

# STATE OF COLORADO

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## Basin Implementation Plan DRAFT Guidance

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John W. Hickenlooper  
Governor

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**Background and Purpose:** Governor Hickenlooper issued an executive order calling for CWCB to work with the basin roundtables, IBCC, and other stakeholders to develop the Colorado Water Plan (CWP). The Basin

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Implementation Plans are a critical input into the CWP, as they will show how each basin plans to meet its future municipal, industrial, agricultural, recreational, and environmental needs. Each Basin Roundtable will help ensure the CWP is a bottom up process by being an avenue to get local project proponent input on which projects and methods are necessary and what other implementation strategies will be needed.

The 2010 State Water Supply Initiative (SWSI) determined that every basin faces a gap between supply and demand. The purpose of the Basin Implementation Plans is for each basin to identify projects and methods to meet basin-specific municipal, industrial, agricultural, environmental, and recreational needs. The Basin Implementation Plans will inform and help drive the Colorado Water Plan. They will review Identified Projects and Processes (IPPs) and the development of new projects and methods that meet the water supply gaps identified in SWSI 2010 and additional shortages outlined in section three. As part of this work, the Basin Roundtables (BRTs) will develop goals and measurable outcomes, needs, constraints and opportunities in each basin. In addition, the plan will identify specific implementation strategies that will be needed to fully realize the projects and methods described in section four and indicate how well the plan meets the goals and measurable outcomes as identified by each BRT.

The Basin Implementation Plans will focus on projects and methods recommended by the roundtables to address their consumptive and nonconsumptive needs. As such, they are intended to help basins proactively meet water needs, with currently planned projects, re-prioritized projects, and new projects, operational agreements, flow protections, or other methods. The Basin Implementation Plans will also likely include more detailed modeling analyses done via the CRWAS Continuation or WSRA-funded studies in basins outside of the CRWAS area.

**Relation to the Colorado Water Plan and SWSI:** The Basin Implementation Plans will be a fundamental component of the Colorado Water Plan as they will focus on strategies to meet roundtables' consumptive and nonconsumptive water supply needs. The Colorado Water for 21<sup>st</sup> Century Act established the Basin Roundtables and tasked them to develop a water supply needs assessment, conduct a water supply analysis and propose projects and methods to meet those needs. This work will provide a more detailed analysis and be geared towards implementing projects to meet those needs to address the gap in a meaningful way. This effort will be a foundational component of the update to SWSI and provide critical inputs into the Colorado Water Plan.

**Basin Roundtable and CWCB Responsibilities:** The description below outlines what resources CWCB can offer to the BRTs. Many roundtables may have a more active role than described in developing each element and may choose to conduct considerably more work than described below. To help with these efforts, BRTs can apply for grant funds to ask for further assistance on any component of the Basin Implementation Plans, including the optional items. A simplified WSRA application is available on the CWCB website.

**Outline:** Following is the table of contents for the Basin Implementation Plans. Each section presented below will include guidance on what the section should contain, information that the Colorado Water Conservation Board (CWCB) will provide to the Basin Roundtables (BRTs), and sections that are optional.

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## Executive Summary

The executive summaries will be included in the Statewide Water Supply Initiative Update (SWSI). The executive summary for each BRT will be between 3 to 5 pages.

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## Section 1: Basin Goals and Measurable Outcomes

This section provides an opportunity for BRTs to envision what they and the project proponents in their basin can and should accomplish. This section will highlight the water management challenges for the basin based on the 2011 Basin Reports, define the goals and measurable objectives, and describe how the goals and measurable outcomes address the gap identified in the SWSI and stand ready to inform the Colorado Water Plan. Examples could include:

**NC Goal:** Ensure Cutthroat Trout have sufficient protection to keep them from being listed as threatened / endangered

*NC Measurable Objective:* Protect 90% of Cutthroat Trout habitat with minimum instream flows.

**M&I Goal:** Develop projects and methods within the basin that meet as much of the future M&I gap as possible.

*M&I Measurable Objective:* Develop in-basin projects and methods that meet 150,000 acre feet of additional demand.

**Agricultural Goal:** Minimize the permanent loss of agricultural acreage to those acres being urbanized and those already planned for in the IPPs.

**Agricultural Measurable Objective:** Develop agriculture/M&I sharing projects for any agricultural transfers above the 20% agricultural dry-up threshold.

### **BRTs Responsibilities**

The BRTs will provide initial input to CWCB prior to the completion of an initial draft of basin goals and measurable outcomes and work jointly with staff through a subcommittee and the roundtable as a whole to finalize the basin's goals and objectives.

### **CWCB Responsibilities**

Based on information developed by the BRTs as part of their 2011 Basin Reports, SWSI 2010, SWSI 1, the IBCC efforts, and the Basin Roundtable Summits, and recent basin discussions CWCB can develop an initial draft of basin goals and measurable objectives for the BRT to review, revise, add, and subtract from. CWCB will support the BRTs in finalizing their sections to inform the Colorado Water Plan.

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## **Section 2: Evaluate Consumptive and Nonconsumptive Needs**

This section will summarize existing reports and information that may be relevant to the Basin Implementation Plans (e.g. SWSI 2010 demands, IPPs, vulnerabilities from the drought plan). The information summarized for this portion of each Basin Implementation Plan will help BRTs measure how well they are currently meeting their goals and objectives as well as identify methods to meet those needs.

### **BRTs Responsibilities**

The BRTs will conduct an inventory of existing water planning information that may be relevant to the Basin Implementation Plan for their basin (e.g. descriptions of basin operations, planning documents identifying water management solutions, and environmental and recreation water-related studies/plans).

The BRTs will review the data summary after CWCB incorporates the information into the report section.

### **CWCB Responsibilities**

CWCB can summarize the information noted as important by the BRTs. CWCB can compare the list of information sources developed by the BRTs with the Water Supply Reserve Account (WSRA) grants, drought planning efforts and other relevant documents for each basin to see if there are relevant WSRA studies or projects that might be incorporated.

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## **2.1 Nonconsumptive Needs**

This section will review nonconsumptive needs, based on the work of the BRTs and SWSI 2010. It will reassess this data in the context of the BRTs' goals and measurable outcomes. Using the nonconsumptive project and methods database, the BRTs can work to understand how much of their nonconsumptive needs are being met through existing projects and methods. For instance, data could indicate that 80% of cutthroat trout currently enjoy protection in the basin/identified reaches, leaving a remaining target of 10% to meet the BRT's goal. This effort is further described in the Nonconsumptive Toolbox.

### **BRTs Responsibilities**

The BRTs will conduct an inventory of existing water planning information that may be relevant to the nonconsumptive needs for their basin (e.g. "A Way Forward" on the Dolores, the Watershed Flow Evaluation Tool reports for the Colorado and Yampa/White roundtables, and other environmental and recreation water-related studies/plans).

Based on the information from this inventory and provided by CWCB, the BRTs should address the following questions:

- For each focus segment, are there projects or methods in place for the attributes?
- If they are in place, are they sufficient to maintain/sustain the attributes?
- How well do existing and planned projects and methods meet the need defined in the goals and measurable outcomes section?

BRTs may need to form committees to address these questions. BRTs will submit their answers to the CWCB to inform the Colorado Water Plan and for inclusion in SWSI.

### **CWCB Responsibilities**

CWCB will incorporate the BRT inventory with additional information developed as part of SWSI 2010 and will provide the following information to the BRTs:

- Nonconsumptive project and method database information for each basin (provided as part of Basin Needs reports)
  - Information on the protection that the projects and methods may provide across the basin (provided as part of Basin Needs reports)
  - Focus area mapping (provided as part of Basin Needs reports)
  - Mapping that overlays the projects and methods and focus area mapping (provided in Nonconsumptive Toolbox)
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## **2.2 Consumptive Needs**

This section will provide an update to the Consumptive Needs Assessments that were developed as part of SWSI 2010 and will include vulnerabilities from the State Drought Plan.

### **BRTs Responsibilities**

The BRTs will conduct an inventory of existing water planning information that may be relevant to the consumptive needs for their basin (e.g. agricultural needs studies and other municipal, industrial, and agriculture water-related studies/plans).

The BRTs will review information and provide feedback on the draft information prior to incorporation into their respective Basin Implementation Plans.

### **CWCB Responsibilities**

CWCB will incorporate the BRT inventory with additional information developed as part of SWSI 2010 and summarize existing information, breaking it into localized needs for the BRTs to review.

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## **Section 3: Evaluate Consumptive and Nonconsumptive Constraints & Opportunities**

The purpose of this section is to help BRTs better understand the constraints and opportunities within their basins to meet their identified needs. The components of this section may include:

- Consumptive and Nonconsumptive Constraints and Opportunities
    - 3.1 Analysis of Constraints and Opportunities Based on Existing Data
    - 3.2 Water Rights Administration Policies and Procedures (Optional)
    - 3.3 Hydrologic Modeling (Optional)
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### **3.1 Analysis of Constraints and Opportunities Based on Existing Data**

The purpose of this task is to understand where there are opportunities for projects and methods to be implemented and where constraints exist that currently limit solutions. The task will utilize current water operations in the basin under dry, wet, and average hydrologic conditions and use existing data, tools, and methodologies. For example, a BRT could have a measurable outcome to “Protect 90% of Cutthroat Trout habitat with minimum instream flows.” The nonconsumptive needs section could indicate that ten percent more habitat needed to be protected. Section 3.1 would then use existing data to determine which stream reaches have the best opportunities for additional protections and which are constrained. The same would be the case for finding opportunities and constraints for consumptive projects and methods.

Within this task, constraints within the basin will be identified and described. Examples of these constraints include:

- Competing or conflicting objectives among local plans
- Conflicting means of achieving the objective among local plans, all portions of the region are not equally represented in local plans

- Jurisdictional conflicts
- Regulatory constraints
- Recreational opportunities, issues and impacts
- Environmental opportunities, issues and impacts

### **BRTs Responsibilities**

The BRTs will work with CWCB staff and consultants to identify the pinch points, other constraints, and opportunities. The BRTs will ensure that the information is accurate and useful once it is summarized and incorporated into the report.

### **CWCB Responsibilities**

The CWCB will work with the BRTs to provide the following information:

- For the major water users in the basin diversions, storage, exchanges and use will be summarized on a monthly basis utilizing existing information (i.e. DSS, Basin Needs Assessments, etc).
- Based on existing information from the Department of Water Resources (DWR), U.S. Geological Survey (USGS), CWCB Decision Support System, and the Colorado River Water Availability Study (CRWAS) Phase 1 CWCB will summarize hydrologic information at key locations in the basin related to the water uses above for wet, dry and average hydrologic conditions
- Instream flows and flow information from programmatic biological opinions
- Mapping summarizing water uses (municipal and agricultural) and hydrology
- Mapping summarizing where the opportunities are to meet nonconsumptive goals and measurable outcomes
- Summary of the constraints and opportunities within the basin

## **3.2 Water Management and Water Administration (Optional)**

The purpose of this activity would be to provide a common understanding of water administration. A BRT could then utilize this common understanding to refine and develop its Basin Implementation Plan report accordingly.

This task is optional and the CWCB will not provide direct support to the roundtables on this task. This effort might be funded through a Water Supply Reserve Account grant. In addition, the CWCB will explore the availability of support under the Colorado River Water Availability Study continuation.

### **BRT's Responsibilities**

Review of existing CWCB and DWR documents addressing water resource management and water administration. Review of cataloged water management information in the Basin Memorandums that were completed as part of the Colorado Decision Support System (CDSS).

The outcome and deliverable for this task would be an inventory listing the major controlling structures within each Water Districts, the period when general water administration begins and ends, acres irrigated, major reservoirs, major basin imports and exports, and any current compact administration within the basin.

### **CWCB Responsibilities**

In addition to exploring the funding opportunities for this task (identified above), CWCB will make available any published documents or reports on water resource management and water administration.

## **3.3 Hydrologic Modeling (Optional)**

The purpose of this task would be to use modeling, such as the CWCB's CDSS, to compare or refine projects and methods. Refinement of a project could be used to optimize operations so that impacts are mitigated or the project can be operated to serve multiple purposes. Modeling can also be used to understand how projects and methods perform under various hydrological scenarios.

Where no existing CDSS modeling is available, models could be constructed using the existing CDSS model framework and a data-centered modeling approach. Deviations from this approach would require CWCB approval.

This task is optional and the CWCB will not provide direct support to the roundtables on this task. This effort might be funded through a Water Supply Reserve Account grant. In addition, the CWCB would explore the availability of support under the Colorado River Water Availability Study continuation.

### **BRT Responsibilities**

The BRTs would develop a request through a WSRA grant application or to CWCB's CRWAS team to model projects and methods. Alternative modeling would require CWCB approval.

### **CWCB Responsibilities**

CWCB would provide technical support in the use of the CDSS modeling framework, provide existing data set created under CRWAS, North Platte Planning Model development, SPDSS, RGDSS and ArkDSS. For the Colorado River basin BRTs, CWCB could have direct interaction through CRWAS continuation. In addition, CWCB would provide the IBCC scenarios.

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## **Section 3.4: Current and Future Shortages Analysis**

Previous versions of SWSI have focused on a “projects and methods” gap using a firm-yield analysis. However, many stakeholders have expressed interest in also analyzing a water supply gap, or shortage. Based on information developed as part this section, a shortage analysis will be conducted. For those BRTs that are including the optional tasks, they should also include a shortage analysis in those optional efforts. The shortage analysis will summarize where municipal and industrial, agricultural, and nonconsumptive needs may have shortages under varying hydrology such as wet, dry, and average conditions. For those basins that do not conduct the optional tasks, the CWCB will assist in summarizing known shortages that exist based on existing information.

CWCB will use the shortage analysis to develop a basinwide and statewide shortage and gap analysis to include in the next SWSI update. In addition to the M&I gap, the gap analysis will identify agricultural and nonconsumptive shortages and gaps.

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## **Section 4: Projects and Methods**

This section is the heart of the Basin Implementation Plans, identifying the projects and methods needed to meet the roundtables' consumptive and nonconsumptive needs. As part of this task, the BRTs should update and refine their list of consumptive and nonconsumptive identified projects and processes. Because every roundtable has a gap above and beyond their IPPs, the BRTs should also identify potential new structural and non-structural solutions to their gaps and shortages. For those BRTs including the optional tasks in Section 3, they should also include an in-basin solution analysis in those optional efforts. Examples of structural solutions include habitat restoration, new storage, enlarged storage, conveyance, direct reuse, and treatment. Examples of nonstructural solutions could include reservoir reoperation, voluntary flow management agreements, instream flow donations, conservation, and reuse by exchange. For those basins that do not conduct the optional tasks in Section 4, the CWCB will assist those BRTs in summarizing potential in-basin solutions based on the qualitative shortage analysis from section 3.4. The CWCB will assist the Roundtables in identifying projects for the major water sectors as well as multi-purpose projects.

The section will include the following subsections

- 4.1 Education, Participation, and Outreach
- 4.2 Critical Community Watershed Wildfire Protection Plans
- 4.3 Conservation Projects and Methods
- 4.4 New Multi-Purpose, Cooperative, and Regional Projects and Methods
- 4.5 M&I Projects and Methods (i.e. projects, conservation, reuse, drought planning, etc.)
- 4.6 Agricultural Projects & Methods

- 4.7 Nonconsumptive Projects and Methods
- 4.8 Interbasin Projects and Methods (optional)

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### **Section 4.1: Education, Participation & Outreach**

In 2013 and 2014 the Public Education, Participation, and Outreach Workgroup of the IBCC and the Basin Roundtable Education Liaison's will be working with their basins to develop Education Action Plans that reach out to decision makers. It will let the decision makers in the basin understand how they are represented, the status of the basin's consumptive and nonconsumptive needs, planned projects, current river operation and opportunities and constraints associated with different hydrologic cycles. Where appropriate, this effort can also help roundtables' outreach to potential project proponents for the new projects and methods needed to meet future water needs to determine if they are interested in being partners or the lead entity.

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### **Section 4.2: Watershed Health**

BRTs should identify watershed protection projects and methods that would protect critical water supplies from being harmed by fire or other hazards or mitigate damages already incurred. These same projects should also consider the environmental benefits. Watershed/Wildfire Assessments provide strategies for water providers, land management agencies, private landowners, environmental and watershed groups, state and local governments, local fire authorities, and water users that identify and prioritize the type and specific location of treatments necessary to mitigate the impacts that occur to hydrology in a post-fire environment. The plans provide specific actions needed to protect reservoirs, intakes, water transportation and distribution structures, and other facilities from high-severity wildfires. They identify locations of hazardous fuels and areas prone to post-fire flooding. Fuel treatments are designed to protect water infrastructure. These projects and methods should be implemented through a collaborative process with the parties described above. Pre-fire mitigation strategies should identify site locations for sediment check structures, contour log felling, sediment catchment basins, constructed alluvial fans, and other treatments designed dissipate flood energy. Monitoring of pre-fire treatments after a fire is critical to determine levels of success. Basin Roundtables should identify existing plans and assessments. Watersheds critical to water supply that do not have plans or assessments already in place should be addressed. As part of this work, BRTs that have critical water supply watersheds in other basins, should partner with the other basins to determine the best approach.

#### **BRT Responsibilities**

BRT members will review existing data, and determine if there are additional watersheds that need assessment.

#### **CWCB Responsibilities**

CWCB will provide data, maps, assessments, and plans currently in existence.

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### **Sections 4.3 through 4.8: Multi-Purpose, Conservation, M&I, Agricultural, Nonconsumptive, and Interbasin Projects and Methods**

BRTs should identify projects and methods that meet the needs. The focus of the basin implementation plans are on in-basin projects. One of the goals identified by SWSI and the IBCC is to develop additional multi-purpose, regional, or cooperative projects that meet the needs. These projects explored in section 3.2 should meet the needs identified by the BRTs. For sections 3.2, 3.3, and 3.4 projects whose primary purpose is M&I, agriculture, or nonconsumptive needs, respectively, should be identified, including any updates to the IPPs.

As part of section 4.4, each roundtable should determine how to best move forward enhanced levels of conservation in their basin and how to utilize the conserved water. Basin conservation goals, standards, or model conservation programs applicable for the basin should be incorporated as part of this work.

In addition, roundtables may consider out-of-basin projects that require cross basin cooperation as part of 4.8. This sub-section is optional, as much of this work is being developed by the IBCC in coordination



with the BRTs. Working in partnership with other basins from which the water may come and who may also utilize the water is encouraged.

If available, the BRTs should provide for each sub-section cost information, potential partners, lead entity, volume of water, and timing for any new projects and methods that are added to the list. The costs could include capital costs, debt service, and annual operating and maintenance expenses for the planning horizon.

### **BRT Responsibilities**

The BRTs will assist CWCB in updating the IPP list by reaching out to project proponents in their basin. For additional projects that may be needed, BRTs will be supported in examining the opportunities and constraints within their basin and going through a decision process to determine which projects and methods should be implemented. They will request to the CWCB the need for any stakeholder meetings to further develop projects and methods.

### **CWCB Responsibilities**

CWCB will provide the existing IPP lists and information. In addition, CWCB will help host a few stakeholder workshops for each basin to further explore which projects and methods could be developed to meet the basin's needs. As part of the Basin Needs Decision Support System (BNDSS), CWCB will include any updates and new projects and methods into the database.

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## **Section 5: Implementation Strategies for the Projects and Methods**

The Basin Roundtable Implementation Plan will identify water management challenges and opportunities within the Basin and provide a framework for meeting the challenges. Ensuring reliable water supplies is one of the key fundamental actions established by this analysis. The CWCB will work with the BRTs to address their recommendations for the path forward including cross-basin recommendations and collaboration opportunities. The section of the Basin Implementation Plan report may include:

- Description of any cross-basin recommendations or needs for additional cooperation
  - Description of what is needed to fully implement the projects and methods. This may include:
    - Identifying strategies to ensure public education and acceptance
    - Identifying funding mechanisms and strategies for implementing water supply projects and methods
    - Additional feasibility analysis and identifying partnerships/sponsors
  - Timelines for identified projects and key tasks/milestones
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## **Section 6: How the Plan Meets the Roundtables' Goals and Measurable Outcomes**

This section describes how the projects and methods identified in the plan meet the gaps and water supply shortages, in relation to the goals and measurable outcomes. This work will be further refined in SWSI as demands are updated, but it provides an initial benchmark to measurably determine how well the plan would meet the basins' needs. This will inform SWSI and the State Water Plan on how we are meeting our municipal, industrial, agricultural, environmental and recreational gaps in a meaningful way.

### **BRT Responsibilities**

The BRTs will work with CWCB to complete this section.

### **CWCB Responsibilities**

CWCB will help BRTs develop an initial draft and work with them to further refine this section.