Comment ID	Comment	Response
Resource Report 1		
1	Provide updated discussions between Tennessee and the other utility entities regarding co-location. State specifically whether these individual entities would allow Tennessee to use portions of their existing rights-of-way for construction, operation, or both and define any potential physical constraints (e.g., guy wires). Where existing rights-of-way would not be shared, indicate whether the NED Project would directly abut the existing corridor. Include a fully descriptive table, with explanations and details included that lists each area where a generally co-located Project segment would temporarily deviate away from other co-located utilities due to the existence of obstacles. Based on the results of these discussions, both for other utilities unwilling to share their right-of-way as well as for physical obstacles, indicate whether (and where) the proposed Project centerline and associated workspaces would have to be modified.	As noted in Resource Report 1, included in the Environmental Report filed with the November 20, 2015 certificate application, Tennessee is proposing that the permanent easement of the proposed pipeline be centered generally on the pipeline and that 20 feet of the proposed 50-foot permanent easement overlap the existing powerline easement. Tennessee is further proposing that the temporary construction workspace for the Project for these areas of co-location will overlap the existing powerline easement between 30 to 60 feet. The amount of overlap of temporary construction easements and the existing powerline easements will depend ultimately on the location of the closest powerline towers and facilities, which will dictate the amount of available space on the powerline easement. During the ongoing discussions with two electric transmission line operating companies, no objection to this proposed co-location configuration have been raised. Tennessee is continuing to engage in discussions with the electric transmission line operating companies and is finalizing survey work on the power companies' fee-owned property to develop a powerline corridor to confirm the accuracy of the pipeline centerline reflected in the November 20, 2015 certificate application filing. Upon development of the powerline corridor, Tennessee will engage both power companies to review the currently filed location of the pipeline in relation to their corridors including potentially altering such location to further minimize environmental and/or landowner impacts. Such review is anticipated to occur in the first quarter of 2016 and the results of that review will be provided to the Commission in a supplemental filing anticipated to be submitted by the end of April 2016.
2	Provide evaluations (including details of ongoing discussions with regulatory agencies) regarding the feasibility of additional horizontal directional drills ("HDDs") in sites containing forested wetlands with an impact of more than 0.5-acre per crossing or in sites containing any high quality or specially designated forested wetland.	Discussions with federal and state regulating agencies regarding wetland crossings have been ongoing during the pre-filing process for the Project (Docket No. PF14-22-000) and have continued following the November 20, 2015 certificate application. Tennessee has developed wetland crossing procedures in accordance with the Project-specific Plan and Procedures and information received from state agencies. During these discussions, no federal or state agency has requested nor required Tennessee to use the HDD crossing method for any high quality or specially designated forested wetlands to date.
3	Provide evaluations regarding the potential for using HDDs at all major waterbodies and sites where waterbody crossings would be greater than 30-feet-wide and a dry construction method is not feasible, as well as at all waterbodies listed as sensitive or high quality; Provide evaluations regarding whether Tennessee would install communication towers as part of the Project, and, if so, describe their location and features.	Tennessee has identified the construction methods proposed at waterbody crossings along the Project in Tables 2.2-4 through 2.2-8 of Resource Report 2, included in the Environmental Report submitted with the November 20, 2015 certificate application. Tennessee continues to consult with state permitting agencies regarding these crossing methods. Tennessee plans to submit permit applications regarding waterbody crossings to state regulatory agencies in the spring 2016. Evaluations of using the HDD crossing method at waterbodies will be completed as needed and at the request of the state regulatory agency and will be provided to the Commission when those evaluations are submitted to state regulatory agencies. Discussions regarding the installation of communication towers for the Project was provided in Section 1.3.3.6 of Resource Report 1, included in the Environmental Report submitted with the November 20, 2015 certificate application.

Comment ID	Comment	Response
4	Provide updates regarding the identification and full description of any non-jurisdictional facilities associated with the Project including potential service for water, sewer, telephone, internet/data, or other utilities at aboveground facilities. If there are any non-jurisdictional facilities that would be built as a result of the new gas volumes associated with this Project, include the following detailed information for each facility: i. company/owner; ii. type of facility; iii. dimensions (pipe diameter, length, horsepower, etc. as appropriate for pipeline and land area for other facilities); iv. maps showing locations; v. federal permits required and their status; vi. status of local and state permits required; and vii. any environmental reviews required for local, state, or federal permitting authorities.	Information regarding the identification and description of non-jurisdictional facilities associated with the Project was provided in Section 1.7 of Resource Report 1, included in the final Environmental Report filed with the November 20, 2015 certificate application. Since the certificate application was filed, Tennessee has the following updates regarding non-jurisdictional facilities: (1) The proposed tap location for the Market Mid 1 Station (Nassau, New York) has changed. National Grid's local 13.2kV feeder will not be suitable to feed the proposed compressor station. There are two National Grid 34.5kV facilities in the area that can supply this service to the proposed compressor station: • Greenbush-Nassau 6 34.5kV Sub-T - 26000 feet away • Snyder Lake – Hoag 9 34.5kV Sub-T - 22,000 feet away The preferred interconnection location, which will have to be confirmed via further study, is the Snyder Lake – Hoag 9 34.5kV Feeder S7460. This tap location is approximately 22,000 feet from the proposed compressor station and potentially has some existing easements that can be used. Tennessee will provide updated information once a final decision has been made. (2) The proposed three phase power tap location for the Market Mid 4 Station (New Ipswich, NH) has changed. Discussions continue with Eversource to finalize the tap location and additional information will be provided in the supplemental filing anticipated to be submitted in late April 2016. Eversource's local 12.47 kV feed will not be suitable to feed the proposed compressor station, but Eversource can provide 34.5 kV power to the site by replacing an existing 12.47 kV three phase feeder line with a 34.5 kV three phase line. The existing cables to be replaced are located along Highway 45 extending from a transformer located on Temple Street in Greenville, New Hampshire to the compressor station site. The replacement distance covers approximately 6,500 feet.
5	Summary of scour analysis, and a cross-reference to where the detailed scour analysis discussion is provided in appropriate Resource Reports.	Tennessee is in the process of completing a full geologic hazard study for the Project, which would include scour analysis. Tennessee anticipates providing this report in a supplemental filing to be submitted by the end of April 2016.
6	As requested in our May 15, 2015 EIR, discuss whether Tennessee, in certain circumstances, may be able to pull back an HDD section in sub-sections, thereby increasing flexibility, minimizing the false right-of-way, and precluding the requirement of pulling one continuous section. If feasible, identify the specific crossings where this method would be employed.	Tennessee is continuing to evaluate the HDDs that are proposed and listed in Tables 2.2-4 through 2.2-8 in Attachment 2b of Resource Report 2, included in the Environmental Report submitted with the November 20, 2015 certificate application. As survey permission is limited, geotechnical investigations have not been completed; therefore, the HDD crossings are in preliminary design phase. Tennessee will limit false right-of-way where possible to limit impacts to resources in the vicinity of the HDD. Tennessee will provide updated HDD plan and profile drawings as information becomes available and detailed HDD design can be completed.

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7	For each cathodic protection facility, provide any identification number, associated access road (if applicable) including directional orientation to the road, approximate length and width of the facility, area affected, and associated land use type.	Tables 1.4A and 1.4B in Resource Report 1, included in the Environmental Report submitted with the November 20, 2015 certificate application, contain the locations of all cathodic protection facilities. Tables 8.1-1 and 8.1-2 in Resource Report 8, included in the Environmental Report submitted with the November 20, 2015 certificate application, illustrate the land use as part of the pipeline facilities.
8	It has come to our attention that areas where the pipeline would abut powerline rights-of-way may not be fully cleared of trees. Indicate if existing trees within the powerline rights-of-way would need to be cleared and indicate this additional clearing in the resource report impact tables as a separate line-item.	Additional clearing may be required where the pipeline would abut powerline rights-of-way ("ROW"). Tennessee is coordinating with the respective electrical transmission line operating companies to determine the width of the existing electrical easements. However, the final location of the pipeline construction ROW and area to be cleared will be determined once the extent of the electrical easements is determined and engineering and environmental surveys can be completed. Additional information will be provided in a supplemental filing anticipated to be submitted by the end of April 2016.
9	Provide updated micro-routing along the planned powerlines for areas where the pipeline would need to move away from the existing right-of-way due to constructability or other issues.	Updated micro-routing along the planned powerlines is provided in a table in Attachment 1 to this response matrix.
10	Provide site-specific waterbody and wetland plans and associated crossing techniques.	Preliminary site-specific waterbody and wetland plans and associated crossing techniques were or will be provided as applicable in the U.S. Army Corps of Engineers and state regulatory permit applications. Final revisions to both federal and state water crossing and fill permit applications will be submitted when engineering, environmental, and geotechnical survey activities are completed. Additional information regarding these plans will be provided to the Commission in a supplemental filing anticipated to be submitted by the end of April 2016.

Comment ID	Comment	Response
Resource Report 2		
11	Provide locations of new compressor stations and associated potential impacts to groundwater.	Locations of the nine new compressor stations proposed as part of the Project was provided in the November 20, 2015 certificate application. With regard to associated potential impacts to groundwater, information regarding the new compressor stations to be located in Pennsylvania and New York has not been received from the applicable agencies. Information received as of the date of this response for the new compressor stations to be located in other states are set forth below. Proposed Market Path Mid Station 2, Market Path Mid Station 3, and Market Path Tail Station are not associated with any medium or high yield aquifers; therefore, potential impacts to aquifers from these compressor stations are not anticipated. The proposed Market Path Mid 4 Compressor Station (Wright to Dracut Pipeline, Segment J, approximate MP 5.8) falls completely within the Greenville Water Department's Drinking Water Source Protection Area (Collins 2015). The Greenville Water Plant is located approximately 0.5 mile from the proposed compressor station. The plant draws water from the Tobey Reservoir to the north and has approximately 356 water connections (Collins 2015). The Market Path Mid 4 Compressor Station is located downstream of the Tobey Reservoir and therefore no impacts are anticipated. As a general matter, the Project is not anticipated to have long term negative impacts on groundwater quality or supply. Tennessee proposes to implement best management practices ("BMPs") designed to avoid, reduce, and/or mitigate potential impacts on groundwater during construction and operation. Tennessee's Project-specific Plan and Procedures will be included as attachments to the Project-specific Environmental Construction Plans ("ECPs") for each state, included as part of the Environmental Report submitted with the November 20, 2015 certificate application. Tennessee's contractors will be required to adhere to these practices related to groundwater protection, including the following: • Installation/maintenance of temporary and/or permanent erosion control structures until soil stabilization is achieved; • Monitoring of dewatering operations and discharging trench-water to appropriate receiving structures; • Use of secondary containment structures when working in/near sensitive resource areas; • Enforcing restrictions on refueling locations and storage of hazardous substances; • Complete revegetation of disturbed workspace locations following installation of the Project facilities; • Installation of permanent trench plugs, where needed to maintain existing groundwater flow patterns; • Limited and controlled use of herbicides on the ROW only in appropriate circumstances (where other options are impractical or not available) and consistent with applicable laws, rules, and regulations, as wells as any enforceable limitations and controls arising from agency consultations; • Prohibiting use of herbicides in or within 100 feet of wetlands or waterbodies, except as allowed by the appropriate land management agency or state agency.

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12	Provide avoidance and mitigation measures that would be taken around wellhead protection areas ("WHPAs").	To the extent practicable, Tennessee has sited the proposed Project to avoid WHPAs. In the instances that a WHPA cannot be avoided, Tennessee proposed to implement BMPs designed to avoid, reduce, and/or mitigate potential impacts on groundwater during construction and operation, as detailed within the Project-specific ECPs for each state and Tennessee's Project-specific Plan and Procedures. Tennessee and its contractors will adhere to practices related to groundwater protection, including specifications for trench breakers and dewatering, as well as restrictions on refueling and storage of hazardous substances. In the unlikely event that construction of the proposed Project is determined to have temporarily impacted private or public well quality or yield, Tennessee will provide alternative water sources or other compensation to the well owner. Should permanent well damage be sustained, Tennessee will either compensate the well owner or make arrangements for a new well to be drilled. All equipment used in construction of the pipeline will be refueled and lubricated within the limits of the ROW at a minimum distance of 100 feet from all wetlands, waterbodies, and identified wells, unless no reasonable alternative is available and contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill. Hazardous materials, including chemicals, fuels, and lubricating oils, will not be stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by the appropriate agency. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas. Auxiliary fuel tanks will be used to reduce the frequency of refueling operations; and refueling will not take place within 400 feet of municipal or community water supplies, including groundwater and surface water as per state requirements. The impact minimization measures will prevent the discharge of hydraulic fluids or fuels from leaving the ROW and/or leaching into the groundwater. Tennessee's land representatives request information on the location of wells, septic systems, and springs from landowners. Tennessee's land representatives will again request information on the location of wells and septic systems prior to the commencement of construction to prepare and inventory for any required pre- and post-construction monitoring and tests. To the extent that any septic systems or wells encroach into Tennessee's existing permanent easement, Tennessee will work with the landowner to resolve the encroachment. No springs utilized for drinking water were specifically identified during initial landowner consultations or field surveys. Additional surveys and landowner contact to re-confirm the location of wells are ongoing. If requested by the landowner, any seeps or springs located within 200 feet of construction workspaces will be reviewed by an expert in the field to make a determination as to whether the normally planned construction activities will have any impact. If any impacts are anticipated to occur, the expert will recommend construction alterations to avoid impacting seep or spring areas. Blasting/removal of bedrock will be conducted to a depth sufficient to install the pipeline, typically 6 to 8 feet below the ground surface. Blasting charges will be limited to the minimum number and force necessary to fracture or loosen rock to the desired depth. Explosive products will be selected that have the appropriate water resistance for the site conditions to minimize the potential for hazardous effect of the product on the groundwater. Testing for water quantity and quality parameters will be conducted for wells located within 200 feet of the Project workspace both pre- and post-construction by a qualified independent inspection service, on property for which Tennessee has been granted access by landowners. Tennessee will similarly, at the request of a landowner, sample developed springs used for drinking water pre- and post-construction within the area referenced above.

Comment ID	Comment	Response
		Water quality parameters for testing of both wells and springs will include: yield, pH, petroleum based hydrocarbons, total suspended solids, total dissolved solids, nitrates, nitrites, arsenic, iron, manganese, lead, copper, and total coliform bacteria. A Tennessee representative will contact landowners after the sample analysis has been conducted to provide the results of these pre- and post-construction sampling events. In the unlikely event that construction of the Project is determined to have temporarily impacted private or public well/spring quality or yield, Tennessee will provide alternative water sources or other compensation to the well owner(s). In the event that it is determined that permanent impacts have occurred to a well/spring as a result of construction activities, Tennessee will repair, replace or provide alternative sources of potable water. Trench dewatering is likely to occur in areas where there is shallow groundwater or after heavy rains. Tennessee proposes to implement BMPs designed to avoid, reduce, and/or mitigate potential impacts on groundwater during construction and operation as detailed within the Project-specific ECPs for each state and Tennessee's Project-specific Plan and Procedures. The Project is not anticipated to have impacts on groundwater quality or supply. Tennessee proposes to implement BMPs designed to avoid, reduce, and/or mitigate potential impacts on groundwater during construction and operation as detailed within the Project-specific ECPs for each state and Tennessee's Project-specific Plan and Procedures. Tennessee and its contractors will adhere to practices related to groundwater protection, including specifications for trench breakers and dewatering, as well as restrictions on refueling and storage of hazardous substances. In the unlikely event that construction of the proposed Project is determined to have temporarily impacted private or public well quality or yield, Tennessee will provide alternative water sources or other compensation to the well owner. Should permanent well damage be sustained, Tennessee will either compensate the well owner or make arrangements for a new well to be drilled.
13	Provide hydrostatic test water quantity needed, as well as discharge locations.	Details regarding hydrostatic testing are being developed along with the final design of the Project facilities. Tennessee is currently consulting with state regulatory agencies and will obtain all necessary permits for hydrostatic test water withdrawals and discharges for the Project.
14	Provide wetland mitigation provisions.	Tennessee will negotiate wetland mitigation provisions with each applicable federal and state regulatory agency through each agency's permitting process and additional information will be submitted to the Commission as it becomes available. The process to develop and negotiate wetland mitigation provisions will not be completed until all permits have been received.
15	In the groundwater descriptions, include a detailed description of the aquifers in each state including the names, beginning and ending mileposts ("MPs") for each crossing, confining layers, principal use, depth to water, and general water quality. Update table 2.1-2 to include aquifer name, well depth, and yield. Include a discussion on stratified drift and granite aquifers and potential impacts and mitigation.	Aquifer names, confining layers, principal use, depth to water, and general water quality information is not readily publicly available. However, a general description of aquifers crossed by the Project are included in Resource Report 2, Section 2.1. In addition, USEPA Designated Sole Source Aquifers are provided in the same resource report section. Tennessee's environmental consultant has requested additional aquifer information from agencies, but has received limited responses to date. Once data is received, Tennessee's environmental consultant will discuss impacts and mitigation measures for the aquifers with applicable regulatory agencies. Tennessee will provide updated information in the supplemental filing anticipated to be submitted by the end of April 2016.
16	Provide a table of all public drinking water supply watersheds, surface water reservoirs, and WHPAs. In the table, include crossing length or distance of each protected surface water supply from the project. Indicate if a waterbody crossing would be within 3 miles upstream of any potable water supply intakes. Specify details regarding the public usage of each of the protected surface waters identified. Identify appropriate mitigation measures within surface water protection areas ("SWPAs"). Identify the government entities that manage the SWPAs within the Project area. Discuss local management/protection strategies and restrictions for SWPAs.	Tables 2.1-2 and 2.1-3 in Resource Report 2 contain Public and Private Water Supply Wells and Protection Areas Within 200 Feet of the Project Pipeline and Contractor Yards along with nearest begin and end mile posting. Table 2.1-4 describes Potable Water Intakes Located within Three Miles Downstream of Any Proposed Waterbody Crossing. Details regarding the public usage for each surface water identified and the government entities that manage the surface water protection areas will require agency consultation that may not be available before the end of December 2015. Local management/protection strategies and suggested mitigation will require discussion and cooperation from the appropriate government/local entities. The anticipated time for delivery is February 2016.

Comment ID	Comment	Response
Resource Report 3		
17	Provide results of field surveys conducted to characterize the natural landscape at the proposed Appalachian Trail crossing, as well as a crossing plan for the same location.	Results of the field surveys conducted to characterize the natural landscape at the proposed Appalachian Trail crossing will be provided upon completion of the surveys, which are dependent on gaining access to state lands. A crossing plan will be developed in consultation with the managing agency and other applicable entities, and will be provided to the Commission.
18	Provide a discussion of potential construction and operation impacts on vegetation outside the pipeline construction right-of-way associated with any aboveground facilities and appurtenant facilities (mainline valves ("MLVs"), pig launchers, and receivers), temporary and permanent access roads, pipe and contractor yards, cathodic protection systems, and alternating current mitigation systems.	Resource Report 8 contains a discussion of the potential impacts on vegetation outside the construction right of way associated with aboveground facilities and the listed appurtenant facilities. However, the final determination of potential impacts will be determined upon the completion of biological surveys, which are dependent on obtaining Project-wide survey access, as well as the results of consultations with federal and state agencies.
19	Expand upon, and provide citations for, the discussion of the potential effects on the survival and fitness of fish and aquatic wildlife resources associated with the removal of riparian vegetation at stream crossings and the duration of these effects. Include the expected timeframe within which invertebrate populations would recolonize the crossing area to pre-construction conditions.	Post-construction and operational impacts to fisheries are anticipated to be minimal. Restoration and maintenance of the vegetation within the ROW will minimize the erosion potential relative to waterbodies. Tennessee will comply with its Project-specific Plan and Procedures and will limit vegetation maintenance of the permanent ROW within a 25-foot riparian strip adjacent to waterbodies. Vegetation removal within this riparian strip will be limited to (1) selectively cutting trees within a 30-foot corridor centered over the Project pipeline and (2) mowing a 10-foot-wide corridor centered over the Project pipeline centerline as necessary for temporary equipment crossings and emergency access. The 10-foot-wide corridor centered over the Project pipeline and the 30-foot-wide corridor centered over the Project pipeline where trees are to be selectively cut will leave a relatively narrow corridor with a stepwise increase in the height of vegetation from the pipeline. This will reduce woody cover directly over the pipeline, but allow for the re-establishment of woody and herbaceous species along the stream banks that will provide needed shading and crucial cover habitat to sufficiently maintain cold water fishes ("CWF") habitat characteristics. Fish and other aquatic life may be affected by the removal of the riparian vegetation at the intersection of rivers and streams and the pipeline corridor. Riparian vegetation has many functions which include: stabilizing stream banks, reducing erosion within the stream channel, moderating water temperatures, moderating light levels, providing woody debris for habitat, tempering the volume of runoff flowing into the stream, and filtering runoff by trapping and removing sediment, and excess nutrients before entering the waterbody (Pusey and Arthington 2003). Many of these functions will likely be fulfilled by the erosion and sedimentation controls in place during and after the construction and the resulting corridor after the restoration phase is complete. Some riparian functions will likely persist throughout the construction and restoration period since many of the shade-providing and bank stabilizing vegetation will be left in place to the extent practicable, but the riparian functions within the pipeline corridor may persist to a slightly lesser degree. Although these impacts are generally local to the stream crossing, and highly variable given the surrounding landscape, Tennessee will stabilize and restore the stream substrates, banks and riparian zones immediately following completion of construction in accordance with Tennessee's Project-specific Procedures. This and other restoration procedures are described in more detail in Resource Report 3, Section 3.1.4, included in the Environmental Report submitted with the November 20, 2015 certificate application. Removal of streamside trees and vegetation at the pipeline crossings may reduce shading, eliminate escape cover, and potentially result in a locally elevated water temperature near, and downstream of the pipeline crossing. In areas with a forested canopy there may be more direct light entering the waterbody in the intersections with the pipeline corridor and stream. Direct sunlight has a warming effect on waterbodies. Elevated water temperature can lead to a reduction in levels of dissolved oxygen ("DO") and influence fish survival and fitness. In small areas with flowing water, this effect is minimal and small areas of sunlight exposed water occur naturally in most forested streams.

Comment ID	Comment	Response
		Man-made stream bank stabilization, runoff, and erosion controls will temporarily replace the functions of the removed vegetation during and immediately after construction. After construction is complete, riparian vegetation will be restored using a riparian seed mix appropriate for the soils in the area (Project-specific ECPs for each state, included in Appendices J, K, L, M, and N to the Environmental Report). This typically results in vegetative growth with stabilizing roots after the seed mix species have established. Duration of the vegetation restoration is dependent on what season the post-construction phase begins and the local soil conditions. The bank and surrounding upland is increasingly stabilized from erosion as the planted vegetation grows and volunteer plant species establish. Spawning habitat is also another consideration. Egg spawning, egg development, and larval development are not likely to be affected by the proposed action because of the instream work window requirements that are set to protect the critical life histories of fish. The timing of the work would protect the majority of fish in these vulnerable stages as the in-stream restoration work would occur after the fry of most species of cold water fish have emerged and avoids the less mobile larval stages that are embedded in the substrate. The act of removing the vegetation and the resulting area that lacks the protection that vegetation provides can increase erosion, the transport of sediment and turbidity. Pipeline installation may cause pulses of turbidity downstream of the crossing during activities that are part of construction such as clearing and grubbing of the Project site, excavation for the pipeline, and diverting the stream's path. If soil does enter the stream, visible turbidity may extend a distance downstream that depends on the flow and the shape of the streambed and the size and density of the suspended particles. In cases where continuous standing water is present across the work area and there is discernible flow, a dry crossing (flume crossing, dam and pump, or cofferdam installation upstream and downstream of the crossing location) method will be implemented in the field to allow for excavation and installation of the pipe under dry conditions while maintaining stream flow. Cofferdams will block much of the sediment and turbidity from entering the water. Upon removal of the cofferdams, the stream crossing reach will be fully restored to a condition similar to its original condition with fish passage restored. If the erosion controls failed or were not present then there would be a risk for a small amount of sedimentation in the waterbody due to erosion and sedimentation after high flows. High concentrations of suspended sediments may directly kill aquatic organisms and impair productivity (Newcombe and Jensen 1996). All life stages of fish and other aquatic organisms are affected by heavy sedimentation, but the younger life stages are particularly susceptible to harm. Sedimentation can bury eggs and fill the interstitial spaces that many fish depend on for cover and food. Direct effects to fish could occur due to increases in turbidity. High turbidities have been shown to cause gill abrasion and reduce the feeding ability of salmonids and other fish and could kill juvenile salmonids downstream of the construction area (Sigler 1980; Sigler et al. 1984; Lloyd 1987). However, many studies have shown that fish can tolerate suspended sediment exposure for short periods (McLeay et al. 1987) which is a more likely scenario for the construction work considering the sedimentation controls that are planned for the Project. When duration and concentration is considered, a duration time exposure limit will likely apply to most fish (Newcombe and MacDonald 1991). Depending on the surrounding land use, an intact vegetated buffer could be important for filtering contaminants from impervious surfaces, industrial, or farming practices (Wegner 1999).

Comment ID	Comment	Response
		Aquatic macroinvertebrates are key prey for stream fish. Their direct mortality within the trench is certain due to the dewatering of the trench. Mortality immediately downstream of the trench from turbidity is also possible. Based on research by Novotny and Faler (1982), re-colonization of aquatic invertebrates from upstream reaches could occur rapidly due to species dispersal from in-stream drift. Gersich and Brusven (1981) estimated that full aquatic insect colonization of rock substrates within disturbed areas beneath a dam on a river would take 47 days. The impact to macroinvertebrates would be localized near the source of turbidity for a brief time (as much as 12 hours) after disturbance and would be limited to the immediate Project area and potentially for some distance downstream depending on flow, substrates and stream channel morphology. Turbidity generated from erosion control installation and removal and stream would be expected to only cause incremental increases in turbidity in the narrow stream channel that is likely to exist during the low flow period that construction is occurring and would be expected to extend a short distance downstream. Gersich, F. and M. Brusven. 1981. Insect colonization rates in near-shore regions subjected to hydroelectric power peaking flows. Journal of Freshwater Ecology 1: 231–236. Jones, Julia A., et al. "Effects of roads on hydrology, geomorphology, and disturbance patches in stream networks." Conservation Biology 14.1 (2000): 76-85. Lloyd, D.S., J.P. Koenings, and J.D. LaPerriere. 1987. Effects of turbidity in fresh waters of Alaska. North American Journal of Fisheries Management 7: 18–33. McLeay, D.J., A.J. Knox, J.G. Malick, I.K. Birtwell, G. Hartman, and G.L. Ennis. 1983. Effects on arctic grayling (Thymallus articus) of short-term exposure to Yukon placer mining sediments: Laboratory and field studies. Canadian Technical Report of Fisheries and Aquatic Sciences 1171. Morgan E, Porak W, Arway J. 1983. Controlling acidic-toxic metal leachates from southern Appalachian construction slopes: mitigating stream damage. Transp. Res. Rec. 948:10–16. Newcombe, C.P., and J.O.T. Jensen. 1996. Channel suspended sediment and fisheries: a synthesis for quantitative assessment of risk. North American Journal of Fisheries Management. 16:693-727. Newcombe, C.P. and D.D. MacDonald. 1991. Effects of suspended sediments on aquatic ecosystems. North American Journal of Fisheries Management 11: 72–82. Novotny, J. and M.P. Faler. 1982. Diurnal characteristics of zooplankton and macroinvertebrates in the tailwater below a Kentucky flood control reservoir. Journal of Freshwater Ecology 1(4). Pusey B.J. & Arthington A.H. (2003) Importance of the riparian zone to the conservation and management of freshwater fish: a review. Marine and Freshwater Research, 54, 1–16. Sigler, J.W. 1980. Effects of chronic turbidity on feeding, growth and social behavior of steelhead trout and coho salmon. Doctoral dissertation; University of Idaho, Moscow. Sigler, J.W., T.C. Bjornn and F.R. Everest. 1984. Effects of chronic turbidity on density and growth of steelhead and Coho salmon. Transactions of the American Fisheries Society 113: 142–150. Wenger, Seth. "A review of the scientific literature on riparian buffer width, extent and vegetation." (1999).

Comment ID	Comment	Response
20	Describe the feasibility of adding seeds that support pollinators into the mixes used to restore construction workspaces. Provide copies of Tennessee's consultations with the relevant federal and/or state regulatory agencies, and update the state-specific ECPs, as necessary. Include any measures that would protect pollinators in the ECPs, which could include, but is not limited to, removal of invasive species by more manual or mechanical means rather than chemical (herbicides/pesticides).	The seed mixes as listed within the Project-specific ECPs developed for each state (included as Appendices J, K, L, M and N in the Environmental Report) contain a number of flowering forb and graminoid species that are beneficial to pollinators by providing pollen, nectar or protective cover for pollinator larvae. During consultation, the Pennsylvania Game Commission recommended seed mixes that include Birdsfoot Trefoil, Alsike Clover, Ladino Clover, Black-eyed Susan and Lance-leaved Coreopsis, all of which are beneficial to pollinators. The seed mixes specified for New York allow for the addition of wildflower seeds, and can be further modified to include specific species at the agencies' request. Seed mixes identified for use in Massachusetts include Showy Tick Trefoil, clovers, as well as little bluestem, which is a grass known to provide good cover for lepidopteran larvae. New Hampshire and Connecticut specific seed mixes both include Birdsfoot Trefoil. The New Hampshire seed mixes are further augmented with Flat Pea and Crown Vetch all of which are valuable to pollinators (Woodcock 2012; University of Texas at Austin 2015). Tennessee will continue to consult with appropriate state and federal agencies regarding restoration techniques and will modify seed mixes in accordance with agency requests. Moreover, Tennessee anticipates the areas of temporary and additional temporary workspace to be recolonized with native herbaceous seed stores from the adjacent landscape. As discussed in Section 3.3.3 of Resource Report 3, included in the Environmental Report submitted with the November 20, 2015 certificate application , new areas permanently maintained during operation of the Project facilities will be kept in an herbaceous/early successional stage of vegetation. Tennessee will accomplish this by conducting routine vegetation maintenance along the ROW primarily through mechanical means (e.g., mowing) on a frequency of approximately once every three years. Wagner et al. (2014) demonstrated that maintained utility transmission ROWs are important rare successional habitats for wild bees, including uncommon species, in the largely forested landscape of New England. Tennessee does not typically include the use of herbicides in their maintenance programs. Manual application of herbicides may be used in specific circumstances to control poisonous plants, such as poison ivy or as part of an approved Invasive Species Management Plan. In these limited circumstances all herbicide use will be applied as allowed by the applicable jurisdictional agencies and with landowner approval. This maintenance regime encourages formation of dense vegetation cover and opportunity for the recolonization of native early successional plants beneficial to pollinators. Wagner et al. 2014. A Transmission Right-of-Way as Habitat for Wild Bees (Hymenoptera: Apoidea: Anthophila) in Connecticut. Annals of the Entomological Society of America. Vol. 107 (6). Pp. 1110-1120. Entomological Society of America. Woodcock, Thomas. 2012. Pollination in the Agricultural Landscape. Canadian Pollination Initiative. University of Guelph. [Online WWW]. Available URL: http://www.pollinator.ca/bestpractices/images/Pollination%20in%20Agricultural %20Landscape_Woodcock_Final.pdf. [Accessed December 2, 2015]. University of Texas at Austin. 2015. Lady Bird Johnson Wildflower Center Native Plant Information Network. [Online WWW]. Available URL: http://www.wildflower.org/plants/. [Accessed December 2, 2015].

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21	Include a more detailed discussion, with citations from recent literature, on the potential effects of the Project on wildlife movement and displacement, including examples of specific species that may be affected depending on the time of year, the relative sensitivity of the species, and seasonal habitat selection.	Numerous studies have documented anthropogenic effects on wildlife with responses and magnitude of effect being variable and dependent on type, duration, frequency, magnitude, location and timing (Steidl and Powell 2006). Erb et al. (2012) demonstrated negative effects of hunter presence on bobcat and black bear occupancy, and use of hiking trails on occupancy of black bears, while red fox and raccoon occupancy increased with trail use and hunting, respectively. Miller et al. (2001) identified effects of recreational activities including both on and off hiking trails used by humans, and humans with a leashed dog. Responses were also variable, however, as activities occurring off trail tended to cause a greater flush (or alert) distance (i.e., the distance at which animals first responded to a human disturbance or threat) and greater distance moved for all four species tested, supporting the evidence that animals become habituated to activities that occur with high frequency and at the same location. Blumstein et al. (2005) demonstrated through simulation models of 150 bird species that larger bird species exhibited greater alert distances and moved farther away after being disturbed. When disturbances are repeated, this translated into greater temporal displacement (e.g., time to resume foraging behavior) and negatively impacted food consumption and fitness when birds were flushed from foraging sites (i.e., number of food items eaten was significantly reduced). In a comprehensive literature review for flight responses by ungulates (e.g., white-tailed deer, moose, elk, caribou) Stankowich (2008) found animals in open habitats and females or groups with young offspring exhibit greater flight responses than adult groups, and humans on foot had a greater effect than vehicles or other noises. Other studies have observed effects including energetic stresses (Bélanger and Bédard 1990), impacts to activity (Mann et al., 2002), and survival of young associated with abandonment (White and Thurow 1985) all stemming from anthropogenic influences. As previously described in Section 3.2.2.7 of Resource Report 3, included in the Environmental Report submitted with the November 20, 2015 certificate application, construction of the Project may result in temporary displacement of wildlife from the construction area and other behavioral or physiological responses due to presence of humans and machinery as described above. However, impacts to wildlife will be minimized by limiting the construction period at any one particular location to the extent practicable, and by promptly restoring the construction site through procedures outlined in Tennessee's Project-specific Plan and Procedures (Volume II, Appendix H of the certificate application) and Project-specific ECPs for each state (Volume II, Appendices J, K, L, M, and N of the certificate application). Most species of wildlife typically encountered in the northeast U.S. will utilize a variety of habitats during their annual life-cycle (DeGraaf and Yamasaki 2001), including open grassland and scrub-shrub habitats commonly associated with pipeline easements. Even species such as interior forest birds have been documented to shift their habitat use to early-successional areas after nesting but before migration, which results in improved physiological condition (Stoleson 2013), and white-tailed deer will use these areas for a continuous supply of accessible browse (i.e., scrub-shrub and sapling habitats where deer can reach buds and soft plant tissues for winter sustenance; see Section 3.2.2.4.7 of Resource Report 3). Therefore, once the corridor is restored and fully vegetated, habitat suitable for many species in the northeast U.S. is expected to be available.

Comment ID	Comment	Response
		As described in Section 3.4 of Resource Report 3, included with the Environmental Report submitted with the November 20, 2015 certificate application, Tennessee is conducting surveys for sensitive wildlife species (federal- and state-listed species) identified through consultation with federal and state agencies. These include bats, migratory birds, amphibians, and reptiles; 10 state-listed threatened, endangered, or special concern species were identified as potentially occurring in the Pennsylvania section of the Project, nine in New York, 40 in Massachusetts, 24 in New Hampshire, and 25 in Connecticut, plus an additional seven federal listed species were identified by the USFWS. Development of appropriate avoidance, minimization and mitigation measures is dependent upon identification of rare species and/or their habitats through implementation of species-specific field surveys, and must be developed on a site-specific basis through consultation with the appropriate agencies. Tennessee has started, and will continue to work with the applicable federal and state agencies to develop additional mitigation measures as needed. Time of year also plays an important role in how construction activities may impact wildlife. For example, several species of bats in the northeast U.S. will use forested areas for roosting and maternal colony habitats during the spring and summer (DeGraaf and Yamasaki 2001). Similarly, some of these areas are used by species of migratory birds (i.e., interior forest birds, see Section 3.2.2.6 of Resource Report 3) during the springtime breeding period. As described in Section 3.4.2.1.2 of Resource Report 3, Tennessee has committed to winter tree clearing in areas identified as summer roosting and maternal colony habitats to avoid temporary impacts typically associated with construction activities. This will also avoid impacts to forest interior birds where these habitats overlap. In contrast, eastern box turtles will use forested upland areas almost exclusively for winter hibernation habitats. This species has been identified as potentially occurring within the Project vicinity in Massachusetts (French 2015) and Connecticut (McKay 2015). Tennessee plans to conduct field surveys for this species in 2016 and confirm presence-absence. In areas that are identified as bat roosting and maternal colony habitats, and eastern box turtle habitat, winter tree clearing would result in a conflict of timing restrictions (i.e., tree clearing in box turtle habitat is generally restricted to their active period, approximately April 1 through October 31). Conflicts such as this, should they occur, will require consultation with the USFWS and state heritage programs to develop further avoidance and minimization measures. These consultations will occur following completion of species-specific presence-absence and habitat surveys. Spring is also an important time period for vernal pool breeding amphibians. These are species that live primarily in forested upland habitats and migrate to vernal pools (temporarily flooded aquatic breeding sites) in the early spring, where they reside for several weeks before returning to non-breeding habitats (Klemens 1993). Temporary impacts can be avoided by limiting work within and adjacent to vernal pools during the spring breeding season to the extent practicable. Impacts to non-breeding forest habitat can be minimized by limiting the amount of tree clearing within 750 feet of a vernal pool to the extent practicable (Calhoun and Klemens 2002). As described in Section 3.3.2 of Resource Report 3, Tennessee biologists are conducting vernal pool surveys and following survey and documentation procedures outlined by the United States Army Corps of Engineers ("USACE") – New England District, Vernal Pool Assessment Guidelines. Following completion of surveys Tennessee will assess vernal pool impacts in consultation with federal and state agencies.

Comment ID	Comment	Response
		Bélanger, L., and J. Bédard. 1990. Energetic cost of man-induced disturbance to staging snow geese. Journal of Wildlife Management 54, 36–41. Blumstein, D.T., E. Fernandez-Juricic, P.A. Zollner, and S.C. Garity. 2005. Inter-specific variation in avian responses to human disturbance. British Ecological Society, Journal of Applied Ecology. 42, 943-953. Calhoun, A. J. K. and M. W. Klemens. 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York. DeGraaf, R.M., M. Yamasaki, W.B. Leak, and J.W. Lanier. 1992. New England Wildlife: Management of Forested Habitats. USDA Northeastern Forest Experiment Station. General Technical Report NE-144. 271 Pp. Erb PL, McShea WJ, Guralnick RP (2012) Anthropogenic Influences on Macro-Level Mammal Occupancy in the Appalachian Trail Corridor. PLoS ONE 7(8): e42574. doi:10.1371/journal.pone.0042574. French, T.W. 2015. Written correspondence between Thomas W. French, Assistant Director, Massachusetts Natural Heritage and Endangered Species Program and Timothy O'Sullivan, AECOM, on July 23, 2015. Klemens, M. W. 1993. Amphibians and reptiles of Connecticut and adjacent regions. State Geological and Natural History Survey of Connecticut, Bulletin No. 112, Connecticut Department of Environmental Protection, Hartford, CT. Mann, S.L., R.J. Steidl, and V.M. Dalton. 2002. Effects of cave tours on breeding cave myotis. Journal of Wildlife Management 66, 618–624. McKay, D.M. 2015. Written correspondence between Dawn M. McKay, Environmental Analyst, Connecticut Natural Diversity Database, and Timothy O'Sullivan, AECOM, on March 11, 2015. Miller, S.G., R.L. Knight, C.K. Miller. Wildlife responses to pedestrians and dogs. Wildlife Society Bulletin, 29:1, 124-132. Stankowich, T. 2008. Ungulate flight responses to human disturbance: a review and meta-analysis. Biological Conservation 141, 2159-2173. Steidl, R.F. and B.F. Powell. Assessing the effects of human activities on wildlife. The George Wright Forum. 23:2, 50-58. White, C.M., and T.L. Thurow. 1985. Reproduction of ferruginous hawks exposed to controlled disturbance. Condor 87, 14–22.

Comment ID	Comment	Response
22	Discuss potential impacts on wildlife associated with air pollution and heat generated from the operation of Project aboveground facilities.	As discussed in Section 9.1.3 of Resource Report 9, included in the Environmental Report submitted with the November 20, 2015 certificate application, dispersion modeling was conducted for all of the Project's proposed new compressor stations and demonstrated in all cases that air quality impacts comply with the National Ambient Air Quality Standards ("NAAQS"). The U.S. Environmental Protection Agency ("USEPA") promulgated the NAAQS to protect human health and welfare. The NAAQS include primary standards, which are designed to protect human health, including the health of sensitive subpopulations such as children, elderly and those with chronic respiratory problems. The NAAQS also include secondary standards designed to protect public welfare, including economic interests, visibility, vegetation, animal species, and other concerns not related to human health. The only significant heat source associated with Project facilities occurs as exhaust from combustion turbines at compressor stations. This exhaust is approximately 800 degrees Fahrenheit and is emitted from a stack that is approximately 80 feet tall. It is expected that this heat will dissipate upwards and eventually come to equilibrium with the surrounding atmosphere. Although one could hypothesize that behavior of flying vertebrates (i.e., birds and bats) may be altered through avoidance of this type of heat source, Tennessee is unaware of any studies that have specifically investigated or demonstrated these types of impacts. For terrestrial wildlife residing in habitats directly adjacent to the facility, it is anticipated that they will not encounter any significant temperature changes at ground to forest canopy level.
23	Include a more detailed discussion, with documentation from agency consultations, of the steps Tennessee would take to avoid and minimize impacts on wildlife, including but not restricted to: whether or not Tennessee would conduct tree surveys prior to tree removal (e.g., to assess presence of nesting sensitive and/or rare species).	Avoidance and minimization of impacts to wildlife associated with the Project are described throughout Resource Report 3, included in the Environmental Report submitted with the November 20, 2015 certificate application. These efforts began during the initial design stages by co-locating approximately 85 percent of the total Project pipeline to follow existing utility easements. Co-location reduces the acreage of forest conversion into other maintained cover types and minimizes impacts to interior forest blocks and habitat fragmentation, protecting habitat for wide-ranging mammals and interior forest breeding birds. Additionally, Tennessee is implementing habitat and rare species surveys for numerous species of plants and animals in areas identified through consultation with federal and state agencies (see Section 3.4 of Resource Report 3), vernal pools, and exemplary natural communities where access is available. Agency consultations, desktop analyses and Project-specific surveys have already contributed towards Project modifications including relocation of two compressor stations, numerous contractor yards, and re-routing of the Project centerline at select locations in order to avoid sensitive wildlife and habitats. Tennessee has also committed to certain timing restrictions recommended by various agencies, such as winter tree clearing in areas identified as summer roosting and maternal colony bat habitats, which will in turn avoid impacts during the breeding period for migratory birds where these habitats overlap, as well as avoidance of spawning periods for coldwater fishery streams that will be crossed by the Project. Impacts to wildlife are also minimized by limiting the construction period at any one particular location to the extent practicable, and by promptly restoring the construction site through procedures outlined in Tennessee's Project-specific Plan and Procedures (included in Volume II, Appendix H of the certificate application) and Project-specific ECPs for each state (included in Volume II, Appendices J, K, L, M, and N of the certificate application). Development of appropriate avoidance, minimization and mitigation measures is dependent upon identification of rare species and/or their habitats through implementation of species-specific field surveys and habitat evaluations, and will be developed on a site-specific basis through consultation with the appropriate agencies. Once surveys are complete Tennessee will work with federal and state agencies to develop additional measures as needed.

Comment ID	Comment	Response
24	Discuss whether Tennessee would conduct 24-hour or nighttime operations using artificial lighting that could cause disturbance to nocturnal wildlife, including bats. Identify mitigation measures to minimize impacts.	Impacts of artificial lighting on wildlife are a relatively new science and poorly understood (The Nature Conservancy ["TNC"] 2015). However, impacts including mating, foraging, sleeping, and migratory behaviors have been demonstrated in the literature for certain species of birds, bats, amphibians and reptiles, and invertebrates (International Dark-sky Association ["IDA"] 2015, TNC 2015). These behaviors are determined by the length of nighttime lighting. For example, birds can become disoriented by artificial light, disrupting migration routes and causing additional energy expenditure by staying near light sources. Tens of thousands of migrating birds die each year in collisions with buildings left illuminated at night (IDA 2015). Crepuscular and nocturnal mammals such as raccoons, bats, deer, coyotes, and mice may lose the nighttime ecosystem they depend on for food and protection against predators, and may interfere with nighttime migration and mating behaviors for breeding amphibians. During construction of the Project, there may be a need to work at night (e.g., to comply with stream crossing windows for coldwater fisheries, hydrostatic testing, HDD crossings of large rivers and highways) and lighting will be required for construction safety. Similarly, Project facilities (i.e., compressor stations and meter stations) will also require nighttime lighting for site safety and security reasons. Although limiting the duration of lighting during construction and operations may not be feasible, some mitigating measures may be implemented in environmentally sensitive areas (e.g., naturally dark areas with relatively low artificial light) to minimize the amount of light escaping outward into the adjacent landscape, also referred to as "light spillage". These may include use of appropriate lamp types (e.g., low-pressure sodium lights), installation of light shields and directing lights downward, or planting of vegetative screens (TNC 2015). Effects of light spillage associated with construction activities requiring 24-hour work windows are temporary and the duration of work at any one particular location will be minimized to the extent practicable. IDA. 2015. [Online WWW]. Available URL: http://darksky.org/. [Accessed December 3, 2015]. TNC. 2015. The Nature Conservancy. Reducing ecological impacts of shale development: recommended practices for the Appalachians. [Online WWW]. Available URL: http://www.nature.org/ourinitiatives/regions/northamerica/areas/centralappalachians/recommended-shale-practices-artificial-lighting.pdf. [Accessed December 3, 2015].
25	Discuss measures that Tennessee would implement to avoid, minimize, or mitigate impacts to eagle nests, should any nests be found during the pre-construction surveys.	Development of appropriate avoidance, minimization and mitigation measures is dependent upon identification of rare species and/or their habitats through implementation of species-specific field surveys and will be developed on a site-specific basis through consultation with the appropriate agencies. Tennessee conducted aerial surveys in 2015 in the vicinity of large waterbodies for eagle nests Project-wide (except for Connecticut; see Section 3.4.2.1.7 of Resource Report 3). Additionally, Tennessee plans to conduct habitat assessment of winter roosting sites and also will conduct additional nest surveys during the spring season immediately prior to construction in all states, as more new nests are likely to be added to the landscape. As of December 2015, three eagle nests have been identified within the Project vicinity; two nests in Massachusetts located approximately 784 feet and another 1.63 miles from the Project construction workspace, and one nest in New York located approximately 1.27 miles from the Project construction workspace. Federal Bald Eagle Management Guidelines (2007) suggest that disturbances should be kept 660 feet away from ragle nests during active season and extremely loud noises such as blasting should be kept 0.5 miles from active nests and roost sites. Once surveys are complete, Tennessee will work with applicable federal and state agencies to develop additional measures as needed.
26	Identify measures that would be taken to minimize or avoid impacts on the three Massachusetts state-listed plants identified by the Natural Heritage and Endangered Species Program ("NHESP") as Species A, B, and C due to their sensitivity to collection.	Development of appropriate avoidance, minimization, and mitigation measures is dependent upon identification of rare species and/or their habitats through implementation of species-specific field surveys and habitat evaluations. Impact avoidance and minimization measures will be developed through consultation with the NHESP following completion of surveys, documentation of species presence, and an assessment of the local population's spatial extent and density. Plant surveys conducted in 2015 have identified one of the state-listed plant species within the Project construction workspace. Surveys will continue during 2016 on parcels where access has been obtained.

Comment ID	Comment	Response
27	Discuss and provide citations from recent literature on the effects electroshocking on fish may have if used as a method for relocation as suggested by the NHESP (e.g., stress response to electroshocking, effects on survival and fitness). Discuss feasible and/or preferable alternative methods of relocation.	Electrofishing is a widely used method for collecting and sampling fish in shallow freshwater environments. It is recognized as being the most comprehensive fish collection method in stream environments; however, it does have a small risk of stress and mortality. When direct current ("DC") electricity is introduced within the effective range of a subject fish, the fish responds by swimming towards the anode in a process known as electrotaxis (also galvanotaxis). When the fish swim into a location with sufficient strength within the electric field, they become stunned in a motionless state. Stunned fish typically roll over and show their lighter colored and more noticeable ventral side. They can then be captured easily by a net and placed into a holding container with water. This response allows the efficient capture of many fish that may be hiding under cover such as logs and boulders. The fish typically recover within moments of being removed from the electric current and are placed into a holding tank (Reynolds and Kolz 2012). Cortisol levels of fish are known to rise in response to DC pulses of electricity (Barton and Dwyer 1997, Bouck and Ball 1966). Risk of mortality and stress is significantly reduced when the settings (amps, volts, and pulse shape) is optimized for the conductivity, depth, and temperature of the sampled water. An experienced electrofishing crew that can respond to conditions as they are presented is recommended to reduce potential harm and mortality risk (Reynolds and Kolz 2012, Burkhardt and Gutreuter 1995). When settings are optimized, electrofishing is the generally accepted method to remove fish from an area. Other potential methods are netting, dewatering, and gill-netting. All of these alternatives involve contact with nets as the fish are able to move and are active in their innate attempt to avoid the net or return to the water. This adds a greater risk of abrasion and skin damage from the net (Chopin and Arimoto 1995). Seine and dip nets can be used in combination to remove fish by corralling with a large net panel that covers the cross-sectional area of the area of interest This technique only works in small areas where fish do not have hiding places with visibility throughout the area. This method is difficult because of the fishes evasive instincts and tendency to hide along features on bottom habitat that cannot be covered by a net. Visibility is often compromised because of depth and/or turbidity from disturbed substrates that occur in the area. Fish are often left behind with this method, even after multiple attempts. Dewatering is the removal of water from an area in order to shrink the watered area and allow fish to be captured more easily. This method works in smooth bottom habitats without places for fish to hide. However, there can be more stress induced due to the potential increased time out of water and injury related to contact with surfaces out of water. There is also the potential that hiding fish will not be found with this method and will die in their hiding place as the water is removed around them. Gill-nets can be an effective way to remove fish from larger areas as they are caught in the monofilament nylon meshes of vertically set nets when they try to swim through the net. Gill-nets for this purpose are made with various mesh sizes to accommodate multiple fish sizes. Fish are removed from the net by untangling them from the nylon meshes. This can be an effective method but it adds additional handling and stress to the fish as they are exposed to the net for a longer period of time and have been shown to cause permanent damage from net abrasion (Chopin and Arimoto 1995, Haux et al 1985). Fish also must be moving through the net in order to be captured, so sedentary or hiding fish would not be captured. This method also requires multiple efforts over a relatively longer period of time.

Comment ID	Comment	Response
		Barton, B. A., and W. P. Dwyer. "Physiological stress effects of continuous-and pulsed-DC electroshock on juvenile bull trout." Journal of Fish Biology 51.5 (1997): 998-1008. Chopin, Francois S., and T. Arimoto. "The condition of fish escaping from fishing gears—a review." Fisheries research 21.3 (1995): 315-327. Bouck, Gerald R., and Robert C. Ball. "Influence of capture methods on blood characteristics and mortality in the rainbow trout (Salmo gairdneri)."Transactions of the American Fisheries Society 95.2 (1966): 170-176. Burkhardt, Randy W., and Steve Gutreuter. "Improving electrofishing catch consistency by standardizing power." North American Journal of Fisheries Management 15.2 (1995): 375-381. Haux, Carl, Maj-Lis Sjöbeck, and Åke Larsson. "Physiological stress responses in a wild fish population of perch (Perca fluviatilis) after capture and during subsequent recovery." Marine Environmental Research 15.2 (1985): 77-95. Reynolds, James B. and A. Lawrence Kolz "Electrofishing." Fisheries techniques, 3rd edition. American Fisheries Society, Bethesda, Maryland (2012): 221-253.
28	Clarify whether or not Tennessee would attempt to retain large-diameter coniferous and deciduous trees to minimize long-term impacts on the hoary and silver haired bats, as recommended by the Connecticut Natural Diversity Data Base ("CTNDDB"). If this measure would be implemented, discuss the process by which Tennessee would determine whether to retain or remove such trees.	All trees within the permanent easement will be removed to maintain safe operation of the pipeline facilities. As described in Section 3.4.2.2.5 of Resource Report 3, included with the Environmental Report submitted with the November 20, 2015 certificate application, although the CTNDDB did not request surveys for these two species (i.e., hoary and silver-haired bats), Tennessee is performing Phase 2 acoustic surveys in areas identified as potential habitat for northern long-eared bats, which have some degree of spatial overlap with the hoary and silver-haired bats and would likely be identified through the acoustic surveys if present. If these species are detected in a particular area, there may be an opportunity to preserve trees that are large diameter or contain cavities suitable for summer roosting sites that are located within the temporary workspace ("TWS") or additional temporary workspace ("ATWS"). This may include trees that are on the edge of the TWS and their preservation will not interfere with construction operations or safety, or in situations where a minor field adjustment to the location of an ATWS can avoid a particular tree. Avoidance and minimization methods will be fully developed through consultation with CTNDDB once the acoustic surveys are completed and critical habitats are identified.
29	Clarify whether or not Tennessee would adhere to the Connecticut Department of Energy and Environmental Protection recommendations listed in section 3.4.2.2.5 to avoid/minimize potential impacts on the eastern ribbon snake, state-listed plants, threatened and endangered mussels, the blue-spotted and Jefferson salamanders, grassland bird species, and the pine barren tiger beetle.	Development of appropriate avoidance, minimization and mitigation measures is dependent upon identification of rare species and/or their habitats through implementation of species-specific field surveys and habitat evaluations, and must be developed on a site-specific basis through consultation with the CTNDDB. Tennessee has developed protocols and commenced surveys for eastern ribbon and hognose snakes, eastern box turtles and state-listed plants, and conducted habitat suitability surveys for grassland birds, American kestrels and pine barren tiger beetle on parcels where access was available in 2015. These surveys, along with those for blue-spotted and Jefferson salamanders, will continue throughout 2016. Tennessee has completed surveys for mussels in Connecticut, and will work with the CTNDDB to develop additional conservation measures as needed.

Comment ID	Comment	Response
30	For the portion of the Fitchburg Lateral between MPs 5.0 and 14.0, explain the feasibility of avoiding BioMap2-mapped sensitive resources by adjusting the route to cross nearby areas with few to no mapped resources.	As currently proposed, the centerline of the Fitchburg Lateral coincides with the mapped edges of BioMap2 Core Habitats and is co-located with an existing utility easement through this area. This approach minimizes impacts directly to Core Habitats, with approximately 12% of the lateral's centerline in Massachusetts (approximately 1.1 miles) intersecting with the mapped edges of BioMap2 Core Habitats. Co-location with the existing utility easement also minimizes the effects of habitat fragmentation within BioMap2 Core Habitats and adjacent Critical Natural Landscapes. Relocation to the east is constrained by extensive areas of protected lands (Townsend State Forest), NHESP Priority Habitats, designated coldwater fisheries streams, and additional BioMap2 Core habitats and Critical Natural Landscapes. Shifting to the west would bring the line through downtown Ashby, Ashby and Fitchburg Reservoirs, Fitchburg State forest and city of Fitchburg's Water Department lands, and would cross additional NHESP Priority Habitats and designated coldwater fisheries. Therefore, relocation of the line will only result in impacts to different (yet also important) habitats and natural resources, and possibly greater impacts depending on what is available for existing utilities to co-locate with.
Resource Report 5		
31	Develop a traffic and transportation plan that provides an estimate of the anticipated number of vehicles, trips, travel routes, and timeframes for construction. Break the construction estimate down by activity (e.g., stringing, water hauling). Describe in detail the pipeline construction vehicle traffic and potential impacts, especially when road closures would be required and an explanation of why a reasonable detour could not be used. Include a section addressing safety and how access would be provided to residences, businesses, and schools during detours and road closures.	Through continued communications with landowners and other appropriate stakeholders during the certificate process, Tennessee will be developing a detailed traffic and transportation plan. Specific traffic and transportation plans may be developed as appropriate for specific portions of the Project as a result of these stakeholder communications. Information on traffic and transportation plans will be provided as developed in supplemental filings during the certificate process.
32	Provide documentation of consultation with the various affected agencies and commercial businesses within each county impacted by construction. Describe any recommendations by the various agencies and landowners in how to alert the public of construction and any requirements regarding minimizing impacts related to construction.	Tennessee has implemented a robust public outreach effort for the Project, which is detailed in the Public Participation Plan (included in Volume II, Appendix D of the November 20, 2015 certificate application) and summarized in Section 1.8 of Resource Report 1. The Commission has also conducted scoping meetings to gather public comments, and has solicited public comments throughout the pre-filing process for the Project in Docket No. PF14-22-000 and now in the certificate process for the Project. Discussions will continue with federal and state legislators, county and municipal government officials, landowners, and other interested stakeholders through the certificate application review, construction, and restoration processes.

Comment ID	Comment	Response
Resource Report 6		
33	Include a geotechnical review of the high-resolution aerial photographs along the Project that are known or may contain hazards resulting from steep slopes, potential landslides, and potential karst topography. The review should be conducted by a geotechnical engineer or certified geologist to provide the extent of the areas where hazards exist (or may exist) to Project construction and operation by MP. Identify mitigation measures to avoid and minimize potential impacts of the Project on these conditions as well as avoiding and minimizing the impacts of these conditions on Project construction and operation.	A geotechnical review of the high-resolution aerial photographs along the Project is currently underway. Additional geotechnical information was provided in Resource Report 6 of the Environmental Report, submitted with the November 20, 2015 certificate application. Resource Report 6 will be supplemented by the findings of the detailed review and provided to the Commission in a supplemental filing anticipated to be submitted by the end of April 2016.
34	Include the following information with regards to seismic risk: a table of past seismic events with a magnitude of 3.0 or greater that have occurred within 100 miles of the Project, including their magnitude, date, and distance from the proposed Project by state.	A table of past seismic events has been included as Attachment 2 to this response matrix.
35	Include the following information with regards to karst terrain: a discussion of the affects blasting may have on deeply fractured granite aquifers, such as those located near Merrimack and Hall, New Hampshire. Include a discussion of potential contamination of fractured granite bedrock aquifers; a discussion of groundwater contamination due to blasting and the compounds used in blasting. Include a discussion of mitigation measures that would be used.	Geologic conditions are variable and site-specific information and data collected in the field is needed to assess potential impacts that blasting may have on aquifers. Geological conditions and the nature of bedrock types will be determined during boring surveys prior to construction and will determine blasting requirements. Blasting material, explosives, and procedures to mitigate impacts to groundwater will be determined by the blasting contractor. As an example, methods that include explosives encased in protective sheathing typically will not expose groundwater to explosive materials. Tennessee is working with the State of New Hampshire to negotiate blasting protocols that will minimize impacts to aquifers. The results of those consultations will be provided in a supplemental filing as developed.
Resource Report 8		
36	Update contractor yard information once landowner permissions are obtained.	Contractor yard information will be updated in a subsequent filing anticipated to be submitted by the end of April 2016. Discussions with landowners to obtain permissions are ongoing.
37	Include additional methods that would be used to avoid or minimize impacts on the Viaduct Valley Way based on consultation with the Pennsylvania Department of Transportation.	Tennessee is in the process of coordinating and establishing a meeting with the railroad company and the Pennsylvania Department of Transportation to discuss safe crossing methods of Viaduct Valley Way and the adjacent railroad.
38	Include results of consultation with the New York State Department of Transportation and assess impacts as appropriate.	An information request letter has been submitted to the New York State Department of Transportation to identify any state or federal scenic byways. Results of the consultation will be provided upon receipt of a response.

Comment ID	Comment	Response
39	Document whether the Project would affect the West Street Cemetery in Plainfield and identify mitigation if applicable.	Survey access in Plainfield is prohibited at this time. Based on aerial images, the West Street Cemetery is over 500 feet from the proposed centerline of the pipeline and is separated from the Project ROW by dense forest. Therefore, no impacts to the West Street Cemetery are anticipated. A site survey will be conducted when access to Plainfield is granted. If it is determined that there will be impacts to the West Street Cemetery, then mitigation measures will be developed.
40	Update discussion with the results of surveys, correspondence, and discussions with state agencies and landowners related to specialty crop, organic, and tree farms. Complete table 8.3-7. Specify how Tennessee would avoid or minimize impacts.	Tennessee in unable to determine the specific locations or options to avoid/minimize impacts until Tennessee begins ROW negotiations with each directly affected landowner, which negotiations are anticipated to begin during the first quarter of 2016.
41	Include a site-specific analysis of impacts from construction and operation of the meter stations, including the dimensions of new meter stations and their sites.	A visual analysis has been conducted for the meter station sites and is included in Attachment 3 to this response matrix. In addition, impacts from construction and operation are discussed in Resource Report 8, included with the Environmental Report submitted with the November 20, 2015 certificate application.
42	Table 8.3-8 – Provide conclusions for those sites still under evaluation. For those sites where impacts are proposed to be unlikely, explain why they are unlikely and what measures would be implemented should impacts occur.	Updated tables are included in Attachment 4 to this response matrix. Certain of the sites have been reviewed. The status of some sites has been re-categorized. Where the status has been re-categorized, a rationale for the revised status has been provided in the last column of the tables. A few sites are still under evaluation; evaluations are planned to be completed in early 2016. Sites where impacts are proposed to be unlikely have been categorized as such for one or more of the following reasons: • An Activity/Use Limitation has been filed on the property, which specifies the allowable and prohibited use of the property. • The location is close to work areas and, although the release is either small or has been addressed, there is no information indicating that contamination has been reduced to background. • The site is not closed and/or is still undergoing monitoring. Should any hazardous materials be encountered during pipeline construction, Tennessee will dispose of and/or mitigate for any hazardous materials uncovered in accordance with applicable federal and state regulations. Additionally, Tennessee will implement its Project-specific Plan and Procedures and the Project-specific ECP for each state, during construction of the Project facilities to minimize potential disturbance of contaminated media. Should surface or subsurface contamination be encountered during construction, it will be addressed and handled in accordance with the Project-specific Unanticipated Discovery of Contamination Plan for each state and federal, state, and local requirements.
43	Identify any Land and Water Conservation Fund properties that would be crossed by the pipeline and describe the impacts and appropriate mitigation based on consultation with the appropriate agencies.	Tennessee's property title work and file research for each such property has been completed, but consultations with applicable federal and state agencies has not yet occurred. Consultations will be initiated at the time Tennessee begins ROW negotiations and submits applications for crossing any properties with conservation easements, including properties acquired with Land and Water Conservation Fund (LWCF) grants.
44	In addition to the lands enrolled in Federal and State conservation land programs, specify the locations and acreages of all deeded conservation easements that would be crossed by the Project, and describe restrictions in the easements and whether or not the Project will comply with the easements. Discuss how effects would be mitigated if conditions in the easements cannot be met.	Tennessee property title work and file research for each such property has been completed, but Tennessee will be unable to address impacts or crossing requirements until Tennessee begins right-of-way negotiations with each directly affected landowner and with the holder of the conservation easement. Right of Way negotiations are anticipated to begin during the first quarter of 2016.
45	Provide the length of the pipeline route through each of the visually sensitive areas listed in section 8.4.1.1 through 8.4.1.16 and list the acreages affected by duration (e.g., temporary, long term, permanent).	A table providing the length of crossings through visually sensitive areas and the associated acreages of impact during construction and operation is included as Attachment 5 to this response matrix.

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46	Provide a list of the "other shippers" mentioned in Section 10.1.	As noted in the certificate application filed on November 20, 2015, the Project Shippers on the Supply Path Component and Market Path Component are identified in Exhibit I to the certificate application.
47	As requested in our February 27, 2015 EIR, evaluate the constructability of the proposed NED route where it would be co-located with existing pipelines in steep terrain and where the most suitable location for construction may already be encumbered, thereby potentially precluding co-location. Identify any such specific areas where co-location would not be possible. Further, identify and describe any other potential constraints associated with co-location with other pipelines or electrical transmission lines including side slopes, urbanized areas, or other factors. Where the Project would be co-located, overlapping, and/or abutting with existing rights-of-way, indicate where (and for what distance) deviations away from the individual existing rights-of-way would be required due to the avoidance of constraints. As applicable, discuss how the avoidance of constraints could affect the reported co-location data.	Identification of the areas where the Project deviates from other utility corridors and a brief explanation of the reasons for these deviations are set forth below: 1. Segment C, MP 15.5-16.2 - The crossing of Viaduct Valley Way railroad and Highway 11 is congested with other existing and proposed pipelines. It is further complicated by wetland and extremely steep terrain. 2. Segment C, MP 21.7-21.9 - The Project route is designed to avoid wetlands as much as possible as it approaches the proposed Supply Head Station. 3. Segment C, MP 23.6-24.1 - The Project route is designed to avoid wetlands as much as possible. 4. Segment C, MP 33.8-35.3 - The Project route is designed to avoid a known landslide area. 5. Segment D, MP 1.2-1.9 - The Project route is designed to avoid a side slope in an area adjacent to the Constitution Pipeline route . 6. Segment D, MP 3.3-3.9 - There is insufficient space to co-locate with the Constitution Pipeline route for the crossing of Highway 17 and Fly Creek. The crossing of Highway 17, in conjunction with the crossing of Fly Creek, requires additional workspace to allow for a successful crossing due to the complexities of low level wet areas and a major thoroughfare. There would not be sufficient construction workspace if the Project was co-located with the Constitution Pipeline in this area. 7. Segment D, MP 5.1-5.2 - In this location with steep terrain, the Constitution Pipeline has occupied the areas that are conducive for safe pipeline construction. Co-locating with the Constitution Pipeline through this area would force the Project to be placed on a side slope, which is not conducive for safe pipeline construction. 8. Segment D, MP 6.1-6.4 - In this location of steep terrain, similar to the areas of MP 5.1-5.2 , the Constitution Pipeline has occupied the areas that are conducive for safe pipeline construction. Co-locating with the Constitution Pipeline through this area would force the Project to be placed on a side slope, which is not conducive for safe pipeline construction.
		9. Segment D, MP 6.9-7.3 - In this location of steep terrain, the Constitution Pipeline has occupied the areas that are conducive for safe pipeline construction. Co-locating with the Constitution Pipeline through this area would force the Project to be placed on a side slop, which is not conducive for safe pipeline construction. 10. Segment D, MP 7.9-8.7 - If the Project would be co-located on the west side of the Constitution Pipeline in this area, there would be insufficient construction space between the Constitution Pipeline and the existing road. The east side of the Constitution Pipeline is located in an extremely wet area. The proposed route minimized impact on the wetlands and places the route in an area more favorable and safe for pipeline construction. 11. Segment D, MP 10.3-23.9 - The proposed route will avoid steep terrain along a powerline route and a difficult crossing of Bennettesville Creek. The Project route is approximately four miles shorter than the Constitution Pipeline route in this area. 12. Segment D, MP 31.5-32.1 - The proposed Project route is required to accommodate the proposed HDD crossing of Ouleout Creek. 13. Segment E, MP 21.9-22.1 - The proposed route accommodates the crossing of a wetland and slopes on both sides of the wetland. Co-locating with the Constitution Pipeline in this area would force Tennessee to construct on the slopes adjacent to the wetland. Deviating away from the Constitution Pipeline route allows for the placement of pipeline on more flat terrain through the wetland. 14. Segment E, MP 46-47.2 - The proposed route is designed to accommodate the proposed HDD of Schoharie Creek. Sufficient space from the Constitution Pipeline route is required for safety and constructability reasons.

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48	As requested in our February 27, 2015 EIR, update RR 10 to include at least one alternative for each segment of the proposed Project, such as the Peabody Lateral as well as the Concord Delivery Line and Maritimes De livery Line (outside of alternatives presented within and as part of the Wheeler Road alternatives as appropriate).	As provided in the Responses to Comments on Draft Resource Reports, submitted with the November 20, 2015 certificate application, the Concord Delivery Line is no longer part of the Project. Additional language about the Peabody Lateral and Maritimes Delivery Line was included in Resource Report 10. An alternative for the Peabody Lateral is currently being evaluated and will be provided in a supplemental filing. Tennessee did not design and analyze an alternative route for the proposed Maritimes Delivery Line due to the short length and its co-location with the Wright to Dracut Pipeline Segment.
49	Provide a detailed description, mapping, and comparative tabular analysis of at least one fully viable alternative for each compressor station site. Viability status would include at a minimum a potentially willing seller, the fulfillment of basic site requirements such as size, shape, topography, and existing use, road/utility access, and a minimal distance to the proposed route. Potential alternative sites summarily dismissed due to a lack of survey permission, inadequate size, and the lack of an existing agreement between the landowner and Tennessee regarding the proposed site, for example, are not sufficient avoid a robust alternatives analysis. Provide an alternatives environmental data comparison table for each viable potential site that includes at a minimum: parcel size, areal extent of construction, aerial extent of operation, land use setting, zoning, prime farmland, protected species, cultural resources, wetlands, waterbodies, floodplains, noise sensitive areas (number, distance, and location/orientation), visibility , and any local air quality concerns.	Tennessee will provide a thorough alternatives analysis for compressor station sites in its response to the Commission's December 8, 2015 data request.