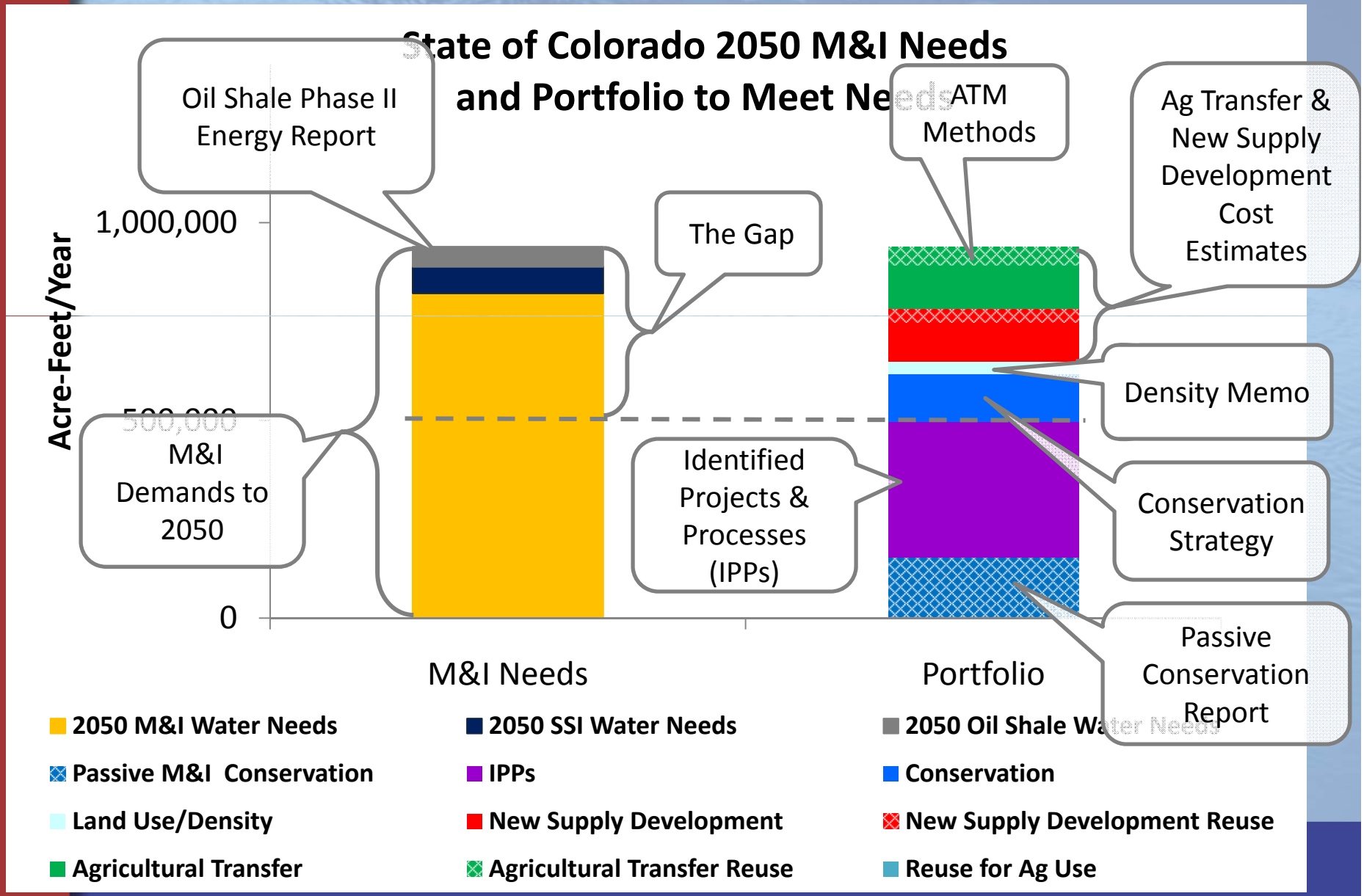
CWCB Water Supply Future Workshop

July 20, 2010

Overview and Purpose

- Provide a brief overview of major conclusions from technical products
- Provide clarification on deliverables and conclusions
- Schedule: timeframe for finalizing remaining components
  - Statewide Water Needs Assessment due November 2010/January 2011
- Prepare board members to serve as outreach to constituents in your basin

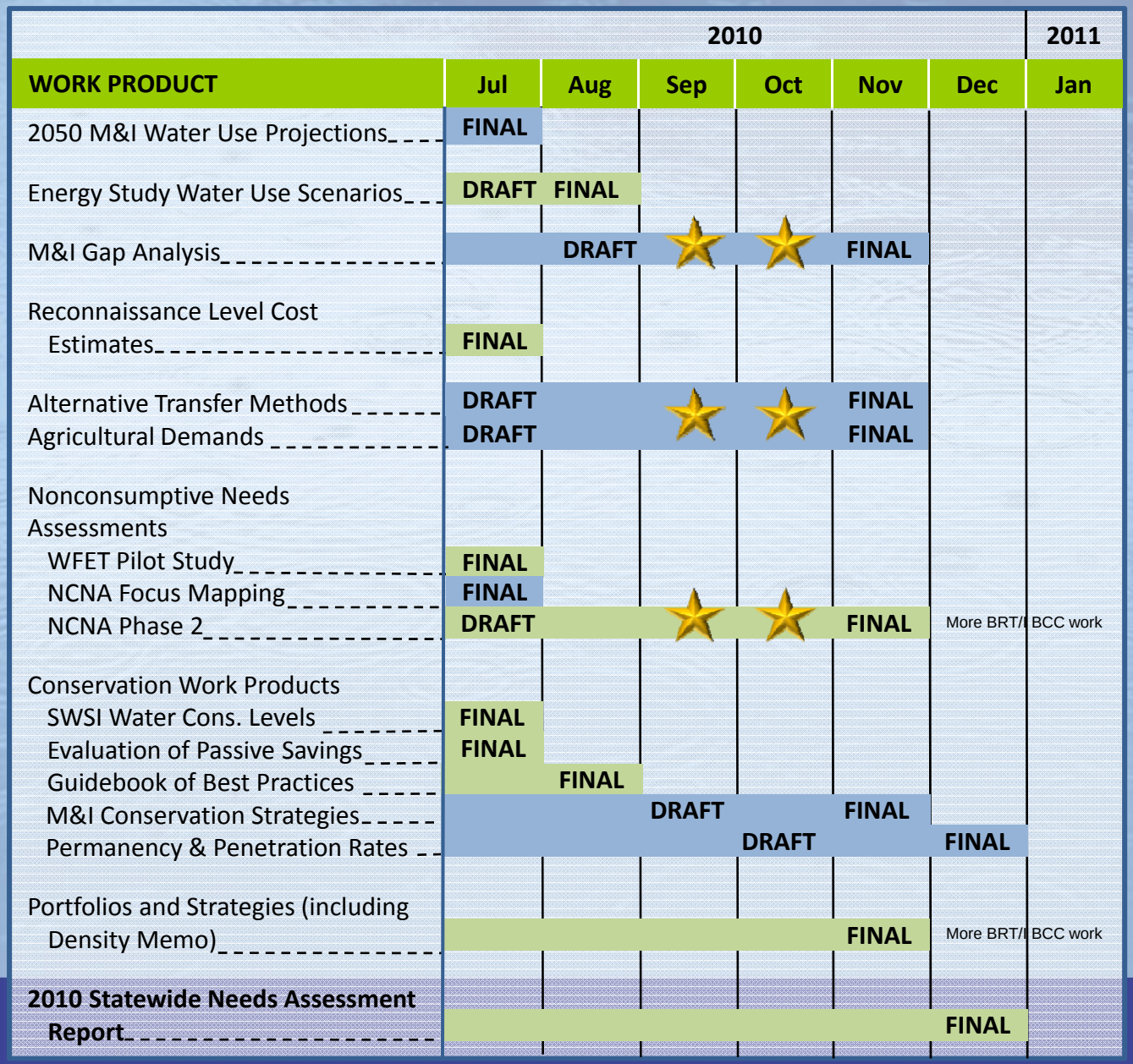
Reports in M&I Context

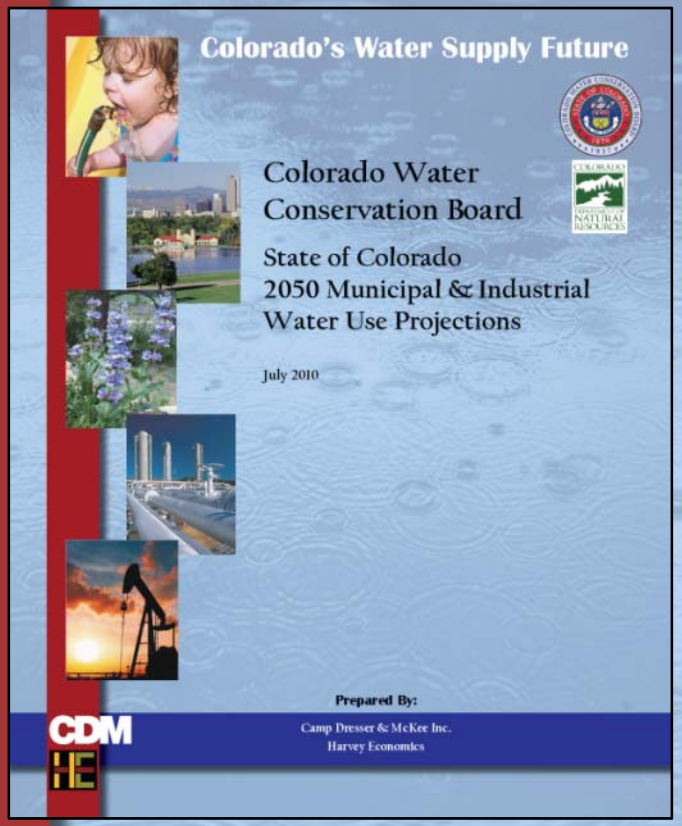


List of Reports

- **2050 M&I Water Use Projections**– final complete
- **Energy Study Phase 2 Revised Water Use Scenarios Memo** –
  draft roundtable product complete; finalize in August
- **M&I Gap Analysis** – draft scheduled for August
- **Reconnaissance Level cost Estimates for Ag & New Supply Strategy Concepts**– final complete
- **Ag Demands/ Alternative Transfer Methods** –
  draft complete; finalize in 2010 Statewide Water Needs Assessment (SNA)
- **Nonconsumptive**:
  - **Watershed Flow Evaluation Tool Pilot Study**– final complete
  - **NCNA Focus Mapping (Phase 1)**– final complete
  - **NCNA Phase 2** – draft complete; finalize in 2010 State Needs Assessment
- **Conservation Products:**
  - **SWSI Conservation Levels Analysis** – final complete
  - **Evaluation of Passive Savings**– final complete
  - **Guidebook of Best Management Practices for Municipal Water Conservation in Colorado**–
    final scheduled for August
  - **M&I Conservation Strategies** – draft scheduled for September; finalize in 2010 SNA
  - **Feasibility Study to Assess the Permanency & Penetration Rates of M&I Water Conservation** –
    draft scheduled for October; finalize in Dec. 2010
- **Portfolios and Strategies** – draft scheduled for September
  - **Density Memo** – draft completed and will be appendix for portfolios memo
- **Final 2010 State Needs Assessment Report** – due Nov/Jan timeframe

2010 Schedule

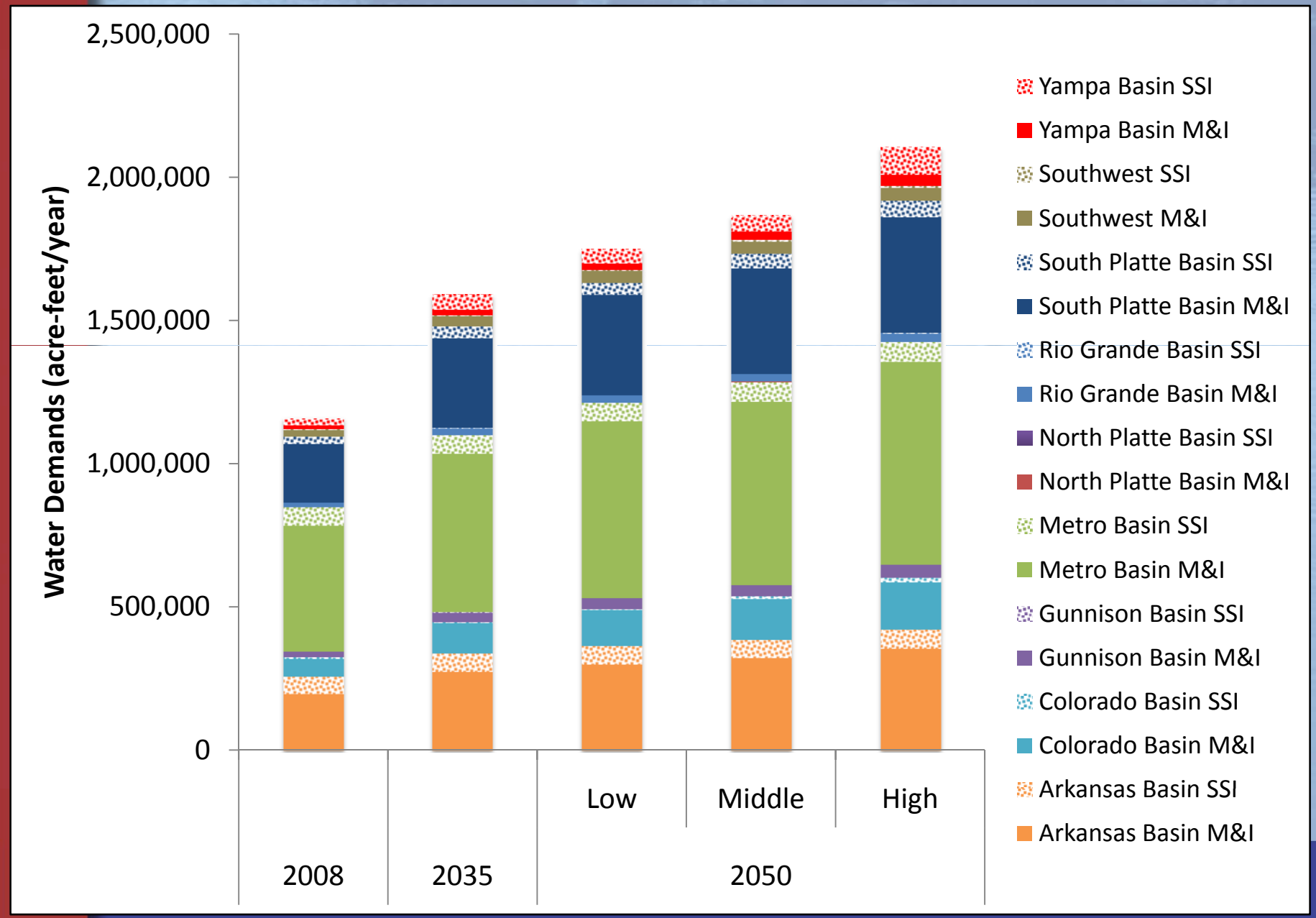




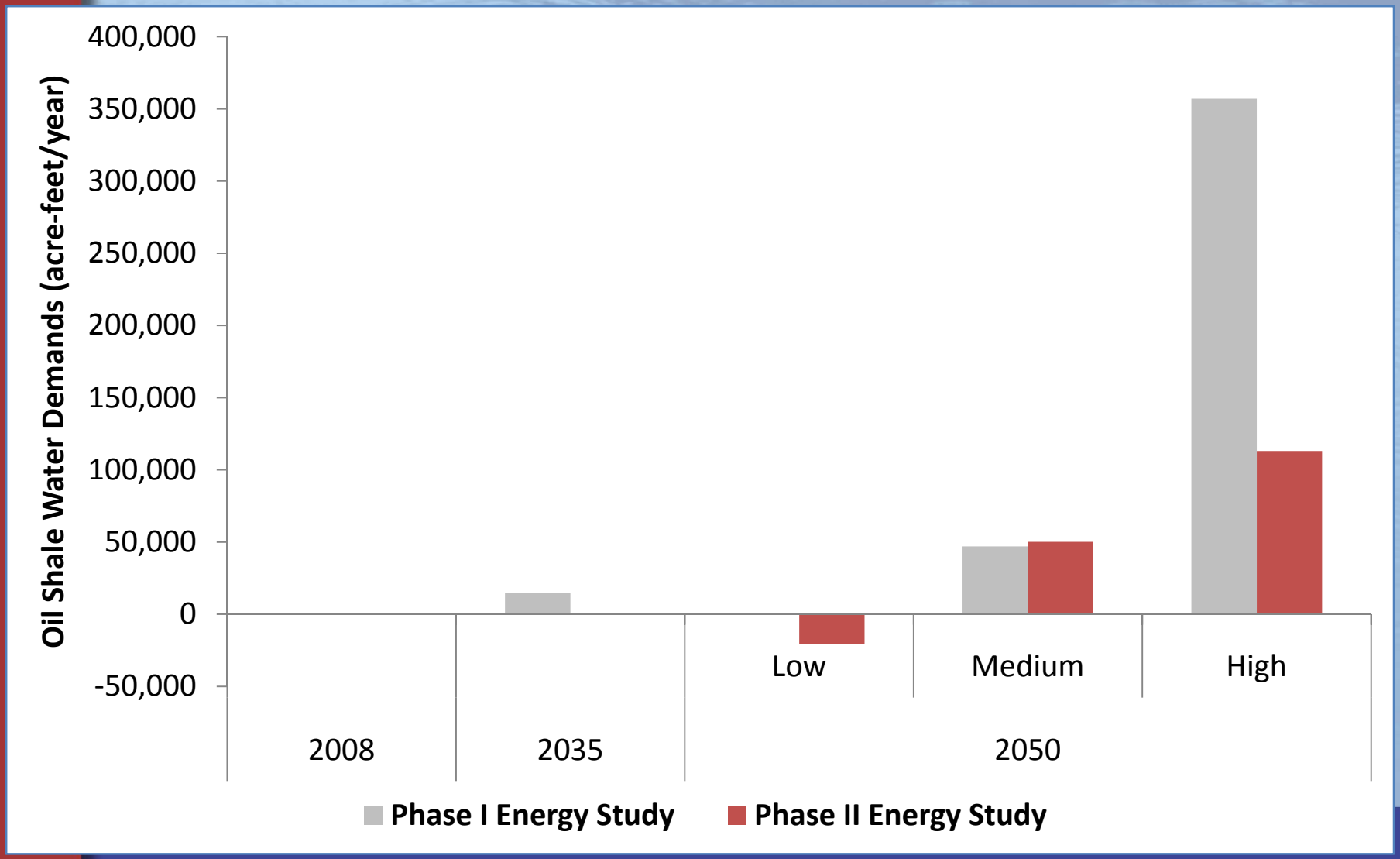
State Of Colorado 2050 Municipal & Industrial water use Projections

CDM

2050 M&I and SSI Demand

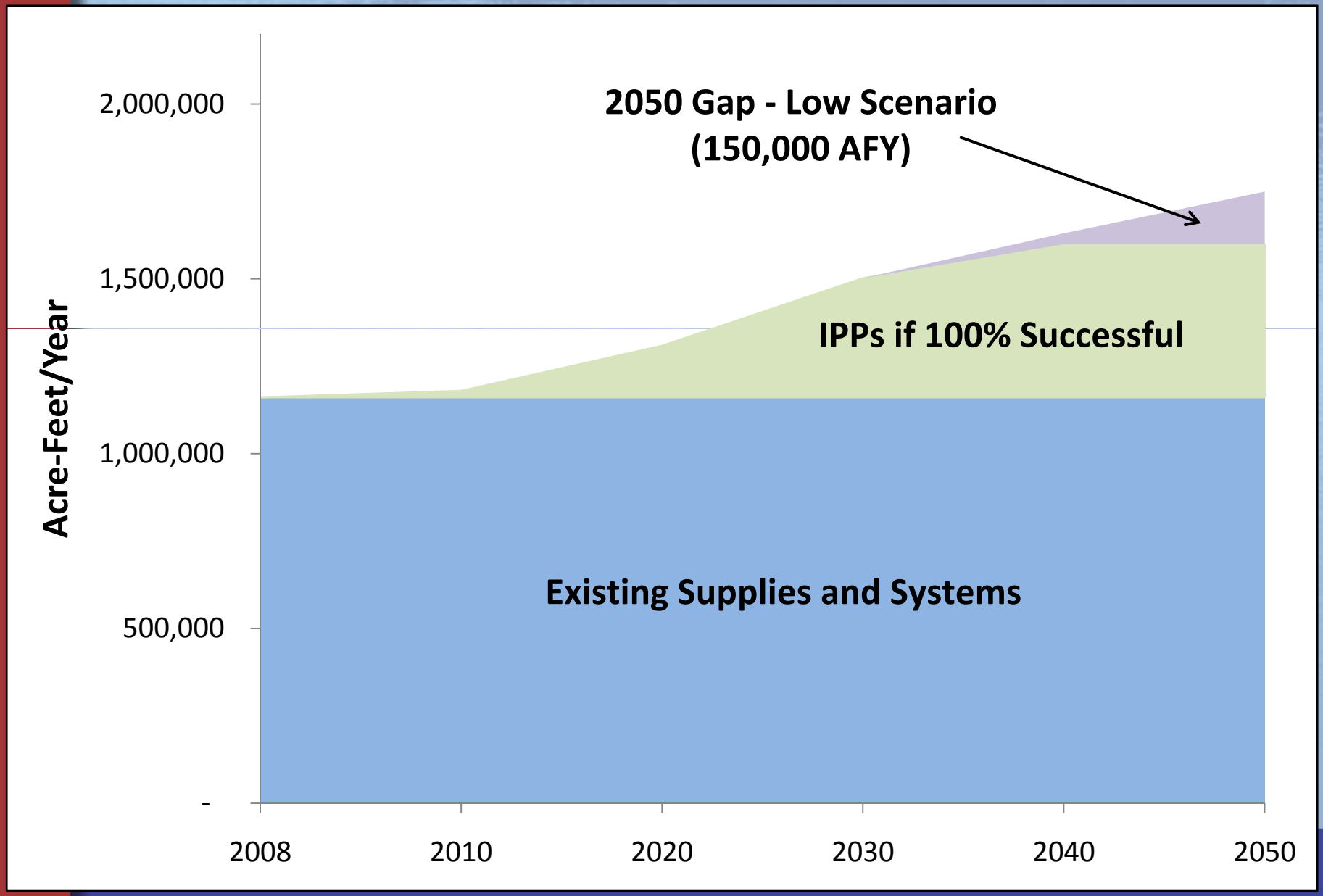


Energy Study Phase II
Oil Shale Water Demands

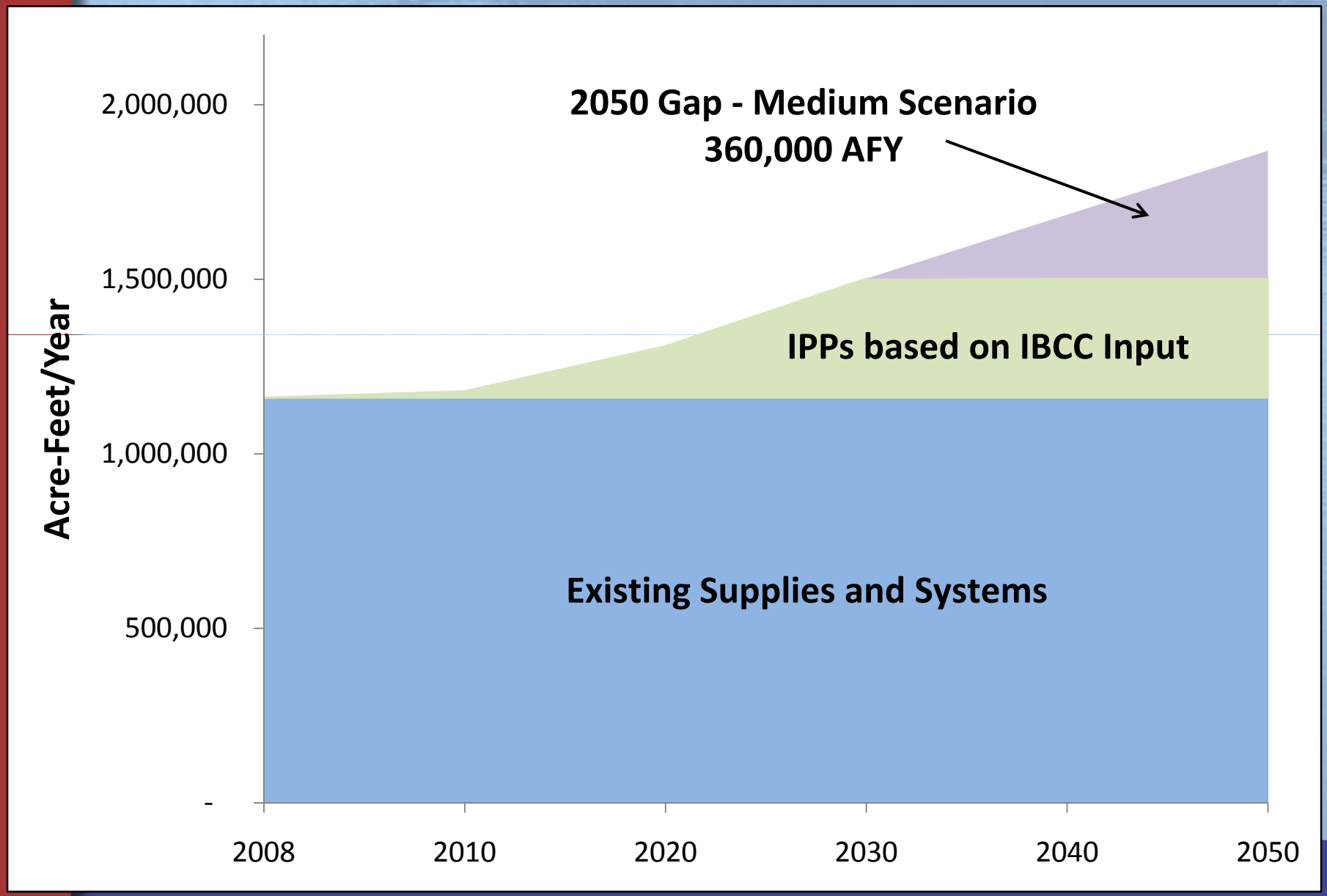


M&I Gap Analysis

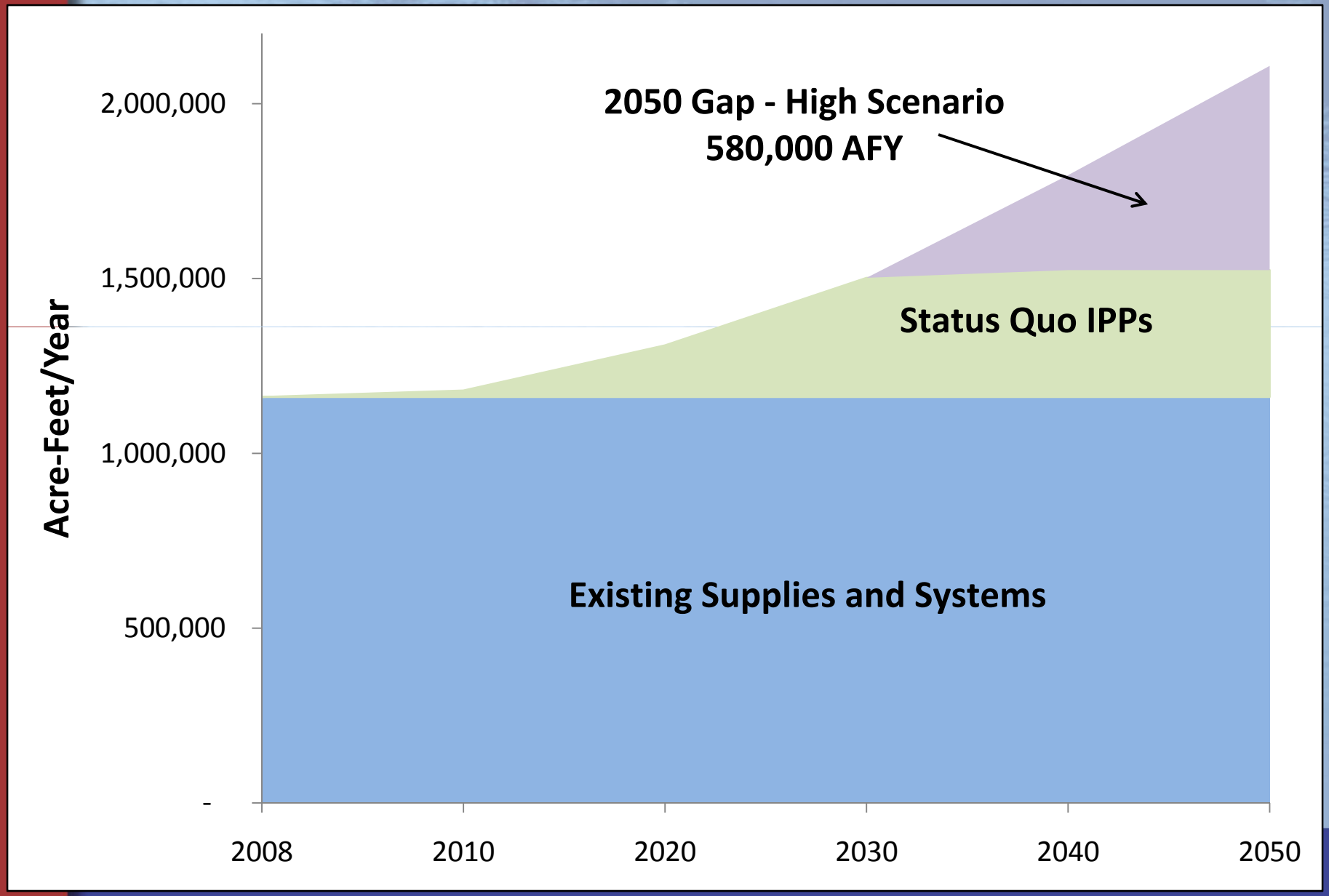
M&I Gap – Low Scenario

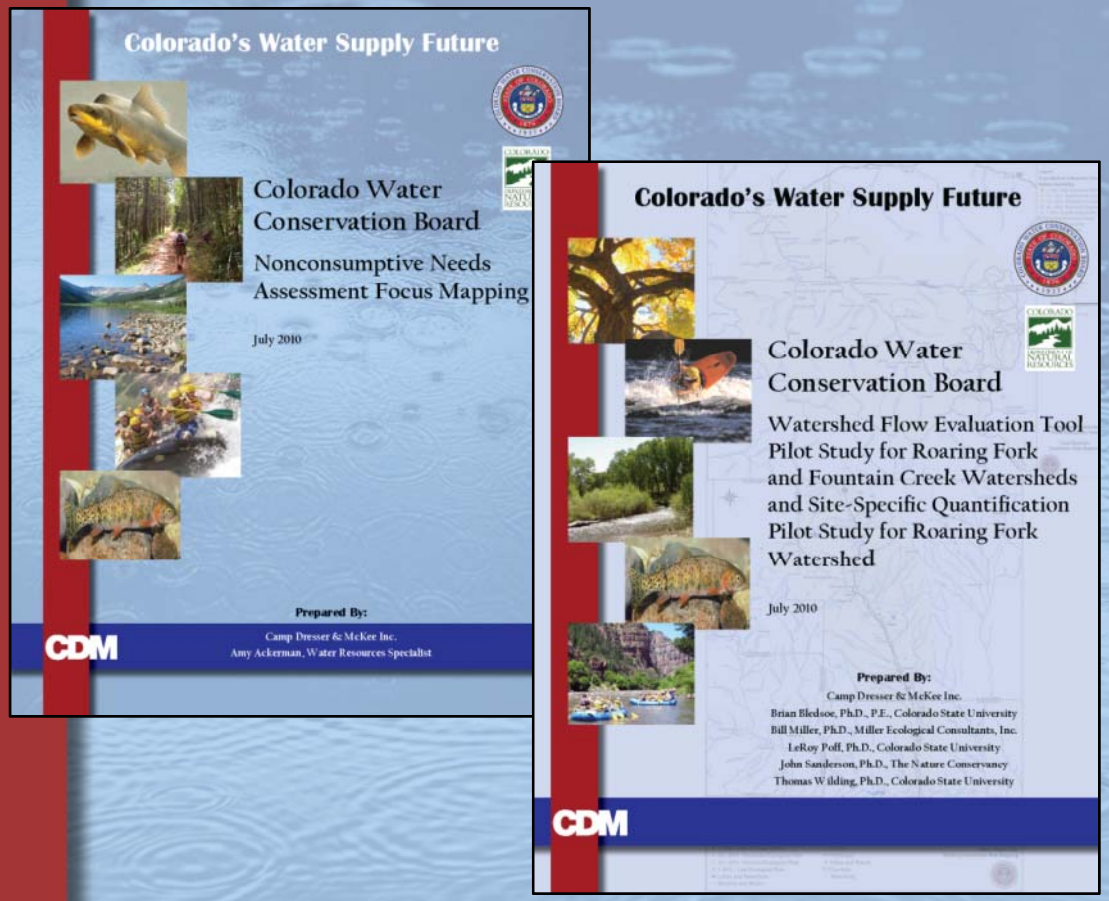


M&I Gap – Medium Scenario



M&I Gap – High Scenario





NONCONSUMPTIVE NEEDS ASSESSMENTS PHASE II

CDM

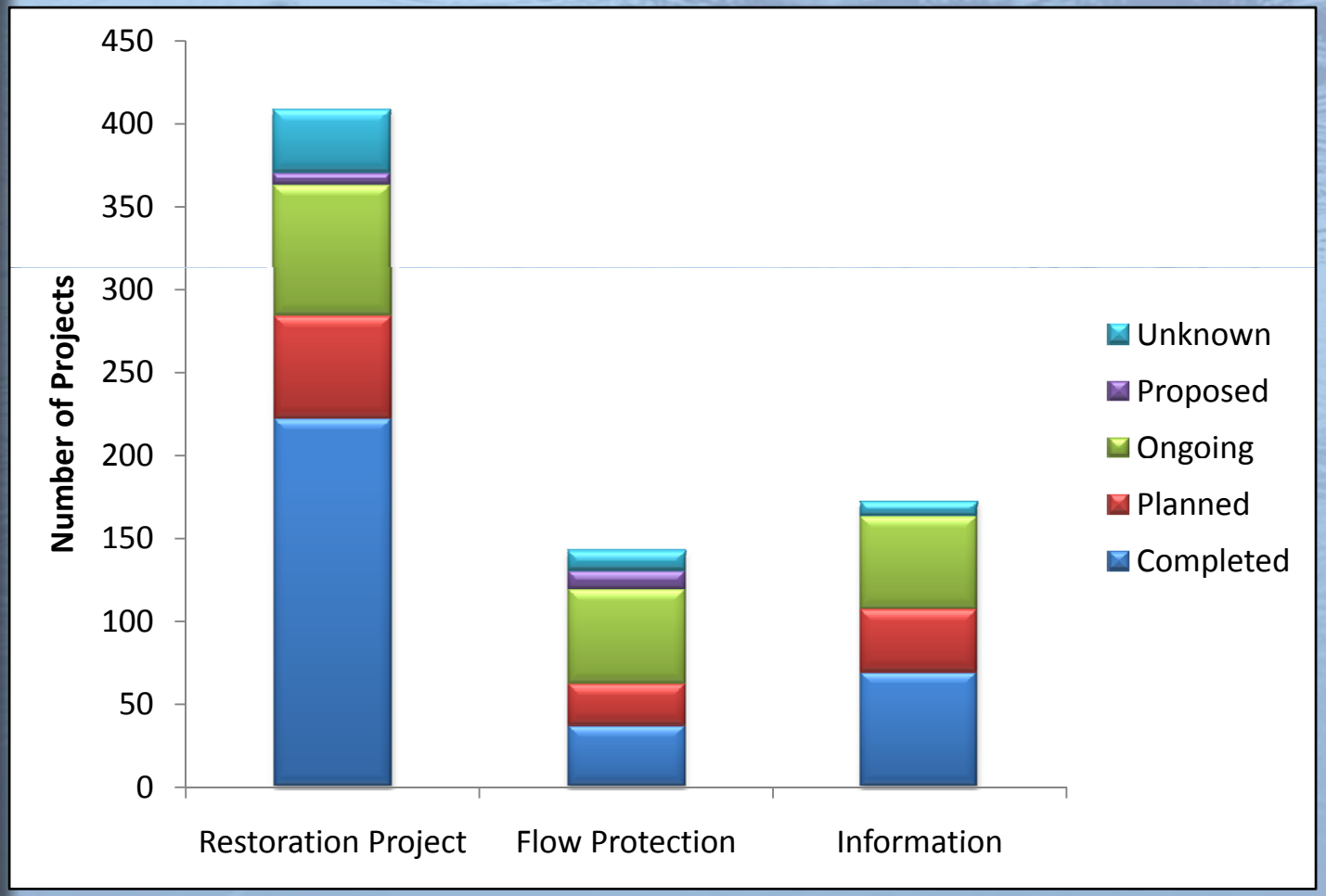
Summary of Nonconsumptive Projects & Methods Status

Project and Methods Status	# of Projects and Methods
Completed	343
On-going	195
Planned	127
Proposed/Recommended	18
Unknown	17
TOTAL	**700**

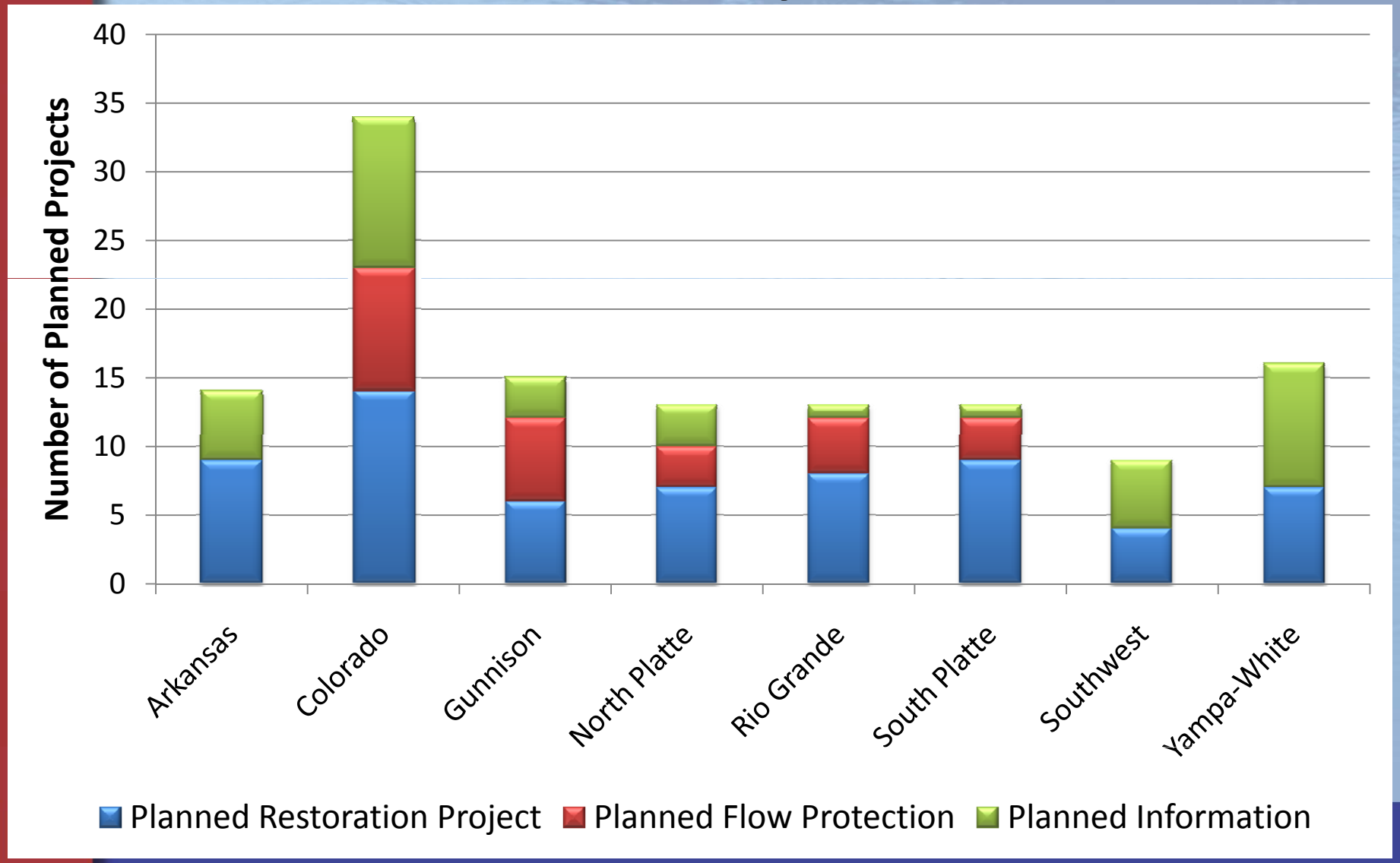
Project and Methods Status	# of Projects and Methods
Restoration Project	392
Flow Protection	142
Information	172
Unknown	5
TOTAL	**727**

* Some overlap occurs between project and methods types

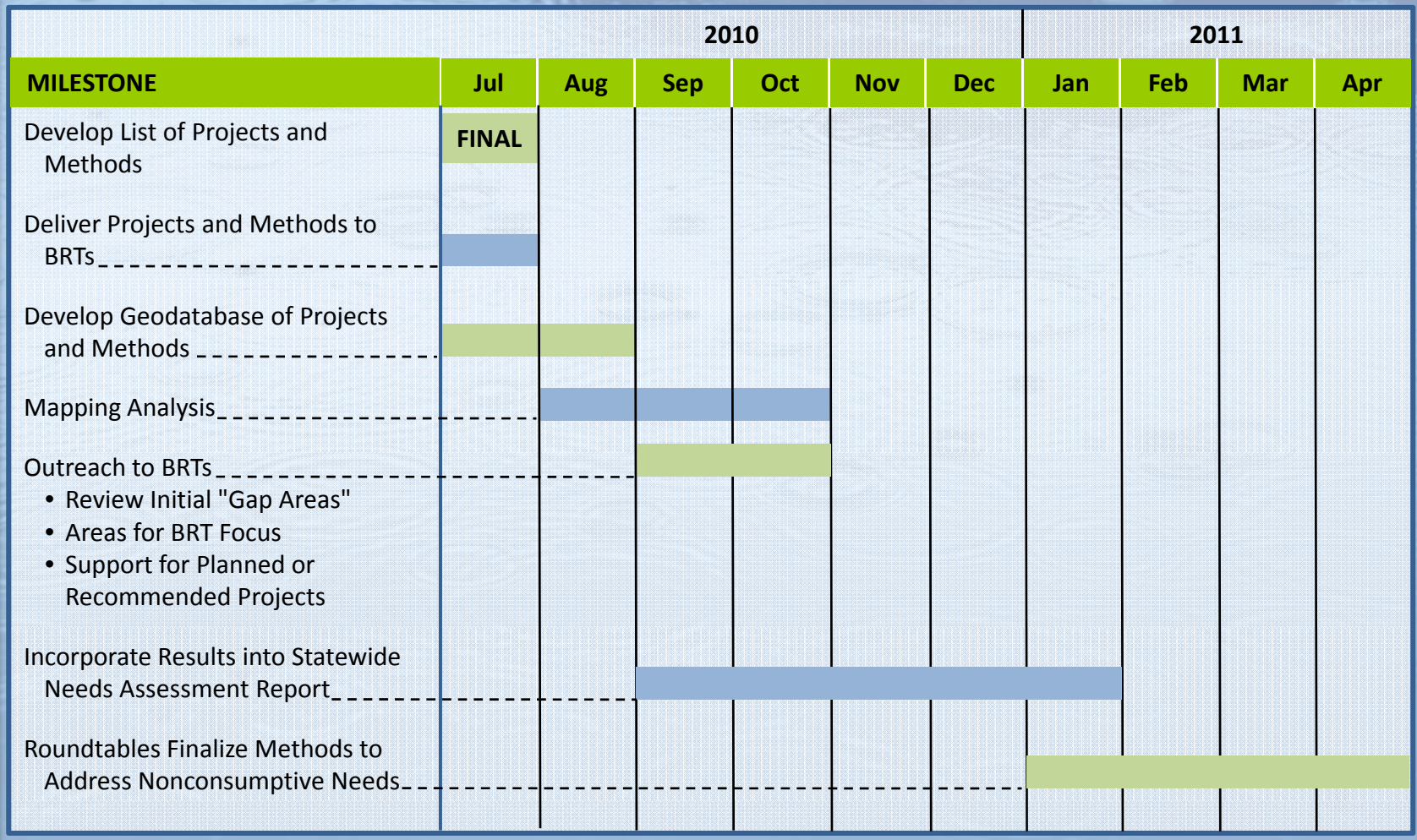
Summary of Nonconsumptive Projects & Methods Status



Planned Projects and Methods by Basin



NCNA Phase II Schedule



CDM

Technical Memorandum

To: *Eric Hecox, CWCB*

From: *Nicole Rowan, CDM*
Susan Morea, CDM

Date: *June 4, 2010*

Subject: *Reconnaissance Level Cost Estimates for Agricultural and New Supply Strategy Concepts*

The Colorado Water Conservation Board (CWCB) and Interbasin Compact Committee (IBCC) are in the process of a continuing dialogue regarding Colorado's Water Supply Future. In June 2009, the CWCB published the draft report "Strategies for Colorado's Water Supply Future" that included a summary of potential agricultural transfer and new supply development concepts that may be a component of the portfolio used to meet Colorado's future water needs. For each concept, CWCB developed a description and reconnaissance level cost estimate. This technical memo includes an update of the descriptions and reconnaissance level cost estimates including the Green Mountain Reservoir and Blue Mesa concepts. This analysis does not include the Colorado River Reconnaissance concept.

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COLORADO DEPARTMENT OF NATURAL RESOURCES

AGRICULTURAL TRANSFER AND NEW SUPPLY DEVELOPMENT STRATEGIES

CDM

Addressing the M&I Gap

Portfolio

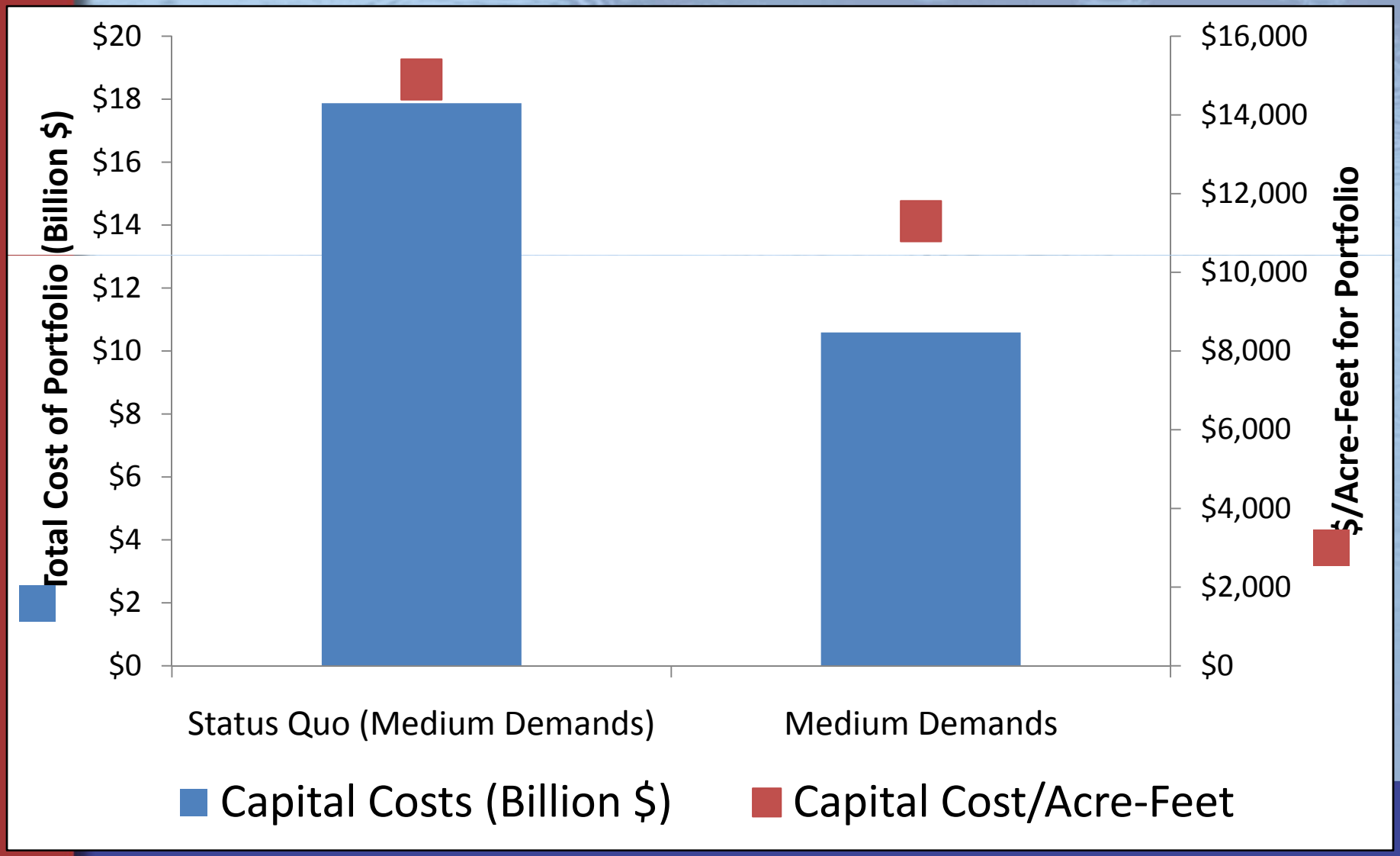
Strategies	Projects and Methods
Agricultural Transfer	• Agricultural Transfers (Traditional and Alternative) – South Platte Basin – Arkansas Basin
Colorado River System	• Green Mountain • Yampa • Flaming Gorge • Blue Mesa
Conservation	• Percent Savings Off of 2008 Water Usage
IPPs	• Providers current conservation plans and optimization of existing infrastructure • Southern Delivery System, Arkansas Valley Conduit, Wolcott Reservoir, Elkhead Enlargement, Moffat Collection System, Rueter Hess Enlargement, Thornton Northern Project, Prairie Waters, Chatfield Reallocation, Northern Integrated Supply Plan (NISP), Windy Gap Firming, Halligan Enlargement, Seaman Enlargement
Mid Demand/ Mid Supply Working Portfolio Goals	• 60 to 70 Percent Statewide Success Rate Desired on IPPs • 15 to 20 Percent off of 2008 Demand • Agricultural Transfers Between 60,000 to 200,000 out of ag AF • 350,000 AF from New Supply Development for East Slope and West Slope

COLORADO WATER CONSERVATION BOARD · STATE OF COLORADO · 1876 · 1937

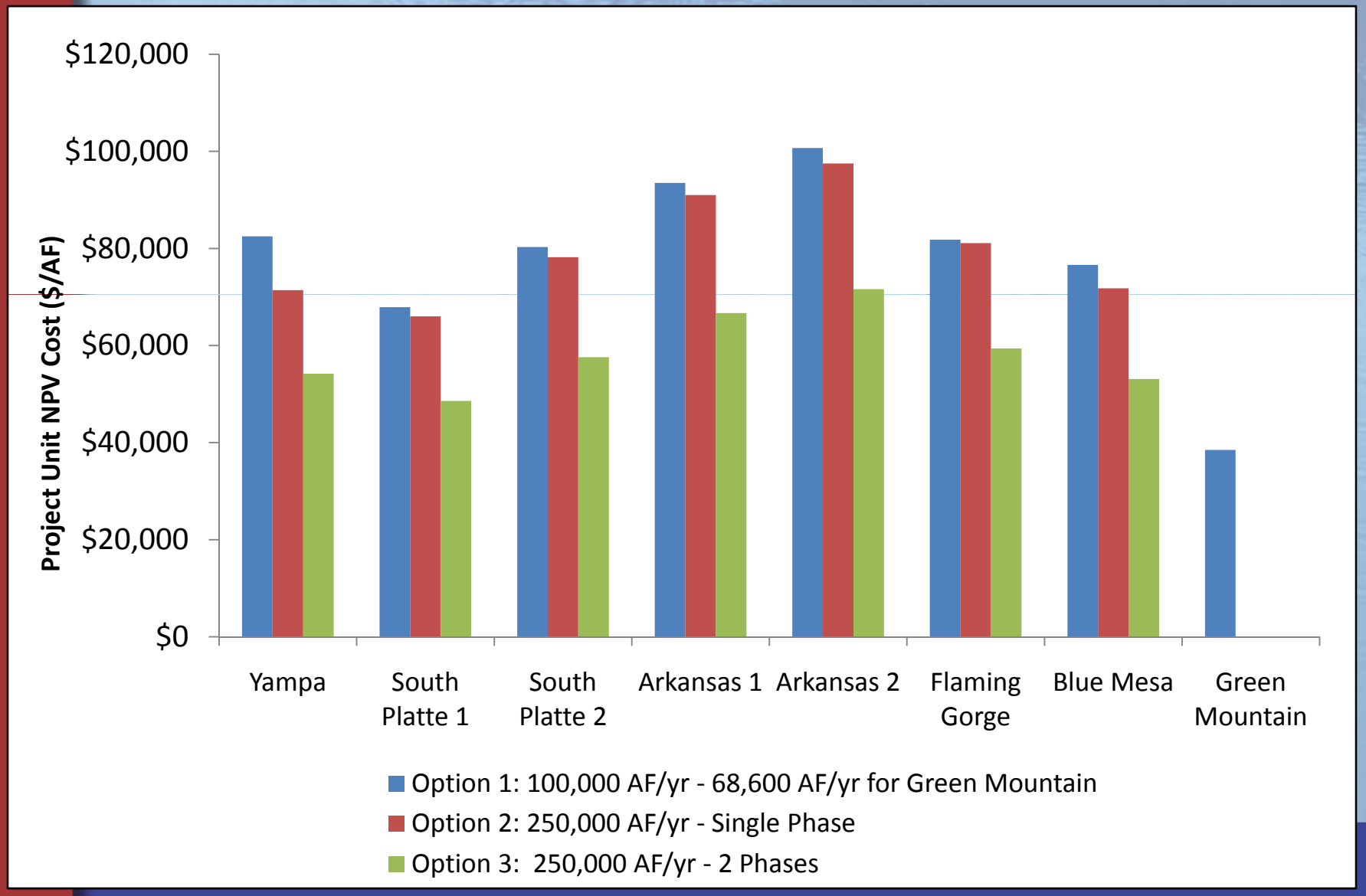
COLORADO DEPARTMENT OF NATURAL RESOURCES

CDM

Example Capital Costs for Portfolio to Address M&I Gap



New Supply Develop and Agricultural Transfer Reconnaissance Level Life-Cycle Costs

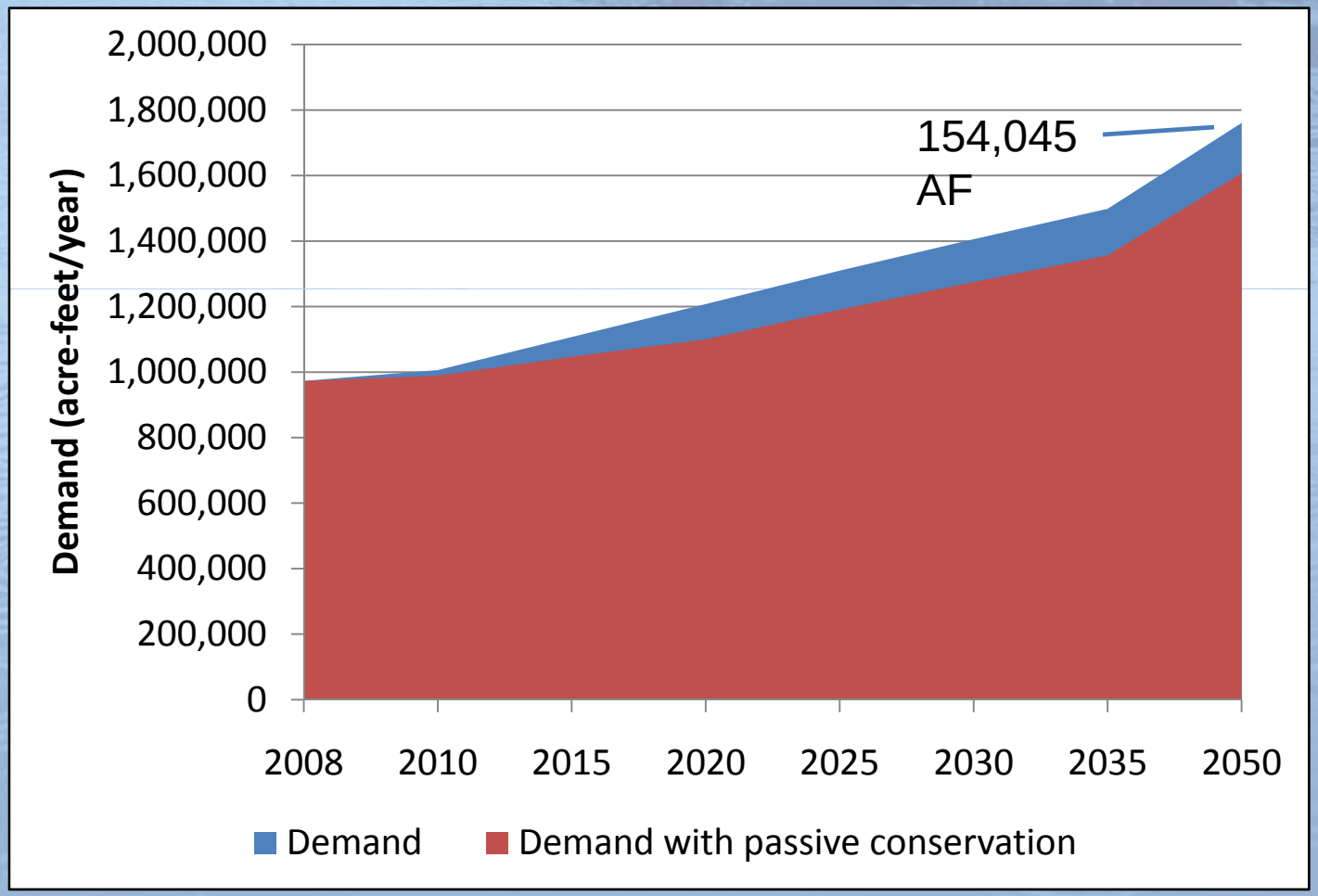


CONSERVATION STRATEGY

Initial Questions

- What amounts of water can M&I conservation provide to meet our 2050 water needs?
  - How much water savings can be expected?
  - How much can be counted on as permanent?
  - When will these savings occur during the planning period?
  - How does water conservation integrate into overall water resource planning?
- What is the best array of conservation measures to achieve these demand reductions?

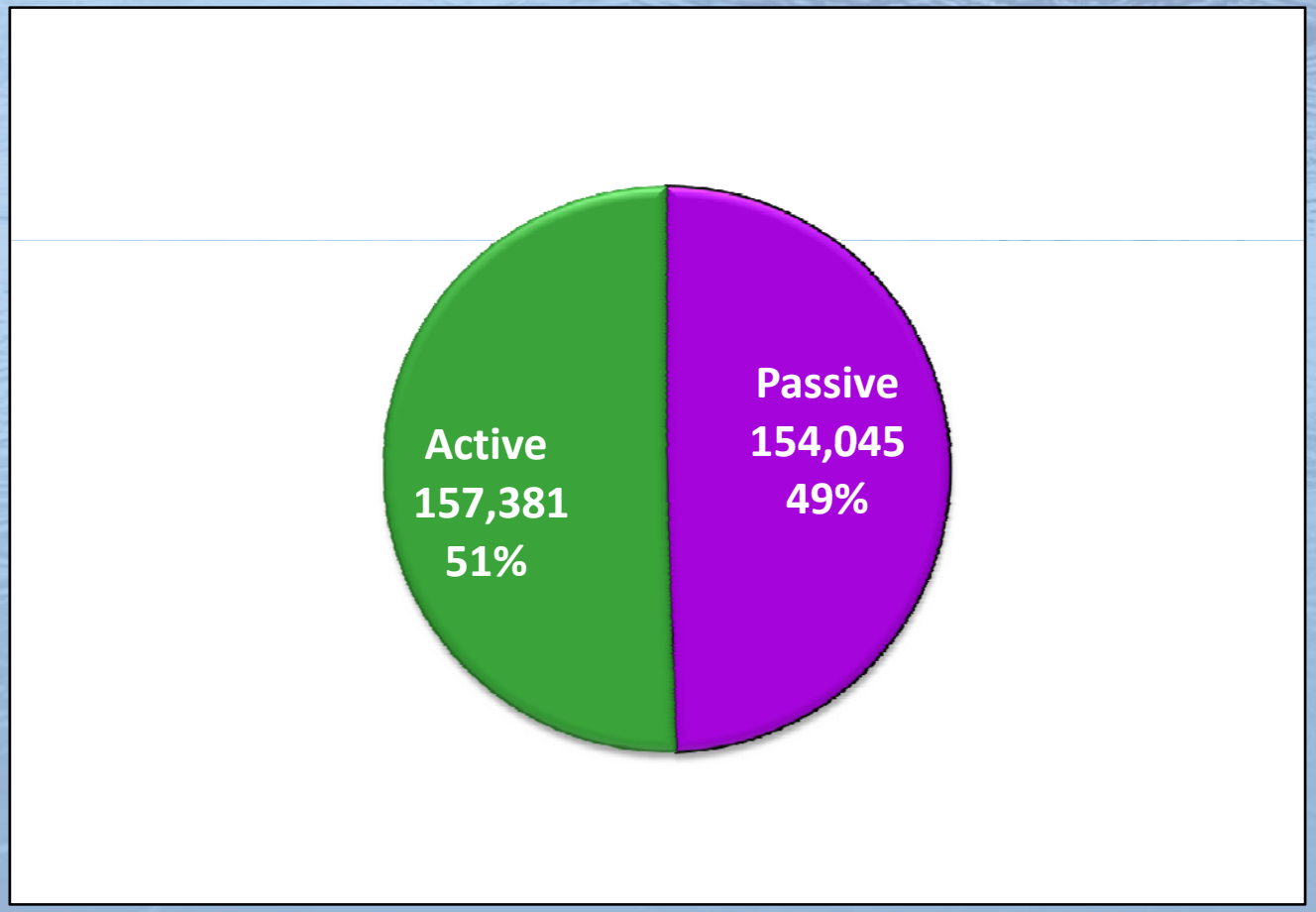
Effect of Passive Conservation on Future M&I Demand



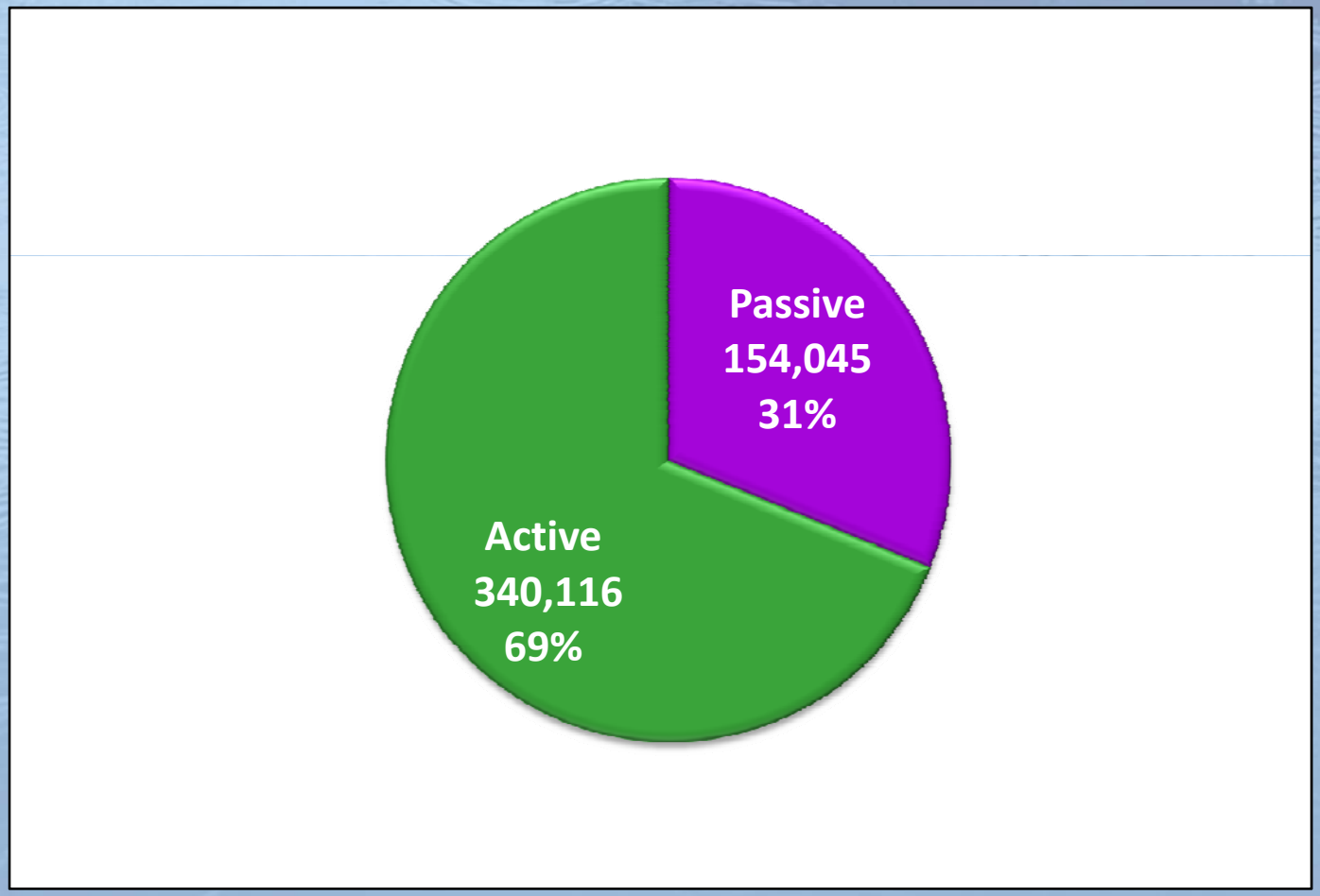
Comparison of SWSI Forecasts

Project	Level	2030 Projections			2050 Projections		
		Baseline Demand (AF)	Volume Savings (AF)	% Savings	Baseline Demand (AF)	Volume Savings (AF)	% Savings
SWSI 1	Level 1 (Passive)	1,926,798	101,900	5%	NA		
	Level 2		170,533	9%	NA		
	Level 3		272,852	14%	NA		
	Level 4		443,385	23%	NA		
	Level 5		699,183	36%	NA		
SWSI 2	Low	1,925,000	287,000	15%	NA		
	Mid		372,000	19%	NA		
	High		459,000	24%	NA		
2010 SNA	Low	1,275,050	47,202	4%	1,607,564	157, 381	10%
	Medium		138,572	11%		340,116	21%
	High		229,275	18%		521,522	32%

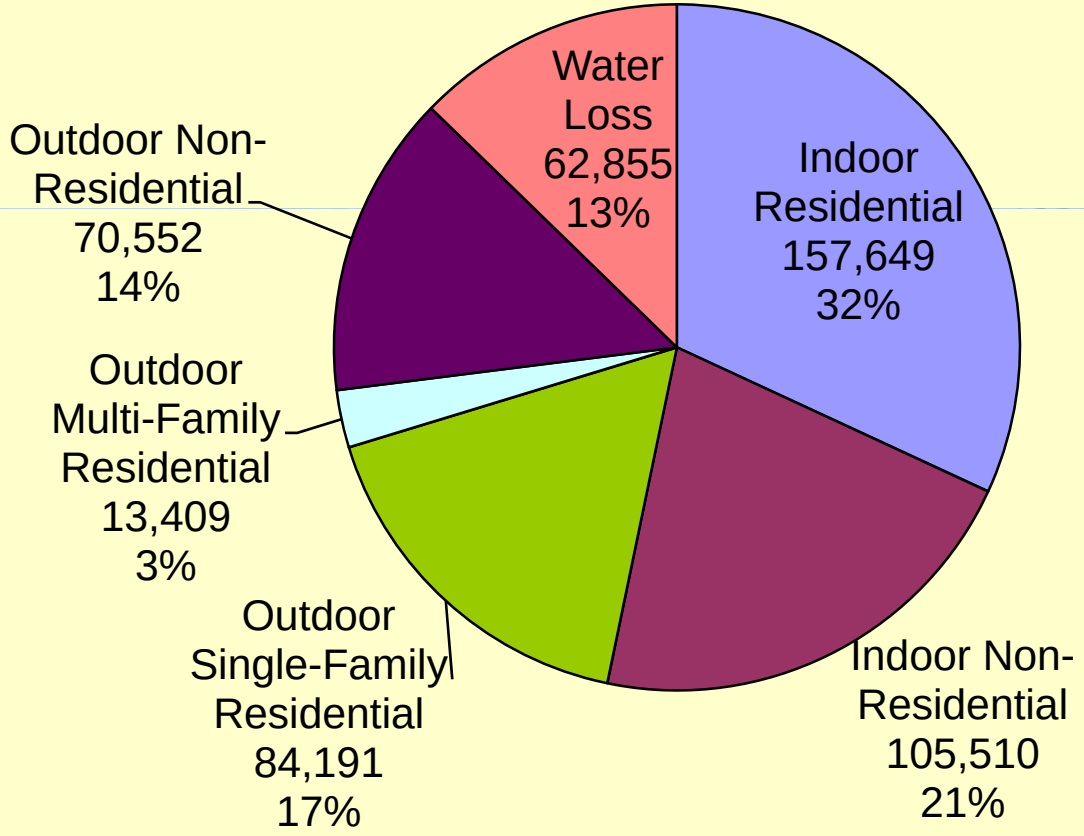
Low Water Saving Strategy Passive and Active Savings at 2050



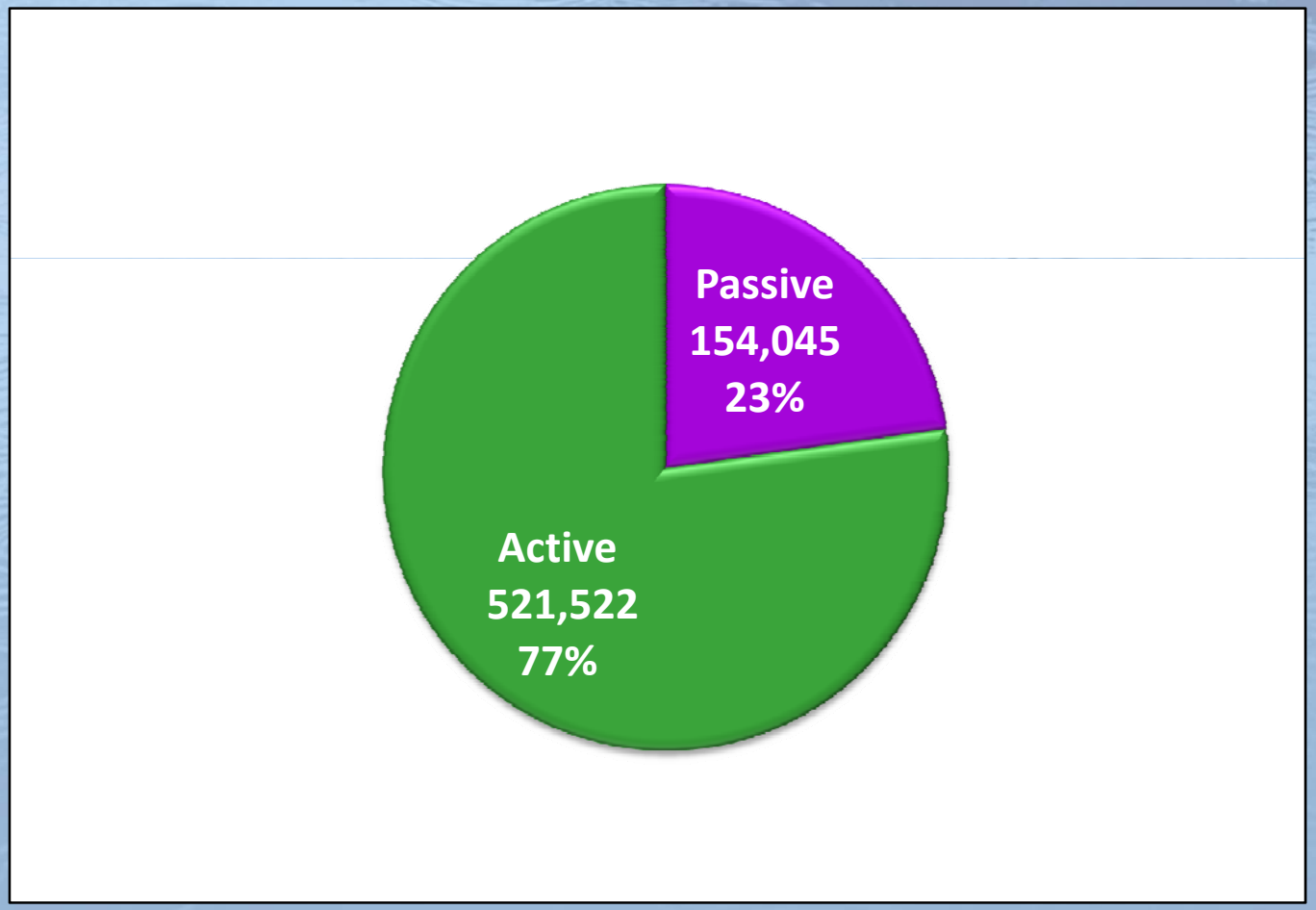
Medium Water Saving Strategy Passive and Active Savings at 2050



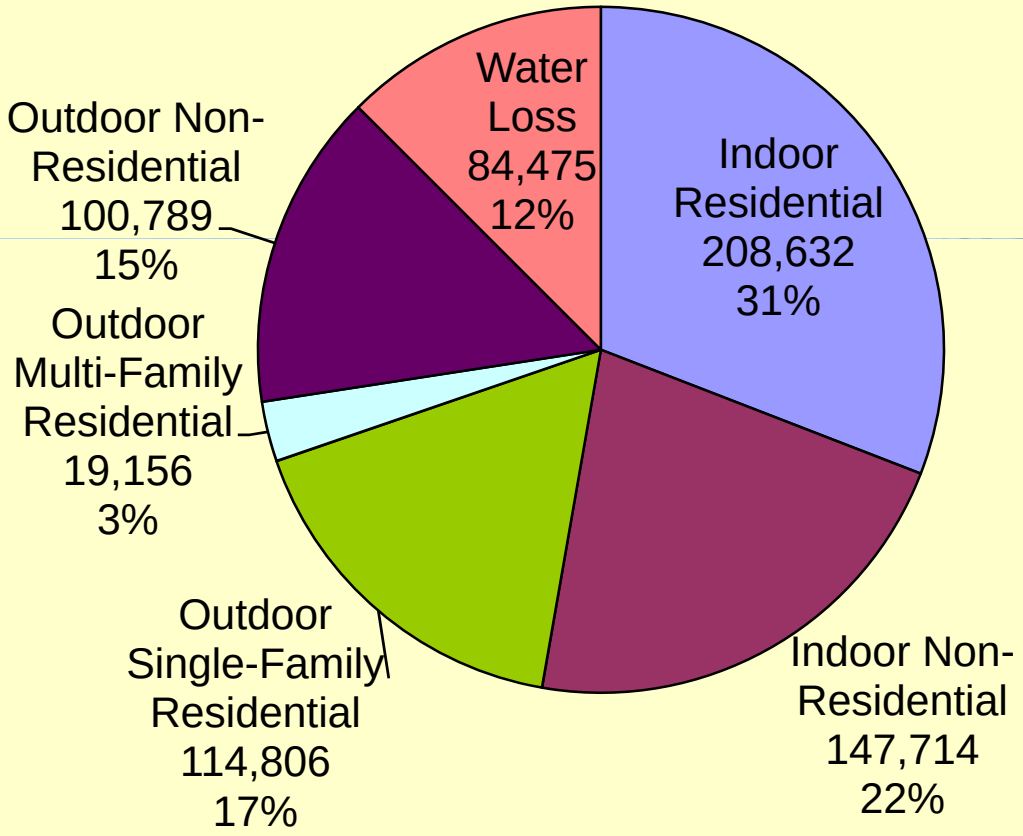
Medium Water Saving Strategy



High Water Saving Strategy Passive and Active Savings at 2050



High Water Saving Strategy



Best Practice Guidebook

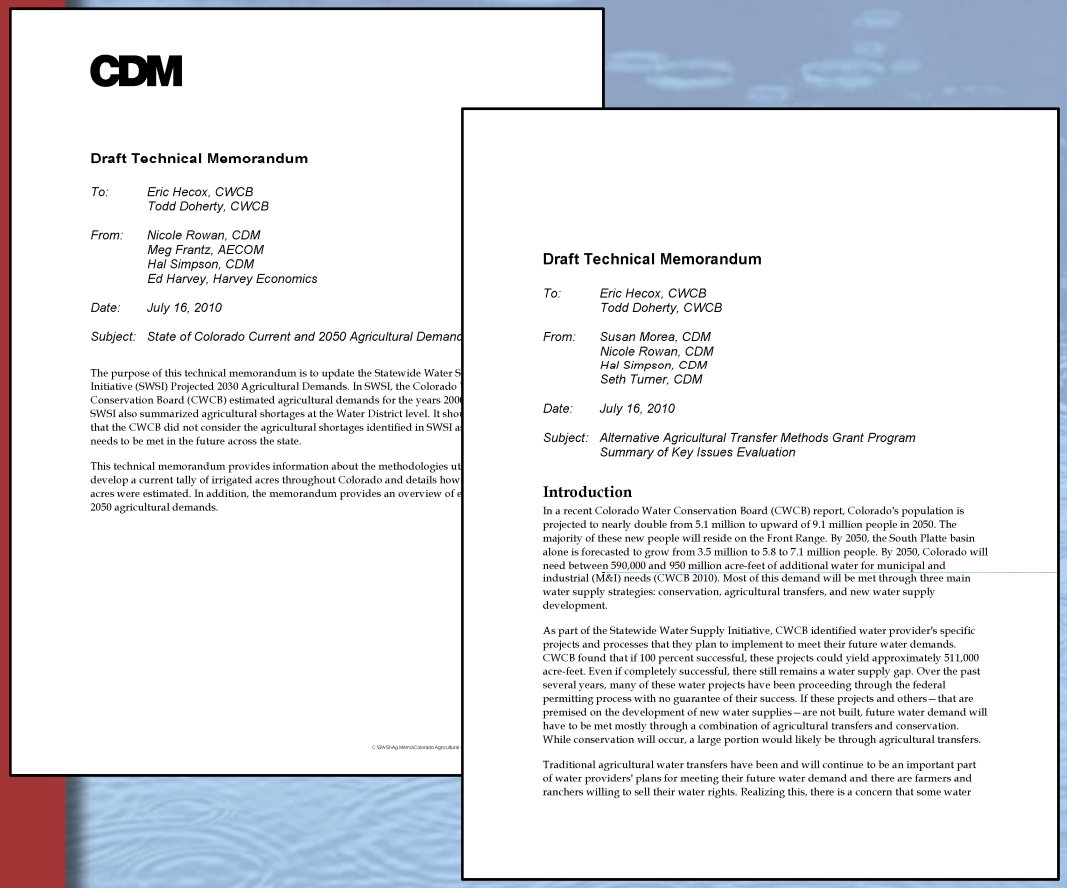
Measure	Best Practice	Category or Sector Impacted
Full metering	BP 1	ALL
Conservation oriented rates	BP 1	ALL
Conservation oriented tap fees	BP 1	ALL
Integrated resource planning, goal setting and monitoring	BP 2	Utility
Water loss control	BP 3	Utility
Conservation coordinator	BP 4	ALL
Water waste ordinance	BP 5	ALL
Public information and education	BP 6	ALL

Best Practice Guidebook

Measure	Best Practice	Category or Sector Impacted
Landscape water budgets	BP 7	Outdoor irrigation
Rules and regulations for landscape design and installation	BP 8	Outdoor irrigation
Certification of landscape professionals	BP 8	Outdoor irrigation
Water efficient design, installation and maintenance practices for new and existing landscapes	BP 9	Outdoor irrigation
Irrigation efficiency evaluations	BP 10	Outdoor irrigation

Best Practice Guidebook

Measure	Best Practice	Category or Sector Impacted
Rules for new construction (residential and non-residential)	BP 11	ALL
High efficiency fixtures and appliances-Residential	BP 12	Residential
High efficiency fixtures and appliances-Non Residential	BP 12	CII
Residential water surveys and evaluations, targeted at high demand customers	BP 13	Residential
Specialized non-residential surveys, audits, and equipment efficiency improvements	BP 14	CII



CDM

Draft Technical Memorandum

To: *Eric Hecox, CWCB*
Todd Doherty, CWCB

From: *Nicole Rowan, CDM*
Meg Frantz, AECOM
Hal Simpson, CDM
Ed Harvey, Harvey Economics

Date: *July 16, 2010*

Subject: *State of Colorado Current and 2050 Agricultural Demand*

The purpose of this technical memorandum is to update the Statewide Water S
Initiative (SWSI) Projected 2030 Agricultural Demands. In SWSI, the Colorado
Conservation Board (CWCB) estimated agricultural demands for the years 200
SWSI also summarized agricultural shortages at the Water District level. It sho
that the CWCB did not consider the agricultural shortages identified in SWSI a
needs to be met in the future across the state.

This technical memorandum provides information about the methodologies ut
develop a current tally of irrigated acres throughout Colorado and details how
acres were estimated. In addition, the memorandum provides an overview of e
2050 agricultural demands.

C:\SWSI\Ag Memo\Colorado Agricultural

Draft Technical Memorandum

To: *Eric Hecox, CWCB*
Todd Doherty, CWCB

From: *Susan Morea, CDM*
Nicole Rowan, CDM
Hal Simpson, CDM
Seth Turner, CDM

Date: *July 16, 2010*

Subject: *Alternative Agricultural Transfer Methods Grant Program*
Summary of Key Issues Evaluation

Introduction

In a recent Colorado Water Conservation Board (CWCB) report, Colorado's population is projected to nearly double from 5.1 million to upward of 9.1 million people in 2050. The majority of these new people will reside on the Front Range. By 2050, the South Platte basin alone is forecasted to grow from 3.5 million to 5.8 to 7.1 million people. By 2050, Colorado will need between 590,000 and 950 million acre-feet of additional water for municipal and industrial (M&I) needs (CWCB 2010). Most of this demand will be met through three main water supply strategies: conservation, agricultural transfers, and new water supply development.

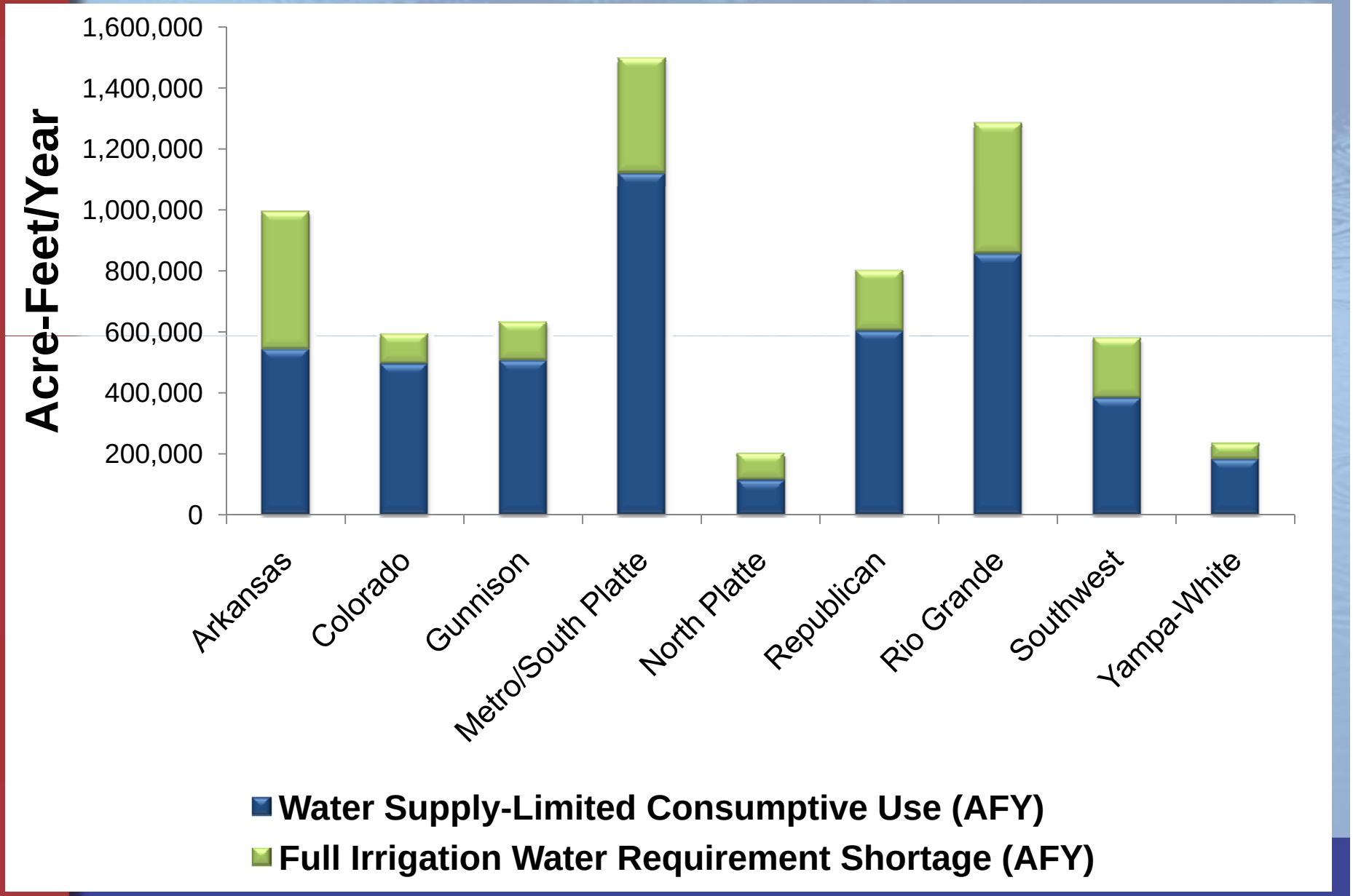
As part of the Statewide Water Supply Initiative, CWCB identified water provider's specific projects and processes that they plan to implement to meet their future water demands. CWCB found that if 100 percent successful, these projects could yield approximately 511,000 acre-feet. Even if completely successful, there still remains a water supply gap. Over the past several years, many of these water projects have been proceeding through the federal permitting process with no guarantee of their success. If these projects and others—that are premised on the development of new water supplies—are not built, future water demand will have to be met mostly through a combination of agricultural transfers and conservation. While conservation will occur, a large portion would likely be through agricultural transfers.

Traditional agricultural water transfers have been and will continue to be an important part of water providers' plans for meeting their future water demand and there are farmers and ranchers willing to sell their water rights. Realizing this, there is a concern that some water

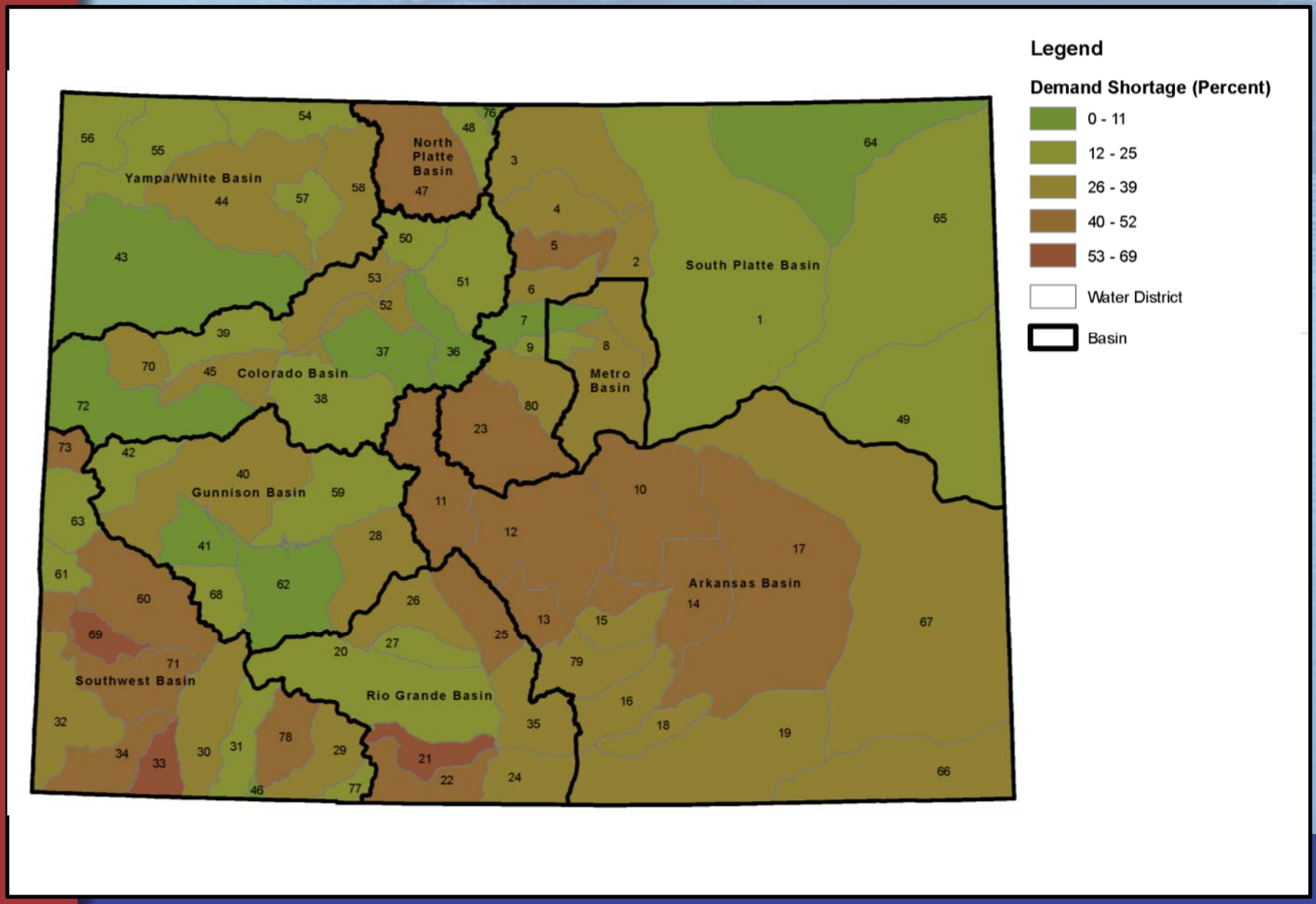
2050 Agricultural demands and Alternative Transfer methods

CDM

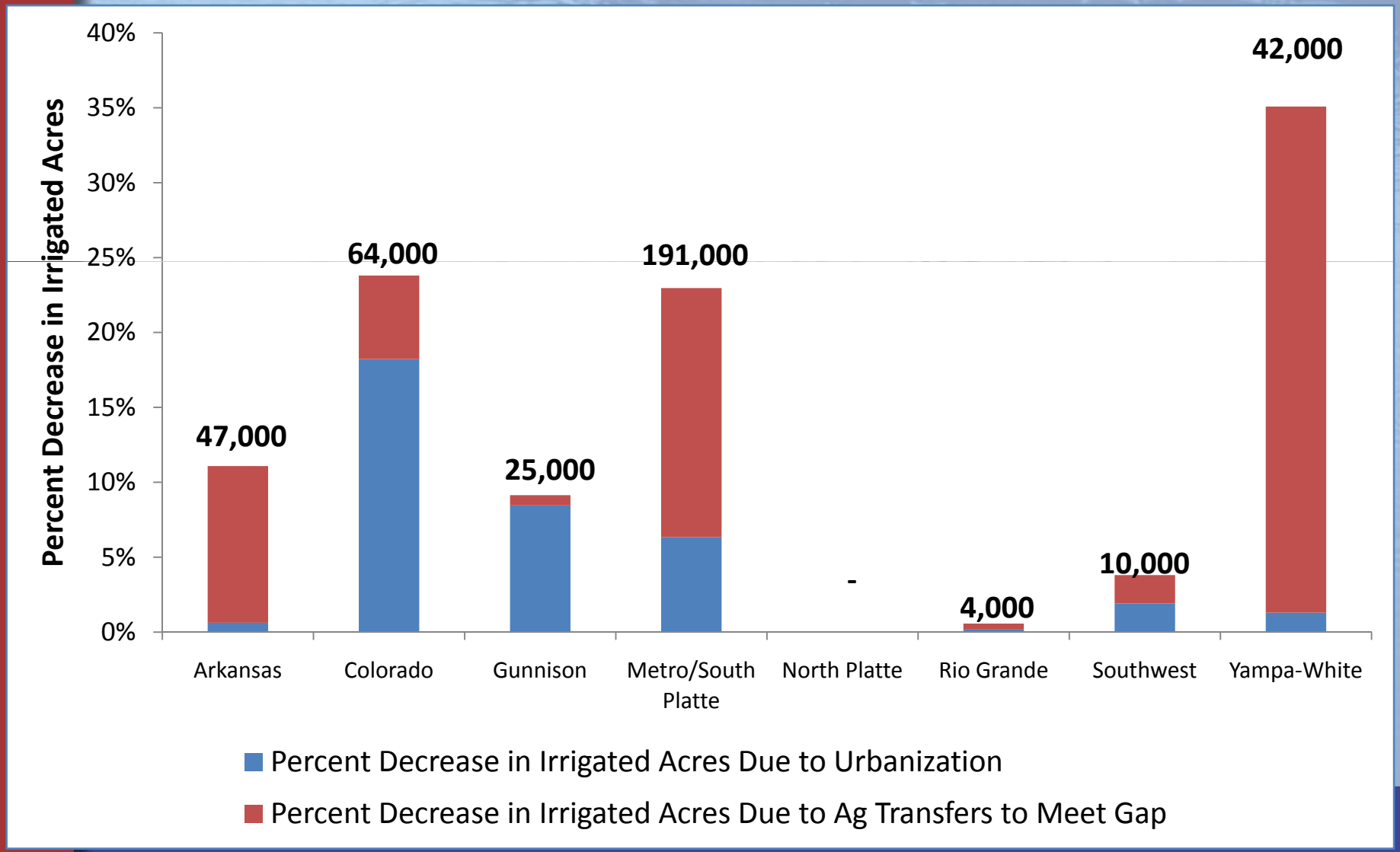
Current Agricultural Demands



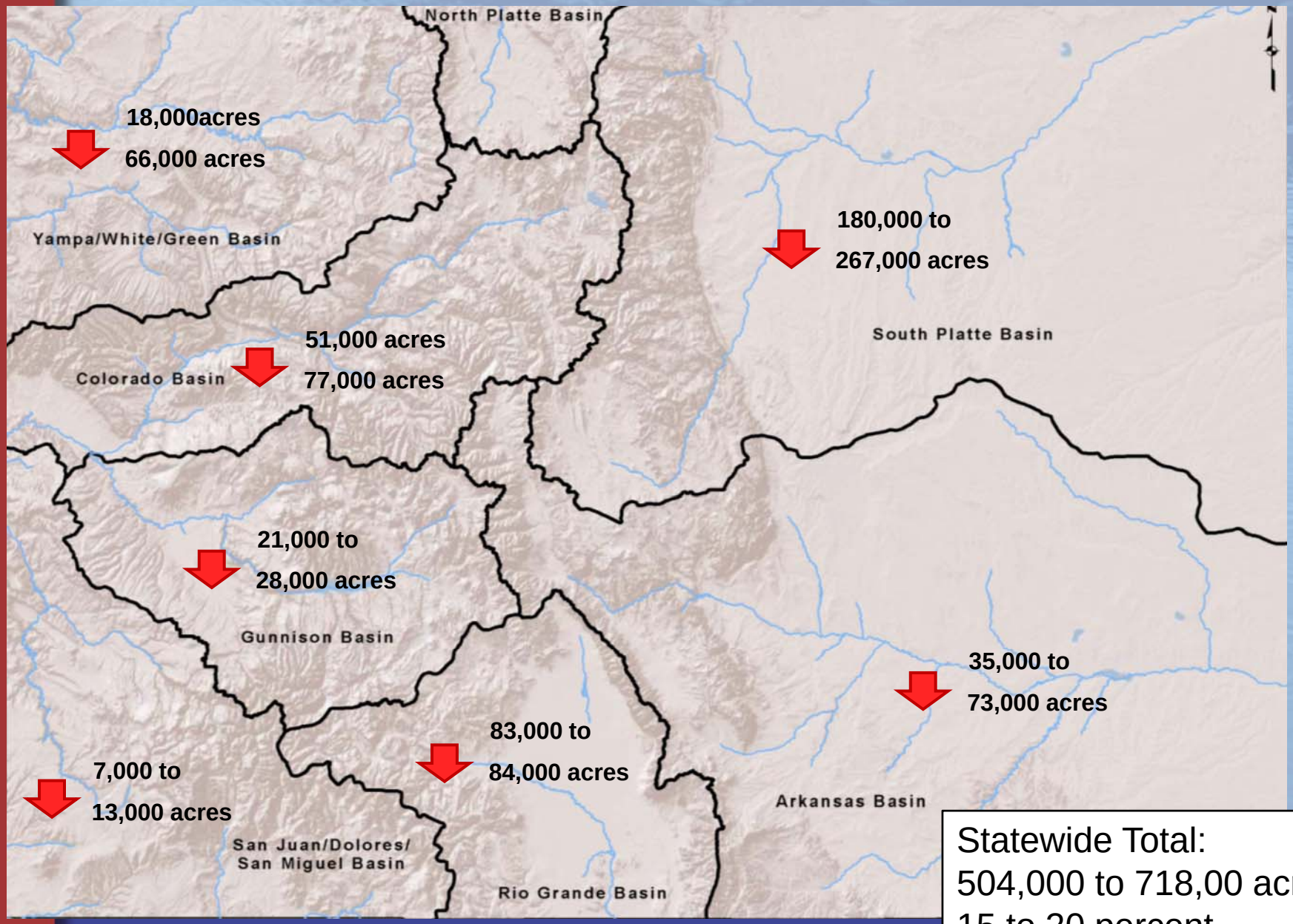
Current Agricultural Shortages



Percent Decrease in Irrigated Acres due to Urbanization & Ag Transfers



2050 Changes in Irrigated Acres



Statewide Total:
504,000 to 718,00 acres
15 to 20 percent

Alternative Agricultural Water Transfers Report

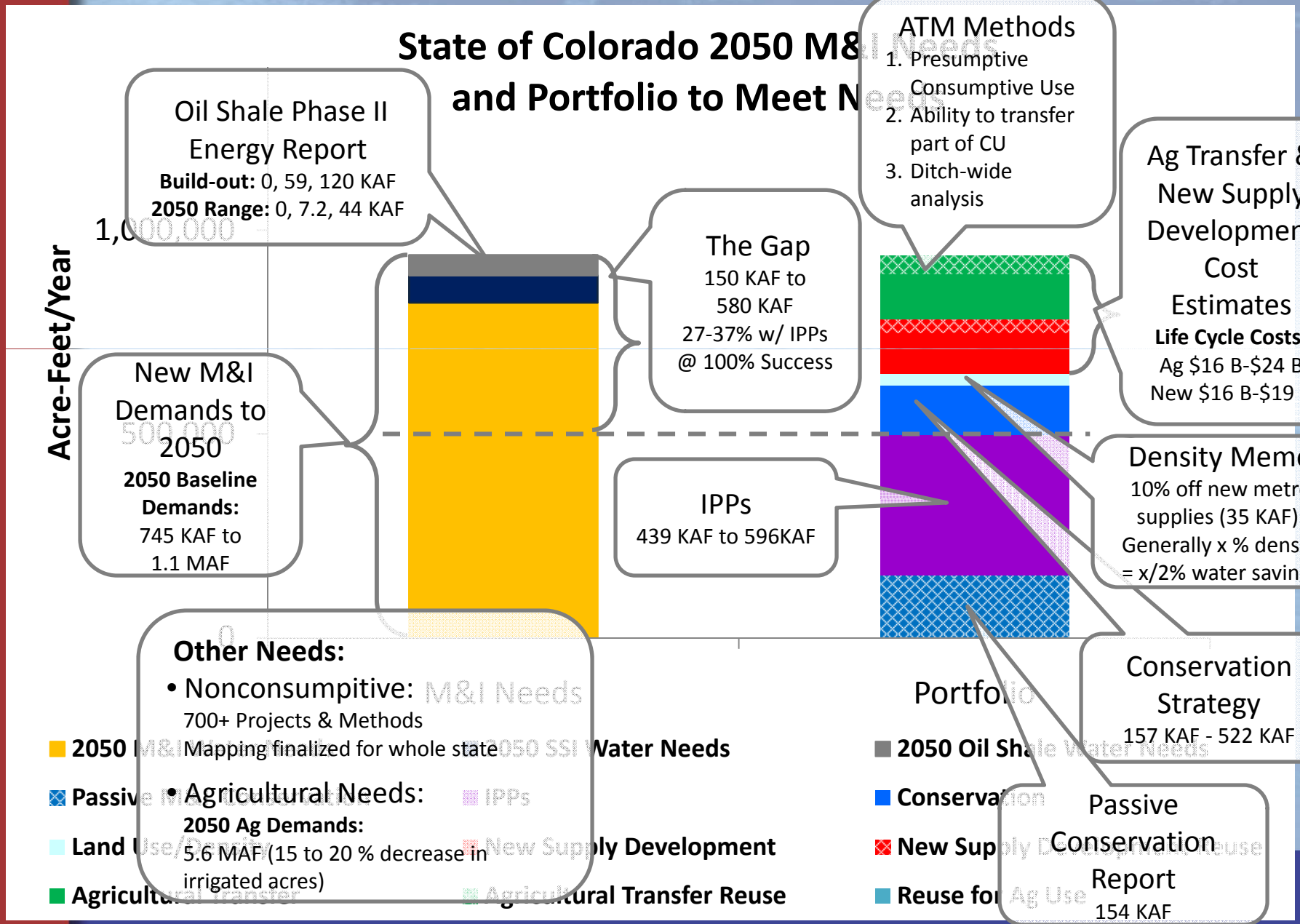
- **Technical Issues**
- **Legal and Institutional Issues**
- **Financial Issues/Economic Considerations**

Alternative Transfer Methods Next Steps

- Presumptive consumptive use
- Canal or ditch systemwide historical consumptive use analysis
- Transfer of a portion of consumptive use

SUMMARY AND DISCUSSION

Reports in the M&I Context

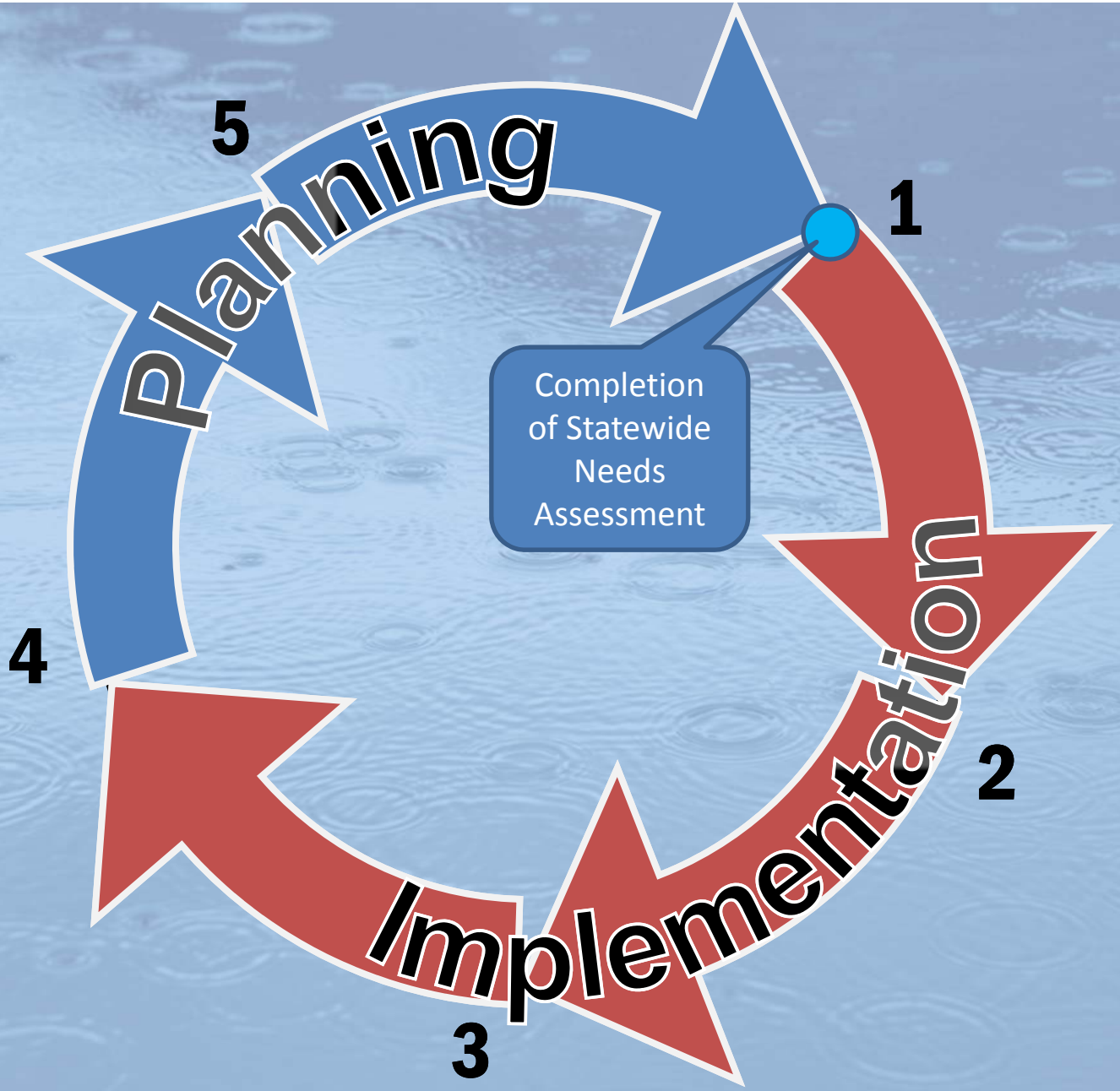


SWSI Recommendations

1. Ongoing Dialogue Among all Water Interests
2. Track and Support the Identified Projects and Processes
3. Develop a Program to Evaluate, Quantify and Prioritize Environmental and Recreational Water Enhancement Goals
4. Work Towards Consensus Recommendations on Funding Mechanisms for Environmental and Recreational Enhancements
5. Create a Common Understanding of Future Water Supplies
6. Develop Implementation Plans Towards Meeting Future Needs
7. Assess Potential New State Roles in Implementing Solutions
8. Develop Requirements for Standardized Annual M&I Water Use Data Reporting

Questions for Future Consideration

- How should CWCB support IPPs (consumptive & nonconsumptive)?
  - Work with permitting agencies on best methods standards
  - Explore encouragement of IRPs, increased regional planning & integration w/ other resources
  - Understand future density patterns
  - Partner with loan program
  - Improvement of BNDSS
  - ID & implement NC projects & methods
  - ???
- How should CWCB help fill the gap?
  - Continue scenario planning & development of portfolios
  - Determine portfolios for each scenario
  - Pursue common elements of the portfolios
  - Technical analysis of strategies (Conservation, New Supply, Ag)
  - Guiding principles
  - ???



Five Year Planning Cycle