

# *Overview of Water Management in Alberta*



## *Lessons for the Okanagan Basin?*



*Presentation to:  
Okanagan Basin Water Board  
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# Overview

1. Legislation and Regulatory Reform
2. Policy and Strategic Initiatives
3. South Saskatchewan River Basin
4. Current Alberta Issues
5. Opportunities for the Okanagan Basin



# 1. Legislation and Regulatory Reform

## HISTORY

1. Irrigation started in 1890s by railway companies that were seeking settlers.
2. Canada establishes Northwest Irrigation Act in 1894.
  - Crown owns water
  - Retains some riparian rights (household use)
  - Other users must apply for licence to divert
  - Priority during shortage based on FITFIR
  - Water licences issued with no expiry date
  - Water rights tied to land or project (appurtenancy)

## 1. Legislation and Regulatory Reform

### HISTORY

3. Federal Government transfers ownership of water to Alberta (Natural Resources Transfer Act) in 1930.
  - Alberta passes Water Resources Act in 1931.
4. Alberta initiates review of water legislation in 1991 to ensure that water is managed and conserved for today and for the future.
  - New Water Act comes into force on January 1, 1999

# 1. Legislation and Regulatory Reform

## WATER ACT

- Major shift in water management in Alberta.
- Continued and expanded use of FITFIR.
- Introduced management flexibility and more tools for managing water shortages.
- Important regulatory changes included:
  1. Water Allocation and Licensing
  2. Water for the Environment
  3. Water Sharing
  4. Basin Management Plans
  5. No Interbasin-Transfers
  6. No Water Export
  7. Severing Water Rights from Land

# 1. Legislation and Regulatory Reform

## 1. Water Allocation and Licensing

### Water Act builds on original legislation

- Water rights not actively allocated.
- Issued in order of application.
- No ability to decide who gets water and who does not.

### Additional Features

- Recognition for farm water use (Registrations)
- Government can decide not to accept new applications.
- Government can reserve unallocated water.
- Water licences are transferable
  - Willing buyer and seller
  - No adverse impacts on environment or other users
  - Allows market to decide who gets water
- New water licences issued for a fixed term

# 1. Legislation and Regulatory Reform

## 2. Water for the Environment

**Water Act allows water to be set aside for environmental purposes**

- Water Conservation Objectives to be established
- WCOs subject to FITFIR
- Government can reserve unallocated water.
- Withhold up to 10% of transferred water

## 3. Water Sharing

**Water Act allows users to share rights**

- Formal written agreement required.
- Cannot adversely affect environment or other users.
- Used in 2000 in St. Mary, Belly and Waterton sub-basin
  - Majority of users agreed to take 60% of allocations

# 1. Legislation and Regulatory Reform

## 4. Basin Management Plans

Water Act requires development of approved basin management plans

- Establish water conservation objectives
- Identify factors to be considered during licensing
- Enable licence transfers and holdbacks.

## 5. Interbasin Transfers

Water Act prohibits interbasin transfers

- No transfer among major basins
- Can be authorized by special act of Legislature.
- Transfer of treated water from South Sask. Basin to North Sask. Basin approved in 2002
- Major transfer would likely trigger an environmental impact assessment and public hearings.

# 1. Legislation and Regulatory Reform

## 6. Water Export

### Water Act prohibits water export

- Does not apply to processed or municipal water.
- Can be authorized by special act of Legislature.

## 7. Severing Water Rights from Land (Appurtenancy)

### Water Act allows water rights to be transferred to a new user/use

- Where allowed in approved water management plan
- All or part of licence; retains seniority
- Willing buyer; willing seller
- Subject to 10% holdback

# 1. Legislation and Regulatory Reform

## SUMMARY OF KEY CHANGES

1. More emphasis on demand management.
2. Licence transfers allow flexibility to meet changing demands.
3. Recognition of non-consumptive demands
4. Basin residents must live with resources available within their own basins.



### Water For Life Strategy (2003)

#### Three Main Goals:

1. Safe, secure drinking water.
2. Healthy aquatic ecosystems.
3. Reliable, quality water supplies for a sustainable economy of non-consumptive demands

#### Key Directions and Actions:

1. Knowledge and Research
  - Scientific knowledge of Alberta's water resources
  - understand of emerging water issues and opportunities
  - ensure all Albertans are aware of water issues and have the knowledge and tools necessary to make effective management decisions

## 2. Policy and Strategic Initiatives

### Key Directions and Actions:

#### 2. Partnerships

- All Albertans must work together to set objectives for the watershed, identify issues, monitor the condition of the watershed and continuously adjust their use
- Established:
  - Provincial Water Advisory Council
  - Watershed Planning and Advisory Councils (WPACs)
  - Watershed Stewardship Groups

## 2. Policy and Strategic Initiatives

### Key Directions and Actions:

#### 3. Water conservation

- ◆ **The solution to looming shortages comes through:**
  - Improving the ability to capture and store water during high flow seasons or periods where possible and feasible
  - Improving water use practices through significant conservation efforts
- ◆ **Adopted long term efficiency objective:**
  - Overall efficiency and productivity of water use in Alberta will be improved by 30% from 2005 levels by 2015 (firm targets to be determined by the Provincial Water Advisory Council).

## 2. Policy and Strategic Initiatives

### Water For Life Renewal (2008)

Government renewed original strategy

Alberta Water Council recommended renewal on two key themes:

#### 1. Safeguarding our water sources:

- addressing aquatic ecosystem degradation
- more fully integrating water and land management
- continuing to create, enhance and use innovative tools and best practices.

#### 2. Accelerating actions to protect our water sources now rather than waiting until later.

Action plan released in November 2009

## 2. Policy and Strategic Initiatives

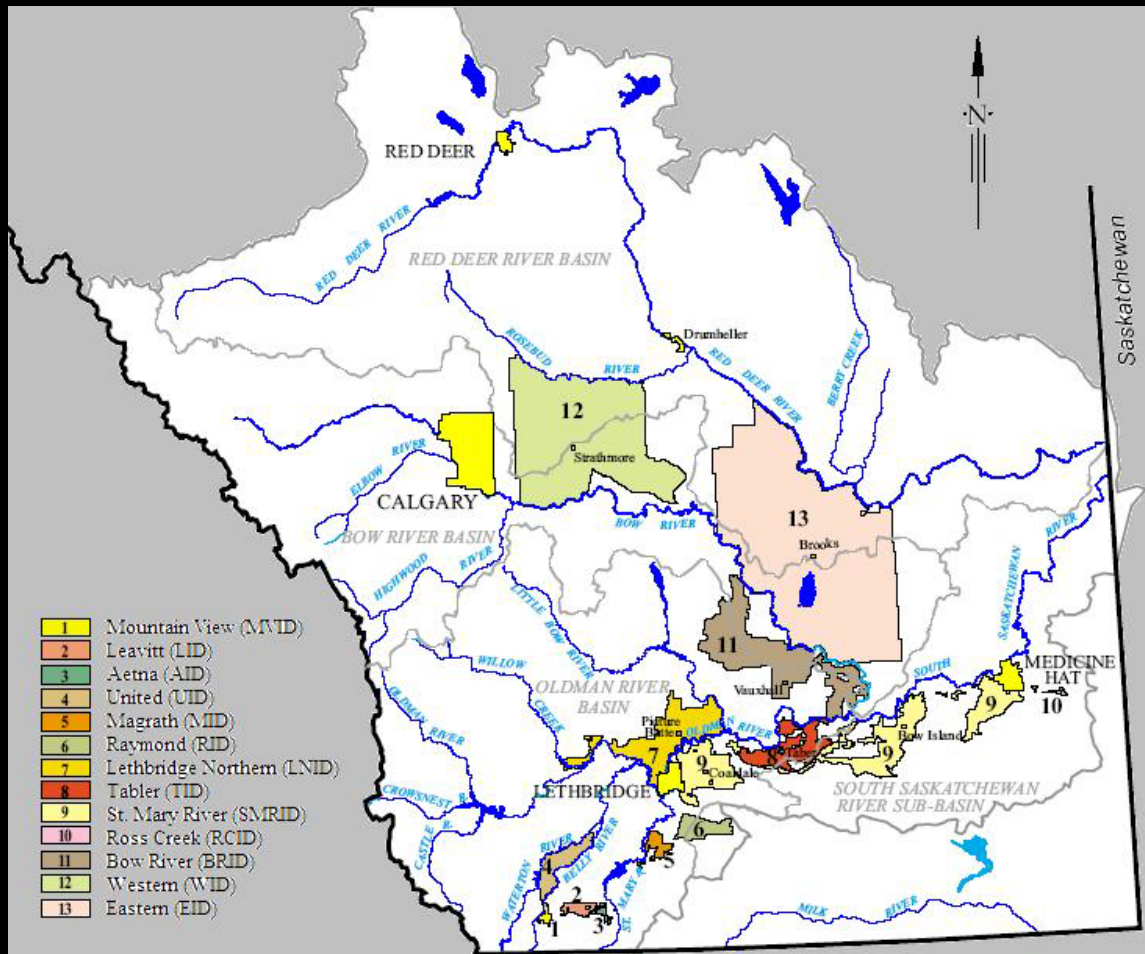
### Minister's Advisory Council (2009)

Developed recommendations to improve Alberta's water management and allocation system.

1. Urgently need to establish levels of Protected Water for the purpose of protecting the environment and aquatic ecosystems in all major river basins in the Province.
2. Invigorate the current process for transferring existing water allocations so that water will be transferred to its most highly valued uses, while ensuring that transfers protect or enhance the environment and respect the rights of other water users.
3. FITFIR continues to be a reasonable basis for allocating and reallocating water in Alberta at this time.

### 3. South Saskatchewan River Basin

## South Saskatchewan River Basin



- ♦ 1.4 million people
- ♦ Irrigation of 1.6 million acres
- ♦ 13 irrigation districts (1.35 million acres)
- ♦ Water for 50 communities
- ♦ 80,000 acres of wetlands
- ♦ 20% of Alberta's agricultural production

### 3. South Saskatchewan River Basin

## Current Status of Surface Water Allocations

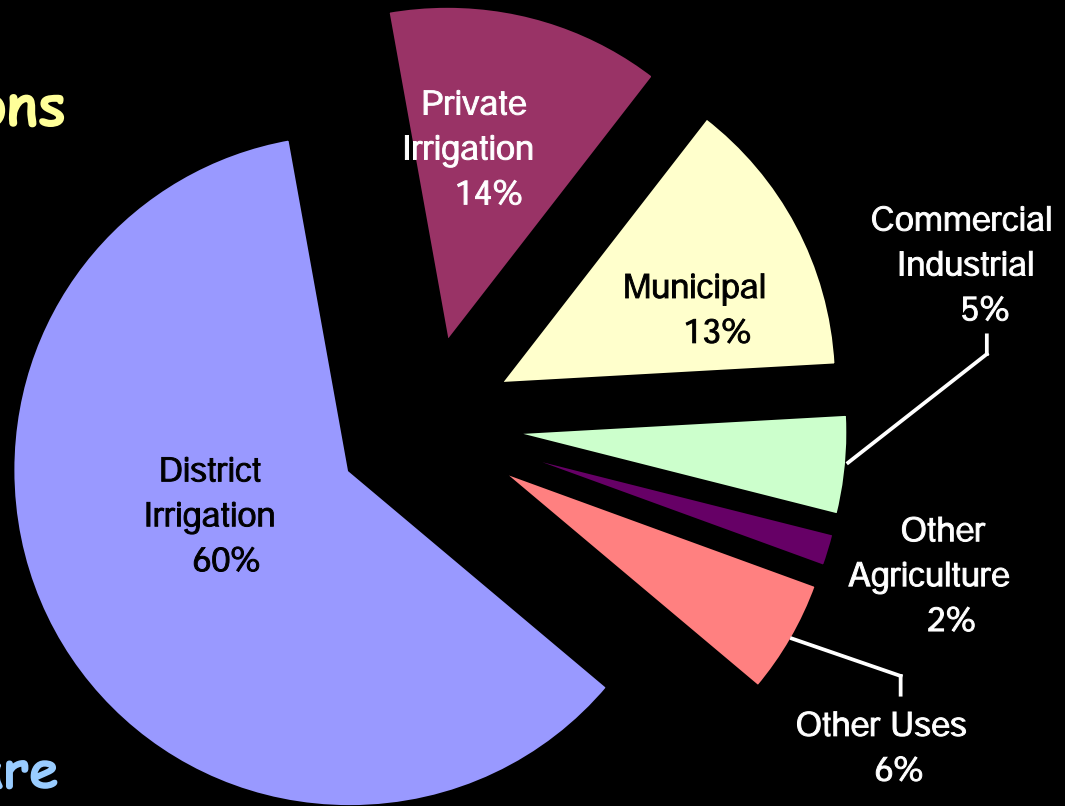
### Surface water allocations

8,700 Licences

18,600 Registrations

### Total allocations

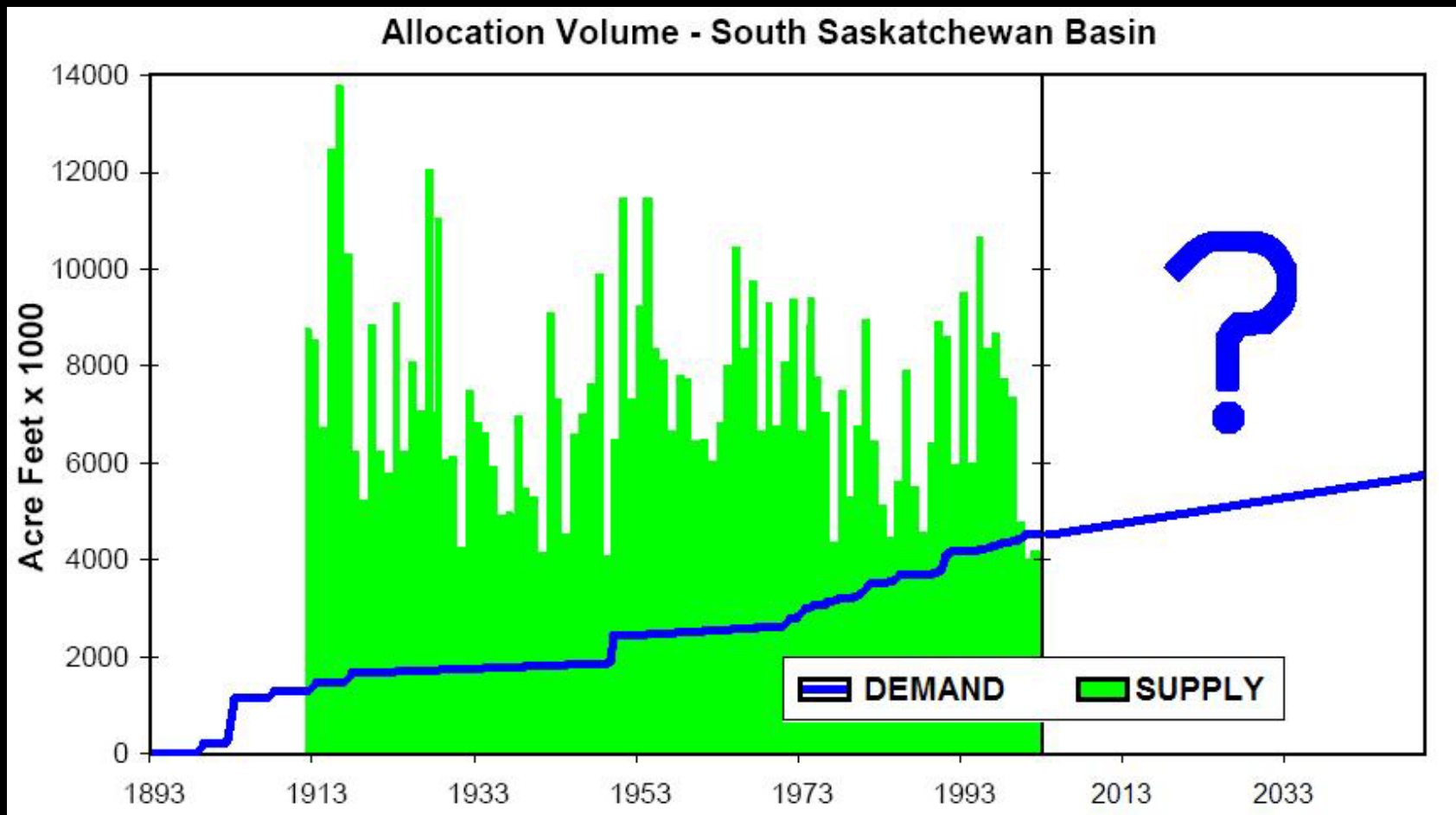
5.6 million dam<sup>3</sup>  
67% of natural flow  
136% of Alberta's share



Meeting commitment to Saskatchewan because full allocations are not being withdrawn and not all withdrawals are consumed (return flows)

### 3. South Saskatchewan River Basin

Consumptive demands are increasing but supply is fixed or declining.



### 3. South Saskatchewan River Basin

Non-consumptive demands are also increasing:

- Health of aquatic environment is in long-term decline
- 10% of 33 river reaches are below ecologically acceptable values
- Instream Flow Needs to protect aquatic life should be about 85% of natural flow

#### Challenge for the Future of the SSRB

Manage a variable water supply to balance present and future demands against the need to increase or maintain instream flows.

### 3. South Saskatchewan River Basin

## 2001 Drought

- Water users in Oldman basin met in Fall 2000 to prepare for possible water shortages
- Water sharing agreement submitted in May 2001
  - Involved more than 200 licensees
  - Allocations under FITFIR suspended
  - Licensees agreed to share water
  - Each received 60% of their allocation regardless of priority
  - Seven irrigation districts were the largest donors
- Sharing agreement was seen as effective means of mitigating the effects of drought
- Future participation by the irrigation districts may ultimately depend on the frequency of such events.

### 3. South Saskatchewan River Basin

## 2002 - Phase One of SSRB Water Management Plan

- Authorized water allocation transfers
- Authorized water conservation holdbacks on transfers
- New water applications will not be accepted for the St. Mary, Belly and Waterton Rivers, pending recommendations from Phase Two

### 3. South Saskatchewan River Basin

## 2006 - Phase Two of SSRB Water Management Plan

- ◆ Applications for new water allocations in the Bow, Oldman and South Saskatchewan River Sub-basins no longer being accepted
- ◆ Crown will reserve water not currently allocated and can only be used for:
  - Water conservation objectives;
  - Storage of peak flows to mitigate impacts on the aquatic environment and to support existing licences.
  - First Nations Reserves
- ◆ Water Conservation Objectives (WCOs) to be established for the Bow, Oldman and South Saskatchewan Sub-basins.
  - Licences issued for applications received after May 1, 2005 will be subject to water conservation objective

### 3. South Saskatchewan River Basin

## The Balzac Water Transfer (2007)

Balzac commercial development (Bow Basin) just north of Calgary

- Tried to obtain water from Red Deer Basin (intra-basin transfer).
- Eventually obtained water from WID (Bow)
- MD of Rocky View agreed to pay WID \$15 million for 2000 acre-feet (\$7500 per acre-foot)
- Money to be spent to convert a 50-kilometre section of canal into a pipeline.
- 10% holdback used to improve flows in Bow
- New demands served by increased efficiency

This is the way the market system is supposed to work!

However, higher utilization of an existing allocation.

### 3. South Saskatchewan River Basin

## Status of Permanent Licence Transfers (2008)

Sellers:	Irrigation		Commercial		TOTAL		
	No	Volume dam <sup>3</sup>	No.	Volume dam <sup>3</sup>	No.	Volume dam <sup>3</sup>	%
Irrigation	3	408.5			3	408.5	8%
Municipal	2	544.1			2	544.1	10%
Rural Community	1	1,604.9			1	1,604.9	31%
Commercial	2	130.8	1	6.8	3	137.6	3%
Recreation	1	1.5			1	1.5	0%
Stockwatering	2	288.9			2	288.9	6%
Multiple	1	2,220.3			1	2,220.3	42%
Lawn, garden , shelterbelt	1	33.0			1	33.0	1%
<b>Total</b>	<b>13</b>	<b>5,232.0</b>	<b>1</b>	<b>6.8</b>	<b>14</b>	<b>5,238.8</b>	<b>100%</b>

No information on assignments or transfers within irrigation districts

## Observations on Licence Transfers

### Water Hold backs on Transfers

- Implemented for 7 transfers
- Involved 485.9 dam<sup>3</sup>
- WCO licences were issued in each case.
- Equivalent to 0.061 m<sup>3</sup>/s on the Oldman
- 0.014 m<sup>3</sup>/s and 0.027 m<sup>3</sup>/s on the Bow River

### Motivation for Transfers

- Buyers were seeking long-term security of supply
- Sellers had water that they were not using.
- Water transferred from low-value to higher-valued uses
- Irrigators purchasing water rights had more efficient technology than the sellers.

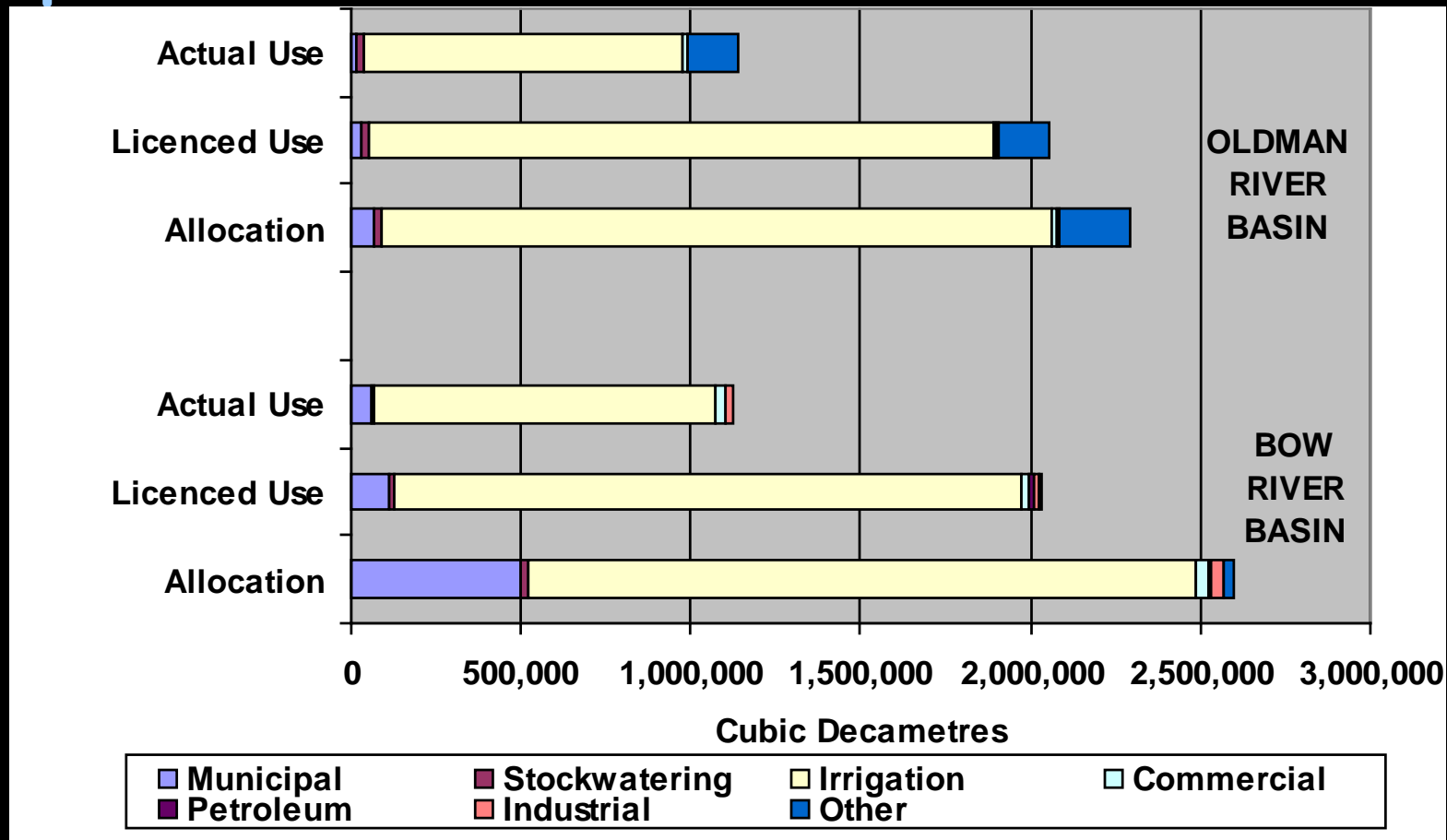
## Observations on Licence Transfers

### Process

- Market participants in Alberta were dismayed by the time delays in the transfer process.
- Nichol et. al. (2007) concluded that “the present approval process is an impediment to the wider adoption of water rights markets” where the process allows consideration of objections that may have little to do with water issues.

### 3. South Saskatchewan River Basin

## Comprehensive Assessment of Water Use, 2005



- In a normal year actual water use is only 55% of water use allowed in licences

### 3. South Saskatchewan River Basin

## Outstanding Issues in the SSSRB

### Consumption will rise even if no new allocations

- ♦ Normal expansion of use (municipalities)
- ♦ Transfers of unused portions of existing licences

### Shortages will be experienced by junior licensees

- ♦ Illegal withdrawals (enforcement)
- ♦ Demand for more storage

### Insufficient water for the environment

- ♦ WCOs not being met
- ♦ Crown reservations have junior priority
- ♦ Holdbacks are too small to have an effect
- ♦ Only Crown can hold a WCO

# Outstanding Issues in the SSSRB

## "Sleeper" Licences

- Only licences in good standing can be transferred
- Cancelling unused licences or licences not using full allocation.
- Problematic since most licensees only use full allocation in dry years (irrigation)

## No water will be conserved

- Any water "conserved" by water users in SSRB will be used elsewhere in basin by:
  - New licensees who obtained water through transfers
  - Junior licensees who would otherwise be cut-off
- Water saved by efficiency improvements will be used to irrigate additional acres.

# Outstanding Issues in the SSSRB

### More Use of Groundwater

- Extent of groundwater resources poorly understood

### More Construction of Off-Stream Storage

- Too many problems with on-stream storage
- Potential off-stream storage sites have been inventoried

### Need More Information on Water Use

- Licences being amended to require all water users to report annual use
- More resources required for real-time monitoring

# 1. Is FITFIR the Right Choice?

## Concern that FITFIR is Outdated

- Favours old users; no security for new users
- Some support for Australian "share" system

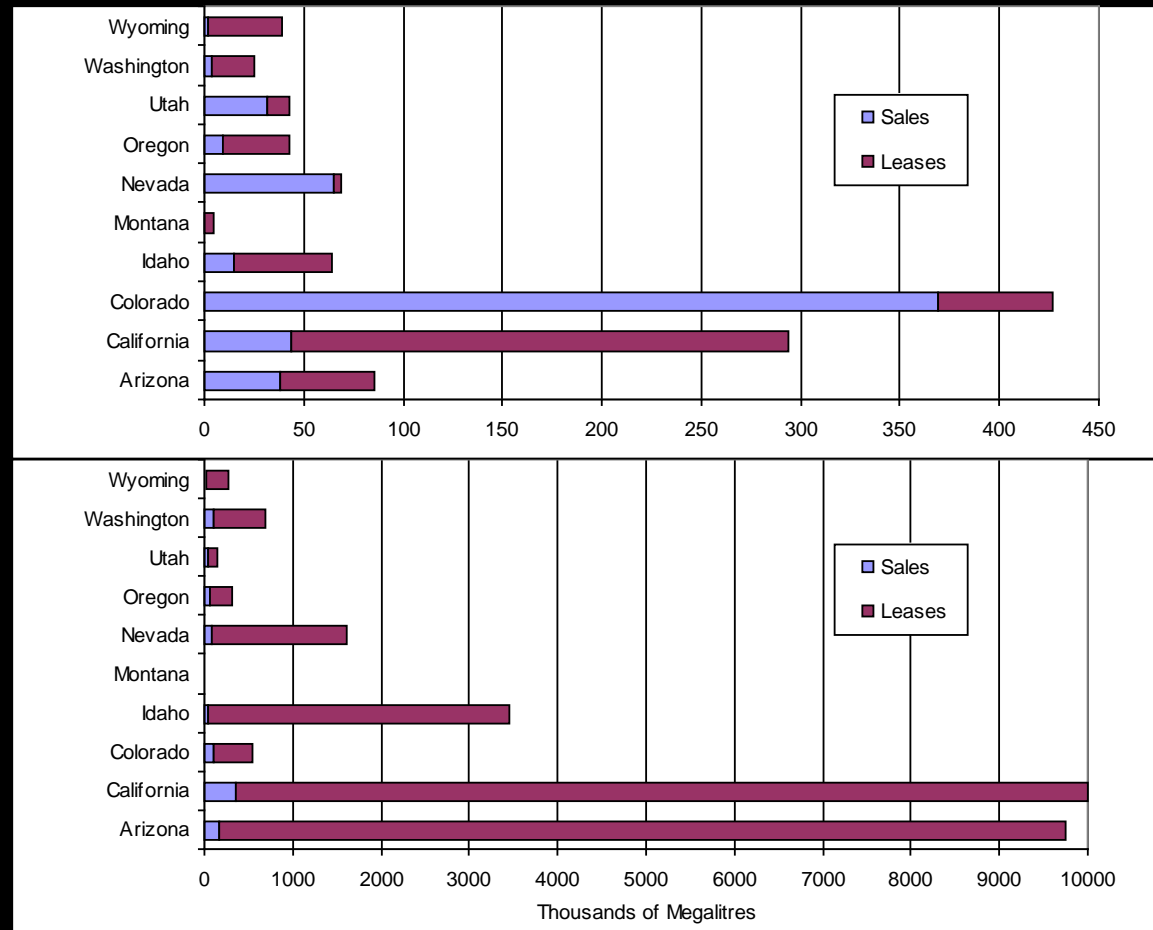
## Ongoing Debate

- Recent reports to Minister suggest most problems can be addressed by FITFIR
- Poor understanding of FITFIR and alternative systems (Australian system works because of high storage volumes)
- Lots of vested interests and investment at risk if system to be changed
- No US states looking at alternative to FITFIR

## 2. Is The Market Working?

Experience from Western US shows extensive trades:

- Colorado has most active market for water sales, but low volumes
- California has most active market, based on volume, and almost entirely leases.
- Arizona has extensive lease market
- Data for 1990-2003



However, most trading involves water, not water rights.

# 2. Is The Market Working?

## Few Transactions to Date

- Concern about transaction costs
- New uses can obtain water from other licensees
- Only government can conduct technical review of applications
- Parties can intervene for non-water reasons
- Not all transfers being reported (assignments)
- However, no real shortage since 2001

## Possible Improvements

- Need a real or virtual marketplace
- Develop streamlined administration processes that allow simple transfers while protecting third parties
- Allow use of third parties to do technical reviews

# 3. Insufficient Water for the Environment

## Current Approaches Not Working

- WCOs not being met; too junior
- Holdbacks ineffective
- WCOs not developed for most rivers

## Alternative Approaches

- Government must purchase licences in market
- State governments have been major players in Australian and western US to get water for the environment
- Target sleeper licences (rather than cancel) in order to obtain seniority
- Coordinated management of all storage in basin

### 4. Unused Water

#### Not All Licences Being Fully Used

- Some licences not being used at all - being cancelled
- Some licences have excess capacity (Calgary)
- Some licences only use full amounts periodically (irrigation districts)

#### Licence Utilization Will Increase Over Time

- Cancellation doesn't help the environment
- Transfers will increase amount of potential withdrawals actually being used
- Limit transfers to net consumption
- How do you address non-use for district licences?

# 5. Ownership of Return Flows

## Return Flow Portion of Licences Not Enforceable

- Licences specify total diversion volumes
- Allocation includes use, losses and may assume some return flow (municipal)
- Only allocations are legally enforceable
- Licensees may be able to use entire allocation without having to put any water back

## Alternative Approaches

- Limit transfers to net consumption
- However, without entitlement to "saved water" that would be seen as return flows, there would be no incentive to conserve or improve efficiency

# 6. Lack of Knowledge/History

## Unfamiliarity with FITFIR and Water Rights

- Both public and young bureaucrats unfamiliar with water law and water rights
- Don't understand connection between water rights, investment and economic output
- Easy to assume that system is broken
- Other jurisdictions appear to work better

## Alternative Approaches

- Alternatives to FIRFIR have their own problems
- Other jurisdictions too unique to be directly comparable
- Need better education and understanding

# 7. Drought Management Plans

## What is Plan "B" in Case of Drought?

- Voluntary sharing of shortages is not long term solution
- FITFIR is for shortages, but not everyone likes results
- Western states have ability override FITFIR in case of drought, but this has never happened
- Short-term licence transfers and water banks have helped address drought

## Alternative Approaches

- Develop sharing plans as in riparian based systems (Ontario)
- However, very difficult to develop such plans
- During shortages water is an emotional issue

## 5. Opportunities for the Okanagan Basin

### Observations

#### 1. Okanagan situation appears very similar to SSRB

- Use of FITFIR
- Water shortages
- High allocation to agriculture
- Increasing municipal demands
- Need more water for environment
- Development of regional water management plans
- Same strategic priorities

**BIGGEST DIFFERENCE:** Groundwater is licenced in Alberta

## 5. Opportunities for the Okanagan Basin

### Observations

#### 2. Different approach to water shortages

- Okanagan approach appears based implementation of water allocation plan that depends on voluntary sharing of shortages, regardless of legal entitlements
- Alberta experience is that cooperative sharing of shortages is only a short term solution
- Alberta relying on market to redistribute water to meet changes in overall demand (municipal growth) and seasonal shortages (leases)
- Markets have been shown to provide water rights holders with an incentive for innovation and increased water efficiency

**WHAT IS THE ALTERNATIVE WHEN DEMANDS ARE CHANGING AND NO NEW RIGHTS BEING ISSUED??**