



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE  
West Coast Region  
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**VIA ELECTRONIC FILING**

February 24, 2023

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

Re: NOAA's National Marine Fisheries Service's Comments on the November 30, 2022  
Draft License Application for the Skagit River Hydroelectric Project, Docket P-553-235

Dear Secretary Bose:

National Marine Fisheries Service (NMFS), a division of the National Oceanic and Atmospheric Administration (NOAA), in accordance with 18 C.F.R. § 5.15, respectfully submits these Comments on Seattle City Light's (Licensee's) Draft License Application for the Skagit River Hydroelectric Project (Project).

NMFS continues to actively participate in the relicensing process for the Project and to support the Licensee's efforts to complete the requested studies and negotiate settlement terms protective of fish, including ESA-listed species. However, NMFS continues to be concerned that a number of key studies remain incomplete, and that the results of some partially-completed studies are prematurely applied in reaching conclusions in the Draft License Application. Ongoing settlement conversations have been complex and slow to develop with only recent progress in discussions. NMFS anticipates that additional environmental review time may be necessary to resolve settlement differences and conclude studies. Based on study results to date, NMFS believes that an additional study season or settlement negotiation period prior to release of the Ready for Environmental Analysis (REA) may be necessary for NMFS to meet our



statutory obligations under the Federal Power Act (FPA),<sup>1</sup> the Endangered Species Act (ESA),<sup>2</sup> the Magnuson-Stevens Fisheries Conservation and Management Act (MSA),<sup>3</sup> and the Fish and Wildlife Coordination Act (FWCA).<sup>4</sup>

Sincerely,



Elizabeth Babcock  
Branch Chief, North Puget Sound Branch  
Oregon Washington Coastal Office

Enclosures: NMFS' Comments on the DLA  
Certificate of Service to FERC

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<sup>1</sup> 16 U.S.C. §§ 791 *et seq.*

<sup>2</sup> 16 U.S.C. §§ 1531 *et seq.*

<sup>3</sup> 16 U.S.C. §§ 1801 *et seq.*

<sup>4</sup> 16 U.S.C. §§ 661 *et seq.*

## **RESOURCE MANAGEMENT GOALS AND OBJECTIVES**

The primary objectives of NMFS include rebuilding, and ultimately maintaining, healthy, self-sustaining anadromous fish runs in the Skagit River basin, and to fully utilize both the currently available and additional functional habitat areas and types necessary to support recovery, abundance, genetic and spatial diversity, and productivity. These objectives apply with respect to species listed under the ESA and their habitat, as well as those that are not currently listed but that are affected by continuing project operations. NMFS's goal under our authorities is to increase the habitat quantity, quality, and capacity for fish and other aquatic resources to offset impacts imposed by the Project and its continued operations. Increased habitat quantity, quality, and capacity is necessary to achieve recovery of ESA-listed species, avoid, minimize and compensate for adverse effects on designated critical habitat and essential fish habitat, meet tribal trust responsibilities and treaty rights, provide harvest opportunity, and ameliorate the compounding effects of project operations under changing climate conditions. Increased habitat quantity, quality, and capacity should include, at a minimum, protection, mitigation, and enhancement of estuary habitat, floodplain habitats, and water quality to support healthy anadromous species and provide fish passage through the project. Our comments on the Draft License Application (DLA) are intended to improve the likelihood and certainty that the Licensee's final license application (FLA) will achieve these outcomes.

## **AUTHORITY RELATED TO THE FEDERAL POWER ACT SPECIFIC TO FISH PASSAGE**

NMFS is responsible for protecting and managing a variety of marine resources, including Pacific salmon, groundfish, coastal pelagic species, sturgeon, and marine mammals, and their habitats, under the Endangered Species Act (16 U.S.C. §§1531 *et seq.*) (ESA), the Federal Power Act (16 U.S.C. §§ 791 *et seq.*)(FPA), the Magnuson-Stevens Fisheries

Conservation and Management Act (16 U.S.C. §§1801 *et seq.*) (MSA), the Reorganization Plan Number 4 of 1970, Pacific Northwest Electric Power Planning and Conservation Act (16 U.S.C. §§ 839 *et seq.*), the Pacific Salmon Treaty Act of 1985 (16 U.S.C. §§ 3631–3644, and other laws. In hydropower licensing proceedings, NMFS typically participates pursuant to sections 10(a), 10(j), and 18 of the FPA.

Section 18 of the FPA expressly grants to the Department of Commerce and the Department of the Interior unilateral authority to prescribe fishways. Section 18 of the FPA states that FERC must require construction, maintenance, and operation by a Licensee at the Licensee's own expense of such fishways, as may be prescribed by the Secretary of Commerce or the Secretary of the Interior. Within the Department of Commerce, the authority to prescribe fishways is delegated to the NMFS Regional Administrators.

#### **NMFS' COMMENTS ON THE DLA**

In this proceeding, the Licensee and its agents have expressed a commitment to an “ecosystem based approach” to the relicensing of this project (e.g., DLA Ex. E at 1-1). NMFS supports this commitment. Throughout our policy and technical engagements in this relicensing process, NMFS has clarified that a scientific and ecosystem-based approach involves evaluation of direct, indirect, and interrelated effects of actions and management approaches on aquatic species, including consideration of both immediate and long-term environmental factors affecting the Skagit River ecosystem, such as habitat loss and climate change. This evaluation must be informed by the best technical and scientific information available. The Licensee has not adapted the DLA to account for current study results, nor has the Licensee integrated study results across interrelated Project effects, such as flow and operations models, largely due to the incompleteness of the studies. In one example, the evaluation of the effects of climate change on

flows and potential management responses have not yet been developed (see *Climate Change Effects* below). Throughout the DLA, the Licensee provides discussions and arguments suggesting that the current license has been successful as justification for maintaining the status quo. However, because most of the studies remain incomplete with very few final results available to NMFS and other licensing participants (LPs), the DLA does not adequately describe the Project's effects. In some cases, study results are cited despite their incompleteness, including outcomes that have not previously been shared with or scientifically evaluated by NMFS or other LPs with relevant expertise. For example, the Licensee completed less than half of the tributary surveys it had planned, yet the DLA infers that habitat values are limited beyond the areas that were sampled (DLA Ex. E at 4-329). Further, the Licensee appears to be using the incomplete studies and delayed settlement negotiations to justify maintaining status quo Protection Mitigation and Enhancement (PM&E) measures (e.g., DLA Ex. E at 1-1). Under these constraints, it is not possible to evaluate Project operations and potential PM&E measures under an ecosystem-based management perspective, to which the DLA purports to adhere.

FERC has tentatively identified the geographic scope for analysis of Project effects on fish resources as including the entire Skagit River from its headwaters to where it empties into Puget Sound (DLA Ex. E at 5-1). This geographic scope is warranted because the operation and maintenance of the Project affects fish resources throughout the entire Skagit River basin. We continue to underscore that fish and the habitat upon which they depend spans the entirety of the river system, thus any aspect of the Project that affects fish or habitat values (e.g. water quality) should be included within the scope of the analysis of Project effects.

*Fish Passage*

The fish passage studies conducted by the Licensee are composed of 1) technical feasibility, 2) genetic studies, 3) tributary habitats, and 4) reservoir productivity. FERC's Study Plan Determination (FERC 2021) only required the technical feasibility and the reservoir productivity studies; the Licensee agreed to conduct the additional studies as described in the Revised Study Plan (City Light 2021a and City Light 2021b). As of this writing, few of the studies are complete. Some draft material has been made available to NMFS and other LPs as analyses are completed. NMFS notes that the current passage feasibility study (FA-07) lacks an analysis of draft tube effects on upstream migrating fish at the Gorge Powerhouse. Given the concentration of fish at this location and potential harm to ESA-listed species, an analysis of effects to salmon and steelhead is required to determine if modifications to the existing powerhouse outfalls are necessary and to facilitate safe fish passage in future design considerations. If passage facilities (such as a barrier) are needed, NMFS is likely to require it through Section 18.

NMFS notes two initial shortcomings of the tributary habitats study (FA-07). First, tributaries in Canada were not surveyed as agreed to by the Licensee (City Light 2021b). Discussions in the DLA are limited to U.S. tributaries, despite the DLA making reference to the entire area inclusive of Canadian tributaries. Therefore, conclusions about available habitat and random sampling are inappropriately applied to the draft conclusions (DLA Ex. E at 4-330). Second, the Licensee used WDFW (1975) to define barriers, which inappropriately truncated the habitat surveys. NMFS thoroughly cautioned the Licensee against using these nearly 50 year-old data, as many barriers identified in the WDFW historical mapping exercise were transient barriers or potential barriers that were never corroborated with field surveys (DLA Ex. E at 4-329). Information from the reservoir productivity study has not been shared with NMFS and

other LPs. There is inadequate information available at this time to meaningfully comment on the overall studies or their eventual integration into the FLA.

The DLA includes a brief and inadequate proposal to provide fish passage from Gorge Dam to Gorge Reservoir. For the FLA, fish passage evaluations and feasibility assessments should include fish passage at each dam, including from Gorge Powerhouse to Ross Reservoir with upstream and downstream passage facilities at each project.

The DLA mistakenly characterizes steelhead and Chinook salmon as “not recorded in past or present studies” for Gorge Lake (DLA Ex. E, Table 4.2.3-1, note 2) when the presence of these species in the area is historically known and recorded (USIT 2020). Further, there is no scientific or evidentiary support for concluding that other salmon or steelhead populations did not occupy habitats above Diablo or Ross dams. The Licensee asserts that anadromous fishes did not occupy the areas now covered by Diablo and Ross reservoirs, using only outdated, anecdotal information. To be clear, none of the information supported by the Licensee precludes the historic presence of anadromous fishes in the habitats now occupied by Diablo and Ross reservoirs.

The DLA states that only Bull Trout, Rainbow Trout, and Dolly Varden are native to the Skagit River above the Project (DLA Ex. E at 4-278). In the FLA, the language should be changed to state “Of the six species currently observed above Gorge Dam, only Bull Trout, Rainbow Trout, and Dolly Varden are known to be native”.

The DLA misrepresents the potential for downstream movement of fish (DLA Ex. E at 4-288). Brook trout have been observed in the bypass reach, providing suggestive evidence that downstream passage is possible via spill or entrainment, which may have implications for other studies cited in the DLA (e.g., Bull Trout migration downstream).

NMFS observes that the Project boundary appears to be excluded from most of the bypass reach in some figures (e.g., DLA Ex. E Figure 4.2.3-21). We are unsure if this was intended or represented a scale error and suggest it be corrected in the FLA.

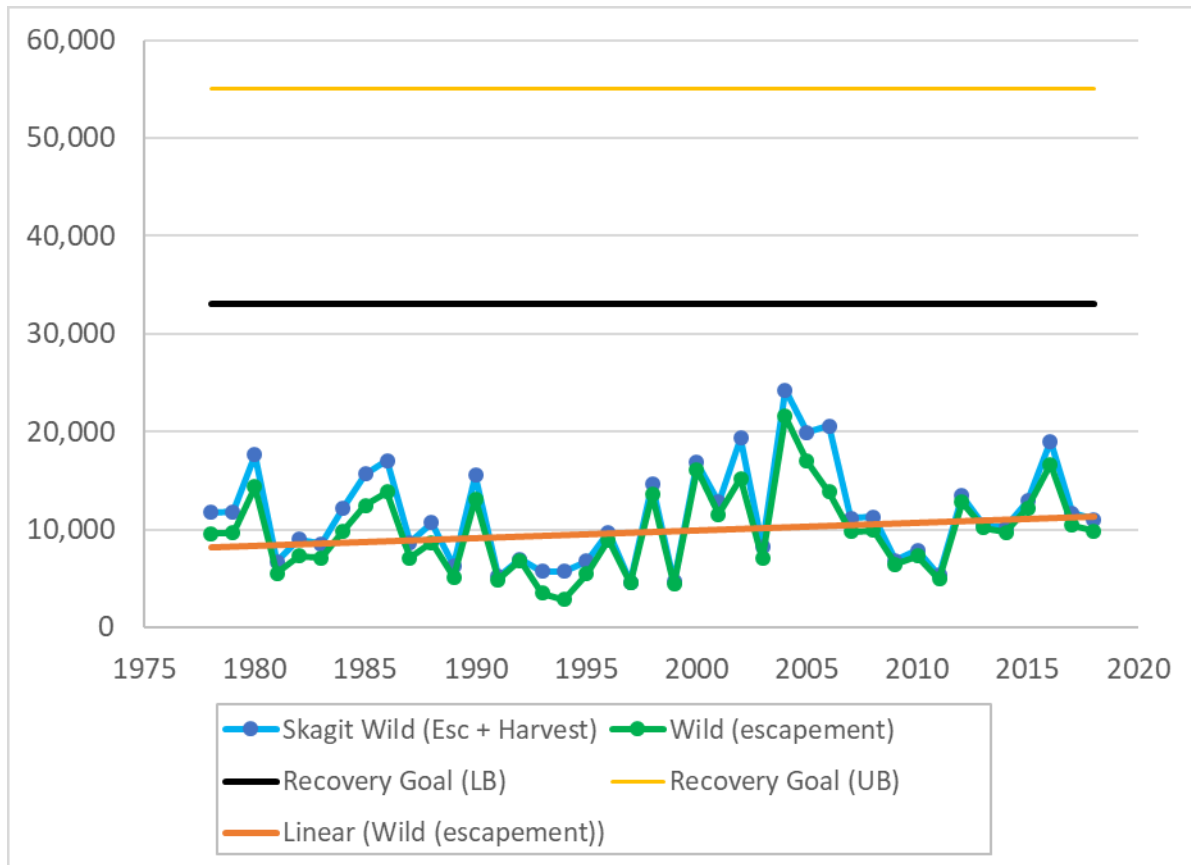
#### *Status of the Species*

Ford (2022) describes the status and viability of ESA-listed Puget Sound Chinook salmon and steelhead populations. The DLA states that the Skagit Chinook salmon runs are the largest in the ESU (DLA Ex. E at 4-278). While this statement is accurate, we note that the Skagit River is the largest river draining into Puget Sound, and associated abundances of Chinook salmon *should be* the largest in Puget Sound. Therefore, this fact does not demonstrate that the Skagit populations are healthy or are unaffected by the Project. The DLA inappropriately alludes to dam operations as responsible for producing abundant populations (DLA Ex. E at § 4.2.3.2). Skagit River Chinook populations are at 10-20% of their recovery thresholds, and have sustained this static and depressed level of recovery for more than 30 years (Figure 1), throughout the duration of the current license. Further, the DLA mischaracterizes Ford (2022) by stating that all Puget Sound populations of Chinook salmon are below recovery thresholds, except Skagit River system populations. In fact, all Puget Sound Chinook salmon populations are below recovery thresholds (Figure 1; Ford 2022), and the FLA should correct this mischaracterization.

With respect to ESA-listed Puget Sound steelhead, the DLA also suggests that Project operations are sufficient under current status. However, Puget Sound steelhead, like Chinook salmon, have been at depressed abundance levels over the duration of the current license. Under the new license, the Licensee must take actions to support and improve the trajectory of recovery of salmon and steelhead in the Skagit River. With Licensee-controlled management that governs the input of flow, water quality, large wood, sediment, and other habitat factors in more than



37% of the Skagit basin, it is necessary for the Licensee to improve on its current actions to mitigate for project effects. This is particularly important under the specter of climate-related environmental variability over the duration of a future license.



**Figure 1.** Long term trends in Chinook salmon abundance, relative to recovery goals under consistently low productivity (yellow line) and High productivity (black line).

As NMFS has previously described in our comments on the Pre-Application Document (PAD) and Proposed Study Plan (PSP), there are misstatements in DLA that should be corrected in the FLA. For example, the DLA states that coho salmon are “a candidate population for listing under the ESA” in Puget Sound (DLA Ex. E at 1-5). NMFS defines a candidate species as one that is being reviewed to determine their status under the ESA. Puget Sound coho salmon are not currently under review for ESA-listing consideration. References to the candidate status of coho

salmon in the FLA should be removed (e.g., DLA Ex. E Table 4.2.3-1, Table 4.2.3-33). We note that coho salmon are a managed species under the MSA, and Project effects to essential fish habitat should be evaluated and mitigated. Additionally, NMFS has previously pointed out (in the PAD and PSP) that a final version of the Puget Sound steelhead recovery plan has been available since December 2019 (NMFS 2019). The Licensee continues to cite the draft version of the plan (see for example, DLA Ex. E at 4-375).

The Licensee cites Johnson et al. (1997) in describing the spawning habitats of chum salmon as generally not seeking groundwater for spawning (DLA Ex. E at 4-304). This is inaccurate. The majority of citations referred to in Johnson et al. (1997) conclude that chum salmon are more likely than not to select spawning areas with groundwater. The Licensee should revise their conclusions in the FLA to reflect the best available scientific information.

On pg. 4-308, Exhibit E, the DLA uses the 2015 Status Review for Puget Sound steelhead to conclude that the risks faced by the DPS have not changed significantly since the 2007 ESA listing (Ford 2022). The Licensee should use and cite the Ford (2022) viability report, because it contains the best available scientific information on the status of the DPS.

The DLA states that, despite extensive surveys, the only location where summer-run steelhead are currently known to spawn is from RMs 8.0 to 11.6 of Finney Creek. Summer steelhead enter Finney Creek in October-November and spawn primarily from February-March (Sauk-Suiattle Indian Tribe et al. 2018) (DLA Ex. E at 4-308). The Licensee should review McMillan (2018) for a list of other potential streams that support summer-run steelhead. Also, Myers et al. (2015) list Day and Finney Creeks and Cascade River as having summer runs. For the FLA, the Licensee should provide a list of the “extensive surveys” undertaken to support their conclusion.

The DLA describes Rainbow Trout in Stetattle Creek as genetically distinct from steelhead in the Skagit River (Kassler and Warheit 2012, as cited in Pflug et al. 2013, Small et al. 2020) (DLA Ex. E at 4-308 & 4-394). The Licensee has generalized the genetics results for *O. mykiss* and has not discussed the genetic distinctness of likely residualized steelhead in Stetattle Creek. The Stetattle Creek population likely contains the genetic legacy of a historically anadromous population (as has been recognized by the Licensee). Additionally, the DLA states that "as described in Downen (2014), a recent analysis conducted by WDFW (Kassler and Warheit 2012, as cited in Pflug et al. 2013) found that Rainbow Trout in Ross, Diablo, and Gorge lakes are similar to each other, supporting the agency's management of these fish as a single population" (DLA Ex E at 4-394). Similarities among Gorge, Diablo, and Ross reservoir populations of *O. mykiss* may be due to releases of rainbow trout from the Ross reservoir program and other historic hatchery releases (See Neuman, 1988, Apdx. III). Results of FA-06, the Licensee's genetic study, recently concluded that the genetic structure was likely affected by hatchery introgression, hybridization (with cutthroat trout), genetic drift and small sample sizes in addition to hypothetical historical hydrogeological connectivity (Blankenship and Bingham 2023). This information should be clarified in the FLA.

The DLA identifies seven genetic groups of Rainbow Trout (DLA Ex. E at 4-313): (1) the upper Skagit (below Gorge) natural-origin steelhead and Baker River Rainbow Trout were in group 1; (2) Rainbow Trout from the Cascade River, Big Creek, Clear Creek, Finney Creek, and Blackwater River (Fraser River Tributary) were in groups 2, 3, 4, 5, and 7 respectively; and (3) the seven collections of resident Rainbow Trout from the upper Skagit River were in group 6. The DLA's analysis of the upper Skagit River Rainbow Trout collections revealed three genetic groups: (1) Diablo Lake and Stetattle Creek were in group 1; (2) Dry and Roland creeks were in

group 2; and (3) Ross Lake 2010 was in group 3. Two other groups had split ancestry: Ross Lake 2006 was in groups 1 and 2, and Ross Lake 2009 was in groups 2 and 3. Stetattle Creek was earlier cited as being distinct from Skagit River populations below Gorge Dam, but it was also distinct from upstream populations. In the FLA, the Licensee should provide a comparison among upstream and downstream populations that clarifies these inconsistencies.

As an evaluation of flow plan adequacy (DLA Ex. E at 4-402), the DLA points to Bull Trout predation to explain steelhead status. However, the predation analysis does not include juvenile pink and chum salmon, which due to their abundance and slow swimming speed, are much larger sources of nutrient inputs for Bull Trout. The Licensee should include a more comprehensive analysis of steelhead status and include the bioenergetics associated with Pink and Chum salmon fry.

The DLA hatchery section (DLA Ex. E at 5-14) jumps back and forth between species and often makes points without identifying the species being named. This is confusing and should be corrected in the FLA.

The DLA description for Southern Resident killer whale (SRKW) critical habitat should be amended for the FLA to include the evaluation of Physical and Biological Features (PBF) for prey species, including Chinook salmon (DLA Ex. E at 4-389).

#### *Climate Change Effects and Flow*

The DLA includes a brief discussion of climate change (DLA Ex. E at 5-16), but lacks detail about the anticipated effects of climate change on Project operations or on species affected by the Project. A robust analysis of these issues is needed in the FLA.

Climate change is accelerating habitat loss, disrupting fisheries, and increasing storm frequency and intensity. As a result, species' need for climate change resiliency through access to suitable habitat continues to grow. While climate change is viewed by many as a slow process

that may not affect society and the environment for 30–50 years into the future, NMFS has observed many challenges and changes to our managed species' population abundances, productivity, and distribution resulting from impacts of recent climate variability (NOAA 2016). Given that the proposed new license term will apply for 30 to 50 years into the future, climate change must factor into the evaluation of the Project's effects and inform decisions regarding sufficient PM&E measures, fish passage, and access to habitat.

When describing “climate variability” NMFS refers to seasonal, interannual, and decadal variability in physical forces that drive freshwater, estuarine, and marine biological responses associated with basin-scale oscillations such as the Pacific Decadal Oscillation, the Northern Pacific Gyre Oscillation, and the El Nino Southern Oscillation, as well as to the local-regional impacts from seasonal variability in temperature, precipitation, stream flow and temperature, and upwelling. Both climate change and climate variability have major, and only partly understood, impacts on freshwater, estuarine and marine food webs, fishery and protected resources, and the resource-dependent communities. Without management actions that mitigate or resist climate change impacts in freshwater habitats (including increases of habitat), climate change is very likely to diminish the productive capacity of many West Coast watersheds for Pacific salmon and steelhead. Estuaries experience climate change from the atmosphere, the ocean and the tributary freshwater environments. Changes in estuarine systems due to rising coastal sea level, warming temperatures and altered stream temperature, stream flow timing and volume will cause multiple stresses on anadromous species through habitat modification, changes in primary and secondary production, altered species composition and food-web structure, and changes in fish metabolism (NOAA 2016).

Climate impacts combine to affect the whole ecosystem, from the mountainous origins of the streams that flow to the Pacific to the open ocean far from shore. Especially affected are the anadromous fish whose habitats span the entire region. In the West Coast states, the massive degradation and loss of freshwater, floodplain, and estuarine habitats, coupled with intensive human use of freshwater resources, have greatly increased the vulnerability of anadromous fishes to climate impacts (NOAA 2016).

In the DLA, the Licensee proposes to use the large volume of cold water stored in Ross Lake to counter climate-change impacts and states that this “water will become a valuable fish management tool in the future, particularly in summer, thereby contributing positively to cumulative effects in the Skagit River basin.” The DLA does not clarify this proposed action nor address potential negative effects on species and habitat. Further, the use of this cold water during summer months is likely already imposing other ecosystem wide and species-specific problems (delayed growth and egg maturation). This combined with a disruption of timing of food resources in Puget Sound may no longer coincide with the arrival of smolts due to delayed migration associated with temperature regimes that are artificially too cold as has occurred with other hydro projects (Angilletta et al. 2008, Williams et al. 2008). Therefore, habitat amounts, especially those in areas with low anthropogenic effects, may become increasingly important through time. The FLA should specify what measures the Licensee is proposing with respect to cold-water releases from Ross Reservoir and thoroughly evaluate the effects of those measures on ESA-listed species in conjunction with anticipated climate-change impacts.

The Licensee is requesting a 40-50-year license (DLA Ex. E at 1-1) but the DLA is lacking in justification for such an extended license period. For example, flow quantity and timing, glacier size and snow pack, storm timing and intensity, and stream temperatures are

expected to change in measurable ways during that timeframe with negative consequences to salmon and steelhead. Despite these significant influences, the Licensee has not integrated climate effects into the Licensee's in-stream or operations models to determine how Project operations should be modified to ameliorate negative impacts to fish. Absent a thorough analysis of climate-change effects and effective operational modifications to counteract those effects, a 40-50 year license term poses unreasonable risks to ESA-listed and non-listed species affected by the Project. NMFS's current understanding of Project effects and climate change and incomplete settlement PM&E measures necessitates a precautionary approach to conserving listed species and the habitats upon which they depend.

The flow, operations and geomorphic modeling is not integrated into the DLA. As of the time of this filing, only the operations modeling was complete. NMFS and other LPs have not been able to review integrated flow and geomorphic modeling information. While discussions on these topics continue under settlement negotiations, interpretations of the data are extremely difficult until integration of these models can produce tangible outcomes. For example, climate change effects have not yet been discussed as a component of model outcomes because fundamental scenarios involving fish, floods, and power generation are still in nascent stages of discussion. The DLA cites Connor and Pflug (2004), which may be an outdated reference for flow regimes that were adopted 2013. The FLA should reflect such updated data, model results, and graphs as needed to support an accurate assessment of the effects of proposed Project operations.

The DLA compares 2015 weather to projections for 2040–2069 in the North Cascades (DLA Ex. E at 4-103). The average from 10 global climate models indicates higher winter temperatures, higher winter precipitation, and lower surface water elevation than 2015. The DLA

does not characterize how this will change the "rule curve" for reservoir downstream releases to accommodate atmospheric rivers and potential decrease in summer pool. In the FLA, the Licensee needs to thoroughly describe how the operations model will affect the "rule curve" for downstream releases provided to transport atmospheric rivers and a potential decrease in the summer pool level.

The DLA (Ex. E at 4-405) cites available guidance (Wald 2009), which suggests that natural hydrologic records should be used to determine appropriate process flows and, where unavailable, the 2- and 10-year flows could be used as the benchmark for setting channel forming and channel maintaining discharges. The Licensee appears to defer to the Wald (2009) default instead of applying flow models and established hydrograph data to develop benchmarks for the Skagit River. NMFS disagrees with this approach, as it is not supported by the best available scientific information. While useful for modeling purposes, process flow levels should be established based on the function they are intended to serve, rather than based on a default time scale intended for use in the absence of data.

The DLA states that it's the Project's 3-dam configuration provides unique flexibility, which allows the lowest dam, Gorge Dam, the ability to regulate flows and protect anadromous fishes downstream (DLA Ex. E at 1-9). The Licensee appears to rely on this argument as support for maintaining status quo management in the new license. NMFS is unclear what the Licensee is intending by characterizing Gorge Dam as having a flexible configuration. Gorge Dam has a very limited storage capacity, as Gorge Reservoir fluctuates only 3–5 ft. (DLA Ex. E at 3-47 & Table 3.1-8). NMFS observes that the settlement agreement under the current license improved fish spawning and incubation conditions below the dam over previous conditions, but falls far short of adequately addressing salmon and steelhead production conditions in the floodplain



(rearing habitat). Also, Gorge Dam is a minor contributor to ameliorating Project effects on salmon and steelhead due to its limited storage capacity.

### *Reservoir Effects*

The DLA claims that there was no evidence of stranding or trapping in shoreline surveys of Ross Reservoir, i.e., no live fish, mortalities or fish remains observed during the 2020-2021 surveys (DLA Ex. E at 4-322). However, a small number of stranded/trapped fish, nearly all reidside shiner (RSS), were observed during the 2021-2022 surveys (DLA Ex. E Table 4.2.3-14). The lack of observed mortalities observed in the shoreline surveys is not equivalent to an absence of mortalities, especially during drawdowns of Ross Reservoir. Survey methods and frequency directly influence data and outcomes. For example, delays in conducting surveys after drawdowns could result in the scavenging of stranding fish, giving the illusion of no mortalities from the drawdowns. The study methods currently used by the Licensee are insufficient to evaluate stranding and trapping risks and will need to be modified when anadromous fishes are passed above the dams. NMFS anticipates that more rigorous sampling will be needed to address risks associated with reservoir elevation changes and salmonid entrapment. Similar evaluations of monitoring and sampling efforts for tributary access, ramping rates, and entrainment also may require revision of existing methods when salmonids are passed above the dams. For example, studies indicate that RSS have been entrained at the Project (DLA Ex. E at 4-324). Juvenile salmon are likely to be similar in size to RSS during early summer months and occupy similar habitats, meaning that additional sampling and precautionary measures must be in place as salmon and steelhead inhabit the reservoir.

According to the DLA, the likelihood of mortality is estimated to be higher for individual fish passing over the spillways than for those passing through the turbines; however, the

frequency of spills at Diablo Dam is low (an average of 39 days annually in normal years (City Light 2022c)), which reduces the significance of spill-related mortality (DLA Ex. E at 4-335). In other words, the DLA indicates that the spill from Diablo Dam would result in nearly 100% mortality for an average of 39 days annually, which is greater than 10% of the year. Under a fish passage scenario, 10% of days of the year would provide considerable opportunity for “attempted passage” and associated mortality. Additional discussion in the FLA should focus on reducing spill and the associated mortality that would result under a fish passage scenario. The FLA should also focus on the dependency on the time of year and whether fish are actively moving in the forebay, trying to move downstream.

The abundance of redbase shiners was assessed by a dedicated hydroacoustic survey, which estimated a minimum population size of 10 million individuals > 40 mm fork length during late summer/fall of 2021 (DLA Ex. E at 4-327). The abundance of 10 million redbase shiners suggests a considerable productivity potential in Ross Reservoir, but this obvious observation was omitted from discussion in the DLA. Instead, the Licensee characterizes only the potential for competition with salmonids under a fish passage scenario. For the FLA, the Licensee should evaluate the competitive advantage enjoyed by salmonids versus redbase shiners in cool water habitats (Reeves et al. 1987).

The Licensee concludes that Ross Reservoir is neither accumulating nor losing sediment (DLA Ex. E at 4-69). However, previous studies (Riedel 1990) concluded that the shoreline along Ross Reservoir has lowered between 2.8 and 9.2 ft. between 1949 and 1989 and that the substrate had coarsened due to wave actions associated with the reservoir and Project operations. The Licensee further concludes that its current study (GE-03) found no sediment accumulation or erosion at the head of Ross Reservoir from 1990 to 2022 (DLA Ex. E at 4-78). NMFS is

concerned with sediment sequestration at the head of Ross Reservoir and requested bathymetric studies to quantify the accumulation of sediment at the head of Ross Reservoir to understand the amount of sediment that was thereby unavailable to downstream habitats (see NMFS comments on the PSP). The Licensee's study appears inadequate to estimate the amount of sediment accumulating at the head of Ross Reservoir, and therefore cannot support an evaluation of the Project's effects on aquatic species and habitats. The GE-03 study appears to recognize this outcome in its conclusion:

The low levels of deposition at the upper end of Ross Lake suggest either that sediment input from the Skagit River is relatively low or that sediment is deposited at elevations lower than those during the field inventory (1,590.26 feet NAVD 88 [1,584 feet CoSD]) (pg. 4-69, Exhibit E).

DLA Ex. E at 4-69. The methods used to identify sediment accumulation at Stetattle Creek, which are described as impacting Project operations at Gorge Dam (DLA Ex. E 4-93) should be employed for the evaluation at Ross Reservoir to provide a more useful evaluation of sediment sequestration effects on salmon and steelhead in downstream habitats.

#### *Downstream Effects*

The Licensee proposes to include off-channel habitat enhancement in future PM&E measures in the FLA (DLA Ex. E at 3-68). The Licensee should include estuaries as an essential element of successful habitat enhancement PM&E measures in the FLA due to the importance of this habitat to anadromous species (SRSC and WDFW 2005), as acknowledged by the Licensee (see, e.g., letter from Debra Smith, dated 01/18/2023).

The DLA reports that the contributions of sediment and large wood from tributaries below the dams and improved land management activities are adequate measures of performance

under the current license (DLA Ex. E. at 4-397). However, neither of these measures (wood and sediment) are a reflection of Project performance. The DLA does not elucidate the primary issue—but for the presence and continued operation of the Project, how much sediment would be available to form and maintain habitat conditions for salmon and steelhead, including the floodplain habitats? The FLA must provide sufficient information to support a careful evaluation of this Project effect and improvements to offset adverse impacts to aquatic species.

The DLA describes the substrate below the project as stable with only small scour detectable in studies conducted in 2019 and 2020 (DLA Ex. E. at 4-397). However, the Project tempers peak flows to maintain flood control and power production. It is unsurprising that the stream substrate did not mobilize in the studies, as sediment continues to be sequestered behind the dams. The FLA should describe PM&E measures to augment sediment and large wood and accurately monitor sediment mobilization and scour due to Project operations.

The DLA reports on the results of the Licensee's preliminary Gorge bypass study, concluding that fish passage through the bypass reach is currently limited to certain species and life stages. Although the DLA cites the observations of the tribes, NPS, and WDFW as confirming the presence of specific species and life histories, the Licensee does not test the hydraulic model against these direct observations to validate the hydraulic tools it then concludes limit fish passage in the reach (DLA Ex. E. at 4-342). We also note that no attempt was made to examine fish passage capabilities if impediments (road-associated boulders) were removed. The FLA should include a comprehensive discussion of these issues.

The DLA states that flows in the Gorge bypass reach will commence after a variable flow release valve is installed at Gorge Dam (DLA Ex. E. at 3-68). The flow release valve's engineering design and installation will be subject to FERC review and approval, and the new

flow regime in the Gorge bypass reach will require coordination with the flows from the Gorge Powerhouse. The DLA does not include a timeframe for this action. NMFS recommends that implementation of this action be completed within a specified and reasonable timeframe, e.g., within two years of license issuance and be designed in concert with fish passage designs. The Licensee should provide the draft designs to the LPs for review and comments prior to submittal to FERC for approval.

The DLA shows elevated total dissolved gas (TDG) above 120 in bypass (DLA Ex. E. at 4-228). Spill will continue to produce elevated TDG levels, especially when adding historic flows back into the bypass reach. The installation of the control valve at the face of Gorge Dam must reduce and control TDG. Recognition of this challenge should be made explicit in the FLA.

The DLA states that Skagit River from Gorge Dam to Gorge Powerhouse (Gorge bypass reach), temperature shall not exceed a 1-day maximum temperature (1-DMax) of 21°C due to human activities (DLA Ex. E at 4-131). This criterion should be revised because temperatures of 21°C for a single day would likely kill most salmonids (Beechie et al. 2013). In addition to mortality, increased temperature regimes can also cause sub-lethal effects (Ligon et al. 1999). Temperatures at sub-lethal levels can effectively block migration, reduce feeding activity and growth, increase susceptibility to diseases and parasites, affect reproduction, inhibit smoltification, and reduce competitive dominance (Reeves et al. 1987, USEPA 1999).

Additionally, the study results from FA-01 indicate that stream temperatures entering Gorge Dam from the reservoir did not exceed 16°C in that study. The FLA should correct this inconsistency.

Flood risk management operations are initiated by the Seattle District, U.S. Army Corps of Engineers, Reservoir Control Center whenever it receives a flood forecast from the National

Weather Service (NWS), Northwest River Forecast Center (NWRFC), or a flood forecast prepared internally indicating that natural flows at Concrete will reach 90,000 cfs in 8 hours on a rising flood. The Licensee should employ additional flexibility in flood control by using a forecast informed reservoir operation (FIRO), which provides more advance notice of precipitation events. Flood control releases from the dams can trigger negative consequences for fish, and additional flexibility in the form of advanced notice from a FIRO can minimize these effects.

### *Treaty Rights*

The Licensee states in the DLA that the Project will not impact or affect the rights of tribes to exercise their treaty rights, presumably, to harvest fish (DLA Ex. E at 4-713). *U.S. v. Washington* (commonly, the Boldt decision) affirms the treaty rights of tribes to harvest 50% of harvestable salmon and steelhead. A sub-proceeding of *U.S. v. Washington* (Martinez decision) concluded that fish blockages on state-owned road culverts limited the rights of tribes to harvest fish by reducing the productivity of the available habitat. NMFS has a trust responsibility to the affected Tribes to exercise our authorities with regard to protecting tribal interests. Providing fish passage through the Project in a responsible manner will further both NMFS's and tribal interests in restoring sustainable fisheries to the Skagit River basin and should be addressed in the FLA.

### *Conclusion*

Throughout the DLA, the Licensee employs conclusions that are founded on incomplete studies. As a result, future effects to fish, including ESA-listed salmon and steelhead, from Project operations are difficult, and in some cases, impossible to assess based on the information in the DLA. Furthermore, settlement negotiations have been hampered by incomplete studies and associated information gaps. Although recent settlement negotiations have improved, substantial

work in negotiations remain and will require time. NMFS anticipates that additional time may be needed prior to the release of the Ready for Environmental Analysis (REA) if the necessary, scientifically based evaluations and discussions are to occur and settlement articles are to be achieved.

NMFS strongly recommends that the Licensee improve certain studies as described above and looks forward to completion of studies in the coming months, leading to a substantially improved and more complete FLA. We appreciate this opportunity to comment on the progress of the license application and look forward to continued discussions to improve the PM&E measures for fish, including ESA-listed salmon, steelhead, and SRKW, and to fulfill our treaty trust responsibilities.

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**UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION**

**Seattle Public Utilities  
Seattle City Light**

**) Skagit River Hydroelectric Project  
) FERC No. P-553-235**

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served, by electronic or first-class mail, a letter to Kimberly D. Bose, Federal Energy Regulatory Commission, upon each person designated on the official service list compiled by FERC in the above-captioned proceeding:

(1) Containing NOAA's National Marine Fisheries Service Comments on the November 30, 2022 Draft License Application for the Skagit River Hydroelectric Project, Docket P-553-235

Dated this 24 day of February, 2023

*Bonnie J. Hossack*  
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Bonnie J. Hossack  
National Marine Fisheries Service

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