



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Field Office  
70 Commercial Street, Suite 300  
Concord, New Hampshire 03301-5087  
<http://www.fws.gov/northeast/newenglandfieldoffice>

REF: FERC No. 1904

February 3, 2009

Mr. Fred Ayer, Executive Director  
Low Impact Hydropower Institute  
34 Providence Street  
Portland, ME 04103

Dear Mr. Ayer:

This letter is in regards to the pending application by TransCanada Hydro Northeast for the Low Impact Hydropower Institute's (LIHI) Low Impact Hydropower Certification for the Vernon Project, located on the Connecticut River in Vermont and New Hampshire.

We have reviewed the LIHI's criteria for certification and have assessed whether, in our opinion, the Vernon Project meets those criteria. Based on our review, we do not believe that the Vernon Project qualifies for LIHI certification based on a number of significant factors specified below.

## River Flows

The Vernon Project does not meet the river flow standard. The river flow standard requires compliance with the U.S. Fish and Wildlife Service's (Service) Aquatic Base Flow (ABF) standard setting methodology or the "good" habitat flow level of the Montana/Tennant Method. The current minimum flow release below the project of 1,250 cfs equates to 0.2 cubic feet per second per square mile of drainage area (csm), which is less than half the summer default ABF of 0.5 csm. The minimum flow also fails to meet the Tennant method for "good" habitat of 20% to 30% mean annual flow.

Subsequent amendments of the project license to modify project capacity and the recent retrofit of the project with new turbines have not addressed overall project operations and downstream flows. Therefore, operations and flow releases have not had post-1986 review as required by the LIHI criteria.

In addition, this project, as well as the upstream Wilder and Bellows Falls projects and downstream Northfield Mountain and Turners Falls projects, all affect river flows with daily cycling. This operation regime affects resources throughout this river reach and also aggravates the ability to institute a real natural flow regime at the Holyoke Project, despite that project's

requirement for run-of-river operation. The river flow issue will be a serious one when relicensing of this project begins in approximately 2013.

### Fish Passage and Protection

The fish passage criteria requires that a project provides effective upstream and downstream fish passage for riverine, anadromous and catadromous species and fish protection. While the Vernon Project has a fish ladder that is generally considered effective, this facility is designed for and operated solely for anadromous species. American eel passage is needed at this site but neither upstream nor downstream passage measures for eels are in place. Upstream passage for riverine species is limited to the period the fish ladder is operated for anadromous fish passage. No specific measures are in place to facilitate downstream passage of riverine species. In addition, although downstream passage measures are in place seasonally to facilitate anadromous fish passage, the wide-spaced trash rack alone does not prevent entrainment of resident fish moving downstream during periods when the bypasses are not in operation.

The newly-installed units changed the project operations and the flow fields in the project forebay. The downstream passage system at the Vernon Project is comprised of a number of different passage devices (guide wall, fish tube and west-side fish pipe) that were evaluated under the former operation regime and forebay flow fields. With the unit changes, the Service and other agencies requested an assessment of downstream fish passage at the project with the new configuration. In 2008, TransCanada conducted a salmon smolt survival study that we have yet to review or comment on. No assessment was made of smolt migratory paths with the new units operating, and no studies were conducted on juvenile clupeid passage, both of which were requested by the agencies. As such, we believe that a decision on whether or not the project provides effective fish passage for salmon smolts and juvenile American shad is premature.

Due to the uncertainties of salmon and shad downstream passage with the new units, and the fact that upstream and downstream passage measures for American eel and to some extent riverine species have not been addressed, we do not believe that the criteria for providing effective fish passage has been met.

### Threatened and Endangered Species

As noted above, the series of hydroelectric projects from Wilder to Turners Falls, including the Vernon Project, affect river flows and water levels in the Holyoke Project impoundment downstream from Turners Falls (the Holyoke Project is required to operate run-of-river, but fluctuating inflows prevent stabilization of the Holyoke impoundment). Water surface level fluctuations of the Holyoke impoundment adversely affect the federally-threatened Puritan tiger beetle that inhabits sandy beaches in the impoundment. As the Vernon Project and the other projects upstream from Holyoke all operate in a store-and-release daily peaking mode, it is impossible to separate the influence of one project from the other, unless operations of all projects were reviewed and modeled at once. In the meantime, they all contribute to flow fluctuations downstream and in turn affect Puritan tiger beetles.

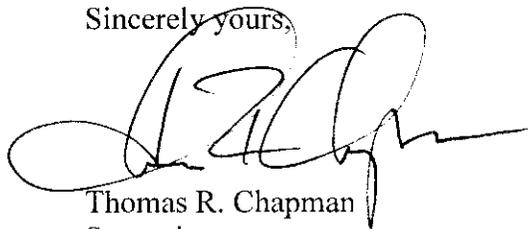
Based on this, we cannot concur that the project has no impact on threatened and endangered species.

Conclusion

While some aspects of the project adhere to LIHI certification, and the current and former licensees have worked towards improved fish passage in the past, the project does not, in our opinion, adhere to LIHI criteria for river flows and fish passage, and may also impact threatened and endangered species. For these reason, we cannot support LIHI certification for the Vernon Project.

Thank you for this opportunity to comment. If you have any questions, please contact John Warner of this office at 603-223-2541, extension 15.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'T. Chapman', with a large, stylized flourish on the left side.

Thomas R. Chapman  
Supervisor  
New England Field Office

CC: VDFW/Waterbury – Rod Wentworth  
VDFW/Springfield – Jay McMenemy  
VANR – Jeff Cueto  
NHFGD/Keene – Gabe Gries  
NHFGD/Concord - Matt Carpenter  
FWS/Ct. River Coord. – Jan Rowan  
FWS/EN – Ben Rizzo  
FERC- Div. of Hydropower Administration and Compliance  
Reading file

ES: JWarner:2-3-09:603-223-2541

**Department of Fish & Wildlife**  
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*Agency Of Natural Resources*

February 9, 2009

Mr. Fred Ayer, Executive Director  
Low Impact Hydropower Institute  
34 Providence Street  
Portland, ME 04103

RE: Application by TransCanada Hydro Northeast for Low Impact Hydropower Certification  
Vernon Project; Connecticut River; FERC #1904

Dear Mr. Ayer:

I am writing in response to your request for comments concerning the pending application referenced above. My Department offers the following comments concerning whether the Vernon Project meets the LIHI criteria. Based on our review, we do not believe that the project qualifies for LIHI certification.

The U.S. Fish & Wildlife Service submitted a letter to you on February 3, 2009 with its assessment. We support their findings, and our conclusions are consistent with them.

The LIHI criterion for River Flows states: *Certified facility must comply with recent resource agency recommendations for flows [post-1986]. If there were no qualifying resource agency recommendations, the applicant can meet one of two alternative standards: (1) meet the flow levels required using the Aquatic Base Flow methodology or the "good" habitat flow level under the Montana-Tennant methodology; or (2) present a letter from a resource agency prepared for the application confirming the flows at the facility are adequately protective of fish, wildlife, and water quality.*

Reason for non-qualification: Vernon operates under a 1979 federal license. The license requires a minimum flow of 0.2 csm (1,250 cfs). For comparison with the Tennant methodology, 20% and 30% of mean annual flow are equivalent to 0.36 csm and 0.53 csm, respectively. The State of Vermont generally applies an aquatic base flow standard in the absence of site-specific studies (<http://www.anr.state.vt.us/dec/fed/damsafety/docs/flowprocedure.pdf>), similar to the New England Flow Policy used by the U.S. Fish & Wildlife Service. The summer aquatic base flow in this case is 0.5 csm. The plant with its new units in operation is now able to generate up to a capacity of 17,100 cfs. It is a daily cycle plant, typically using up to two feet of storage and the augmented inflows from upstream flow regulation. Downstream flows as a consequence can fluctuate substantially, and the minimum flow is well below any current standard.



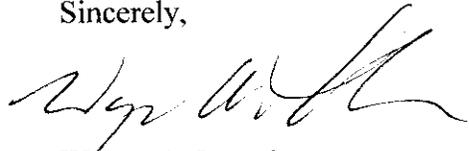
TransCanada's dams (Wilder, Bellows Falls, and Vernon) all operate under old licenses and do not provide what would be considered to be fish-friendly flows. TransCanada can offer to reopen the license and address flows, but we would expect that it will wait for the next relicensing, which begins in 2013 (license expires in April 2018).

The LIHI criterion for Fish Passage and Protection states: *[F]acility must be in compliance with recent (after 1986) mandatory prescriptions regarding fish passage (such as a Fish and Wildlife Service prescription for a fish ladder) as well as any recent resource agency recommendations regarding fish protection (e.g., a tailrace barrier).*

Reason for non-qualification: Downstream passage for Atlantic salmon smolts and adults and juvenile and adult American shad requires evaluation and possible modification due to construction of the new turbines and associated flow changes. Evaluation has not been done despite requests from the U.S. Fish & Wildlife Service and my Department. Additionally, the dam does not provide downstream passage for non-anadromous fish, nor does it provide passage for American eel, a catadromous species that migrates to the Sargasso Sea to spawn.

We support the goals of LIHI and its certification program in encouraging environmentally sound operation of hydropower projects and appreciate the opportunity to comment.

Sincerely,



Wayne A. Laroche  
Commissioner

CC: Rod Wentworth, VDFW  
Jay McMenemy, VDFW  
Jeffrey Cueto, VDEC  
Matt Carpenter, NHFGD, Concord  
John Warner, USFWS  
Jan Rowan, USFWS  
FERC – Div. of Hydropower Administration and Compliance  
David Deen, CRWC



Commonwealth of Massachusetts

# Division of Fisheries & Wildlife

**MassWildlife**

Wayne F. MacCallum, *Director*

February 13, 2009

Mr. Fred Ayer, Executive Director  
Low Impact Hydropower Institute  
345 Providence Street  
Portland, ME 04103  
RE : Vernon Project comments

Dear Mr. Ayer:

The Department of Fish and Game ("DFG") hereby submits the following comments on the Low Impact Hydropower Institute's ("LIHI") Pending Application for the Vernon Project on the Connecticut River in New Hampshire and Vermont (FERC No. 1904).

DFG is submitting these comments to LIHI in order to fulfill the requirements of the Massachusetts Department of Energy Resources ("DOER") Renewable Energy Portfolio Standard Regulations (225 CMR 14.00; "RPS I" and 225 CMR 15.00; "RPS II"). The RPS I and RPS II regulations were promulgated by DOER on January 1, 2009 and require that any hydroelectric project wishing to receive RPS I or RPS II certification from DOER first obtain LIHI certification. These regulations also require all relevant regulatory agencies to comment on the pending LIHI application.

DFG has particular interest in this project as it is located only five miles upstream of the Mass. state line. The operation of this conventional, dam-dependent hydropower project, indeed its very existence, has significant impact on fish and other riverine organisms and habitat in and along the Connecticut River in Massachusetts, particularly to the so-called Turners Falls Pool, the 22-mile segment stretching from Turners Falls, MA upstream to the Vernon dam.

DFG has reviewed TransCanada's LIHI application and has the following comments.

## River Flows

The Vernon project does not meet accepted minimum flow standards. The US Fish and Wildlife Service ("USFWS") Aquatic Base Flow standard recommends a minimum summer release of at least 0.5 cubic feet per second per square mile of drainage area (cfs/m). The Vernon minimum flow release of 1,250 cfs equates to only 0.2 cfs/m.

The Vernon project also stores and releases water on a daily basis. This peaking operation is detrimental to aquatic resources and will be one of the major issues to be dealt with when this project comes up for FERC relicensing in 2018.

## Fish Passage

The Vernon project is equipped with an upstream fishway that is designed for anadromous fish (Atlantic salmon, American shad, river herring, and Sea lamprey) and appears to be satisfactory. However upstream fish passage for American eel is lacking and will have to be addressed when this project comes up for FERC relicensing in 2018.

[www.masswildlife](http://www.masswildlife)

Division of Fisheries and Wildlife

Field Headquarters, One Rabbit Hill Road, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-6301  
*An Agency of the Department of Fisheries, Wildlife & Environmental Law*

The downstream fish passage system was evaluated for Atlantic salmon smolts under the previous project configuration. Evaluation of the system with the newly installed units began in 2008 with a turbine survival study. Resource agencies have asked for a more comprehensive radio telemetry study of Atlantic salmon smolt bypass as well as some determination of juvenile clupeid (herring and shad) passage. The project owner's response to these requests is pending.

DFG understands that TransCanada will be applying for qualification as an RPS I Generation for this project. Under the DOER program only incremental increases in power production installed after 1997 are eligible for RPS qualification. TransCanada is applying for qualification for the incremental increase in power production realized from the recent replacement of four 2 MW units with four 4 MW units at the Vernon dam. Operation of these units has done nothing to address the flow issues at the project and has changed the flow fields around both the upstream and downstream fish passage systems requiring new evaluations of fish passage effectiveness.

For the reasons stated above, DFG does not believe that the Vernon Project should be certified as "Low Impact".

Sincerely,

A handwritten signature in black ink, appearing to read "Caleb Healy". The signature is fluid and cursive, with a long horizontal stroke at the end.

Anadromous Fish Project Leader



February 26, 2009

Mr. Fred Ayer, Executive Director  
Low Impact Hydropower Institute  
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Portland, ME 04103

US Northeast Region  
Concord Office  
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RE: Certification Application for Vernon Project

Dear Mr. Ayer:

This letter responds to correspondence of February 3 from the US Department of the Interior, Fish and Wildlife Service, New England Field Office; February 9 from the Vermont Department of Fish and Wildlife; and February 13 from the Massachusetts Division of Fisheries and Wildlife commenting on TransCanada's application for certification for its Vernon Project.

TransCanada worked with the Massachusetts Department of Energy Resources relative to the inclusion of Low Impact Hydropower Institute (LIHI) criteria and certification in the agency's rule-making relative to Renewable Portfolio Standards (RPS) and qualification for Renewable Energy Credits (RECs) for incremental hydropower. We believe that the Vernon Project meets the LIHI criteria and the three fishery agencies referenced above believe it does not.

We have worked closely with the agencies and the individual fishery biologists referenced in or signatory to the letters on Connecticut River fishery issues for many years and have respect for them and their views. We feel that agency consultation on the Vernon Project has met the standards expected from LIHI certification criteria and point out that the Vernon Project has followed closely the consultation requested by the agencies and is in compliance with its federal operating license.

The Vernon Project holds an operating license issued by the Federal Energy Regulatory Commission (FERC) in 1979. That license expires in 2018. The project was issued a license amendment by the FERC in 2006 in conjunction with the replacement of four (4) of the station's original turbines with modern units. It also received a Water Quality Certification in 2006 to permit that work. The Fish and Wildlife Service and the Vermont Department of Fish and Wildlife were participants in the amendment process along with New Hampshire agencies including the New Hampshire Department of Fish and Game and the Department of Environmental Services. Although both agencies that commented to LIHI now generally object to fishery mitigation and flow management issues in their current letters, those issues were not raised during the license amendment or water quality certification processes. Specifically, we note the following with respect to fishery and operational issues raised by the agencies:

<b>OPERATIONS</b>		
This conventional, dam-dependent hydropower project, indeed its very existence has significant impact on fish and other riverine organisms and habitat in and along the Connecticut River in Massachusetts, particularly to the so-called Turners Falls Pool, the 22-mile segment stretching from Turners Falls, MA upstream to the Vernon Dam	MAFWS	TC acknowledges fluctuating flows can impact organisms and habitat and Vernon Station is particularly subject to flow fluctuations from natural events.
The Vernon Project stores and releases water on a daily basis. This peaking operation is detrimental to aquatic resources.	MAFWS	To state that Vernon, by virtue of its operation, is the most significant impact on the Turners Falls Pool is an over-statement and generalization. The statement does not consider the impact of natural inflow on the inflow hydrograph and how that inflow determines much of Vernon's daily operation.
This operation regime affects resources throughout the river reach and also aggravates the ability to institute a natural flow regime at the Holyoke Project, despite that project's requirement for run-of-river operation.	USFWS	
As the Vernon Project and the other projects upstream from Holyoke all operate in a store-and-release daily peaking mode, it is impossible to separate the influence of one project from the other, unless operations of all projects were reviewed and modeled at once. In the meantime, they all contribute to flow fluctuations downstream and in turn affect Puritan tiger beetles.	USFWS	It does not consider the fact that Vernon Station discharges directly into the Turners Falls impoundment that is both associated with a riverine daily run-of-river plant as well as an 1100 MW capacity pump storage project which discharges into and pumps from that impoundment.
Subsequent amendments of the project license to modify project capacity and the recent retrofit of the project with new turbines have not addressed overall project operations and downstream flows. Therefore, operations and flow releases have not had post-1986 review as required by the LIHI criteria.	USFWS	It does not consider the fact that TransCanada provides advance information as well as real-time flow information to the downstream project in order for it to operate in a coordinated manner, thus limiting the Turners Falls pond fluctuation.
It is a daily cycle plant, typically using up to two feet of storage and the augmented inflows from upstream flow regulation. Downstream flows as a consequence can fluctuate substantially, and the minimum flow is well below any current standard.	VDFW	There were no agency comments concerning fluctuating flows, impacts on habitat, organisms or endangered species during the FERC license amendment and NH401 (in consultation with VANR) agency consultation process.
<b>MINIMUM FLOWS</b>		
The minimum flow does not meet acceptable minimum flow standards. The USFWS Aquatic Base Flow Standard recommends a minimum summer release of at least 0.5 cfsm	MAFWS	There were no agency comments regarding minimum flows during either the FERC license amendment proceeding or the NH401 (in consultation with VANR) agency consultation process.
The Vernon Project does not meet the river flow standard... the USFWS ABF or the "good" habitat flow level of the Montana Tennant (20% - 30% of mean annual flow). The current minimum flow release below the project of 1250 cfs equates to 0.2 cfsm, which is less than half the summer default ABF of 0.5 cfsm	USFWS	Although the licensed minimum flow is 1250 cfs and is not "current" by 2009 standards, it is in full compliance with the license issued to the Project. In a review of actual discharges from Vernon Station in calendar 2008 (1/1-12/31), the station discharge was at or above 1700 cfs 98.27% of the time. Because there is effectively little storage in the Vernon impoundment and the station is more frequently in spill, the station discharge was above 1300 cfs a total of 99.98% of the time.
The minimum flow is well below any current standard. TransCanada can offer to reopen the license and address flows, but we expect that it will wait for the next relicensing.	VDFW	See above. The minimum flow in the license and the minimum flow discharged are substantially different. Offering to "reopen" a license is neither typical nor legally prudent.

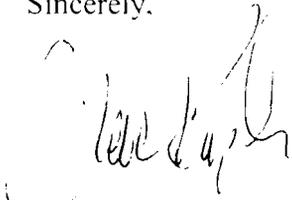
<b>FISH PASSAGE – lack of American eel and riverine species passage</b>		
The Vernon Project is equipped with an upstream fishway that is designed for anadromous fish (Atlantic salmon and American shad, river herring and Sea lamprey) and appears to be satisfactory. However upstream fish passage for American eel is lacking and will have to be addressed when this project comes up for relicensing.	MADFW	There were no agency comments concerning either upstream or downstream fish passage for American eel or riverine species submitted during the FERC license amendment and NH401 (in concert with VANR) agency consultation processes.
While the Vernon project has a fish ladder that is generally considered to be effective, this facility is designed and operated solely for anadromous species. American eel passage is needed at this site but neither upstream nor downstream passage measures for American eel are in place. No specific measures are in place to facilitate downstream passage of riverine species.	USFWS	There was significant discussion regarding impact of the new runner and the associated operation on American shad and Atlantic salmon. There was no discussion of either non-anadromous or catadromous species in the permitting associated with the license amendment or Section 401 issuance.
The dam does not provide downstream passage for non-anadromous fish, nor does it provide passage for American eel, a catadromous species that migrates to the Sargasso sea to spawn.	VDFW	
<b>FISH PASSAGE – impact of new turbines on up and downstream passage</b>		
Operation of these units has done nothing to address the flow issues at the project and has changed flow fields around both the upstream and downstream fish passage systems requiring new evaluations of fish passage effectiveness.	MADFW	There was significant discussion regarding impact of operating the new units on upstream and downstream passage of American shad and Atlantic salmon.
No assessment was made of smolt migratory paths with the new units' configuration, and no studies were conducted on juvenile clupeid passage, both of which were requested by the agencies. As such we believe that a decision on whether or not the project provides effective fish passage for salmon smolts and juvenile American shad is premature.	USFWS	A fish passage monitoring plan was filed with NHDES and the FERC. NHDES approved the plan and FERC TC is informed, is about ready to issue an Order approving it.  TC understands the agencies request for studies but upon consultation, they agreed to allow TC to conduct and review fish mortality studies in advance of requiring radio tag migratory path studies. With respect to adult American shad it was also agreed to table any request for studies at this time pending greater numbers returning as a result of operational changes at Cabot Station. Juvenile shad monitoring was requested but high water during the passage season prevented TC from being able to conduct controlled passage preference studies and reach conclusions.
Downstream passage for Atlantic salmon smolts and adults and juvenile and adult American shad requires evaluation and possible modification due to construction of the new turbines and associated flow changes. Evaluation has not been done despite requests from the USFWS and VTDFW.	VDFW	A radio tag study of salmon smolts is planned for 2009 as well as juvenile shad evaluation.  An evaluation on the effect of the new units on attractiveness of the fish ladder to returning adults was conducted and an operational protocol was established for use during the passage season when the ladders must be open and operated.

The three agency letters are both surprising and discouraging to TransCanada, but we continue to feel that the Vernon Project fully meets LIHI certification criteria. The claim of “low impact” is relative to other hydroelectric operations, not a pristine or remote river system without hydroelectric, wastewater assimilation, water supply, recreation, irrigation and other human uses. The LIHI criteria appear to us to

require broad consideration of hydroelectric system operations in addition to flow and fishery and a “balancing” of frequently competing and conflicting hydroelectric project operational demands. Fishery mitigation is an essential and, by far, the most expensive but not the exclusive, test for balance within the LIHI criteria, an operating license, a license amendment or a water quality certification. Respectfully we point out that the three fishery agency letters’ interpretation is understandably narrow. We would have appreciated the clear identification of their concerns within the context of the amendment and water quality certification processes, but we expect to work with the agencies to address them going forward.

Please contact me with any questions. I appreciate the opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read 'Cleve Kapala', written in a cursive style.

Cleve Kapala  
Director of Government Affairs