

Xcel Energy Drought Preparedness Efforts

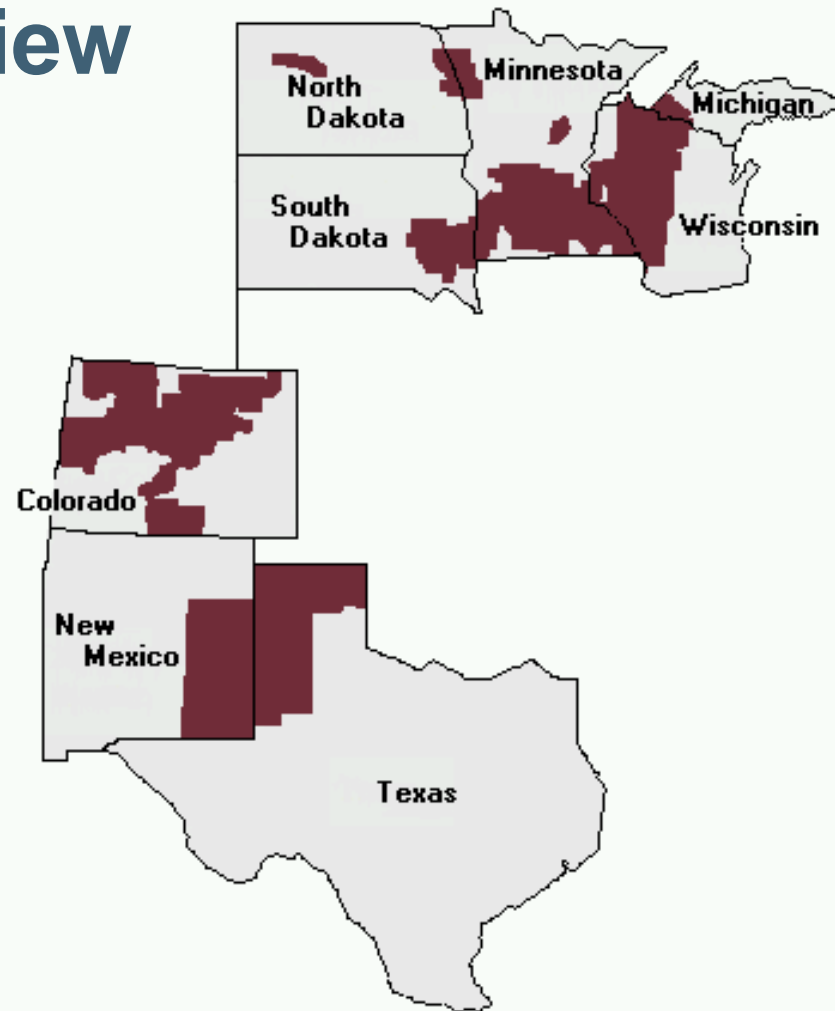
CWCB 2012 Drought Conference

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Xcel Energy Overview

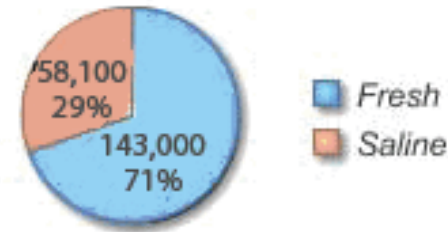
- 3.4 million electricity customers and 1.9 million natural gas customers, serving eight states
- Wide variety of fuel sources and generating technologies
- Top provider of wind energy



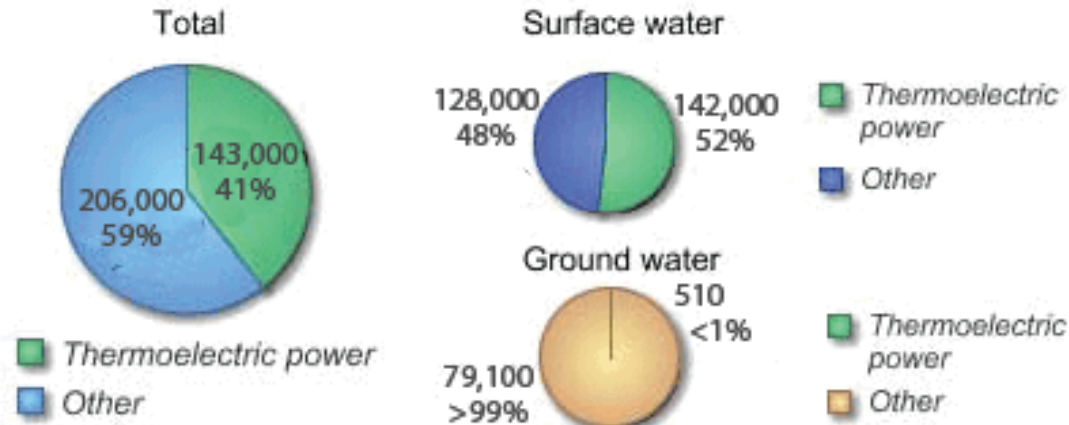
Water - Energy Nexus

- 41% of surface water *withdrawals* used for thermoelectric generation
- Withdrawal vs. Consumption

Thermoelectric-power water withdrawals, 2005



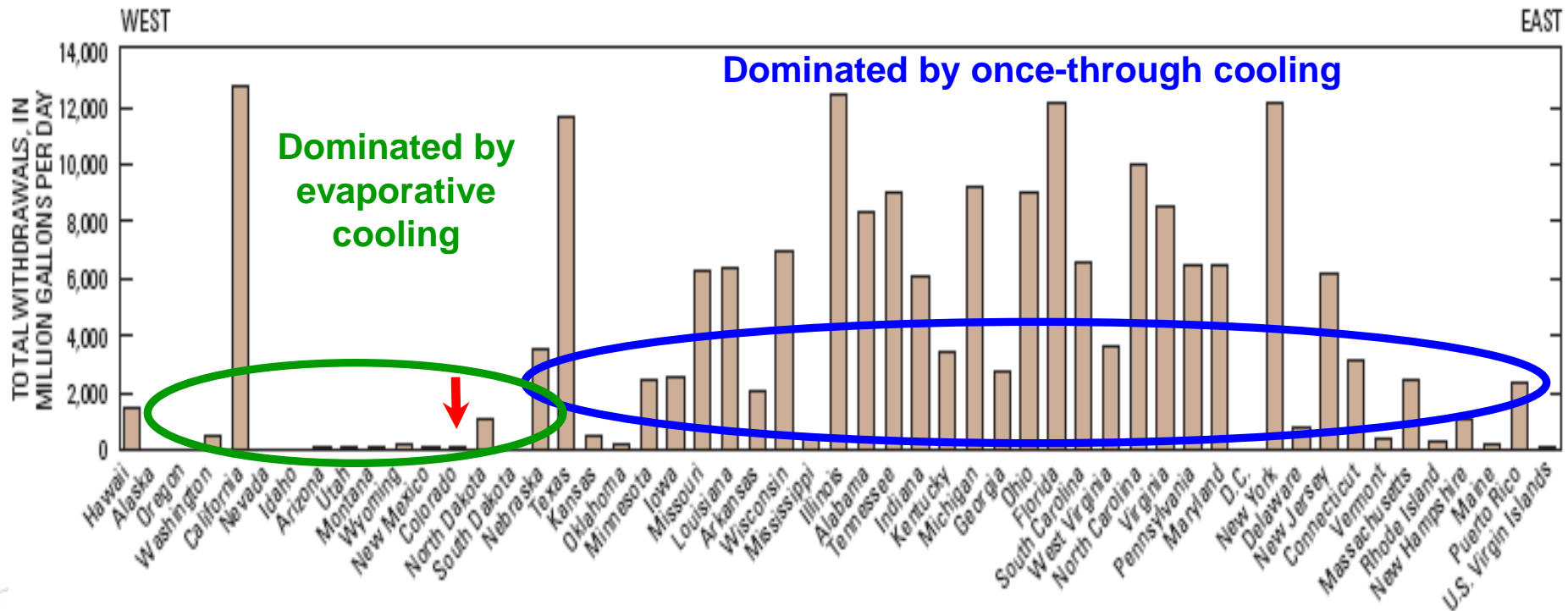
Total freshwater withdrawals, 2005



(Withdrawals are in million gallons per day)

Source: US Geological Survey;
<http://ga.water.usgs.gov/edu/wupt.html>

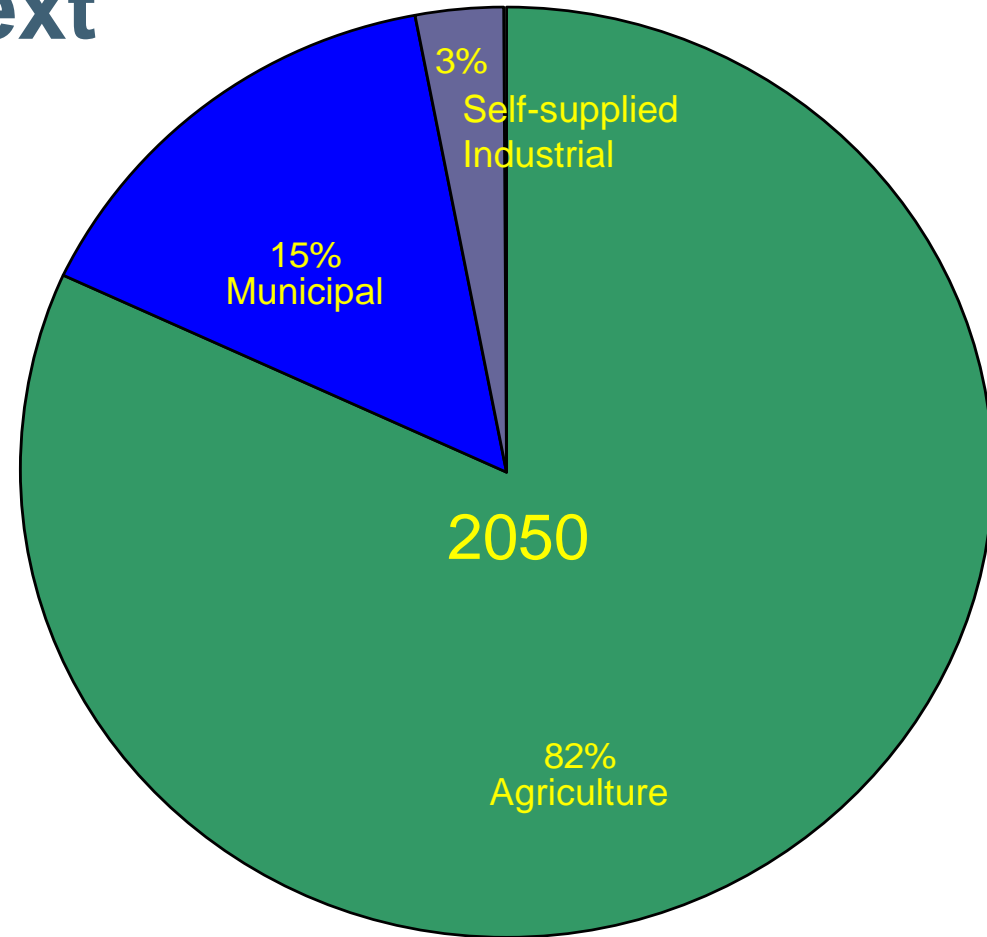
Water – Energy Nexus



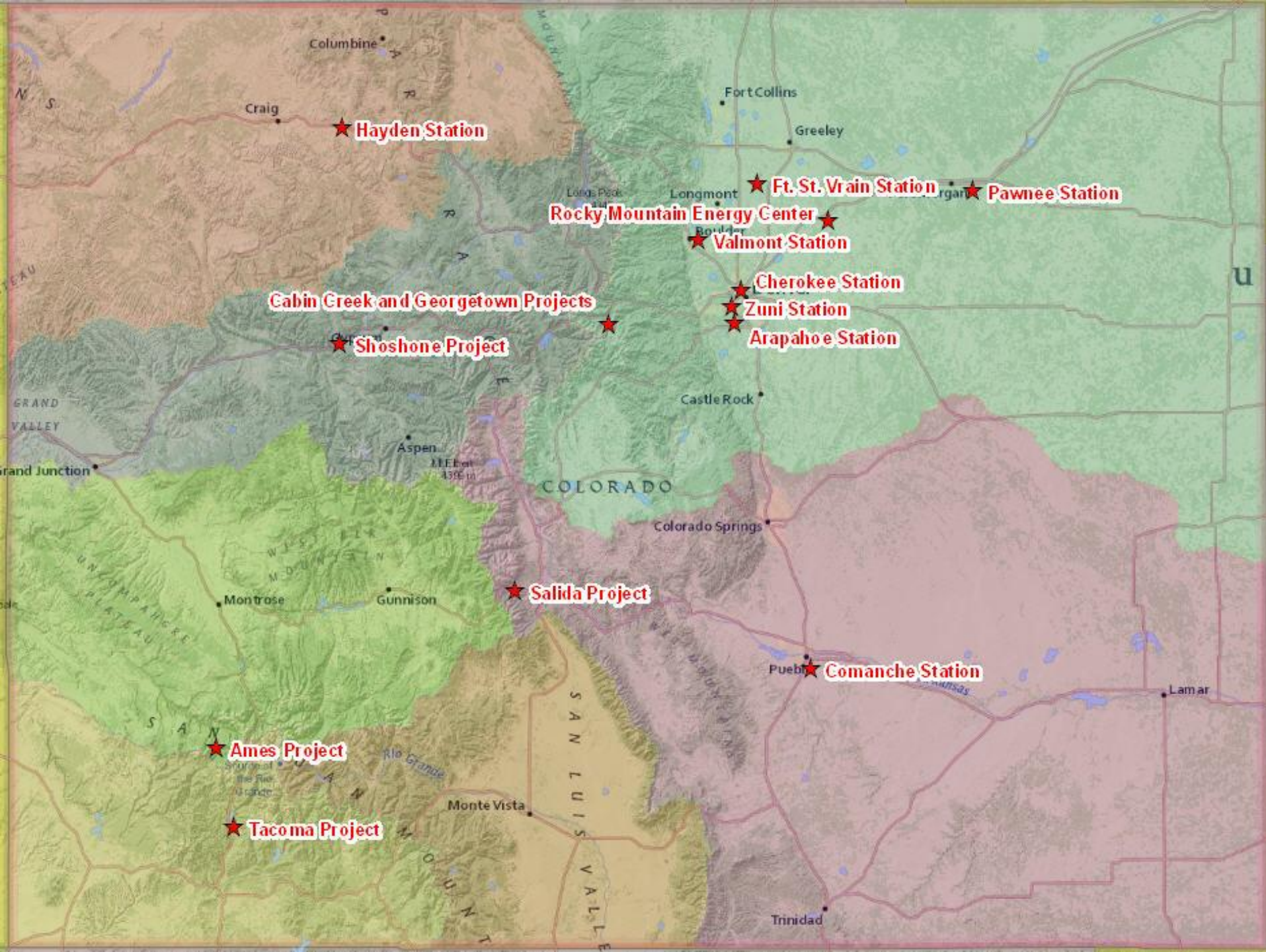
Source: US Geological Survey;
<http://ga.water.usgs.gov/edu/wuvt.html>

Colorado Context

- **Self-supplied Industrial**
 - **Thermoelectric generation (~1%)**
- **Avg residential electric demand < 10 gallons per day to generate, <7% Denver Water daily per capita water use in 2011.**



Source: Colorado Water Conservation Board





- Changed agricultural
- JR direct flow
- SR/JR storage
- C-BT
- Fully-consumable municipal

★Ft. St. Vrain Station

★Pawnee Station

- Contract recharge credits
- C-BT/Seasonal storage agreement
- JR direct flow/storage
- JR recharge
- Fully-consumable municipal
- Interruptible Supply

★Rocky Mountain Energy Center

- Contract water supply

★Valmont Station

- Changed agricultural
- SR/JR storage
- C-BT

- Changed agricultural
- JR direct flow
- SR/JR storage
- Recycled water
- Fully-consumable municipal

★Cherokee Station

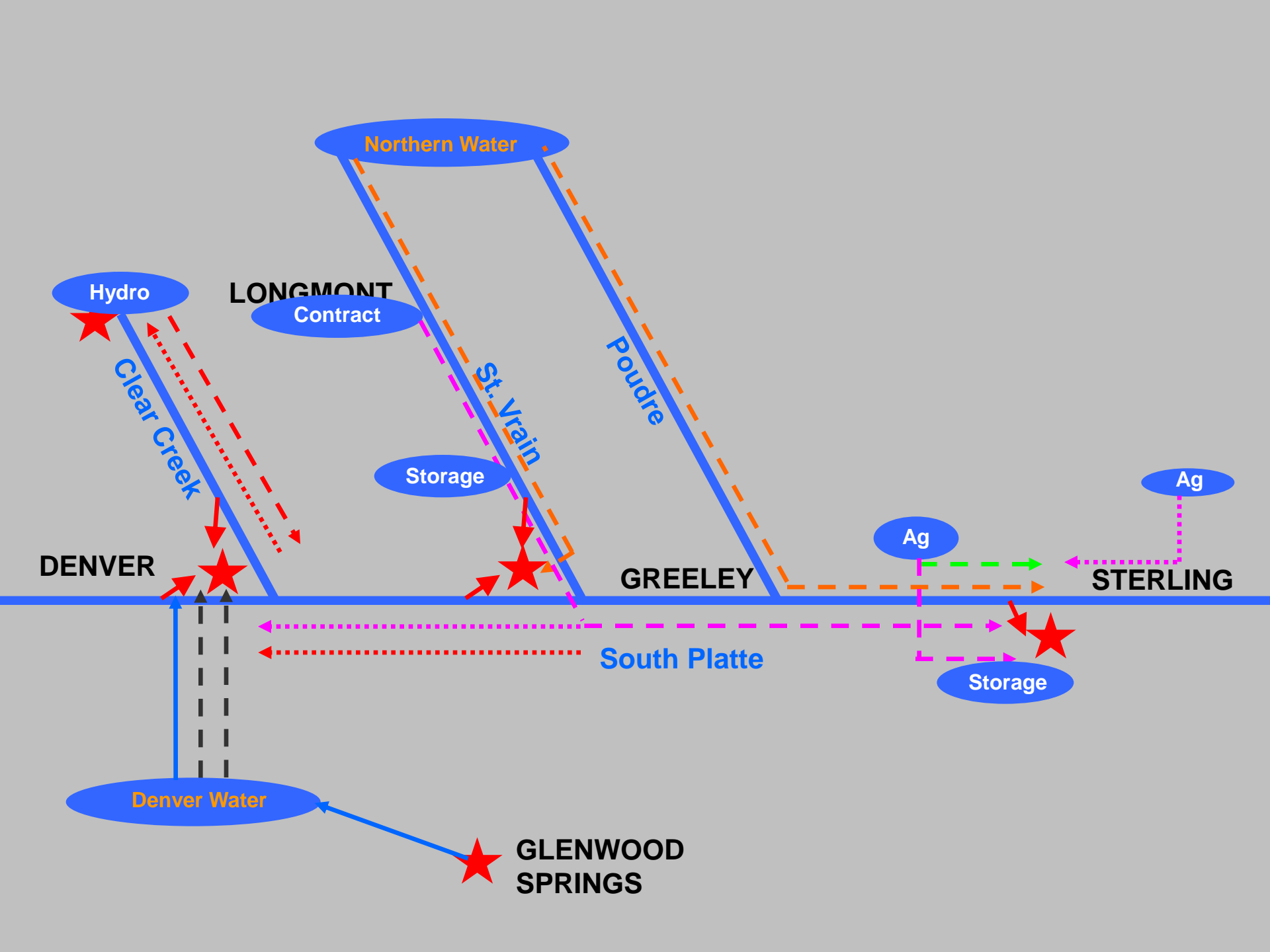
★Zuni Station

- Contract water supply

★Arapahoe Station

- Contract water supply





Water Conservation

- Natural gas combined cycle
- Wind
- Demand-side Management
- Wastewater effluent for cooling
- Technology; Comanche 3 hybrid cooling
- Plant retirements; Valmont, Arapahoe and Cherokee Units 1-3 retired under Colorado's Clean Air-Clean Jobs project
- Good stewardship practices

