# STATE OF COLORADO


## Colorado Water Conservation Board
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TO: Colorado Water Conservation Board Members

FROM: Becky Mitchell, Chief, Water Supply Planning Section
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SUBJECT: **Agenda Item 15, March 18-19, 2014 Board Meeting**
**Water Supply Planning Section – Statewide Water Supply Initiative 2016**

This is an informational item. No Board action is required.

**Background**
Progress continues on the 2016 iteration of the Statewide Water Supply Initiative (SWSI 2016). At the January 2014 Board meeting, staff presented the new outline, which incorporates elements of scenario planning, adaptive strategies, and the Basin Implementation Plans (BIPs).

Included in the Board packet is the SWSI Glossary. This proposed inclusion to SWSI 2016 is intended to clarify and define the more technical aspects of the report, while providing an easy-to-use reference guide for commonly used water planning terms. The Glossary has been vetted by key CWCB staff members for technical accuracy and readability.

Staff invites comments and edits from Board members on the content and utility of the SWSI 2016 Glossary.

# SWSI GLOSSARY:

- **Municipal and Industrial Related Terms:**
  - **Municipal and Industrial (M&I) Demand:** Water demand for municipal and industrial uses within a municipal distribution system that can be potable, raw and/or reuse water. This includes residential (single family and multi-family) and non-residential (commercial, industrial, institutional) uses of water within a water provider's service area in addition to water loss present in the distribution system.
  - **Current M&I Water Demands:** Current treated water deliveries reflective of a typical water year.
  - **M&I Water Usage Rate:** gallons per capita per day
  - **Municipal and Industrial (M&I) Water Efficiency:** Water efficiency includes the practices, techniques and technologies that extend water supplies either directly through water savings or through substituting alternative supplies such as reuse. M&I water efficiency includes both system demands and customer water demands within a water provider's system.
  - **Passive Conservation:** Reductions to the M & I water demand from the natural replacement of indoor plumbing fixtures due to the impacts of plumbing codes, ordinances and standards that change the marketplace and improve the efficiency of water use.
  - **Future Population Projection:** One of the low, medium or high population projections dependent on which scenario is used.
  - **Future Municipal and Industrial (M&I) Demand:** Water demands for municipal and industrial uses in 2050. This will vary for low, medium, and high projects dependent on the drivers in the scenarios. This variable is defined by M&I water usage rates applied to future population projections while subtracting passive conservation.
  - **Net New M&I Demands:** Net new water demands for municipal and industrial uses in 2050 above and beyond current use that reflect the increase in M&I demands. This will vary for low, medium, and high projects dependent on the drivers in the scenarios. Any decreases in available supplies for current uses will also be factored into this value.
  - **M&I Identified Projects and Processes (IPPs):** IPPs must meet the following criteria
    - The project or method has a project or method proponent.
    - When the proponent is a retail water provider, the project or method is being used to meet the water supply needs of its customers by 2050.
    - When the project proponent is a wholesale water provider, at least one retail water provider must express interest in writing and plan on using the project or method to meet the water supply needs of its customers by 2050.
    - The project or method must have at least preliminary planning, design, conditional or absolute water rights, rights of way, and/or negotiations captured in writing with local governments that the water project could affect.
    - The water supply needs must be identified and included in the Basin Implementation Plans and/or SWSI documents.
  - **M&I No & Low Regrets:** The minimum amount of water needed from each portfolio element regardless of which future scenario Colorado may face. This is equivalent to the following
    - 80% success rate for the IPPs statewide
    - 50,000 acre feet per year for the east slope of agricultural water derived from alternative transfer methods plus another 25,000 acre feet of reuse on that water
    - 35,000 acre feet per year of unallocated water on the west slope for west slope uses
    - 167,000 acre feet per year of active conservation being used to meet future M&I needs due to municipal growth.

    No and low regrets were not used as part of SWSI 2010.

- **M&I Gap:** The amount of future M&I demands not met by the no and low regrets. This varies both by scenario and by how much the no and low regrets are implemented.
- **M&I New Proposed Projects and Methods:** Additional projects and methods identified by the roundtables that could meet future water needs, but don't meet the criteria of IPPs.

- **Self Supplied Industrial Related Terms**
  - **Self Supplied Industrial (SSI) Needs:** Water needs for self supplied industrial uses in 2050. This includes demands for large industry, snowmaking, thermoelectric power generation, energy development, and other extraction industries. This will vary for low, medium, and high projects dependent on the drivers in the scenarios.
  - **SSI Identified Projects and Processes (IPPs):** IPPs must meet the following criteria
    - The project or method has a project or method proponent.
    - The proponent plans for the project or method to be used to meet the water supply needs of its SSI needs by 2050.
    - The project or method must have at least preliminary planning, design, conditional or absolute water rights, rights of way, and/or negotiations captured in writing with local governments which the water project could effect.
    - The water supply needs must be identified and included in the Basin Implementation Plans and/or SWSI documents.
  - **SSI Gap:** The amount of future SSI needs not met by the SSI IPPs. This varies both by scenario and by how much the IPPs are implemented.
  - **SSI New Proposed Projects and Methods:** Additional projects and methods identified by the roundtables that could meet future SSI water needs, but don't meet the criteria of IPPs.

- **Agricultural Related Terms:**
  - **Current Irrigated Acres:** Acres under irrigation by either surface or groundwater as identified by the most recent inventory.
  - **Future Irrigated Acres:** Anticipated acres under irrigation by either surface or groundwater.
  - **Irrigation Water Requirement:** Volume of irrigation water required from surface or ground water diversions to completely satisfy a crop's consumptive needs associated with a specific acreage. Calculated as potential evapotranspiration less effective precipitation and stored winter precipitation.
  - **Water Supply Limited Consumptive Use:** The amount of water actually used by the crop, limited by water availability; both legal and physical.
  - **Agricultural Irrigation Shortage:** The difference between Water Supply Limited Consumptive Use and Irrigation Water Requirement. A shortage reflects the fact that consumption to the full extent of IWR was not realized, and reveals the difference between what could be achieved if yields and irrigable acreage were maximized and what is actually produced under existing legal and physical conditions.
  - **Non-irrigation Agricultural Demand:** Agricultural demand that is not directly associated with crop consumption that includes three other types of consumptive use that are associated with agricultural activity: 1) livestock consumptive use, 2) stockpond evaporation, 3) losses incidental to delivering irrigation water (incidental losses).
  - **Current Agricultural Demand:** The average amount of water consumptively used by crops on lands currently under irrigation.
  - **Future Agricultural Demand:** The average amount of water projected to be consumptively used by crops on lands expected to be under irrigation at some point in the future.
  - **Agricultural IPPs (for both irrigation and non-irrigation demand):** IPPs must meet the following criteria:
    - The project or method has a project or method proponent.

        - When the proponent is a retail water provider, the project or method is being used to meet the water supply needs of its customers by 2050.
        - When the project proponent is a wholesale water provider, at least one retail water provider must express interest in writing and plan on using the project or method to meet the water supply needs of its customers by 2050.
        - The project or method must have at least preliminary planning, design, conditional or absolute water rights, rights of way, and/or negotiations captured in writing with local governments that the water project could affect.
        - The water supply needs must be identified and included in the Basin Implementation Plans and/or SWSI documents.
    - **Agricultural New Proposed Projects and Methods:** Additional projects and methods identified by the roundtables that could meet future water needs, but don't meet the criteria of IPPs.
    - **Agricultural Gap:** The difference between what the basin indicates it wants to achieve with regard to agriculture, as defined in its goals and measurable outcomes, and what projects and methods it has determined could be implemented to meet those needs.

- **Total Consumptive Needs Related Terms**
    - **Total Consumptive Needs:** Water needs for municipal and industrial (M&I), self supplied industrial (SSI), and agricultural uses in 2050. This will vary for low, medium, and high projects dependent on the drivers in the scenarios.
    - **Total Consumptive Identified Projects and Processes (IPPs):** The sum of IPPs for M&I, SSI, and agriculture.
    - **Total Consumptive Needs Gap:** The amount of future consumptive needs not met by the IPPs or no and low regrets. This varies both by scenario and by how much the IPPs and no and low regrets are implemented.

- **Scenario Planning Relate Terms:**
    - **Scenarios:** Plausible alternative futures
    - **Portfolios:** Different combinations of strategies to address future M&I demands
    - **Drivers:** Drivers are forces or the factors beyond the control of the water community that will likely have the greatest influence on the future state or scenario of Colorado and thereby Colorado's water management over time. Because not all driving forces influence the system to the same degree or contribute the same level of uncertainty, primary drivers that represent the most uncertain and are of the most importance were developed. Primary drivers are water supply, water demand, and social values. Secondary drivers influence the primary drivers and include population growth, climate change, and other influencing factors.
    - **Adaptive Strategies:** The process of using sign posts and portfolios to develop phased implementation of future projects and methods
    - **Sign Post:** Decision points based on the primary drivers for when strategies will need to be implemented

- **BIP Related Terms**
    - **Goals:** Broad objectives each basin would like to accomplish in order to meet its consumptive and nonconsumptive needs as well as other topics critical to the basin.
    - **Measurable Outcomes:** How each goal can be measurably achieved.
    - **Strategies:** Broad categories to meet the goals that refer to the type of project and method, such as agricultural transfers, reuse, identified projects and processes, transbasin diversions, and in-basin projects.

- **Actions:** Implementable activities that the basin recommends doing to meet its measurable outcomes and goals.

- **Water Supply Related Terms:**
  - **Climate Change:** Climate change refers to a change in the state of the climate (e.g. temperature, precipitation, or hydrology) that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as: 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes.
  - **Climate Variability:** Climate variability refers to variations in the mean state and other statistics (such as standard deviations, statistics of extremes, etc.) of the climate on all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forces (external variability).
  - **Historical hydrology-** Recorded streamflows from the observed time period.
  - **Paleohydrology-** Hydrologic record determined through methods such as tree ring studies that extends well beyond the observed record
  - **Climate-adjusted Hydrology -** An adjustment to the historical natural streamflow regime to reflect conditions that may occur under an altered climate.
  - **Surface Water Supply Availability:** Water that is legally and physically available to meet current or future consumptive or nonconsumptive water needs. The availability of water varies depending on whether a scenario is considering 20th century observed hydrology, hot and dry climate change, or somewhere in between the two.
  - **Groundwater Supply Availability-** Water located below ground that is legally and physically available to meet current or future consumptive or nonconsumptive water needs.

- **Nonconsumptive Related Terms:**
  - **Nonconsumptive Attribute:** An environmental or recreational value, such as species, community of species, or other value deemed as important to the basin roundtable. Examples include Colorado cutthroat trout, important fishing area, rare wetland plant community, and important boating area.
  - **Nonconsumptive Need:** The physical and chemical demand needed to sustain a nonconsumptive attribute in a specific location defined by the basin roundtables as being important. This could include flow, channel morphology, or temperature levels.
  - **Focus Area:** A stream reach or watershed identified by the basin roundtables as having important nonconsumptive attributes.
  - **Nonconsumptive IPP:** Nonconsumptive IPPs must have the following criteria:
    - The project or method has a project or method proponent.
    - The project proponent plans to utilize the project to meet nonconsumptive needs by 2050.
    - The project or method must have at least one of the following: preliminary planning, design, conditional or absolute water rights, rights of way, and/or negotiations captured in writing with local governments or consumptive water users that the project could affect.
    - The nonconsumptive needs must be identified and included in the Basin Implementation Plans and/or SWSI documents.

- **Nonconsumptive New Proposed Project or Method:** Additional projects and methods identified by the roundtables that could meet future water needs, but don't meet the criteria of IPPs.
- **Nonconsumptive Gap:** The difference between what the basin indicates it wants to achieve with regard to meeting its nonconsumptive needs, as defined in its goals and measurable outcomes, and what projects and methods it has determined could be implemented to meet those needs.