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July 15, 2013

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

Subject: Wilder Hydroelectric Project, FERC Project No. 1892
Bellows Falls Hydroelectric Project, FERC Project No. 1855
Vernon Hydroelectric Project, FERC Project No. 1904
Comments on Proposed Study Plan

Dear Secretary Bose:

Pursuant to the Federal Energy Regulatory Commission's (Commission or FERC) regulations 18 C.F.R. § 5.12, The Nature Conservancy (TNC) is providing comment on TransCanada Hydro Northeast Inc.'s (TransCanada) Proposed Study Plan (PSP) for the relicensing of the Wilder (FERC No. 1982), Bellows Falls (FERC No. 1855), and Vernon (FERC No. 1904) Hydroelectric Projects, filed on April 15, 2013, and the Updated Proposed Study Plan, filed by TransCanada on July 8, 2013. Unless specifically noted, all comments in this letter are in reference to the July 8, 2013 Updated PSP.

Between May 13, 2013 and June 21, 2013, representatives of TNC's Connecticut River Program attended several meetings and conference calls held by TransCanada to discuss the content and further development of the PSP. Overall, we find that the concerns and comments that we raised at these meetings were addressed in the Updated PSP; however, there are some remaining study components that we find require clarification and further refinement. Our comments below address these concerns, and are based on a review of the April 15, 2013 original PSP, the July 8, 2013 Updated PSP, and discussions that took place at meetings held between May 13 and June 21, 2013.

The comments that follow are organized by the numbering and study titles given in the July 8, 2013 Updated PSP.

Updated Study 4: Hydraulic Modeling Study

Deliverables

On page 47, TransCanada presents a brief description of the report that will be prepared for the hydraulic study. We request that the following specific components be included in the report or provided upon request:

- The HEC-RAS files necessary to run the models and reproduce the results, including the geometry files, plan files, flow files, and project files (i.e., file extensions .f, .g, .O, .p, .prj, and .r);
- The associated GIS files with topographic data for the valley and stream cross sections; and
- A brief summary of the approach taken to calibrate the model including the data used and assumptions made.

Updated Study 5: Operations Modeling Study

Methods

On p. 53, TransCanada states that each year of the 5-year subset used for model inflows corresponds to a particular ranking of annual flow volume at Vernon and to a particular ranking of annual system energy production. We request that TransCanada please clarify whether these rankings are ascending or descending. In other words, does a ranking of 30 correspond to the largest value of annual inflow or energy production, or to the lowest value? In addition, it is not clear how the ratio of spring total inflow to annual inflow volume is different among the five years. If the selection was based on both annual and spring total inflow volumes at Vernon, and represents different seasonal patterns as well as a range of overall hydrology inflow, it would be helpful to know the rank of each year relative to spring total inflow volumes as well.

Additionally, we request that TransCanada please explain or clarify how the operational impact of subsequent wet or dry years will be evaluated if only one year is run through the model at a time.

On p. 54, TransCanada provides some explanation of the rationale and methods for defining hourly market energy prices. The text states, "…the 2010 hourly prices were filtered by deriving the average hourly weekday and weekend prices for each month for use in the model." Does this mean that there are only two derived values associated with each month: a weekday value and a weekend value? We request that additional detail be provided to clarify the filtering process, perhaps by including the steps used to develop the energy price signals.

Updated Study 9: Instream Flow Study

Deliverables

We request that TransCanada please make the raw data available so that agency representatives and other interested parties may conduct additional analyses beyond what is done within the scope of this study.

Updated Study 10: Fish Assemblage Study

Project Nexus

On page 116, TransCanada states, "This study…will represent the available habitat within project operational ranges for resident and diadromous fish populations." Because this is not a habitat study, it is not clear how this study will represent available habitat; however, an assessment of available habitat could potentially be made with additional data from the Aquatic Habitat Mapping Study (Study 7) and the Instream Flow Study (Study 9). Furthermore, it is not clear within the methodology how this study will "allow for the contribution of both factors (project operations and available habitat) to the baseline fisheries conditions to be examined for limiting and non-limiting influences" (p. 117). This claim itself is unclear, as well as the methods for its achievement.

Study Area and Study Sites

For the Bellows Falls bypassed reach, we do not recommend changing the size of the sample segment (from 500 m to 100 m) simply because the length of the defined sampling reach is less than that of the other strata, as suggested on page 117. This will cause unnecessary bias in the collected data, such that if there are any differences in assemblage structure at this site, it will be impossible to differentiate actual site effects from sampling bias error. Normalizing the sample by effort may also be ineffective because the relationship between catch and effort is not necessarily linear. Sampling a 100 m segment in a smaller reach implies that a 100 m sample is equivalent to a 500 m sample after normalization. If this were the case, then sampling a 500 m segment would unnecessarily multiply sampling effort at any site. Therefore, either too much sampling is being done at most sites or 100 m is not a sufficient length for a sample. In either case, the methods at present require modification. It is imperative that sampling effort is as equivalent as possible among all sites within all strata. The solution to the problem of strata of greatly disproportionate lengths is either to make all sample segments shorter so that an adequate

number of sites can be sampled in each stratum, or simply to sample fewer sites in the shorter reaches, with at least three sample segments in each stratum.

Methods

If the issue of collecting a smaller sample in the Bellows Falls bypassed reach is not simply a matter of the length of the stratum, but is an issue associated with gear type, sampling smaller reaches in this one stratum is still not an acceptable solution for reasons similar to those described above. Substantial bias will result if the Bellows Falls bypassed reach is the only stratum that is sampled with pram or backpack electrofishing. Gear bias is the tendency of gear, including different electrofishing methodologies, to select for some species and sizes of fish more than others. If there are any differences within the Bellows Falls bypassed reach data set compared to other sites, it will be impossible to differentiate gear bias error from any actual site effects. In order to accurately characterize the fish assemblage of the project area, sampling methods must be consistent throughout the entire study area.

Because different gear types have different efficiencies in various habitat types, it may be effective to stratify sampling by habitat type. If backpack/pram electrofishing is the only effective method for sampling the Bellows Falls bypassed reach, then this is a valuable method that should be used in other sections of the study area (e.g., in shallow riffles and runs). The Aquatic Habitat Mapping Study (Study 7) could potentially assist in identifying different habitat types. We suggest that once Study 7 is completed, the results should be used to inform site and/or gear selection for this study. We recommend that sites be chosen randomly, but proportionally by habitat type. At each site, at least three replicates of each habitat-specific gear type should be sampled. This prevents bias from anomalous samples, allows for site-level statistical evaluation, and is standard scientific field design (Eberhardt and Thomas 1991, Krebs 1998). Alternately, one sample each of three different habitat-specific gear types could be considered independent replicates. This kind of robust, stratified random sampling design is especially important if the collected data are to be "examined for limiting and non-limiting influences," as suggested in the Nexus (p. 117). Without replicates it is difficult if not impossible to draw conclusions from the data; this is basic statistical and scientific methodology (Eberhardt and Thomas 1991, Krebs 1998).

Analysis

On page 121, TransCanada states that "Summary statistics will be calculated by stratum and sampling technique…" If summary statistics are to be calculated by sampling technique, then the premise is that values of different strata and sampling techniques can be compared. In order for this to be true, the collection of samples within each stratum and by each sampling technique

needs to follow a similar sampling design (e.g., stratified random, as described briefly above). Otherwise, it is not possible to compare strata or sampling techniques and draw inference concerning differences or similarities among them. Sampling methodologies should be used consistently, and never simply as a substitution in areas where habitat makes sampling difficult. Catches among gear types can only be compared if they have been sampled with the same basic design, and if they are intended to sample the same habitat.

Deliverables

We request that TransCanada please make the raw data from this study available in digital format so that agency representatives and other interested parties may conduct additional analyses beyond what is done within the scope of this study.

Schedule

Because the development of field study design is critical to the ability to use study results, we strongly support and value the included allowance provided in the schedule (p. 122) to share the sampling locations with the aquatics working group for consultation and approval.

Updated Study 12: Tessellated Darter Survey

Study Area and Study Sites

We recommend adding one more sampling segment to the reach below Vernon. Doing so will allow for greater statistical inference. If adding one more site is unacceptable in terms of study costs, we suggest re-evaluating the distribution of effort elsewhere, sampling proportionally by length of the reach, but with a minimum of three sites in each stratum. Alternately, the size of the individual samples could be changed in order to keep costs equivalent.

Methods

The recommendations provided for the Fish Assemblage Study (Study 10) with regard to sampling design apply to this study as well. Sampling methodologies should be used consistently, and never simply as a substitution in areas where habitat makes sampling difficult. Sampling methods cannot be determined on a case-by-case basis as implied (p. 134). This causes bias in the collected data, and makes it difficult if not impossible to distinguish differences in population size and structure at a site from error due to gear bias. Therefore, we strongly suggest that methods be used consistently across habitat types. The Aquatic Habitat Mapping Study

(Study 7) should be useful for determining various habitat types and the gear that will be required to sample them. If only one method is being used, sites should be randomly selected from those sites that may be effectively sampled by that particular gear type. Ideally, replicate samples should be taken at a site (e.g., three 2-minute tows per 500 m reach instead of one 5-minute tow). This prevents bias from anomalous samples, allows for site-level statistical evaluation, and is standard scientific field design (Eberhardt and Thomas 1991, Krebs 1998). Alternately, three samples of different sampling gear types could achieve a similar result.

We advise extreme caution when using information on dwarf wedgemussel (DWM) distribution to inform sample station placement. Details in the methods suggested that sites would be placed both to avoid DWM (p. 135) and to ensure that sampling occurs within the DWM distribution (p. 133-134, "Study Area and Study Sites"). However, care should be taken that this directed placement does not bias results toward artificially positive association (if adding sites near DWM populations) or artificially negative association (by avoiding sites near DWM populations). We recommend that a gear type is selected that is acceptable to use in areas where DWM are present, and that this gear type is used consistently across the entire study area. To ensure that samples are collected in areas where DWM are present, DWM distribution data can be used to define the spatial extent of sampling strata. However, samples must still be randomly selected within strata to prevent bias in the data, which would severely limit the ability to draw conclusions from the results. The objective of this study is to characterize the distribution and relative abundance of tessellated darter (p. 130), with an aim to relate this distribution and abundance to that of DWM. Whereas it is not necessary to sample exactly where DWM occur, it is imperative to ensure the spatial design of the sampling protocol is sufficient to meet this objective.

Because the development of field study design is critical to the ability to use study results, we strongly support and value the included allowance provided to consult with the aquatics working group "to determine the most appropriate sampling gears and placement of sampling locations to both minimize potential disturbance of DWM while maintaining a defensible and scientifically sound sampling procedure."

Deliverables

We request that TransCanada please make the raw data from this study available in digital format so that agency representatives and other interested parties may conduct additional analyses beyond what is done within the scope of this study.

Study 24: Dwarf Wedgemussel and Co-Occurring Mussel Study

Study Goals and Objectives

Throughout this study, there is reference made to collaboration with resource agencies with regard to study design and implementation. We hope that this collaboration can include other members of the aquatics working group that have experience and expertise in study design and interest in the long-term success and persistence of dwarf wedgemussel (DWM) populations. The Nature Conservancy is certainly interested in the development of this study, and would like to be included if possible.

Deliverables

We request that a version of the results and report be made available that has sensitive information redacted. Currently, the language states that all of the results from Tasks 2 and the pilot study will be confidential. However, shell condition, abundance of uncommon species, habitat variables, observed behavioral response, and other valuable information will be provided in these reports. This information is important for understanding project effects, and should be made available apart from sensitive locality data.

Thank you for this opportunity to provide comment on TransCanada's Proposed Study Plan. If you have any questions regarding the preceding comments, please contact Katie Kennedy at the Nature Conservancy's Connecticut River Program office (413-586-2349 or kkennedy@tnc.org).

Sincerely,

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Literature Cited

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