Jennifer Saxe
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200 Kent Street.
Ottawa, ON, K1A 0E6

September 2, 2026

RE: Draft Technical Standard for Existing Facility Operations and Water Flow Management

Dear Ms. Jennifer Saxe,

Thank you for the opportunity to provide comment on the draft *Technical Standard for Existing Facility Operations and Water Flow Management* (Technical Standard).

Electricity Canada and Waterpower Canada have been actively engaged the with the Department of Fisheries and Oceans (DFO) over the last seven years to implement the 2019 changes to the *Fisheries Act*. The sector has provided extensive input to ensure that DFO processes are practical and fit-for-purpose; protecting fish populations and their habitat while recognizing the operational needs of existing electricity generating facilities. This is particularly important for the hydro facilities that generate nearly 60% of all electricity used in Canada and make up the backbone of our clean energy supply. Given the need to increase the supply of clean energy to support electrification and fight climate change, regulatory and policy decisions made by DFO should be aligned with these broader objectives.

Based on the information provided to date, DFO's proposed approach to existing facilities has the potential to make it more challenging to meet the objectives of the National Electricity Strategy and will likely add administrative burden, counter to the objectives of the Red Tape Review.

The National Electricity Strategy is seeking to double Canada's electricity capacity by 2050 and reduce emissions through the expansion of clean energy. **DFO's proposed approach has the potential to impose operational constraints on existing electricity generating facilities that could reduce the generating capacity of these facilities.** Reduced capacity means less clean electricity available to Canadians. The fastest, most affordable path to doubling Canada's electricity capacity is by using existing assets as efficiently and effectively as possible then building upon that solid foundation.

Moreover, the proposed approach will likely add administrative burden for the sector to comply with the *Fisheries Act*. If the objective of the Technical Standard is to streamline the approach toward *Fisheries Act* Authorizations (FAA), the proposal currently misses the mark. The Technical Standard, as currently drafted, cannot in most, if not all instances, be used for existing facilities to reduce their information requirements as part of an FAA application. The elimination of the Request for Review option will result in even minor works requiring FAAs, adding administrative

burden. The lack of clarity on consequential details of a proposal that will come into effect in a few weeks adds to the sense of regulatory uncertainty.

As such we urge DFO to pause publication of the Interim Technical Standard on October 15th and work with the sector in good faith to develop an approach to existing facilities that is practically feasible and aligned with broader government objectives. We understand that the Department believes that the *Fisheries Act* hinders their ability to regulate based on the significance of an activity's impact on fish and fish habitat. **Therefore, we believe it is imperative that the *Fisheries Act* be amended to restore its focus on fisheries and fish populations.**

We welcome the opportunity to work with the Department to achieve our common objective of a simplified approach to low-risk and routine projects and a streamlined approach to high-risk projects that is feasible for the electricity sector.

The comments below should not be considered exhaustive commentary on the proposed approach to existing facilities or the Technical Standard but rather comments are meant to be illustrative.

Concerns with the Technical Standard

Fundamentally, the draft Technical Standard does not acknowledge that the main goal of hydroelectric facilities and systems is to produce clean electricity for Canadians. **It incorrectly assumes that operational changes can be made easily and fails to reflect the full range of considerations and constraints that operators must factor in when managing fleets on shared water systems.** While most facilities take reasonable steps and measures to protect fish populations and their associated habitats, this is one consideration amongst many.

For example:

The Technical Standard fails to consider decisions taken and permits issued under provincial jurisdiction, including water use licensing and water resource planning. The Technical Standard should expressly recognize existing Water Management Plans, water use licenses, operating agreements, and watershed-level management frameworks where they already establish flow and level requirements and address relevant environmental objectives. These frameworks are not simply operational preferences; they are formal decision-making instruments that balance environmental, public safety, social, economic, navigation, recreation, Indigenous, infrastructure, and electricity system considerations.

The increasing integration of intermittent energy sources further heightens the need for flexibility within the hydroelectric fleet and reduces the operational latitude available to accommodate new operating constraints. Unlike hydropower, wind and solar generation depend on weather conditions that can change rapidly and remain largely beyond the operator's control. As a result, the power system must be able to compensate in real time for sometimes significant fluctuations in renewable generation to maintain the balance between supply and demand.

In many jurisdictions, this balancing function relies primarily on hydroelectric facilities, which must be able to adjust water releases and power output with a high degree of responsiveness. As the share of intermittent generation continues to grow, the modulation requirements placed on the hydroelectric fleet increase accordingly, leaving even less flexibility to impose additional operating restrictions on individual facilities. A local restriction that may appear reasonable when a facility is

assessed in isolation can therefore contribute to reducing the overall ability of the power system to integrate intermittent renewable energy while maintaining a reliable electricity supply.

Additionally, the draft Technical Standard focuses exclusively on the application of measures to avoid or mitigate impacts to fish and fish habitat instead of the significance of impacts to fish and fish habitat.

In an email from August 19, 2026, DFO stated that the "Technical Standards aim is to incentivize fish friendly design upfront that minimizes risk to fish and fish habitat to as low as reasonably practicable". Similar language was also included in the list of Technical Standard measures provided for our review. Incentivizing upfront design for facilities that were constructed decades ago, and which operate under approved and well-established water management regimes in service of many competing priorities, often including fish and fish habitat, is simply not possible.

Where such measures were not incorporated at the time of construction or considered during the establishment of the facility's operating regime, electricity companies, despite their best efforts, will have few if any opportunities to implement them now. **We are not aware of any existing facility that could reasonably be expected to fully comply with the Technical Standard as written.**

As such, the Technical Standard will provide no benefit in terms of tiering facilities based on the significance of their current impacts and will not lead to any appreciable streamlining of FAA applications. Further, as the Technical Standard does not quantify or evaluate the significance of existing impacts to fish and fish habitat, it will not offer any support in the determination of offsetting requirements.

Further detailed commentary on the draft Technical Standard can be found in the Appendix.

Concerns with the planned elimination of Requests for Review

We are also concerned with the planned elimination of Requests for Review and associated letters of advice from the regulatory process and wish to reiterate our request for clarity on if this process will be replaced by any process outside of making an application for a FAA.

These informal processes currently provide valuable guidance from DFO regarding a wide variety of planned activities. The effects of discontinuing the Request for Review process can be mitigated only if a comprehensive set of Codes of Practice and BMPs are in place. That is not currently the case. This will result in routine works needing to seek a *Fisheries Act* authorization. Eliminating a useful regulatory process without having a substitute process ready to use is counterproductive to improving regulatory efficiency for proponents, Indigenous groups and DFO.

Concerns with the consultation process

We have further concerns with the abbreviated and incomplete consultations associated with the implementation of DFO's proposed approach to existing facilities.

1. Two weeks is insufficient time to assess a technical document with the potential to have significant operational implications for the sector.

2. The consultation on the Technical Standard was only conducted in English. Even where a consultation is informal, conducting it in only one official language raises issues of procedural fairness and meaningful participation. In practice, it affords certain stakeholders an advantage while placing others at a disadvantage, potentially affecting the quality and representativeness of the feedback received. This concern is particularly acute where the consultation period is exceptionally short and the issues under consideration have significant operational implications. In such circumstances, the inability to obtain the consultation materials from the outset in both official languages can materially prejudice affected stakeholders and undermine the fairness and inclusiveness of the consultation process.

3. It is not possible to assess the potential implications of the Department's proposal for existing facilities with the information that has been given. Without further guidance, particularly on the proposed annex to the Existing Facilities Statement and/or the Death of Fish Position Statement, the proposal remains incomplete and thorough review and commentary is not possible.

We are concerned with the rapid rollout of this policy given these procedural concerns. We stand ready and willing to engage with the Department on the Technical Standard and proposed approach to existing facilities which need not be concluded by October 15th to align with the coming into force of the regulatory amendments.

Proposed alternative approach

We respectfully urge DFO to pause publication of the Interim Technical Standard on October 15th and work with the sector in good faith to develop an approach to existing facilities that is practically feasible and aligned with broader government objectives. Furthermore, because the Department is constrained by the *Fisheries Act* which has resulted in a focus on *de minimis* impacts on fish and fish habitat, **we reiterate our call to amend the *Fisheries Act* to restore its focus on fisheries and fish populations.**

We urge DFO to work with the sector to adopt and implement a significance-based framework that:

1. Assesses the significance of any death of fish that may occur at a given facility.

2. Determines whether a *Fisheries Act* authorization is required as a result.

3. And determines whether offsets are required after impacts have been mitigated to the extent practicable or reasonably possible.

The framework must recognize that existing facilities were built according to the standards of the day, with limited ability to alter existing infrastructure or operations today without undermining system reliability and capacity, and often operate within stable systems that have been established for decades. Consequently, **the significance-based framework should only consider any new adverse impacts caused by changes to the existing operation of the facility, or significant impacts on listed species at risk.**

Additionally, we strongly recommend that DFO do not eliminate the Request for Review option at this time.

Thank you for your consideration, we look forward to discussing our comments with you.

Sincerely,

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Appendix – Detailed Commentary on DFO's Draft Technical Standard

The proposed Technical Standard is drafted as a collection of operational best practices or guiding principles of more relevance to greenfield developments. However, in the context of an authorization regime for existing facilities, the measures take on an entirely different significance. As it is currently written, each measure essentially becomes either a commitment by the operator to comply with them at all times, or an unachievable constraint on operations and compliance with the standard. This premise is unrealistic.

Operating a generating fleet does not consist of managing a collection of isolated facilities each with its own fixed set of rules. Each facility has its own technical, hydrological, environmental, and safety constraints, while remaining interdependent with the other facilities in the system. Operating conditions continually evolve based on natural inflows, system needs, safety imperatives, and maintenance, inspection, or repair interventions required to ensure the long-term integrity of the facilities. In this context, it is impossible for an operator to guarantee simultaneous and constant compliance with all the proposed standards.

A framework based on absolute obligations reflects neither the operational reality of existing facilities nor the inherent complexity of integrated fleet management. Flexibility must exist to enable each facility to operate within a range of reasonable conditions. The Technical Standard as drafted does not provide that flexibility. **The cumulative effect of the proposed standards would make overall water management on a system-wide basis impossible.**

Additionally, the lack of clarity regarding the species of interest and the meaning of certain key terms makes it difficult to fully assess these requirements. As currently drafted, the exercise remains incomplete.

Finally, the absence of a streamlined exemption or variance mechanism for situations where an operator cannot reasonably meet certain criteria is problematic. Given the operational realities of hydroelectric facilities, a clear and efficient process should be available to address circumstances where compliance is not feasible.

To be compliant with the *Fisheries Act*, existing hydroelectric facilities should not be required to fundamentally alter approved operating regimes, reservoir management practices, water allocation priorities, or generation capabilities unless a demonstrated and significant impact to fish or fish habitat has been identified and the proposed mitigation is technically and economically feasible with no undue consequences for system reliability, and proportionate to the environmental benefit achieved.

Specific examples are discussed below with quotations taken from the Technical Standard shown in italics.

General

1. Operating Flexibility

"Where operational flexibility exists, maintain seasonal flow patterns that are reasonably representative of natural hydrological conditions and avoid repeated alterations that substantially modify the timing, frequency, duration, or rate of change of flows."

In many situations, utilities can only manage the flows that enter their facilities. Where upstream water management has altered the natural hydrological conditions, operators may have no ability to replicate natural conditions. Where there is operational flexibility operators will often try to maintain the seasonal flow patterns they experience, but this may not be representative of natural conditions.

The operating parameters for an individual facility are constrained by hydrological, technical, safety, environmental, and contractual requirements. When these constraints are extended to an operator's entire fleet, the remaining flexibility becomes extremely limited. Any new constraint imposed on a given facility must therefore be assessed considering its cumulative effects on the entire energy system, not solely at the scale of the facility concerned.

The margin for flexibility is already limited for a single facility. Some constraints include:

- Minimum / maximum individual unit loading
- Fleet wide generation capacity requirements and unit commitments
- Water management agreement / water use plan / water lease requirements
- Requirement to maintain operating reserves and ancillary services
- Unit start / stop demands to address system contingencies and load changes
- Transmission constraints, limitations, and reliability requirements
- System load and committed imports and exports
- Water management and system water storage requirements, including minimum storage and spill avoidance objectives.

This list is by no means exhaustive.

These constraints apply to both run of river and storage reservoir facilities.

For example, the Carillon run of river development on the Ottawa River has very limited storage capacity. Incoming flows must be either turbined or spilled, which limits possible adjustments to very short periods. In addition, its operation is part of an integrated management framework for the Ottawa River with several external partners, further reducing the operator's decision-making autonomy. Very strict limits also apply during the navigation season, which are unrelated to power generation.

For facilities with storage reservoirs, managing stored water is a critical planning requirement.

Water in storage is actively managed to ensure that sufficient water is available in reservoirs to meet upcoming seasonal needs and that reservoirs have sufficient freeboard capacity to store inflows while avoiding unnecessary spill.

Fleet management is integrated and facilities are not operated in isolation. The simultaneous management of all facilities makes it possible to maintain the balance between electricity supply

and demand. Flow reductions affecting stations elsewhere on the grid influence the operation of all other individual facilities.

Accordingly, a restriction imposed on one facility is not limited to that facility. It shifts constraints onto other facilities, modifies reservoir management strategies, and would reduce the fleet's overall ability to meet energy needs and other water management obligations.

2. Repeated and variable operations are required.

"avoid repeated alterations that substantially modify the timing, frequency, duration, or rate of change of flows."

and

"Conduct facility operations in a manner that maintains downstream habitat functions and avoids repeated disturbance of the same habitat areas."

Stations were designed to maximize generating capacity using the quantity of water available in the system and their operating regime has been optimized to meet load requirement as well as other operating constraints despite the variability inherent in that system.

Any requirement to avoid repeated alterations that substantially modify the timing, frequency, duration, or rate of change of flows would treat each individual operation as a distinct event leading to potential HADD. This is not the correct way to address facilities with established variable flow regimes. The current variable flow regime resulted from the initial project development (i.e., project construction and commissioning) which shifted the flow regime from one state (more stable) to another (less stable). Any reduction in productive capacity that resulted from the shift in flow regime should only be attributed to the original project development and should be out of scope for any *Fisheries Act* authorization (FAA) for the current operations.

Provided they remain within the established operating range, repeated variations in flows are not impacts; they are the current baseline condition against which future impacts are to be evaluated. Any reduction in habitat quality or productivity happened because of that historic state-change in flow regime and can only be quantified in comparison to the pre-development state which DFO has stated is not the intent.

New or additional HADD would only result where a deviation from the current operating regime leads to greater impact to fish or fish habitat. Where operational flexibility allows, and where utilities proactively reduce the variability of their operations in a way that improves habitat quality, offsetting credits should be available. This approach aligns with DFO's proposed policy reforms and should be included when clarifying which historical impacts may be grandfathered.

3. Environmental constraints accumulate and practically cover the entire year.

"Maintain stable operating conditions during sensitive periods, including fish spawning, incubation, emergence, migration, and rearing periods."

and

"Maintain minimum flows necessary to preserve fish passage, wetted habitat, habitat connectivity, access to critical habitats, and the ecological functions required by fish during spawning, incubation, rearing, feeding, migration, and overwintering periods."

Many facilities have established minimum operating levels and flows that were not developed specifically for the protection of fish and fish habitat. In some cases, these were established proactively and iteratively over many years to satisfy a range of stakeholder interests both up and downstream of a facility (e.g., water supply, navigation, recreation etc.). In others they were imposed by the relevant water management agency.

Although a given restriction may appear reasonable when analyzed for a particular species, the picture changes completely when all species present in a watershed are considered.

In practice, spawning, incubation, emergence, fry-rearing, and migration periods overlap significantly. Salmonids spawn in the fall and their eggs incubate over the winter, while several other species spawn in the spring and use riparian habitats in early summer. Migrations may occur in spring, summer, or fall depending on the species concerned. As a result, periods considered sensitive cover virtually the entire year.

In this context, requiring flow modifications or operational interventions to systematically avoid sensitive periods would, in many cases, impose constraints that would apply virtually year-round. When all species present are considered, there is always a spawning, incubation, migration, emergence, or fry-rearing period underway.

Such an approach leaves little, if any, room to operate facilities, adjust flows, or carry out the interventions required for their maintenance, inspection, and repair. It would amount to assuming that facilities can be operated based on the biological needs of all species, at all times, which is incompatible with the reality of existing hydroelectric facilities and with the other obligations operators must meet.

Finally, it is not always clear that one operating manoeuvre is environmentally preferable to another. For example, partially opening several gates rather than fully opening one may reduce certain impacts while increasing others.
This is compounded by the physical limits of the structures, which do not necessarily allow all options that may be theoretically conceivable.

The operator therefore cannot be required to operate a facility exclusively on the basis of fish-related considerations. Fish protection is an important consideration among others, but it cannot systematically prevail over all other environmental constraints, particularly considering safety constraints. A standard that assumes otherwise ignores the reality of operating existing facilities.

4. Gradual flow transitions are sometimes impossible

"Implement gradual flow transitions (up-ramping and down-ramping) that reduce the potential for fish stranding, fish displacement, dewatering of habitat, and habitat instability."

Many facilities were not designed to adjust flows continuously. At several structures, the operator has no choice but to open or close a gate, or to start or stop a generating unit. These manoeuvres inevitably result in significant flow variations, particularly at facilities with few generating units or limited control structures.

5. Dam safety events require decisive actions

Periodic gate testing is used to demonstrate that a structure will function properly in an emergency. However, a safety test generally does not allow for a partial or gradual opening designed from an environmental perspective.

Similarly, during flood events, the primary objective remains the safe management of water inflows and the protection of infrastructure. In that context, opportunities for gradual modulation are limited.

6. Some facilities are remote and manually operated

Gradual transitions may be a sound practice where the characteristics of the structure and operating conditions allow. However, many existing facilities cannot accommodate this as a general obligation. The physical constraints of the structures, safety imperatives, power system needs, flood management, and operational realities mean that certain flow variations must sometimes be rapid, significant, or carried out in a single manoeuvre. An approach based on impact minimization, rather than an absolute obligation of gradual transition, is therefore far more compatible with the reality of hydroelectric operations.

7. Maintaining stable operating conditions during sensitive periods

"Maintain stable operating conditions during sensitive periods, including fish spawning, incubation, emergence, migration, and rearing periods."

and

"Maintain minimum flows necessary to preserve fish passage, wetted habitat, habitat connectivity, access to critical habitats, and the ecological functions required by fish during spawning, incubation, rearing, feeding, migration, and overwintering periods."

Certain operational, maintenance, inspection, or repair interventions require specific conditions that are not always compatible with maintaining stable conditions or constant flows. This is notably the case where access is required to components that are normally submerged, such as gate sills, spiral cases, or draft tubes, and where it is not technically possible to isolate the work area using gates, stoplogs, or cofferdams. Temporary adjustments to water levels or flows may also be required to ensure the safety of interventions carried out in the immediate vicinity of the structures, particularly where barges, divers, or other personnel must operate upstream of the facility.

Moreover, when the sensitive periods applicable to different species are considered cumulatively, the windows available to carry out these interventions are already very limited. In this context, a

general requirement to maintain stable operating conditions could compromise the completion of interventions that are essential to safe operation and to the long-term integrity of the facilities.

8. Prioritizing habitat maintenance during extreme climate events

The draft standard states *"When prolonged drought periods, reduced seasonal flows, or other hydrological changes related to climate change are observed, facility operators must prioritize maintaining the required environmental flows and fish habitat functions when implementing operational flow adjustments."*

Maintaining stable operating conditions requires sufficient water, either in storage or moving through the system. Natural variability and other water management activities are beyond the control of the operator and may make it impossible to maintain stable operating conditions. Utilities should not be asked to alter operations or draw down a reservoir to provide stable flow conditions in a system that would otherwise go dry because of seasonal variability, drought or upstream water withdrawals.

This requirement is difficult to apply in a context of extreme hydrological variability. When drought, a significant reduction in natural inflows, or other climate-related phenomena affect a watershed, it may become impossible to maintain environmental flows or certain habitat functions if the inflows themselves are insufficient. Requiring otherwise would essentially amount to asking the operator to artificially compensate for adverse natural conditions caused by climate, rather than by the operation of the facility. Yet the role of an operator is to manage the structures under its responsibility and minimize the impacts associated with their operation, not to correct or neutralize the effects of natural events.

For facilities with reservoirs, such a requirement also raises significant feasibility issues. It appears to force operators to use stored water to offset the effects of drought or other natural climate-related phenomena. However, it should not be the operator's responsibility to correct the consequences of hydrological events that would occur regardless of the presence of the facility. Its role is to limit the impacts resulting from its activities, not to artificially recreate ecological conditions that nature itself can no longer sustain.

Furthermore, drought conditions are precisely the conditions where operators need to hold water in storage to maximize the availability of water for generation to meet future generating commitments. Many reservoirs also provide storage for other water users such as irrigation, recreation and municipal water supply. Compromising the sustainability of supply to other users to maintain an unnaturally stable downstream flow is also not practical.

Reservoir Management

The following sections discuss specific recommendations from the draft standard and explain the challenges associated with each.

1. Reservoirs are intended to have variable water levels

"Operate the reservoir in a manner that avoids isolating fish in riparian habitats, tributary mouths, wetlands, backwaters (oxbows), or any other aquatic habitat."

This requirement is incompatible with the normal operation of a hydroelectric reservoir. Reservoir operation is based precisely on managing water levels according to inflows and system needs, which inevitably results in level variations and, in some cases, the temporary isolation of certain habitats. Requiring such situations to be always avoided amounts to assuming that water levels must remain practically fixed, which is incompatible with the very purpose of a reservoir.

This requirement is even more unrealistic because it would apply to vast areas comprising thousands of kilometres of shorelines, tributaries, wetlands, and aquatic habitats. Minimum operating elevations were not established based on an exhaustive mapping of each of these areas or of all depressions that could be created. Compliance with such an obligation would require bathymetric characterizations and connectivity analyses on a scale far beyond current industry practices, while imposing major constraints on reservoir operation. Such an expectation is simply incompatible with the management of a large-scale hydroelectric fleet intended to provide reliable, renewable electricity to consumers.

2. The scale of operations is underappreciated in the standard

"Monitor areas likely to cause fish stranding during planned reservoir drawdowns and implement corrective measures when a risk of fish mortality is identified."

and

"Implement fish rescue measures when fish become isolated or stranded, in accordance with DFO's Interim Standard on Fish Capture and Relocation."

These requirements reflect a theoretical view of operations rather than an operational reality. Reservoir levels are not lowered according to a fixed schedule established weeks or months in advance. Operations are adjusted frequently based on hydrological conditions and the needs of the electrical system. In this context, assuming that it would be possible to monitor in advance all areas likely to cause stranding and to implement corrective measures whenever a risk is identified does not reflect the reality of managing a large-scale hydroelectric fleet.

In addition, areas likely to cause stranding may extend over vast territories that are often remote and difficult to access. In many cases, it is simply impossible to identify and continuously monitor all at-risk areas, let alone intervene in each of them.

The concept of "corrective measures" also remains unclear. In practice, it is not feasible to carry out fish rescue operations every time a water level is lowered, nor to physically modify all areas capable of creating pools or isolated zones. Such interventions may sometimes be justified in specific and limited circumstances, notably during planned interventions on small reservoirs, but they cannot reasonably become a mandatory condition for obtaining authorization for routine operations.

3. Entrainment Risks

"Where operational flexibility exists, conduct turbine operations in a manner that avoids fish entrainment during periods of elevated fish movement or migration."

While entrainment risks have been assessed for a variety of different turbine technologies, we are unaware of a predictive model for this application.

4. Operational Measures Aimed at Minimizing Fish Displacement

"Where fish displacement cannot be avoided, implement operational measures to minimize the movement of fish from reservoir habitats into downstream environments that do not support equivalent ecological functions."

To comply with this requirement, extensive studies would have to be carried out before authorization of the facility to verify that downstream habitat provides the ecological functions required for all fish located upstream. In itself, this would already be a colossal task if it had to be completed for all existing facilities.

Operational measures intended to reduce fish displacement must therefore be considered on a case-by-case basis, for specific species and specific situations.

In addition, modifying the operation of a facility to reduce entrainment or displacement of certain species may have significant consequences for generation, flow management, and the operation of other facilities. For example, the mere fact that entrainment is higher at night does not mean that it is realistic or justified to systematically reduce turbine operation during that period. Such a measure may be appropriate in a particular context, for a targeted species and where a real environmental benefit has been demonstrated, but it cannot be presumed to be generally applicable to all facilities requiring authorization.

This also presumes that displacement of fish through entrainment is necessarily negative. Most fish entrained are unharmed and there are instances where downstream populations are sustained or enhanced by the contribution of fish from the higher productivity reservoir upstream of a station.

Plant Operations

1. Constraints Related to Turbine Operation

"Operate turbines within approved operating ranges intended to minimize fish injury and mortality."

At present, there are no "approved operating ranges" for turbines that have been established specifically for the purpose of reducing fish injury or mortality. Moreover, the actual possibilities for adjusting turbine operation are limited. Existing turbines were designed to operate under specific conditions, and it has not been demonstrated that operational adjustments would significantly reduce impacts on fish without affecting performance or generation capacity.

Certain targeted measures may be justified in particular situations. However, turning this type of one-off measure into a general obligation applicable to the entire fleet would presume the existence of operational flexibility that has never been demonstrated and that varies considerably from one facility to another.

These requirements presume that the operator has operational levers available to reduce fish entrainment, injury, or mortality, even though this has never been demonstrated.

2. "Normal" conditions cannot always be ensured

"Ensure that flows released by the dam or generating station do not exceed those associated with normal operating conditions."

Utilities cannot ensure flows do not exceed those released under normal operations. Upset conditions, floods and other emergencies may require flows far in excess of normal operations. Even an average spring runoff may require flows that exceed those experienced for the rest of the year.

While this is generally the intent of the facility operator, it is not realistic to expect this condition to be met during flood conditions when insufficient storage is available to store excessive inflows.

3. Operations require variability and repeatability

"Avoid operating practices that result in chronic dewatering of fish habitat or repeated watering and dewatering of habitat"

Chronic dewatering of fish habitat forms part of the normal operation of a reservoir, and repeated events will occur if flows change repeatedly. These conditions exist on uncontrolled watercourses, and it is unreasonable to expect this not to happen on a reservoir and downstream of that reservoir.

4. Connectivity is not naturally consistent

"Maintain connectivity between refuge habitats and adjacent habitats"

Demonstrating compliance with such a requirement would necessitate detailed bathymetric and hydraulic studies across extensive areas, followed by continuous monitoring. These efforts would entail considerable costs and would be disproportionate to the expected benefits, particularly where the objective is broadly aimed at all habitats rather than at clearly identified areas or specific fish species.

5. Fish passage cannot be assumed to be necessary or effective

"Where fish passage is required, maintain conditions that allow fish to move upstream and downstream throughout the applicable migration period.

and

"During known fish migration periods, operate facilities in a manner that promotes fish movement and minimizes migration delays"

We have difficulty understanding the scope of these requirements. Do they apply only to existing facilities equipped with a fish passage structure, or do they more broadly target any existing facility

located along the migration route of migratory species? If the latter interpretation is intended, the implications for hydroelectric operations would be significant.

The idea that it would be sufficient to allow fish to pass through a spillway, lock, or other bypass structure does not reflect the reality observed in the field. In many cases, theoretical solutions raise significant technical, environmental, or operational issues of their own, so there is no simple solution for ensuring the safe passage of fish through hydroelectric facilities.

For example, using spillways does not necessarily provide a safe passage route for the fish species of interest. Some fish prefer to move downstream through the upper part of the water column, whereas certain spillways open from the bottom. This could mean that a full opening of the spillways would be required to allow the species of interest to pass. Such a measure, however, raises significant issues related to bank erosion and potential impacts on shoreline residents. Downstream bathymetry may also show the presence of major reefs that could injure fish using this passage route.

6. Many factors are beyond the control of the operator

"Maintain the flows, water depths, attraction flow, and other hydraulic conditions necessary to ensure the entry, passage, and exit of fish through the fishway."

This requirement assumes that the operator controls all hydraulic parameters that influence the effectiveness of a fishway, which is not always the case. For many run-of-river facilities, downstream water levels depend on numerous factors over which the operator has limited, if any, direct control, and therefore water levels may be insufficient to allow the fishway to function optimally, despite compliant operation of the facility.