COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
February 7, 2024
Facilitator's Summary
Facilitation Team: Emily Stranz & Colby Mills, DS Consulting

The following Facilitator's Summary is intended to capture basic discussion, decisions, and actions, as well as point out future actions or issues that may need further discussion at upcoming meetings; it is not intended to be the "record" of the meeting. Official minutes can be found on the TMT website: https://pweb.crohms.org/tmt/agendas/2024/ Suggested edits for the summary are welcome and can be sent to Colby at colby@dsconsult.co.

Review Meeting Summaries & Minutes – TMT Members approved the official meeting minutes and facilitator's summaries from the 2023 Year End Review on December 6, and the January 10 and 24 meetings.

Official Water Supply Forecasts – Chris Runyan, Reclamation, reported the official February water supply forecast for Hungry Horse Dam, emphasizing the dry conditions above the project. Residual February through July was 1,600 kaf, or 74% of average; April through August was 1,440 kaf, or 70% of average; May through July was 1,084 kaf, or 65% of average; and May through September was 1,176 kaf, or 66% of average. Chris noted that the April through August forecast sets minimum flows: Columbia Falls is now 3,330 cfs and Hungry Horse is 610 cfs. Reclamation is projecting the project to be at 3,545 feet on April 30.

Doug Baus, Corps, reported official February water supply forecasts for Corps of Engineers projects:

- **The Dalles**: NWRFC April to August volume forecast is 68 maf, or 76% of average;
- **Lower Granite**: NWRFC April to July volume forecast is 15 maf, or 77% of average;
- **Libby**: Corps February runoff forecast is 4,743 kaf, or 78% of average; and
- **Dworshak**: NWRFC April to July is 1,740 kaf, or 70% of average.

Charles Morrill, WDFW, commented that conditions seem to be moving toward a potential drought declaration trigger for Washington. He shared information from WA Department of Ecology regarding low water supply leading to drought conditions: https://ecology.wa.gov/water-shorelines/water-supply/water-availability/statewide-conditions/drought-response, noting, "a drought emergency is declared when water supply conditions are expected to fall below 75 percent of average, and there is potential for undue hardships due to low water supply." Jay Hesse, Nez Perce Tribe, asked how percentage-of-average is considered, and if there are volume thresholds that trigger decisions for low water or a drought year actions? The Corps and Reclamation clarified that a current year's percentage/rank is determined by comparing it across a project's entire period of record, although Grand Coulee uses the 30-year average now (around 89 maf). Rankings of the water year are available on the RFC water supply forecast pages under the "ranking" tab at the top; The Dalles ranking is available here and Lower Granite rankings are here. Tony Norris, BPA, added that a range of augmentation actions are specified for dry years in the Water Management Plan (see Chapter 9).

Chum Operation - Doug reviewed the Water Year observed precipitation and percentage of normal: the Snake River above Ice Harbor Dam observed 9.2 inches of precipitation, or 88% of normal; the upper Columbia above Arrow observed 20.5 inches, or 80% of normal; the Columbia mainstem above The Dalles observed 11 inches, or 83% of normal; and the Willamette above Portland observed 39.3 inches, or 103% of normal.

Doug highlighted that temperatures across the October 1 through February 6 period have been warm throughout the Columbia River Basin: the Snake River above Ice Harbor Dam has been 2.2 degrees F above average across the season, and 6.4 degrees F above normal for the current month. The upper Columbia River above Arrow, has been 1.7 degrees F above average for the season and 8.6 degrees F above for the current month. The Columbia mainstem above The Dalles has been 2.0 degrees F above average across the season, and 6.4 degrees F above average for the current month. The Willamette above Portland has been 1.9 degrees F above average across the season.

The Bonneville Dam tailwater elevation at 0700 hours this morning was 12.6 feet, with a total outflow of 131.2 kcfs. Below average precipitation values with above average temperatures are prevalent throughout the Columbia River Basin. Snotel Sites in British Columbia are predominantly in the 50-75% of average for SWE; the upper Columbia and Snake are below average as well.

RFC inflow forecasts at Bonneville Dam over the next 10 days are around 122 kcfs. Forecasted precipitation over the next 10 days is well below average throughout the Columbia basin, with a minor exception in the upper Snake; the 5-day QPF is similar with predominantly well below average precipitation throughout the Columbia Basin with exceptions in Idaho.

The 6-10 day climate outlook shows a probability of below average temperatures in the eastern Columbia basin and near normal in the west with a probability of below average precipitation. The 8-14 day outlook reflects the same pattern of variability in temperatures with a probability of below average in the eastern basin, near normal in the central, and above average in western Oregon and Washington, with a probability of below average precipitation. The 3-4 week outlook continues to show above average temperatures and below average precipitation.

The chum incubation operation of an 11.3 feet minimum tailwater elevation at Bonneville Dam will continue through April 9 with the start of spring spill on April 10, unless otherwise coordinated at TMT. Tony noted that streamflow increases over the last several days have allowed Grand Coulee to reduce discharge down to Hanford Reach minimums and the project will continue to target its refill objective while meeting chum and Hanford Reach obligations. Chris added that as Bonneville flows come down, the project will start augmenting for chum flows. It was emphasized that quite a bit of uncertainty still remains, and that impacts to the chum operation and Grand Coulee elevations will continue to be closely monitored; adjustments can be made as needed.

Thomas Starkey, WA DOE, asked what a low water year means for spill season. Doug noted that TMT has coordinated through dry water years in the past and operations will continue as identified in the December 2023 MOU, although proportions of spill may be different depending on water supply.

105% TDG Clarification Memo - David Gruen, Columbia River Coordinator for Oregon DEQ, presented DEQ's written response (posted to the TMT website) to the Corps' request (March 2023) to provide clarification on whether the 105% TDG criterion applies on the mainstem Columbia River below Bonneville Dam in March, prior to the start of voluntary spring spill. DEQ clarified that the 105% criterion does not apply on the mainstem Columbia downstream of Bonneville, instead, the 110% TDG standard is in effect at that time and location. The Corps noted that this letter is sufficient for clear guidance of operations moving forward.

Operations Review

Reservoirs – Chris reported on Bureau of Reclamation projects:

- **Hungry Horse**: Inflow yesterday was 1.6 kcfs, outflow was 0.8 kcfs, and midnight elevation was 3,534.41 feet. The project is 25.6 feet from full (filled around 0.7 of a foot last week) and is currently operating to Columbia Falls minimums (set at 3.33 kcfs). Flow yesterday was 3.6 kcfs

and the project is working to get that down in the next couple days. Chris noted Snotels near the project are showing historically low snow, emphasizing the basin-wide low snow pack.

- **Grand Coulee**: Inflow yesterday was 64 kcfs, outflow was 59.9 kcfs, and midnight elevation was 1,287.7 feet. The project is 2.3 feet from full and refilled about 2.7 feet since last week. Operations are supporting flows below Priest Rapids Dam.

Lisa Wright, Corps, reported on Corps of Engineers projects:

- **Libby**: midnight elevation was 2,417.5 feet, average inflows of 3.4 kcfs, outflows of 4 kcfs;
- **Albeni Falls**: midnight elevation was 2,051.6 feet, average inflows of 18.6 kcfs, outflows of 19 kcfs;
- **Dworshak**: midnight elevation of 1,520.9 feet, average inflows of 4.5 kcfs, outflows of 1.7 kcfs;
- **Lower Granite**: average outflows of 34.4 kcfs
- **McNary**: average outflows of 102.3 kcfs; and
- **Bonneville**: average outflows of 121.8 kcfs.

Water Quality – Dan Turner, Corps, reported an exceedance of 110% TDG criteria downstream of Lower Granite due to current transmission line work. The project is operating at speed-no-load during the daytime and some spill at the same time; nothing else is going on in the system.

Fish – Kelsey reported that three projects are currently conducting adult counts: Bonneville, John Day, and Ice Harbor, with a handful of steelhead counted each day at all three projects.

Power System – Tony reported that temperatures have moderated significantly since the last cold snap.

Questions and Comments from Members of the Public – There were no questions or comments from members of the public.

The next scheduled TMT meeting is on February 21, 2024, at 9:00 AM.

Columbia River Regional Forum
Technical Management Team
OFFICIAL MINUTES
Wednesday, February 7, 2024
Minutes: Andrea Ausmus, BPA (contractor, CorSource Technology Group)

Today's TMT meeting was held via conference call and webinar, chaired by Doug Baus, Corps, and facilitated by Emily Stranz, DS Consulting. A list of today's attendees is available at the end of these minutes.

Chris Runyan, Reclamation, reminded TMT that Joel Fenolio is down in California for a 3-month detail, and Runyan will be filling in for him while he is gone.

1. **Review Summaries and Minutes – December 6 (YER), January 10, and January 24**
    - December 6 (YER) – Approved
    - January 10 – Approved
    - January 24 - Approved
    - Charlie Morrill, WA, looked at all the notes and did not see anything that he was concerned with.

2. **Official January Water Supply Forecasts – *Chris Runyan, BOR, and Doug Baus, Corps NWD***

    <u>*Reclamation*</u>

    - Hungry Horse – February 2024
        - Dry above HGH
            - Dried up a little bit but it is still pushing record lows in quite a few of the SNOTEL sites.
        - February – July
            - 1600 kaf
            - 74% of average
        - Apr – Aug
            - 1440 kaf
            - 70% of average
        - May – July
            - 1084 kaf
            - 65% of average
        - May – Sep
            - 1776 kaf
            - 66% of average

- April through August: Minimum Flows Downstream of Hungry Horse
  - Columbia Falls
    - 3330 cfs
  - S. Fork below Hungry Horse
    - 610 cfs
- Projecting that HGH will be ~3545 ft on April 30

Corps

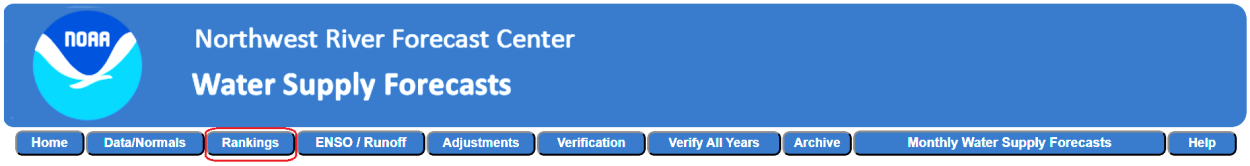
- Dalles
  - April to August
    - 68 maf
    - 76% of average
- Lower Granite
  - April to July
    - 15 maf
    - 77% of average
- Libby
  - February Runoff Forecast
    - 4743 kaf
    - 78% average
- Dworshak
  - April to July
    - 1740 kaf
    - 70% of average

Morrill said that for Washington State anything under 72 maf is considered moving towards a drought declaration. He said that if Thomas Starkey, Washington Ecology, is on he might be able to add his view from Ecology's perspective as well.

Thomas Starkey, Washington Department of Ecology, said that he had no direct comment pertaining to that at the moment.

Jay Hesse, Nez Perce, said that the percent of averages are helpful, but he heard that there are some record lows. He asked how the percent of averages considered among the record lows and are they in the lowest 5-percentile quartile of historic observations. He also asked if there are any thresholds of low water supply forecast that trigger decisions that declare this as either a drought or a low water year.

Baus said that if you go to the RFC current Water Supply Forecast (WSF) and on the top of the page there is a "Rankings" tab. It takes the Period of Record, 1949 – 2024, and ranks them all out.



After selecting the runoff period, it can be ranked to see how it compares over the period of record.

- THE DALLES:
  - 68 out of 76 (Apr – Sep)
  - 66 out of 76 (Apr – Aug)
- LOWER GRANITE:
  - 61 out of 76 (Apr – Sep)
  - 59 out of 76 (Apr – Jul)

Baus said that the Corps has dry water year strategies identified in the Water Management Plan (WMP) and those are based on forecasts at different locations and different volumes. It can be found in section 4.8 Dry Water Strategies.

Norris said that there is a suite of things in the WMP that are triggered off of water supply as it relates to either tiered actions or other various thresholds. Starting with LIB, which is the sturgeon pulse which is based on the May Final WSF. He said that there is quite some time before May. The lowest tier is 4.8 maf and we are at 4.7 maf. He said to remember that we are still in February. He said that LIB and HGH both have summer augmentation draft limits for the end of September that are set based on their WSF and they will be drafted incrementally lower depending on that WSF. Norris said at GCL there is the additional 2 feet of draft by the end of August that is triggered on an April – August, 92 maf, but that is above average, 5 maf above the average WSF, and that is a July final forecast that sets that. We would be well below that, and it takes you from 1280' to 1278' at the end of August. The Dry Year Non-Treaty Storage release is based on the lowest 20th-percentile of the most recent 30-year normal. The 30-year normal is 74.8 maf.

Eric Rothwell said that Reclamation does not use 92 maf anymore for GCL. They use the 30-year average, which is ~89 maf.

3. **Chum Operations –** *Doug Baus, Corps; Tony Norris, BPA; Joel Fenolio, BOR; Charles Morrill, Washington; and Kelsey Swieca, NOAA Fisheries*

   a. October 1 through January 9, 2024, Monthly Precipitation – *Baus*

   - Snake River abv IHR
     - 9.2 inches
     - 88% of normal
   - Columbia River Basin abv Arrow Dam
     - 20.5 inches
     - 80% of normal
   - Columbia River Mainstem abv TDA

  - 11.0 inches
  - 83% of normal
- Willamette abv Portland
  - 39.3 inches
  - 103% of normal

b. October 1 through January 9, 2024, Seasonal Temperature Deviations – *Baus*
- Warm throughout the entire Columbia Basin
- Snake River abv IHR
  - 2.2°F above average across the season
  - 6.4°F above average current month
- Columbia River Basin abv Arrow Dam
  - 1.7°F above average across the season
  - 8.6°F above average current month
- Columbia River Mainstem abv TDA
  - 2.0°F above average across the season
  - 6.4°F above average current month
- Willamette abv Portland
  - 1.9°F above average across the season
  - 1.4°F above average current month

c. Bonneville Dam – Hour ending 7 – *Baus*
- Total Outflows: 131.2 kcfs
- Tailwater elevation: 12.6 feet

d. NWRFC - Current Monthly Summary Graphics – *Baus*
- Temperatures across the Columbia Basin
  - Eastern Portion: 6° above average
- Monthly Precipitation
  - Well above average in the Snake River Basin.

e. NWRFC - Current Station Snow Conditions – *Baus*
- Below average precipitation coupled with above average temperatures throughout the Columbia Basin.
  - SNOTEL Sites in British Columbia are all in the 50-75% average SWE.
  - Upper Columbia is below average.
  - Snake is also predominantly below average.

f. NWRFC - Inflow Forecast – *Baus*

- Bonneville RFC Inflow Forecast (Ten-Day)
  - Hovering around 122 kcfs

g. RFC Forecasted Precipitation Summary – *Baus*

- 10-day QPF (Percent of Climatology) -- as it relates to percent of average
  - Well below average.
  - Minor exception in the Upper Snake River.
- 5-day QPF (Percent of Climatology)
  - Same pattern
  - Some exceptions in Idaho.

h. NWRFC Climate Forecast – *Baus*

- 6 – 10 Day Outlook:
  - Temperature –
    - Eastern Columbia – Below Average
    - Western Columbia – Near Normal
  - Precipitation – Below Average
- 8 – 14 Day Outlook:
  - Temperature – Variability
    - Eastern Columbia – Below Average
    - Central Columbia – Near Normal
    - Western Washington and Oregon – Above Average
  - Precipitation – Below Average
- 3 -4 Week Outlook:
  - Temperature – Above Average
  - Precipitation – Below Average

i. TMT - Coordinated Chum Operation - December 20, 2023, at 1:40pm

- Reminder that they are continuing the Incubation Period of 11.3' BON minimum tailwater elevation through midnight April 9, and will then switch over to Spring Spill on April 10 unless something different is coordinated through TMT.

Morrill posted in chat about Washington Ecology's response to when water supply conditions are expected to fall below 75% of average and there is a potential for undue hardships due to low water supply.

> from Charles Morrill to everyone: 9:21 AM
>
> https://ecology.wa.gov/water-shorelines/water-supply/water-availability/statewide-conditions/drought-response

> response
> Drought preparedness & response
> At its most basic level, drought means there is a lack of water to meet needs. Every year, we carefully monitor snowpack, precipitation, and local temperatures to help anticipate potential drought conditions. We work with state and federal agencies to determine current and projected water supplies for the state.
> I want to...
> Learn about Drought Preparedness and Planning Grants
>
> Read about Drought declared in 12 counties on July 24, 2023
> Report any drought conditions.
> In Washington, the legal definition of drought is based on water availability. A drought emergency is declared when water supply conditions are expected to fall below 75 percent of average, and there is potential for undue hardships due to low water supply.

Baus asked Morrill to put that into context. Baus said that he did not know that criteria. He asked if there is a document, and with Washington making the decision if there is a nexus.

Morrill said that he will need to read more in the link that he sent to be able to provide some feedback or Starkey may be able to pitch in and provide the nexus on how to move forward. He said that it is on the website and the link was posted in the chat.

Starkey said that he did not have any answer about the nexus about Ecology's definition of 'below average conditions' versus with what TMT defines. He did ask if going into a low water year, what does that look like for the spill season as defined in the MOU and does it change anything moving forward. He said that it might be something that would be observed this year.

Baus said TMT can get a wide variety of low-, medium-, and high-water years. In addition to volumes that can vary across seasons there can also be within season variability that can be significant or insignificant and more near normal. He said that Starkey's comments are appropriate but moving forward, TMT and the Corps have dealt with low water years before so should we find ourselves in a situation where we are in a dry water year, we do have experience and will continue with operations contained in the MOU. What is contained in the MOU is not anything different than what was there in the past, when it is contained the in BiOps or the Court Ordered Operations, they have had Spill Operations. In-season conditions can play a role in those spill operations and the Corps adapt accordingly. In the scenario that Starkey portrayed the Corps will do the best they can to continue to spill as identified in the MOU moving forward, the proportions of spill may be different. He said that was vague and he would be happy to talk to Starkey offline in greater detail if he would like and if Starkey is interested in any operations that he may be concerned about in lower water years he can speak about that offline as well.

Starkey said that he does not need a deep dive answer today, but he said that his question was specifically about given a lower water year proportions of spilling, would the gas caps in a lower water year would be any lower than they are in that proportion or if the gas caps are always going to be met regardless of a lower water year.

Baus said no and that he would be happy to talk about this offline but for most of the TMT members on the call, but we have a construct in the Fish Operation Plan (FOP) called Minimum Generation. Oftentimes if we have a low flow condition, we may not be

able to achieve an identified spill level. If we have set up a spill cap at a project of like 200 kcfs and stream flows are not enough to achieve that level and that spill rate may not be achievable if there are low flow conditions. If the spill cap was 200 kcfs and the project was unable to operate a minimum generation and spill at that level, it would spill up to whatever level the river allowed. So, for example it could be 180 kcfs rather than 200 kcfs.

Stranz said that if she remembered correctly, we ended up in that situation part of the year last year so that would be a place to go back and look to see what it ended up looking like.

Baus said that we routinely get there, and it is not an uncommon phenomenon at all. He said as he noted earlier there are large scale seasonal flow issues but there are also within season flow variabilities. Big picture across the season it can be a challenge but also within season it is a reality sometimes as well. They have a lot of experience with that type of phenomenon.

Dan Turner, Corps, said that they can talk more offline later.

j. Operations and Willamette Forecast (SLMO3) – *Norris*

- Stream flow increases over the last several days.
  - Allowed GCL to reduce releases to minimum for Hanford Reach Fall Chinook.
  - Other stream flows contributed to meet the remainder of what was needed to meet the chum minimum.
  - Stream flows are receding between now and April 10 and GCL will need to augment to supporting chum as necessary.
- So far, they have been able to fill into GCL and they will continue to manage the system to meet the April 10 refill objective at GCL.
  - Current Level: 1288 ft.
  - April 10 Forecast: 1282 ft.
  - Target the refill objective and meet the Chum and Hanford Reach objectives along the way.

Runyan said that it is nice to be in this situation compared to looking at the forecast a month ago and where GCL was going to be. He confirmed what Norris said that they are about as full as they can be at GCL and then when flows come down at BON they will start augmenting for chum flows again.

Norris added an additional note that there is quite a bit of uncertainty between now and April 10. He said that all you have to do is pull up 2015's WSF traces from the RFC page to see that things can still be quite difficult moving forward. He said right now we are seeing a pretty reasonable outcome.

Swieca said building off of what Norris was saying NMFS will continue to keep an eye on this as he had mentioned, a lot can change between now until April. She said they will continue to keep and eye on the impacts to GCL elevation and chum operations will be adjusted accordingly.

Morrill said that he echoed Norris and Swieca. He said that he also appreciates that we are doing as well as we are given the current outlook at GCL this season was not expected earlier in January.

4. 105% TDG Clarification Memo - *David Gruen, ODEQ*

a. Memo

- Gruen wanted to close the loop with TMT with the written letter representing Oregon DEQ's written response to the Corps from their response that originated last March.
- The Corps requested a written response on whether or not the 105% TDG criterion applies on the Mainstem Columbia River below BON in March prior to the start of voluntary Spring Spill.
- DEQ's interpretation is that the 105% TDG does not apply, it is the 110% TDG standard is what is in effect.

Jay Hesse, Nez Perce, told Gruen thank you for providing the letter and being here to summarize this and be available for questioning. He said that his question is to the Corps and asked if this letter was sufficient and gives clear guidance in terms of operations.

Turner answered affirmatively.

5. Operations Review

a. Reservoirs

Reclamation (February 6, 2023) – Chris Runyan

- Hungry Horse Dam
  - Generally, basin wide is experiencing a low snowpack. There are a couple snow tails near HGH that are painting a different picture but farther back into the base and especially along the divide, and on the East side of the divide, it is historically low snow.
  - Inflow: 1.6 kcfs
  - Releasing: 0.8 kcfs
  - Midnight elevation: 3534.41 ft.
    - 25.6 feet from full.
    - Filled around seven-tenths of a foot.
  - Operating to Columbia Falls minimums.
    - Current: 3.33 kcfs
    - Yesterday's flow: 3.6 kcfs
    - They are looking to get this down a little closer in the next day or two.
- Grand Coulee Dam
  - Inflows: 64 kcfs
  - Outflows: 59.9 kcfs
  - Midnight elevation: 1287.7 ft.

        - 2.3 feet from full
        - Refilled 2.7 feet since last week.
    - Supporting Vernita Bar flows beneath Priest Rapids Dam
        - Flow: 64 kcfs

Corps – Lisa Wright

- Libby Dam
    - Midnight elevation: 2417.5 ft.
    - Inflows: 3.4 kcfs
    - Minimum Outflows: 4 kcfs
- Albeni Falls (at the Hope gage)
    - Midnight elevation: 2051.6 ft.
    - Inflows: 18.6 kcfs
    - Average Outflows: 19 kcfs
- Dworshak Dam
    - Midnight elevation: 1520.9 ft.
    - Inflows: 4.5 kcfs
    - Outflows: 1.7 kcfs
- Lower Granite average outflows: 34.4 kcfs
- McNary average outflows: 102.3 kcfs
- Bonneville average outflows: 121.8 kcfs

b. Water Quality – *Dan Turner, Corps*

- Lower Granite
    - An exceedance of 110% TDG downstream of Lower Granite.
        - Outage due to transmission work.
        - Speed No Load which means high TDG and some spill at the same time.

c. Fish

Salmon – Swieca, NOAA

- Three Projects are doing adult counts right now (BON, JDA, IHR).
- Handful of steelhead counted at each of those Projects.

d. Power System – *Tony Norris, BPA*

- Temperatures have moderated since the last cold snap.
- Moving forward BPA is not seeing any issues.

6. Public Comments: NONE

7. **Set agenda for next meeting – February 21, 2024**
    a. Chum Operation

Today's Attendees:

Agency	TMT Representative(s)
Army Corps of Engineers	Doug Baus, Julie Ammann, Lisa Wright
Bonneville Power Administration	Tony Norris, Scott Bettin, Ben Haussmann
Bureau of Reclamation	Chris Runyan
NOAA Fisheries	Kelsey Swieca
US Fish & Wildlife Service	Dave Swank
Washington	Charlie Morrill
Oregon	Erick Van Dyke
Idaho	Jonathan Ebel
Montana	Brian Marotz
Nez Perce Tribe	Jay Hesse
Umatilla Tribe	Thomas Lorz (CRITFC)
Colville Tribe	Kirk Truscott
Warm Springs Tribe	
Kootenai Tribe	Dennis Moore
Spokane Tribe	

Other Attendees (non-TMT members):

COE – Dan Turner, Alexis Mills

Washington Ecology – Thomas Starkey

Oregon DEQ – David Gruen

DS Consulting – Emily Stranz (Facilitator), Colby Mills

CorSource – Andrea Ausmus (BPA note taker, Contractor) (*recording only*)

Energy Keepers – Eve James

Clearing Up – K.C. Mehaffey

Portland General Electric – Ruth Burris

Grant PUD – Peter Graf