

BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

APPLICATION FOR PRELIMINARY PERMIT

Tazewell Hybrid Energy Center
Project No. _____

Virginia Electric and Power Company
DBA Dominion Energy Virginia
120 Tredegar Street
Richmond, VA 23219

September 6, 2017

VERIFICATION STATEMENT

This application for preliminary permit is executed in

State of: Virginia

County of: Henrico

**By: Mark D. Mitchell
Dominion Energy Virginia
5000 Dominion Boulevard
Glen Allen, VA 23060
(804) 273-4543**

Being duly sworn, deposes and says that the contents of this Preliminary Permit Application are true to the best of his knowledge or belief. The undersigned Applicant has signed the application on this 6TH day of SEPTEMBER 2017.

**Applicant: Virginia Electric & Power Company
DBA Dominion Energy Virginia**

**By: Mark D. Mitchell
Mark D. Mitchell
VP – Generation Construction
Dominion Energy Virginia**

Subscribed and sworn to before me, a Notary Public of the Commonwealth of Virginia this 6TH day of SEPTEMBER 2017.

Notary:

Kathy W. Prokopis

My Commission expires:

SEPTEMBER 30, 2020



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INITIAL STATEMENT

Pursuant to 18 CFR §4.81, each application for a preliminary permit must include the following initial statement and numbered exhibits containing the information and documents specified:

(a) *Initial statement:*

BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

Application for Preliminary Permit

(1) Virginia Electric and Power Company DBA Dominion Energy Virginia (Applicant or Dominion Energy Virginia) *applies to the Federal Energy Regulatory Commission (FERC or Commission) for a preliminary permit for the proposed Tazewell Hybrid Energy Center (Project), as described in the attached exhibits. This application is made in order that the applicant may secure and maintain priority of application for a license for the project under Part I of the Federal Power Act while obtaining the data and performing the acts required to determine the feasibility of the project and to support an application for a license.*

(2) *The location of the proposed project is:*

<i>State or territory:</i>	Virginia
<i>County:</i>	Tazewell
<i>Township or nearby town:</i>	Bluefield, VA
<i>Stream or body of water:</i>	Oneida Branch and West Fork Cove Creek

(3) *The exact name, business address, and telephone number of the applicant are:*

Virginia Electric and Power Company
DBA Dominion Energy Virginia
120 Tredegar Street
Richmond, VA 23219
(804) 819-2794

The exact name and business address of each person authorized to act as agent for the applicant in this application are:

Michael Regulinski
Dominion Energy Virginia
120 Tredegar Street, RS-2
Richmond, VA 23219
(804) 819-2794

Mark Mitchell
Dominion Energy Virginia
5000 Dominion Boulevard
Glen Allen, VA 23060
(804) 273-4543

Michael Swiger
Van Ness Feldman, LLP
1050 Thomas Jefferson Street, NW
Washington, DC 20007

- (4) Dominion Energy Virginia *is a domestic corporation and is not claiming preference under Section 7(a) of the Federal Power Act.*
- (5) *The proposed term of the requested permit is 36 months.*
- (6) *If there is any existing dam or other project facility, the applicant must provide the name and address of the owner of the dam and facility. If the dam is federally owned or operated, provide the name of the agency.*

There are no existing dams or other Project facilities that will be used for the proposed Project.

INFORMATION REQUIRED BY 18 CFR §4.32(a)

- (1) *For a preliminary permit or license, identify every person, citizen, association of citizens, domestic corporation, municipality, or state that has or intends to obtain and will maintain any proprietary right necessary to construct, operate, or maintain the project:*

Virginia Electric and Power Company
DBA Dominion Energy Virginia
120 Tredegar Street
Richmond, VA 23219

- (2) *For a preliminary permit or a license, identify (providing names and mailing addresses):*

- (i) *Every county in which any part of the project, and any Federal facilities that would be used by the project, would be located:*

Patricia Green, County Administrator
Tazewell County
108 E. Main Street
Tazewell, VA 24651

- (ii) *Every city, town, or similar local political subdivision:*

- (A) *In which any part of the project, and any Federal facilities that would be used by the project, would be located:*

None.

- (B) *That has a population of 5,000 or more people and is located within 15 miles of the project dam:*

The Town of Bluefield, Virginia, with a population of 5,444 is located approximately 1 mile northeast of the Project. Contact information for the Town of Bluefield is as follows:

Don Harris, Mayor
Town of Bluefield
112 Huffard Drive
P.O. Box 1026
Bluefield, VA 24605

The City of Bluefield, West Virginia, with a population of 10,448, is located approximately two miles northeast of the Project. Contact information for the City of Bluefield is as follows:

Tom Cole, Mayor
City of Bluefield
200 Rogers Street
Bluefield, WV 24701

The Town of Pocahontas, Virginia, with a population of 389, is located approximately eight miles northeast of the Project. Contact information for the Town of Pocahontas is as follows:

Benjamin A. Gibson, Mayor
Town of Pocahontas
PO Box 128
300 Centre Street
Pocahontas, VA 24635

The Town of Bramwell, West Virginia, with a population of 365, is located approximately ten miles northeast of the Project. Contact information for the Town of Bramwell is as follows:

Louise Stroker, Mayor
Town of Bramwell
PO Box 338
Bramwell, WV 24715

The Town of Anawalt, West Virginia, with a population of 219, is located approximately twelve miles northwest of the Project. Contact information for the Town of Anawalt is as follows:

Dorothy Wilson, Manager
Town of Anawalt
1 Walnut Street
Anawalt, WV 24808

The City of Gary, West Virginia, with a population of 938, is located approximately fifteen miles northwest of the Project. Contact information for the City of Gary is as follows:

Thomas Vineyard, Mayor
City of Gary
PO Box 310
Gary, WV 24836

The Town of Tazewell, Virginia, with a population of 4,479, is located approximately eight miles west of the Project. Contact information for the Town of Tazewell is as follows:

Donald Buchanan, Jr., Mayor
Town of Tazewell
201 Central Avenue
Tazewell, VA 24651

(iii) *Every irrigation district, drainage district, or similar special purpose political subdivision:*

(A) *In which any part of the project, and any Federal facilities that would be used by the project, would be located:*

Tazewell Soil and Water Conservation District
121 Professional Drive
North Tazewell, VA 24630

Tazewell Soil and Water Conservation District
Daniel C. Bowling, Chairman
726 Hubble Hill Road
North Tazewell, VA 24630

(B) *That owns, operates, maintains, or uses any project facilities or any Federal facilities that would be used by the project:*

None.

(iv) *Every other political subdivision in the general area of the project that there is a reason to believe would likely be interested in, or affected by, the application:*

None.

(v) *All Indian tribes that may be affected by the project.*

The only federally recognized Indian tribe in Virginia is the Pamunkey Indian Tribe. The Applicant does not anticipate that such tribe will be affected by the Project. Accordingly, pursuant to the definition of Indian tribe in 18 CFR §4.30(10), no Federally recognized Indian tribes were identified that are anticipated to be affected by the Project

EXHIBIT 1 - DESCRIPTION OF THE PROPOSED PROJECT

18 CFR §4.81(b) Exhibit 1 must contain a description of the proposed project, specifying and including, to the extent possible:

- (1) *The number, physical composition, dimensions, general configuration and, where applicable, age and condition, of any dams, spillways, penstocks, powerhouses, tailraces, or other structures, whether existing or proposed, that would be part of the project:*

The proposed Tazewell Hybrid Energy Center dams will be constructed for the proposed Project and will be operated by Dominion Energy Virginia for hydropower generation during peak energy demand periods and pumping during off-peak energy demand periods. The power grid benefits of such operations include, but are not limited to the integration of intermittent power generation sources, enhancement of grid stability and supply of other ancillary benefits. Two alternative sites – Alternatives 1 and 2 -- are being evaluated for the lower reservoir for the Project. The upper reservoir would be in the same location under either alternative, but its size would differ.

Alternative 1:

The concrete face, rockfill dam associated with the upper reservoir will be 3,263 feet long with a 150-foot-long, concrete-lined emergency overflow spillway. The dam will have a maximum height of 380 feet. The concrete face, rockfill dam associated with the lower reservoir will be 1,723 feet long with a 150-foot-long, concrete-lined emergency overflow spillway. The dam will have a maximum height of 288 feet.

The Applicant proposes to construct a new underground concrete powerhouse, upper and lower reinforced-concrete inlet/outlet structures, concrete-lined water conveyance tunnels, substation and transmission facilities, and supporting infrastructure. The 250-foot-long by 150-foot-high by 100-foot-wide underground reinforced-concrete powerhouse will accommodate a pump-turbine/motor-generating system with a design head of 621 feet. The Applicant proposes to install two pump-turbine/motor-generator units with a combined capacity of 446 megawatts (MW) and 10 hours of continuous generation. Annual energy production at the site is expected to be 1,302 gigawatt hours per year (GWh/year).

Water will be conveyed from the upper reservoir to the lower reservoir via an upper reservoir inlet/outlet, vertical shaft, concrete-lined horizontal power tunnel, concrete-lined penstock manifold tunnel, individual unit penstock tunnels and draft tube tunnels, low pressure tailrace tunnel, and a lower reservoir inlet/outlet. The 29-foot-diameter headrace tunnel will bifurcate into two, 17-foot-diameter, steel-lined penstocks, which will enter the underground powerhouse at each of the two pump-turbine/motor-generator units rated at 223 MW each. From the powerhouse, water will discharge into the two, 24-foot-diameter draft tubes from each unit and then into one, 34-foot-diameter tailrace tunnel which will discharge into the lower reservoir.

Alternative 2:

The concrete face, rockfill dam associated with the upper reservoir will be 3,263 feet long with a 150-foot-long, concrete-lined emergency overflow spillway. The dam will have a maximum height of 380 feet. The concrete face, rockfill dam associated with the lower reservoir will be 1,680 feet long with a 150-foot-long, concrete-lined emergency overflow spillway. The dam will have a maximum height of 257 feet.

The Applicant proposes to construct a new underground powerhouse, upper and lower reinforced-concrete inlet/outlet structures, concrete-lined water conveyance tunnels, substation and transmission facilities, and supporting infrastructure. The 350-foot-long by 150-foot-high by 100-foot-wide underground reinforced-concrete powerhouse will accommodate a pump-turbine/motor-generating system with a design head of 887 feet. The Applicant proposes to install three pump-turbine/motor-generator units with a combined capacity of 870 MW and 10 hours of continuous generation. Annual energy production at the site is expected to be 2,540 GWh/year.

Water will be conveyed from the upper reservoir to the lower reservoir via an upper reservoir inlet/outlet, vertical shaft, concrete-lined horizontal power tunnel, concrete-lined penstock manifold tunnel, individual unit penstock tunnels and draft tube tunnels, low pressure tailrace tunnel, and a lower reservoir inlet/outlet. The 33-foot-diameter headrace tunnel will bifurcate into three, 15-foot-diameter, steel-lined penstocks, which will enter the underground powerhouse at each of the three pump-turbine/motor-generator units rated at 290 MW each. From the powerhouse, water will discharge into the three, 22-foot-diameter draft tubes from each unit and then into one, 39-foot-diameter tailrace tunnel which will discharge into the lower reservoir.

- (2) *The estimated number, surface area, storage capacity, and normal maximum surface elevation (mean sea level) of any reservoirs, whether existing or proposed, that would be part of the project:*

Alternative 1:

Upper Reservoir

The surface area of the proposed upper reservoir will be 112 acres at normal maximum surface elevation 3,830.0 feet above mean sea level (ft msl). The usable storage capacity of the reservoir will be 8,173 acre-feet at elevation 3,830.0 ft msl.

Lower Reservoir

The surface area of the proposed lower reservoir will be 96 acres at normal maximum surface elevation 3,238.0 ft msl. The usable storage capacity of the reservoir will be 8,173 acre-feet at elevation 3,238.0 ft msl.

Alternative 2:

Upper Reservoir

The surface area of the proposed upper reservoir will be 112 acres at normal maximum surface elevation 3,830.0 ft msl. The usable storage capacity of the reservoir will be 11,135 acre-feet at elevation 3,830.0 ft msl.

Lower Reservoir

The surface area of the proposed lower reservoir will be 144 acres at normal maximum surface elevation 2,937.0 ft msl. The usable storage capacity of the reservoir will be 11,135 acre-feet at elevation 2,937.0 ft msl.

Potential water sources for the initial fill and makeup water for the Alternative 1 and 2 Project reservoirs are the following: (1) Mine ID PO3_003 and (2) Mine ID PO3_017. The initial fill water for the Project's reservoirs will be supplied by one or more of these water sources via a proposed pump and water conveyance system. The water source(s), location(s), and water conveyance routing will be determined based on the configuration of the Project alternative that is selected and additional studies to be conducted. Information regarding the location of the potential water sources is provided on Exhibit 3-1. Although the upper reservoir would be located on Oneida Branch and the lower reservoir would be located in West Fork Cove Creek, it is anticipated that the proposed Project will use mine water sources for the initial fill and makeup water. The feasibility of relying on mine water sources will be evaluated under the preliminary permit.

- (3) *The estimated number, length, voltage, interconnections, and, where applicable, age and condition, of any primary transmission lines whether existing or proposed, that would be part of the project:*

The Project substation/switchyard (transformers, disconnect switches, etc.) will tie directly into the existing the existing 765 kilovolt (kV) transmission line located between the upper and lower reservoirs.

The substation, transmission and interconnection locations, features and characteristics are dependent upon the results of studies to be carried out during the term of the permit; however, the Applicant anticipates the transmission line voltage to step up to 765 kV at the Project substation and connect to the existing 765 kV transmission line as shown on Exhibit 3-1.

- (4) *The total estimated average annual energy production and installed capacity (provide only one energy and capacity value), the hydraulic head for estimating capacity and energy output, and the estimated number, rated capacity, and, where applicable, the age and condition, of any turbines and generators, whether existing or proposed, that would be part of the project works:*

Alternative 1:

- a. Average annual energy output from the proposed two-unit powerhouse will be 1,302 GWh.
- b. Two generating units are proposed.
- c. The turbine rating for each unit is 223 MW.
- d. The generator rating for each unit is 223 MW.
- e. The single capacity rating for each generating unit is 223 MW.
- f. The rated gross hydraulic head for the proposed units is 621 feet.

Alternative 2:

- a. Average annual energy output from the proposed three-unit powerhouse will be 2,540 GWh.
- b. Three generating units are proposed.
- c. The turbine rating for each unit is 290 MW.
- d. The generator rating for each unit is 290 MW.
- e. The single capacity rating for each generating unit is 290 MW.
- f. The rated gross hydraulic head for the proposed units is 887 feet.

- (5) *All lands of the United States that are enclosed within the proposed project boundary described under paragraph (d)(3)(i) of this section, identified and tabulated on a separate sheet by legal subdivisions of a public land survey of the affected area, if available. If the project boundary includes lands of the United States, such lands must be identified on a completed land description form (FERC Form 587), provided by the Commission. The project location must identify any Federal reservation, Federal tracts, and townships of the public land surveys (or official protractions thereof if unsurveyed). A copy of the form must also be sent to the Bureau of Land Management state office where the project is located:*

No lands of the United States are enclosed within the proposed Project boundary. The location of the proposed Tazewell Hybrid Energy Center is shown on a USGS topographic quadrangle map in Exhibit 3-1.

- (6) *Any other information demonstrating in what manner the proposed project would develop, conserve, and utilize in the public interest the water resources of the region:*

During the 2017 session, the Virginia General Assembly recognized the value of pumped storage hydroelectric projects by passing Senate Bill 1418, sponsored by Sen. Ben Chafin, R-Lebanon, and House Bill 1760, sponsored by Del. Terry Kilgore, R-Gate City. The bills authorize Dominion Energy Virginia to apply to the Virginia State Corporation Commission for permission to recover costs of constructing and operating pumped storage hydroelectric facilities in Virginia's coalfield region through a rate adjustment

clause. They further state that at least part of the energy stored in such facilities must be generated by renewable resources. The legislation was approved by Gov. Terry McAuliffe and became law on July 1, 2017.

The coalfield region is made up of the counties of Russell, Tazewell, Dickenson, Buchanan, Lee, Wise, and Scott, as well as the City of Norton. The Project will be designed to meet Commonwealth of Virginia requirements in regards to natural flows and water use to ensure it is compatible with existing water resource needs, policies, and laws.

The Applicant will consult with government agencies and members of the public as required by the Commission's pre-filing consultation regulations, in order to ensure that public interests are fully considered in developing a license application.

EXHIBIT 2 - DESCRIPTION OF PROPOSED STUDIES

18 CFR §4.81(c) Exhibit 2 is a description of studies conducted or to be conducted with respect to the proposed project, including field studies. Exhibit 2 must supply the following information:

- (1) *General requirement. For any proposed project, a study plan containing a description of:*
 - (i) *Any studies, investigations, tests, or surveys that are proposed to be carried out, and any that have already taken place, for the purposes of determining the technical, economic, and financial feasibility of the proposed project, taking into consideration its environmental impacts, and of preparing an application for a license for the project:*

Applicant proposes to conduct a detailed feasibility study of the technical features of the Project alternatives and confirm the Project's economic viability. The feasibility study will be designed to evaluate various project concepts, layouts, and equipment arrangements to optimize the Project configuration. The feasibility study will integrate the pre-filing licensing process and generate information required to develop a license application, including:

- Concept formulation and evaluation of alternative configurations
- Formulation of Project water supply plan
- Selection of a preferred alternative
- Topographical surveying
- Geological investigations
- Environmental, social, and cultural study scoping and consultation, surveys, impact identification and assessment, and formulation of mitigation measures
- Land use studies, including consultation with private owner(s)
- Engineering studies to optimize the Project's physical configuration
- Determination of size and specific type of equipment
- Power marketing and establishing preliminary power sales and power supply expectations
- Transmission interconnection planning
- Legal and water rights considerations
- Cost estimating, economic feasibility, and financial planning investigations

Environmental studies may include water quality; fish and aquatic resources; wildlife and botanical resources; wetlands, riparian, and littoral habitat; and rare, threatened, and endangered species. Social studies may include recreation, land use, aesthetics, and socio-economics. Cultural studies may include historical, archaeological, and tribal resources.

Based on the results and findings of the initial stages of the feasibility study, the Applicant will prepare and file with the Commission a Notice of Intent and Pre-Application Document as detailed in 18 C.F.R. §5.5 and §5.6.

- (ii) *The approximate locations and nature of any new roads that would be built for the purpose of conducting the studies:*

The Applicant will utilize existing roads to the extent possible for the purposes of conducting the feasibility studies noted above. Access to the Project will be via the existing road(s) as well as the new proposed road(s) as shown on Exhibit 3-1. Use of this access will be coordinated in advance with any private entities that may control land between public access points and the Project site or points of interest for study. Any new roads will be properly permitted.

- (2) *Work plan for new dam construction. For any development within the project that would entail new dam construction, a work plan and schedule containing:*

- (i) *A description, including the approximate location, of any field study, test, or other activity that may alter or disturb lands or waters in the vicinity of the proposed project, including floodplains and wetlands; measures that would be taken to restore the altered or disturbed areas:*

The selection of the best Project configuration will depend on a variety of factors involving the physical size of the facilities, horizontal and vertical separation between the reservoirs, the geological design environment, and topographic conditions. Therefore, field studies will be required for geological investigations, topographic surveying, and environmental survey mapping.

Topographic surveying may involve traversing the Project area on foot or in a light vehicle. This work is not expected to disturb or alter any lands or waters in the Project area.

Environmental surveys may involve traversing the area on foot or in a light vehicle to collect samples, perform inventories, and/or perform observations necessary to conduct the environmental evaluations. This work is not expected to disturb or alter any lands or waters in the Project area.

Geological investigations may involve exploratory borings, test pits, test trenches, and seismic surveys. An underground powerhouse is a viable option that will be carried to the design phase; however, no exploratory audits will be required at this time.

Exploratory borings will be required within the upper and lower reservoir areas and along the waterway alignment. At present, the total number of borings is not known. The exact location of the exploratory borings will be determined only after alternatives have been investigated and a preferred Project concept emerges from the studies. Exploratory drilling will be designed to minimize any possible adverse environmental impacts. Best management practices (BMPs) will be observed to: 1) mitigate potential impacts resulting from the disposal of waste material(s); 2) minimize the generation of noise, noxious fumes, and dust; and 3) restore altered and disturbed areas. Similarly, the exact locations of test pits, trenches, and seismic profiling will depend on the preferred arrangement. BMPs

will also be adopted to mitigate impacts resulting from these activities. The Applicant will comply with applicable state and local guidelines and regulations, which will also minimize potential effects on the local environment.

- (ii) *A proposed schedule (a chart or graph may be used), the total duration of which does not exceed the proposed term of the permit, showing the intervals at which the studies, investigations, tests, and surveys, identified under this paragraph are proposed to be completed.*

A proposed schedule showing the approximate intervals at which studies, investigations, tests, or surveys are anticipated to be completed during the permit term is provided below and is subject to change as determined by field conditions and/or additional information.

Scheduled Term		Work Item
From beginning of month	To end of month	
0	6	Concept formulation and evaluation of alternative configurations
0	8	Initial scoping and consultation
0	26	Engineering studies to optimize Project physical configuration
0	26	Environmental studies
0	36	Legal and water rights matters
6	10	Selection of preferred alternative
6	24	Transmission interconnection planning
8	12	Topographical surveying
8	16	Geological investigations
8	20	Formulation of Project water supply plan
14	22	Power marketing; establishing preliminary power sales and power supply expectations
16	18	Determination of size and specific type of equipment
16	24	Cost estimating, economic feasibility, and financial planning investigations
20	26	Additional stage consultation and documentation

- (3) *Waiver. The Commission may waive the requirements of paragraph (c)(2) pursuant to 18 CFR §385.207 of this chapter, upon a showing by the applicant that the field studies, tests, and other activities to be conducted under the permit would not adversely affect cultural resources or endangered species and would cause only minor alterations or disturbances of lands and waters and that any land altered or disturbed would be adequately restored.*

The Applicant does not intend to apply for a waiver for the requirements of 18 CFR §4.81(c)(2) pursuant to 18 CFR §385.207.

(4) *Exhibit 2 must contain a statement of costs and financing, specifying and including, to the extent possible:*

(i) *The estimated costs of carrying out or preparing the studies, investigations, tests, surveys, maps, plans or specifications identified under paragraph (c) of this section:*

\$4 to \$6 Million

(ii) *The expected sources and extent of financing available to the applicant to carry out or prepare the studies, investigations, tests, surveys, maps, plans, or specifications identified under paragraph (c) of this section.*

The Applicant has sufficient internal financial resources to fund the planned studies.

EXHIBIT 3 - PROJECT MAP

18 CFR §4.81(d) Exhibit 3 must include a map or series of maps, to be prepared on graphic quadrangle sheets or similar topographic maps of a State agency, if available. The maps must show.

- (1) *The location of the project as a whole with reference to the affected stream or other body of water and, if possible, to a nearby town or any permanent monuments or objects that can be noted on the maps and recognized in the field:*
- (2) *The relative locations and physical interrelationships of the principal project features identified under paragraph (b) of this section:*
- (3) *A proposed boundary for the project, enclosing:*
 - (i) *All principal project features identified under paragraph (b) of this section, including but not limited to any dam, reservoir, water conveyance facilities, powerplant, transmission lines, and other appurtenances; if the project is located at an existing Federal dam, the Federal dam and impoundment must be shown, but may not be included within the project boundary;*

Any non-Federal lands and any public lands or reservations of the United States necessary for the purposes of the project. To the extent that those public lands or reservations area covered by a public land survey, the project boundary must enclose each of an only the smallest legal subdivisions (quarter-quarter section, lots or other subdivisions, identified on the map by subdivision) that may be occupied in whole or in part by the project.

The required map is provided as Exhibit 3-1, Project Location and Boundary.

- (4) *Areas within or in the vicinity of the proposed project boundary which are included in or have been designated for study for inclusion in the National Wild and Scenic Rivers System:*

None.
- (5) *Areas within the project boundary that, under the provisions of the Wilderness Act, have been:*
 - (i) *Designated as wilderness area;*
 - (ii) *Recommended for designation as wilderness area; or*
 - (iii) *Designated as wilderness study area.*

None.