



Alternative Water Transfers



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ATMs Defined

ATM =

Agricultural Water Supply Method

- Full-Season Fallow
- Rotational Fallow
- Split-Season Fallow
- Regulated Deficit Irrigation
- Crop Switching
- Infrastructure

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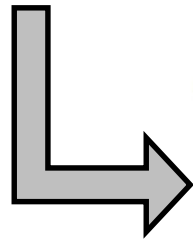
Water Transfer Method

- Water Bank
- Buy & Supply
- IWSA / Option Contract
- Purchase / Lease
- Lease to Fix

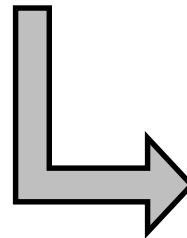


ATM Goal

COLORADO'S WATER PLAN



10.2
MEASURABLE OBJECTIVES AND
ADAPTIVE MANAGEMENT



“...to share at least **50,000 acre-feet** of agricultural water using voluntary alternative transfer methods by **2030.**”

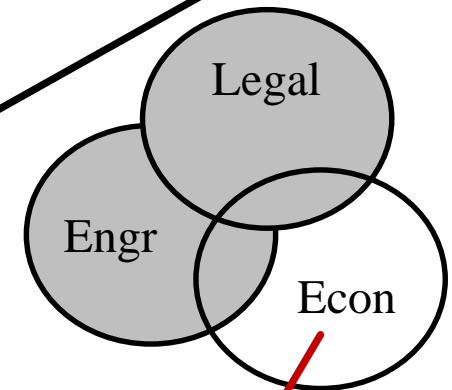
$50,000 / 13 \text{ yrs} = \sim 3,850 \text{ afy from ATMs}$

Introduction

ATMs in Colorado

Examples:

- Fort Collins multiple use decree of Water Supply & Storage Co. **1,600**
- Public Service Co. option lease with North Sterling ID **3,000**
- Aurora leases from Highline Canal Co. **1,100**
- CWT McKinley Ditch Project **175**
- Catlin Canal Pilot Project **500**
- *Upper CO System Conservation Program* **5,600**



State Efforts:

CWCB ATM Grant Program
\$4.5M since 2008 funding **23** studies
across Colorado looking at ATMs

Why should municipalities seek to acquire ATM supplies instead of permanent supplies?

Introduction

Project Overview:

- To develop a financial comparison of the water supply development options currently pursued by municipalities to applicable ATMs
- To develop recommendations that may help to increase the application of ATM structures with the potential joint benefits to municipal and agricultural water users.

Process:

- Review ATMs in CO & Western US
- Identify 2 Municipal Case Studies
- Analyze & Compare Water Supply Options
- Focus on Financial Costs of Options
- Recommendations for Moving Forward



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**Economics
Partnerships**

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Science**

Review of ATMs in CO & Western US

Recent CO Water Transfer Laws

Substitute Water Supply Plans

- HB 02-1414

Interruptible Water Supply Agreements

- HB 03-1334
- HB 13-1130
- HB 04-1256

Water Transfers from Agriculture

- SB 03-115
- HB 06-1124
- HB 13-1248
- SB 04-032
- HB 07-1132
- SB 15-183
- SB 05-133
- SB 13-019
- HB 16-1228

Water Banks for Storage Rights

- HB 03-1318

Instream Flow Leases

- HB 03-1320
- HB 08-1280
- HB 07-1012

Recommendation:

Efforts should focus on education and/or incentives. Current laws allow ATMs.

Western US Examples

- MWD rotational fallowing lease from Palo Verde ID **25,000+**
- SDCWA fallowing lease from Imperial ID **100,000**
- The Nature Conservancy lease from Diamond S Ditch **2,700**
- Deschutes River Conservancy lease from Three Sisters ID **2,200**
- CAP rotational fallowing lease from Yuma Mesa ID **6,800**
- *Lower CO System Conservation Program* **63,000**



Recommendation:

Efforts to implement ATMs should be focused initially on the demand side

Study Results & Recommendations

Municipal Case Study Selection

Color Scheme:
Green – good for ATMs
Yellow – ok for ATMs
Red – bad for ATMs

Demand-Side (Municipal) Data

District / Utility	Potable Water Deliveries (AFY)	Raw Water Sources	Ditches	Treatment Plant	Water Purchase Activity	Water Lease Activity	New Project Participation
Fountain, City of	2,589	Fry-Ark, Fountain Creek, Arkansas Basin Reservoirs	2	Fountain Valley Treatment Plant No. 4	High	Yes	-
Fowler, Town of	-	Groundwater springs, purchased Fry-Ark Project Water	2	-	High	Yes	-
Frederick, Town of	1,830	CBT units, Boulder Creek ditch shares for non-potable use	3	Carter Lake WTP from Central Weld County WD, FF WTP from Left Hand WD.	High	No	NISP
Gilcrest, Town of	211	CBT units	-	Town of Gilcrest WTP	Low	No	-
Golden, City of	4,000	Clear Creek, Upper and Lower Urad Reservoirs, Guanella Reservoir, Vidler Tunnel	5+	Golden WTP	High	No	-
Greeley, City of	29,000	CBT units, Windy Gap project, Poudre and Big Thompson River ditch shares	5+	Bellevue WTP or Boyd Lake WTP	High	No	WGF
Halltown, Town of	-	Purchase water from Fort Lupton, CBT units	-	-	Low	No	-
Johnstown, Town of	-	CBT units, Purchase from Little Thompson	1	Johnstown WTP	None	No	-
Lafayette, City of	11,425	CBT units, South Boulder Creek, Boulder Creek, Coal Creek	5+	Baseline WTP	High	No	NISP, WGF
Lafayette, Town of	-	Purchase water from Central Weld WCD	2	-	Low	Yes	-
Left Hand WD	3,991	CBT units, Left Hand Ditch Co.	1	Saugus WTP, Alva Dadd WTP	High	No	NISP
Little Thompson WTP	6,416	CBT units, Windy Gap Project, Buckhorn Creek, Fox Creek Reservoir	5+	Carter Lake WTP	High	No	WGF

- Potable Water Deliveries (AFY)
- Raw Water Sources
- No. of Ditches Owned
- Treatment Plant
- Water Purchase Activity
- Water Lease Activity

Supply-Side (Ditch) Data

Ditch Name	Service Area (Acres)	Number of Municipal Owners
Leyner Cottonwood Consolidated	1,432	2
Louden Canal	2,260	2
Lower Boulder Ditch	3,284	4
Lower Clear Creek Ditch	863	1
Lupton Bottom Ditch	3,503	2
Manhart Ditch	26	-
Meadow Island No. 1 Irrigation	1,707	1
Meadow Island No.2 / Beeman Ditch	2,561	1
Nevada Ditch	92	-
New Cache Irrigation Company	32,862	4
New Mercer Ditch	28	-
North Boulder Farmers Ditch	495	-
North Poudre Irrigation Company	27,520	6
Oligarchy Ditch	1,483	1
Palmerton Ditch	878	-
Platte Valley Irrigation	14,054	1
Pleasant Valley & Lake Canal	2,171	2
Riverside Irrigation District	31,093	2
Rocky Mountain Ditch	159	-
Rough and Ready Ditch Co.	1,555	3
Rural Ditch	478	1
South Boulder Canyon Ditch	1,332	4
South Side Irrigation & Reservoir	974	1
Supply Irrigating Ditch	4,956	2
Union Ditch	54	-
Union Ditch (Dist. 2)	4,930	2
Upper Platte & Beaver	10,052	1
Wannemaker Ditch	336	-
Warren Lake Reservoir	346	-
Water Supply & Storage	44,229	3
Weldon Valley Ditch	9,998	2
Western Mutual Ditch	7,436	1
Whitney Irrigation	1,858	1
Windsor Lake	142	-

- Ditch Service Area
- No. of Municipal Owners

Municipal Case Study Selection

Data Sources

- Water rights purchase and leasing activity

- Previously purchased ditch shares
- Acceptable ditch shares for raw water

- Current water demands
- Water sources
- Treatment plant locations
- Participation in regional water projects

Analysis

Filter Municipalities

1. Owns shares in at least one ditch system

2. Needs raw water supplies

3. Provides 1,000+ AFY of water deliveries

Results

- Short-list of 35 municipal entities on Front Range to contact that appear to be ATM candidates
- Ranked into tiers based on ditch data, project participation, other factors
- Risk tolerance is a key consideration, influenced by water supply options
- Location differences along the Front Range

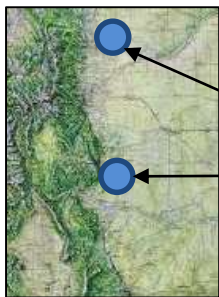
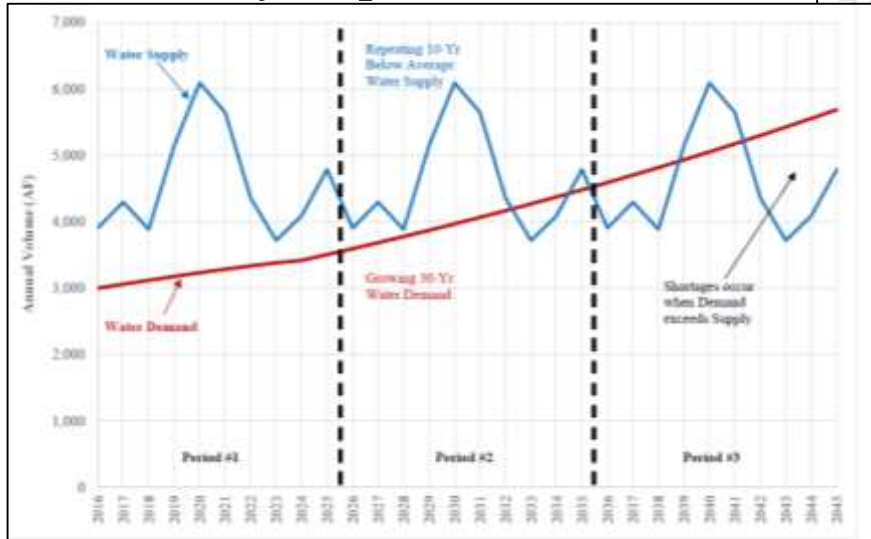
Recommendation:

The 35 potential ATM municipal participants should be analyzed further and contacted, focused on those with limited water supply options.

Study Results & Recommendations

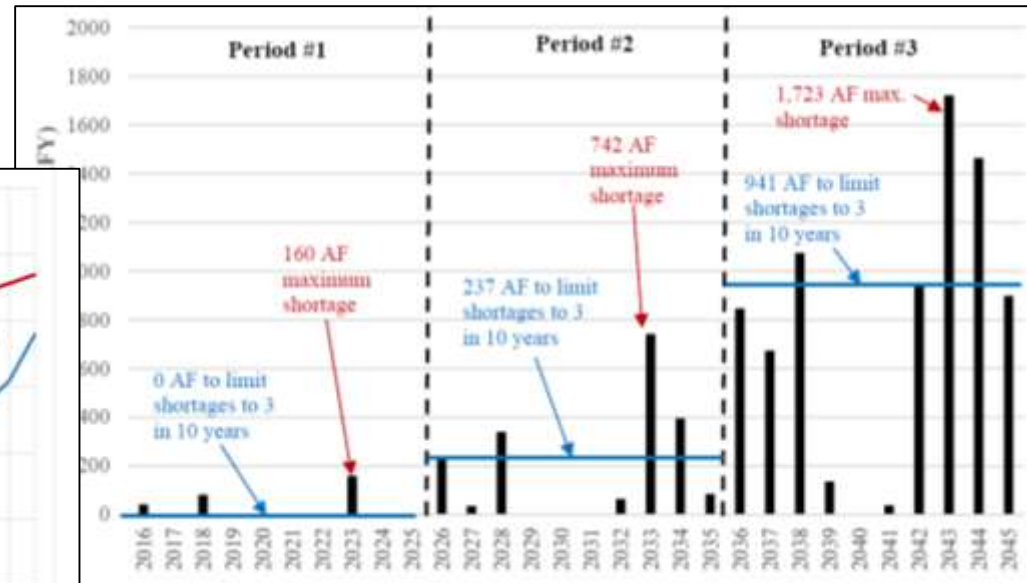
Financial Analysis

1. Identify water shortages over future 30-year period



Two Case Studies:
 • Town of Windsor
 • City of Fountain

2. Identify water supply alternatives



- Regional water supply project
- Ditch share purchase & transfer
 - Buy 30yr needs in 2016
 - Buy in 10yr blocks
 - *Buy & lease in blocks*
- *Rotational fallowing leases*
- *Buy farmland & multiple use decree*
- Local groundwater wells

Financial Analysis

3. Calculate long-term costs of each water supply alternative

- Acquisition Costs
- Transfer Costs
- Annual Ownership Costs
- Annual Operating Costs

Take Home Points:

- Financial model was very sensitive to assumed inputs
- Need to consider long-term costs when comparing purchased & leased water supplies
- Over the long term, leasing water will likely be more expensive than buying it unless lease prices are low and appreciate slow, and/or discount rate is high

Figure 3: Effect of Lease Rate Escalation on Comparable Costs

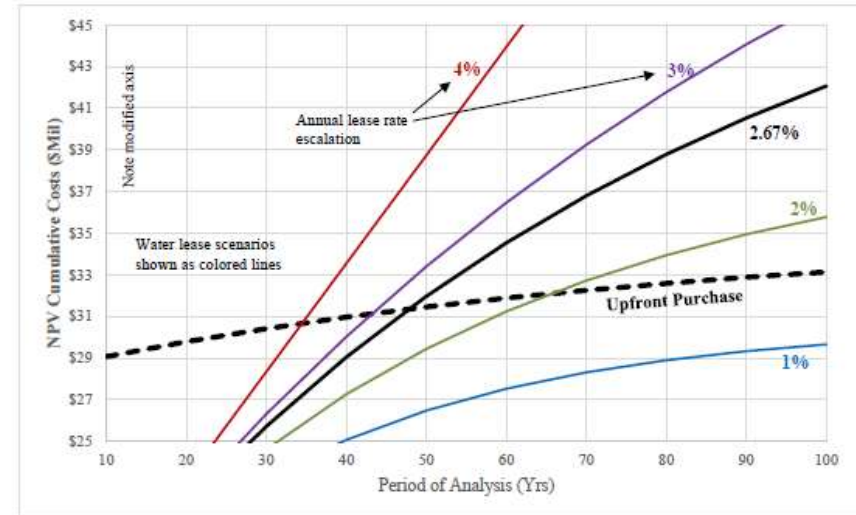
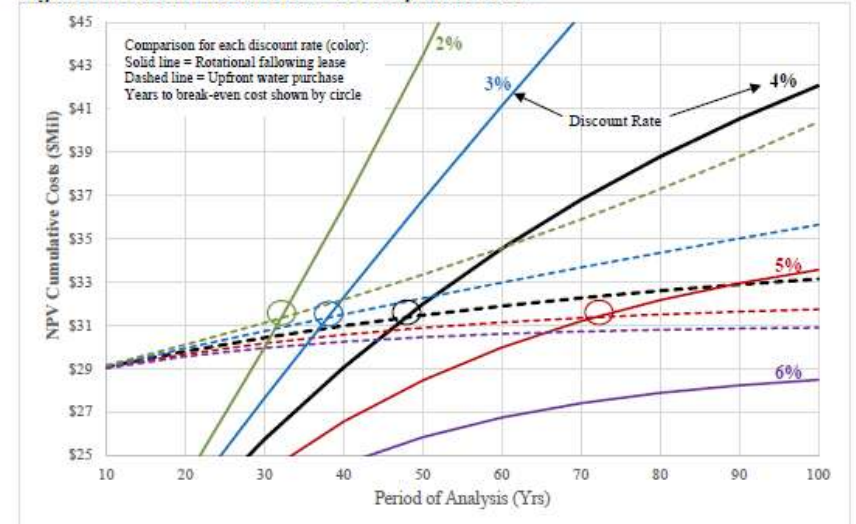


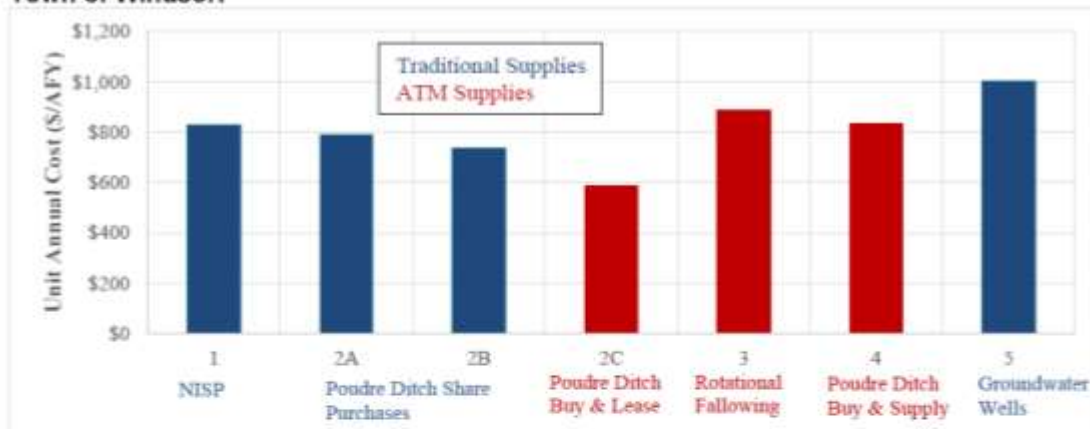
Figure 4: Effect of Discount Rate on Comparable Costs



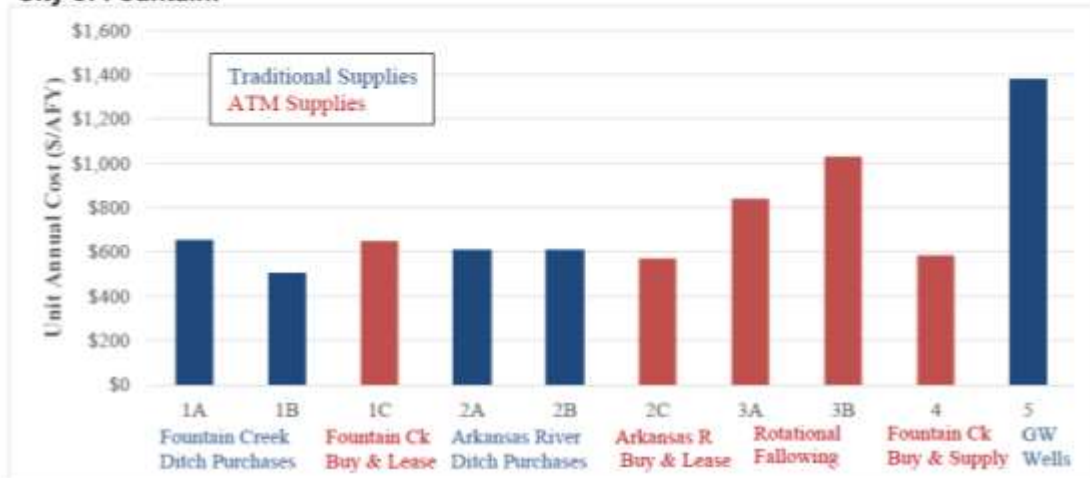
Study Results & Recommendations

Financial Analysis

Town of Windsor:



City of Fountain:



Findings:

- ATMs can be cost effective and comparable to permanent water acquisition options
- Mix of buying & leasing water supplies was the most cost effective ATM
- Leasing water supplies was about 10% to 40% more expensive than traditional purchase options

Recommendations:

- Target financial incentives to motivate ATM participation
- Explore ways to reduce the cost of leased water supplies.

Summary of Recommendations

1. Focus more on education and/or incentives, and less on policy and laws.
2. Focus on the demand side – entities that want non-traditional water supplies
3. Analyze and communicate with the relatively small number of potential ATM municipal participants, and focus on those with limited water supply options
4. Identify and promote financial incentives to motivate ATM participation
5. Address municipal concerns about the water supply risks associated with ATMs, and look to build a greater level of comfort with ATM water supply options