FACT SHEET

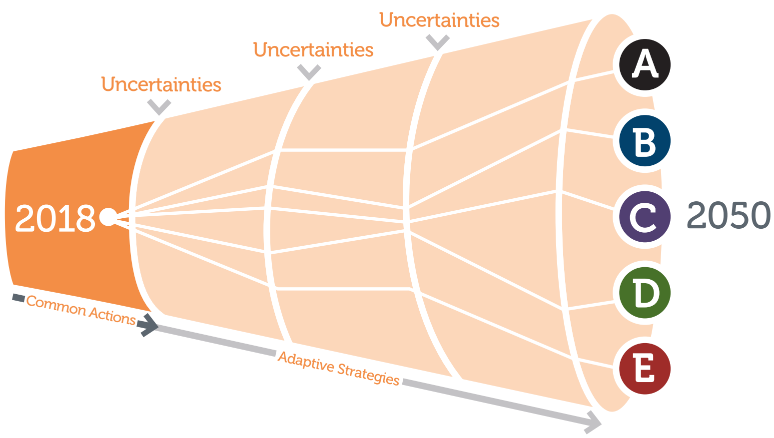
Scenario Planning & Gap Analysis Methodology

This fact sheet summarizes new approaches and planning concepts that are being adopted for the SWSI Update

Scenario Planning

Scenario planning relies on several key driving forces to build multiple, plausible futures (or "scenarios"). In contrast, traditional "predict-and-plan" approaches develop a single future.

Given the uncertainties of future water supply and demand, the CWCB adopted a scenario planning approach for the SWSI Update. The approach assumes that the future is unknown, and it provides flexibility in responding to various future conditions. Rather than trying to predict the future by looking at the past, scenario planning allows the CWCB and stakeholders to identify and account for key drivers and uncertainties within the planning period. Common actions applicable to all futures can be implemented, and adaptive strategies can be developed to meet future needs depending upon future conditions.

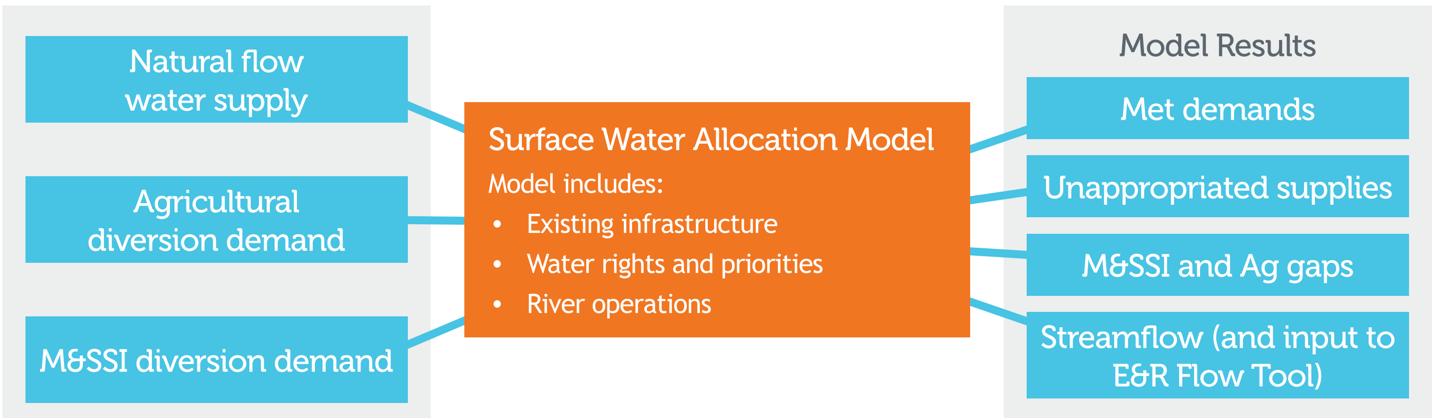


Gap Analysis

In previous iterations of SWSI, the gap analysis considered net new municipal and self-supplied industrial (M&SSI) water needs and anticipated yield from Identified Projects and Processes (IPPs) in the year 2050. A range of 2050 M&SSI gaps were calculated by using high and low baseline water demands combined with higher and lower assumptions regarding the success rate of IPPs. Agricultural gaps were also calculated and were defined at the field level as the difference between the irrigation water requirement and water supply limited consumptive use (in SWSI 2010, this difference was termed as a "shortage" rather than a "gap").

For the SWSI Update, the gap will be defined somewhat differently. For the purposes of the SWSI Update, a "gap" occurs when legally and physically available water supplies cannot meet diversion demands. The gap is the difference between diversion demand and water supply. The gap will be a hydrologic gap and will not consider Identified Projects and Process that may be effective at meeting the agricultural or municipal gap; however these may be evaluated in more detail during future updates of BIPs.

The updated gap evaluation methodology will utilize Colorado's Decision Support System (CDSS) surface water allocation models where available and other analysis tools to estimate future hydrologic gaps. The models incorporate and consider water supplies, existing infrastructure, diversion demands, water rights, river operations, and the effects of climate change (applicable to certain scenarios). The models then use this information to allocate water to meet demands based on the priority of water rights. The output of the modeling will be a range of gaps for M&SSI and agricultural diversion demands under wet, normal, and dry conditions. The graphic below illustrates the gap analysis process:



Development and Quantification of Planning Scenarios for the SWSI Update

From 2012 to 2013, The Interbasin Compact Committee (IBCC) developed five planning scenarios based on nine high-impact drivers that will affect future supplies and demands (the drivers are listed in the table below). The scenarios represent how Colorado's alternative water futures may look in 2050, even though the actual future at that time will likely contain a mixture of multiple scenarios. The figure below summarizes how the high-impact drivers are contemplated to change under each scenario and depicts how the drivers generally relate to each other.

The SWSI Update will incorporate the planning scenarios developed by the IBCC, and gaps will be estimated for each scenario. Scenario planning is a new addition to SWSI, and a challenge in this update will be quantifying, modeling, and evaluating the high-impact drivers. The high-impact drivers affect water demands and water supplies in different ways in each planning scenario. Demands and supplies will be quantified for each planning scenario and evaluated using the modeling and analysis tools described on the previous page to estimate gaps, unappropriated supplies and demands that can be met in the future under each scenario. Specific methodologies for quantifying demands and supplies are presented in other fact sheets.

Drivers	A Business as Usual	B Weak Economy	C Cooperative Growth	D Adaptive Innovation	E Hot Growth
A. Economy/ Population					
B. Urban Land use	No change	No change	Higher density	Higher density	Lower density
C. Climate Status/ Water Supply	Same as 20th century observed	Same as 20th century observed	Between hot and dry and 20th century observed	Hot and dry	Hot and dry
D. Energy Water Needs	Low (no oil shale)	Moderate (no oil shale)	Low (no oil shale)	Low (no oil shale)	High (oil shale)
E. Agricultural Conditions	Total ag water demands slightly higher • Decrease in irrigated acres due to urbanization • Ag exports and demands lower • Ag is less able to compete with urban areas for water	Total ag water demands decrease • Decrease in irrigated acres due to urbanization • Ag exports and demands constant • Ag is less able to compete with urban areas for water	Total ag water demands slightly higher • Slight decrease in irrigated acres due to urbanization • Ag exports down and local demands up • Ag is better able to compete with urban areas for water • Increased ET due to climate change	Total ag water demands slightly higher • Slight decrease in irrigated acres due to urbanization • Ag exports down and local demands up • Ag is better able to compete with urban areas for water • Increased ET due to climate change	Total ag water demands higher • Significant decrease in irrigated acres due to urbanization • Ag exports and demands high • Ag is better able to compete with urban areas for water • Increased ET due to climate change
F. Availability of New Water Efficiency Technology	• M&I Moderate • Ag: Efficiencies are increased	• M&I Moderate • Ag: Efficiencies are increased	• M&I High • Ag: Efficiencies are increased	• M&I High • Ag: Much higher efficiencies are implimented	• M&I Moderate • Ag: Efficiencies are increased
G. Social/ Environmental Values	No change	No change	• Increased awareness • Increased willingness to protect environment and stream recreation	• Increased awareness • Increased willingness to protect environment and stream recreation	• Full use of resources • Low willingness to protect environment and stream recreation
H. Regulatory Constraints	Regulation Deregulation No change	Regulation Deregulation No change	Regulation Deregulation Increased	Regulation Deregulation Increased but expedited	Regulation Deregulation Reduced
I. M&I Water Demands	Lowest of the five scenarios	Middle of the five scenarios	Second lowest of the five scenarios	Second highest of the five scenairos	Highest of the five scnarios

FOR MORE INFORMATION

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http://cwcb.state.co.us/water-management/water-supply-planning/Pages/SWSIUpdate.aspx

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