning step work.



## Review or Determine the Critical Water Issues

When the planning group and the broader community understand the water resource situation and the critical water issues in the planning area, they are more likely to understand the value of the solutions identified during this planning step. Understanding the critical water issues helps prioritize and later communicate the importance and need for solutions. Therefore, if the critical water issues are not already determined, the key findings from Planning Steps 2 and 3 should be reviewed and discussed early in this planning step to develop a list of critical water issues.

A critical water issue is a water related problem or challenge that if not resolved will inhibit the ability of the community and other interests to meet the instream and out-of-stream water needs. Critical water issues can include, but are not limited to data gaps, water quality concerns, water supply shortfalls, and ecosystem impacts. The critical water issues can be formed into problem statements, quantified to the extent possible, and prioritized. Also, when possible, a metric or measurement of progress should be developed for each critical water issue so the effectiveness of the solutions can be monitored/evaluated. If desired, the planning group can organize/group critical water issues by type (e.g., instream, agricultural, municipal, or industrial) or area (e.g., stream reach or sub-watershed). The following are three hypothetical problem statements and corresponding metrics:

***Deer Creek Instream Critical Water Issue.*** *The 3-mile stream reach of Deer Creek between Jones Road and Highway 2 is important habitat for threatened steelhead and salmon. The instream need in the reach from June through September is 10 cubic feet per second (cfs). The usable habitat is greatly diminished since streamflow is rarely above 3 cfs during July and August. There are several legal water diversions from Deer Creek upstream of Jones Road. Of the six instream critical water issues identified, this is the highest priority to be addressed.*

*A metric to monitor success at addressing this critical water issue is constant summer stream flow at or above 10 cfs, June through September, within the stream reach. The existing stream gage operated by USGS located 1 mile upstream of Highway 2 is a convenient point of monitoring and additional access is possible at both Jones Road and Highway 2.*

***Bear Creek Irrigation District Critical Water Issue.*** *The Bear Creek Irrigation District diverts water from Bear Creek into an unlined, earthen canal to serve high-value farmland. Farmers within the district use flood-irrigation methods on 80% of the land and wheel-lines on 20%. Water rights held by the district and its members total 40 cfs. The district's diversion is typically reduced to about 20 cfs sometime in July or August*

*due to the priority for water by downstream senior water rights, so 50% of the land often lacks water for late-season irrigation. Of the five agriculture-related critical water issues identified, this is the third highest priority to be addressed.*

*A metric to monitor success at addressing this critical water issue is the percent of the land within the district reliably irrigated through the irrigation season. If the district members desire 100% of the land to be reliably irrigated, they can measure progress relative to the current 50%.*

***Groundwater Elevation Data Gap Critical Water Issue.*** *There exists a gap in the understanding of the alluvial groundwater aquifer beneath much of the planning area due to a scarcity of groundwater elevation data. The aquifer is pumped substantially for beneficial municipal and irrigation uses in a 20-square mile area. There are only four wells where groundwater elevation data is recorded quarterly and they are clustered into two adjacent square-mile sections (10% of the 20 sections). Of the known data gaps, groundwater elevation data is the highest ranked priority.*

*A metric to measure success at filling this priority data gap might be the percentage of square-mile sections where one or more wells are used to collect quarterly groundwater elevation measurements.*

Notice that in these three examples, the critical water issues are defined with information generated during planning steps 2 and 3, are prioritized relative to other critical water issues, and are assigned a metric for monitoring progress at addressing the critical water issue. The metric does not pre-suppose the best solution(s) since there may be a number of potential solutions to explore and evaluate relative to addressing these critical water issues.

### **Explore and Evaluate a Variety of Potential Solutions**

After setting a foundation for fruitful conversation and identifying the place's water challenges, the planning group can begin conversations about potential solutions. There are many potential solutions to water resource issues. Keep an open mind while you explore and evaluate a variety of potential solutions. This is important because new information about a solution and its applicability to your critical water issues may cause you to be more open to a solution you previously disregarded or reconsider a solution you previously championed. The following three sections describe a process of exploring and evaluating a comprehensive set of solutions in a fair and systematic way that can be documented and broadly supported.

## Develop a System for Evaluating Solutions

The planning group should consider developing a “Decision Support Framework” to guide them in the selection of solutions to address critical water issues. A decision support framework is a tool that will help answer the fundamental question: *Is this the right solution, or mix of solutions, to help address the critical water issue?* It will help the planning group use pre-established criteria to evaluate a variety of potential solutions and make choices that the planning group, the larger community, funders, regulatory agencies, and others, will understand and support. It helps ensure that all potential solutions are fairly considered and evaluated in a consistent manner. Use of a decision support framework can help bring legitimacy to the planning process and the plan it produces.

A common evaluation method is a matrix to evaluate solutions based on multiple criteria such as cost, expected benefits, size or scale, time to implement, risk, availability of funding, secondary benefits, technical difficulty, community support, and more. Each of the criteria can be assigned a weight and ultimately each solution can be scored as a way to compare them for prioritization.

## Learn About Many Potential Solutions

Given the diversity of perspectives within the planning group and the larger community, it is important to explore and learn about a wide range of potential solutions as a group before deciding which ones to apply to your critical water issues. Different planning participants likely have different levels of familiarity and understanding of different water solutions. This is an opportunity to learn together and be open to both common and innovative ideas.

Section II of this document, Water Resource Solutions Toolbox, provides a list of solutions and descriptions, but is not all-encompassing. The Department is also working with others to develop case studies that demonstrate past success in Oregon. The unique circumstances in a planning area, or smaller sub-area, may lend themselves to creative solutions that the planning group might consider.

### Solution Evaluation Methods

Some approaches that planning groups might consider include:

- Alternatives analysis
- Cost-benefit analysis
- Multi-criteria decision analysis
- Prioritization matrix/matrix ranking
- Results chain framework
- Scenario planning
- Structured decision making

Example of decision support tools include:

- Agent-based modeling
- Conceptual models
- Decision support system
- Spatial analysis tools
- Atlas prioritization tool
- NetMap

Learning about solutions may be more effective if it involves a combination of background research, presentations from specialists, field tours, and group discussions. This is a good time for field visits to see and discuss solutions already employed in the planning area, or nearby. For instance, if the group is considering a storage solution, it may be helpful to visit an existing reservoir or aquifer recharge project and learn about its design, location, construction and maintenance costs, the funding mechanism, uses of the stored water, benefits, permitting requirements, and any challenges encountered in the construction or operation of the project.

Flyers and other informational materials about past solutions from the planning area, other parts of Oregon, other states, or even other countries may provide useful background information on potential solutions. Soil and Water Conservation Districts, watershed councils, state and federal agencies, tribes, cities, districts and other entities may have existing information on potential solutions that the planning group could use or reference.

### **Evaluate Solutions Using the System**

After identifying or developing a system for evaluating solutions and exploring a variety of potential solutions, apply the evaluation system to the potential solutions to 1) learn if/how they might address the identified critical water issues and 2) determine a priority list of solutions. Remember to engage the planning group and communicate the results of this analysis. If not covered in the evaluation of the solutions document the benefits and barriers to implementing the solutions as well as identify where integrated solutions may exist.

Describe Benefits of and Barriers to Implementing Solutions. When potential solutions have been evaluated, the qualities and potential benefits can be described and any apparent barriers to implementation discussed and documented. Identifying benefits and barriers will be helpful later on when determining what next steps are needed to pursue a solution and when trying to gather strong support for pursuing the solution.

Develop Integrated Solutions Where Practical. *Integrated Solutions* are linked or related solutions that work together to solve problems or manage water more effectively than a single, discreet solution could alone. For example, upgrading an irrigation system often involves several discreet solutions integrated in a larger system that can produce multiple benefits. It may involve a modern surface diversion or variable speed pump, a pipeline to replace a canal, an efficient application method such as a center-pivot, soil moisture sensors, water transactions such as an allocation of conserved water, and possibly even a system of tail-water recovery and reuse. Such an irrigation efficiency project integrates solutions and can produce numerous benefits for the farmer, the stream and the community: permanently increased summer streamflow, improved farming productivity, reduced soil erosion, improved water quality, and enhanced management flexibility.

Another example is how treated municipal wastewater can be reused, with some state permits, by piping and applying the wastewater to wetlands, or to irrigate farmland, instead of discharged to a stream. The results are that a beneficial use is achieved with the treated wastewater, stream water quality is improved, and the city can cost-effectively meet its regulatory requirements.

Finally, by looking at solutions as an entire package, you may be able to negotiate different tradeoffs or outcomes with partners. A solution in isolation may not be appealing to one partner, but in the context of a package of solutions, it may become more acceptable.

Prioritize Solutions to Pursue. With an understanding of both the critical water issues and the potential solutions and their relative qualities and applicability, a prioritized or tiered list of solutions can be made to address the critical water issues. Prioritization may involve ranking solutions, placing solutions into types/categories (e.g., instream, agriculture, municipal, or integrated) or tiers (e.g., high, medium, low priority), or a combination.

Identify Recommended Actions (Next Steps) for Priority Solutions. Once priority solutions are identified it is important to determine what next steps must be taken to pursue implementation of that solution. For example, if a group identifies on-farm efficiency as a priority solution, recommended actions may include 1) surveying landowner interest, 2) using or building upon existing conservation programs doing this work, 3) developing a cost estimate, 4) applying for a Feasibility Study Grant or other funds to determine feasibility of specific on-farm efficiency projects. A solution may have one or more corresponding recommended actions. A planning group may choose to identify recommended actions at the beginning of Planning Step 5 instead of at the end of Planning Step 4.

### **Document Planning Step 4 Results**

Documenting the results of Planning Step 4 will help the planning group capture the information for future use in plan development and funding applications. It will help capture which solutions are supported by the planning group and justify the value of a solution by noting the benefits the solution brings or what critical water issues it helps address. When thinking about how to present information, the group should think about what their place-based plan might look like and how the Step 4 report might set the group up for efficient development of their plan. The planning groups should familiarize themselves with how information is organized in [Oregon's Integrated Water Resources Strategy and consider using a similar approach \(though this is not required\)](#).

An example report template is provided in Appendix B: Example Template for Water Solutions Report. The group can modify this template or compile summary materials using a different format. Generally speaking, it is helpful to document what you did for each of the steps

identified in Section I of the guidance. This will capture the critical water issues identified as well as how and why solutions were selected and any recommended actions also identified. That information will likely be a useful reference later when pursuing solutions. In general, action-oriented information should be at the front of the document with technical analyses at the back of the document. Information should be conveyed in an easy to read format, with images, tables, and graphics presenting as much information as possible.

There should be a clear process for ensuring buy-in of the final written summary. Partners should be given ample time to review the written materials and they should be approved using the decision-making process outlined in the governance agreement. Talk with planning group participants about what time they might need for review early in Planning Step 4 to account for what they need in the step timeline/schedule. Consider developing a consensus summary of Step 4 to document points of agreement and accompany the Water Solutions Report.

## Water Resource Solutions Toolbox (Forthcoming)

The following are categories of water resource solutions which should be explored by the planning group. The first nine (9) categories are described in the 2015 Draft Guidelines beginning on page 11 and should be reviewed there. The category *Water Markets and Mitigation* has been added to the original 9 categories. But, the list is not all-encompassing and deliberately includes an “other?” category recognizing that new and innovative solutions are possible, welcome, and needed. Additional resources are being developed to help groups explore potential solutions and understand how and when to employ them.

1. Efficiency and Conservation Measures
2. Built and Natural Storage
3. Water Right Transfers & Management Agreements
4. Water Reuse, Rainwater Harvesting, & Non-Traditional Methods
5. Infrastructure Maintenance & Replacement
6. Watershed & Habitat Restoration
7. Instream Flow Protections
8. Water Quality Protections
9. Monitoring
10. Water Markets & Mitigation
11. Other?

## Appendix A. Engagement Considerations

Engagement is a very important part of collaborative water planning. The planning group should continually evaluate how well it is engaging partners as well as stakeholders and citizens that aren't sitting at the planning table. As defined by the Center for Advances in Public Engagement:

*Public engagement is a process that brings people together to address issues of common importance, to solve shared problems, and to bring about positive social change.*

The Planning Group should build on their existing Communication and Outreach plan and develop engagement strategies specific to each planning step. Begin by listing out key audiences for each step.

Some things to keep in mind as you're developing engagement strategies:

**Know your audience.** When trying to understand and describe water needs, it is important think of your key audiences and what is important to them. Ask your partners about the different ways water is used in your place. Do some strategic outreach to water users to inform your approach. What do they care about? What messages will resonate with them? What are the barriers to their participation?

**Make it easy.** Before you engage these audiences think about how you meaningfully engage them while requiring minimal resources from them – make it easy for them to engage. Be sure to tailor your requests based on what you know about the different audiences and their ability to participate. Engagement may take significant coordination – we suggest having a coordinator for this who has limited other responsibilities within the planning effort.

**Be strategic.** Don't forget that any engagement effort provides an opportunity to inform people about the planning effort and build new partnerships. Make sure everyone you engage learns the basics about the planning effort and knows how to stay engaged if they are interested.

**Ask what they need.** Long-term engagement and partnerships are built on reciprocity. Make sure you ask what they need even if it has nothing to do with what you need – it may lead to interesting places.

**Circle back.** People generally want to know how their feedback and input is used. Make sure to build in continuous feedback loops so that people can understand how they have influenced the process or outcomes.

### Benefits of Engagement

- ✓ Helps people weigh a variety of perspectives and listen to each other's views.
- ✓ Builds common understanding, manages differences, and establishes direction for moving ahead on tough issues.
- ✓ Builds trust and improves communication between members of the planning group and the broader public.
- ✓ Creates new opportunities for citizens to become involved in public problem solving and decision making.



## Appendix B. Example Template for Water Solutions Report

- **CONCENSUS SUMMARY OF CRITICAL WATER ISSUES**
- **CONCENSUS SUMMARY OF SOLUTIONS/RECOMMENDED ACTIONS**
- **INTRODUCTION AND BACKGROUND**
  - Map of the planning area
  - Overview of planning process and stakeholder engagement
  - Optional: Summary of findings from the Planning Step 2 and 3 Reports
    - Hydrologic Setting
    - Instream, Municipal, Agriculture
    - Water Quality, Climate Change, Natural Hazards
    - Data Gaps
- **CRITICAL WATER ISSUES IDENTIFIED**
  - Description of how the critical water issues were determined
  - Description of data gaps that need to be filled
  - Prioritization of critical water issues
  - Critical water issue problem statements and metrics
- **EVALUATION OF POTENTIAL SOLUTIONS**
  - Method(s) used to evaluate potential solutions
    - What methods were selected
    - How the methods were selected/formed
    - How the methods were applied
  - Spectrum of potential solutions explored
  - How the potential solutions were explored
    - Background research and sources of information consulted
    - Expert presentations
    - Field tours
  - Results of evaluation
    - Potential benefits of each solution
    - Potential barriers to implementation of each solution
    - Opportunities identified for integrating solutions
    - Prioritized/tiered list of solutions
    - Recommended actions

## Appendix C. Case Studies (Forthcoming)

Case studies are currently under development. If you have a suggested case study please contact us at [placebasedplanning@oregon.gov](mailto:placebasedplanning@oregon.gov).

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