Colorado's Water Supply Future

IBCC Meeting

Steamboat, CO

September 14, 2009

Agenda

- Portfolios
  - Overview of Scenarios, Portfolios, and Strategies
  - Demonstration of Portfolio Builder Tool
  - Introduction of Example Portfolio
- Discussion of Example Portfolio
- Breakout Group Discussions
- Technical Support and Schedule
- Colorado River Water Availability Study
- Public Education, Participation and Outreach
- Conservation Strategy

Overview of Scenarios, Portfolios, and Strategies

IBCC/CWCB Visioning Process

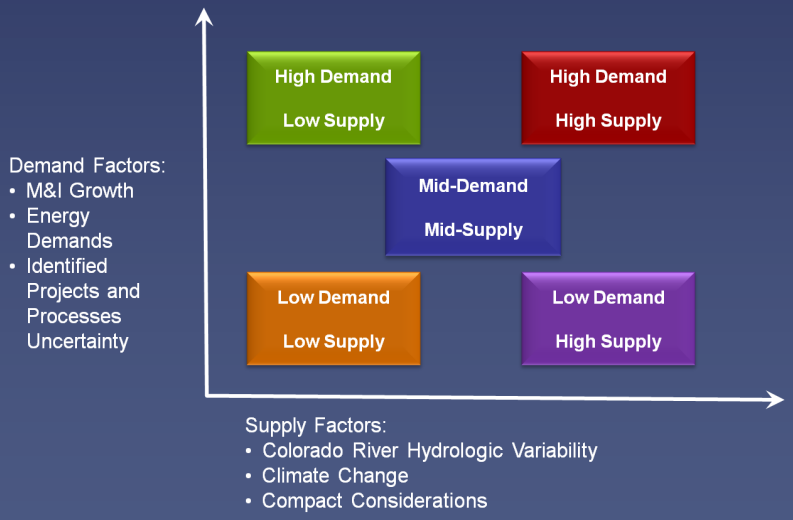
- During 2008, Colorado's water community embarked on a visioning process to address the following questions:
  - If we let Colorado's water supply continue to evolve the way it is now, what will our state look like in 50 years?
  - Is that what we want it to look like?
  - If not, what can and should we do about it?

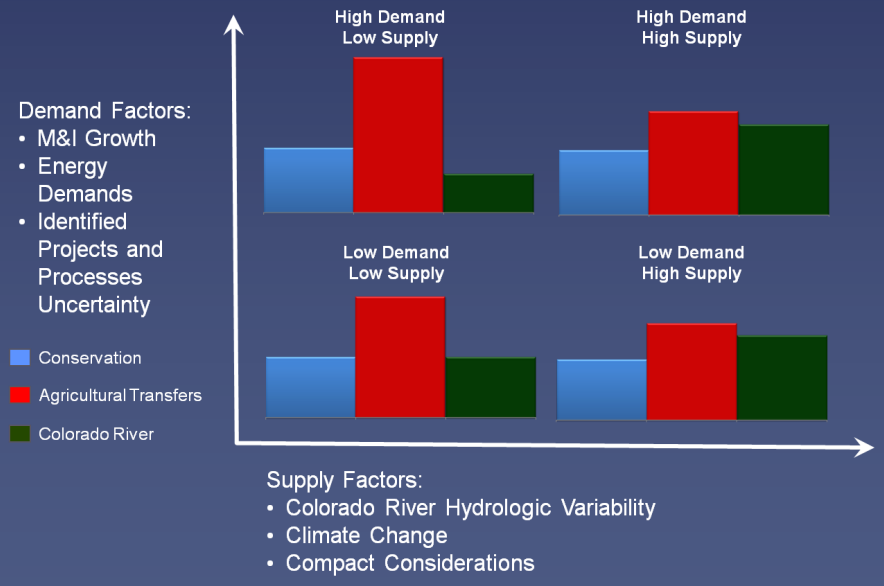
IBCC/CWCB Visioning Process
Basic Conclusions

- The status quo approach to water supply will not lead to a desirable future for Colorado.
  - Example #6 of 7 – Representation of Status Quo
  - If not the Status Quo then what?
- Colorado will need of range of demand side and supply side strategies.
- We need to work together to examine the trade-offs, risks, and uncertainties associated with different strategies and combination of strategies.

IBCC Meeting Objective:

Begin building combinations of strategies or “portfolios” for meeting Colorado’s future water needs.





Overview of Scenarios, Portfolios, and Strategies

- *Scenarios* – Different future conditions. Each scenario represents a different, but plausible, representation of circumstances that would result in differing statewide consumptive and nonconsumptive water demand and water supply. The IBCC is considering 5 different scenarios.
- *Portfolios* – Combinations of strategies which collectively meet statewide water demands. Portfolios can be developed for each future scenario.

Overview of Scenarios, Portfolios, and Strategies

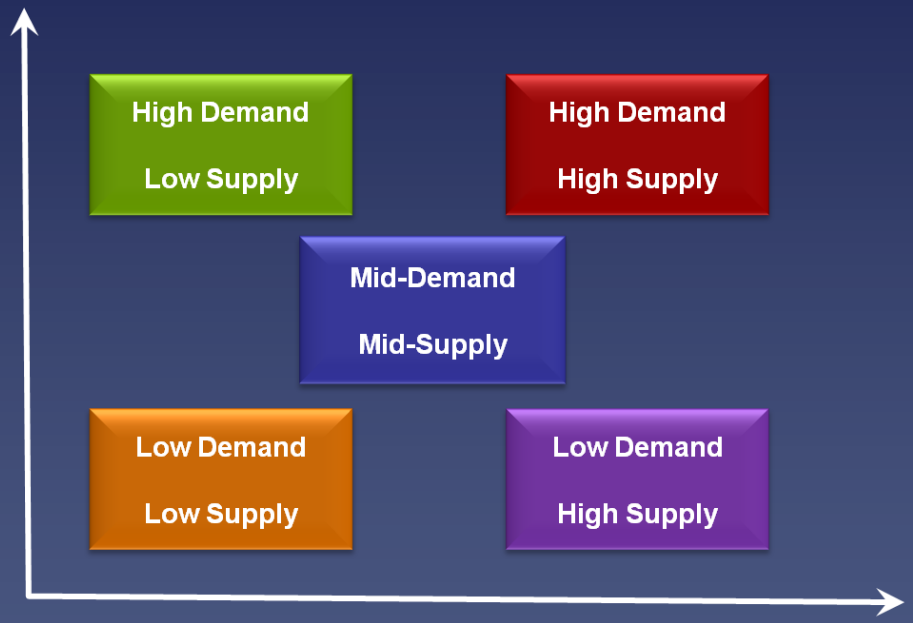
- *Strategies* – Broad categories of solutions for meeting Colorado's consumptive and nonconsumptive water supply needs. Through its Visioning Process the IBCC identified a set of Demand Side Strategies and Supply Side Strategies and began developing conservation, agricultural transfers, and new water supply development strategies.

Overview of Scenarios, Portfolios, and Strategies

- *Projects and Methods* – Specific actions which help implement each strategy. For example a water project helps implement a new water supply development strategy, a rotational fallowing program helps implement an agricultural transfer strategy, and a block rate pricing program helps implement a conservation strategy. Each Basin Roundtable is responsible for proposing projects and methods to meet their consumptive and nonconsumptive needs.

Scenarios

Demand Factors:
- M&I Growth
- Energy Demands
- Identified Projects and Processes Uncertainty



Supply Factors:
- Colorado River Hydrologic Variability
- Climate Change
- Compact Considerations

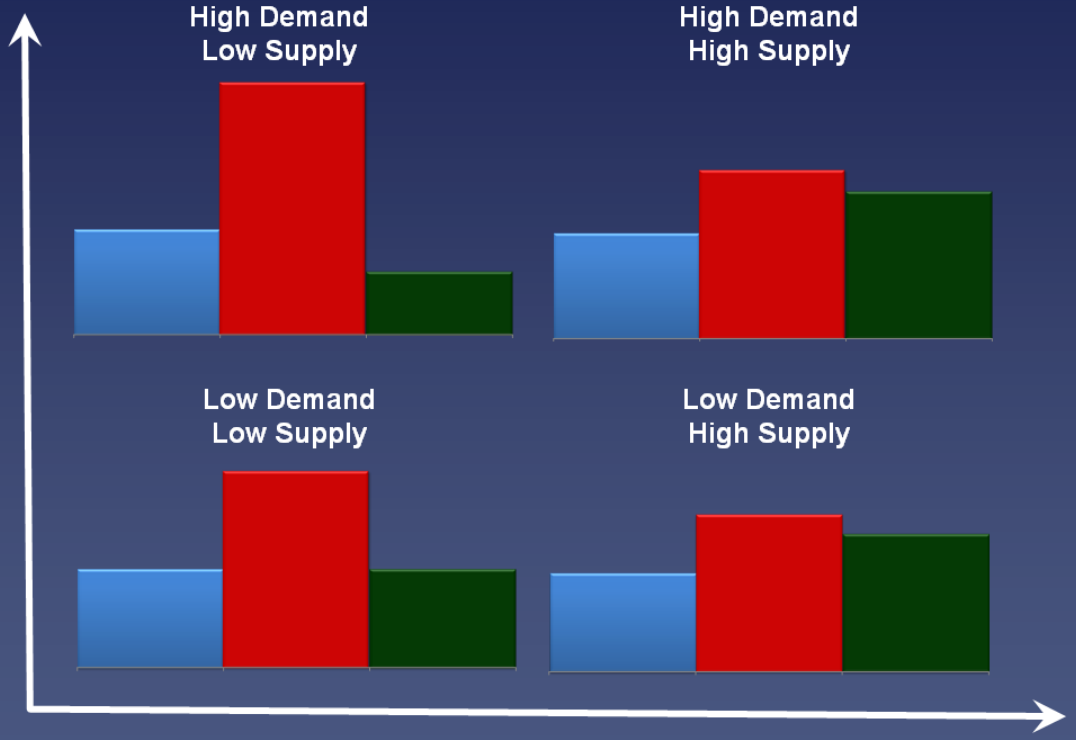
Portfolios

Demand Factors:
- M&I Growth
- Energy Demands
- Identified Projects and Processes Uncertainty

Conservation

Agricultural Transfers

Colorado River



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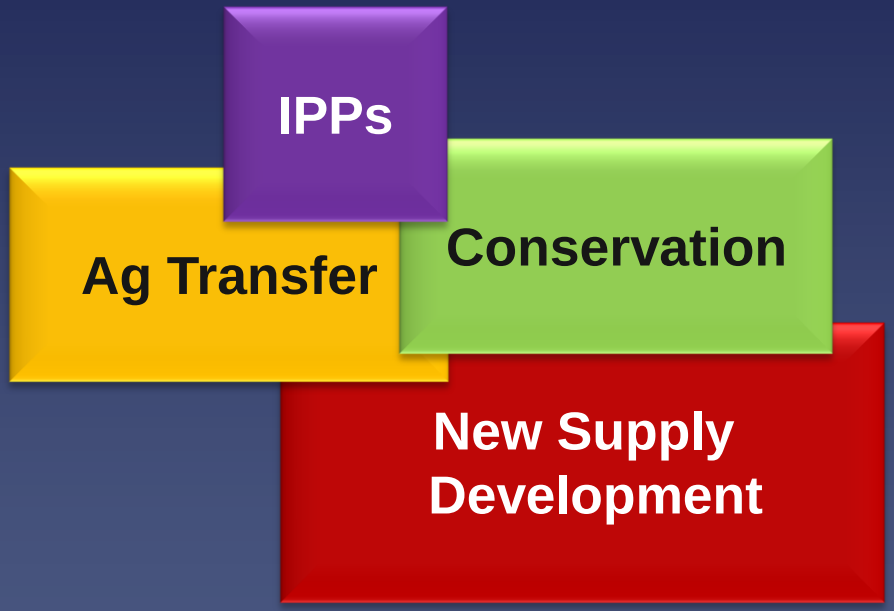
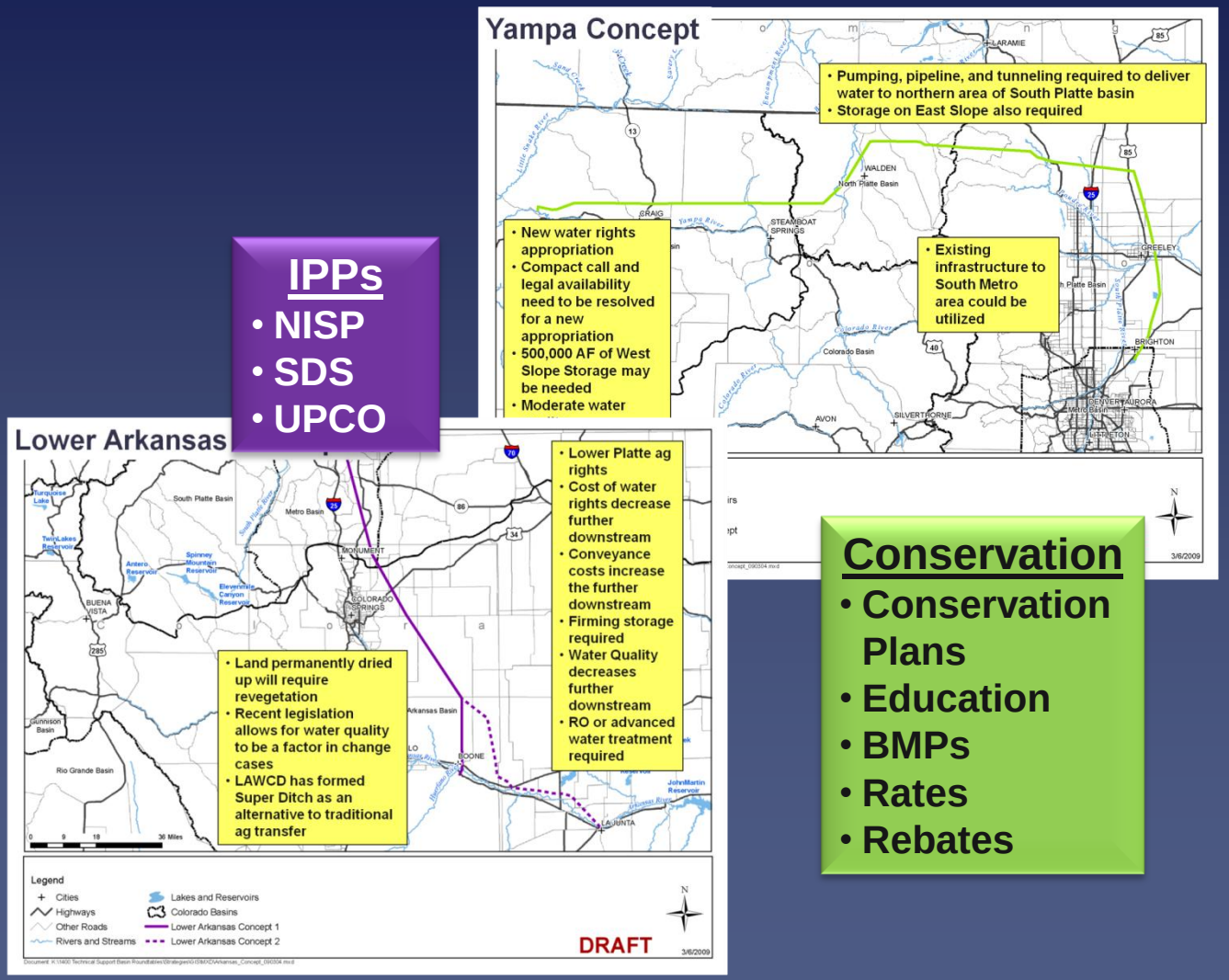
Strategies



Projects and Methods



IPPs
- NISP
- SDS
- UPCO

Conservation
- Conservation Plans
- Education
- BMPs
- Rates
- Rebates

Roles

IBCC/CWCB: Support scenario, portfolio, and strategy development

Basin Roundtables: Work with stakeholders in their basin to propose project and methods to meet their basin's consumptive and nonconsumptive needs

Demonstration of Portfolio Builder Tool

Colorado's Water Supply Future Trade-Off Tool Scenario Builder

M&I Demand

Supply

Low – 833,000 AFY
Medium - 1,053,400 AFY
High - 1,615,200 AFY

Agricultural Transfer Options

Reuse Options

Review Portfolio Table

Colorado's Water Supply Future Trade-Off Tool Sc

M&I Demand: medium

Supply: medium

Low – 100,000 AFY
Medium – 350,000 AFY
High – 700,000 AFY
WILL BE REVISED BY CRWAS

Agricultural Transfer Options

Reuse Options

Review Portfolio Table

Colorado's Water Supply Future Trade-Off Tool Portfolio Builder

IPP Success Rate (0 to 100%) 50%

M&I Conservation Savings 20%

Remaining M&I Need Met First Through:

○ Agricultural Transfer ◉ Colorado River

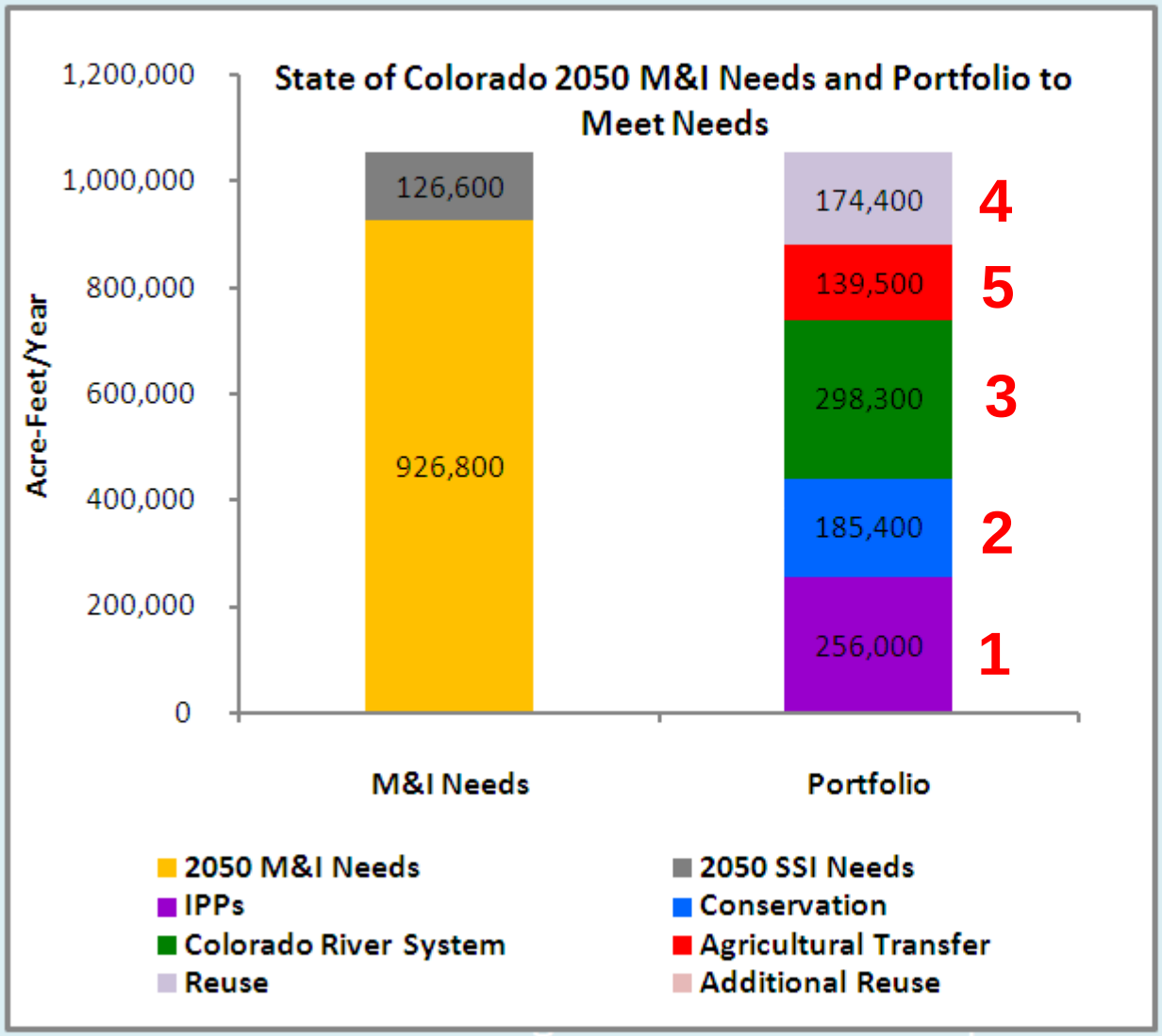
Scenario Builder

Agricultural Transfer Options

Reuse Options

Review Portfolio Chart

Review Portfolio Table



Scenario Builder

Portfolio Builder

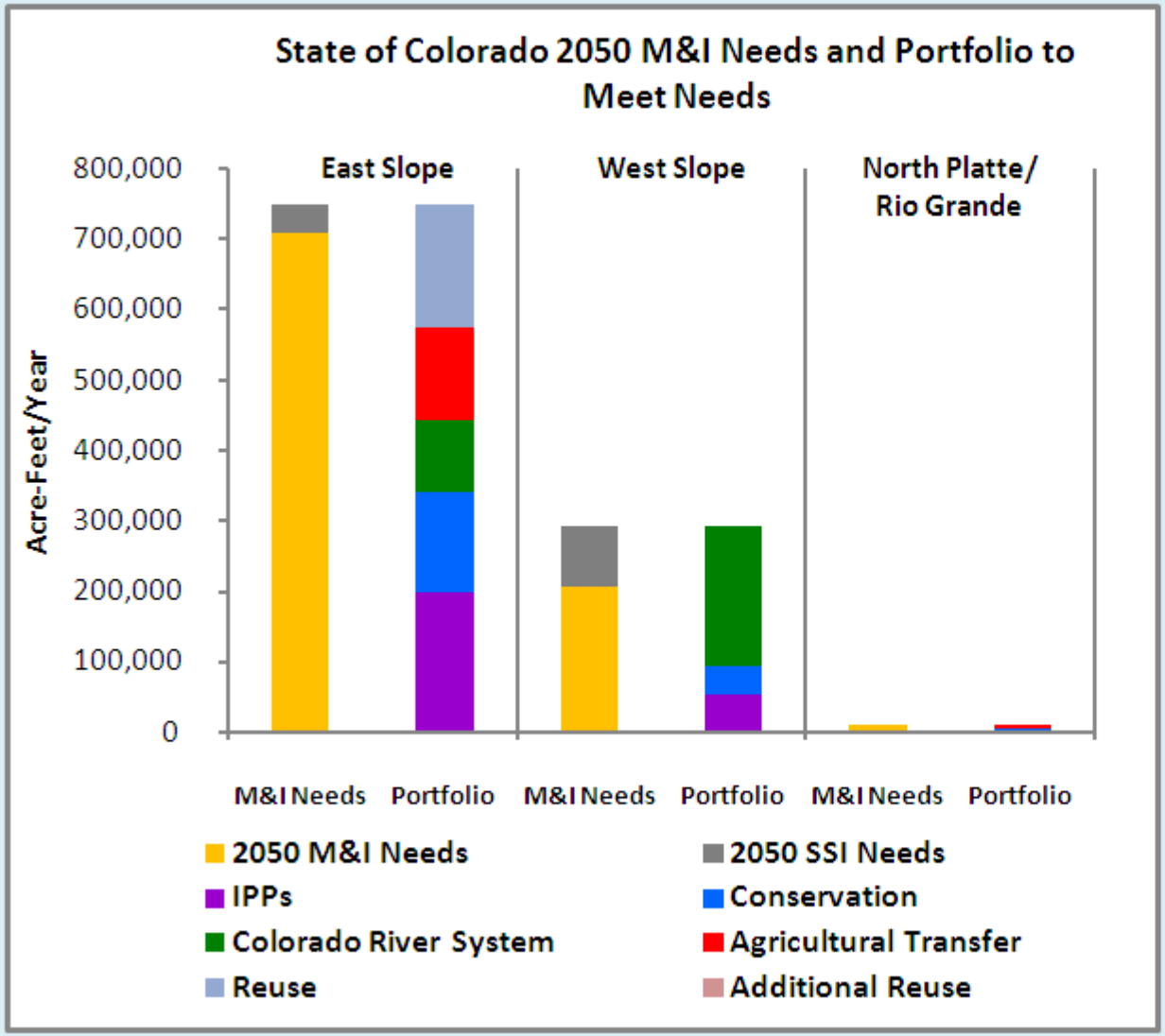
Agricultural Transfer Options

Reuse Options

Regional Portfolio

Review PortfoliosTable

Reductions in Irrigated Acres



Scenario Builder

Portfolio Builder

Agricultural Transfer Options

Reuse Options

Statewide Portfolio

click here to review statewide M&I wa

Review PortfolioTable

Reductions in Irrigated Acres

Transferable consumptive use from irrigated land (acre-feet/acre)

East Slope	1.3
West Slope	1.3

<-- enter transferable consumptive use

Percentage of Identified Projects & Processes that are agricultural transfers

East Slope	25%
West Slope	35%

<-- enter in percentage of 0% to 25%

Percentage decrease from average to firm yield

25% <-- enter in percentage of 0% to 100%

Percentage of Agricultural Transfers

Arkansas	South Platte
17%	20%

Scenario Builder

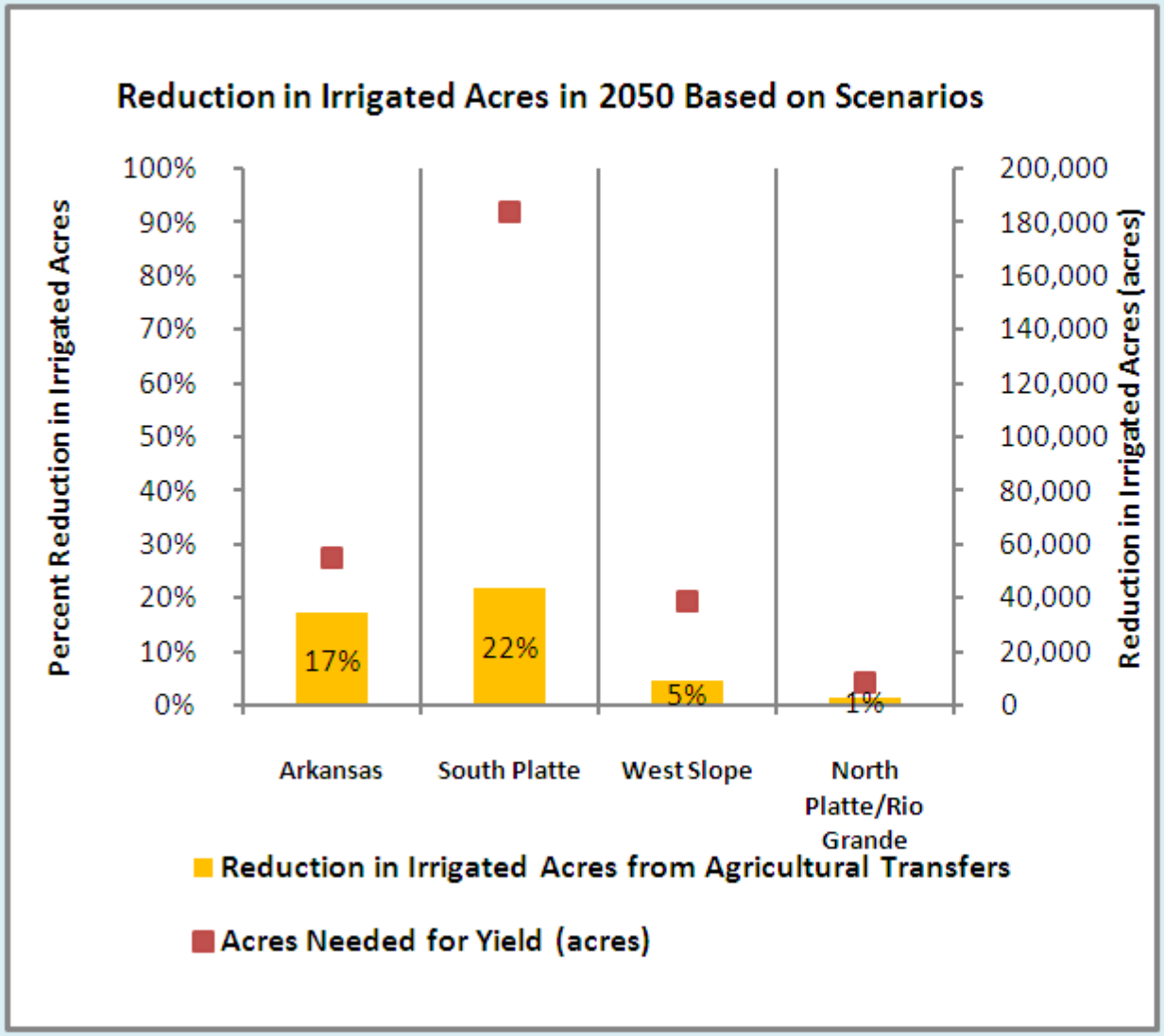
Portfolio Builder

Reuse Options

Statewide Portfolio Chart

Review Portfolio Table

Reductions in Irrigated Acres



Scenario Builder

Portfolio Builder

Agricultural Transfer Options

Reuse Options

Statewide Portfolio

Review Portfolio Table

Reductions in Irrigated Acres (Statewide)

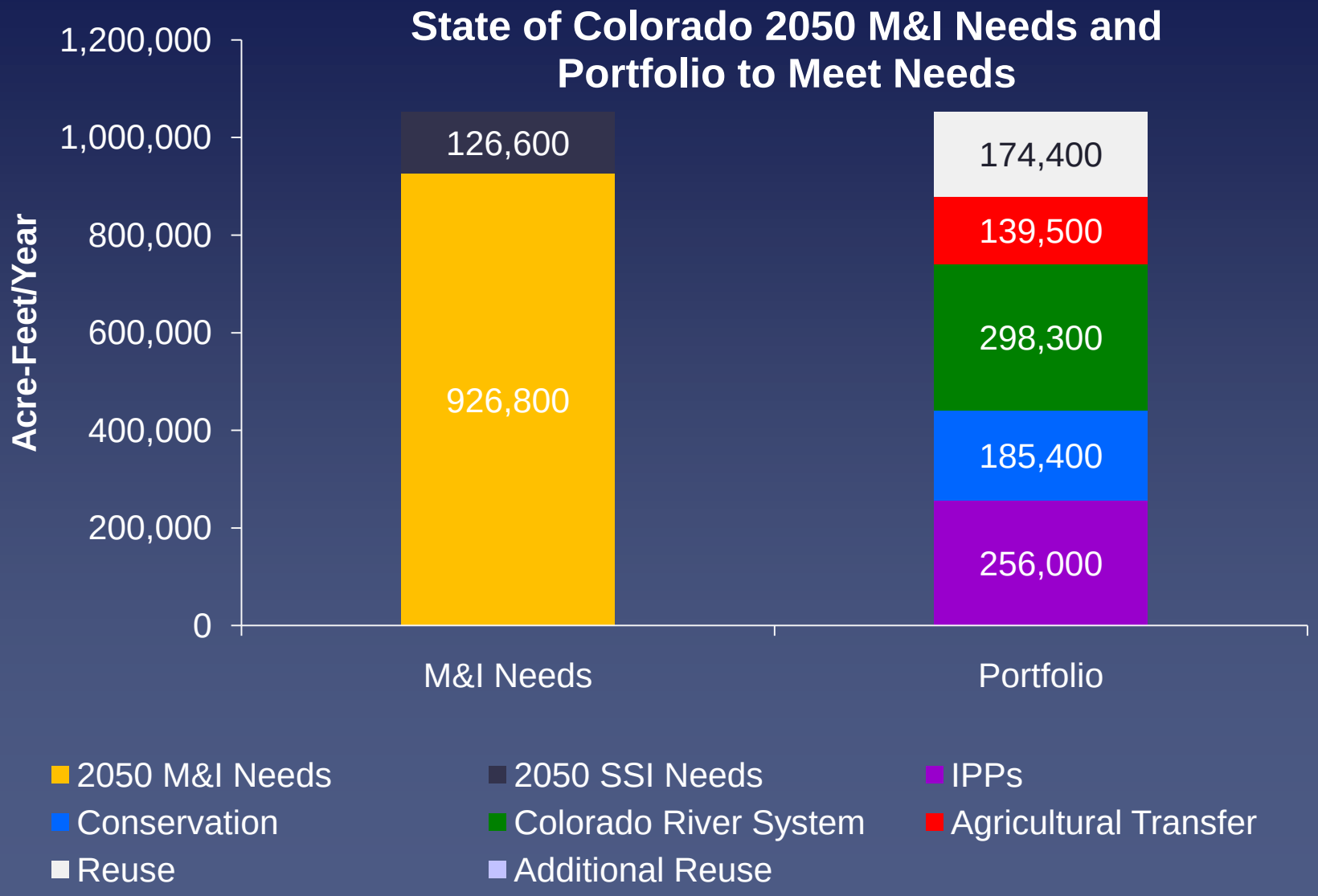
click here to review reductions in irrig

Introduction of Example Portfolio

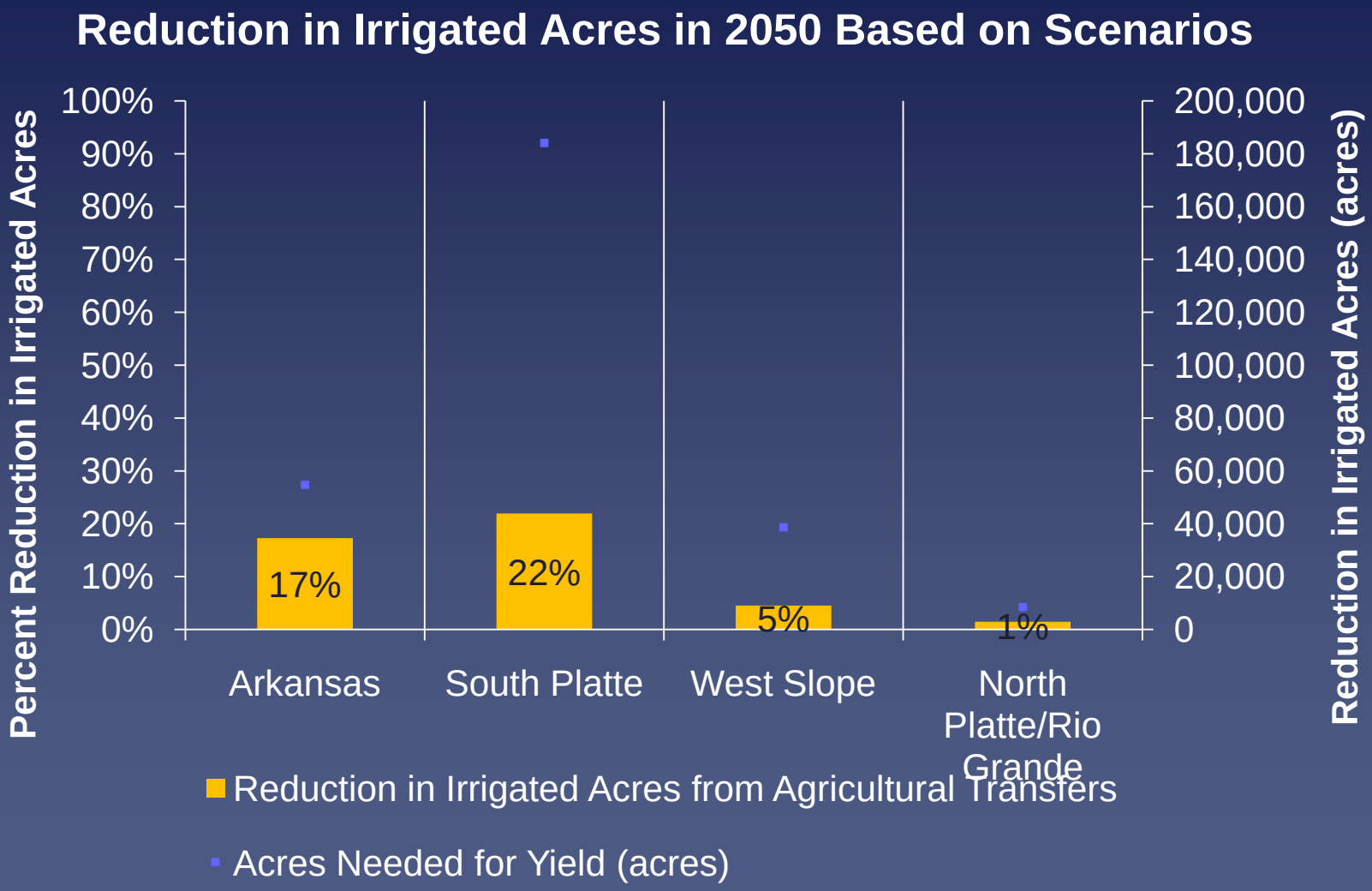
Example Portfolio

- Medium M&I demands (including Energy)
- Medium supply (350,000 a.f.)
- 50% IPP success (1/4 of which are ag transfers on east slope; 35% on west slope)
- 20% Conservation (off of 2008; applied to new growth)
- Remaining west slope demands are met with new supply development; 100,000 a.f. TBD
- Remaining east slope demands are met with ag transfer

Example Portfolio No. 1 of 7

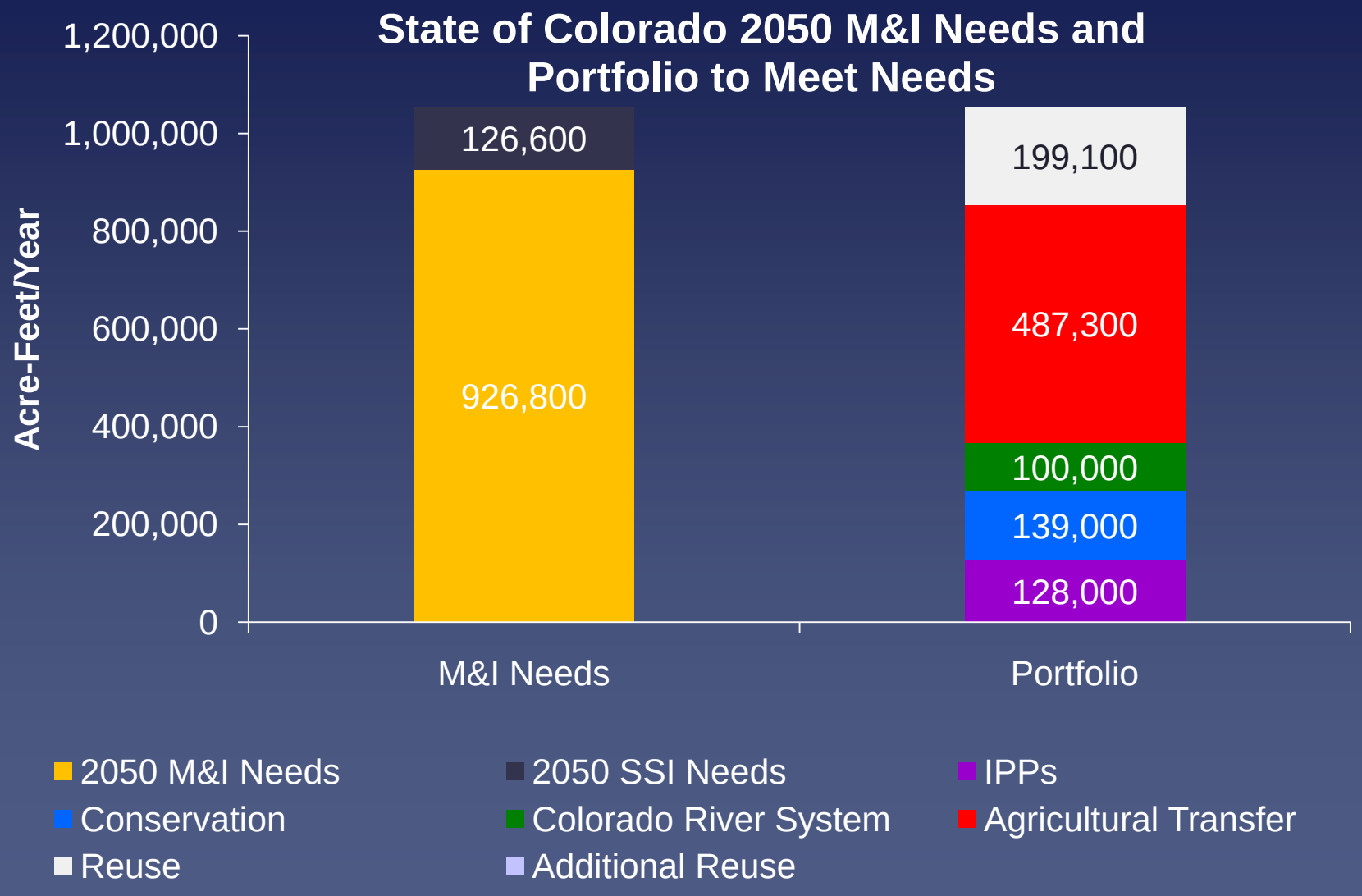


Example Portfolio No. 1 of 7

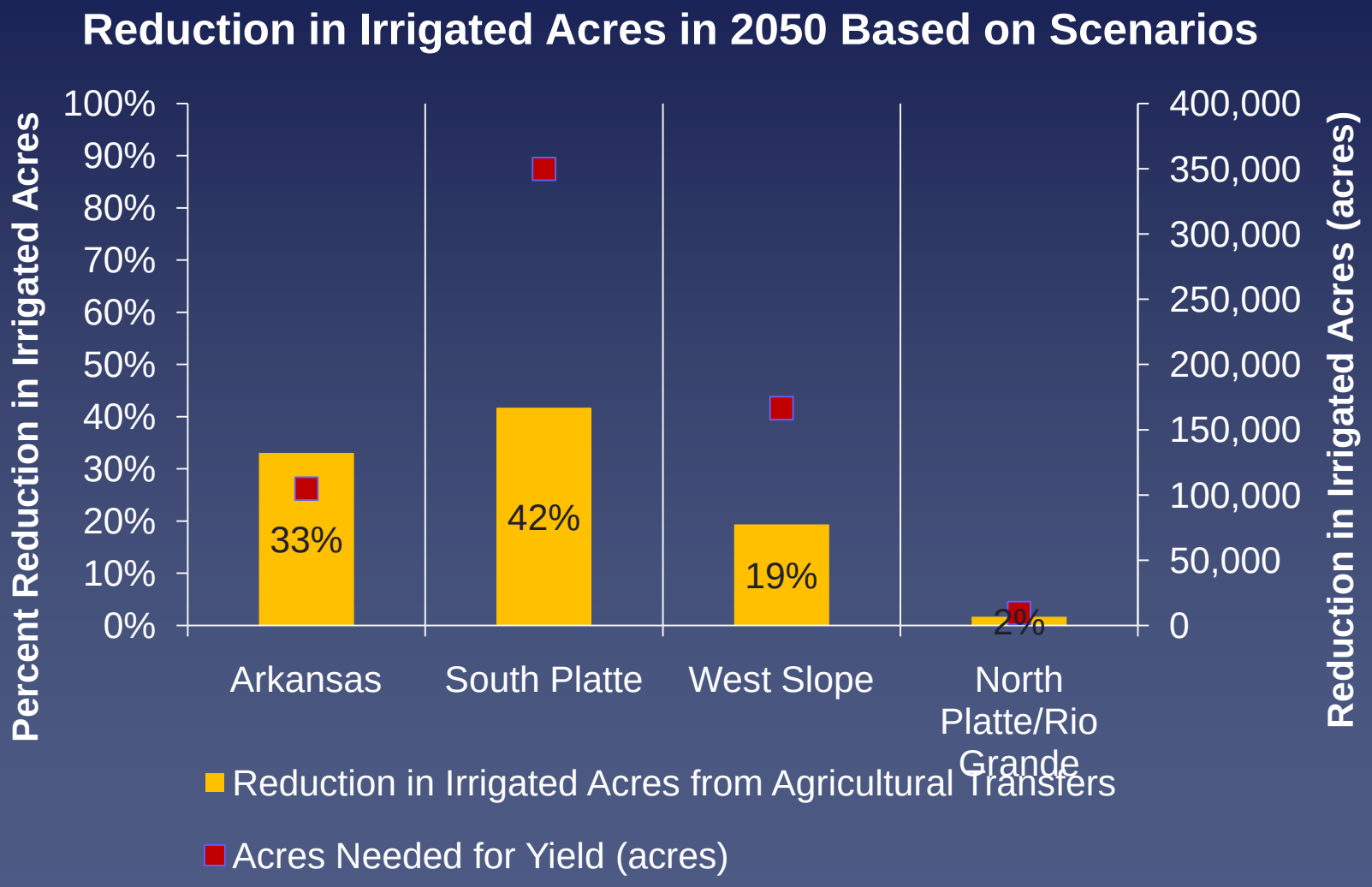


M&I Needs	Statewide	West Slope	East Slope		North Platte/ Rio Grande
Municipal Needs (AFY)	926,800	205,700	710,000		11,200
Energy (SSI) Needs (AFY)	126,600	87,500	39,100		0
Total M&I Needs (AFY)	1,053,400	293,200	749,100		11,200
Strategies					
IPPs (AFY)	256,000	53,800	200,000		2,200
Conservation (AFY)	185,400	41,100	142,000		2,200
New Supply Development (AFY)	298,300	198,300	100,000		0
Reuse (AFY)	74,900	0	74,900		0
Ag Transfer (AFY)	139,500	0	132,700		6,800
Reuse (AFY)	99,400	0	99,400		0
Reduction in Irrigated Acres (percent)	11%	5%	21%		1%
			17%	Arkansas	
			22%	South Platte	
Reduction in Irrigated Acres (acres)	285,900	38,700		238,700	8,500
			54,700	Arkansas	
			184,000	South Platte	
Colorado River Depletions (AFY)	231,800				
NOTE: There may be some discrepancies in totals due to rounding.					

Status Quo Portfolio 6 of 7



Status Quo Portfolio 6 of 7



M&I Needs	Statewide	West Slope	East Slope		North Platte/ Rio Grande
Municipal Needs (AFY)	926,800	205,700	710,000		11,200
Energy (SSI) Needs (AFY)	126,600	87,500	39,100		0
Total M&I Needs (AFY)	1,053,400	293,200	749,100		11,200
Strategies					
IPPs (AFY)	128,000	26,900	100,000		1,100
Conservation (AFY)	139,000	30,900	106,500		1,700
New Supply Development (AFY)	100,000	100,000	0		0
Reuse (AFY)	0	0	0		0
Ag Transfer (AFY)	487,300	135,500	343,400		8,400
Reuse (AFY)	199,100	0	199,100		0
Reduction in Irrigated Acres (percent)	24%	19%	39%		2%
			33%	Arkansas	
			42%	South Platte	
Reduction in Irrigated Acres (acres)	631,100	166,600		454,800	9,700
			104,900	Arkansas	
			349,900	South Platte	
Colorado River Depletions (AFY)	92,500				
NOTE: There may be some discrepancies in totals due to rounding.					

Discussion of Example Portfolio

Breakout Groups

Technical Support for the Interbasin Compact Process, Basin Roundtable Needs Assessments, and Schedule

Technical Support for the Interbasin Compact Process, Basin Roundtable Needs Assessments, and Schedule for the Fiscal Year

- Draft reports
- Key findings
- Next steps
- Schedule

The Following Draft Reports are Available

- State of Colorado 2050 Municipal and Industrial Water Use Projections
- Nonconsumptive Needs Assessment Priorities Mapping
- Watershed Flow Evaluation Tool Pilot Study for Roaring Fork and Fountain Creek Watersheds and Site-Specific Quantification Pilot Study for Roaring Fork Watershed
- Evaluation of Water Supply Strategies

To access the reports visit:
http://cwcb.state.co.us/IWMD/COsWaterSupplyFuture/

Key Findings

- Colorado's population will nearly double by 2050 requiring between 830,000 and1.7 million acre-feet of additional water to meet M&I needs
- Environmental and recreational water needs have been identified statewide. Identifying projects and methods to meet those needs will continue to be a priority
- In order to meet these consumptive and nonconsumptive needs, Colorado will rely on a mix of conservation, agricultural transfers, and new water supply development
- Meeting Colorado's consumptive and nonconsumptive needs will require substantial investment. For example, a new water supply project yielding 250,000 acre-feet will cost between $7.5 to $10 billion. This exceeds previous cost projections.

Next Steps

- Statewide Update of Nonconsumptive and Consumptive Needs
  - M&I Demands
  - Nonconsumptive Focus Areas Mapping
  - Nonconsumptive Projects and Methods
  - Agricultural shortages
  - Updated Gap Analysis
  - Report summarizing needs assessments (June, 2010)
- Development of Portfolios and Evaluation of Water Supply Strategies

M&I Demands

- CWCB Staff will be gathering comments on M&I Demands to 2050 report
- Feedback will be gathered through November 2009
- CWCB will respond to comments and revise report
- Report will be included as an appendix to statewide update of consumptive and nonconsumptive needs

Nonconsumptive Focus Areas Mapping

- CWCB Staff will be gathering comments on report mapping report
- Feedback will be gathered through November 2009
- CWCB will respond to comments and revise report
- Report will be included as a section in the statewide update of consumptive and nonconsumptive needs

Nonconsumptive Projects and Methods

- CWCB will examine past studies:
  - Existing studies and plans by "ISF recommending entities"
  - Watershed restoration plans and flood DSS for identified restoration projects
  - Other relevant restoration and quantification studies, plans and processes
  - Other WSRA funded studies or Basin Roundtable Studies
- Information will be summarized by focus area
- Results will be included in statewide update of consumptive and nonconsumptive needs

Agricultural shortages

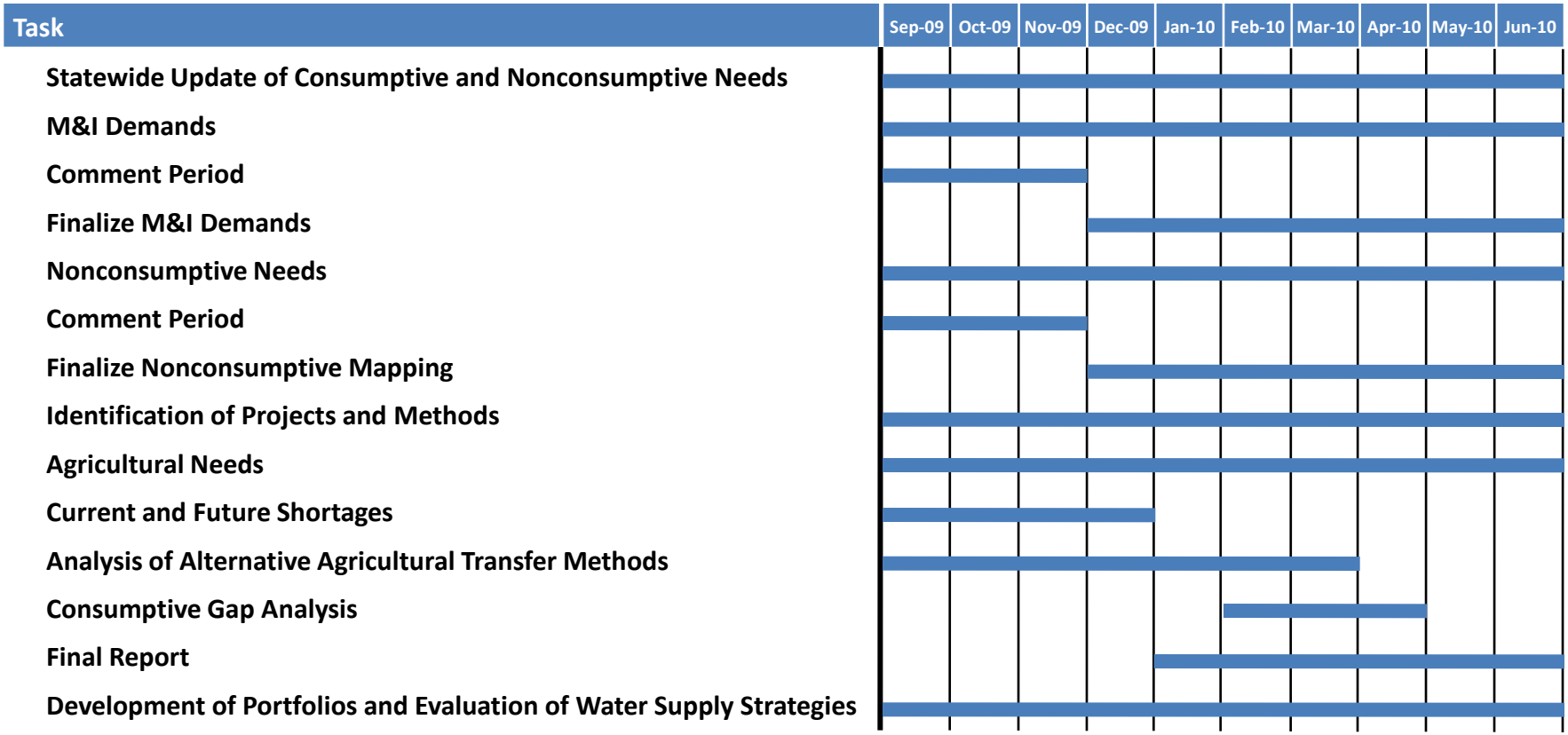
- CWCB will update the agricultural shortages from SWSI 1
- CWCB will summarize results of Yampa and Gunnison Agricultural WSRA studies
- Information will be included in statewide update
- CWCB will review information with roundtables
- CWCB will also review the Alternative Agricultural Transfer Methods Grant Projects

Consumptive Gap Analysis

- CWCB will update M&I gap analysis from SWSI 1 using updated IPP database
- CWCB will update agricultural shortages statewide
- Information will be included in report updating consumptive and nonconsumptive needs statewide

Report summarizing needs assessments (June, 2010)

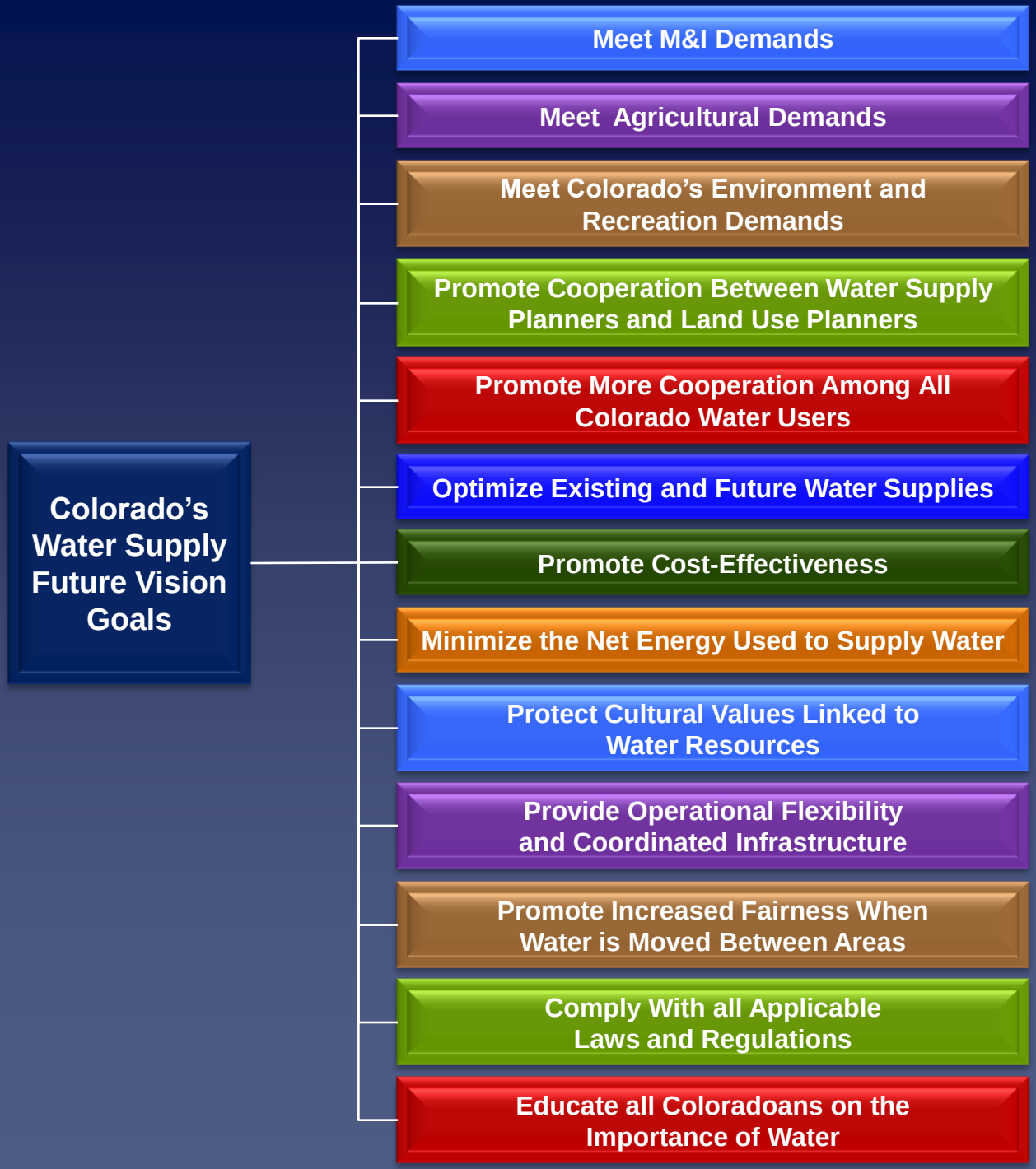
- CWCB will provide update of statewide consumptive and nonconsumptive needs based on recent reports and Basin Roundtable Needs Assessment efforts
- Target completion date of report is June 2010


Task
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Statewide Update of Consumptive and Nonconsumptive Needs
M&I Demands
Comment Period
Finalize M&I Demands
Nonconsumptive Needs
Comment Period
Finalize Nonconsumptive Mapping
Identification of Projects and Methods
Agricultural Needs
Current and Future Shortages
Analysis of Alternative Agricultural Transfer Methods
Consumptive Gap Analysis
Final Report
Development of Portfolios and Evaluation of Water Supply Strategies

Scenarios and Portfolios Next Steps

- Add IPPs and existing systems to depletions and model
- Focus next on low supply scenarios
- Further break down ag reductions to sub-basin/ditch level
- Specific analysis at the basin level to vary IPPs, conservation, new supply and ag transfer
- Complete exercise with Roundtables
- Look at storage overlaps between IPPs, new supply development, and ag transfers
- Create side-bars to protect nonconsumptive needs

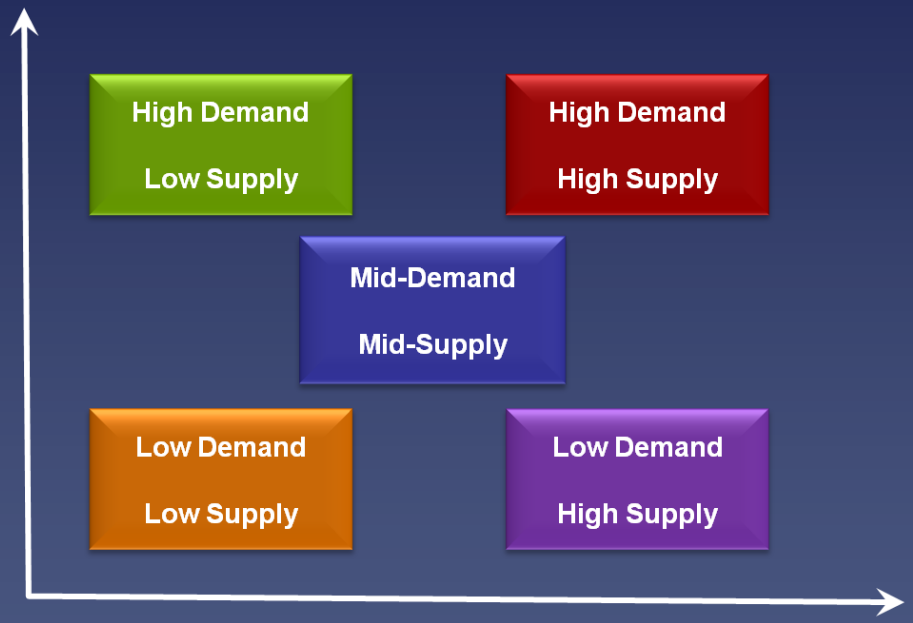
Elements of the Visioning Process


Colorado's Water Supply Future Vision Goals
Meet M&I Demands
Meet Agricultural Demands
Meet Colorado's Environment and Recreation Demands
Promote Cooperation Between Water Supply Planners and Land Use Planners
Promote More Cooperation Among All Colorado Water Users
Optimize Existing and Future Water Supplies
Promote Cost-Effectiveness
Minimize the Net Energy Used to Supply Water
Protect Cultural Values Linked to Water Resources
Provide Operational Flexibility and Coordinated Infrastructure
Promote Increased Fairness When Water is Moved Between Areas
Comply With all Applicable Laws and Regulations
Educate all Coloradoans on the Importance of Water

CRWAS

Scenarios

Demand Factors:
- M&I Growth
- Energy Demands
- Identified Projects and Processes Uncertainty



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Low – 100,000 AFY
Medium – 350,000 AFY
High – 700,000 AFY
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Agricultural Transfer Options

Reuse Options

Review Portfolio Table

CRWAS Phase 2

- Existing West Slope Systems
- Demands to 2050
  - M&I
  - Energy
  - Agriculture
- Transbasin Identified Projects & Processes
- Integration of Nonconsumptive Needs
- Analysis of New Supply Projects

PEPO

Conservation Strategy