

RECLAMATION

Managing Water in the West

Irrigation Management Information Systems' Workshop

James Prairie, Upper Colorado Region
San Diego, CA
August 25-26, 2016



U.S. Department of the Interior
Bureau of Reclamation

Building a UCRB climate station network

- Assess Suitability of Existing Stations
 - Located in agricultural settings
 - Measures data required to support all CU analyses (Blaney-Criddle, Penman, Remote Sensing)
 - Equipment, calibration, and maintenance adheres to ASCE standards

Assess Suitability of Existing Stations

- Worked with States' climate network administrators during assessment
 - Wyoming State Engineer's Office
 - New Mexico Climate Center/Navajo Agricultural Products Industry
 - Colorado State Climatologist (CoAgMet)
 - Utah State Climatologist/AgriMet

Stations Installed/Planned During Project

- Colorado Installed 5 new stations in 2015, 1 planned for 2016
- Wyoming has 5 planned for 2016
- Utah teamed with AgriMet and installed 2 new stations and “took over” 5 marginal stations in 2014-2015, 2 installed in 2016

Stations Installed/Planned During Project

State	# Existing	# Planned	Irrigated Acreage
Wyoming	5	5	338,500
Utah	7	2	175,500
Colorado	15	1	426,000
New Mexico	3	--	77,000
Total	30	8	1,017,000

Existing and Planned Stations Cover 66% of Irrigated Acreage

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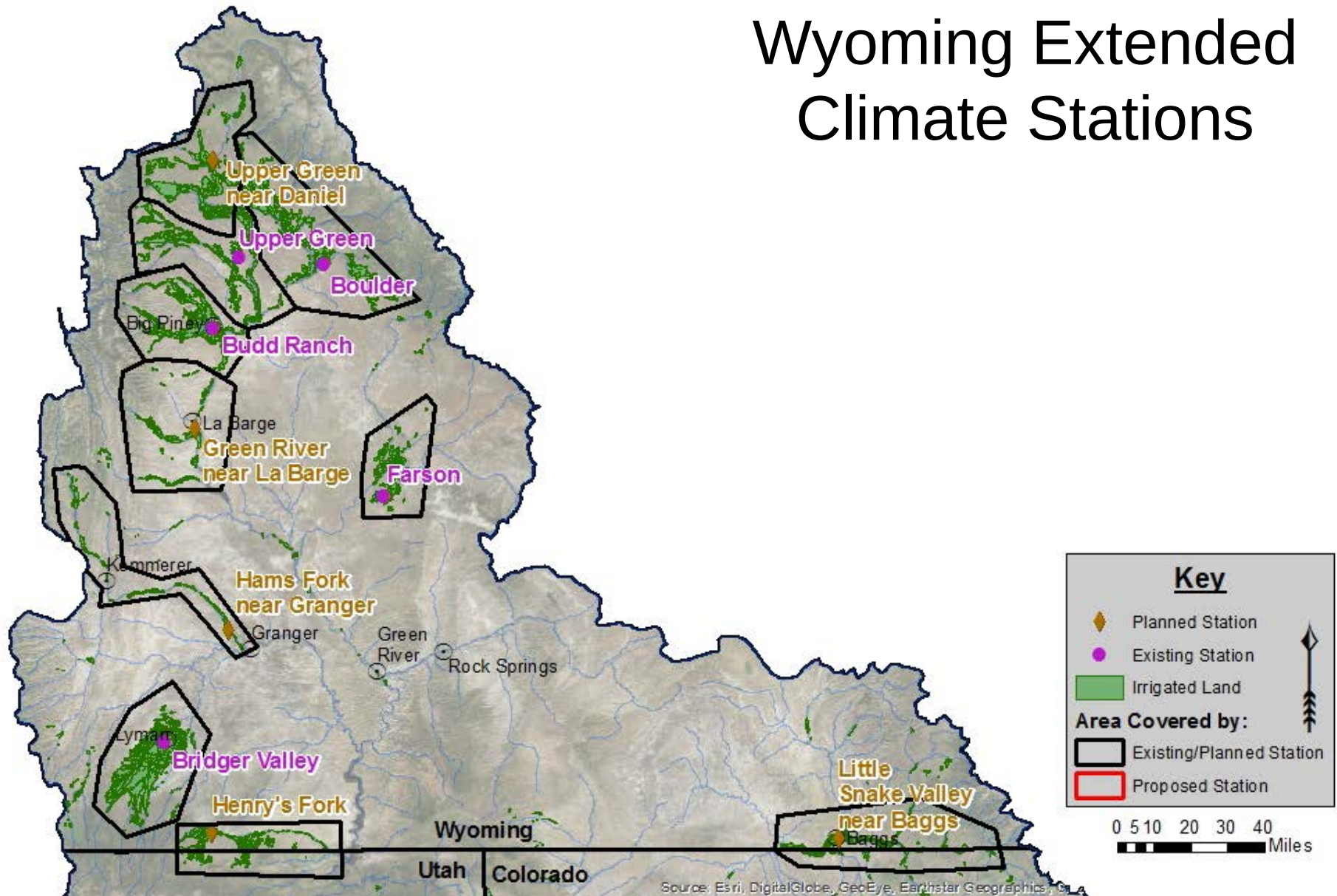
Stations Proposed By Project

State	# Proposed	Irrigated Acreage
Wyoming	-	-
Utah	3	86,000
Colorado	10	234,000
New Mexico	1	15,000
Total	14	335,000

Entire Network Cover 1,352,000 acres
88% of Irrigated Acreage

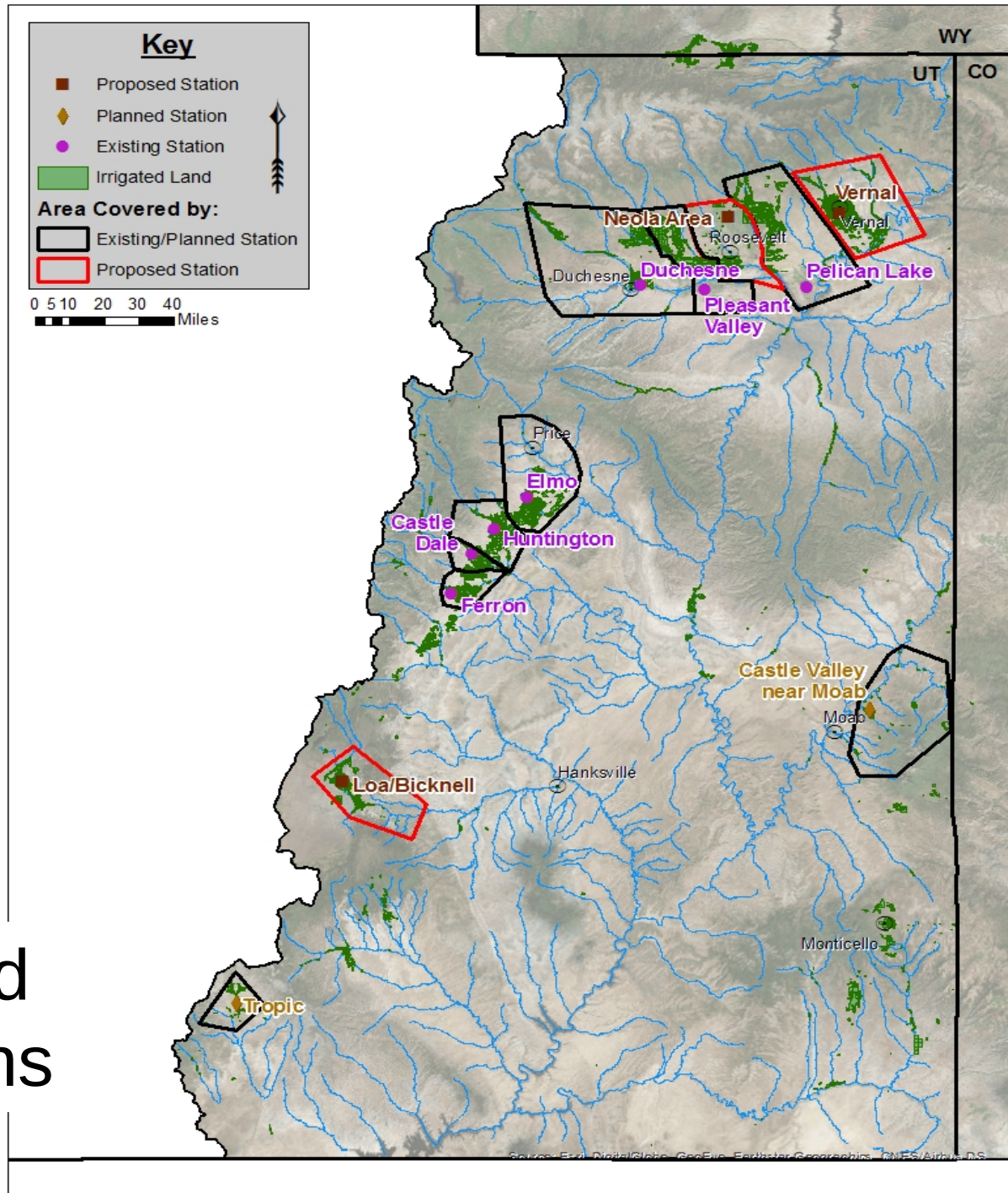
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Wyoming Extended Climate Stations

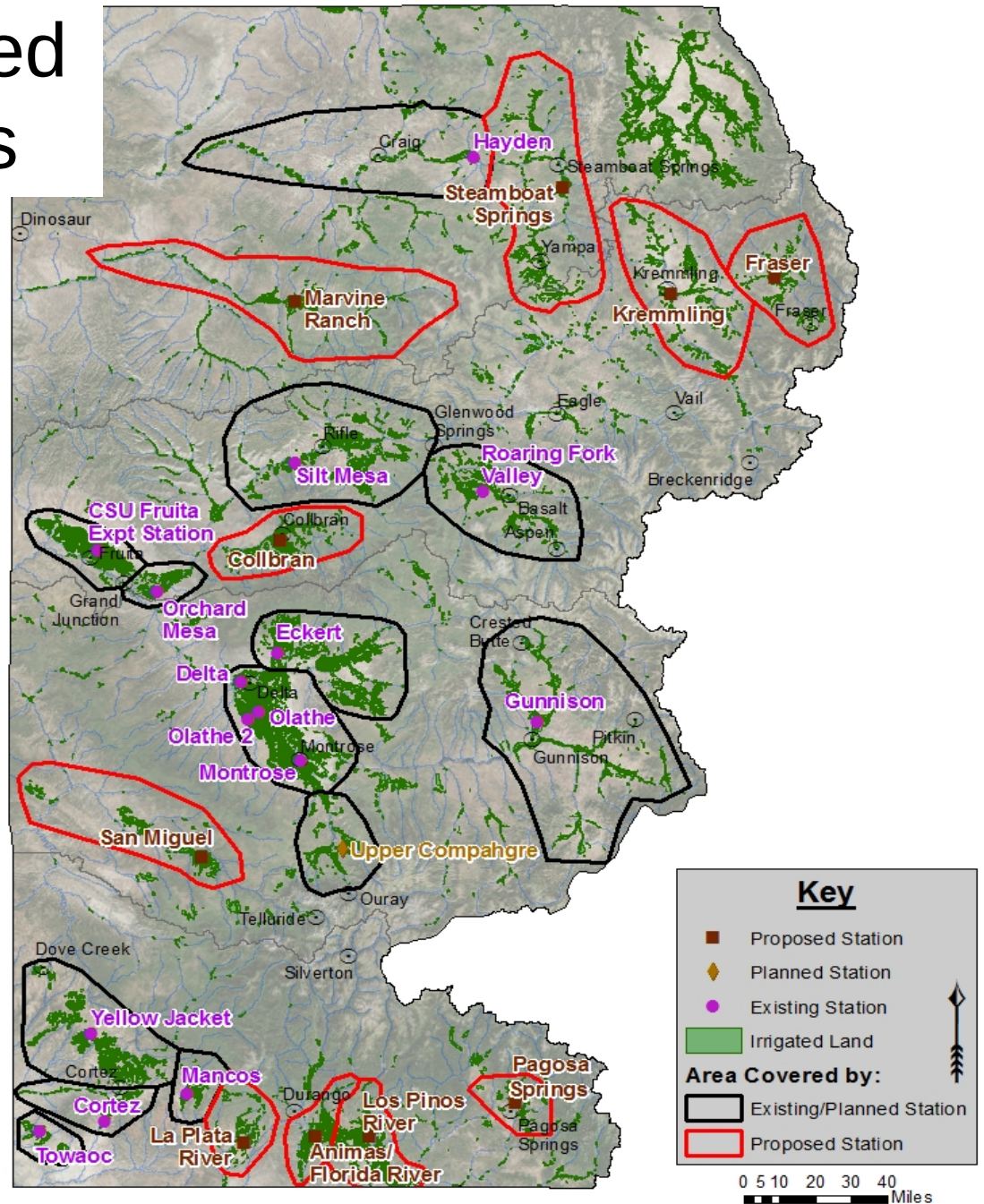


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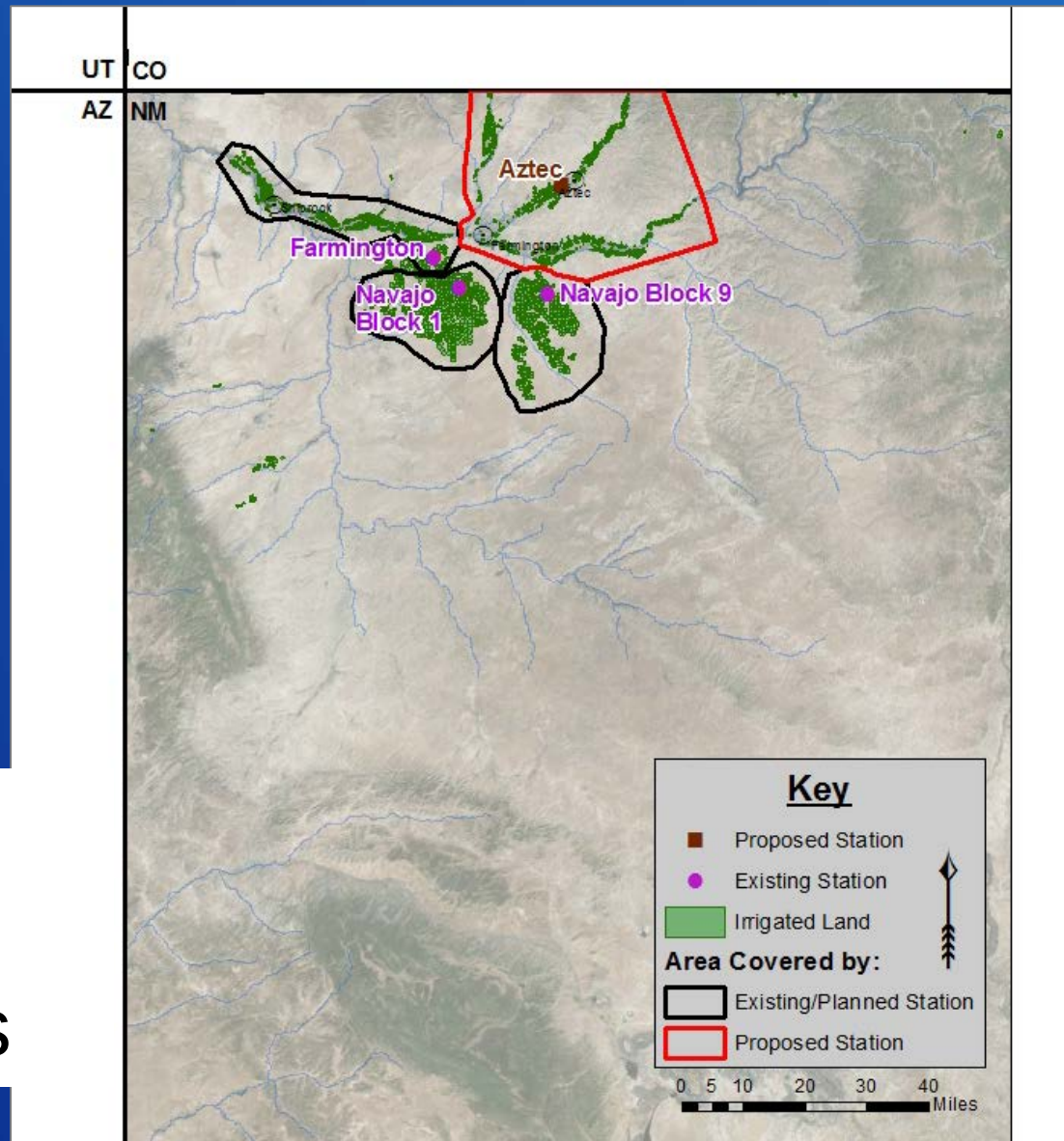
Utah Extended Climate Stations



Colorado Extended Climate Stations



New Mexico Extended Climate Stations



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Proposed Climate Stations

- Reclamation will purchase and “own” new climate stations
- State Climate Networks will work with land owners and install the stations
- State Climate Networks will perform annual equipment maintenance and calibration
- State Climate Networks will perform climate data QA/QC

Proposed Climate Station Costs

Cost Item	Unit Costs	# Stations	One-Time Costs	Annual Costs	Proposed Reclamation Share
Purchase and Install new Climate Station	\$9,000	14	\$126,000	N/A	N/A
Develop Calibration Kits and Review/ Assist with Calibration Processes	\$3,000	2	\$6,000	N/A	N/A
Assist with Development and Review of Data QA/QC Process	\$5,000	2	\$10,000	N/A	N/A
Operation and Maintenance	\$1,750	17	N/A	\$29,750	N/A
Data QA/QC	\$500	17	N/A	\$8,500	N/A
Spare Sensor			\$18,000		N/A
First Year Costs	\$160,000				\$160,000
Subsequent Year Annual Cost	\$33,750				to cover first year

draft costs – subject to revision

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Annual Maintenance Costs

- State Climate Networks will need to continue to maintain existing stations relied on for Upper Basin Ag CU estimates

Cost Item	Wyoming	Utah	Colorado	New Mexico
Number of Existing or Planned Stations	10	9	16	1
Annual Operation and Maintenance (\$1,750/year per station)	\$17,500	\$15,750	\$28,000	\$1,750
Data QA/QC (\$500/year per station)	\$5,000	\$4,500	\$8,000	\$500
Annual Cost	\$22,500	\$20,250	\$36,000	\$2,250

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Planned use

- 2017 Upper Colorado River basin scale remote sensing project
 - Irrigated Agriculture CU
- Move to Penman Monteith
 - Compare with existing Blaney Criddle CU
- Groundtruth
 - Adding 3 to 4 Eddy Covariance Towers
 - Managed by Utah State University



Questions

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