



Southwest Basin Roundtable Colorado's Water Supply Future: Updates and Schedule

September 8, 2010

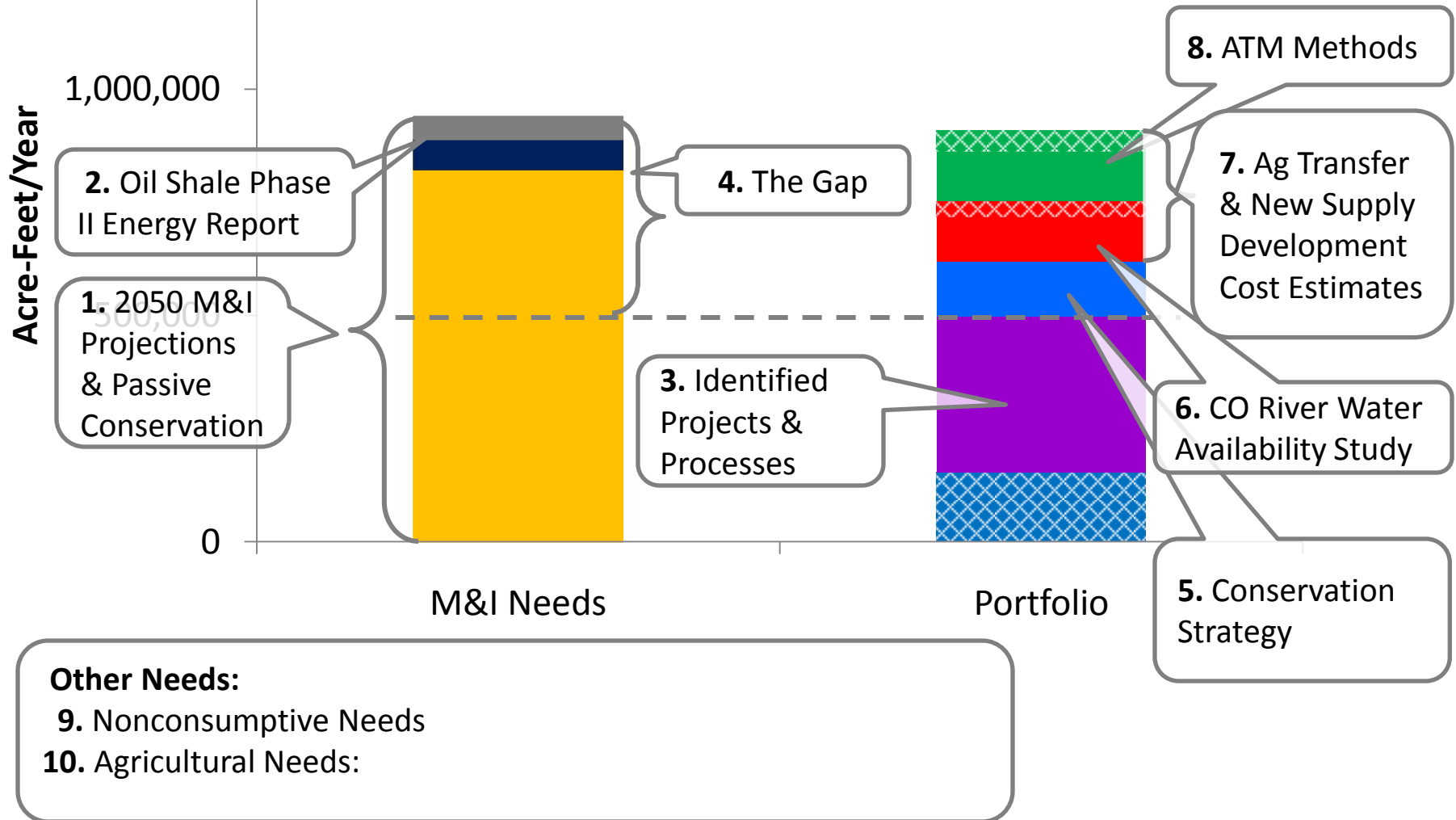
Overview and Purpose



- Provide a brief overview of major technical reports and their conclusions
- Discuss report schedule:
 - Timeframe for finalizing remaining components
 - Statewide Water Needs Assessment scheduled for January 2011
 - Basin-specific Reports 1st Quarter 2011
- Solicit feedback from roundtable

Reports in the M&I Context

State of Colorado 2050 M&I Needs and Portfolio to Meet Needs



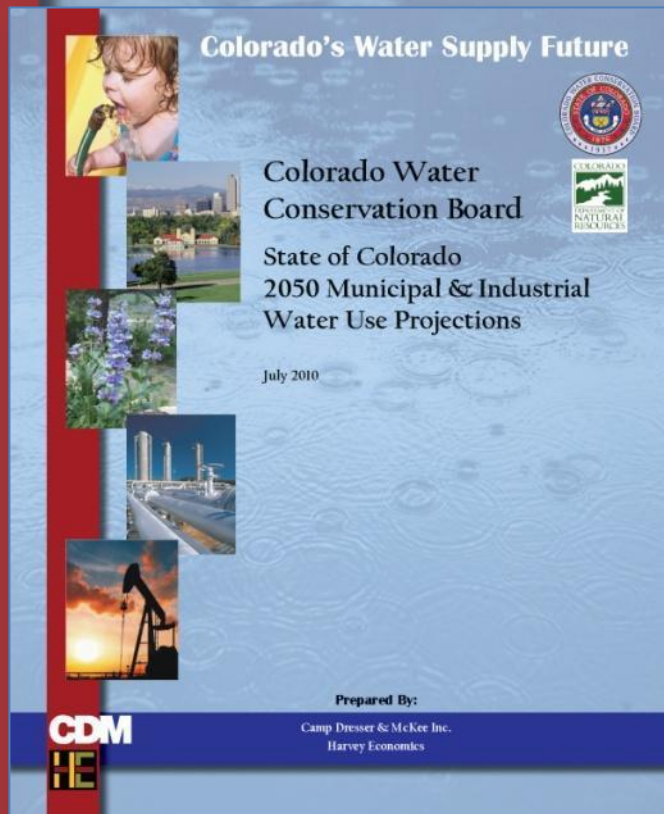
List of Reports

- **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 January 2011 timeframe

2010 Schedule

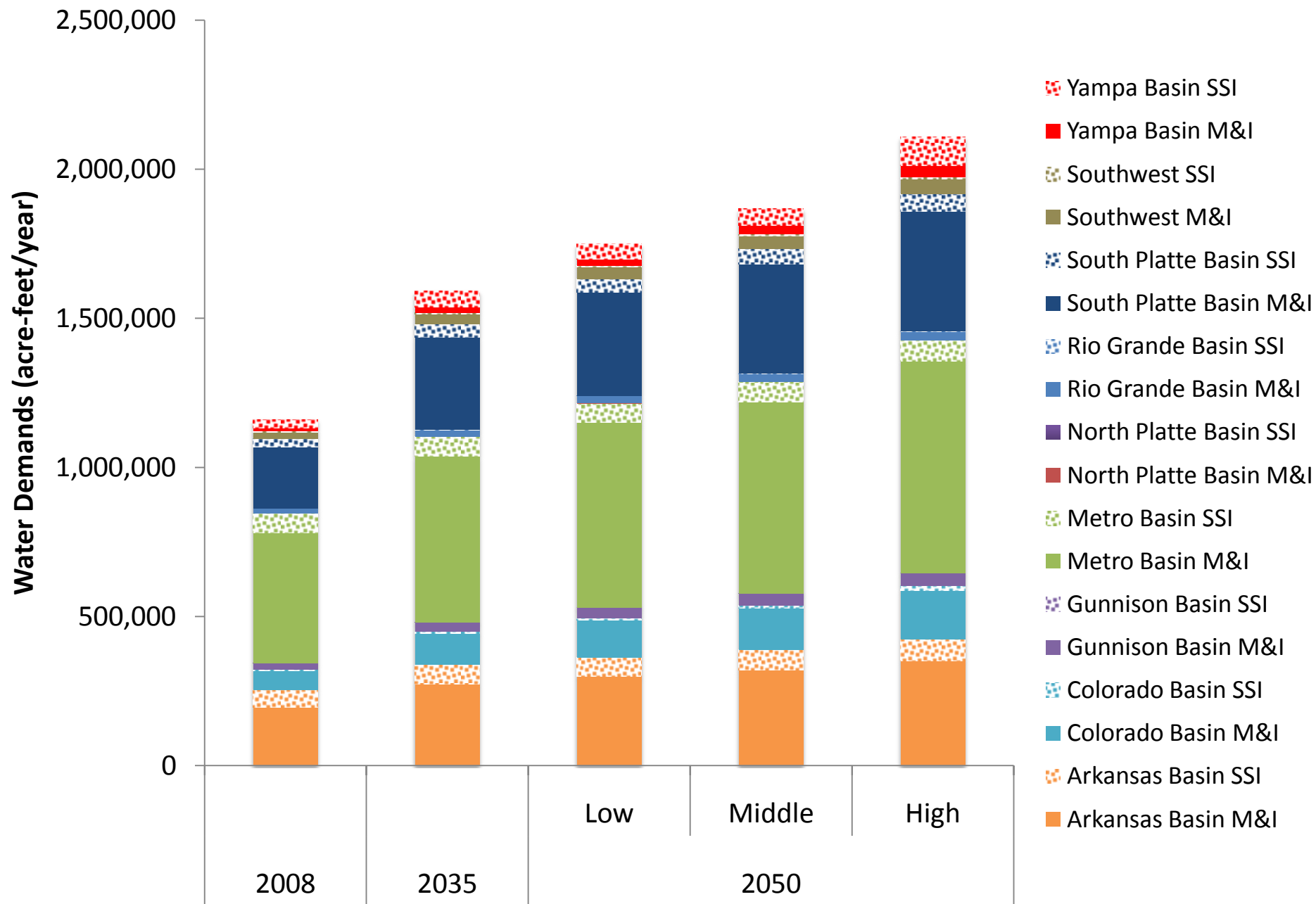
WORK PRODUCT	2010						2011
	Jul	Aug	Sep	Oct	Nov	Dec	Jan
2050 M&I Water Use Projections.....	FINAL						
Energy Study Water Use Scenarios.....	DRAFT	FINAL					
M&I Gap Analysis.....		DRAFT	★	★	FINAL		
Reconnaissance Level Cost Estimates.....	FINAL						
Alternative Transfer Methods and Agricultural Demands.....	DRAFT		★	★	FINAL		
Nonconsumptive Needs Assessments							
WFET Pilot Study.....	FINAL						
NCNA Focus Mapping.....	FINAL						
NCNA Phase 2.....	DRAFT		★	★	FINAL	More BRT//	BCC work
Conservation Work Products							
SWSI Water Cons. Levels.....	FINAL						
Evaluation of Passive Savings.....	FINAL						
Guidebook of Best Practices.....		FINAL					
M&I Conservation Strategies.....			DRAFT		FINAL		
Permanency & Penetration Rates ..				DRAFT		FINAL	
Portfolios and Strategies (including Density Memo).....							
					FINAL	More BRT//	BCC work
2010 Statewide Needs Assessment Report.....						FINAL	

★ = BRT Outreach



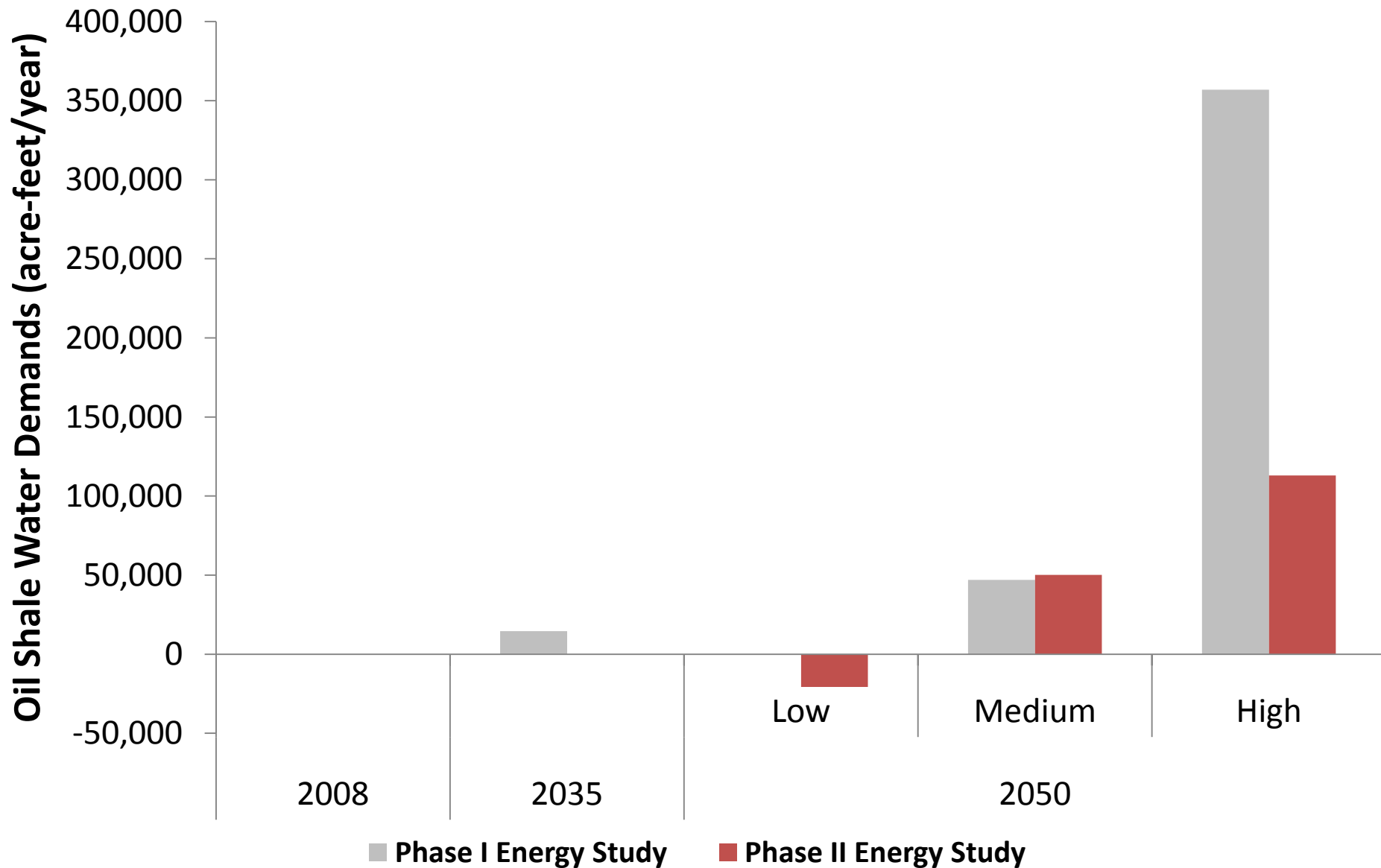
STATE OF COLORADO 2050 MUNICIPAL & INDUSTRIAL WATER USE PROJECTIONS

Statewide 2050 M&I and SSI Demand



Energy Study Phase II

Oil Shale Water Demands





Draft Technical Memorandum

To: Eric Hecox, CWCB
Todd Doherty, CWCB
Jacob Bornstein, CWCB
Greg Johnson, CWCB

From: Susan Morea, CDM
Nicole Rowan, CDM
Seth Turner, CDM

Date: August 18, 2010

Subject: 2050 Municipal and Industrial Gap Analysis

The purpose of this technical memorandum is to update the Statewide Water Supply Initiative (SWSI) Projected 2050 Municipal and Industrial (M&I) and self-supplied industrial (SSI) "gap" analysis to 2050. Having an understanding of what the gap is will help the Colorado Water Conservation Board (CWCB), Interbasin Compact Committee (IBCC), and Basin Roundtables focus on what portfolio of strategies are needed to fill the gap.

Background

In SWSI the CWCB worked with water providers and users, interest groups, organizations, and individuals throughout Colorado to identify solutions to address the state's future M&I and SSI demands. As part of the SWSI Phase 1 study, the CWCB:

- Cataloged and characterized specific water management solutions being contemplated around the state.
- Identified the amount of water, by basin and sub-basin, that would be produced by projects or processes that were expected to move forward in the future with a reasonable degree of certainty by 2050. These projects and processes were called Identified Projects and Processes (IPPs).
- Estimated the amount of water needed (the "gap" in supply) in each basin to meet 2050 needs, assuming each of the IPPs completely met its goals.
- Considered the potential implications if a portion of the IPPs were not successfully implemented.

DRAFT

DRAFT 2050 M&I GAP ANALYSIS REVISED 08/18/10



M&I AND SSI GAP ANALYSIS

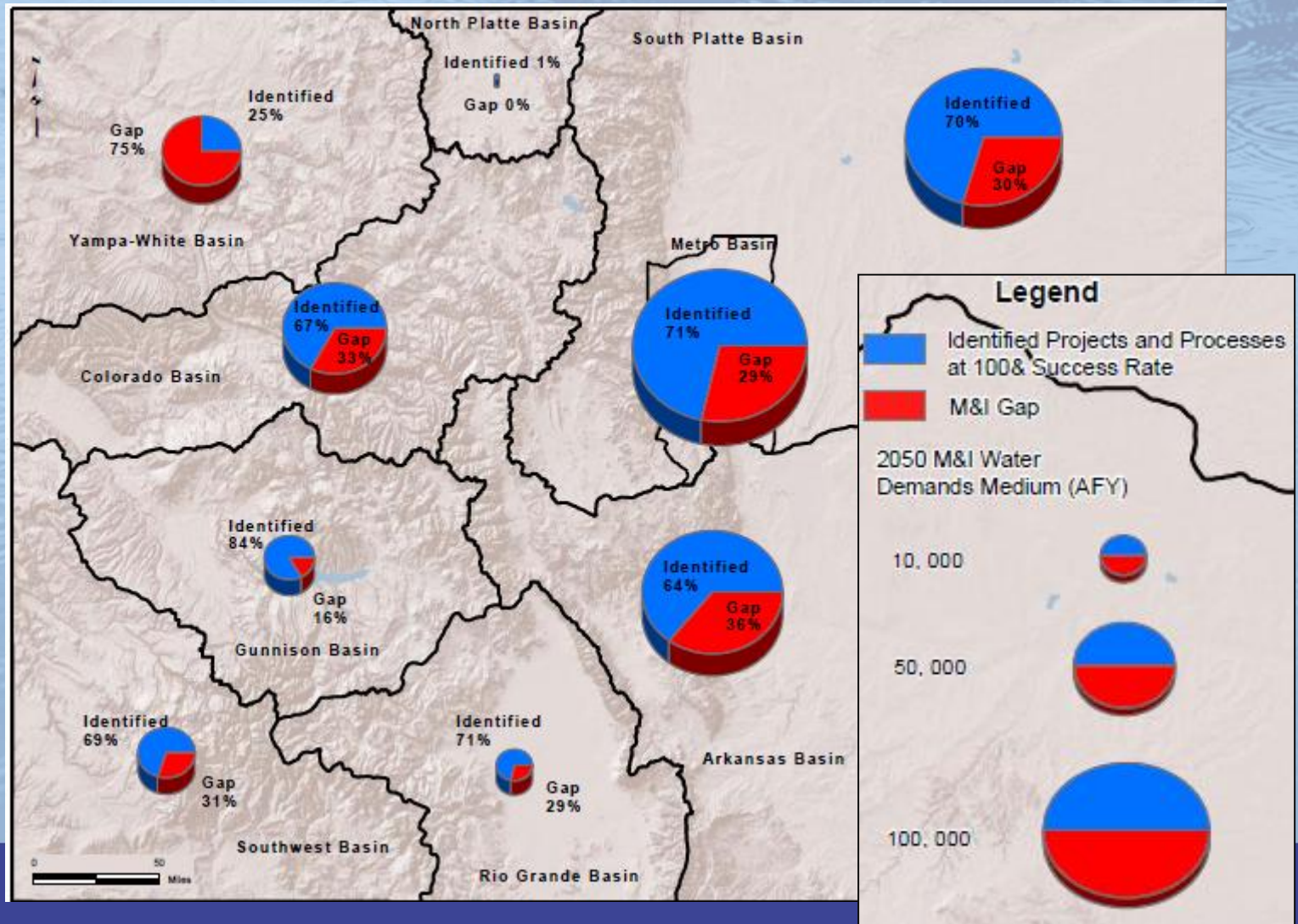


Components of M&I/SSI Gap Analysis

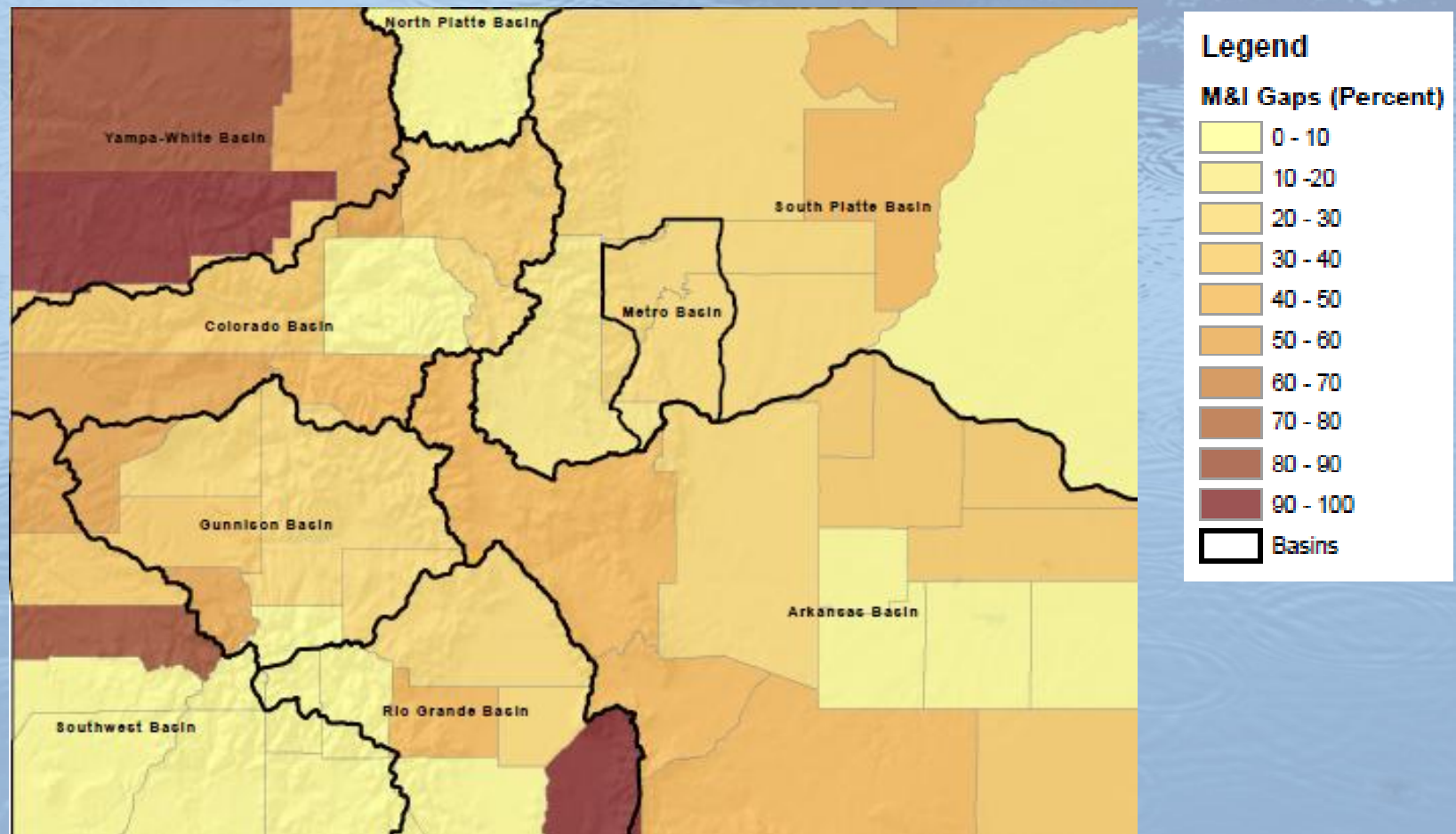


- 2050 M&I/SSI Demands
 - Assume high passive conservation
 - Calculate demand increase above current conditions (2008)
- Estimate yield of IPPs
 - Water provider interviews
 - SWSI Phase 1
 - NEPA project documentation
 - Other sources
- $M\&I/SSI \text{ Gap} = \text{Demand Increase} - \text{IPPs}$

2050 M&I/SSI Gap Analysis – Medium Demand Scenario

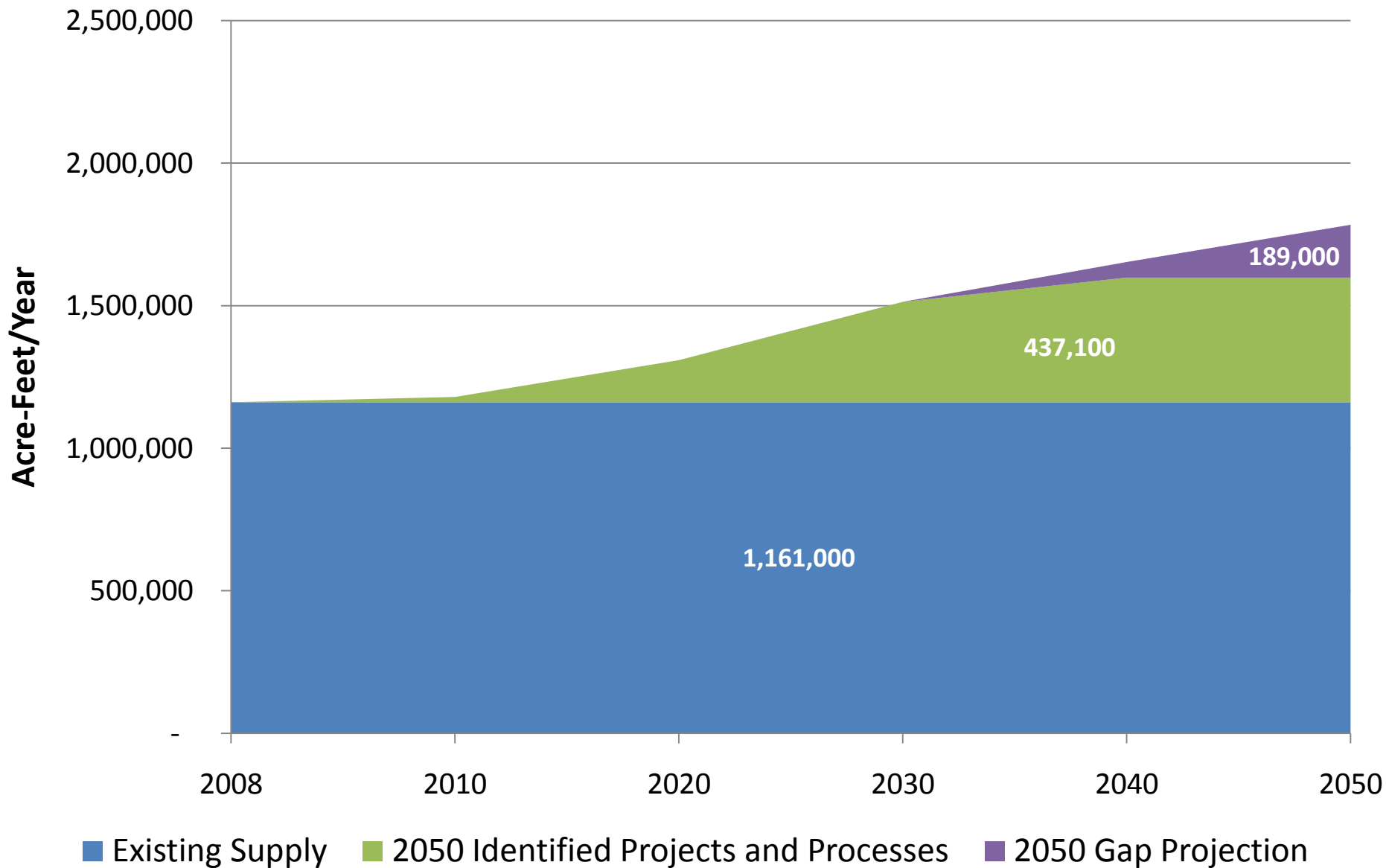


2050 M&I Gaps by County and Region (Medium)



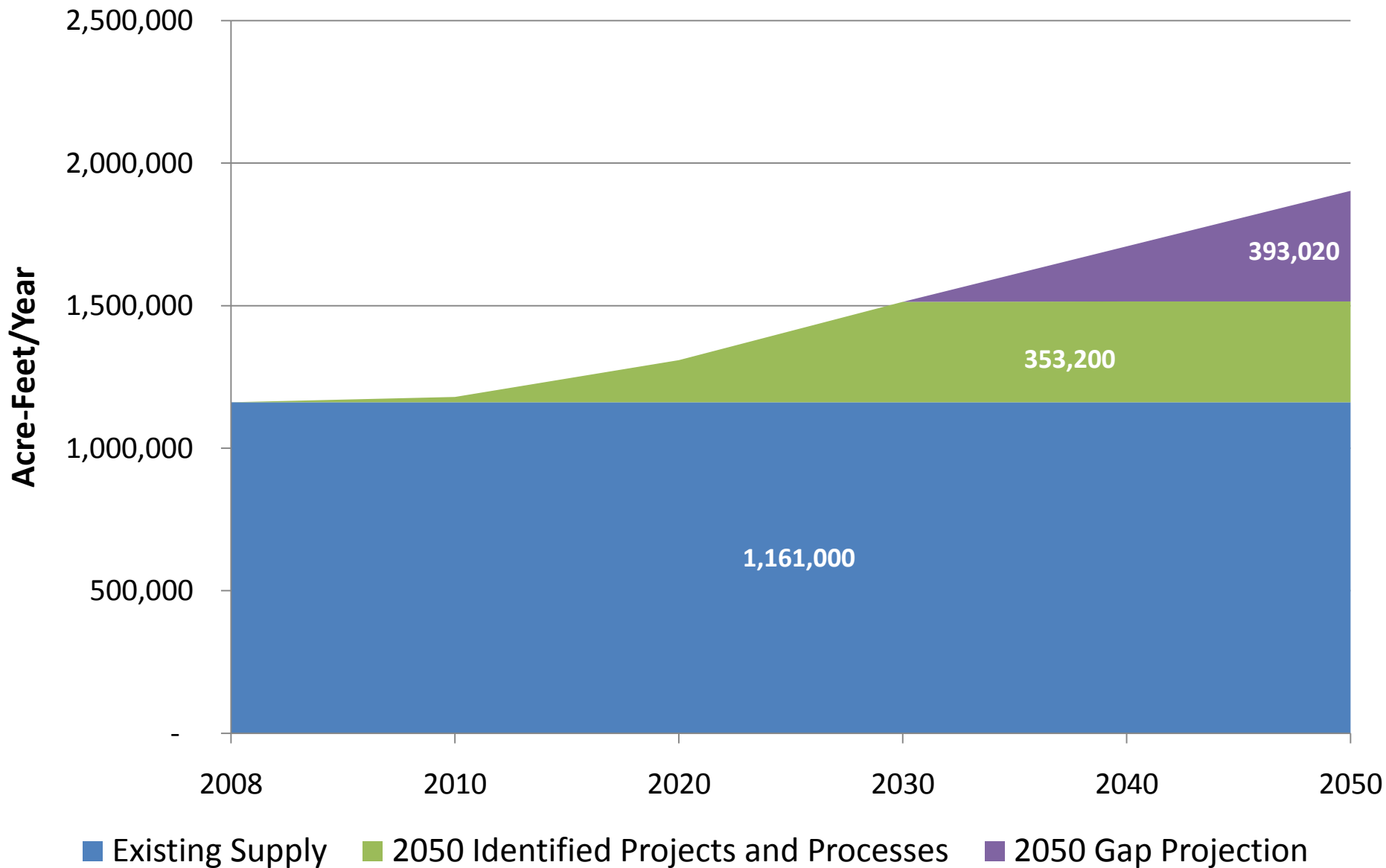
Statewide M&I and SSI Gap Summary

Low Scenario



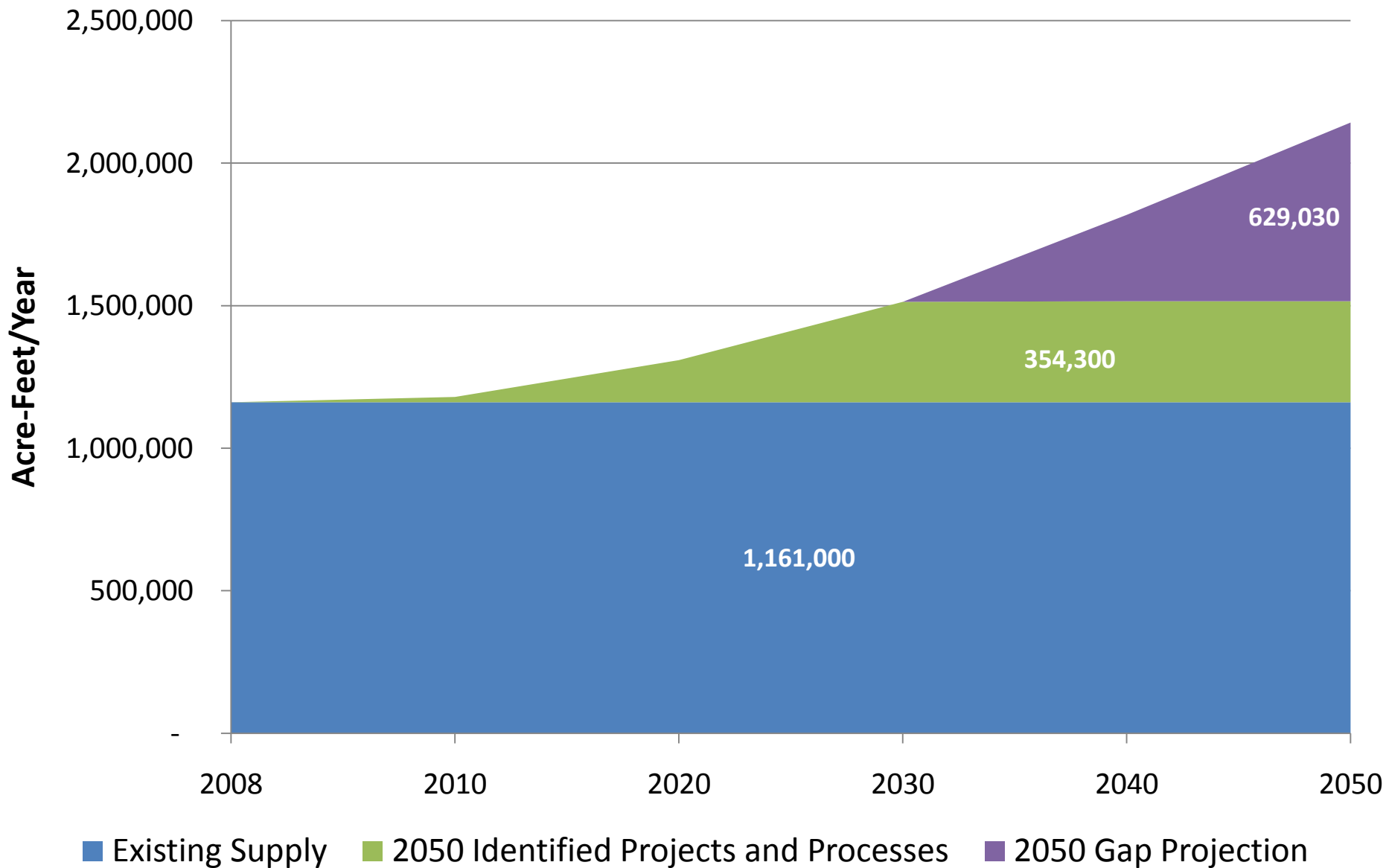
Statewide M&I and SSI Gap Summary

Medium Scenario

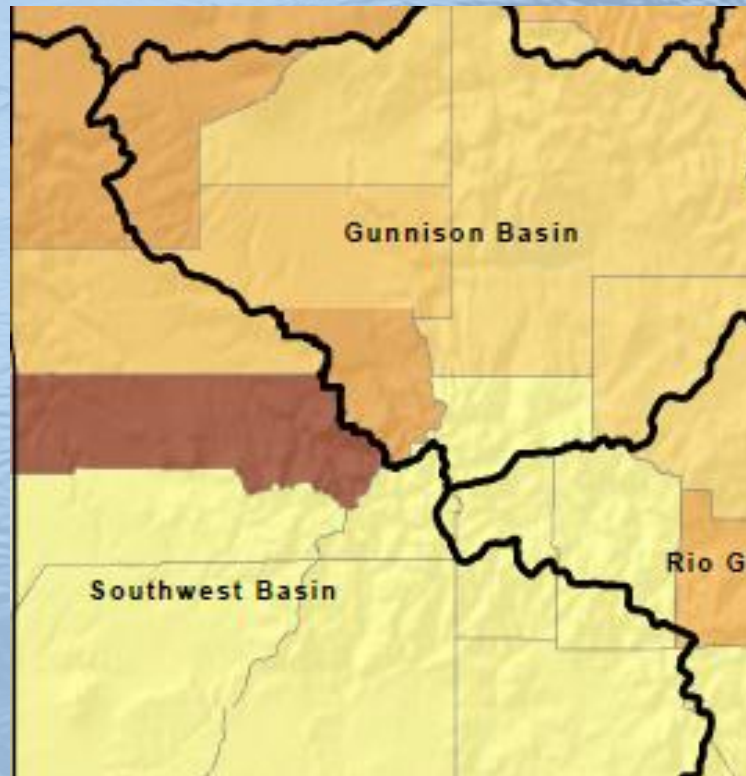


Statewide M&I and SSI Gap Summary

High Scenario

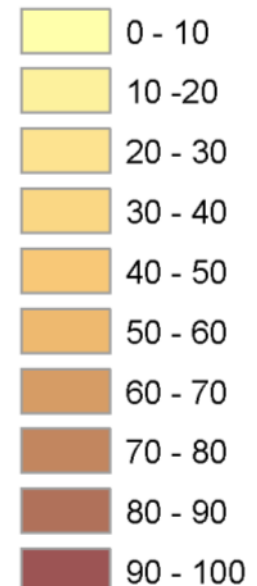


Southwest Basin M&I Gap – Medium Scenario with 100% IPP Success



Legend

M&I Gaps (Percent)

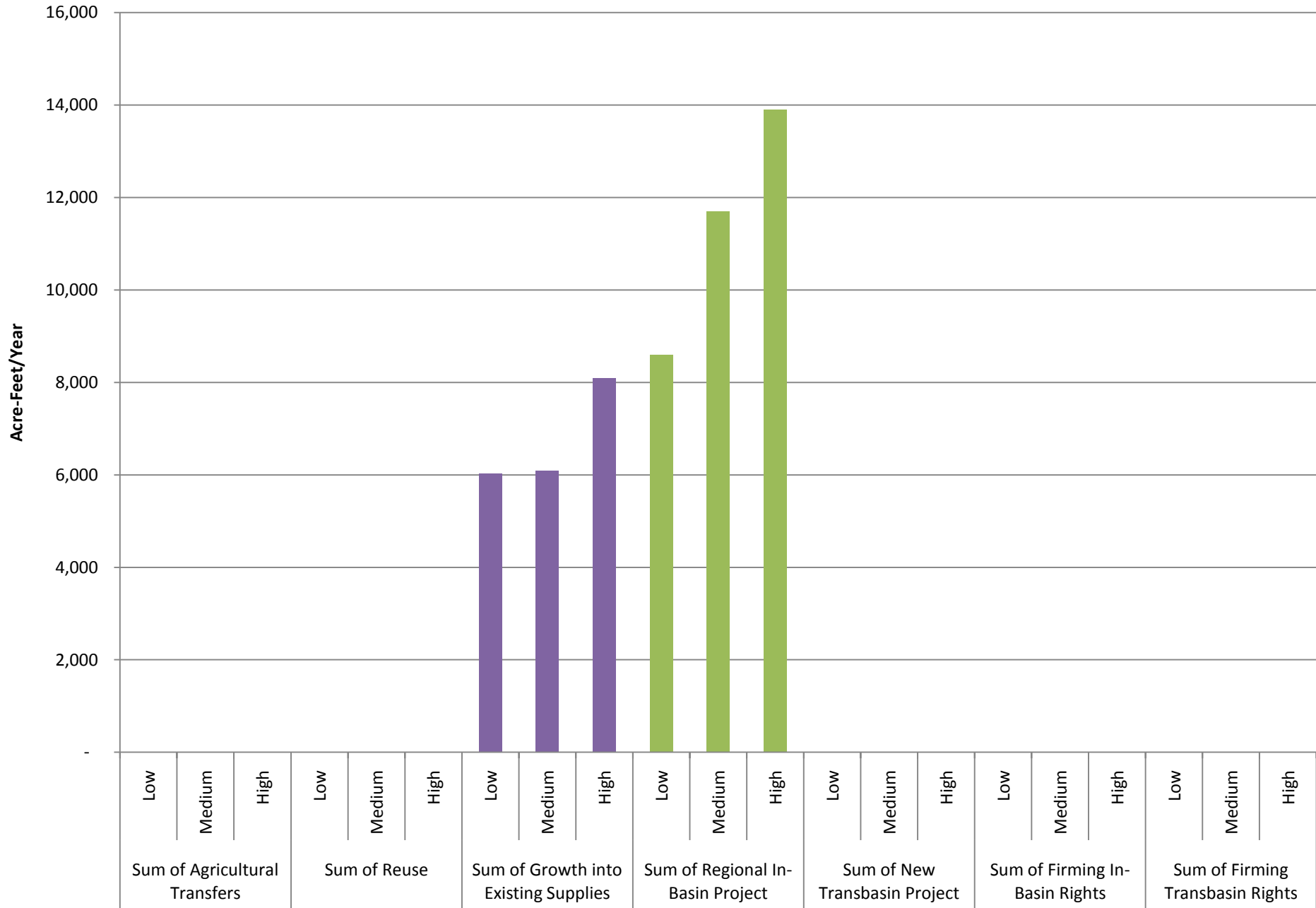


Basins

Southwest Basin M&I/SSI Gap Analysis – Identified Projects and Processes Summary

Region or County	Agricultural Transfer (AFY)	Reuse (AFY)	Growth into Existing Supplies (AFY)	Regional In-Basin Project (AFY)	New Transbasin Project (AFY)	Firming In-Basin Water Rights (AFY)	Firming Transbasin Rights (AFY)	IPPs
Archuleta County	0	0	0	3,300 – 4,000	0	0	0	• Dry Gulch Reservoir Project • Stevens Reservoir enlargement
Dolores County	0	0	0	350 – 500	0	0	0	• WETPACK Lawn and Garden M&I water • Totten Reservoir
La Plata County	0	0	1,000 – 1,700	5,000 – 9,000	0	0	0	• Existing supplies and waer rights • Animas-La Plata Project water • Western La Plata County Domestic Water System • La Plata Archuleta Water District Water System • Florida Water Conservancy District Multipurpose Project
Montezuma County	0	0	2,500 – 3,600	350 – 500	0	0	0	• Existing supplies and water rights • McPhee Reservoir water
Montrose County	0	0	725 – 800	0	0	0	0	• Existing supplies and water rights
San Juan County	0	0	500 – 100	0	0	0	0	• Existing supplies and water rights
San Miguel County	0	0	725 – 800	0	0	0	0	• Existing supplies and water rights
Total	0	0	5,000 – 9,000	9,000 – 14,000	0	0	0	14,000 – 21,000

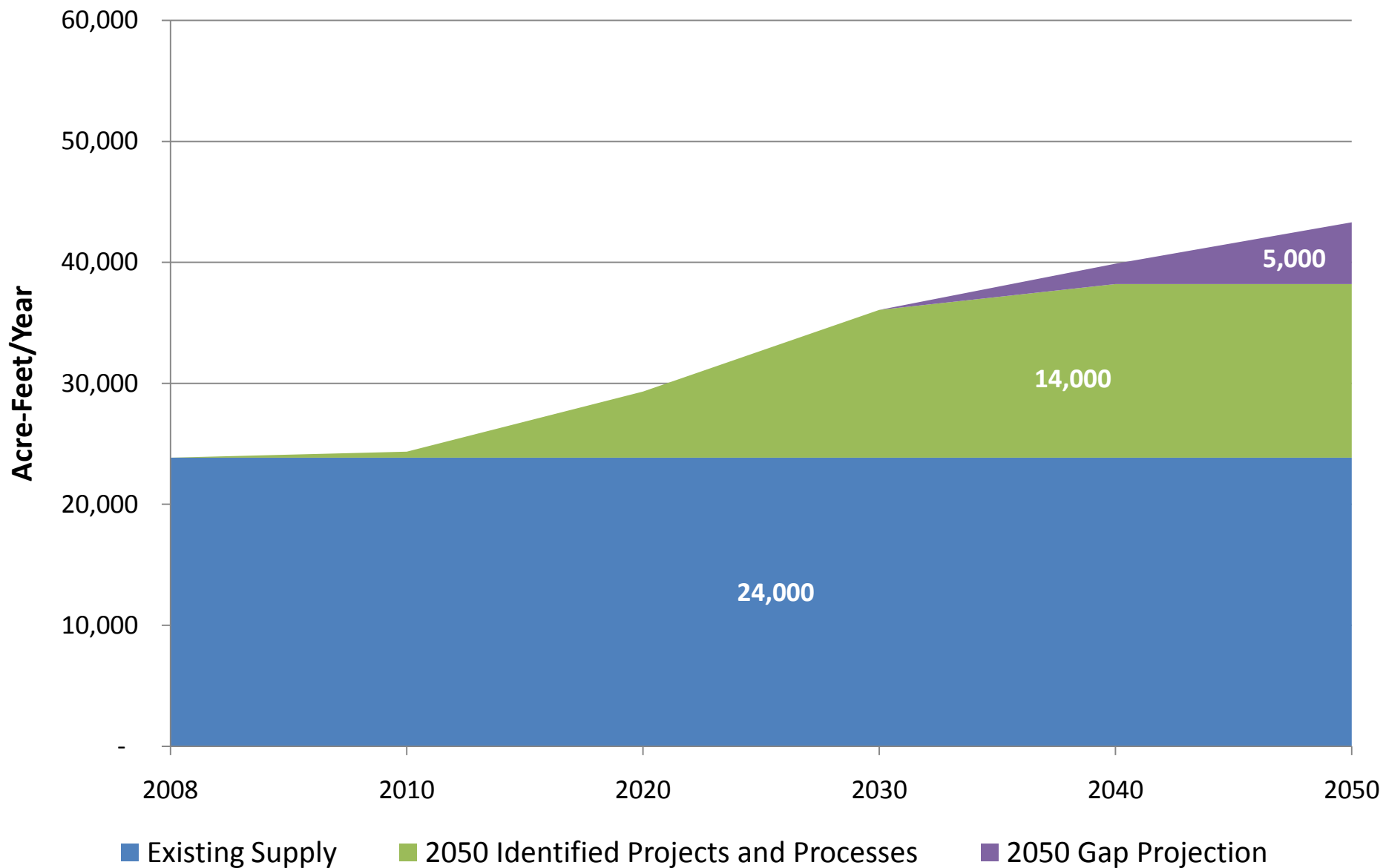
Southwest - Summary of IPP Categories



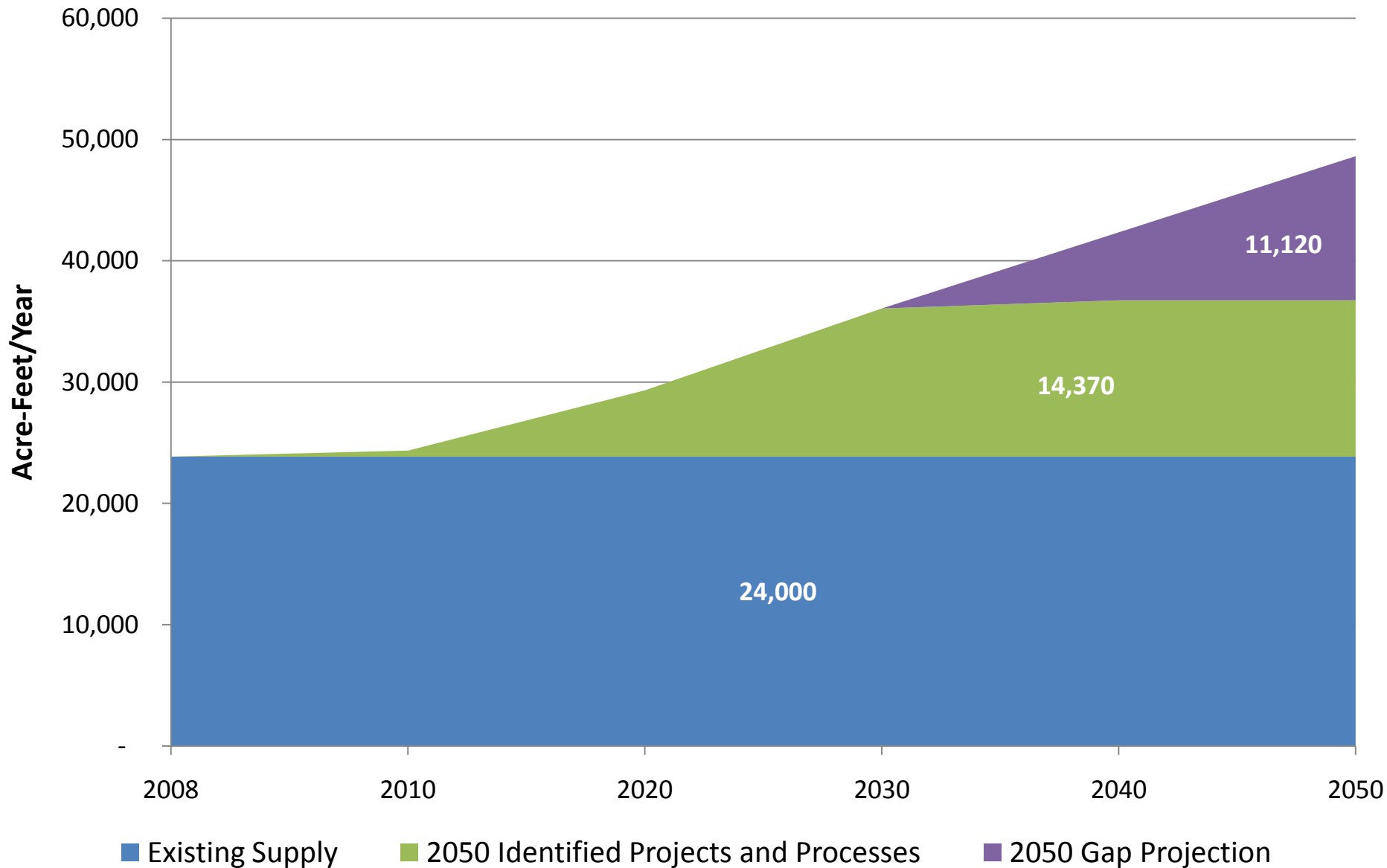
Southwest Basin M&I/SSI Gap Analysis - Results

Region or County	Increase in M&I and SSI Demand (AFY)			Estimated Yield of Identified Projects and Processes if 100% success rate (AFY)			Estimated Remaining M&I/SSI Gap after Identified Projects and Processes (AFY)								
							Low Gap 100% IPP Success Rate			Medium Gap Alternative IPP Success Rate (60%)			High Gap Status Quo IPP Success Rate (50%)		
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Archuleta County	3,000	4,000	5,000	3,000	4,000	4,000	200	200	200	1,000	1,000	1,000	1,000	1,000	1,000
Dolores County	300	400	500	300	400	500	20	20	20	100	100	100	100	100	100
La Plata County	7,000	9,000	11,000	6,000	8,000	10,000	300	400	1,000	2,000	2,000	3,000	2,000	2,000	3,000
Montezuma County	3,000	4,000	4,000	3,000	3,000	4,000	100	200	200	1,000	1,000	1,000	1,000	1,000	1,000
Montrose County	3,000	4,000	5,000	1,000	1,000	1,000	2,000	3,000	4,000	2,000	3,000	4,000	2,000	3,000	4,000
San Juan County	30	90	100	30	90	100	-	-	-	10	20	40	10	20	40
San Miguel County	3,000	4,000	6,000	1,000	1,000	1,000	2,000	4,000	5,000	2,000	4,000	5,000	2,000	4,000	5,000
Total	19,000	25,000	31,000	14,000	17,000	21,000	5,000	8,000	10,000	8,110	11,120	14,140	8,110	11,120	14,140

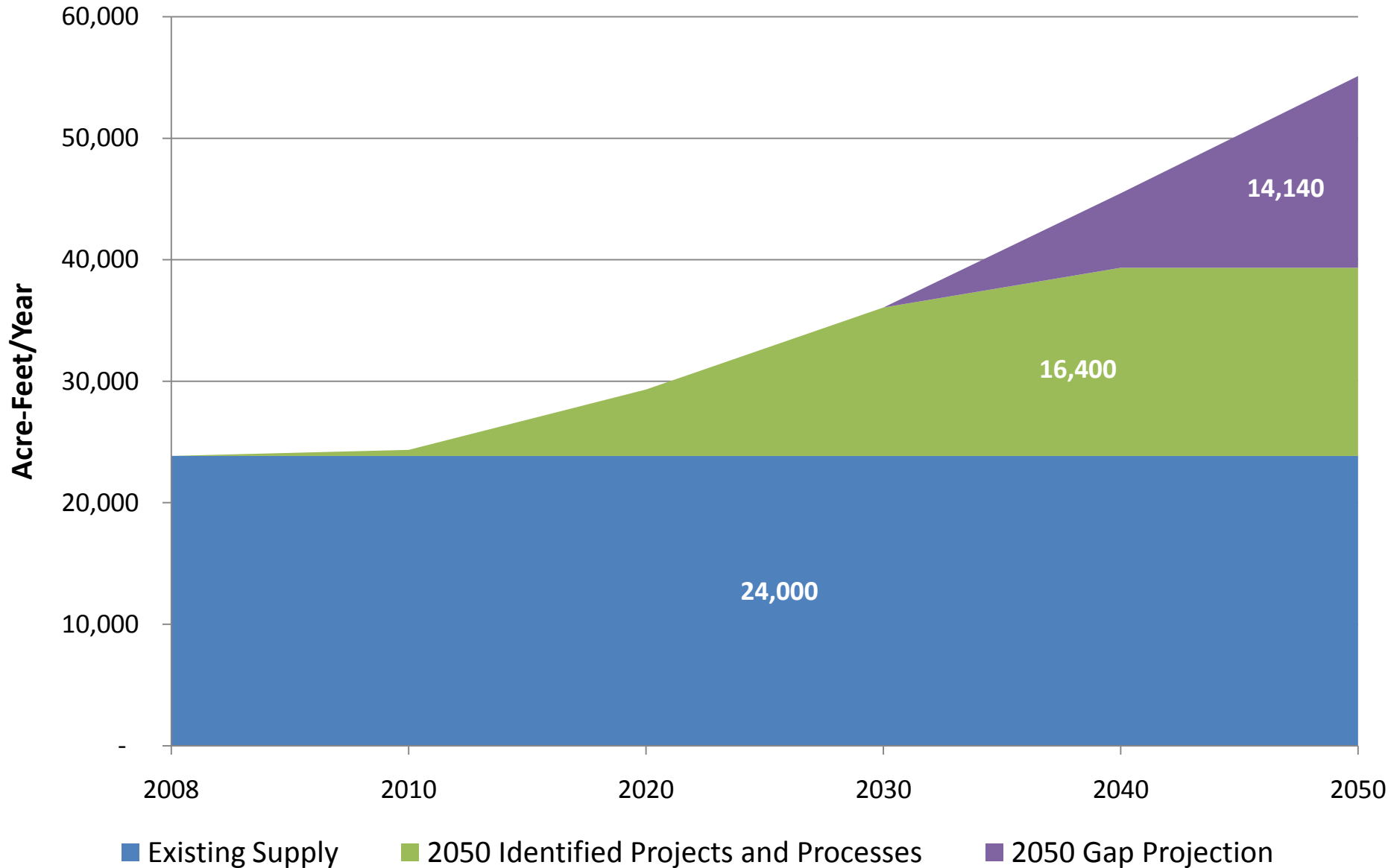
Southwest Basin M&I and SSI Gap Summary Low Scenario



Southwest Basin M&I and SSI Gap Summary Medium Scenario



Southwest Basin M&I and SSI Gap Summary High Scenario





Technical Memorandum

To: Eric Hecox, CWC8

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 (CWC8) and Interbasin Compact Committee (IBCC) are in the process of a continuing dialogue regarding Colorado's Water Supply Future. In June 2009, the CWC8 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, CWC8 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.

C:\admin\reports\08200902\Cost Estimating Technical Memorandum_8-5-10.docx



AGRICULTURAL TRANSFER AND NEW SUPPLY DEVELOPMENT STRATEGIES



Addressing the Statewide 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

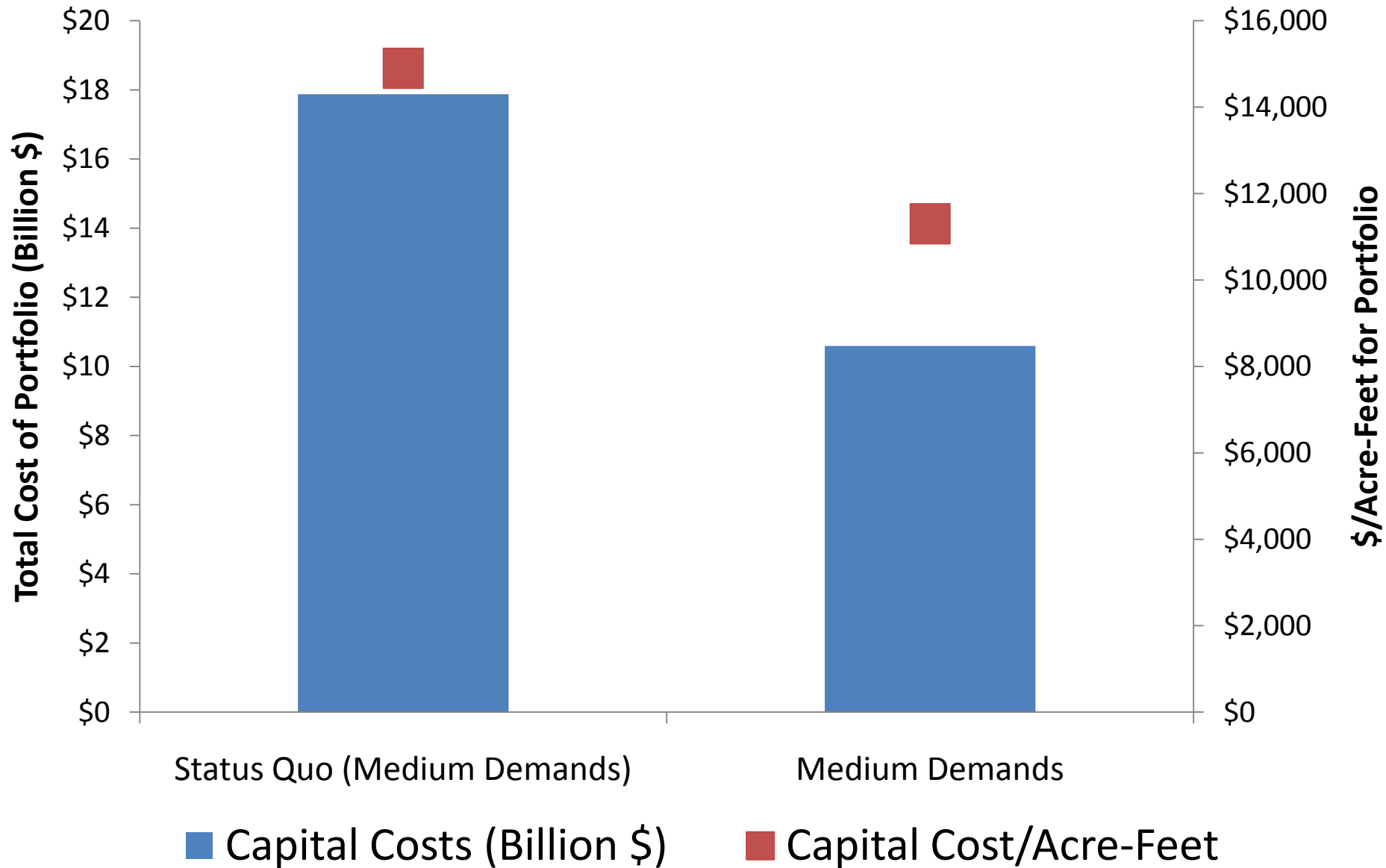
IPPs

- 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

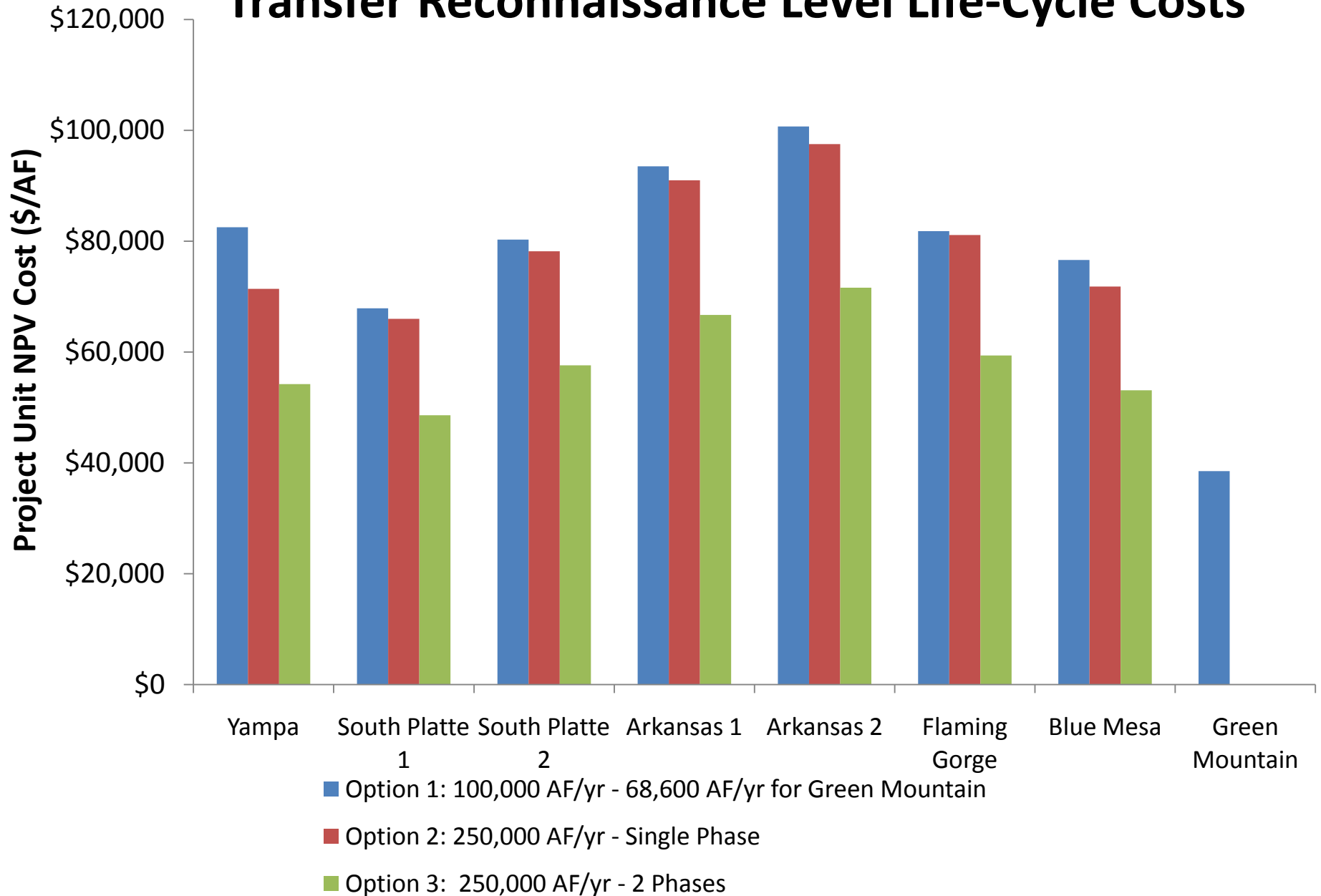
Mid Demand/ Mid Supply Working Portfolio Goals

- 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

Example Capital Costs for Portfolio to Address Statewide M&I Gap



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





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 Supply Initiative (SWSI) Projected 2050 Agricultural Demands. In SWSI, the Colorado Water Conservation Board (CWCB) estimated agricultural demands for the years 2000-2050. SWSI also summarized agricultural shortages at the Water District level. It shows that the CWCB did not consider the agricultural shortages identified in SWSI as needs to be met in the future across the state.

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

© 2010 CDM, AECOM, and Harvey Economics

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 providers' 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.

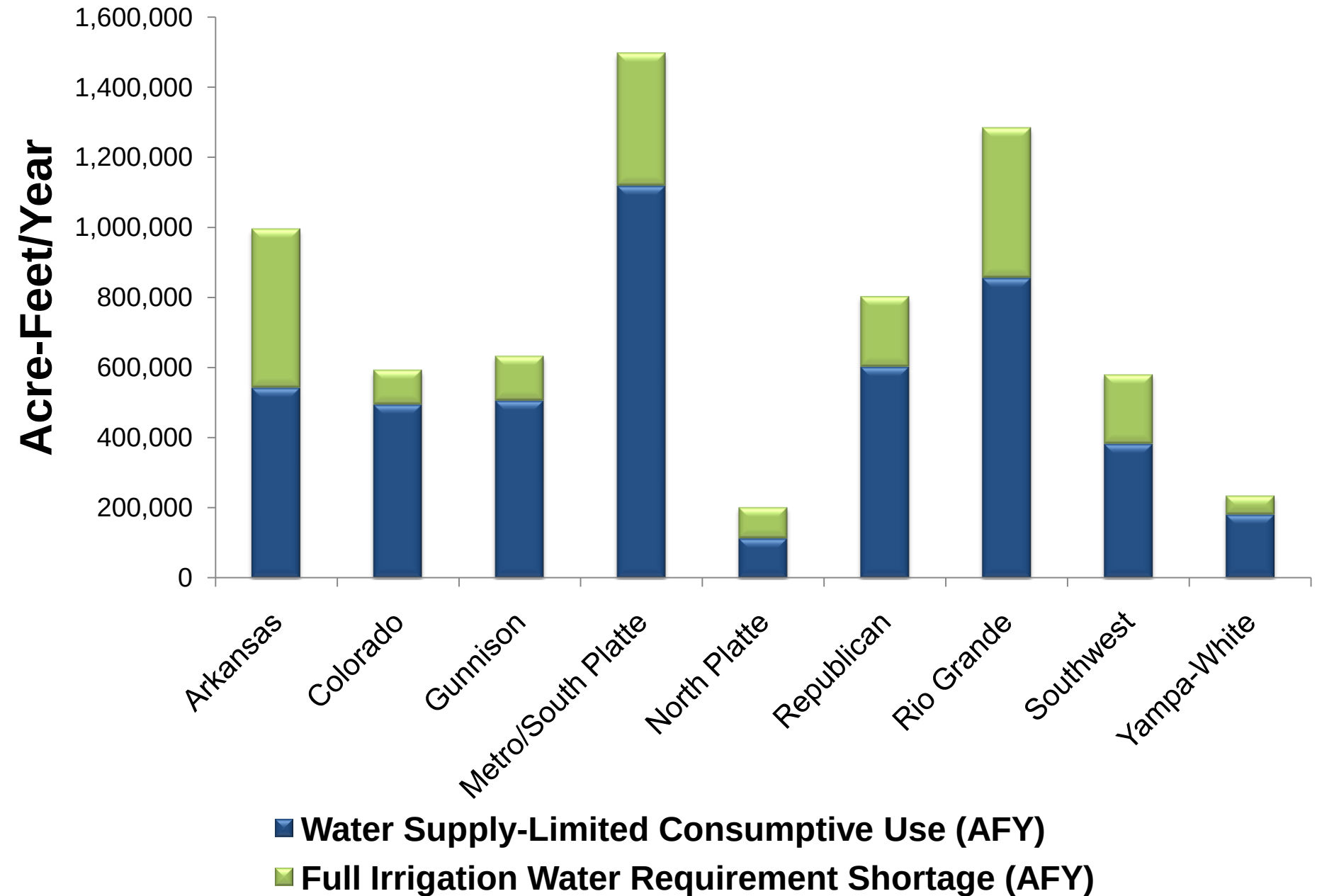
Traditional agricultural water transfers have been and will continue to be an important part of water providers' plans for meeting their future water demand and there are farmers and ranchers willing to sell their water rights. Realizing this, there is a concern that some water



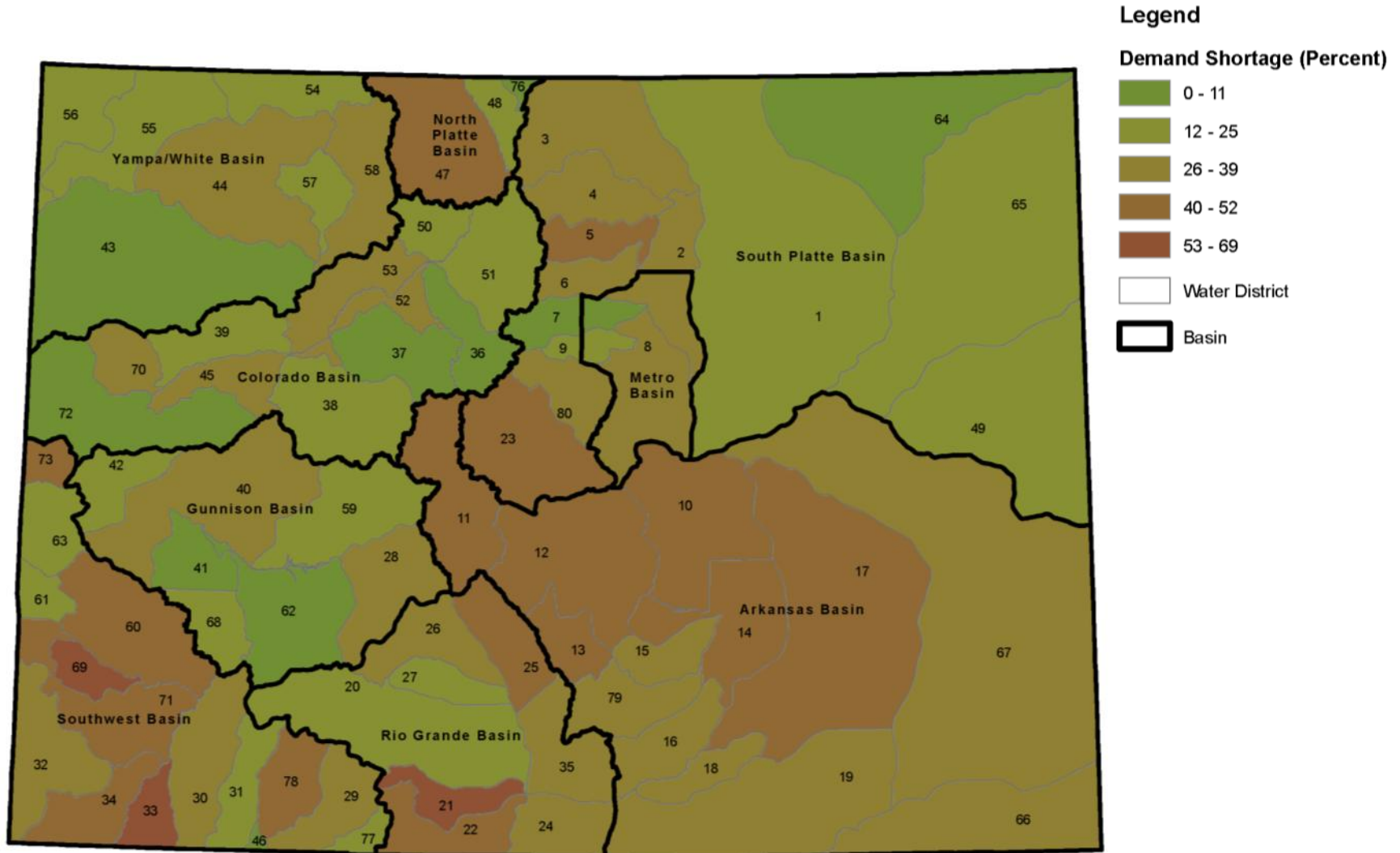
2050 AGRICULTURAL DEMANDS AND ALTERNATIVE TRANSFER METHODS



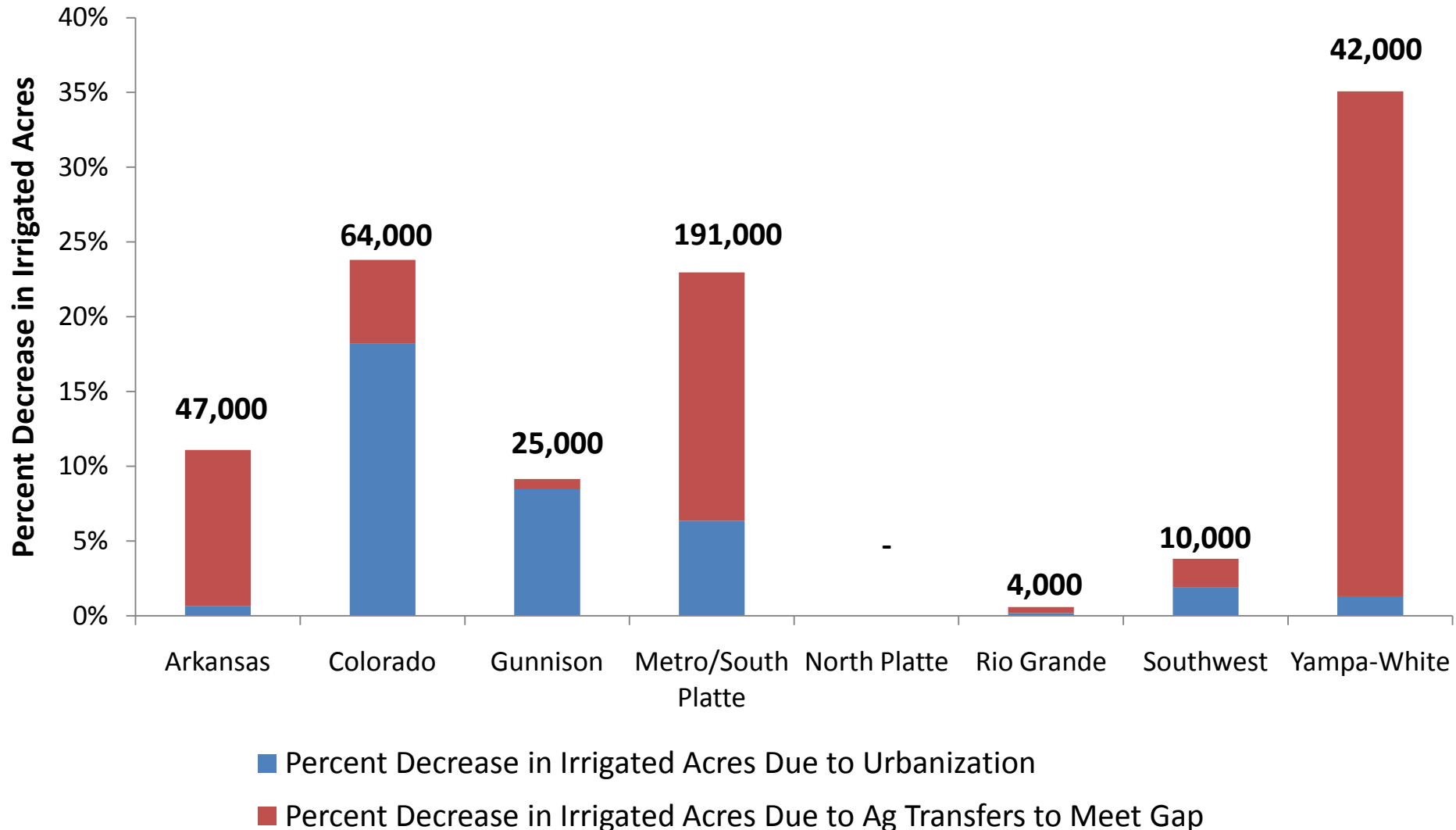
Current Agricultural Demands



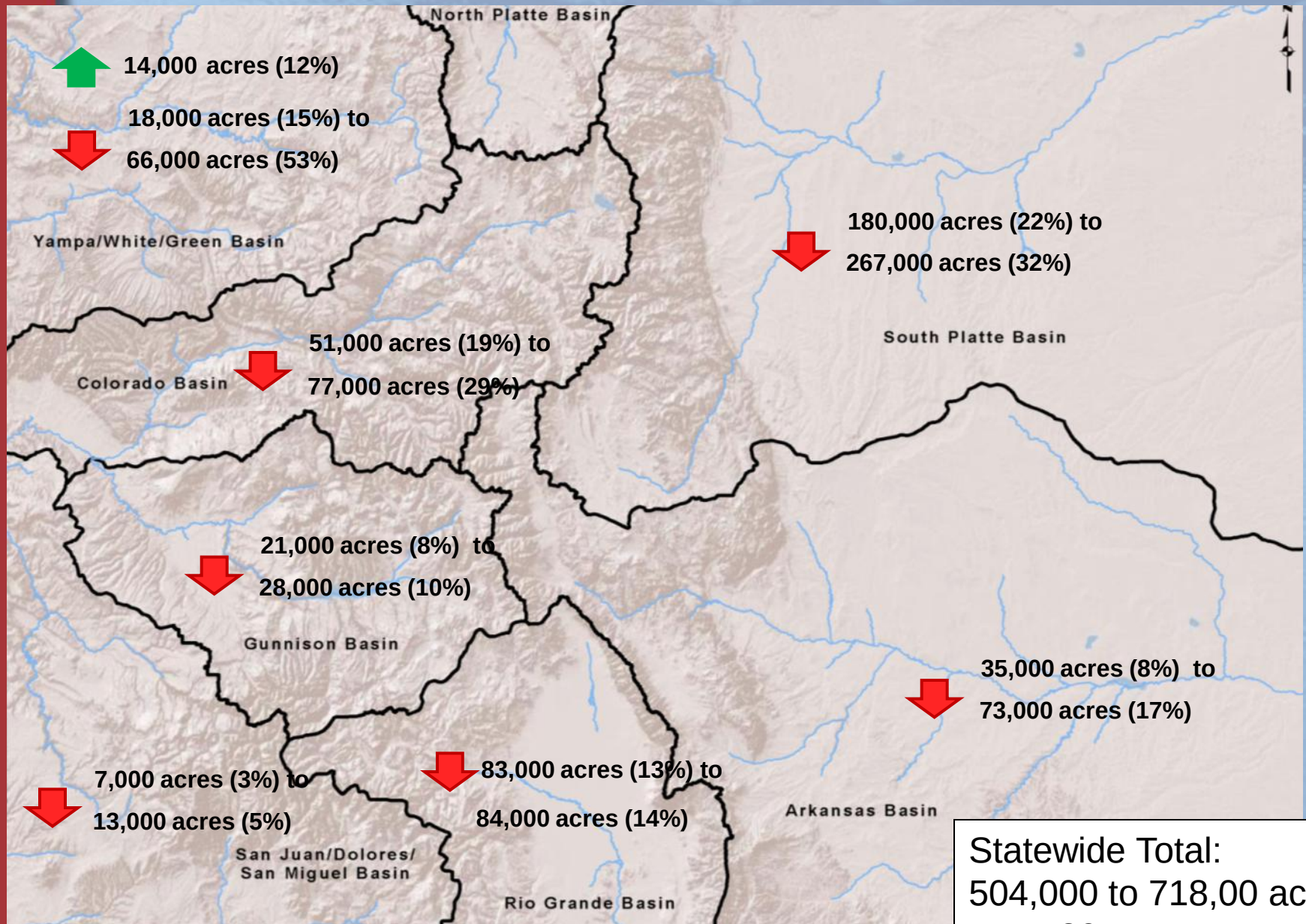
Current Agricultural Shortages



Percent Decrease in Irrigated Acres to Due to Urbanization and Ag Transfers to Meet Gap



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

Colorado's Water Supply Future



Colorado Water Conservation Board Nonconsumptive Needs Assessment Focus Mapping

July 2010

Prepared By:

Camp Dresser & McKee Inc.
Amy Ackerman, Water Resources Specialist

CDM

Colorado's Water Supply Future



Colorado Water Conservation Board Watershed Flow Evaluation Tool Pilot Study for Roaring Fork and Fountain Creek Watersheds and Site-Specific Quantification Pilot Study for Roaring Fork Watershed

July 2010

Prepared By:

Camp Dresser & McKee Inc.

Brian Bledsoe, Ph.D., P.E., Colorado State University
Bill Miller, Ph.D., Miller Ecological Consultants, Inc.
LeRoy Poff, Ph.D., Colorado State University
John Sanderson, Ph.D., The Nature Conservancy
Thomas Wilding, Ph.D., Colorado State University

CDM



NONCONSUMPTIVE NEEDS ASSESSMENTS PHASE II

CDM

Statewide Summary of Nonconsumptive Projects and Methods Status

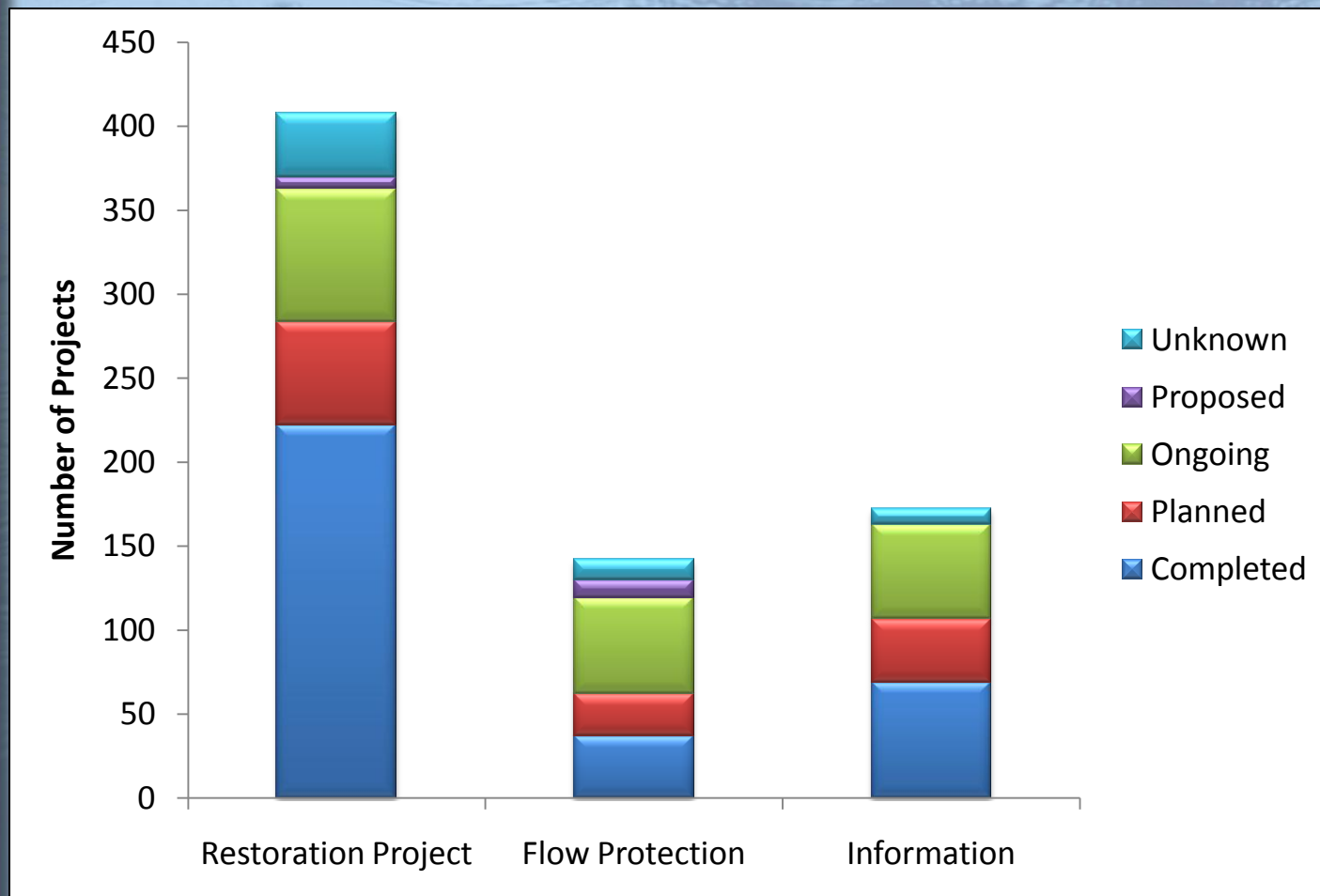


Project and Methods Status	# of Projects and Methods
Completed	343
On-going	195
Planned	127
Proposed/Recommended	18
Unknown	17
TOTAL	700

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

Statewide Summary of Nonconsumptive Projects and Methods Status

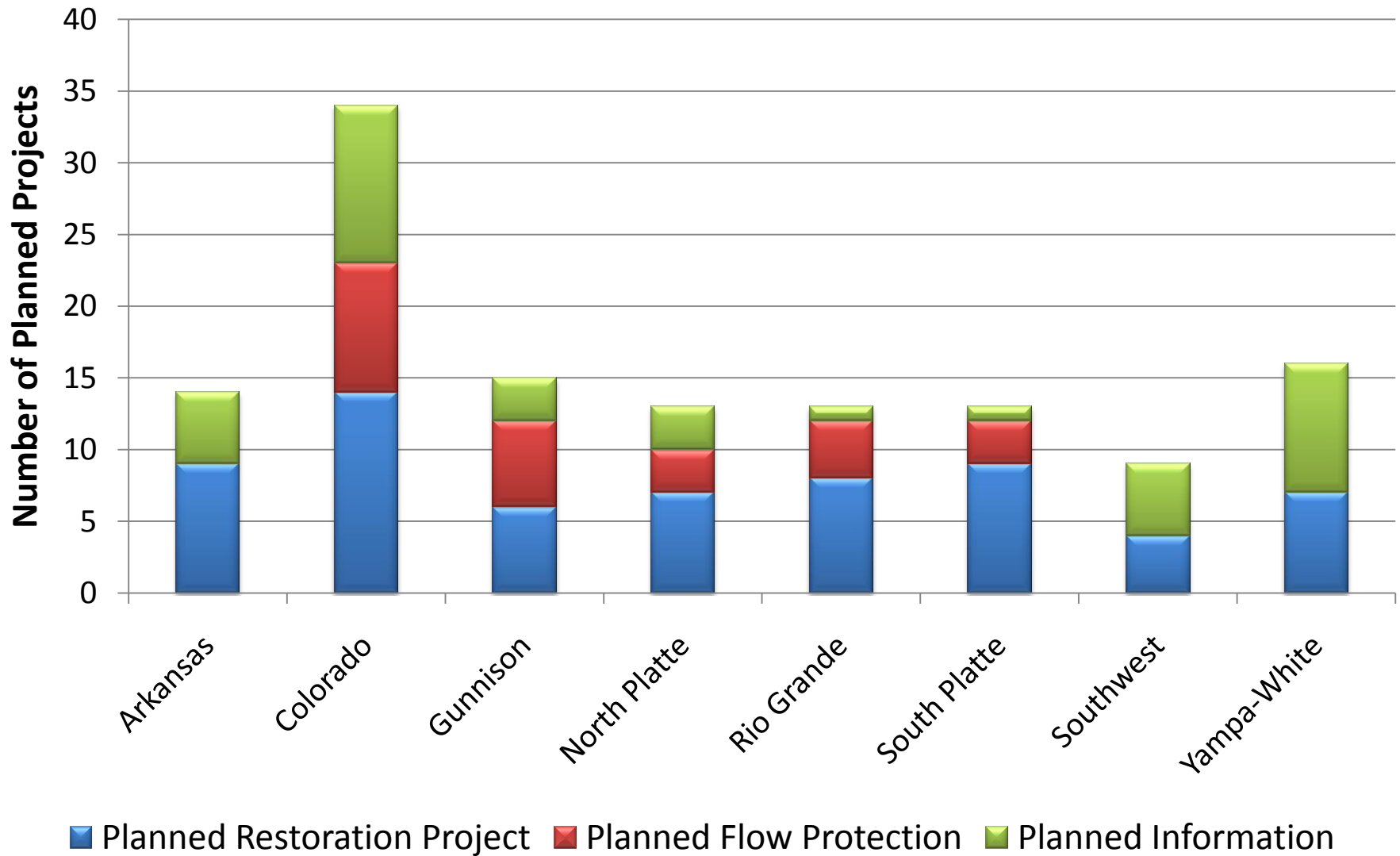


Southwest Summary of Nonconsumptive Projects and Methods Status



- Total Projects and Methods = 107
 - Completed = 51
 - Ongoing = 42
 - Planned = 9
 - Proposed = 5
- Planned Projects
 - Planned Restoration Projects = 4
 - Planned Information = 5

Planned Projects and Methods by Basin



NCNA Phase II Schedule



MILESTONE	2010						2011			
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Develop List of Projects and Methods	FINAL									
Deliver Projects and Methods to BRTs										
Develop Geodatabase of Projects and Methods										
Mapping Analysis										
Outreach to BRTs										
• Review Initial "Gap Areas" • Areas for BRT Focus • Support for Planned or Recommended Projects										
Incorporate Results into Statewide Needs Assessment Report										
Roundtables Finalize Methods to Address Nonconsumptive Needs										

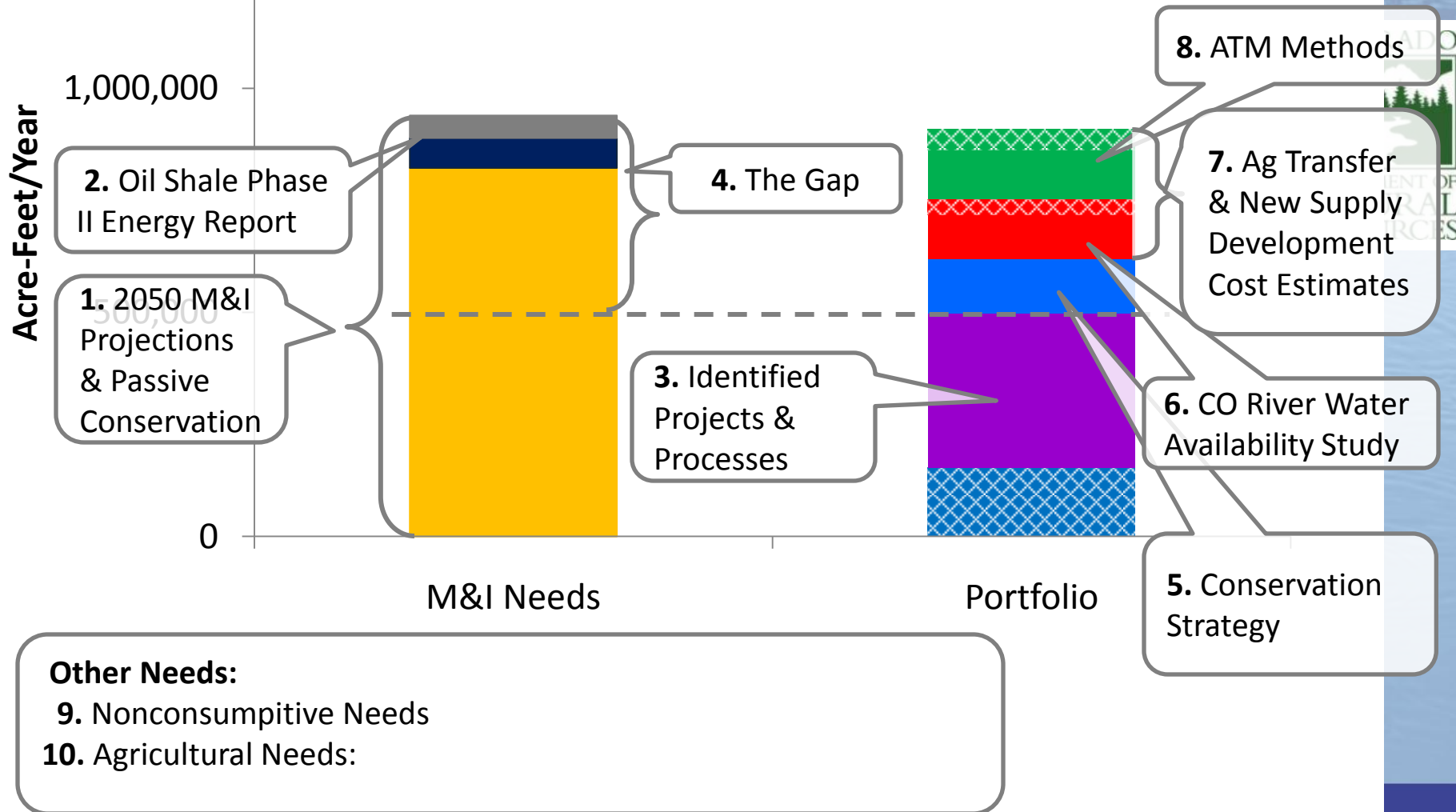




SUMMARY AND DISCUSSION

Reports in the M&I Context

State of Colorado 2050 M&I Needs and Portfolio to Meet Needs



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

