**MAFAC Task Force**

**Potential Basin-Wide Scenarios – Upper Columbia Regional Meeting (January 7, 2020)**
**Meeting Notes** (*italics* = a la carte menu; roman = meeting notes; shading = change to a la carte language)

- **Goal of all these scenarios would be to achieve the high-range goals. Some might achieve them sooner than others or might have higher certainty of achieving them.**
- **The biological strategies below focus on the strategies/actions during the early portion (e.g., first 25-years) of scenario implementation.**

| **Theme** | **Continue existing level of effort** (note wording change from template) | **Moderately increase effort in all threats** (Note wording change from template b/c original overemphasized habitat compared to other threats) | **Frontload Maximum Effort in All Threats** |
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| **Description** | Continues efforts similar to current levels on all fronts in the near term. Identifies benchmarks. Results evaluated relative to benchmarks after a certain time period and if benchmarks not met, additional actions are triggered. | Moderately increases efforts in the near term in all threats. Identifies benchmarks. Results evaluated relative to benchmarks after a certain time period and if benchmarks not met, additional actions are triggered. | Maximum effort in near term on all fronts directed toward achieving goals as soon as possible. |
| **Biological Strategies** | **Hydro:**<br>***Grant and Chelan PUDs:*** *Continue to implement HCPs.* The HCPs commit the two utilities to a 50-year program to ensure that their hydro projects have no net impact on mid-Columbia salmon and steelhead runs. As defined in the HCPs, NNI has two basic components: (1) 91% combined adult and juvenile Project Survival achieved through project improvement measures (a combination of fish bypass systems and spill at the hydro projects); and (2) up to 9% compensation for Unavoidable Project Mortality, with 7% compensation provided through hatchery programs and 2% compensation provided through tributary habitat restoration programs (2013 Comp Progress Report). | **Hydro:**<br>Enhance measures to improve system survival (in river & latent) within the (large-scale) limitations of current system configuration (experimental spill program, etc.)<br>***Grant and Chelan PUDs:*** Look beyond the HCPs to find additional actions. Evaluate whether there's other operational measures at each dam that could be implemented to improve survival. Possibilities include:<br>Modify operations to benefit natural-origina fish– e.g., begin fish operations earlier to catch more of natural run. Consider alternative spill regimes to what's in HCP. Consider increases in spill to 120-125% TDG.<br>Evaluate potential to speed migration time and reduce costs with alternative adult passage (e.g., WHOOSHH adult fish passage). | **Hydro:**<br>*Targeted restoration of normative river conditions and function (e.g., dam breeching, natural hydrograph, flooding, temperature).*<br>***Grant and Chelan PUDs:*** Operate fish bypass systems year round. Restrict how turbines operate to minimize fish impacts. Replace turbines with fish-friendly designs (this is ongoing to an extent – Wannapum, Priest Rapids). No passage efficiency improvements on the horizon in terms of potential to improve bypass systems. Consider alternative spill regimes. |

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| | ***Columbia Mainstem Hydro:*** *Continue to implement spill programs and other operational measures as defined in 2019 and 2020 CRS BiOps*.<br><br>**Trib habitat:**<br>*Continue current level of investment.*<br>The UCSRB has estimated that, from the late 1990s through 2014, and with an investment of $74 million, the region had moved the needle between 4-6% toward an estimated tributary habitat restoration potential of 15% for both Chinook salmon and steelhead (USCRB 2015). The estimated 15% improvement potential is based on the results of the expert panels convened under the 2008 FCRPS BiOp to evaluate tributary habitat improvement actions and their potential benefits. The expert panels were generally conservative in their estimates of potential improvement in that, for example, they assumed there was no potential to remove, relocate, or modify existing development. Their estimates are also based on accessible areas only.<br>In the opinion of the UCR CBP technical team meeting attendees, at existing levels of effort (i.e., existing funding levels), the 15% improvement would not likely be achieved in 25 years due the fact that additional improvements will require come complex (and therefore more costly) projects, and that activities having adverse effects on habitat continue to occur, so even more effort would be needed to achieve a net 15% improvement.<br>The technical team meeting attendees also noted that above Chief Joseph Dam, there are still "low-hanging fruit" habitat actions that could be accomplished at relatively lower cost, but that in general funding for habitat restoration in blocked areas is limited. The group noted that in particular | ***Columbia Mainstem Hydro:*** ??<br><br>**Trib habitat:**<br>*Substantially enhanced resources and large-scale, process-based restoration and protection of habitat function sufficient to demonstrably and significantly improve abundance and productivity at population scale.*<br>The UCR CBP technical team meeting attendees felt that with enhanced resources, it would be possible to achieve the potential improvement in habitat productivity that was identified based on the FCRPS expert panel results. | ***Columbia Mainstem Hydro:*** Develop project-specific passage efficiency standards beyond the concrete (i.e., throughout the reservoirs). (NOTE: Need to clarify and be sure we are accurate and clear on how the standards for the PUDs differ from those for the CRS.)<br><br>**Trib habitat:**<br>*Substantially enhanced resources and large-scale, process-based restoration and protection of habitat function sufficient to demonstrably and significantly improve abundance and productivity at population scale.*<br>To truly maximize habitat restoration, in addition to increased resources, would have to remove major constraints (existing development, infrastructure) and put greater effort into preventing additional degradation. |

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| | there is high restoration potential in Hangman Creek and the Little Spokane River.<br><br>**Estuary habitat:**<br>*Protection and small-scale restoration prioritized based on a basic understanding of limiting habitats. Where possible, protect and restore priority areas selected based on best available science to a high level of function.*<br>Discuss further with estuary reps.<br><br>**Blocked areas:**<br>Continue limited adult releases in currently blocked historical production areas to provide fishing opportunities and assess natural production potential of current habitats. Experimental reintroduction with interim hatchery supplementation concurrent with evaluation of passage potential.<br>Consider potential to improve habitat in blocked areas (see notes above – opportunities to find low-hanging fruit projects in blocked areas; at least some areas have considerable potential to improve habitat productivity).<br><br>**Predation**:<br>Continue nonlethal measures designed to discourage predation by marine mammals and birds in focal problem areas. Continue lethal but limited removal of problem California Sea Lions and northern pikeminnow in specific areas or as part of redistribution efforts. | **Estuary habitat:**<br>Substantially enhanced resources and large-scale, process-based restoration and protection of habitat function sufficient to demonstrably and significantly improve survival.<br>Discuss further with LCR estuary reps<br><br>**Blocked Areas:**<br>For potential reintroduction benefits, use Casey's LCM scenario. Regarding the potential to improve tributary habitat in blocked areas, the UCR CBP technical team meeting attendees felt that with enhanced resources, it would be possible to improve habitat productivity by 20% in 25 years.<br><br>**Predation:**<br>*Nonlethal measures designed to discourage predation by key predators in focal problem areas. Lethal but limited removal of problem animals of key predators in specific areas or as part of redistribution efforts.*<br>Make federal hydropower facilities responsible for survival through both concrete and reservoir as a way of mitigating for predation effects in reservoirs. (NOTE: Need to clarify and be sure we are accurate | **Estuary habitat:**<br>Substantially enhanced resources and large-scale, process-based restoration and protection of habitat function sufficient to demonstrably and significantly improve survival.<br>Discuss further with LCR estuary reps<br><br>**Blocked areas:**<br>*Restore effective adult and juvenile passage consistent with high levels of self-sustaining natural abundance and production in historical ranges.*<br>Achieve functioning juvenile and adult fish passage<br>Have dedicated hatchery production for reintroduction.<br>Achieve colonization of habitat in blocked areas.<br>Achieve 20% improvement in trib hab productivity in blocked areas in 25 years. (Would require increased funding and greater effort in preventing additional degradation).<br><br>**Predation:**<br>*Predator removals which substantially reduce numbers and corresponding predation impacts.*<br>Pinnipeds<br>Avian<br>Non-native fish<br>Pike minnow |

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| | **Hatcheries:**<br>Continue current production numbers and configuration.<br><br>**Harvest:**<br>Continue abundance-based management to optimize and share harvest consistent with the needs of spawning escapement and weak stock limitations. | and clear on how the standards for the PUDs differ from those for the CRS.)<br>Identify opportunities to reduce predation in McNary-Priest Rapids reach. Some existing efforts to quantify fish predation in this reach. (See UCSRB Hydro Report; also a study looking at fish coming down Snake and Columbia to MCN)<br>Pinnipeds—consider more effective means of lethal removal; lethal removal of more animals<br>Avian--<br>Non-native fish—employ consistent management strategies of non-native fish; consider lethal removal (e.g., gill-nets). Look at potential to reduce recruitment of non-native fish.<br>Pike minnow<br><br>**Hatcheries:**<br>Moderately increase production at harvest programs and appropriately size conservation programs based on habitat capacity, pHOS, and PNI.<br>Point to fact that if increasing n.o. returns, it will indirectly help hatchery programs and eventually lead to higher returns.<br><br>**Harvest:**<br>*Curtail or eliminate directed fisheries on natural-origin fish and limit incidental impacts to de minimis levels which do not impede recovery.*<br>Maximize harvest in mark-selective fisheries<br>Reshape harvest management to be more flexible to smaller populations (or ESU or DPS) – i.e., to units smaller than harvest management stocks. | **Hatcheries:**<br>Curtail hatchery production except for critical conservation or reintroduction purposes.<br>As worded, would have SCEE impact to harvest. As worded, doesn't address all the qualitative goals. Look at Orca task force report and how it finessed wording about increasing production to benefit ocras. Think about how to word this so that it addresses the conflicting goals of meeting natural production and harvest goals.<br><br>**Harvest:**<br>Close or severely limit all harvest to maximize natural spawning escapement. (Interim measure to restore natural diversity, distribution & productivity.)<br>Similar issue to above: consider how to incorporate harvest qualitative goals.<br>When unlisted natural-origin fish exceed spawning escapement goals, allow harvest. |

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| **Benchmarks** | For all strategies: Identify benchmarks. After 15-25 years, evaluate results relative to benchmarks. If not met, additional actions are triggered. | For all strategies: Identify benchmarks. After 15-25 years, evaluate results relative to benchmarks. If not met, additional actions are triggered. | For all strategies: Identify benchmarks. After 15-25 years, evaluate results relative to benchmarks. If not met, evaluate needed changes in strategies. |
| **SCE&E Considerations and Strategies** | • All H approach.<br>• Closest to status quo SCE&E.<br>• By making some more radical decisions contingent on not meeting benchmarks, provides time for more public buy in and planning for addressing SCE&E impacts of those actions.<br><br>**Habitat:** will continue to get more expensive as projects become more complex/expensive and as the available pool or projects gets smaller. Willingness to take risks on outcomes of habitat projects – projects are getting bigger and more complex so funders may be more hesitant to fund without high certainty of outcome. | • All H approach.<br>• Would require substantially increased funding for enhanced efforts.<br>• Habitat efforts could have implications for private landowners and public lands management; could also create jobs.<br>• By making some decisions contingent on benchmarks, provides time for more public/political buy in and planning for addressing SCE&E impacts of those actions.<br><br>**Potential to modify operations (beyond what's in HCP) at PUD dams:** From PUDs' perspective, difficult b/c have to take systems offline. Political/social will needed to change HCP management regime. Economic and maintenance factors (restrictions on how many turbines can be offline; requirements for other species – e.g., bull trout). | • All H approach.<br>• Costly: Would require drastically increased funding for enhanced efforts.<br>• Habitat efforts could have implications for private landowners and public lands management; could also create jobs.<br>• Do not have public consensus at this point.<br>• Disruptive to power and navigation sectors and to fishery interests.<br>• Current mitigation funds for habitat and hatchery production would likely be substantially reduced.<br><br>Grant/Chelan PUD: Operating fish bypass year round would have implications for maintenance; cost considerations. Fish friendly turbines = $150 million to replace.<br><br>Trib hab: political/social will and economic resources to address existing development and prevent additional degradation.<br><br>Blocked areas: Passage could be very costly. But achieving passage would benefit local economies, reinvigorate tribal and non-tribal cultures, provide subsistence/recreational fishing opportunities, and provide marine derived nutrients.<br>See Earth Economics report (Columbia Basin Evaluation) |

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| **Critical Uncertainties/Research Needs** | Habitat that's in relatively good condition isn't as productive as we'd expect – why?<br>Uncertainties re. hydro: survival studies done primarily with hatchery fish. Impacts may not be the same to natural-origin fish.<br>Impact of non-native fish predators.<br>**Additional from Greer's report:**<br>Need better understanding of habitat status and fish survival at population scale.<br>Need better understanding of how fish respond to habitat actions.<br>Need better understanding of how habitat actions contribute to recovery.<br>Future changes in temperature and precipitation could have regional effects on the timing and distribution of water, water quality, ocean conditions, and the susceptibility of areas to expansion and introduction by non-native species.<br>Toxic pollutants throughout the Columbia River are well documented and continue to be a growing concern. The collective impacts of contaminants on Upper Columbia fish that migrate through the lower Columbia are unknown.<br>Non-native species are a major threat to the region and to the Columbia basin as a whole.<br>Uncertainty about the carrying capacity of freshwater habitats. | Fish used in PUD hydro survival studies are predominately hatchery-origin juveniles, which are often larger and could display different characteristics than natural-origin fish. | Engineering for passage systems.<br>Biological uncertainties. |
| **Regional Considerations**<br><br>(this was focus of 1/7/20 meeting) | | | |
| **Innovation & experimental management**<br><br>(not discussed at 1/7/20 meeting) | | | |

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| **Strategic choices, sequencing considerations, early successes, stock specificity**<br><br>(not discussed at 1/7/20 meeting) | | | |
| **Climate/population considerations**<br><br>(not discussed at 1/7/20 meeting) | Protect and restore stocks and populations regardless of their vulnerability to possible climate change effects. | Prioritize protection and restoration efforts for stocks and populations which are least vulnerable to climate. | Maximum improvement effort for stocks and populations which are least vulnerable to climate and/or actions most likely to improve climate resilience. Restore access to currently-blocked areas which are least vulnerable or most resilient to effects of climate change. |

General Questions:

Question about consistency of assumptions across regions + willingness to go beyond constraints
Question about how to address habitat capacity in Canada.

Discussion about need to integrate the full suite of qualitative goals (natural production; hatcheries and mitigation; harvest and fisheries; and social, cultural, economic, and ecosystem) into the scenario instead of making the scenario focused on achieving the natural production goals.