

Dominion Energy
Diadromous Fish Restoration Technical Advisory Committee
5 December 2022
FINAL MEETING MINUTES

In Person Attendees:

Dominion Energy – Pete Sturke, Corey Chamberlain, Ben Eberline, Paul Vidonic, Taylor Allen, Tom Effinger, Chris Nunn, Chris Cudd, Ben Rice
NMFS – Fritz Rohde, Twyla Cheatwood
NCWRC – Jeremy McCargo, David Belkoski, Kirk Rundle
NCSU – Wilson Laney
AKRF – Justin Krebs, Chris Manhard

Virtual Attendees:

Dominion Energy – Susan Gonzales, John Swenarton, Caleb Gaston
NMFS – Kevin Mack, Bjorn Lake
USFWS – John Ellis, Jesus Morales
VDWR – Dan Michaelson, Scott Smith
NCDMF – Todd Mathes, Holly White
Alumni – Bob Graham

Safety Moment – Peter gave the briefing and covered safety issues, particularly trip hazards, and active construction ongoing for station tour later.

Peter noted he is moving to Offshore Wind department within Dominion Energy, and Ben Eberline will be taking over for him. Ben Eberline introduced himself with a little about his background. Fish passage and eels will be new territory for him. All attendees then went through introductions for Ben's benefit.

Peter noted those attending online could use the 'raise hand' function to contribute.

Wilson volunteered to take notes by hand.

9:37 AM

Peter reviewed the agenda, noting bold items to be points of decision/discussion, and highlighted we would discuss the Fish Friendly Turbine project early, the Operations and Maintenance Manual later, and if time allowed, we could cover "bonus info" like Roanoke River sturgeon. Peter asked for questions, and there were none.

First bypass flows and freshet schedule for 2023 was discussed. Corey noted this is the same basic schedule used since 2015, moving some of freshet flows to April. This will be the third year of 1000 cfs flows as part of a five-year study. Three years should be sufficient to detect a fish response. Scott Smith talked about a habitat study in the bypass. If no decision is made by 2025 about bypass flows, the 1000 cfs flows will continue. Jeremy favored a third year of 1000 cfs. NCWRC will not stock American Shad again in 2023. There should be year classes from wild fish showing up thereafter, and we can have further discussion later about stocking. Corey will send bypass flows and freshet schedule to FERC. There were no questions from anyone attending virtually regarding the freshet flows.

Wilson asked Peter to send out all of the slides from the presentation.

Justin Krebs gave an American Eel downstream passage presentation, a study started in 2019. He reported on 2022 results. The study includes eel pots from May to October, and that will continue in 2023. They are doing a habitat association study using stratified random sampling. This year they removed receivers from Johnson Pond, Deep Creek, and Roanoke Rapids Lake West. 25 acoustic tagged eels at large. Outmigration model to be updated in Spring 2023. Rest of eels have either left already or batteries in tags have died. They will look at environmental factors triggering outmigration. Eel captures show cyclical pattern, with most occurring above 15°C. June catches in 2022 were unusually low but need to explore why. In the stratified random sampling, multiple sites were sampled more than once. There were 267 pots in 2022 (1,499 total to date – 94 in 2020, 131 in 2021). Justin reviewed in detail the zones in which most eels were captured. Most eels were caught in Lake Central. There were some seasonal catches in the SAV zone.

Chris Manhard then summarized the eel population estimates. Estimate was initially 2,817 (CI 1,950-5,068). One assumption is population is closed, which we know is violated, but only one outmigration season is included. Bob Graham noted these are eels >300mm TL. New estimates for two years are 3,645 (CI 2,168-11,418). Wilson asked if they are planning to look at numbers passed, apply mortality, and see if their estimates appear reasonable. Peter noted they do get eels around 300mm TL moving to Gaston. Justin noted they didn't get the first recapture until they had tagged 115 eels. They have enough eels tagged now that they are consistently seeing more recaptures. They will continue sampling in 2023, and Peter noted that monitoring will continue until all eel tags die. They will do predictive modeling of eel outmigration. There are several manuscripts in progress. Fritz asked about outmigration timing. Justin noted most have been October – December. One early eel left in August and one left shortly after being tagged. Corey asked about any correlation with water clarity. Justin and Wilson noted perception is eels are mostly olfactory predators and less so visual. There were no questions from those attending virtually.

10:13 AM

Peter began the Fish Friendly Turbine discussion by reviewing the project timeline. RFP went out late November. Dominion is in the bid cycle and bids close February 13, 2023. DFRTAC should get materials for review in February 2023. Chris Cudd noted this is "Mark 1," and has never been built before, so there are lots of questions from Dominion. He expects a lot of back and forth on the bids, so the dates will likely slip. Bids went to four vendors. Dominion is most concerned about survivability rate. A 99% survivability rate is likely not achievable, and Dominion wants to be environmentally responsible, but has an obligation to be responsible to their customer. Two major criteria specified to bidders were 85% eel survival or better and cost. Tom Effinger noted this is an exciting project, and requires looking at safety, affordability, etc. Approach must be common sense. Dominion has worked with EPRI and others to arrive here. Wilson confirmed no one has ever done this before. Chris noted that the selected vendor will have to do both desktop and scale model testing. Justin clarified all this happens after a vendor is selected. Dominion wants an opinion from DFRTAC based on models without the cost. Their Capital Review Committee (CRC) will review. DFRTAC model review will be part of that having taken place previously. It is a large investment. After contract placement, it would probably be a year. Justin asked what the DFRTAC would review. Chris said they would share their modeling data with DFRTAC. Dominion is using Stantec for their engineering reviews. Wilson clarified that there will be initial modeling reviewed by the DFRTAC provided by all the bidders, then the winning bid will do more modeling and physical model test. Ben noted that 85% survival is desirable but is the minimum and bidder models could show higher. Also, Turbine 1 runs most of the time. Kevin Mack asked if 85% number was told to vendors. Dominion confirmed vendors were given that target as a minimum. Kevin thought a higher number may be achievable. However, the group questioned what data would exist to

support a higher number. Corey clarified the vendors think they can go higher than 85%, possible 90%. The vendor responses will show us how they believe they can achieve higher than 85% survival. Dominion stressed survivability and cost will be balanced. Jeremy asked if cost of operations (economic analysis) would be considered. Chris confirmed it would and said there was a license issue if their energy output changes more than 2%. Corey explained how loss of efficiency may not be as significant as other factors. Bob Graham asked what level of vetting there would be for models used to evaluate survival. Peter explained in the absence of actual eels through turbines, vendors will use the Franke blade strike equation. Ben noted they want to be sure they have an “apples to apples” comparison between bidders. Bob noted he had heard something about a proprietary model. Peter acknowledged, noting discussions with Bjorn and Jesus, and that they wanted to make sure the comparisons were valid. Jesus noted he was ok with what he had heard thus far. There are some model limitations. Peter noted they want to make sure that some good data will come out of this. Dominion noted all parties need to handle this information carefully, mentioning NDAs. Bjorn suggested an alternative using Critical Energy Infrastructure Information (CEII) designation. DFRTAC reviewers could receive bids and models under such an agreement. FFT model testing would occur in 2024, then procurement and final FFT installment in 2025-2027.

10:47 AM

Peter asked for any other questions. Fritz noted 2027 is five years away, so we wouldn't know what the eels are doing during that interval. Justin asked about continuing eel trapping and tracking. Fritz noted that would be desirable. Ben asked if continuing what Dominion is doing now would be sufficient. Fritz wasn't sure. Ben asked about the winning bidders doing some work. Peter noted if tagging and monitoring was continued it could be reduced. Fritz noted there was 100% survival during the shutdown period. Peter noted there are some tags still pinging in the bypass reach, so there was likely some mortality. There was further discussion of the desirable nature for further monitoring. Fritz noted Pace had asked him where 80% total Roanoke Rapids Power Station survival came from. Peter referenced the 11/30 Dominion email and citations to the literature. Ben Rice noted Unit 1 runs the most but operating schedule can change, especially depending now upon solar generation. Fritz asked about nighttime operations. Corey said maybe 15% goes down the spillway. If flows are greater than 500 cfs, then license required stepdowns come into play. Justin noted you cannot just turn it off, then back on. Jeremy asked if minimum flows go through Unit 1. Ben Rice noted Unit 1 is also closest to the safe passage provided by the skimmer gate or bypass. Peter noted units 2-4 usually operate less during eel outmigration. Corey noted if they increase flow through the turbines, they would have to reapply for their 401. Ben Rice noted that requests for acoustic tags usually are approved, and that there would be utility to further studies either through continued acoustic tagging or balloon studies. Wilson noted that more is better from a science perspective, so he would support continued monitoring for the next six years including turbine mortality studies after installation either with surrogate or live eels. Wilson also expressed appreciation for Dominion's engagement in this cutting-edge work. Dominion asked who on DFRTAC has the ultimate call on concurrence with 85% and 80% survivability goals moving forward. Fritz noted the two federal agencies (NMFS and USFWS) were the ones who filed the fishway prescription. *During review of the meeting minutes, Bob Graham noted that although both agencies have prescriptive authority, only NMFS filed a prescription.* Twyla noted we ultimately don't know what the population need is, especially considering Gaston. She suggested we may need to consider this. Ben Rice asked if we see the population on the river increase, does that equate to success? Twyla noted “foreseeable” is not a date (referencing 11/30 Dominion email: “Therefore, Dominion Energy recommends that the FFT project should be selected as the preferred alternative to focus investigation and resources for the foreseeable future or until deemed necessary to revisit by the DFRTAC and Dominion Energy”), and she

noted the agencies may need to set a date. Fritz asked how many years after installation Dominion would look at survival. Kirk suggested three years. Peter noted they can put 2027 in as the date for now. Ben Rice noted he has always assumed that this project would not be a “one and done” and that it would be a continuing effort. Twyla noted there is a second project as well (referencing Gaston). Wilson noted to Ben’s point about river population increases, that we can’t really connect the outmigrating adult eels to the number of elvers incoming and that eels are very complex. Peter noted eel recruitment variability.

Todd Mathes then summarized the current ongoing stock assessment. The Atlantic States Marine Fisheries Commission - American Eel Technical Committee is recommending that the coastwide catch cap be further reduced from 900,000 lbs to around 200-300,000 lbs. Todd noted this further increases the importance of the work Dominion is doing. Corey asked if the 900,000 lbs cap is being met. Todd said there has only been less than that in recent years, but that is only U.S. landings. Peter thanked Todd for the update on the ASMFC assessment. Todd noted Dominion had provided their data to ASMFC. The American Eel Stock Assessment Survey did not use the data because of concern on the early years of elver data. Todd noted there is only one remaining silver eel fishery on east coast in Delaware.

Dominion re-centered the conversation on the Fish Friendly Turbine project, with Chris Nunn specifically asking why this project should be done, why it is important, in order to pass that message to their customers. Wilson suggested that the DFRTAC could help to put something together to help in answering that question. Jesus noted that eels serve as a mussel host as well, and mussels help to clean water, maintaining water quality – suggesting this as a very clear and simple impact to share with customers. Wilson noted that the Roanoke is a very large watershed, so in that respect it is more critical to overall American Eel health.

Wilson asked about future replacement of other turbines, to which Dominion replied it was possible but depends on a lot of factors. Wilson noted that the agencies, principally ASMFC, also have a responsibility to try to determine how many silver eels are needed to ensure enough SSB to sustain the American Eel population. Peter talked about making sure survival estimates were done correctly the first time. Ben noted they will have data and a tuned model.

Twyla returned to the 11/30 Dominion email requesting concurrence. She asked about putting in some timelines. Corey and Ben Rice noted the next relicensing will be 2040, but FERC would begin that process 5 years before. Peter pulled up Article 401 timelines. Peter noted this is something we could discuss in the future, noting discussions about Gaston as well. Corey suggested they could do studies at Gaston as well. Peter noted doing a study at Gaston would be a larger undertaking, considering the size of Lake Gaston. Justin asked about a population estimate for eels in Gaston, to which the group noted that Dominion has put all the eels into Lake Gaston with a few exceptions. Group also explained the alternate fish passage route into Kerr Reservoir. This route into Kerr, if present, would have a low likelihood of passing eels.

Twyla and Fritz agreed to meet with Pace and provide a response by December 15, 2022.

12:03 PM Lunch

12:38 PM Reconvene – several Dominion staff departed

Peter requested comments on Article 401 draft revision, version 4. First, on American Shad language. NMFS was okay with some reframing of the language. Peter said he would send it out again so members would not have to search for it. Justin asked what was needed for the June 2023 submittal to FERC for the downstream passage modeling. Peter said a high-level summary should be sufficient and Corey agreed.

Taylor then briefed on the Eelway O&M Manual. Wilson noted “diadromous” definition needed to be fixed. Wilson also asked about any need to address ice issues. The group decided any icing probability would be very low. Bob Graham commented during all his years there he had never seen any icing. Taylor made last call for comments, as Dominion would like to submit by December 15, 2022. Fritz asked for a reminder email.

Wilson briefed the group on the Roanoke River Sustainable Rivers Program CASC Proposal, USGS materials from a recent meeting, and Kerr Dam eel passage. The group decided a future conversation on Kerr would be useful. Fritz didn’t necessarily agree it would be productive.

Peter reviewed the eel passage numbers for RRPS, looking at patterns several ways with the group. Kevin Mack briefed the group on the paper he and Twyla have prepared for publication regarding eel passage at several east coast dams. They plan to prepare a separate paper on the Roanoke specifically. Wilson asked about any size differences in eels as you move north up the Atlantic coast. Kevin said they only looked at passage numbers. Bjorn said that a lot depends on the distance the dam is from the mouth of the watershed as well as other factors. Kevin showed the group the graphs for environmental parameters (daily flow, water temperature, lunar illumination, day of year, year). The data were combined for the four projects they investigated. He asked the group to read the paper.

Peter then reviewed the Gaston Eelways numbers, which increased in 2021 and again in 2022. He showed multiple graphs for discussion. Length-frequency data shows wider range of eels at Gaston. The group discussed water snake predation and possible exclusion methods. However, any exclusion would exclude larger eels as well.

Taylor reported on the Gaston Distribution study. Dominion has recaptured some coded wire tagged eels. So far, the study is showing the eels are distributing upstream. Dominion is also receiving some reports of eels being caught by anglers in Lake Gaston.

Peter transitioned to the eel release location for eels being moved into Lake Gaston for 2023, which was a decision point for the group. Currently, Dominion releases half the eels at Deep Creek location and half the eels straight into the reservoir at a public boat ramp (5th street). Bob noted the Deep Creek releases did not pay off very well in terms of obtaining recaptures. Wilson noted he could not think of any good reason to continue splitting the releases. Dan noted predation could be an issue if releases were all at a single location. The group discussed the merits of various release points. Bob noted various predator concerns, but there is no real data collected. Bob suggested one of the communities may have a community boat ramp where the eels could be released. Jeremy said Dominion could list all potential release points to satisfy their NC state stocking permit. Justin noted a potential release point on the other side of the reservoir, but the group decided that would require too much driving to use. Dominion expressed abandoning Deep Creek would be better for safety reasons. **Peter asked for concurrence to abandon any releases in Deep Creek, the DFRAC agreed.** Dominion will ask their contractor to be on the lookout for any predator congregations. The group discussed the need to release them in good water quality conditions.

Jeremy gave a brief report on Matt Balazik's Atlantic Sturgeon research on the Roanoke River.

Wilson, Twyla, and Fritz briefed the group on ASMFC Fish Habitats of Concern (FHOC) designations which are in progress. Wilson hopes the ISFMP Policy Board will approve the language in February. Final report should be out in the Spring 2023.

Taylor addressed the proposed new signage on American Eels is in progress.

The group discussed the Southern Division AFS meeting to be held in Norfolk, VA on February 1-5, 2023. Bob Graham noted the VA Chapter is trying to tape presentations. Peter noted there will be a lot of eel presentations, and 144 total talks as well as poster sessions.

Peter reviewed Dominion's planned filings to FERC in June 2023.

Wilson returned to the 11/30 Dominion email and asked for a definition of an "operational risk." Corey explained some examples like Hydrilla fouling.

1:53 PM

Taylor showed the group the information planned for the eel signs at access ramps at Roanoke Rapids Lake and Lake Gaston and asked for help. Jeremy indicated he could ask their graphic design staff for help. Taylor expressed appreciation. Twyla asked where they plan to place them. Taylor answered for now it is TBD, but probably where people would be most likely to see them. Dominion would also like to put agency logos on the signs, the agencies in the DFRTAC agreed.

1:58 PM Completed Agenda