Memorandum

To: *IBCC Members*

From: *Eric Hecox*

Date: *December 12, 2008*

Subject: *Visioning Process*

This document describes the Interbasin Compact Committee (IBCC) visioning process. It is a revised document based on Basin Roundtable comments and the discussions at the October IBCC/Colorado Water Conservation Board (CWCB) joint meeting. The document contains the following:

- A description of the Visioning Process
- A Draft Vision Statement
- Draft Vision Goals
- Water Supply Strategies that will be evaluated
- Discussion material for the evaluation of Conservation, Agricultural Water Transfers, and Compact Development and Transbasin Diversions
- The next steps for developing and evaluating strategies
- Overall schedule for 2009

Colorado's Water Supply Future Vision Exercise

Vision

If we let Colorado's water supply continue to develop according to current trends and existing policy, what will our state look like in 50 years? Is this our vision of the future of Colorado? Is this future inevitable? If it is not, what can and should we do to effect changes? These are questions the Interbasin Compact Committee (IBCC) is addressing through their water supply visioning exercise.

The purpose of the IBCC's visioning exercise is to develop a Vision Statement for Colorado's water supply future that recognizes both the opportunities and the difficult water supply tradeoffs facing the state. (The visioning process will also develop and evaluate water supply strategies for achieving this vision.)

After two rounds of discussions, the IBCC generally agrees that:

1. Colorado needs to provide an adequate water supply for our citizens and the environment. In doing so, the status quo approach to water supply will not lead to a desirable future for Colorado.
2. Water supply in Colorado is transitioning from an era of undeveloped resources to an era of managing a more developed resource. Future water decisions will increasingly involve reallocating water between uses.
3. Water is not an independent issue. Colorado's water supply future is tied to the larger economic, demographic, and cultural trends of our state.
4. A range of strategies are needed help meet our state's consumptive and nonconsumptive water supply needs. These include a combination of demand side strategies such as conservation, supply side strategies such as storage and agricultural transfers, and regional coordination strategies.
5. The IBCC should work with the Colorado Water Conservation Board (CWCB) to examine the trade-offs, risks, and uncertainties associated with different strategies and combination of strategies.
6. A statewide Vision Statement should be developed in combination with an evaluation of water supply strategies.

Visioning Process

A statewide vision for Colorado's water supply future has three parts: 1) a Vision Statement; 2) Vision Goals; and 3) Water Supply Strategies. These terms are specifically defined as:

1. **Vision Statement** – This represents, in the broadest sense, the overall directive or mission. It describes "what" is to be achieved.

2. **Vision Goals** – These define the goals of the vision, and more importantly represent the benchmarks for the evaluation of strategies. The Vision Goals will play an important role in evaluating the performance of water supply strategies. This represents the "why" portion of the vision.

3. **Water Supply Strategies** – Strategies represent "how" we will achieve the Vision Statement. The performance of strategies is compared against the Vision Goals in order to see how well we are doing in achieving the overall Vision Statement. These strategies will lead to implementation.

Elements of the Visioning Process

The main rule is that the "what," "why," and "how" builds on each other, but are not redundant.

This visioning process is modeled after an integrated planning process and provides a path to sustainability. The elements of an integrated resource planning process involves active stakeholder participation, examines demand-side management as vigorously as supply options, incorporates multiple criteria in decisionmaking (e.g., reliability, cost, environment, quality of life, recreation, etc.), explores risk and uncertainty, and takes a long-term perspective (30 to 50 years).

This visioning process also employs elements of sustainability including finding the right balance between economic, environmental, and social needs; taking a holistic perspective; and consideration of the long-term. This visioning process promotes sustainable solutions because:

- It focuses on the long-term;
- It incorporates societal values;
- It takes a holistic, interconnected perspective; and
- It strives for balance in meeting multiple objectives.

Vision Statement

Background for Vision Statement

The first part of a statewide vision for Colorado's water supply future is a Vision Statement. This Vision Statement is rooted in a series of observations about Colorado water supply future including:

- Colorado faces significant and immediate water supply challenges that need to be addressed.
- Innovative as well as traditional approaches to water supply will be needed to foster a desirable future for Colorado.
- Water supply in Colorado is transitioning from an era of undeveloped water resources to an era of managing a more developed resource.
- Water supply is not an independent issue. Colorado's water supply future is tied to the larger economic, demographic, and cultural trends of our state.
- A range of strategies are needed to help meet our state's consumptive and nonconsumptive water supply needs.
- There are numerous impediments to implementing water supply solutions to meet our consumptive and nonconsumptive water needs.

With these observations in mind, the IBCC drafted and discussed several versions of a vision statement. The IBCC came close to agreement, but did not reach final agreement on the following Vision Statement:

Vision Statement

We envision a Colorado that balances municipal, industrial, agricultural, environmental, and recreational water needs and promotes cooperation among all water uses.

Action Item

This Vision Statement will be retained as a draft and revisited as strategies are developed and evaluated.

Vision Goals

Vision Goals constitute the second component of a statewide visioning process for Colorado's water supply future. Vision Goals will be used to compare the performance of water supply strategies.

These Vision Goals are based on previous work by the IBCC, the CWCB Board, and other processes including: 1) responses to the IBCC Visioning Exercise[i], the Statewide Water Supply Initiative (SWSI) Major Findings[ii], the SWSI Objectives[iii], CSU's recent analysis of water beliefs and values[iv], University of Denver's Colorado's Water Future Panel[v], and the IBCC's Guiding Principles (the CO 64 Principals)[vi].

These goals may individually conflict and may not always be accomplished. However, by evaluating all the goals together, more balanced water supply strategies can be achieved.

The IBCC drafted and discussed, but has not come to agreement on the following Vision Goals:

1. Meet municipal and industrial (M&I) demands.

2. Meet agricultural demands.

3. Meet Colorado's environment and recreation demands.

4. Promote cooperation between water supply planners and land use planners.

5. Promote more cooperation among all Colorado water users.

6. Optimize existing and future water supplies by[1]:
   a. Minimizing non-beneficial consumptive use (evaporation, non-native phreatophytes, etc.).
   b. Maximizing successive uses of legally reusable water.
   c. Maximizing use of existing and new in-basin supplies.

7. Promote cost-effectiveness by:
   a. Allocating costs to all beneficiaries fairly.
   b. Achieving benefits at the lowest cost.
   c. Providing viable financing mechanisms, including local, state, and federal funding/ financing.
   d. Mitigating third-party economic impacts.

8. Minimize the net energy used to supply water, including both the energy used and/or generated with raw water delivery, and the energy used for treatment.

[1] Basin Roundtables have also identified conservation, the use of groundwater, and development of unappropriated water as components of optimizing water supplies. These could be categorized as goals, but for the purposes of this process will be directly dealt with in the development and evaluation of strategies.

9. Protect cultural values linked to water resources by:
   a. Maintaining and improving the quality of life unique to each basin.
   b. Maintaining open space.

10. Provide operational flexibility and coordinated infrastructure.

11. Promote increased fairness when water is moved between areas by:
   a. Benefiting both the area of origin and the area of use.
   b. Minimizing and mitigating the adverse economic and environmental impacts.

12. Comply with all applicable laws and regulations, meet all applicable compact obligations, protect compact allocations, and protect water rights including the right of water right owners to market their water, while recognizing some new institutions, organizations, or legislation may be needed to implement certain strategies.

13. Educate all Coloradoans on the importance of water, and the need to conserve, manage, and plan for needs of current and future generations.

Action Item

These Vision Goals will be retained as draft and revisited as strategies are developed and evaluated. The Vision Goals will serve as the basis for the evaluation criteria for the strategies.

Water Supply Strategies

The third part of a statewide vision for Colorado's water supply future is water supply strategies. During their May and August meetings, the IBCC discussed which water supply strategies may help meet our state's **consumptive** and **nonconsumptive** water supply needs. They agreed on a draft list of strategies for further evaluation. These included:

Demand Side Strategies

- Growth, Land Use, and Density Development
- M&I Conservation
- Agricultural Conservation (non-beneficial losses), Efficiency, and Alternative Cropping Patterns
- Reduction in Water Demands for Energy Development (Traditional and Renewable Energy)

Supply Side Strategies

- Reuse and Desalination
- Agricultural Transfers: Traditional Transfers and Alternatives to Traditional Transfers
- Optimizing/Rehabilitating Existing Storage and Delivery Systems
- New In-basin Storage that can Meet Multiple Consumptive and Nonconsumptive Needs
- Colorado River Compact Development
- Transbasin Diversions that Benefit the Area of Origin and the Area of Use
- Coordinated Reservoir Operations, Infrastructure Development, and Opportunities for Shared Infrastructure
- Colorado River Basin General Augmentation
- Integrated Management of Groundwater and Surface Water including the optimum use of groundwater and surface water supplies and the use of aquifer storage and recovery

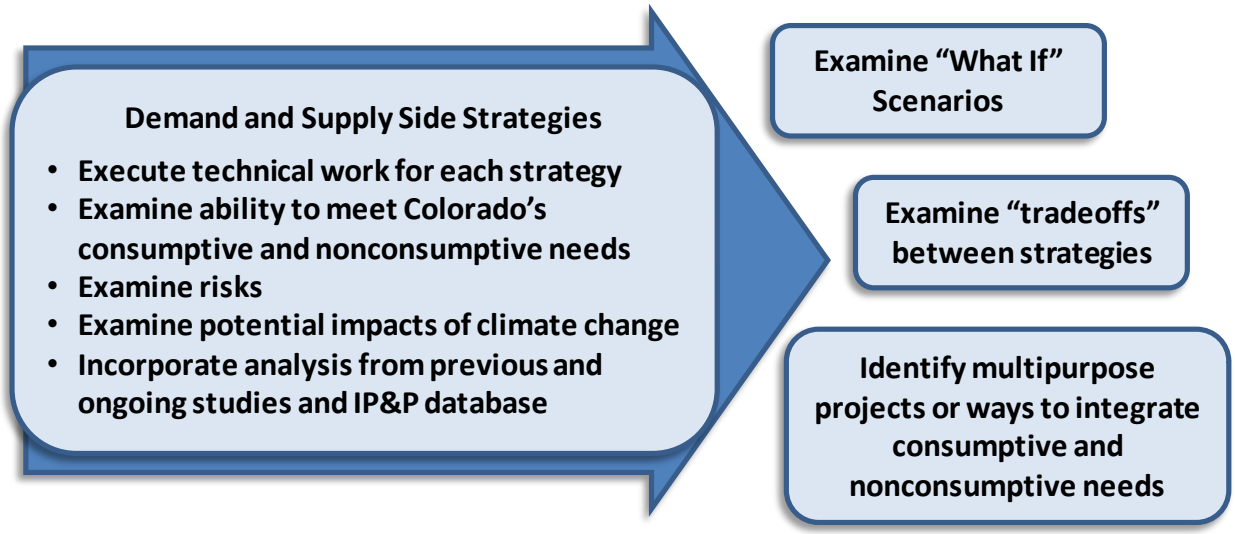
At the July CWCB Board meeting, the CWCB Board reviewed this draft list and asked staff to begin evaluating these strategies.

Action Item

These strategies will be developed in more detail and evaluated beginning with M&I Conservation, Agricultural Transfers, Colorado River Compact Development, and Transbasin Diversions

Evaluation of Strategies

The evaluation of strategies will include examining the opportunities, challenges, and trade-offs associated with each strategy or combination of strategies and by examining "what-if" scenarios. Evaluation of the strategies may include an analysis of infrastructure requirements, possible financing mechanisms, and whether such strategies could operate effectively in the context of existing statutory and regulatory provisions. The steps for evaluating water supply strategies are illustrated in the following figure. The strategies will be prepared for the 2035 and 2050 planning horizons.



Demands to 2035

Basin roundtables are charged with developing a basin-wide water needs assessment. The final component of their needs assessment is to identify projects and methods to meet their consumptive and non-consumptive needs. Strategies to meet 2035 demands will be based on these identified projects and methods. The projects and methods will be identified, tracked, and monitored and will be used to recaluculate the 2035 M&I gap.

Demands to 2050

Strategies will be examined to meet 2050 Demands. These demands will be grouped into high, medium, and low projections for municipal and industrial, agricultural, energy, and nonconsumptive needs. The uncertainty in future demands will establish "future scenarios" for planning purposes. The impacts of climate change on these demand forecasts will also be prepared. Strategies will be developed and evaluated based on these future scenarios.

Evaluation of Strategies

M&I Conservation Strategy

Water conservation is an important component of Colorado's water supply portfolio for meeting future M&I demands. At their August 2008 meeting, the IBCC had an in-depth discussion on M&I conservation. This discussion focused on implementation of best management practices customized to each unique water supply situation instead of a gallons-per-capita-per-day goal. A conservation strategy based on this discussion will be developed and evaluated. The conservation strategy will incorporate information from the August IBCC discussion and build upon the results from the SWSI II Conservation and Efficiency Technical Roundtable.

Technical Approach

- Confirm the identified potential savings from various water conservation measures or best management practices (BMPs) developed by the Water Conservation Technical Roundtable.
- Working with water providers, evaluate if recent, post-drought water demand reductions are permanent or a reflection of the drought shadow and recent economic conditions.
- Use a Simplified Water Allocation Model to test the impacts of implementing permanent conservation measures and reallocation of conserved water on supply reliability.
- Based on the analysis of impacts of conservation on supply reliability, identify the opportunities and challenges for the use of conserved water as a source of future water supply (identify storage and conveyance needs, institutional challenges, etc.). Evaluate how much of our future M&I water needs can be met by implementing different water conservation measures and the steps that need to be taken to utilize the conserved water.

Action Item

A conservation water supply strategy will be developed and evaluated. Preliminary analysis will be presented at the January 2009 CWCB Meeting.

Agricultural Water Needs and Transfers

Agriculture is and will continue to be the largest consumptive use of water in the state. Agriculture is important to Colorado's economy and culture. The decline in irrigated acres is partially attributable to farm economics and demographics, urbanization of irrigated lands, lack of available water supplies for well augmentation, and the ability of M&I water providers to pay attractive prices for the acquisition and transfer of agricultural water rights under a willing buyer-willing seller free market.

An agricultural water needs and transfers strategy will be developed and evaluated. This strategy will incorporate information discussed at the October IBCC meeting and build upon the results from the SWSI II Alternative Agricultural Transfer Methods Technical Roundtable, available information from the CWCB Alternative Agricultural Transfer Methods Grant Program, and subsequent work in the South Platte, Arkansas, Yampa/White, and Gunnison basins.

Technical Approach

- Evaluate the historical trends in irrigated acres in each basin.
- Evaluate the impact of using South Platte agricultural water transfers to meet the 2050 projected M&I demands of the South Platte.
- Incorporate the Super Ditch analysis from the Arkansas and work with the water transfers matrix developed by the Arkansas Basin Water Transfer subcommittee.
- Quantify agricultural transfers and trends with irrigated acreage on the West Slope and analyze the role of these trends in meeting 2050 projected West Slope M&I demands.
- Identify and evaluate infrastructure, conveyance, treatment, and storage associated with agricultural water supply options.

Action Item

Agricultural transfer strategies will be developed and evaluated.

Compact Development

The Arkansas, South Platte, and Rio Grande Basins regularly curtail in-basin diversions to meet required compact deliveries. There may be water left for development on the Colorado River system, but there are risks in additional development of this water. There is general agreement that these risks exist, but there is need to examine associated risks.

Technical Approach

- Pros and cons of additional development of Colorado River water.
- Evaluate issues and benefits of the development of 100,000 acre-feet, 250,000 acre-feet, and 400,000 acre-feet for in-basin consumptive use and use on the Front Range.
- Evaluate the use of existing storage, water banks, pre-1922 rights and/or interruptible agricultural options to help prevent a compact call and minimize the impacts should it occur.
- Identify the opportunities and challenges for managing compact obligations in a way that helps meet non-consumptive needs.

Transbasin Diversions

In general, 80 percent of Colorado's population on the East Slope of the Continental Divide and 80 percent of the water is on the West Slope. This has historically resulted in major water providers developing transbasin diversion projects to meet a portion of their water needs. There is general agreement that additional transbasin diversions will be proposed, but there is need for discussion of under what circumstances additional transbasin diversions should move forward.

Technical Approach

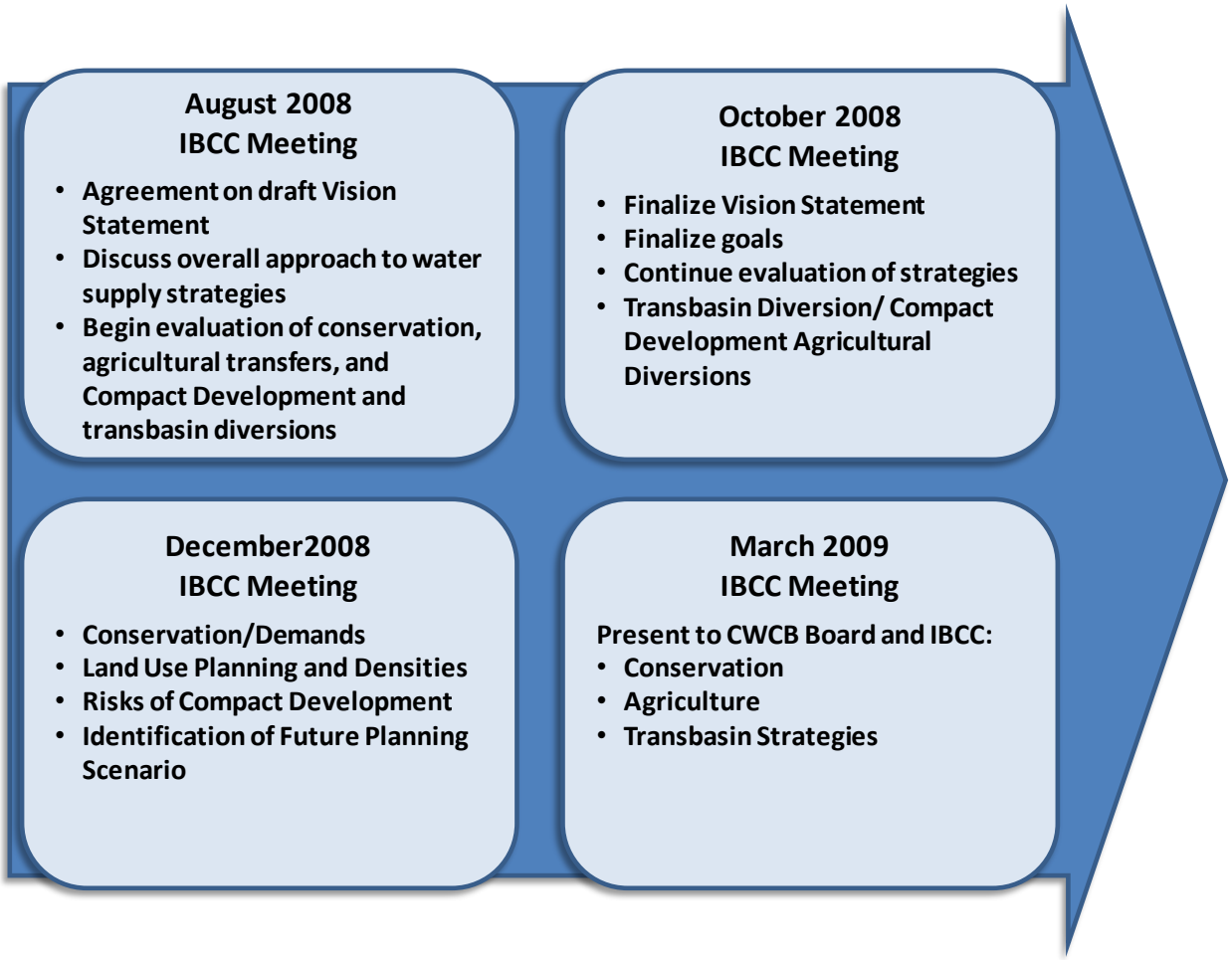
- Examine the risks associated with additional Colorado River Compact development (see Compact Development above).
- Evaluate alternatives for the protection and compensation to the basin-of-origin.
- Evaluate the trade-offs for both the area of origin and the area of use between different combinations of agricultural transfers and transbasin diversions.
- Evaluate infrastructure options, conveyance, treatment, and storage associated with transbasin diversion projects and basin-of-origin mitigation.

Action Item

Compact development and transbasin diversion strategies will be developed and evaluated.

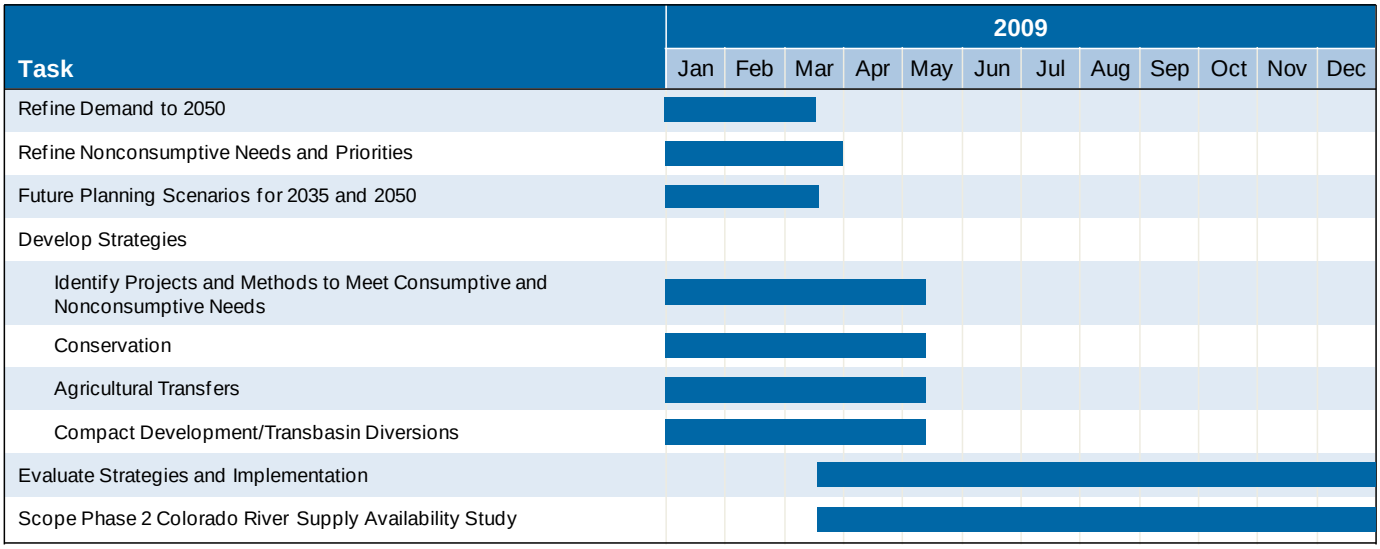
Next Steps

The Next Steps outline the overall schedule for developing water supply strategies, the evaluation of these straegies, and addressing risk and uncertainty in the future on both the demand and supply side.



The following graphic outlines the overall schedule for 2009 with input from the Basin Roundtables. The CWCB staff will refine demands to 2050 along with the nonconsumptive needs and priorities for each Basin. The IBCC will work to establish future planning scenarios for 2035 and 2050. This will include the depiction of high, medium, and low projections on the demand side and assumptions on the supply side that address future uncertainties associated with the Colorado River supplies.

The CWCB staff will provide the CWCB Board and IBCC with the following water supply strategies: the status of the IPPs, conservation, agricultural transfers, and new compact development/transbasin diversion projects in the first part of 2009. The evaluation of these strategies will be performed through discussions with the CWCB Board, IBCC, and the Basin Roundtables in 2009. The scoping of Phase 2 for the Colorado River Supply Availability Study will begin in June 2009. This scoping process will take into account the analysis of these strategies and their impact on the supply availability in the Colorado River.


Task
2009
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Feb
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Refine Demand to 2050
Refine Nonconsumptive Needs and Priorities
Future Planning Scenarios for 2035 and 2050
Develop Strategies
Identify Projects and Methods to Meet Consumptive and Nonconsumptive Needs
Conservation
Agricultural Transfers
Compact Development/Transbasin Diversions
Evaluate Strategies and Implementation
Scope Phase 2 Colorado River Supply Availability Study

References

[i] Responses to the IBCC Visioning Exercise include written responses to Director Sherman's January 15, 2008 memo, interviews conducted with IBCC members prior to the March 2008 IBCC meeting, and the meeting notes summarizing the discussion at the March and May 2008 IBCC meetings.

[ii] **SWSI Major Findings**

1. Significant increases in Colorado's population-together with agricultural water needs and an increased focus on recreation and environmental uses-will intensify competition for water.
2. Projects and water management processes that local municipal and industrial (M&I) providers are implementing or planning to implement have the ability to meet about 80 percent of Colorado's M&I water needs through 2030.
3. To the extent that these identified M&I projects are not successfully implemented, Colorado will see a significantly greater reduction in irrigated agricultural lands as M&I water providers seek additional permanent transfers of agricultural water rights to provide for the demands that would otherwise have been met by specific projects and processes.
4. Supplies are not necessarily where demands are; localized shortages exist, especially in headwater areas, and compact entitlements in some basins are not fully utilized.
5. Increased reliance on nonrenewable, nontributary groundwater for permanent water supply brings serious reliable and sustainability concerns in some areas, particularly along the Front Range.
6. In-basin solutions can help resolve the remaining 20 percent gap between M&I water supply and demand, but there will be tradeoffs and impacts on other users-especially agriculture and the environment.
7. Water conservation (beyond Level 1) will be relied upon as a major tool for meeting future M&I demands, but conservation alone cannot meet all of Colorado's future M&I needs. Significant water conservation has already occurred in many areas.
8. Environmental and recreational uses of water are expected to increase with population growth. These uses help support Colorado's tourism industry, provide recreational and environmental benefits for our citizens, and are an important industry in many parts of the state. Without a mechanism to fund environmental and recreational enhancement beyond the project mitigation measures required by law, conflicts among M&I, agriculture, recreational, and environmental users could intensify.
9. The ability of smaller, rural water providers and agricultural water users to adequately address their existing and future water needs is significantly affected by their financial abilities.
10. While SWSI evaluated water needs and solutions through 2030, very few M&I providers have identified supplies beyond 2030. Beyond 2030, growing demands may require more aggressive solutions.

[iii] **SWSI Objectives**

- Sustainable met M&I demands
- Sustainable meet Agricultural demands
- Optimize existing and future water supplies
- Enhance recreational opportunities
- Provide for environmental enhancement
- Promote cost effectiveness
- Protect cultural values
- Provide for operational flexibility
- Comply with all applicable laws, regulations, and water rights

[iv] **Water in 2025 Beliefs and Values as a Means for Cooperation, Lynn Katheleen, January 2006**

Three areas of overwhelming agreement:

1. Water is fundamental to the economy
2. An appropriated right does not mean water will be available for use
3. Agricultural water is the prime target for water transfers to urban and recreational uses

Five beliefs held by a majority of participants:

1. Money has become the means for allocating water
2. The market is not always the appropriate method for allocating water
3. Protecting existing individual water rights is important
4. Water court decisions have been favorable to agricultural interests, a belief held by those inside and outside the agricultural community
5. Current water law is quite functional

Five areas of disagreement:

1. The "use it or lose it" doctrine is seen by some to encourage wasteful use of water, while others believe it has no detrimental impact.
2. There is strong division of opinion on whether there is a connection between land use and water planning.
3. Some respondents believe the recent drought proved the inadequacies of the current water system, while some felt just the opposite.
4. Some respondents think there is plenty of water if used wisely, while others see a shortage and think new water needs to be developed.

There is significant disagreement as to whether or not environmental claims have limited legal recognition.

[v] **DU Water Futures Panel**

The DU Water Futures Panel identified eight key priorities:

1. Embrace fairness, trust, respect, and openness in water supply planning
2. Encourage water conservation
3. Encourage partnerships between urban and agricultural water users
4. Eradication of non-native phreatophytes
5. Streamlining water court
6. Encouraging statewide perspective on water storage and infrastructure projects
7. Facilitating cooperation between river basins
8. Planning for potential climate change and drought

[vi] **CO 64 Principles - Included in the IBCC Charter as Guiding Principles**

1. All Colorado water users must share in solving Colorado's water resource problems.
2. The State of Colorado should provide assistance, when requested, for local water supply planning and assist in the implementation of consensus-based water resource solutions that respect local authorities, private property, and water rights.
3. During the process of planning to meet future needs, water suppliers and utilities should give preference to development of economically viable local water sources and demand management as they consider other options, including development of new water transfers.
4. Additional water storage should be pursued through the improvement and rehabilitation of existing structures and the development of new structures. These activities should be accomplished with local consensus.

5. The right of water rights owners to market their water rights must be protected.
    a. Colorado must fully explore flexible, market-based approaches to water supply management, including interruptible water contracts, water banking, in-state water leasing and groundwater recharge management.
    b. Those seeking to transfer agricultural water to another use should consider leasing or other temporary arrangements for transfer of water, rather than relying exclusively on the purchase of water rights. Leasing or other such temporary arrangements could allow for reversion of the water to agricultural purposes under certain conditions.
    c. In the event that agricultural water is transferred, the transaction must adequately address the need for maintaining the existing tax base, protecting the remaining water rights in the area, and maintaining the proper stewardship of the land including revegetation and weed control.
6. Appropriate recognition should be given to preservation of flows necessary to support recreational, hydroelectric, and environmental needs concurrent with development of water for beneficial consumptive uses.
7. Adverse economic, environmental, and social impacts of future water projects and water transfers should be minimized; unavoidable adverse impacts must be reasonably mitigated; all communities involved should commit themselves to identifying and implementing reasonable mitigation measures as an integral part of future water projects or transfers.
8. Future water supply solutions must benefit both the area of origin and the area of use.
9. Water conservation measures that do not injure other water rights should be aggressively pursued.
10. There must be an ongoing, concerted effort to educate all Coloradoans on the importance of water, and the need to conserve, manage, and plan for the needs of this and future generations.