Upper Gunnison River Water Conservancy District

210 West Spencer Avenue, Suite B • Gunnison, Colorado 81230
(970) 641-6065 • www.ugrwcd.org

BOARD OF DIRECTORS
AGENDA - REGULAR MEETING
Monday, February 25, 2019

MISSION STATEMENT

To be an active leader in all issues affecting the water resources of the Upper Gunnison River Basin.

5:30	p.m.	1.	Call to Order
5:32	p.m.	2.	Agenda Approval
5:35	p.m.	3.	Consent Agenda Items: Any of the following items may be removed for discussion from the consent agenda at the request of any Board member or citizen. • Approval of January 28, 2019 Minutes • Consideration of Operating Expenses • Consideration of Non-Operating Expenses
5:40	p.m.	4.	Legal and Legislative Matters
5:50	p.m.	5.	Manager's Report
6:00	p.m.	6.	Update on CCWC Activities– Ashley Bembenek and Zach Vaughter
6:15	**p.m.**	**7.**	**Dinner Break**
6:30	p.m.	8.	US Forest Service Grant Updates – Ashley Hom
6:50	p.m.	9.	Update on Tomichi Creek Study – Jesse Kruthaupt
7:10	p.m.	10.	Board/Staff/Committee Members Reports • Treasurer's Report • Taylor Park Reservoir • Update on Drought Contingency Planning • Watershed Management Planning • Wet Meadows Project Update • Update on Scientific Endeavors within the District
8:20	p.m.	11.	Miscellaneous Matters • CWC Annual Convention
8:30	**p.m.**	**12.**	**Citizen Comments**
8:35	p.m.	13.	Future Meetings
8:40	p.m.	14.	Summary of Meeting Action Items
8:45	p.m.	15.	Adjournment

Note: This agenda is subject to change, including the addition of items or the deletion of items at any time. All times are approximate. Regular meetings, public hearings, and special meetings are recorded, and action can be taken on any item. The board may address individual agenda items at any time or in any order to accommodate the needs of the board and the audience. Persons with special needs due to a disability are requested to call the District at 641-6065 at least 24 hours prior to the meeting.

The listing under "CONSENT AGENDA" is a group of items, which the Board has already reviewed, to be acted on with a single motion or vote. This agenda is designed to expedite the handling of limited routine matters by the Board. The Board President will ask if any Board member or citizen wishes to have any specific item discussed. Items removed from consent agenda for discussion may be rescheduled later in this meeting, or at a future meeting.

AGENDA ITEM 3

Upper Gunnison River Water Conservancy District
Board Meeting Minutes
Monday, January 28, 2019

The Board of Directors of the Upper Gunnison River Water Conservancy District conducted a regularly scheduled meeting on Monday, January 28, 2019 at the District's offices, 210 West Spencer Avenue, Suite B, Gunnison, Colorado.

Board members present: Rosemary Carroll, Kathleen Curry, Rebie Hazard, Stacy McPhail, Julie Nania, Bill Nesbitt, John Perusek, Michelle Pierce, George Sibley, Andy Spann, and Julie Vlier

Cheryl Cwelich
Ashley Hom, U.S. Forest Service
Tom Grant, Wet Meadows Program Coordinator
Jesse Kruthaupt
Frank Kugel, General Manager
Jill Steele, Office Manager
Henry Woods, Lake San Cristobal Water Activity Enterprise

1. CALL TO ORDER

Board President Michelle Pierce called the meeting to order at 5:30 p.m.

2. EXECUTIVE SESSION TO DISCUSS PERSONNEL MATTERS

John McClow said that the board is authorized to meet in executive session to discuss personnel matters pursuant to §24-6-402(4)(f)(I), C.R.S.

Julie Vlier moved, and Stacy McPhail seconded to adjourn into executive session to discuss personnel matters pursuant to §24-6-402(4)(f)(I), C.R.S. The motion carried.

Bill Nesbitt moved, and Julie Vlier seconded, to adjourn the executive session. The motion carried.

The board took no action as a result of the executive session.

3. AGENDA APPROVAL

Board President Michelle Pierce called the regular meeting back to order at 5:55 p.m.

Michelle Pierce said that additions to the agenda include a memo from Dave Currier, which will be discussed under agenda item 8. The board also received a revised list of non-operating expenses for approval.

Bill Nesbitt moved, and George Sibley seconded, to approve the amended agenda with the additions mentioned. The motion carried.

4. CONSENT AGENDA ITEM

Kathleen Curry asked that the Wilson Water Group bill be removed from the consent agenda.

Rebie Hazard moved and Bill Nesbitt seconded approval of the remaining consent agenda items. The motion carried.

Consideration of the Wilson Water Group bill: Kathleen asked Frank to comment on the status of the budget for Wilson Water Group's work, given their comment in bold on the invoice.

Frank Kugel said that Erin Wilson has notified him that they are donating part of their time in large part because they are behind schedule in providing the work product.

Kathleen Curry moved, and Andy Spann seconded, to approve the Wilson Water Group bill. The motion carried.

5. LEGAL AND LEGISLATIVE MATTERS

John McClow said that the legal matter he has to discuss will be the subject of the executive session later.

The board received a legislative activity report in their packets.

John said that on the ditch easement bill, HB 19-1082, the committee had concerns last week and put together an amendment that Representative Catlin was comfortable with, a few changes were made, and the committee voted to support it.

John said that negotiations are still ongoing on HB 19-1113.

John said that Julie Nania suggested a resolution supporting HB 19-1113 to the committee. The bill is scheduled to come up to committee on Monday, so there is a short timeframe in which to support the legislation.

6. MANAGER'S REPORT

Frank Kugel showed the board the current drought monitor which, in contrast to last week's, shows less area of exceptional drought.

7. DINNER BREAK

8. BOARD/STAFF/COMMITTEE MEMBERS REPORTS

Treasurer's Report: Bill Nesbitt said that the District's income on investments exceeded the 2018 budgeted amount by 50%.

Gunnison Basin Roundtable: Kathleen Curry said the GBRT met January 21. They reviewed two grant applications and have been approving letters of support for other grant programs. They also discussed the status of demand management and drought contingency planning. They talked about phase 3 of the risk study and want to get a thorough update at the March meeting. Kathleen suggested it might could be good to share that or to have an update on phase 3 at an upcoming board meeting. The model runs being done as part of that are very interesting.

The four, West Slope round tables will meet to talk about phase 3 of the risk study and to provide input to a September meeting of all the roundtables in the state.

Update on Drought Contingency Planning: John McClow said that he and Frank included a memo in the board packets on basin-specific issues related to demand management. He said that Julie Nania wrote a memo titled Local Concerns, Questions and Preferences from Irrigators and Water Resources, which included more local details.

John showed historic and projected end-of-month levels for Lake Powell. Levels were projected to be mostly below 3,575 feet of elevation through May 2020.

The memo contains the recommendation that the District compile a complete tabulation of pre-compact and post-compact water rights in the District to determine what impact curtailment could have, and where. In addition, the District should adopt a firm policy on the definition of "present perfected rights" and be prepared to support it. A question here is whether the District should advocate for using rights based on adjudication dates or use dates.

Andy Spann asked if an economic impact component will be involved. Bill Nesbitt said he supports Andy's comment and said he would like to see a number chosen for use in the basin that a number of working ranches could use in order to calculate what would happen with a certain percentage reduction of water use.

Frank said that the Gunnison basin shows a higher number of water rights because there are many straddle rights, which makes using appropriate dates beneficial for the basin.

Kathleen Curry suggested that the board could form a committee to study this and that she would be willing to participate.

Frank said that he has been asked to participate in a West Slope group of thirty parties to talk about the demand management and drought contingency planning.

John McClow discussed the conservation pilot program that has been ongoing for four years. One of the popular programs that participated in that process was a partial year irrigation process. Many Wyoming ranchers found that attractive. However, at the end of four years, the final analysis report concluded that was a very difficult process to evaluate. Due to the way return flows work and soils differ, they had difficulty in measuring, quantifying, and verifying. So that may or may not continue to be available. Deficit irrigation is another process being studied, but nobody seems to be able to decide what that means.

Cheryl Cwelich said that as part of her capstone project at Western, she is working on strategic implementation for the draft continency plan in the Gunnison basin based upon pilot programs that have been used. Her group will meet with John tomorrow. Their goal is to develop basin specific uses to present to the state engineer.

Watershed Management Planning:

George said that the board received a memo in their packets. He said that the model that is supposed to tell us how the watersheds work is not working well. The diversion information we have is not precise enough.

George said that he wants to have stakeholder meetings to present the needs assessment we have come up with and to sound out stakeholders on what would be good demonstration projects to address some of the needs being identified. We need to have this done by June and then move on to other streams.

George said that the next meeting will be February 4, and our consultant will be here for that. We have a lot of good information put together by Ashley and Julie and Jesse. We may have to go with the information we have in order to be done by June.

There was support from the board for this approach.

2019 Grant Program:

Frank Kugel said that notices will be published this week and next, with February 28 being be the application deadline. Then the Grant Committee looks at the applications and makes recommendations to the board for consideration at the March board meeting.

Update on Scientific Endeavors Within the District:

Rosemary Carroll said that the government shutdown has caused the Airborne snow observatory flights to be postponed until next year.

Rosemary said that a new SNOTEL site is being scoped out in the Kebler pass/Lake Irwin area.

The effort with the DOE to model the entire East and Taylor drainages is now in phase two. This entails a weather forecast model along with a ground model. While not intended to specifically address agriculture, some large-scale information will be produced that could be useful down the road.

Julie Vlier said that in the 2019 budget, $30,000 is included for Taylor River basin modeling. She and Rosemary and Frank have talked with Dave Gochis and have developed a scope of work for him and his staff. The modeling effort should be getting underway soon.

Frank said that new SNOTELS are located at Mirror Lake, near Italian Mine, and in the Trail Creek area. One transmits data in real time, and the others are currently logging data.

Frank said it was hoped that the Floresta area would be suitable for a SNOTEL because it faces north and retains snow. However, the property is for sale and the owners are not interested in any encumbrances on the property. He asked Ashley Hom, of the Forest Service, about the timing for obtaining a permit to install a SNOTEL on government property. Ashley said the NEPA part of it takes about one month, and the permit itself takes about two to three months.

9. CITIZEN COMMENTS

No citizens requested to speak.

10. MISCELLANEOUS MATTERS

The board considered the resolution drafted by Julie Nania in support of House Bill 19-1113 to amend the Colorado Mined Land Reclamation Act.

Julie Vlier moved to support the resolution in support of House Bill 19-1113 to amend the Colorado Mined Land Reclamation Act. George Sibley seconded. The motion carried.

John McClow said there are two primary sponsors of this bill in the house and there are four secondary sponsors. He will send the resolution to the six of them, and also to a senate sponsor when there is one.

Frank Kugel said he met today with Solarize Gunnison County, a Masters in Environmental Management (at Western) project in cooperation with a solar energy vendor in Almont. He indicated the District's interest and will give more information when he has it.

11. FUTURE MEETINGS

Frank reminded the board of the upcoming Colorado Water Congress convention. He said that there are many workshop opportunities Wednesday morning and afternoon.

12. SUMMARY OF MEETING ACTION ITEMS

1. Follow up on demand management memo recommendations, but in addition to what was listed in the memo to include a recommendation on doing the economic analysis.
2. Think about what deficit irrigation really means.

13. EXECUTIVE SESSION TO RECEIVE LEGAL ADVICE FROM COUNSEL AND INSTRUCTION FOR NEGOTIATORS REGARDING TAYLOR PARK RESERVOIR OPERATIONS.

John McClow said that the board is authorized to meet in executive session pursuant to §24-6-402(4)(b), C.R.S., conference with attorney and §24-6-402, C.R.S., (4)(c)(I) positions regarding negotiations and instructing negotiators.

Bill Nesbitt moved and Andy Spann seconded to meet in executive session pursuant to §24-6-402(4)(b), C.R.S., conference with attorney and §24-6-402 (4)(c)(I), C.R.S., positions regarding negotiations and instructing negotiators. The motion carried.

Rosemary Carroll moved and George Sibley seconded to adjourn the executive session. The motion carried.

The board took no action as a result of the executive session.

14. ADJOURNMENT

Board President Michelle Pierce adjourned the January 28, 2019 meeting at 8:32 p.m.

Respectfully Submitted,

_____
George Sibley, Secretary

APPROVED:

_____
Michelle Pierce, President

As chair of the executive session, I hereby attest that the executive session held on January 28, 2019 was confined to the topic authorized for discussion in an executive session, as reflected by the minutes.

_____
Michelle Pierce, President

CERTIFICATION

As attorney for the Upper Gunnison River Water Conservancy District, I hereby attest that the executive session held on January 28, 2019 was confined to the topic authorized for discussion in an executive session, as reflected by the minutes.

_____
John H. McClow, General Counsel

UPPER GUNNISON RIVER WATER CONSERVANCY DISTRICT BUDGET SUMMARY

2/12/19

January 1 - December 31, 2019

Budget Line no.		January	YTD	2019 Budget	% of Budget
	REVENUE				
1	General Property Tax	$ 27.44	$ 27.44	$ 1,121,568	0.00%
2	Specific Ownership Tax	5,622.81	5,622.81	65,000	8.65%
3	Penalties & Interest on Taxes	-	-	3,300	0.00%
4	Interest on Investments	1,983.99	1,983.99	40,000	4.96%
5	Water Quality Monitoring Program - Passthrough	-	-	20,780	0.00%
6	Aspinall Water Contract Sales	79.65	79.65	18,500	0.43%
7	Cloudseeding Program - Passthrough	-	-	103,450	0.00%
8	Wet Meadows Project - Passthrough	-	-	272,314	0.00%
9	Watershed Management Planning - Passthrough	22,500.00	22,500.00	175,000	12.86%
10	Miscellaneous	-	-	1,000	0.00%
	Elk Home Ditch Passthrough	-	-	-	
11	Unspent Funds from Previous Year	-	-	37,291	0.00%
12	Additional Contribution from Reserve Fund	-	-	405,233	0.00%
13	**TOTAL REVENUES**	**$ 30,213.89**	**$ 30,213.89**	**$ 2,263,436**	1.33%
	Operating Expenses				
14	Administrative Salaries	$ 27,206.33	$ 27,206.33	$ 326,476	8.33%
15	Staff Salaries	8,524.91	8,524.91	102,300	8.33%
16	Payroll Taxes	2,840.63	2,840.63	33,316	8.53%
17	Employee Benefits	3,826.02	3,826.02	93,373	4.10%
18	Public Outreach	8,080.00	8,080.00	33,000	24.48%
19	Audit & Accounting	-	-	7,500	0.00%
20	Utilities and Association Dues	1,294.49	1,294.49	13,396	9.66%
21	Bonding and Insurance	-	-	10,274	0.00%
22	Office Telephone	235.36	235.36	7,110	3.31%
23	Office Equipment	312.64	312.64	14,020	2.23%
24	Legal Publication	513.20	513.20	6,000	8.55%
25	Administrative Travel & Expenses	4,384.93	4,384.93	22,000	19.93%
26	Office Expenses	1,460.43	1,460.43	16,850	8.67%
27	Postage	-	-	1,500	0.00%
28	Board of Directors' Expenses	64.96	64.96	12,000	0.54%
29	Meeting Expenses	447.00	447.00	3,500	12.77%
30	Election Expenses	-	-	-	
31	County Treasurers' Fees	0.83	0.83	35,696	0.00%
32	Board of Directors' Fees	550.00	550.00	6,920	7.95%
33	Board of Directors' Mileage	222.72	222.72	2,200	10.12%
34	Memberships & Dues	4,604.50	4,604.50	10,010	46.00%
35	Manager's discretionary fund	-	-	3,000	0.00%
36	**Total Operating Expenses**	**$ 64,568.95**	**$64,568.95**	**$ 760,441**	8.49%
	Non-Operating Expenses				
37	General Consulting	-	-	5,000	0.00%
38	Recreational In-Channel Diversion	-	-	8,192	0.00%
39	Taylor Park Projects	-	-	6,377	0.00%
40	Lake San Cristobal - Fees & Repair	-	-	14,225	0.00%
41	Basin Augmentation Program	-	-	49,000	0.00%
42	Building Expenses	-	-	11,000	0.00%
43	Aspinall Unit Water Contract Costs	-	-	315,160	0.00%
44	Regional Water Supply Improvement Program	53,676.30	53,676.30	689,764	7.78%
45	Basinwide Planning	9,287.70	9,287.70	230,000	4.04%
46	Water Quality Monitoring Program	15,000.00	15,000.00	137,278	10.93%
47	Endangered Fish Recovery Program	3,000.00	3,000.00	3,000	100.00%
48	Contribution to Spencer Ave. Assoc. Reserve	-	-	10,000	0.00%
49	Contribution to Reserve Fund Balance	-	-	-	
50	**Total Non-Operating Expenses**	**$ 80,964.00**	**$ 80,964.00**	**$ 1,478,996**	5.47%
51	Contingency	-	$0.00	24,000	0.00%
52	**TOTAL EXPENDITURES**	**$ 145,533**	**$ 145,533**	**$ 2,263,437**	6.43%
53	Revenue Over (Under) Expenditures	$ (115,319)	$ (115,319)	$ (0)	

UGRWCD & UGRWAE BANK BALANCES, INTEREST RATES, MATURITY DATES

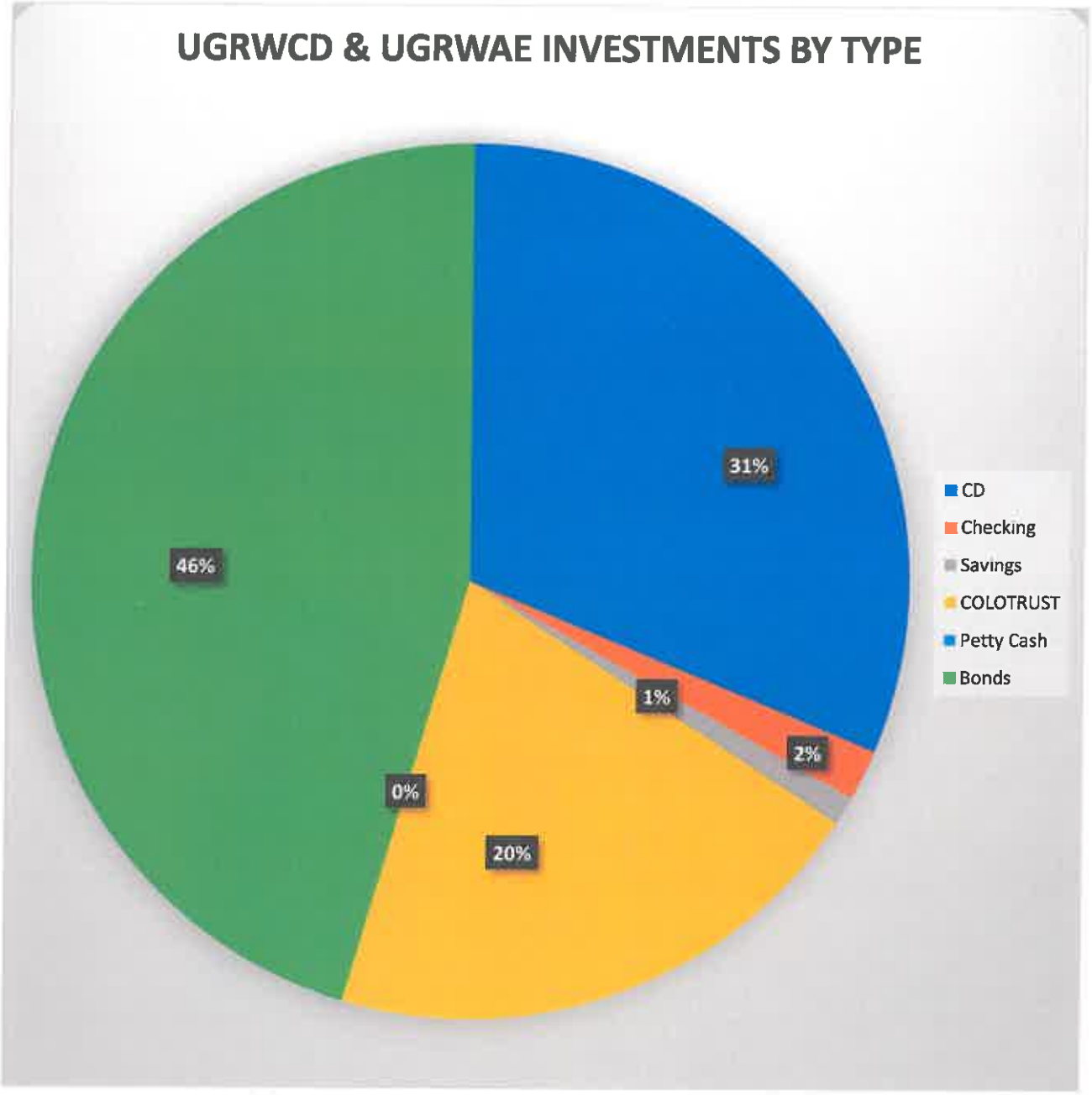
UGRWCD General Ledger # and Account Name		Balance 1/31/2019	Interest Rate	Maturity Date	Bond Callable Date
Sigma Bond 14	$	270,000.00	1.60%	9/18/2020	9/18/2018
1420 Community Banks of Colo. CD		51,376.59	1.55%	6/26/2020	
1400 Gunnison Savings & Loan CD		104,511.61	1.31%	8/10/2019	
1390 Comm. Banks of Colo. CD Lake City		101,129.09	0.40%	8/20/2019	
Sigma Bond 12		200,000.00	1.125%	10/11/2019	
1450 Compass Bank CD		100,000.00	2.500%	11/18/2019	
1410 Bank of the West CD		103,086.41	1.51%	12/22/2019	
1470 Mountain View Bank CD		100,852.16	2.65%	2/10/2020	
1310 Gunnison Bank & Trust CD		131,594.42	1.00%	2/14/2020	
1430 Wells Fargo CD thru Sigma		150,000.00	2.35%	2/14/2020	
Sigma Bond 15		200,000.00	2.15%	2/20/2020	2/20/2019
1280 Gunnison Bank & Trust CD		114,951.68	1.24%	2/26/2020	
Sigma Bond 11		405,000.00	1.19%	7/13/2020	7/13/2020
Sigma Bond 9		100,000.00	1.62%	2/17/2021	2/17/2021
Sigma Bond 10		250,000.00	1.55%	5/17/2021	5/17/2021
Sigma Bond 13		399,980.00	2.00%	2/15/2022	2/15/2022
1460 Guaranty Bank CD		100,000.00	2.80%	3/1/2021	
1440 JP Morgan Chase CD (through Sigma)		200,000.00	3.25%	7/31/2023	7/31/2019
1011 Bank of the West Checking		37,833.72	0.01%	N/A	
1380 NuVista Federal Credit Union Share		25.00	0.05%	N/A	
1295 COLOTRUST PLUS+		273,999.22	2.62%	N/A	
1290 COLOTRUST PRIME		506,147.18	2.35%	N/A	
Sigma Money Market Account		42,477.48		N/A	
Petty Cash		98.00	N/A	N/A	
TOTAL UGRWCD	**$**	**3,943,062.56**			

UGRWAE Account Name		Balance 1/31/2019	Interest Rate	Maturity Date
Bank of the West Checking	$	37,774.02	N/A	N/A
COLOTRUST PLUS+		38,480.79	2.62%	N/A
TOTAL UGRWAE	**$**	**76,254.81**		
TOTAL UGRWCD + UGRWAE	**$**	**4,019,317.37**		

Total UGRWCD and UGRWAE Deposits by Bank		
COLOTRUST	$	818,627.19
Bank of the West		178,694.15
Community Banks of Colo.		152,505.68
Gunnison Savings & Loan		104,511.61
Gunnison Bank & Trust		246,546.10
Wells Fargo		150,000.00
Compass Bank		100,000.00
Sigma Financial		1,867,457.48
Guaranty Bank		100,000.00
NuVista Credit Union		25.00
Petty Cash		98.00
JP Morgan Chase		200,000.00
Mountain View Bank		100,852.16
TOTAL ALL BANKS	**$**	**4,019,317.37**

UGRWCD & UGRWAE INVESTMENTS BY TYPE

CD	31%	$ 1,257,501.96
Checking	2%	75,607.74
Savings	1%	42,502.48
COLOTRUST	20%	818,627.19
Petty Cash	0%	98.00
Bonds	45%	$ 1,824,980.00
Total	100%	$ 4,019,317.37



Upper Gunnison River Water Conservancy District
Operating Expenses for Approval

2/12/2019

Name	Account	Amount
Anthem	Employee Benefits	$ 220.34
APEX Cleaning Service	Office Cleaning	$ 340.94
Atmos Energy	Utilities	$ 110.13
Atmos Energy	Utilities	$ 81.60
Beverly Richards	Staff Salary	$ 2,448.14
Business Leasing Solutions	Copier	$ 215.84
Cheryl Cwelich	Internship	$ 300.00
Citibank	Various	$ 3,521.72
Citibank	Office Expenses	$ 66.98
City of Gunnison Finance	Utilities	$ 95.60
City of Gunnison Finance	Utilities	$ 103.77
Colorado Bar Association	Office Expenses	$ 141.03
Colorado Water Congress	CWC Annual Dues = $2,121.00 CWC State Affairs Committee = $400.00	$ 2,521.00
Colorado Water Workshop - WSCU	Memberships & Dues	$ 3,500.00
Crested Butte News	Public Outreach = $100.00 Legal Publication = $167.12	$ 267.12
EFTPS	Payroll Taxes	$ 9,495.88
Frank Kugel	Administrative Salary	$ 5,534.42
Great West (CCOERA)	Employee Benefits	$ 11,010.77
Frank Kugel	Administrative Travel	$ 983.17
Gunnison Country Publications	Public Outreach = $100.00 Legal Publication = 267.08	$ 367.08
Jill Steele	Staff Salary	$ 1,999.79
John McClow	Administrative Salary	$ 9,277.86
John McClow	Administrative Travel	$ 2,041.74
John McClow	Employee Benefits	$ 202.00
Julie Nania	BOD Expenses	$ 880.53

Upper Gunnison River Water Conservancy District
Non-Operating Expenses for Approval

2/12/2019

Name	Account		Amount
Synergy Land & Livelihoods	Wet Meadows	$	5,333.33
Hartman Brothers	Cloud Seeding	$	19.14
RigNet	Cloud Seeding	$	49.78
U.S. Bureau of Reclamation	Aspinall Contract Costs	$	27.97
Non-Operating Expenses Payable		**$**	**5,430.22**

Upper Gunnison River Water Conservancy District
Non-Operating Expenses for Approval

2/14/2019

Name	Account		Amount
Synergy Land & Livelihoods	Wet Meadows	$	5,333.33
Hartman Brothers	Cloud Seeding	$	19.14
RigNet	Cloud Seeding	$	49.78
U.S. Bureau of Reclamation	Aspinall Contract Costs	$	195.79
Non-Operating Expenses Payable		**$**	**5,598.04**

citi

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Company Account Number	Payment Date	New Balance	Minimum Amount Due	Enter Amount Paid
XXXX-XXXX-XX47-2174	02/19/2019	$3,521.72	$3,521.72	

SOC 521 O UPPER GUNN **T0000122
JILL STEELE
210 W SPENCER AVE
SUITE B
GUNNISON CO 81230-2544

CITIBANK
P.O. BOX 78025
PHOENIX, AZ 85062-8025

For a credit balance refund, or a telephone or address change, please place an X in the parentheses and make the desired changes on the reverse side. Thank you. ( )

Payment coupon: Please tear along perforation and return this portion with your payment. Make company check or money order payable in U.S. dollars on a U.S. bank to Citibank. Include company account number on check or money order. No cash please. Do not staple or tape your check to this coupon.

CITIBANK CORPORATE CARD

Company Credit Line	Available Credit Line	Cash Advance Limit	Available Cash Line
$12,800	$9,278	$00	$00

Statement Date 01/25/19

Payment Date 02/19/19

For customer service call or write 1-800-248-4553 P.O. Box 6125 Sioux Falls, SD 57117

Send payments to: Citibank P.O. Box 78025 Phoenix, AZ 85062-8025

COMPANY SUMMARY

SOC 521 O UPPER GUNN XXXX-XXXX-XX47-2174		Previous Balance	Payment Allocation	Credits	Purchases and Advances	Interest Charges	New Balance
	Purchases	7,173.16	- 7,173.16		3,521.72		3,521.72
	Advances						
Company Totals	TOTAL	7,173.16	- 7,173.16		3,521.72		3,521.72

Citi is committed to the reduction of paper. Within the Commercial Cards business, you can switch to online statements now by registering your card on CitiManager at **https://home.cards.citidirect.com/CommercialCard/Cards.html** Thanks to those who already access statements online, together we are saving 2,170 trees each year through this initiative alone.

Your total finance charge paid for 2018 was $0.00.

Account management made easier: Online statements & CitiManager Mobile offer 24/7 access, security, and mobility. Log in at www.citimanager.com/login and click Go Paperless under the Statement tab.

Sign-up for email or text message alerts to know when your statement is ready to view. When on the go, access your account and recent activity through your mobile device at www.citimanager.com/mobile

CARDMEMBER SUMMARY

[redacted] XXXX-XXXX-XX48-2314		Previous Balance	Payments	Credits	Purchases and Advances	Interest Charges	New Balance
Monthly Limit: $7,000	Purchases				1,869.51		1,869.51
	Advances						
	TOTAL				1,869.51		1,869.51

MCCLOW,JOHN H XXXX-XXXX-XX76-1828		Previous Balance	Payments	Credits	Purchases and Advances	Interest Charges	New Balance
Monthly Limit: $7,000	Purchases				1,652.21		1,652.21
	Advances						
	TOTAL				1,652.21		1,652.21

Bd. Rec. 2-5-19 Auth. Sig.
Dept. Appr. Amt. Appr.
Bd. Appr. Date Bd. Initials
Pd. Date Ck#
Account(s)

DAYS IN BILLING PERIOD: 31		Purchases	Cash Advances
Balance Subject To Interest Charges	>	.00	.00
Periodic Rate	>	.6250%	.0000%
ANNUAL PERCENTAGE RATE	>	7.50%	0.00%

Payment Due:	3,521.72
Amount Over Credit Limit:	.00
Amount Past Due:	.00
MINIMUM AMOUNT DUE:	3,521.72

citi

21090250 - 000095 - 0002 - 0002 - 2

XXXX-XXXX-XX47-2174

Statement Date
01/25/19

COMPANY BOOKKEEPING DETAIL

SOC 521 O UPPER GUNN XXXX-XXXX-XX47-2174

Monthly Limit	Cash Limit*	Available Credit Line	Available Cash Line**
$12,800	$00	$9,278	$00

Sale Date	Post Date	Reference Number	Type of Activity	Total Amount
01-10	01-11	74046589011010000050921	PAYMENT - THANK YOU	7,173.16 PY

INDIVIDUAL CARDHOLDER ACTIVITY

KUGEL,FRANK J XXXX-XXXX-XX48-2314

Monthly Limit	Cash Limit*
$7,000	$00

Sale Date	Post Date	Reference Number	Type of Activity	Amount
2-26	12-27	24692168360100153433131	AMAZON PRIME AMZN.COM/BILL WA	12.99
2-27	12-28	24692168361100544444184	GOOGLE GOOGLE STORAGE 855-836-3987 CA	19.99
2-27	12-28	24717058361263612849488	GOBINS INC 719-5442324 CO	96.80
1-01	01-02	24055239001207523100376	IC CONNEX 970-209-6920 CO	184.97
1-03	01-03	24692169003100218344357	AMAZON WEB SERVICES AWS.AMAZON.CO WA	33.77
1-03	01-04	24492159003717335368150	EB WATER IN THE WEST 801-413-7200 CA	225.00
1-02	01-04	24210739004207246100552	AMER SOC CIVIL ENGINEERS 800-548-2723 VA	270.00
1-16	01-18	24270769017083705561488	DENVER POST CIRCULATION 303-832-3232 CO	11.99
1-17	01-18	24204299017000179253524	WEEBLY 844-4933259 CA	144.00
1-17	01-21	24055229018200788301146	THE SECRET STASH CRESTED BUTTE CO	120.00
1-22	01-23	24430999022400814020094	MSFT E020079L4O 800-642-7676 WA	100.00
1-22	01-23	24493989022200652400092	COLORADO WATER CONGRESS 303-837-0812 CO	650.00
			TOTAL PURCHASES/ADVANCES/CREDITS	1,869.51

MCCLOW,JOHN H XXXX-XXXX-XX76-1828

Monthly Limit	Cash Limit*
$7,000	$00

Sale Date	Post Date	Reference Number	Type of Activity	Amount
1-03	01-07	24326849004014000777619	AMERICAN BAR ASSOCIATION 214-257-2249 IL	550.00
1-07	01-08	24692169007100992460532	REI PAYMENT CENTER 800-227-9597 OH	512.19
1-16	01-17	24755429016170167085761	WESTIN (WESTIN HOTELS) 303-4105000 CO	590.02
			171011612490049 ARRIVAL: 01-16-19	
			TOTAL PURCHASES/ADVANCES/CREDITS	1,652.21

*Cash Advance Limit is a portion of your Total Monthly Limit
**Available Cash Line is a portion of your Available Credit Line

citi

4480715000147221600066980006698259

21090250 - 000096 - 0001 - 0002 - 2

Company Account Number	Payment Date	New Balance	Minimum Amount Due	Enter Amount Paid
XXXX-XXXX-XX47-2216	02/19/2019	$66.98	$66.98	

521 O UPPER GUNNISON DB **T0000121
JILL STEELE
210 W SPENCER AVE
SUITE B
GUNNISON CO 81230-2544

CITIBANK
P.O. BOX 78025
PHOENIX, AZ 85062-8025

For a credit balance refund, or a telephone or address change, please place an X in the parentheses and make the desired changes on the reverse side. Thank you. ( )

Payment coupon: Please tear along perforation and return this portion with your payment. Make company check or money order payable in U.S. dollars on a U.S. bank to Citibank. Include company account number on check or money order. No cash please. Do not staple or tape your check to this coupon.

CITIBANK CORPORATE CARD

Statement Date 01/25/19

Payment Date 02/19/19

Company Credit Line	Available Credit Line	Cash Advance Limit	Available Cash Line
$700	$633	$00	$00

or customer service call or write 1-800-248-4553 P.O. Box 6125 Sioux Falls, SD 57117

end payments to: Citibank P.O. Box 78025 Phoenix, AZ 85062-8025

COMPANY SUMMARY

521 O UPPER GUNNISON DB XXXX-XXXX-XX47-2216		Previous Balance	Payment Allocation	Credits	Purchases and Advances	Interest Charges	New Balance
	Purchases	145.34	- 145.34		66.98		66.98
	Advances						
Company Totals	TOTAL	145.34	- 145.34		66.98		66.98

Citi is committed to the reduction of paper. Within the Commercial Cards business, you can switch to online statements now by registering your card on CitiManager at **https://home.cards.citidirect.com/CommercialCard/Cards.html** Thanks to those who already access statements online, together we are saving 2,170 trees each year through this initiative alone.

Your total finance charge paid for 2018 was $0.00.

Account management made easier: Online statements & CitiManager Mobile offer 24/7 access, security, and mobility. Log in at www.citimanager.com/login and click Go Paperless under the Statement tab.

Sign-up for email or text message alerts to know when your statement is ready to view. When on the go, access your account and recent activity through your mobile device at www.citimanager.com/mobile

CARDMEMBER SUMMARY

TRAVEL ADVANCE 5 XXXX-XXXX-XX48-2256		Previous Balance	Payments	Credits	Purchases and Advances	Interest Charges	New Balance
	Purchases				66.98		66.98
Monthly Limit: $20,000	Advances						
	TOTAL				66.98		66.98

COMPANY BOOKKEEPING DETAIL

521 O UPPER GUNNISON DB XXXX-XXXX-XX47-2216

Monthly Limit	Cash Limit*	Available Credit Line	Available Cash Line**
$700	$00	$633	$00

Sale Date	Post Date	Reference Number	Type of Activity	Total Amount
01-10	01-11	74046589011010000050939	PAYMENT - THANK YOU	145.34 PY

DAYS IN BILLING PERIOD: 31		Purchases	Cash Advances
Balance Subject To Interest Charges	>	.00	.00
Periodic Rate	>	.0000%	.0000%
ANNUAL PERCENTAGE RATE	>	0.00%	0.00%

Payment Due:	66.98
Amount Over Credit Limit:	.00
Amount Past Due:	.00
MINIMUM AMOUNT DUE:	66.98

citi

21080260 - 000088 - 0002 - 0002 - 2

XXXX-XXXX-XX47-2216

Statement Date
01/25/19

INDIVIDUAL CARDHOLDER ACTIVITY

TRAVEL ADVANCE 5 XXXX-XXXX-XX48-2256

Monthly Limit	Cash Limit*
$20,000	$00

Sale Date	Post Date	Reference Number	Type of Activity	Amount
01-22	01-24	24431069023975018601468	SAFEWAY #0617 GUNNISON CO	66.98
			TOTAL PURCHASES/ADVANCES/CREDITS	66.98

Date Rec. 2-5-19 Auth. Ckd.
Mgr. Appr. Amt. Appr.
Bd. Appr. Date Bd. Initials
Pd. Date Ckd
Account(s)

*Cash Advance Limit is a portion of your Total Monthly Limit
*Available Cash Line is a portion of your Available Credit Line

Hartman Brothers, Inc.
524 North First Street
Montrose, CO 81401
Tel.: (970) 240-8535
Fax: (970) 249-6675

allair
GASES • INDUSTRIAL • BEVERAGE
HARTMAN BROTHERS est.1904

Sold To:
UPPER GUNNISON RIVER WATER CON
210 WEST SPENCER AVE., SUITE B
GUNNISON, CO, 81230

Shipped To:

CYLINDER RENTAL INVOICE

CUSTOMER No.	CUSTOMER P.O. No.	PERIOD	INVOICE DATE (Y-Y / M-M / D-D)	INVOICE No.	PAGE
M05447		01/01-01/31	2019 01 31	284620	1

DESCRIPTION	DATE M-M	DATE D-D	DEL. NOTE #	INVOICE No.	CYLINDER STATEMENT BAL.	SUPPD	RETURN	NEW BAL.	CONTRACT	CHARGE	RATE	AMOUNT	TAX	TYPE
NITROGEN 60CF					2			2	0					
31 days	01	31			2	0	0	2	0	62				
Total										62	0.300	18.60	X	D

TERMS	TYPE: S - DEMURRAGE, E - MONTH END, D - DAILY, M - FREE, P - HIRERS	SUB-TOTAL	18.60
NET 30 DAYS			
VALUE OF CYLINDER INVENTORY ON HAND	0.00	SALES TAX	0.54
		TOTAL	19.14

THIS INVOICE IS PAYABLE IN FULL UPON RECEIPT. CYLINDERS ARE RENTED AND REMAIN THE PROPERTY OF THE SELLER.

Customer Copy

RigNet

Invoice **201901_472**
Date 31 January, 2019
Account C201008

Upper Gunnison River Water Conservancy District
210 W. Spencer Ave
Suite B
Gunnison, CO 81230
United States

Remittance should be mailed to:
RigNet, Inc.
P. O. BOX 941629
Houston, TX 77094
Phone: +1 281 674 0683
Email: ar@rig.net

Airtime Period **1 Jan - 31 Jan 2019**

Summary

Total Airtime and Fees this Period	USD	49.78
Total Amount This Invoice	**USD**	**49.78**

Terms: Net 30

Please include Invoice Number and Account Number with your payment

For Wire Transfers, please remit to:
Bank Name: Bank of America
Acct Name: RigNet, Inc.
Account No: 488025116355
SWIFT # BOFAUS3NABA
Routing # 026009593ABA
ACH# 111000025

Summary per Product

Product	Charge Type		Amount (USD)
IDP	Subscription Fee		33.00
IDP	Airtime		14.83
IDP	Other		1.95
		Total for IDP	**49.78**
Total charges (excl tax) for this invoice			**49.78**

Upper Gunnison River Water Conservancy District

210 West Spencer Avenue, Suite B • Gunnison, Colorado 81230
(970) 641-6065 • www.ugrwcd.org

Date: **February 14, 2019**

Payable to: **Bureau of Reclamation**

Account: **Aspinall Augmentation**

For: **Purchase of 3.5 Acre-Feet Augmentation Water**

Robert Wattles	**Contract #ASP19-216A**	**.5 acre-feet**	**$ 27.97**
John and Mary Lou Gregory	**Contract #ASP19-217A**	**.5 acre-feet**	**27.97**
John and Mary Lou Gregory	**Contract #ASP19-218A**	**.5 acre-feet**	**27.97**
John and Mary Lou Gregory	**Contract #ASP19-219A**	**.5 acre-feet**	**27.97**
John and Mary Lou Gregory	**Contract #ASP19-220A**	**.5 acre-feet**	**27.97**
John and Mary Lou Gregory	**Contract #ASP19-221A**	**.5 acre-feet**	**27.97**
John and Mary Lou Gregory	**Contract #ASP19-222A**	**.5 acre-feet**	**27.97**
TOTAL	**3.5 Acre-feet**		**$195.79**

Date Rec'd 2-14-19 Addit. Cert.
Mgr. Appr. Amt. Appr.
Bd. Appr. Date Bd. Initials
Pd. Date 2-25 Ck#
Account(s) ASP Mgt Water Costs

AGENDA ITEM 4

LEGISLATIVE ACTIVITY REPORT

COLORADO GENERAL ASSEMBLY

2019 REGULAR SESSION

February 14, 2019

The following are bills of interest to the District that are still alive or recently deceased in the General Assembly, including the position taken by the District at the Colorado Water Congress State Affairs Committee. The Bills are listed in numerical order. Updates from the previous report are in red.

HOUSE BILL 19-1006 CONCERNING MEASURES TO MITIGATE THE EFFECTS OF WILDFIRES WITHIN WILDLAND-URBAN INTERFACE AREAS, AND, IN CONNECTION THEREWITH, CREATING A STATE GRANT PROGRAM TO PROMOTE FOREST MANAGEMENT FUELS REDUCTION PROJECTS IN SUCH AREAS.

House Sponsors: McLachlan and Carver Senate Sponsor: Fields

Wildfire Matters Review Committee. The bill creates a state grant program to be administered by the Colorado state forest service (forest service) to fund proactive forest management fuels reduction projects to reduce the impacts to life, property, and critical infrastructure caused by wildfires.

To be eligible for a grant award, a grant recipient must be any one of a group of individual landowners as specified in the bill whose real property that is the subject of a grant application is located within a land area that is covered by a community wildfire protection plan.

The bill specifies requirements pertaining to the evaluation of grant proposals. The forest service is to select the proposals that will receive funding, administer the grant program, and develop procedures by which applicants are to apply for grants.

The bill imposes a monetary limit on the amount of a grant to be awarded and also requires a grant applicant to demonstrate an available amount of matching funds to be awarded a grant.

The bill creates the forest management fuels reduction projects grant program cash fund in the state treasury.

The bill requires the forest service to report annually to the general assembly on the number, location, and benefits of all projects for which a grant award is made.

Status: 1/04/2019 Introduced in House; Assigned to Rural Affairs and Agriculture Committee

UGRWCD Legislative Committee position: Support

CWC State Affairs Committee position: Representative McLachlan has advised that amendments are forthcoming so the Committee has postponed any action on the bill.

HOUSE BILL 19-1050 CONCERNING THE PROMOTION OF WATER-EFFICIENT LANDSCAPING ON PROPERTY SUBJECT TO MANAGEMENT BY LOCAL SUPERVISORY ENTITIES.

House Sponsor: Titone Senate Sponsor: None

Section 1 of the bill augments an existing law that establishes the right of unit owners in common interest communities to use water-efficient landscaping, subject to reasonable aesthetic standards, by specifically extending the same policy to common areas under the control of the community's governing board.

Sections 2 and 3 extend existing water conservation requirements, currently applicable only to certain public entities that supply water at retail and their customers, to property management districts and other special districts that manage areas of parkland and open space.

Status: 1/4/2019 Introduced In House - Assigned to Energy & Environment

1/17/2019 House Committee on Energy & Environment Refer Amended to House Committee of the Whole

1/25/2019 House Second Reading Passed with Amendments.
1/28/2019 House Third Reading Passed – No Amendments
2/1/2019 Introduced in Senate – Assigned to Local Government

UGRWCD Legislative Committee position: Support

CWC State Affairs Committee position: The Committee had not seen the amendment as of the January 22 meeting, but voted to support the bill in theory because the bill is scheduled for second reading in the House on Friday, January 25. The amendment is attached.

HOUSE BILL 19-1082 CONCERNING THE RIGHTS OF A WATER RIGHTS EASEMENT HOLDER.

House Sponsors: Catlin and Valdez, D. Senate Sponsor: Coram

The bill clarifies that water rights easement holders may maintain, repair, and improve their easement.

Status: 1/11/2019 Introduced in House; Assigned to Rural Affairs & Agriculture Committee

1/28/2018 House Committee on Rural Affairs & Agriculture Refer Amended to House Committee of the Whole

The amendment adopted the suggestion that a new section be added rather than changing the language of the existing statute. The amended version is attached.

1/30/2019 House Second Reading Passed with Amendments

1/31/2019 House Third Reading Passed – No Amendments.

2/5/2019 Introduced in Senate – Assigned to Agriculture & Natural Resources.

UGRWCD Legislative Committee position: Support

CWC State Affairs Committee position: The committee supports the intent of the bill, which is to protect water rights owners from interference with their ability to improve their ditches through piping. The proponents were motivated by a case wherein a ranch crossed by an irrigation ditch was divided into 40-acre homesites. When the water right owner attempted to pipe the ditch, the lot owners filed suit to prevent it. The lot owners did not prevail, but the litigation delayed the project long enough to cause the grant for piping to expire, defeating the project. A number of concerns were raised about the bill as drafted and the proponents agreed to accept assistance from a subcommittee of SAC in revising the bill to resolve the concerns and to request that the House Sponsors delay committee action (now scheduled for January 24) until the revisions could be made. A possible solution discussed was leaving current law as is and drafting another bill more specifically addressing the problem.

HOUSE BILL 19-1113 CONCERNING THE PROTECTION OF WATER QUALITY FROM ADVERSE IMPACTS CAUSED BY MINERAL MINING.

House Sponsors: Roberts and McLachlan (Arndt, Buentello, McCluskie, Titone)

Senate Sponsor: Donovan

Current law does not address reliance on perpetual water treatment as the means to minimize impacts to water quality in a reclamation plan for a mining operation. **Section 1** of the bill requires most reclamation plans to demonstrate, by substantial evidence, a reasonably forseeable end date for any water quality treatment necessary to ensure compliance with applicable water quality standards.

Current law allows a mining permittee to submit an audited financial statement as proof that the operator has sufficient funds to meet its reclamation liabilities in lieu of a bond or other financial assurance. **Section 2** eliminates this self-bonding option and also requires that all reclamation bonds include financial assurances in an amount sufficient to protect water quality, including costs for any necessary treatment and monitoring costs.

Status: 1/15/2019 Introduced In House; Assigned to Rural Affairs & Agriculture

2/4/2019 House Committee on Rural Affairs & Agriculture Refer Amended to House Committee of the Whole

2/6/2019 House Second Reading Passed with Amendments

2/7/2019 House Third Reading Passed – No Amendments

2/11/2019 Introduced in Senate – Assigned to Agriculture & Natural Resources

UGRWCD Legislative Committee position: Support

CWC State Affairs Committee position: This bill was not scheduled for action by the State Affairs Committee at the January 22 meeting, so the committee has not taken a position. A number of concerns were raised by committee members about certain provisions. Proponents and sponsors were not present to respond and some issues will require research. The bill is not

calendared for House Committee action until February 4, so there is time for State Affairs to fully consider its position.

At the February 4 meeting, the State Affairs Committee voted to support the bill. I testified at the House Rural Affairs & Agriculture Committee hearing on behalf of the State Affairs Committee and the UGRWCD. The amendment was a minor clarification regarding end dates (noted in the description above).

HB1082_L.001

HOUSE COMMITTEE OF REFERENCE AMENDMENT

Committee on Rural Affairs & Agriculture.

HB19-1082 be amended as follows:

Amend printed bill, page 1, strike line 2.

Page 2, strike lines 1 through 9 and substitute:

"**SECTION 1.** In Colorado Revised Statutes, **amend** 37-86-103 as follows:

37-86-103. Extent of right-of-way. Such right-of-way shall extend only to a ditch, dike, cutting, pipeline, or other structure sufficient for the purpose required. UNLESS EXPRESSLY INCONSISTENT WITH THE TERMS UPON WHICH THE RIGHT-OF-WAY WAS CREATED, A DITCH RIGHT-OF-WAY INCLUDES THE RIGHT TO CONSTRUCT, OPERATE, CLEAN, MAINTAIN, REPAIR, AND REPLACE THE DITCH, TO IMPROVE THE EFFICIENCY OF THE DITCH, INCLUDING BY LINING OR PIPING THE DITCH, AND TO ENTER ONTO THE BURDENED PROPERTY FOR SUCH PURPOSES, WITH ACCESS TO THE DITCH BANKS, AS THE EXIGENCIES THEN EXISTING MAY REQUIRE, FOR ALL REASONABLE AND NECESSARY PURPOSES RELATED TO THE DITCH.".

** *** ** *** **

AGENDA ITEM 5

MEMORANDUM

TO: UGRWCD Board Members

FROM: Frank Kugel

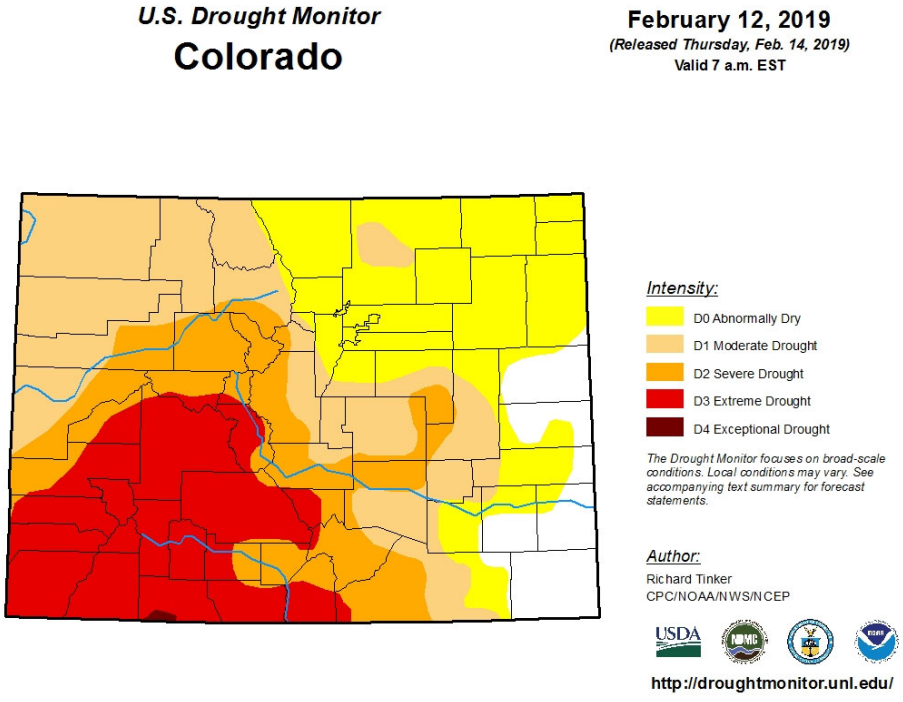
DATE: February 25, 2019

SUBJECT: February Manager's Report

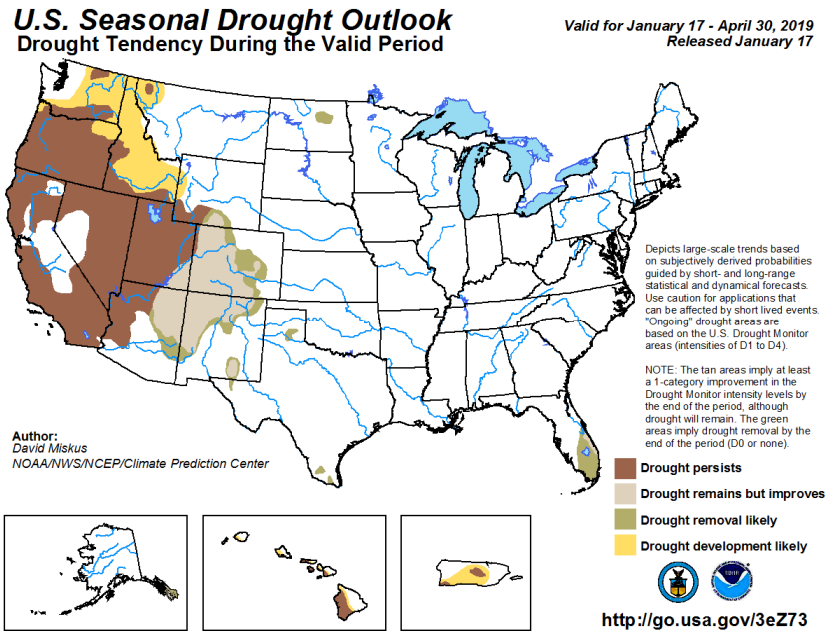
Water Supply Update

The Gunnison Basin received 125 percent of normal precipitation in January. For the four months of the 2019 Water Year beginning October 1, we have received 104 percent of normal precipitation. Unregulated inflows into Blue Mesa Reservoir were 82 percent of normal for January, while Taylor Park Reservoir inflows were 87 percent of normal.

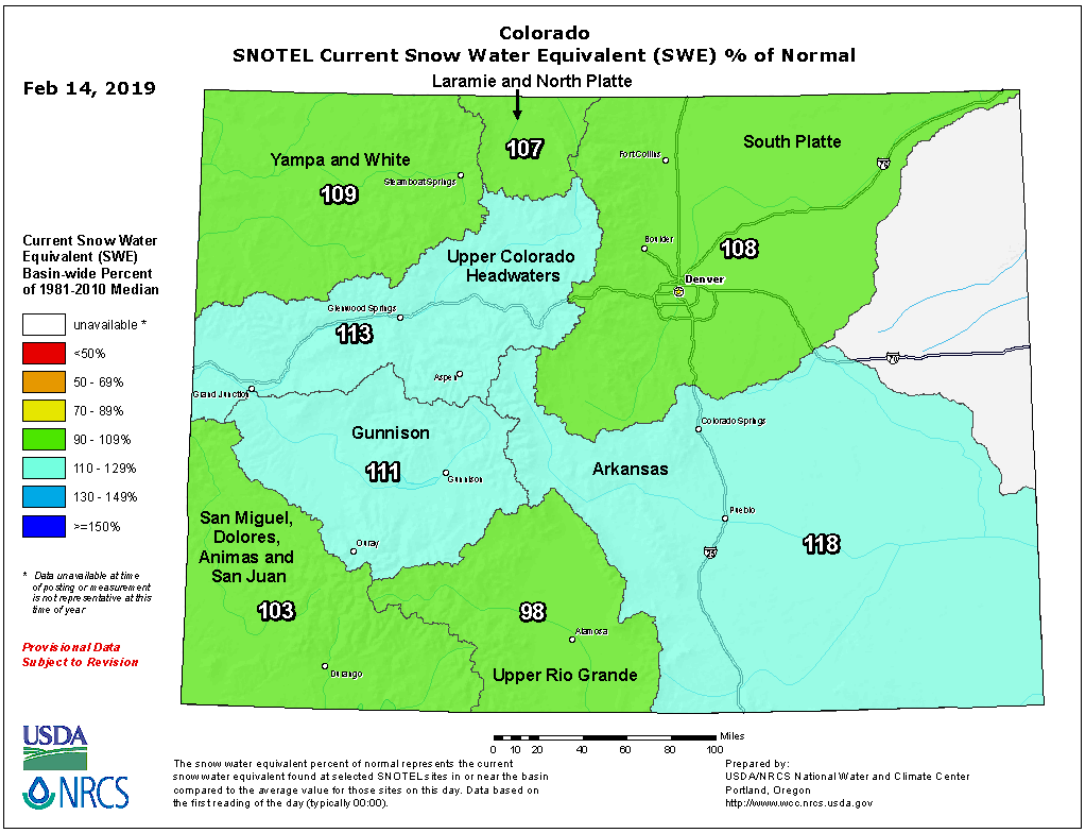
Water supply conditions have improved over the past month, particularly in the southwest corner of Gunnison County and virtually all of Hinsdale County. All parts of the district are now considered to 'merely' be in an Extreme Drought.



Western Colorado drought conditions are predicted to continue through April, but the severity is expected to improve as shown below (forecast as of January 17).



All of the basins in Colorado have near- or above-normal snowpack for this date.



The chart below shows all our basin snotels reporting above normal snowpack for this date.

Colorado SNOTEL Snow/Precipitation Update Report

Based on Mountain Data from NRCS SNOTEL Sites

Provisional data, subject to revision

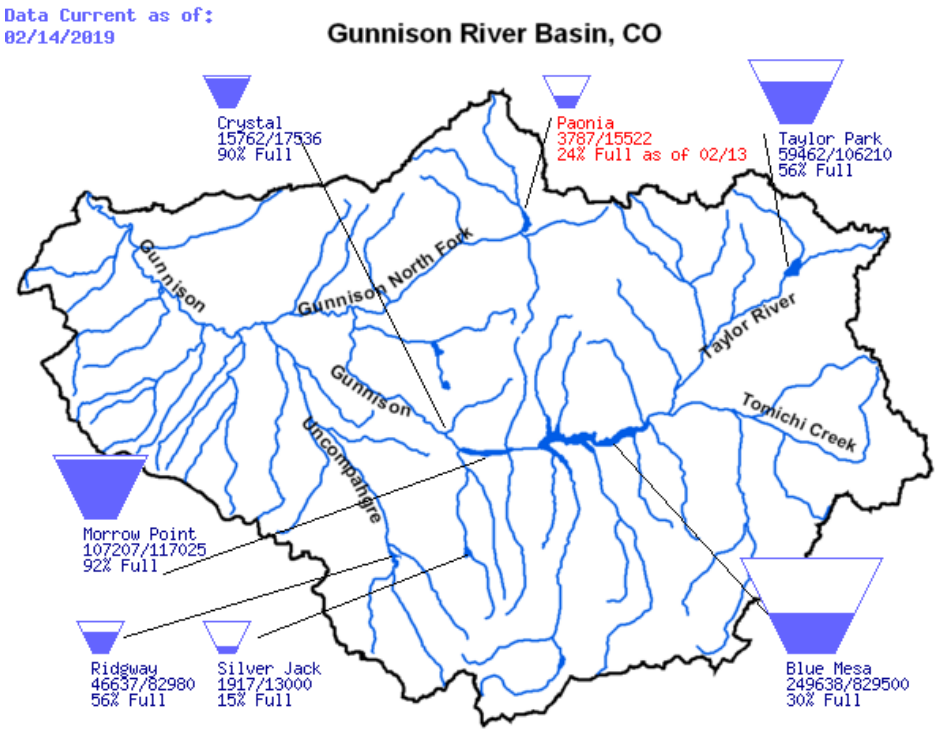
Data based on the first reading of the day (typically 00:00) for Friday, February 15, 2019

Site Name	Elev (ft)	Snow Water Equivalent			Water Year-to-Date Precipitation		
		Current (in)	Median (in)	Pct of Median	Current (in)	Average (in)	Pct of Average
GUNNISON RIVER BASIN							
Butte	10160	10.8	9.8	110	11.7	11.6	101
Cochetopa Pass	10020	4.6	2.8_R	164	5.4	5.1_R	106
Columbine Pass	9400	15.7	12.2	129	19.4	16.0	121
Idarado	9800	9.7	8.5	114	13.2	12.9	102
Mc Clure Pass	9500	12.6	11.2	112	16.7	14.8	113
Mesa Lakes	10000	13.0	11.0	118	18.8	14.2	132
Overland Res.	9840	9.8	8.4	117	13.7	11.7	117
Park Cone	9600	7.3	7.1	103	7.9	8.6	92
Park Reservoir	9960	21.9	18.5	118	27.1	19.7	138
Porphyry Creek	10760	13.6	10.6	128	11.4	10.4	110
Red Mountain Pass	11200	19.5	15.1	129	19.5	18.2	107
Sargents Mesa	11530	8.5	N/A	*	9.9	N/A	*
Schofield Pass	10700	25.0	22.6	111	23.5	22.3	105
Slumgullion	11560	11.3	9.4	120	10.3	9.4	110
Upper Taylor	10640	11.7	N/A	*	15.1	N/A	*
Wager Gulch	11100	8.8	N/A	*	10.7	N/A	*
Basin Index (%)				**119**			**114**

Storage in Blue Mesa Reservoir declined slightly over the past month and is currently at 7438.01 feet, or some 81 feet below the spillway, which corresponds to a reservoir storage of 30 percent of capacity. The low level for 2018 was 7437.43 feet recorded on December 17.

Blue Mesa Reservoir is expected to only fill to 450k-500k acre feet in 2019, or 54-60 % percent of active capacity, according to the most recent projections.

Taylor Park Reservoir is currently at an elevation of 9303.13 feet, or 27 feet below the spillway. The release rate from Taylor Park Dam is currently 57 cfs and is scheduled to be at that release rate until the end of April, unless hydrologic conditions improve dramatically in the Taylor River basin.



Lake Powell continued to release storage last month while Lake Mead held steady – Lake Powell for the first time in over a decade is at a lower percentage of storage capacity than Lake Mead. It has dropped 43.5 feet in the past year. Lakes Powell and Mead are now at 39 and 40 percent of capacity, respectively.

Gunnison River flows in the Black Canyon are currently 473 cfs. Releases from Crystal were increased on February 5 to get flows at Whitewater back to the baseflow target of 750 cfs. After the USGS returned to work at the end of January, they measured at Whitewater and recorded 556 cfs and 589 cfs. After some rework of the data and the rating table it was clear we were well below 750 cfs. Flows have been close to 750 cfs since but are on the rise now with the storms rolling through.

The National Weather Service is forecasting cooler and wetter conditions than normal for both its 6-10 day forecast period beginning February 21 and its 8-14 day forecast beginning February 23. The current forecast for March through May (released January 17) calls for warmer temperatures and above normal precipitation.

AGENDA ITEM 10

Beverly Richards

Subject: FW: Kathleen's DCP questions

From: Kathleen Curry <kathleencurry@montrose.net>
Sent: Wednesday, February 13, 2019 8:11 AM
To: michellepierce@centurytel.net
Subject: Re: Feb board meeting

Hi Michelle,

Here are my questions regarding demand management. Since the staff has requested that I provide them in advance, I would appreciate it if we could forward them to the whole board as well.

My goal is to better understand the direction we are heading so I can communicate that accurately at the next GBRT meeting discussion. At this point I need clarification on the UpperGunnison's position on this recommendation from staff to develop criteria for both a voluntary and mandatory curtailment scenario.
Questions for staff:
Please clarify again why you feel it is beneficial for the district to discuss criteria for a Mandatory Plan at this time?
What benefits could a Mandatory Curtailment Plan have for the Upper Gunnison?
Why are we working in the context of a SEO rule-making as opposed to the CWCB outreach and work group effort that has been outlined?

Our position to date has been to focus on the voluntary approach. At the last meeting I stated that I couldn't see a reason to discuss terms for a mandatory approach, and if memory serves, John stated that in the interest of time the district should be looking at both on a parallel track and that there would be similarities so it made sense. I want to know if I heard him correctly, and I want to talk about how that differs from the position the west slope entities have taken so far. Maybe there is something I am not understanding..

Thanks, Kathleen

Kathleen Curry
54542 US Highway 50
Gunnison, CO 81230
Cell 970-209-5537
Home 970-641-0699

UPPER GUNNISON RIVER WATER CONSERVANCY DISTRICT

MEMORANDUM

FROM: John H. McClow, General Counsel
TO: Board of Directors
RE: Drought Contingency Planning Update
DATE: February 14, 2019

Interstate Update

The Arizona legislature passed, and Governor Ducey signed, legislation authorizing the Director of the Arizona Department of Water Resources to enter into the Lower Basin DCP agreements minutes before the Commissioner of Reclamation's January 31 deadline. Nevertheless, Commissioner Burman posted the attached notice on the Reclamation website and directed the notice to the Federal Register. What remains to complete the Lower Basin DCP is final review and approval of intrastate DCP agreements and exhibits to the DCP Agreement containing Intentionally Created Surplus forbearance agreements. In addition, the Imperial Irrigation District has conditioned its agreement on securing $200 million in federal funding for Salton Sea air quality mitigation.[1]

The Commissioner hosted an update telephone conference on February 6 during which each state itemized the details of their remaining tasks. All principals are authorized to sign a letter to Congress supporting the required federal legislation, pending completion of the final agreements noted above. When the next opportunity for Congressional legislation will arise is uncertain.

Gunnison Basin Issues

In our discussions of demand management, we have speculated generally about what a voluntary program would look like and how it would be administered. In 2013, the Colorado General Assembly authorized the Colorado Water Conservation Board to administer a pilot program to test the efficacy of fallowing-leasing as an alternative to permanent agricultural dry- up. The CWCB, in collaboration with the State Engineer, developed criteria and guidelines for pilot project selection, application, and approval of pilot projects, While fallowing-leasing projects differ in several respects from voluntary demand management, the criteria and guidelines offer good examples of the requirements and parameters that would likely be applied to demand management proposals. I have attached excerpts from the criteria and guidelines.

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[1] Water transfers authorized by the 2003 Quantification Settlement Agreement – one of the intrastate agreements implementing California's reduction of consumptive use of Colorado River water to its 4.4 million acre-foot annual entitlement – resulted in a reduced volume of agricultural return flow from IID and Coachella Valley farms to the Salton Sea, thereby exposing the playa and increasing the potential for dust emissions that are hazardous to human health. The total cost of mitigation is estimated in billions of dollars.

We have discussed (and we summarized in last month's memo) the System Conservation Pilot Program administered by the Upper Colorado River Commission. I have also attached the report evaluating the first three years of the plan to provide a more complete picture of how the experiment was conducted and its results.

From:	Burman, Brenda
To:	Tom Buschatzke; Ted Cooke; Christopher Harris; Jeffrey Kightlinger; Ebmartinez@iid.com; James Eklund; John McClow; john.longworth@state.nm.us; rolf.schmidt@state.nm.us; John Entsminger; Eric Millis; Patrick Tyrrell; fhannay@ucrcommission.com; Amy Haas
Cc:	Brent Rhees; Terrance Fulp; Robert Snow International; Carly Jerla
Subject:	DCP Federal Register notice
Date:	Friday, February 1, 2019 8:07:50 AM
Attachments:	2019-02-01_FR NOTICE-Drought Governor Input Requested.pdf

Good morning,

Today, we posted the attached notice concerning "Responding to Historic Drought and Ongoing Dry Conditions in the Colorado River Basin" on the Reclamation website. We also are sending the notice to the Office of the Federal Register, to be published at the earliest available issuance date.

As you are all well aware, the Colorado River Basin is experiencing its worst drought in recorded history. Reclamation is currently working with each of the seven Colorado River basin states to develop voluntary drought contingency plans (DCPs) which, if implemented, would reduce the risk of Colorado River reservoirs declining to critically low levels. Recently, as Reclamation's Commissioner, I indicated that if the DCPs were not completed by January 31, 2019, Reclamation would issue a solicitation for input from the seven Basin States' Governors regarding recommendations for potential Departmental action. The attached notice indicates that the Department will accept input from the Basin states beginning on March 4, 2019, for a 15-day period.

As noted in the Notice, the Department will ensure that information received from the Governors' representatives will be promptly shared with Tribes, interested parties, and the general public at the end of the comment period.

This Departmental action was not our preferred approach. However, any further delay elevates existing risks in the basin to unacceptable levels. It is our hope that the states will promptly complete work on the DCPs, and if they can, we anticipate terminating our request for further input and rescinding the request contained in the Federal Register notice.

To be prepared in the circumstance that the DCPs cannot be promptly completed in early 2019, the Department must be prepared to take actions – if needed – to better protect the water users of the Basin against the increasing risks facing the Basin.

I am grateful for our close relationships with each basin state and thank you for the hard and challenging work to achieve meaningful DCPs. I look forward to working with you to complete the task.

Sincerely,
Brenda Burman

DEPARTMENT OF THE INTERIOR

Bureau of Reclamation

[LC RR03040000, 19XR0680A1, RX.18786000.5009000; UC RR04090000, 19XR0680A1, RX.19830001.0010000]

Responding to Historic Drought and Ongoing Dry Conditions in the Colorado River Basin: Request for Input

AGENCY: Bureau of Reclamation, Interior.

ACTION: Notice; request for input.

SUMMARY: The Colorado River Basin (Basin) has experienced historically dry conditions since 2000 and the combined storage in Lakes Powell and Mead has reached its lowest level since Lake Powell initially began filling in the 1960s. Given the persistence and intensity of the current drought, the risk of reaching critically low elevations at Lakes Powell and Mead has increased nearly four-fold over the past decade. The Department of the Interior (Department), recognizing this increased risk, called on the seven Colorado River Basin States (Basin States) to put drought contingency plans (DCPs) in place before the end of 2018. Each of the Governors' representatives of the Basin States endorsed the goal of completion of the DCPs by the end of 2018.[1]

The DCPs remain unfinished at this time, and given the current unfinished status of the DCPs, combined with declining reservoir storage in the Basin, the Department is considering potential federal actions to revise Colorado River operations in an effort to

[1] See statement of Commissioner of Reclamation and representatives of the Seven Colorado River Basin States at https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=62170

enhance and ensure sustainability of Colorado River water supplies for the southwestern United States. This Notice requests input from the Governors of the Basin States (and appropriate consultation with such state representatives as each Governor may designate) regarding recommendations for potential Departmental actions in the event that the DCPs cannot be completed and promptly adopted that: a) would be appropriate to take to reduce the risks the Colorado River Basin is facing, and b) can be adopted prior to the August 2019 determinations of operations for Lake Powell and Lake Mead in 2020.

DATES: Input will be accepted beginning March 4, 2019, for a 15-day period ending March 19, 2019.

ADDRESSES: Send input pursuant to this notice by email to crbasin_drought@usbr.gov, or via facsimile to (202) 513-0308. More information regarding the DCPs is available on the Bureau of Reclamation's website at https://www.usbr.gov/dcp/.

FOR FURTHER INFORMATION CONTACT: To request additional information about this Notice, contact James Hess by email at jhess@usbr.gov, or by telephone at (202) 513-0543.

SUPPLEMENTARY INFORMATION: The Colorado River is the most important water resource in the southwestern United States and northwestern Mexico–irrigating nearly 5.5 million acres of farmland and serving approximately 40 million people in major metropolitan areas such as Albuquerque, Cheyenne, Denver, Las Vegas, Los Angeles, Phoenix, Salt Lake City, San Diego, Tucson, and Tijuana. The waters of the Colorado River are shared among seven states within the United States: Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. The Secretary of the

Interior, pursuant to applicable provisions of federal law including, in particular, the Boulder Canyon Project Act of 1928 (authorizing, among other actions, construction and operation of Hoover Dam and Lake Mead) and the Colorado River Storage Project Act of 1956 (authorizing, among other actions, construction and operation of Glen Canyon Dam and Lake Powell), is vested with the responsibility to manage the waters of the Colorado River through operations of federal facilities in the Colorado River Basin. Under applicable federal law, the Secretary of the Interior's authorities to manage the waters of the Lower Colorado River Basin are broader than his authorities in the Upper Basin, but the importance of federal facilities in the management of the Colorado River extends throughout the Basin.

Since 2000, the Colorado River Basin has experienced historic drought and dry conditions; the combined storage in Lakes Powell and Mead has reached its lowest level since Lake Powell initially began filling in the 1960s.

In recent decades, recognizing the limited resources of the Colorado River, the Department of the Interior has undertaken numerous actions to manage the waters of the Colorado River including, in particular, development of the 2001 Interim Surplus Guidelines (see 66 FR 7772 dated January 25, 2001) and development of the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead (see 73 FR 19873 dated April 11, 2008) (2007 Interim Guidelines).

The 2007 Interim Guidelines represent important additional operational guidelines and tools that were adopted to meet the challenges of the drought in the Colorado River Basin. As the Department noted at the time: "While water storage in the massive

reservoirs afforded great protection against the drought, the Department set a goal to have detailed, objective operational tools in place by the end of 2007 in order to be ready to make informed operational decisions if the reservoirs continued to decline," 73 FR 19873. Implementation of the 2007 Interim Guidelines required consultation with the Basin States in multiple provisions, expressly providing that: "Beginning no later than December 31, 2020, the Secretary shall initiate a formal review for purposes of evaluating the effectiveness of these Guidelines. The Secretary shall consult with the Basin States in initiating this review," 73 FR 19892 (April 11, 2008).

Since adoption of the 2007 Interim Guidelines, given the persistence and intensity of the current drought, the risk of reaching critically low elevations at Lakes Powell and Mead has increased nearly four-fold. In response to these conditions of continued drought and increasing risk, Reclamation and officials in the Basin States have been working for a period of years on DCPs. The Upper and Lower Basin DCPs contain actions in addition to those authorized or required by the 2007 Interim Guidelines, and are designed to reduce the risk of Lake Powell and Lake Mead declining to critical elevations.[2] The Basin States made significant progress in 2018 on draft DCP agreements that would implement Upper and Lower Basin DCPs,[3] but work on the DCPs remains unfinished, particularly among the Lower Colorado River Basin states of

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[2] Completion of the DCPs, and associated reduction in risk of Lakes Powell and Mead declining to critically low elevations, will also benefit the activities, analyses and interstate discussions associated with the formal review and evaluation of the effectiveness of the 2007 Interim Guidelines. Under the applicable provisions of the 2007 Interim Guidelines the Secretary shall consult with the Basin States in initiating this review beginning no later than December 31, 2020.

[3] Draft versions of the DCPs and information on the Upper and Lower Basin DCPs are available on the Bureau of Reclamation's website at: https://www.usbr.gov/dcp/.

Arizona, California and Nevada. While unfinished, the Department takes particular cognizance of the fact that on January 31, 2019, the Arizona Legislature passed legislation authorizing the Arizona Department of Water Resources Director to execute the relevant interstate DCP agreements. Arizona is unique in the need for state legislative action to approve the DCPs, and this important step may indicate that finalization of the DCPs is imminent.

While the Department supports the ongoing efforts of the Basin States and remains cautiously optimistic that the Basin States will successfully complete their efforts promptly in early 2019, the Department is highly concerned that continued delays regarding adoption of the DCPs inappropriately increases risk for all that rely on the waters of the Colorado River.

In the circumstance that the DCPs cannot be promptly completed in early 2019, the Department must be prepared to take actions – if needed – to respond to the increasing risks facing the Colorado River Basin. Consistent with past practice, through this Notice, the Department is taking the initial step of requesting input from the Governors of each of the Basin States for their specific recommendations on prompt Departmental actions that: a) would be appropriate to take to reduce the risks the Colorado River Basin is facing, and b) can be adopted prior to the August 2019 determinations of operations for Lake Powell and Lake Mead in 2020.

Engagement with the Governors of the Basin States and appropriate consultation with such state representatives as each Governor may designate is appropriate given the Secretary's recognition of "the special role of the Basin States in matters relating to the Long-Range Operating Criteria," 64 FR 27009 (May 18, 1999), as codified in Section

602 of the Colorado River Basin Project Act of 1968. The Department's history and actions in recent decades fully reflect and underscore the importance of working closely with the Basin States in developing operational tools for management of the Colorado River. For example, the Secretary of the Interior noted at the time of the adoption of the 2007 Interim Guidelines: "In recent years, in a number of settings, and facing a broad range of water management challenges, the Department has highlighted the important role of the Basin States in the statutory framework for administration of Basin entitlements and the significance that a seven-state consensus represents. Multi-state consensus is a rare and unique achievement that should continue to be recognized and facilitated," 73 FR 19878 (April 11, 2008). The Department fully endorses this Secretarial statement of policy as this approach continues to represent the best manner to address future controversies on the Colorado River through consultation and negotiation. Simply put, this approach minimizes the likelihood that controversies will increase and intensify as water supplies diminish.

Through this Notice, and at this time, the Department is seeking input from the Governors' representatives of the Basin States. The Department will ensure that the information received from the Governors' representatives is promptly shared with tribes, interested parties and the general public for their review. In the event that the Department proposes to take further action following receipt of such input, the Department will also provide an opportunity for further input from tribes, interested parties and the general public.

Across Administrations, the Department has invested extraordinary time, effort and resources to facilitate development of the DCPs. While adoption of consensus-based

DCPs in early 2019 would appropriately and promptly reduce the risk facing the Colorado River Basin, the Basin States may not complete the actions necessary to put the DCPs into effect this year. Accordingly, the Department must be prepared to act without undue delay to reduce the risk of continued declines in the critical water supplies of the Colorado River Basin in the unfortunate event that the Basin States are unable to complete their work on the DCPs.

Dated: FEB 0 1 2019

Signed: _____

Timothy R. Petty
Assistant Secretary – Water & Science
U.S. Department of the Interior

_____

Brenda W. Burman
Commissioner, Bureau of Reclamation
U.S. Department of the Interior

A. Pilot Project Selection Criteria

1. Pursuant to Section 37-60-115(8)(a), a proposed pilot project submitted to the Board to be considered for selection must demonstrate the practice of:
    a. fallowing agricultural irrigation land; and
    b. leasing the associated water rights for temporary municipal, agricultural, environmental, industrial, or recreational use.
2. In addition, consistent with the purpose of the pilot program as stated in Section 37- 60-115(8)(b), proposed pilot projects must have the potential to:
    a. in fallowing irrigated agricultural land for leasing water for temporary municipal, agricultural, environmental, industrial, or recreational use, demonstrate cooperation among different types of water users, including cooperation among shareholders, ditch companies, water user associations, irrigation districts, water conservancy districts, water conservation districts, and municipalities;
    b. evaluate the feasibility of delivering leased water to the temporary municipal, agricultural, environmental, industrial, or recreational users;
    c. provide sufficient data from which the Board, in consultation with the State Engineer, can evaluate the efficacy of using a streamlined approach, such as an accounting and administrative tool, for determining:
        i. historical consumptive use,
        ii. return flows,
        iii. the potential for material injury to other water rights, and
        iv. conditions to prevent material injury; and
    d. demonstrate how to operate, administer, and account for the practice of fallowing irrigated agricultural land for leasing water for temporary municipal, agricultural, environmental, industrial, or recreational use without causing material injury to other vested water rights, decreed conditional rights, or contract rights to water.
3. The Board will not select a pilot project that involves:
    a. the fallowing of the same land for more than three years in a ten-year period or the fallowing of more than thirty percent of a single irrigated farm[2] for more than ten consecutive years;[3]
    b. the transfer or facilitation of the transfer of water across the continental divide by direct diversion, exchange, or otherwise; or
    c. the transfer or facilitation of the transfer of water out of the Rio Grande basin by direct diversion, exchange, or otherwise; or
    d. fallowing-leasing from lands on more than one ditch, if the use of more than one ditch would have the effect of circumventing the limitation on the

number of pilot projects that can be authorized. The Board retains discretion to select a pilot project if more than one ditch is proposed to be used in a unified pilot.

4. As described in Section 37-60-115(8)(e)(I), pilot project applications submitted to the Board for consideration must include, at a minimum, the following:
    a. a description of the proposed pilot project;
    b. an analysis of the historical use, the historical consumptive use, and the historical return flows of the water rights or contract rights to water proposed to be used for temporary municipal, agricultural, environmental, industrial, or recreational use using a water budget model;
    c. a map showing all parcels that will be fallowed as part of the pilot project;
    d. evidence that the applicant has satisfied the requirements in II.K. below;
    e. a description of the source of water to be used to replace all historical return flow obligations, with evidence that the source will provide a firm yield of water to replace all return flow obligations, during the pilot project and after completion of the pilot project, and;
    f. any additional information requested by the Board.

All parcels that will be fallowed and dried up must be verified as having been historically irrigated (*e.g.*, land historically dry-land farmed may not be considered fallowed for the purposes of a pilot project), and no partial year dry-up shall be permitted. An aerial photo from each decade of the relevant study period will be acceptable evidence. In the absence of aerial photography, the applicant may submit other evidence that will be subject to verification by the Board and other parties.

5. All pilot project application analyses of the historical use, the historical consumptive use, and the historical return flows of the water rights or contract rights to water proposed to be used for temporary municipal, agricultural, environmental, industrial, or recreational use using a water budget model, as required above, shall comply with the following:
    a. Proposed pilot projects shall be evaluated with the Lease Fallowing Tool. The individual components of analyses submitted shall include the following

    tables and other information. All tables should show monthly values, and a separate table should be used for each individual farm that is included in a pilot project. A list of the tables, along with one sample table, is included in Appendix A. Pilot project sponsors and applicants should contact the Division of Water Resources for electronic versions of all tables in Excel format:

        i. A table identifying all assumptions, presumptive factors, and methodologies used in the analyses;
        ii. Tables of historical use and historical consumptive use, based

on at least 30 years of diversion records, including:

1. historical total river headgate diversions to the relevant ditch and the proportionate share of those diversions attributable to the relevant individual farm(s);
2. ditch losses and off-farm losses (use cited information from a previous change case or information from the relevant ditch company);
3. farm headgate delivery (use diversion records);
4. farm efficiency (use 55 percent); and
5. potential consumable amount of the farm headgate delivery (use farm headgate delivery multiplied by farm efficiency);
6. stored soil moisture limited to six inches or 0.5 acre-feet per acre.

iii. Tables of historical use and historical consumptive use, based on crop demand, including:

1. description of crop mix (use ditch-wide crop statistics available in Colorado's Decision Support System basin models or the Arkansas River Hydrologic Institute (HI) Model; or if neither of those is available, use county-wide statistics);
2. crop potential evapotranspiration (PET) (use Modified Blaney Criddle with TR-21 coefficients);
3. total precipitation (use weather station closest to the centroid of the historically irrigated fields to be fallowed for which the record contains adequate data for the chosen study period);
4. effective precipitation (use factors from United States Bureau of Reclamation method); and
5. crop irrigation requirement (CIR).

iv. Farm headgate depletions, which are equal to the Farm Headgate Delivery minus the un-lagged return flows and are calculated in the Lease Fallowing Tool. Farm headgate depletions will be used to determine the following volumetric limits:

1. monthly volumetric limits, calculated as the average of the three greatest monthly amounts for each month of farm headgate depletions in the study period; and
2. annual volumetric limit, calculated as the average of the three greatest annual amounts for each year of farm headgate depletions in the study period.

v. Historical return flows.

1. The portion of the monthly farm headgate delivery not used to meet the irrigation demand will be the return flow fraction, or 45 percent of the farm headgate delivery, being the remaining fraction of the farm efficiency:

    a. twenty percent of the return flow fraction will be designated as surface runoff, and

    b. eighty percent of the return flow fraction will be designated as deep percolation to the alluvial aquifer.

2. Unit Response Functions (URFs) shall be used for determination of timing of groundwater return flows from each farm to the stream or natural drains, using the following approaches, assumptions, and factors:

    a. use the Glover-Balmer analytical solution (Glover equation) to calculate the lag effect of deep percolation return flows;

    b. specific yield = 0.20;

    c. transmissivity according to cited reference or through the applicant's detailed analysis;

    d. the relevant ditch represents the location of the no-flow boundary unless geologic and hydrologic conditions indicate that the relevant ditch does not reasonably represent the no- flow boundary, which boundary should then be determined based on actual geologic or hydrologic conditions;

    e. the distance to the river is equal to the length of a line extending perpendicular from the river or drain to the centroid of the irrigated land; return flows accrue to the river or drain at this location on the river; and

    f. the number of month time steps (URF period) for the URF will be limited to the number of months required for at least ninety percent of the impact to occur to the stream; the URFs will then be normalized by apportioning the remaining return flows across the URF period.

3. Tables of Historical Delayed Return Flow Remaining to the stream after Diversions have Ceased

    a. Applicant must specifically identify how delayed return flows are to be met in timing, location, and amount, on a monthly basis, with due consideration of losses.

4. If return flow obligations are to be met by recharge, URFs do not need to be used in developing the Applicant's proposed accounting if:
    a. all return flows for a farm are met by recharge from a recharge facility within one quarter mile of the dried up land and the recharge water is delivered in the same time and amount, with an additional amount to account for recharge pond evaporation, as the deep percolation portion of the farm delivery for the dried up land; or
    b. if the recharge plan would result in the replacement of the actual amount of deep percolation return flow obligations by the recharge accruing to the river at the approximate location and at the approximate time.

5. A comparison of historic values determined above and projected operations.

project proposal.

6. The Board will give priority to pilot projects that can be implemented using existing infrastructure.

FINAL REPORT

COLORADO RIVER SYSTEM CONSERVATION PILOT PROGRAM IN THE UPPER COLORADO RIVER BASIN

Prepared for:

The Upper Colorado River Commission

Prepared by:

UCRC Staff

&

Wilson Water Group

165 S. Union Blvd. Suite 520

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February 2018

Table of Contents

I. Executive Summary

The following report is intended to summarize the outcomes and lessons learned from the three-year Colorado River System Conservation Pilot Program (SCPP) as implemented in the Upper Colorado River Basin (Upper Basin) beginning in 2015.[1] The Upper Basin SCPP is part of a larger, basin-wide program that was funded by four Colorado River municipal water users--the Central Arizona Water Conservation District, the Southern Nevada Water Authority, the Metropolitan Water District of Southern California (MWD), and Denver Water-- partnering with the Bureau of Reclamation (collectively, the Funding Agencies). In 2017, the Walton Family Foundation also contributed to the Upper Basin SCPP through Denver Water.

The overall goals of the SCPP were to, among other things, help explore, learn from and determine whether a voluntary, temporary and compensated reduction in consumptive use in the Upper Basin is a feasible method to partially mitigate the decline of or to raise water levels in Lake Powell and thereby serve as a useful tool for the drought contingency planning processes in the Upper Basin. Thus, the primary objective of the pilot program was not to test whether conserved water actually reaches Lake Powell, but rather to assess the feasibility of system conservation as a future means of increasing storage at the reservoir. From 2015-2017, the Upper Basin SCPP funded 45 projects, for a consumptive use reduction of approximately 22,116 acre-feet at a total cost of $4,555,747. There was significant interest and program participation in the Upper Basin. With assistance from the four Upper Colorado River Division States (Colorado, Utah, Wyoming, and New Mexico) as well as facilitation by key non-governmental organizations (NGOs), the Upper Basin SCPP received 93 applications from 2015 through 2017. Information about the SCPP was collected that will inform the future of the program, or a similar demand management effort, including recommendations for potential improvements.

In addition to demonstrating significant Upper Basin water user interest, the SCPP was also successful in demonstrating and accomplishing the administrative requirements for such a program. These included solicitation of proposals from water users; review, ranking and selection of projects; contracting; field verification of consumptive use savings; payment management and processing; and, management and coordination of activities among multiple funding agencies.

The SCPP successfully demonstrated water user interest, administrative capabilities and requirements, as well as greatly advanced learning – all of which have contributed to a better understanding of whether and how voluntary reductions in consumptive use in the Upper Basin may help protect critical reservoir levels during drought Among the broader-based observations involved in implementing this program, the following have emerged:

1. The Upper Colorado River Commission (UCRC) gained an understanding of the requirements to administer, contract, and pay for conservation activities;
2. It is valuable to have key stakeholders and NGOs participate in program outreach;

[1] In August 2017, the Upper Colorado River Commission agreed to extend the SCPP through 2018 to further study the feasibility of the Program in the Upper Basin. A summary of the fourth year of SCPP in the Upper Basin will be included as an appendix to this Report upon conclusion of the 2018 projects.

3. There can be multiple benefits of conservation, including fuller target reservoirs, in-channel benefits, and benefits to agricultural production through soil "resting";
4. Sufficient resources for program administration must be provided;
5. Additional groups may be interested in providing potential funding – including public water providers, NGOs, and the federal government;
6. Improved methods of estimating conservation, such as remote sensing, may be useful;
7. The desire to generate publicity about program participation varies among selected applicants;
8. Involvement by trusted local and state representatives is critical in attracting agricultural water user participation;
9. The availability of historical crop and water use data and information on a proposed site is beneficial to understanding potential conservation benefits;
10. The SCPP served as a valuable tool for educating local water managers, administrators, and water users about the Colorado River System; and
11. Conservation may be a tool to improve reservoir conditions provided legal, technical and policy issues can be resolved.

The underlying goal of the SCPP was to learn about the logistics and challenges associated with implementing this type of program. The operation of the pilot program showed: 1) there is participation interest within the Upper Basin; 2) it is possible to contract and verify conservation measures; and, 3) competitive pricing can support conservation efforts. Because of the learning successes of the pilot program between 2015 and 2017, the SCPP has been extended into 2018. See footnote 1. Additionally, the information garnered in the first three years of the pilot program has helped clarify remaining questions that need to be answered to support a long-term management program. The following questions should be addressed in conjunction with the lessons learned detailed in this Report:

1. What is the role and objective of a more permanent System Conservation Program? For example, is it an intermittent tool used only when Lake Powell hits critical elevations for large-scale demand management; or, is it vehicle to implement more local water banking options to benefit Upper Basin water users?
2. What can be done to ensure that conserved water gets to Lake Powell?
3. What can be done to improve the ability to measure conserved water volumes?
4. Can projects generate the amount of conserved water that modeling conducted by the Upper Basin suggests may be required to have measurable impacts; and,
5. What are the direct and indirect benefits and impacts to local areas from a significant level of conservation?
6. What would be the source of financial support for measurable demand management volumes, recognizing current unit costs? For example, is it feasible to secure roughly $40 million to conserve approximately 200,000 acre-feet based on the 2017 SCPP unit costs?
7. How do we manage risk and determine an appropriate level of conservation given hydrologic variability? For example, how do we minimize large investments in conservation rendered unnecessary by a wet year—are there opportunities for using surplus conserved water in the Upper Basin (e.g., water banking)?

8. How do we preserve the widespread interest, support, and momentum that the SCPP has generated; will a short-term break in implementation have long-term impacts in interest?
9. What are the possible options and the best vehicle to administer a system conservation program? For example, some of the options being considered by a UCRC/Upper Basin workgroup include administration by Reclamation or other government agencies, continued administration by the UCRC, or administration by an NGO.
10. How does a future system conservation program respond to the goals, objectives, timing, mandates, and priorities of the Upper Basin states and the UCRC?

II. Background

The Colorado River, often considered the lifeline of the American Southwest, supplies water to between 35 and 40 million people in the seven U.S. Basin States of Arizona, California, Nevada, Colorado, Wyoming, Utah, and New Mexico, and approximately 4.5 million acres of land in the Basin and adjacent areas.[2] Prolonged drought conditions over the course of more than 17 years, coupled with increasing demands, have stressed this valuable water system. In 2016, water levels in Lake Mead reached a historic low, dropping below 1,072 feet.[3] Moreover, two of the last 17 years of inflows into Lake Powell were less than five million acre-feet[4] with above-average inflows into Lake Powell occurring only four years since 2000.[5] Should such patterns continue over time, both Lake Powell and Lake Mead could reach critical elevations that would threaten hydroelectric power generation and could eventually lead to a conflict over the 1922 Colorado River Compact.

To help explore drought contingency options that could help increase water elevation levels in Lake Mead and Lake Powell, four Colorado River municipal water users—the Central Arizona Water Conservation District, the Southern Nevada Water Authority, The Metropolitan Water District of Southern California, and Denver Water, partnering with the Bureau of Reclamation (collectively, the Funding Agencies)—funded the SCPP in both the Upper and Lower Colorado River basins. The overarching goal was to assess whether surface water elevations in Lake Mead and Lake Powell could be increased through participation in the program. The SCPP provided over $11 million in funding to develop, test, and collect data for a *temporary, voluntary and compensated* water-savings program to provide a learning opportunity and assess long-term feasibility. The Funding Agencies originally committed at least $2.75 million to implement a two-year SCPP for projects located in the Upper Basin. The UCRC entered into a Facilitation Agreement with the Funding Agencies in May of 2015 to implement the SCPP in the Upper Basin beginning that same year.

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[2] "Colorado River Basin Stakeholders Moving Forward to Address Challenges Identified in the Colorado River Basin Water Supply and Demand Study Phase 1 Report". U.S. Bureau of Reclamation. Available at: https://www.usbr.gov/lc/region/programs/crbstudy/MovingForward/Phase1Report.html.

[3] "Lake Mead Historical Reservoir Levels." U.S. Bureau of Reclamation. Available at: https://www.usbr.gov/lc/region/g4000/hourly/mead-elv.html

[4] "Lake Powell Unregulated Inflow." U.S. Bureau of Reclamation. Available at: https://www.usbr.gov/uc/water/crsp/studies/images/PowellForecast.png.

[5] The Average inflow into Lake Powell was 10.83 MAF from 1981-2010. "Lake Powell Unregulated Inflow." U.S. Bureau of Reclamation. Available at: https://www.usbr.gov/uc/water/crsp/studies/images/PowellForecast.png.

Although the SCPP was originally intended to be a two-year project, greater interest in participation and availability of additional funds motivated the UCRC and Funding Agencies to extend the project through 2017, and again into 2018. Preliminary results of the SCPP and lessons learned from the implementation of the 2015, 2016, and 2017 projects in the Upper Basin are provided below.

III. System Conservation Pilot Program Approach

A. Evaluation Criteria and Project Selection

Evaluation criteria was developed to select projects that would provide learning opportunities to understand how a larger-scale project could be implemented and would most benefit the Colorado River by intentionally leaving water in the system. The UCRC, the four Upper Division States and the Funding Agencies participated in the evaluation process. Evaluation criteria included:

- ability to demonstrate the efficacy of a new conservation method,
- schedule for implementing the conservation project,
- complexity or level of administration involved in project implementation and verification,
- cost per acre-foot of conserved water,
- identified environmental benefits,
- demonstrated commitment to project success,
- diversity in geographic locations,
- diversity in the types of water conservation methods,
- funding availability in conjunction with consideration of other proposed projects,
- demonstrable water savings, and
- potential for any conserved water to benefit storage in the Colorado River system.

B. Project Verification

The SCPP Team worked with the selected project participants or their representatives to establish project-specific verification plans that were included in the final contracts between the participants and the UCRC. The primary focus of each plan outlined procedures to *verify and document* that the applicant performed the conservation measures and complied with the schedule indicated in their contract.

Each verification plan was tailored to take advantage of existing measuring devices, primarily flumes or other diversion measurement devices at river or farm headgates. The primary component for verifying full or partial fallowing was field site visits to visually assess that water was not being applied. Each verification plan included scheduled site visits during project implementation and a standard approach was taken to photograph and document the site visits. The final component of each verification plan was to assess the estimated consumptive use savings compared to the proposed savings. While the consumptive use savings was important, the primary focus of the SCPP was to explore, learn from and determine whether a voluntary, compensated reduction in consumptive use is a feasible method to partially mitigate the decline of Lake Powell reservoir elevations.

IV. System Conservation Pilot Program Results

A. Summary of Selected Projects

The SCPP demonstrated that there is significant interest from Upper Basin water users in participation in this type of program. In the three years of the SCPP, there were more applications received than projects selected due to funding limitations. Figure 1 summarizes the total number of applications received, the total projects selected each year, and the total cost. Notably, in 2017, 5 fewer projects were selected relative to 2016. However, the overall size of the 2017 projects increased while the unit cost decreased relative to the previous year.

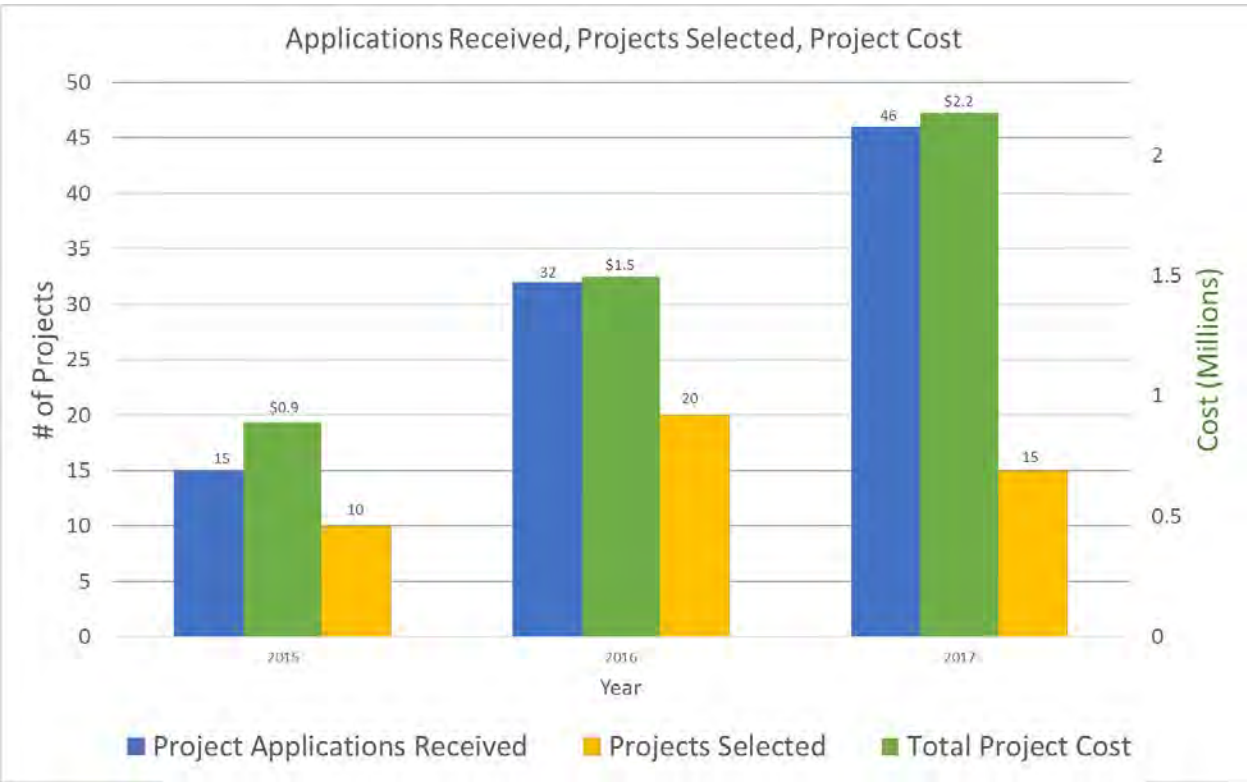

Figure 1 – Number of Applications Received, Projects Selected, and Total Project Cost

Tables 1 and 2 provide an overview of the number of applications received relative to the number of projects implemented in each state.

Table 1 – Total Number of Applications Received in Each Year by State

Year	Colorado	New Mexico	Utah	Wyoming	Total
2015	6	0	1	8	15
2016	17	3	2	10	32
2017	12	4	8	22	46
Total	**35**	**7**	**11**	**40**	**93**

Table 2 – Total Number of Projects Implemented in Each Year by State

Year	Colorado	New Mexico	Utah	Wyoming	Total
2015	5	0	0	5	10
2016	8	2	1	9	20
2017	2	3	6	4	15
Total	**15**	**5**	**7**	**18**	**45**

As the SCPP progressed, the number of applications increased. Colorado and Wyoming saw the most applications throughout the duration of the SCPP. The success in these two states, coupled with the increased number of applications in Utah and New Mexico, is attributed to focused outreach (see "Lessons Learned: Community Outreach and Education").

In 2016, 25 projects were selected; however, only 20 were contracted and implemented. See Table 2. The reasons the five applicants chose not to participate varied and included complexities involving multiple owners and pending property sales.

Table 3 highlights the different project categories implemented in each year. For the fallowing projects, no irrigation water was applied to the enrolled fields for the duration of the irrigation season, and for the split season deficit irrigation projects, no irrigation water was applied during a specified period of the irrigation season (e.g., June 1 through September 30). Some of the projects were a combination in which some fields were fallowed and others were split season deficit irrigated. The municipal projects include both outdoor and indoor municipal water use.

Table 3 – Types of Projects Implemented in Each Year

Project Type	2015	2016	2017	Total
Fallow	1	1	6	8
Split Season Deficit Irrigation	6	14	5	25
Alternative Cropping & Deficit Irrigation	1	4	1	6
Combination of Fallow & Split Season Deficit Irrigation	1	0	3	4
Municipal	1	1	0	2

Figures 2, 3 and 4, below represent the locations of the projects selected and implemented by project type in 2015, 2016 and 2017, respectively. Note that six of the projects were multi-year projects (for example, contracted for both 2016 and 2017) and seven of the projects applied and were selected in multiple years of the SCPP, often enrolling different fields within the same farm or ranch. Focused outreach from representatives of Trout Unlimited and The Nature Conservancy helped enroll several agricultural applicants that may not have otherwise applied (see "Lessons Learned: Community Outreach and Education").

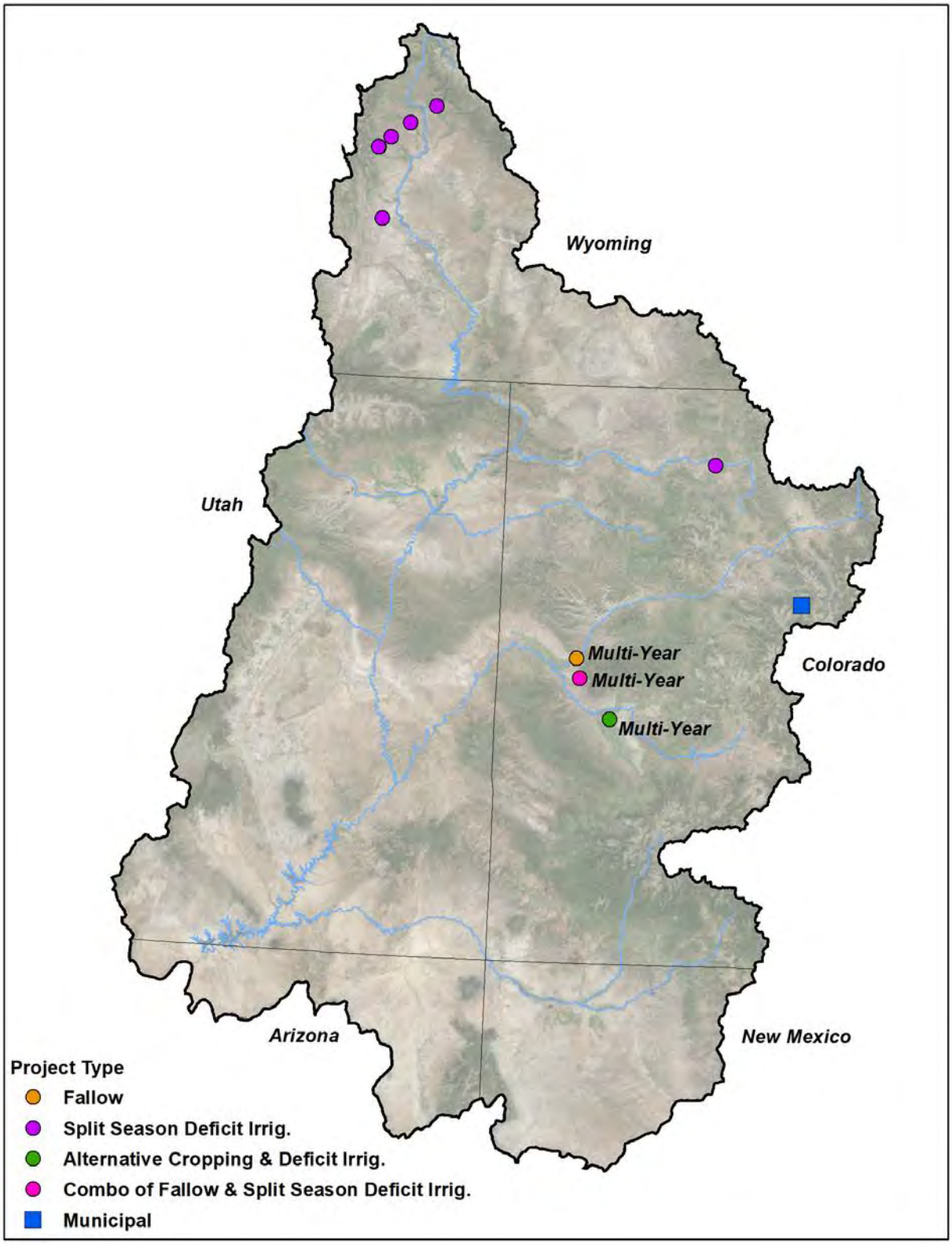

Figure 2 – Location of the Projects Selected & Implemented in 2015

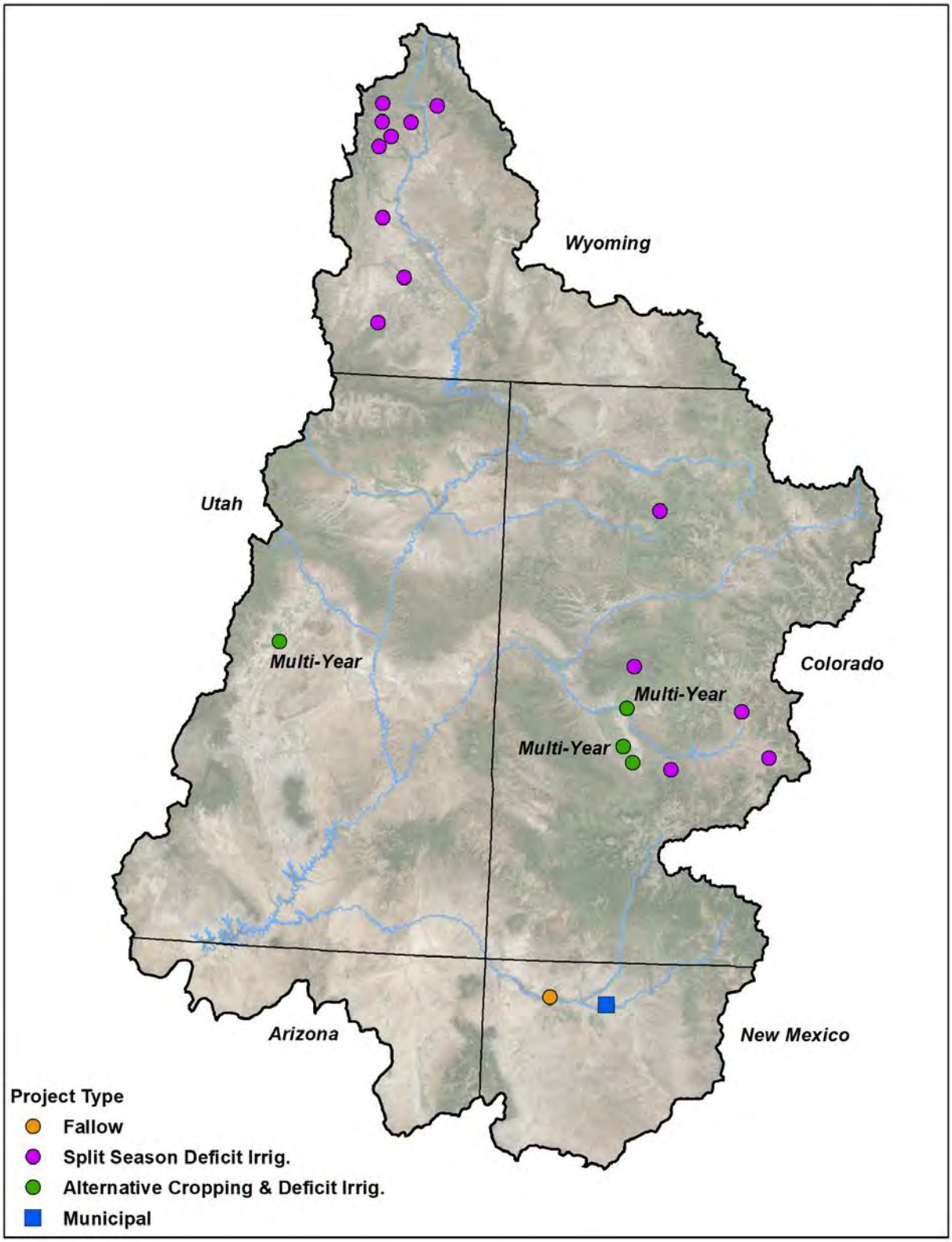

Figure 3 – Location of the Projects Selected & Implemented in 2016

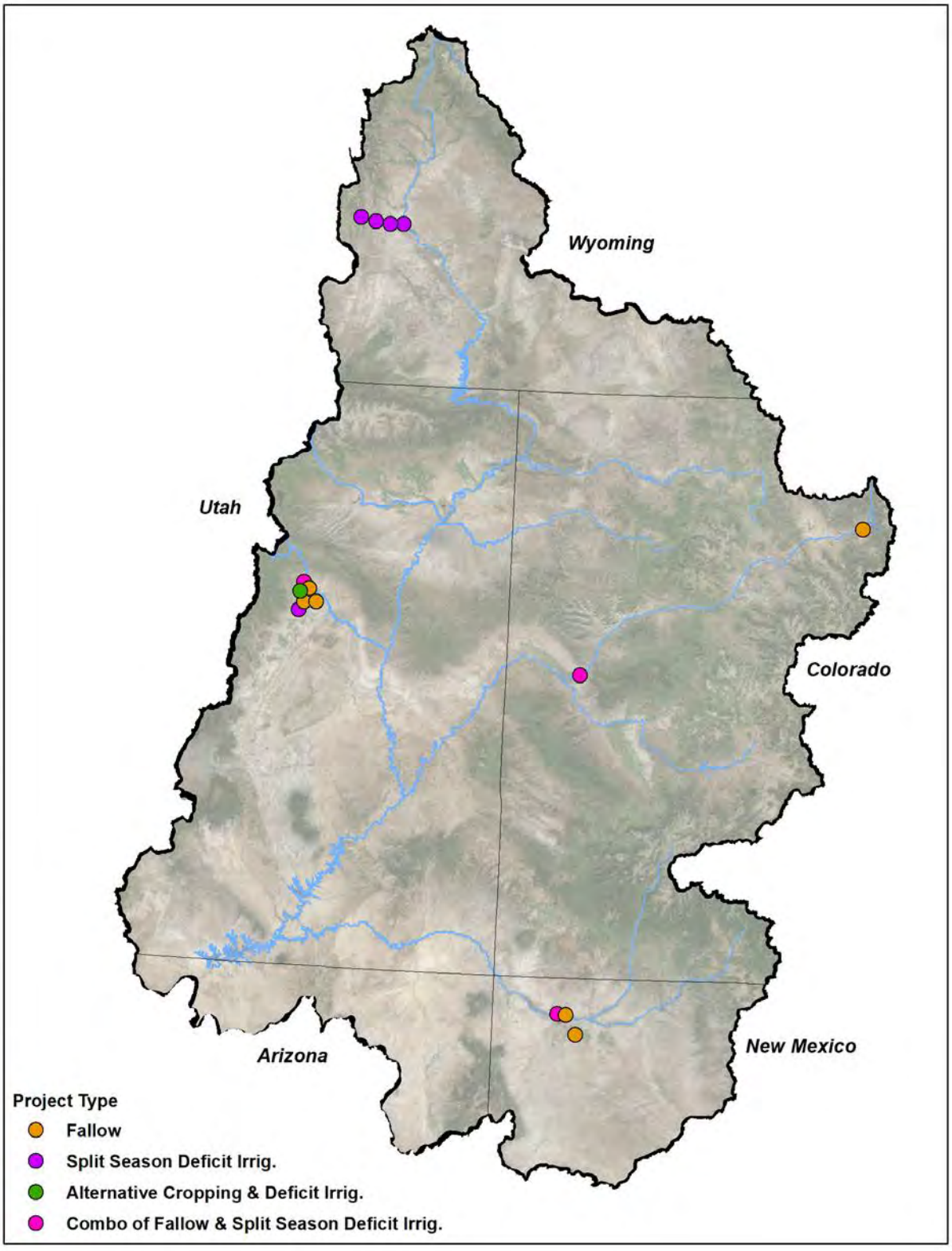

Figure 4 – Location of the Projects Selected & Implemented in 2017

B. Summary of the Contracted Conserved Water and Associated Cost

The participants in the SCPP were compensated based on an estimated average historical conserved consumptive use value associated with each project. These estimates were provided in the application and were reviewed, verified, and adjusted if necessary by Wilson Water Group (WWG) during the project selection process. The estimates were generally based on historical averages that accounted for water supply limitations; however, some of the estimates were negotiated based on pending water right court cases or documented reports.

The method for calculating the potential conserved consumptive use varied by state depending on data availability. In general, the applicants in Colorado, New Mexico, and Utah calculated historical potential consumptive use based on Modified Blaney-Criddle with an elevation adjustment, while the applicants in Wyoming used remote sensed data (Landsat satellite imagery) with the energy balance model METRIC (Mapping EvapoTranspiration with High Resolution and Internalized Calibration). Wyoming relied exclusively on 2011 data for this analysis as it was the most comprehensive METRIC dataset available for SCPP project use. Therefore, Wyoming estimates did not represent average historical consumptive use, but rather a snapshot of a relatively wet water supply year.

The consumptive use estimates were adjusted, if necessary, to account for historical water supply limitations. This is important because the ability for Upper Basin water users to divert water is dependent upon the physical supply associated with the hydrologic year type. Because of this, Upper Basin water users often experience late season water supply shortages. To account for water supply limitations, different methods were used to adjust the potential consumptive use estimates based on the available data in each state:

- **Colorado**: Average water supply limitations were applied based on historical diversions and associated shortages calculated using the state's consumptive use model (StateCU). In Colorado, diversions are measured, recorded, and publicly available in the state's database (HydroBase); therefore, water supply limitations can be readily quantified.
- **New Mexico**: Average water supply limitations were applied based on discussions with the State Engineer's Office. Not all diversions are measured or recorded; therefore, State Engineer's Office staff provided supply limitation estimates.
- **Utah:** Average water supply limitations were applied based on discussions with the State Engineer's Office. Similar to New Mexico, not all diversions are measured or recorded; therefore, State Engineer's Office staff provided supply limitation estimates.
- **Wyoming:** Average water supply limitations were applied based on regulation dates and discussions with the State Engineer's Office, as the METRIC estimates are based upon 2011 data which was a relatively wet supply year. In Wyoming, diversions are generally not recorded except on tributaries that require frequent regulation.

Tables 5 through 7 show the contracted consumptive use estimates by tributary and associated compensation for each program year. Based on the contracted historical conserved consumptive use estimates, the Funding Agencies, including NGOs, provided $4,555,747 to conserve 22,116 acre-feet of water during 2015, 2016, and 2017.

Table 4 – Total Conserved Consumptive Use (CCU) and Associated Compensation for the 2015 Projects[6]

Tributary Name	State	Total Acreage	Crop	Project Type	Total Estimated CCU (acre-feet)	Cost per acre-foot	Total Cost
Fontenelle Creek	WY	221	Grass pasture	Split Season Deficit Irrigation	248	$ 200	$ 49,600
Cottonwood Creek	WY	1,736	Grass pasture	Split Season Deficit Irrigation	1,202	$ 200	$ 240,492
Middle Piney Creek	WY	40	Grass pasture	Split Season Deficit Irrigation	32	$ 200	$ 6,313
Middle Piney Creek	WY	101	Grass pasture	Split Season Deficit Irrigation	88	$ 200	$ 17,563
Pine Creek	WY	81	Grass pasture	Split Season Deficit Irrigation	74	$ 200	$ 14,832
Uncompahgre River	CO	23	Corn	Fallow	46 (2015)	$ 300	$ 21,000
			Winter wheat	Alternative Cropping & Deficit Irrigation	29 (2016)	$ 250	
Yampa River	CO	193	Grass pasture	Split Season Deficit Irrigation	188	$ 200	$ 37,600
Colorado River – Grand Valley	CO	200	Corn & alfalfa	Fallow	334 (2015) 334 (2016) 334 (2017)	$ 330	$ 330,660
Various tributaries on Colorado's West Slope	CO	51	Grass pasture & alfalfa	Combination of Fallow & Split Season Deficit Irrigation	56 (2015) 62 (2016)	$ 300	$ 36,501
South Fork Eagle River*	CO	-	-	Municipal	200	$ 670	$ 134,132
Total	-	**2,646**	-	-	**3,227**	-	**$ $888,693**

**Project was selected in 2015 and implemented in 2016. This was a pilot program and, due to considerations specific to this project, it was funded at a higher rate than others. This is not a rate that was or typically will be considered for other SCPP projects.*

[6] Table also includes multi-year projects that were first implemented in 2015

Table 5 – Total Conserved Consumptive Use (CCU) and Associated Compensation for the 2016 Projects

Tributary Name	State	Total Acreage	Crop	Project Type	Total Estimated CCU (acre-feet)	Cost per acre-foot	Total Cost
San Juan River	NM	-	-	Municipal (outdoor)	39[A)]	$ 190	$ 7,391
Animas & San Juan Rivers	NM	58	Grass Pasture	Fallow	152	$ 200	$ 30,366
Ferron Creek	UT	240	Alfalfa & Grass Pasture	Fallow	517 (2016)	$ 200	$ 255,876
				Alternative Cropping & Deficit Irrigation	381 (2017)		
					381 (2018)		
Fontenelle Creek	WY	381	Grass Pasture	Split Season Deficit Irrigation	466	$ 200	$ 93,200
Cottonwood Creek	WY	726	Grass Pasture	Split Season Deficit Irrigation	482	$ 200	$ 96,400
Middle Piney Creek	WY	1,240	Grass Pasture	Split Season Deficit Irrigation	1,135	$ 200	$ 227,000
Middle Piney Creek	WY	184	Grass Pasture	Split Season Deficit Irrigation	178	$ 200	$ 35,600
South Fork Horse Creek	WY	1,103	Grass Pasture	Split Season Deficit Irrigation	1,226	$ 200	$ 245,200
South Cottonwood Creek	WY	1,631	Grass Pasture	Split Season Deficit Irrigation	1,143	$ 200	$ 228,600
Pine Creek	WY	82	Grass Pasture	Split Season Deficit Irrigation	70	$ 200	$ 14,000
Ham's Fork River	WY	292	Grass Pasture	Split Season Deficit Irrigation	395	$ 200	$ 79,000
Black's Fork River	WY	40	Grass Pasture	Split Season Deficit Irrigation	105	$ 200	$ 21,000
Uncompahgre River	CO	44	Alfalfa, Corn, Beans, Clover	Alt. Cropping & Deficit Irrigation	96[B)]	$ 200	$ 19,250
Uncompahgre River	CO	10	Alfalfa, Corn & Clover	Alternative Cropping & Deficit Irrigation	20 (2016)	$ 200	$ 12,000
					20 (2017)		
					20 (2018)		
Uncompahgre River	CO	12	Alfalfa & Triticale	Alternative Cropping & Deficit Irrigation	24 (2016)	$ 200	$ 14,400
					24 (2017)		
					24 (2018)		
Surface Creek	CO	67	Alfalfa & Grass Pasture	Split Season Deficit Irrigation	125	$ 250	$ 31,250
East River	CO	106	Grass Pasture	Split Season Deficit Irrigation	98	$ 200	$ 19,674
Tomichi Creek	CO	165	Grass Pasture	Split Season Deficit Irrigation	100	$ 200	$ 20,000
Little Cimarron River	CO	195	Grass Pasture	Split Season Deficit Irrigation	170	$ 161	$ 27,375
Milk Creek	CO	94	Alfalfa & Grass Pasture	Split Season Deficit Irrigation	84	$ 200	$ 16,760
Total	-	**6,670**	-	-	**7,475**	-	**$ 1,494,342**

A) The estimated CU is for the lifetime of the project (approximately 20 years)

B) Compensated on actual practice and associated CU

Table 6 – Total Conserved Consumptive Use (CCU) and Associated Compensation for the 2017 Projects

Tributary Name	State	Total Acreage	Crop	Project Type	Total Estimated CCU (acre-feet)	Cost per acre-foot	Total Cost
San Juan & Animas River	NM	125	Alfalfa & Corn	Combination of Fallow & Split Season Deficit Irrigation	298	$ 190	$ 56,679
San Juan & Animas River	NM	40	Grass Pasture	Fallow	95	$ 190	$ 18,103
San Juan River	NM	1,286	Alfalfa, Corn & Pinto Bean	Fallow	2,901	$ 219	$ 635,242
Price River	UT	28	Alfalfa & Oat	Alternative Cropping & Deficit Irrigation	58	$ 190	$ 10,992
Price River	UT	371	Alfalfa & Small Grain	Fallow	923	$ 190	$ 175,332
Price River	UT	152	Alfalfa & Grass Pasture	Combination of Fallow & Split Season Deficit Irrigation	311	$ 190	$ 59,157
Price River	UT	186	Grass Pasture	Fallow	372	$ 190	$ 70,674
Price River	UT	159	Alfalfa	Split Season Deficit Irrigation	228	$ 190	$ 43,341
Price River	UT	27	Alfalfa & Grass Pasture	Fallow	67	$ 190	$ 12,675
Fontenelle Creek	WY	275	Grass Pasture	Split Season Deficit Irrigation	407	$ 190	$ 77,330
Fontenelle Creek	WY	492	Grass Pasture	Split Season Deficit Irrigation	540	$ 190	$ 102,600
Fontenelle Creek	WY	717	Grass Pasture	Split Season Deficit Irrigation	714	$ 190	$ 135,660
Fontenelle Creek	WY	878	Grass Pasture	Split Season Deficit Irrigation	1,083	$ 190	$ 205,770
Colorado River	CO	1,252	Alfalfa & Corn	Combination of Fallow & Split Season Deficit Irrigation	3,178	$ 165	$ 525,000*
Colorado River & Fraser River	CO	348	Grass pasture	Fallow	233	$ 190	$ 44,300
Total	**-**	**6,336**	-	-	**11,408**	-	**$ 2,172,855**

**Additional funding for this project came from non-SCPP sources.*

C. Summary of the SCPP Conserved Consumptive Use Analyses

As part of the SCPP, individual project performance was evaluated through project-specific verification plans. Each plan included an analysis of potential consumptive use during the conservation activity using climate data from a nearby climate station, reduced as necessary by water supply limitations. The purpose of the consumptive use analysis was to quantify the amount of water each project conserved by participating in the SCPP. These analyses were for study purposes only, and did not impact participant compensation. Based on these analyses, an estimated 2,645 acre-feet of water was conserved in 2015 and an estimated 8,068 acre-feet of water was conserved in 2016. The individual results from these analyses and a discussion of the methodology are presented in Appendices A and B. Differences between the applicants' estimated conserved consumptive use savings and the final conserved consumptive use calculation are due to climate and water availability for the SCPP year. The same general procedure will be used to provide results for the 2017 projects when they are completed.

V. System Conservation Pilot Program Project Monitoring

As part of the project selection criteria, the SCPP included a qualitative monitoring component separate from verification. The terms "monitoring" and "verification" hold distinct meanings within the context of the SCPP, as defined below:

> **Verification** refers to project compliance – verifying the applicants are doing what they said they would do per their signed contracts.
>
> **Monitoring** is an assessment of the likelihood that the conserved water remained in the system as "system water." The basis for assessing this was to evaluate whether the conserved water was likely to flow to one of the larger main stem tributaries. Each of the projects was qualitatively evaluated based on the ease of monitoring and the ability to track the water savings to Lake Powell or another Colorado River Storage Project (CRSP) reservoir. However, because there is no legal mechanism to ensure that the conserved water is not consumed by downstream users, the basis for assessing the ease of monitoring assumed that if the conserved water was likely to flow to the main stem or one of the larger main stem tributaries, it was more likely to flow to Lake Powell. Main stem tributaries include the Yampa River, White River, Green River, Gunnison River, and the San Juan River. The number of intervening water users between the project and Lake Powell was also considered.

Projects were assessed, in part, based on ease of monitoring. For example, projects for which it was determined that conserved water was likely to flow to Lake Powell or another CRSP reservoir were ranked "high." Alternatively, projects ranked "low" had less probability that conserved water would flow to Lake Powell. Those projects for which water could flow to Powell, but not without some impediment (e.g. the need to shepherd water past downstream diversions) were ranked "medium."

Of the implemented projects in 2015 and 2016, and projects selected for 2017, approximately 71 percent of the projects ranked "medium" to" high" in terms of ease of monitoring. The inability to legally protect the conserved water from downstream diversion significantly impacts the likelihood the

water will enhance storage levels in Lake Powell and the effectiveness of these types of programs, as discussed below in the Lessons Learned section.

Regardless of the inability to legally protect the conserved water, quantitatively tracking this water was not possible because it was very small relative to flows on the main stem rivers and storage levels in Lake Powell. For example, in 2015, an estimated 2,645 acre-feet of water was conserved in the Upper Basin. This is equivalent to 0.01 percent of the active storage in Lake Powell and 0.03 percent of the annual 2015 inflow to Lake Powell.

VI. Lessons Learned

Program implementation has generated both broad-based policy information, as well as specific feedback on the administration and operation of the SCPP. Five main themes emerged regarding the administrative and operational lessons learned, and are grouped below accordingly. These lessons were documented throughout the process.

A. Program Administration and Project Implementation

The following lessons fall under the category of program administration and project implementation. This aspect of the SCPP was the most time-intensive and required significant resources from the SCPP Team.

a. **Integrate more detail-oriented questions in the application.** The SCPP application was a simple, fill-in-the-boxes, three-page application that asked for basic project-related information including proposed project description, project location, type of water use, water right, and description of current water use. While this information is crucial, the level of detail requested in the application proved to be too basic, resulting in extensive program administration outreach to understand simple project operations. For example, if a project diverts water under a large ditch company, knowing the water right information is not enough. The application needs to require information relating to the number of shares owned by the applicant and the quantity of water associated with each share. Additional helpful information should include the applicant's total irrigated acreage (not just the acreage proposed for the SCPP), how often the applicant has historically irrigated the proposed fields (irrigation schedule), and the approximate cutting dates for each proposed field. This would significantly streamline the process and save administrative costs by reducing the amount of additional outreach for coordination.

b. **Advertise and provide technical support to potential applicants.** The SCPP application required technical information such as a conserved consumptive use estimate, detailed water right information, and a location map. In most cases, it was difficult for applicants to provide this information without external support. While support was available in each of the Upper Basin states, it was not readily known and advertised in all areas. For example, it was widely known that the State Engineer's Office in Wyoming provided technical support to potential applicants, which resulted in both an increased interest in the program and number of submitted applications. For the other states, assistance was offered to potential applicants during the outreach process; however it was not noted on the application. Moving forward, it will be

helpful to indicate other resources, such as NGOs and state and federal entities that may be available to provide technical support on the applications. This would help assure that the application process is not a deterrent or barrier to participation.

c. **Refine selection criteria**. The SCPP Team developed diverse evaluation criteria to select projects that would provide learning opportunities while potentially providing the most benefit to the Colorado River system. However, the selection process, particularly in the first two years of the pilot program, took significantly longer than anticipated. Moving forward, the selection process may benefit from refinement to the evaluation criteria.

d. **Streamline project contracting and funding.** It is critical to streamline and simplify project contracting and funding as much as possible. At the beginning of this program, the UCRC had concerns about potential exposure in its contracts with the Funders and the project participants alike. Moreover, the multi-state nature of the SCPP also gave rise to legal questions with respect to choice of law provisions and possible constraints in state or local laws. To address these concerns, the contracts for each pilot project were more than twenty pages in length and the contracting process took months to complete. Each contract was tailored to the needs of each participant, thus necessitating an iterative review process between the applicant, the funders, and legal counsel.

   Potential improvements in the contracting process may include the development of a shorter standardized contract that requires less intensive review, coupled with a more detailed verification plan tailored to the specific needs and nuances of each project. The standard contract could be included with the application so the participants understand that if they cannot agree to the standard contract, they should not apply.

   In addition to streamlining the contracting process, the funding process could also be improved. Currently, twice a year, the UCRC must track when a payment is needed and then invoice up to five funding agencies for their share of the payment. Once the money is received from each agency, the UCRC writes a check to the participant. This proved to be a time-intensive process, not the least because the UCRC must maintain separate accounting for the SCPP. For example, in 2016, 230 individual invoices had to be sent from the UCRC to pay 23 project participants twice—once within 60 days of the executed contract and again within 60 days of project completion. While this sequence was developed to accommodate both the needs of the funding agencies and the applicants, the funding process itself resulted in delays.

   Moving forward, the funding process should be simplified to work for all the Funding agencies and applicants. Ideally, funders could provide project money up-front and rely on audit reports to track funds.

e. **Understand the impacts associated with sources of funding**. The SCPP was funded by the Bureau of Reclamation, the Central Arizona Water Conservation District, the Southern Nevada Water Authority, The Metropolitan Water District of Southern California, and Denver Water. Through the process, the SCPP Team was surprised to hear that the source of funding may have influenced people's interest and willingness to participate in a program. For example, some

applicants indicated they were interested in participating in the SCPP because four municipalities—including three Lower Basin municipalities—were helping fund the program. They felt this represented an enhanced level of cooperation and collaboration between the Upper and Lower Basin states as well as municipal and agricultural water users. By contrast, several potential applicants indicated that they were not interested in participating in the SCPP because it was partially funded by the federal government. While it is impossible to create a program to accommodate everyone, it is important to know and understand that the source of funding may influence participation.

f. **Administrative agency**. The UCRC was ultimately responsible for all contracting and funding distribution. Although this was a new role for the UCRC, it does have authority to administer contract work and has done so in the past. The UCRC agreed to facilitate the program in the Upper Basin to help the Upper Basin states learn about water conservation as a drought contingency management tool, and because the UCRC was best situated to perform the program's administration due to its authorities and connections within the basin. The UCRC had to rely on volunteered assistance from the states and Reclamation due to its limited staffing. The nature of the SCPP was such that it required collaboration from the Funding Agencies, Reclamation staff, technical and legal representatives from each of the Upper Basin states, the Compact Commissioners and the UCRC staff.

   Program administration was a challenge because of the small, 3-person UCRC staff. The funders provided money for verification and some project evaluation. To address the large administrative workload, the state of Colorado provided legal/contracting assistance and program coordination with the funders. Reclamation provided part of a staff person's time to assist with verification, tracking, payment processing, coordination and other administrative functions. UCRC staff was heavily involved in program coordination, tracking, funding, account management and overall program management. Each of the states provided assistance in project development, contract review, project selection and general direction through the UCRC.

B. Operational Lessons

The following lessons fall into the category of project operations. Early on, the Funding Agencies agreed that the available funding would be used to pay participants to reduce consumptive use; not to fund research or cost-intensive methods to verify savings. Therefore, standard approaches, using readily available data and information, were adopted to estimate consumptive use savings. A larger-scale program should consider a means of improving data available for consumptive use estimates. .

a. **Site verification visits.** Verification of project compliance for a majority of the projects was completed via multiple site verification visits. The site verification visits were tailored to meet the needs of each project and consisted primarily of verifying that the river headgates were closed if applicable, the on-farm delivery headgates were closed if applicable, and no irrigation water was being applied to the project fields during the contracted dates. Photos of most headgates and fields were taken and documented in a formal verification report. This method

proved adequate to verify the participants were complying with the contracted project activity; however, it is recommended additional verification measures be explored in order to estimate water savings.

b. **Estimating conserved consumptive use**. Compensation for SCPP participants had to be determined in advance of the actual conservation activity. To accomplish this, an original estimated conserved consumptive use volume was calculated based upon historical consumptive use data and availability of water supply at each participant site. This information was then used to establish the compensation amount for each participant. In 2016 and 2017, WWG worked closely with the selected participants in Colorado, Utah, and New Mexico to verify that the conserved consumptive use estimates provided in the applications were reasonable and included water supply limitations. Similarly, the Wyoming State Engineer's Office completed the conserved consumptive use estimates for the Wyoming participants for the three program years (2015, 2016 and 2017) and adjusted the estimates, as needed, to account for water supply limitations. This process was a fundamental component of the SCPP and broadened the conversation surrounding the following concepts:

    - **Methods are constrained by data.** The availability of data—including irrigated acreage, crop type, and diversion records—is inconsistent throughout the Upper Basin states. Because of this, different methods were used in each state to estimate the conserved consumptive use provided for in the applications:

        New Mexico – Monthly modified Blaney-Criddle method with an elevation adjustment was used to estimate the potential consumptive use. Water supply limitations were estimated based on conversations with the State Engineer's Office and ditch companies.

        Utah – The Division of Water Resources estimates consumptive use at climate stations throughout the state using a monthly calibrated Soil Conservation Service Blaney-Criddle method; however, these analyses have not been updated since 1994.[7] Water supply limitations were estimated based on conversations with the Division of Water Resources and ditch companies.

        Colorado – Monthly modified Blaney-Criddle method with an elevation adjustment and historical diversion records were used to estimate water supply limited consumptive use.

        Wyoming – The State Engineer's Office used a METRIC-based analysis using Landsat imagery from 2011 to estimate the conserved consumptive use. Because 2011 was a hydrologically wet year, average water supply limitations were estimated based on regulation dates and conversations with the State Engineer's Office.

[7] Utah Division of Water Right: Consumptive Use Information Table. Available at: http://waterrights.utah.gov/techinfo/consumpt/default.asp

Based on the available data and resources in each state, implementing one method for estimating consumptive use was not practical. Future direct-measurement options could include on-farm instrumentation to measure irrigated and non-irrigated field water use, or a remote sensing method, such as METRIC. In lieu of direct-measurement options, it is important for future program administrators to understand the data constraints in each state, the differences between each method, and the assumptions used to estimate water supply limitations.

- **Defining "historical."** Because water availability in the Upper Basin is highly dependent on hydrologic year type, it is necessary to consider an "average" or "likely" consumptive use for estimating funding requirements for application review. The number of years of data included in a historical consumptive use analysis to estimate average consumptive use for the application varied. Therefore, the consumptive use estimates for some projects were based on 5 years of data while others were based on 25 years of data. When applications were being accepted, it was not possible to predict the upcoming hydrologic year type. There was some comfort with using average consumptive use as the basis of payment with the understanding that there was shared risk between the funders and the applicant, as discussed in more detail below. Another option would be to have the applicant provide historical consumptive use representing a range of hydrologic year types where that information is available, and tie it to different payment options. A clearer definition of what is acceptable for the application should be considered, while keeping in mind that it would require flexibility to account for crop changes and ownership over time.
- **Verifying historical crop type.** Part of the reason the SCPP was based on historical consumptive use was because the SCPP Team did not want to incentivize applicants to, for instance, plant high consumptive use crops for one year and then be compensated the following year based on that high consumptive use, or to irrigate for a single year when they had not been consistently irrigating in the past. To this end, the SCPP compensated participants based on original estimated conserved consumptive use. During the project selection process, the applicants were specifically asked to verbally confirm that they historically grew the same crops upon which their consumptive use estimates were based; for most applications, the SCPP Team was unable to independently confirm historical crop types. After contracts were signed, there were some instances in which it became known that the applicants' historical crop types were not accurate (e.g., planted corn and alfalfa rather than just planting alfalfa).
- **Accounting for soil moisture in the consumptive use estimates.** During the first year of the SCPP, it was acknowledged that it would be difficult to account for consumptive use from soil storage during the "fallowing" period because diversion records were generally not available. It is understood that the consumptive use from soil moisture occurs when fields are partially irrigated or fallowed; however, either diversion records are required to estimate soil reservoir contents or soil moisture sensors must be installed on

participating fields. Given the economic constraints of the SCPP and the cost associated with installing the necessary diversion meters or soil moisture sensors, quantifying consumptive use from soil moisture was not feasible. Therefore, it is possible that applicants that partially fallowed fields in 2015 were over-compensated and the actual conserved consumptive use was less than the contracted amount.

During the second and third years of the SCPP, the consumptive use from soil moisture was estimated using two different approaches for two projects in which the fields were intermittently irrigated (for example, irrigated one day per month or irrigated one time during the middle of the summer for 5 consecutive days). One of the approaches assumed one day of irrigation would fill the soil zone enough to meet the crop irrigation requirement for one week. The other approach assumed the soil zone was filled from irrigation and fully consumed thereafter. For both approaches, the conserved consumptive use estimates were adjusted accordingly.

It is fully understood that these methods provide rough estimates of consumptive use from soil moisture; however, they are the most practical approaches given instrumentation and data limitations. It is recommended that future programs explore different options to more realistically account for consumptive use from soil moisture.

c. **Understanding the impacts of land management strategies.** The SCPP did not specify land management standards for fallowed fields (for example, implementing wind erosion control measures, or managing/controlling weed and plant growth). Three of the projects, however, voluntarily implemented these measures, providing the following benefits:

   - The consumptive use from the soil zone was close to zero because there were no weed/plant roots—resulting in completely barren fields.
   - The fields were mechanically tilled to control wind erosion and minimize dust
   - The fields appeared well-maintained and were not eyesores for the community.

   The full extent of these land management strategies likely can only be implemented on fields that grow annual crops (i.e., corn) rather than perennial crops (i.e., alfalfa and grass pasture). However, a scaled version of these measures could be considered as a requirement on fields that grow both annual and perennial crops to reduce wind erosion and dust.

d. **Project types**. Learning about the nuances associated with different types of projects was an important element of the SCPP. Lessons associated with each type of project are summarized below:

   - ***Agricultural projects on ditches with multiple water users*.** The size of the ditch greatly influences how conserved water can be accounted for in this type of program. For projects diverting water on ditches with multiple water users, the following approaches were explored in the SCPP:

     - **Large ditch managed by a ditch company that was not involved in SCPP activities.** For the majority of the projects involving large ditches managed by

ditch companies, the ditch company entity was not involved in SCPP project activities. Therefore, all diversions—including those associated with program participants—were diverted as normal at the river headgate, and on-farm delivery headgates were closed to ensure no water could be applied to the participating fields. In theory, the conserved water associated with the program returned to the river via natural drainages or tailed back with ditch return flows. Verifying and quantifying whether the conserved water returned to the system was not feasible given the lack of measurement devices on the large ditch systems and ditch company bylaws.

While this approach may not be ideal, it is the most realistic because many ditch companies do not have the capacity and wherewithal to accommodate these types of programs (i.e., they are personnel and funding limited, constrained by ditch company bylaws, etc.). Ten agricultural projects (23 percent) fell into this category in 2015 through 2017.

Small to medium size ditches with multiple water users. Some of the projects involve smaller ditches that have a handful of water users that divert water from the same river headgate; however, the ditch is not managed by a ditch company. For these projects, two options were explored:

- The water associated with the project fields was diverted at the river headgate and returned to the system through natural drainages, spillways or the ditch tailback. Although the conserved water bypassed the enrolled fields, it ran the risk of being diverted by other ditch users before being returned to the river. Two agricultural projects (5 percent) fell into this category in 2015 through 2017.
- The diversions were reduced at the river headgates by a quantity equivalent to the participant's interest in the associated water rights. For verification, these participants closed their on-farm delivery headgates or pumps to ensure water was not applied to the Project fields. Reducing diversions at the river headgate is preferred because the water associated with the Project fields remains in the river—thus eliminating the risk that it will be consumed by other users on the ditch before returning to the system. Five agricultural projects (12 percent) fell into this category in 2015 through 2017.

- ***Agricultural projects on ditches with single water users*.** Verification of projects located on small ditches in which the participants were the sole diverters allowed the river headgates to be closed so the foregone diversions remained in the river. Note, even though the conserved water remained in the system, it was not guaranteed to flow to Lake Powell because it could be diverted downstream, as discussed below. Single water user ditch projects accounted for 18 (42 percent) of the agricultural projects selected in 2015 through 2017.

- ***Storage projects***. Two of the agricultural projects involved a storage component. A brief description of each project and the associated lessons learned are provided below:

    - For one of the projects, the enrolled fields were typically irrigated from a combination of direct streamflow water diverted on a large ditch and storage water released from a private reservoir operated by an association. The diversions at the river headgate continued as normal; however, the applicant's shares were not applied to the project fields and remained in the ditch for use on other fields. An equivalent quantity of water equal to the consumptive use from the shares (125 acre-feet) in a private reservoir was not released for irrigation during Water Year 2016. Because the reservoir historically fills and empties each year, any carryover storage from 2016 should result in an equivalent reduction of water stored in 2017.

      Project verification included visually inspecting that the project fields were dry through monthly site visits and a storage analysis. The storage analysis included a site verification visit at the end of the irrigation season to verify an equivalent amount equal to the conserved consumptive use associated with the project fields was retained in the reservoir at the end of the irrigation season. Additionally, for study purposes only, WWG will perform an analysis in 2017 to determine if the reservoir would have filled without the carryover storage. The results of this analysis will not affect compensation to the applicant.

      This project, located in Colorado, took significant coordination with the State Engineer's Office to develop a plan that worked within the constraints of Colorado water law. Initially, the project was developed such that the conserved water would remain in storage until the end of the irrigation season and then be released in November to benefit low streamflows and minimize the risk of it being diverted by downstream users. This was not feasible because the water in the reservoir could only be legally released for a decreed beneficial use. Therefore, the water was "carried over" to the next year—decreasing the amount of water diverted to storage in 2017. To continue incorporating projects like this in future programs, program administrators will have to work closely with the applicant, associated reservoir companies, and state water officials to develop creative legal solutions.

      Additionally, the reservoir association that operates this reservoir was wary and hesitant of this project—creating another barrier to project implementation. Because of this, the project verification had to be developed without the association's cooperation. Cultural attitudes and perceptions about the SCPP are discussed below in the Community Outreach and Education section of this report.

    - Similar to the project above, one project in Wyoming included a storage component in which the enrolled fields typically receive irrigation water from

direct flow rights and water stored in a private reservoir. Due to water law constraints, the same approach was taken with this project; however, the water stored in the reservoir could not be verified at the end of the irrigation season because there is no gage at the reservoir. While this made verification more difficult, the reservoir could only legally release water to irrigate the fields enrolled in the SCPP; therefore, the conserved consumptive use portion likely remained as carryover storage.

The SCPP selected this project to better understand the challenges associated with storage projects. It is recommended that future program administrators consider the importance of measuring capabilities in conjunction with the associated costs to applicants for installing measuring equipment.

- ***Municipal projects.*** One municipal project that involved both indoor and outdoor municipal water use was selected in the SCPP. For this project, trans-basin diversions for municipal use outside the Colorado River basin were reduced by 200 acre-feet. This project was unique because the foregone diversions were measured. Additional verification included assuring that the foregone diversions would have been taken in priority and that there was a clear use for them outside the Colorado River Basin. A second municipal project involved outdoor irrigation of sports complex fields. The project helped fund automation that reduced the number of days of irrigation and allowed scheduled irrigations to cease based on automated rain sensors.
- ***Federal projects***. One project involving coordination with the Bureau of Reclamation was selected in 2017. The lessons learned from this project will be summarized in the 2017 supplemental report.
- ***Tribal projects***. One Tribal project was selected in 2017. The lessons learned from this project will be summarized in the 2017 supplemental report.

e. **Integrating flexibility for contracted project activities**. The majority of the selected projects had well-defined project guidelines outlined in the contracts, including the fields that would be enrolled, type of irrigation practice that was going to be implemented (i.e., fallow or split season deficit irrigation), the type of cover plant that would be planted if applicable, and clear start and end dates. While this approach is ideal from the perspective of the program administrators, it may discourage people from participating because every detail must be planned—resulting in limited flexibility.

To explore what a more flexible approach looks like, the SCPP selected two projects that incorporate different flexibility opportunities. Each project and the associated lessons learned are described below.

- **Flexible irrigation practice.** The SCPP selected one project in which the applicant agreed to conserve at least one acre-foot per acre and no more than 2.5 acre-feet per acre of water. Compensation was based on a consumptive use analysis performed at the end of the irrigation season that accounted for his observed practice. From the perspective of

the participant, this approach was more practical because it allowed flexibility to either fallow the enrolled fields, or plant and partially irrigate a low water use cover crop depending on whether he had the time and capacity to install a drip irrigation system. From an administrative perspective, this approach proved more challenging because it required the funders to budget for the maximum payment; potentially reserving funding that could be used elsewhere. Additionally, this approach required extensive outreach and communication with the applicant.

- **Flexible field rotation**. The SCPP selected one multi-year project in which the enrolled fields could be rotated each year as long as the conserved consumptive use was the same. From an administrative perspective, this approach was feasible because the payment was the same each year; therefore, the contract did not have to be amended. However, a new Verification Plan was developed each year to reflect the enrolled fields. From a participant perspective, this type of flexibility is crucial because the participants reap the known benefits associated with rotational fallowing (e.g., soil health) and do not have to worry about the long-term impacts (e.g., crop yield, crop recovery, reduced return flows) of fallowing and/or split season deficit irrigation. Future programs should explore ways to efficiently integrate this type of flexibility.

C. Project Costs, Benefits, and Risks

The following lessons fall under the category of project costs, benefits, and risks—including lessons regarding risks that projected saved water may not be actual saved water, and risks of setting market value.

a. **Risks associated with historical consumptive use.** The participants were paid based on original estimated conserved consumptive use. Although the methods for estimating the consumptive use vary across the states, the goal was to have the estimates represent the *average* supply limited historical consumptive use. Therefore, the risk is distributed between the participants and the funders. For example, in a wet hydrologic year, the crops are more likely to receive a greater supply and actual consumptive use is closer to potential consumptive use. In this scenario, the participants bear the risk because they are underpaid (i.e., their conserved consumptive use in a wet year would have been greater than the calculated conserved consumptive use for an average year). However, in a hydrologically dry year, supply limitations constrain the actual consumptive use and the funders bear the risk because the participants may be overpaid. This method was accepted by both the funders and the participants. Future programs could explore whether participants would be willing to be paid based on estimated consumptive use in the year the project was implemented—which could be calculated at the end of the irrigation season—rather than an estimated historical average consumptive use. As previously noted, payment based on estimated consumptive use in the year the project was implemented increases program flexibility for the participants; however, it requires a change in how the projects are budgeted because the funders would need to set aside funds for maximum payment, making it more challenging for the participants to financially plan because they do not

know their compensation until the end of the irrigation season. This approach would remove the risk from the funders and participants, but add an element of uncertainty for both.

b. **Negotiating cost per acre-foot**. In 2015 and 2016, the cost per acre-foot was consistent for similar projects (i.e., fallowing, municipal, etc.); however, program administrators were concerned that the SCPP might set the market price in the Upper Basin for other future projects. Most of the 2017 projects came in at the same unit cost, likely because the cost for the previous years was well known. To gain a better understanding, and in recognition that there was not funding available for all applications, applicants were approached to see if they would accept a lower unit price. This resulted in the selected participants agreeing to a negotiated, slightly reduced cost per acre-foot.

   The discussion of cost negotiations initiated a broader conversation about the following:

   - Does there need to be price consistency between similar projects in the Upper Basin?
   - How can the applicants develop competitive prices without an established market?
   - How does a program like this refrain from setting market prices?
   - If conserved water at the participant level cannot be protected throughout the stream system, will continuing with similar projects create the perception of payment for participation rather than payment for conserved water?
   - Should future programs be designed such that the funders identify the maximum price they are willing to pay per acre-foot; or should the applicants identify the minimum price they are willing to accept (i.e., a reverse auction)? Who should determine this? What are the pros and cons of each?

   This is an ongoing conversation that needs to be further explored and, potentially, incorporated into the design of future programs.

D. Legal Constraints

The following lessons fall under into the category of legal constraints and, more specifically, the issues associated with assuring that conserved water can provide system benefits, and the protection of participant and non-participant water rights.

a. **Shepherding water.** In the Upper Basin states, water is only legally protected from downstream users if it is decreed for a state-approved beneficial use—such as municipal, agricultural, recreational, etc. Currently, intentionally leaving water in the river to flow to Lake Powell (or across a state line) does not count as beneficial use and, therefore, conserved water can legally be diverted by downstream users. The lack of protection makes it difficult to monitor whether the conserved water is making it to Lake Powell and may bring into question the validity/effectiveness of this type of program and/or discourage participation. To maximize the value of a water-savings program for both funders and participants, conserved water should be accounted for and protected from downstream diversions.

b. **Addressing the impacts of reduced return flows.** Changes in irrigation and diversion practices reduce the availability of late season return flows—which in Upper Basin water-short systems may be critical to preventing injury to downstream users. While the SCPP discussed the impacts

of reduced late season return flows during the project selection process, there was no mechanism to account for and/or address these impacts. In a larger-scale program, these impacts will need to be considered to prevent injury to other water right holders and non-program participants.

c. **Protection of water rights from non-use.** In some states, abandonment and forfeiture of a water right due to SCPP participation was a concern for water users. Should a long-term program be developed, it will be important to educate potential participants about the implications, if any, of program participation on the validity of their water rights.

E. Community Outreach and Education

The following lessons fall under the category of community outreach and education. While the SCPP was very successful and significantly raised awareness about water conservation opportunities, more can be done to support future programs.

a. **Understanding the public perception and cultural attitudes about the SCPP.** There were many cited reasons why people considered and then chose not to participate in the SCPP; however, one of the main reasons in the agricultural community stemmed from misconceptions about the program coupled with cultural attitudes towards fallowing. For example, many water users were concerned about protecting their water rights from non-use while others were concerned about economic impacts associated with a long-term program. The prevalence of misconceptions underscores the importance of trust, peer-to-peer networking, education, and community outreach; there was higher participation in areas where trusted water managers, administrators, and water users understood and supported the program. Identifying the trusted water authorities in each basin and working with them is critical to success.

b. **Importance of focused outreach**. The importance of focused outreach has been highlighted in the SCPP. Both Trout Unlimited (TU) and The Nature Conservancy (TNC) conducted focused outreach with targeted agricultural water users to inform them about the program, encourage participation, and help them with the application/contracting process. Because of focused outreach, there were more agricultural project applications than any other water sector. The table below highlights the importance of focused outreach by showing the percent of implemented projects that were associated with TU and TNC outreach.

Table 7. Projects Associated with Focused Outreach.

SCPP Year	% of Projects Associated with TU	% of Projects Associated with TNC
2015	60%	10%
2016	50%	15%
2017	60%	7%

For each year of the SCPP, more than 60 percent of the implemented projects were associated with TU and TNC. It is evident that their on-the-ground, focused outreach resulted directly in an increased number of agricultural project applications and geographic diversity. For example, TU

did not have focused outreach in Utah during 2016, but increased their outreach for project year 2017. As a result, the number of applications and selected projects in Utah increased significantly. New Mexico did not benefit from focused outreach from TNC or TU as neither is currently active in the San Juan Basin in New Mexico.

Focused outreach to this extent did not occur in other water sectors (e.g., municipal, industrial, etc.), which could be a reason for limited project diversity. Focused outreach could increase both geographic and project-type diversity.

c. **Importance of local outreach.** In addition to focused outreach, a local community presence proved important for agricultural participation. Both TU and TNC staff worked closely with the agricultural participants to fill out applications and navigate the contracting process. Additionally, many of the TU and TNC staff members live and ranch in the areas where they work. This peer-to-peer networking helped build trust and promote participation. Throughout the program, the ranchers and farmers preferred face-to-face conversations with someone living/working in their community rather than talking on the phone with someone outside their basin.

   Although TU and TNC staff was integral to the success of the SCPP, they did not receive funding from the program for their efforts. Moving forward, future program administrators should consider the importance of local outreach.

Appendix A: System Conservation Pilot Program Consumptive Use Analysis (2015)

Background

The Upper Basin System Conservation Pilot Program, established through the System Conservation Agreement[8], promotes temporary, voluntary, measurable reduction of consumptive use of Colorado River water in order to increase storage levels of Lake Mead and Lake Powell. As part of the SCPP, individual project performance is evaluated through project-specific verification plans, which include a potential consumptive use analysis using the Penman-Monteith method—reduced as necessary by water supply limitations—and climate data from a nearby climate station. The purpose of the consumptive use analysis is to quantify the amount of water each project conserved by participating in the System Conservation Pilot Program during the 2015 irrigation season. An ultimate goal is for the conserved water to increase the storage level in Lake Powell.

The conserved consumptive use estimates calculated by WWG and documented in this Appendix are generally greater than or equal to the applicant's estimate. For the 2016 applications, the conserved consumptive use estimates provided in each application were thoroughly reviewed prior to project selection.

Approach

The following, simplified, approach was used for each consumptive use analysis:

1. **Used climate data from the nearby climate station defined in each Verification Plan.** Each Verification Plan identified an appropriate climate station. Climate data from each station was reviewed and corrected using American Society of Civil Engineers (ASCE) standards. Due to errant data at the Orchard Mesa CoAgMet station, data from the Colorado State University Fruita CoAgMet station was used for the Grand Valley Farm analysis.
2. **Estimated the potential consumptive use using Penman-Monteith**. The potential consumptive use was estimated using a daily Penman-Monteith calculation and was reduced by daily effective precipitation (per Soil Conservation Service (SCS) National Engineering Handbook Section 4 (NEH4) guidelines) to determine the potential consumptive use from irrigation during the project-specific contracted dates of participation. The calculated consumptive use from irrigation water equals the net savings during the fallowing period.
3. **Adjusted results for water supply limitations.** As outlined in each Verification Plan, the potential consumptive use estimate would be adequately adjusted for water supply limitations based on available information. The 2015 diversion records were not available in either Colorado or Wyoming at the time the analysis was completed. Based on discussions with staff from the State Engineer's Office, including water commissioners, 2015 was generally a wet year.

[8] "Agreement Among the United States of America, through the Department of the Interior, Bureau of Reclamation, the Central Arizona Water Conservation District, The Metropolitan Water District of Southern California, Denver Water, and the Southern Nevada Water Authority, for a Pilot Program for Funding the Creation of Colorado River System Water through Voluntary Water Conservation and Reductions in Use."

However, to be conservative in the analysis, average historical water supply limitations were applied to the Colorado projects. Similarly, water supply limitations were applied to the Wyoming projects by comparing the 2011 potential consumptive use to the estimated consumptive use from 2011 remote sensing. This is important because not all projects receive a full supply even in wet hydrologic years due to supply limitations, especially on smaller tributaries, and a lack of storage.

Results

The results from the daily consumptive use analyses are provided in **Table 8**. In the observations column, "Actual water savings is close to the contracted value" indicates the results from this analysis were within 10 percent of the contracted conserved consumptive use estimate. "Actual water savings is higher/less than the contracted value" indicates the results from this analysis differed from the contracted conserved consumptive use by more than 10 percent. In general, the majority of the conserved consumptive use estimates for the projects implemented in 2015 were more than 10 percent higher than the estimates provided in the application. Differences between the applicant's estimated historical average consumptive use savings and the estimated consumptive use savings are due to climate and water availability for the SCPP year.

Note, per the Contract and Verification Plan, a consumptive use analysis was not completed by WWG for the Water Bank sites. Additionally, the values presented below are rounded for simplicity.

Table 8. The 2015 Estimated Conserved Consumptive Use (CCU) Results

Tributary Name	State	Total Acreage	Crop	Dates of Fallowing or Deficit Irrigation (2015)	Selected Climate Station	Cost per acre-foot	Total Cost for 2015	Estimated CCU per Application (acre-feet)	Estimated CCU per Analysis (acre-feet)	Observations
Fontenelle Creek	WY	221	Grass Pasture	July 15 – September 30	Budd Ranch	$ 200	$ 49,600	248	259	Estimated water savings is close to the contracted value
Cottonwood Creek	WY	1,736	Grass Pasture	July 15 – September 30	Budd Ranch	$ 200	$ 240,492	1,202	1,442	Estimated water savings is higher than the contracted value
Middle Piney Creek	WY	40	Grass Pasture	July 15 – September 30	Budd Ranch	$ 200	$ 6,313	32	38	Estimated water savings is higher than the contracted value
Middle Piney Creek	WY	101	Grass Pasture	July 15 – September 30	Budd Ranch	$ 200	$ 17,563	88	103	Estimated water savings is higher than the contracted value
Pine Creek	WY	81	Grass Pasture	July 15 – October 31	Boulder	$ 200	$ 14,832	74	99	Estimated water savings is higher than the contracted value
Uncompahgre River	CO	23	Corn	All of 2015	Delta	$ 200	$ 13,650	46	33	Estimated water savings is less than the contracted value
Yampa River	CO	193	Grass Pasture	July 1 – November 1	Hayden	$ 200	$ 37,600	188	239	Estimated water savings is higher than the contracted value
Colorado River – Grand Valley	CO	200	Corn & Alfalfa	All of 2015	CSU Fruita	$ 330	$ 110,220	334	376	Estimated water savings is higher than the contracted value
Various Tributaries on Colorado's West Slope	CO	51	Grass pasture & Alfalfa	Various Dates Throughout 2015	-	$ 300	$ 16,860	56	56[A)]	See note below.

A) *Per the contract, Water Bank Working Group will complete a consumptive use analysis that integrates field specific water-balance data. This analysis is not yet complete; therefore, it is assumed the estimated CCU equals the historical average estimated CCU per the application.*

Appendix B: System Conservation Pilot Program Consumptive Use Analysis (2016)

Background

The Upper Basin System Conservation Pilot Program, established through the System Conservation Agreement[9], promotes temporary, voluntary, measurable reduction of consumptive use of Colorado River water in order to increase storage levels of Lake Mead and Lake Powell. As part of the SCPP, individual project performance is evaluated through project-specific verification plans which include a potential consumptive use analysis—reduced as necessary by water supply limitations—with climate data from a nearby climate station. The purpose of the consumptive use analysis is to quantify the amount of water each project conserved by participating in the System Conservation Pilot Program during the 2016 irrigation season.

As part of the 2016 project selection process, the conserved consumptive use estimates provided in the applications were reviewed, verified, and adjusted if needed. The estimates were generally based on historical averages that accounted for water supply limitations. However, some of the estimates were negotiated based on pending water right court cases or based on documented reports.

Approach

The following simplified approach was used for each consumptive use analysis:

1. **Collect climate data from nearby climate stations.** A nearby climate station was selected for each project. Climate data from each station was reviewed and corrected using ASCE standards as outlined in Appendix D ASCE Manual 70.
2. **Estimate potential consumptive use.** The potential consumptive use for the projects in each state was estimated using the following methods. For consistency, the method used in this analysis—either modified Blaney-Criddle or Penman-Monteith—was selected based on the method used in the applications and the availability of meteorological data.
    - **New Mexico –** Modified Blaney-Criddle was used to estimate the conserved consumptive use in the application and, subsequently, for this analysis.
    - **Utah –** Modified Blaney-Criddle was used to estimate the conserved consumptive use in the application and, subsequently, for this analysis.
    - **Wyoming –** Mapping EvapoTranspiration with High Resolution and Internalized Calibration (METRIC) was used to estimate the conserved consumptive use in the applications. Because this method was only used to develop estimates for 2011, a daily Penman-Monteith calculation was used for this analysis.
    - **Colorado –** Modified Blaney-Criddle was used to estimate the conserved consumptive use in the applications and, subsequently, for this analysis.

[9] "Agreement Among the United States of America, through the Department of the Interior, Bureau of Reclamation, the Central Arizona Water Conservation District, The Metropolitan Water District of Southern California, Denver Water, and the Southern Nevada Water Authority, for a Pilot Program for Funding the Creation of Colorado River System Water through Voluntary Water Conservation and Reductions in Use."

The potential consumptive use estimates were reduced by daily effective precipitation (per SCS NEH4 guidelines for the Penman-Monteith calculations and the SCS Technical Release-21 method for the Modified Blaney-Criddle calculations) to determine the potential consumptive use from irrigation during the project-specific contracted dates of participation. The calculated consumptive use from irrigation water equals the maximum net savings during the fallowing or deficit irrigation period.

3. **Adjust results for water supply limitations.** In general, 2016 represented an average water supply year with warmer temperatures—allowing for a longer growing season. To account for water supply limitations, the following methods were used to adjust the potential consumptive use estimates based on the available information in each state:
    - **New Mexico** – According to the State Engineer's Office, the ditches associated with Lawrence Stock were not supply limited in 2016; therefore, no water supply limitations were applied to the consumptive use estimate.
    - **Utah –** The State Engineer's Office confirmed 2016 was an average hydrologic year and Rainbow Glass Ranch would not have been supply limited. Therefore, no water supply limitations were applied to the consumptive use estimate.
    - **Wyoming –** Diversion records are not recorded unless a ditch is being administered; however, the State Engineer's Office confirmed it was an average hydrologic year and the consumptive use estimates were adjusted by the average historical shortage.
    - **Colorado –** The 2016 diversion records were not available at the time this analysis was completed. However, the State Engineer's Office confirmed it was an average hydrologic year and the consumptive use estimates were adjusted by the associated average historical shortage.

Results

Results from the consumptive use analyses are provided in **Table 9**. In the observations column, "Actual water savings is close to the contracted value" indicates the results from this analysis were within 10 percent of the contracted conserved consumptive use estimate. "Actual water savings is higher/less than the contracted value" indicates the results from this analysis differed from the contracted conserved consumptive use by more than 10 percent. Differences between the applicant's estimated historical average consumptive use savings and the estimated consumptive use savings are due to climate and water availability for the SCPP year. In general, the majority of the conserved consumptive use estimates for the projects selected in 2016 were within 10 percent of the estimates provided in the application.

Note: The values presented below are rounded for simplicity.

Table 9. The 2016 Estimated Conserved Consumptive Use (CCU) Results

Tributary Name	State	Total Acreage	Crop	Dates of Fallowing or Deficit Irrigation (2016)	Selected Climate Station	Cost per acre-foot	Total Cost for 2016	Estimated CCU per Application (acre-feet)	Estimated CCU per Analysis (acre-feet)	Observations
Animas River & San Juan	NM	58	Grass Pasture	April 1 - October 31	Farmington Agricultural Science Center	$ 200	$ 30,366	152	156	Estimated water savings is close to the contracted value
Ferron Creek	UT	240	Alfalfa & Grass Pasture	April 1 – August 31 October 1 – October 31	Ferron	$ 200	$ 103,380	517	586	Estimated water savings is higher than the contracted value
Fontenelle Creek	WY	381	Grass Pasture	June 20 – October 31	Budd Ranch	$ 200	$ 93,200	466	378	Estimated water savings is less than the contracted value
Cottonwood Creek	WY	726	Grass Pasture	July 15 – September 30	Budd Ranch	$ 200	$ 96,400	482	686	Estimated water savings is higher than the contracted value
Middle Piney Creek	WY	1,240	Grass Pasture	May 15 – September 30	Budd Ranch	$ 200	$ 227,000	1,135	1,158	Estimated water savings is close to the contracted value
Middle Piney Creek	WY	184	Grass Pasture	July 20 – September 30	Budd Ranch	$ 200	$ 35,600	178	160	Estimated water savings is close to the contracted value
South Fork Horse Creek	WY	1,103	Grass Pasture	June 5 – September 30	Budd Ranch	$ 200	$ 245,200	1,226	1,213	Estimated water savings is close to the contracted value
South Cottonwood Creek	WY	1,631	Grass Pasture	July 15 – September 30	Budd Ranch	$ 200	$ 228,600	1,143	1,541	Estimated water savings is higher than the contracted value
Pine Creek	WY	82	Grass Pasture	July 20 – October 31	Boulder	$ 200	$ 14,000	70	83	Estimated water savings is higher than the contracted value
Ham's Fork River	WY	292	Grass Pasture	July 1 – September 30	Bridger Valley	$ 200	$ 79,000	395	423	Estimated water savings is close to the contracted value
Black's Fork River	WY	40	Grass Pasture	July 1 – September 30	Bridger Valley	$ 200	$ 21,000	105	108	Estimated water savings is close to the contracted value
Uncompahgre River	CO	44	Alfalfa, Corn, Dry Beans & Clover	January 1 – October 31	Montrose No. 2	$ 200	$ 20,300	Not Applicable	102	Compensated based on actual practice and associated CU
Uncompahgre River	CO	10	Alfalfa, Corn & Clover	January 1 – December 31 Irrigated 1 full day per month May through September	Montrose No. 2	$ 200	$ 4,000	20	21	Estimated water savings is close to the contracted value
Uncompahgre River	CO	12	Alfalfa & Triticale	January 1 – July 14 October 16 – October 31	Montrose No. 2	$ 200	$ 4,800	24	23	Estimated water savings is close to the contracted value
Surface Creek	CO	67	Alfalfa & Grass Pasture	June 10 – September 20	Delta 3 E	$ 250	$ 31,250	125	126	Estimated water savings is close to the contracted value
East River	CO	106	Grass Pasture	July 1 – October 31	Crested Butte Gunnison 3 SW	$ 200	$ 19,674	98	105	Estimated water savings is close to the contracted value
Tomichi Creek	CO	165	Grass Pasture	July 1 – October 31	Cochetopa Creek Gunnison 3 SW	$ 200	$ 20,000	100	185	Estimated water savings is higher than the contracted value
Little Cimarron River	CO	195	Grass Pasture	July 7 - October 31	Gunnison	$ 161	$ 27,375	170	[A]	Estimated water savings is higher than the contracted value
Milk Creek	CO	94	Alfalfa & Grass Pasture	July 1 – August 31	Meeker 3W	$ 200	$ 16,760	84	82	Estimated water savings is close to the contracted value
Uncompahgre River	CO	23	Winter Wheat	June 1 – October 15	Montrose No. 2	$ 250	$ 7,350	29	35	Estimated water savings is higher than the contracted value
Colorado River – Grand Valley [B]	CO	200	Corn & Alfalfa	January 1 – December 31	Grand Junction 6 ESE	$ 330	$ 110,220	334	465	Estimated water savings is higher than the contracted value
South Fork Eagle River	CO	-	-	January 1 – December 31	Not Applicable	$ 670	$ 134,132	200	200	Same as contracted value
Various Tributaries on Colorado's West Slope	CO	51	Grass pasture & Alfalfa	Various Dates Throughout 2016	-	$ 300	$ 18,450	62	62[C]	See note below.

A) Per contract, estimated CU not provided due to pending water court case.

B) Indicates a multi-year project that was selected in 2015 and included different criteria for reviewing the CU estimates provided in the application due to the initial phase of the SCPP.

C) Per the contract, Water Bank Working Group will complete a consumptive use analysis that integrates field specific water-balance data. This analysis is not yet complete; therefore, it is assumed the estimated CCU equals the estimated CCU per the application.

MEMORANDUM

TO: Board of Directors

FROM: Watershed Management Planning Committee

DATE: February 4, 2019

SUBJECT: Summary of Watershed Management Planning Committee Meeting

MISSION STATEMENT

The mission of the Watershed Management Planning Group (WMPG) is to help protect existing water uses and watershed health in the Upper Gunnison Basin in the face of pressure from increased water demands and permanent reductions in water supply.

A meeting of the Watershed Management Planning (WMP) Committee was held on February 4, 2019 at 1:00 p.m.

George Sibley, Camille Richard, Michelle Pierce, Stacy McPhail, Jesse Kruthaupt, Erin Wilson, Tom Grant, Julie Nania, Ashley Bembenek, Matt Feier, Molly McConnell, Frank Kugel, and Beverly Richards were in attendance.

George Sibley called the meeting to order. He said his hope for the meeting today was to come up with a plan and schedule for completing the needs assessment in order to get this information out to stakeholders and the agricultural community before summer work begins.

Review of Needs Assessment Framework and Development of Strategies and Timetable for Completion of Needs Assessment Reports to Stakeholders

The discussion began with a review of the outline developed by the needs assessment sub-committee in September. This outline will be used to determine who will be responsible for developing content in the interim report to be used for stakeholder information and to gain their input for the final report to be submitted to the CWCB. Much of the developed content will also be included in the final watershed management plan. The committee committed to an outline for the stakeholder report, with individual assignments as follows:

Phase I Report Writing Outline – Deadlines included

This is for the **Needs Assessment Reports** that Sub-basin Coordinators will use in meetings this winter and spring with stakeholders in their sub-basins. (These reports will probably be included as appendices in the final report on 'Phase I' to the CWCB

in June, with the addition by then of recommendations from stakeholders for demonstration projects or topics for further study and analysis.)

1.0 Watershed Overview and Introduction

- Introduction/Key Water Value and Issues – Watershed wide – George – February 22
- Legal Framework – Watershed wide - Should include mention of Colorado River System and how this watershed is tied to that system – John – February 26
- Sub-Basin Maps – WWG – SBC should determine what maps and graphs will be needed for their stakeholder meetings (dates to be determined) – February 28

2.0 Sub-Basin Information

- Introduction to sub-basin wide water uses and needs – SBC (unless noted otherwise) – February 22
    - Broad overview of the sub-basin
    - Legal framework specific to each sub-basin – John – February 26
        - Water rights
    - Basic information about each of the four main water uses within the sub-basin
- Sub-basin Characteristics – WWG/SBC (Information from Section 2 written by WWG) – February 28
    - Streamflow measurements – how measured in the sub-basin
    - Climate Data – weather information and how it affects water availability
    - Irrigated acreage – type and quantity
    - Diversion amounts
    - Irrigation practices - summary

3.0 Reach Information – February 28

- Identify and characterize reaches selected – SBC
    - Summary of reach and its characteristics
- Provide information about identified reaches – SBC/WWG/AEC
    - Existing water use – summary
    - Stakeholder issues - summary
    - Compilation of assessed needs, both from stakeholder input spreadsheets and consultant research

All information should be provided no later than the end of February as we will need time for editing and development of information needed for stakeholder meetings by March 15th. (The report to the CWCB will also include stakeholder input on the needs assessment from meetings scheduled this winter and spring).

Planning for Stakeholder Input Meetings to Receive Feedback on Needs Assessments and Ideas for Demonstration Projects

Jesse Kruthaupt said he is trying to establish focus groups for Ohio Creek agricultural users by the middle of March. He will contact Erin to develop presentation materials to be used in these meetings as well as the one-on-one meetings he is planning with stakeholders on Ohio Creek. He will have this information to Erin by March 1st. Focus groups for the East River and Lake Fork watersheds can mostly be held later in the spring. Once the needs assessment phase is complete, these meetings for the East River and Lake Fork will be scheduled.

Begin Discussion of Development of Budget and Scope of Work for Phase II

This item will be discussed in the March committee meeting.

Meeting Wrap-up and Action Items

In preparation for the next meeting the following items were discussed:

- There will be a meeting to discuss the needs assessment for the next grant phase on February 21, 2019 beginning at 10:00 a.m.

- The next meeting for the Watershed Management Planning Committee will be March 11, 2019 beginning at 1:00 p.m.

Action items include:

- Sub-basin coordinators will develop rough draft of proposed groups and proposed dates for stakeholder meetings.
- Sub-basin coordinators will work with WWG to develop presentation materials for stakeholder meetings to be held in the spring.
- The group will provide input drafts for stakeholder report based on outline developed in this meeting.
- Camille Richard and staff will develop a draft scope of work and budget for the second CWCB grant for review at the next committee meeting.

Adjournment

The meeting was adjourned at 3:40 p.m.

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

January 29, 2019

Frank Kugel, General Manager
Upper Gunnison River Water Conservancy District
210 West Spencer, Suite B
Gunnison, CO 81230

Dear Upper Gunnison River Water Conservancy District:

We are pleased to inform you that the Colorado Department of Natural Resources, Colorado Water Conservation Board (CWCB) has approved your application, **Upper Gunnison Basin Watershed Assessment and Management Planning (Phase II)**, for funding pursuant to the Colorado Watershed Restoration Program (CWRP) in the amount of $300,000. Please contact me to schedule a time to discuss the contracting process and additional needs.

General additional needs include:

- Stream Management Plan grantees must demonstrate that the planning effort put as much or more emphasis on environmental and recreational water uses as it does on other water uses.
- All CWRP funding awards are contingent upon applicant's ability to secure match funding.
- All grantees should adhere to their organizational procurement policies when hiring contractors and consultants. CWCB recommends that State procurement polices be used as a guide if an organization does not have procurement policies.
- Grantees should adequately address CWCB staff comments to scopes of work, engineering designs, and applications. This may result in changes. Comments are forthcoming.

The CWRP Grant Program Guidance can be located on our website for additional information.

Sincerely,
Vivian Pinelli
Administrative Assistant II

COLORADO
Colorado Water Conservation Board
Department of Natural Resources
P (303) 866-3441 | F (303) 866-4474
1313 Sherman Street, Room 718 | Denver, CO 80203
vivian.pinelli@state.co.us | cwcb.state.co.us

AGENDA ITEM 11

TO

Daily Summary for Month --> **Feb**

	River Call				Average Flow		Taylor Park Reservoir						Silver Jack Reservoir			Aspinall Unit							GUNNISON TUNNEL ALLOCATION								
							Reservoir			1st Fill	2nd Fill	Other	Aspinall	Reservoir			Reservoir Contents			Total Aspinall Unit Inflow			1st Fill	Contract	Streamflow and Divs		Type of Water Diverted into Tunnel						Tot 1st fill
Day of Month	Silver Jack Reservoir & Juniors In Priority (1=Yes, 0=No)	TP Releases from TP 2nd Fill Rec/Fish (1=Yes, 0=No)	Excess Released TP Inflow and AU Nat Inflow (cfs)	Gun Tunnel (GT) Shortage after AU Nat Inflow and TP Inflow (cfs)	3-Day Average Excess TP Inflow and AU Nat Inflow (cfs)	3-Day Ave. GT Shortage after AU Nat Inflow and TP Inflow (cfs)	TP Res. Content (af)	TP - USGS outflow (cfs)	TP Computed Inflow (cfs)	1st Fill - Storage - in TP (af)	2nd Fill - Storage - in TP (af)	Other Account Storage in TP - Storage - (af)	AU Storage in TP - (af)	SJ Res Content (af)	SJ Inflow to Reservoir Storage (cfs)	BP - Storage - in SJ (af)	AU Water - Storage - in SJ (af)	BM Res Content (af)	MP Res Content (af)	CR Res Content (af)	AU Change In Storage (af)	Computed rel from CR (cfs)	AU inflow below TP & with AU Aug Rel (cfs)	1st Fill - Storage - in AU (af)	UGRWCD Contract water (af)	Gun. River below East Portal (cfs)	Total Gunnison Tunnel Divs (cfs)	GT Divs - AU inflow minus TP released inflow (cfs)	GT Divs - TP Released Inflow (cfs)	GT Divs - SJ Storage Inflow by AU Exch (cfs)	GT Divs - UGRWCD Contract Water Rel (cfs)	GT Divs - Rel from 2nd Fill for Rec/Fish (cfs)	GT Divs - 1st Fill Credit in AU (cfs)	GT Divs - AU Storage by exchange w/ 2nd Fill in TP (cfs)	Remain. 1st Fill Credits in TP and AU (af)
(1)	(2)	(3)	(5)	(6)	(7)	(8)	(11)	(14)	(15)	(19)	(25)	(30)	(35)	(37)	(40)	(44)	(48)	(50)	(54)	(58)	(62)	(63)	(65)	(69)	(70)	(71)	(74)	(75)	(76)	(77)	(78)	(79)	(80)	(82)	(83)
1	1	0	372	0	336	0	59,233	56	63	42,602	0	0	16,631	1,807	4	1,807	0	251,565	106,638	15,116	106	312	310	0	0	311	1	1	0	0	0	0	0	0	42,602
2	1	0	218	0	312	0	59,219	56	48	42,698	0	0	16,521	1,814	4	1,814	0	251,614	106,470	15,063	-171	312	170	0	0	311	1	1	0	0	0	0	0	0	42,698
3	1	0	453	0	347	0	59,275	57	85	42,867	0	0	16,408	1,823	5	1,823	0	252,008	106,379	14,988	227	311	369	0	0	310	1	1	0	0	0	0	0	0	42,867
4	1	0	303	0	325	0	59,290	57	64	42,994	0	0	16,296	1,830	4	1,830	0	252,057	106,310	14,980	-28	311	240	0	0	310	1	1	0	0	0	0	0	0	42,994
5	1	0	490	0	416	0	59,332	57	78	43,149	0	0	16,183	1,838	4	1,838	0	252,156	106,364	14,914	85	427	413	0	0	426	1	1	0	0	0	0	0	0	43,149
6	1	0	472	0	422	0	59,346	57	64	43,276	0	0	16,070	1,851	6	1,851	0	251,270	106,699	15,343	-122	577	459	0	0	526	51	51	0	0	0	0	0	0	43,276
7	1	0	466	0	476	0	59,290	56	27	43,330	0	0	15,960	1,855	2	1,855	0	250,974	107,128	15,191	-18	560	495	0	0	504	56	56	0	0	0	0	0	0	43,330
8	1	0	295	0	411	0	59,318	55	69	43,467	0	0	15,851	1,863	4	1,863	0	250,876	106,837	15,208	-373	470	228	0	0	469	1	1	0	0	0	0	0	0	43,467
9	1	0	270	0	344	0	59,332	54	61	43,587	0	0	15,745	1,871	4	1,871	0	250,531	106,745	15,236	-409	470	210	0	0	469	1	1	0	0	0	0	0	0	43,587
10	1	0	244	0	270	0	59,318	55	48	43,682	0	0	15,635	1,880	5	1,880	0	250,187	106,615	15,278	-432	470	197	0	0	469	1	1	0	0	0	0	0	0	43,682
11	1	0	1,191	0	568	0	59,290	56	42	43,765	0	0	15,525	1,890	5	1,890	0	249,694	108,112	15,732	1,458	471	1,150	0	0	470	1	1	0	0	0	0	0	0	43,765
12	1	0	54	0	496	0	59,290	55	55	43,872	0	0	15,417	1,897	4	1,897	0	249,302	107,089	15,749	-1,398	473	0	0	0	472	1	0	1	0	0	0	0	0	43,872
13	1	0	559	0	601	0	59,332	56	77	44,026	0	0	15,306	1,908	6	1,908	0	249,694	106,867	15,706	128	474	483	0	0	473	1	1	0	0	0	0	0	0	44,026
14	1	0						0														0			0	0	0				0				
15								0																		0									
16								0																		0									
17								0																		0									
18								0																		0									
19								0																		0									
20								0																		0									
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22								0																		0									
23								0																		0									
24								0																		0									
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26								0																		0									
27								0																		0									
28								0																		0									
29																																			
30																																			
31																																			
Total	14	0	5,387	0	5,325	0		725	782						55						-945	5,639	4,725			5,520	119	118	1	0	0	0	0	0	
Tot (af)			10,686	0	10,561	0		1,437	1,551						108						-1,875	11,186	9,372			10,949	237	235	2	0	0	0	0	0	
Min	1	0	54	0	270	0	59,219	0	27	42,602	0	0	15,306	1,807	2	1,807	0	249,302	106,310	14,914	-1,398	0	0	0	0	0	0	0	0	0	0	0	0	0	42,602
Max	1	0	1,191	0	601	0	59,346	57	85	44,026	0	0	16,631	1,908	6	1,908	0	252,156	108,112	15,749	1,458	577	1,150	0	0	526	56	56	1	0	0	0	0	0	44,026

Annual Summary (all values in ac-ft) Note: Reservoir content is the end of the month content

	(days)	(days)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)		(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)	(af)
Nov	30	0	26,913	0	25,306	0	58,780	3,317	3,649	35,362	0	0	23,417	1,096	346	1,096	0	249,793	104,066	14,160	4,751	20,001	24,273	0		18,992	1,009	916	94	0		0	0	0	35,362
Dec	31	0	23,617	0	24,083	0	58,964	3,393	3,577	38,931	0	0	20,033	1,488	393	1,488	0	248,523	107,465	14,762	2,731	20,424	20,598	0		19,867	558	549	9	0		0	0	0	38,931
Jan	31	0	23,098	0	23,041	0	59,219	3,393	3,647	42,477	0	0	16,741	1,800	311	1,800	0	251,368	106,737	15,108	2,463	20,390	19,977	0		19,863	527	426	101	0		0	0	0	42,477
Feb	14	0						1,437														11,186				10,949	237								
Mar	0	0	0	0	0	0		0	0						0						0	0	0			0	0	0	0	0		0	0	0	
Apr	0	0	0	0	0	0		0	0						0						0	0	0			0	0	0	0	0		0	0	0	
May	0	0	0	0	0	0		0	0						0						0	0	0			0	0	0	0	0		0	0	0	
Jun	0	0	0	0	0	0		0	0						0						0	0	0			0	0	0	0	0		0	0	0	
Jul	0	0	0	0	0	0		0	0						0						0	0	0			0	0	0	0	0		0	0	0	
Aug	0	0	0	0	0	0		0	0						0						0	0	0			0	0	0	0	0		0	0	0	
Sep	0	0	0	0	0	0		0	0						0						0	0	0			0	0	0	0	0		0	0	0	
Oct	0	0	0	0	0	0		0	0						0						0	0	0			0	0	0	0	0		0	0	0	
Total	106	0	73,628	0	72,431	0		11,540	10,874						1,050						9,946	72,001	64,848			69,670	2,331	1,890	203	0		0	0	0	
Min	0	0	0	0	0	0	58,964	0	0	38,931	0	0	16,741	1,488	0	1,488	0	248,523	106,737	14,762	0	0	0	0		0	0	0	0	0		0	0	0	38,931
Max	31	0	23,617	0	24,083	0	59,219	3,393	3,647	42,477	0	0	20,033	1,800	393	1,800	0	251,368	107,465	15,108	2,731	20,424	20,598	0		19,867	558	549	101	0		0	0	0	42,477

North American Weather Consultants, Inc.

Air Quality, Applied Meteorology, Meteorological Research, Weather Modification

8180 South Highland Drive, Suite B-2
Sandy, Utah 84093
Telephone 801-942-9005
Facsimile 801-942-9007
E-Mail nawc@nawcinc.com

February 6, 2019

Frank Kugel
Upper Gunnison River Water Conservancy District
210 West Spencer, Suite B
Gunnison, CO 81230

Dear Frank:

This report covers activities conducted for the upper Gunnison River Basin cloud seeding program during January 2019. There were seven seeding opportunities during January, as summarized in Table 1.

Avalanche conditions were carefully monitored before and during each event to ensure that all regulations were honored. No seeding suspensions occurred due to avalanche concerns. Table 2 shows that amount of snow water equivalent accumulated at select SNOTEL sites around the target region during seeded events. These are 24-hour SNOTEL totals, therefore likely include more than just the actual seeded period.

Table 1
Generator Usage for January 2019

Storm Number	Dates	Number of Generators Used	Number of Hours
11	January 6	6 + remote	44.75 + 5 remote
12	January 7	5 + remote	60.75 + 7.25 remote
13	January 11-12	8	107.5
14	January 16	4	23.5
15	January 17-18	14	286.75

16	January 21	5	34.75
17	January 28	2	6
January Total	---	---	564 + 12.25 remote
Season Total	---	---	1367.75* + 64 remote

*: value has been adjusted from December 2018 values

Table 2
SNOTEL Snow Water Equivalent Accumulation for Seeded Storm Events

Dates	SNOTEL Site					
	Schofield Pass	Park Cone	Porphyry Creek	Cochetopa Pass	Slumgullion	Idarado
January 6	0.8	0.1	0.1	0.1	0.1	0.2
January 7	0.5	0	0.1	0	0.1	0.1
January 11-12	0.1	0	0.8	0.6	0.1	0.2
January 16	1.2	0.2	0.7	0	0.1	0.3
January 17-18	1.7	0.8	1.0	0.2	0.6	1.0
January 21	0.6	0.1	0.3	0	0	0.3
January 28	0	0	0	0	0	0

As of February 1, 2019, snow water equivalent in the Gunnison Basin was above normal with a basin-wide average of 104% of the median. Water year precipitation as of February 1 was 103% of the mean for this date. Table 3 shows percentages of normal for the SNOTEL sites listed in and near the target area. Data were obtained from the Natural Resources Conservation Service website.

Table 3
Snow Water Content and Water Year Precipitation as of February 1, 2019

Measurement Site	Snow Water Equivalent (in)			Water Year Precipitation (in)		
	2-1-19	Median	%	2-1-19	Average	%
Butte	8.3	8.4	99	9.7	10.2	95
McClure Pass	9.7	9.8	99	13.9	13.1	106
Schofield Pass	19.4	19.5	99	18.9	19.4	97
Park Cone	5.5	6.2	89	21.8	17.5	125
Porphyry Creek	11.0	8.8	125	9.5	9.2	103
Slumgullion	8.8	8.7	101	8.3	8.5	98
Red Mountain Pass	15.1	13.3	114	15.9	16.3	98
Beartown	12.3	14.6	84	14.2	16.0	89
Idarado	7.4	7.9	94	10.9	11.7	93
Gunnison Basin %	---	---	**104**	---	---	**103**

Figure 1 provides a map showing snow water equivalent (SWE) for the Colorado River Basin area. Data were obtained from the National Resources Science Center. The target area as a whole received above SWE during the month of January.

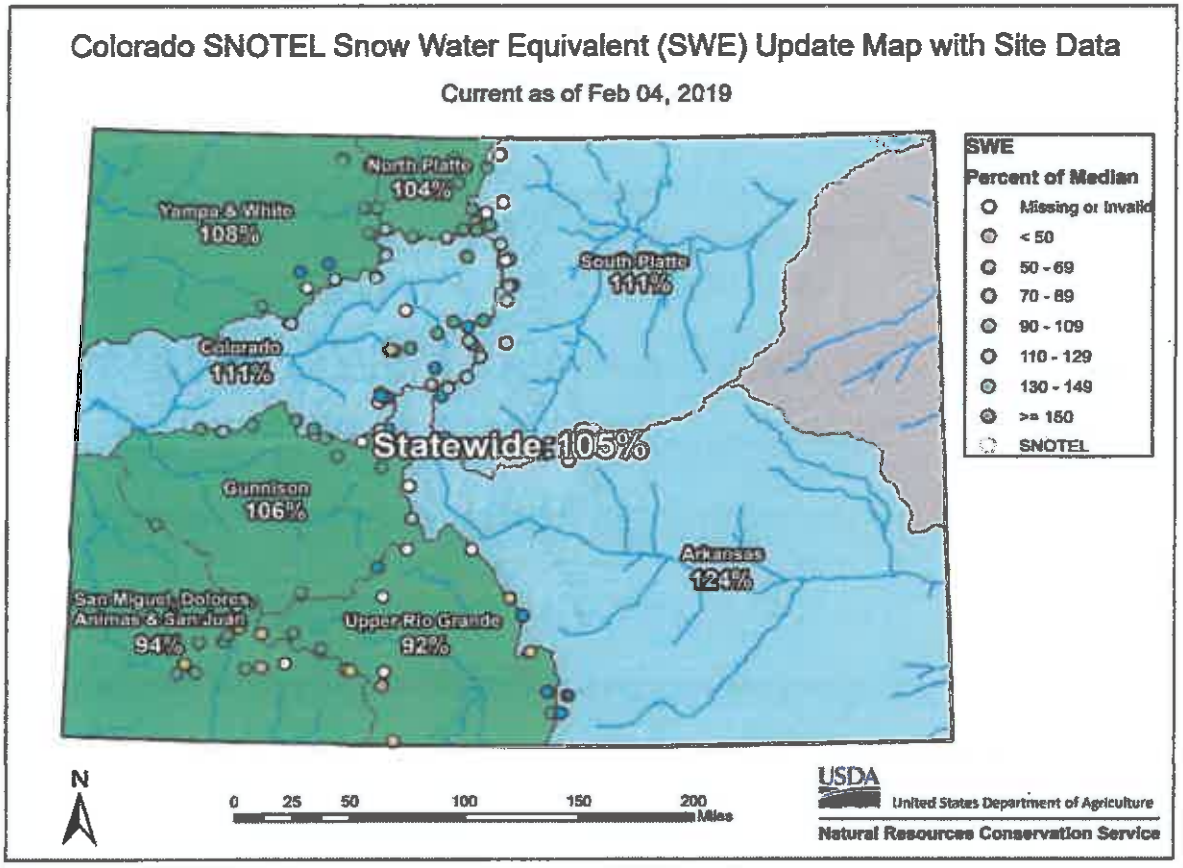


Figure 1. February 4, 2019 Snow Water Equivalent expressed as a percent of mean (source: NRCS)

The seeding program is scheduled to continue through April 15, 2019. Please call us with any questions or comments.

Sincerely,

Don Griffith, President

cc: Joe Busto, Colorado Water Conservation Board
Tom Ryan, Metropolitan Water District of Southern California

2/8/2019

Executive Summary

Cash Price

Atlasta Solar Center
In GJ Since 1979

Water District

100% | **9 Panels**

System Size (KW)	2.70
System Investment	$10,260.00
Less ASC CO-OP Rebate	$270.00
Investment after Rebate	**$9,990.00**
GCE Bill *	$0.00

* Approximate

Your Current Electricity Costs

Annual Electricity Costs	$396.00
Monthly Costs	$33.00

Investment after Rebate	$9,990.00
Less 30% Federal Tax Credit	$2,997.00
Real Investment of Solar System	$6,993.00

30% Federal Tax Credit	**$2,997.00**

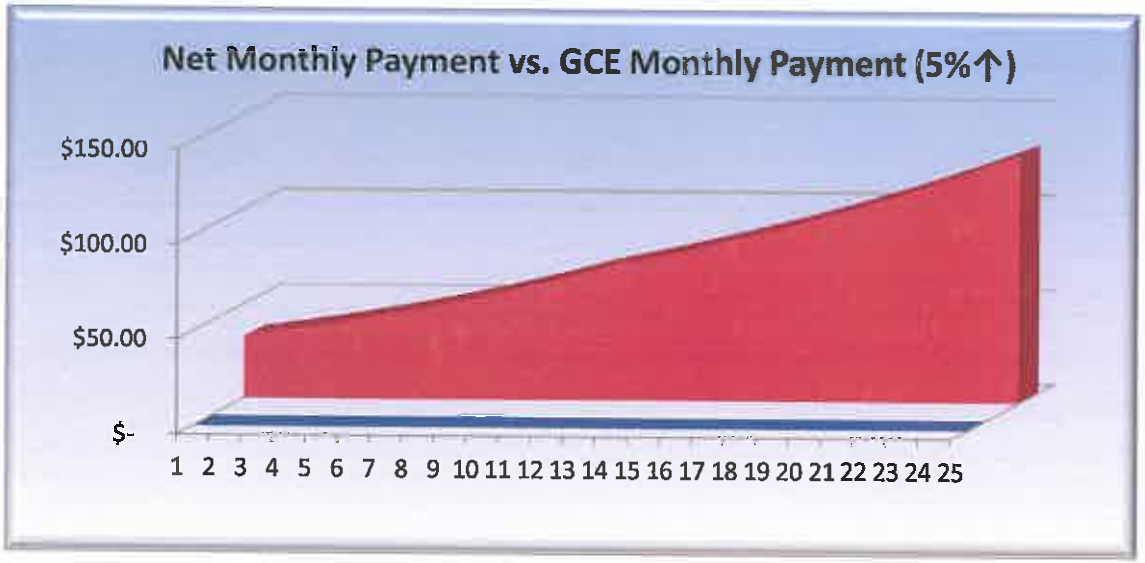
ASC Renewable Energy Credit Purchase

Electric Service Provider	GCE
System Size (watts)	2,700
Rebate amount per watt	$0.10
Total Rebate	**$270.00**

Savings (or Lost Opportunity Cost)

Total Net Value/Savings	$22,586.18
Avg. Yearly Savings (25 yrs)	$903.45
Avg. Monthly Savings (25 yrs)	**$75.29**

Investment	divided	Watts		Price per Watt
$6,993.00	/	2,700	=	$2.59



Internal Rate of Return (IRR)

IRR is an analytical tool used in capital budgeting to measure the profitability of potential investments.

Avg Yearly Savings	(divided by)	Investment	(=) IRR
$903.45	/	$6,993.00	**12.92%**

Annualized Cost of Electricty over 25 years

kWh produced over 25 years (d-rate included)				96,390
Investment	/	25 yr kWh	=	cost of electricty
$6,993.00	/	96,390		**$0.073**

Teddy Aegerter 970-209-0790

Atlasta Solar Center - 1111 S. 7th Street - Grand Junction, CO - 970.248.0057

2/8/2019

Executive Summary

Cash Price

Atlasta Solar Center
In GJ Since 1979

Water District

100% | **14 Panels**

System Size (KW)	4.20
System Investment	$15,960.00
Less ASC CO-OP Rebate	$420.00
Investment after Rebate	**$15,540.00**
GCE Bill *	$0.00

* Approximate

Your Current Electricity Costs

Annual Electricity Costs	$600.00
Monthly Costs	$50.00

Investment after Rebate	$15,540.00
Less 30% Federal Tax Credit	$4,662.00
Real Investment of Solar System	$10,878.00

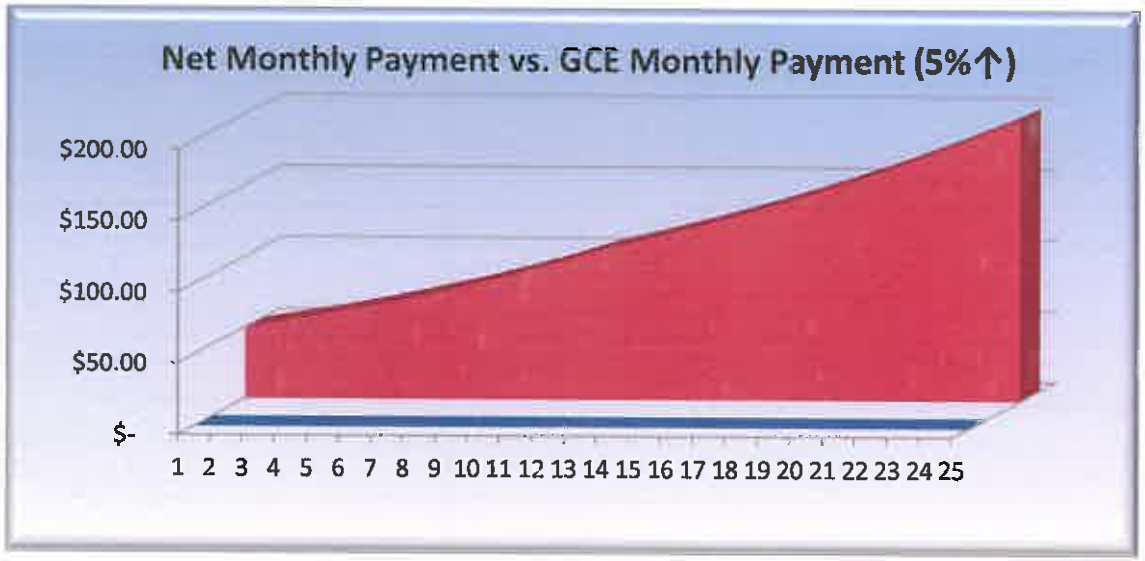
30% Federal Tax Credit	**$4,662.00**

ASC Renewable Energy Credit Purchase

Electric Service Provider	GCE
System Size (watts)	4,200
Rebate amount per watt	$0.10
Total Rebate	**$420.00**

Savings (or Lost Opportunity Cost)	
Total Net Value/Savings	$34,221.49
Avg. Yearly Savings (25 yrs)	$1,368.86
Avg. Monthly Savings (25 yrs)	**$114.07**

Investment	divided	Watts		Price per Watt
$10,878.00	/	4,200	=	$2.59



Internal Rate of Return (IRR)

IRR is an analytical tool used in capital budgeting to measure the profitability of potential investments.

Avg Yearly Savings	(divided by)	**Investment**	(=) **IRR**
$1,368.86	/	$10,878.00	**12.58%**

Annualized Cost of Electricty over 25 years

kWh produced over 25 years (d-rate included)	149,940

Investment	/	25 yr kWh	=	cost of electricty
$10,878.00	/	149,940		**$0.073**

Teddy Aegerter 970-209-0790

Atlasta Solar Center - 1111 S. 7th Street - Grand Junction, CO - 970.248.0057

2/8/2019

Executive Summary

Cash Price

ASC Atlasta Solar Center

In GJ Since 1979

Water District

100% | **6 Panels**

System Size (KW)	1.80
System Investment	$6,840.00
Less ASC CO-OP Rebate	$180.00
Investment after Rebate	**$6,660.00**
GCE Bill *	$0.00

* Approximate

Your Current Electricity Costs

Annual Electricity Costs	$240.00
Monthly Costs	$20.00

Investment after Rebate	$6,660.00
Less 30% Federal Tax Credit	$1,998.00
Real Investment of Solar System	$4,662.00

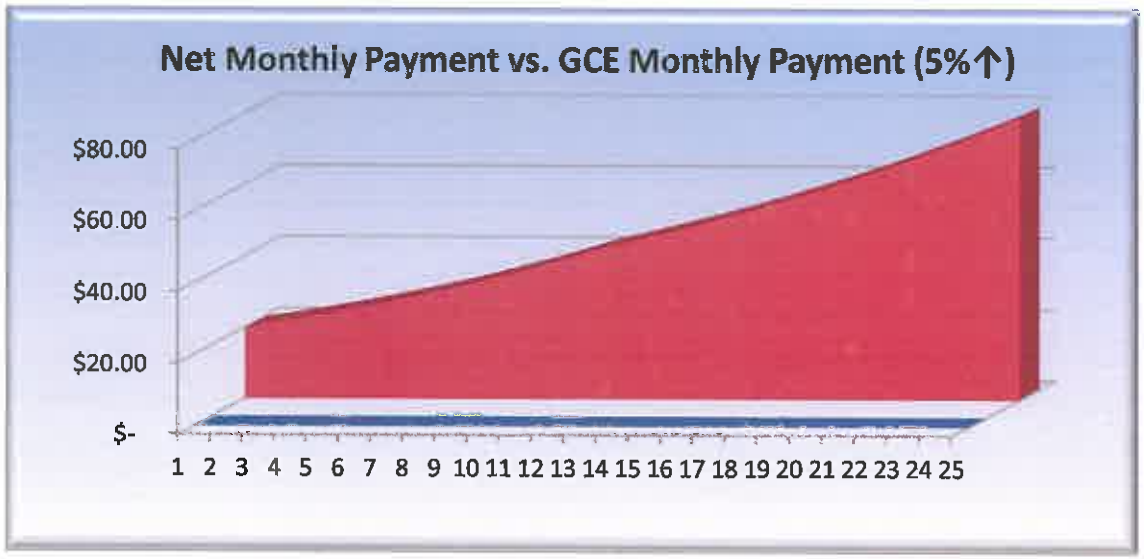
30% Federal Tax Credit	**$1,998.00**

ASC Renewable Energy Credit Purchase

Electric Service Provider	GCE
System Size (watts)	1,800
Rebate amount per watt	$0.10
Total Rebate	**$180.00**

Savings (or Lost Opportunity Cost)	
Total Net Value/Savings	$13,688.60
Avg. Yearly Savings (25 yrs)	$547.54
Avg. Monthly Savings (25 yrs)	**$45.63**

Investment	divided	Watts		Price per Watt
$4,662.00	/	1,800	=	$2.59



Internal Rate of Return (IRR)

IRR is an analytical tool used in capital budgeting to measure the profitability of potential investments.

Avg Yearly Savings	(divided by)	**Investment**	(=) **IRR**
$547.54	/	$4,662.00	**11.74%**

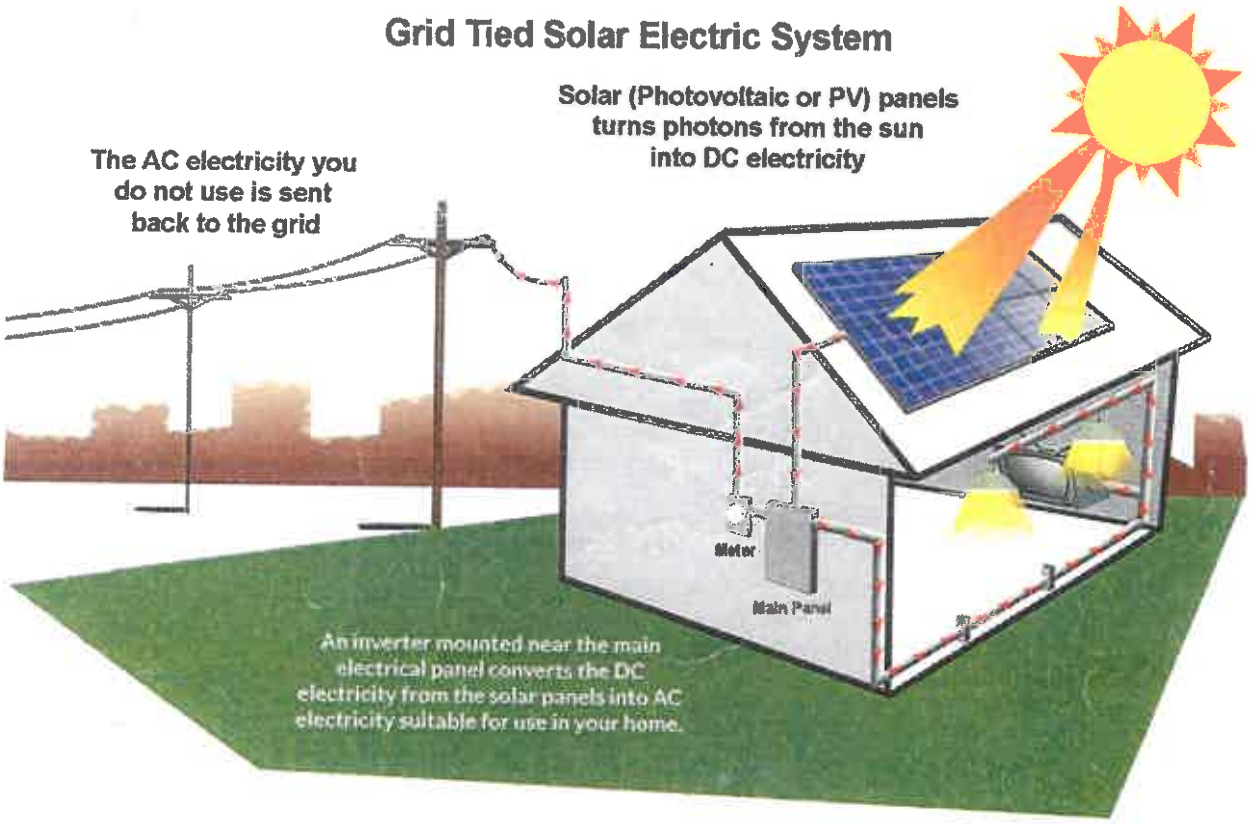
Annualized Cost of Electricty over 25 years

kWh produced over 25 years (d-rate included)				64,260
Investment	/	25 yr kWh	=	cost of electricty
$4,662.00	/	64,260		**$0.073**

Teddy Aegerter 970-209-0790

Atlasta Solar Center - 1111 S. 7th Street - Grand Junction, CO - 970.248.0057

Grid Tied Solar Electric System



ASC
Atlanta Solar Center
In GA Since 1979

- Eliminate your electric bill for $0 down!!
- Save thousands of dollars!!
- Start saving DAY 1!!
- Save the Environment!!
- Increase home value!!
- Take Advantage of Incentives!!
- Solar is a Secure Investment!!
- Create Energy Independence!!

GET YOUR FREE ESTIMATE TODAY!!

ASC
Atlasta Solar Center
In Grand Junction Since 1979

We Proudly Support Many Community Groups

Homeward Bound of the Grand Valley, Inc

HopeWest
Palliative Care | Hospice | Grief Support

Karis inc.

STRIVE
People Supporting People

Fraternal Order of Eagles

Colorado Discover Ability

St. Matthew's Episcopal Church

Kiwanis
Grand Junction

Mesa Land Trust

GRID Alternatives

The Art Center
Western Colorado Center for the Arts

School District 51
Mesa County Valley
Every student, every day, learning for life!

younglife

Help Haiti

Tiara Rado Women's Golf

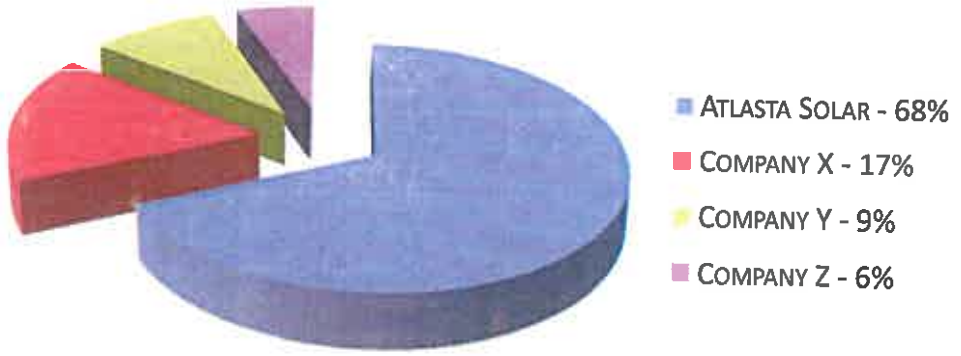
Farmers Market Music

Fruita Little League

Expertise

- Over 10,000 kWs installed (10 megawatts)
- Over 9,500 customers (9,498 satisfied)
- Residential & Commercial
- Colorado Electrical Contractor
- Master Electrician on staff
- NABCEP Certified
- 2+ Installation crews on staff
- Solar – photovoltaic and thermal
- Wind & Hydro
- Solar Off Grid with Batteries
- Solar for RVs & Boats
- Natural gas/propane generators

2017 Mesa County Solar Permits

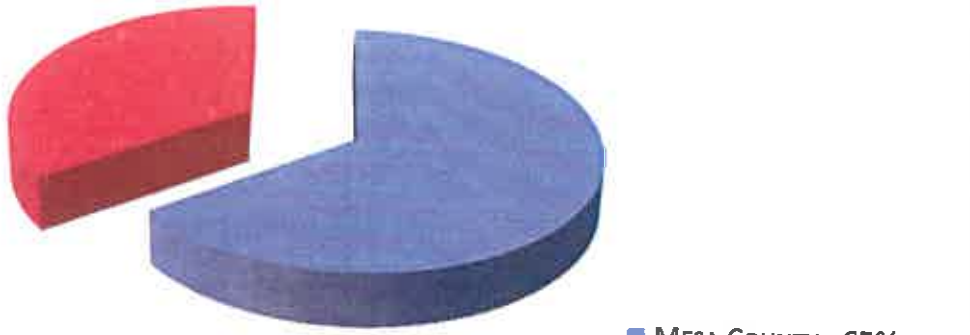


Longevity & Stability

- Over 37 years of sales and support
- Dozens of solar companies have come and gone since 1979
- Show Room & **Inventory**

ASC
Atlasta Solar Center
In Grand Junction Since 1979
970.248.0057

2017 Colorado Solar Installation by Atlasta



In 2017, **Solar Power Word** ranked the **Top Colorado Solar Contractors** – Out of 387 solar companies **Atlasta ranked 12th** (top 3%)

With Senate Bill 9, Colorado has become one of the first states to declare energy storage a "right" for consumers. How has your company responded to this?

The new bill is a huge help in our quest to make solar energy an on-demand power source. By working with utilities and supplying power to the grid when it is actually needed, solar energy is now a reliable source of power. We are encouraging customers to consider batteries for security and offsetting peak demand. We are already working with some of the smaller utilities to design systems that communicate with the grid to supply power as needed. We look forward to Colorado utilities offering time-of-use rates. We think that this is a better way to bill for power, for both the utility and the consumer.

— David Raichart, co-founder and president of sales for Photon Brothers (No. 229 overall)

Residential Install
24 kW
Greenwood Village, Colorado

• UTILITY CONTRACTOR • RESIDENTIAL CONTRACTOR • COMMERCIAL/INDUSTRIAL CONTRACTOR • OFF-GRID CONTRACTOR
• EPC • INSTALLATION SUBCONTRACTOR • ELECTRICAL SUBCONTRACTOR • DEVELOPER • ROOFTOP CONTRACTOR • MANUFACTURER INSTAL

RANK	COMPANY	OVERALL RANK	CITY	FOUNDED	EMPLOYEES	TOTAL INSTALLED KILOWATTS	KILOWATTS INSTALLED IN 2017	MARKET
1	E Light Electric Services	17	Englewood	1998	170	1,759,550	176,030.0	
2	SEI Professional Services (SEIPS)	38	Paonia	2015	10	150,000	66,142.0	
3	Namasté Solar	52	Boulder	2005	163	84,747	34,414.6	
4	RGS Energy	191	Denver	1978	116	260,000	3,279.9	
5	EcoMark Solar	203	Denver	2010	140	13,888	2,923.1	
6	BriteStreet Energy Group	225	Denver	2012	9	3,500	2,218.6	
7	Photon Brothers	229	Denver	2013	50	9,574	2,152.2	
8	Sunsense Solar	272	Carbondale	1990	20	13,849	1,249.0	
9	Peak View Solar	313	Colorado Springs	2009	22	2,561	911.5	
10	Southard Solar and Construction	326	Longmont	2005	15	4,622	810.8	
11	Stellar Energy Contractors	352	Wheat Ridge	2008	16	2,657	610.3	
12	Atlasta Solar Center	353	Grand Junction	1979	20	5,600	609.6	
13	Shaw Solar	383	Durango	2007	12	3,303	447.1	
14	Empowered Energy Systems	432	Hotchkiss	2004	5	950	205.5	
15	Living Solar	434	Durango	1995	4	1,956	183.1	

By How Much Does Solar Increase Your Property's Value?

The National Renewable Energy Laboratory offers a useful guide when determining how much your property's value will go up. According to its research, each additional $1 in energy bill savings (from your solar installation) adds $20 to your home's total value.

This rule of thumb varies depending on a number of factors, including:

- The location of your home. Installations in active solar markets like New Jersey typically yield higher returns than comparable installations in less developed markets.
- The size of your installation. Property value increases are directly proportional to the number (and quality) of solar PV panels installed.
- The value of your home. Larger houses usually receive higher nominal boosts in property value. However, this increase often represents a smaller percentage of the total home value.

The exact numbers vary from property to property and installation to installation, but recent research shows an average increase in resale value being $5,911 for each 1 kilowatt (kW) of solar installed. In a state like Colorado, for example, a small 3.1-kilowatt (kW) system can add an average of $18,324 to the value of a medium-sized home.

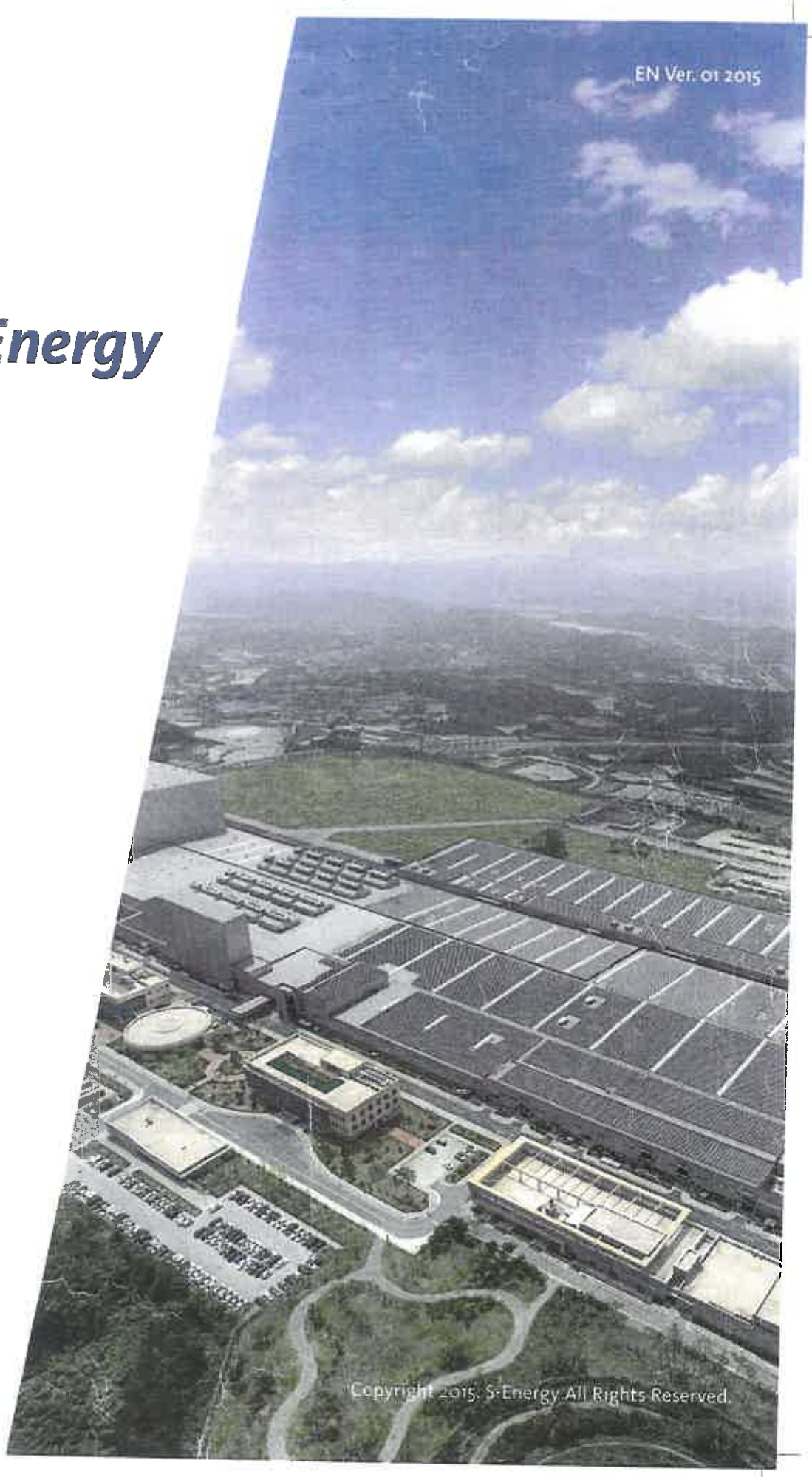
The property value advantages of solar energy only increase as you scale up. Installing 5kW of solar panels adds an average of $29,555 to the retail value of a medium-sized home.

It's important to note that these statistics only apply to today's housing prices and utility rates. As electricity prices go up (as they most certainly will), the advantages of solar energy rise proportionally as well.

In addition, installing solar panels not only helps you fetch a higher asking price, but it can also help your home sell 20% faster as properties without solar installations. For homeowners who want to reduce exposure, paperwork, and wait times, this can be a *huge*advantage – especially in today's sluggish housing market.

S-Energy

EN Ver. 01 2015



SN 60-Cell 1,000V

Monocrystalline PV Module

SN290M-10 SN295M-10 SN300M-10 SN305M-10

S-Energy

Continuously manufacturing PV modules since 1992, S-Energy is one of the most experienced module makers in the industry. More than 25 years of operating data support S-Energy's reputation as the best overall quality, performance, and value for solar investors. The cutting-edge SN-series leads the industry again in advanced design, construction, and performance. The SN-series is the ideal module for any system size in any given environment. With the quality to last the lifetime of the PV system, S-Energy's SN-series provides the confidence and assurance to each and every one of our customers.

Features

ENHANCED EXTERNAL LOAD / IMPACT

Snow Load : 5,400 Pa (30T) / 5,400 Pa (40T)
Wind Load : 2,400 Pa (30T) / 5,400 Pa (40T)
Hail Impact : 30 mm/s (speed ball)

POWER ADVANTAGE

25-year, linear power warranty
> 97.5% nominal power during 1st year
Positive tolerance up to +5W

PID RESISTANCE

Enhanced potential induced degradation

FIRE SAFETY

UL1703 Fire Classification : Type 1, Type 2

ENVIRONMENT RESISTANCE

Suitable for extreme conditions
Resistant to high salt mist and ammonia
(certified by TUV Rheinland)

AVAILABLE IN TWO THICKNESSES

Standard (30T) and 40T for more durability

Qualifications & Certifications

IEC 61215 & 61730, UL 1703, ISO 9001,
ISO 14001, OHSAS 18001, WEEE

Mechanical Characteristics

Solar Cells	Monocrystalline 156 x 156mm (6 inches)
Number of Cells	60 Cells (6x10 Matrix)
Dimensions	1,626 x 990 x 30mm (30T) / 1,650 x 990 x 40mm (40T)
Weight	19kg (30T) / 22kg (40T)
Front Glass	High-Transmittance Low Iron Tempered Glass
Frame	Anodized Aluminum Black Frame
Output Cables	PV Wire (PV1-F), 12AWG (4mm²), Cable Length : 1,000mm
Connector	MC4 Compatible

Warranty

Product Warranty	10 year Limited Product Warranty
Performance Warranty	Minimum Power Output for Year 1 : 97.5%
	Maximum Power Decline from Year 2 to 24 : 0.7%
	Power Output at year 25 : 80.7%

S-Energy

Second quarter of 2016

BANKABILITY REPORT

CORPORATE OVERVIEW

The most important determinants of a PV Solar project investment return are the quality, reliability and long-term performance of the solar module. The cash flow generated by a project is based on producing the most amount of electricity possible in a given set of environmental conditions; eliminating losses due to module defects, damages, and/or performance degradation. A long-term product performance track record, current state-of-the-art manufacturing process, and an exceptional financial strength to back the product warranty are critical elements of a vendor's characteristics, meant to minimize the financial risk for all buyers. Whether the system owner is a homeowner, a third-party finance platform, or an investment bank, the "bankability" of the PV module manufacturer is equally important.

Consistently producing modules since 1992, S-Energy is one of the few high-volume PV module manufacturers with over 20 years of performance data, long-term reputation for manufacturing excellence, and transparent financial strength. The following information is provided to familiarize new investors with the company and product details to establish the confidence that hundreds of developers have experienced when partnering with S-Energy.

Overseas Sales Portfolio

HISTORY & FINANCIAL STRENGTH

- S-Energy was founded in 1992 as the Samsung Electronics Photovoltaic Module Division. The Company was subsequently spun-out as an independent entity in 2001 and began trading on the KOSDAQ exchange in 2007 (KOSDAQ: 095910) as the first publically listed renewable energy company in Korea.
- The Company maintains the Samsung legacy in its management team, manufacturing processes and philosophy; and partners extensively with Samsung C&T on PV project design and construction worldwide.
- S-Energy's headquarter and factories are located in South Korea. The manufacturing facilities operate 2 state-of-the-art ISO 9001/14001 certified module factories with current manufacturing capacity of 530MW.
- S-Energy Co. provides OEM manufacturing for several of the most reputable European and Japanese PV brands. (specific OEM relationships are confidential)

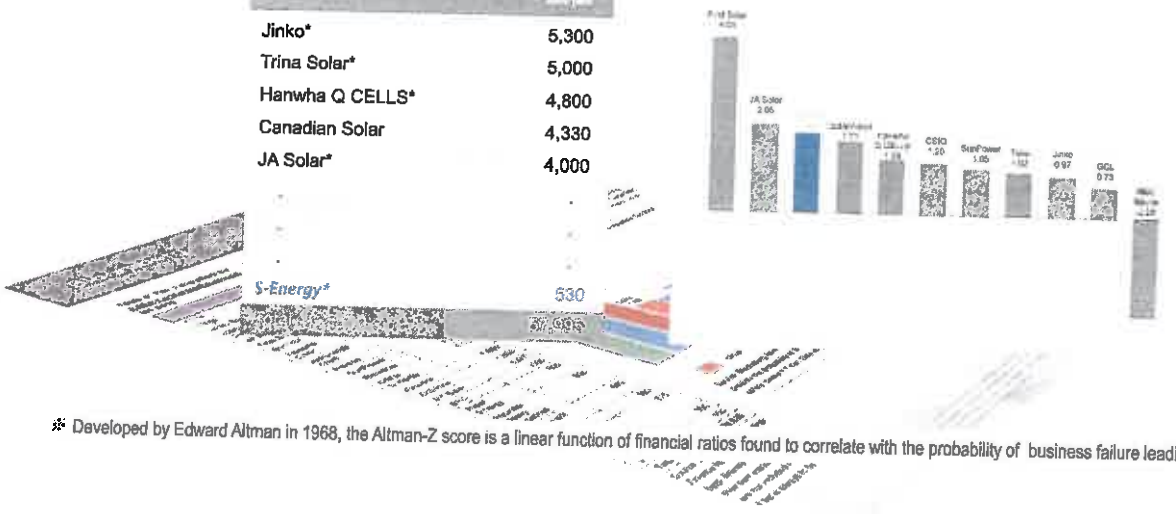
INTERNATIONAL RECOGNITION

S-Energy has ranked the world's third bankable solar company as being in the global top tier listed on Bloomberg New Energy Finance.(2nd quarter of 2016)

Suppliers by BNEF tiering methodology

Company/brand	In-house module capacity (MW/year)
Jinko*	5,300
Trina Solar*	5,000
Hanwha Q CELLS*	4,800
Canadian Solar	4,330
JA Solar*	4,000
S-Energy*	530

Altman-Z scores of quoted solar companies



※ Developed by Edward Altman in 1968, the Altman-Z score is a linear function of financial ratios found to correlate with the probability of business failure leading to bankruptcy.

Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready Enphase IQ 7 Micro™ and Enphase IQ 7+ Micro™ dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate seamlessly with the Enphase IQ Envoy™, Enphase Q Aggregator™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell modules.

UL CERTIFIED

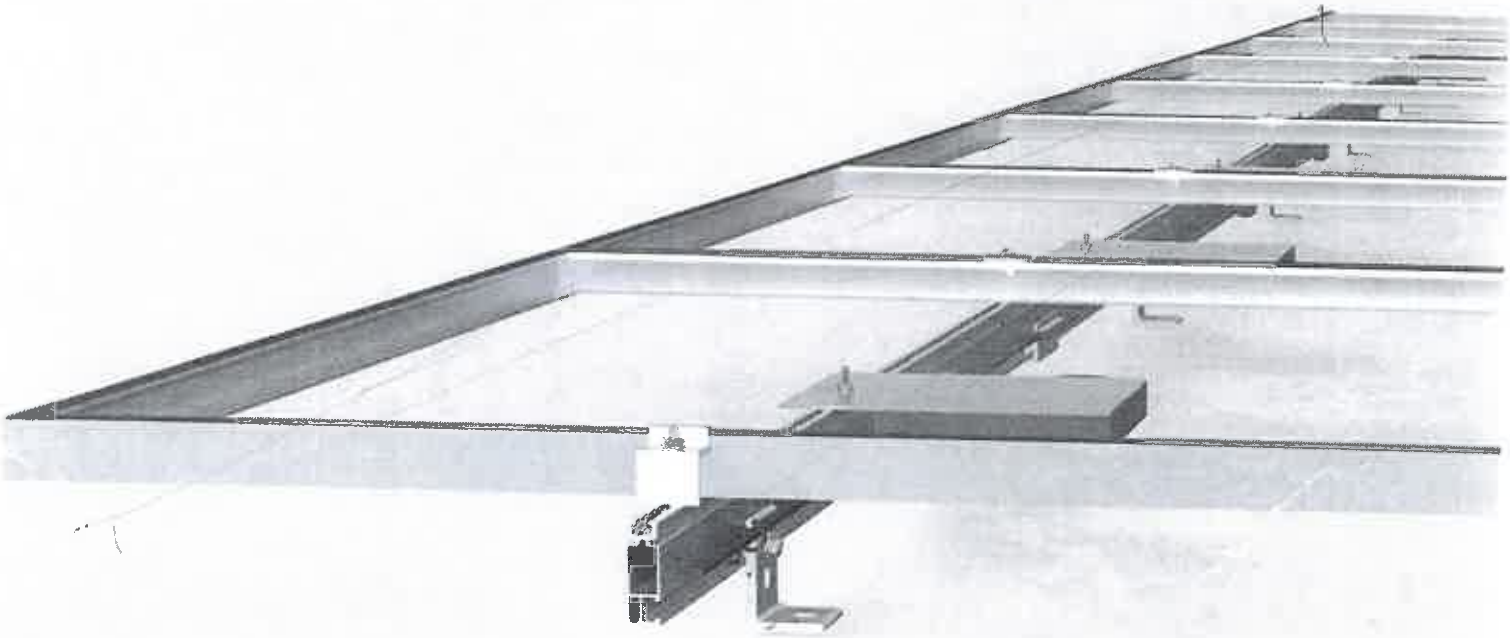
To learn more about Enphase offerings, visit **enphase.com**

ENPHASE

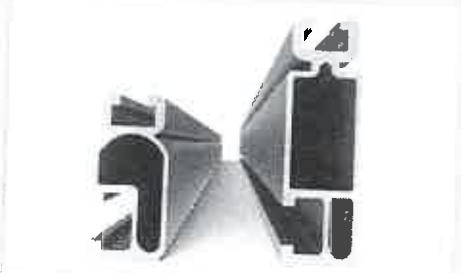
SM SOLARMOUNT

UNIRAC

SOLARMOUNT defined the standard in solar racking. New enhancements are designed to get installers off the roof faster than ever before. Components are pre-assembled and optimized to reduce installation steps and save labor time. Our new grounding & bonding process eliminates copper wire and grounding straps to reduce costs. Utilize the microinverter mount with a wire management clip for an easier installation.



LOSE ALL OF THE COPPER & LUGS
System grounding through Enphase microinverters and trunk cables



SMALL IS THE NEXT NEW BIG THING
Light Rail is Fully Compatibility with all SM Components

ENHANCED DESIGN & LAYOUT TOOLS
Now Featuring Google Map Capabilities within U-Builder

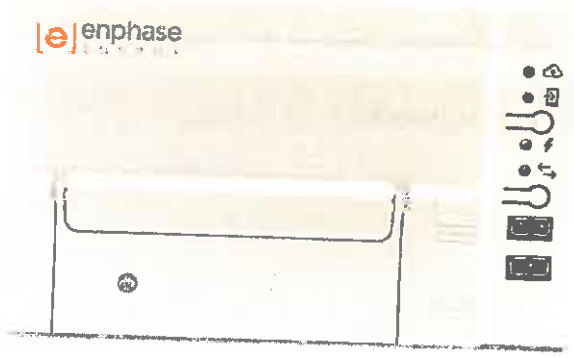
GET OFF THE ROOF FASTER THAN EVER BEFORE

OPTIMIZED COMPONENTS • VERSATILITY • DESIGN TOOLS • QUALITY PROVIDER

Enphase Envoy-S Standard

The **Enphase Envoy-S Standard™** communications gateway delivers solar production data to Enphase Enlighten™ monitoring and analysis software for comprehensive, remote maintenance and management of the Enphase System

With multiple powering and connection options, Envoy-S Standard allows for greatest installation flexibility



Smart

- Enables web-based monitoring and control
- Bidirectional communications for remote upgrade

Simple

- Easy system configuration using Enphase Installer Toolkit™ mobile app
- Flexible networking with Wi-Fi, Ethernet, or mobile

Reliable

- Designed for installation indoors or in an outdoor enclosure
- Five-year warranty

CE

To learn more about Enphase offerings, visit **enphase.com/uk**

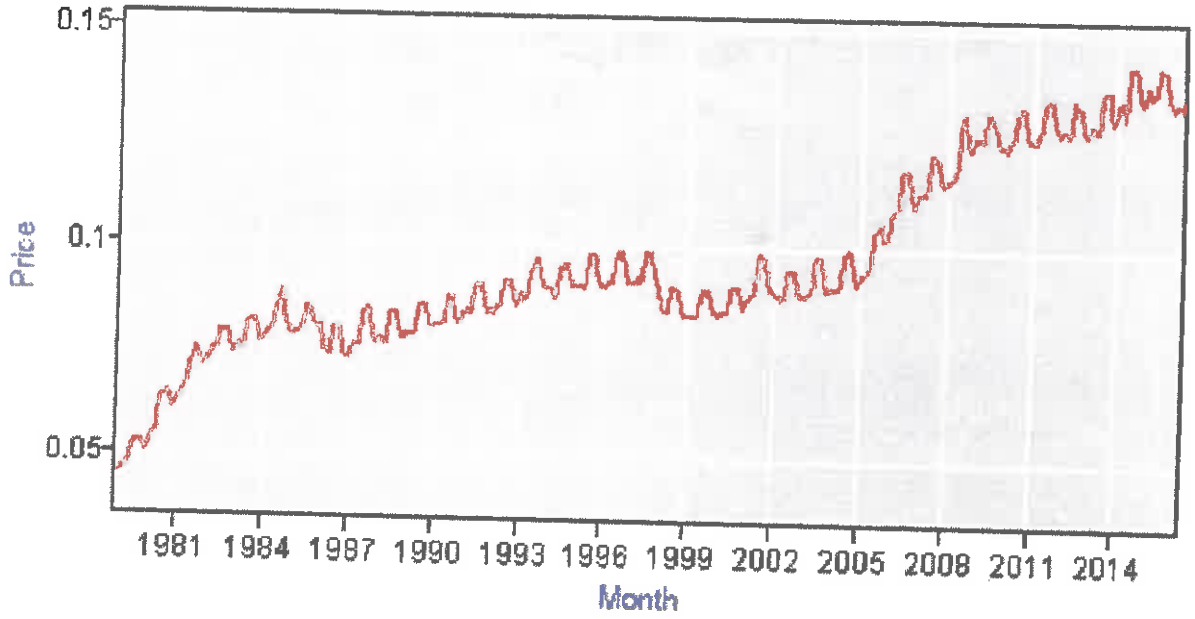
ENPHASE

Consumer Electrical Rate Charges

US Bureau of Labor Statistics – www.bls.gov

Consumer Price Index - Average Price Data

Series Id: APU000072610
Area: U.S. city average
Item: Electricity per KWH



November 1978 – 4.6 cents per kilowatt hour
June 2016 – 13.8 cents per kilowatt hour

300% increase over 38 years

7.89% average yearly increase

ASC
Atlasta Solar Center
In Grand Junction Since 1979

Teddy Aegerter 970-209-0790

Solar Investment Tax Credit (ITC)

What is the Solar Investment Tax Credit?

The Investment Tax Credit (ITC) is currently a 30 percent federal tax credit claimed against the tax liability of residential (Section 25D) and commercial and utility (Section 48) investors in solar energy property. The Section 25D residential ITC allows the homeowner to apply the credit to his/her personal income taxes. This credit is used when homeowners purchase solar systems outright and have them installed on their homes. In the case of the Section 48 credit, the business that installs, develops and/or finances the project claims the credit.

How does the Solar Investment Tax Credit Work?

A tax credit is a dollar-for-dollar reduction in the income taxes that a person or company claiming the credit would otherwise pay the federal government. The ITC is based on the amount of investment in solar property. Both the residential and commercial ITC are equal to 30 percent of the basis that is invested in eligible property which have commence construction through 2019. The ITC then steps down to 26 percent in 2020 and 22 percent in 2021. After 2023, the residential credit will drop to zero while the commercial and utility credit will drop to a permanent 10 percent

ASC
Atlasta Solar Center

Dear Frank and Julie

Thank You for taking the time out of your day to come give us a super cool presentation. We all learned how complex the water law in Colorado is. What you guys do to protect our local water is amazing. Thank You a lot for looking out our water.

Josiah Tunkey, Joe Coburn, Juneau Post, Joe Cerio, Ty, Fabiana, Lance M. Jasper, Olivia Robbie E.C.L -Seve -Tej Trujillo

Frank and Julie,

Thank you so much for connecting with my students and me! You empowered the students when you inform them about real issues and then ask for their thoughts and suggestions about solutions. I appreciate your time and caring in coming to us!

Liz

AGENDA ITEM 13

February 2019

February 2019

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
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March 2019

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31						

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Jan 27	28	29	30	31	Feb 1 Colorado Water Congress Ar	2
3	4 Erin Wilson (here) 8:00am Colorado Water Congress State Affairs Committee (1580 1:00pm WMP Committee Meeting	5 John's Birthday 1:00pm Webinar: Is water reuse on the rise?	6 12:00pm John Birthday Lunch - Beverly Richards	7	8 9:00am Colorado Water Congress Federal Affairs Committee 11:00am Teddy - Atlasta Solar (here)	9
10	11 12:00pm Mayor Manager meeting (Palisades)	12 11:30am League of Women Voters (District Board Room) 1:00pm WMP Focus Group meeting	13 CDSS Workshop (REI - Denver) 9:30am Colorado Water Congress Board of Directors meeting (1580 Logan, Denver,	14 8:30am Avalanche Safety Training - BLM 1:00pm GRCL Board meeting 2:00pm Copy: STOR Committee Meeting	15 9:00am Copy: Invitation: '75 Exchange Agreement Update Discussion @ Fri Feb 15, 2019 9am - 10am (MST)	16 9:30am AAUW
17	18 Presidents' Day (United States) 8:00am Legislative Committee	19 John Vacation 8:00am Colorado Water Congress State Affairs 10:00am Frank: February Implementation 2:00pm Garden Club	20 8:00am GRF	21 10:00am East River WMP meeting - Needs Assessment deadline	22 8:00am Legislative Committee Meeting (Phone) 3:00pm ENS Talks (Hurst Hall)	23 8:00am Rural Landowner Days 9:00am DAR Meeting
24	25 8:00am Colorado Water Congress State Affairs Committee (1580 8:00am Park Cone 5:30pm UGRWCD Board of Directors Meeting	26 Frank - vacation	27	28	Mar 1	2

March 2019

March 2019

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April 2019

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28	29	30				

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Feb 24	25	26	27	28	Mar 1 Frank - vacation 8:00am Legislative Committee Meeting 9:30am Colorado Water	2
3 Frank - vacation	4 8:00am Colorado Water Congress State Affairs Committee (1580	5	6 AMWG meeting (Hilton Garden Inn, Tempe, AZ)	7 12:00pm Frank - Mayors 5:30pm Gunnison Conservation District	8 8:00am Legislative Committee Meeting (Phone) 1:00pm TLUG Meeting	9
10	11 8:00am Colorado Water Congress State Affairs 1:00pm WMP Committee Meeting	12 11:30am League of Women Voters (District Board Room)	13 Water in the West Symposium (Gaylord Aurora) Environment Colorado Workshop (WSCU)	14 2:00pm Copy: STOR Committee Meeting (2nd Floor	15 8:00am Legislative Committee Meeting (Phone)	16
17	18 8:00am Colorado Water Congress State Affairs 4:00pm Gunnison Basin Roundtable	19 10:00am Invitation: March Implementation Working Group #3 @	20	21	22 World Water Day 8:00am Legislative Committee Meeting (Phone)	23
24	25 8:00am Colorado Water Congress State Affairs 5:30pm UGRWCD Board of Directors Meeting	26 ABA Water Law Conference (Grand Hyatt, Denver)	27	28 1:00pm CFGV Board Meeting	29 8:00am Legislative Committee Meeting (Phone)	30
31	Apr 1	2	3	4	5	6

April 2019

April 2019

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May 2019

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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Mar 31	Apr 1 8:00am Colorado Water Congress State Affairs Committee (1580 Logan, Suite 700, Denver)	2	3	4 WSCU Outdoor Industry Ethics - Summit (WSCU) 12:00pm Frank - Mayors and Managers mtg	5 Southwest Water Seminar (Durango) 8:00am Legislative Committee Meeting (Phone)	6
7	8 8:00am Colorado Water Congress State Affairs Committee (1580 1:00pm WMP Committee Meeting (District Board Room)	9 11:30am League of Women Voters (District Board Room)	10 Frank - vacation	11 2:00pm Copy: STOR Committee Meeting (2nd Floor Conference Room, Blackstock's Govt	12	13
14 Frank - vacation	15 8:00am Colorado Water Congress State Affairs Committee (1580 Logan, Suite 700, Denver)	16 Colorado River District Board Meeting	17	18	19	20
21 Frank - vacation	22 8:00am Colorado Water Congress State Affairs Committee (1580 5:30pm UGRWCD Board of Directors Meeting (UGRWCD Office -	23 2019 Audit 9:30am Colorado Water Congress Board of Directors meeting 1:00pm Aspinall operations meeting	24 Growing Water Smart in the Headwaters (Keystone) 25th Annual Arkansas River Basin Water Forum (Pueblo Conv	25	26	27
28	29 8:00am Colorado Water Congress State Affairs Committee (1580 Logan, Suite 700, Denver)	30	May 1	2	3	4

May 2019

May 2019

Su	Mo	Tu	We	Th	Fr	Sa
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12	**13**	**14**	15	16	17	18
19	**20**	**21**	22	23	24	25
26	27	28	29	30	31	

June 2019

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9	**10**	**11**	12	13	14	15
16	**17**	18	19	20	21	22
23	**24**	25	26	27	28	29
30						

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Apr 28	29	30	May 1	2 12:00pm Frank - Mayors and Managers mtg	3 General Assembly adjourns sine die	4
5	6	7	8	9 John Vacation 2:00pm STOR Committee Meeting (2nd Floor Conference Room, Blackstock's Govt	10 John Vacation	11 John Vacation
12 John Vacation	13 1:00pm WMP Committee Meeting (District Board Room)	14 11:30am League of Women Voters (District Board Room)	15	16	17	18
19	20 4:00pm Gunnison Basin Roundtable	21 10:00am Frank: May Implementation Working Group #5 @ 1:00pm UGRWCD Board of Directors Meeting - LSCWAE Annual	22	23	24	25
26	27 Memorial Day Holiday - Office CLosed	28	29 Western Water Future Games	30 Western Water Future Games	31 Western Water Future Games	Jun 1