



**NORTH CAROLINA
PUBLIC STAFF
UTILITIES COMMISSION**

October 19, 2021

Ms. A. Shonta Dunston, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

Re: Docket No. EMP-102, Sub 1 – CPCN for 150MW Solar Located East of NC 11 South and North of NC 30 in the Town of Bethel NC Pitt County

Dear Ms. Dunston:

Attached for filing in the above-referenced docket is the second supplemental testimony of Dustin R. Metz, Utilities Engineer, Electric Section, Energy Division.

By copy of this letter, I am forwarding a copy to all parties of record by electronic delivery.

Sincerely,

Electronically submitted
s/ Gina C. Holt
Staff Attorney
gina.holt@psncuc.nc.gov

Attachment

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BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. EMP-102, SUB 1

In the Matter of)	
Application of Pitt Solar, LLC, for a)	SECOND
Certificate of Public Convenience and)	SUPPLEMENTAL
Necessity to Construct a 80-MW Solar)	TESTIMONY OF
Facility in Pitt County, North Carolina)	DUSTIN R. METZ
)	PUBLIC STAFF – NORTH
)	CAROLINA UTILITIES
)	COMMISSION

**BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. EMP-102, SUB 1**

SECOND SUPPLEMENTAL TESTIMONY OF DUSTIN R. METZ

On Behalf of the Public Staff

North Carolina Utilities Commission

October 19, 2021

1 **Q. PLEASE STATE YOUR NAME AND ADDRESS FOR THE**
2 **RECORD.**

3 A. My name is Dustin R. Metz. My business address is 430 North
4 Salisbury Street, Raleigh, North Carolina.

5 **Q. BRIEFLY STATE YOUR QUALIFICATIONS AND DUTIES.**

6 A. My qualifications and duties are included in Appendix A.

7 **Q. WHAT IS YOUR POSITION WITH THE PUBLIC STAFF?**

8 A. I am an engineer in the Electric Section – Operations and Planning
9 in the Public Staff’s Energy Division.

10 **Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS DOCKET?**

11 A. Yes. I filed my initial testimony in this docket on November 12, 2020
12 and supplemental testimony on July 7, 2021.

1 **Q. WHAT IS THE PURPOSE OF YOUR SECOND SUPPLEMENTAL**
2 **TESTIMONY IN THIS PROCEEDING?**

3 A. The primary purpose of my second supplemental testimony is to
4 respond to the Commission's September 14, 2021, Order Requiring
5 Amendment of the Application and Revising Procedural Schedule in
6 this docket regarding the application (Application) for a certificate of
7 public convenience and necessity (CPCN) for a solar facility filed by
8 Pitt Solar, LLC (Pitt Solar or Applicant). The Commission requested
9 testimony from the Public Staff on three issues:

10 1) Whether the Commission should bifurcate the proceeding
11 to allow the Commission to consider the two different portions
12 of the proposed Facility separately;

13 2) Identification of any issues or concerns bifurcation raises
14 with the Public Staff; and

15 3) Whether bifurcation changes the Public Staff's analysis or
16 recommendations as to either portion of the proposed Facility.

17 **Q. PLEASE DESCRIBE THE PITT SOLAR FACILITY.**

18 A. The application for the Pitt Solar facility (Facility) is the result of the
19 Applicant merging two solar projects, the first an 80 MW_{AC} facility (80
20 MW or Phase I), which was a part of the Applicant's original CPCN
21 application filed in Docket No. EMP-102, Sub 0, and the second, a 70
22 MW_{AC} facility (70 MW or Phase 2), bringing the project total to 150

1 MW_{AC}. PJM assigned queue number AC1-189 to the original 80 MW_{AC}
2 project and queue number AF2-080 to the 70 MW_{AC} project.

3 **Issue No. 1 – Bifurcation of the Proceeding:**

4 **Q. WHO PROPOSED THE CONCEPT OF A PHASED OR**
5 **BIFURCATED FACILITY?**

6 A. Applicant's witness Nwadike in her June 1, 2021 testimony (page 9,
7 lines 1 - 7) discussed a phased approach to obtaining a CPCN in
8 which the Facility would be split into two components, the first the 80
9 MW portion assigned PJM queue number AC1-189 and the second
10 being the 70 MW portion assigned PJM queue number AF2-080.

11 **Q. DO YOU AGREE WITH BIFURCATION OF THE PROJECT IN THIS**
12 **SPECIFIC INSTANCE, AND IF SO, WHY?**

13 A. Yes, for two reasons. Given the uncertainty of estimating transmission
14 upgrades with the incomplete analysis and cost estimates for the
15 combined project, as discussed in my supplemental testimony,¹
16 bifurcation allows for an evaluation of more current and better-known
17 information for the 80 MW portion of the Facility. The first portion of the
18 Facility, assigned to PJM cluster AC1, has more complete and detailed
19 transmission cost information, as shown in Duke Energy Progress,
20 LLC's (DEP's) affected system study report. The second portion of the

¹ Public Staff Witness Dustin R. Metz, Supplemental Testimony EMP 102, Sub 1, p. 16 ln. 20 through p. 17 ln. 2.

1 Facility, assigned to PJM cluster AF2, only has a System Impact Study
2 at this time, as DEP has yet to complete an affected system study for
3 it. The Applicant has agreed to bifurcation and filed an amended
4 application in Docket No. EMP-102, Sub 2 for the 70 MW portion of
5 the originally filed project.

6 **Issue No. 2 - Issues or Concerns with Bifurcation:**

7 **Q. DOES BIFURCATION OF THE ORIGINAL APPLICATION CREATE**
8 **ANY CONCERNS FOR THE PUBLIC STAFF?**

9 A. The Applicant filed a revised layout of the facility on October 18, 2021.
10 The revised layout clearly separates the AC1-189 portion of the project
11 from the AF2-080 portion and no material changes occurred to the
12 boundaries of the facility; therefore, the Public Staff has no concerns
13 about bifurcation itself but has other concerns that I describe below.

14 **Issue No. 3 – Changes and Recommendations:**

15 **Q. DOES BIFURCATION OF THE FACILITY CHANGE ANY OF YOUR**
16 **OTHER ANALYSES?**

17 A. No. Bifurcation does not change my other analyses. The analyses in
18 my supplemental testimony are still relevant, inclusive of all footnotes
19 and specified assumptions.

1 Q. IF PITT SOLAR'S PHASE 1 (80 MW) IS ASSIGNED THE
 2 AFFECTED SYSTEM UPGRADE COSTS IN PJM CLUSTER AC1,
 3 WOULD THIS IMPACT THE LCOT ANALYSIS YOU HAVE
 4 PREVIOUSLY FILED?

5 A. No. In my supplemental testimony, Table 1, I performed a sensitivity
 6 analysis to evaluate the potential impacts of just the AC1-189 part of
 7 the Applicant's project and I provide the same table in this testimony
 8 for ease of reference. Please note that the footnotes for Table 1 in my
 9 second supplemental testimony may have changed numerically from
 10 my supplemental testimony, but no other material changes were
 11 made.

12

Table 1: LCOT Sensitivity	
	AC1-189 (\$/MWh)
As Filed by Applicant	\$1.94
Include a 1% Decrease in Annual Capacity Factor	\$2.01
Include a 15% Increase in Total Network Upgrades ² and 1% Decrease in Annual Capacity Factor	\$2.31
Include AC1 Affected System Cost ^{3 4}	\$9.25

² Total Network Upgrades is the sum of both Network Upgrades and any Affected System Upgrades.

³ This sensitivity assumes that the prior project, American Beech, EMP-108, Sub 0, which was assigned the Affected System costs, is not built and the Applicant is assigned the affected system costs. DEP's methodology assigns Affected System costs to the first project in a PJM cluster that triggers the costs. Should American Beech withdraw at any time prior to commercial operation, later projects could have to pay for the affected system upgrade costs currently assigned to American Beech.

⁴ The AC1 Affected System Costs are a Duke Energy Class IV estimate. At this time, I did not assume a high or low range of the estimate in the overall calculation. The Association for the Advancement of Cost Engineering (AACE) practices considers a Class IV estimate

1 **Q. HOW DOES BIFURCATION OF THE FACILITY CHANGE YOUR**
2 **RECOMMENDATIONS?**

3 A. Bifurcation, in isolation, does not materially influence the calculations
4 that I provided in my supplemental testimony, nor does it resolve the
5 concerns of potential cost increases or decreases. The bifurcation in
6 this case allowed me to remove the uncertainty of unknown
7 transmission upgrades from the incomplete study of the Phase 2
8 portion of the Facility. Now that Phase 1 of the project can be
9 evaluated with the more certain values from completed studies, the
10 issue before the Commission is whether it should issue a CPCN for
11 Phase 1 in light of the known transmission infrastructure upgrades
12 required as a result of the Facility, or as a result of the existence of
13 another project in the PJM AC1 cluster or subsequent PJM clusters.

14 **Q. HAS ANYTHING OTHER THAN FACILITY'S BIFURCATION**
15 **CHANGED SINCE THE FILING OF YOUR SUPPLEMENTAL**
16 **TESTIMONY THAT MAY ALTER YOUR RECOMMENDATION?**

17 A. Yes. I discussed my initial concerns regarding other factors that may
18 materially alter the Facility, its costs, and grid impacts in my
19 supplemental testimony. Those topics and my analysis to quantify my
20 concerns, are unchanged. However, there have been multiple filings
21 at the FERC regarding other merchant power generation within the

to have an excepted accuracy range of -30% to +50%, and a 1% to 15% level of project definition complete at the time of the estimate. A Class IV estimate adds more uncertainty to the total cost evaluated in the early stages of the Application review.

1 PJM footprint that could directly impact the Applicant's Phase 1 and
2 Phase 2 projects. As I stated in my supplemental testimony, Pitt
3 Solar's interconnection is contingent upon network upgrades being
4 completed for previous projects.⁵ Previously, American Beech Solar,
5 LLC (American Beech), who applied for a CPCN in Docket No. EMP-
6 108, Sub 0, executed an Affected System Operating Agreement
7 (ASOA) with DEP, which was filed with the FERC on May 20, 2021, in
8 FERC Docket Number ER21-1955-002. DEP filed on August 4, 2021,
9 an amended ASOA.

10 On October 1, 2021, the FERC issued an Order rejecting the ASOA
11 between DEP and American Beech, specifically with respect to the
12 part of the ASOA that relieved DEP of its obligation to reimburse
13 American Beech for affected system costs paid by the generator,
14 which was a change from terms approved by the FERC in its Order
15 No. 2003.⁶ Order No. 2003 sets forth the requirements that
16 interconnection customers and transmission providers must follow
17 during the generator interconnection process. These procedures are
18 contained in the pro forma Large Generator Interconnection
19 Procedures (LGIP) and pro forma Large Generator Interconnection

⁵ *Id.* p. 15, ln. 4 – 11.

⁶ *Standardization of Generator Interconnection Agreements and Procedures*, Order No. 2003, 104 FERC ¶ 61,103, at P 36 (2003), *order on reh'g*, Order No. 2003-A, 106 FERC ¶ 61,220, *order on reh'g*, Order No. 2003-B, 109 FERC ¶ 61,287 (2004), *order on reh'g*, Order No. 2003-C, 111 FERC ¶ 61,401 (2005), *aff'd sub nom. Nat'l Ass'n of Regulatory Util. Comm'rs v. FERC*, 475 F.3d 1277 (D.C. Cir. 2007).

1 Agreement (LGIA)⁷. The FERC stated that it found the terms of the
2 DEP ASOA unjust and unreasonable. In its discussion, the FERC
3 stated that Order No. 2003 provides in pertinent part that a non-
4 independent affected system operator like DEP may require an
5 interconnection customer (American Beech) to initially fund the costs
6 of network upgrades that must be constructed on the affected system
7 to accommodate the interconnection of the generating facility to
8 another transmission provider's transmission system⁸; however,
9 "any affected system operator that has received payments from an
10 interconnection customer for the costs of network upgrades must
11 reimburse the interconnection customer."⁹ The payment and
12 reimbursement requirements are contained in article 11.4 of the pro
13 forma LGIA, which applies to all affected system operators.
14 Additionally, the FERC stated that in order to deviate from the Order
15 No. 2003 reimbursement requirement, Duke had to show that the
16 modification was necessary or otherwise just and reasonable, and
17 Duke failed to make this showing.¹⁰ Additionally, since the FERC
18 found that DEP had not provided a basis for its deviation from the
19 LGIA, it found the ASOA to be unjust and unreasonable and required
20 DEP to file a new ASOA with American Beech.

⁷ *Id.*

⁸ 177 FERC ¶ 61,001 at P 2

⁹ *Id.*

¹⁰ *Id.* at P 13

1 Unless DEP files for reconsideration of the order or provides more
2 support for the modification to eliminate the reimbursement
3 requirement in its ASOP (affected system operating procedure) with
4 American Beech, a new ASOA will have to include a provision
5 whereby DEP would have to reimburse American Beech for the
6 affected system upgrade costs, which would be passed on to DEP
7 ratepayers. I am not aware of another ASOA between DEP and
8 another generator owner in PJM cluster AC1. Thus, it is unknown
9 which project in PJM cluster AC1 will be assigned these initial affected
10 system upgrade costs if American Beech does not enter a new ASOA.
11 If these costs are assigned to the Applicant, raises the question in this
12 proceeding of whether there is a realizable benefit to DEP ratepayers
13 commensurate with the associated ASOA upgrades.

14 **Q. PLEASE DESCRIBE HOW THE FERC RULING COULD AFFECT**
15 **PHASE 1 OF THE FACILITY AND OTHER EMP DOCKETS**
16 **PRESENTLY BEFORE THE COMMISSION.**

17 A. The FERC's order rejecting DEP's ASOA with American Beech relates
18 to an issue that has been discussed in multiple EMP dockets before
19 the Commission: will captive ratepayers ultimately be responsible for
20 affected system costs necessary to interconnect merchant power
21 generators without ratepayers directly receiving the energy or capacity
22 from the generators, and if so, should CPCNs be granted for those
23 facilities? While the FERC's ruling may be specific to the facts and

1 circumstances to be considered in the American Beech CPCN
2 proceeding, the results may affect the Pitt Solar Facility Phase 1, given
3 the crediting policy (reimbursable affected system upgrades) if Pitt
4 Solar enters an ASOA with DEP, before American Beech has an
5 approved ASOA, and is the next project in queue in PJM cluster AC1.
6 The FERC's ruling indicates a strong likelihood that affected system
7 costs paid by generators will have to be reimbursed by DEP, and
8 therefore by its captive ratepayers, going forward.

9 **Q. WHAT IS DEP'S AFFECTED SYSTEM COST FOR PJM CLUSTER**
10 **AC1 AND WHAT IS YOUR OPINION OF THAT COST?**

11 A. PJM cluster AC1 will create approximately \$31 million in affected
12 system upgrades for DEP. Also, Metz Table 1 clearly shows the LCOT
13 difference with and without the AC1 affected system upgrades.¹¹
14 Given the specifics of the Facility and the speculative nature of future
15 projects that have requested to interconnect to DENC,¹² it is unclear
16 whether the affected system upgrades to DEP's system resulting from
17 generation located within the PJM footprint of DENC will benefit DEP's
18 ratepayers.

¹¹ If the AC1 upgrades are borne by Pitt Solar's Phase 1, the effective LCOT exposure to ratepayers would be ~ \$7.31, at the current estimates (\$9.25 – \$1.94 = \$7.31). The Applicant is responsible for the \$1.94 costs, which are not subject to reimbursement at this time; hence, I removed it from my calculation in this case.

¹² "...developers have proposed approximately 6.6 gigawatts of solar capacity for interconnection in PJM's North Carolina territory", *Id.* p. 9 ln. 3-5.

1 Also, the affected system upgrades to which Pitt Solar might be
2 subject are contingent upon whether those costs will be assigned to
3 and paid for by American Beech¹³; however, the upgrades may
4 become obsolete before the end of their useful life. The PJM
5 interconnection queue for North Carolina only has had as much as
6 ~16 GW (16,000 MW) of nameplate generation seeking to
7 interconnect since 2011, and currently has ~7.2 GW of generation
8 actively seeking to interconnect. ^{14, 15}

9 **Q. WHAT HAS BEEN THE INTERCONNECTION ACTIVITY IN PJM'S**
10 **NORTH CAROLINA QUEUE?**

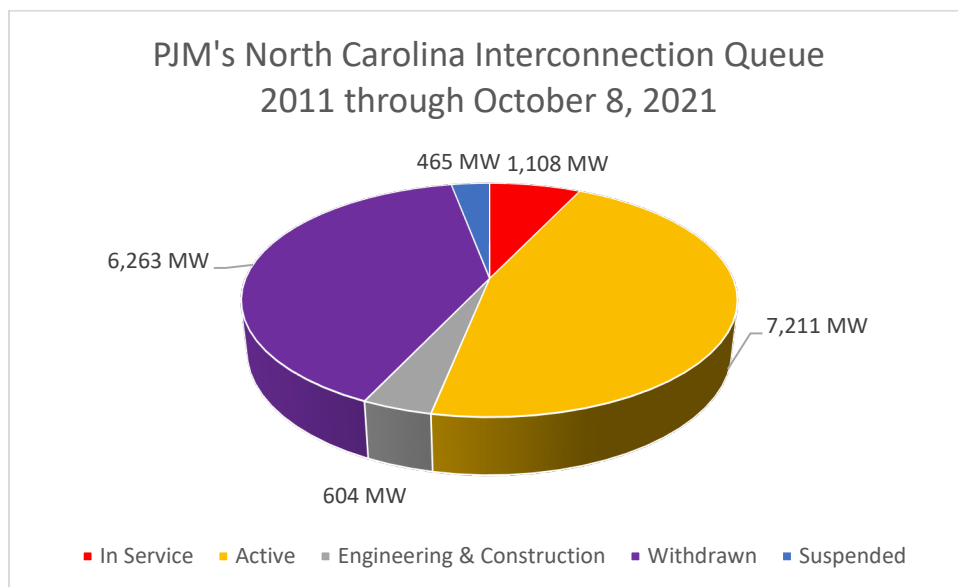
11 A. My Figure 2 below shows PJM's North Carolina queue activity from
12 2011 through October 8, 2021:

¹³ The assumption of the contingent upgrade is that American Beech will enter into a new ASOA with DEP as a result of FERC's October 1, 2021 ruling.

¹⁴ PJM queue data sometimes contains duplicative project entries. I removed some of duplicative entries for a proposed 1210MW (AF1-236) solar facility in North Carolina. The multiple queue entries are in part because of further modification requests by the facility.

¹⁵ These amounts do not include DENC's distribution level interconnections.

1 **Figure 2**



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This level of unconstrained merchant activity in the DENC territory raises the issues, once again, as to whether or not: 1) merchant power generation plants located on the outer edges of the system, far removed from load centers, are beneficial to efficient long-term utility planning, 2) increases in congestion and congestion-related charges (PJM) are beneficial, from a total delivered energy perspective, to North Carolina, and 3) whether both inter-connected (Dominion Energy for Pitt Solar) and non-direct inter-connected (DEP for Pitt Solar) transmission owners should build their systems to satisfy the needs of merchant power generators while captive ratepayers are exposed to millions of dollars of transmission investment without realizing the benefit of the generation.

1 Q. DO YOU HAVE ANY RECOMMENDATIONS TO ADDRESS YOUR
2 CONCERNS?

3 A. Yes, particularly with regard to the nodes, or connection points,
4 between transmission owners. I recommend a joint utility study to
5 evaluate the immediate tie line(s) that are being impacted by
6 contingent upgrades due to the increasing volumes of merchant
7 power plants locating in this general area of North Carolina. The intent
8 of this study would be to enable a long-term view of this part of the
9 electrical system and maximize, to the extent possible, efficiencies
10 while minimizing wasteful spending and a continuous parade of
11 upgrade after upgrade as more generation tries to interconnect in this
12 narrow part of the system. At this time, I am unable to propose a
13 detailed agenda/outline to the Commission for accomplishing this
14 effort, but should the Commission agree to pursue this concept, the
15 Public Staff is willing to engage with affected utilities who would need
16 to perform most of the work and power flow analyses. This request
17 may take a year or longer to complete and produce viable solutions to
18 address the concerns, due to its complexity. I am also open to the
19 possibility that there may be other avenues to explore with the utilities,
20 and perhaps a general discussion with transmission planners on

1 performing a dedicated affected system impact analysis with a more
2 recent PJM queue cluster study.¹⁶

3 Another possibility is for PJM and Dominion to evaluate a new high
4 voltage transmission line(s) in North Carolina at the current levels of
5 interconnection. In concept, this new transmission should be built in
6 such a way to alleviate congestion and/or overloads on the tie points
7 between Dominion and Duke and result in electrical infrastructure that
8 will facilitate flow on to the PJM/DENC bulk electric system. The new
9 transmission would serve internal growth needs of the PJM region
10 while also addressing increasing amounts of generation built on the
11 fringes of its system and minimizing impacts on nearby affected
12 systems. Conceptually, generators would be responsible for the
13 network upgrades, without reimbursement.

14 **Q. MR. METZ, CAN YOU DEMONSTRATE THAT YOUR PROPOSAL**
15 **IS TRULY NEEDED?**

16 A. I have reviewed multiple PJM queue system impact studies filed
17 before and after the AC1 cluster projects. My Figure 2 above shows
18 the increasing magnitude of interconnected generation and planned
19 generation in the queue that will overload DEP's transmission tie lines

¹⁶ Based on the Public Staff's review of the PJM Interconnection studies, the Public Staff is concerned that cluster studies after the AC and AD clusters may start to trigger larger upgrades into the Duke Energy system and may no longer be constrained to a localized area of the tie point between the utilities.

1 to PJM as well as the possibility of further upgrades required within
2 DEP's system.

3 **Q. WHAT IS THE YOUR CURRENT RECOMMENDATION ON THE**
4 **APPLICATION FOR A CPCN?**

5 A. I recommend that the Commission deny the application for the
6 following reasons:

7 i. DEP customers could be forced to pay for \$31 million in
8 affected system upgrades that are not needed for reliable
9 service.

10 ii. The \$31 million in upgrades could sit idle for extended periods
11 of time. Some projects enter the PJM queue and later withdraw
12 as shown in my Figure 2 above.

13 iii. Future projects in PJM could force DEP to retire the \$31 million
14 in upgrades long before the end of their service life and install
15 larger and more costly upgrades, thereby unduly economically
16 burdening DEP's captive customers.

17 **Q. SHOULD THE COMMISSION APPROVE THE APPLICATION, DO**
18 **YOU HAVE ANY CHANGES TO YOUR RECOMMENDATIONS**
19 **THAT THE COMMISSION SHOULD CONSIDER?**

20 A. Yes. In the event the FERC ruling, which presently requires DEP to
21 reimburse all affected system costs paid by American Beech, is
22 extended to all ASOAs, I make the following recommendations:

- 1 i. The Applicant shall notify the Commission within 30 days
2 of any change or any revisions to the cost estimates for
3 the construction of the Facility itself, interconnection
4 facilities, network upgrades, or affected system costs
5 within 30 days of becoming aware of such revisions. Once
6 the Commission is notified, subsequent steps and actions
7 along with a respective timeline for additional actions can
8 be defined on an as needed basis.
- 9 ii. That the Applicant file a copy of any executed Affected
10 System Operating Agreement (ASOA) with the
11 Commission at the same time such filing is made at the
12 FERC (at least 61 days prior to commencing construction
13 on the upgrades).
- 14 iii. In the event an ASOA is entered into with the Applicant
15 and Duke Energy Progress:
- 16 a. These conditions will cease at commercial operation of
17 the 80 MW_{AC} portion of the project and:
- 18 b. The Applicant shall file in this docket the total amount
19 of affected system costs reimbursed, and the end date
20 of the agreement/contract.

21 **Q. DOES THIS COMPLETE YOUR TESTIMONY?**

22 A. Yes.

QUALIFICATIONS AND EXPERIENCE

DUSTIN R. METZ

Through the Commonwealth of Virginia Board of Contractors, I hold a current Tradesman License certification of Journeyman and Master within the electrical trade, awarded in 2008 and 2009 respectively. I graduated from Central Virginia Community College, receiving Associates of Applied Science degrees in Electronics and Electrical Technology (Magna Cum Laude) in 2011 and 2012 respectively, and an Associates of Arts in Science in General Studies (Cum Laude) in 2013. I graduated from Old Dominion University in 2014, earning a Bachelor of Science degree in Engineering Technology with a major in Electrical Engineering and a minor in Engineering Management. I completed engineering graduate course work in 2019 and 2020 from North Carolina State University.

I have over 12 years of combined experience in engineering, electromechanical system design, troubleshooting, repair, installation, commissioning of electrical and electronic control systems in industrial and commercial nuclear facilities, project planning and management, and general construction experience, including six years with direct employment with Framatome, where I provided onsite technical support, craft oversight, engineer change packages and participated in root cause analysis teams at commercial nuclear power plants, including plants owned by both Duke and Dominion.

I joined the Public Staff in the fall of 2015. Since that time, I have worked on electric and natural gas general rate cases, fuel cases, natural gas annual reviews, applications for certificates of public convenience and necessity, service and power quality, customer complaints, North American Electric Reliability Corporation (NERC) Reliability Standards, nuclear decommissioning, National Electric Safety Code (NESC) Subcommittee 3 (Electric Supply Stations) member, avoided costs and PURPA, interconnection procedures and power plant performance evaluations; I have also participated in multiple technical working groups and been involved in other aspects of utility regulation.