

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * *

IN THE MATTER OF THE APPLICATION OF)
PUBLIC SERVICE COMPANY OF COLORADO,)
550 15TH STREET, DENVER, COLORADO,)
FOR A CERTIFICATE OF PUBLIC CONVEN-)
IENCE AND NECESSITY FOR THE CONSTRUC-)
TION, OPERATION AND MAINTENANCE OF A)
330 MW ELECTRIC GENERATING PLANT TO)
BE KNOWN AS THE FORT ST. VRAIN)
NUCLEAR GENERATING STATION, NEAR)
PLATTEVILLE, COLORADO, TOGETHER WITH)
A 230 KV TRANSMISSION LINE FROM SAID)
PLANT SITE TO A POINT NEAR BOULDER,)
COLORADO, AND A 230 KV TRANSMISSION)
LINE FROM SAID PLANT SITE TO A POINT)
NEAR FORT LUPTON, COLORADO.)

APPLICATION NO. 22803

April 2, 1968

Appearances: Lee, Bryans, Kelly & Stansfield, Esqs.,
Denver, Colorado, by
Bryant O'Donnell, Esq., and
Robert F. Thompson, Esq., for
Applicant;
Miller & Ruyle, Esqs., Greeley, Colorado, by
David J. Miller, Esq., and
Robert A. Ruyle, Esq., for Union Rural
Electric Association, Inc.;
Raphael J. Moses, Esq., Boulder, Colorado, and
John J. Conway, Esq., Denver, Colorado, for
Tri-State Generation and Transmission
Association, Inc.;
V. G. Seavy, Jr., Esq., Denver, Colorado, and
Edward L. Carey, Esq., Washington, D. C. for
International Union, United Mine Workers
of America;
Robert O. Marritz, Esq., Washington, D. C. and
Victor B. Grandy, Esq., Denver, Colorado, and
Tom Bonar, Broomfield, Colorado, for
Colorado Electric Consumers Association,
Inc.;
Eugene R. Weiner, Denver, Colorado, for
Colorado Open Space Coordinating Council, Inc.;
Elbridge G. Burnham, Denver, Colorado,
Individually;
E. R. Thompson, Denver, Colorado, and
Paul M. Brown, Denver, Colorado, and
J. M. McNulty, Denver, Colorado, of the
Staff of the Commission;
Robert Lee Kessler, Esq., Denver, Colorado, and
Robert L. Pyle, Esq., Denver, Colorado, and
Girts Krumins, Esq., Denver, Colorado, for
the Staff of the Commission.

MJM-5

S T A T E M E N T

BY THE COMMISSION:

On September 14, 1967, Public Service Company of Colorado (Applicant) filed with the Commission, pursuant to Section 115-5-1 Colorado Revised Statutes 1963, its Application for a Certificate of Public Convenience and Necessity for the construction, operation and maintenance of a 330 mw* electric generating plant, which is to be known as the "Fort St. Vrain Nuclear Generating Station," near Platteville, Colorado, together with a 230 kv transmission line from said plant site to a point near Boulder, Colorado, to connect with Applicant's central station transmission system and a 230 kv transmission line from said plant site to a point near Fort Lupton, Colorado, to connect with Applicant's central station transmission system.

The application was set for initial hearing commencing on November 8, 1967, at 9:00 o'clock A.M. in the Commission Hearing Room, 532 State Services Building, Denver, Colorado.

Petitions to intervene or protests were filed by Union Rural Electric Association, Inc. (Union), Tri-State Generation and Transmission Association, Inc. (Tri-State), United Mine Workers of America (UMW), Colorado Electric Consumers Association, Inc., and Elbridge G. Burnham. In addition, the Colorado Open Space Coordinating Council, Inc., filed a statement, although it did not seek leave to formally appear as a party.

Hearings on the application were held before the Commission on November 8 and 9, 1967, and February 7 and 13, 1968.

Prior to the conclusion of taking testimony before the Commission, both Union and Tri-State, through their respective attorneys, indicated that they were satisfied that the construction of the proposed generating plant and transmission lines would not adversely affect the systems of either of said public utilities.

* 1000 watts = 1 kilowatt (kw)

1,000,000 watts = 1 megawatt (mw)

The plant site upon which Applicant proposes to construct, operate and maintain its Fort St. Vrain plant and related facilities is situated in Weld County approximately 35 miles north of the City and County of Denver and three miles to the northwest of the Town of Platteville. It is located at the confluence of the South Platte River and St. Vrain Creek, and is bordered on the west, north and east by the two water courses. The area of the plant site acquired by Applicant is approximately 2200 acres and its size and shape were largely dictated by water acquisition requirements and private property ownership boundaries.

Applicant, in selecting the proposed plant site, took into consideration factors such as the availability of water for cooling and other purposes, the proximity of a major railroad and highway, the proximity to Applicant's load center in the Denver area and the proximity to existing transmission facilities, as well as Atomic Energy Commission (AEC) regulations pertaining to the location of Nuclear Power Plants.

The Fort St. Vrain Nuclear Generating Station is designed to produce a net electrical output of 330 mw. The reactor design utilizes many of the same fundamental principles that form the basis of the 40 mw (e)* High Temperature Gas-Cooled Reactor (HTGR) at Peach Bottom, Pennsylvania, now in commercial operation on the system of Philadelphia Electric Company. Heat is produced by fission in the HTGR utilizing a uranium-thorium fuel cycle. Graphite is used for the moderator, fuel cladding, core structure, and reflector, and helium is the primary coolant. The turbine generating plant design is, in general, conventional, utilizing 2400 p.s.i., 1000⁰ F. superheated and 1000⁰F. reheated steam.

The Fort St. Vrain Nuclear Generating Station will be interconnected to the central system of Applicant by the construction of a single circuit 230 kv line from the plant site to the Valmont Station of Applicant adjacent

(e)*= electric

to the City of Boulder, Colorado, and by the construction of a double circuit 230 kv transmission line from the plant site to interconnect with the 230 kv transmission system of the Applicant at a point adjacent to the City of Fort Lupton, Colorado.

The conductor size will be 954 MCM ACSR. The transmission line towers will be constructed of steel, and the portion of the transmission line from the proposed plant site to Valmont will be designed as a double circuit steel tower with a single circuit initially installed. This will leave provision for the addition of a second circuit at a later date as generating and load requirements dictate.

Portions of the transmission lines will pass through areas certificated to Union REA. However, Applicant does not propose to render service to any customers within that area from the transmission lines to be constructed. The proposed transmission lines will not pass through any areas certificated to any other public utility.

The estimated cost of the transmission line from the proposed plant site to Valmont is estimated to be \$2,200,000, and the cost from the proposed plant to Fort Lupton is estimated to be \$1,200,000. The cost of the transmission line and related facilities will be the same whether electricity is generated through the use of nuclear or the use of fossil fuel.

Under date of July 1, 1965, Applicant entered into a contract with General Dynamics Corporation through its General Atomic Division (General Atomic) for the construction of the proposed plant, and under said date also entered into a contract with said company to supply the nuclear fuel for the proposed plant during the first 8 years of its operation at a base price of 1.6 mills per kwh. The 1.6 mills is divided as follows:

- 1.1 mills of the base price is not subject to escalation,
- .25 mills is subject to escalation according to an index of material prices, and
- .25 mills is subject to escalation according to an index of labor costs.

On November 1, 1967, the obligations, rights and duties of General Atomic were assigned to Gulf General Atomics, a wholly-owned subsidiary of

the Gulf Oil Company. In the remainder of this decision, that company will be generally referred to as Gulf General Atomics.

All the rights and responsibilities of the parties concerned are set forth in the Plant & Fuel Agreements and the so-called three-party agreement which are all part of the record herein.

The Plant Agreement, inter alia, provides for a "turn-key" base price of \$37,700,000, for which the Applicant will be provided with the plant and all warranties associated with it as required by the Plant Agreement. The base price is subject to escalation as is a standard practice in most contracts.

The Plant Agreement further calls for commercial operation of the plant on October 1, 1971, and recognizes in the warranty provision of the agreement that the plant is required for Applicant's use in 1972 and contains provisions for the assessment of damages if the plant is not in commercial operation by March 31, 1972.

While the Plant Agreement calls for commercial operation of the facilities not later than March 31, 1972, the Plant Agreement also requires the operation of the Plant at its rated capacity for a considerable period of time prior to its acceptance by Applicant. The testing must demonstrate that the proposed plant meets its design rating and will operate as a reliable source of base-load power on Applicant's system.

Under the Fuel Agreement, Gulf General Atomics has the responsibility to provide the fuel for the plant during the start-up and testing, and during the first eight years of commercial operation. At the end of the first eight years of commercial operation, Applicant will purchase Gulf General Atomics' interest in the fuel elements and Applicant is granted an option to purchase additional fuel at an agreed-upon price for the following five years, which gives Applicant a guaranteed fuel source at a contract price through the first 13 years of commercial operation of the plant. However, during the option period of five years the fuel price may be escalated by applying the material and labor indices mentioned to 90% of the base price. Since fuel

elements have an expected useful life of 6 years, the fuel supply provided for under the Fuel Agreement will actually extend over a longer period than the basic 13-year term. The Commission finds that the Applicant, by resorting to a new and different type of fuel, i.e. nuclear fuel, will not be placing itself in the position of a captive customer for such fuel to the detriment of the public interest in the future.

Applicant proposes to finance the construction, operation and maintenance of its proposed plant and transmission lines, as well as its related facilities, in the same manner that it finances any other construction. Applicant will generate approximately 50% of the monies required from internal sources, primarily depreciation and retained earnings, and the balance will be financed by outside financing through the sale of some type of securities such as first mortgage bonds, preferred stocks, common stocks, or a combination of all such securities. Any such sale of securities will be a part of Applicant's general financing for all of its construction, operation and maintenance needs during the next 5 years.

Applicant has been an active participant in studies of the application of nuclear energy to central station generation since the year 1954 when the Atomic Energy Act was amended to permit private industry to participate in the development and utilization of nuclear energy for the generation of electrical power. Applicant has also actively participated in the experimental and development processes of the utilization of nuclear power in the 40,000 electrical kw high temperature gas-cooled reactor known as the Peach Bottom Plant now in commercial operation on the system of Philadelphia Electric Company.

In connection with the studies and development of the utilization of nuclear power for electrical generation, personnel of Applicant have received specialized training and experience, both in privately-owned and governmentally-owned nuclear facilities.

With respect to the question of the technical ability of the Applicant to operate and maintain the proposed plant, the record does not

disclose any evidence which would question the ability of Applicant to discharge this element of its public responsibility. Applicant has been engaged in a training program to train and educate engineering and technical employees as well as a number of plant operators so that they will be qualified to operate a plant of this nature. Additionally, any operator who will operate the reactor must obtain a permit from the Atomic Energy Commission.

Applicant has historically been one of the leaders in the development and utilization of new, different, and, at the time, experimental generating and transmission facilities. Examples are the development of high altitude transmission lines, one of which, at the time of construction was the highest transmission line in the world; the development and construction of a hydroelectric generating facility, which, at the time of construction, utilized one of the highest heads of water pressure in the United States and possibly the world; and the development and construction of its high altitude pumped storage project known as the Cabin Creek Pumped Storage facility.

It is in the public interest that public utilities such as Applicant should participate in the research and development of advanced design electric facilities which are intended to establish more reliable or more economical generation of electrical energy.

Electric power requirements of consumers in the United States have been steadily increasing in recent years, and the growth in electrical demand on the system of Applicant has followed this pattern. Applicant's evidence (Exhibit 2) establishes that in 1955 the maximum hour demand was 456,500 kw, while in 1965 the maximum hour demand was 1,018,000 kw, and by 1972 Applicant estimates its maximum hour demand will be approximately 1,664,000 kw. In the year 1972, without the construction of additional generating capacity, Applicant will have in service only 1,903,600 kw of generating capacity with which to meet its expected maximum demand which results in a generating reserve capacity of only approximately 239,600 kw. Good operating practice

requires any public utility to generally make provision for ample amounts of reserve generating capacity to provide for the contingency of the unscheduled loss of its largest unit during times of peak demand. (Cherokee Unit No. 4 is rated at 350 mw) In addition, reserve generating capacity is required to meet other unforeseen contingencies, including load requirements which may grow faster than anticipated. It is, therefore, abundantly clear from the record, and indeed it was not seriously contended to the contrary, that Applicant must construct additional generating capacity by the year 1972 if it is to have adequate capacity to meet its load requirements.

Before turning to the position and allegations of certain of the protestants and intervenors, we here observe that the record firmly discloses, and we so find, that public convenience and necessity requires the construction of additional generating capacity by Applicant prior to the end of the year 1972; that the Applicant is a financially sound public utility and has demonstrated its ability to finance the proposed generating plant and transmission lines which are the subject of this Application; and that Applicant is qualified and able to construct, operate and maintain such facility.

The position of the Intervenor raises the questions of the economic feasibility of the proposed plant, the health and safety of the public resulting from possible radiation hazards and, in addition, in the case of the UMW the loss of a potential market for coal production.

None of the above parties presented any substantive evidence attacking the economic feasibility of the facilities Applicant proposes to construct, although there was extensive cross-examination of Applicant's witnesses on this subject. The record demonstrates that the proposed nuclear plant can reasonably be expected to generate electrical energy at a cost at least comparable to the expected cost from a fossil-fueled plant. The Applicant also takes the position that there are other factors favoring the management decision to proceed in the construction of the nuclear plant. These factors are: contribution to the State of the art of nuclear generation; possible large savings in fuel costs since the

Applicant has a guaranteed source of supply at contract prices for nuclear fuel for a period in excess of 13 years and possibly may not be as subject to inflationary trends as would be other forms of fuel. A principal witness for the United Mine Workers stated that nuclear plants might represent possible advantages, and further testified that a substantial portion of future generating plants would be powered by nuclear energy.

It should be noted that economic feasibility of this plant as compared to a conventional fossil-fuel powered plant is dependent upon many factors which may possibly change in the future. While the cost factors involved in a conventional plant can be well established and the Applicant is experienced in the construction of such plants, a nuclear plant which will be the first one on Applicant's system and, for that matter, first of its size and kind in the world, may present problems in estimating future costs. An important element in this may be new safety requirements imposed by AEC over which Applicant may have no control or knowledge at this time, but which may nevertheless affect the construction and operating costs of the plant. New technological developments may also dictate modifications affecting the cost. The Applicant at this time has elected to construct a nuclear plant in lieu of a conventional fossil-fuel plant, yet the economics involved do not give a clear preponderance of the evidence in favor of the nuclear plant of any substantial nature. Authority to construct this generating plant as a nuclear powered plant rather than as a fossil-fuel powered plant will be ordered subject to the condition that the Commission may, in the future when rates or valuation are at issue, disallow portions of investment and operating expenses which are due to the fact that the plant is a nuclear powered plant rather than a fossil-fuel powered plant, if the allowance of such portions of investment and operating expenses would adversely affect the rate payer. The decision to construct this type of plant is a decision being made by management of the Applicant and is not presently supported by clear and substantial economic advantages. Therefore, any risk should be borne by the Applicant if such decision of management should adversely affect the consumer.

The record is, however, barren of sufficient evidence which would require this Commission to find that a nuclear power plant as proposed by Applicant is not economically feasible. However, it is also clear on the face of the hearing record that the comparative economic advantages to the Applicant of constructing and operating the proposed facility, as against a conventional one, would be negligible, if any.

The Atomic Energy Act of 1954, as amended, and the regulations adopted by the Atomic Energy Commission provide for an elaborate regulatory procedure to insure that the construction of the nuclear power plant will not result in any unreasonable danger to the health and safety of the public. Although Section 274.k. of the Act specifically provides:

"k. Nothing in this section shall be construed to affect the authority of any state or local agency to regulate activities for purposes other than protection against radiation hazard." (Emphasis supplied),

this Commission in its hearings freely received all evidence relating to the health and safety question. Whether or not the Atomic Energy Act of 1954, as amended, pre-empts to the Atomic Energy Commission all questions of health and safety resulting from radiation hazards is not an issue in this proceeding for the reason that the record in this proceeding amply demonstrates that the proposed plant will be constructed and operated in a safe manner and will not impose any unreasonable danger to the health and safety to the general public within the State of Colorado or elsewhere. In this regard the Commission bears in mind its powers to regulate the Applicant and its duty to require that its lines, plant, system, equipment, electrical wires, apparatus, and premises be constructed, maintained and operated in such manner as to promote and safe-guard the health and safety of its employees, customers and the public; and, finds that the undertaking of the Applicant in the manner as proposed by Applicant presently meets such safeguards.

Testimony was received from Applicant's witnesses of the many safeguards which will be incorporated in the proposed plant to prevent any escape of radioactive material. Just as an example, the plant will be constructed to provide for safe shutdown in a tornado of up to 300 miles per

hour and an earthquake of some 50 times the magnitude of any earthquake previously felt at the site of the plant.

Intervenors' witnesses were, in substance, in accord that the possibility of a nuclear explosion, such as a bomb explosion, to occur under the safeguards stated to be provided is impossible. While they did testify that it is not impossible for a nuclear excursion to occur which could cause damage to either persons or property as a result of radiation, the possibility of such an event occurring was said to be similar to the possibility that the Golden Gate Bridge would collapse at any particular moment. Intervenors' witnesses would not testify that the proposed plant would be unsafe and one of such witnesses testified that anything built by man carries with it the possibility of failure. No number of such conjectural possibilities can be equated to a sufficient factual probability to form a basis for denying Applicant the certificate it seeks. Moreover, the evidence discloses, that if the alleged accident should occur which the UMW fears, the maximum release of radioactivity at the boundary of the low population zone (a circle radius of 16,000 meters around the center of the plant) would be 5.8 millirems, while the maximum allowable under AEC regulation is 25 rem. Thus, such an accident would result in only 1/4000 of the maximum tolerable exposure, at the low population zone boundary.

Whether or not the construction of a nuclear plant, as opposed to a coal-fired plant, will have any future impact upon the United Mine Workers of America does not constitute sufficient basis for this Commission to refuse the certificate requested for the construction of a plant which is otherwise required by the present and future public convenience and necessity. It is not the function of this Commission, in determining public convenience and necessity, to favor or promote one type of fuel over another.

FINDINGS AND CONCLUSIONS

1. That the statements of fact contained in the foregoing Statement are hereby adopted as findings of fact herein.

2. Applicant is a corporation organized and existing under and by virtue of the laws of the State of Colorado. A certified copy of Applicant's

Composite Articles of Incorporation and all amendments thereto have heretofore been filed with this Commission.

3. Applicant is a public utility subject to the jurisdiction and regulation of the Public Utilities Commission of the State of Colorado, and is engaged principally in the generation, purchase, transmission, distribution and sale of electricity, and in the purchase, distribution and sale of natural gas.

4. Applicant has need for a 330 mw electric generating plant and related facilities by the year 1972 to enable Applicant to meet the electric power needs of its customers and to assure an adequate power supply for future growth and needs of its customers and of the areas in which it operates.

5. The plant and interrelated facilities as proposed to be constructed, operated, and maintained by the Applicant will be safe according to present-day nuclear technology.

6. The location of the proposed generating plant and facilities lies within the area certificated to Union Rural Electric Association, Inc., Brighton, Colorado; however, Applicant does not propose and does not request authority to serve the public within the service area of Union Rural Electric Association, Inc. There are no other public utilities operating within the area in which said plant is to be located.

7. The proposed generating plant, transmission lines and related facilities will not physically or economically duplicate or interfere with the lines, plant or system of any other public utility.

8. The economics of the project, as supported by the estimates presented (Exhibit No. 14), are not unreasonable, under presently known conditions.

9. There is no evidence in the record concerning safety which would cause us to reject the proposed project as being unsafe or which would constitute an undue risk to the health and safety to the people of the area adjacent thereto.

10. Applicant has the ability to finance and construct the proposed facilities.

11. Present and future public convenience and necessity requires, and will require the construction, operation and maintenance by Applicant of the proposed Fort St. Vrain Nuclear Generating Station, related facilities and transmission line, as proposed by Applicant in the application filed in this proceeding, subject to the conditions stated herein.

12. The certificate of public convenience and necessity as applied for by Applicant should be issued subject to certain conditions. The Atomic Energy Commission must also issue a construction permit and an operating license for this facility. The certificate to be issued herein should be subject to the condition, therefore, that such certificate shall be void in the event the United States Atomic Energy Commission should deny Applicant a permit to construct or a license to operate said proposed nuclear energy utilization facility.

13. The public interest requires that the certificate to be granted herein should be subject to the condition that the Commission may, in the future when rates or valuation are at issue, disallow portions of investment and operating expenses which are excessive due to the fact that the plant is a nuclear powered plant rather than a fossil-fuel powered plant, if the allowance of such portions of investment and operating expenses would adversely affect the rate payer.

O R D E R

THE COMMISSION ORDERS:

1. A certificate of public convenience and necessity is hereby granted to Public Service Company of Colorado to construct, operate and maintain a nuclear-fueled electric generating plant of approximately 330 mw capacity, to be known as the Fort St. Vrain Nuclear Generating Station, together with appurtenant facilities and to construct, operate and maintain a 230 kv transmission line from said Fort St. Vrain Nuclear Generating Station site near Platteville, Colorado to points near Boulder, Colorado,

and Fort Lupton, Colorado, to interconnect the proposed plant with its existing transmission system, subject to the condition, however, that such certificate shall be void in the event the United States Atomic Energy Commission should deny Applicant a permit to construct or a license to operate said proposed nuclear energy generating facility.

2. Upon receipt by Applicant of a permit and an operating license by the United States Atomic Energy Commission for the construction and operation of Applicant's proposed nuclear energy generating facility, a certified copy of each such document shall be filed with this Commission within ninety (90) days of the receipt thereof.

3. The certificate granted herein is further subject to the condition that in any future proceedings involving rates or valuation of Applicant, this Commission may disallow portions of investment and operating expenses which are excessive due to the fact that the plant is a nuclear powered plant rather than a fossil-fuel powered plant, if the allowance of such portions of investment and operating expenses would adversely affect the rate payer, in accordance with the Findings and Statement herein.

This Order shall become effective twenty-one (21) days from the date hereof.

THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO







Commissioners

Dated at Denver, Colorado,
this 2nd day of April, 1968

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