Colorado River Basin

July 27, 2020, CBRT Minutes.

1. **July 27, 2020 CBRT Minutes –Upper Colorado River Basin high altitude consumptive use ATM study; progress on the 2020 BIP Update**

2. **Next Meetings:**

   a. **August 24, 2020: Next Steps meeting, 12:00 – 2:00.**
   b. **September 28, 2020, Colorado Basin Roundtable, 12:00 – 4:00.**

3. Reporter: These minutes were prepared by Ken Ransford, Esq., CPA, 970-927-1200, ken@kenransford.com.

4. **CBRT Members Present**: Kim Albertson, Nathan Bell, Paul Bruchez, Stan Cazier, Kathy Chandler Henry, Carlyle Currier, Mark Hermundstad, Kelly McNicholas Kury, Merritt Linke, Holly Loff, Ed Moyer, Ken Neubecker, Ken Ransford, Scott Schreiber, Gail Schwartz, Jason Turner, Richard VanGytenbeek, Rick McNeill, Holly Loff, John Eklund, Maria Pastore, Jeff Bandy

5. **Guests:** Kirsten Kurath, Peter Barkmann USGS, Abby Burk Audubon Society, Perry Cabot CSU, Anna Cochran, Ken Curtis, Aaron Derwingson, Erika Donaghy, Chip Fischer, Angie Fowler, Allison Gould, David Graf CPW, Hannah Holm CMU, Randi Kim, Brendon Langenhuizen, Mike Ledger, Victor Lee BuRec, Bailey Leppak SGM, Matt Lindburg PE Brown & Caldwell, Rich Marsicek, Juan Roberto Madrid, Representative Julie McCluskie, District 61 Delta, Gunnison, Lake, Pitkin, and Summit Counties, Dave Merritt, Ed Millard, Katie Randall Middle Park Water Conservancy District, David Reinertson Clifton Water, Robert Sakata CWCB, Russ Sands CWCB, Sam Stein, Mely Whiting Colorado TU

6. **River Forecast.** The Colorado River at Dotsero is running at 1,600 cfs on July 27, 2020, below its median of nearly 2,000 cfs on that date.[1] The Colorado River at Cameo is running at 2,400 cfs, below to its median of 3,300 cfs on that date.[2]

7. **CBRT Member departures.**

   a. Ken Neubecker is stepping down; Richard Van Gytenbeek will be the new environmental rep, and Abby Burk will take over as the PEPO liaison.

   b. Angie Fowler is resigning as an at large representative since she is working on the CBRT 2020 Basin Implementation Plan BIP update.

[1] Dotsero forecast: https://waterdata.usgs.gov/usa/nwis/uv?site_no=09070500.
[2] Cameo forecast: https://waterdata.usgs.gov/co/nwis/uv/?site_no=09095500&PARAmeter_cd=00065,00060

c. Dan Harrison is stepping down and Rick McNeil of the West Divide Water Conservancy District is taking his place.

d. Marble has a Roundtable seat but it is vacant.

e. Chuck Ogilby is stepping down as the Eagle County representative, and Holly Loff is taking his place.

8. Paul Bruchez has been identified by Colorado Water Education as the 2020 Emerging Water Leader.

9. Kirsten Kurath, chair of the Demand Management work group, discussed progress on the Upper Colorado River Basin high altitude consumptive use ATM study. In addition to the members reporting below, the team includes Matt Rice of American Rivers, Seth Mason of LOTIC, Luke Gingerich of JUB Engineers, and Mely Whiting of Colorado Trout Unlimited.

a. Paul Bruchez described the project. He emphasized that **this is an ATM (Alternative Transfer Method) project and not a Demand Management study**. Kremmling is outlined in yellow in the center below, Wolford Mountain Reservoir on the Muddy River is the impoundment showing up as a vertical dark patch, and Williams Fork Reservoir is the other reservoir in the lower left.

i. The ATM project is studying reduced irrigation for a full season, where irrigation is foregone entirely, and for a **split season, where irrigation allowed to June 15.**

ii. 54 different locations are being monitored in Grand County, known as **Soil Water Balance Stations.** These show the impact to the field from not irrigating. They monitor soil moisture at different depth levels, and also have rain and wind gauges, shown below.

It's been a dry summer. Paul said, "It's a dust bowl out there." The photo below shows a field that has not been irrigated, following several afternoons of welcome rain:

Not irrigating a field for a season may be more work than not irrigating.

This a split season field, with water shut off on June 15, after being hayed, indicating that partial irrigation makes a big difference in hay yield.

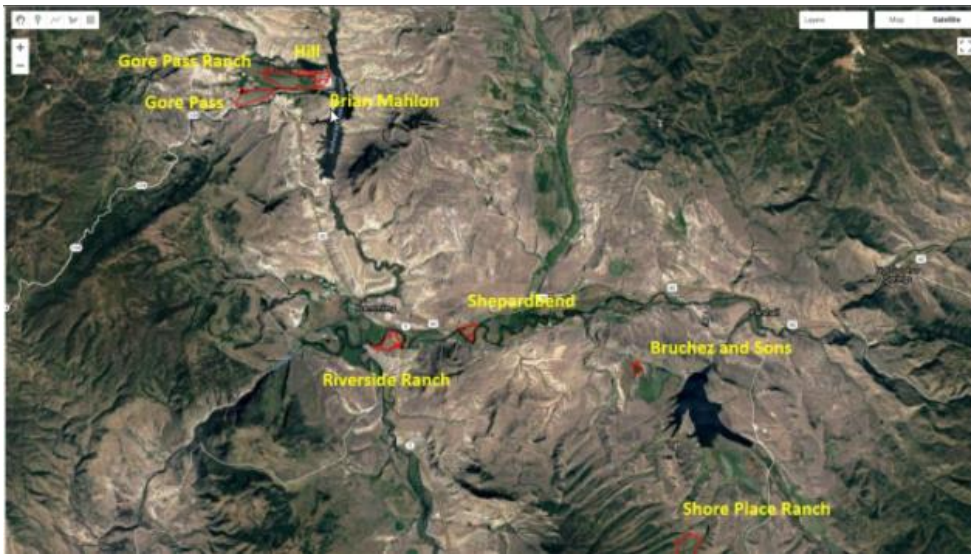
iii. **Hay production from the split season**, where irrigation is cut off on June 15, **is about 55% of normal** based on tonnage of storage and bales.

b. CSU Professor Perry Cabot

i. **CSU and Utah State University are monitoring the change in soil moisture**. Project partners include Wendy and Bill Thompson (field technicians); from CSU: Dr. Perry Cabot (remote sensing expert), Dr. Joe Brummer (state forage expert), Dr. Reza Keshavarz (agronomy and statistics), Jenny Biermann (Economics); and from Utah State University: Dr. Alfonso Torres-Rua (remote sensing liaison), Dr. Larry Hipps, Martin Schroeder, and Jobie Carlisle.

ii. **Perry commended Paul Bruchez** for being a very committed and dedicated partner.

iii. The size of the fields is very important. **The study area is** considered to be **high mountain pastures**, and the ranches participating in the study are shown below.



iv. Forage evaluation enclosures keep animals outside, and they take a grid sample of forage growth each month. They aren't just relying on the grid samples.

v. It takes about 5" of consumptive use to produce a ton of alfalfa.

vi. They monitor the soil moisture every day, and **the drop in soil moisture indicates the water lost from evapotranspiration**.

vii. **The study will indicate the change in hay yield**.

c. Aaron Derwingson, The Nature Conservancy, is addressing the following engineering questions.

i. How do we get a better **estimate of water savings**, and provide useful information to ranchers, the roundtable, and decision makers?

ii. **How do we administer, or move, the water savings to where we want to use them**? The lease-fallow tool will be used to administer the water in real time. The water rights are protected this year under the Colorado River District's conservation program, so they are not at risk of being lost.

iii. **Did we have an impact**: did we make additional water available or **improve stream flows**? Are we adding water to the stream, or are we merely trading water in time and space and losing late-season return flows? Are we having a negative wildlife impact for either fish or bird life?

d. Abby Burk, Audubon Society: Avian research. Irrigated agricultural land supports bird habitat; **the impact to birds from reduced irrigation has not been studied before**.

i. 2019 would have been a good year to get a baseline, but they did not start until 2020 after they already started reducing irrigation. They will count birdlife for 3 years. They **start monitoring at 4:30 AM, and walk at recorded intervals to record the birds they see and hear**.

ii. Notable birds that have been observed include Pelicans, Peregrine falcons, yellow warblers, and kingfishers. The report will be released in the fall. They don't know much yet, and are **looking for overall trends from year to year**. They hope to expand the study area beyond Kremmling.

e. Richard Vangytenbeek commented that **ranchers would have to be compensated for several years**, not just the year that irrigation is reduced, **since soil moisture deficit carries over to the following years**.

10. **BIP Update Brendon Langenhuizen**

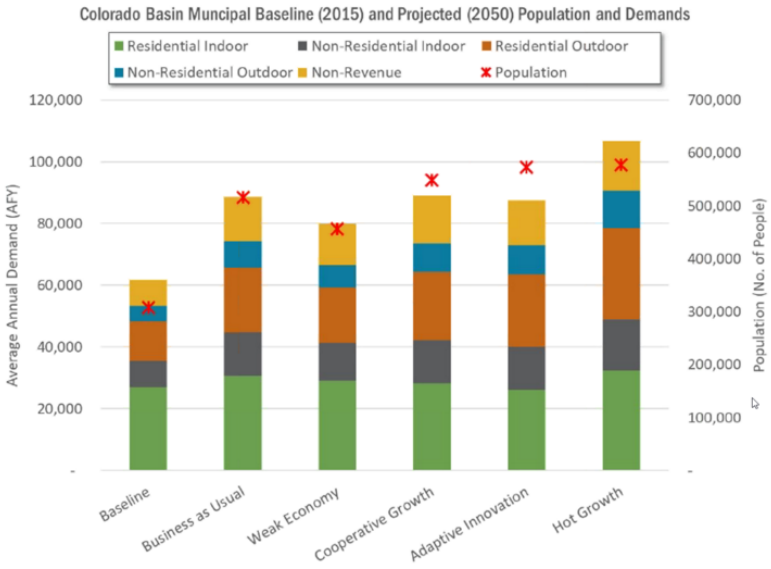
a. **The 2020 BIP update** will process 2019 Technical update data, identify basin gaps, simplify the BIP for greater approachability, and assimilate project data to help fund projects. It **is not an extensive analysis** since there is no budget for this. We will also update the IPP database. The BIP draft will be written from January to June 2021, and the public will comment on it for the remainder of 2021.

b. The name "Statewide Water Supply Initiative," or SWSI, has been changed to "Technical Update."

c. **The 2015 Colorado River Basin BIP is available on the Colorado River Basin Roundtable and CWCB websites**.

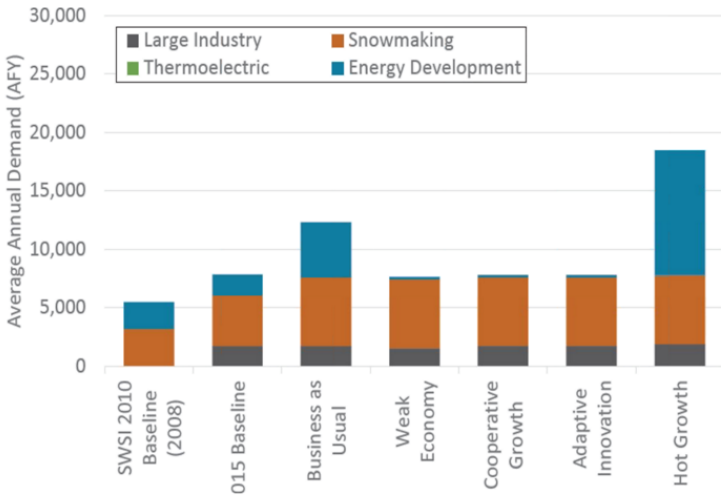
d. Colorado river basin municipal demand is shown below. Yellow represents system losses, and the **reddish-brown color represents outdoor irrigation**, the greatest consumptive use by far. **Nearly all residential indoor use, the green bars**, ends up in city sewers and **is available for reuse**. The highest demand is under Hot Growth, the last scenario. In Cooperative Growth and Adaptive Innovation, water demand drops while population (the red x) is increasing. Adaptive Innovation anticipates 10% savings from water conservation.

Colorado Basin Municipal Water Demand



e. Colorado industrial demands shown below indicate that **most new industrial water demand results from energy development**, particularly oil shale in the "Business as Usual" and "Hot Growth" scenarios..

Colorado Basin Self-Supplied Industrial Water Demands



f. The Colorado Basin Roundtable **area expects to lose 13,600 acres to expanded cities and housing** subdivisions.

The "gap" refers to how much water is available and how much the demand is; **the gap does not include future projects**. How much of the gap are we now experiencing, and how much is it expected to increase?

		Scenario					
		Baseline (2015)	Business as Usual	Weak Economy	Cooperative Growth	Adaptive Innovation	Hot Growth
Average	Average Annual Demand	68,500	98,400	85,800	95,400	94,500	121,400
	Average Annual Gap	0*	1,200	800	1,900	2,300	4,700
	Average Annual Percent Gap	0%	1%	1%	2%	2%	4%
Maximum	Demand in Maximum Gap Year	68,500	98,400	85,800	95,400	94,500	121,400
	Gap in Maximum Gap Year	0*	4,200	3,300	5,300	6,600	15,800
	Percent Gap in Maximum Gap Year	0%	4%	4%	6%	7%	13%

Colorado Basin M&I Gap (AF)

The worst annual average Municipal and Industrial demand gap is 4% of available supplies, under the Hot Growth scenario.

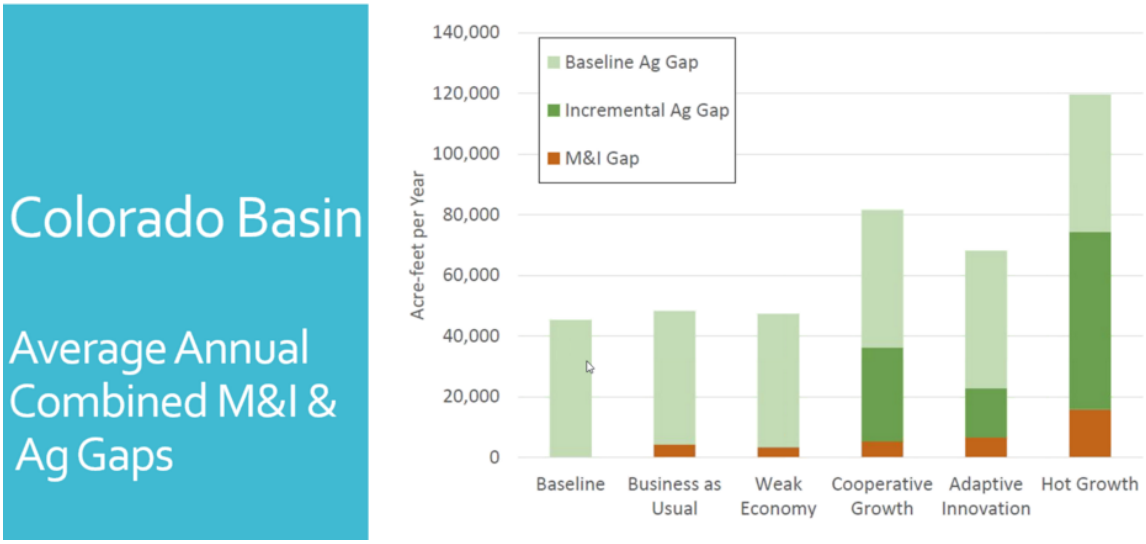
The agricultural gap is below. This indicates that the annual **agricultural consumptive use is 15-30 times the Municipal and Industrial use** shown above.

		Scenario					
		Baseline (2015)	Business as Usual	Weak Economy	Cooperative Growth	Adaptive Innovation	Hot Growth
Average	Average Annual Demand	1,598,900	1,476,800	1,476,800	1,663,800	1,294,900	1,751,600
	Average Annual Gap	45,300	44,994	43,000	76,200	61,500	103,800
	Average Annual Gap Increase from Baseline	-	-	-	30,900	16,200	58,500
	Average Annual Percent Gap	3%	3%	3%	5%	5%	6%
	Average Annual CU Gap	25,100	24,400	24,400	42,400	40,400	57,800
Maximum	Demand in Maximum Gap Year	1,598,800	1,477,500	1,477,500	1,587,200	1,258,000	1,668,300
	Gap in Maximum Gap Year	148,000	141,100	141,000	166,500	131,400	210,400
	Increase from Baseline Gap	-	-	-	18,500	-	62,400
	Percent Gap in Maximum Gap Year	9%	10%	10%	10%	10%	13%

Colorado Basin Agricultural Gap (AF)

The current agricultural gap is about 45,000 af, 3% of total agricultural consumption. It more than doubles under Hot Growth.

g. The total gap is shown below. **The Municipal and Industrial gap** in brown is a **fraction of the agricultural use gap**. **Expected hotter temperatures and earlier anticipated runoff is causing the increase in the Incremental Ag Gap** in the Adaptive Innovation and Hot Growth scenarios.



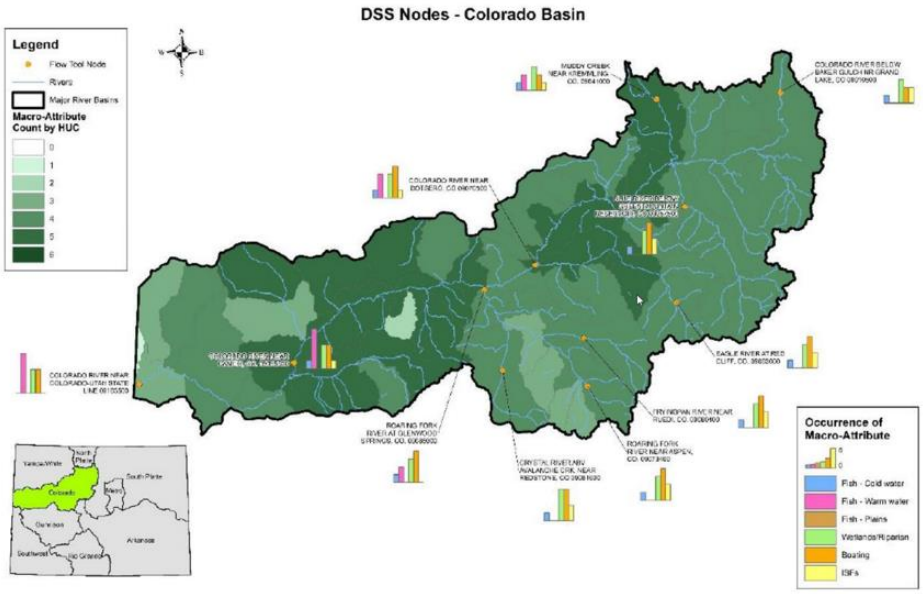
h. Environmental and Recreation database. SWSI is attempting to **put all environmental data into a single database** that can be compared across basins. There are 6 main attributes:

i. Coldwater fish
ii. Warmwater fish
iii. Plains fish
iv. Wetlands
v. Boating
vi. Instream Flows

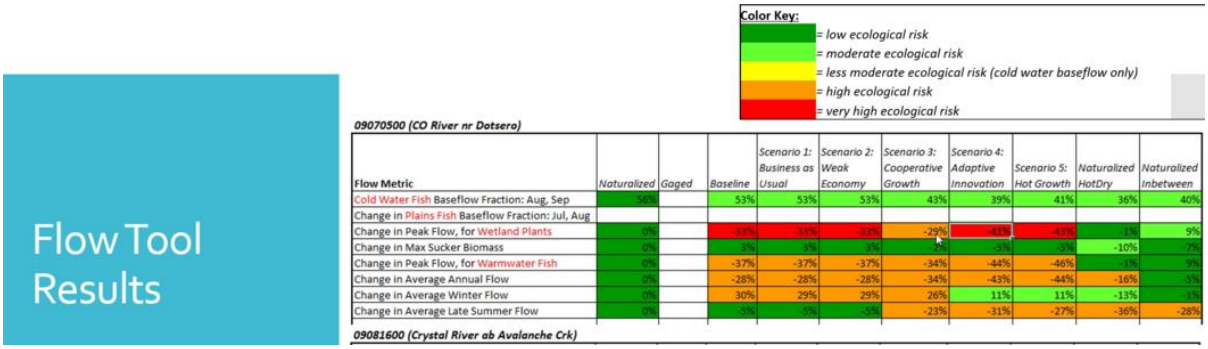
i. A flow tool is available online. The 3 big inputs are (1) hydrologic data from StateMOD, the CDSS Database; (2) the 6 macro attributes above; and (3) the relationship between flow and **ecology, developed by TNC.**

j. **Brendon described the flow tool. The naturalized flow is what the natural flow would look like if man were not in the picture**: there are no towns, or agricultural or municipal diversions. **Baseline flow** indicates flows with current diversions, but **before future additional diversions.**

k. There are 11 nodes in the Colorado River Basin where water data for the flow tools is available:



l. The flow tool produces the report below, printed here for the Crystal River above Avalanche Creek. There are no reservoirs above, so the only changes to current baseline conditions are from climate change, not from an increase in diversions. David Graf was surprised to see the wetland plants go from dark green to red below; Brendon said that climate change is what is causing this. This tool will steer stakeholders in a particular direction.



m. Mountain streams with no infrastructure have low to moderate risk under most scenarios, although instream flow rights may be met less often with climate change. The peak runoff is about a month earlier, and that is accounting for some of this risk. **One-third of August flows in the 15-mile reach will not meet the targeted instream flow by 2050, meaning that the targeted flows will not be met in 1 of every 3 years on average**.

11. Brendon then discussed the BIP Work Plan, and said the Roundtable needed to vote on it

a. The $145,000 budget is set forth below:

Draft Budget Review

Core Duty Tasks	LE Budget (8/1/2020- 1/31/2022)	GC Budget (8/1/2020- 1/31/2022)
Budget allocated for: Kickoff Workshop, Initial Coordination, IPP Update, 2nd Cross-Basin Workshop and Work Plan Development through 7/31/2020	$49,600	$13,200 *(Spent through 6/30/2020)*
2.1 Administration	$15,000	$15,000
2.2 Stakeholder Outreach & Education	$24,400	$5,250
2.3 IPP List Update	$8,000	$11,800
2.4 BIP Volume 1 & Volume 2	$30,000	$47,250
3.0 Additional Studies	$18,000	$52,500
3.1 Colorado Basin Regionalized Model Analysis	*$9,000*	*?*
3.2 Model Proposed Transmountain Diversions	*$7,000*	*?*
3.3 Cross-Basin Forest Health Study	*$2,000*	*$17,500*
3.4 Rapid River Assessment (Alternate Study)	*$ 0*	*$0*
Total	$145,000	$145,000

b. Brendon asked **how the stakeholder budget should be spent**. The budget does not include public presentations, public education, and outreach to specific stakeholders such as industrial, agriculture, or municipal stakeholders.

   i. **In the 2015 BIP, public feedback was very effective—that's how the 6 main themes in the BIP were developed**.

   ii. During the COVID crisis, we're trying to not hold public meetings, but instead to hold them virtually.

   iii. The Roundtable members really helped spread the word at the 2014-15 meetings, and Brendon encouraged Roundtable members to again promote this, saying, "We can duplicate this at ongoing stakeholder meetings."

c. The 2020 BIP will be divided into 2 volumes: BIP Volume 1 is the BIP Strategy, with emphasis on the current and projected water situation, a summary of strategies, an overview of projects, and PEOP (Public Education and Outreach) strategies. **BIP Volume 2 is more data-intensive**—it will contain a detailed project list, project cost calculations, results of technical analyses, the list of Identified Projects and Processes (IPPs), and the earlier **2015 BIP retained in its original form** with updated text.

   i. Ken Ransford recommended **preparing a separate chapter for environmental and recreation issues affecting the basin**.

d. Technical updates. **Prioritized additional studies include**:

   i. Colorado Basin Regional Model Analysis by region

ii. **Model the proposed trans-mountain diversions: (1) the Moffatt firming** project to divert **18,000 af from the Fraser River**; (2) **the Windy Gap** Firming Project to divert **30,000 af from the Colorado River**; (3) the **Eagle River MOU** to divert up to **30,000 af each year to the Arkansas** drainage, and **the Blue River Project**. Together, these total over **100,000 acre feet of potential future diversions** from the West slope to the Front Range. Brendon is meeting with each of the project proponents so we can model what the basin looks like after these projects come on line.

1) Bailey Leppak said this requires cooperation from the project proponents. She said that **modeling these diversions should be listed as an IPP** in case the project proponents do not share the information regarding these diversions, or the modeling cannot be done by the time the BIP update is completed (January 2022).

iii. Conduct and **develop Rapid River Assessment tools** for the basin for particular stream segments such as the **15-mile reach** on the Colorado River above its confluence with the Gunnison River in Grand Junction; the **Fraser River** above its confluence with the Colorado River, the **Colorado river below Windy Gap**; the **Crystal River**, and the **Blue River** between Dillon and Green Mountain Reservoirs.

1) Richard Vangytenbeek said there are many reaches around the basin where we can't have this discussion because of data gaps. There are many reaches where we cannot answer where the tipping point is; these assessments and the Integrated Water Management Plans will give us a starting point to have this discussion.

e. The top priority Cross-Basin study is to **review the literature on forest health** and to deliver technical analysis recommendations.

f. No one had any objection to Brendon's presentation, and **the work plan was approved unanimously**.

12. IPP list: Russ Sands, CWCB

a. It uses a tiering matrix to identify projects that are "ready to launch" and ready for funding. It contains a standard framework for gathering data so that projects can be compared, and is a tool for the CWCB To assess overall funding needs. Each project collects 21 data points.

i. Tier 1: Prioritized for support, and are ready to launch

ii. **Tier 2**: Have full basin support and are almost ready and very important to the basin. They are **ready to pursue**.

iii. **Tier 3: Support of concept**, but still needs to be fleshed out. They will be ready later, or are conceptual.

iv. **Tier 4**: projects that are ideas but don't' have a lot of meat on the bones yet. They are **not ready, or may not be pursued**.

b. It is not a project ranking mechanism, or a means of pitting projects against each other. **No projects are guaranteed funding from the CWCB**.

c. **Wildly Important Goals (WIGs)**: **Projects that will get the governor's support**. A major focus is determining the cost of projects, and provide funding for them.

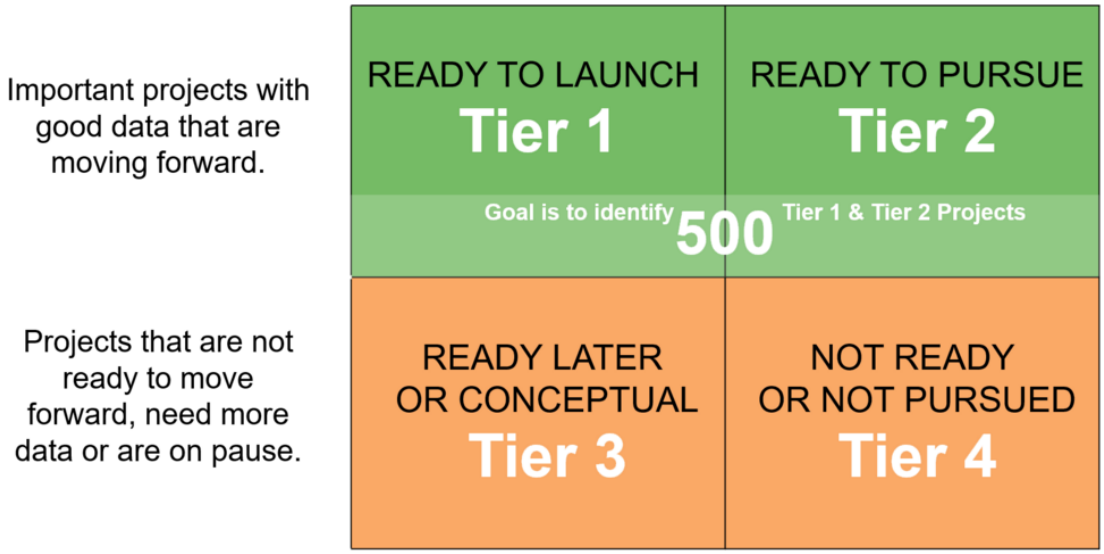
i. **The goal is to identify 160 Tier 1 projects statewide**, 20 from each basin.

ii. **Secondary goal is to identify 500 Tier 1 and 2 projects.**

iii. **Goal: move all IPPs into an online database.**

iv. **The WIG does not provide funding for projects or guarantee project funding.**

v. The goal is to have the WIG projects reinforce Colorado's Water Plan.



13. **Regional leader summaries**. Brendon assembled regional leaders to **review the IPP list that was generated for the 2015 BIP**; here are their reports.

a. Summit County: Richard Van Gytenbeek; Karn Stieglemeier and Lane Wyatt are also involved. Lane and Wyatt and Karn Stieglemeier contacted the earlier IPP proponents, and they are generating lists of new projects. The old list had 68 projects in Summit County; 36 were completed or dropped off the list, and 32

remain. **They fit into the Integrated Water Management Plan process now ongoing on the Blue River, and supported by the Blue River Watershed Group**, and Dan Omasta from Colorado TU. Richard said that getting the local community involved has been very effective in this process.

b. Grand County: Paul Bruchez. The project list in the 2015 BIP was quite long; they have reorganized the list. Kirk Klancke, Lurline Curran, Mely Whiting, Merritt Linke, and Ed Moyer are all involved. They had 3 long virtual meetings to go over the IPPs.

c. State Bridge Mile Eytel, no report.

d. Eagle: Holly Loff: They started off with 28 projects, many of which were vague and lacked detail, but after working with 18 different groups, 16 projects were removed from the list, many of which were consolidated with other IPPs. They added 33 more so there are now 45 projects listed. It as been a good exercise for al the stakeholders in the valley.

e. Roaring Fork April Long. Bailey Leppak provided an update. They have reached out to the project proponents. April has been spearheading a review of the environmental and recreational use projects.

f. Middle Colorado: Laurie Rink. This is an outgrowth of the Middle Colorado Integrated Water Management Plan.

g. Grand Valley – Kristen Kurath. They had 16 projects, of which 4 were removed. The proponents withdrew them because they aren't an immediate need. The Grand Valley is not preparing an Integrated Water Management Plan, so there isn't a stakeholder group to readily call on. **They've added 4 new projects**.

14. Russ Sands CWCB and Matt Lindburg, Brown & Caldwell, provided a BIP 2020 update.

a. Some basins are looking at the **economic value of recreation**.

b. **Other basins are interested in modeling stream flows** based on the development of future projects.

c. Russ emphasized that **one goal of the updated BIPs is that they are comparable across the basins**.