LOW IMPACT HYDROPOWER CERTIFICATION HANDBOOK

2nd Edition

Revision 2.04: April 1, 2020

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DEDICATION

This 2nd Edition of the LIHI Certification Handbook is dedicated to Julie Keil, who gave us her inspirational leadership for all too short a time. To learn more about Julie's life and the Julie A. Keil Women in Hydro Scholarship Fund established in her honor, please visit http://lowimpacthydro.org/julie-keil-scholarship-fund/

ACKNOWLEDGEMENTS

This 2nd Edition of the LIHI Certification Handbook was produced by Governing Board members, staff, and consultants to the Low Impact Hydropower Institute. The primary authors are Dr. Michael J. Sale, Executive Director, Ms. Dana Hall, Deputy Director, and Ms. Julie Keil, past LIHI Chair. Julie Keil and John Seebach were major contributors during the development of the revised criteria that are the core of this new Handbook. LIHI's Technical Committee (Kenneth Kimball, Tara Moberg, Glenn Cada, Shawn Seaman, and Elizabeth Ablow) provided critical guidance and review in the production stages of the Handbook. Executive management oversight was provided by a succession of Chairs of the LIHI Governing Board: Richard Roos Collins, Julie Keil, and John Seebach.

The final product benefited significantly from peer reviews from Jeffrey Cueto, Peter Drown, Gary Franc, Pat McIlvaine, Stephen Hickey, and Thomas Mark. Two members of LIHI's Industry Advisory Panel also provided peer review comments on an earlier draft of the Handbook.

Recommended Reference: M.J. Sale, D. Hall, and J. Keil, 2016. Low Impact Hydropower Institute Certification Handbook, 2nd Edition. Low Impact Hydropower Institute, Lexington, MA.

REVISION HISTORY

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PREFACE

The Low Impact Hydropower Institute (LIHI) Certification Program requirements are determined by LIHI's Governing Board. LIHI reserves the right to modify the certification criteria and other program elements as needed with reasonable notice to Certificate holders.

This document is the first major revision of the LIHI Certification Handbook hence the "2nd edition." The certification processes used by LIHI did not substantially change between 2000 and 2014. Beginning in 2006 significant effort was invested in exploring potential revisions of the LIHI criteria, but no changes were approved until late in 2014. In October 2014, at the LIHI annual meeting in Seattle, Washington, the LIHI Governing Board approved the revisions. Those revisions are being implemented through this new edition of the Handbook.

The reasons for changing the LIHI Certification process include:

- The LIHI bylaws require LIHI to conduct an annual review of the program to ensure that it meets its goals and objectives, striving for continuous improvement in the program and its delivery.
- With the exception of the current watershed protection criterion and some changes in eligibility that occurred in 2009, LIHI has not substantially changed the certification approach since the Program's inception in 2000.
- As renewable energy markets are evolving significantly in response to climate change and the need for stronger greenhouse gas mitigation actions, the certification criteria need to stay up-to-date with environmental science, technology, and policy.
- Environmental management concepts and regulatory requirements for hydropower are also evolving, and the criteria need to be responsive to these changes.
- Consumer expectations and standards for eco-labeling have continued to develop and mature in the time since LIHI was first established.

Some elements of the LIHI Certification approach have not changed. For example, the structure of criteria, goals, and standards is very similar to previous versions. The new aspects cover essentially the same environmental and social resource areas as before: flows, water quality, fish passage, watershed protection, threatened/endangered species, cultural resources, and recreation. Each criterion is evaluated on a pass/fail basis, and all eight criteria must be satisfied. No changes have been made in the eligibility requirements for certification, except that dam removal recommendations are now part of eligibility rather than a separate criterion.

The most substantive differences in the new 2nd Edition Handbook are in an expanded list of alternative standards by which each criterion can be satisfied, a new emphasis on the need for a scientific basis for agency recommendations and mitigation, and in new opportunities for longer terms of LIHI Certificates. The list of alternative standards is intended to allow both existing routes to satisfy criterion goals and new routes. These changes are responsive to feedback that was received from a range of stakeholders.

The questionnaire that was used previously for LIHI Certification has been replaced with a series of matrix-type checklists and associated supporting information needed to evaluate the facility. There are

more ways to satisfy the goal of each criterion, implemented through a set of alternative standards. The first standard for each criterion is always a "no impact," or non-applicability, standard. There is also a "PLUS" standard for each criterion that rewards applicants by adding extra years to the Certification where substantial investments in the environment or social resources are being made. PLUS standards are limited to no more than 5 years total on top of the standard five-year term, with three more years for the first PLUS standard satisfied, and two more years for a second PLUS standard satisfied.

Other changes were made to the information required in an application. For example, the original questionnaire is replaced by a three-part application that consists of: 1) the facility description; 2) a "matrix of standards" selected to satisfy the goals for each criterion; and 3) supporting information relevant to each standard selected. There is also a new emphasis on designating specific "Zones of Effect" around each facility where physical impact mechanisms differ, and different standards may apply. This new spatial resolution should make the application of LIHI criteria more effective in evaluating the overall impacts of a facility.

Aside from changing dam removal from a criterion to an eligibility requirement, the LIHI Governing Board has not yet approved any changes in eligibility. For example, LIHI still does not accept applications for facilities that are located outside of the United States. Similarly, the current LIHI criteria are not yet considered sufficient to evaluate facilities involving construction of new dams or diversions, pumped-storage facilities, or new facilities using marine and hydrokinetic technologies; therefore, those types of facilities are ineligible for certification at this time. At a future date, the Governing Board may revise the current eligibility provisions to allow these types of hydropower facilities to apply and after public input, the Handbook would be revised to reflect such programmatic changes. Other non-programmatic changes may also be considered from time to time as part of the annual reviews of the Handbook and would be incorporated into revisions of the 2nd edition Handbook. The most current revision to the Handbook is published on the LIHI website.

1. INTRODUCTION

The Low Impact Hydropower Institute (LIHI) is a nationally recognized, independent, 501(c)(3) non-profit organization that sets criteria for characterizing hydropower facilities as being Low Impact and operates a program to certify hydro facilities that meet these criteria as LIHI Certified®. LIHI's Certification Program helps reduce the environmental and social impacts of hydropower generation by creating a credible and accepted standard for electricity consumers to use in evaluating sources of hydropower.

LIHI Certificates help define hydropower's eligibility in renewable energy markets. They also provide positive recognition and economic reinforcement to hydropower owners who take steps to improve their facilities and invest in the local environment. A LIHI Certified® hydropower facility is one that is sited, designed, and operated to be compatible with environmental and social resources. LIHI has been in operation since 2000, during which time it has certified more than 200 hydropower facilities in 23 states. The founding of LIHI is described by Grimm (2002). A description of the governance of LIHI and other information about the organization can be found on the LIHI website: www.lowimpacthydro.org.

1.1 Purpose of this Handbook

This 2nd Edition Handbook is written for applicants for LIHI Certification, recertification applicants, and others who want to understand how the Certification Program works. The Handbook describes the current process that is used by LIHI to certify hydropower facilities as Low Impact. It also provides guidance on how to apply for LIHI Certification. Through the operation of the Certification Program, LIHI certifies hydropower facilities that seek to minimize the impacts of their operations as compared to other hydropower facilities based on objective criteria.

To be recognized as Low Impact Certified, a hydropower facility must pass LIHI's eligibility requirements, and then satisfy eight criteria associated with environmental and social resources (see Section 3). A hydropower facility that satisfies program criteria will become a Low Impact Certified hydropower facility and will be offered a limited-time license to use the LIHI Certification mark according to LIHI's terms and conditions, which will enable the marketing of the facility's energy output as "LIHI Certified®" to consumers and purchasers.

1.2 Organization of the Handbook

This Handbook is organized into five main sections:

- Section 2 -- LIHI Eligibility Requirements,
- Section 3 -- LIHI Certification Criteria,
- Section 4 -- Application Process,
- Section 5 -- Certification Marketing Guidelines and Compliance, and
- Section 6 -- Recertification.

Additional technical information is provided in the appendices which may be subject to more frequent

updates than the main body of the Handbook. Appendix A provides a comprehensive list of the definitions of terms and acronyms, as they are used in this Handbook. Appendix B provides instructions and a detailed explanation of necessary application materials, including supporting information that demonstrates compliance with specific standards and criteria (Note: examples of application packages are provided on the LIHI website "How to apply" page). Appendix C contains the current LIHI Fee Schedule.

Throughout the text, key terms that require definition and further explanation are highlighted by underlining. Definitions for these key terms are provided in Appendix A. Defined terms that appear in titles are not highlighted.

2. ELIGIBILITY REQUIREMENTS

LIHI Certification is limited to certain types of hydropower facilities located in the United States. The following sections describe the current eligibility requirements for LIHI Certification.

2.1 Facilities Eligible for LIHI Certification

In general, conventional hydropower facilities located within the United States are eligible to apply for LIHI Certification, if the facility did not involve construction of new dams or diversions after August 1998. Facilities that do not involve a dam or diversion are not subject to the August 1998 construction date limitation.

2.1.1 Existing and New Facilities

"Existing" hydropower facilities -- those with powerhouses located at existing dams or diversions that were generating electricity as of August 1998 -- are eligible to apply for LIHI Certification. "New" hydropower facilities, that added a new powerhouse at a previously non-powered dam or that increased power generation capacity after August 1998, are also eligible for LIHI Certification, if the dam or diversion structure associated with the facility was in existence in August 1998.

Eligible new hydropower facilities at existing dams include those that have added generating equipment, made efficiency upgrades to existing equipment, or otherwise increased generation, provided that the added or increased generating capacity meets the following requirements:

- New capacity was created by modifications or additions to the existing facility (e.g., modifications or additions to the existing dam, intake structure, or powerhouse) and did not include any new dam or other diversion structure;
- New capacity did not result in a change in water flow through the facility that worsened conditions for resources assessed by LIHI criteria (for example, operations did not change from run-of-river to peaking); and
- New capacity did not occur at an existing dam that had been recommended for removal or decommissioning by a resource agency. Exceptions may be considered but only when it is shown that the changes in the facility resulted in improvements to resources assessed by LIHI criteria, especially those issues raised in removal recommendations.

Hydropower facilities at dams or diversions that have been reconstructed at the site of a previously existing dam may also be considered for Certification on a case-by-case basis.

2.1.2 Pre-operational Facilities

"New" hydropower facilities that are not generating electricity at the time of their LIHI Certification application may be eligible for consideration, provided that the Federal Energy Regulatory Commission (FERC) license or exemption, or similar authorization addressing environmental and social impacts, has been issued and that there are no pending appeals or litigation associated with that authorization. In such cases, the applicant must acknowledge that LIHI may suspend or revoke the Certification should the impacts of the facility, once operational, cause non-compliance with the certification criteria. For

pre-operational certification, the LIHI Certification term will begin when the new facility begins generation. Applicants will be charged a fee premium for pre-operational Certification (see Appendix C).

2.2 Facilities Not Eligible for LIHI Certification

The following types of hydropower facilities are not currently eligible for LIHI Certification:

- Facilities associated with dams that have been recommended for removal by a resource agency. If a natural resource agency has concluded that a dam should be removed and has documented their recommendation in an official, publicly available report or proceeding, the hydroelectric facilities associated with that dam are not eligible for LIHI Certification;
- Hydropower facilities that are located at a dam or diversion that was constructed after August 1998 or that would require construction of a new dam or diversion that does not currently exist.
- Pumped-storage hydropower facilities;
- Hydropower facilities located outside of the United States; and
- Facilities located in marine environments or using hydrokinetic hydropower technologies.

3. CERTIFICATION CRITERIA

Applications for LIHI Certification are evaluated using a consistent, hierarchical set of eight criteria, goals, and standards. Criteria are defined for areas of potential social and environmental impact associated with hydropower facilities. There are eight criteria and supporting goal statements, all of which must be met for a facility to qualify as Low Impact Certified:

- Ecological Flow Regimes
- Water Quality Protection
- Upstream Fish Passage
- Downstream Fish Passage and Protection
- Watershed and Shoreline Protection
- Threatened and Endangered Species Protection
- Cultural and Historic Resource Protection
- Recreational Resources

All criteria and their respective goals must be satisfied but the alternative standards within each criterion are designed to be flexible enough to apply to the wide range of conditions that occur in river systems and at hydropower facilities. If any of the criteria are not satisfied, the facility cannot be granted LIHI Certification.

3.1 Structure of Criteria, Goals, and Standards

Goal statements are provided for each criterion to define the purpose or objective that must be achieved. For each criterion and supporting goal statement, a set of alternative standards provide a comprehensive menu of alternatives by which the criterion goal can be met. The order of the alternative standards is consistent for all criteria.

The first standard for each criterion is a "Not Applicable or *De Minimis* Effect" (NA/DME) standard that recognizes that some facilities either do not impact a given LIHI goal or have impacts so minimal that they would be difficult to quantify. This standard provides a streamlined way to satisfy a particular criterion where circumstances justify it. Facilities that satisfy the first standard for all eight criteria will be rewarded in the form of a longer term (10-year) LIHI Certificate and reduced certification review and annual fees (see Section 4.4 and Appendix C).

For most criteria, the second standard, if applicable, requires meeting the most environmentally protective science-based resource agency recommendation(s) of the relevant state or federal resource agencies whose mandates are to protect the resources the criteria are designed to evaluate. The application must include specific descriptions of the methods, procedures, and/or studies used by agencies to develop the recommendation in order to demonstrate that the recommendation is science-based.

In circumstances where there are no resource agency recommendations, the applicant can use other standards to satisfy the criterion through demonstrated best practices and technologies.

The numbering and order of alternative standards is important. Except for the PLUS standards, an applicant should attempt to satisfy a lower numbered standard before applying higher numbered standards. Applying higher numbered standards implies that lower numbered standards are not possible or appropriate, which may or may not be the case. Applicants should consult with LIHI staff early in the application process to determine which standards are most appropriate for specific facilities (see Section 4.1 on processing steps).

In addition to the alternative standards, each criterion also includes a "PLUS" standard, which allows an applicant to extend the LIHI Certificate term if the applicant can demonstrate significant additional effort to implement environmental and social mitigation, enhancement, and/or restoration. Some examples include implementing advanced technologies, science-based adaptive management, basin-scale redevelopment strategies, or supporting a watershed enhancement fund (see Appendix A for definitions of these terms). A facility will earn an additional three years of LIHI Certification for the first PLUS standard that is satisfied, and another two years for additional PLUS standards satisfied, up to a maximum term of 10 years. An applicant should thoroughly discuss any application for PLUS standards with LIHI staff during the intake review. Acceptance of PLUS standards is made at the discretion of the LIHI Governing Board, or as applicable under Delegated Authority, to the Technical Committee or to the Executive Director.

3.2 Definition of Criteria, Goals, and Standards

The alternative standards available for satisfying the criterion goals differ by criterion, as described below. The applicant is responsible for identifying which standard applies to their facility in each criterion, and for documenting how the standard applies in each Zone of Effect (see Section 4.1.1 for definition of Zones of Effect). The specific information required to justify each standard is explained in more detail in Appendix B. The goals of each criterion must be satisfied everywhere that they are affected by facility operations, even though different standards may apply in different locations.

3.2.1 Criterion A - Ecological Flow Regimes

Goal: The flow regimes in riverine reaches that are affected by the facility support habitat and other conditions suitable for healthy fish and wildlife resources.

Introduction to Standards: The applicant shall define all river reaches where stream flows are altered by the facility (for example, the tailwater below a powerhouse, bypassed reaches between a dam and tailrace confluence, and in riverine reaches immediately above the facility where flows are linked to facility operation). In all locations, appropriate flow management should apply an ecosystem-based approach that supports fish and wildlife resources by considering base flows, daily, seasonal, and inter-annual variability, high-flow pulses, and short-term rates of change. This criterion is related to riverine flows, therefore all impoundment Zones of Effect can typically use Standard A-1 but refer to Table B-2 in Appendix B for required additional information. In addition, to pass the flows criterion, the applicant must demonstrate compliance with at least one of the following standards (Standards A-1 through A-4)

- ***STANDARD A-1. Not Applicable/De Minimis Effect:*** The facility operates in a true run-of-river operational mode and there are no bypassed reaches or water diversions associated with the

facility; or the facility is located within an existing water conduit that does not discharge into natural waterways; or

- ***STANDARD A-2. Agency Recommendation:*** The flow regime at the facility was developed in accordance with a science-based resource agency recommendation; or
- ***STANDARD A-3. Limited Storage:*** In the absence of applicable agency recommendations and for facilities with limited storage capacity, the flow regime complies with a well-documented, regionally accepted instream flow policy or methodology (sometimes referred to as a standard-setting or desktop technique); or
- ***STANDARD A-4. Site-Specific Studies:*** In the absence of an applicable agency recommendation, the flow regime at the facility was developed on a site-specific basis, using a well-documented science-based habitat evaluation technique or a flow-ecology model.
- ***STANDARD A-PLUS:*** In addition to satisfying one or more of the standards above, the facility is operating an adaptive management program to regularly evaluate and adjust facility operations with respect to flows and habitat conditions, or has implemented significant, non-flow habitat enhancements (for example, structural improvements leading to river restoration) with demonstrated net benefits to fish and wildlife resources affected by the facility.

3.2.2 Criterion B - Water Quality

Goal: Water quality is protected in waterbodies directly affected by the facility, including downstream reaches, bypassed reaches, and impoundments above dams and diversions.

Introduction to Standards: The applicant shall define all waterbodies and reaches where water quality is directly affected by the facility, including those affected areas outside the facility boundary. The applicant must demonstrate compliance for each of these waterbodies with the appropriate jurisdictional agency water quality standards. In all cases, if any waterbody directly affected by the facility has been defined as being water quality limited (for example, included on a state list of impaired waters that do not fully support designated uses), the applicant must demonstrate that the facility has not contributed to the impairment in that waterbody. In addition, to pass the water quality criterion, the applicant must demonstrate compliance with at least one of the following standards (B-1 through B-3):

- ***STANDARD B-1. Not Applicable/De Minimis Effect:*** The facility does not alter the physical, chemical, or biotic water characteristics necessary to support fish and wildlife resources or human water uses (e.g., water supply or recreation); or
- ***STANDARD B-2. Agency Recommendation:*** The facility is in compliance with all water quality conditions contained in a recent Water Quality Certification or science-based resource agency recommendation providing reasonable assurance that water quality standards will be met for all waterbodies that are directly affected by the facility. Such recommendations, whether based on a generally applicable water quality standard or one that was developed on a site-specific basis, must include consideration of all water quality components necessary to preserve healthy fish and wildlife populations, human uses and recreation; or

- ***STANDARD B-3. Site-Specific Studies:*** In the absence of an applicable agency recommendation specific to the facility, the facility owner demonstrates that it is in compliance with the quantitative water quality standards established by the state or other regulatory authority to support designated uses pursuant to the federal Clean Water Act or other applicable statute in the facility area and in the downstream reach.
- ***STANDARD B-PLUS:*** In addition to satisfying one or more of the standards above, the facility has deployed advanced technology to enhance ambient water quality or is operating an adaptive management program to regularly evaluate the operation of the facility with respect to enhancing water quality.

3.2.3 Criterion C - Upstream Fish Passage

Goal: The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy populations in areas affected by the facility.

Introduction to Standards: The applicant shall list all migratory fish species (anadromous, catadromous, and potamodromous species) that are present or historically occurred at the facility. To pass the upstream fish passage criterion the applicant must demonstrate that upstream passage provisions are sufficient to support healthy populations of migratory species through compliance with at least one of the following fish passage standards (C-1 through C-4). Note that impoundments typically qualify for Standard C-1 unless there are additional facility-related barriers to upstream passage once fish have passed the dam.

- ***STANDARD C-1. Not Applicable/De Minimis Effect:*** The facility does not create a barrier to upstream passage, or there are no migratory fish in the vicinity of the facility. If migratory fish were present historically, the facility did not contribute to the extirpation of such species ; or
- ***STANDARD C-2. Agency Recommendation:*** The facility is in compliance with science-based fish passage recommendations issued by appropriate resource agency(ies) for the facility and which may include provisions for appropriate monitoring and effectiveness determinations; or
- ***STANDARD C-3. Best Practice/Best Available Technology:*** In the absence of applicable resource agency fish passage recommendations, the facility includes well-designed, well-operated upstream fish passage methods or technologies that are appropriate for migratory fish species that occur in the area affected by the facility. These methods should enable safe, timely and effective fish passage at all barriers associated with the facility and include provisions for appropriate monitoring and effectiveness determinations; or
- ***STANDARD C-4. Acceptable Mitigation:*** In the absence of science-based fish passage recommendations from a resource agency and in lieu of upstream passage provisions at the facility, the facility employs approved, alternative fish passage mitigation measures that support the migratory fish species affected by the facility. These measures could be in-kind or out-of-kind mitigation. In all cases, resource agencies must approve the mitigation measures and must have determined that the total benefits provided by such mitigation measures equal or exceed the benefits of providing upstream passage provisions at the facility, measured in terms of

reproductive success (for example, numbers of fish produced) or area of suitable fish habitat provided (compared to that lost upstream of the facility barrier).

- ***STANDARD C-PLUS:*** In addition to satisfying one or more of the standards above, the facility has deployed an advanced technology, the primary purpose of which is to increase upstream fish passage; or is part of a basin-scale redevelopment strategy; or is operating an adaptive management program to regularly evaluate the performance of new technology. The adaptive management program should include monitoring of the overall fish passage effectiveness and correction of deficiencies in effectiveness.

3.2.4 Criterion D - Downstream Fish Passage and Protection

Goal: The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, the facility minimizes loss of fish from reservoirs and upstream river reaches affected by facility operations. Migratory species can successfully complete their life cycles and maintain healthy populations in the areas affected by the facility.

Introduction to Standards: The applicant shall list all fish species (riverine, anadromous, catadromous, and potamodromous) that occur now or have occurred historically in the area affected by the facility. To pass the downstream fish passage and protection criterion, the applicant must demonstrate compliance with at least one of the following standards (D-1 through D-4). Note that the downstream reach (not a bypassed reach) typically qualifies for Standard D-1 unless there are additional facility-related barriers to downstream passage once fish have passed below the dam and/or bypassed reach.

- ***STANDARD D-1.*** **Not Applicable/De Minimis Effect:** The facility does not create a barrier to downstream passage, or there are no migratory fish in the vicinity of the facility. If migratory fish were present historically, the facility did not contribute to the extirpation of such species; the facility does not contribute adversely to riverine fish populations or to their access to habitat necessary for the completion of their life cycles, or
- ***STANDARD D-2. Agency Recommendation:*** The facility is in compliance with a science-based resource agency recommendation for downstream fish passage or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations; or
- ***STANDARD D-3. Best Practice/Best Available Technology:*** In the absence of science-based resource agency recommendation for downstream fish passage or protection, the facility includes well-designed, well-operated downstream fish passage methods or technologies that are appropriate for the migratory species that occur in the area affected by the facility, and technologies that minimize loss of riverine species. Operating plans for such fish passage technologies must include provisions for ongoing monitoring and effectiveness determinations; or
- ***STANDARD D-4. Acceptable Mitigation:*** In the absence of science-based resource agency recommendation for downstream fish passage and in lieu of downstream fish passage and protection provisions at the facility, the applicant employs approved alternative fish passage mitigation measures that support migratory and native non-migratory fish species affected by the facility. These measures might include in-kind or out-of-kind mitigation. In all cases,

resource agencies must approve the alternative mitigation measures and must have determined that the total benefits provided by such mitigation measures are likely to equal or exceed the benefits of installing and operating downstream passage and protection provisions, measured in terms of reproductive success (for example numbers of fish produced) or areas of suitable fish habitat provided. In addition, such mitigation measures must include a monitoring component.

- ***STANDARD D-PLUS:*** In addition to satisfying one or more of the standards above, the facility has deployed an advanced technology, the primary purpose of which is to increase downstream fish passage; or is part of a basin-scale redevelopment strategy; or is operating an adaptive management program to regularly evaluate the performance of new technology. The adaptive management program should include monitoring of the overall fish passage effectiveness and correction of deficiencies in effectiveness.

3.2.5 Criterion E - Shoreline and Watershed Protection

Goal: The facility has demonstrated that sufficient action has been taken to protect, mitigate or enhance the condition of soils, vegetation and ecosystem functions on shoreline and watershed lands associated with the facility.

Introduction to Standards: To pass the watershed protection criterion, the applicant must demonstrate compliance with at least one of the following standards (E-1 through E-3):

- ***STANDARD E-1. Not Applicable/De Minimis Effect:*** There are no lands associated with the facility under the direct or indirect ownership or control of the facility owner that have been identified as having significant ecological value for protecting water quality, aesthetics, or low-impact recreation, and the facility is not subject to any Shoreline Management Plan (SMP) or similar protection plan; or
- ***STANDARD E-2. Agency Recommendation:*** The facility is in compliance with all government agency recommendations in a license, exemption, water quality certificate, or other authorization, such as an approved SMP or equivalent for protection, mitigation or enhancement of shoreline surrounding the facility; or
- ***STANDARD E-3. Enforceable Protection:*** The facility demonstrates that, on lands abutting facility waters under its direct or indirect ownership or control, there is an approved and legally enforceable shoreline buffer or equivalent watershed land protection plan (including state or local regulations) for conservation purposes (to protect water quality, aesthetics and low-impact recreation). In the absence of an existing protection plan, the applicant formally commits as a condition of its LIHI Certification to protect and not develop such properties for the term of its LIHI Certification.
- ***STANDARD E-PLUS:*** To the extent the facility owner has direct or indirect ownership or control over lands surrounding the facility and its riverine zones, the facility has an approved and legally enforceable site-specific shoreline buffer or equivalent watershed land protection plan for ecological land protection of water quality, aesthetics, and low-impact recreation values. The buffer zone must be dedicated for conservation purposes and must also be vegetated similarly to adjacent natural lands. In addition, the buffer zone must include at least 50% of the

undeveloped shoreline around the reservoir, or a reservoir shoreline equivalent along its riverine zones. Alternatively, the facility has established a watershed enhancement fund for land management within the facility's watershed that is designed to achieve the ecological and recreational equivalent of land protection that would have been achieved by dedicating an ecologically effective buffer zone around more than 50% the reservoir.

3.2.6 Criterion F - Threatened and Endangered Species Protection

Goal: The facility does not negatively impact federal or state listed species.

Introduction to Standards: To pass the Threatened and Endangered Species criterion, the applicant must demonstrate compliance with at least one of the following standards (F-1 through F-4). Facilities shall not have caused or contributed in a demonstrable way to the extirpation of a federal or state listed species. However, a facility that is making significant efforts to reintroduce an extirpated species may pass this criterion.

- ***STANDARD F-1. Not Applicable/De Minimis Effect:*** There are no listed species documented to be present in the facility area, and the facility was not responsible for the extirpation of listed species that historically were present; or
- ***STANDARD F-2. Finding of No Negative Effect:*** There are or may be listed species in the facility area, but the facility has been found by an appropriate resource management agency to have no negative effect on them, or habitat for the species does not exist within the facility's affected area or is not impacted by facility operations; or
- ***STANDARD F-3. Recovery Planning and Action.*** The facility is in compliance with relevant conditions in a species recovery plan, with relevant conditions in an incidental take permit or statement, biological opinion, habitat conservation plan, or similar government document and the incidental take document and/or biological opinion issued relevant to the facility was designed to be a long-term solution for protection of the listed species; or
- ***STANDARD F-4. Acceptable Mitigation:*** If a newly listed species has been determined to be present by an appropriate resource agency subsequent to the establishment of environmental requirements at the facility, and no incidental take permit or statement, biological opinion, habitat conservation plan, or similar government document relevant to the facility exists, and the facility is implementing significant, agency-approved measures to avoid or minimize the impact of the facility on that listed species***.***
- ***STANDARD F- PLUS:*** The facility has established an enforceable agreement with resource agencies to operate the facility in support of rare and endemic species, is implementing proactive measures to substantively minimize impacts on species which are at risk of becoming listed species in the vicinity of the facility in the future, or the facility is a significant participant in a species recovery effort.

3.2.7 Criterion G - Cultural and Historic Resource Protection

Goal: The facility does not unnecessarily impact cultural or historic resources that are associated with the facility's lands and waters, including resources important to local indigenous populations, such as Native Americans.

Introduction to Standards: To pass the Cultural Resources criterion, the applicant must demonstrate compliance with either the G-1 or G-2 standards:

- ***STANDARD G-1. Not Applicable/De Minimis Effect:*** There are no cultural or historic resources present on facility lands that can be potentially threatened by construction or operations of the facility, or facility operations have not adversely affected those that are or were historically present; or
- ***STANDARD G-2. Approved Plan:*** The facility is in compliance with approved state, federal, and recognized tribal plans for protection, enhancement, or mitigation of impacts to cultural or historic resources affected by the facility.
- ***STANDARD G-PLUS:*** The applicant has made a substantial commitment to restoring one or more significant cultural or historical resource in the vicinity beyond what is required in existing plans, such as a Historic Properties Management Plan; or the applicant has created a significant new educational opportunity about cultural or historical resources in the area, and formally commits as a condition of its LIHI Certification that this opportunity will exist for the duration of the LIHI Certification.

3.2.8 Criterion H - Recreational Resources

Goal: The facility accommodates recreation activities on lands and waters controlled by the facility and provides recreational access to its associated lands and waters without fee or charge.

Introduction to Standards: To pass the Recreation criterion, the applicant must demonstrate compliance with at least one of the following standards (H-1 through H-3). In all cases, the applicant must demonstrate that flow-related recreational impacts are mitigated to a reasonable extent in all Zones of Effect where there is flow-related recreation. Where there is recognized, flow-related recreational use, the facility shall provide the public with relevant and up-to-date information on reservoir levels and river flows. It is understood that recreational activities must be consistent with the assurance of reasonable safety of employees and the public, and with Critical Energy Infrastructure protections dictated by state or federal authorities.

- ***STANDARD H-1. Not Applicable/De Minimis Effect:*** The facility does not occupy lands or waters to which the public can be granted safe access and does not otherwise impact recreational opportunities in the vicinity of the facility; or
- ***STANDARD H-2. Agency Recommendation:*** The facility demonstrates compliance with resource agency recommendations for recreational access or accommodation (including recreational flow releases), or any enforceable recreation plan in place for the facility; or
- ***STANDARD H-3. Assured Accessibility and Use:*** If agency recommendations or an enforceable

recreation plan is not in effect, the applicant demonstrates that they have been and formally commits as a condition of its LIHI Certification to continue to be responsive to reasonable requests from recreational interests for public access to lands and waters associated with the facility, , and to appropriate recreational water flows and levels, without fees or charges.

- ***STANDARD H-PLUS:*** The facility has created significant new public recreational opportunities in the vicinity of the facility beyond those otherwise required by agencies, such as campgrounds, whitewater parks, boating access facilities and trails, which opportunities do not create unmitigated impacts to other resources, beyond those required as a part of the facility's FERC license, exemption, water quality certificate, or other authorization.

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4. APPLICATION PROCESS

The LIHI Certification application process is designed to evaluate the impacts of different types of hydropower facilities and operations. The process is intended to be consistent in approach and flexible enough to address the relative risks of environmental and social impacts from a facility. LIHI uses third-party independent application reviewers to evaluate applications. LIHI is also committed to broad stakeholder involvement and public participation, and although complexities and participation from third parties take time, LIHI is committed to processing applications as promptly as possible.

The application process for LIHI Certification (see Section 6 for recertifications) involves the following basic steps:

1. Pre-application consultation between applicant and LIHI staff (optional and no cost)
2. Preparation and submittal of an initial application
3. Intake review of the application
4. Preparation and submittal of a revised application or application supplement if needed
5. Full Certification review
6. Preliminary certification decision, subject to appeal
7. Final decision and, if granted, Certificate issuance

The relationship between the processing steps and the parties responsible for each are shown in Figure 4-1. An application is not complete until it is accepted by LIHI staff at the beginning of the full certification review step, the signed Sworn Statement and Waiver Form has been received, and payment of the full application review fee has been received. Each application process step is described more fully in the sections below. A recommended outline for an application package, illustrating the preferred organization of an application document, is provided in Appendix B.

4.1 Contents of an Application Package

An application package must contain the following components. Forms and tables can be downloaded from the LIHI website How to Apply page:

- Facility description
- Standards matrices
- Supporting documentation to meet standards for each criterion in each Zone of Effect
- Completed sworn Statement and Waiver of Liability Form
- Completed contacts Forms
- Payment of applicable fees

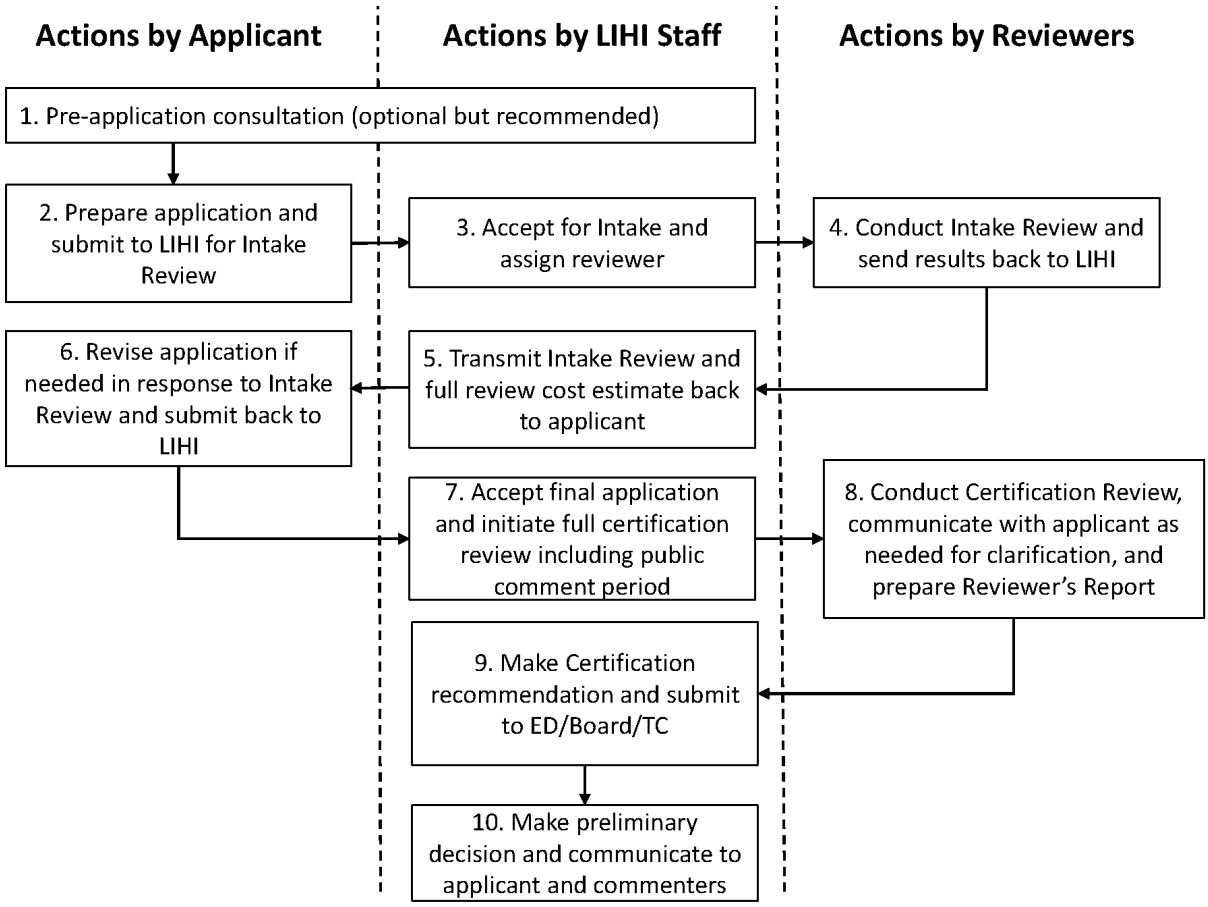

Figure 4-1. Generalized Flow Chart of the Primary Steps in the LIHI Certification Process

Materials provided to LIHI as part of a pre-application consultation and during the intake review stage will be kept confidential with access limited to LIHI staff and reviewers, unless and until a complete certification application is submitted and public notice of the application is made. Generally, all information submitted to LIHI and pertaining to a complete certification application will be available for public review and public access unless designated as confidential by the applicant (see Appendix B for additional details).

At the option of the applicant, an application package may also include additional materials which may serve to strengthen the applicant's case for LIHI Certification. Such materials may include: ISO 14000 certification or documentation of any Environmental Management System in place for the facility; current letters of support from resource agencies or other stakeholders; documentation of other environmental certifications pertinent to the facility; or information about, or summaries of, any relevant resource management plans, habitat conservation plans, biological operating plans, memoranda of understanding or other third party-agreements pertinent to LIHI criteria.

4.1.1 Facility Description

Information required to describe the facility, its operation, and its environmental setting (see Table B-1.1 in Appendix B or alternate Excel format of Table B-1.1 at https://lowimpacthydro.org/how-to-apply/) includes:

- Name of the facility
- Reason for applying for certification
- Location
- Facility owner
- Regulatory status
- Characteristics of the powerhouse and generating equipment
- Characteristics of the dam, diversion, or conduit system
- Characteristics of the impoundment and watershed
- Operating regime
- Hydrologic setting
- Designated Zones of Effect
- Photographs and maps of the facility, including demarcation of Zones of Effect

Most hydropower facilities are comprised of multiple parts or areas with different physical characteristics, such as impoundments, bypassed reaches, downstream regulated river segments, and sometimes upstream riverine segments where flows are regulated by agreement with upstream facilities. The environmental and social impacts of hydropower facilities can vary among these different parts of a facility. All the LIHI criteria must be satisfied in all areas of the facility, but different standards may apply to different areas.

The different facility areas are designated as "Zones of Effect" (Zones or ZoEs) which account for the differing types and level of impacts throughout the facility's affected area. Examples of facility designs and associated ZoEs are shown in Figure 4-2 and Figure 4-3 below.

If a facility owner has an enforceable agreement in place that regulates water inflows to the facility, then a specific ZoE for the regulated riverine reach upstream of the facility's impoundment should be designated and described (see panel (B) in Figure 4-2). Such upstream ZoEs are included to evaluate the potential impacts on the facility-affected area of regulated flows above the facility.

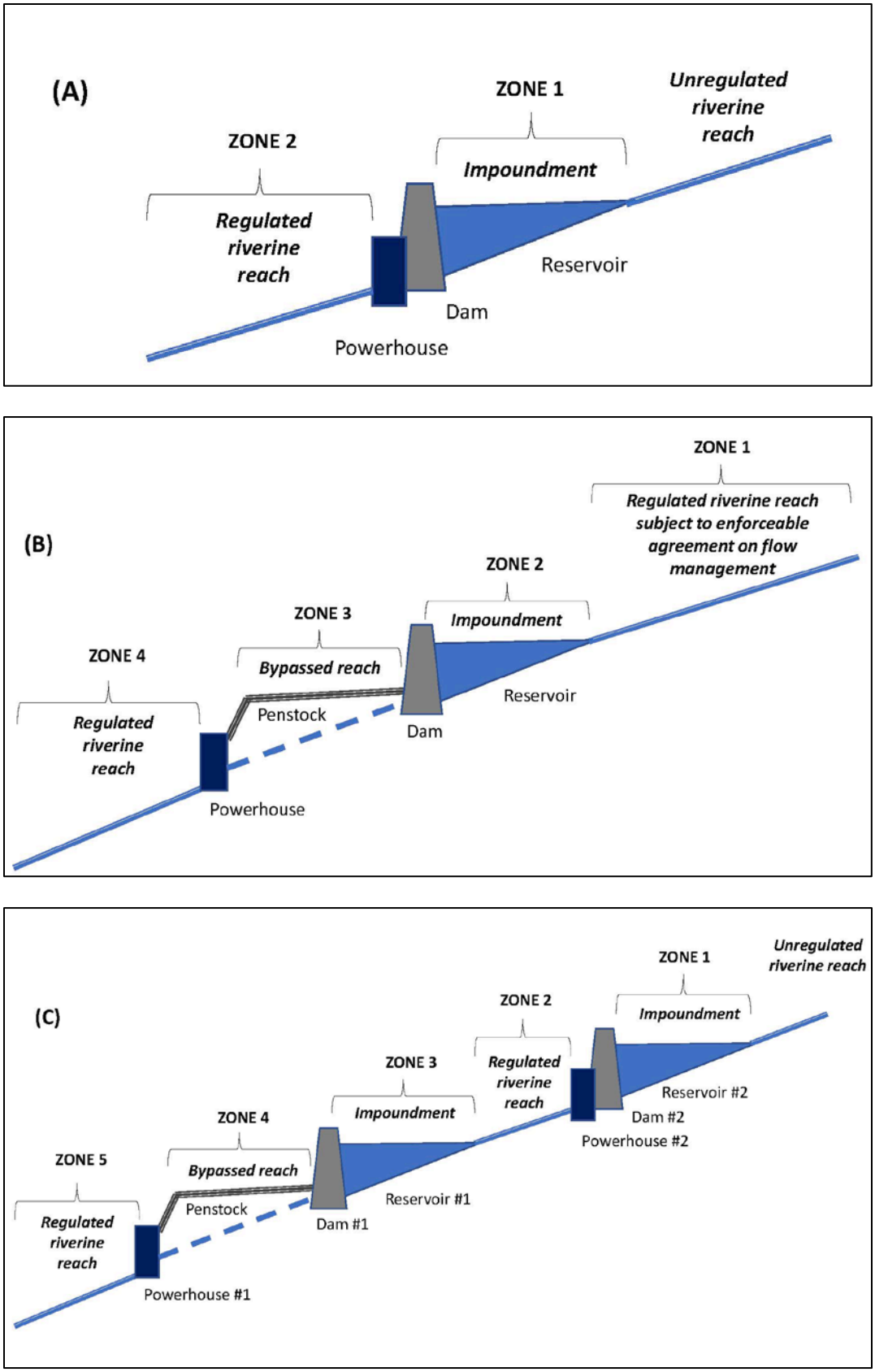

Figure 4-2. Conceptual Examples of Zones of Effect for a Typical Hydropower Facility.

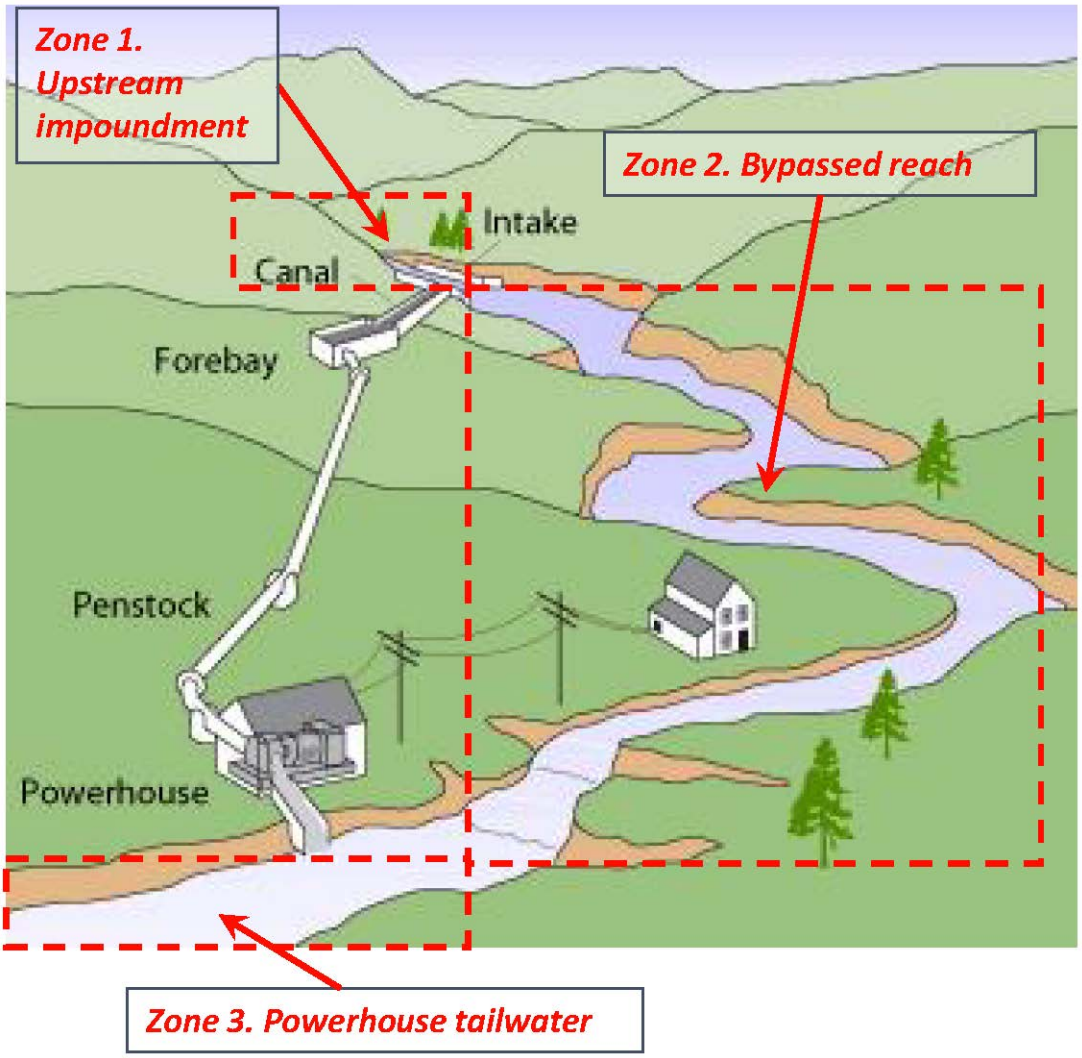

Figure 4-3. Conceptual Example of Zones of Effect for a Typical Diversion Project.

4.1.2 Standards Matrix

The Standards Matrix is a summary of which single numbered alternative standard is being used to satisfy each criterion in each ZoE. Figure 4-4 illustrates an example of a completed matrix for a single ZoE. Applicants must record an 'X' or check mark (✓) inside each cell that applies to the ZoE. Only one numbered standard should be checked off in each row of the matrix. If a PLUS standard is also selected that should be noted in the applicable criteria and ZoEs as shown below. An application must contain one matrix for each designated ZoE as in Figure 4-4 or a consolidated matrix as shown in Figure 4-5. The alphabetic and numeric values correspond to the supplemental information required to support selection of that standard (see Section 4.1.3 and Appendix B tables).

All criteria must be evaluated for each ZoE. This approach ensures that a comprehensive examination of facility impacts is conducted (e.g., water quality evaluated separately in riverine and impoundment zones or recreational access examined in all zones individually). Appendix B provides an example application outline with the preferred organization of information by criterion and ZoE.

Facility Name: __ABC Hydro_____ Zone of Effect: __#1 - Impoundment_

	Criterion	*Alternative Standards Applied*				
		1	*2*	*3*	*4*	*Plus*
A	Ecological Flow Regimes	X				X
B	Water Quality			X		
C	Upstream Fish Passage	X				
D	Downstream Fish Passage				X	X
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection	X				
G	Cultural and Historic Resources Protection		X			
H	Recreational Resources			X		

Figure 4-4. Example of a Completed Standards Matrix for one ZoE

Facility Name: XYZ Hydro

		CRITERION and STANDARD SELECTED							
Zone No. and Name	**River Mile at upper and lower extent of Zone**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
		Ecological Flows	**Water Quality**	**Upstream Fish Passage**	**Downstream Fish Passage**	**Shoreline and Watershed Protection**	**Threatened and Endangered Species**	**Cultural and Historic Resources**	**Recreational Resources**
1: Upper dam impoundment	97.3 – 95.0	1	3	1	2	1	2	2	3, PLUS
2: Upper dam bypassed reach	95.0 – 94.1	4	3	2	2, PLUS	1	2	2	3
3: Upper dam tailrace	95.0 – 92.0	4	3	2	1	1	2	2	3
4: Lower dam impoundment	92.0 – 91.0	1	3	1	2	1	2	2	3, PLUS
5: Lower dam tailrace/downstream reach	91.0 – 87.5	4	3	2	1	1	2	2	3

Figure 4-5. Example of a Completed Standards Matrix for Multiple ZoEs.

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4.1.3 Supporting Information

The supporting information provided in an application should justify the standard selected for each criterion and ZoE and document the specific methods or technology used. Appendix B contains additional instructions and tables for each criterion that list the types of information required for each alternative standard.

In all cases, the applicant must demonstrate that the facility is in compliance with or has taken action to regain compliance with, its current regulatory requirements related to the LIHI criteria and to relevant FERC license or exemption articles, water quality certification terms and conditions, and other authorizations, permits, and enforceable agreements. Any issues surrounding the facility's compliance and current status of the issues should be discussed and supporting documentation provided.

4.1.4 Sworn Statement and Waiver of Liability

All applications must include a sworn statement and waiver of liability from an officer or authorized representative of the facility owner attesting that the material presented in the application is true and complete. Applications for pre-operational certification of a "new" facility (see Section 4.5.3), must include an acknowledgement that LIHI may suspend or revoke the Certification should the impacts of the facility, once it is operational, fail to comply with the certification criteria. A template Sworn Statement and Waiver Form to use for this requirement is provided in Appendix B.

4.1.5 Contacts Forms

The application package must provide contact information for authorized representatives of the facility owner, any consultant firms that are assisting the owner with the LIHI application process, facility operations contacts designated to handle annual compliance obligations, billing/accounts payable contacts; and agency and other stakeholder contacts (see Contacts Forms in Appendix B). The application Contacts Forms must be provided at the intake stage. If a facility is sold or transferred to a new owner entity during or after Certification, the new owner must notify LIHI and assume all program obligations or the Certification will be revoked. (See Assignment and Assumption Form in Appendix B).

4.2 Processing Steps

All applicants should become familiar with the LIHI Certification process and terminology described in this Handbook including definitions in Appendix A before starting the application process. It is the responsibility of the applicant to produce a complete application package that clearly explains and demonstrates how the facility satisfies the LIHI eligibility requirements and criteria. Interested applicants should also familiarize themselves with the Certification Mark License Agreement (CMLA), the execution of which is a requirement before a facility may market the facility as LIHI Certified® (see Section 5).

4.2.1 Pre-Application Consultation

Applicants are encouraged to contact LIHI staff for an informal pre-application discussion which is confidential, optional, and free. The purpose is to help the potential applicant understand the LIHI Certification Program and to provide guidance on the information needed to support a complete

application. It also provides an early opportunity to identify potential conflicts between LIHI criteria and a prospective facility's likelihood of meeting the criteria, and to determine whether there may be ways to resolve such conflicts.

Challenging policy or interpretation questions that are identified in this early consultation may be raised to the Governing Board for clarification, if necessary. The Board, if it so chooses, may decline to address such questions prior to being presented with a complete reviewer's report after the full certification review. After pre-application consultation, the potential applicant may elect to proceed with the intake review step explained below or decide not to pursue LIHI Certification further.

4.2.2 Intake Review

Upon receipt of an initial application and payment of the intake review fee (see Section 4.4 and Appendix C), LIHI will notify the applicant that the intake review process has begun. The intake review takes a high-level look at whether sufficient information is provided to adequately satisfy the LIHI criteria. When the intake review is complete, the reviewer drafts a summary report and submits it to LIHI staff for approval, along with a list of missing information, a recommendation on whether and how to proceed to a full application review, and an estimate for the fee required to complete the full review. LIHI staff will send this information to the applicant in an intake transmittal letter with a copy of the reviewer's findings and will discuss any substantive issues identified with the applicant. LIHI makes every attempt to complete intake reviews within 60 days of receipt of an initial application package and intake review fee. After the intake transmittal letter is sent, the applicant may decide not to proceed to the full review stage or may need to revise or supplement the application package based on the intake review report. LIHI staff and reviewers are available for continued free consultation throughout the application process.

4.2.3 Certification Review

The next stage of the LIHI Certification process is the full certification review. This is a public process, initiated upon receipt of a complete final application package and payment of the full certification review fee (see Appendix C). All application materials, including payment of the certification fee, the Facility Description, the Standards Matrices, supporting documentation for meeting the standards, facility and stakeholder contact forms, and the Sworn Statement and Waiver of Liability (see Appendix B) are required for an application to be deemed complete and posted on the LIHI website for public review and comment.

Materials provided to LIHI on a confidential basis as part of a pre-application consultation or during the intake review stage will be kept confidential with access limited to LIHI staff and the reviewer, unless and until a complete certification application is submitted and public notice is made. Except in rare circumstances, all information pertaining to a certification application provided to LIHI will be available for public review. The applicant can request to keep certain information confidential if it is submitted separately and marked as such (see Appendix B).

The final certification application should be responsive to all the missing information and clarification guidance in the intake review report. Once LIHI has received a revised application or application

supplement, the Sworn Statement, and payment of the full certification review fee, the application package is deemed complete. The date that a package is designated as complete by LIHI staff is the date that will become the Certificate's effective date once a decision to certify has been made.

The application reviewer examines the application package, conducts a search of public records associated with the facility, including a review of the FERC elibrary, and makes any necessary inquiries to resource agencies and local non-governmental organizations to seek clarification on factual issues or make other inquiries as needed. The reviewer also considers all public comments and applicant responses to comments received (see Section 4.2.4).

Once the review is complete, the reviewer submits a written report to LIHI staff, with a recommendation on whether the facility should be certified or not and an explanation outlining the basis for the recommendation. If the reviewer believes that facility-specific certification conditions are necessary, they are included as recommendations in the report.

The duration of the certification review period varies, depending on availability of information, unforeseen complexities or issues of concern, and timely responses to reviewer or staff inquiries of the applicant and other stakeholders. LIHI will issue a preliminary certification decision (Figure 4.1, step 10) within 180 days of accepting a final application package as complete (Figure 4.1, step 7). Circumstances beyond the control of LIHI may extend the review period. At the close of the public comment period LIHI will notify the applicant of the status of the review and the time expected for LIHI to reach a final certification decision.

4.2.4 Public Comment Period

The complete application and relevant supporting information is posted for public review on the LIHI website and a 60-day comment period is announced via email. The distribution lists for LIHI email notices are organized by state. The email notice lists are open to any interested party by signing up at https://lowimpacthydro.org/join-our-list/. The announcement is also forwarded to governmental and other stakeholder contacts identified in the application. LIHI makes no commitment to consider public comments that are received after the 60-day comment period closes. The applicant will be given a reasonable period to respond to all comments. All public comments. and any applicant responses will also be posted on the are posted on the facility webpage on the LIHI website.

4.2.5 Certification Decision and Announcement

Certification decisions may be made by the full LIHI Governing Board, or by the LIHI Technical Committee or the Executive Director under authority delegated by the LIHI Governing Board. The LIHI Technical Committee provides expertise and support in the decision-making process. All Board members have the opportunity to participate in the Technical Committee's processing of individual applications that come before the Committee. Where authority has been delegated to the Executive Director, he/she will exercise that authority after consideration of the reviewer's report and recommendation and, in some cases, with input from the Technical Committee.

Decisions to certify a facility are first announced in preliminary form. If the decision is to not certify, the Executive Director will notify the applicant in writing of the decision and the reasons for rejection before

public posting. An applicant may decide to withdraw the application prior to a preliminary decision being announced or may withdraw for other reasons (see Section 4.5.4). The preliminary decision is then publicly posted on the LIHI website for a 30-day period, along with the application reviewer's report and (if prepared) a report of the Executive Director. An announcement of the preliminary decision to certify is sent to all parties that signed up to be on LIHI's applicable state or regional email list, as well as to all parties that provided public comments on the application. All commenters and applicants can request an appeal of the preliminary certification decision during the 30-day appeal period (see Section 4.3). Only those who submitted public comments during the initial 60-day public comment period may appeal. Preliminary decisions not to certify are also subject to appeal by the applicant (see Section 4.3.2). If no appeals are filed within the 30-day period, the certification decision becomes final.

During the review process, LIHI may determine that Certificate conditions are necessary. Conditions are typically imposed to:

a) satisfy a criterion where additional confirming data is or will be collected;
b) reflect anticipated changes to the facility's structures, operations, or capacity;
c) incorporate FERC relicensing or other outcomes;
d) address agency reservations of authority to require additional measures;
e) respond to stakeholder or agency comments; and/or
f) to ensure that planned or in-progress studies, mitigation measures, agreements between the applicant and stakeholders, or compliance matters are completed in a timely manner.

During the certification decision process, LIHI may determine that facility-specific conditions are necessary to satisfy a criterion or to ensure that certain studies or mitigation measures are implemented in a timely manner. Conditions may have a special annual fee associated with them, as discussed in Section 4.4.2 and Appendix C. Applicants are provided with draft condition language using an informal process and are offered the opportunity to provide input and request modifications to the condition language before the certification decision is announced publicly. LIHI will give due consideration to this input, however the final condition language is decided by the Executive Director or Governing Board.

If the application is approved for LIHI Certification, no appeals are filed within the 30-day period, and the LIHI CMLA is executed, a LIHI Certificate will be issued for a defined term with any facility-specific conditions and associated condition fees identified.

4.3 Appeals of Certification Decisions

Preliminary LIHI Certification decisions are subject to appeal by either an applicant or by a commenter who provided comments to LIHI during the 60-day public application review period. Conditions may also be appealed (see Section 4.3.3).

4.3.1 Appeal of Decision Granting Certification

Only commenters who participated in the 60-day public review period may submit a letter to the Executive Director requesting an appeal, if the request is received within 30 days of the preliminary LIHI

Certification decision announcement. An appeal request must be in writing and include specific reasons why the appellant believes the facility does not meet the LIHI criteria. Requests for appeals may be submitted by email or by US mail. The Executive Director will evaluate the request to determine if: a) the party requesting the appeal previously filed timely comments; and b) if the request adequately describes the basis for the appeal. If either condition is not met, the Executive Director will reject the request for appeal and notify the requestor. If both conditions are met the Executive Director will notify the appellant and provide a detailed description of the appeals process. Before an appeal proceeds, the party requesting the appeal must pay a $500 appeal processing fee.

4.3.2 Appeal of Decision Denying Certification

If a certification is denied the applicant can also request an appeal of the decision during the 30-day period. Requests for appeals may be submitted by email or by US mail. The appeal request must either: a) propose measures or changes to the facility which, if implemented, would address LIHI's reasons for rejection; or b) set forth specific reasons why the facility should have passed the LIHI criteria. The Executive Director will evaluate the request to determine if the request adequately demonstrates the basis for the appeal. If it does not, the Executive Director will reject the request and notify the applicant. If the Executive Director determines that there is a basis for appeal, he/she will notify the applicant and provide a detailed description of the appeals process. Before an appeal proceeds, the applicant must pay a $500 appeal processing fee.

4.3.3 Appeal of Conditions Placed on a Certificate

If after a preliminary decision is announced, an applicant is not willing to comply with the condition language as worded, the applicant may appeal the conditions within the 30-day period by submitting a letter to the Executive Director explaining why the conditions, as worded, are a hardship or unreasonable. A commenter may also appeal condition language, explaining why they believe the conditions as written are insufficient to support the LIHI criteria. The Executive Director will review the request and convene the Technical Committee if needed, to determine if modifications to the condition language are appropriate. If so, condition language will be modified.

4.3.4 Appeal Review

If a timely appeal of a LIHI Certification decision is submitted and accepted by the Executive Director, the Executive Director will convene an Appeals Panel and forward the full certification application file to the Panel members.

Once the Appeals Panel has been selected, it will meet with the Executive Director to receive instructions and materials, then convene to independently consider the appeal. The panel will review all application materials, making any additional inquiries it deems necessary, and meet to discuss and resolve the appeal. Under no circumstances is either the appellant or applicant permitted to communicate with any member of the Appeals Panel. If additional materials are necessary or the panel has questions for either party, all communications must occur through the LIHI Executive Director or designee. If the Appeals Panel requires additional assistance, an Appeal Reviewer will be appointed from LIHI's existing roster of application reviewers, to acquire any additional information from the

parties and to prepare a report to the Executive Director and the Appeals Panel that analyzes the merits of the appeal. The Appeal Reviewer will not be the same application reviewer that conducted the underlying application review. However, the Appeal Reviewer may consult with the original application reviewer. At the direction of the Appeals Panel, the Appeal Reviewer will compile the written report and any other relevant information including subsequent comments and reports pertinent to the appeal and submit it to the Appeals Panel.

Decisions by the Appeals Panel will be made by majority vote. The Appeals Panel will function independently of the Governing Board and make an independent decision about whether a facility should be certified. Appeals Panel decisions will be rendered in writing to the Executive Director and the Governing Board and will include identification of the issues of fact and the interpretations of the LIHI criteria and other policy matters that the Appeals Panel decided in order to render its decision. This process is expected to take approximately 60 days.

The Governing Board will review Appeals Panel decisions only to ensure that the decisions are consistent with LIHI criteria and policy. The decision of the Appeals Panel will stand unless the Governing Board finds that the decision is inconsistent with the LIHI criteria and/or policy. The Governing Board determination at this stage is final.

If the Governing Board accepts an Appeals Panel decision to certify a facility, the Executive Director will then issue a LIHI Certificate for the facility, post notice of the final LIHI Certification decision on the LIHI website, and send notice of the LIHI Certification to all stakeholders in the applicable email notice list, as well as to all parties that commented on the application package ("commenter").

For certifications that are denied by the Appeals Panel, the Executive Director will provide written notice of the decision and reasons for that decision to the applicant and other parties to the appeal. In the case of an appeal of a decision to recertify a facility, the current Certification will be considered active until a final appeal decision is made. If the appeal results in de-certification, the effective end date will be the date of the final appeal decision.

In the case of a denied original certification, if an appeal is successful in reversing the preliminary decision, the effective date for the new Certification will be the date of the receipt of the final full application package. Upon such a reversal and the final decision to certify, the owner of the facility may market the facility as LIHI Certified® retroactive to the effective date of the LIHI Certification.

4.4 Program Fees

LIHI program fees are designed to cover the cost of processing applications and for monitoring and maintaining active certifications. There are two types of fees associated with LIHI Certification: 1) fees to process an application prior to issuance of a certificate; and 2) certification maintenance fees that apply annually during the term of a certificate. A summary of LIHI program fees is provided below. The complete fee policy is described fully in the Fee Schedule in Appendix C. LIHI reserves the right to alter the program fees and/or policy as needed with reasonable notice to Certificate holders.

4.4.1 Application Review Fees

Application review fees include fees for the initial intake review, for full application review, and for recertification review. These fees are designed to cover LIHI's cost associated with reviewing applications at all stages in the process. The intake review fee is a fixed fee charged to all applicants, regardless of facility size or circumstances. Before submitting payment of this fee to LIHI, it is strongly recommended that interested applicants contact LIHI for free and confidential pre-application consultation. Application review fees include the cost of hiring an independent reviewer, which is estimated during the intake review, and overhead costs covering LIHI staff's time. Application review fees vary based on the circumstances and available information for each facility. LIHI reserves the right to charge additional fees in circumstances where a review is more complex that initially estimated.

Some facilities may have very low environmental and social impacts and may qualify for the Not Applicable/ De Minimis Effect standard for all criteria. These applications may be processed at lower application fees compared to Table C-1 in Appendix C and applicants should consult with LIHI staff to determine whether they may qualify for reduced fees. The determination of applicability will be based on the LIHI criteria being satisfied at the Not Applicable/ De Minimis Effect standard, not on facility design (e.g., a FERC conduit project will not be treated as very low impact if it does not meet the Not Applicable/ De Minimis Effect standard for all criteria).

4.4.2 Certification Maintenance Fees

Certification maintenance fees include annual fees, condition fees, and any other supplemental compliance fees LIHI may impose to maintain an active LIHI Certificate. Details on fees are provided in the preliminary decision letter sent to the applicant. The annual and conditions fees are retroactive, covering the 12-month period ending the month prior to the anniversary of the Certificate. The fee is calculated using a $/MWh rate structure that includes a base rate and variable regional market rates. There is a tiered minimum annual fee, or floor, for facilities with low installed capacity or low annual generation (see Appendix C). There is also a maximum annual fee, or cap, for large facilities. Facilities that qualify for the Not Applicable/ De Minimis Effect standard on all criteria may qualify for reduced certification maintenance fees that are noted in the preliminary decision letter.

Condition fees are charged on an annual basis to certificate holders for active conditions. Not all conditions will require a fee, and the fee amounts may vary from year-to-year during the term of a Certificate, as conditions are satisfied, modified, or added. Condition fees are calculated based on the time required by LIHI staff to monitor compliance and review compliance submittals.

4.4.3 Refund Policy

All fees are non-refundable. Should an applicant choose to withdraw or place an application on hold at any point during the review process, LIHI is under no obligation to refund fees already collected. Should a Certificate holder decide to withdraw a Certified facility from the program (see Section 4.5.4), LIHI will discontinue all annual maintenance billing for the years after the year of withdrawal. Additional fees may apply when an applicant chooses to revive an application that was submitted previously but was withdrawn or placed on hold by the applicant.

4.5 Special Situations

LIHI recognizes that each hydro facility is unique and strongly advises that pre-application consultation take place with LIHI staff. The intake review step is intended to provide guidance on how to structure applications in special circumstances, as well as how to handle other unique circumstances.

4.5.1 Facilities undergoing FERC Licensing

If a new application for LIHI Certification is received for a facility that is currently in, or approaching FERC licensing, relicensing, or exemption, and a new license or exemption is expected to be issued during the term of LIHI Certification, LIHI will advise the applicant to delay application until they have completed that proceeding. The applicant will also be advised to delay application if the facility is subject to an ongoing amendment or rehearing proceeding that may affect the LIHI criteria.

If a facility is currently Certified but enters a FERC relicensing proceeding during the Certification term, the recertification application will be evaluated under the conditions in the existing FERC license until FERC issues a new license. In this latter case, the LIHI certificate may be conditioned to require updating and potential modification as soon as a new license is issued, so as to be consistent with any new science-based resource agency recommendations made during the proceeding. Similarly, the findings of any science-based studies, relevant to certification criteria, may be considered.

4.5.2 Multi-Dam Applications

If an applicant owns or operates multiple facilities that are operationally or hydrologically connected, the applicant may request to submit a consolidated application for those facilities. The applicant should consult with LIHI staff prior to the intake review about how best to structure a consolidated application. A consolidated application may be subject to a supplemental processing fee (see Appendix C).

4.5.3 Pre-operational Applications

An applicant may submit an application for a new hydropower facility that is built on an existing dam, diversion, or conduit but not yet operational, provided that:

- the applicant has obtained a FERC license or exemption, or similar authorization addressing environmental and social impacts;
- that authorization is not subject to any pending legal challenges; and
- the applicant specifically acknowledges on the Sworn Statement and Waiver Form in Appendix B that LIHI may suspend or revoke the Certification if facility operations result in non-compliance with the LIHI criteria.

For a pre-operational facility, the LIHI Certification term will begin on the date that the facility begins generation. Applicants will be charged a fee premium for pre-operational certifications (see fee schedule in Appendix C).

4.5.4 Withdrawal of an Application

At any time, an applicant or Certificate holder may withdraw its application from consideration or withdraw a Certified facility from the LIHI program. If an application is withdrawn, the final status of the application in public LIHI documents will be described as withdrawn. The applicant may resubmit an application package at a later date. An applicant may also suspend or place their application on hold at any time. Application review fees are not refundable, even in the instance of withdrawal. Renewed applications may be subject to additional review fees.

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5. MARKETING GUIDELINES AND COMPLIANCE

Low Impact Certified hydropower provides consumers with assurance that an independent review has determined that the facility is operated in accordance with LIHI's objective and scientific criteria. Certification also results in a legally binding contract that grants the Certificate holder a limited license to use the LIHI Certification Mark and to market the facility as LIHI Certified®.

5.1 Certification Mark and Marketing Guidelines

Once the Certification decision becomes final, a LIHI Certificate for the facility will be issued to the applicant but only after the applicant has executed the LIHI Certification Mark License Agreement (Agreement or CMLA). The CMLA standard form is available for review at https://lowimpacthydro.org/how-to-apply/.

LIHI Certification Mark

The CMLA entitles the Certificate holder to use the LIHI Certification Mark to market energy and the associated green attributes from the facility as "Low Impact Certified" or "LIHI Certified®." The Agreement requires strict, ongoing adherence by Certificate holders to all program rules provided for in this Handbook, as well as the LIHI marketing guidelines and the program compliance requirements in Section 5.2. The LIHI marketing guidelines provide rules for the observance of Federal Trade Commission principles as well as acceptable language for the use of the Low Impact Certification Mark. The marketing guidelines are available at http://lowimpacthydro.org/marketing-guidelines, and will be updated from time to time at the discretion of LIHI. All Certificate holders will be notified of changes to the guidelines at least 60 days before they go into effect.

5.2 Compliance Requirements

During the term of their LIHI Certificates, all facility owners/operators are required to operate their hydroelectric facilities in a manner that complies with the Certificate terms and all rules in this Handbook. LIHI maintains the integrity and credibility of Low Impact Certification by verifying annual compliance with the criteria and with facility-specific requirements. Changes to a facility or its requirements do not necessarily represent a violation of the LIHI criteria, nonetheless LIHI verifies compliance in order to maintain a complete and accurate record of the operations at each Certified facility.

5.2.1 Notification of Potential Non-Compliance or Changes in the Facility

Certificate holders must notify LIHI as soon as possible when a violation of the terms of the LIHI Certificate has or may have occurred and must also summarize those instances and their resolution in annual compliance statements submitted to LIHI. Triggers to required notification include:

- a violation of the LIHI criteria or associated site-specific conditions included in the LIHI Certificate;
- a violation of the LIHI marketing guidelines;
- a material change in the facility, its operations, or regulatory requirements relevant to the Certification that may impact compliance; or
- receipt of a notice of permit or license violation or formal notice of non-compliance from any government agency relevant to the facility's Certification, LIHI criteria, or facility-specific conditions.

The notification should include an explanation as to why the violation or change does not amount to a significant violation of LIHI Certification, or in the case of a change, that the change will not result in an adverse impact under the LIHI criteria. Any other party may also notify LIHI of the occurrence of one or more triggering events.

5.2.2 Review of Potential Non-Compliance or Changes in the Facility

The Executive Director will review the alleged violation or change in conditions, make any necessary inquiries, decide whether to refer the allegations to an application reviewer and may, if necessary, request additional information from the Certificate holder. The request may include a facility inspection by LIHI staff and/or the application reviewer. If an application reviewer is utilized, they will submit a written report to the Executive Director regarding whether a compliance violation has occurred or whether the change results in non-compliance with the criteria. The Executive Director will then make a recommendation regarding compliance to the Governing Board. The Governing Board will determine what compliance action is appropriate (see Section 5.2.4). If a reviewer is used, the costs associated their effort may be charged to the Certificate holder.

5.2.3 Annual Compliance Statement

To maintain compliance with LIHI Certification, all Certificate holders must submit a signed statement to LIHI annually confirming that during the preceding year, there were no violations of the terms of the LIHI Certificate. The filing will also include an update on the status of any facility-specific conditions that are active, and submittal to LIHI of all materials required under those conditions.

LIHI will provide the Certificate holder with a form to use to submit this statement. LIHI may ask for additional information, such as annual generation data during the previous year; whether any financial benefits were received from LIHI Certification during the past year; and whether any specific environmental or social benefits were achieved. The statement must be submitted annually by the end of the anniversary month of the LIHI Certificate. Failure to timely file an annual statement, or a material misrepresentation contained in the statement may result in revocation of the Certificate.

5.2.4 Consequences of Non-Compliance

If LIHI finds that a Certified facility has committed a significant violation of the terms of certification, or if LIHI finds that a material misrepresentation of fact was made in any submission from an applicant or Certificate holder, and such violation or material misrepresentation is not corrected within thirty (30) days after the facility receives written notice from the Executive Director, the Governing Board may:

- Impose additional conditions and/or condition fees;
- Revoke or modify the Certification;
- Bar the Certificate holder from re-applying to certify the same facility for five years;
- Require the Certificate holder to notify immediately its current customers that its Certification has been revoked, and, if its customers do not deliver power to the ultimate retail customer, to notify immediately the retail marketer; and/or
- Require any entity marketing power from the facility to immediately stop employing the LIHI Certification in its marketing unless it can find other supply that is also Low Impact Certified®.

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6. RENEWAL OF CERTIFICATION

All LIHI Certificates are issued for a term of between five and ten years. Before the end of the current term, the Certificate holder may apply for recertification. Approximately six to nine months prior to the Certificate expiration, LIHI will notify the Certificate holder that its Certification is due to expire and will provide instructions to apply for recertification. To renew a LIHI Certification, the Certificate holder submits a recertification application package to LIHI and pays recertification review fees (see Section 4.4 and Appendix C). Recertification applications should be received by LIHI well in advance of the current term expiration to allow sufficient time for review and public comment.

6.1 Recertification Process

Recertification occurs in two stages, both of which involve independent application review and an opportunity for public review and comment. Stage I is a relatively simple and quick process that is similar to the original intake review. Stage II is a more comprehensive evaluation similar to the review of the first-time certification application. Please review Section 4.1 and Section 4.2 for additional information on applications.

The Stage I recertification review focuses on three primary questions:

1. Is there any missing information in the application for recertification?
2. Have there been any material changes (defined below) at the facility during the term of the previous Certification?
3. Have there been any material changes in the LIHI criteria or certification process since the facility was originally certified?

If the application reviewer determines that the answer to each question is 'no,' then a recertification decision can be made relatively quickly pending verification of information provided in the application, and receipt of any public comments during the 60-day comment period. If there is missing information, LIHI will provide the applicant with a Stage I review report that explains what is missing. If there have been material changes in the LIHI criteria or certification process since the facility was last certified or if there have been material changes at the facility, then a Stage II review is triggered.

The Stage II recertification review involves a complete review of the application package, a search of public records associated with the facility, and all other necessary inquiries to resolve factual disputes, evaluate the veracity of claims, or make other inquiries as needed. The review also considers all public comments received and any applicant responses to comments.

When the review is complete, the reviewer submits a written report to LIHI staff, with a recommendation on whether the facility should continue to be Low Impact Certified or not, and an explanation outlining the basis for the recommendation. If the reviewer believes that new facility-specific conditions or a continuation of conditions from the current Certification are necessary, they are included as recommendations in the reviewer's report.

6.1.1 Determination of Material Changes

There has been a material change if either the LIHI criteria have changed since the previous LIHI Certification decision; or if one or more of the events described below have occurred. If the LIHI criteria changed during the term of a Certification, those changes will not take effect until the facility is recertified. The change events that trigger a Stage II recertification review must be reported to LIHI at the time they occur and/or in annual compliance submittals as well as in the recertification application, and include:

- ***Non-compliance***: Since receiving its last LIHI Certification, the Certificate holder has not implemented, has delayed implementing, or has otherwise not adequately met obligations relevant to the LIHI criteria. These obligations could be in the form of terms and conditions of license(s), settlement agreements, resource agency recommendations or agreements, LIHI facility-specific conditions including required notifications, agreements with local municipalities or other third parties, or similar relevant obligations; or
- ***Operational Changes:*** Since receiving its last LIHI Certification, changes in the facility have occurred that are relevant to LIHI criteria (e.g., a new or modified facility feature that changes the nature or extent of impacts including water quality compliance, adherence to flow requirements, changes in fish passage measures); or
- ***New/Renewed Issues of Concern:*** Since receiving its last LIHI Certification:
    - new issues of concern and relevance to the LIHI criteria have emerged that did not exist or were not made known to LIHI at the time of prior LIHI Certification; or
    - there are ongoing problems with previously known issues that appeared to have been resolved or on the road to resolution at the time of the prior LIHI Certification, but in fact are not resolved at the time of the recertification application.

If a new FERC license, settlement agreement, prescription, biological opinion, or other similar regulatory decision has been made since the prior LIHI Certification, these documents must be provided as part of the recertification application, and they will be evaluated to determine if new or renewed issues have been raised. Updated federal and state listings of threatened and endangered species and updated state water quality assessments and impaired waters listings must also be included and discussed in the recertification application.

6.1.2 Recertification Review Processing Steps

The recertification application package must describe all material changes that have occurred during the current LIHI Certification term, and any planned material changes that are expected to occur during the next LIHI Certification term. The applicant submits this package, along with the recertification application fee (see Appendix C), to LIHI, following the instructions received from LIHI staff prior to expiration of the current Certificate. LIHI then contracts with an independent reviewer, who prepares a Stage I recertification report evaluating the three primary questions (see Section 6.1). If the application is substantially complete, LIHI will post the application package on the LIHI website for the 60-day public comment period. Notice of the application is sent via email to the agency and stakeholder contact list provided in the application, as well as to others on the LIHI state and regional email notice list.

Any party may submit public comments to LIHI during the 60-day comment period. The application reviewer will examine all application materials, the LIHI file containing the past Certification decision(s), public documents for the period of the current Certification period, public comments received, and responses to any reviewer inquiries of the applicant and/or third parties. If the review determines that the answers to the recertification questions are all "no" and that the application package materials demonstrate continued compliance with the LIHI Criteria, the reviewer will recommend recertification to LIHI via a letter report, and no further application review is required.

If the reviewer determines that the answer to any of the recertification questions is "yes", a more extensive Stage II investigation is required. The reviewer will submit a Stage I review report on unresolved issues plus recommendations to resolve them, and LIHI will share these conclusions with the applicant following the procedures set forth in Section 4.2.2. The recertification fee may also be increased if additional effort is required by LIHI staff or its reviewers to process a Stage II recertification review, including a more detailed and thorough investigation needed to answer the recertification questions. The application will not be posted on the LIHI website and the public comment period will not begin until the final application package is deemed complete.

At the conclusion of the Stage II review, the reviewer will produce a detailed report similar to that issued for an initial LIHI Certification (Section 4.2.3) and make a recommendation to LIHI as to whether the LIHI criteria are still met by the facility, in light of any material changes and/or changes in LIHI criteria.

6.2 Recertification Decisions and Appeals

Decision-making authority for recertification applications is the same as in original LIHI Certification applications (see Section 4.2.5).

If there have been adverse material changes, the Executive Director's recommendation and the reviewer's report will be submitted to the Technical Committee of the LIHI Governing Board for a certification decision. If LIHI's decision is to recertify, the Executive Director will and post notice of the preliminary decision on the LIHI website for the 30-day appeal period. Should an applicant or any other stakeholder desire to appeal a decision on a recertification application, the guidelines in Section 4.3 apply.

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APPENDIX A – DEFINED TERMS AND ACRONYMS USED

Adaptive management: A system of management practices based on clearly identified timeframes and outcomes with monitoring to determine if management actions are meeting outcomes, and, if they are not, facilitating management changes that will best ensure that outcomes are timely met or to re-evaluate the outcomes. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain and is the preferred method of management in those cases.

Advanced technology: A technology or mitigation technique based on new ideas, new technology, or unique, site-specific conditions which has a reasonable possibility of providing the desired results (e.g., effective fish passage, improved water quality).

Alternative fish passage mitigation: Mitigation measures employed *in lieu* of upstream or downstream fish passage measures at the facility to support fish populations adversely affected by the facility. Such measures might include the restoration of degraded habitat in the watershed to enhance natural reproduction. Such alternative mitigation measures should be designed to sustain the abundance and diversity of fish stocks in the river system.

Anadromous fish: Fish that begin their life cycle in freshwater, then migrate as juveniles to the ocean, where they grow into adults before migrating back into freshwater to spawn.

Appeals Panel: An appeals panel is comprised of three independent, non-conflicted individuals selected by the Executive Director from a pool of qualified candidates. Appeals panel members are to be selected based on their expertise in hydropower and natural resource issues, and their ability to objectively evaluate cases concerning the LIHI Certification Program.

Applicant: The party applying for LIHI Certification. This will usually be the facility owner or operator, or their authorized agent. However, compliance with the conditions of a Certificate is the responsibility of the facility owner and all affiliates.

Basin-scale redevelopment strategy: A watershed-level action plan that examines the dual opportunities for hydropower generation and environmental restoration/enhancement and defines ways to achieve both. The applicant must demonstrate a substantial commitment to achieving the goals of the plan. An example of a successful basin-scale redevelopment strategy is the Penobscot River Restoration Project (http://www.penobscotriver.org).

Best Practice/Best Available Technology: A method, technique, or technology that has consistently proven to produce superior results within the hydropower industry. To justify such approaches, the applicant should reference past successful uses and/or recognition by a resource management authority or professional research organization.

Bylaws: The Low Impact Hydropower Institute bylaws are the written rules by which the organization is governed. They set forth the structure of the LIHI Governing Board and the organization. They determine the procedures by which the LIHI Certification Program is implemented and guide the LIHI Governing Board in conducting business.

Catadromous fish: Fish that begin their life cycle in saltwater, then migrate as juveniles into freshwater,

where they grow into adults before migrating back into the ocean to spawn. American eels are the only catadromous fish in North America.

CMLA: The Certification Mark License Agreement which is required to be executed by the Certified facility owner (and appropriate affiliates) prior to use of the LIHI Certification Mark. The CMLA authorizes the use of the Certification Mark for the certificate holder to market power and the associated green attributes from the facility as Low Impact Certified by LIHI or "LIHI Certified®"

Compliance: A facility is in compliance with a requirement or recommendation if it complies at the time the application is filed and has not had any material violations or formal notices of violation issued by a state or federal agency within the prior year. If the facility has been in violation of a requirement or recommendation but the applicant does not believe the violation is material, the violation must be disclosed, and its materiality explained in the application. Certificate holders must certify compliance annually on a form provided by LIHI.

Cultural Resource: Material remains of past and present human life or activities that are of significant cultural or archaeological interest. Of cultural or archaeological interest means capable of providing scientific or humanistic understandings of past human behaviors, cultural adaptation, and related topics through the application of scientific or scholarly techniques such as controlled observation, contextual measurement, controlled collection, analysis, interpretation and explanation. This term includes, but is not limited to, objects made or used by humans, such as pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, or any portion or piece of the foregoing items, and the physical site, location or context in which they are found, or human skeletal materials or graves. Cultural resources are also understood to include historic resources such as facility equipment and structures having historic significance because of their engineering, technology used, and/or architecture.

Downstream fish passage (also, downstream passage): Safe and effective movement of fish downstream through the facility's impoundment, dam, powerhouse, and bypassed stream reaches. Effective downstream passage should encompass migratory fish and riverine fish and life history stages that are identified at or could be impacted by the facility.

Enforceable (also, enforceable protection): For purposes of this Handbook enforceable protection means a legally enforceable agreement, restriction, authorization or covenant that requires certain actions by the facility owner on facility lands or waters so as to achieve ecological land protection for water quality, wildlife, aesthetics, low-impact recreation, or other resource values. Examples include permanent conservation easements habitat or species protection plans, and shoreline permit programs.

Extirpate (also, extirpated and extirpation): To completely remove or locally eliminate a species population from the facility's affected area.

Fish passage: The ability, by native migratory fish and riverine fish species and life history stages that are identified at or could be impacted by the facility, to move safely and effectively upstream and downstream of an artificial obstruction or its operation.

Fish protection: Techniques or structures to prevent the loss of resident or migratory fish (e.g., screens

and other barriers that exclude fish from impingement or entrainment).

Fishway: A fishway is the combination of elements (structures, facilities, devices, operations, and measures) necessary to ensure the safe, timely, and effective movement of fish past a barrier. Generally, fishways employ proven technological approaches that comply with agency guidance if such guidance exists.

Flow-ecology model: For the purposes of this Handbook, a science-based flow-ecology model is a method that (1) quantitatively or qualitatively defines the relationship between flow, hydrologic alteration and ecological condition; and (2) demonstrates that an altered flow regime is within acceptable limits of ecosystem risk. Possible approaches could range from broadly-applicable hydrologic alteration thresholds (Richter et al., 2012) to regional or river-specific ecosystem flow recommendations (Kendy et al., 2012; DePhilip and Moberg, 2013; McManamay et al., 2013; Novak et al., 2015).

Habitat evaluation technique: A science-based habitat evaluation technique is a quantitative environmental assessment procedure that describes how habitat quantity and quality change over a range of physical conditions, such as stream flows or impoundment surface elevations. The term refers to a relatively large number of assessment methods that include the Instream Flow Incremental Methodology (IFIM) and the Physical Habitat Simulation (PHABSIM) model that dates to the 1970s (Stalnaker et al., 1995), the Habitat Evaluation Procedures developed in the 1980s by the U.S. Fish and Wildlife Service (https://www.fws.gov/policy/ESMindex.html), and many subsequent methods. For examples, see Annear et al. (2004) and other products from the Instream Flow Council (http://www.instreamflowcouncil.org/). The most important aspect of these techniques is that they involve an analytical framework that considers the tradeoffs between multiple ecological processes and resource management objectives and evaluates a range of flow options over a continuum of hydrologic conditions, both within years and among different types of water years (wet to dry). The resulting management decisions supported by these methods may result in seasonal or year-round limits on impoundment fluctuations, facility discharge ramping rate restrictions, and/or minimum instream flows into a bypassed reach and downstream of a powerhouse.

Indirect ownership: Indirect ownership means that the generation facility and associated lands are owned through separate LLC's or other segmented ownerships that have interconnected business relationships with the applicant company. Indirect ownership may include lands not directly related to power generation and transmission (e.g., lands other than those associated with the dam, powerhouse, or transmission corridor).

In-kind mitigation: A mitigation project in close proximity to the site of impact that is designed to replace lost resources with identical or very similar resources.

Limited storage capacity: An impoundment with a storage ratio (relationship between usable impoundment storage and mean annual flow) that poses a low relative risk of altering the flow regime. In this Handbook, limited storage includes impoundments with an active or usable storage capacity of equal to or less than 5% of the estimated unregulated mean annual flow (Dynesius and Nilsson, 1994; UNEP, 2009; Opperman et al., 2015). Load-following or peaking facilities will be reviewed on a case-by-case basis for compliance with the intent of this defined term.

Listed Species: Listed species are those species that have been designated by the appropriate federal or state regulatory agency, as either "Endangered" and in danger of extinction throughout all or a significant portion of its range, or "Threatened" and likely to become endangered in the foreseeable future throughout all or a significant portion of its range.

Migratory fish: Fish species that require stream connectivity to travel between different areas on an occasional (daily, seasonal, annual or longer) basis, for purposes such as spawning, rearing, feeding, growth to maturity, dispersion, and seasonal use of habitat. Migratory fish include anadromous, catadromous, potamodromous, and other riverine or resident species, if those species must move through a river system to successfully complete their life cycle.

Mitigation: This term is used in this Handbook to generally refer to a hierarchical set of actions, including avoidance, minimization, and compensation, in that order (Clement et al., 2014).

Mode of operation: Type of operation of impoundment or powerhouse releases that determine the water surface elevations and downstream flow patterns over sub-daily, daily, and seasonal time periods. Modes may include run-of-river, peaking, pulsing, seasonal storage, diversion, etc.

Net benefit: An increase in the overall habitat quality or quantity in the vicinity of the facility after technology improvements or mitigation measures have been completed.

New hydropower facility (or new generation): Addition of electrical generation equipment or retrofit of such equipment at an existing dam that was built before August 1998 and that does not degrade resource conditions above or below the modified facility.

Out-of-kind mitigation: Replacement or substitute resources that are related to but of a different quality, species mix, or even species type compared to more direct mitigation. Out-of-kind mitigation must have benefits that are of equal or greater overall value to that of the impacted species. Out-of-kind mitigation may be employed outside the boundary of the facility's affected area. For example, in lieu of upstream fish passage measures to make habitat available above a barrier, the facility owner/operator might enhance or make available other spawning habitat downstream of the barrier or in another part of the watershed not affected by the facility.

Potamodromous fish: Fish species whose migrations occur entirely within fresh water. This term includes riverine and resident species.

Recognized tribal plans: A plan for management of cultural resources as adopted by a tribe recognized by a federal or state government.

Recreation activities: Public uses of a facility's lands or waters including, but not limited to swimming, boating, fishing, sightseeing, picnicking, and wildlife viewing.

Recreational access: The ability to enter waterbodies and lands associated with the facility by the public for recreational use. Safety and security issues may dictate that such access is not feasible in some locations.

Regionally accepted instream flow policy: A study methodology or standard that is routinely relied upon by regulatory agencies and scientists working in the facility's geographic area. These are often

referred to as standard-setting, or desk-top, methods and are often used to define a minimum threshold flow, below which instream conditions are considered unsupportive of sustaining aquatic life. In Standard A-3, this method to protect base flows is coupled with the requirement of an impoundment having limited storage, to limit risk of hydropower operations on seasonal and inter-annual flow variability. For further explanation, see publications from the Instream Flow Council (Annear et al., 2004) and The Nature Conservancy (Mathews and Richter, 2007).

Resource agency recommendations: Recommendations or conditions for operation, maintenance, and construction of structures of the facility issued by resource agencies for the facility. Resource agency recommendations considered in LIHI Certifications shall be:

- ***Issued pursuant to a proceeding.*** Valid resource agency recommendations are those issued pursuant to a legal or administrative proceeding or other legally enforceable agreements made between a resource agency and the facility owner/operator. For a filing in a proceeding to be considered a valid recommendation, the submittal must be on agency letterhead and signed by an individual with the statutory or regulatory authority, as defined by each agency, to submit formal correspondence on behalf of the agency. The proceeding anticipated to apply for most facilities is a FERC licensing, exemption, license amendment proceeding, or recommendations issued specifically as part of LIHI Certification. For a FERC-regulated facility, these recommendations would include proposed or mandated license conditions submitted through the FERC licensing or other processes pursuant to Federal Power Act Sections 4(e), 18, 10(a) or 10(j), Clean Water Act Section 401, the Endangered Species Act Section 7 or other state or federal laws. For non-FERC-regulated facilities, the proceedings anticipated to apply include consultation pursuant to the Endangered Species Act, CWA Section 401 proceedings, Northwest Power Act proceedings, and other state or federal proceedings resulting in a legally enforceable agreement between the facility owner/operator and a resource agency. Resource agency recommendations that are subsequently overturned by a judicial proceeding cease to be valid for purposes of certification.

- ***Recent.*** If a single resource agency has made multiple recommendations, the most recent formal recommendation shall generally apply. This principle also applies when there is a settlement agreement. If a resource agency is party to a settlement, or otherwise formally concurs in a settlement, the settlement terms will be considered the most recent resource agency recommendation for these purposes. If, however, a resource agency is not party to a settlement and does not formally concur in the settlement, a subsequent formal science-based recommendation by that agency will be considered in the certification evaluation.

- ***Environmentally Protective.*** In general, the most environmentally protective resource agency recommendation shall apply where different resource agencies have made differing recommendations or recommendations by a single agency have changed over time. If a condition in the facility's FERC license or exemption (or other operating requirement, if not FERC licensed) is less environmentally protective than a more recent science-based resource agency recommendation, the more recent recommendation will be considered in the certification evaluation.

- ***Consistent with and supportive of Resource Management Goals and Objectives.*** Resource agency recommendations must align with the relevant published agency management goals and objectives for the resource(s) in question (e.g., fishery management plan, species recovery plan). The specific recommendation for the facility must also demonstrate how the recommendation supports achievement of the relevant resource management goals and objectives.

- ***Resolution of Conflicting Resource Agency Recommendations.*** Where there are conflicting resource agency recommendations and the conflict is not resolved by applying the most recent and most environmentally protective test, the conflict shall be resolved by applying the recommendations based upon the health of threatened or endangered biological organisms first, the health of other biological organisms second, cultural resources third, and recreation fourth, unless there is a statutory mandate to resolve the conflict otherwise. For example, recommendations designed to protect threatened or endangered species (i.e., a biological opinion) would prevail over recommendations regarding recreation. If a conflict still exists among resource agency recommendations, the Governing Board will determine which recommendation shall apply for purposes of LIHI Certification.

Riverine fish: A fish species that spends its entire life cycle in the riverine (fresh water) system and may migrate or move from one area to another for purposes of completing its life cycle. Riverine fish do not migrate to or from the ocean. Riverine fish have been referred to as resident fish. However, many riverine fish species are potamodromous.

Run-of-River: For purposes of this Handbook, a facility is operated in a run-of-river mode if the outflow of the facility is within reasonable measurement accuracy (plus or minus 10 percent) of the inflow to the facility, measured on an hourly basis. This level of alteration is estimated to have a low risk to ecosystem flow needs (Richter et al. 2012).

Science-based: Science-based agency recommendations can be based on relevant peer-reviewed and published studies; principles, methods, or techniques generally accepted within the scientific community; other technically sound best management practices; or facility-specific studies. In all cases, the recommendation must be based on rigorous, systematic, and objective methodologies to obtain reliable and valid knowledge that demonstrates that the design and operations of a facility would be expected to achieve the criterion goals.

Site-specific basis: Studies or measures that are developed on a site-specific basis are those that are directly related to a facility's impacted lands or river segments and intended to address the physical and biological conditions that have been altered by facility construction, modification, and/or operation.

Tailwater: The river reaches directly downstream of the powerhouse, including turbine discharges and waters flowing from a bypassed reach, if one is present. A tailwater zone of effect should consider all water releases from a facility.

Upstream Fish Passage (also, upstream passage): Safe and effective movement of fish upstream over or around the facility's dam and bypassed stream reaches. Effective upstream passage should encompass migratory fish species and life history stages that are identified at or could be impacted by the facility.

Upstream Fish Passage Structure: Any human-built structure that allows fish passage upstream around an artificial obstruction, including, but not limited to, fish ladders, elevators, nature-like fishways, and trap and haul facilities.

Water Conduit: A tunnel, canal, pipeline, aqueduct, flume, ditch, or similar conveyance structure that is operated for the distribution of water for agricultural, municipal, or industrial consumption and not primarily for the generation of electricity.

(Recent) Water Quality Certification: A state-issued water quality certification (WQC) that has been issued within 10 years of the LIHI application. It does not include a waiver of certification but may include amendments to an older WQC.

Water Quality Limited: Waterbodies directly affected by the facility that are currently identified by a regulatory agency as not meeting water quality standards (for example, a listing pursuant to Section 303(d) of the Clean Water Act; this includes numeric standards, narrative standards, and designated uses).

Zone of Effect: A specific waterbody or river segment, adjacent riparian lands, and other lands under the applicant's direct or indirect control that are directly affected by the design and operation of a hydropower facility, including areas in and surrounding reservoirs or impoundments above a dam or diversion, bypassed reaches between a dam and a powerhouse, and rivers downstream of a powerhouse discharge.

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APPENDIX B - APPLICATION MATERIALS

This appendix provides comprehensive listings of the contents of an application for LIHI Certification. The materials described here and editable forms and tables are available for download at www.lowimpacthydro.org/how-to-apply.

Be sure to review the eligibility requirements in Section 2 **of the Handbook before proceeding and contact LIHI staff for guidance and assistance in completing the application, following instructions in Sections 3, 4, 5 and 6 (if a recertification).**

The recommended approach for preparing an application package is as follows (see Example Outline below):

1. Provide an introductory narrative summary of the facility, its history, operations, location in the watershed and in relation to other dams, and a brief description of each ZoE. Include annotated maps, figures, and photographs that illustrate the facility layout and primary structures (e.g., dam, powerhouse, bypassed reach, fishways). Include one or more annotated aerial images that illustrate and delineate all ZoEs. If there are upstream and downstream dams, provide a map that locates those in relation to the facility.

    a. For recertification applications, include a summary of any changes in facilities, structures, operations; and changes in facility requirements, obligations or agreements since the last LIHI Certification and describe them in detail for each Criterion and applicable ZoE (See #5 below). Even if previously provided to LIHI in annual compliance statements, provide a summary of the status of conditions attached to the current LIHI Certification including whether each condition has been fully satisfied or what aspects of each condition remain active and why, and include or provide links to relevant documents. Please also review the facility's webpage on the LIHI website (www.lowimpacthydro.org) and provide any needed updates.

    b. For "new" facilities describe how the facility meets the eligibility criteria in Section 2 of the Handbook, and summarize all facility, equipment, and operational changes that occurred after August 1998.

2. Complete the facility description using Table B-1.1 or alternate Excel format of Table B-1.1 at https://lowimpacthydro.org/how-to-apply/ with facility-specific information, including the designation of all ZoEs in the appropriate section.

    a. For multiple hydro developments included a single application see Additional Information below.

    b. For pre-operational facilities please provide the additional information requested at the bottom of Table B-1.1.

3. Complete one Standards Matrix for each designated ZoE (Table B-1.2.a) or complete a consolidated Standards Matrix for multiple ZoEs (Table B-1.2.b). Number the ZoEs consecutively starting with the

upstream-most ZoE.

4. Using the standards selected, cut/paste the corresponding numbered rows in Tables B-2 through B-9 and provide detailed narrative and references to satisfy the applicable bulleted instructions. Group the tables by LIHI Criterion (e.g., discuss Criterion A – Ecological Flow Regimes for each ZoE and its selected standard, then discuss Criterion B – Water Quality for each ZoE, and so on). Where narrative text would be identical for different ZoEs, do not repeat the information, simply refer to the applicable text in another ZoE or note that the discussion applies to all or the identified ZoEs. Do not simply reference supporting documentation but summarize relevant information from and provide references to page numbers in supporting documents. If PLUS standards are requested, provide detailed narrative to justify the request and provide additional supporting documentation.

5. Provide a summary of any planned or unplanned deviations from, or violations of the FERC license, exemption, or other permit or authorization requirement (e.g., water quality certification) over the last five years. Indicate if each occurrence has or has not been resolved/corrected and include or provide links to relevant documents. For recertifications, this is needed even if such information was previously reported to LIHI in annual compliance statements.

6. Complete the Sworn Statement and Waiver Form (Appendix B.3) and the Contacts Forms (Appendix B.4).

7. Provide clearly named attachments or appendices containing supporting documentation that demonstrate compliance with existing regulatory requirements and that provide justification for how the facility meets each selected standard for each criterion in each ZoE (if different for different ZoEs). If documents are readily available electronically (e.g., from the FERC elibrary or from state agency website), provide a list of relevant supporting documents with active weblinks to them. If any Critical Energy Infrastructure Information (CEII)[1] is included in an application, it should be placed in a separate document. Similarly, any privileged information (i.e., locational information about threatened and endangered species or cultural and historic resources) should be provided separately. All confidential documents should be submitted in pdf format and be clearly marked "Confidential – Do not Post". If confidential information is imbedded in an application, both a public and non-public version of the application should be submitted and clearly identified as such.

8. Assemble all parts into a single document that includes a cover page, table of contents, and narrative text before or after the standards tables that explain how all LIHI criteria are satisfied. Fill-in forms and example applications are available on the LIHI website "How to Apply" page.

Additional Information for multiple developments in a single application:

- If there are only two or three developments (facilities) included in an application, all facility information can be combined into a single Table B-1.1. In each applicable table row, provide information for each facility starting from the upstream-most facility. If there are numerous facilities and a single Table B-1.1 would be too onerous or complex, use separate tables for each facility or use the alternate Excel format of Table B-1.1 at https://lowimpacthydro.org/how-to-

[1] See https://www.ferc.gov/legal/maj-ord-reg/land-docs/ceii-rule.asp

apply/ that includes all required information for each facility.

- Provide the total nameplate capacity and average annual generation values for each facility and for the application as a whole.
- All ZoEs included in the application should be uniquely numbered from 1 to xx, from upstream to downstream, and identified as to which facility it belongs.
- All narrative and Tables B-2 through B-9 should be grouped by LIHI Criterion rather than by ZoE.

Example Application Outline:

1. Cover page
2. Table of contents
3. Introduction, facility description, compliance status, overview map(s)/image(s), description of ZoEs
    a. Table B-1.1
    b. Standards matrices for each ZoE (Table B-1.2.a or Table B-1.2.b)
4. Discussion of each Criterion and how the facility meets the selected standard in each ZoE:
    a. Ecological Flows, use applicable portion for Table B-2 for each ZoE
    b. Water Quality, use applicable portion for Table B-3 for each ZoE
    c. Upstream Fish Passage, use applicable portion for Table B-4 for each ZoE
    d. Downstream Fish Passage, use applicable portion for Table B-5 for each ZoE
    e. Shoreline and Watershed Protection, use applicable portion for Table B-6 for each ZoE
    f. Threatened and Endangered Species, use applicable portion for Table B-7 for each ZoE
    g. Cultural and Historic Resources, use applicable portion for Table B-8 for each ZoE
    h. Recreational Resources, use applicable portion for Table B-9 for each ZoE
5. Signed Sworn Statement and Waiver Form
6. Facility and Stakeholder Contact Forms
7. Appendices/Attachments
    a. Additional figures, maps, photographs
    b. Supporting letters, emails from resource agencies and/or stakeholders, if available
    c. Supporting documents or hyperlinked list of documents available online

***NOTE:** Materials provided to LIHI as part of a pre-application consultation or during the intake review stage will be kept confidential, unless and until a complete certification application is submitted and public notice is made. Except in rare circumstances, all information submitted to LIHI and pertaining to a certification application provided to LIHI or its Executive Director will be available for public review and public access.

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B.1 Facility Information

Complete Table B-1.1 below. All applicable information identified in Table B-1.1 must be provided either in the table or in the application narrative for an application to be considered complete. If the information is provided in the application narrative, please identify in Table B-1.1 the application section where the information can be found. Alternative formats are acceptable if all information is provided.

Table B-1.1. Facility Information.

Item	***Information Requested***	***Response (include references to further details)***
Name of the Facility	Facility name (use FERC project name or other legal name)	
Reason for applying for LIHI Certification	1. To participate in state RPS program (specify the state and the total MW/MWh associated with that participation (value and % of facility total MW/MWh) 2. To participate in voluntary REC market (e.g., Green-e) 3. To satisfy a direct energy buyer's purchasing requirement 4. To satisfy the facility's own corporate sustainability goals 5. For the facility's corporate marketing purposes 6. Other (describe)	
	If applicable, amount of annual generation (MWh and % of total generation) for which RECs are currently received or are expected to be received upon LIHI Certification	
Location	River name (USGS proper name)	
	Watershed name - Select region, click on the area of interest until the 8-digit HUC number appears. Then identify watershed name and HUC-8 number from the map at: https://water.usgs.gov/wsc/map_index.html	
	Nearest town(s), county(ies), and state(s) to dam	
	River mile of dam above mouth	
	Geographic latitude and longitude of dam	
Facility Owner	Application contact names (Complete the Contact Form in Section B-4 also)	
	Facility owner company and authorized owner representative name. **For recertifications: If ownership has changed since last certification, provide the effective date of the change.**	

Item	*Information Requested*	*Response (include references to further details)*
	FERC licensee company name (if different from owner)	
Regulatory Status	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption	
	FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional")	
	Water Quality Certificate identifier, issuance date, and issuing agency name. Include information on amendments.	
	Hyperlinks to key electronic records on FERC e-library website or other publicly accessible data repositories[2]	
Powerhouse	Date of initial operation (past or future for pre-operational applications) Total installed capacity (MW) **For recertifications: Indicate if installed capacity has changed since last certification**	
	Average annual generation (MWh) and period of record used **For recertifications: Indicate if average annual generation has changed since last certification**	
	Mode of operation (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.) **For recertifications: Indicate if mode of operation has changed since last certification**	
	Number, type, and size of turbine/generators, including maximum and minimum hydraulic capacity and maximum and minimum output of each turbine and generator unit	
	Trashrack clear spacing (inches) for each trashrack	
	Approach water velocity (ft/s) at each intake if known	

[2] For example, the FERC license or exemption, recent FERC Orders, Water Quality Certificates, Endangered Species Act documents, Special Use Permits from the U.S. Forest Service, 3rd-party agreements about water or land management, grants of right-of-way, U.S. Army Corps of Engineers permits, and other regulatory documents. If extensive, the list of hyperlinks can be provided separately in the application.

Item	*Information Requested*	*Response (include references to further details)*
	Dates and types of major equipment upgrades **For recertifications: Indicate only those since last certification**	
	Dates, purpose, and type of any recent operational changes **For recertifications: Indicate only those since last certification**	
	Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments	
Dam or Diversion	Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications	
	Dam or diversion structure length, height including separately the height of any flashboards, inflatable dams, etc. and describe seasonal operation of flashboards and the like	
	Spillway maximum hydraulic capacity	
	Length and type of each penstock and water conveyance structure between the impoundment and powerhouse	
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	
Conduit Facilities Only	Date of conduit construction and primary purpose of conduit	
	Source water	
	Receiving water and location of discharge	
Impoundment and Watershed	Authorized maximum and minimum impoundment water surface elevations **For recertifications: Indicate if these values have changed since last certification**	
	Normal operating elevations and normal fluctuation range **For recertifications: Indicate if these values have changed since last certification**	
	Gross storage volume and surface area at full pool **For recertifications: Indicate if these values have changed since last certification**	
	Usable storage volume and surface area **For recertifications: Indicate if these values have changed since last certification**	

Item	*Information Requested*	*Response (include references to further details)*
	Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions.	
	Upstream dams by name, ownership and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage.	
	Downstream dams by name, ownership, river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage	
	Operating agreements with upstream or downstream facilities that affect water availability and facility operation	
	Area of land (acres) and area of water (acres) inside FERC project boundary or under facility control. Indicate locations and acres of flowage rights versus fee-owned property.	
Hydrologic Setting	Average annual flow at the dam, and period of record used	
	Average monthly flows and period of record used	
	Location and name of closest stream gaging stations above and below the facility	
	Watershed area at the dam (in square miles). Identify if this value is prorated from gage locations and provide the basis for proration calculation.	
	Other facility specific hydrologic information (e.g., average hydrograph)	
Designated Zones of Effect	Numbers and names of each zone of effect (e.g., Zone 1: Impoundment)	
	River mile of upstream and downstream limits of each zone of effect (e.g., Zone 1 Impoundment: RM 6.3 - 5.1)	
Pre-Operational Facilities Only		
Expected operational date	Date generation is expected to begin	

Item	*Information Requested*	*Response (include references to further details)*
Dam, diversion structure or conduit modification	Description of modifications made to a pre-existing conduit, dam or diversion structure needed to accommodate facility generation. This includes installation of flashboards or raising the flashboard height. Date the modification is expected to be completed	
Change in water flow regime	Description of any change in impoundment levels, water flows or operations required for new generation	

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B.2 Supporting Information

The tables in the sections correspond to each LIHI criterion. Each provides instructions about the supporting information required to demonstrate that the standard selected is satisfied in each Zone of Effect for each criterion. Supporting information is a necessary component to demonstrate that the facility meets the LIHI standards, criteria, and goals of LIHI Certification.

the facility must be in compliance with or have taken action to regain compliance with, its current regulatory requirements related to the LIHI criteria including FERC license or exemption articles, water quality certification terms and conditions, and other state and federal authorizations and permits. Any issues surrounding the facility's regulatory compliance and current status of the issues should be discussed in applicable sections of the application.

To use the tables in this section, first complete a Standards Matrix for each Zone of Effect (ZoE) (Table B-1.2.a) or for multiple ZoEs (Table B-1.2.b) to select the single numbered standard for each criterion that is applicable to the ZoE (see Section 4.1.2 for example matrices). Then, provide the information in the corresponding instructions box in Tables B-2 through B-9 below for each ZoE (see Example Outline above). Select only one numbered standard for each ZoE and each criterion.

If a PLUS standard is also selected, also provide the information required in the instructions box for the PLUS standard. However, the criterion must first be satisfied with one of the numbered standards before a PLUS standard can be used.

Table B-1.2.a. Standards Matrix Template for One ZoE.

Facility Name: _____ **Zone of Effect: _____**

	Criterion	*Alternative Standards*				
		1	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**					
B	**Water Quality**					
C	**Upstream Fish Passage**					
D	**Downstream Fish Passage**					
E	**Watershed and Shoreline Protection**					
F	**Threatened and Endangered Species Protection**					
G	**Cultural and Historic Resources Protection**					
H	**Recreational Resources**					

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Table B-1.2.b. Standards Matrix – Alternate Format Template for Multiple ZoEs.

		CRITERION							
Zone No., Zone Name, and Standard Selected (including PLUS if selected)	**River Mile at upper and lower extent of Zone**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***
		Ecological Flows	**Water Quality**	**Upstream Fish Passage**	**Downstream Fish Passage**	**Shoreline and Watershed Protection**	**Threatened and Endangered Species**	**Cultural and Historic Resources**	**Recreational Resources**

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Notes on using these materials:

- Applying for LIHI Certification is a public process and all application materials and all non-confidential supporting information will be published on the LIHI website and announced to stakeholders for review.

- LIHI prefers not to receive paper copies of applications. If you need assistance, please contact LIHI staff.

- Supporting information should be provided as follows in order of LIHI preference: 1) with a working hyperlink to the document online unless the document is CEII or privileged and not accessible to the public (for example on FERC's elibrary); 2) through online transfer of electronic files (i.e. Dropbox); or 3) with files clearly identified and stored on digital media and mailed to LIHI.

- The contents of the tables in this appendix may change over time. Applicants should use the most current version of the Handbook and template forms posted on the LIHI website. Please check with LIHI staff if you are unsure of the current versions.

- In addition to addressing the required information in the tables and their introductory sections below, narrative text should be provided to introduce and explain how the standards are applied to satisfy the criteria in each ZoE. Read the goals of each criterion in Section 3.2 of the Handbook, then explain how that and the selected standard are satisfied in each combination of criterion and ZoE. The instructions in Tables B-2 through B-9 below identify information needed to meet each criterion and to satisfy its goal (described in Section 3.2).

- If the PLUS standard is also selected for a criterion, provide detailed information associated with the PLUS standard to make your case for why the measures meet and LIHI should grant the PLUS standard. If more than one ZoE is designated for an application, this process should be repeated for the other ZoEs.

- If narrative describing how the facility meets a particular standard for a particular criterion is identical for multiple ZoEs, avoid repeating the narrative and simply reference the earlier section where the discussion for another ZoE appears, or combine the discussion for all ZoEs

B.2.1 Ecological Flow Standards

Required regardless of standard selected: Identify any deviations that have occurred in the past 5 years; if none have occurred, state so. If deviations have occurred, identify the date, duration, cause and the measures taken to minimize reoccurrence. Links to FERC notifications and responses should be included.

Table B-2. Information Required to Support Ecological Flows Standards.

Criterion	*Standard*	*Instructions*
A	1	Not Applicable / De Minimis Effect: • Confirm the location of the powerhouse relative to dam/diversion structures and demonstrate that there are no bypassed reaches at the facility. • For run-of-river facilities, provide details on operations and describe how flows, water levels, and operations are monitored to ensure such an operational mode is maintained. In a conduit facility, identify the source waters, location of discharge points, and receiving waters for the conduit system within which the hydropower facility is located. This standard cannot be used for conduits that discharge to a natural waterbody. • For impoundment zones only, explain water management (e.g., fluctuations, ramping, refill rates) and how fish and wildlife habitat within the zone is evaluated and managed. ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.
A	2	Agency Recommendation (see Appendix A for definitions): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations). • Explain how flows are monitored for compliance.
A	3	Limited Storage: • Explain the calculation of active storage capacity and retention time (storage/flow), including data sources. • Provide the name and published reference for the methodology used, including developer of the methodology and several successful, recent applications, and how it has been regionally accepted. • Provide the calculations used to derive the final flow, including data sources and any pre-processing applied.

Criterion	*Standard*	*Instructions*
A	4	Site-Specific Studies: • Describe the site-specific, habitat evaluation technique that was used to define the ecological flow regime and how the results satisfy the goal of this criterion. • Describe the resultant flow regime in terms of base flow, seasonal variability, high-flow events, short-term rates of change, and year-to-year variability. • Describe the target fish and wildlife resources that were considered and how the resultant flow regime supports their habitat over their life cycles.
A	PLUS	Bonus Activities: • If an adaptive management program is in place, provide sufficient information to describe the program, the current status of implementation and consultation, and how it is expected to achieve the desired results. • If non-flow habitat enhancements have been applied, explain what they are, how their benefits are being monitored, and how they are achieving a positive net benefit to fish and wildlife resources.

B.2.2 Water Quality Standards

Required regardless of standard selected:

1. Please specify the state's water quality classification and designated uses for the river at the facility or, for each zone if they differ. For instance, "*The impoundment is a Class B water designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation*".
2. If the facility is located on a Water Quality Limited river reach, provide a link to the state's most recent impaired waters list and indicate the page(s) therein that apply to facility waters. If possible, provide an agency letter stating that the facility is not a cause of such limitation.

Table B-3. Information Required to Support Water Quality Standards.

Criterion	*Standard*	*Instructions*
B	1	Not Applicable / De Minimis Effect: • Explain the rationale for why the facility does not alter water quality characteristics below, around, and above the facility.
B	2	Agency Recommendation: • Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter from the agency). • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.
B	3	Site-Specific Studies: • Document consultation with appropriate water quality agency to determine what water quality parameters and sampling methods are required. • Present recent water quality data from the facility or from other sources in the vicinity of the facility (e.g., data collected from the state, watershed associations, or others who collected data under generally accepted sampling protocols and quality assurance procedures) and explain and demonstrate how it satisfies current applicable water quality standards including designated uses, or provide a letter from the appropriate state or other regulatory agency accepting the data.
B	PLUS	Bonus Activities: • Describe any advanced technologies or methods that have been deployed at the facility to enhance ambient water quality and how its performance is being monitored. • If adaptive management is being applied, describe the management objectives, the monitoring program in place to evaluate performance against those objectives, and the management actions that will be taken in response to monitoring results.

B.2.3 Upstream Fish Passage Standards

Required regardless of standard selected: Provide a list all migratory fish species (anadromous, catadromous, and potamodromous species) that occur now or have occurred historically at the facility.

Table B-4. Information Required to Support Upstream Fish Passage Standards.

Criterion	*Standard*	*Instructions*
C	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to upstream fish passage in the designated zone. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no facility barrier to further upstream movement. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.
C	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)
C	3	Best Practice / Best Available Technology: • Describe the upstream fish passage technologies that have been deployed and are in operation and justify why they qualify as best practices or best available technology. • Identify the migratory fish species in the area and explain how the upstream fish passage facilities provide adequate and safe passage for them. • Describe the monitoring and effectiveness activities that have been or are being conducted for the upstream passage facilities.
C	4	Acceptable Mitigation: • Describe the alternative mitigation measures being deployed in lieu of upstream fishways and provide documentation of agency approval of them. • Explain how the total benefits of the mitigation provided equals or exceeds the benefits that might accrue from providing upstream passage in terms of reproductive success (e.g., numbers of fish produced, or area of suitable habitat provided). • Explain how the alternative mitigation measures sustain the abundance and diversity of fish stocks in the river system.

Criterion	*Standard*	*Instructions*
C	PLUS	<u>Bonus Activities:</u> • If advanced technology has been or will be deployed, explain how it will increase fish passage success relative to other options. • If a basin-scale redevelopment strategy is being pursued, explain how it will increase the abundance and sustainability of migratory fish species in the river system. • If adaptive management is being applied, describe the management objectives, the monitoring program pursuant to evaluating performance against those objectives, and the management actions that will be taken in response to monitoring results.

B.2.4 Downstream Fish Passage and Protection Standards

Required regardless of standard selected: In addition to the migratory species list provided for criterion C above, provide a list of all riverine/resident fish species that occur now or have occurred historically at the facility.

Table B-5. Information Required to Support Downstream Fish Passage Standards.

Criterion	*Standard*	*Instructions*
D	1	<u>Not Applicable / De Minimis Effect:</u> • Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). Typically, tailwater/downstream zones will qualify for this standard since below a dam and powerhouse there is no facility barrier to further downstream movement. Bypassed reach zones must demonstrate that flows in the reach are adequate to support safe, effective and timely downstream migration. • For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the species populations or to their access to habitat necessary for successful completion of their life cycles. • Document available fish distribution data and the lack of fish species requiring passage in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.

Criterion	*Standard*	*Instructions*
D	2	<u>Agency Recommendation:</u> • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)
D	3	<u>Best Practice / Best Available Technology:</u> • Describe the downstream fish passage technologies that have been deployed and are in operation and justify why they qualify as best practices or best available technology. • Explain how the downstream fish passage facilities provide adequate and safe passage for fish species that are present and require passage. • Describe the monitoring and effectiveness activities that have been or are being conducted for the downstream passage facilities.
D	4	<u>Acceptable Mitigation:</u> • Describe the alternative mitigation measures being deployed in lieu of downstream fish passage and/or protection strategies and provide documentation of agency approval of the measures. • Explain how the total benefits of the mitigation strategy equals or exceeds the benefits that might accrue from providing downstream passage in terms of reproductive success (e.g., numbers of fish produced, or area of suitable habitat provided). • Explain how the alternative mitigation measures sustain the abundance and diversity of fish stocks in the river system.
D	PLUS	<u>Bonus Activities:</u> • If advanced technology has been or will be deployed, explain how it will increase fish passage success relative to other options. • If a basin-scale redevelopment strategy is being pursued, explain how it will increase the abundance and sustainability of migratory fish species in the river system. • If adaptive management is being applied, describe the management objectives, the monitoring program pursuant to evaluating performance against those objectives, and the management actions that will be taken in response to monitoring results.

B.2.5 Shoreline and Watershed Protection Standards

***Required regardless of standard selected*:** Describe land use and land cover around the facility. Describe any protections afforded the river or lands around the facility (e.g., Wild and Scenic River, conservation lands surrounding the impoundment, critical habitats, etc.)

Table B-6. Information Required to Support Shoreline and Watershed Protection Standards.

Criterion	*Standard*	*Instructions*
E	1	Not Applicable / De Minimis Effect: • If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the FERC project or facility boundary, and absence of critical habitat for protected species). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans). • Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.
E	3	Enforceable Protection: • Demonstrate that there is an approved and enforceable shoreline buffer or equivalent watershed protection plan (including state or local regulations) in place for conservation purposes, including buffered shoreline along river corridors. • In lieu of an existing shore land protection plan, provide documentation that the facility commits to protect and not develop an equivalent land area for conservation purposes as a condition of LIHI Certification, with such commitment to be in effect for the duration of LIHI Certification.
E	PLUS	Bonus Activities: • Provide documentation that the facility has a formal site-specific conservation plan protecting a buffer zone of 50% or more of the undeveloped shoreline that the facility owns around its reservoirs and river corridors. • In lieu of a formal conservation plan, provide documentation that the facility has established a watershed enhancement fund for ecological land management that will achieve the equivalent land protection value of an ecologically effective buffer zone of 50% or more around undeveloped shoreline.

B.2.6 Threatened and Endangered Species Standards

***Required regardless of standard selected*:** Identify all federal and state listed species (fish, aquatic plants and organisms, and terrestrial plants and wildlife) in the facility area based on current data. Avoid using privileged locational information or provide that information in a separate confidential attachment.

Table B-7. Information Required to Support Threatened and Endangered Species Standards.

Criterion	*Standard*	*Instructions*
F	1	Not Applicable / De Minimis Effect: • Document that there are no listed species in the facility area or affected riverine zones downstream of the facility. • If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species. • If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.
F	2	Finding of No Negative Effects: • Identify all federal and state listed species that are or may be in the immediate facility area based on current data from the appropriate state and federal natural resource management agencies. • Provide documentation that there is no demonstrable negative effect of the facility on any listed species in the area from an appropriate natural resource management agency or provide documentation that habitat for the species does not exist within the ZoE or is not impacted by facility operations.
F	3	Recovery Planning and Action: • If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents. • Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.
F	4	Acceptable Mitigation: • If newly listed species are present for which environmental requirements have not been fully determined, describe any significant measures that the facility is implementing to avoid or minimize the impacts on such newly listed species. • Document that the mitigation measures for newly listed species are being implemented to the interim satisfaction of applicable resource agencies.

Criterion	*Standard*	*Instructions*
F	PLUS	Bonus Activities: • Describe any enforceable agreement that the facility has with resource agencies to operate the facility in support of rare and endemic species. • Describe any enforceable agreement that the facility has with resource agencies to take proactive measures in the vicinity of the facility to substantially minimize impacts on species that are at risk of becoming listed species. • Describe any enforceable agreement that the facility has with resource agencies to be a significant participant in a species recovery effort.

B.2.7 Cultural and Historic Resources Standards

Required regardless of standard selected: Identify the cultural and historic resources present on facility-owned property or that may be affected by facility operations. Avoid using privileged locational information or provide that information in a separate confidential attachment.

Table B-8. Information Required to Support Cultural and Historic Resources Standards.

Criterion	*Standard*	*Instructions*
G	1	Not Applicable / De Minimis Effect: • Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility; or • Document that the facility construction and operation have not in the past, nor currently adversely affect any cultural or historic resources that are present on facility lands.
G	2	Approved Plan: • Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.
G	PLUS	Bonus Activities: • Document any substantial commitment that the facility has made to restoring one or more significant cultural or historical resource in the vicinity, beyond what is required in existing plans such as a Historic Resources Management Plan. • Document any significant new educational opportunity about cultural or historical resources in the area that the facility has created, including contractual obligations that guarantee that this opportunity will exist for the duration of the LIHI Certification.

B.2.8 Recreational Resources Standards

Required regardless of standard selected: Identify and briefly describe all recreational amenities associated with the facility, identify which are owned by the facility, and which not owned or operated by the facility. If there has been a FERC Environmental and Recreation Inspection, please provide a link to or copy of the report and any follow up activities. If there was no inspection, please state that.

Table B-9. Information Required to Support Recreational Resources Standards.

Criterion	*Standard*	*Instructions*
H	1	Not Applicable / De Minimis Effect: • Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.
H	3	Assured Accessibility: • In lieu of existing agency recommendations and plans for recreational uses, document the facility's current and future commitment to accommodate reasonable requests from recreation interests for adequate public access for recreational use of lands and waters of the facility, including appropriate recreational water flows and levels, without fees or charges.
H	PLUS	Bonus Activities: • Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails). • Document that such new recreational opportunities did not create unmitigated impacts to other resources.

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B.3 Sworn Statement and Waiver Form

All applications for LIHI Certification must include the following sworn statement before they can be reviewed by LIHI:

SWORN STATEMENT

As an Authorized Representative of _____, the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's certification program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The Undersigned further acknowledges that if LIHI Certification of the applying facility is granted, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified®.

The Undersigned further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's certification program.

FOR PRE-OPERATIONAL CERTIFICATIONS:

The Undersigned acknowledges that LIHI may suspend or revoke the LIHI Certification should the impacts of the facility, once operational, fail to comply with the LIHI program requirements.

Company Name: _____

Authorized Representative:

Name: _____

Title: _____

Authorized Signature: _____

Date: _____

B.4 Contacts Forms

All applications for LIHI Certification must include complete contact information.

A. Applicant-related contacts

Facility Owner:	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
Facility Operator (if different from Owner):	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
Consulting Firm / Agent for LIHI Program (if different from above):	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
Compliance Contact (responsible for LIHI Program requirements):	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
Party responsible for accounts payable:	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	

B. Current relevant state, federal, and tribal resource agency contacts with knowledge of the facility (copy and repeat the following table as needed).

Agency Contact		***Area of Responsibility***
Agency Name		☐ Flows ☐ Water Quality ☐ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☐ Recreation
Name and Title		
Phone		
Email address		
Mailing Address		

C. Current stakeholder contacts that are actively engaged with the facility (copy and repeat the following table as needed).

Stakeholder Contact		***Area of Responsibility***
Organization Name		☐ Flows ☐ Water Quality ☐ Fish/Wildlife ☐ Watershed ☐ T&E Species ☐ Cultural/Historic ☐ Recreation
Name and Title		
Phone		
Email address		
Mailing Address		

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B.5 Assignment and Assumption Form

If the Certified facility transfers ownership and the purchaser wishes to maintain LIHI Certification, the new facility owner must assume all obligations and responsibilities of a LIHI Certificate holder. This can be demonstrated in one of the following ways: by providing LIHI with a copy of an Assignment and Assumption Agreement between the seller and purchaser of the facility which is subject to the acceptance of LIHI; by the purchaser executing a separate CMLA with LIHI; or by adding the subject facility as an Exhibit to a CMLA executed by the purchaser and LIHI that is already in effect (if applicable).

The text below is suggested language for interested parties to modify and use, should a purchaser of a Certified facility wish to maintain LIHI Certification of a facility they have purchased. This Assignment and Assumption agreement must be accompanied by evidence of the transfer of ownership, which can include the purchase agreement and/or a FERC Order documenting the transfer.

FACILITY NAME: _____ LIHI CERTIFICATE NUMBER: _____

SELLER OF FACILITY:

Company Name: _____

Authorize Representative Name: _____ Title _____

BUYER OF FACILITY:

Company Name: _____

Authorize Representative Name: _____ Title _____

This Assignment and Assumption Agreement (the "Assignment and Assumption Agreement") is made and entered into as of _____ 20____, by and among _____, a _____ corporation ("Assignor"), and _____, a _____ corporation ("Assignee").

WHEREAS, Assignor and Assignee are parties to that certain Asset Purchase Agreement dated as of _____, _20____ (the "Purchase Agreement"), pursuant to which Assignee has purchased the _____ hydroelectric facility (the "Certified Facility") owned by Assignor; and

WHEREAS, pursuant to the Purchase Agreement, Assignor has agreed to assign certain rights and agreements to Assignee as a LIHI Certificate holder of the _____ hydroelectric facility, and Assignee has agreed to assume certain obligations of Assignor, as set forth herein, and this Assignment and Assumption Agreement is contemplated by Section _____ of the Purchase Agreement;

NOW, THEREFORE, for and in consideration of the premises and the mutual covenants contained herein, and for other good and valuable consideration, the receipt, adequacy and legal sufficiency of which are hereby acknowledged, the parties do hereby agree as follows:

1. Assignment and Assumption. Effective as of _____, 20_____ (the "Effective Date"), Assignor hereby assigns, sells, transfers and sets over (collectively, the "Assignment") to Assignee all of Assignor's right, title, benefit, privileges and interest in and to, and all of Assignor's burdens, obligations and liabilities in connection with, the LIHI Certification of the facility. Assignee hereby accepts the Assignment and assumes and agrees to observe and perform all of the duties, obligations, terms, provisions and covenants, and to pay and discharge all of the liabilities of Assignor to be observed, performed, paid or discharged from and after the Closing, in connection with the LIHI Certification of the facility. Assignee assumes no Retained Liabilities, and the parties hereto agree that all such Retained Liabilities shall remain the sole responsibility of Assignor.

2. Terms of the Purchase Agreement. The terms of the Purchase Agreement, including but not limited to Assignor's representations, warranties, covenants, agreements and indemnities relating to the LIHI Certification of the facility, are incorporated herein by this reference. Assignor acknowledges and agrees that the representations, warranties, covenants, agreements and indemnities contained in the Purchase Agreement shall not be superseded hereby but shall remain in full force and effect to the full extent provided therein. In the event of any conflict or inconsistency between the terms of the Purchase Agreement and the terms hereof, the terms of the Purchase Agreement shall govern.

3. Further Actions. Each of the parties hereto covenants and agrees, at its own expense, to execute and deliver, at the request of the other party hereto, such further instruments of transfer and assignment and to take such other action as such other party may reasonably request to more effectively consummate the assignments and assumptions contemplated by this Assignment and Assumption Agreement.

[Insert provisions on choice of law, attorneys' fees, assignment, successors and assigns, counterparts, etc., which should be drafted to track the "boilerplate" language of the Purchase Agreement.]

IN WITNESS WHEREOF, the parties have executed this Assignment and Assumption Agreement as of the date first above written.

ASSIGNOR	**ASSIGNEE**
_____	_____
a _____ corporation	a _____ corporation
By: _____	By: _____
Title: _____	Title: _____

APPENDIX C - FEE SCHEDULE

LIHI program fees are designed to cover the cost of operating the Low Impact Hydropower Institute, including processing applications, monitoring compliance, and maintaining active Certifications. This Fee Schedule explains each component of the fees in detail. LIHI reserves the right to alter the program fee policy as needed with reasonable notice to applicants and Certificate holders. Adjustments to fees may be available under certain circumstances, please contact LIHI for details.

Table C-10. Program Fee Schedule

Type	***Amount/Method****	***Frequency***
Application Fees		
Intake Review	$950	Once – due with submittal of intake draft application
Certification Review	May range from $3,000 - $10,000+.	Once – due with submittal of final certification application
Recertification Review	Stage I: $2,000 Stage II: $0 - $8,000+	Stage I – due with submittal of recertification application. Stage II – due after recertification intake is completed
Certificate Maintenance Fees		
Annual Certificate Fee	Product of average generation and applicable market category rate. $1000 minimum - $33,000 maximum	Annually – due in the anniversary month of the Certificate's effective date
Condition Fee	By number and nature of conditions, ranges from $0 to $1000 per condition.	Annually – due in the anniversary month of the Certificate's effective date for active conditions only.

Note: Fees listed here are effective as of the publication of this Handbook revision. An up-to-date fee schedule can be found on the LIHI website at https://lowimpacthydro.org/fees/

C.1 Application Review Fees

Application review fees include intake review fees, full certification review fees, and recertification review fees. Application fees are designed to cover LIHI's cost associated with reviewing applications for Certification at all stages in the process.

C.1.1 Intake Review Fee

The intake review fee is a fixed fee charged to all applicants, regardless of the facility's installed capacity or circumstances. The fee covers the cost to review the initial application submitted in the Intake stage. Before submitting payment of this fee to LIHI, it is strongly recommended that interested applicants contact LIHI staff for free pre-application consulting (See Section 4.2.1). An invoice for the intake review fee will be issued by LIHI staff only when a prospective applicant notifies LIHI that they wish to initiate the intake application.

An applicant must pay a separate intake review fee for each separate application. The fee must be received before LIHI can begin to review the application materials.

C.1.2 Application Review Fee

All applicants must pay an application review fee to process an application. Application review fees are individually tailored based on the information gathered in the intake review stage. As stated in Section 4.2.2 and Section 4.2.3, all applicants that submit an intake application will be provided with a summary of the intake review findings which includes a recommendation on how to proceed to the next stage and an estimate for the non-refundable full application fee. The fee estimate covers review costs such as the cost of hiring an independent reviewer and LIHI staff time and other overhead costs. LIHI reserves the right to charge additional fees in circumstances where a review is more complex that initially estimated. If, during the full application review, LIHI staff determine that unanticipated complexities in the review process impose additional costs to LIHI, a supplementary fee may be charged prior to the issuance of a certificate. Supplementary fees are imposed at the discretion of the Executive Director and in consultation with the applicant.

Additional Information:

Fee supplement for a consolidated application seeking LIHI Certification for multiple facilities:
At the request of the applicant and at the discretion of LIHI staff, a consolidated, single application may be submitted by an applicant for multiple facilities in a watershed that are operationally or hydrologically connected. The fee supplement for a consolidated application will be determined at the sole discretion of the Executive Director.

Application Fee Premium for a "Pre-Operational" facility:
An application for the certification of a facility that is pre-operational shall include a premium comprised of an additional twenty-five percent (25%) of the certification application fee charged.

Reduced Fee for "Not Applicable/ De Minimis Effect" facilities:
For facilities including generation installed in pre-existing conduits or in other situations where a facility can pass the Not Applicable / De Minimis Effect standard for each criterion, a reduced full review fee may apply.

C.2 Certification Maintenance Fees

LIHI Certification maintenance fees include annual certificate fees, active condition fees, and any other supplemental fees LIHI may impose to maintain an active Certificate. The annual certificate fee is based on a $/MWh rate structure that varies according to regional renewable market averages. There is a tiered minimum annual fee, or floor, for facilities based on installed capacity (less than or greater than 5 MW; see Table C-1). There is also a maximum annual fee, or cap, for large facilities. Condition fees are charged on an annual basis to certificate holders with active facility-specific conditions that require LIHI staff time to process (see Section C.2.2).

C.2.1 Annual Certificate Fees

For the full term of the LIHI Certification, the owner of each LIHI Certified® facility shall pay to LIHI on an annual basis, an annual certificate fee for each year of Certification, subject to the following provisions:

Implementation Schedule: The annual certificate fee term begins on the effective date of the LIHI Certification for the subsequent twelve (12) month period, with the first annual fee due by the end of the first anniversary month of the Certificate's effective date. Thereafter, annual fees will be due by the end of the anniversary month. Annual certificate fees will be imposed every year, including the year in which a Certified facility is undergoing an application for re-certification.

Annual Certificate Fee Amount and Rate: The annual certificate fee amount for each Certificate shall be the product of the total average annual generation (AAG) of the Certified facility as provided by the applicant in their LIHI certification application[3] and the applicable Annual Certificate Fee Rate(s), according to the market-participation of the facility generation output and as published in the LIHI Rate Schedule at www.lowimpacthydro.org/fees. Rates are as follows:

> **Verified Market Participant**: The Verified Market Participant rate applies to LIHI Certified® generation that is publicly listed as eligible for a state Renewable Portfolio Standard program, a Renewable Energy Standard program, an Alternative Energy Portfolio Standard, a voluntary Green Energy program such as Green-e, or any other policy or program that utilizes the LIHI Certification standard as a requirement and/or option for eligibility. If a LIHI Certified® facility has only a portion of their generation certified in a verified market, only that portion will be charged at this rate, and the balance will be charged at the published Base Rate (see below). The current $/MWh rates vary by program and region
>
> **Base Rate:** All generation that is not subject to the provisions above are assessed at the Base Rate.

Publication of LIHI Rate Schedule and Changes to Annual Certificate Fee Rate: The most current LIHI Rate Schedule will be published at www.lowimpacthydro.org/fees. LIHI reserves the right to alter the definitions and rates for the Verified Market Participant categories with reasonable notice to certificate holders.

Annual Certificate Fee Minimum and Maximum Amounts: Regardless of the calculated annual Certificate fee amount using the $/MWh rate, no Certificate holder shall pay less than $1,000 per year if the installed generation capacity of the LIHI Certified® facility is less than 5 MW, no less than $1,500 per year if the installed capacity of the generation facility is between 5 MW and less than 10 MW, and no more than $33,000 per year for a LIHI Certified® facility of any size.

[3] The AAG amount may be adjusted according to actual generation documented by a Certificate holder in annual compliance statements that result from newly added generation capacity, efficiency gains, a reduction in generation capacity from equipment brought offline or any other material change that impacts generation output.

C.2.2 Active Condition Fees

A non-refundable fee may be charged along with annual certificate fees for each active facility-specific condition attached to the Certificate. This fee may range from $0 to $1,000 per condition depending on the complexity of the condition. The fee will be determined at the sole discretion of LIHI. Not all conditions will incur a fee, and the fee amount may vary from year to year during the term of a Certificate, as conditions are satisfied, modified or added to Certificates. Condition fee amounts are established in proportion to the time and effort required by LIHI staff to monitor compliance with the condition.

C.3 Recertification Application Review Fees

All applicants for recertification must pay a recertification review fee. The Stage I fee is a fixed amount of $2,000. If a Stage I recertification review determines that a Stage II review is required (see Section 6.1), then additional review fees will likely be required. If the Stage I recertification review results in granting of a new LIHI Certification term, there will be no additional fee charged. The Stage II fee will be determined by the reviewer's cost estimate plus LIHI overhead, in proportion to the level of effort and time estimated to be required in Stage II review.

C.4 Reduced Fees for Very Low Impact Facilities

Some types of hydropower facilities may qualify for the Not Applicable / De Minimis Effect standard for all criteria. In those cases, reduced application fees and annual maintenance fees may apply. Consult with LIHI staff to determine whether your facility qualifies.

C.5 Refund Policy

All LIHI Fees are non-refundable. Should an applicant choose to withdraw or place an application on hold at any point during the review process, LIHI is under no obligation to return or refund fee amounts already collected. Should a certificate holder decide to withdraw a Certified facility from the program (see Section 4.5.4), LIHI will discontinue all annual maintenance billing for the years after the year of withdrawal but will charge an annual fee for the last year or partial year of active LIHI Certification. Additional fees may apply if an applicant chooses to revive a LIHI application that was submitted previously and withdrawn or placed on hold by the applicant.